



OPTO-ELECTRONIC PROTECTIVE DEVICES

Safety laser scanners, safety light curtains,
safety camera systems, multiple light beam safety devices,
single-beam photoelectric safety switches,
mirror columns and device columns

SICK
Sensor Intelligence.

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SERVICES FOR MACHINES AND SYSTEMS: SICK LifeTime Services

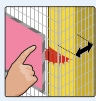
Our comprehensive and versatile LifeTime Services are the perfect addition to the comprehensive range of products from SICK. The services range from product-independent consulting to traditional product services.



-  **Consulting and design**
Safe and professional
-  **Product and system support**
Reliable, fast and on-site
-  **Verification and optimization**
Safe and regularly inspected
-  **Upgrade and retrofits**
Easy, safe and economical
-  **Training and education**
Practical, focused and professional

SYMBOLS AND THEIR MEANING

Safety tasks



Hazardous point protection with finger or hand detection



Hazardous point protection with hand and person detection



One-sided access protection with person detection



Multi-sided access protection with person detection



One-sided access protection with differentiating between persons and material / muting



Stationary hazardous area protection with person detection in the presence



Mobile hazardous area protection with person detection when approaching

Fields of application



Finger detection



Hand detection



Access protection



Hazardous area protection



Safe SICK device communication via EFI

LIST OF PRODUCT FAMILIES

Safety laser scanners

S300 Mini Standard	F-78
S300 Mini Remote	F-86
S300 Standard	F-96
S300 Advanced	F-106
S300 Professional.	F-116
S300 Expert	F-128
S3000 Standard	F-138
S3000 Advanced	F-148
S3000 Professional.	F-158
S3000 Expert	F-170
S3000 Remote	F-182
S3000 PROFINET IO Advanced.	F-192
S3000 PROFINET IO Professional	F-200
S3000 Cold Store	F-208

Safety light curtains

deTec4 Core	G-232
deTec2 Core	G-242
C4000 Standard	G-252
C4000 Standard ATEX II 3G/3D	G-278
C4000 Advanced	G-280
C4000 Advanced ATEX II 3G/3D	G-306
C4000 Micro	G-308
C4000 Micro in IP69K Housing	G-318
C4000 Fusion	G-326
C4000 Palletizer	G-344
C4000 Palletizer in IP69K Housing	G-360
C4000 Entry/Exit	G-368
C4000 Select	G-380
M4000 Advanced Curtain	G-396
miniTwin4	G-414
miniTwin2	G-428
C2000 Standard in IP69K Housing	G-442

Safety camera systems

V300 Work Station Extended	H-470
V200 Work Station Extended	H-478

Multiple light beam safety devices

M4000 Standard	I-496
M4000 Standard A/P.	I-508
M4000 Standard in IP69K Housing	I-518
M4000 Standard A/P in IP69K Housing	I-524
M4000 Advanced	I-530
M4000 Advanced A/P	I-548
M4000 Area	I-564
M2000 Standard	I-574
M2000 Standard A/P.	I-584
M2000 Standard in IP69K Housing	I-592

Single-beam photoelectric safety switches

WSU/WEU26-3	J-610
L4000 Systems	J-616
L41.	J-626
L21.	J-634
L27.	J-642
L28.	J-648

Mirror columns and device columns





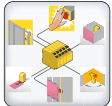







Mirror columns with protective field height mirror	K-668
Mirror columns with separate mirrors	K-672
Device columns with external grooves	K-678
Device columns for outdoor use	K-684

Enhanced system solutions

Flexi Loop	L-692
Flexi Classic	L-692
Flexi Soft.	L-693
Flexi Soft Drive Monitor	L-693
UE10-2FG	L-694
UE12-2FG	L-694
UE10-30S	L-695
UE48-20S	L-695
UE48-30S	L-696
UE10-4XT	L-696
UE11-4DX	L-697

FROM SAFETY TASK TO PRODUCT



	GENERAL INFORMATION About SICK	A
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	FUNCTIONS AND SAFETY TASKS Overview and selection	E
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A WE DELIVER “SENSOR INTELLIGENCE.”

SICK sensor solutions for industrial automation are the result of exceptional dedication and experience. From development all the way to service: The people at SICK are committed to investing all their expertise in providing with the very best sensors and system solutions possible.

A company with a culture of success

Almost 7,000 people are on staff, with products and services available to help SICK sensor technology users increase their productivity and reduce their costs. Founded in 1946 and headquartered in Waldkirch, Germany, SICK is a global sensor specialist with more than 50 subsidiaries and representations worldwide. The people work with pleasure at SICK.

This is demonstrated by the accolades that the company is regularly awarded in the “Great Place to Work” competition. This lively corporate culture holds strong appeal for qualified and skilled persons. In SICK, they are part of a company that ensures an excellent balance between career progression and quality of life.



Innovation for the leading edge

SICK sensor systems simplify and optimize processes and allow for sustainable production. SICK operates at many research and development centers all over the world. Co-designed with customers and universities, our innovative sensor products and solutions are made to give a decisive edge. With an impressive track record of innovation, we take the key parameters of modern production to new levels: reliable process control, safety of people and environmental protection.

A corporate culture for sustainable excellence

SICK is backed by a holistic, homogeneous corporate culture. We are an independent company. And our sensor technology is open to all system environments. The power of innovation has made SICK one of the technology and market leaders – sensor technology that is successful in the long term.



A “SENSOR INTELLIGENCE.” FOR ALL REQUIREMENTS

SICK is a renowned expert in many industries, and is entirely familiar with the critical challenges they face. While speed, accuracy and availability take center stage in all industries, technical implementations vary greatly. SICK puts its vast experience to use to provide with precisely the solution you need.

For applications worldwide

Hundreds of thousands of installations and applications go to prove that SICK knows the different industries and their processes inside out. This tradition of uncompromising expertise is ongoing: As we move into the future, we will continue

to design, implement and optimize customized solutions in our application centers in Europe, Asia and North America. You can count on SICK as a reliable supplier and development partner.



For your specific industry

With a track record of proven expertise in a great variety of industries, SICK has taken quality and productivity to new heights. The automotive, pharmaceutical, electronics and solar industries are just a few examples of sectors that benefit from our know-how. In addition to increasing speed and improving traceability in warehouses and distribution centers, SICK solutions provide accident protection for automated guided vehicles. SICK system solutions for analysis and flow measurement of gases and liquids enable environmental protection and sustainability in, for example, energy production, cement production or waste incineration plants.

For performance across the board

SICK provides the right technology to respond to the tasks involved in industrial automation: measuring, detecting, monitoring and controlling, protecting, networking and integrating, identifying, positioning. Our development and industry experts continually create groundbreaking innovations to solve these tasks.

→ www.sick.com/industries



A VERSATILE PRODUCT RANGE FOR INDUSTRIAL AUTOMATION

From the simple acquisition task to the key sensor technology in a complex production process: With every product from its broad portfolio, SICK offers a sensor solution that best combines cost effectiveness and safety.

[→ www.sick.com/products](http://www.sick.com/products)

Photoelectric sensors

- Miniature photoelectric sensors
- Small photoelectric sensors
- Compact photoelectric sensors
- Cylindrical photoelectric sensors
- Fiber-optic sensors and fibers
- MultiTask photoelectric sensors



Proximity sensors

- Inductive proximity sensors
- Capacitive proximity sensors
- Magnetic proximity sensors



Magnetic cylinder sensors

- Analog positioning sensors
- Sensors for T-slot cylinders
- Sensors for C-slot cylinders
- Sensor adapters for other cylinder types



Registration sensors

- Contrast sensors
- Markless sensors
- Color sensors
- Luminescence sensors
- Fork sensors
- Array sensors
- Register sensors
- Glare sensors



Automation light grids

- Measuring automation light grids
- Switching automation light grids



Opto-electronic protective devices

- Safety laser scanners
- Safety light curtains
- Safety camera systems
- Multiple light beam safety devices
- Single-beam photoelectric safety switches
- Mirror columns and device columns



Safety switches

- Electro-mechanical safety switches
- Non-contact safety switches
- Safety command devices



sens:Control – safe control solutions

- Safe sensor cascade
- Safety relays
- Safety controllers



Gas analyzers

- Gas transmitters
- In-situ gas analyzers
- Extractive gas analyzers



Dust measuring devices

- Scattered light dust measuring devices
- Transmittance dust measuring devices
- Gravimetric dust measuring devices



Analyzer solutions

- CEMS solutions
- Process solutions



A

Traffic sensors

- Tunnel sensors
- Overheight detectors
- Visual range measuring devices



Ultrasonic gas flow measuring devices

- Volume flow measuring devices
- Mass flow measuring devices
- Flow velocity measuring devices
- Gas flow meters



Identification solutions

- Image-based code readers
- Bar code scanners
- RFID
- Hand-held scanners
- Connectivity



Vision

- 2D vision
- 3D vision



Distance sensors

- Short range distance sensors (Displacement)
- Mid range distance sensors
- Long range distance sensors
- Linear measurement sensors
- Ultrasonic sensors
- Optical data transmission
- Position finders



Detection and ranging solutions

- 2D laser scanners
- 3D laser scanners
- Radar sensors



Motor feedback systems

- Motor feedback system rotary HIPERFACE®
- Motor feedback system rotary HIPERFACE DSL®
- Motor feedback system rotary incremental
- Motor feedback system rotativ incremental with commutation
- Motor feedback system linear HIPERFACE®



Encoders

- Absolute encoders
- Incremental encoders
- Linear encoders
- Wire draw encoders
- Safety encoders



Fluid sensors

- Level sensors
- Pressure sensors
- Flow sensors
- Temperature sensors



System solutions

- Customized analyzer systems
- Collision awareness systems
- Robot guidance systems
- Object detection systems
- Profiling systems
- Quality control systems
- Security systems
- Track and trace systems
- Functional safety systems



SERVICES FOR MACHINES AND SYSTEMS: SICK LifeTime Services

B SICK LifeTime Services is a comprehensive set of high-quality services provided to support the entire life cycle of products and applications from plant walk-through to upgrades. These services increase the safety of people, boost the productivity of machines and serve as the basis for our customers' sustainable business success. LifeTime Services range from product-independent consulting to traditional product services and are characterized by extensive industry expertise and more than 60 years of experience.





→ www.sick.com/service



Consulting and design

- Plant walk-through
- Risk assessment
- Safety concept
- Safety software and hardware design
- Validation of functional safety
- CE-conformance check



Product and system support

- Installation
- Commissioning
- Start-up support
- Calibrations
- Telephone support
- 24-hour helpline
- SICK Remote Service
- Troubleshooting on site
- Repairs
- Exchange units
- Extended warranty



Verification and optimization

- Inspection
- Stop time measurement
- Machine safety inspection
- Electrical equipment check
- Accident investigation
- Initial verification
- Performance check
- Maintenance



Upgrade and retrofits

- Upgrade services



Training and education

- Training
- Seminars
- Web training



SECURE YOUR INVESTMENT WITH CONSULTING AND DESIGN SERVICES

B

SICK LifeTime Services are brought in at a very early stage: with consulting, customer-orientated analyses, project management, and engineering. Secure your investment from the very start with our unique and comprehensive expertise!

Services for industrial safety technology

With SICK LifeTime Services, the main objective always comes first: the safety of people and machines. And at the same time, services for industrial safety technology optimize the manufacturing process, increase machine availability, and decrease downtimes. More than 15,000 safety inspections per year demonstrate SICK's expertise.

An overview of the services:

- Plant walk-through
- Risk assessment
- Safety concept
- Safety software design
- Safety hardware design
- Validation of functional safety
- CE-conformance check

Services for machine safety: “plant walk-through”

The modification or linking of machines can result in new hazards in production systems. Therefore, operators often need to take additional action in order to meet essential safety and health protection requirements. As an independent expert, SICK provides support for the evaluation of current system conformity status. The evaluation results, which confirm that safety has been ensured, provide a line of reasoning to management or authorities. Alternatively, the results can be used to develop safety strategies. The plant walk-through from SICK provides an overview of the current safety status – quickly and objectively.

Your benefits:

- Independent experts assess the primary safety aspects and recommend measures to be taken
- Provides a basis for the development of safety strategies
- Can be used by safety representatives or other officials as a basis of proof presented to management or health and safety authorities
- High level of quality thanks to standardized processes and sustainable competency management



Service for machine safety: “risk assessment”

The prerequisites for building safe machines and systems are diverse: risks must be identified, appropriate measures for minimizing risk need to be defined and their effectiveness has to be checked. Experts from SICK offer knowledge and experience to assist with a risk assessment – right from the start. This saves time and resources. The VERIFIED SAFETY seal of quality stands for solutions, generated and verified by certified staff members, in line with a specified process. VERIFIED SAFETY assures functional safety with proven quality.

Your benefits:

- Saves time and resources thanks to the involvement of experienced SICK experts
- Independent and comprehensive expertise provide certainty when assessing risks
- Periodic qualification of SICK specialists ensures the latest directives and standards are incorporated in new and repeat projects
- High level of quality thanks to standardized processes and sustainable competency management



The “risk assessment” service carries the VERIFIED SAFETY seal of quality

Service for machine safety: “safety concept”

Once risks have been identified and the design-related risk reduction measures are defined, the technical protection measures must be implemented. These measures depend on the proper performance of the control system. Experts from SICK identify and specify the necessary safety functions. Drawing from many years of experience, these experts create a flexible and product-neutral safety concept. The definition of selection parameters by SICK saves time and resources and also prevents any unnecessary measures.

Your benefits:

- Saves time and resources thanks to involvement of experienced SICK experts
- Increases machine safety as a result of compliance with essential safety and health requirements and standards
- Choose from any safeguarding component available on the market
- Ensures effectiveness and competitiveness by preventing unnecessary measures
- High level of quality thanks to standardized processes and sustainable competency management



The “safety concept” service carries the VERIFIED SAFETY seal of quality



VERIFIED SAFETY – The SICK seal of quality

Consulting and engineering services from SICK carry the VERIFIED SAFETY seal of quality. Documents bearing the VERIFIED SAFETY seal of quality guarantee results with proven quality and compliance with the prevailing regulations.



INCREASE SAFETY THROUGH VERIFICATION AND OPTIMIZATION

B

Monitor, assess, control – with SICK lifeTime Services you'll stay on the safe side. Naturally every situation and every plant is different, but our experts will find the right solution for you.

Service for machine safety: “inspection”

Ensuring the safety of machines and systems is not only the responsibility of the manufacturer, but also machine and system owners, who are obliged to provide safe work equipment. The experts at SICK use their knowledge and experience to support the operating company in this regard. Inspecting the machine or system before it is commissioned ensures that it has been mounted properly and the safety-related equipment is functioning safely, and that these steps have been completed and documented accordingly. The following periodic inspections check the operation of the protective devices according to current machine usage and in accordance with the legally required testing periods. This means that countermeasures can be introduced in a timely manner. To ensure a consistently high level of testing quality, SICK experts are certified and are reviewed on a regular basis.

Your benefits:

- Safety is determined and corresponding documentation is provided in the inspection report as proof that the legal obligation for testing has been fulfilled
- High testing quality through certification and periodic inspection in accordance with IEC 17020
- Safety is ensured due to early detection of changes to application conditions and manipulations
- High machine reliability due to periodic checking
- Automatic reminder of required testing periods within the framework of the service contracts



Service for machine safety: “stop time measurement”

Whether a protective device provides sufficient protection against the dangerous movement is determined primarily by the safety distance selected. It must be ensured that the movement comes to a stop before the hazardous point is reached – for the entire service life of the machine. SICK's stop time measurement identifies the machine stopping time. This information provides the basis for specifying the safety distances. Stop time measurement is able to detect changes as a result of brake wear, for example, at an early stage, so that appropriate action can then be taken. Consistent and high test quality can be achieved if measuring instruments are checked at regular intervals.

Your benefits:

- Guaranteed quality of measurement by monitored measuring instruments
- Creation of a measurement report for the machine documentation
- A test label is attached to the machine so that important information can be identified quickly
- Identification of hazardous risks due to noncompliance with the necessary safety distances
- High test quality thanks to certification and regular inspection in accordance with IEC 17020 by independent bodies and sustained skills management



INCREASING PERFORMANCE THROUGH UPGRADE SERVICES AND RETROFITTING



The simple solution for replacing used protective devices.

B

Upgrade kits for opto-electronic protective devices

SICK upgrade kits are perfectly matched to the product they are replacing. Protective devices from SICK offer reliable and continuous operation over many years. However, if a device does experience a failure after several years of operation, SICK upgrade kits make replacing it much easier. Benefit from our know-how: we deliver the latest technology, prepared and brought together in a way that allows seamless integration in existing systems. So the exchange is quick and efficient, and system availability is ensured.

Your benefits:

- Solution tailored to the previous product in question
- Simple to install thanks to individual adapters and flexible mounting brackets
- No new cabling required: Plug and play thanks to pre-assembled adapters and plug connectors
- Quick and efficient: Perfect integration in existing systems, minimal downtime
- Taking the quick, precautionary step of converting your system means costly and unscheduled outage times are avoided
- Also available as a service: On request, SICK will carry out all the conversion work for your system on site

Benefits of our upgrade service:

We help you select a suitable upgrade kit and support you to integrate the protective device into the machine. Moreover, we configure the device and perform a final safety inspection.





BUILD COMPETENCE THROUGH BASIC TRAINING AND ADVANCED TRAINING

B

The human factor has a decisive impact on machine and plant productivity. With SICK's training the performance of your employees will reach new heights.

From first contact to experts

Fundamentally, every sensor from SICK is designed to be as easy to put into operation as possible, and simple to use. In some cases, it may be vital for ensuring the sensor's reliability, that it is installed, configured, and maintained by a qualified professional. The range of services from SICK extends from simple coaching sessions and briefings, to wide-ranging workshops and product training courses, to professionally led seminars and web training courses. The seminars introduced here are just a few examples from our wide range of training opportunities.

Training: "S3000 PROFINET IO"

This training provides an overview of the functions and settings of S3000 PROFINET IO Advanced and S3000 PROFINET IO Professional. You will also get practical tips for configuration and parameterization.

At a glance

- Basic configuration of the S3000 PROFINET IO safety laser scanner
- Communication between the S3000 PROFINET IO safety laser scanner and the Siemens PLC
- Number of bits necessary for communication between the Siemens PLC and SICK devices
- Overview of the necessary settings on the Siemens PLC
- Fault diagnosis
- Practical exercises on S3000 PROFINET IO safety laser scanners

Objectives

- Get an overview of the functions and settings of the S3000 PROFINET IO safety laser scanner
- Acquire knowledge of the relevant parameters for the S3000 PROFINET IO safety laser scanner
- Adjustments and configuration from practice



Seminar: “risk assessment and conformance check”

Practical seminar provided by SICK for the successful creation of risk assessments in the context of CE marking. Performance and documentation of risk assessments in practice. Following a brief introduction to the legal background, trainees will learn about a proven procedure that is easy to apply and will then implement it.

At a glance

- Overview of conformity assessment and CE marking
- Requirements and objectives of risk assessment: gathering and documentation of information, identification of standards, definition of hazards and hazardous points, assignment of solutions and measures
- EN ISO 13849-1/ and EN ISO 62061
- Risk assessment and tools for documentation
- Putting into practice, tips for day-to-day working

Objectives

- Introduction to the legal requirements for risk assessments, meaning and research of standards
- Drawing up of practical measures based on an example case scenario
- Skills to implement the procedure for CE marking and risk assessment in the trainee’s own company

Seminar: “Machinery Directive – principles of machine-related safety”

Machine-related safety is more than just compliance with written text. The European directives define the general requirements for putting products on the open market within the European Union. What is the right way to implement the Machinery Directive? We will show you possible solutions.

At a glance

- Machine safety, European directives and standards and their application
- Safe design of machines: risk assessment, hierarchy of measures
- Selection and use of protective devices and physical guards
- Correct use of safety interlocks
- Two-hand control, hold-to-run mode, and emergency stop
- Special function for material flow
- Safe control technology

Objectives

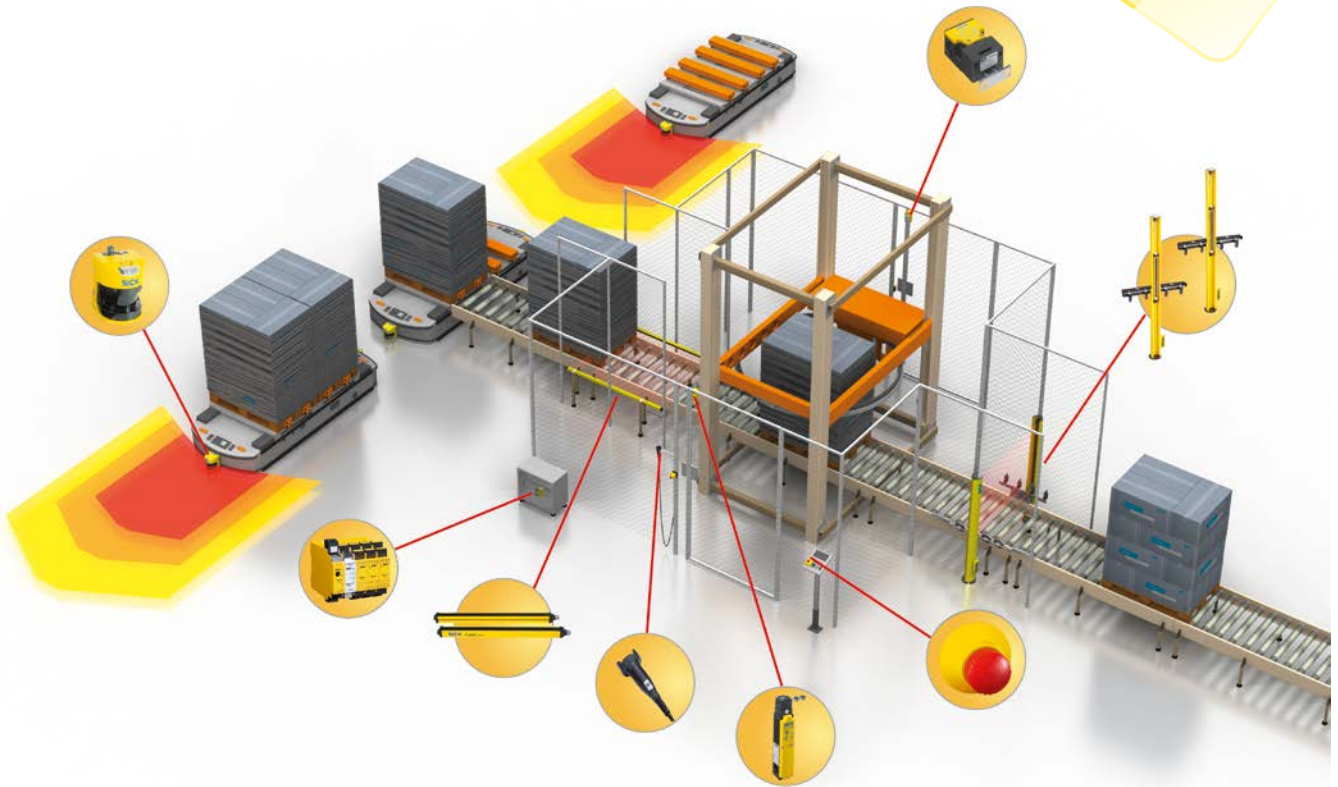
- Communication of the legal requirements to be met by machine manufacturers
- Safe application of directives and standards with regard to:
 - General procedure
 - Types of protective device and their application
 - Consideration of functional safety



SICK – YOUR PARTNER FOR MACHINE SAFETY



C



SICK's proximity to the customer and experience result in the development of safety solutions for industrial automation.

SICK safety solutions increase your security of investment and efficient processes open up new savings potential. We always keep an eye on our primary objective; the safety of people and machines.

Our range of products and services for industrial safety systems includes:

- Application-oriented functions and trend-setting products that increase your system efficiency
- Seamless integration into your safety and system environments for total transparency
- Compliance with applicable international standards to support the global presence of your products
- Global services that range from the realization of your ideas through to regular safety inspections for your machines
- Tools to facilitate your safety engineering
- Training courses to develop and maintain your expertise
- Comprehensive safety packages for the safety solutions in your machines and systems

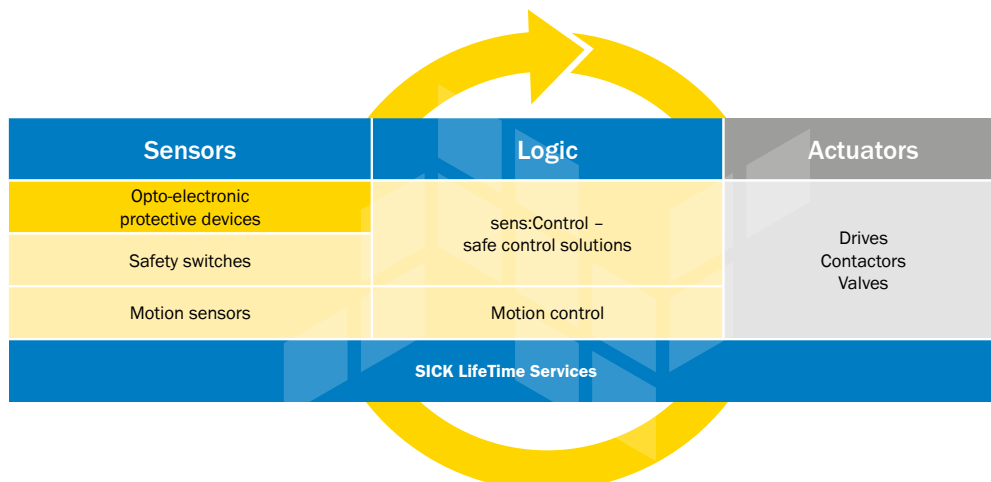
safetyPLUS® – WE PROTECT PEOPLE. → www.sick-safetyplus.com



Opto-electronic protective devices

SICK opto-electronic protective devices are the first choice for ensuring maximum productivity for machines and systems. They are used whenever hazardous machine movements need to be stopped quickly and there is no danger from ejected parts or radiation. Unlike fences and doors, they do not restrict handling or material transport and so do not lead to a temptation to manipulate. This ensures that the safety level originally defined by the designer for the operator remains in place. The extensive SICK portfolio includes safety laser scanners, safety camera systems, safety light curtains, multiple light beam safety devices and single-beam photoelectric safety switches.

This comprehensively covers the various requirements of the hazardous point protection, access protection and hazardous area protection. Specially integrated functions and a SICK-specific device interface also enables production processes to be optimized. The interaction between safety sensors and safety controllers guarantees maximum functionality and safety.



The safety chain to perform safety functions generally consists of sensors, the logic, the power control elements and the drive element.

OPTO-ELECTRONIC PROTECTIVE DEVICES IN THE SICK “GUIDE FOR SAFE MACHINERY”

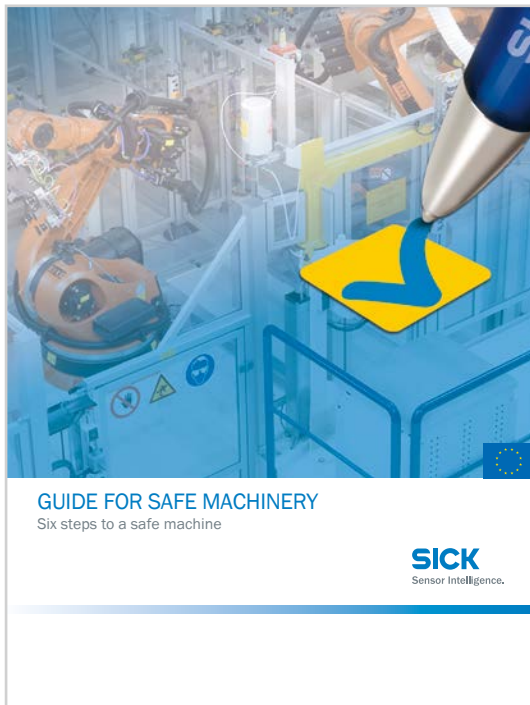
The “Guide for Safe Machinery – Six steps to a safe machine” combines our many years of practical experience into a comprehensive brochure. We guide you to safe machinery.

The guide contains structured information on:

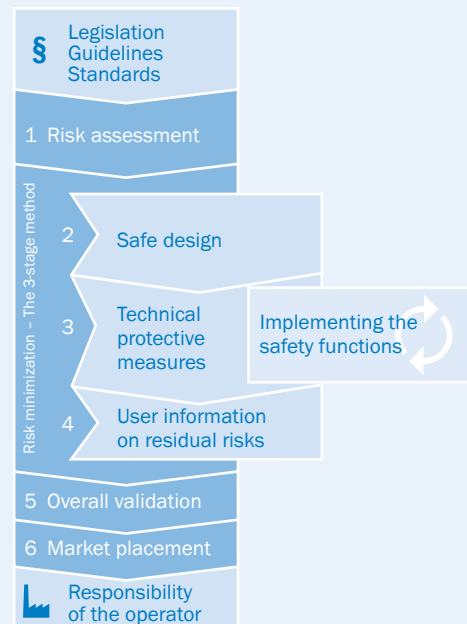
- Legal requirements for machines and their implementation
- Selection and use of protective devices
- Examples of how to protect machines and persons against accidents
- Application of the EN ISO 13849-1 and EN 62061 standards to determine performance levels (PL) or safety integrity levels (SIL)
- SICK support services

Special additional comprehensive information on opto-electronic protective devices:

- Technologies
- Key parameters, such as detection capability
- Relationship between the type, PL and SIL
- Application conditions
- Positioning and dimensioning



Six steps to a safe machine with SICK



You can download the guide as well as find more knowledge and extensive information on services and tools for machine safety at → www.sick-safetyplus.com

Part numbers for the European editions: 8008007 German, 8007988 English

Part number for the North American edition: 7028282

OPTO-ELECTRONIC PROTECTIVE DEVICES AND SAFETY STANDARDS

EN ISO 13849-1 defines the reliability of safe control functions with performance levels (PL) a, b, c, d and e. PL e represents the highest level.


Besides the categories, which describe the structural requirements, EN ISO 13849-1 also considers the probability of a dangerous failure, measures for avoiding and controlling faults, the avoidance or controlling of systematic faults and the quality of the design process.

EN 62061 follows the same approach with safety integrity levels (SIL) 1, 2 and 3.

In contrast to simple control systems, such as electronic safety switches, additional criteria need to be taken into account for opto-electronic protective devices.

These include the required detection capability, which results from the optical operating principles and is defined in the IEC 61496 series of standards (see table below).

Supplementary requirements of EN ISO 13849-1 and IEC 61496

Functional safety	Resistance to environmental influences	Electromagnetic compatibility	Detection capability
<p>EN ISO 13849-1 primarily describes requirements for functional safety in safety-related control components:</p> <ul style="list-style-type: none"> • Structure (categories) • Probability of a hazardous failure • Measures for avoiding errors and detecting errors • Preventing and controlling systematic faults • Quality of the design process • Documentation 		<p>IEC 61496 describes the requirements for opto-electronic protective devices:</p> <ul style="list-style-type: none"> • Design of the ESPE • Optical performance features • Detection capability • Reliability of the detection capability • EMC • Structure (categories) 	
			
PL EN ISO 13849-1	+	Type IEC 61496	

The detection capability describes the ability to reliably detect objects of a certain size (e.g., 14/30/40 mm for safety light curtains), which leads to the switching off of the switching outputs (OSSDs) in the opto-electronic protective device.

It is one of the main parameters for defining use; e.g., for detecting fingers, hands or bodies, and for defining the minimum distance to the hazardous point.

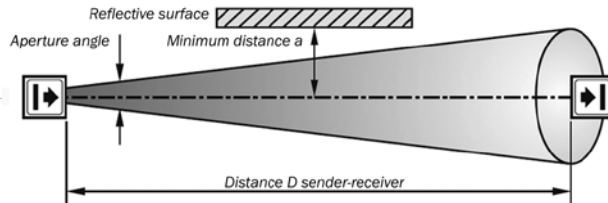
The reliability of the detection capability is determined by the type classification in accordance with IEC 61496.

Requirements relating to optical sources of interference (sunlight, different lamp types, devices of the same design, etc.), reflective surfaces and misalignment during normal operation play a major role (see table below). Remission (= diffuse reflection) also plays an important role for safety laser scanners.

Main differences between type 2 and type 4 opto-electronic protective devices according to IEC 61496 ¹⁾




C

	Type 2	Type 4
Functional safety	The protective function may be lost if a fault occurs between test intervals	The protective function is maintained even if multiple faults occur
EMC (electromagnetic compatibility)	Basic requirements	Increased requirements
Maximum aperture angle of the lens	10°	5°
Minimum distance a to reflective surfaces at a distance D (see figure) of < 3 m	262 mm	131 mm
Minimum distance a to reflective surfaces at a distance D (see figure) of > 3 m	= distance D x tan (10°/2)	= distance D x tan (5°/2)
Several senders of the same design in a single system	No special requirements (beam coding is recommended)	No effect or OSSDs shut down if they are affected



1) Not relevant for safety camera systems and safety laser scanners

The relationship between the type classification according to the IEC 61496 series of standards for opto-electronic protective devices and the performance level according to EN ISO 13849-1 is displayed in the table below.

Type according to IEC 61496	Performance level according to EN ISO 13849-1		Examples from SICK
2	c		miniTwin2 safety light curtain deTec2 Core safety light curtain M2000 multiple light beam safety device L2000 single-beam photoelectric safety switch V200 safety camera system
3	d		S3000 safety laser scanner S300 safety laser scanner V300 safety camera system
4	e		deTec4 safety light curtain miniTwin4 safety light curtain C4000 safety light curtain M4000 multiple light beam safety device L4000 single-beam photoelectric safety switch

C

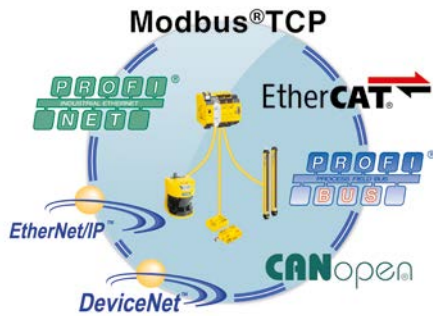
COVER ALL SAFETY FUNCTIONS – WITH INTELLIGENT INTERCONNECTION

Simple system integration plays a key role in the commissioning and ongoing operation of your machines. A SICK-specific EFI interface (→ see page C-27 “Advanced EFI interface function”) ensures that our products provide rapid communication for automatic operation and convenient configuration and diagnostic functions for setup and maintenance activities.

A higher speed of safe communication also results in a reduction of the minimum distances, saving machine space. You receive full transparency of the sensors in your industrial network, e.g., PROFINET with PROFIsafe or EtherCAT.

Integrated, intelligent functions and coordinated interfaces eliminate the need for additional hardware, reducing the number of devices and wires required for your machines.

C



CONFIGURATION – SIMPLE AND EFFECTIVE WITH INTUITIVE SOFTWARE

The SICK Configuration & Diagnostic Software or Flexi Soft Designer can be used for all SICK industrial safety systems. The intuitive user interface enables fast and simple design and implementation of the application.

All configuration and diagnostic data for quick commissioning and effective troubleshooting is provided by the software. Standard communication interfaces (TCI, FDT/DTM) can be used to easily and effectively integrate CDS into the system level of the automation environment. This enables configuration and diagnostics during commissioning or maintenance via the standard protocol used.



More information is available at → www.sick.com > Know How > Technologies > Industrial Communication

ADVANCED EFI INTERFACE FUNCTION

The SICK-specific EFI interface transmit additional data which can be used for process optimization. SICK provides corresponding gateways (→ in the accessories section of the specific product) and control components. (→ see page L-690 “Enhanced system solutions”)

Integration via OSSDs

The OSSD output (OSSD = output signal switching device) is the safe switching output in an opto-electronic protective device (such as a C4000 safety light curtain or S3000 safety laser scanner).

If the protective field is interrupted, the safety sensor switches the switching outputs (OSSDs) to the off state. This switches off the dangerous state.

Each safety sensor has two parallel OSSD outputs that have to be evaluated separately from each other (dual-channel), depending on the safety level required.

Integrating safety sensors via OSSDs means that bi-directional communication between the participants is not possible. The safety sensor transmits the “Protective field free” status information. This status information is evaluated in the safety controller or the safety relay.

Integration via EFI interface

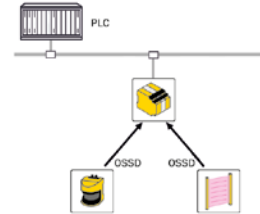
The SICK-specific EFI interface (EFI = enhanced function interface) ensures secure communication between opto-electronic protective devices, safety controllers or gateways.

These EFI interfaces enable the bi-directional transmission and diagnosis of process data for multiple participants, with minimal installation effort. They also enhance the functional scope of the individual protective devices and the diagnostic information of all EFI participants is available with a high information content.

Enhanced functional scope includes:

- Simultaneous protective field evaluation
- Protective field switching
- Operating mode switching
- Evaluation of status signals

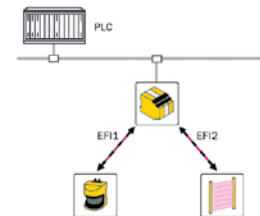
Safety sensor diagnostics can only be carried out locally on the device. Diagnostics cannot be run via the safety controller.



Benefit:

- Shortest possible response times for small minimum distances
- Space-saving machine design

EFI enables a rapid overview of the entire system configuration, leading to an increased capacity to act and a higher availability of the machine.



Benefit:

- Increased system reliability
- Easy and flexible configuration as well as function switch-over of the protective device via the system's safety controller

APPLICATIONS

D





Applications

Whether people, machines or other objects, applications are always the focus in automated production and logistics processes. SICK has been manufacturing pioneering products for the protection of hazardous areas, hazardous points, and for access protection for decades.

The potential applications on the following pages are a selection of the wide range available.



Hazardous point protection
with finger or hand detection

D-30



Hazardous point protection
with hand and person detection

D-34



One-sided access protection
with person detection

D-38



Multi-sided access protection
with person detection

D-40



One-sided access protection with differentiating
between persons and material/muting

D-42



Stationary hazardous area protection
with person detection in the presence

D-46



Mobile hazardous area protection
with person detection when approaching

D-50



D

Application

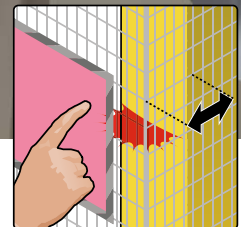
Hazardous point protection with finger or hand detection is ideal for protecting hazardous points very close to the machine. A detection capability of 14 mm ensures that even individual fingers are reliably detected.

Benefits

Distance to hazardous points is reduced to a minimum. This enables straightforward and frequent interaction with the machine. Unrestricted access and free view into the machine support ergonomics and high productivity. An undetected presence in the hazardous point is essentially impossible due to the small distance between the protective device and the hazardous point. This means that a secondary protective device or the manual resetting of the protective device is not required. Automatic restart is possible and permitted depending on the system type.

Safety function

The triggering of the protective device generates a stop signal, which can be used to stop the dangerous machine function. Restarting the machine must not be possible as long as there are fingers or hands in the hazardous point.





Compact machines with frequent operator intervention

Efficiency and intelligence in confined spaces

Compact machine dimensions require short minimum distances and flexible adjustment of the protective field.

- + Thanks to fine adjustment together with its compact size, the safety light curtain can be adapted to the machine design
- + Its variable bracket concept and lack of blind zones offer a high degree of flexibility when mounting the machine
- + LED displays and automatic coding ensure rapid commissioning
- + Smooth processes with free access and short minimum distances support the machine's productivity

D

Exemplary product choice

miniTwin4 safety light curtain

→ page G-414

Flexi Classic modular safety controller

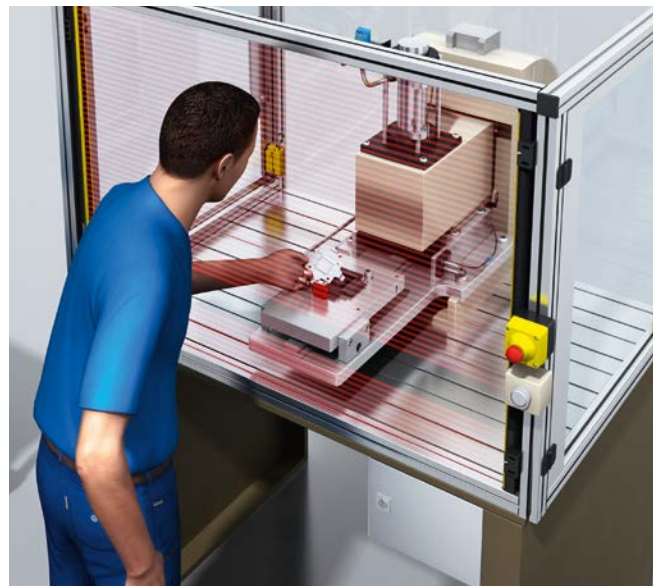
→ page L-692

Frequent insertion and removal with simple safety requirements

Produce quality safely

Short minimum distances are ensured for efficient operation. Requirements up to performance level c can be met using the deTec2 Core safety light curtain. deTec4 Core safety light curtain can be used for performance levels d and e.

- + Standardized brackets for individual, simple, and cost-effective mounting of the safety light curtains
- + Integrated safety functions support economic system solutions
- + Fast alignment and diagnostics due to the integrated status indicator
- + High system productivity thanks to free access during operation



Exemplary product choice

deTec4 Core safety light curtain

→ page G-232

deTec2 Core safety light curtain

→ page G-242

Flexi Soft modular safety controller

→ page L-693

D



Compact machines with automatic material transportation and access possibility

Simply teach-in protective fields

Defined transport products can pass through, but the machine switches off when intervention is detected.

- + Infinitely variable protection of openings without blind zones and device overhang
- + Flexible adjustment to the area to be protected thanks to the positioning options of the V300 Work Station Extended safety camera system and reflector strip
- + Mechanical fine-tuning is no longer required as the safety camera system tolerates the lateral displacement of the reflector
- + Flexible design of the protective field

Exemplary product choice	
V300 Work Station Extended safety camera system	→ page H-470
Flexi Soft modular safety controller	→ page L-693

Barrier-free corner workstation

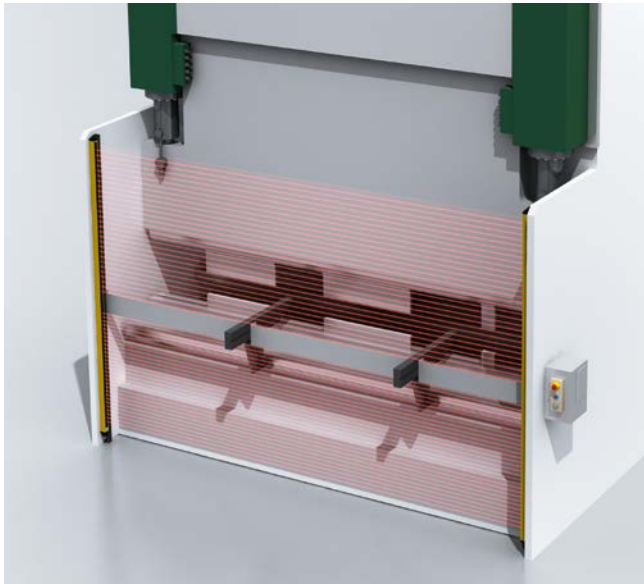
Ergonomics and safety combined

Two V300 Work Station Extended safety camera systems positioned at right angles to each other can be used to protect two areas without mounting supports in the center.

- + The barrier-free design of workplaces facilitates comfortable work and makes it easy to transfer products from one workplace to another
- + Easy commissioning thanks to the automatic synchronization of the two devices when teaching-in
- + Flexible workplace design allows ergonomic work processes to be implemented



Exemplary product choice	
V300 Work Station Extended safety camera system	→ page H-470
Flexi Classic modular safety controller	→ page L-692



Protective field with blanking for objects

Safety and productivity go hand in hand

Objects, such as electrical cables or machine parts that protrude into the protective field place great demands on the protective device.

- + Integrated blanking functions allow defined objects to be present in the protective field. The productivity of the system is not affected and operator safety continues to be ensured
- + Safety and efficiency combine for faster processes and maximum availability of machines and systems

D

Exemplary product choice	
C4000 Advanced safety light curtain	→ page G-280
Flexi Classic modular safety controller	→ page L-692

Machines in the food sector

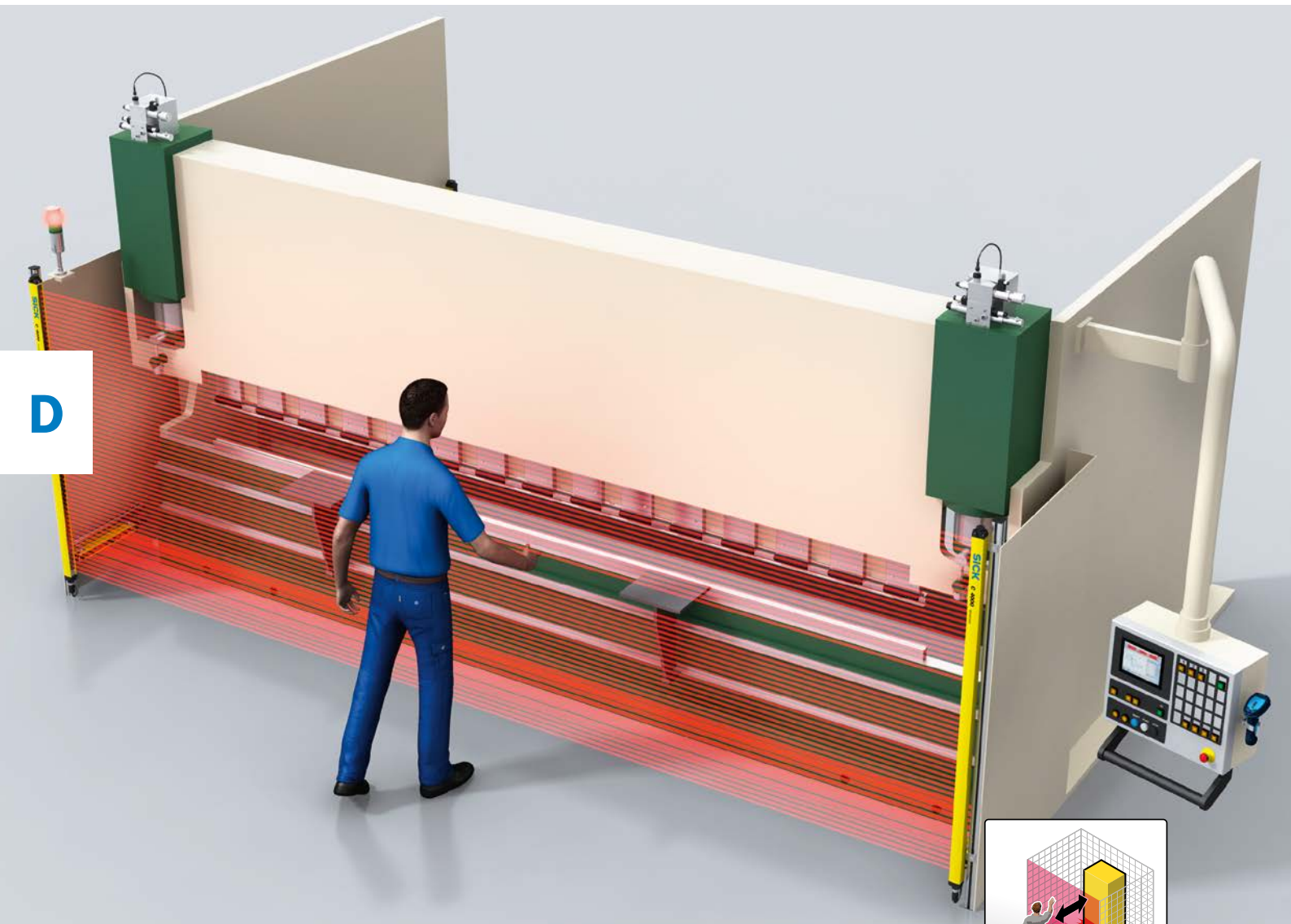
Maximum availability in extreme situations

Harsh ambient conditions, as is the case in wet areas or washable applications with high temperatures and the use of steam jets, require the application of enclosure rating IP 69K.

- + Satisfies requirements for environments with aggressive cleaning agents or chemicals
- + The housing can withstand 100 bar of water pressure and significant temperature fluctuations
- + Safety that can handle extreme ambient conditions



Exemplary product choice	
C4000 Micro in IP69K Housing safety light curtain	→ page G-318
UE10-30S safety relay	→ page L-695



Application

Hazardous point protection with hand and person detection is ideal for protecting hazardous points close to the machine. A detection capability of up to 40 mm ensures that hands are reliably detected. An undetected presence in the hazardous point, behind the primary protective device, is possible. A secondary protective device or the special arrangement of the primary protective device ensures that this presence is also detected (presence detection). Presence detection can be used to automatically restart the machine.

Benefits

A low minimum distance to the hazardous point enables simple and frequent interaction with a free view into the machine. Preventing the possibility of standing behind the access protection point supports high productivity as there is no need to manually reset the protective device.

Safety function

The triggering of the protective device generates a stop signal, which can be used to stop the dangerous machine function. Presence detection prevents the machine from restarting as long as a person is located at the hazardous point.



Large system with two access areas

Efficient protection for machines and systems

All dangerous gantry robot movements must be stopped if individuals access or reach into the transport rack unloading area. The gantry robot is shut down if the rack is replaced, or a person passes through the light curtain's protective field. However, the gantry robot is able to continue depalletizing on the other side until the previously blocked area is released by resetting.

- + The automatic measurement of the protective field range of the light curtain enables the use of standardized components for different scanning ranges in a system
- + The integrated LED displays and diagnostic functions as well as an innovative system of brackets ensures mounting and alignment in the shortest possible time
- + Standardization reduces costs and expense in ordering, logistics, handling and service

D

Exemplary product choice	
deTec4 Core safety light curtain	→ page G-232
Flexi Soft modular safety controller	→ page L-693

Combination of hazardous point protection and presence detection with cascading safety light curtains

Higher productivity with greater machine safety

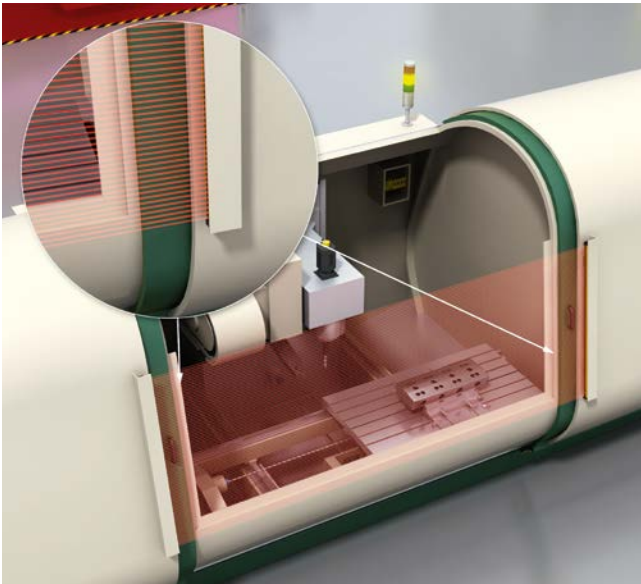
Workers could step behind the vertically arranged safety light curtain. To ensure the safe detection of persons stepping behind the curtain, a second light curtain is fitted horizontally beneath the vertical light curtain (cascading).

- + Any interruption of the protective fields stops the rotational movement of the table and prevents start-up
- + Presence detection increases productivity as the protective device does not have to be reset manually
- + Reduced wiring expense by cascading provides a high level of flexibility and facilitates the integration into the machine



Exemplary product choice	
C4000 Standard safety light curtain	→ page G-252
Flexi Classic modular safety controller	→ page L-692

D



Protection against dangerous door movement

Optimal integration into the machine design

Hazardous point protection on automatically closing machine doors must be perfectly integrated into the machine design.

- + The compact design, the variable and innovative bracket concept, and the lack of blind zones of the deTec4 Core safety light curtain guarantees maximum flexibility when mounting on the machine
- + The integrated LED displays and diagnostic functions ensure mounting and alignment in the shortest possible time
- + Minimum expense and effort for efficient and quick commissioning

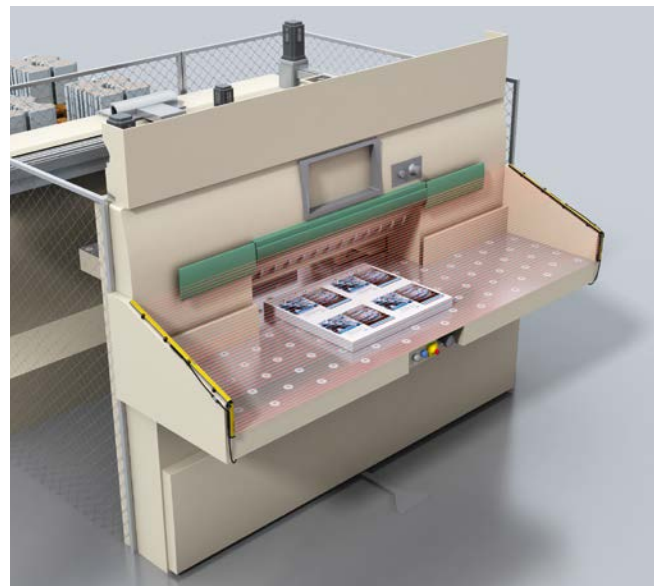
Exemplary product choice	
deTec4 Core safety light curtain	→ page G-232
UE48-20S safety relay	→ page L-695

Replacement protective hoods with safety light curtains

Compact design for simple machine integration

To replace a frequently used mechanical protective hood, compact machine dimensions, short minimum distances and optimal alignment of the protective field in an L-shape are required.

- + The safety light curtain with no blind zone provides a continuous high-resolution protective field all the way to the edges. Cascading provides a continuous protective field beyond corners
- + The short response time and the high detection capability allow short minimum distances between the safety light curtain and dangerous movements
- + Standardization with the miniTwin4 for a large number of protective field shapes and easy integration



Exemplary product choice	
miniTwin4 safety light curtain	→ page G-414
Flexi Classic modular safety controller	→ page L-692



Access without interrupting the work process

Multifunctional and user-friendly,
high availability and safe

Workers need to reach into the system at irregular intervals to arrange the materials. A worker's hands and arms can reach into the protective field without shutting down the system.

- + The system is stopped as soon as the safety light curtain detects the upper body
- + The "reduced resolution" and "multiple sampling" functions available on the C4000 Fusion allow safe access without interrupting the process
- + Maximum operational safety combined with maximum productivity

D

Exemplary product choice	
C4000 Fusion safety light curtain	→ page G-326
UE10-30S safety relay	→ page L-695

Hazardous point protection and presence detection using a single safety light curtain

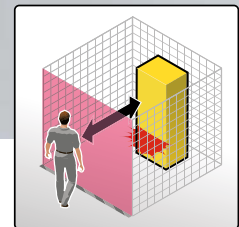
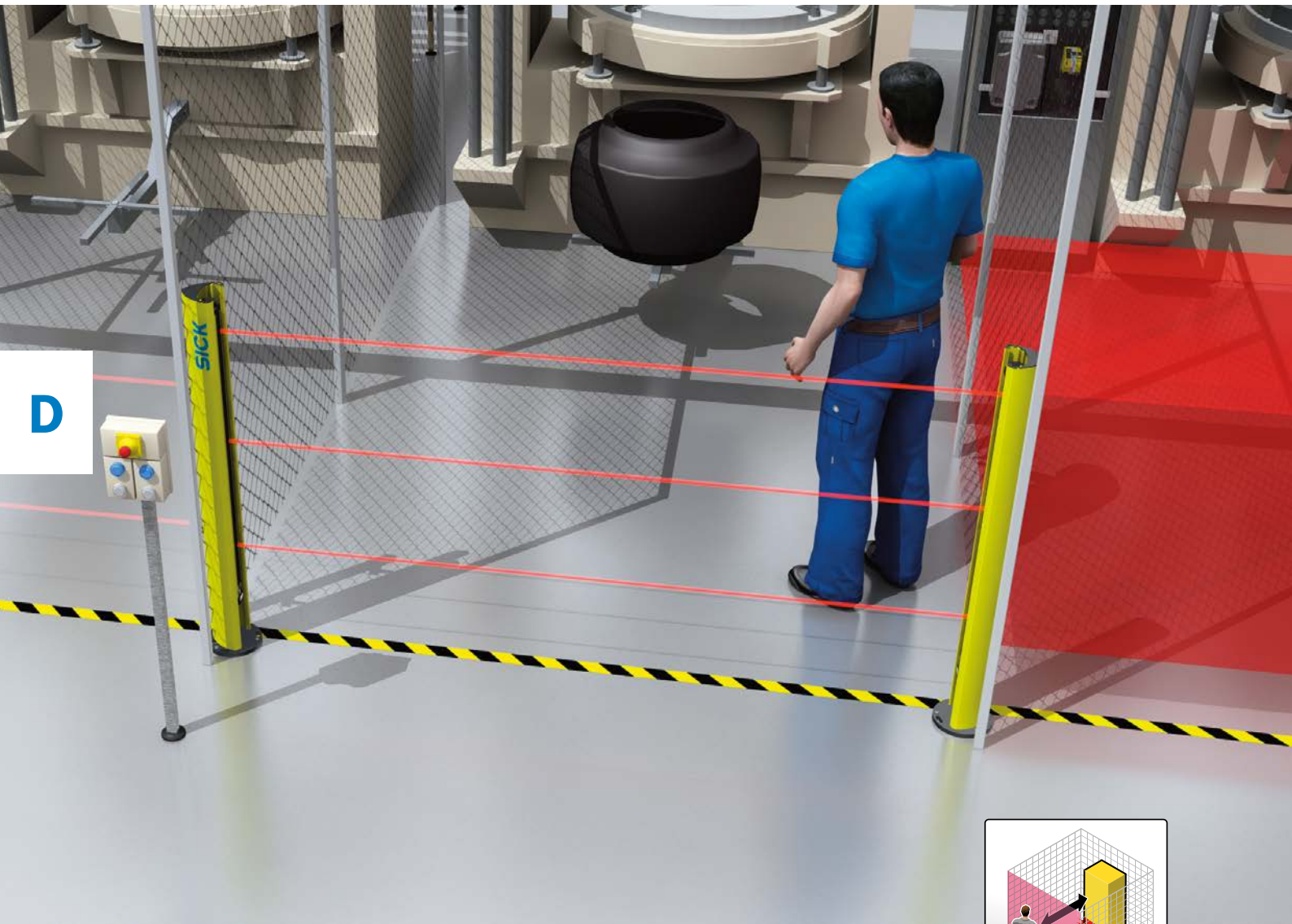
Efficient integration

A machine punches out workpieces from a metal strip over several stages. The visible and open area is secured against access and interruptions in the production cycle using an inclined safety light curtain.

- + The absence of blind zones in the safety light curtain ensures reliable detection down to the floor across a protective field with a height of 2.10 m for complete safety
- + Continuous protective fields without blind zones and short minimum distances enable faster processes with higher productivity



Exemplary product choice	
deTec4 Core safety light curtain	→ page G-414
Flexi Soft modular safety controller	→ page L-693



Application

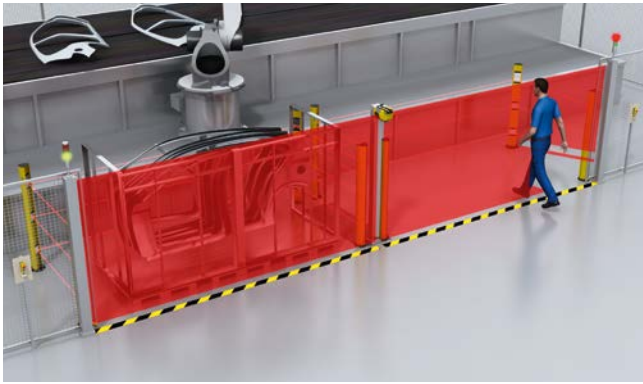
Single-side access protection with person detection is ideal for regular, but not frequent, interaction with a machine's hazardous area. A detection capability of up to 150 mm, or multiple-beam systems, reliably detects a person accessing the hazardous area. The protective device is set up vertically. The minimum distance to the hazardous area is larger than for the hazardous point protection due to the lower detection capability. Presence behind the protective device is possible. Manual restart is performed by the separate resetting of the protective device outside the hazardous area.

Benefits

Unrestricted access and free view into the machine are possible.

Safety function

The triggering of the protective device generates a stop signal, which can be used to stop the dangerous machine function.



Simultaneous monitoring of two access points

Safe and efficient

A robot loads car doors from a picking station onto a belt. The robot works on one picking station while the second station is simultaneously re-filled. Access is secured by a S3000 safety laser scanner. The rear zone protection with a multiple light beam system guarantees protection against unauthorized interruption by the robot and complete protection of the work area.

+ Intelligent safety technology optimizes manufacturing productivity

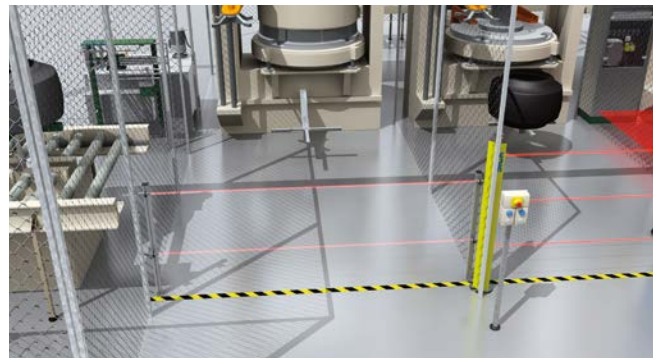
+ The simultaneous monitoring of the protective field constantly monitors both access points independently of one another

Exemplary product choice	
S3000 Standard safety laser scanner	→ page F-138
M4000 Standard multiple light beam safety device	→ page I-496
Flexi Soft modular safety controller	→ page L-693

Large system with cost-effective protection

High availability and short response times

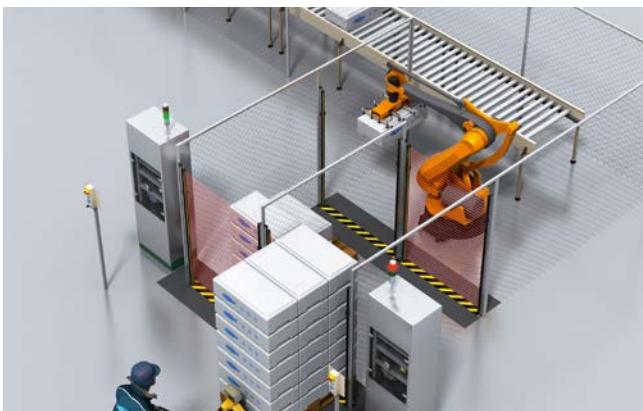
Access to a press must be protected to ensure that the press stops as soon as workers enter the hazardous area. This solution can be flexibly setup as a single-beam or multiple-beam system depending on requirements. The beam separation applied is determined by the necessary minimum distance to the dangerous movement.



+ Simple integration due to small, compact designs with a maximum scanning range of up to 60 m

+ A cost-effective solution

Exemplary product choice	
L41 single-beam photoelectric safety switch	→ page J-626
M4000 Standard A/P multiple light beam safety device	→ page I-508
Flexi Soft modular safety controller	→ page L-693



Access protection in a cold store

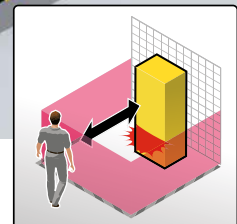
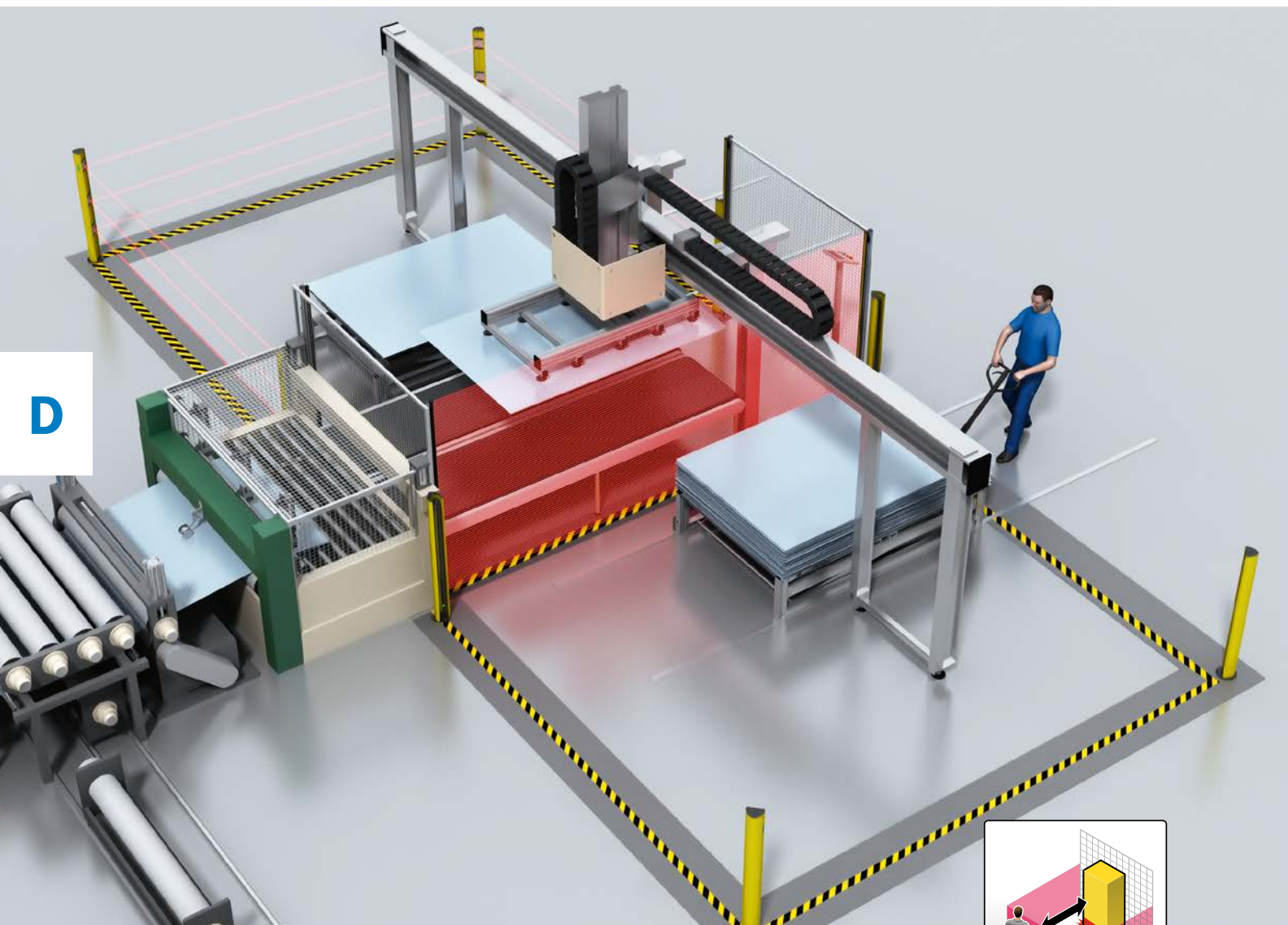
Safe in all areas of application

An articulated arm robot unloads pallets onto a belt in a cold store. Two unloading stations are each protected with a deTec4 Core safety light curtain. As soon as a pallet is fed in by an employee, this area is blocked for the robot. Used in conjunction with a Flexi Soft safety controller, even complex safety functions can be easily implemented across the entire machine.

+ Unrestricted cold store operation at temperatures as low as -30 °C

+ Faster processes because one area can be loaded while the robot simultaneously operates in another area

Exemplary product choice	
deTec4 Core safety light curtain	→ page G-232
Flexi Soft modular safety controller	→ page L-693



Application

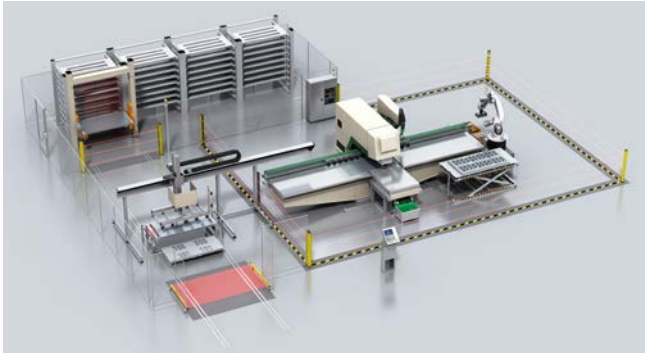
Multi-sided access protection with person detection is ideal for regular, but not frequent, interaction with a machine's hazardous area. A detection capability of up to 150 mm, or multiple-beam systems, ensures that the protective device detects a person accessing the hazardous area from different sides. The protective device is set up vertically. To protect the hazardous area from multiple sides, the hazardous area is protected using deflector mirrors or an adequate number of protective devices, depending on the protective device. The minimum distance to the hazardous area is larger than for the hazardous point protection due to the lower detection capability. Presence behind the protective device is possible. The protective device needs to be reset manually for restart. The reset device must be mounted outside the hazardous area, at a point from which the entire hazardous area can be viewed. In addition, the reset device must not be able to be actuated from the hazardous area.

Benefits

Unrestricted access and free view into the machine is possible across great distances and from several sides.

Safety function

The triggering of the protective device generates a stop signal, which can be used to stop the dangerous machine function.



Large machining center with all-round unrestricted access

Highly efficient with maximum availability

A machining center is secured against access by individuals on multiple sides. Easy access must be possible for the machine operator when the machine is at a standstill for placement or retooling purposes.

- + Use of a system consisting of multiple light beam safety devices and mirror columns is an economical solution compared to mechanical fences

- + Well-designed interfaces and status indicators facilitate commissioning and maintenance

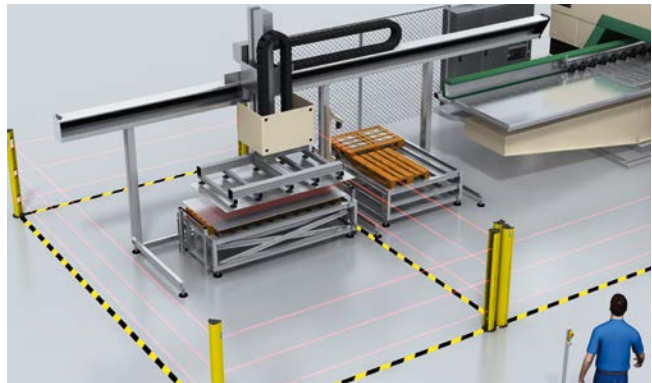
Exemplary product choice	
M4000 Standard multiple light beam safety device	→ page I-496
Mirror columns and device columns	→ page K-664
Flexi Soft modular safety controller	→ page L-693

Access protection with mirror columns for workplace separation

Loading on moving belts

The loading area of a laser cutting and turret punching system can be used and monitored independently of the work area. Multiple light beam safety devices fitted in columns and the associated mirror columns for deflecting the light beam are used to define isolated safety zones.

- + No interruption to production because an area can be loaded while the transfer robot simultaneously operates in another area
- + The integrated alignment aid enables the simple alignment of the entire system, even across wide scanning ranges



- + Standardization: A single device for a range of applications ensures efficient machine safety

Exemplary product choice	
M4000 Standard multiple light beam safety device	→ page I-496
Mirror columns and device columns	→ page K-664
Flexi Soft modular safety controller	→ page L-693



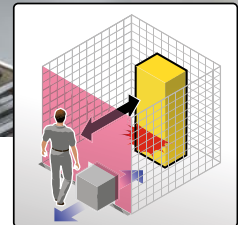
L-shaped access protection with mirror columns

Safety around corners

Access to a machine needs to be monitored.

- + Protection by a M4000 multiple light beam safety device together with a mirror column enables flexible protection areas, even around corners
- + Straightforward, high availability area protection and safe access from all sides
- + Reliable protection for optimal work flows

Exemplary product choice	
M4000 Standard multiple light beam safety device	→ page I-496
Mirror columns and device columns	→ page K-664
Flexi Classic modular safety controller	→ page L-692



Application

One-sided access protection, which distinguishes between people and machines, detects an individual that accesses the machine's hazardous area and automatically distinguishes this individual from the transported material. A detection capability of up to 150 mm ensures that individuals are reliably detected. The minimum distance to the hazardous area is larger than for the hazardous point protection. Presence behind the protective device is possible. The protective device needs to be reset manually for restart. The reset device must be mounted outside the hazardous area, at a point from which the entire hazardous area can be viewed.

Benefits

Automatic entry and exit of material in the hazardous area is possible without restriction. High productivity and low downtimes are supported.

Safety function

The protective device generates a stop signal if an individual accesses the hazardous area, which can be used to stop the dangerous machine function. No stop signal is generated for automatically transported material as a delayed, process-dependent or pattern-dependent muting of the protective device allows the transportation to continue.



Muting device for minimum machine dimensions

Intelligent and efficient:

Connection of the muting signals directly on site

Access to the machine is protected so that the introduction of loaded pallets does not trigger the protective device, while reliably detecting individuals who enter the hazardous area. The machine infeed is secured by a muting system, consisting of an opto-electronic protective device combined with four photoelectric retro-reflective sensors as muting sensors. The arrangement of the muting sensors detects and recognizes pallets with packed items and the protective device is muted, while individuals are reliably detected.

- + The use of a safety light curtain with a high detection capability makes a significant contribution to minimizing machine dimensions due to its short minimum distance requirement
- + Simple and flexible configuration of the muting functions and on-site connection of the muting signals guarantee maximum availability and minimize installation effort

D

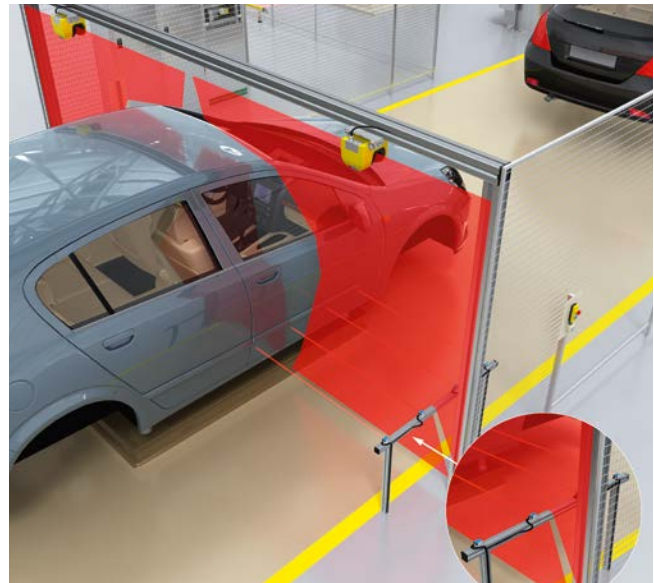
Exemplary product choice	
M4000 Advanced multiple light beam safety device + UE403 switching amplifier	→ page I-530
M4000 Advanced Curtain multiple light beam safety device + UE403 switching amplifier	→ page G-396
Flexi Classic modular safety controller	→ page L-692

Safe material lock without pendulum flaps

Seamless safety, even for different transport goods

A car windscreen is installed fully automatically using robots. To do this, car bodies must be transported to the manufacturing cell. Muting sensors identify whether a person or material is approaching the lock. If material is detected, the vertically installed safety laser scanners switch to a protective field with matching opening. The material can then pass through the protective device. The protective field remains closed as long as material remains undetected. Access by a person results in a safe machine stop.

- + The flexible field geometry of the safety laser scanner means that no additional safety devices (e.g., side pendulum flaps) are required
- + Optimized material flow as the protective fields can be flexibly adapted to the shape of the material



Exemplary product choice	
S300 Expert safety laser scanner	→ page F-128
S3000 Expert safety laser scanner	→ page F-170
Flexi Soft modular safety controller	→ page L-693

D



Muting solution as low as -30 °C

Temperature-resistant in cold stores

Individuals need to be protected when accessing the storage and retrieval system area in a cold store high-bay warehouse. Access protection is ensured by a safety light curtain combined with small photoelectric sensors as muting sensors. The M4000 Advanced Curtain stops all dangerous movements of the storage and retrieval system and transport equipment if an individual accesses the protected area. A three-stage diagnostic function reduces undesired machine downtimes to a minimum.

- + This solution enables the unrestricted transportation of goods in both directions and ensures the safe loading and unloading of the deep frozen packages on and off the pallets
- + A three-stage diagnostic function reduces undesired machine downtimes to a minimum
- + Worker protection, even at low temperatures

Exemplary product choice	
M4000 Advanced Curtain safety light curtain + UE403 switching amplifier	→ page G-396
UE10-2FG safety relay	→ page L-694

Safe material lock for standard palletizing tasks in confined spaces

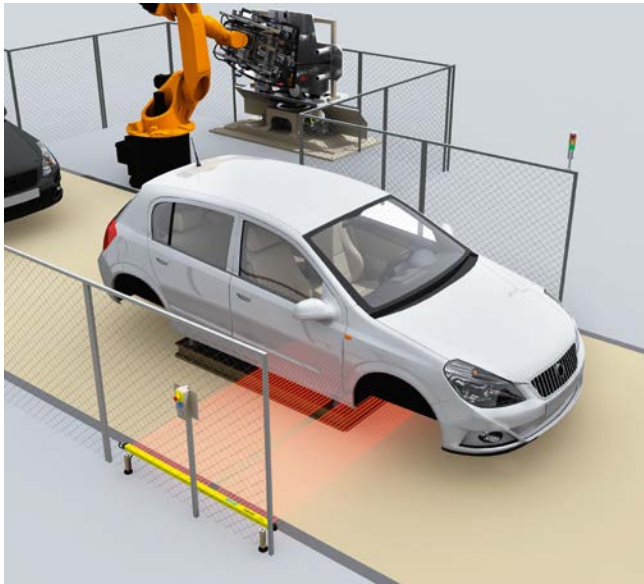
Simple integration and installation

Packed pallets are automatically film-wrapped. An automated guided vehicle delivers the pallets to a roller conveyor, which automatically transports the pallets to the packaging machine. Individuals are authorized to access the machine's hazardous area for maintenance. A vertically installed safety laser scanner protects the access area. Pallets can pass through the opening in the protective field without restriction, while access by an individual results in a safe machine stop. Muting sensors identify whether a person or material is approaching the lock.

- + The compact design of the S300 and S300 Mini safety laser scanners provide a good integration option and easy installation in confined spaces



Exemplary product choice	
S300 Mini Remote safety laser scanner + Flexi Soft modular safety controller	→ page F-86
S300 Advanced safety laser scanner	→ page F-106
Flexi Soft modular safety controller	→ page L-693



Pattern recognition as a muting alternative to secure entry and departure points

Multifunctional and user-friendly, high availability and safe

Entry and exit points must be secured to prevent access by individuals. However, the automatic transport of unfinished car bodies, for example, into and out of the hazardous area must be possible at the same time.

- + A horizontal light curtain, which automatically recognizes object patterns, facilitates installation and maintenance
- + For example, permitted object patterns can be reliably distinguished from a person's legs without additional secondary sensors (muting sensors). This ensures maximum safety
- + Faults caused by smaller objects, such as electrical cables or foil remnants, which protrude into the protective field, are tolerated to maximize availability
- + Up-front savings with only one sensor pair: No additional muting sensors, connection cables and mechanical swing-doors are required

D

Exemplary product choice	
C4000 Fusion safety light curtain	→ page G-326
UE10-30S safety relay	→ page L-695

Pattern recognition as muting alternative for pallet transport

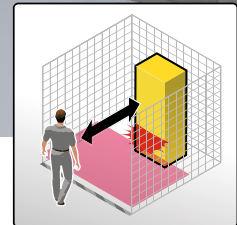
Application benefits through innovation

Material or pallets are conducted into and out of the machine at certain points. Here, workers must be protected from dangerous movements in the event of unintentional access. Materials must be able to enter and leave without restriction, but a stop signal must be sent to the system control when a person enters the hazardous area.

- + Only one pair of sensors is required. Typical muting sensors are not required, which facilitates the integration of the control unit
- + The self-teach and dynamic pattern recognition allows the safety light curtain to reliably distinguish between people and materials to ensure maximum safety
- + Allowing various pallets or mesh boxes to pass through provides outstanding flexibility and ensures optimal use of the system



Exemplary product choice	
C4000 Palletizer Advanced safety light curtain	→ page G-344
Flexi Classic modular safety controller	→ page L-692



Application

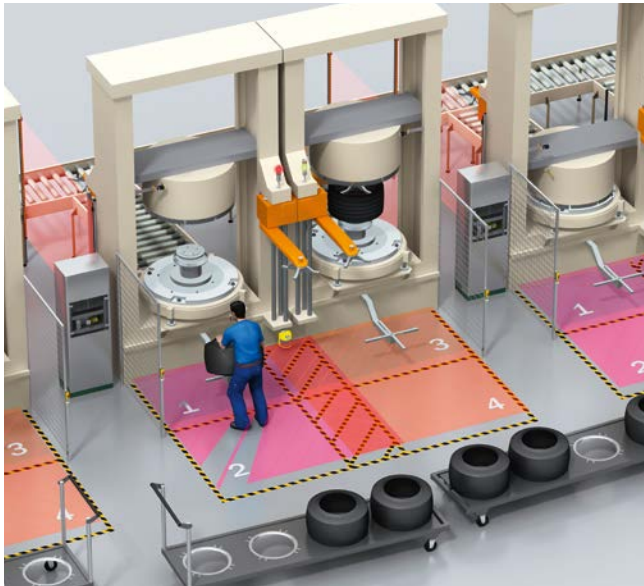
Stationary hazardous area protection with person detection in the presence is ideal for regular, but not frequent, interaction between an individual and the machine. A detection capability of up to 70 mm and an appropriate mounting height reliably detects an individual's legs. The protective device is setup horizontally. The minimum distance to the hazardous area is larger than for the hazardous point protection. Hazardous area protection is also ideal as an additional measure for applications where the hazardous area cannot be completely seen.

Benefits

Unrestricted access and free view into the machine are not impaired by the protective device. The freely definable warning fields in front of the safety laser scanner's protective field can provide an alert in the event of unintentional entry into the hazardous area. This supports a high level of productivity. An automatic restart may take place after leaving the hazardous area, depending on the application. Manual resetting of the protective device is not required in this case.

Safety function

The triggering of the protective device generates a stop signal, which can be used to stop the dangerous machine function. The machine is prevented from restarting if a person is in the hazardous area.



Simultaneous monitoring of multiple areas

Multiplies efficiency

A high level of interaction between an individual and a machine is required on a tire building machine. The numerous dangerous movements by the machine mean that every hazardous area must be protected. Only the part of the system that must be accessed by an individual for loading and unloading purposes is stopped.

- + A single S3000 safety laser scanner can be used to simultaneously and separately monitor up to four hazardous areas individually
- + Simple intuitive programming of the safety application and permanent storage in the system plug of the safety laser scanner
- + Improved system ergonomics and productivity thanks to minimum distance optimization. Optimal safety without protective field switching

D

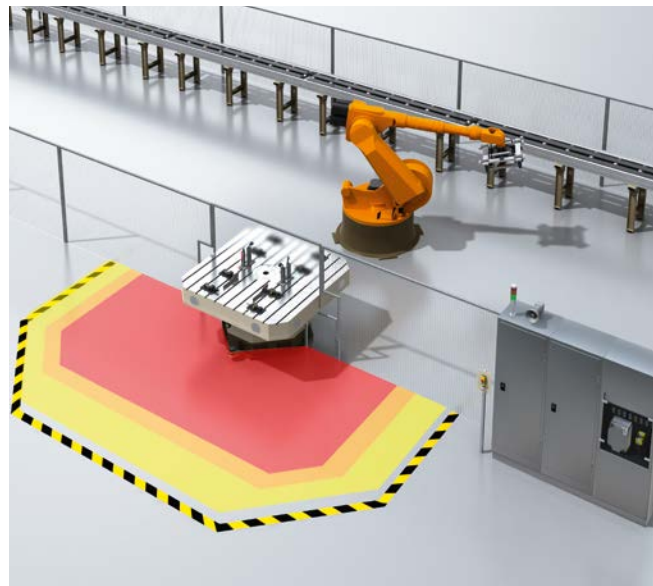
Exemplary product choice	
S3000 Standard safety laser scanner	→ page F-138
Flexi Soft modular safety controller	→ page L-693

Machine protection with advance warning function

Ensuring high productivity

In accessible areas, such as on rotating tables, it is possible for a worker to unintentionally move into the safety laser scanner's protective field and trigger a system stop. Warning fields in front of the safety laser scanner's protective fields provide a warning. For example, warning field 1 triggers a warning light, while warning field 2 triggers an additional audio signal. This prevents a safe system stop as a result of unintentional access to the protective field.

- + Higher system productivity thanks to the prevention of unwanted system stops



Exemplary product choice	
S300 Mini Standard safety laser scanner	→ page F-78
S300 Standard safety laser scanner	→ page F-96
Flexi Classic modular safety controller	→ page L-692

D



Machine protection with automatic protective field adjustment

Protective field adjustment that adapts to the process

A range of dangerous movements on a tube bending machine results in different hazardous situations. Switching the protective field adapts the protective field of the safety laser scanner to the current hazardous situation. The current hazardous area is protected and work can be carried out in other areas. Protective and warning fields can be adapted to the structural conditions around the machine.

- + The field size always matches the process step with optimal area utilization

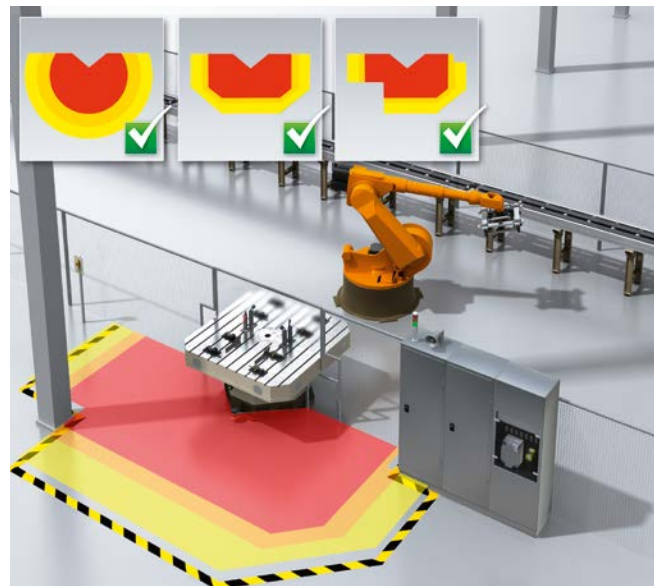
Exemplary product choice	
S300 Professional safety laser scanner	→ page F-116
S3000 Professional safety laser scanner	→ page F-158
Flexi Soft modular safety controller	→ page L-693

Hazardous area protection with safety laser scanners

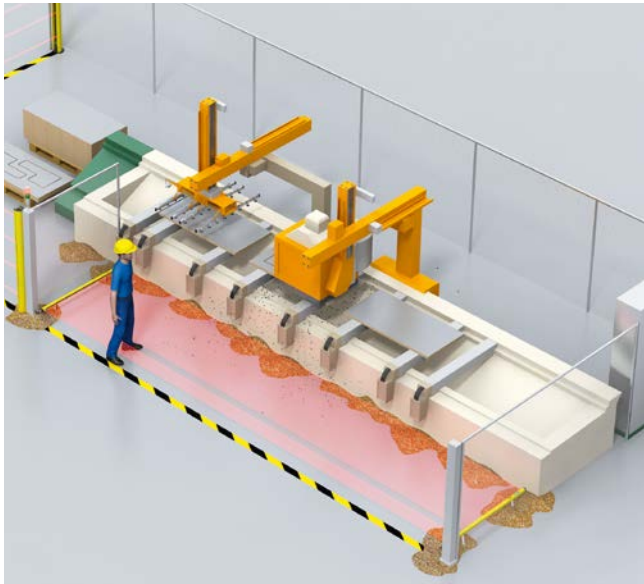
Seamless safety, even in difficult space conditions

The rotational movement of the rotating table can present a potential injury hazard. The size of the hazardous area differs depending on the size and the speed of the movement of the table.

- + In the event that ambient conditions change, the field geometry can quickly and easily be adapted by reconfiguring
- + The different types of devices with scanning ranges between 2 m and 7 m enables small as well as large areas to be secured using a perfectly adapted safety laser scanner
- + Easy to integrate and cost-effective conversion and system adjustments



Exemplary product choice	
S300 Professional safety laser scanner	→ page F-116
S3000 Professional safety laser scanner	→ page F-158
Flexi Classic modular safety controller	→ page L-692



Hazardous area protection under harsh ambient conditions

Reliable – despite flying chips

Chips and remnants fall into the area of the machining center monitored by a safety light curtain. Hand or person detection may be necessary, depending on the type of system and mounting height.

- + Multiple sampling and reduced resolution functions ensure that contaminations in the safety light curtain's protective field do not lead to a system shutdown
- + Maximized availability of the protective device and minimized machine and system downtimes
- + Flexible adjustment of the resolution for hand or person detection
- + Short downtimes and high system throughput

D

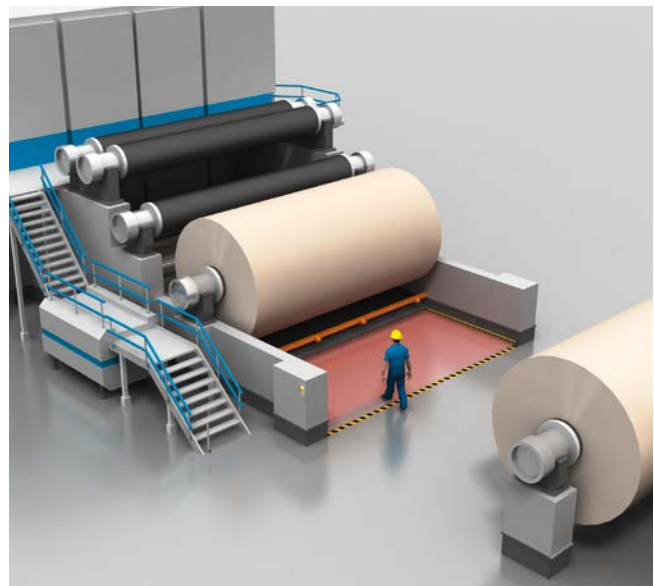
Exemplary product choice	
C4000 Fusion safety light curtain	→ page G-326
UE10-30S safety relay	→ page L-695

Area protection for extended systems

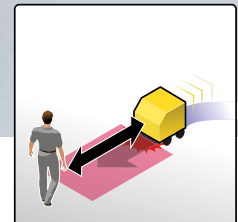
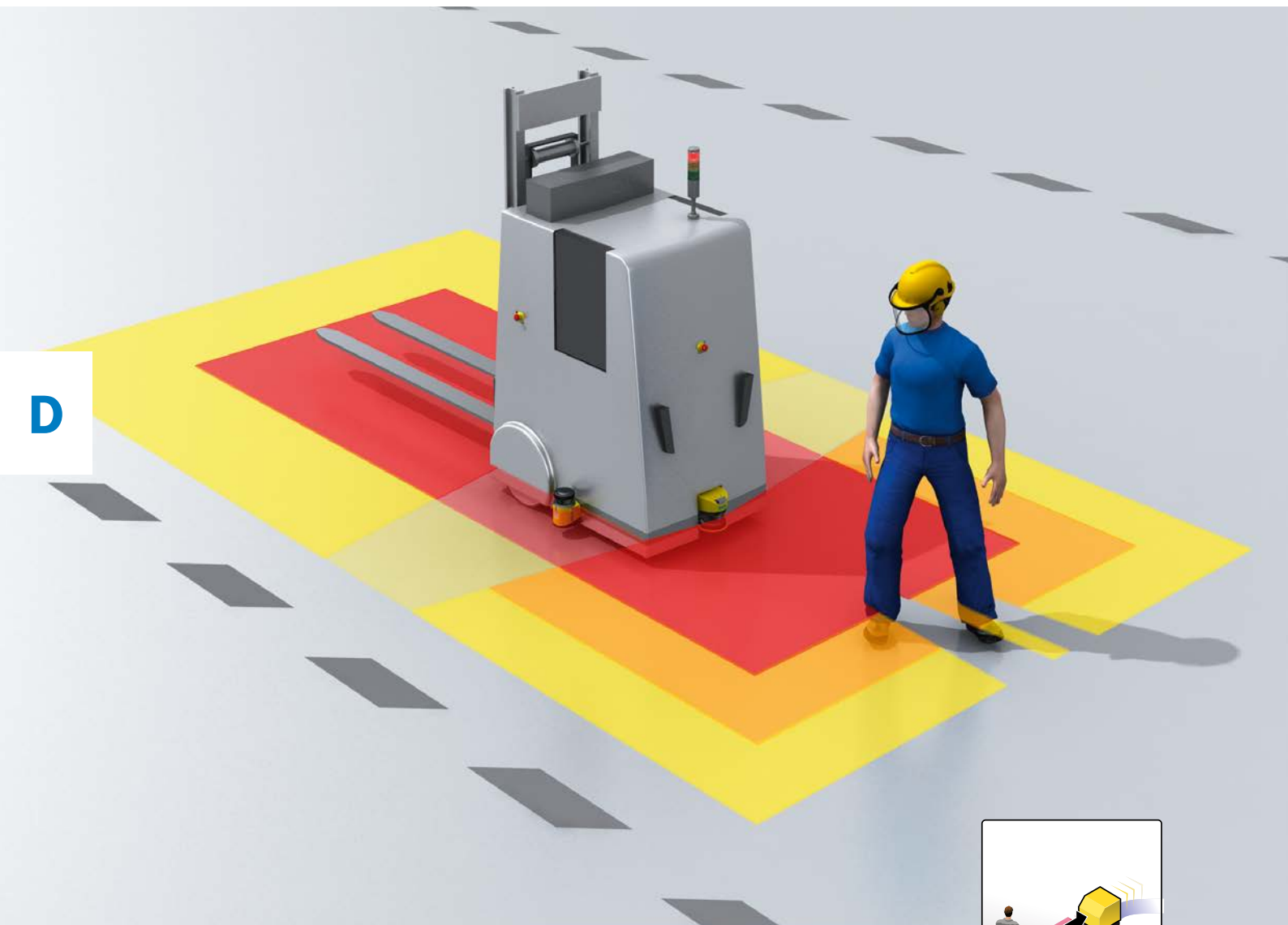
Large scanning range for area protection or presence detection

The area in front of a paper winding machine must be protected because machine operators occasionally have to inspect the quality and winding. The horizontal multiple light beam safety device detects unintentional entry into the hazardous area when the machine is running.

- + Easy configuration via PC and the high scanning range of up to 70 m ensure maximum flexibility in the system design and use
- + Integrated functions as well as status and diagnostics information allow quick commissioning and prevent unnecessary machine downtime
- + Large scanning range and rugged design for high system throughput



Exemplary product choice	
M4000 Area multiple light beam safety device	→ page I-564
Flexi Classic modular safety controller	→ page L-692



Application

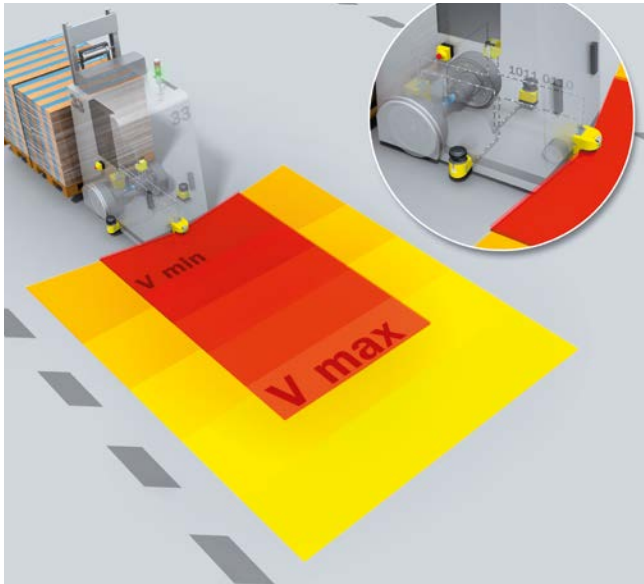
Mobile hazardous area protection that detects an approaching individual prevents a vehicle from colliding with a person. For example, vehicles may be automated guided systems (AGS), cranes, or trucks. A detection capability of up to 70 mm and an appropriate mounting height reliably detects an individual's legs. The protective device is setup horizontally.

Benefits

The minimum distance can be adapted to the speed and direction of the vehicle. An automatic restart may take place after leaving the hazardous area. Warning fields can be used in order to prevent an unnecessary stop by using speed rules and warning signals. This minimizes downtimes and brake wear.

Safety function

The triggering of the protective device generates a stop signal, which can be used to stop the vehicle. The vehicle is prevented from starting back up as long as a person is in the hazardous area.



Automated guided system with speed-dependent protective field adjustment

Always the right protective field

Throughput and productivity are highly dependent on the speed of the AGV. Dynamic inputs allow safety laser scanners to receive information on the current speed from encoders. A change in speed leads to a change in the required braking distance. This ensures that the right protective field is always activated, which guarantees vehicle safety and prevents unwanted stops.

- + Continuous safety, even at changing speeds
- + No unnecessary downtimes or unwanted stops with dynamic protective field adaptation to vehicle speed

D

Exemplary product choice	
S300 Professional safety laser scanner	→ page F-116
S3000 Expert safety laser scanner	→ page F-170
Flexi Soft Drive Monitor MOC modular safety controller	→ page L-693

Automated guided system with protective field adjustment when turning corners

Safe turning

Automated guided vehicles (AGV) turn and change direction to follow a route. The vehicle must always be protected, but without restricting its freedom of movement. To ensure the vehicle has flexibility to move where it needs to, different fields can be configured depending on the operational status of the vehicle.

- + Safety laser scanners with up to 64 fields adapt to any driving situation in order to guarantee optimal transport flow
- + AGV has maximum freedom of movement thanks to the flexible adjustment of the protective and warning fields



Exemplary product choice	
S300 Mini Remote safety laser scanner + Flexi Soft modular safety controller	→ page F-86 + L-693
S300 Expert safety laser scanner	→ page F-128
Flexi Soft modular safety controller	→ page L-693

D



Protection for compact automated guided vehicles

Protection without wear

Compact automated guided vehicles (AGV) enable flexible material transportation into the production area. The vehicles must be protected against collisions with individuals and objects. The non-contact technology used in safety laser scanners detects individuals and objects in the AGV's path.

- + Vehicles stop before collision occurs; mechanical wear and damage, such as to safety edges and bumpers, are a thing of the past
- + Due to its compact dimensions, the S300 Mini safety laser scanner can be easily integrated into compact vehicles
- + High availability and minimum brake wear

Exemplary product choice	
S300 Mini Standard safety laser scanner	→ page F-78
Flexi Classic modular safety controller	→ page L-692

Automated guided vehicles in combination with safety laser scanners

Forwards as well as backwards

Automated guided vehicles (AGV) are protected against collisions with individuals, other vehicles and objects. Areas of different sizes can be secured for forwards as well as backwards travel, depending on speed. A host/guest connection of two safety laser scanners protects the AGV for forwards as well as backwards travel. The host device controls the guest device.

- + The speed and curve information is available to all scanners via the EFI interface, which minimizes the installation and configuration effort
- + Permanent configuration storage in the devices simplifies maintenance and ensures productivity
- + SICK safety laser scanners operate in perfect unison, which saves components and time during commissioning



Exemplary product choice	
S3000 Professional safety laser scanner + S3000 Remote safety laser scanner	→ from page F-158
Flexi Soft modular safety controller	→ page L-693



Narrow aisle protection

High speed with high safety

High vehicle speeds are essential for high throughput in narrow aisle warehouses. High speeds mean long braking distances that have to be protected.

- + With an excellent protective field range of 7 m, individuals or objects obstructing the path of the vehicle are quickly detected, even when the vehicle is traveling at high speeds
- + Permanent storage of the configuration in the device ensures that the narrow aisle truck is quickly back in action in the event of servicing
- + Maximum safety without compromising productivity

D

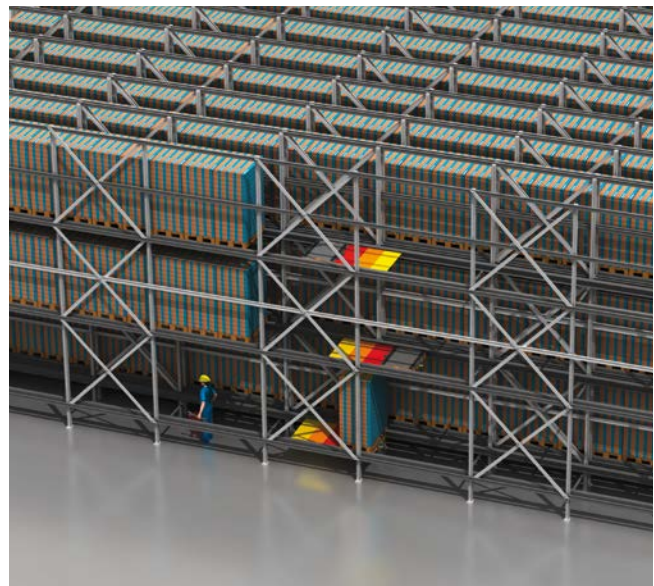
Exemplary product choice	
S3000 Professional (7 m) safety laser scanner	→ page F-158
Flexi Soft modular safety controller	→ page L-693

Shuttle system protection

Compact scanner for compact vehicles

Pallet shuttle systems are used in channel storage facilities in order to move pallets automatically. Individuals in the storage rack, e.g., for maintenance purposes, are in danger of being run over by the shuttle.

- + The S300 Mini safety laser scanner is a protection solution that is easy to integrate into compact vehicles thanks to its small size
- + Mobile protection solutions in the vehicle itself have clear benefits in the areas of flexibility and integration: Only the pallet shuttle that represents a danger is stopped, while the rest of the system continues to run
- + High flexibility and easy integration into the existing system



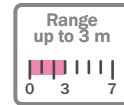
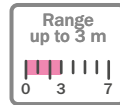
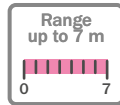
Exemplary product choice	
S300 Mini Standard safety laser scanner	→ page F-78
S300 Mini Remote safety laser scanner + Flexi Soft modular safety controller	→ page F-86

AN OVERVIEW OF THE KEY FEATURES OF OPTO-ELECTRONIC PROTECTIVE DEVICES

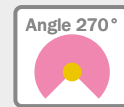
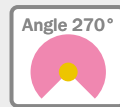
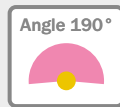
Safety laser scanners			
			
S3000	S300	S300 MINI + EFI DEVICE	
Powerful and modular	Compact – all functions in a single device	Ultra-compact – focused on the essentials	

E

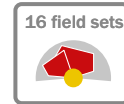
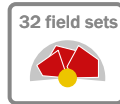
Protective field range
The protective field range defines the maximum radius of the monitored area.



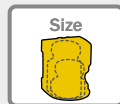
Scanning angle
The scanning angle defines the maximum viewing angle of the scanner.



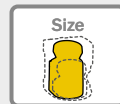
Field sets
The number of field sets indicates how flexibly the scanner can be adapted to different process phases.



Dimensions:
Width x height x depth
The smaller the device, the easier it is to integrate into a system.



155 mm x 185 mm x 160 mm

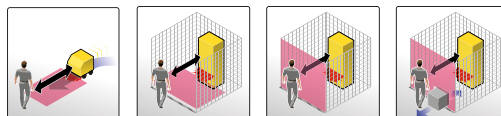


102 mm x 152 mm x 106 mm











102 mm x 116 mm x 104 mm

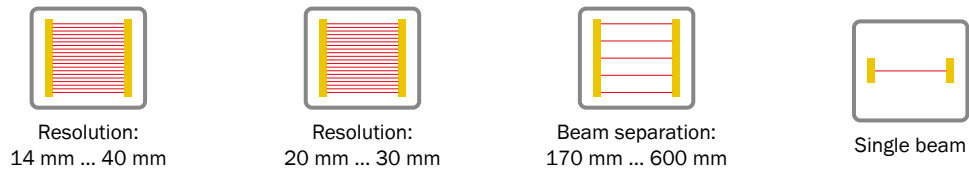
Safety tasks



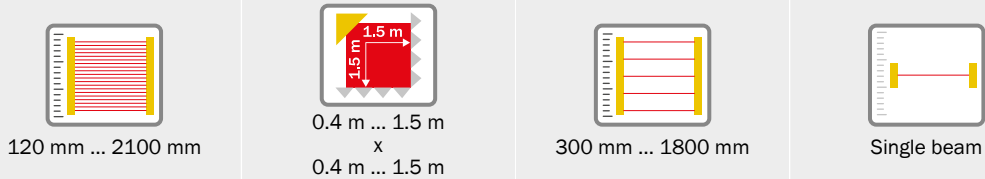
Applications	→ D-29		
Detailed information	→ F-138	→ F-96	→ F-78

	Safety light curtains	Safety camera systems	Multiple light beam safety devices	Single-beam photoelectric safety switches
	 	 	 	 
	Small, compact or extremely rugged for individual application solutions	Easy commissioning thanks to the self-teach protective field	Resistant and rugged, even in special ambient conditions	Simple integration due to small, compact designs with maximum scanning range

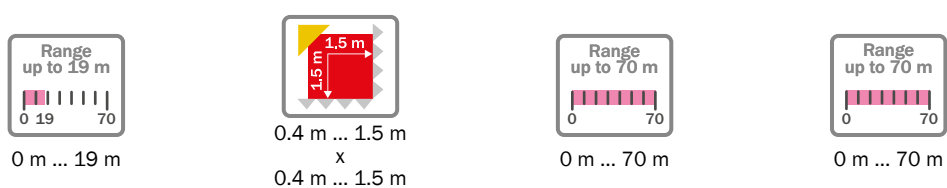
Resolution/
beam separation
The safety task determines the necessary resolution in the application.



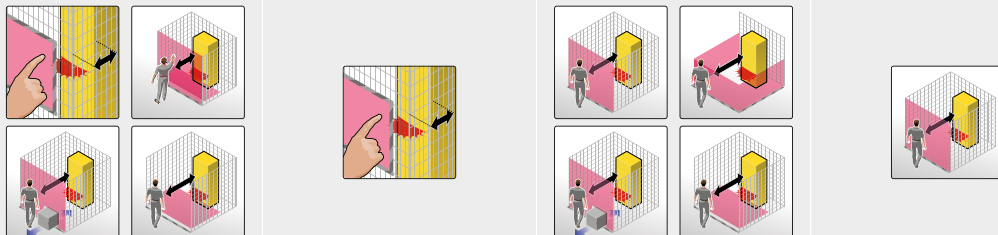
Maximum height of
the protective field
Specifies the maximum detection height for the protective field.



Maximum scanning range
The scanning range indicates the maximum distance between the sender and receiver.



Safety tasks



Applications

→ D-29

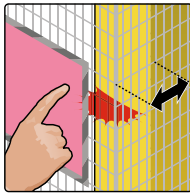
Detailed information

→ G-222

→ H-466

→ I-488

→ J-604



Application

- Mounting workplaces for small components
- Workers operate very close to the hazardous point on the machine
- The machine stopping time is extremely short
- Reliable detection of a finger thanks to a detection capability of 14 mm

Benefits

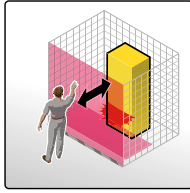
- Enables frequent interaction between the operator and the machine and a free view into the machine
- The distance to the hazardous point is reduced to a minimum
- Supports high productivity

E

Function	Customer benefits
Restart interlock	The protective device can only be restarted if a person deliberately resets the protective device.
External device monitoring (EDM)	Comprehensive monitoring of the safety chain through to the actuator, in order to guarantee safe function.
Beam coding	Reduces mutual optical interference when using similar systems in a confined area and prevents unnecessary shutdown.
Cascading	Minimizes the wiring requirements in the commissioning phase and reduces costs.
Automatic calibration of the protective field width	Reduces storage costs and spare parts management, as one device system can be used for different scanning ranges.
Configurable scanning range	Reduces storage costs and spare parts management, as one device system can be used for different scanning ranges.
Multiple sampling	Increases system throughput as well as productivity in harsh ambient conditions, e.g., in the presence of insects, welding sparks or chips.
Safe SICK device communication via EFI	Simple integration of multiple devices in a single overall system. Reduces the wiring requirement during commissioning and allows straightforward diagnostics across several devices.
Bypass	Temporary muting of the protective device for maintenance and setup mode.
Operating mode switching	Allows several functions in a device to be configured and simply and individually adapted to a system depending on the requirements and application. This enables systems to be operated with even greater flexibility.
PSDI mode	Enables a defined number of interruptions by the operator in the protective field without the protective device triggering an emergency stop.
Reduced resolution	Increases the system throughput in muting applications, as disruptive objects, such as straps or hanging foil remains, do not lead to the shutdown of the protective device.
Fixed blanking	Allows protective devices to also be used in applications in which objects (such as tables) need to permanently protrude into the protective field during the machining process.
Floating blanking	Allows protective devices to also be used in applications in which objects (such as hoses, cables or tables) need to permanently operate in the protective field during the machining process.

				
Safety laser scanners	Safety light curtains	Safety camera systems	Multiple light beam safety devices	Single-beam photoelectric safety switches
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	→ G-222	→ H-466		

E



Application






- Mounting or handling machines for large parts or components
- Workers operate close to the machine's hazardous point
- The machine stopping time is extremely short
- Reliable detection of a hand thanks to a 40 mm detection capability

Benefits

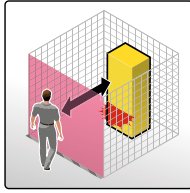
- Unrestricted access to the machine, frequent interaction and free view into the machine are possible
- Presence detection can be used to automatically restart the machine

E

Function	Customer benefits
Restart interlock	The protective device can only be restarted if a person deliberately resets the protective device.
External device monitoring (EDM)	Comprehensive monitoring of the safety chain through to the actuator, in order to guarantee safe function.
Beam coding	Reduces mutual optical interference when using similar systems in a confined area and prevents unnecessary shutdown.
Cascading	Minimizes the wiring requirements in the commissioning phase and reduces costs.
Configurable scanning range	Reduces storage costs and spare parts management, as one device system can be used for different scanning ranges.
Multiple sampling	Increases system throughput as well as productivity in harsh ambient conditions, e.g., in the presence of insects, welding sparks or chips.
Safe SICK device communication via EFI	Simple integration of multiple devices in a single overall system. Reduces the wiring requirement during commissioning and allows straightforward diagnostics across several devices.
Bypass	Temporary muting of the protective device for maintenance and setup mode.
Operating mode switching	Allows several functions in a device to be configured and simply and individually adapted to a system depending on the requirements and application. This enables systems to be operated with even greater flexibility.
Reduced resolution	Increases the system throughput in muting applications, as disruptive objects, such as straps or hanging foil remains, do not lead to the shutdown of the protective device.
Fixed blanking	Allows protective devices to also be used in applications in which objects (such as tables) need to permanently protrude into the protective field during the machining process.
Floating blanking	Allows protective devices to also be used in applications in which objects (such as hoses, cables or tables) need to permanently operate in the protective field during the machining process.

				
Safety laser scanners	Safety light curtains	Safety camera systems	Multiple light beam safety devices	Single-beam photoelectric safety switches
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	→ G-222			

E



Application

- Workers interact with the machine regularly, but not frequently
- Reliable detection of an individual thanks to a detection capability of 150 mm or a multiple beam system

Benefits

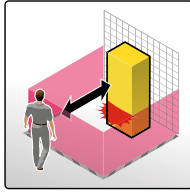
- Unrestricted access and free view into the machine are possible

E

Function	Customer benefits
Restart interlock	The protective device can only be restarted if a person deliberately resets the protective device.
External device monitoring (EDM)	Comprehensive monitoring of the safety chain through to the actuator, in order to guarantee safe function.
Beam coding	Reduces mutual optical interference when using similar systems in a confined area and prevents unnecessary shutdown.
Configurable scanning range	Reduces storage costs and spare parts management, as one device system can be used for different scanning ranges.
Multiple sampling	Increases system throughput as well as productivity in harsh ambient conditions, e.g., in the presence of insects, welding sparks or chips.
Simultaneous protective field monitoring	Reduces project and system costs, as the single protective device monitors several hazardous areas simultaneously and independently.
Integrated configuration memory	Enables a quick device replacement thanks to an automatic parameter download. The replaced device is quickly ready for operation without a PC and software. This reduces maintenance costs and ensures immediate system availability.
Safe SICK device communication via EFI	Simple integration of multiple devices in a single overall system. Reduces the wiring requirement during commissioning and allows straightforward diagnostics across several devices.

				
Safety laser scanners	Safety light curtains	Safety camera systems	Multiple light beam safety devices	Single-beam photoelectric safety switches
■			■	■
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→ F-70			→ I-488	→ J-604

E



Application

- Workers interact with the machine regularly, but not frequently
- Reliable detection of a person thanks to a multiple beam system

Benefits

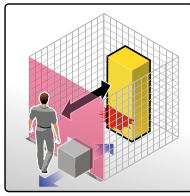
- Unrestricted access to the machine from multiple sides and a free view into the machine are possible

E

Function	Customer benefits
Restart interlock	The protective device can only be restarted if a person deliberately resets the protective device.
External device monitoring (EDM)	Comprehensive monitoring of the safety chain through to the actuator, in order to guarantee safe function.
Beam coding	Reduces mutual optical interference when using similar systems in a confined area and prevents unnecessary shutdown.
Configurable scanning range	Reduces storage costs and spare parts management, as one device system can be used for different scanning ranges.
Safe SICK device communication via EFI	Simple integration of multiple devices in a single overall system. Reduces the wiring requirement during commissioning and allows straightforward diagnostics across several devices.

				
Safety laser scanners	Safety light curtains	Safety camera systems	Multiple light beam safety devices	Single-beam photoelectric safety switches
			■	
			■	
			■	
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			→ I-488	

E



Application

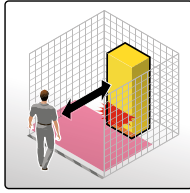
- Machines with automatic material transport systems
- Reliable detection of an individual thanks to a detection capability of 150 mm or a multiple beam system

Benefits

- Supports high productivity thanks to unrestricted material transport

E

Function	Customer benefits
Restart interlock	The protective device can only be restarted if a person deliberately resets the protective device.
External device monitoring (EDM)	Comprehensive monitoring of the safety chain through to the actuator, in order to guarantee safe function.
Beam coding	Reduces mutual optical interference when using similar systems in a confined area and prevents unnecessary shutdown.
Configurable scanning range	Reduces storage costs and spare parts management, as one device system can be used for different scanning ranges.
Monitoring case switching	Increased productivity and higher system throughput due to the flexible monitoring adaptation to match the operating mode or movement of the machine.
Contour as reference	Saves costs, as a single safety laser scanner can be used to monitor large areas along the vertical or horizontal plane and the surrounding contours can be integrated.
Integrated configuration memory	Enables a quick device replacement thanks to an automatic parameter download. The replaced device is quickly ready for operation without a PC and software. This reduces maintenance costs and ensures immediate system availability.
Safe SICK device communication via EFI	Simple integration of multiple devices in a single overall system. Reduces the wiring requirement during commissioning and allows straightforward diagnostics across several devices.
Muting	Enables the normative requirements of material flow to be easily logistically implemented.
Direction detection	Ensures that material can only be transported in one direction. Unintentional access of the hazardous area by an individual is detected.
Virtual photoelectric switches	Renders additional detection sensors unnecessary, as the protective device indicates object positions in the protective field.
Concurrency monitoring	Increases availability in muting applications, helps prevent unnecessary shutdowns, and makes manipulation difficult.
Monitoring the entire muting time	The protective device only remains muted for as long as required for the material transport. Unintentional access of the hazardous area by an individual is detected.
Sensor gap monitoring	Increases availability in muting applications and helps prevent unnecessary shutdowns.
Belt stop	Removes the time monitoring for muting processes in the event of a belt stop. System throughput and productivity are ensured.
Muting with override	Enables the rapid unlocking of a system in the event of a fault to ensure productivity.
Exit monitoring	Increases safety as material can only be transported out of the hazardous area. Unintentional access of the hazardous area by an individual is detected.
Sequence monitoring	Ensures that objects are only transported in one direction as defined by the system. Unintentional access of the hazardous area by an individual is detected.
Partial blanking	Increases safety, as only part of the protective device is muted during the muting cycle, making manipulation difficult.
Object entry monitoring	Muting sensors are no longer required: Increases personnel and system safety, as the direction of transport is monitored by the horizontally positioned protective device. Objects can move within the protective device, while a typical walking pattern for humans is reliably detected.
Dynamic blanking for object pattern recognition	Muting sensors are no longer required: If only rigid objects (skids) are transported, access protection can be implemented without muting. The movements of individuals are reliably detected, safety is increased, and manipulation becomes difficult.
Self-teach dynamic blanking for goods detection	Muting sensors are no longer required: Increases the system throughput, as goods of a defined size can reliably pass through the horizontal protective field, while access is reliably detected for individuals.
Self-teach dynamic blanking for pallet detection	Muting sensors are no longer required: Increases system throughput and flexibility, as the horizontally installed protective device dynamically and independently teaches-in the distances between the objects. Individuals are reliably detected and cannot enter the hazardous area.
Detection of geometrically uniform objects	Geometrically uniform objects, such as paper rolls or cardboard boxes, are blanked, while people are reliably detected.



Application





- Workers interact with the machine regularly, but not frequently
- View into the accessible hazardous area is restricted
- Reliable detection of a person's leg thanks to a 70 mm detection capability

Benefits

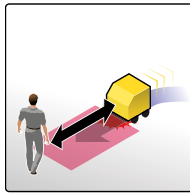
- Combined proximity and presence monitoring
- Unrestricted access to the machine

E

Function	Customer benefits
Restart interlock	The protective device can only be restarted if a person deliberately resets the protective device.
External device monitoring (EDM)	Comprehensive monitoring of the safety chain through to the actuator, in order to guarantee safe function.
Beam coding	Reduces mutual optical interference when using similar systems in a confined area and prevents unnecessary shutdown.
Cascading	Minimizes the wiring requirements in the commissioning phase and reduces costs.
Configurable scanning range	Reduces storage costs and spare parts management, as one device system can be used for different scanning ranges.
Multiple sampling	Increases system throughput as well as productivity in harsh ambient conditions, e.g., in the presence of insects, welding sparks or chips.
Monitoring case switching	Increased productivity and higher system throughput due to the flexible monitoring adaptation to match the operating mode or movement of the machine.
Simultaneous protective field monitoring	Reduces project and system costs, as the single protective device monitors several hazardous areas simultaneously and independently.
Static protective field switching	Enables protective functions that are flexibly adapted to the system concept, which can be easily integrated into the production flow.
Contour as reference	Saves costs, as a single safety laser scanner can be used to monitor large areas along the vertical or horizontal plane and the surrounding contours can be integrated.
Integrated configuration memory	Enables a quick device replacement thanks to an automatic parameter download. The replaced device is quickly ready for operation without a PC and software. This reduces maintenance costs and ensures immediate system availability.
Safe SICK device communication via EFI	Simple integration of multiple devices in a single overall system. Reduces the wiring requirement during commissioning and allows straightforward diagnostics across several devices.

				
Safety laser scanners	Safety light curtains	Safety camera systems	Multiple light beam safety devices	Single-beam photoelectric safety switches
■	■		■	
■	■		■	
	■		■	
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■	■		■	
→ F-70	→ G-222		→ I-488	

E



Application




- Protects persons while vehicles are moving
- Reliable detection of a person's leg thanks to a 70 mm detection capability

Benefits

- Reduction of downtimes and wear caused by frequent braking
- The minimum distance can be automatically adapted to the speed

E

Function	Customer benefits
Restart interlock	The protective device can only be restarted if a person deliberately resets the protective device.
External device monitoring (EDM)	Comprehensive monitoring of the safety chain through to the actuator, in order to guarantee safe function.
Cascading	Minimizes the wiring requirements in the commissioning phase and reduces costs.
Configurable scanning range	Reduces storage costs and spare parts management, as one device system can be used for different scanning ranges.
Multiple sampling	Increases system throughput as well as productivity in harsh ambient conditions, e.g., in the presence of insects, welding sparks or chips.
Monitoring case switching	Increased productivity and higher system throughput due to the flexible monitoring adaptation to match the operating mode or movement of the machine.
Dynamic protective field switching	The required protective fields can be flexibly implemented in mobile applications according to the principle "as long as necessary, but as little as possible" and can automatically be adjusted depending on the speed of the vehicle. This means lower maintenance costs due to reduced brake wear.
Integrated configuration memory	Enables a quick device replacement thanks to an automatic parameter download. The replaced device is quickly ready for operation without a PC and software. This reduces maintenance costs and ensures immediate system availability.
Measured data output	Reduces costs as a single device simultaneously performs two different functions: Navigation of the automated guided vehicle and protective function for the individuals in the work environment.
Extended measured data output	Reduces costs as a single device simultaneously performs two different functions: Navigation of the automated guided vehicle by recording the surrounding contour and protective function for the individuals in the work environment.
Safe SICK device communication via EFI	Simple integration of multiple devices in a single overall system. Reduces the wiring requirement during commissioning and allows straightforward diagnostics across several devices.

				
Safety laser scanners	Safety light curtains	Safety camera systems	Multiple light beam safety devices	Single-beam photoelectric safety switches
■				
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→ F-70				

E



SAFETY LASER SCANNERS

F



Safety first – efficient solutions for industrial protection

SICK uses its vast to create safety laser scanners with maximum performance. Whether mobile or stationary, for area protection or access protection – our comprehensive portfolio offers the right cost-effective package for every requirement and task. Like optical radar, the compact systems scan their surroundings and measure distances by using the time-of-flight principle of measurement. The integrated rotating mirror creates a two-dimensional scan for freely defined protection areas.

Your benefits

- Tailored solutions for your applications
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Decades of proven safety technology guarantee maximum reliability and productivity – even under difficult conditions
- Expandable modular system, simple cabling and additional functions such as the simultaneous monitoring of up to four protective fields using a SICK safety controller with EFI
- Quick recommissioning via configuration memory
- Variety of field sets ensures safety and productivity when protecting mobile or stationary systems
- Simple alignment and safe operation in vertical mode
- Efficient, cost-effective protection – networked through a direct connection to PROFINET IO networks



F

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Product family overview	F-74



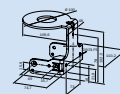
S300 Mini	F-78
S300 Mini Standard	F-78
S300 Mini Remote	F-86



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S300 Professional	F-116
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S300 Mini	F-218
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Selection guide

Product		Safety task				Features										
		One-sided access protection with person detection	One-sided access protection with differentiating between persons and material / muting	Stationary hazardous area protection with person detection in the presence	Mobile hazardous area protection with person detection when approaching	Type (IEC 61496)	Performance level (EN ISO 13849)	Ambient operating temperature -10 °C ... + 50 °C	Ambient operating temperature -30 °C ... + 50 °C	Enclosure rating IP 65	Enclosure rating IP 67	Max. number of simultaneously monitored protective fields	Number of field sets	Number of monitoring cases	Scanning angle	
S300 Mini																
	S300 Mini Standard	■	■	■	■	3	d	■		■			1	1	270°	
	S300 Mini Remote ¹⁾	■	■	■	■	3	d	■		■			16	32	270°	
S300																
	S300 Standard	■	■	■	■	3	d	■		■			1	1	270°	
	S300 Advanced	■	■	■	■	3	d	■		■			4	4	270°	
	S300 Professional	■	■	■	■	3	d	■		■			8	32	270°	
	S300 Expert	■	■	■	■	3	d	■		■			16	32	270°	
S3000																
	S3000 Standard	■	■	■	■	3	d	■		■			4	1	1	190°
	S3000 Advanced	■	■	■	■	3	d	■		■			4	4	4	190°
	S3000 Professional	■	■	■	■	3	d	■		■			4	8	16	190°
	S3000 Expert	■	■	■	■	3	d	■		■			4	32	32	190°
	S3000 Remote ¹⁾	■	■	■	■	3	d	■		■			4	32	32	190°
	S3000 PROFINET IO Advanced	■	■	■	■	3	d	■		■			2	4	4	190°
	S3000 PROFINET IO Professional	■	■	■	■	3	d	■		■			2	8	16	190°
	S3000 Cold Store	■	■	■	■	3	d		■	■	■		4	4	4	180°

¹⁾ Can only be used in the EFI system network, e.g., with a Flexi Soft safety controller and an S300 or S3000 safety laser scanner

Functions													Scanning range in m		Page
Restart interlock	External device monitoring (EDM)	Multiple sampling	Monitoring case switching	Static protective field switching	Dynamic protective field switching	Contour as reference	Integrated configuration memory	Measured data output	Extended measured data output (CMS)	Direct integration into bus systems	Safe SICK device communication via EFI	Maximum protective field range	Maximum warning field range		
■	■	■				■						3	8	→ F-78	
			■	■	■	■					■	3	8	→ F-86	
■	■	■				■	■	■			■	3	8	→ F-96	
■	■	■	■	■		■	■	■			■	3	8	→ F-106	
■	■	■	■	■	■	■	■	■			■	3	8	→ F-116	
■	■	■	■	■	■	■	■	■	■		■	3	8	→ F-128	
■	■	■				■	■	■			■	7	49	→ F-138	
■	■	■	■	■		■	■	■			■	7	49	→ F-148	
■	■	■	■	■	■	■	■	■			■	7	49	→ F-158	
■	■	■	■	■	■	■	■	■	■		■	7	49	→ F-170	
■	■	■	■	■	■	■	■	■			■	7	49	→ F-182	
■		■	■	■		■	■	■		■		7	49	→ F-192	
■		■	■	■		■	■	■		■		7	49	→ F-200	
		■	■	■		■					■	7	49	→ F-208	

F

PRODUCT FAMILY OVERVIEW

				
	S300 Mini Standard	S300 Mini Remote	S300 Standard	
	Economical yet reliable	Very high functionality in mini format	Economical yet reliable	

Technical data overview

Protective field range	1 m / 2 m / 3 m	2 m / 3 m	2 m / 3 m
Warning field range	8 m	8 m	8 m
Type of field set	Triple field sets	Triple field sets	Triple field sets
Number of field sets	1	16	1
Scanning angle	270°	270°	270°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm	30 mm, 40 mm, 50 mm, 70 mm, 150 mm	30 mm, 40 mm, 50 mm, 70 mm, 150 mm
Response time	80 ms	80 ms	80 ms
Enclosure rating	IP 65 (EN 60529)	IP 65 (EN 60529)	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +50 °C	-10 °C ... +50 °C	-10 °C ... +50 °C

At a glance

	<ul style="list-style-type: none"> • Very compact design • 1 m, 2 m or 3 m protective field range • 270° scanning angle • 1 field set • Selectable resolution for hand, leg or body detection • Contour as reference for vertical applications • Integrated external device monitoring (EDM) • Easy-to-configure fields and functions 	<ul style="list-style-type: none"> • Can only be used in EFI system network, e.g., with a Flexi Soft safety controller or another safety laser scanner • Very compact design • 2 m or 3 m protective field range • 270° scanning angle • Up to 16 switchable field sets • Selectable resolution for hand, leg or body detection • Extended system solutions in combination with Flexi Soft safety controller 	<ul style="list-style-type: none"> • Compact design • 2 m or 3 m protective field range • 270° scanning angle • 1 field set • Configuration memory integrated in the system plug • EFI interface for safe SICK device communication • Selectable resolution for hand, leg or body detection • Contour as reference for vertical applications 	
Detailed information	→ F-78	→ F-86	→ F-96	

F



S300 Advanced

Optimize production processes safely



S300 Professional

High-performance – the right protection for any speed



S300 Expert

Flexible and pioneering – for challenging applications

2 m / 3 m	2 m / 3 m	2 m / 3 m
8 m	8 m	8 m
Triple field sets	Triple field sets	Triple field sets
4	8	16
270°	270°	270°
30 mm, 40 mm, 50 mm, 70 mm, 150 mm	30 mm, 40 mm, 50 mm, 70 mm, 150 mm	30 mm, 40 mm, 50 mm, 70 mm, 150 mm
80 ms	80 ms	80 ms
IP 65 (EN 60529)	IP 65 (EN 60529)	IP 65 (EN 60529)
-10 °C ... +50 °C	-10 °C ... +50 °C	-10 °C ... +50 °C

<ul style="list-style-type: none"> • Compact design • 2 m or 3 m protective field range • 270° scanning angle • 4 switchable field sets • Configuration memory integrated in the system plug • EFI interface for safe SICK device communication • Selectable resolution for hand, leg or body detection • Contour as reference for vertical applications 	<ul style="list-style-type: none"> • Compact design • 2 m or 3 m protective field range • 270° scanning angle • 8 switchable field sets • Configuration memory integrated in the system plug • EFI interface for safe SICK device communication • Incremental encoder inputs for speed-dependent field switching • Measured data output via RS-422 	<ul style="list-style-type: none"> • Compact design • 2 m or 3 m protective field range • 270° scanning angle • 16 switchable field sets • Configuration memory integrated in the system plug • EFI interface for safe SICK device communication • Incremental encoder inputs for speed-dependent field switching • Extended measured data output via RS-422 with landmark recognition
→ F-106	→ F-116	→ F-128

F

PRODUCT FAMILY OVERVIEW

				
	S3000 Standard	S3000 Advanced	S3000 Professional	S3000 Expert
	Economical yet reliable	Optimize production processes safely	Flexible high-performance - the right protection for any speed	Safety gaps have no chance – with 64 fields

Technical data overview

Protective field range	4 m / 5.5 m / 7 m	4 m / 5.5 m / 7 m	4 m / 5.5 m / 7 m	4 m / 5.5 m / 7 m
Warning field range	49 m	49 m	49 m	49 m
Type of field set	Triple field sets, dual field sets	Triple field sets, dual field sets	Triple field sets, dual field sets	Triple field sets, dual field sets
Number of field sets	1	4	8	32
Scanning angle	190°	190°	190°	190°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm	30 mm, 40 mm, 50 mm, 70 mm, 150 mm	30 mm, 40 mm, 50 mm, 70 mm, 150 mm	30 mm, 40 mm, 50 mm, 70 mm, 150 mm
Response time	60 ms	60 ms	60 ms	60 ms
Enclosure rating	IP 65 (EN 60529)	IP 65 (EN 60529)	IP 65 (EN 60529)	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +50 °C	-10 °C ... +50 °C	-10 °C ... +50 °C	-10 °C ... +50 °C

At a glance

	<ul style="list-style-type: none"> • 4 m, 5.5 m or 7 m protective field range • 1 field set • Configuration memory integrated in the system plug • Interface (EFI) for reliable SICK device communication • Selectable resolution for hand, leg or body detection • Simultaneous monitoring of up to 4 protective fields • Contour as reference for vertical applications • Integrated external device monitoring (EDM) 	<ul style="list-style-type: none"> • 4 m, 5.5 m or 7 m protective field range • 4 switchable field sets • Configuration memory integrated in the system plug • Interface (EFI) for reliable SICK device communication • Selectable resolution for hand, leg or body detection • Simultaneous monitoring of up to 4 protective fields • Contour as reference for vertical applications • Integrated external device monitoring (EDM) 	<ul style="list-style-type: none"> • 4 m, 5.5 m or 7 m protective field range • 8 switchable field sets • Configuration memory integrated in the system plug • Interface (EFI) for reliable SICK device communication • Incremental encoder inputs for speed-dependent field switching • Measured data output via RS-422 • Simultaneous monitoring of up to 4 protective fields • Monitoring of the maximum speed of an AGV 	<ul style="list-style-type: none"> • 4 m, 5.5 m or 7 m protective field range • 32 switchable field sets • Configuration memory integrated in the system plug • Interface (EFI) for reliable SICK device communication • Incremental encoder inputs for speed-dependent field switching • Extended measured data output via RS-422 with field marker detection • Simultaneous monitoring of up to 4 protective fields
Detailed information	→ F-138	→ F-148	→ F-158	→ F-170

F



S3000 Remote

The scanner for more safety



S3000 PROFINET IO Advanced

Always available – safety technology in your network



S3000 PROFINET IO Professional

Always available - safety technology in your network



S3000 Cold Store

Reliable safety for tough requirements in cold storage

4 m / 5.5 m / 7 m	4 m / 5.5 m / 7 m	4 m / 5.5 m / 7 m	7 m
49 m	49 m	49 m	49 m
Triple field sets, dual field sets	Dual field sets	Dual field sets	Triple field sets, dual field sets
32	4	8	4
190°	190°	190°	180°
30 mm, 40 mm, 50 mm, 70 mm, 150 mm	30 mm, 40 mm, 50 mm, 70 mm, 150 mm	30 mm, 40 mm, 50 mm, 70 mm, 150 mm	30 mm, 40 mm, 50 mm, 70 mm, 150 mm
60 ms	60 ms	60 ms	60 ms
IP 65 (EN 60529)	IP 65 (EN 60529)	IP 65 (EN 60529)	IP 65 (EN 60529) IP 67 (EN 60529)
-10 °C ... +50 °C	-10 °C ... +50 °C	-10 °C ... +50 °C	-30 °C ... +50 °C



- Can be used only in the EFI system network, e.g. with a Flexi Soft safety controller or another safety laser scanner
- 4 m, 5.5 m or 7 m protective field range
- Up to 32 switchable field sets
- Configuration memory integrated in the system plug
- Measured data output via RS-422
- Simultaneous monitoring of up to 4 protective fields
- Contour as reference for vertical applications

→ F-182

- Direct integration in PROFINET IO safe bus system
- 4 m, 5.5 m or 7 m protective field range
- 4 switchable field sets
- Managed 2-Port switch for copper or optical fiber based conductors
- Configuration memory integrated in the system plug
- Remote diagnostics and configuration through safety controller
- Simultaneous monitoring of 2 protective fields

→ F-192

- Direct integration in PROFINET IO safe bus system
- 4 m, 5.5 m or 7 m protective field range
- 8 switchable field sets
- Managed 2-Port switch for copper or optical fiber based conductors
- Configuration memory integrated in the system plug
- Remote diagnostics and configuration through safety controller
- Simultaneous monitoring of 2 protective fields

→ F-200

- Designed and certified for temperatures down to -30 °C
- Modified housing with integrated temperature controller
- IP 67 enclosure rating
- 7 m protective field range
- 4 switchable field sets
- Interface (EFI) for reliable SICK device communication
- Selectable resolution for hand, leg or body detection
- Contour as reference for vertical applications

→ F-208

ECONOMICAL YET RELIABLE



Product description

The S300 Mini Standard is an ultra-compact design which is ideal for simple applications in which a freely definable protective field is required. The triple field function enables a protective field and two warning fields to be operated at the same time. This minimizes downtime and brake wear. The S300

Mini Standard is ideal for protecting small automated guided carts (AGC) and also for hazardous area protection of small machines. CDS (Configuration & Diagnostic Software) can be used to define protective and warning fields in a convenient and standardized way on a PC or laptop.

At a glance

- Very compact design
- 1 m, 2 m or 3 m protective field range
- 270° scanning angle
- 1 field set
- Selectable resolution for hand, leg or body detection
- Contour as reference for vertical applications
- Integrated external device monitoring (EDM)
- Easy-to-configure fields and functions

Your benefits

- Simple integration due to ultra-compact design
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Unbeatable cost-effectiveness – 270° scanning angle allows complete application protection with only two scanners
- Safety engineering – with no loss of productivity
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions
- Easy to manage, reducing costs and work time
- Reduction of downtime and brake wear thanks to triple field function
- Simple alignment and safe operation in vertical mode



Additional information

Detailed technical data	F-79
Ordering information	F-81
Dimensional drawing	F-81
Connection diagrams	F-82
Recommended accessories	F-84

→ www.sick.com/S300_Mini_Standard

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



F

Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Protective field range	1 m / 2 m / 3 m (depending on type)
Warning field range	8 m (at 30 % reflectivity)
Distance measuring range	30 m
Type of field set	Triple field sets
Number of field sets	1
Number of monitoring cases	1
Scanning angle	270°
Resolution	
Protective field range 1 m	30 mm, 40 mm, 50 mm, 70 mm, configurable
Protective field range 2 m	30 mm, 40 mm, 50 mm, 70 mm, configurable
Protective field range 3 m	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, configurable
Angular resolution	0.5°
Response time	80 ms ¹⁾
Protective field supplement	100 mm
Number of multiple samplings	2 ... 16, configurable
Delay of automatic reset	2 s ... 60 s, configurable

¹⁾ Depending on basic response time and multiple sampling.

Safety-related parameters

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	8.0 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

Restart interlock	✓
External device monitoring (EDM)	✓
Multiple sampling	✓
Contour as a reference	✓

Interfaces

Connection type	Cable, 250 mm, with male connector M12, 8-pin
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Configuration and diagnostics interface	RS-232
Transmission rate	38.4 kBaud
Fieldbus, industrial network	
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT [®] , EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ¹⁾

¹⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	III (EN 50178)
Supply voltage V_s	24 V DC (16.8 V DC ... 30 V DC)
Power consumption	
Protective field range 1 m	$\leq 0.2 \text{ A}^{1)}$ $\leq 1.35 \text{ A}^{2)}$
Protective field range 2 m	$\leq 0.2 \text{ A}^{1)}$ $\leq 1.35 \text{ A}^{2)}$
Protective field range 3 m	$\leq 0.25 \text{ A}^{1)}$ $\leq 1.35 \text{ A}^{2)}$
Universal I/Os	2
Inputs	
External device monitoring (EDM)	1 ³⁾
Reset/restart	1 ³⁾
Standby	1 ³⁾
Outputs	
Safety outputs (OSSD)	2
Outputs for warning field	2 ³⁾
Reset required	1 ³⁾

¹⁾ At 24 V DC without output load.

²⁾ At 24 V DC including maximum output load.

³⁾ Availability depends on the configuration of the universal I/Os.

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Mechanical data

Dimensions (W x H x D)	102 mm x 116 mm x 105 mm
Weight	0.8 kg, without connecting cables
Housing material	Aluminum die cast
Housing color	RAL 1021 (yellow), RAL 9005 (black)
Optics cover material	Polycarbonat
Optics cover surface finish	Outside with scratch-resistant coating

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +50 °C
Storage temperature	-25 °C ... +50 °C
Vibration resistance	5 g, 10 Hz ... 150 Hz (EN 61496-1, CLC/TS 61496-3)
Shock resistance	10 g, 16 ms (EN 61496-1, CLC/TS 61496-3)

Other information

Type of light	Pulsed laser diode
Wave length	905 nm
Reflectivity	1.8 % ... > 1,000 %, reflectors
Laser class	1 (21 CFR 1040.10 and 1040.11, IEC 60825-1)

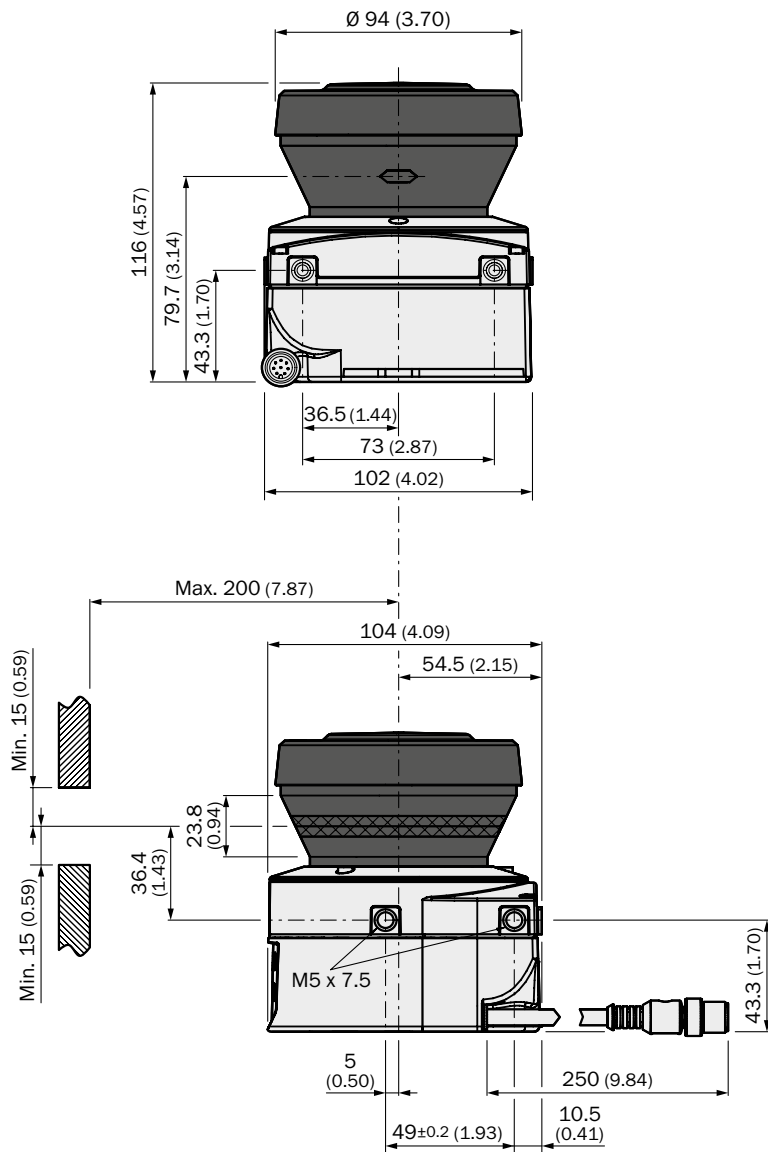
Ordering information

Items supplied S300 Mini:

- Safety laser scanner
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

Protective field range	Type	Part no.
1 m	S32B-0011BA	1058000
2 m	S32B-2011BA	1050932
3 m	S32B-3011BA	1056430

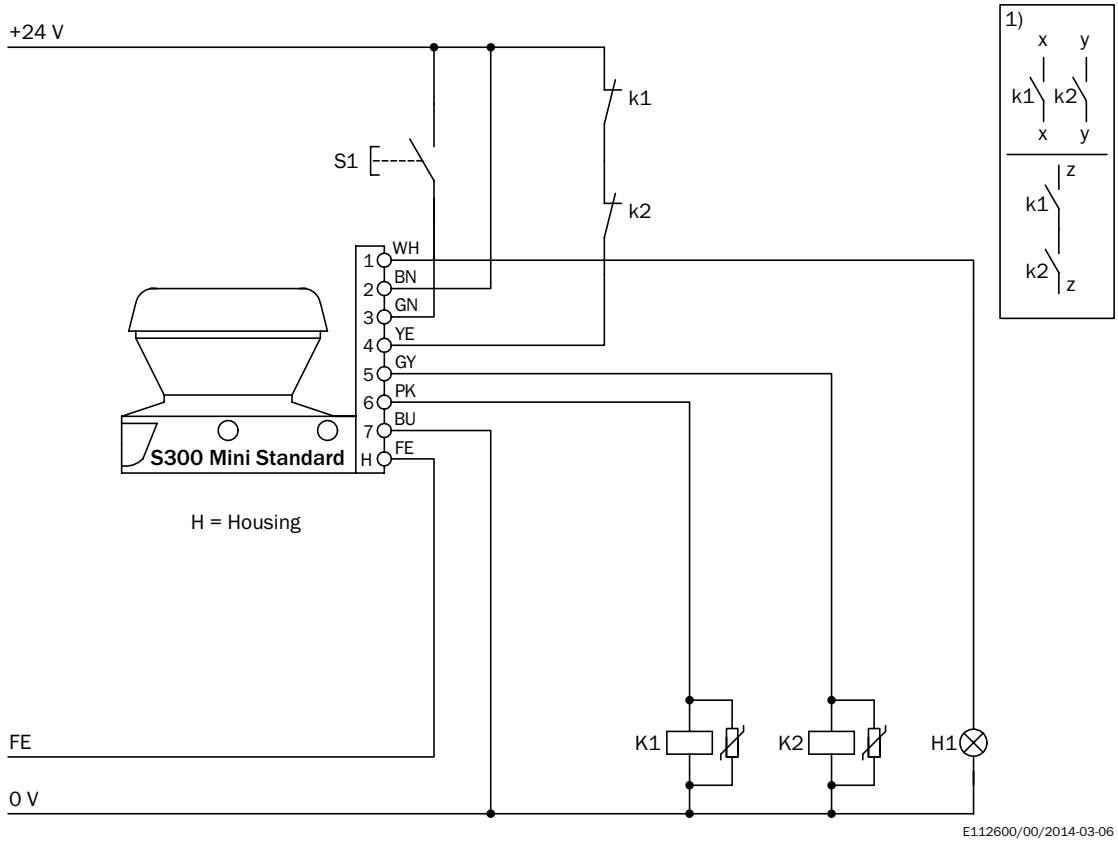
Dimensional drawing (Dimensions in mm (inch))



F

Connection diagrams

S300 Mini Standard with restart interlock and external device monitoring



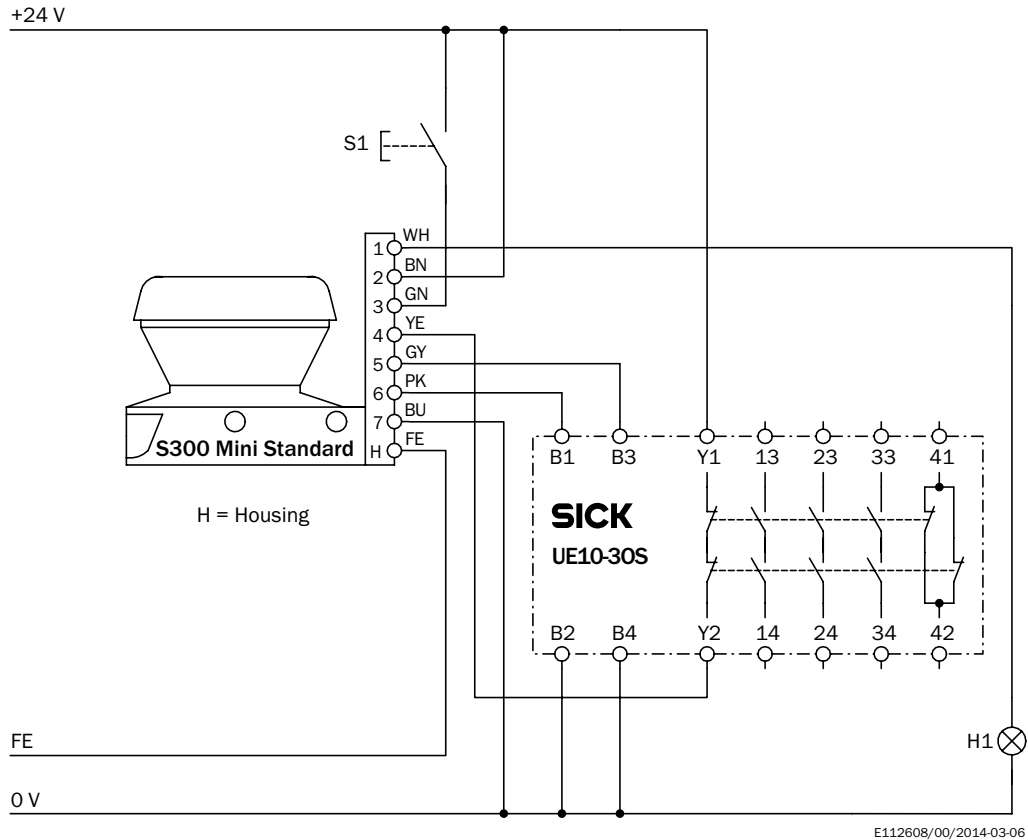
- S300 Mini Standard in conjunction with relays/contactors
- Operating mode: with restart interlock (universal I/O 1 must be configured as reset) and external device monitoring (universal I/O 2 must be configured as EDM)

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

F

S300 Mini Standard on UE10-30S safety relay



- S300 Mini Standard on UE10-30S safety relay
- Operating mode: with restart interlock (universal I/O 1 must be configured as reset) and external device monitoring (universal I/O 2 must be configured as EDM)

Accessories required for commissioning





Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
Connecting cable	1	-	→ Plug connectors and cables
Connection cable for configuration and diagnosis	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting bracket for rear mounting on wall or machine	1 piece	Mounting kit 1a	2034324
	Mounting bracket for rear mounting on wall or machine with protection of optics hood	1 piece	Mounting kit 1b	2034325
	Mounting bracket, adjustable lateral axis, only in conjunction with mounting kit 1a (2034324) or 1b (2034325)	1 piece	Mounting kit 2	2039302
	Mounting plate, adjustable longitudinal axis, only in conjunction with mounting kit 2 (2039302)	1 piece	Mounting kit 3	2039303



Dimensional drawings → page F-218

Connection systems

Plug connectors and cables


Connecting cables with female connector

- **Model:** PUR, halogen-free, shielded

Figure	Connection type		Conductor cross-section	Cable length	Type	Part no.
	Female connector, M12, 8-pin, angled	Cable	0.25 mm ²	5 m	DOL-127SW05ME25KM0	2076548
				7.5 m	DOL-127SW7M5E25KM0	2076549
				10 m	DOL-127SW10ME25KM0	2076550
				15 m	DOL-127SW15ME25KM0	2076551
	Female connector, M12, 8-pin, straight	Cable	0.25 mm ²	2.5 m	DOL-127SG2M5E25KM0	2076540
				5 m	DOL-127SG05ME25KM0	2076541
				7.5 m	DOL-127SG7M5E25KM0	2076542
				10 m	DOL-127SG10ME25KM0	2076543
				15 m	DOL-127SG15ME25KM0	2076544
				20 m	DOL-127SG20ME25KM0	2076545


Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded


Figure	Connection type		Cable length	Type	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649

Connection cables with male connector and male connector

- **Model:** PVC, unshielded

Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
10 m	DSL-8U04G10M025KM1	6034575				

Power supply units and power cord connectors


Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
 Illustration may differ	Scan finder, receiver to localize infrared scans	LS-80L	6020756

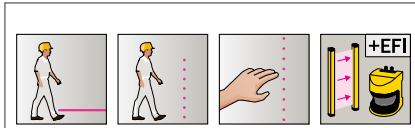
Spare parts

Figure	Description	Type	Part no.
	Spare part set optics cover with replacement seal and screws	Spare part set optics cover S100/S300/S300 Mini	2039248

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

VERY HIGH FUNCTIONALITY IN MINI FORMAT



Product description

The S300 Mini Remote offers the ultimate in functionality within an ultra-compact design. With 16 triple field sets, the S300 Mini Remote is very flexible, so it is ideal for small automated guided vehicles (AGVs) or service robots. The triple field function enables a protective field and two warning fields to be operated at the same time. This minimizes downtimes and brake wear. The S300 Mini Remote has an internal

interface (EFI) for safe device communication. This allows the realization of advanced system solutions, for example with the Flexi Soft safety controller. This enables the protection of automated guided vehicles in the front and rear. CDS (Configuration & Diagnostic Software) or the Flexi Soft Designer can be used to define protective and warning fields in a convenient and standardized way on a PC or laptop.

At a glance

- Can only be used in EFI system network, e.g., with a Flexi Soft safety controller or another safety laser scanner
- Very compact design
- 2 m or 3 m protective field range
- 270° scanning angle
- Up to 16 switchable field sets
- Selectable resolution for hand, leg or body detection
- Extended system solutions in combination with Flexi Soft safety controller

Your benefits

- Simple integration due to ultra-compact design
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Unbeatable cost-effectiveness – 270° scanning angle allows complete application protection with only two scanners
- Variety of field sets guarantees safety and productivity when protecting vehicles or moving machine parts
- Easy modular expansions, simple cabling and additional functions using SICK safety controllers with EFI
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions
- Simple alignment and safe operation in vertical mode



Additional information

Detailed technical data	F-87
Ordering information	F-89
Dimensional drawing	F-89
Connection diagrams	F-90
Recommended accessories	F-93

→ www.sick.com/S300_Mini_Remote

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Usage	Can be used only in the EFI system network, e.g. with a Flexi Soft safety controller or another S300 or S3000 safety laser scanner
Protective field range	2 m / 3 m (depending on type)
Warning field range	8 m (at 30 % reflectivity)
Distance measuring range	30 m
Type of field set	Triple field sets
Number of field sets	16
Number of monitoring cases	32
Scanning angle	270°
Resolution	
Protective field range 2 m	30 mm, 40 mm, 50 mm, 70 mm, configurable
Protective field range 3 m	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, configurable
Angular resolution	0.5°
Response time	80 ms ¹⁾
Protective field supplement	100 mm
Number of multiple samplings	2 ... 16, configurable
Delay of automatic reset	2 s ... 60 s, configurable

¹⁾ Depending on basic response time and multiple sampling.

Safety-related parameters

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	8.0 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

Multiple sampling	✓
Monitoring case switching	✓
Static protective field switching	✓
Dynamic protective field switching	✓
Contour as a reference	✓
Safe SICK device communication via EFI	✓

Interfaces

Connection type	Cable, 250 mm, with male connector M12, 7-pin
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Configuration and diagnostics interface	RS-232
Transmission rate	38.4 kBaud
Safe SICK device communication via EFI	
Transmission rate	≤ 500 kBaud
Cable length	≤ 20 m ¹⁾
Fieldbus, industrial network	
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ²⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ³⁾

¹⁾ Use only pre-assembled extension cables.

²⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

³⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	III (EN 50178)
Supply voltage V_s	24 V DC (16.8 V DC ... 30 V DC)
Power consumption	
Protective field range 2 m	≤ 0.2 A ¹⁾ ≤ 0.22 A ²⁾
Protective field range 3 m	≤ 0.22 A ¹⁾ ≤ 0.24 A ²⁾
Inputs	
Static control inputs with EFI	5 ³⁾
Standby	1 ³⁾
Outputs	
	Depends on the configuration of the connected EFI device

¹⁾ At 24 V DC without output load.

²⁾ At 24 V DC including maximum output load.

³⁾ Can be used only in the EFI system network, e.g. with a Flexi Soft safety controller or another S300 or S3000 safety laser scanner.

Mechanical data

Dimensions (W x H x D)	102 mm x 116 mm x 105 mm
Weight	0.8 kg, without connecting cables
Housing material	Aluminum die cast
Housing color	RAL 1021 (yellow), RAL 9005 (black)
Optics cover material	Polycarbonat
Optics cover surface finish	Outside with scratch-resistant coating

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +50 °C
Storage temperature	-25 °C ... +50 °C
Vibration resistance	5 g, 10 Hz ... 150 Hz (EN 61496-1, CLC/TS 61496-3)
Shock resistance	10 g, 16 ms (EN 61496-1, CLC/TS 61496-3)

Other information

Type of light	Pulsed laser diode
Wave length	905 nm
Reflectivity	1.8 % ... > 1,000 %, reflectors
Laser class	1 (21 CFR 1040.10 and 1040.11, IEC 60825-1)

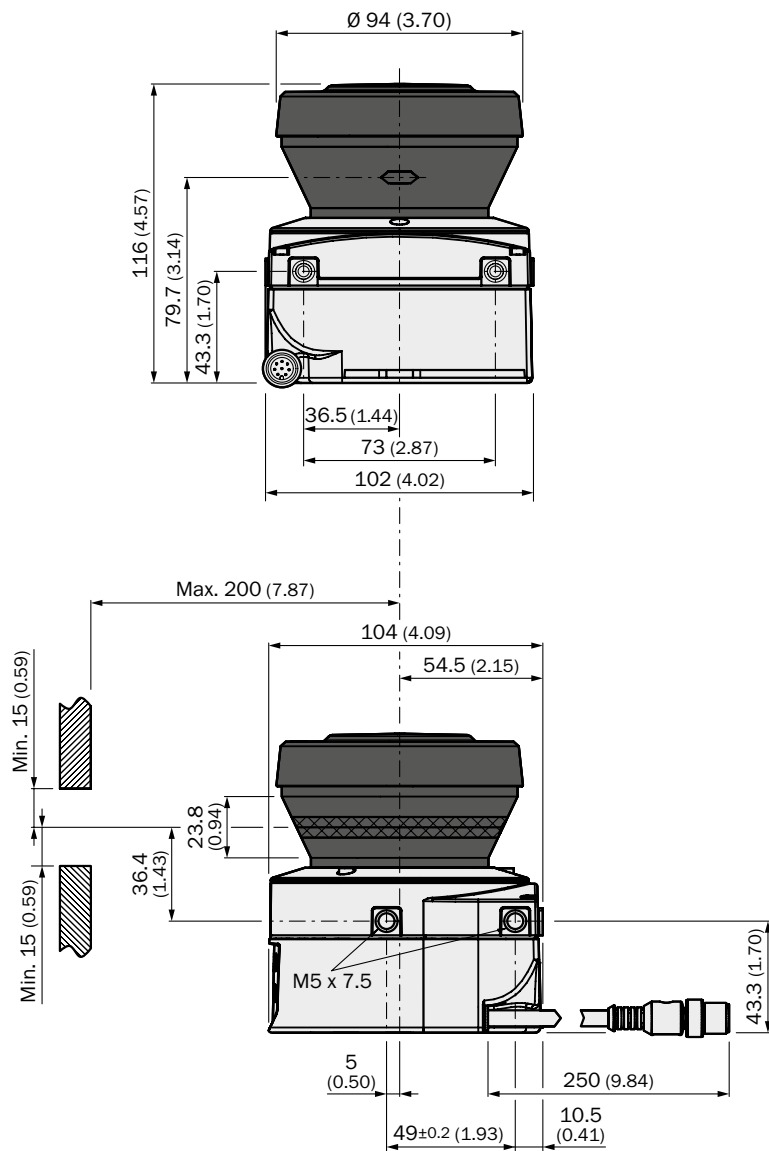
Ordering information

Items supplied S300 Mini:

- Safety laser scanner
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

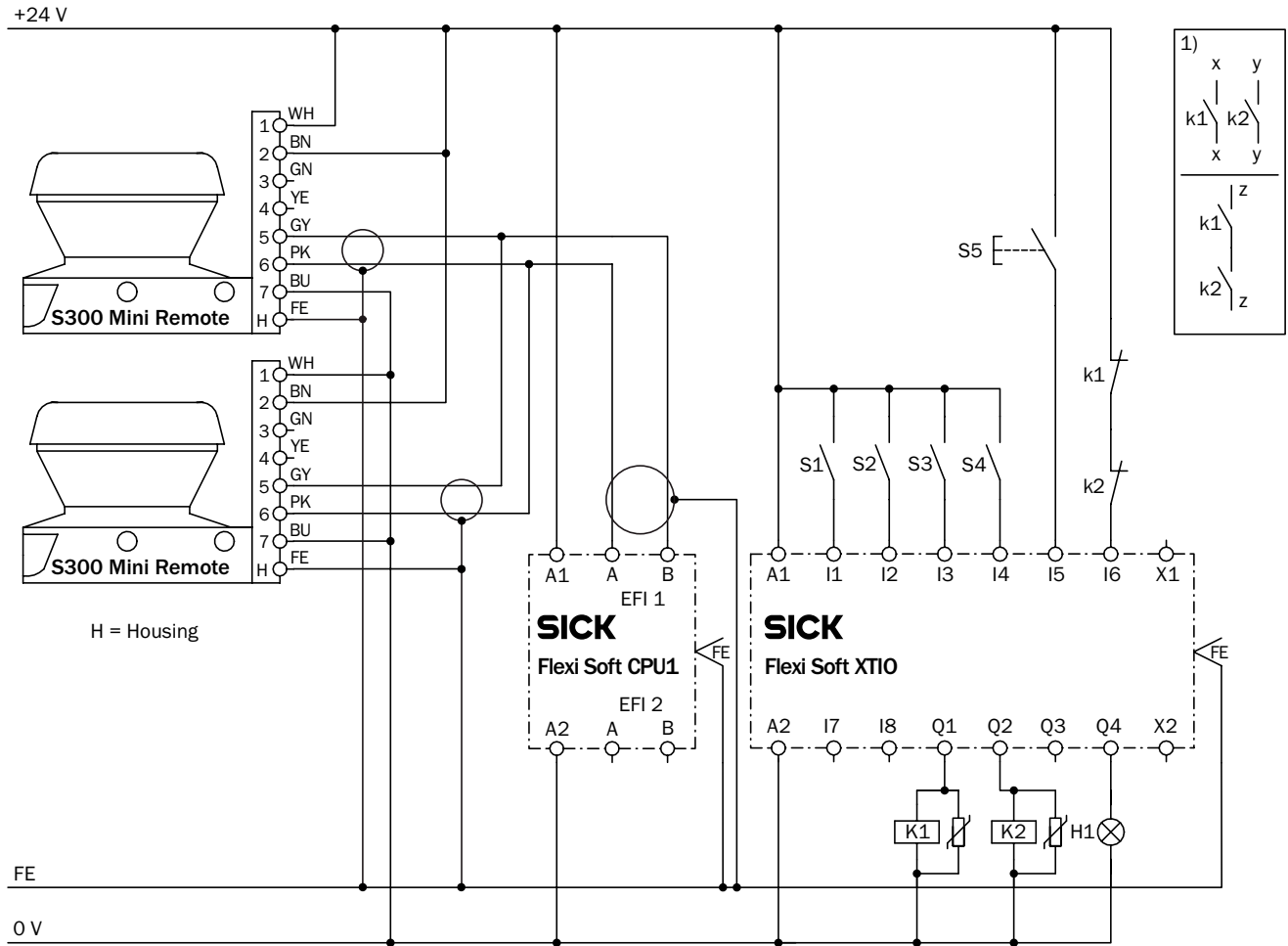
Protective field range	Type	Part no.
2 m	S32B-2011EA	1051884
3 m	S32B-3011EA	1056431

Dimensional drawing (Dimensions in mm (inch))



Connection diagrams

S300 Mini Remote: protective field switching with a Flexi Soft safety controller



E112689/00/2014-03-06

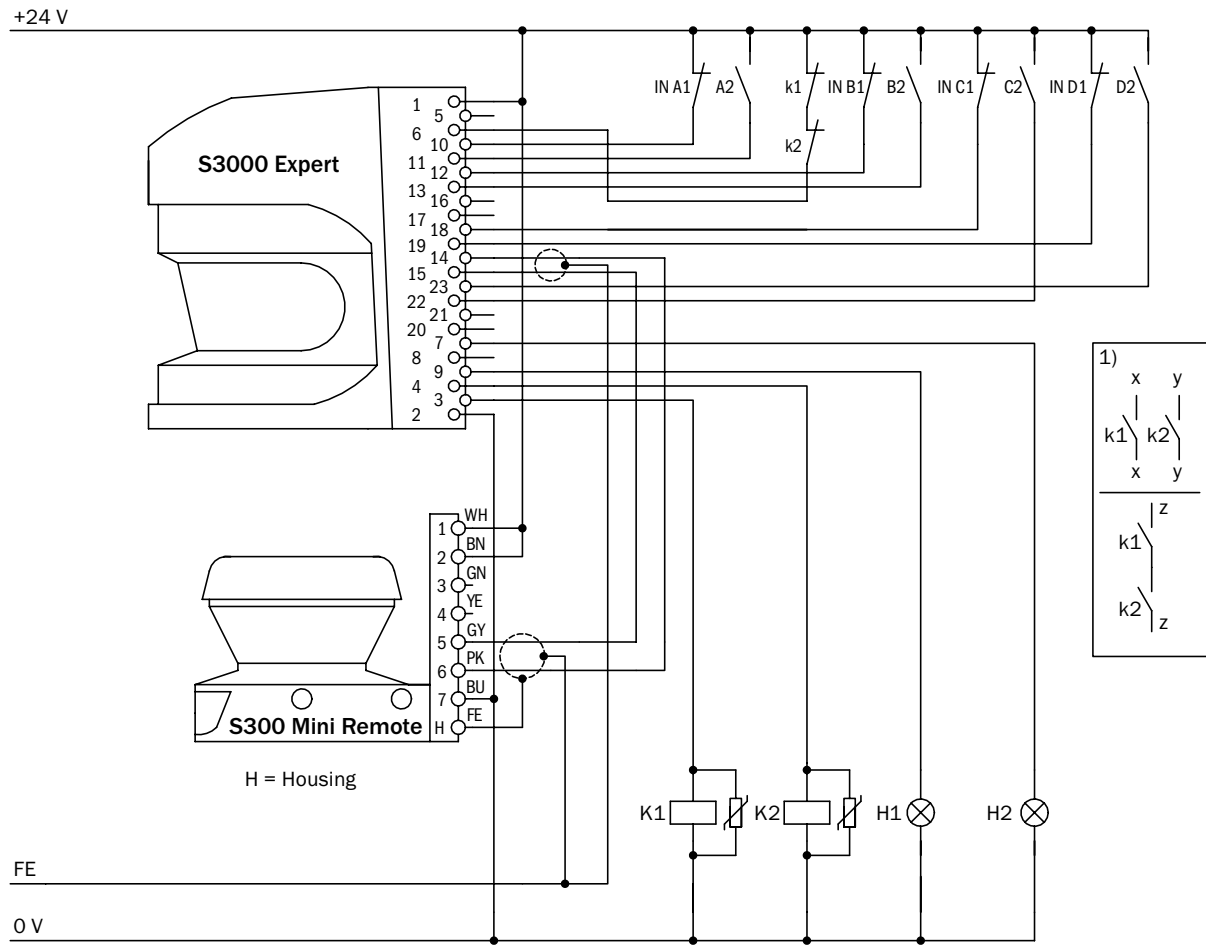
- Two S300 Mini Remote
- Protective field evaluation and switching via EFI using a Flexi Soft safety controller

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

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Protective field switching between an S3000 Expert and an S300 Mini Remote with static inputs



E112714/00/2014-03-06

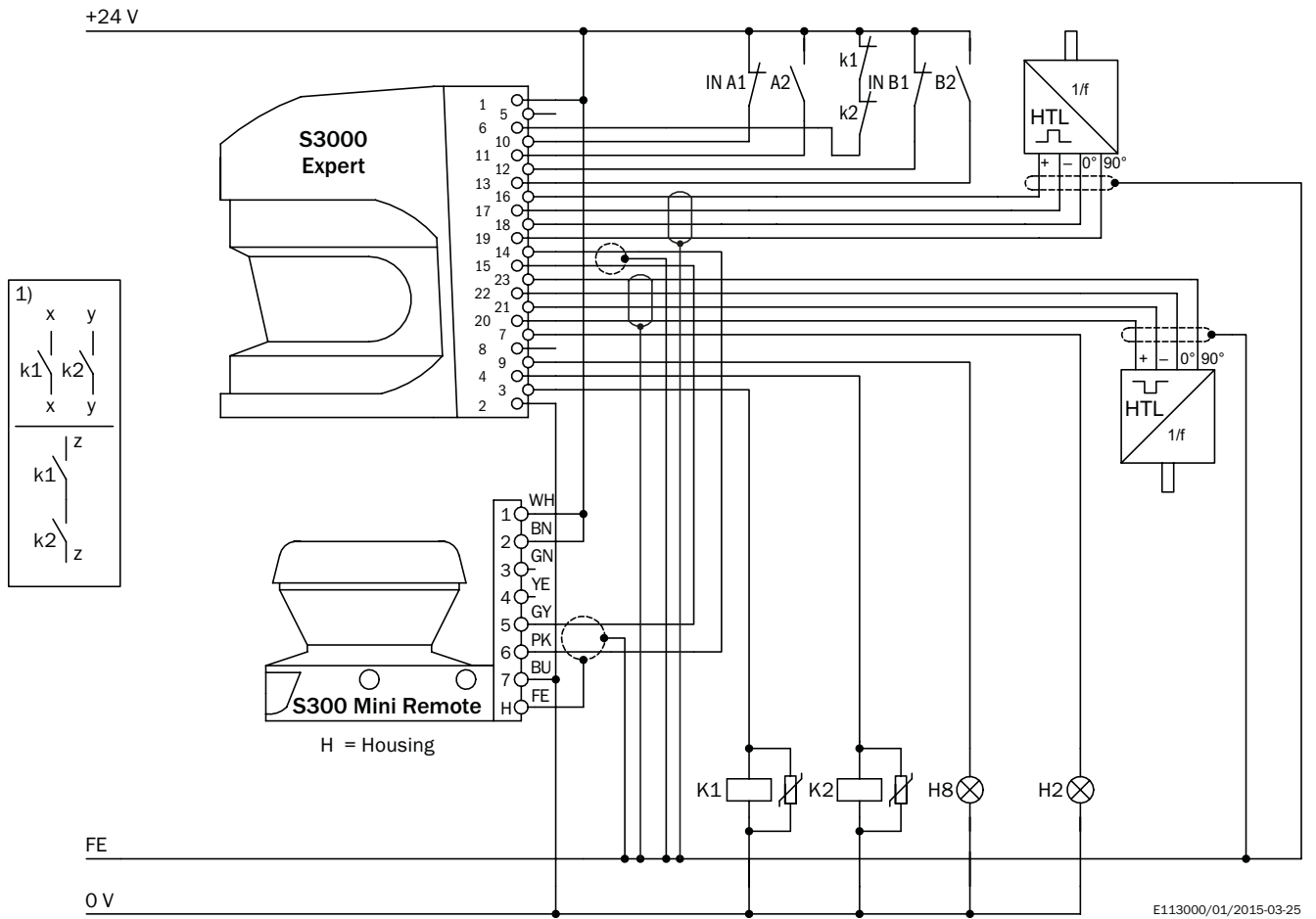
- S3000 Expert with S300 Mini Remote in an EFI system with relays/contactors
- Operating mode: without restart interlock, with external device monitoring
- Static protective field switching by the S3000 control inputs IN A to D. The protective fields affect the OSSDs on the S3000 Expert.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.



Protective field switching between an S3000 Expert and an S300 Mini Remote with static and dynamic inputs



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- S3000 Expert with S300 Mini Remote in an EFI system with relays/contactors
- Operating mode: without restart interlock with external device monitoring
- Direction of travel-dependent dynamic protective field switching using the incremental encoders C and D as well as static protective field switching using the control inputs A and B of the S3000. The protective fields affect the OSSDs on the S3000 Expert.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

Accessories required for commissioning





Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
Connecting cable	1	-	→ Plug connectors and cables
EFI partner device	1	-	→ Can be used only in the EFI system network, e.g. with a Flexi Soft safety controller or another S300 or S3000 safety laser scanner
Connection cable for configuration and diagnosis	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting bracket for rear mounting on wall or machine	1 piece	Mounting kit 1a	2034324
	Mounting bracket for rear mounting on wall or machine with protection of optics hood	1 piece	Mounting kit 1b	2034325
	Mounting bracket, adjustable lateral axis, only in conjunction with mounting kit 1a (2034324) or 1b (2034325)	1 piece	Mounting kit 2	2039302
	Mounting plate, adjustable longitudinal axis, only in conjunction with mounting kit 2 (2039302)	1 piece	Mounting kit 3	2039303


Dimensional drawings → [page F-218](#)

Connection systems

Plug connectors and cables


Connecting cables with female connector

- **Description:** extension cable S300 Mini Remote
- **Model:** shielded

Figure	Connection type	Cable length	Type	Part no.	
	Female connector, M12, 7-pin, straight	Cable	2.5 m	DOL-1SS2G2M5E15KM3	6042337
			5 m	DOL-1SS2G5M0E15KM3	6042338
			7.5 m	DOL-1SS2G7M5E15KM3	6042339
			10 m	DOL-1SS2G10ME15KM3	6042340
			15 m	DOL-1SS2G15ME15KM3	6042341
			20 m	DOL-1SS2G20ME15KM3	6042342



Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded

Figure	Connection type		Cable length	Type	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649

Connection cables with male connector and male connector

- **Model:** PVC, unshielded

Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574
				10 m	DSL-8U04G10M025KM1	6034575


Modules and gateways

EFI gateways

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Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098
	PROFINET PROFI-safe	UE4740-22H0000	1046978

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790


Reflectors and optics

Optics cloths

Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
 Illustration may differ	Scan finder, receiver to localize infrared scans	LS-80L	6020756


Cleaning agent

Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006

Spare parts

Figure	Description	Type	Part no.
	Spare part set optics cover with replacement seal and screws	Spare part set optics cover S100/S300/S300 Mini	2039248



Enhanced system solutions


Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

ECONOMICAL YET RELIABLE

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Additional information

Detailed technical data F-97

Ordering information F-99

Dimensional drawings F-100

Connection diagrams F-101

Recommended accessories F-102

Product description

The S300 Standard is the cost-effective solution for applications with freely definable protective fields. The new triple field mode allows three fields – one protective field and two warning fields – to be activated at the same time. The compact design means the safety laser scanners can easily be fit to any machine. The S300 Standard is ideally suited to horizontal and vertical

protection of hazardous and entrance areas. The configuration memory integrated into the system plug also enables simple commissioning and quick device replacement. CDS (Configuration & Diagnostic Software) can be used to define protective and warning fields in a convenient and standardized way on a PC or laptop.

At a glance

- Compact design
- 2 m or 3 m protective field range
- 270° scanning angle
- 1 field set
- Configuration memory integrated in the system plug
- EFI interface for safe SICK device communication
- Selectable resolution for hand, leg or body detection
- Contour as reference for vertical applications

Your benefits

- Simple integration due to compact design
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Unbeatable cost-effectiveness – 270° scanning angle allows complete application protection with only two scanners
- Safety engineering – with no loss of productivity
- Quick recommissioning via configuration memory
- Easy modular expansions, simple cabling and additional functions using SICK safety controllers with EFI
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions
- Simple alignment and safe operation in vertical mode

→ www.sick.com/S300_Standard

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Protective field range	2 m / 3 m (depending on type)
Warning field range	8 m (at 30 % reflectivity)
Distance measuring range	30 m
Type of field set	Triple field sets
Number of field sets	1
Number of monitoring cases	1
Scanning angle	270°
Resolution	
Protective field range 2 m	30 mm, 40 mm, 50 mm, 70 mm, configurable
Protective field range 3 m	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, configurable
Angular resolution	0.5°
Response time	80 ms ¹⁾
Protective field supplement	100 mm
Number of multiple samplings	2 ... 16, configurable
Delay of automatic reset	2 s ... 60 s, configurable

¹⁾ Depending on basic response time and multiple sampling.

Safety-related parameters

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	8.0 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

Restart interlock	✓
External device monitoring (EDM)	✓
Multiple sampling	✓
Contour as a reference	✓
Integrated configuration memory	✓
Measured data output	✓
Safe SICK device communication via EFI	✓

Interfaces

Connection type	System plug with or without connecting cable
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Configuration and diagnostics interface	RS-232
Transmission rate	38.4 kBaud
Data interface	RS-422
Transmission rate	≤ 500 kBaud
Safe SICK device communication via EFI	
Transmission rate	≤ 500 kBaud
Cable length	≤ 50 m
Conductor cross-section	0.22 mm ²
Fieldbus, industrial network	
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ¹⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾

¹⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	
Protective field range 2 m	II (EN 50178)
Protective field range 3 m	III (EN 50178)
Supply voltage V_s	24 V DC (16.8 V DC ... 30 V DC)
Power consumption	≤ 0.33 A ¹⁾ ≤ 1.7 A ²⁾
Universal I/Os	5 ³⁾
Inputs	
External device monitoring (EDM)	1 ⁴⁾
Reset/restart	1 ⁴⁾
Standby	1
Outputs	
Safety outputs (OSSD)	2 x 250 mA
Diagnostic outputs	3 x 100 mA ⁵⁾

¹⁾ At 24 V DC without output load.

²⁾ At 24 V DC including maximum output load.

³⁾ Freely programmable, e.g., input external device monitoring, input reset, contamination warning, reset required.

⁴⁾ Availability depends on the configuration of the universal I/Os.

⁵⁾ Freely programmable, e.g. warning field, contamination, reset required.

Mechanical data

Dimensions (W x H x D)	102 mm x 152 mm x 106 mm
Weight	1.2 kg
Housing material	Aluminum die cast
Housing color	RAL 1021 (yellow)
Optics cover material	Polycarbonat
Optics cover surface finish	Outside with scratch-resistant coating

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Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +50 °C
Storage temperature	-25 °C ... +50 °C
Vibration resistance	5 g, 10 Hz ... 150 Hz (EN 61496-1, CLC/TS 61496-3)
Shock resistance	10 g, 16 ms (EN 61496-1, CLC/TS 61496-3)

Other information

Type of light	Pulsed laser diode
Wave length	905 nm
Reflectivity	1.8 % ... > 1,000 %, reflectors
Laser class	1 (21 CFR 1040.10 and 1040.11, IEC 60825-1)

Ordering information

Items supplied S300:

- Safety laser scanner
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

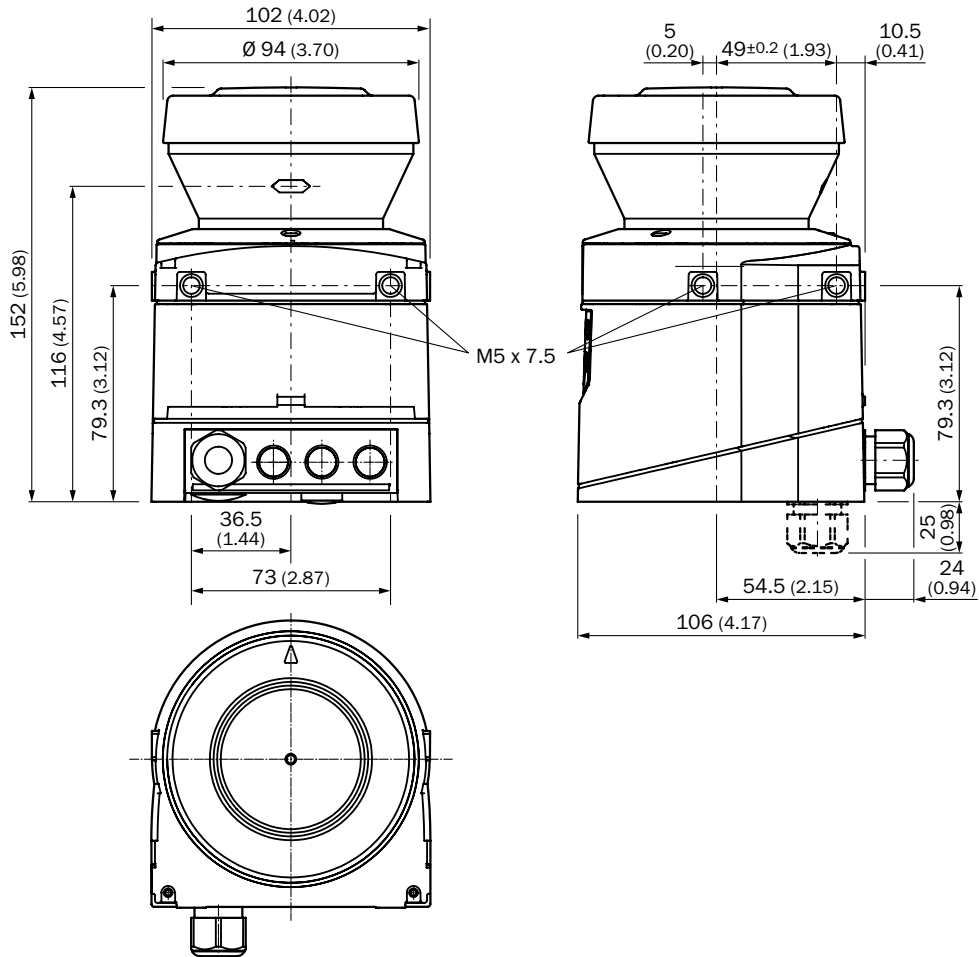
The system plug has to be ordered separately!

Protective field range	Type	Part no.
2 m	S30B-2011BA	1026820
3 m	S30B-3011BA	1056427

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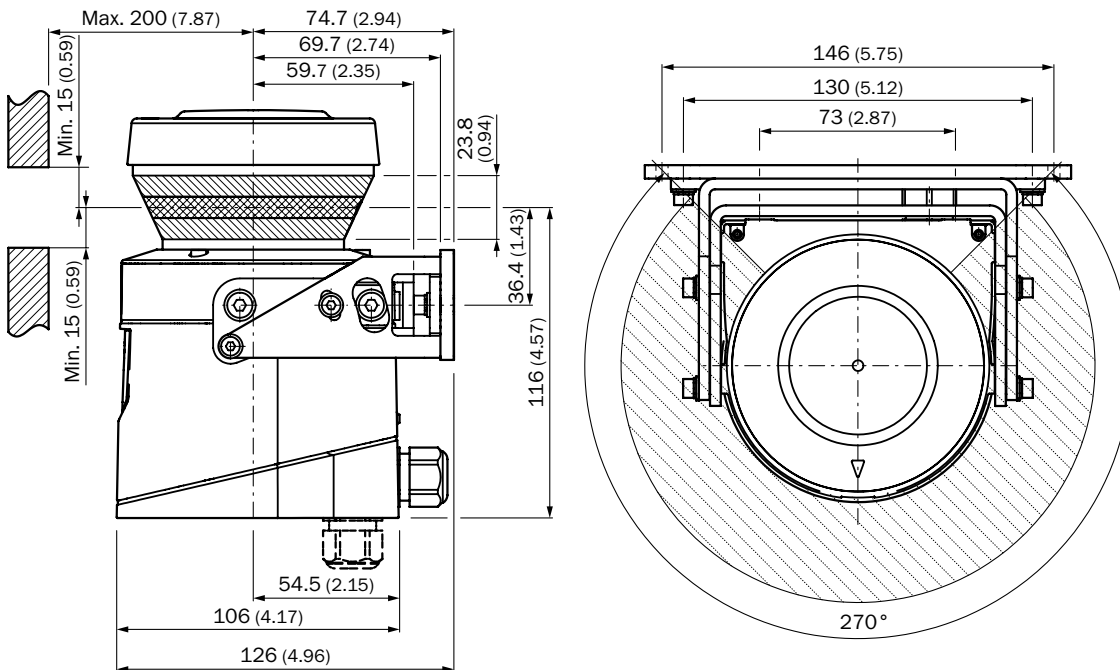
Dimensional drawings (Dimensions in mm (inch))

Laser scanner



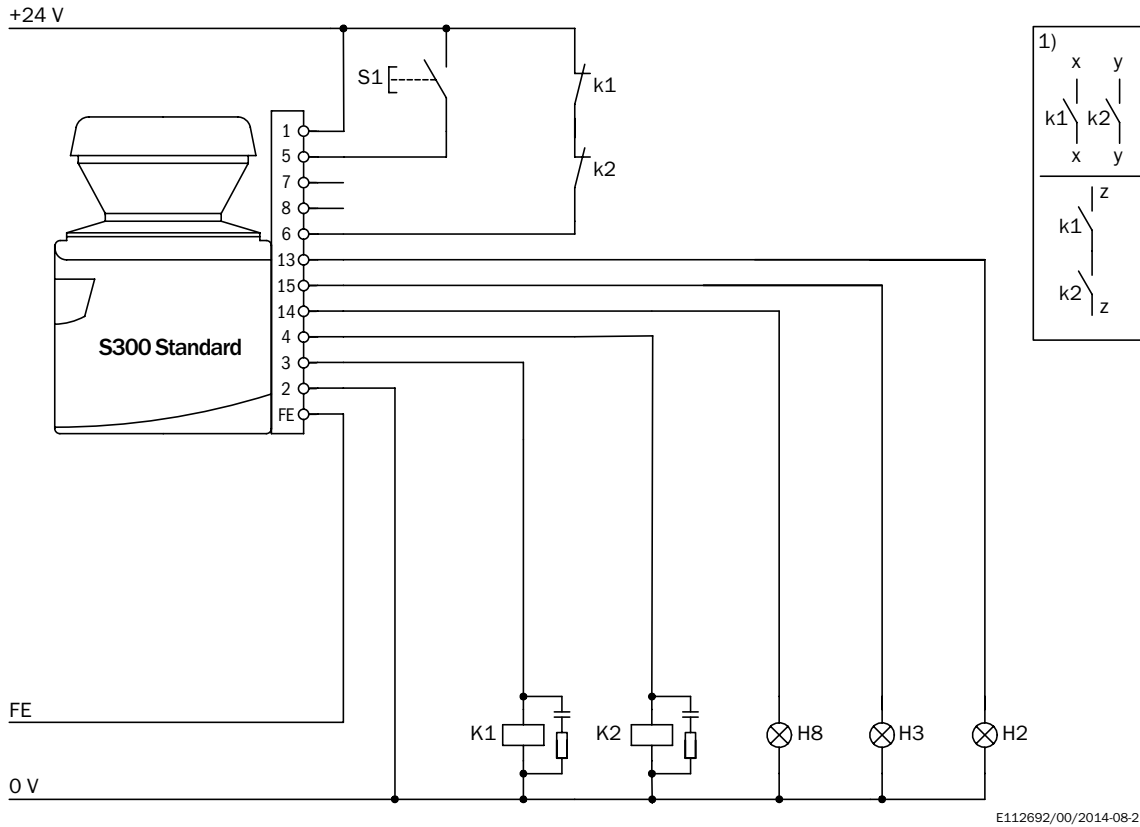
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Scan plane origin



Connection diagrams

S300 Standard with restart interlock and external device monitoring



E112692/00/2014-08-21

- S300 Standard in conjunction with relays/contactors
- Operating mode: with restart interlock and external device monitoring (EDM)

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and taking the risk analysis into account.

Accessories required for commissioning





Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
System plug	1	-	→ Plug connectors and cables
Connecting cable (only required for system plugs without cable)	1	-	→ Plug connectors and cables
Connection cable for configuration and diagnosis	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting bracket for rear mounting on wall or machine	1 piece	Mounting kit 1a	2034324
	Mounting bracket for rear mounting on wall or machine with protection of optics hood	1 piece	Mounting kit 1b	2034325
	Mounting bracket, adjustable lateral axis, only in conjunction with mounting kit 1a (2034324) or 1b (2034325)	1 piece	Mounting kit 2	2039302
	Mounting plate, adjustable longitudinal axis, only in conjunction with mounting kit 2 (2039302)	1 piece	Mounting kit 3	2039303



Dimensional drawings → page F-219

Connection systems

Plug connectors and cables


System plugs

- **Description:** Not for use of incremental encoders, integrated configuration storage

Figure	Model	Number of cores	Cable length	Items supplied	Type	Part no.
	Without cable	-	-	With 1 x cable gland M16, 1 x blanking plug M16, 2 x blanking plug M12	SX0B-A0000G	2032807
	Pre-assembled, PVC, unshielded	11-wire	5 m		SX0B-B1105G	2032859
			10 m		SX0B-B1110G	2032860
			14 m		SX0B-B1114G	2047875
			20 m		SX0B-B1120G	2032861



Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded

Figure	Connection type		Cable length	Type	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649



Connection cables with male connector and male connector

- **Model:** PVC, unshielded


Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574
				10 m	DSL-8U04G10M025KM1	6034575

Cables (ready to assemble)

- **Items supplied:** by the meter



Figure	Description	Model	Conductor cross-section	Cable diameter	Number of cores	Type	Part no.
	Fitting for EFI connections	PVC, shielded	1 x 2 x 0.22 mm ²	∅ 5.7 mm	2-wire	EFI connecting cable	6029448
			2 x 2.62 mm ² + 2 x 1.65 mm ²	∅ 12.2 mm	4-wire	Connection cable	6030756
			2 x 0.34 mm ² + 2 x 0.25 mm ²	∅ 6.9 mm	4-wire	Connection cable	6030921
	On 100 m reel	PVC, unshielded	0.56 mm ²	∅ 8.8 mm	15-wire	Connecting cable	6030795

Cable gland

Figure	Connection type	Description	Permitted cable diameter	Type	Part no.
	M12	For EFI connections and incremental encoders, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5308757
		For EFI connections and incremental encoders, for quick and easy shield connection, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5314772


Modules and gateways

EFI gateways

Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098
	PROFINET PROFI-safe	UE4740-22H0000	1046978

Power supply units and power cord connectors

F

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790


Reflectors and optics

Optics cloths


Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
 Illustration may differ	Scan finder, receiver to localize infrared scans	LS-80L	6020756


Cleaning agent

Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006

Spare parts

Figure	Description	Type	Part no.
	Spare part set optics cover with replacement seal and screws	Spare part set optics cover S100/S300/S300 Mini	2039248

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

OPTIMIZE PRODUCTION PROCESSES SAFELY

F



The image shows a yellow and black SICK S300 Advanced safety laser scanner. Above the main image are four small icons: a person walking, a person standing, a hand, and a vertical scanning beam with a '+EFI' label. Below the scanner image are the CE and UL US certification marks.

Additional information

- Detailed technical data F-107
- Ordering information F-109
- Dimensional drawings F-110
- Connection diagrams F-111
- Recommended accessories . . . F-112

Product description

The S300 Advanced meets exacting requirements and meets the demands of mobile and stationary applications. With up to four protective fields and eight warning fields, production processes can be optimized easily. The new triple field mode allows three fields – one protective field and two warning fields – to be activated at the same time. The use of the integrated EFI interface ex-

tends interoperability with other safety laser scanners and safety controllers from SICK. The configuration memory integrated into the system plug also enables simple commissioning and quick device replacement. CDS (Configuration & Diagnostic Software) can be used to define protective and warning fields in a convenient and standardized way on a PC or laptop.

At a glance

- Compact design
- 2 m or 3 m protective field range
- 270° scanning angle
- 4 switchable field sets
- Configuration memory integrated in the system plug
- EFI interface for safe SICK device communication
- Selectable resolution for hand, leg or body detection
- Contour as reference for vertical applications

Your benefits

- Simple integration due to compact design
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Unbeatable cost-effectiveness – 270° scanning angle allows complete application protection with only two scanners
- Safety engineering – with no loss of productivity
- Quick recommissioning via configuration memory
- Easy modular expansions, simple cabling and additional functions using SICK safety controllers with EFI
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions
- Simple alignment and safe operation in vertical mode

→ www.sick.com/S300_Advanced

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Protective field range	2 m / 3 m (depending on type)
Warning field range	8 m (at 30 % reflectivity)
Distance measuring range	30 m
Type of field set	Triple field sets
Number of field sets	4
Number of monitoring cases	4
Scanning angle	270°
Resolution	
Protective field range 2 m	30 mm, 40 mm, 50 mm, 70 mm, configurable
Protective field range 3 m	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, configurable
Angular resolution	0.5°
Response time	80 ms ¹⁾
Protective field supplement	100 mm
Number of multiple samplings	2 ... 16, configurable
Delay of automatic reset	2 s ... 60 s, configurable

¹⁾ Depending on basic response time and multiple sampling.

Safety-related parameters

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	8.0 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

Restart interlock	✓
External device monitoring (EDM)	✓
Multiple sampling	✓
Monitoring case switching	✓
Static protective field switching	✓
Contour as a reference	✓
Integrated configuration memory	✓
Measured data output	✓
Safe SICK device communication via EFI	✓

Interfaces

Connection type	System plug with or without connecting cable
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Configuration and diagnostics interface	RS-232
Transmission rate	38.4 kBaud
Data interface	RS-422
Transmission rate	≤ 500 kBaud
Safe SICK device communication via EFI	
Transmission rate	≤ 500 kBaud
Cable length	≤ 50 m
Conductor cross-section	0.22 mm ²
Fieldbus, industrial network	
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ¹⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾

¹⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	
Protective field range 2 m	II (EN 50178)
Protective field range 3 m	III (EN 50178)
Supply voltage V_s	24 V DC (16.8 V DC ... 30 V DC)
Power consumption	≤ 0.33 A ¹⁾ ≤ 1.7 A ²⁾
Universal I/Os	5 ³⁾
Inputs	
External device monitoring (EDM)	1 ⁴⁾
Reset/restart	1 ⁴⁾
Static control inputs	2
Static control inputs with EFI	5 ⁵⁾
Standby	1
Outputs	
Safety outputs (OSSD)	2 x 250 mA
Diagnostic outputs	3 x 100 mA ⁶⁾

¹⁾ At 24 V DC without output load.

²⁾ At 24 V DC including maximum output load.

³⁾ Freely programmable, e.g., input external device monitoring, input reset, contamination warning, reset required.

⁴⁾ Availability depends on the configuration of the universal I/Os.

⁵⁾ In combination with an EFI device (Flexi Soft or EFI gateway) five static control inputs are available. Otherwise two.

⁶⁾ Freely programmable, e.g. warning field, contamination, reset required.

Mechanical data

Dimensions (W x H x D)	102 mm x 152 mm x 106 mm
Weight	1.2 kg
Housing material	Aluminum die cast
Housing color	RAL 1021 (yellow)
Optics cover material	Polycarbonat
Optics cover surface finish	Outside with scratch-resistant coating

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +50 °C
Storage temperature	-25 °C ... +50 °C
Vibration resistance	5 g, 10 Hz ... 150 Hz (EN 61496-1, CLC/TS 61496-3)
Shock resistance	10 g, 16 ms (EN 61496-1, CLC/TS 61496-3)

Other information

Type of light	Pulsed laser diode
Wave length	905 nm
Reflectivity	1.8 % ... > 1,000 %, reflectors
Laser class	1 (21 CFR 1040.10 and 1040.11, IEC 60825-1)

Ordering information

Items supplied S300:

- Safety laser scanner
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

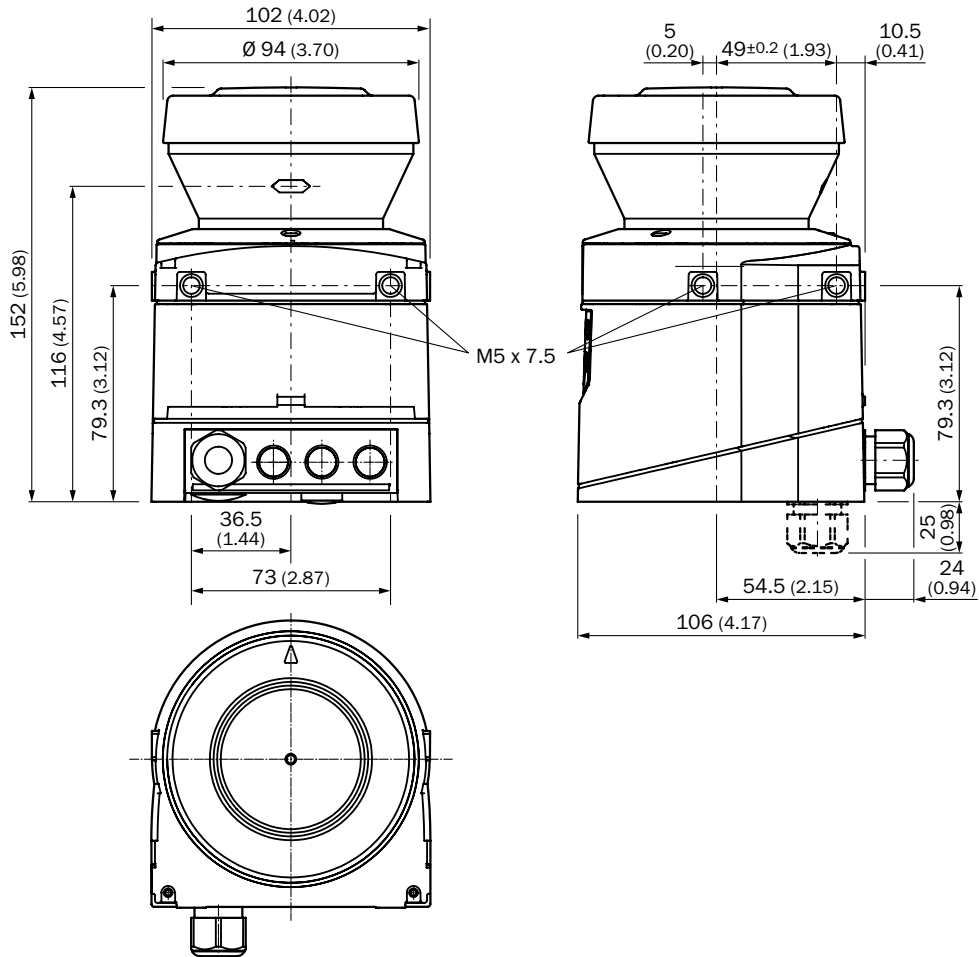
The system plug has to be ordered separately!

Protective field range	Type	Part no.
2 m	S30B-2011CA	1026821
3 m	S30B-3011CA	1056428

F

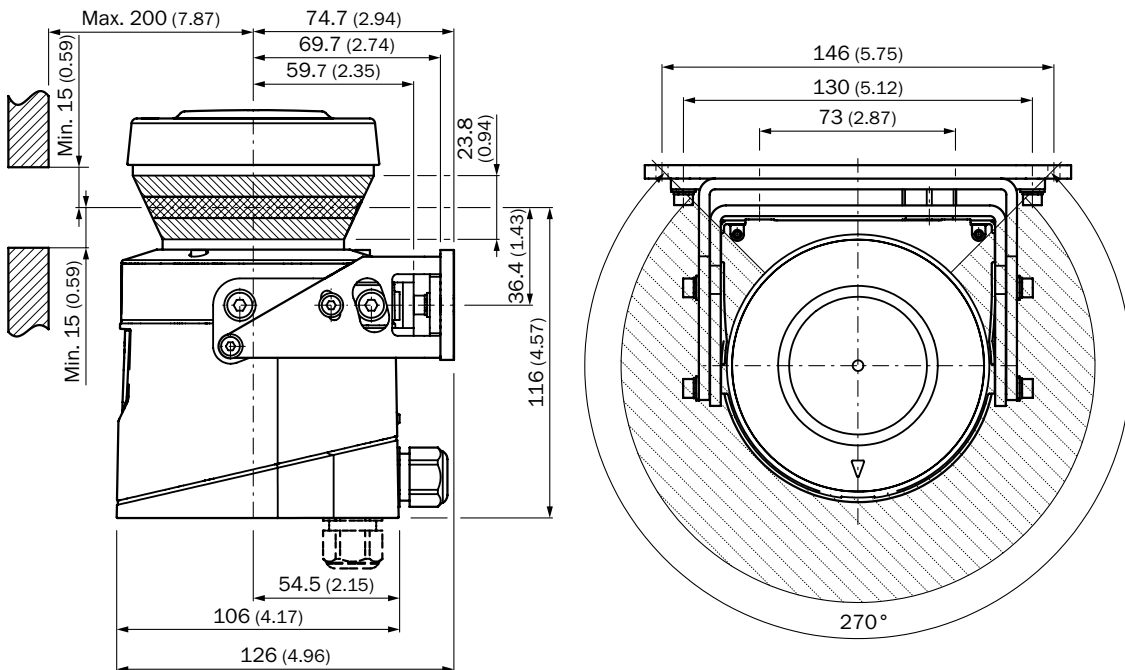
Dimensional drawings (Dimensions in mm (inch))

Laser scanner



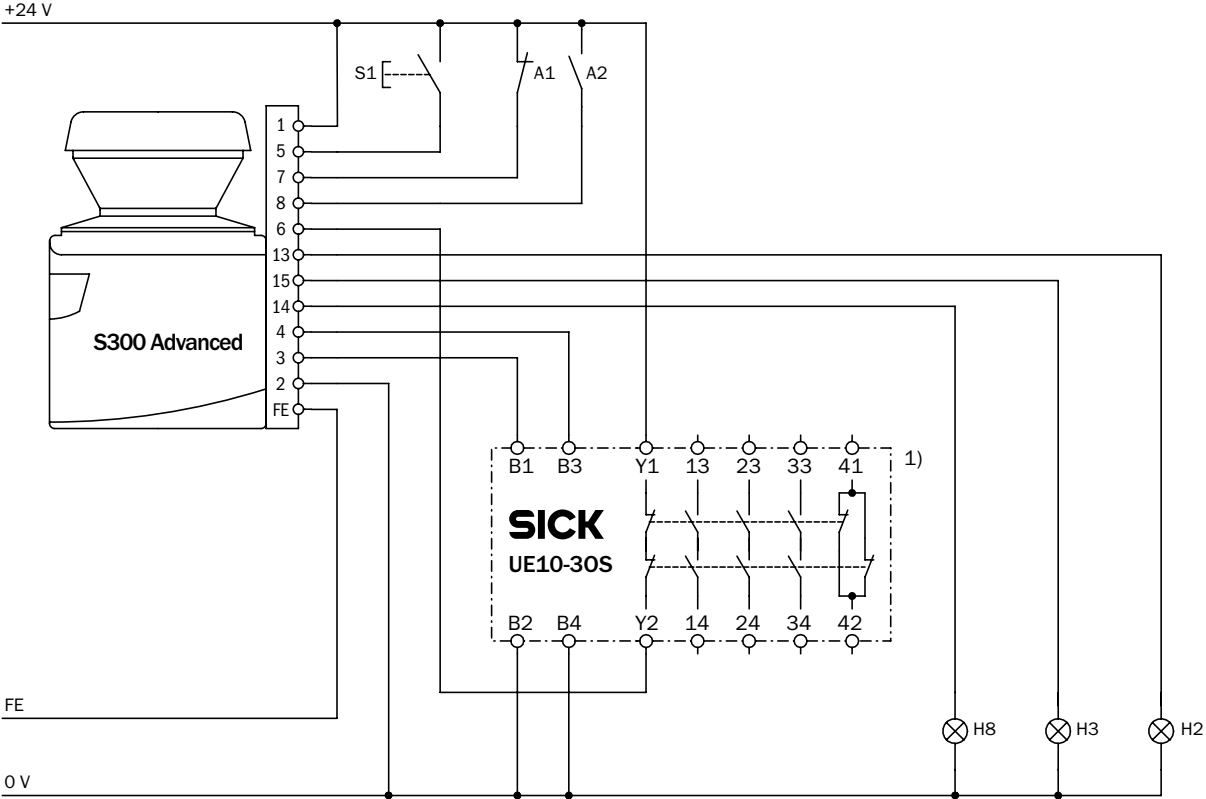
F

Scan plane origin



Connection diagrams

Protective field switching with one pair of static inputs



E112694/00/2014-08-21

- S300 Advanced in conjunction with UE10-30S
- Operating mode: with restart interlock and external device monitoring (EDM)
- Protective field switching by means of control input IN A

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and taking the risk analysis into account.



Accessories required for commissioning





Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
System plug	1	-	→ Plug connectors and cables
Connecting cable (only required for system plugs without cable)	1	-	→ Plug connectors and cables
Connection cable for configuration and diagnosis	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting bracket for rear mounting on wall or machine	1 piece	Mounting kit 1a	2034324
	Mounting bracket for rear mounting on wall or machine with protection of optics hood	1 piece	Mounting kit 1b	2034325
	Mounting bracket, adjustable lateral axis, only in conjunction with mounting kit 1a (2034324) or 1b (2034325)	1 piece	Mounting kit 2	2039302
	Mounting plate, adjustable longitudinal axis, only in conjunction with mounting kit 2 (2039302)	1 piece	Mounting kit 3	2039303



Dimensional drawings → [page F-219](#)

Connection systems

Plug connectors and cables

System plugs

- **Description:** Not for use of incremental encoders, integrated configuration storage

Figure	Model	Number of cores	Cable length	Items supplied	Type	Part no.
	Without cable	-	-	With 1 x cable gland M16, 1 x blanking plug M16, 2 x blanking plug M12	SX0B-A0000G	2032807
	Pre-assembled, PVC, unshielded	15-wire	5 m		SX0B-B1505G	2034264
			10 m		SX0B-B1510G	2034265



Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded

Figure	Connection type		Cable length	Type	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649



Connection cables with male connector and male connector

- **Model:** PVC, unshielded


Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574
				10 m	DSL-8U04G10M025KM1	6034575

Cables (ready to assemble)

- **Items supplied:** by the meter

Figure	Description	Model	Conductor cross-section	Cable diameter	Number of cores	Type	Part no.
	Fitting for EFI connections	PVC, shielded	1 x 2 x 0.22 mm ²	∅ 5.7 mm	2-wire	EFI connecting cable	6029448
			2 x 2.62 mm ² + 2 x 1.65 mm ²	∅ 12.2 mm	4-wire	Connection cable	6030756
			2 x 0.34 mm ² + 2 x 0.25 mm ²	∅ 6.9 mm	4-wire	Connection cable	6030921
	On 100 m reel	PVC, unshielded	0.56 mm ²	∅ 8.8 mm	15-wire	Connecting cable	6030795

Cable gland

Figure	Connection type	Description	Permitted cable diameter	Type	Part no.
	M12	For EFI connections and incremental encoders, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5308757
		For EFI connections and incremental encoders, for quick and easy shield connection, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5314772


Modules and gateways

EFI gateways

Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098
	PROFINET PROFI-safe	UE4740-22H0000	1046978

Power supply units and power cord connectors

F

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

Reflectors and optics

Optics cloths

Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
 Illustration may differ	Scan finder, receiver to localize infrared scans	LS-80L	6020756


Cleaning agent

Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006

Spare parts

Figure	Description	Type	Part no.
	Spare part set optics cover with replacement seal and screws	Spare part set optics cover S100/S300/S300 Mini	2039248

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

HIGH-PERFORMANCE – THE RIGHT PROTECTION FOR ANY SPEED

F



The image shows a yellow and black SICK S300 Professional safety laser scanner. Above the scanner are four small icons: a person walking, a person walking with a red dashed line indicating a protective field, a hand reaching towards a red dashed line, and a close-up of the scanner's lens with a '+EFI' label.

CE c UL us

Additional information

Detailed technical data F-117
 Ordering information F-119
 Dimensional drawings F-120
 Connection diagrams F-121
 Recommended accessories F-123

Product description

The S300 Professional meets exacting requirements and meets the demands of mobile applications thanks to its extensive functionality. Up to eight protective fields can be configured. The new triple field mode allows three fields – one protective field and two warning fields – to be activated at the same time. The use of the integrated EFI interface extends interoperability

with other safety laser scanners and safety controllers from SICK. This means automatic guided vehicles (AGVs) can be given all around protection and matching safety fields, regardless of speed. The configuration memory integrated into the system plug also enables simple commissioning and quick device replacement.

At a glance

- Compact design
- 2 m or 3 m protective field range
- 270° scanning angle
- 8 switchable field sets
- Configuration memory integrated in the system plug
- EFI interface for safe SICK device communication
- Incremental encoder inputs for speed-dependent field switching
- Measured data output via RS-422

Your benefits

- Simple integration due to compact design
- Unbeatable cost-effectiveness – 270° scanning angle allows complete application protection with only two scanners
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Variety of field sets guarantees safety and productivity when protecting vehicles or moving machine parts
- Quick recommissioning via configuration memory
- Easy modular expansions, simple cabling and additional functions using SICK safety controllers with EFI
- The correct protective field at any speed avoids unnecessary stops.
- Personnel protection and navigation support in one device

→ www.sick.com/S300_Professional

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Protective field range	2 m / 3 m (depending on type)
Warning field range	8 m (at 30 % reflectivity)
Distance measuring range	30 m
Type of field set	Triple field sets
Number of field sets	8
Number of monitoring cases	32 ¹⁾
Scanning angle	270°
Resolution	
Protective field range 2 m	30 mm, 40 mm, 50 mm, 70 mm, configurable
Protective field range 3 m	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, configurable
Angular resolution	0.5°
Response time	80 ms ²⁾
Protective field supplement	100 mm
Number of multiple samplings	2 ... 16, configurable
Delay of automatic reset	2 s ... 60 s, configurable

¹⁾ In combination with an additional static input via EFI or using the dynamic inputs on the device. Otherwise eight.

²⁾ Depending on basic response time and multiple sampling.

Safety-related parameters

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	8.0 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

Restart interlock	✓
External device monitoring (EDM)	✓
Multiple sampling	✓
Monitoring case switching	✓
Static protective field switching	✓
Dynamic protective field switching	✓
Contour as a reference	✓
Integrated configuration memory	✓
Measured data output	✓
Safe SICK device communication via EFI	✓

Interfaces

Connection type	System plug with or without connecting cable
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Configuration and diagnostics interface	RS-232
Transmission rate	38.4 kBaud
Data interface	RS-422
Transmission rate	≤ 500 kBaud
Safe SICK device communication via EFI	
Transmission rate	≤ 500 kBaud
Cable length	≤ 50 m
Conductor cross-section	0.22 mm ²
Fieldbus, industrial network	
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ¹⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾

¹⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	
Protective field range 2 m	II (EN 50178)
Protective field range 3 m	III (EN 50178)
Supply voltage V_s	24 V DC (16.8 V DC ... 30 V DC)
Power consumption	≤ 0.33 A ¹⁾ ≤ 1.7 A ²⁾
Universal I/Os	5 ³⁾
Inputs	
External device monitoring (EDM)	1 ⁴⁾
Reset/restart	1 ⁴⁾
Static control inputs	3 ⁵⁾
Static control inputs with EFI	5 ⁶⁾
Dynamic control inputs (incremental encoder)	2 ⁷⁾
Standby	1
Outputs	
Safety outputs (OSSD)	2 x 250 mA
Diagnostic outputs	3 x 100 mA ⁸⁾

¹⁾ At 24 V DC without output load.

²⁾ At 24 V DC including maximum output load.

³⁾ Freely programmable, e.g., input external device monitoring, input reset, contamination warning, reset required.

⁴⁾ Availability depends on the configuration of the universal I/Os.

⁵⁾ 2+1; additional input only available if reset and reset required are not used.

⁶⁾ In combination with an EFI device (Flexi Soft or EFI gateway) five static control inputs are available. Otherwise three.

⁷⁾ Two of the static switching signals can be used either as dynamic or as static switching signals.

⁸⁾ Freely programmable, e.g. warning field, contamination, reset required.



Mechanical data

Dimensions (W x H x D)	102 mm x 152 mm x 106 mm
Weight	1.2 kg
Housing material	Aluminum die cast
Housing color	RAL 1021 (yellow)
Optics cover material	Polycarbonat
Optics cover surface finish	Outside with scratch-resistant coating

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +50 °C
Storage temperature	-25 °C ... +50 °C
Vibration resistance	5 g, 10 Hz ... 150 Hz (EN 61496-1, CLC/TS 61496-3)
Shock resistance	10 g, 16 ms (EN 61496-1, CLC/TS 61496-3)

Other information

Type of light	Pulsed laser diode
Wave length	905 nm
Reflectivity	1.8 % ... > 1,000 %, reflectors
Laser class	1 (21 CFR 1040.10 and 1040.11, IEC 60825-1)

Ordering information

Items supplied S300:

- Safety laser scanner
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

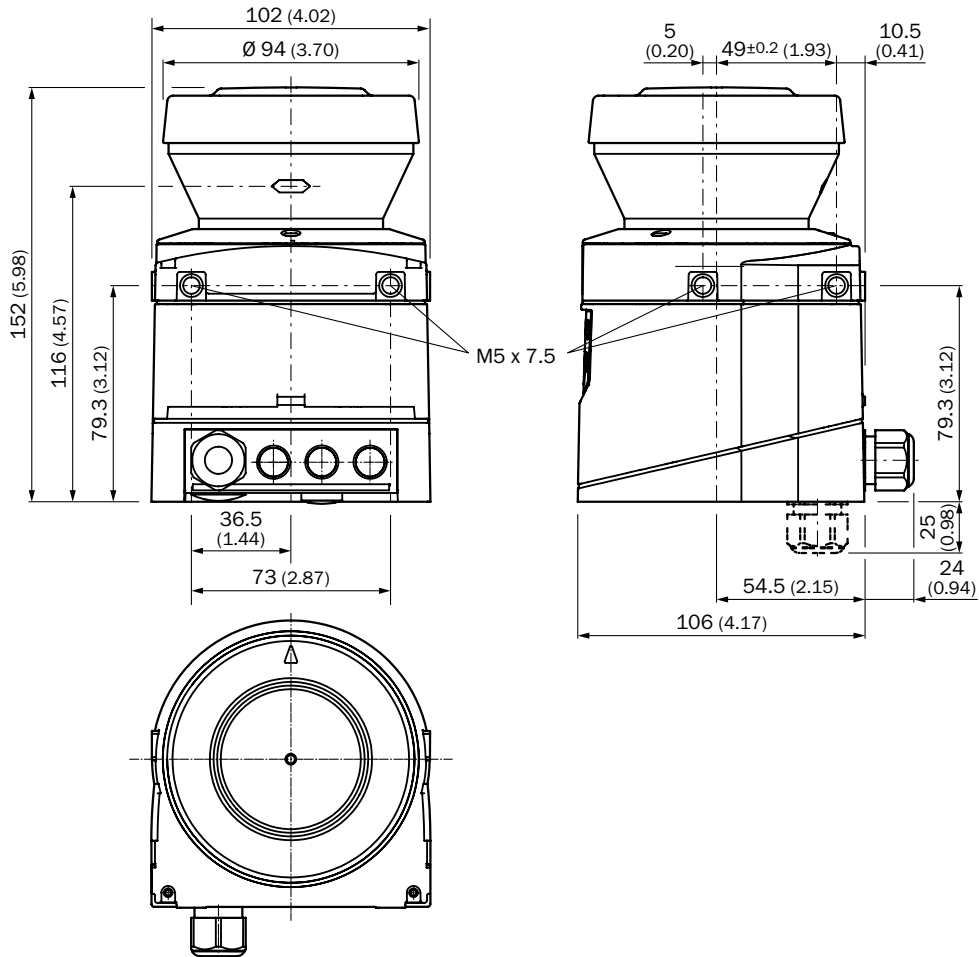
The system plug has to be ordered separately!

Protective field range	Type	Part no.
2 m	S30B-2011DA	1026822
3 m	S30B-3011DA	1056429

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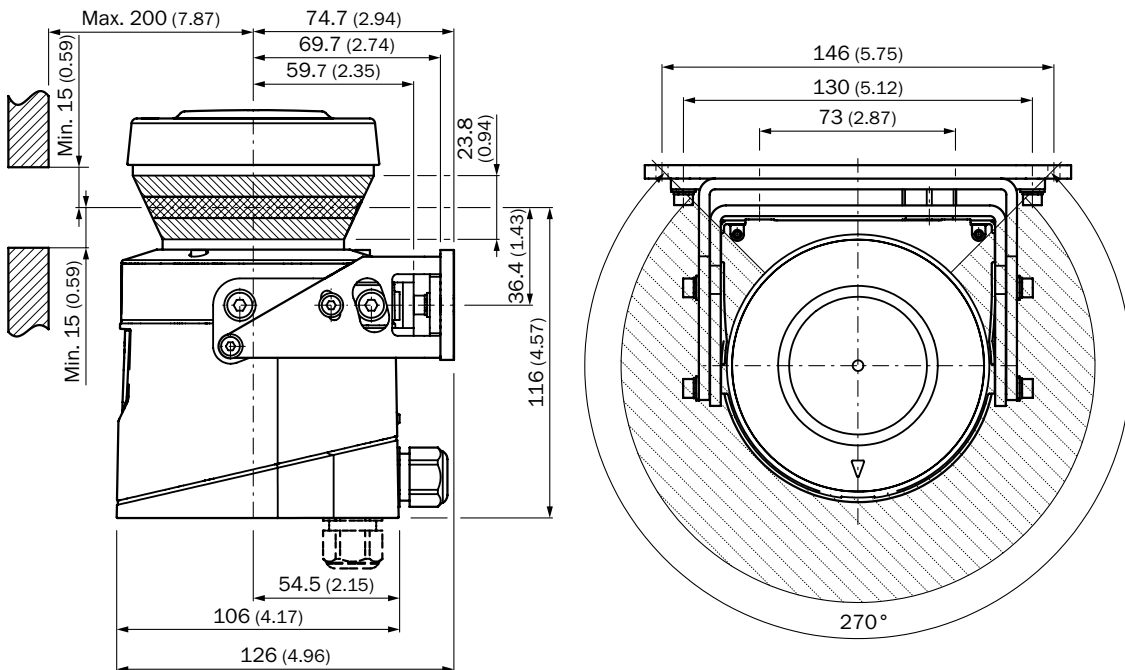
Dimensional drawings (Dimensions in mm (inch))

Laser scanner



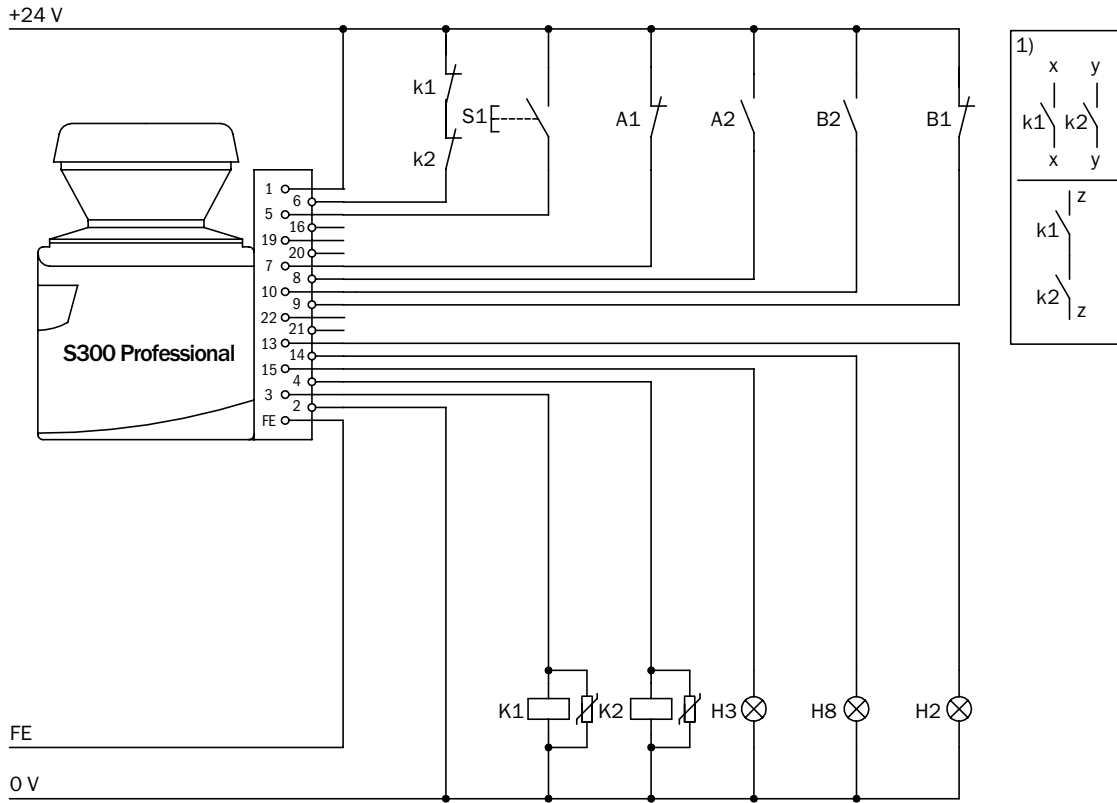
F

Scan plane origin



Connection diagrams

S300 Professional: protective field switching with two static inputs



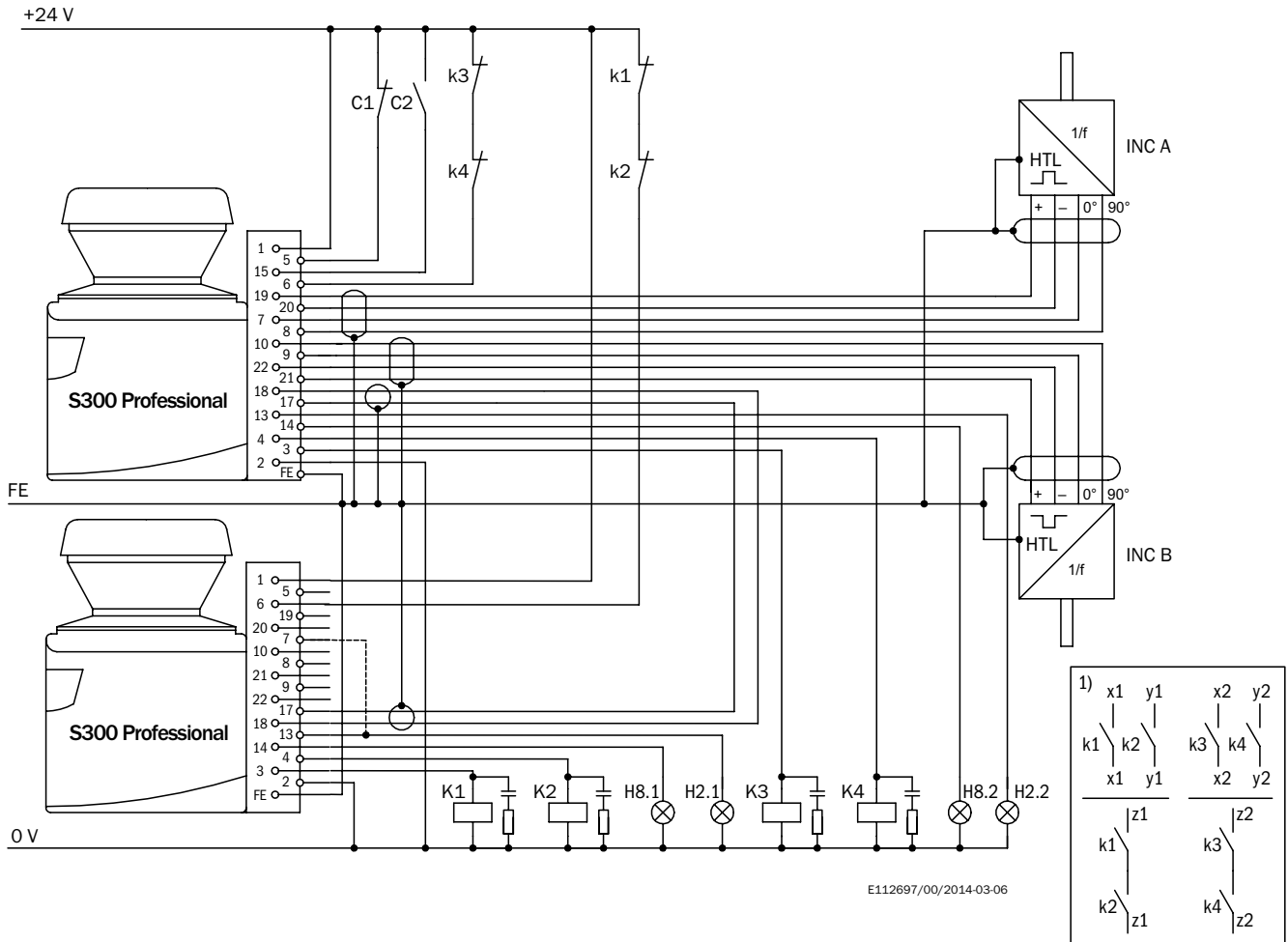
E113153/01/2015-03-25

- S300 Professional in conjunction with relays/contactors
- Operating mode: with restart interlock and external device monitoring (EDM)
- Protective field switching using control input IN A and IN B

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and taking the risk analysis into account.

Protective field switching between two S300 with static and dynamic inputs



- S300 Professional with S300 Professional in host/guest connection with relays/contactors
- Operating mode: with restart interlock and external device monitoring
- Dynamic protective field switching by the incremental encoders A and B on the host
- Static protective field switching using the control input IN C on the host
- The protective fields affect the related OSSDs on host or guest

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and taking the risk analysis into account.

F

Accessories required for commissioning





Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
System plug	1	-	→ Plug connectors and cables
Connecting cable (only required for system plugs without cable)	1	-	→ Plug connectors and cables
Connection cable for configuration and diagnosis	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets



Figure	Description	Packing unit	Type	Part no.
	Mounting bracket for rear mounting on wall or machine	1 piece	Mounting kit 1a	2034324
	Mounting bracket for rear mounting on wall or machine with protection of optics hood	1 piece	Mounting kit 1b	2034325
	Mounting bracket, adjustable lateral axis, only in conjunction with mounting kit 1a (2034324) or 1b (2034325)	1 piece	Mounting kit 2	2039302
	Mounting plate, adjustable longitudinal axis, only in conjunction with mounting kit 2 (2039302)	1 piece	Mounting kit 3	2039303

Dimensional drawings → [page F-219](#)

Connection systems

Plug connectors and cables

System plugs

Figure	Description	Model	Number of cores	Cable length	Items supplied	Type	Part no.
	For use of incremental encoders, integrated configuration storage	Without cable	-	-	With 1 x cable gland M16, 2 x cable gland M12, 1 x blanking plug M16, 6 x blanking plug M12	SX0B-A0000J	2032856
		Pre-assembled, PVC, unshielded	11-wire	5 m		SX0B-B1105J	2032857
				10 m		SX0B-B1110J	2032858
	Not for use of incremental encoders, integrated configuration storage	Without cable	-	-	With 1 x cable gland M16, 1 x blanking plug M16, 2 x blanking plug M12	SX0B-A0000G	2032807
		Pre-assembled, PVC, unshielded	15-wire	5 m		SX0B-B1505G	2034264
				10 m		SX0B-B1510G	2034265



Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded

Figure	Connection type		Cable length	Type	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649



Connection cables with male connector and male connector

- **Model:** PVC, unshielded


Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574
				10 m	DSL-8U04G10M025KM1	6034575

Cables (ready to assemble)

- **Items supplied:** by the meter

Figure	Description	Model	Conductor cross-section	Cable diameter	Number of cores	Type	Part no.
	Fitting for EFI connections	PVC, shielded	1 x 2 x 0.22 mm ²	∅ 5.7 mm	2-wire	EFI connecting cable	6029448
			2 x 2.62 mm ² + 2 x 1.65 mm ²	∅ 12.2 mm	4-wire	Connection cable	6030756
			2 x 0.34 mm ² + 2 x 0.25 mm ²	∅ 6.9 mm	4-wire	Connection cable	6030921
	On 100 m reel	PVC, unshielded	0.56 mm ²	∅ 8.8 mm	15-wire	Connecting cable	6030795






Cable gland

Figure	Connection type	Description	Permitted cable diameter	Type	Part no.
	M12	For EFI connections and incremental encoders, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5308757
		For EFI connections and incremental encoders, for quick and easy shield connection, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5314772


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Modules and gateways

EFI gateways

Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098
	PROFINET PROFI-safe	UE4740-22H0000	1046978

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790


Reflectors and optics

Optics cloths

Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
 Illustration may differ	Scan finder, receiver to localize infrared scans	LS-80L	6020756


Cleaning agent

Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006

Spare parts

Figure	Description	Type	Part no.
	Spare part set optics cover with replacement seal and screws	Spare part set optics cover S100/S300/S300 Mini	2039248

Enhanced system solutions


Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

F

F

FLEXIBLE AND PIONEERING – FOR CHALLENGING APPLICATIONS

F



The image shows a yellow and black SICK S300 Expert safety laser scanner. Above the main image are four small icons: a person walking, a person walking with a red dotted line indicating a protective field, a hand reaching towards a red dotted line, and a close-up of the scanner's top with a '+EFI' label.

CE c UL us

Additional information

Detailed technical data F-129
 Ordering information F-131
 Dimensional drawings F-132
 Connection diagrams F-133
 Recommended accessories F-134

Product description

The S300 Expert meets exacting requirements and provides flexibility to meet the demands of mobile applications. Up to 16 protective fields can be configured. The new triple field mode allows three fields - one protective field and two warning fields - to be activated at the same time. The use of the integrated EFI interface extends interoperability with other safety laser scanners and safety controllers from SICK. This

means automatic guided vehicles (AGVs) can be given all around protection and matching safety fields, regardless of speed. The configuration memory integrated into the system plug also enables simple commissioning and quick device replacement. The built-in CM functionality combines personnel protection with surrounding contour recording. The system opens up cutting edge solutions for logistics and production applications.

At a glance

- Compact design
- 2 m or 3 m protective field range
- 270° scanning angle
- 16 switchable field sets
- Configuration memory integrated in the system plug
- EFI interface for safe SICK device communication
- Incremental encoder inputs for speed-dependent field switching
- Extended measured data output via RS-422 with landmark recognition

Your benefits

- Simple integration due to compact design
- Unbeatable cost-effectiveness – 270° scanning angle allows complete application protection with only two scanners
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Variety of field sets ensures safety and productivity when protecting vehicles or moving machine parts
- Quick recommissioning via configuration memory
- Easy modular expansions, simple cabling and additional functions using SICK safety controllers with EFI
- The correct protective field at any speed avoids unnecessary stops.
- Personnel protection and navigation support in one device

→ www.sick.com/S300_Expert

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Protective field range	2 m / 3 m (depending on type)
Warning field range	8 m (at 30 % reflectivity)
Distance measuring range	30 m
Type of field set	Triple field sets
Number of field sets	16
Number of monitoring cases	32 ¹⁾
Scanning angle	270°
Resolution	
Protective field range 2 m	30 mm, 40 mm, 50 mm, 70 mm, configurable
Protective field range 3 m	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, configurable
Angular resolution	0.5°
Response time	80 ms ²⁾
Protective field supplement	100 mm
Number of multiple samplings	2 ... 16, configurable
Delay of automatic reset	2 s ... 60 s, configurable

¹⁾ In combination with an additional static input via EFI or using the dynamic inputs on the device. Otherwise eight.

²⁾ Depending on basic response time and multiple sampling.

Safety-related parameters

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	8.0 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

Restart interlock	✓
External device monitoring (EDM)	✓
Multiple sampling	✓
Monitoring case switching	✓
Static protective field switching	✓
Dynamic protective field switching	✓
Contour as a reference	✓
Integrated configuration memory	✓
Measured data output	✓
Extended measured data output (CMS)	✓
Safe SICK device communication via EFI	✓

Interfaces

Connection type	System plug with or without connecting cable
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Configuration and diagnostics interface	RS-232
Transmission rate	38.4 kBaud
Data interface	RS-422
Transmission rate	≤ 500 kBaud
Safe SICK device communication via EFI	
Transmission rate	≤ 500 kBaud
Cable length	≤ 50 m
Conductor cross-section	0.22 mm ²
Fieldbus, industrial network	
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ¹⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾

¹⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	
Protective field range 2 m	II (EN 50178)
Protective field range 3 m	III (EN 50178)
Supply voltage V_s	24 V DC (16.8 V DC ... 30 V DC)
Power consumption	≤ 0.33 A ¹⁾ ≤ 1.7 A ²⁾
Universal I/Os	5 ³⁾
Inputs	
External device monitoring (EDM)	1 ⁴⁾
Reset/restart	1 ⁴⁾
Static control inputs	3 ⁵⁾
Static control inputs with EFI	5 ⁶⁾
Dynamic control inputs (incremental encoder)	2 ⁷⁾
Standby	1
Outputs	
Safety outputs (OSSD)	2 x 250 mA
Diagnostic outputs	3 x 100 mA ⁸⁾

¹⁾ At 24 V DC without output load.

²⁾ At 24 V DC including maximum output load.

³⁾ Freely programmable, e.g., input external device monitoring, input reset, contamination warning, reset required.

⁴⁾ Availability depends on the configuration of the universal I/Os.

⁵⁾ 2+1; additional input only available if reset and reset required are not used.

⁶⁾ In combination with an EFI device (Flexi Soft or EFI gateway) five static control inputs are available. Otherwise three.

⁷⁾ Two of the static switching signals can be used either as dynamic or as static switching signals.

⁸⁾ Freely programmable, e.g. warning field, contamination, reset required.



Mechanical data

Dimensions (W x H x D)	102 mm x 152 mm x 106 mm
Weight	1.2 kg
Housing material	Aluminum die cast
Housing color	RAL 1021 (yellow)
Optics cover material	Polycarbonat
Optics cover surface finish	Outside with scratch-resistant coating

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +50 °C
Storage temperature	-25 °C ... +50 °C
Vibration resistance	5 g, 10 Hz ... 150 Hz (EN 61496-1, CLC/TS 61496-3)
Shock resistance	10 g, 16 ms (EN 61496-1, CLC/TS 61496-3)

Other information

Type of light	Pulsed laser diode
Wave length	905 nm
Reflectivity	1.8 % ... > 1,000 %, reflectors
Laser class	1 (21 CFR 1040.10 and 1040.11, IEC 60825-1)

Ordering information

Items supplied S300:

- Safety laser scanner
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

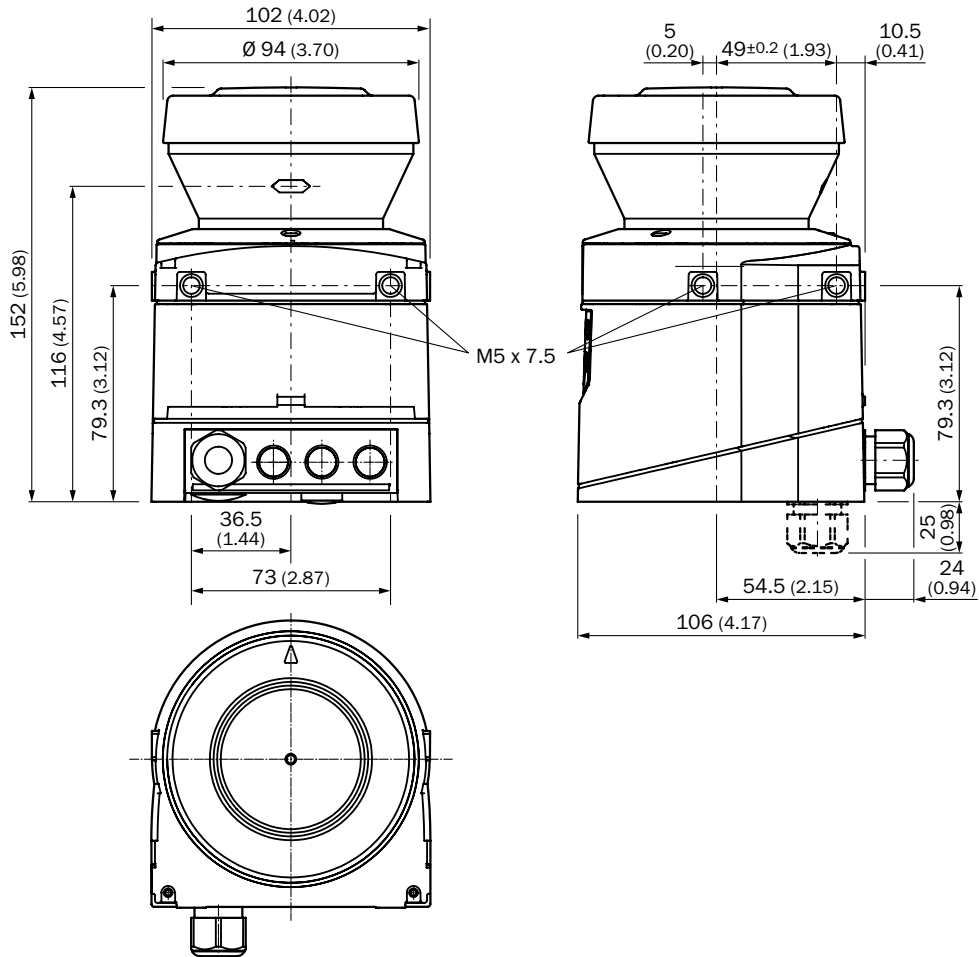
The system plug has to be ordered separately!

Protective field range	Type	Part no.
2 m	S30B-2011GB	1050193
3 m	S30B-3011GB	1057641

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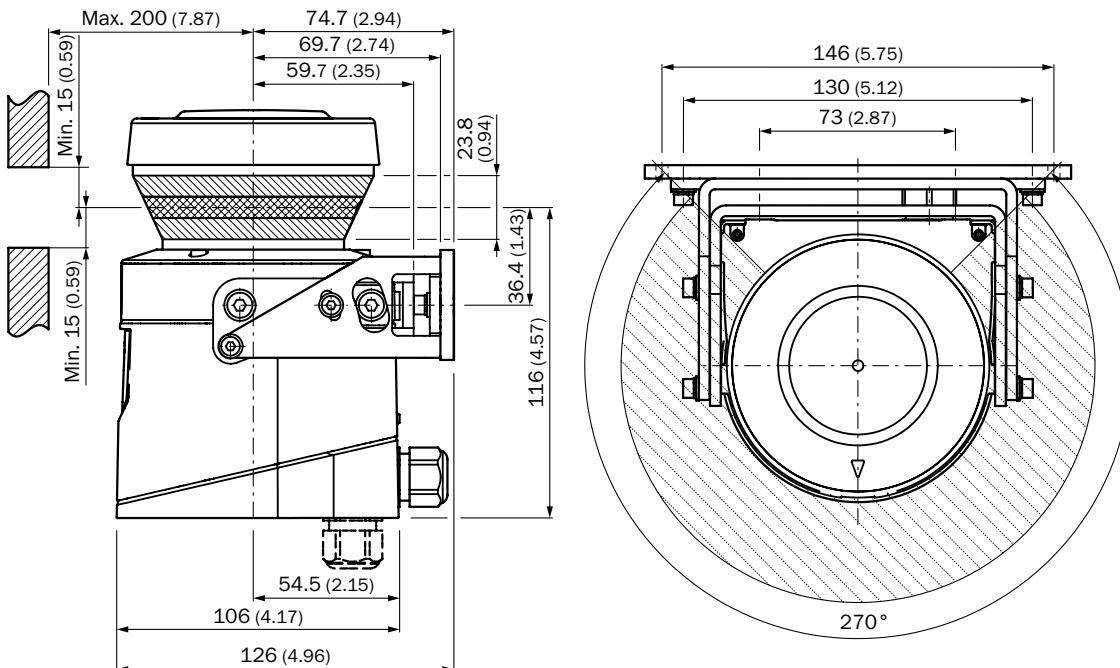
Dimensional drawings (Dimensions in mm (inch))

Laser scanner



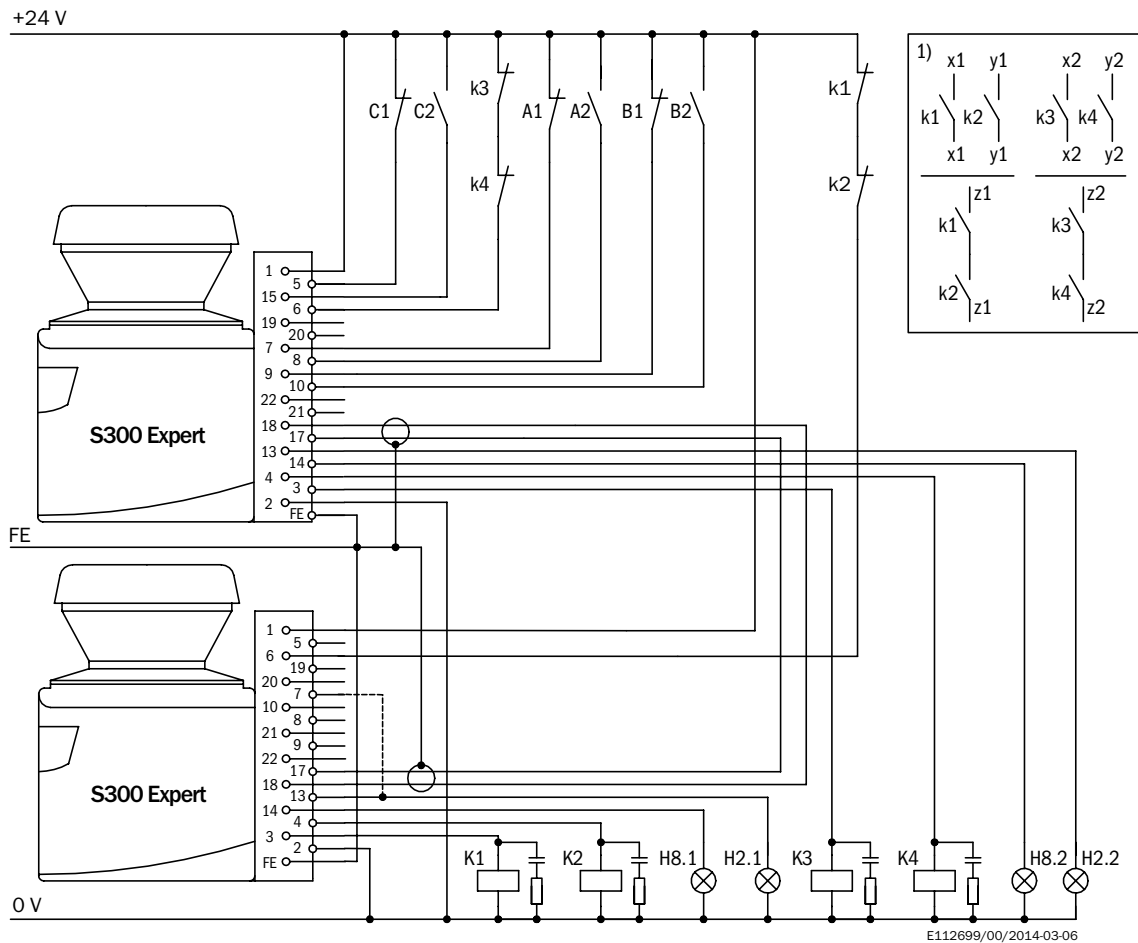
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Scan plane origin



Connection diagrams

S300 Expert with S300 Expert in host/guest connection with relays/contactors



- S300 Expert with S300 Expert in host/guest connection with relays/contactors
- Operating mode: with external device monitoring and without restart interlock
- Static protective field switching using the control inputs A, B and C
- The protective fields affect the related OSSDs on host or guest

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

Accessories required for commissioning





Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
System plug	1	-	→ Plug connectors and cables
Connecting cable (only required for system plugs without cable)	1	-	→ Plug connectors and cables
Connection cable for configuration and diagnosis	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets



Figure	Description	Packing unit	Type	Part no.
	Mounting bracket for rear mounting on wall or machine	1 piece	Mounting kit 1a	2034324
	Mounting bracket for rear mounting on wall or machine with protection of optics hood	1 piece	Mounting kit 1b	2034325
	Mounting bracket, adjustable lateral axis, only in conjunction with mounting kit 1a (2034324) or 1b (2034325)	1 piece	Mounting kit 2	2039302
	Mounting plate, adjustable longitudinal axis, only in conjunction with mounting kit 2 (2039302)	1 piece	Mounting kit 3	2039303

Dimensional drawings → [page F-219](#)

Connection systems


Plug connectors and cables

System plugs

Figure	Description	Model	Number of cores	Cable length	Items supplied	Type	Part no.
	For use of incremental encoders, integrated configuration storage	Without cable	-	-	With 1 x cable gland M16, 2 x cable gland M12, 1 x blanking plug M16, 6 x blanking plug M12	SX0B-A0000J	2032856
		Pre-assembled, PVC, unshielded	11-wire	5 m		SX0B-B1105J	2032857
				10 m		SX0B-B1110J	2032858
	Not for use of incremental encoders, integrated configuration storage	Without cable	-	-	With 1 x cable gland M16, 1 x blanking plug M16, 2 x blanking plug M12	SX0B-A0000G	2032807
		Pre-assembled, PVC, unshielded	15-wire	5 m		SX0B-B1505G	2034264
				10 m		SX0B-B1510G	2034265



Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded

Figure	Connection type		Cable length	Type	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	2 m	DSL-8D04G02M025KM1	6021195
10 m			DSL-8D04G10M025KM1	2027649	



Connection cables with male connector and male connector

- **Model:** PVC, unshielded


Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574
				10 m	DSL-8U04G10M025KM1	6034575

Cables (ready to assemble)

- **Items supplied:** by the meter



Figure	Description	Model	Conductor cross-section	Cable diameter	Number of cores	Type	Part no.
	Fitting for EFI connections	PVC, shielded	1 x 2 x 0.22 mm ²	∅ 5.7 mm	2-wire	EFI connecting cable	6029448
			2 x 2.62 mm ² + 2 x 1.65 mm ²	∅ 12.2 mm	4-wire	Connection cable	6030756
			2 x 0.34 mm ² + 2 x 0.25 mm ²	∅ 6.9 mm	4-wire	Connection cable	6030921
	On 100 m reel	PVC, unshielded	0.56 mm ²	∅ 8.8 mm	15-wire	Connecting cable	6030795

Cable gland

Figure	Connection type	Description	Permitted cable diameter	Type	Part no.
	M12	For EFI connections and incremental encoders, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5308757
		For EFI connections and incremental encoders, for quick and easy shield connection, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5314772


Modules and gateways

EFI gateways

Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098
	PROFINET PROFI-safe	UE4740-22H0000	1046978

Power supply units and power cord connectors

F

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

Reflectors and optics

Optics cloths


Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
 Illustration may differ	Scan finder, receiver to localize infrared scans	LS-80L	6020756


Cleaning agent

Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006

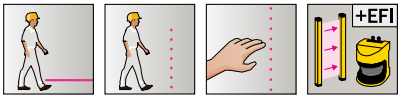
Spare parts

Figure	Description	Type	Part no.
	Spare part set optics cover with replacement seal and screws	Spare part set optics cover S100/S300/S300 Mini	2039248

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

ECONOMICAL YET RELIABLE



Product description

The S3000 Standard is the economic solution for protecting hazardous points, danger zones and entrances, as well as for protecting automated guided vehicles. The S3000 Standard is designed for simple applications with one protective field. By the proven triple field mode and the function of simultaneous monitoring of up to four protective fields in combination with the SICK safety controller- mobile and stationary appli-

cations are more efficiently implemented. The integrated EFI interface also allows additional sensor functions, e.g. connecting SICK safety controllers. The system plug with built-in configuration storage enables rapid device replacement without using a laptop. CDS (Configuration & Diagnostic Software) can be used to define protective and warning fields in a convenient and standardized way on a PC or laptop.

At a glance

- 4 m, 5.5 m or 7 m protective field range
- 1 field set
- Configuration memory integrated in the system plug
- Interface (EFI) for reliable SICK device communication
- Selectable resolution for hand, leg or body detection
- Simultaneous monitoring of up to 4 protective fields
- Contour as reference for vertical applications
- Integrated external device monitoring (EDM)

Your benefits

- Large protective field range of 7 m enables a large variety of applications
- Safety technology – with no loss of productivity
- Quick recommissioning via configuration memory
- Modular expansions, low wiring effort and additional functions such as the simultaneous monitoring of up to four protective fields using a SICK safety controller via EFI
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions
- Simple alignment and reliable operation in vertical mode



Additional information

Detailed technical data F-139
 Ordering information F-141
 Dimensional drawing F-141
 Connection diagrams F-142
 Recommended accessories F-144

→ www.sick.com/S3000_Standard

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



F

Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Protective field range	4 m / 5.5 m / 7 m (depending on type)
Warning field range	49 m (20 m at 20 % reflectivity)
Distance measuring range	49 m
Number of simultaneously monitored protective fields	≤ 4 ¹⁾
Type of field set	Triple field sets, dual field sets
Number of field sets	1
Number of monitoring cases	1
Scanning angle	190°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, configurable
Angular resolution	0.5°, 0.25°, depending on range and resolution
Response time	60 ms ²⁾
Protective field supplement	100 mm
Number of multiple samplings	2 ... 16, configurable
Delay of automatic reset	2 s ... 60 s, configurable

¹⁾ If more than one protective field is monitored simultaneously, then the safe output signals must be routed to safe outputs of a Flexi Soft safety controller, or via a safe EFI gateway.

²⁾ Depending on basic response time and multiple sampling.

Safety-related parameters

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	8.0 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

Restart interlock	✓
External device monitoring (EDM)	✓
Multiple sampling	✓
Simultaneous monitoring	✓
Contour as a reference	✓
Integrated configuration memory	✓
Measured data output	✓
Safe SICK device communication via EFI	✓

Interfaces

Connection type	System plug with or without connecting cable
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Configuration and diagnostics interface	RS-232
Transmission rate	9.6 kBaud, 19.2 kBaud, 38.4 kBaud
Data interface	RS-422
Transmission rate	≤ 500 kBaud
Safe SICK device communication via EFI	
Transmission rate	≤ 500 kBaud
Cable length	≤ 50 m
Conductor cross-section	0.34 mm ²
Fieldbus, industrial network	
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ¹⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾

¹⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	II (EN 50178)
Supply voltage V_s	24 V DC (16.8 V DC ... 28.8 V DC)
Power consumption	≤ 0.8 A ¹⁾ ≤ 2.3 A ²⁾
Inputs	
External device monitoring (EDM)	1
Reset/restart	1
Outputs	
Safety outputs (OSSD)	2 x 500 mA
Diagnostic outputs	3 x 100 mA ³⁾

¹⁾ At 24 V DC without output load.

²⁾ At 24 V DC including maximum output load.

³⁾ Freely programmable, e.g. warning field, contamination, reset required.

Mechanical data

Dimensions (W x H x D)	155 mm x 185 mm x 160 mm
Weight	3.3 kg
Housing material	Aluminum die cast
Housing color	RAL 1021 (yellow)
Front screen material	Polycarbonat
Front screen surface finish	Outside with scratch-resistant coating

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +50 °C
Storage temperature	-25 °C ... +50 °C
Vibration resistance	5 g, 10 Hz ... 150 Hz (EN 61496-1, CLC/TS 61496-3)
Shock resistance	10 g, 16 ms (EN 61496-1, CLC/TS 61496-3)

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Other information

Type of light	Pulsed laser diode
Wave length	905 nm
Reflectivity	1.8 % ... > 1,000 %, reflectors
Laser class	1 (21 CFR 1040.10 and 1040.11, IEC 60825-1)

Ordering information

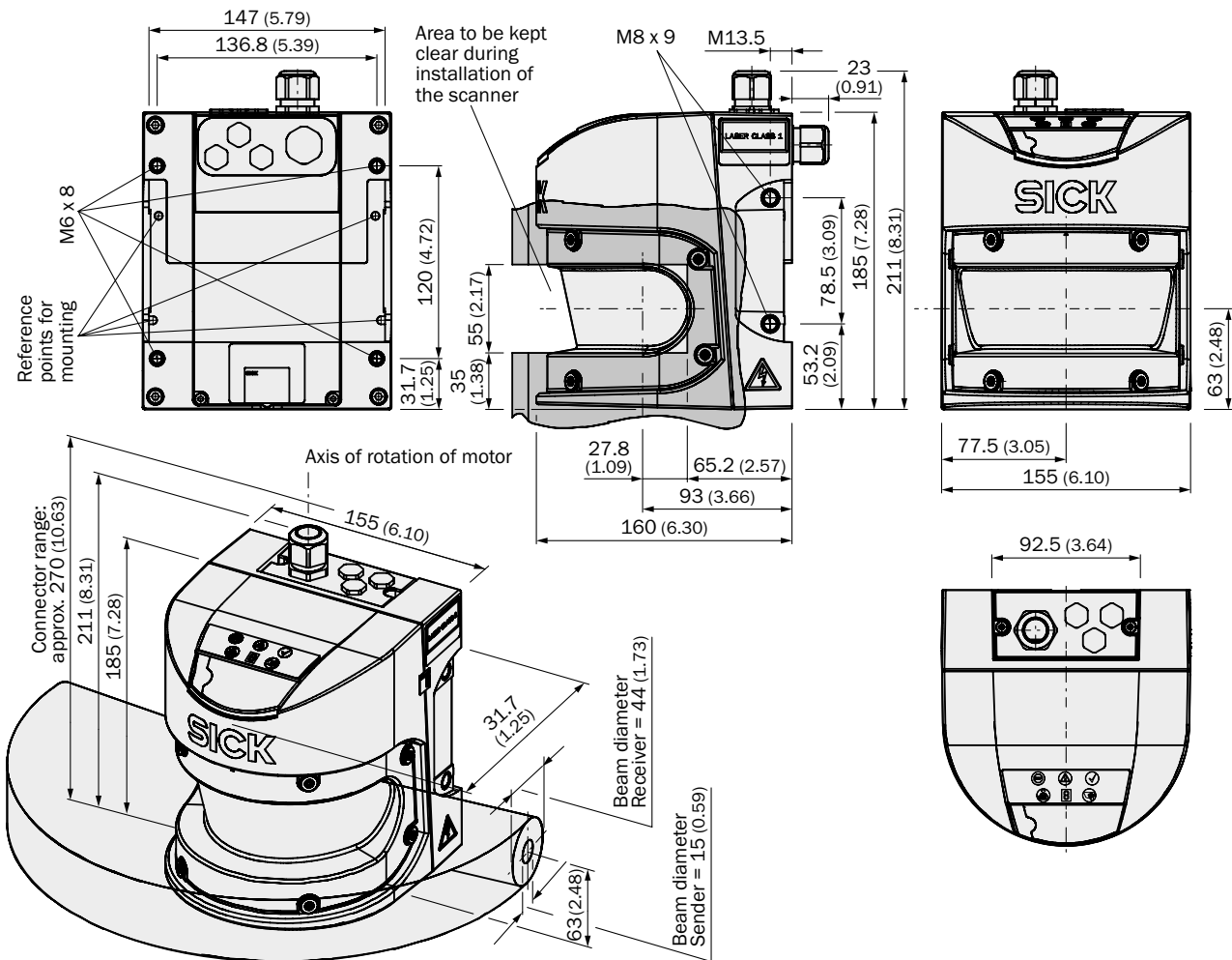
Items supplied S3000 systems:

- Sensor head with I/O module mounted
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

The system plug has to be ordered separately!

Protective field range	Type	Part no.
4 m	S30A-4011BA	1028934
5.5 m	S30A-6011BA	1023546
7 m	S30A-7011BA	1023890

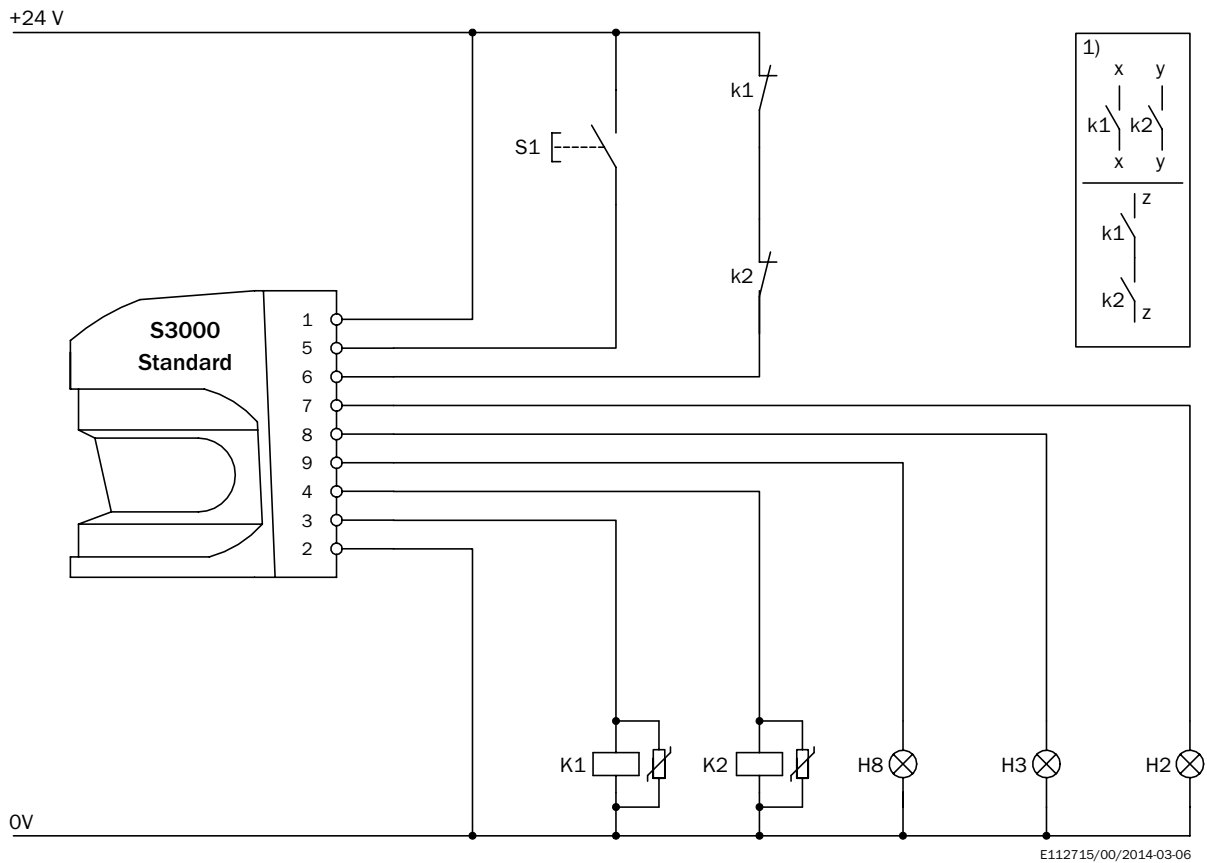
Dimensional drawing (Dimensions in mm (inch))



F

Connection diagrams

S3000 Standard with restart interlock and external device monitoring



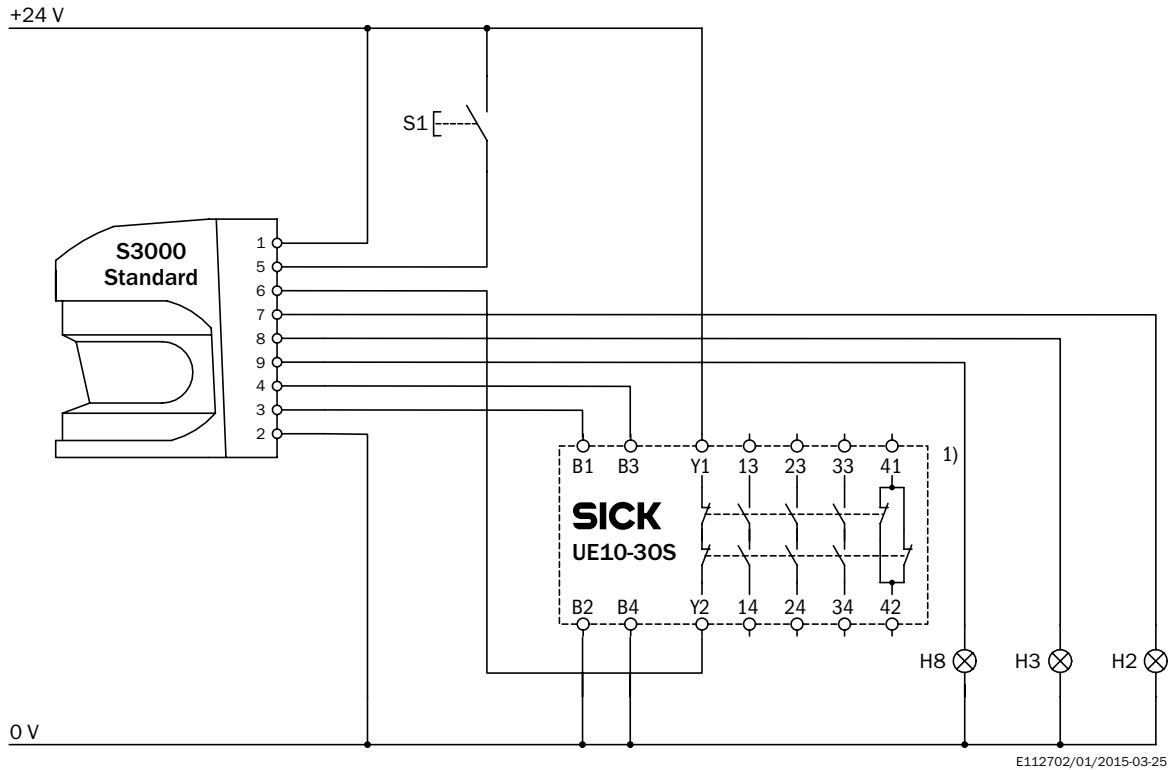
- S3000 Standard in conjunction with relays/contactors
- Operating mode: with restart interlock and external device monitoring (EDM)

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

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S3000 Standard with restart interlock and external device monitoring on UE10-30S safety relay



- S3000 Standard in conjunction with UE10-30S
- Operating mode: with restart interlock and external device monitoring (EDM)

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

F

Accessories required for commissioning






Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
System plug	1	-	→ Plug connectors and cables
Connecting cable (only required for system plugs without cable)	1	-	→ Plug connectors and cables
Connection cable for configuration and diagnosis	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting bracket for direct mounting, from the rear, on wall or machine, not adjustable	1 piece	Mounting kit 1	2015623
	Mounting bracket for rear mounting on wall or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623)	1 piece	Mounting kit 2	2015624
	Mounting bracket for rear mounting on wall, floor, or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623) and 2 (2015624)	1 piece	Mounting kit 3	2015625
	Mounting bracket, heavy design, with protective hood, for floor mounting, adjustable longitudinal and lateral axes via ball joint, adjustable height	1 piece	Mounting kit heavy duty	7087514
	Mounting bracket, heavy design, with protective hood, for floor mounting, adjustable longitudinal and lateral axes via alignment plate, adjustable height	1 piece	Mounting kit heavy duty	2080350

Dimensional drawings → page F-220





F

Connection systems

Plug connectors and cables

System plugs

- **Description:** Not for use of incremental encoders, integrated configuration storage

Figure	Model	Number of cores	Cable length	Items supplied	Type	Part no.
	Without cable	-	-	With 1 x cable gland M20, 1 x blanking plug M20, 2 x blanking plug M12	SX0A-A0000B	2023797
	Pre-assembled, PVC, unshielded	9-wire	5 m		SX0A-B0905B	2027170
	Pre-assembled, cable outlet to the rear, PVC, unshielded	9-wire	5 m		SX0A-B0905G	2049222
	Pre-assembled, PVC, unshielded	9-wire	10 m		SX0A-B0910B	2027171
			20 m		SX0A-B0920B	2027814



Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded

Figure	Connection type		Cable length	Type	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649



Connection cables with male connector and male connector

- **Model:** PVC, unshielded


Figure	Connection type		Description	Cable length	Type	Part no.
	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574
				10 m	DSL-8U04G10M025KM1	6034575

Cables (ready to assemble)

- **Items supplied:** by the meter




Figure	Description	Model	Conductor cross-section	Cable diameter	Number of cores	Type	Part no.
	-	PVC, unshielded	0.56 mm ²	Ø 7.5 mm	9-wire	Connecting cable	6022651
	Fitting for EFI connections	PVC, shielded	1 x 2 x 0.22 mm ²	Ø 5.7 mm	2-wire	EFI connecting cable	6029448
			2 x 2.62 mm ² + 2 x 1.65 mm ²	Ø 12.2 mm	4-wire	Connection cable	6030756
			2 x 0.34 mm ² + 2 x 0.25 mm ²	Ø 6.9 mm	4-wire	Connection cable	6030921

Cable gland


Figure	Connection type	Description	Permitted cable diameter	Type	Part no.
	M12	For EFI connections and incremental encoders, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5308757
		For EFI connections and incremental encoders, for quick and easy shield connection, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5314772
	M20	For supply cables and signal cables, for quick and easy shield connection, EMC proof	10 mm ... 14 mm	Cable gland M20	5314774

Modules and gateways

EFI gateways

Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098
	PROFINET PROFI-safe	UE4740-22H0000	1046978

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790



Reflectors and optics

Optics cloths

Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
 Illustration may differ	Scan finder, receiver to localize infrared scans	LS-80L	6020756
	To test the function of the protective field in a narrow aisle	Test object with bracket	2019459


Cleaning agent

Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006

Spare parts

Figure	Description	Type	Part no.
	Front screen replacement kit with replacement seal and screws	Front screen replacement kit S3000	2027180


Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

F

OPTIMIZE PRODUCTION PROCESSES SAFELY

F



The image shows a yellow and black SICK S3000 Advanced safety laser scanner. Above the scanner are four small icons: a person walking, a hand, a vertical line, and a plug labeled '+EFI'. Below the scanner are the CE, cUL, and UL US certification marks.

Additional information

Detailed technical data F-149
 Ordering information F-151
 Dimensional drawing F-151
 Connection diagrams F-152
 Recommended accessories F-154

Product description

The S3000 Advanced is used for efficient optimization of production processes. The S3000 Advanced variant can be configured with up to four field sets. By the proven triple field mode and the function of simultaneous monitoring of up to four protective fields- in combination with the SICK safety controller- mobile and stationary applications are more efficiently implemented. The static signals at the two available inputs enable flexible protective field switch-

ing. The S3000 Advanced is ideal for integration into complex processes, such as assembly lines in the automotive industry. This variant also has an integrated EFI interface for implementing networked systems. EFI can be used to connect up to four devices to safety controllers from SICK, which provides remote diagnostics, for example. The system plug with built-in configuration storage enables rapid device replacement without using a laptop.

At a glance

- 4 m, 5.5 m or 7 m protective field range
- 4 switchable field sets
- Configuration memory integrated in the system plug
- Interface (EFI) for reliable SICK device communication
- Selectable resolution for hand, leg or body detection
- Simultaneous monitoring of up to 4 protective fields
- Contour as reference for vertical applications
- Integrated external device monitoring (EDM)

Your benefits

- Large protective field range of 7 m enables a large variety of applications
- Safety technology – with no loss of productivity
- Quick recommissioning via configuration memory
- Modular expansions, low wiring effort and additional functions such as the simultaneous monitoring of up to four protective fields using a SICK safety controller via EFI
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions
- Simple alignment and reliable operation in vertical mode

→ www.sick.com/S3000_Advanced

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Protective field range	4 m / 5.5 m / 7 m (depending on type)
Warning field range	49 m (20 m at 20 % reflectivity)
Distance measuring range	49 m
Number of simultaneously monitored protective fields	≤ 4 ¹⁾
Type of field set	Triple field sets, dual field sets
Number of field sets	4
Number of monitoring cases	4
Scanning angle	190°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, configurable
Angular resolution	0.5°, 0.25°, depending on range and resolution
Response time	60 ms ²⁾
Protective field supplement	100 mm
Number of multiple samplings	2 ... 16, configurable
Delay of automatic reset	2 s ... 60 s, configurable

¹⁾ If more than one protective field is monitored simultaneously, then the safe output signals must be routed to safe outputs of a Flexi Soft safety controller, or via a safe EFI gateway.

²⁾ Depending on basic response time and multiple sampling.

Safety-related parameters

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	8.0 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

Restart interlock	✓
External device monitoring (EDM)	✓
Multiple sampling	✓
Monitoring case switching	✓
Simultaneous monitoring	✓
Static protective field switching	✓
Contour as a reference	✓
Integrated configuration memory	✓
Measured data output	✓
Safe SICK device communication via EFI	✓

Interfaces

Connection type	System plug with or without connecting cable
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Configuration and diagnostics interface	RS-232
Transmission rate	9.6 kBaud, 19.2 kBaud, 38.4 kBaud
Data interface	RS-422
Transmission rate	≤ 500 kBaud
Safe SICK device communication via EFI	
Transmission rate	≤ 500 kBaud
Cable length	≤ 50 m
Conductor cross-section	0.34 mm ²
Fieldbus, industrial network	
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ¹⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾

¹⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	II (EN 50178)
Supply voltage V_s	24 V DC (16.8 V DC ... 28.8 V DC)
Power consumption	≤ 0.8 A ¹⁾ ≤ 2.3 A ²⁾
Inputs	
External device monitoring (EDM)	1
Reset/restart	1
Static control inputs	2
Static control inputs with EFI	5 ³⁾
Outputs	
Safety outputs (OSSD)	2 x 500 mA
Diagnostic outputs	3 x 100 mA ⁴⁾

¹⁾ At 24 V DC without output load.

²⁾ At 24 V DC including maximum output load.

³⁾ In combination with an EFI device (Flexi Soft or EFI gateway) five static control inputs are available. Otherwise two.

⁴⁾ Freely programmable, e.g. warning field, contamination, reset required.

Mechanical data

Dimensions (W x H x D)	155 mm x 185 mm x 160 mm
Weight	3.3 kg
Housing material	Aluminum die cast
Housing color	RAL 1021 (yellow)
Front screen material	Polycarbonat
Front screen surface finish	Outside with scratch-resistant coating

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +50 °C
Storage temperature	-25 °C ... +50 °C
Vibration resistance	5 g, 10 Hz ... 150 Hz (EN 61496-1, CLC/TS 61496-3)
Shock resistance	10 g, 16 ms (EN 61496-1, CLC/TS 61496-3)

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Other information

Type of light	Pulsed laser diode
Wave length	905 nm
Reflectivity	1.8 % ... > 1,000 %, reflectors
Laser class	1 (21 CFR 1040.10 and 1040.11, IEC 60825-1)

Ordering information

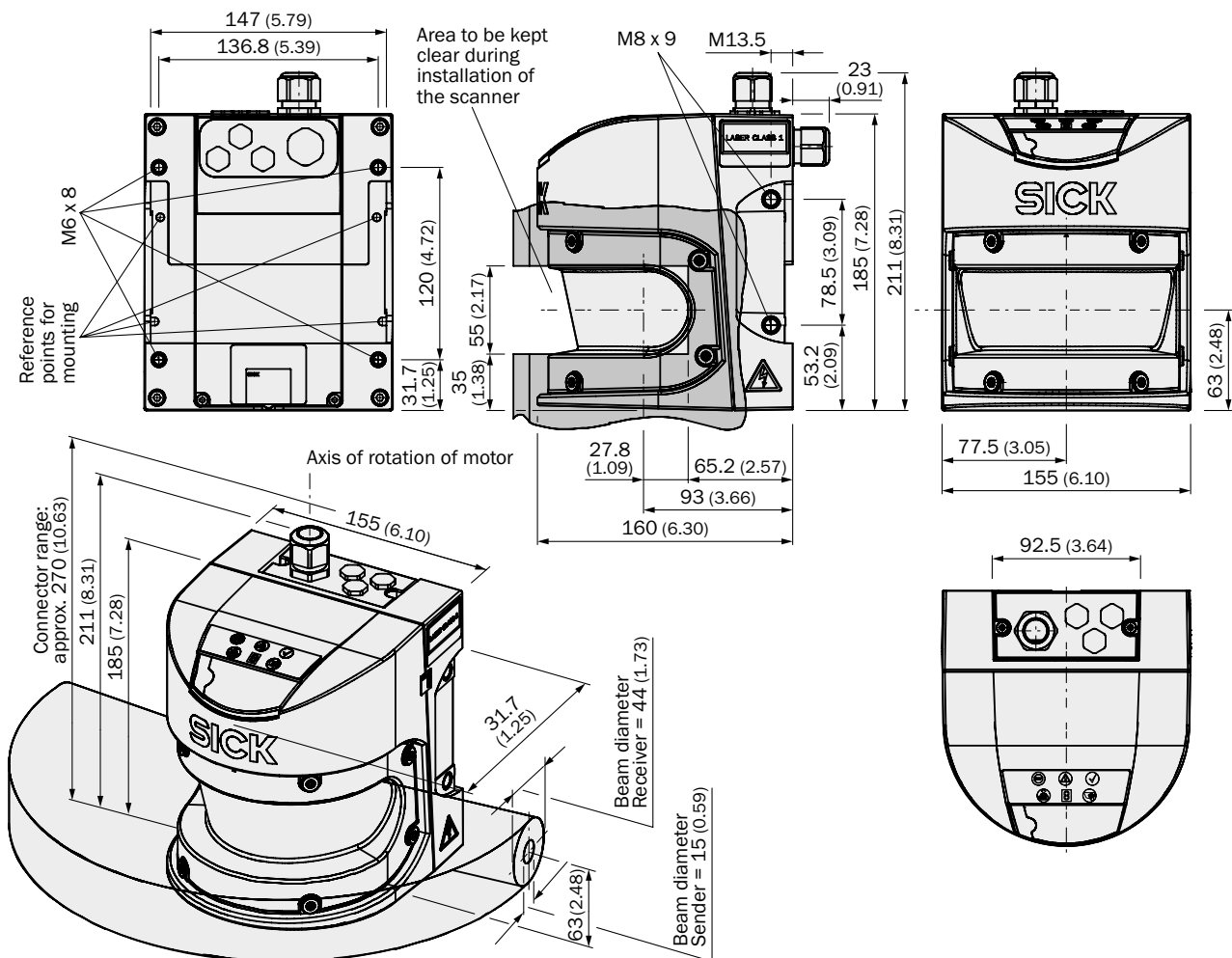
Items supplied S3000 systems:

- Sensor head with I/O module mounted
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

The system plug has to be ordered separately!

Protective field range	Type	Part no.
4 m	S30A-4011CA	1028935
5.5 m	S30A-6011CA	1023547
7 m	S30A-7011CA	1023891

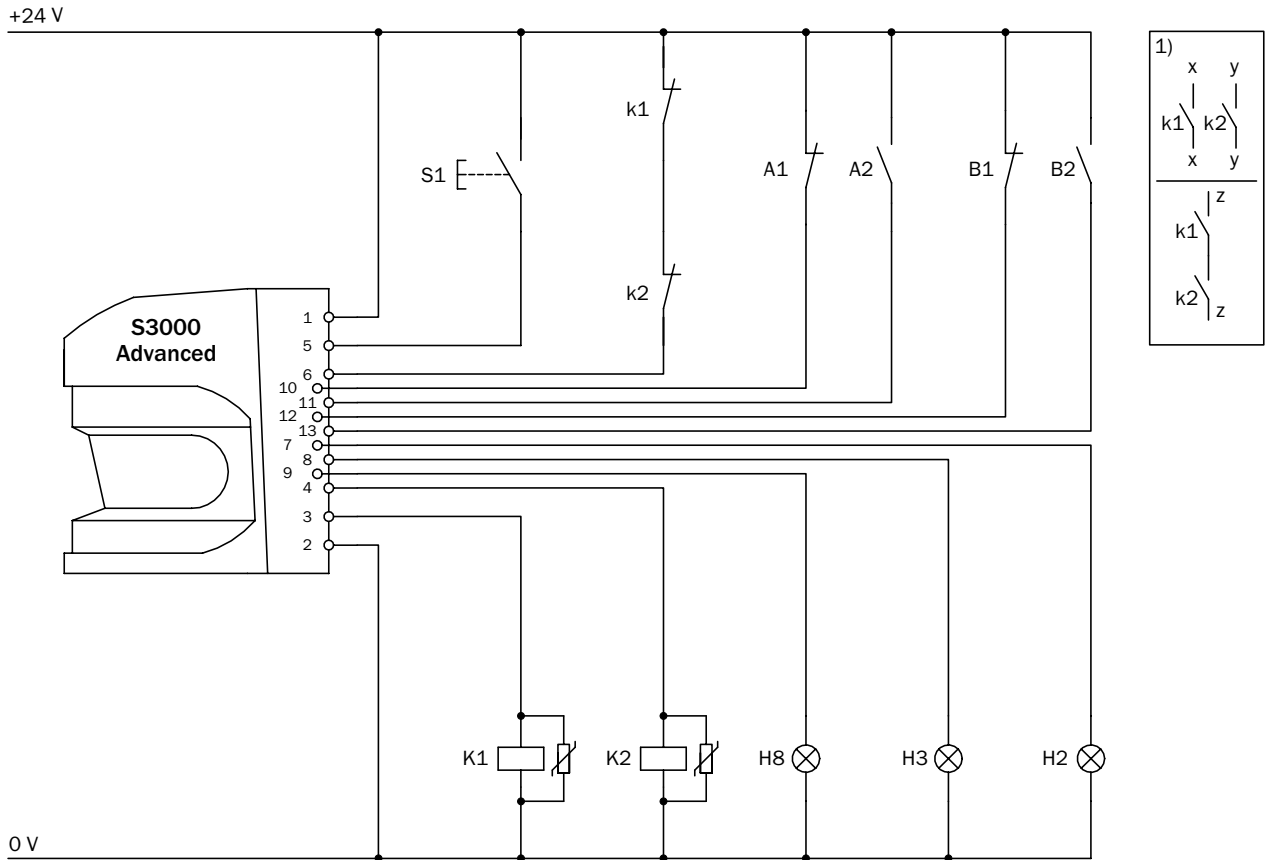
Dimensional drawing (Dimensions in mm (inch))



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Connection diagrams

Protective field switching with two static inputs



E112707/00/2014-03-06

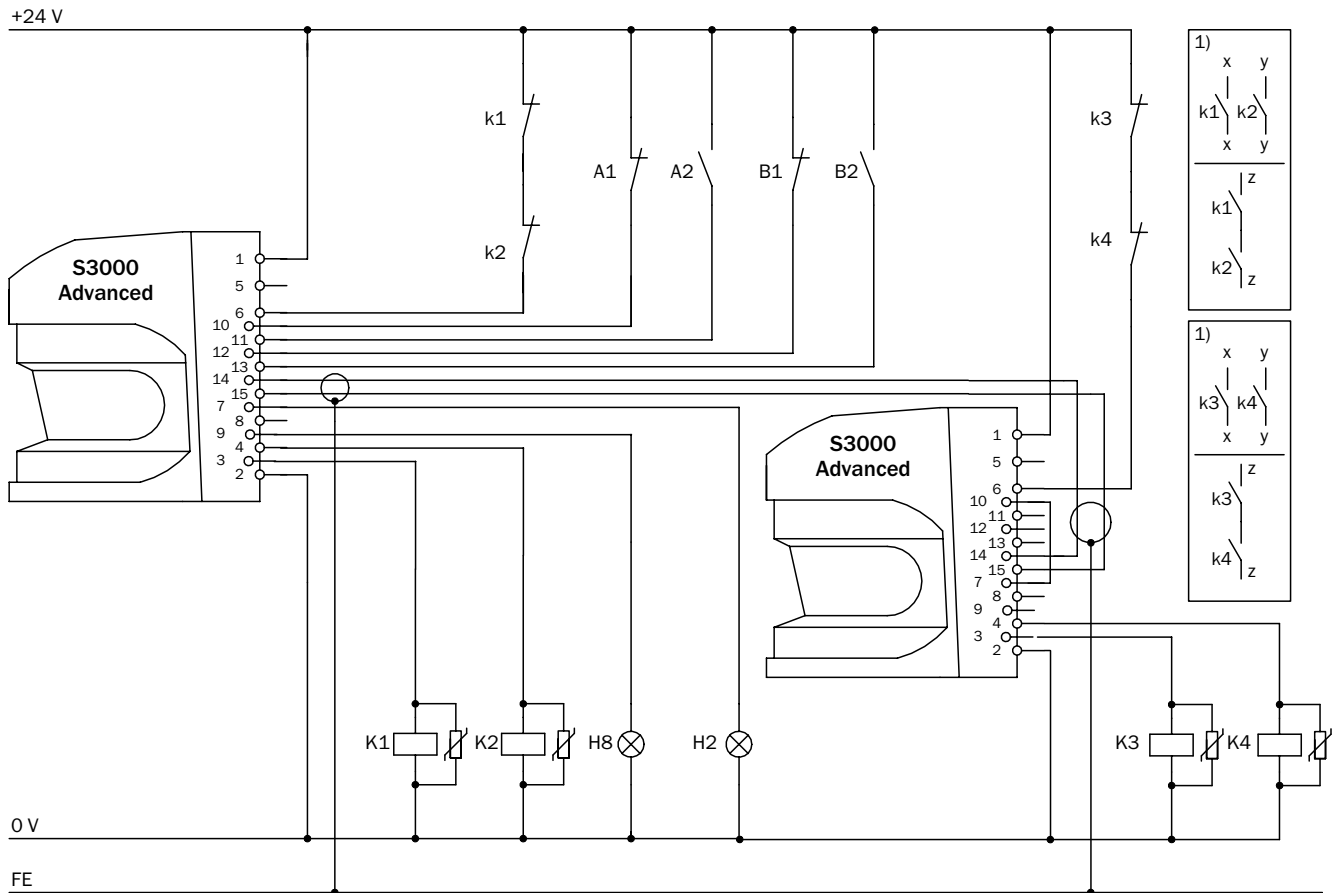
- S3000 Advanced in conjunction with relays/contactors
- Operating mode: with restart interlock and external device monitoring (EDM)
- Protective field switching by means of control inputs A and B

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

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Protective field switching between two S3000 with static inputs



E112708/00/2014-03-06

- S3000 Advanced with S3000 Advanced in conjunction with relays/contactors
- Operating mode: without restart interlock, with external device monitoring (EDM)
- Protective field switching by means of control input A and control input B on separate OSSD pairs (simultaneous monitoring)

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

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Accessories required for commissioning






Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
System plug	1	-	→ Plug connectors and cables
Connecting cable (only required for system plugs without cable)	1	-	→ Plug connectors and cables
Connection cable for configuration and diagnosis	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting bracket for direct mounting, from the rear, on wall or machine, not adjustable	1 piece	Mounting kit 1	2015623
	Mounting bracket for rear mounting on wall or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623)	1 piece	Mounting kit 2	2015624
	Mounting bracket for rear mounting on wall, floor, or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623) and 2 (2015624)	1 piece	Mounting kit 3	2015625
	Mounting bracket, heavy design, with protective hood, for floor mounting, adjustable longitudinal and lateral axes via ball joint, adjustable height	1 piece	Mounting kit heavy duty	7087514
	Mounting bracket, heavy design, with protective hood, for floor mounting, adjustable longitudinal and lateral axes via alignment plate, adjustable height	1 piece	Mounting kit heavy duty	2080350



Dimensional drawings → page F-220

Connection systems

Plug connectors and cables


System plugs

- **Description:** Not for use of incremental encoders, integrated configuration storage

Figure	Model	Number of cores	Cable length	Items supplied	Type	Part no.
	Without cable	-	-	With 1 x cable gland M20, 1 x blanking plug M20, 2 x blanking plug M12	SX0A-A0000B	2023797
	Pre-assembled, PVC, unshielded	13-wire	5 m		SX0A-B1305B	2027172
			10 m		SX0A-B1310B	2027173
			20 m		SX0A-B1320B	2027815



Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded

Figure	Connection type		Cable length	Type	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649



Connection cables with male connector and male connector

- **Model:** PVC, unshielded


Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574
				10 m	DSL-8U04G10M025KM1	6034575

Cables (ready to assemble)

- **Items supplied:** by the meter



Figure	Description	Model	Conductor cross-section	Cable diameter	Number of cores	Type	Part no.
	-	PVC, unshielded	0.56 mm ²	Ø 8.5 mm	13-wire	Connecting cable	6025729
				Ø 9.3 mm	17-wire	Connecting cable	6025730
	Fitting for EFI connections	PVC, shielded	1 x 2 x 0.22 mm ²	Ø 5.7 mm	2-wire	EFI connecting cable	6029448
				Ø 12.2 mm	4-wire	Connection cable	6030756
				Ø 6.9 mm	4-wire	Connection cable	6030921

Cable gland

Figure	Connection type	Description	Permitted cable diameter	Type	Part no.
	M12	For EFI connections and incremental encoders, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5308757
		For EFI connections and incremental encoders, for quick and easy shield connection, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5314772
	M20	For supply cables and signal cables, for quick and easy shield connection, EMC proof	10 mm ... 14 mm	Cable gland M20	5314774


Modules and gateways

EFI gateways

Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFIsafe	UE4140-22I0000	1029098
	PROFINET PROFIsafe	UE4740-22H0000	1046978

Power supply units and power cord connectors

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Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790



Reflectors and optics

Optics cloths


Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
 Illustration may differ	Scan finder, receiver to localize infrared scans	LS-80L	6020756
	To test the function of the protective field in a narrow aisle	Test object with bracket	2019459


Cleaning agent

Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006

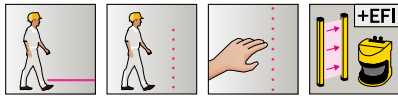
Spare parts

Figure	Description	Type	Part no.
	Front screen replacement kit with replacement seal and screws	Front screen replacement kit S3000	2027180

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

FLEXIBLE HIGH-PERFORMANCE - THE RIGHT PROTECTION FOR ANY SPEED



Product description

The S3000 Professional combines flexibility with high performance. With up to eight configurable protective and warning fields, it also solves complex protection problems. Stationary and mobile applications can be implemented even more efficiently by using the tried-and-tested triple field mode and the function for simultaneously monitoring up to four protective fields – in combination with the safety controller from SICK. The connection of incremental encoders enables switching between defined

fields as a function of speed. Use of the integrated EFI interface extends interoperability with other safety laser scanners and safety controllers from SICK. This means automated guided vehicles can be given all-around protection and protective fields can be adjusted as a function of speed. The system opens up cutting-edge solutions for logistics and production applications. The system plug with built-in configuration memory enables quick device replacement without using a laptop.

At a glance

- 4 m, 5.5 m or 7 m protective field range
- 8 switchable field sets
- Configuration memory integrated in the system plug
- Interface (EFI) for reliable SICK device communication
- Incremental encoder inputs for speed-dependent field switching
- Measured data output via RS-422
- Simultaneous monitoring of up to 4 protective fields
- Monitoring of the maximum speed of an AGV

Your benefits

- Large protective field range of 7 m enables a large variety of applications
- Variety of field sets ensures safety and productivity when protecting vehicles or moving machine parts
- Quick recommissioning via configuration memory
- Modular expansions, low wiring effort and additional functions such as the simultaneous monitoring of up to four protective fields using a SICK safety controller via EFI
- Having the correct protective field at any speed prevents unwanted stops
- Navigation support and personal protection in one device
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions



Additional information

- Detailed technical data F-159
- Ordering information F-161
- Dimensional drawing F-162
- Connection diagrams F-163
- Recommended accessories F-165

→ www.sick.com/S3000_Professional

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



F

Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Protective field range	4 m / 5.5 m / 7 m (depending on type)
Warning field range	49 m (20 m at 20 % reflectivity)
Distance measuring range	49 m
Number of simultaneously monitored protective fields	≤ 4 ¹⁾
Type of field set	Triple field sets, dual field sets
Number of field sets	8
Number of monitoring cases	16
Scanning angle	190°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, configurable
Angular resolution	0.5°, 0.25°, depending on range and resolution
Response time	60 ms ²⁾
Protective field supplement	100 mm
Number of multiple samplings	2 ... 16, configurable
Delay of automatic reset	2 s ... 60 s, configurable

¹⁾ If more than one protective field is monitored simultaneously, then the safe output signals must be routed to safe outputs of a Flexi Soft safety controller, or via a safe EFI gateway.

²⁾ Depending on basic response time and multiple sampling.

Safety-related parameters

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	8.0 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

Restart interlock	✓
External device monitoring (EDM)	✓
Multiple sampling	✓
Monitoring case switching	✓
Simultaneous monitoring	✓
Static protective field switching	✓
Dynamic protective field switching	✓
Contour as a reference	✓
Integrated configuration memory	✓
Measured data output	✓
Safe SICK device communication via EFI	✓

Interfaces

Connection type	System plug with or without connecting cable
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Configuration and diagnostics interface	RS-232
Transmission rate	9.6 kBaud, 19.2 kBaud, 38.4 kBaud
Data interface	RS-422
Transmission rate	≤ 500 kBaud
Safe SICK device communication via EFI	
Transmission rate	≤ 500 kBaud
Cable length	≤ 50 m
Conductor cross-section	0.34 mm ²
Fieldbus, industrial network	
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ¹⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾

¹⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	II (EN 50178)
Supply voltage V_s	24 V DC (16.8 V DC ... 28.8 V DC)
Power consumption	≤ 0.8 A ¹⁾ ≤ 2.3 A ²⁾
Inputs	
External device monitoring (EDM)	1
Reset/restart	1
Static control inputs	4
Static control inputs with EFI	5 ³⁾
Dynamic control inputs (incremental encoder)	2 ⁴⁾
Outputs	
Safety outputs (OSSD)	2 x 500 mA
Diagnostic outputs	3 x 100 mA ⁵⁾

¹⁾ At 24 V DC without output load.

²⁾ At 24 V DC including maximum output load.

³⁾ In combination with an EFI device (Flexi Soft or EFI gateway) five static control inputs are available. Otherwise four.

⁴⁾ Two of the static switching signals can be used either as dynamic or as static switching signals.

⁵⁾ Freely programmable, e.g. warning field, contamination, reset required.

Mechanical data

Dimensions (W x H x D)	155 mm x 185 mm x 160 mm
Weight	3.3 kg
Housing material	Aluminum die cast
Housing color	RAL 1021 (yellow)
Front screen material	Polycarbonat
Front screen surface finish	Outside with scratch-resistant coating

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Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +50 °C
Storage temperature	-25 °C ... +50 °C
Vibration resistance	5 g, 10 Hz ... 150 Hz (EN 61496-1, CLC/TS 61496-3)
Shock resistance	10 g, 16 ms (EN 61496-1, CLC/TS 61496-3)

Other information

Type of light	Pulsed laser diode
Wave length	905 nm
Reflectivity	1.8 % ... > 1,000 %, reflectors
Laser class	1 (21 CFR 1040.10 and 1040.11, IEC 60825-1)

Ordering information

Items supplied S3000 systems:

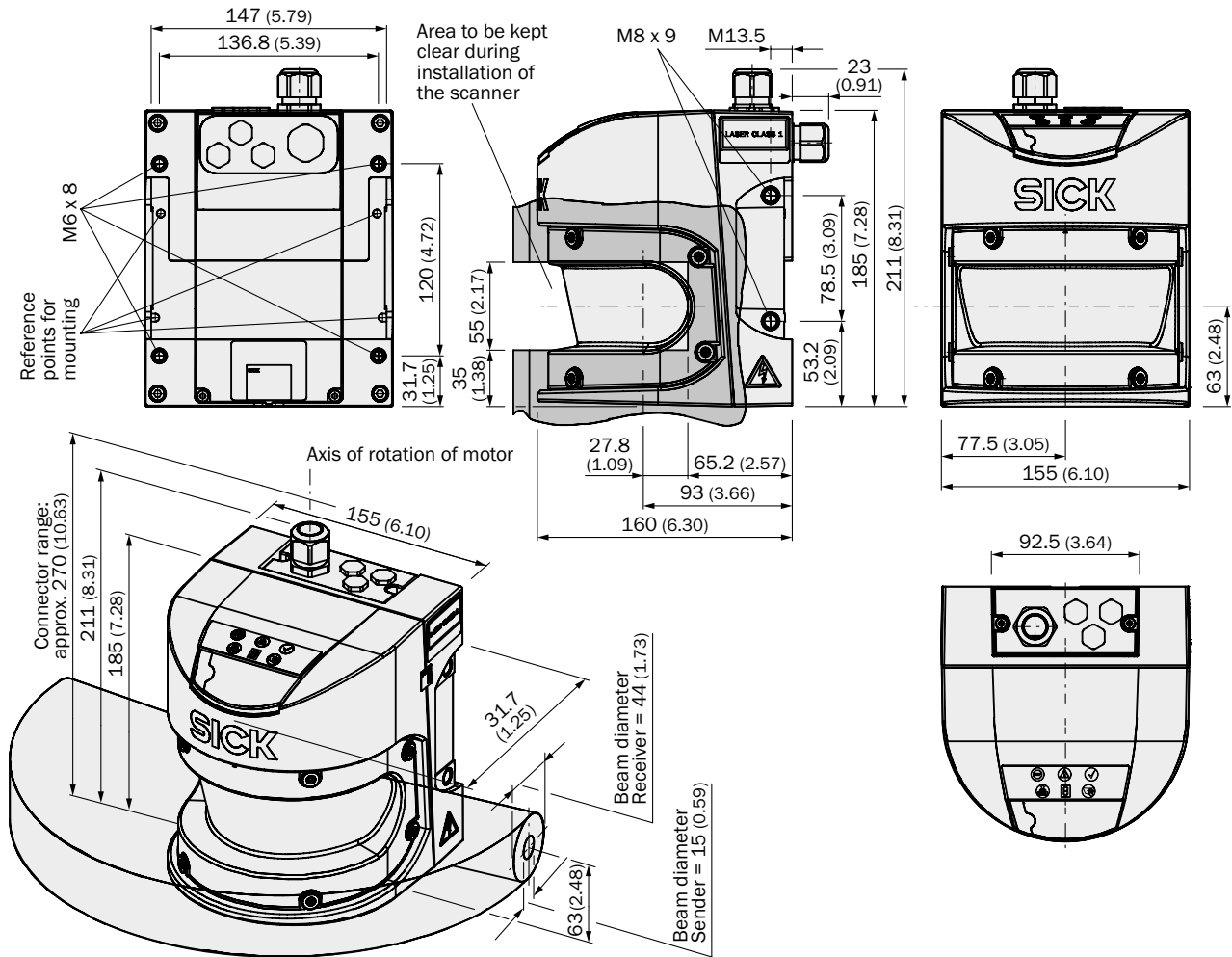
- Sensor head with I/O module mounted
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

The system plug has to be ordered separately!

Protective field range	Type	Part no.
4 m	S30A-4011DA	1028936
5.5 m	S30A-6011DA	1019600
7 m	S30A-7011DA	1023892

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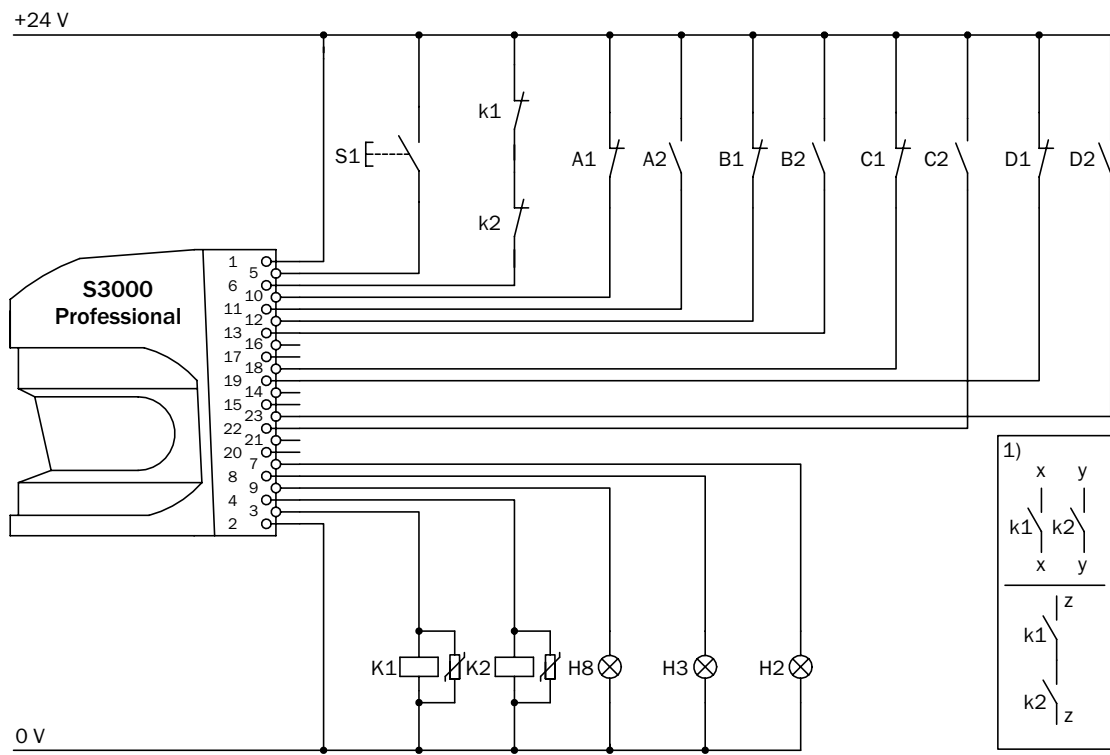
Dimensional drawing (Dimensions in mm (inch))



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Connection diagrams

Protective field switching with four static inputs



E112709/00/2014-03-06

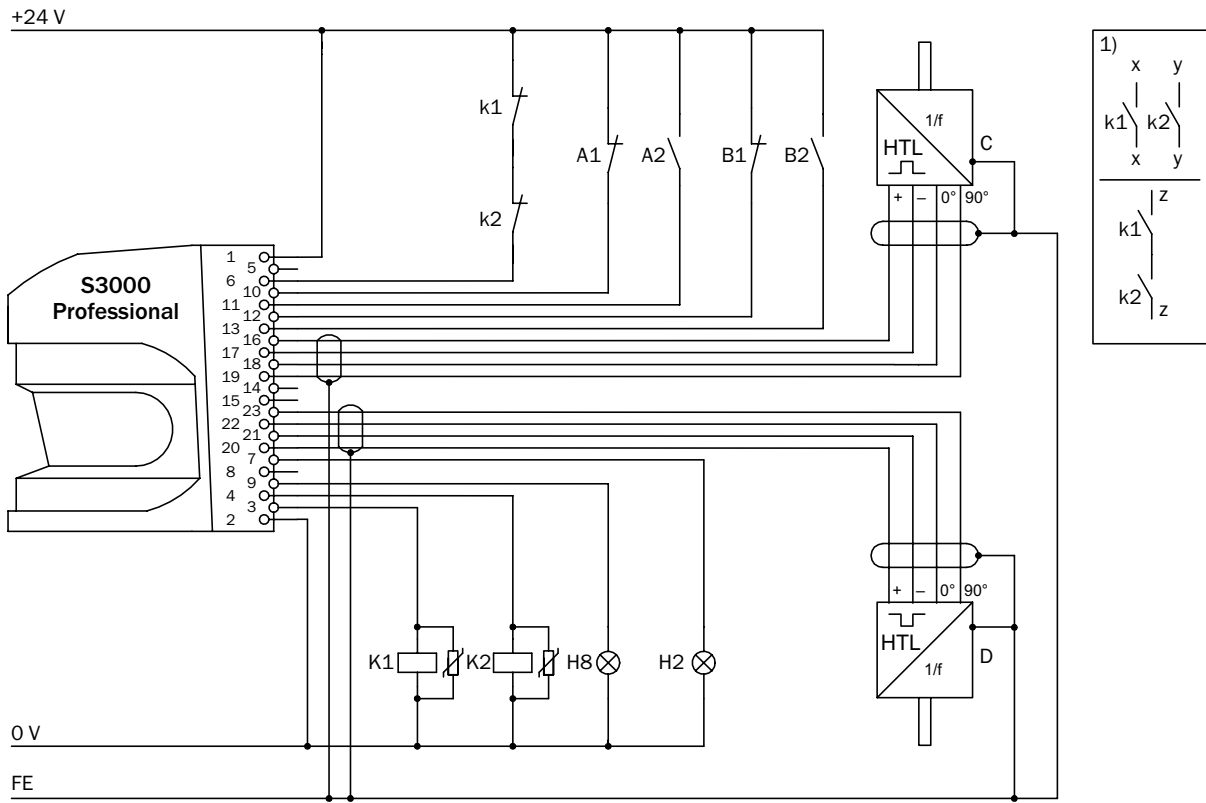
- S3000 Professional in conjunction with relays/contactors
- Operating mode: with restart interlock and external device monitoring
- Static protective field switching by means of the control inputs A, B, C and D

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.



Protective field switching with static and dynamic inputs



E112710/01/2015-03-25

- S3000 Professional in conjunction with relays/contactors
- Operating mode: without restart interlock with external device monitoring (EDM)
- Dynamic protective field switching using B1 and B2 as well as static protective field switching using the control inputs A and B

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.



Accessories required for commissioning





Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
System plug	1	-	→ Plug connectors and cables
Connecting cable (only required for system plugs without cable)	1	-	→ Plug connectors and cables
Connection cable for configuration and diagnosis	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets





Figure	Description	Packing unit	Type	Part no.
	Mounting bracket for direct mounting, from the rear, on wall or machine, not adjustable	1 piece	Mounting kit 1	2015623
	Mounting bracket for rear mounting on wall or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623)	1 piece	Mounting kit 2	2015624
	Mounting bracket for rear mounting on wall, floor, or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623) and 2 (2015624)	1 piece	Mounting kit 3	2015625
	Mounting bracket, heavy design, with protective hood, for floor mounting, adjustable longitudinal and lateral axes via ball joint, adjustable height	1 piece	Mounting kit heavy duty	7087514
	Mounting bracket, heavy design, with protective hood, for floor mounting, adjustable longitudinal and lateral axes via alignment plate, adjustable height	1 piece	Mounting kit heavy duty	2080350

Dimensional drawings → [page F-220](#)

Connection systems

Plug connectors and cables

System plugs

Figure	Description	Model	Number of cores	Cable length	Items supplied	Type	Part no.
	For use of incremental encoders, integrated configuration storage	Without cable	-	-	With 1 x cable gland M20, 2 x cable gland M12, 1 x blanking plug M20, 6 x blanking plug M12	SX0A-A0000D	2023310
		Pre-assembled, PVC, unshielded	13-wire	5 m		SX0A-B1305D	2027176
	10 m			SX0A-B1310D		2027177	
	Not for use of incremental encoders, integrated configuration storage	Without cable	-	-	With 1 x cable gland M20, 1 x blanking plug M20, 2 x blanking plug M12	SX0A-A0000B	2023797
		Pre-assembled, PVC, unshielded	17-wire	5 m		SX0A-B1705B	2027174
				10 m		SX0A-B1710B	2027175
				20 m		SX0A-B1720B	2027816



Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded

Figure	Connection type		Cable length	Type	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649



Connection cables with male connector and male connector

- **Model:** PVC, unshielded


Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574
				10 m	DSL-8U04G10M025KM1	6034575

Cables (ready to assemble)

- **Items supplied:** by the meter






Figure	Description	Model	Conductor cross-section	Cable diameter	Number of cores	Type	Part no.	
	-	PVC, unshielded	0.56 mm ²	Ø 8.5 mm	13-wire	Connecting cable	6025729	
				Ø 9.3 mm	17-wire	Connecting cable	6025730	
	Fitting for EFI connections	PVC, shielded	1 x 2 x 0.22 mm ²	Ø 5.7 mm	2-wire	EFI connecting cable	6029448	
				2 x 2.62 mm ² + 2 x 1.65 mm ²	Ø 12.2 mm	4-wire	Connection cable	6030756
					2 x 0.34 mm ² + 2 x 0.25 mm ²	Ø 6.9 mm	4-wire	Connection cable

Cable gland


Figure	Connection type	Description	Permitted cable diameter	Type	Part no.
	M12	For EFI connections and incremental encoders, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5308757
		For EFI connections and incremental encoders, for quick and easy shield connection, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5314772
	M20	For supply cables and signal cables, for quick and easy shield connection, EMC proof	10 mm ... 14 mm	Cable gland M20	5314774

Modules and gateways

EFI gateways

Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098
	PROFINET PROFI-safe	UE4740-22H0000	1046978

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790



Reflectors and optics

Optics cloths

Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories

Test and monitoring tools


Figure	Description	Type	Part no.
 Illustration may differ	Scan finder, receiver to localize infrared scans	LS-80L	6020756
	To test the function of the protective field in a narrow aisle	Test object with bracket	2019459

Cleaning agent


Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006

F

Spare parts

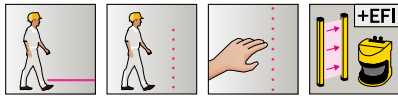
Figure	Description	Type	Part no.
	Front screen replacement kit with replacement seal and screws	Front screen replacement kit S3000	2027180

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

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SAFETY GAPS HAVE NO CHANCE – WITH 64 FIELDS



Product description

The S3000 Expert adds expanded functions to the successful S3000 product range. Even more protection applications can now be solved with the trusted reliability of the S3000. By the proven triple field mode and the function of simultaneous monitoring of up to four protective fields- in combination with SICK safety controller- mobile and stationary applications can be implemented more efficiently. The 64 fields offer virtually unlimited performance and can be

adjusted individually. The scanners' extended interoperability means that the S3000 Expert is easy to combine with other safety laser scanners and safety controllers from SICK. This means automatic guided vehicles can be given all around protection and matching safety fields, regardless of speed. The built-in CM function combines personnel protection with surrounding contour recording. This allows cutting edge solutions for logistics and production applications.

At a glance

- 4 m, 5.5 m or 7 m protective field range
- 32 switchable field sets
- Configuration memory integrated in the system plug
- Interface (EFI) for reliable SICK device communication
- Incremental encoder inputs for speed-dependent field switching
- Extended measured data output via RS-422 with field marker detection
- Simultaneous monitoring of up to 4 protective fields

Your benefits

- Large protective field range of 7 m enables a large variety of applications
- Variety of field sets ensures safety and productivity when protecting vehicles or moving machine parts
- Modular expansions, low wiring effort and additional functions such as the simultaneous monitoring of up to four protective fields using a SICK safety controller via EFI
- Quick recommissioning via configuration memory
- Having the correct protective field at any speed prevents unwanted stops
- Navigation support and personal protection in one device
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions



Additional information

Detailed technical data	F-171
Ordering information	F-173
Dimensional drawing	F-174
Connection diagrams	F-175
Recommended accessories	F-177

→ www.sick.com/S3000_Expert

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Protective field range	4 m / 5.5 m / 7 m (depending on type)
Warning field range	49 m (20 m at 20 % reflectivity)
Distance measuring range	49 m
Number of simultaneously monitored protective fields	≤ 4 ¹⁾
Type of field set	Triple field sets, dual field sets
Number of field sets	32 ²⁾
Number of monitoring cases	32 ³⁾
Scanning angle	190°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, configurable
Angular resolution	0.5°, 0.25°, depending on range and resolution
Response time	60 ms ⁴⁾
Protective field supplement	100 mm
Number of multiple samplings	2 ... 16, configurable
Delay of automatic reset	2 s ... 60 s, configurable

¹⁾ If more than one protective field is monitored simultaneously, then the safe output signals must be routed to safe outputs of a Flexi Soft safety controller, or via a safe EFI gateway.

²⁾ In dual field mode 32, in triple field mode 21 field sets.

³⁾ In combination with an additional static input via EFI or using the dynamic inputs on the device. Otherwise 16.

⁴⁾ Depending on basic response time and multiple sampling.

Safety-related parameters

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	8.0 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

Restart interlock	✓
External device monitoring (EDM)	✓
Multiple sampling	✓
Monitoring case switching	✓
Simultaneous monitoring	✓
Static protective field switching	✓
Dynamic protective field switching	✓
Contour as a reference	✓
Integrated configuration memory	✓
Measured data output	✓
Extended measured data output (CMS)	✓
Safe SICK device communication via EFI	✓

Interfaces

Connection type	System plug with or without connecting cable
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Configuration and diagnostics interface	RS-232
Transmission rate	9.6 kBaud, 19.2 kBaud, 38.4 kBaud
Data interface	RS-422
Transmission rate	≤ 500 kBaud
Safe SICK device communication via EFI	
Transmission rate	≤ 500 kBaud
Cable length	≤ 50 m
Conductor cross-section	0.34 mm ²
Fieldbus, industrial network	
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ¹⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾

¹⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	II (EN 50178)
Supply voltage V_s	24 V DC (16.8 V DC ... 28.8 V DC)
Power consumption	≤ 0.8 A ¹⁾ ≤ 2.3 A ²⁾
Inputs	
External device monitoring (EDM)	1
Reset/restart	1
Static control inputs	4
Static control inputs with EFI	5 ³⁾
Dynamic control inputs (incremental encoder)	2 ⁴⁾
Outputs	
Safety outputs (OSSD)	2 x 500 mA
Diagnostic outputs	3 x 100 mA ⁵⁾

¹⁾ At 24 V DC without output load.

²⁾ At 24 V DC including maximum output load.

³⁾ In combination with an EFI device (Flexi Soft or EFI gateway) five static control inputs are available. Otherwise four.

⁴⁾ Two of the static switching signals can be used either as dynamic or as static switching signals.

⁵⁾ Freely programmable, e.g. warning field, contamination, reset required.

Mechanical data

Dimensions (W x H x D)	155 mm x 185 mm x 160 mm
Weight	3.3 kg
Housing material	Aluminum die cast
Housing color	RAL 1021 (yellow)
Front screen material	Polycarbonat
Front screen surface finish	Outside with scratch-resistant coating

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Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +50 °C
Storage temperature	-25 °C ... +50 °C
Vibration resistance	5 g, 10 Hz ... 150 Hz (EN 61496-1, CLC/TS 61496-3)
Shock resistance	10 g, 16 ms (EN 61496-1, CLC/TS 61496-3)

Other information

Type of light	Pulsed laser diode
Wave length	905 nm
Reflectivity	1.8 % ... > 1,000 %, reflectors
Laser class	1 (21 CFR 1040.10 and 1040.11, IEC 60825-1)

Ordering information

Items supplied S3000 systems:

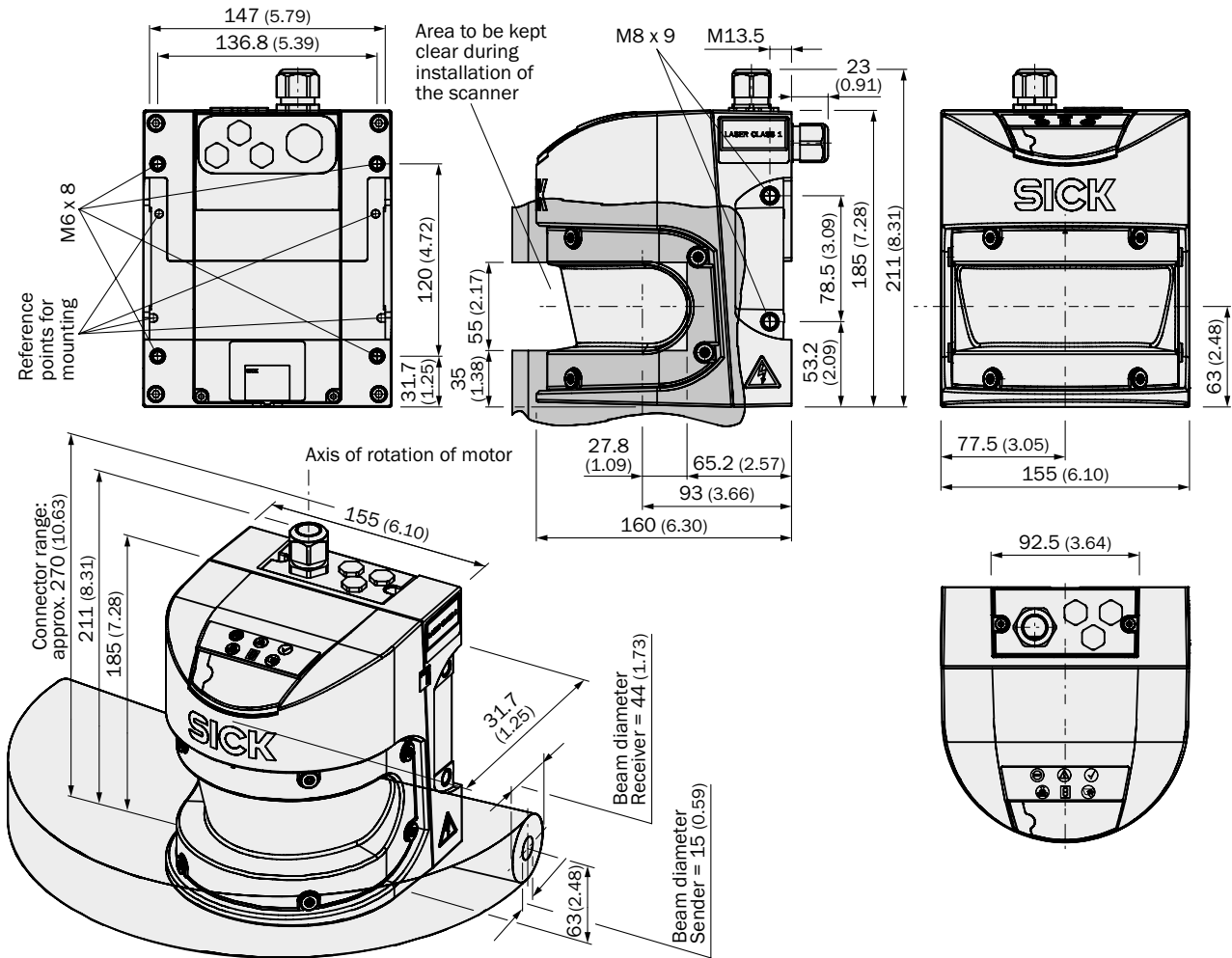
- Sensor head with I/O module mounted
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

The system plug has to be ordered separately!

Protective field range	Type	Part no.
4 m	S30A-4011GB	1052107
5.5 m	S30A-6011GB	1052108
7 m	S30A-7011GB	1052109

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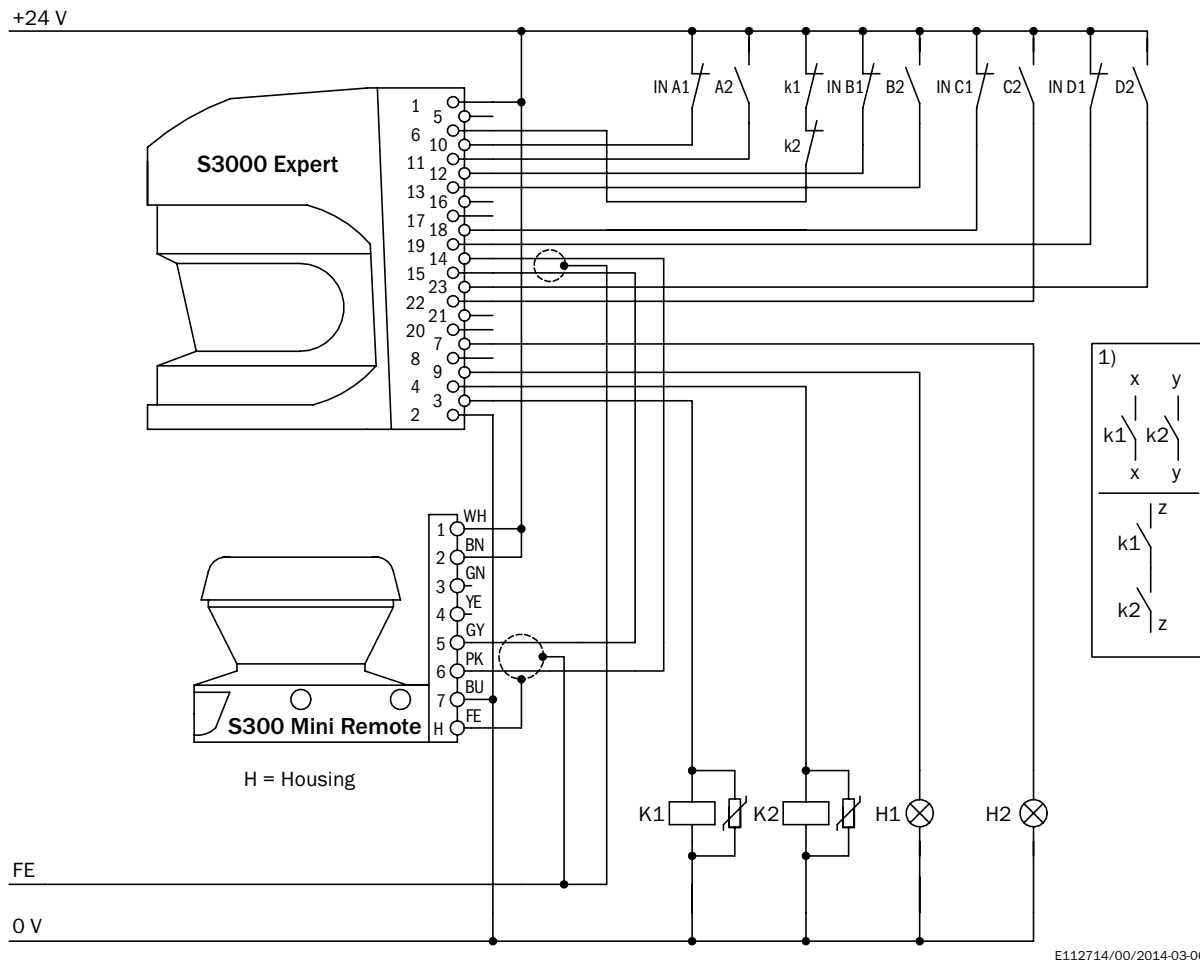
Dimensional drawing (Dimensions in mm (inch))



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Connection diagrams

Protective field switching between an S3000 Expert and an S300 Mini Remote with static inputs



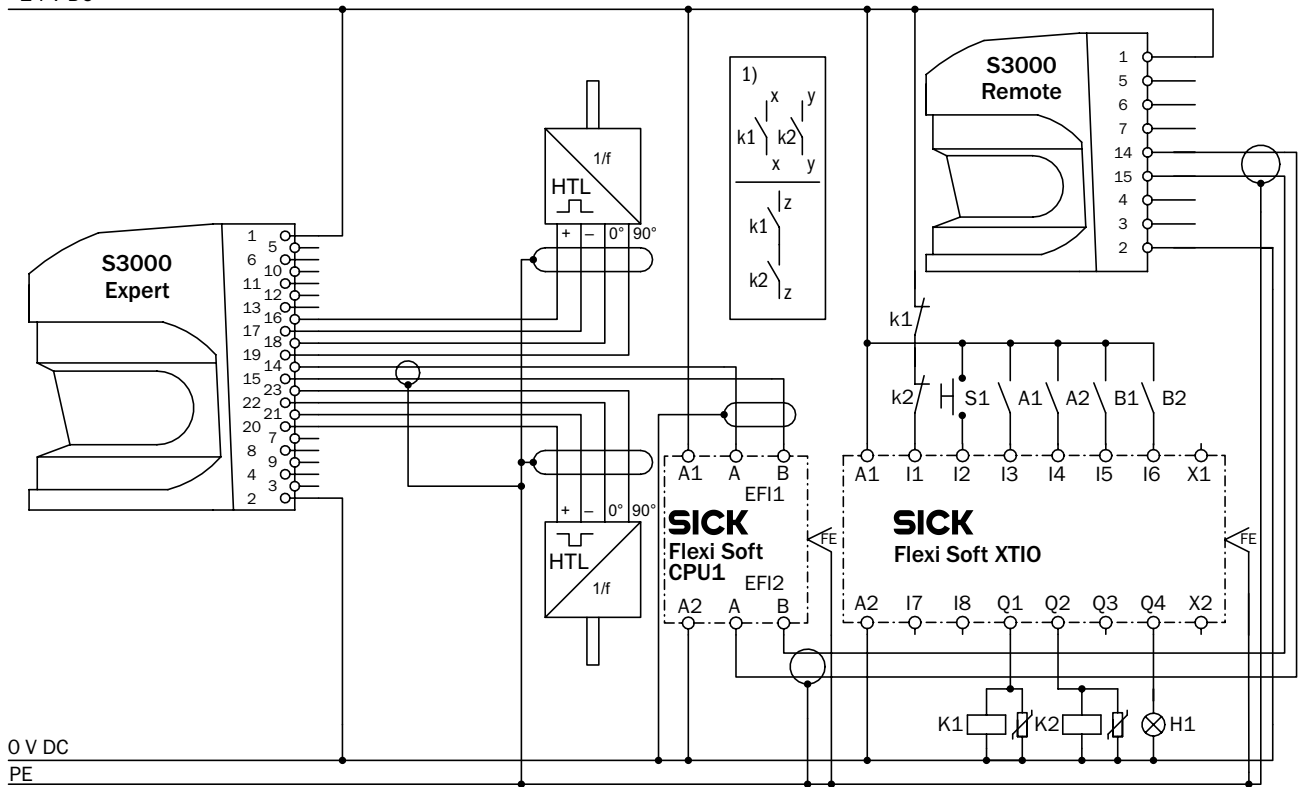
- S3000 Expert with S300 Mini Remote in an EFI system with relays/contactors
- Operating mode: without restart interlock, with external device monitoring
- Static protective field switching by the S3000 control inputs IN A to D. The protective fields affect the OSSDs on the S3000 Expert.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

Protective field switching between two S3000 scanners with static and dynamic inputs

+24 V DC



E112713/00/2014-03-06

- Combination of safety laser scanners and incremental encoders with Flexi Soft safety controller
- S3000 Expert with incremental encoders (x 2) for safe protective field switching based on dynamic input signals of the incremental encoders (speed)
- Protective field switching with static and dynamic inputs of two scanners in combination with a Flexi Soft safety controller via EFI (Enhanced Function Interface)
- Speed signals are transferred from scanner 1 to scanner 2 via EFI and Flexi Soft

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

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Accessories required for commissioning






Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
System plug	1	-	→ Plug connectors and cables
Connecting cable (only required for system plugs without cable)	1	-	→ Plug connectors and cables
Connection cable for configuration and diagnosis	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting bracket for direct mounting, from the rear, on wall or machine, not adjustable	1 piece	Mounting kit 1	2015623
	Mounting bracket for rear mounting on wall or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623)	1 piece	Mounting kit 2	2015624
	Mounting bracket for rear mounting on wall, floor, or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623) and 2 (2015624)	1 piece	Mounting kit 3	2015625
	Mounting bracket, heavy design, with protective hood, for floor mounting, adjustable longitudinal and lateral axes via ball joint, adjustable height	1 piece	Mounting kit heavy duty	7087514
	Mounting bracket, heavy design, with protective hood, for floor mounting, adjustable longitudinal and lateral axes via alignment plate, adjustable height	1 piece	Mounting kit heavy duty	2080350





Dimensional drawings → [page F-220](#)

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Connection systems


Plug connectors and cables

System plugs

Figure	Description	Model	Number of cores	Cable length	Items supplied	Type	Part no.
	For use of incremental encoders, integrated configuration storage	Without cable	-	-	With 1 x cable gland M20, 2 x cable gland M12, 1 x blanking plug M20, 6 x blanking plug M12	SX0A-A0000D	2023310
		Pre-assembled, PVC, unshielded	13-wire	5 m		SX0A-B1305D	2027176
	10 m			SX0A-B1310D		2027177	
	Not for use of incremental encoders, integrated configuration storage	Without cable	-	-	With 1 x cable gland M20, 1 x blanking plug M20, 2 x blanking plug M12	SX0A-A0000B	2023797
		Pre-assembled, PVC, unshielded	17-wire	5 m		SX0A-B1705B	2027174
				10 m		SX0A-B1710B	2027175
				20 m		SX0A-B1720B	2027816



Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded

Figure	Connection type		Cable length	Type	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649



Connection cables with male connector and male connector

- **Model:** PVC, unshielded


Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574
				10 m	DSL-8U04G10M025KM1	6034575

Cables (ready to assemble)

- **Items supplied:** by the meter





Figure	Description	Model	Conductor cross-section	Cable diameter	Number of cores	Type	Part no.
	-	PVC, unshielded	0.56 mm ²	Ø 8.5 mm	13-wire	Connecting cable	6025729
				Ø 9.3 mm	17-wire	Connecting cable	6025730
	Fitting for EFI connections	PVC, shielded	1 x 2 x 0.22 mm ²	Ø 5.7 mm	2-wire	EFI connecting cable	6029448
				Ø 12.2 mm	4-wire	Connection cable	6030756
					Ø 6.9 mm	4-wire	Connection cable

Cable gland


Figure	Connection type	Description	Permitted cable diameter	Type	Part no.
	M12	For EFI connections and incremental encoders, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5308757
		For EFI connections and incremental encoders, for quick and easy shield connection, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5314772
	M20	For supply cables and signal cables, for quick and easy shield connection, EMC proof	10 mm ... 14 mm	Cable gland M20	5314774

Modules and gateways

EFI gateways

Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098
	PROFINET PROFI-safe	UE4740-22H0000	1046978

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790



Reflectors and optics

Optics cloths

Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories

Test and monitoring tools


Figure	Description	Type	Part no.
 Illustration may differ	Scan finder, receiver to localize infrared scans	LS-80L	6020756
	To test the function of the protective field in a narrow aisle	Test object with bracket	2019459

Cleaning agent


Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006

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Spare parts

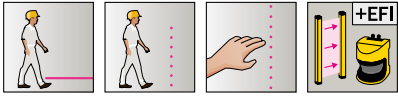
Figure	Description	Type	Part no.
	Front screen replacement kit with replacement seal and screws	Front screen replacement kit S3000	2027180

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

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THE SCANNER FOR MORE SAFETY



Product description

The S3000 Remote is an unbeatably cost-effective scanner for the complete protection of automatic guided vehicle systems and complex production and handling systems. In combination with other safety laser scanners, it provides optimum, efficient monitoring for all areas. The S3000 Remote uses an EFI interface to access the inputs and even incremental encoders on other devices.

This extends the interoperability of the S3000 Remote with other safety laser scanners and safety controllers from SICK. The system plug with built-in configuration storage enables rapid device replacement without using a laptop. The functions of the scanner network system can be easily configured and diagnosed in the CDS user interface (Configuration & Diagnostic Software).

At a glance

- Can be used only in the EFI system network, e.g. with a Flexi Soft safety controller or another safety laser scanner
- 4 m, 5.5 m or 7 m protective field range
- Up to 32 switchable field sets
- Configuration memory integrated in the system plug
- Measured data output via RS-422
- Simultaneous monitoring of up to 4 protective fields
- Contour as reference for vertical applications

Your benefits

- Easy installation, commissioning and maintenance for stationary and mobile applications
- Large protective field range of 7 m enables a large variety of applications
- Variety of field sets ensures safety and productivity when protecting vehicles or moving machine parts
- Quick recommissioning via configuration memory
- Modular expansions, low wiring effort and additional functions such as the simultaneous monitoring of up to four protective fields using a SICK safety controller via EFI
- Navigation support and personal protection in one device
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions



Additional information

Detailed technical data	F-183
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Connection diagrams	F-186
Recommended accessories	F-187

→ www.sick.com/S3000_Remote

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Usage	Can be used only in the EFI system network, e.g. with a Flexi Soft safety controller or another S300 or S3000 safety laser scanner
Protective field range	4 m / 5.5 m / 7 m (depending on type)
Warning field range	49 m (20 m at 20 % reflectivity)
Distance measuring range	49 m
Number of simultaneously monitored protective fields	≤ 4 ¹⁾
Type of field set	Triple field sets, dual field sets
Number of field sets	32 ²⁾ ³⁾
Number of monitoring cases	32 ³⁾
Scanning angle	190°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, configurable
Angular resolution	0.5°, 0.25°, depending on range and resolution
Response time	60 ms ⁴⁾
Protective field supplement	100 mm
Number of multiple samplings	2 ... 16, configurable
Delay of automatic reset	2 s ... 60 s, configurable

¹⁾ If more than one protective field is monitored simultaneously, then the safe output signals must be routed to safe outputs of a Flexi Soft safety controller, or via a safe EFI gateway.

²⁾ In dual field mode 32, in triple field mode 21 field sets.

³⁾ The performance characteristics of the Remote device correspond to those of the host. If the system exclusively consists of Remote devices connected to an EFI partner, 16 dual field sets or 10 triple field sets and 32 monitoring cases are available. For monitoring case switching static or dynamic inputs of the EFI partner have to be used.

⁴⁾ Depending on basic response time and multiple sampling.

Safety-related parameters

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508), SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	8.0 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

Restart interlock	✓
External device monitoring (EDM)	✓
Multiple sampling	✓
Monitoring case switching	✓
Simultaneous monitoring	✓
Static protective field switching	✓
Dynamic protective field switching	✓
Contour as a reference	✓
Integrated configuration memory	✓
Measured data output	✓
Safe SICK device communication via EFI	✓

Interfaces

Connection type	System plug with or without connecting cable
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Configuration and diagnostics interface	RS-232
Transmission rate	9.6 kBaud, 19.2 kBaud, 38.4 kBaud
Data interface	RS-422
Transmission rate	≤ 500 kBaud
Safe SICK device communication via EFI	
Transmission rate	≤ 500 kBaud
Cable length	≤ 50 m
Conductor cross-section	0.34 mm ²
Fieldbus, industrial network	
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ¹⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾

¹⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	II (EN 50178)
Supply voltage V_s	24 V DC (16.8 V DC ... 28.8 V DC)
Power consumption	≤ 0.8 A ¹⁾ ≤ 2.3 A ²⁾
Inputs	
External device monitoring (EDM)	1
Reset/restart	1
Static control inputs with EFI	5 ³⁾
Outputs	
Safety outputs (OSSD)	2 x 500 mA
Diagnostic outputs	3 x 100 mA ⁴⁾

¹⁾ At 24 V DC without output load.

²⁾ At 24 V DC including maximum output load.

³⁾ Can be used only in the EFI system network, e.g. with a Flexi Soft safety controller or another S300 or S3000 safety laser scanner.

⁴⁾ Freely programmable, e.g. warning field, contamination, reset required.

Mechanical data

Dimensions (W x H x D)	155 mm x 185 mm x 160 mm
Weight	3.3 kg
Housing material	Aluminum die cast
Housing color	RAL 1021 (yellow)
Front screen material	Polycarbonat
Front screen surface finish	Outside with scratch-resistant coating

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +50 °C
Storage temperature	-25 °C ... +50 °C
Vibration resistance	5 g, 10 Hz ... 150 Hz (EN 61496-1, CLC/TS 61496-3)
Shock resistance	10 g, 16 ms (EN 61496-1, CLC/TS 61496-3)

Other information

Type of light	Pulsed laser diode
Wave length	905 nm
Reflectivity	1.8 % ... > 1,000 %, reflectors
Laser class	1 (21 CFR 1040.10 and 1040.11, IEC 60825-1)

Ordering information

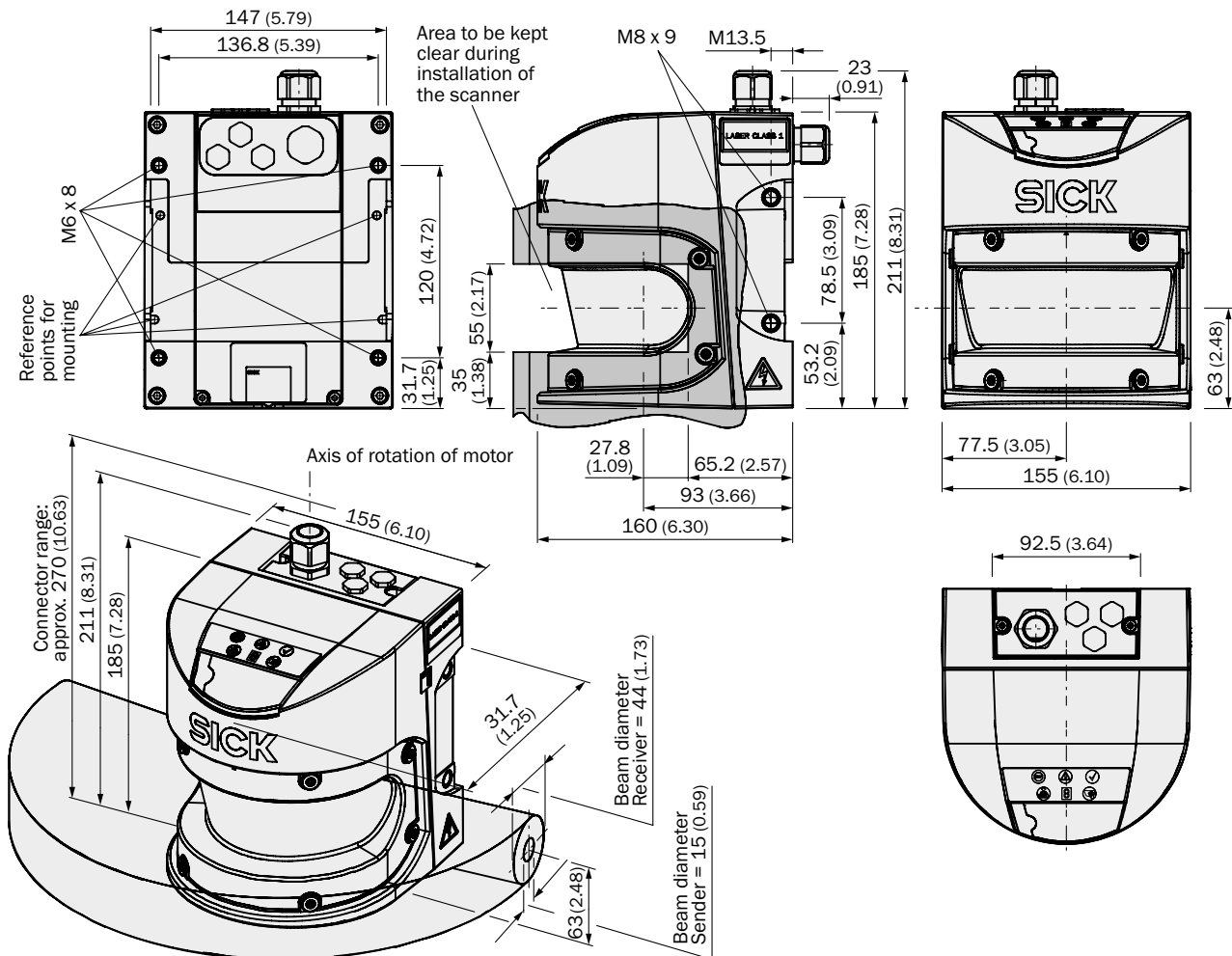
Items supplied S3000 systems:

- Sensor head with I/O module mounted
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

The system plug has to be ordered separately!

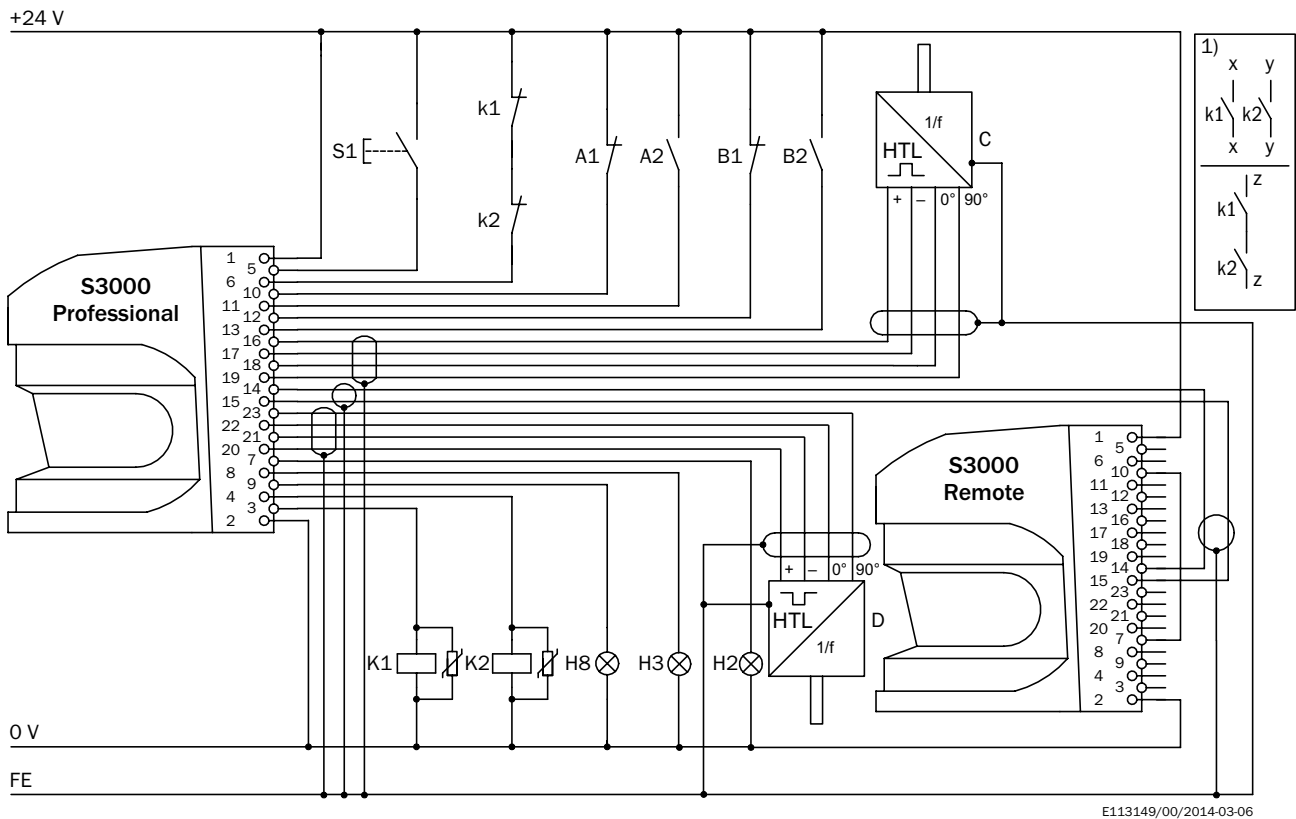
Protective field range	Type	Part no.
4 m	S30A-4011EA	1028938
5.5 m	S30A-6011EA	1023548
7 m	S30A-7011EA	1023893

Dimensional drawing (Dimensions in mm (inch))



Connection diagrams

Protective field switching between two S3000 scanners with static and dynamic inputs



E113149/00/2014-03-06

- S3000 Professional (left) and Remote (right) in conjunction with relays/contactors
- Operating mode: without restart interlock, with external device monitoring (EDM)
- Direction of travel-dependent dynamic protective field switching by means of B1 and B2 as well as static protective field switching by means of the control inputs A and B with sensor communication via EFI

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

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Accessories required for commissioning






Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
System plug	1	-	→ Plug connectors and cables
Connecting cable (only required for system plugs without cable)	1	-	→ Plug connectors and cables
EFI partner device	1	-	→ Can be used only in the EFI system network, e.g. with a Flexi Soft safety controller or another S300 or S3000 safety laser scanner
Connection cable for configuration and diagnosis	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting bracket for direct mounting, from the rear, on wall or machine, not adjustable	1 piece	Mounting kit 1	2015623
	Mounting bracket for rear mounting on wall or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623)	1 piece	Mounting kit 2	2015624
	Mounting bracket for rear mounting on wall, floor, or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623) and 2 (2015624)	1 piece	Mounting kit 3	2015625
	Mounting bracket, heavy design, with protective hood, for floor mounting, adjustable longitudinal and lateral axes via alignment plate, adjustable height	1 piece	Mounting kit heavy duty	2080350
	Mounting bracket, heavy design, with protective hood, for floor mounting, adjustable longitudinal and lateral axes via ball joint, adjustable height	1 piece	Mounting kit heavy duty	7087514





Dimensional drawings → [page F-220](#)

Connection systems

Plug connectors and cables


System plugs

- **Description:** Not for use of incremental encoders, integrated configuration storage

Figure	Model	Number of cores	Cable length	Items supplied	Type	Part no.
	Without cable	-	-	With 1 x cable gland M20, 1 x blanking plug M20, 2 x blanking plug M12	SX0A-A0000B	2023797
	Pre-assembled, PVC, unshielded	9-wire	5 m		SX0A-B0905B	2027170
	Pre-assembled, cable outlet to the rear, PVC, unshielded	9-wire	5 m		SX0A-B0905G	2049222
	Pre-assembled, PVC, unshielded	9-wire	10 m 20 m		SX0A-B0910B SX0A-B0920B	2027171 2027814



Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded

Figure	Connection type		Cable length	Type	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649


Connection cables with male connector and male connector

- **Model:** PVC, unshielded


Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574
				10 m	DSL-8U04G10M025KM1	6034575

Cables (ready to assemble)

- **Description:** fitting for EFI connections
- **Model:** PVC, shielded



Figure	Conductor cross-section	Cable diameter	Number of cores	Items supplied	Type	Part no.
	1 x 2 x 0.22 mm ²	Ø 5.7 mm	2-wire	By the meter	EFI connecting cable	6029448
	2 x 2.62 mm ² + 2 x 1.65 mm ²	Ø 12.2 mm	4-wire	By the meter	Connection cable	6030756
	2 x 0.34 mm ² + 2 x 0.25 mm ²	Ø 6.9 mm	4-wire	By the meter	Connection cable	6030921

Cable gland


Figure	Connection type	Description	Permitted cable diameter	Type	Part no.
	M12	For EFI connections and incremental encoders, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5308757
		For EFI connections and incremental encoders, for quick and easy shield connection, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5314772
	M20	For supply cables and signal cables, for quick and easy shield connection, EMC proof	10 mm ... 14 mm	Cable gland M20	5314774

Modules and gateways

EFI gateways

Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098
	PROFINET PROFI-safe	UE4740-22H0000	1046978

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790



Reflectors and optics

Optics cloths

Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories

Test and monitoring tools


Figure	Description	Type	Part no.
 Illustration may differ	Scan finder, receiver to localize infrared scans	LS-80L	6020756
	To test the function of the protective field in a narrow aisle	Test object with bracket	2019459

Cleaning agent


Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006

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Spare parts

Figure	Description	Type	Part no.
	Front screen replacement kit with replacement seal and screws	Front screen replacement kit S3000	2027180

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

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ALWAYS AVAILABLE – SAFETY TECHNOLOGY IN YOUR NETWORK

F



Product description

The S3000 PROFINET IO enables safe and reliable bus communication employing the safe PROFIsafe protocol and can be configured with up to four protective and four warning fields. By using the PROFINET-IO bus interface all signals are being processed by the superior controller (FPLC). The safety laser scanner is connected to the controller via a generic station description file (GSDML). Besides copper based conductors also optical fiber conductors are utilized as transmission medium.

The managed 2-port-switch of the I/O module is alternatively equipped with SCRJ connectors for optical fiber or RJ45 for copper conductors. A system plug with configuration memory enables fast device exchange. Simultaneous monitoring of separate protective fields can be easily configured. The process image offers notifications and alarms for simple administration and diagnostics from a centralized point. Large field-bus installations can also be operated economically.

At a glance

- Direct integration in PROFINET IO safe bus system
- 4 m, 5.5 m or 7 m protective field range
- 4 switchable field sets
- Managed 2-Port switch for copper or optical fiber based conductors
- Configuration memory integrated in the system plug
- Remote diagnostics and configuration through safety controller
- Simultaneous monitoring of 2 protective fields

Your benefits

- Reliable, fault-tolerant communication with FPLC control system using state-of-the-art optical fiber technology
- Efficient, cost-effective protection – networking through direct integration into PROFINET IO networks
- Rapid diagnostics using remote access prevents downtime
- Standardized integration in FPLC controllers thanks to GSDML generic station description
- Large protective field range of 7 m enables a large variety of applications
- Quick recommissioning via configuration memory
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions



Additional information

- Detailed technical data F-193
- Ordering information F-195
- Dimensional drawing F-196
- Recommended accessories F-197

→ www.sick.com/S3000_PROFINET_IO_Advanced

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Usage	S3000 PROFINET IO does not have any local inputs or outputs and is only operated in a network with corresponding controller.
Protective field range	4 m / 5.5 m / 7 m (depending on type)
Warning field range	49 m (20 m at 20 % reflectivity)
Distance measuring range	49 m
Number of simultaneously monitored protective fields	2
Type of field set	Dual field sets
Number of field sets	4
Number of monitoring cases	4
Scanning angle	190°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, configurable
Angular resolution	0.5°, 0.25°, depending on range and resolution
Response time	60 ms ¹⁾
Protective field supplement	100 mm
Number of multiple samplings	2 ... 16, configurable
Delay of automatic reset	120 ms ... 4,920 ms, configurable

¹⁾ Depending on basic response time and multiple sampling.

Safety-related parameters

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	8.0 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	The safety-related data is logic 0.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

Restart interlock	✓
Multiple sampling	✓
Monitoring case switching	✓
Simultaneous monitoring	✓
Static protective field switching	✓
Contour as a reference	✓
Integrated configuration memory	✓
Measured data output	✓

Interfaces

	S30A-x111xL	S30A-x111xP	
Connection type	Bus connection	Optical fiber conductor (2 female connectors for SCRJ push-pull plug)	Copper conductor (2 female connectors for RJ-45 push-pull plug)
	Supply connection	System plug with or without connecting cable	
Configuration and diagnostics interface	RS-232		
Transmission rate	9.6 kBaud, 19.2 kBaud, 38.4 kBaud		
Fieldbus, industrial network	PROFINET PROFI-safe		
Type of fieldbus integration	Integrated in the device		
Device properties	PROFINET IO device with 2-port real-time switch according to PROFINET specification V2.2 PROFI-safe profile with 6-octet input and 6-octet output according to IEC 61784-3-3 V2.4 Cycle time 4, 8, 16, 32 ms, etc. GSDML according to GSDML specification V2.25		
Switch properties	Filtering Data Base according to IEEE 802.1D 6 prioritization levels for IEEE 802.1Q – Network prioritization 64 KB SRAM memory for caching telegrams, managed in 768-byte segments Resource prioritization for network control and RTC2/3 frames Telegram extension based on “Cut-through” Port status (Disabled, Blocking, Forwarding) Support for non-real-time and real-time data transfer		
Port properties	Auto-negotiation Auto-crossover (MDIX) Auto-polarity 100Base-FX	Auto-negotiation Auto-crossover (MDIX) Auto-polarity 100Base-TX	
Conformance	Conformance Class B		
Topology support	SNMP, MIB-2, LLDP according to IEEE 802.1AB MRP client support		
Diagnostics	Application-related manufacturer-specific channel diagnostics and channel diagnostics for the PROFI-safe profile, individually switchable Report system errors Maintenance alerts for POF interfaces for signal quality Cable diagnostics Neighborhood alerts Support for port statistics I&M support from I&M0 to I&M4	Application-related manufacturer-specific channel diagnostics and channel diagnostics for the PROFI-safe profile, individually switchable Report system errors Cable diagnostics Neighborhood alerts Support for port statistics I&M support from I&M0 to I&M4	
Interfaces	TCP port 9000 and UDP port 30718 RS-232		
Functions that are not supported	Multicast communication Supervisor AR MAC-pause mechanism in full duplex Back-pressure in half duplex Static learning Broadcast Storm Control		

Electrical data

Protection class	III (VDE 0106, EN 60950)
Supply voltage V_s	24 V DC (16.8 V DC ... 28.8 V DC)
Power consumption	$\leq 0.8 \text{ A}^{1)}$ $\leq 2.3 \text{ A}^{2)}$

¹⁾ At 24 V DC without output load.

²⁾ At 24 V DC including maximum output load.

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Mechanical data

Dimensions (W x H x D)	155 mm x 185 mm x 160 mm
Weight	3.3 kg
Housing material	Aluminum die cast
Housing color	RAL 1021 (yellow)
Front screen material	Polycarbonat
Front screen surface finish	Outside with scratch-resistant coating

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +50 °C
Storage temperature	-25 °C ... +50 °C
Vibration resistance	5 g, 10 Hz ... 150 Hz (EN 61496-1, CLC/TS 61496-3)
Shock resistance	10 g, 16 ms (EN 61496-1, CLC/TS 61496-3)

Other information

Type of light	Pulsed laser diode
Wave length	905 nm
Reflectivity	1.8 % ... > 1,000 %, reflectors
Laser class	1 (21 CFR 1040.10 and 1040.11, IEC 60825-1)

Ordering information

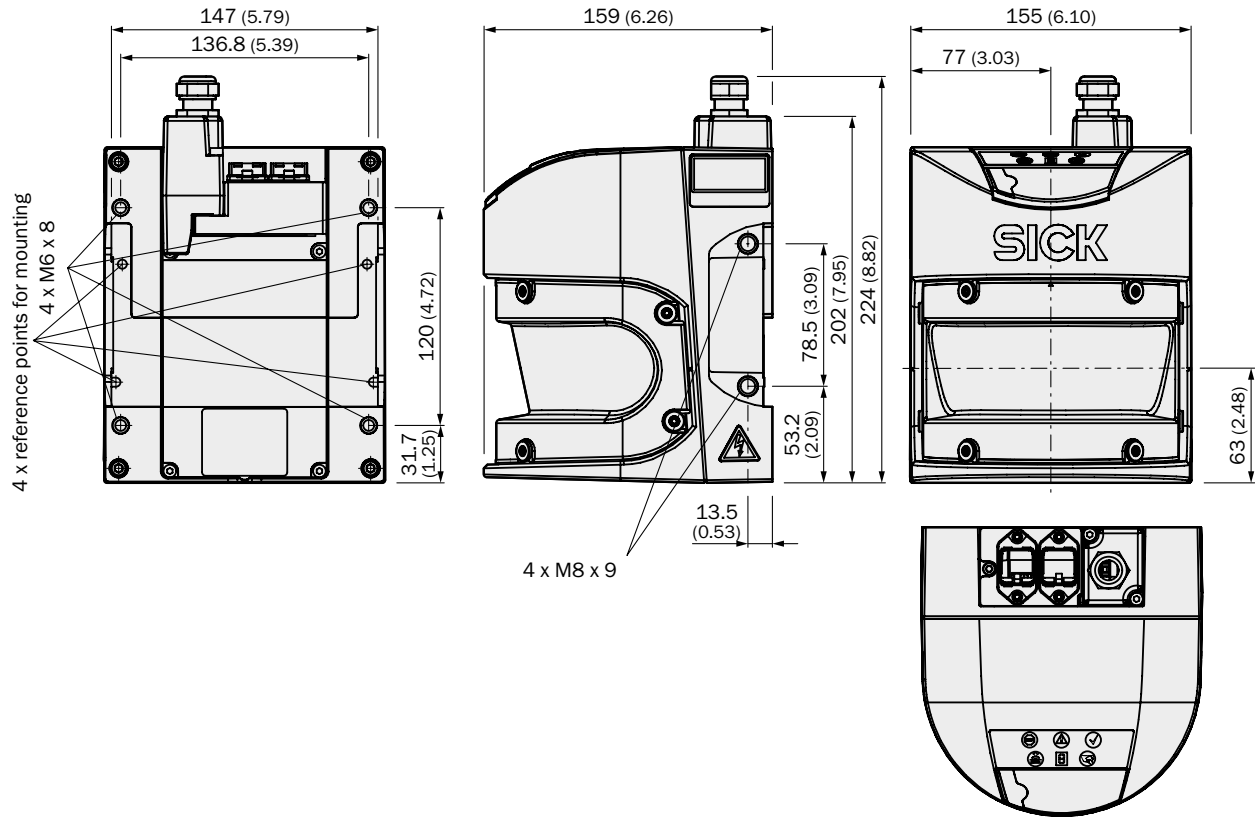
Items supplied S3000 systems:

- Sensor head with I/O module mounted
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

The system plug has to be ordered separately!

Protective field range	Connection type	Type	Part no.
4 m	Optical fiber conductor (2 female connectors for SCRJ push-pull plug)	S30A-4111CL	1052591
	Copper conductor (2 female connectors for RJ-45 push-pull plug)	S30A-4111CP	1045650
5.5 m	Optical fiber conductor (2 female connectors for SCRJ push-pull plug)	S30A-6111CL	1052593
	Copper conductor (2 female connectors for RJ-45 push-pull plug)	S30A-6111CP	1045652
7 m	Optical fiber conductor (2 female connectors for SCRJ push-pull plug)	S30A-7111CL	1052595
	Copper conductor (2 female connectors for RJ-45 push-pull plug)	S30A-7111CP	1045654

Dimensional drawing (Dimensions in mm (inch))



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Accessories required for commissioning






Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
System plug	1	-	→ Plug connectors and cables
Connecting cable (only required for system plugs without cable)	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting bracket for direct mounting, from the rear, on wall or machine, not adjustable	1 piece	Mounting kit 1	2015623
	Mounting bracket for rear mounting on wall or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623)	1 piece	Mounting kit 2	2015624
	Mounting bracket for rear mounting on wall, floor, or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623) and 2 (2015624)	1 piece	Mounting kit 3	2015625
	Mounting bracket, heavy design, with protective hood, for floor mounting, adjustable longitudinal and lateral axes via alignment plate, adjustable height	1 piece	Mounting kit heavy duty	2080350
	Mounting bracket, heavy design, with protective hood, for floor mounting, adjustable longitudinal and lateral axes via ball joint, adjustable height	1 piece	Mounting kit heavy duty	7087514




Dimensional drawings → [page F-220](#)

Connection systems

Plug connectors and cables

System plugs

- **Description:** Not for use of incremental encoders, integrated configuration storage

Figure	Model	Number of cores	Cable length	Items supplied	Type	Part no.
	Without cable	-	-	With 1 x cable gland M16	SX1A-A0000L	2047286
	Pre-assembled, PVC, unshielded	2-wire	1 m	With 1 x cable gland M16	SX1A-B0201L	2049575
	Pre-assembled with power y-junction, PVC, unshielded	2-wire	1 m	With 1 x cable gland M16	SX1A-B0201M	2049857



Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded


Figure	Connection type		Cable length	Type	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649

Connection cables with male connector and male connector


- **Model:** PVC, unshielded

Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574
				10 m	DSL-8U04G10M025KM1	6034575

Other connectors and cables

Figure	Model	Cable length	Type	Part no.
	Unshielded	0.3 m	Adapter cable RJ45PP/M12	6044052

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790


Reflectors and optics

Optics cloths


Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
 Illustration may differ	Scan finder, receiver to localize infrared scans	LS-80L	6020756

Cleaning agent

Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006

Spare parts

Figure	Description	Type	Part no.
	Front screen replacement kit with replacement seal and screws	Front screen replacement kit S3000	2027180

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Product description

By using the PROFIsafe protocol, the S3000 PROFINET IO Professional enables safe and reliable bus communication and can be configured for complex applications with up to eight protective fields and eight warning fields. The PROFINET IO bus connection processes all signals from the higher-level control system (FPLC). The safety laser scanner is connected to the control system via a standardized generic station description (GSDML). In addition to copper wires, optical fiber cables are also used as the

transmission medium. The managed 2-port switch of the I/O module has the option of being equipped with a SCRJ plug connector for optical fiber cables or a RJ45 for copper wires. The system plug with built-in configuration memory enables quick device replacement. It is easy to configure simultaneous monitoring of separate protective fields. For the operation of large fieldbus installations, the process map provides signals for easy administration and diagnostics from a central location.

At a glance

- Direct integration in PROFINET IO safe bus system
- 4 m, 5.5 m or 7 m protective field range
- 8 switchable field sets
- Managed 2-Port switch for copper or optical fiber based conductors
- Configuration memory integrated in the system plug
- Remote diagnostics and configuration through safety controller
- Simultaneous monitoring of 2 protective fields

Your benefits

- Reliable, fault-tolerant communication with FPLC control system using state-of-the-art optical fiber technology
- Efficient, cost-effective protection – networking through direct integration into PROFINET IO networks
- Rapid diagnostics using remote access prevents downtime
- Standardized integration in FPLC controllers thanks to GSDML generic station description
- Large protective field range of 7 m enables a large variety of applications
- Quick recommissioning via configuration memory
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions



Additional information

- Detailed technical data F-201
- Ordering information F-203
- Dimensional drawing F-204
- Recommended accessories F-205

→ www.sick.com/S3000_PROFINET_IO_Professional

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



F

Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Usage	S3000 PROFINET IO does not have any local inputs or outputs and is only operated in a network with corresponding controller.
Protective field range	4 m / 5.5 m / 7 m (depending on type)
Warning field range	49 m (20 m at 20 % reflectivity)
Distance measuring range	49 m
Number of simultaneously monitored protective fields	2
Type of field set	Dual field sets
Number of field sets	8
Number of monitoring cases	16
Scanning angle	190°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, configurable
Angular resolution	0.5°, 0.25°, depending on range and resolution
Response time	60 ms ¹⁾
Protective field supplement	100 mm
Number of multiple samplings	2 ... 16, configurable
Delay of automatic reset	120 ms ... 4,920 ms, configurable

¹⁾ Depending on basic response time and multiple sampling.

Safety-related parameters

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	8.0 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	The safety-related data is logic 0.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

Restart interlock	✓
Multiple sampling	✓
Monitoring case switching	✓
Simultaneous monitoring	✓
Static protective field switching	✓
Contour as a reference	✓
Integrated configuration memory	✓
Measured data output	✓

Interfaces

	S30A-x111xL	S30A-x111xP	
Connection type	Bus connection	Optical fiber conductor (2 female connectors for SCRJ push-pull plug)	Copper conductor (2 female connectors for RJ-45 push-pull plug)
	Supply connection	System plug with or without connecting cable	
Configuration and diagnostics interface	RS-232		
Transmission rate	9.6 kBaud, 19.2 kBaud, 38.4 kBaud		
Fieldbus, industrial network	PROFINET PROFI-safe		
Type of fieldbus integration	Integrated in the device		
Device properties	PROFINET IO device with 2-port real-time switch according to PROFINET specification V2.2 PROFI-safe profile with 6-octet input and 6-octet output according to IEC 61784-3-3 V2.4 Cycle time 4, 8, 16, 32 ms, etc. GSDML according to GSDML specification V2.25		
Switch properties	Filtering Data Base according to IEEE 802.1D 6 prioritization levels for IEEE 802.1Q – Network prioritization 64 KB SRAM memory for caching telegrams, managed in 768-byte segments Resource prioritization for network control and RTC2/3 frames Telegram extension based on “Cut-through” Port status (Disabled, Blocking, Forwarding) Support for non-real-time and real-time data transfer		
Port properties	Auto-negotiation Auto-crossover (MDIX) Auto-polarity 100Base-FX	Auto-negotiation Auto-crossover (MDIX) Auto-polarity 100Base-TX	
Conformance	Conformance Class B		
Topology support	SNMP, MIB-2, LLDP according to IEEE 802.1AB MRP client support		
Diagnostics	Application-related manufacturer-specific channel diagnostics and channel diagnostics for the PROFI-safe profile, individually switchable Report system errors Maintenance alerts for POF interfaces for signal quality Cable diagnostics Neighborhood alerts Support for port statistics I&M support from I&M0 to I&M4	Application-related manufacturer-specific channel diagnostics and channel diagnostics for the PROFI-safe profile, individually switchable Report system errors Cable diagnostics Neighborhood alerts Support for port statistics I&M support from I&M0 to I&M4	
Interfaces	TCP port 9000 and UDP port 30718 RS-232		
Functions that are not supported	Multicast communication Supervisor AR MAC-pause mechanism in full duplex Back-pressure in half duplex Static learning Broadcast Storm Control		

Electrical data

Protection class	III (VDE 0106, EN 60950)
Supply voltage V_s	24 V DC (16.8 V DC ... 28.8 V DC)
Power consumption	$\leq 0.8 \text{ A}^{1)}$ $\leq 2.3 \text{ A}^{2)}$

¹⁾ At 24 V DC without output load.

²⁾ At 24 V DC including maximum output load.

Mechanical data

Dimensions (W x H x D)	155 mm x 185 mm x 160 mm
Weight	3.3 kg
Housing material	Aluminum die cast
Housing color	RAL 1021 (yellow)
Front screen material	Polycarbonat
Front screen surface finish	Outside with scratch-resistant coating

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +50 °C
Storage temperature	-25 °C ... +50 °C
Vibration resistance	5 g, 10 Hz ... 150 Hz (EN 61496-1, CLC/TS 61496-3)
Shock resistance	10 g, 16 ms (EN 61496-1, CLC/TS 61496-3)

Other information

Type of light	Pulsed laser diode
Wave length	905 nm
Reflectivity	1.8 % ... > 1,000 %, reflectors
Laser class	1 (21 CFR 1040.10 and 1040.11, IEC 60825-1)

Ordering information

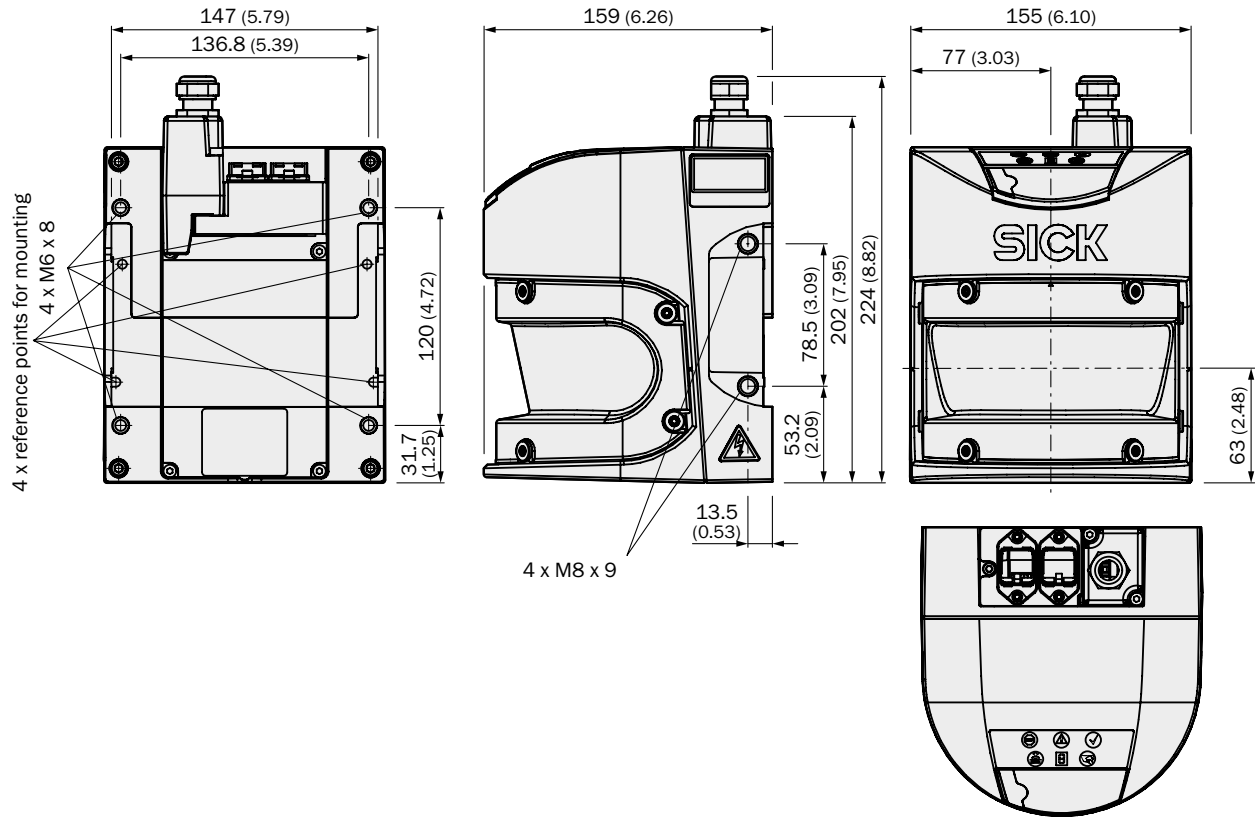
Items supplied S3000 systems:

- Sensor head with I/O module mounted
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

The system plug has to be ordered separately!

Protective field range	Connection type	Type	Part no.
4 m	Optical fiber conductor (2 female connectors for SCRJ push-pull plug)	S30A-4111DL	1052592
	Copper conductor (2 female connectors for RJ-45 push-pull plug)	S30A-4111DP	1045651
5.5 m	Optical fiber conductor (2 female connectors for SCRJ push-pull plug)	S30A-6111DL	1052594
	Copper conductor (2 female connectors for RJ-45 push-pull plug)	S30A-6111DP	1045653
7 m	Optical fiber conductor (2 female connectors for SCRJ push-pull plug)	S30A-7111DL	1052596
	Copper conductor (2 female connectors for RJ-45 push-pull plug)	S30A-7111DP	1045655

Dimensional drawing (Dimensions in mm (inch))



F

Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
System plug	1	-	→ Plug connectors and cables
Connecting cable (only required for system plugs without cable)	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting bracket for direct mounting, from the rear, on wall or machine, not adjustable	1 piece	Mounting kit 1	2015623
	Mounting bracket for rear mounting on wall or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623)	1 piece	Mounting kit 2	2015624
	Mounting bracket for rear mounting on wall, floor, or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623) and 2 (2015624)	1 piece	Mounting kit 3	2015625
	Mounting bracket, heavy design, with protective hood, for floor mounting, adjustable longitudinal and lateral axes via alignment plate, adjustable height	1 piece	Mounting kit heavy duty	2080350
	Mounting bracket, heavy design, with protective hood, for floor mounting, adjustable longitudinal and lateral axes via ball joint, adjustable height	1 piece	Mounting kit heavy duty	7087514

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Dimensional drawings → [page F-220](#)

Connection systems

Plug connectors and cables

System plugs

- **Description:** Not for use of incremental encoders, integrated configuration storage

Figure	Model	Number of cores	Cable length	Items supplied	Type	Part no.
	Without cable	-	-	With 1 x cable gland M16	SX1A-A0000L	2047286
	Pre-assembled, PVC, unshielded	2-wire	1 m	With 1 x cable gland M16	SX1A-B0201L	2049575
	Pre-assembled with power y-junction, PVC, unshielded	2-wire	1 m	With 1 x cable gland M16	SX1A-B0201M	2049857



Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded


Figure	Connection type		Cable length	Type	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649

Connection cables with male connector and male connector


- **Model:** PVC, unshielded

Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574
				10 m	DSL-8U04G10M025KM1	6034575

Other connectors and cables

Figure	Model	Cable length	Type	Part no.
	Unshielded	0.3 m	Adapter cable RJ45PP/M12	6044052

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790


Reflectors and optics

Optics cloths

Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
 Illustration may differ	Scan finder, receiver to localize infrared scans	LS-80L	6020756

Cleaning agent

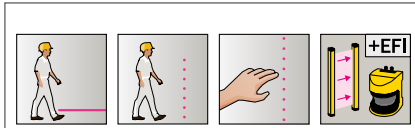
Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006

Spare parts

Figure	Description	Type	Part no.
	Front screen replacement kit with replacement seal and screws	Front screen replacement kit S3000	2027180

RELIABLE SAFETY FOR TOUGH REQUIREMENTS IN COLD STORAGE

F



Product description

The S3000 Cold Store is used to protect people and systems in cold areas as it is designed to withstand temperatures as low as $-30\text{ }^{\circ}\text{C}$. It is suitable for stationary and mobile applications and can be used without any additional measures under the harshest of conditions. Integrated heating and a special housing mean that it complies with the requirements for the IP 67 enclosure rating. Up to four switchable field sets can be programmed. There are two static inputs

available for this purpose. The system network of two scanners can also be implemented via the safe bus connection by means of EFI. The integrated EFI interface also allows additional sensor functions. EFI allows up to 4 safety laser scanners to be connected to SICK safety controllers. With an EFI connection the function of simultaneous monitoring of up to four protective fields can be realized.

At a glance

- Designed and certified for temperatures down to $-30\text{ }^{\circ}\text{C}$
- Modified housing with integrated temperature controller
- IP 67 enclosure rating
- 7 m protective field range
- 4 switchable field sets
- Interface (EFI) for reliable SICK device communication
- Selectable resolution for hand, leg or body detection
- Contour as reference for vertical applications

Your benefits

- First safety laser scanner available on the market that can be used at temperatures as low as $-30\text{ }^{\circ}\text{C}$
- Hazard area, hazard point, access or vehicle protection in cold areas
- Large protective field range of 7 m enables a large variety of applications
- Modular expansions, low wiring effort and additional functions such as the simultaneous monitoring of up to four protective fields using a SICK safety controller via EFI
- Easy installation, commissioning and maintenance for stationary and mobile applications
- Decades of proven safety technology guarantee maximum reliability and availability – even under difficult conditions



Additional information

Detailed technical data	F-209
Ordering information	F-211
Dimensional drawing	F-212
Connection diagrams	F-213
Recommended accessories	F-215

→ www.sick.com/S3000_Cold_Store

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Protective field range	7 m
Warning field range	49 m (20 m at 20 % reflectivity)
Distance measuring range	49 m
Number of simultaneously monitored protective fields	≤ 4 ¹⁾
Type of field set	Triple field sets, dual field sets
Number of field sets	4
Number of monitoring cases	4
Scanning angle	180°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, configurable
Angular resolution	0.5°, 0.25°, depending on range and resolution
Response time	60 ms ²⁾
Protective field supplement	100 mm
Number of multiple samplings	2 ... 16, configurable
Delay of automatic reset	2 s ... 60 s, configurable

¹⁾ If more than one protective field is monitored simultaneously, then the safe output signals must be routed to safe outputs of a Flexi Soft safety controller, or via a safe EFI gateway.

²⁾ Depending on basic response time and multiple sampling.

Safety-related parameters

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	8.0 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

Multiple sampling	✓
Monitoring case switching	✓
Simultaneous monitoring	✓
Static protective field switching	✓
Contour as a reference	✓
Safe SICK device communication via EFI	✓

Interfaces

Connection type	System plug
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Configuration and diagnostics interface	RS-232
Transmission rate	9.6 kBaud, 19.2 kBaud, 38.4 kBaud
Safe SICK device communication via EFI	
Transmission rate	≤ 500 kBaud
Cable length	≤ 50 m
Conductor cross-section	0.34 mm ²
Fieldbus, industrial network	
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFIsafe, PROFINET PROFIsafe ¹⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾

¹⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	II (EN 50178)
Supply voltage V_s	
Scanner	24 V DC (17.5 V DC ... 28.8 V DC)
Heating	24 V DC (16.8 V DC ... 28.8 V DC)
Power consumption	
Scanner	≤ 0.8 A ¹⁾ ≤ 2.3 A ²⁾
Heating	≤ 6 A, cyclical
Inputs	
Static control inputs	2
Static control inputs with EFI	5 ³⁾
Outputs	
Safety outputs (OSSD)	2 x 500 mA
Diagnostic outputs	2 x 100 mA ⁴⁾

¹⁾ At 24 V DC without output load.

²⁾ At 24 V DC including maximum output load.

³⁾ In combination with an EFI device (Flexi Soft or EFI gateway) five static control inputs are available. Otherwise two.

⁴⁾ Freely programmable, e.g. warning field, contamination, reset required.

Mechanical data

Dimensions (W x H x D)	351 mm x 265 mm x 221 mm
Weight	9 kg
Material	
Back panel, plug	Aluminum die cast
Cover	Polyurethane
Housing color	RAL 1021 (yellow)
Front screen material	Polycarbonat
Front screen surface finish	Outside with scratch-resistant coating

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Ambient data

Enclosure rating	IP 65 (EN 60529)
	IP 67 (EN 60529)
Ambient operating temperature	-30 °C ... +50 °C
Storage temperature	-30 °C ... +50 °C
Vibration resistance	5 g, 10 Hz ... 150 Hz (EN 61496-1, CLC/TS 61496-3)
Shock resistance	10 g, 16 ms (EN 61496-1, CLC/TS 61496-3)

Other information

Type of light	Pulsed laser diode
Wave length	905 nm
Reflectivity	1.8 % ... > 1,000 %, reflectors
Laser class	1 (21 CFR 1040.10 and 1040.11, IEC 60825-1)

Ordering information

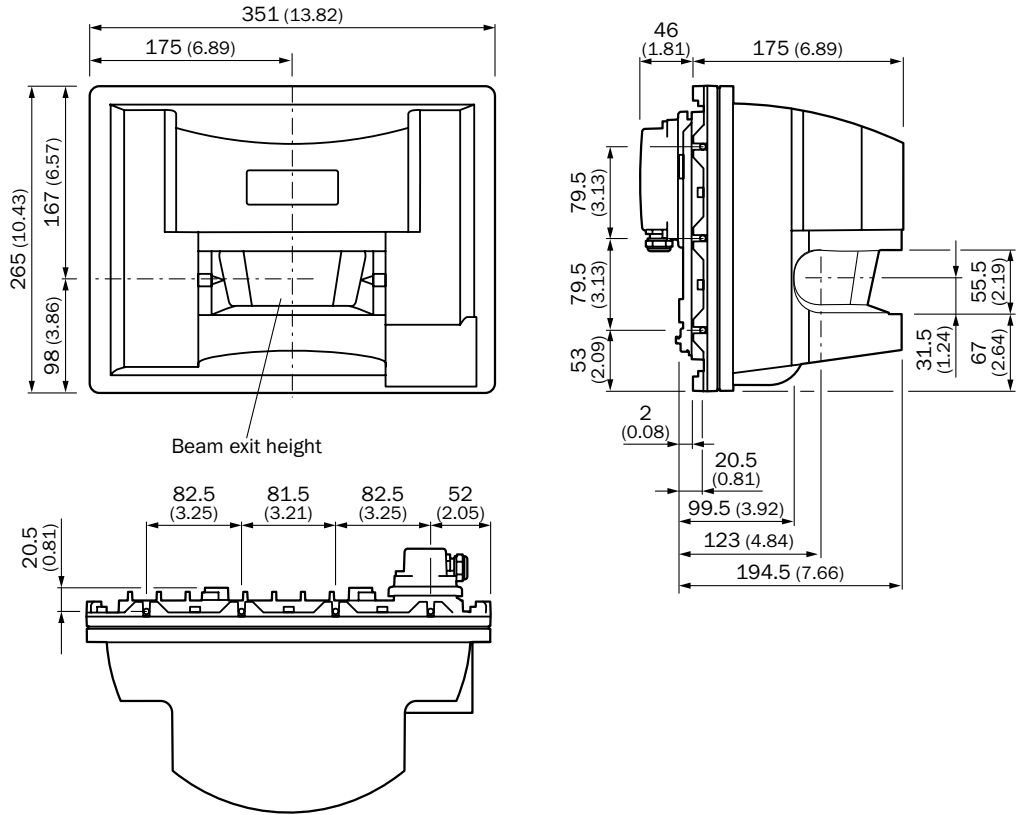
Items supplied S3000 Cold Store:

- S3000 Cold Store including system plug
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

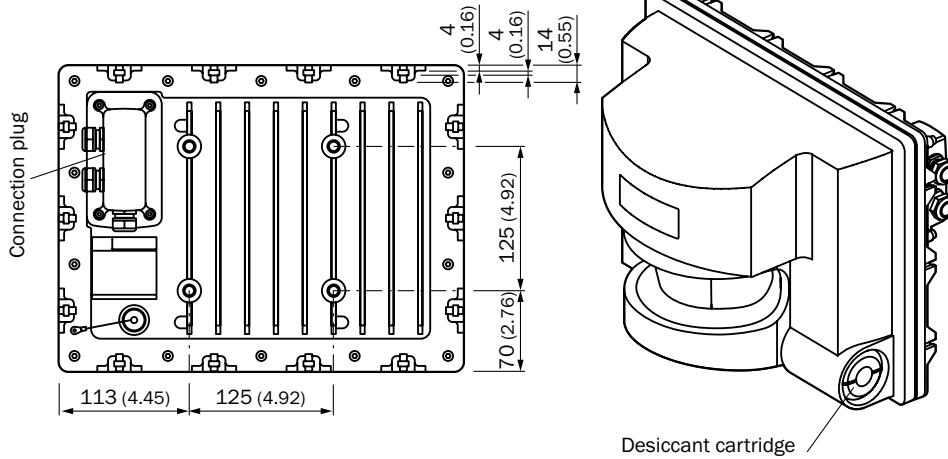
Protective field range	Type	Part no.
7 m	S31A-7011CA	1041648

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Dimensional drawing (Dimensions in mm (inch))

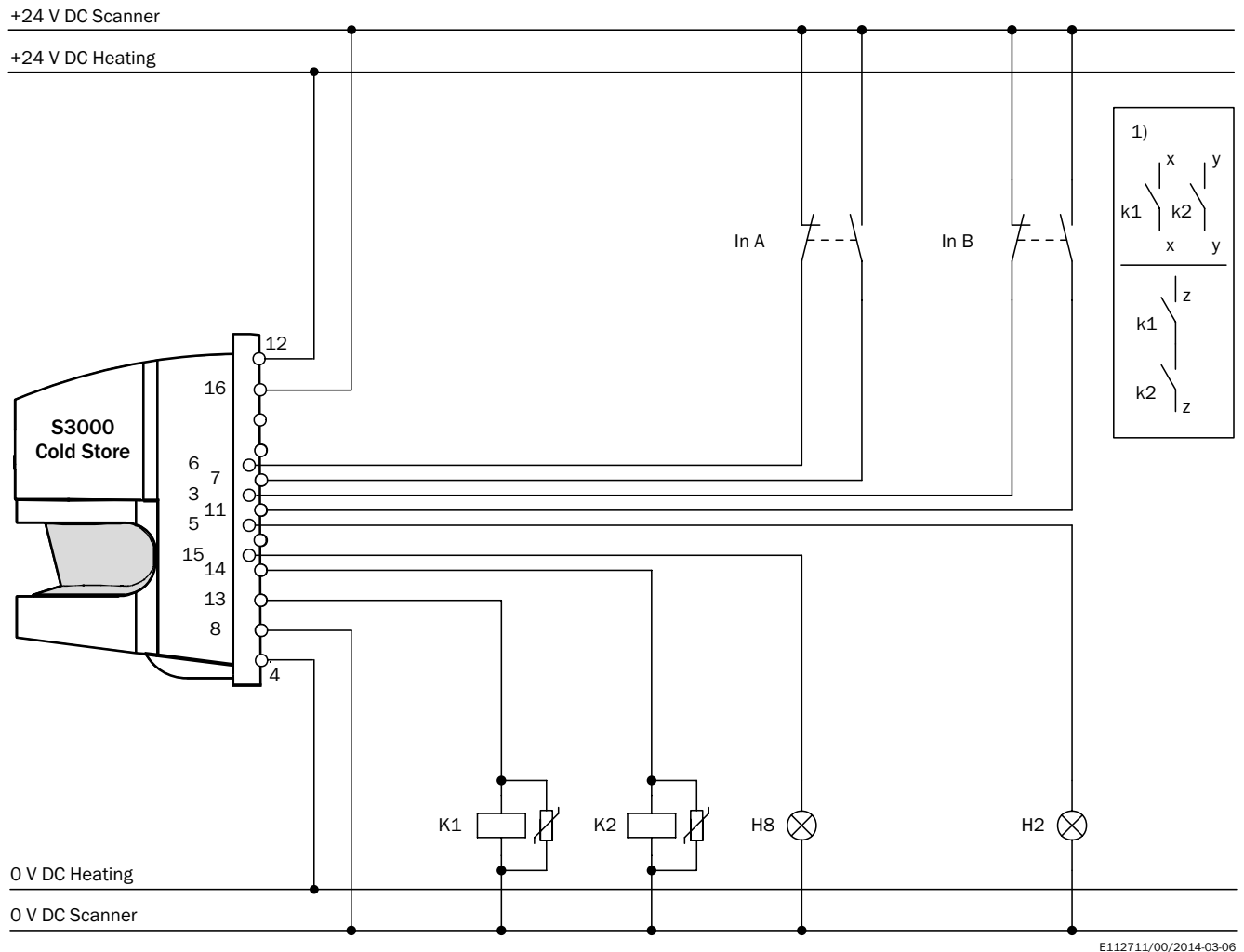


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Connection diagrams

Protective field switching with two static inputs



E112711/00/2014-03-06

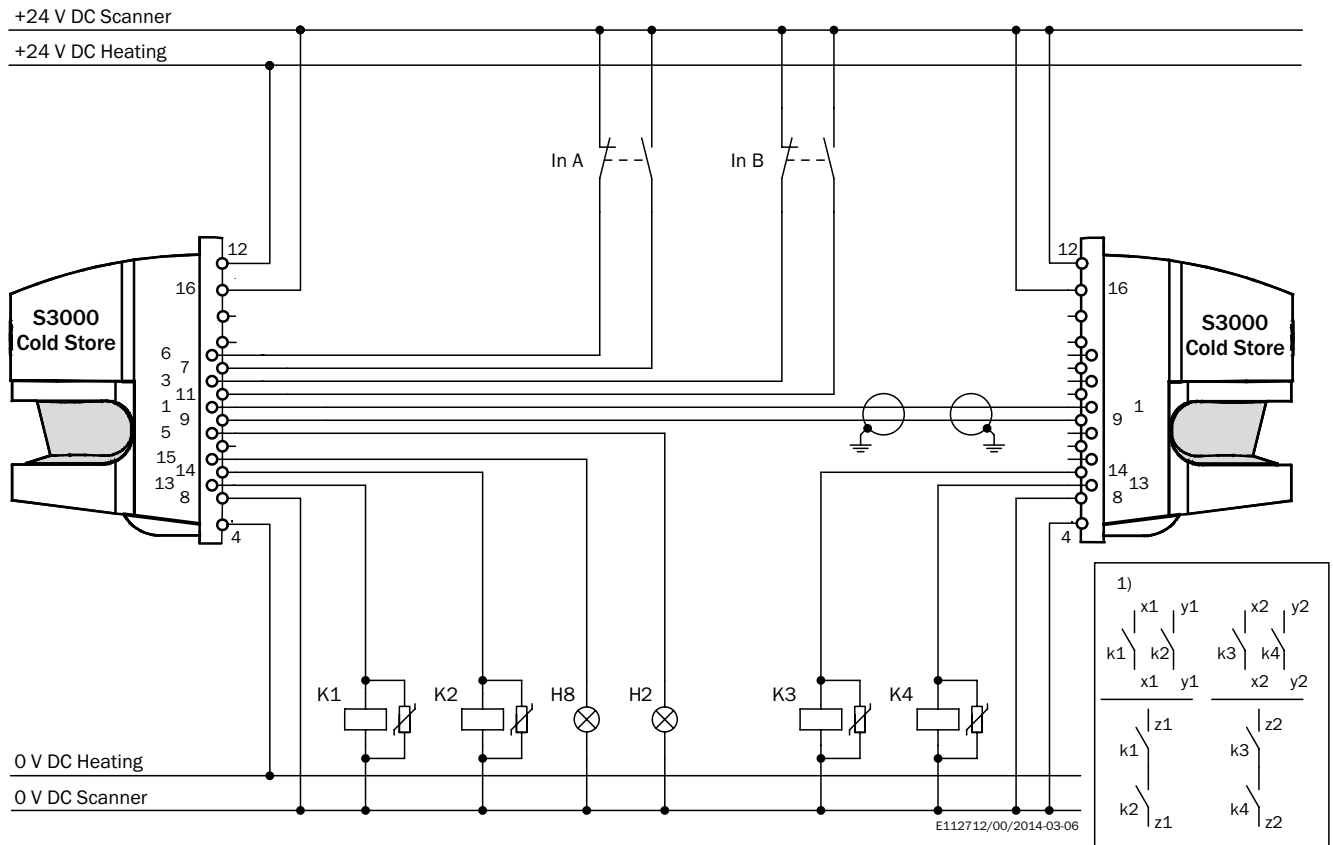
- S3000 Cold Store in conjunction with relays/contactors
- Protective field switching by means of control inputs A and B

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

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Protective field switching between two S3000 with static inputs



- S3000 Cold Store with S3000 Cold Store in conjunction with relays/contactors
- Protective field switching by means of control input A and control input B on separate OSSD pairs (simultaneous monitoring)

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

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Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
Adjustment bracket	1	-	→ Mounting brackets and mounting plates
Service cable for parameter setting	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates



Mounting brackets

Figure	Description	Type	Part no.
	Mounting kit for wall-mounting (adjustment bracket)	Mounting kit	2018303

Connection systems



Plug connectors and cables

Male connectors (ready to assemble)

Figure	Connection type	Type	Part no.
	16-pin	16-pin plug insert (female connector)	6004379
	Male connector, 16-pin	16-pin male connector	2018301

Cables (ready to assemble)

- **Items supplied:** by the meter

Figure	Description	Model	Conductor cross-section	Cable diameter	Number of cores	Type	Part no.
	-	PVC, unshielded	0.56 mm ²	∅ 8.5 mm	13-wire	Connecting cable	6025729
	Fitting for EFI connections	PVC, shielded	1 x 2 x 0.22 mm ²	∅ 5.7 mm	2-wire	EFI connecting cable	6029448

Other connectors and cables

Figure	Description	Model	Cable length	Type	Part no.
	Configuration cable pre-assembled for RS-232, for the connection of PCs/ power supply	Unshielded	5 m	Service cable	2019561

Power supply units and power cord connectors

Input voltage	Output voltage	Output current	Type	Part no.
120 V AC 230 V AC	24 V DC	≤ 10 A	Power supply	6011156


Reflectors and optics

Optics cloths

Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories

Test and monitoring tools


Figure	Description	Type	Part no.
 Illustration may differ	Scan finder, receiver to localize infrared scans	LS-80L	6020756

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Drying agent cartridges

Figure	Description	Type	Part no.
	Dry cartridge	Desiccant cartridge with male thread M36 x 1.5	5306179

Cleaning agent

Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006

Enhanced system solutions

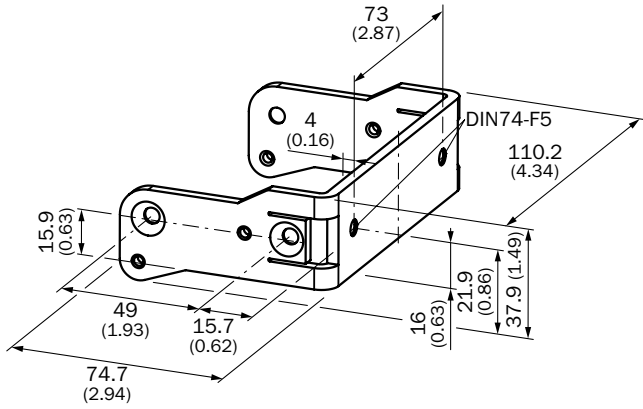
Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

F

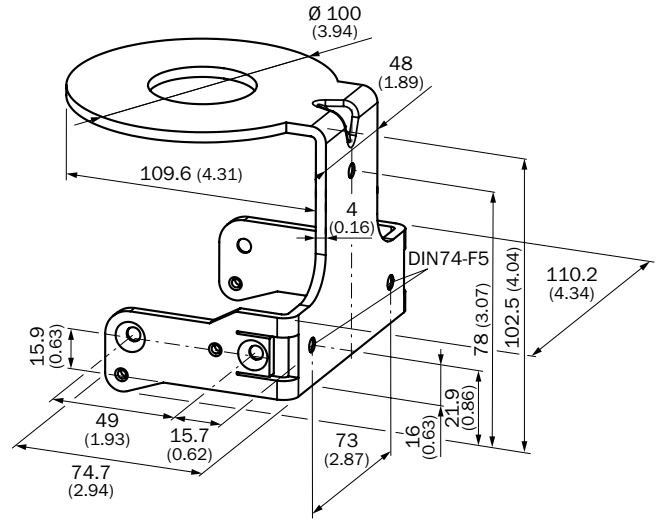
S300 Mini (Dimensions in mm (inch))

Mounting brackets and mounting plates

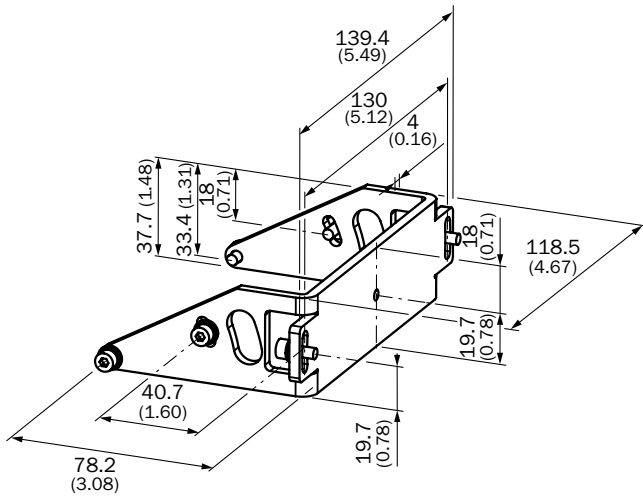
Mounting kit 1a (2034324)



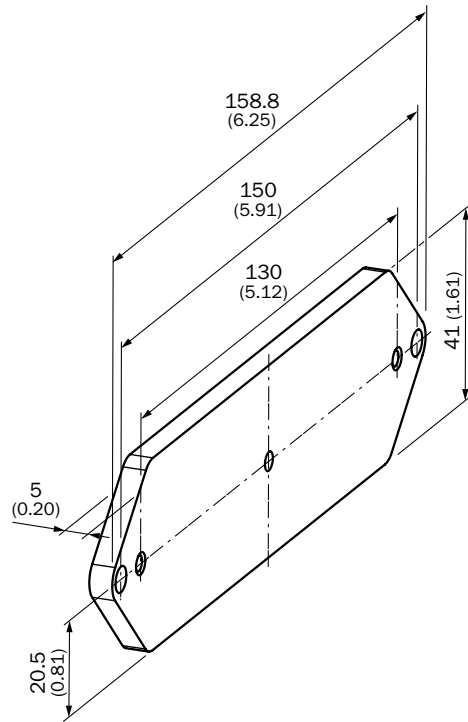
Mounting kit 1b (2034325)



Mounting kit 2 (2039302)



Mounting kit 3 (2039303)

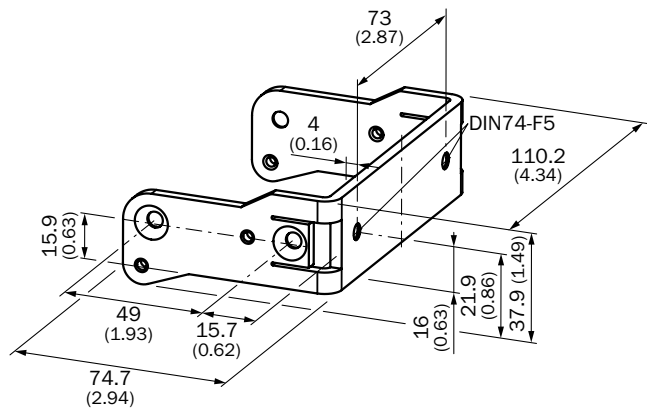


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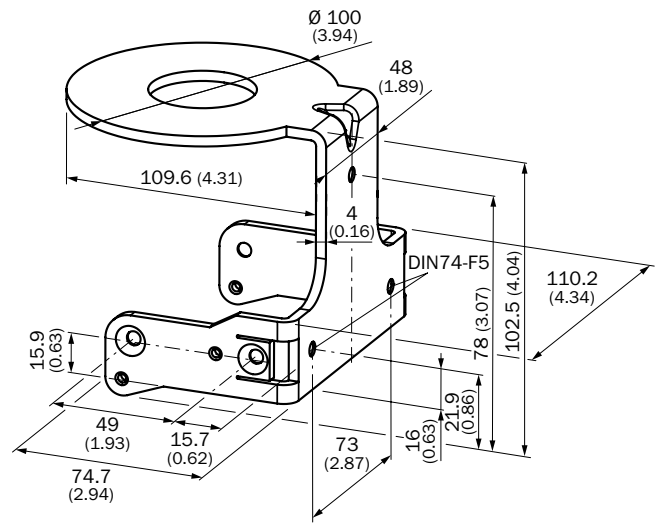
S300 (Dimensions in mm (inch))

Mounting brackets and mounting plates

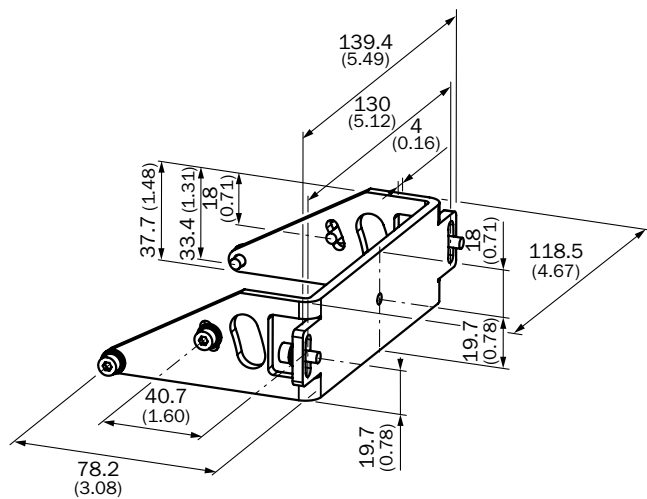
Mounting kit 1a (2034324)



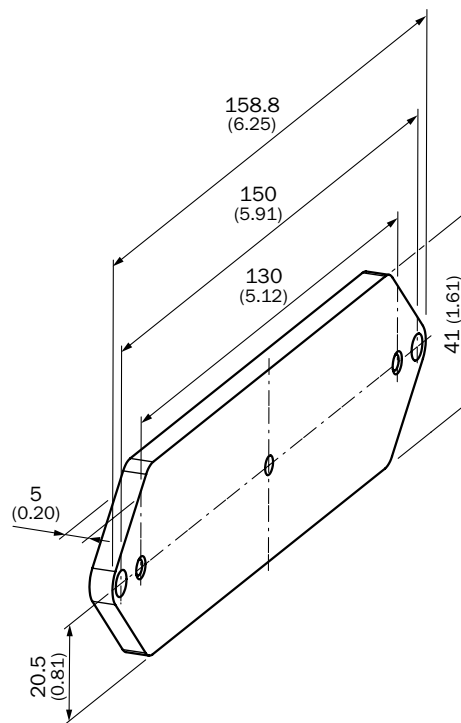
Mounting kit 1b (2034325)



Mounting kit 2 (2039302)



Mounting kit 3 (2039303)

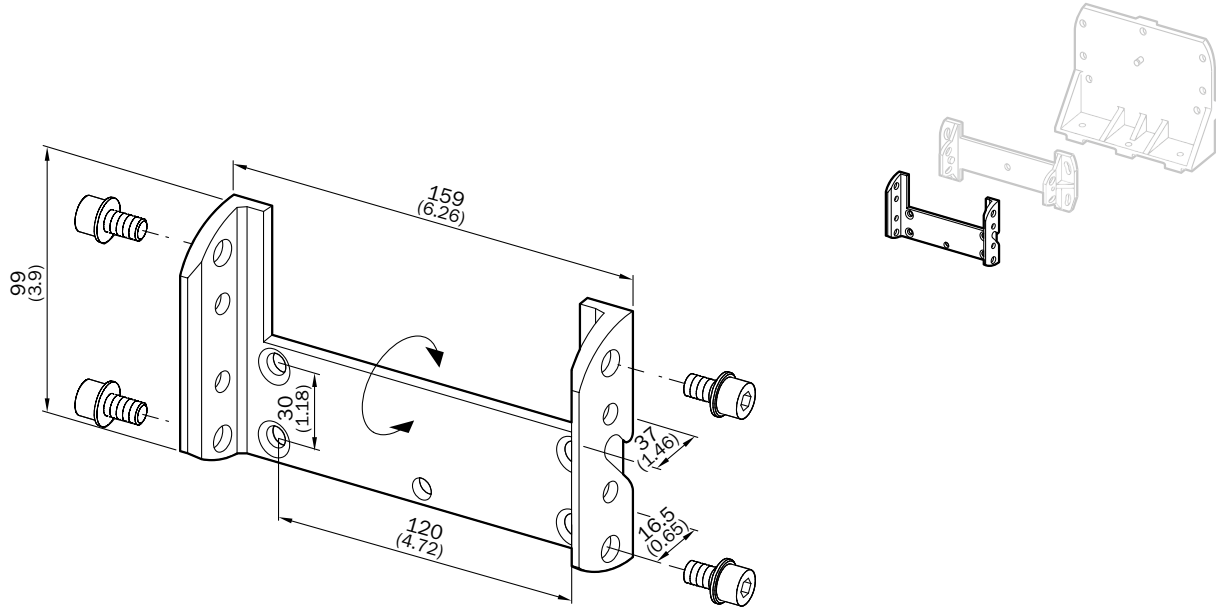


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S3000 (Dimensions in mm (inch))

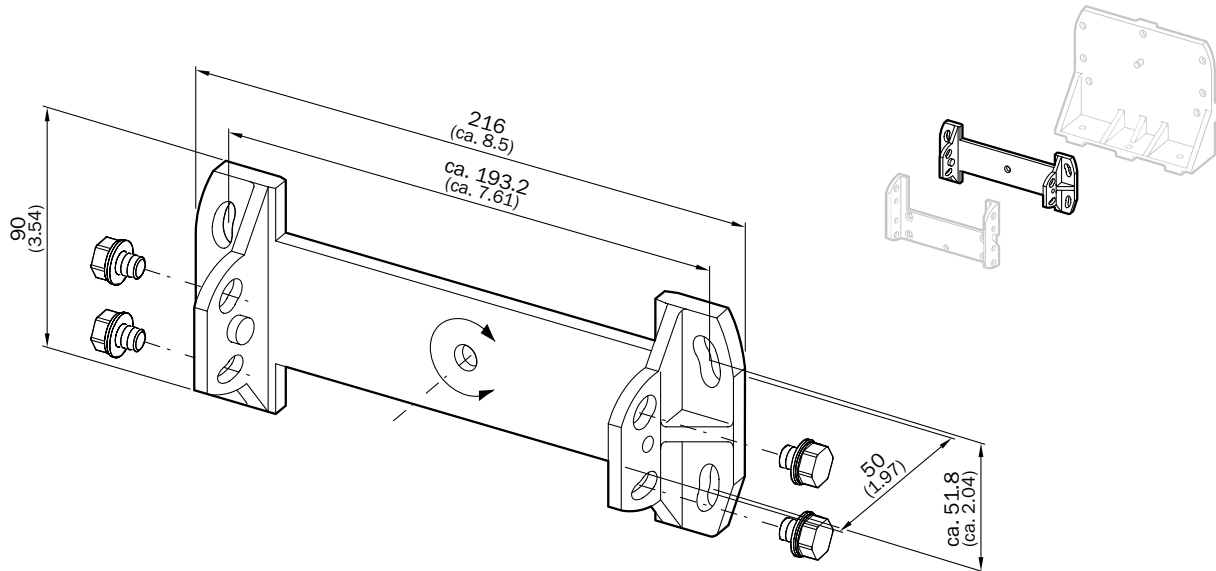
Mounting brackets and mounting plates

Mounting kit 1 (2015623)

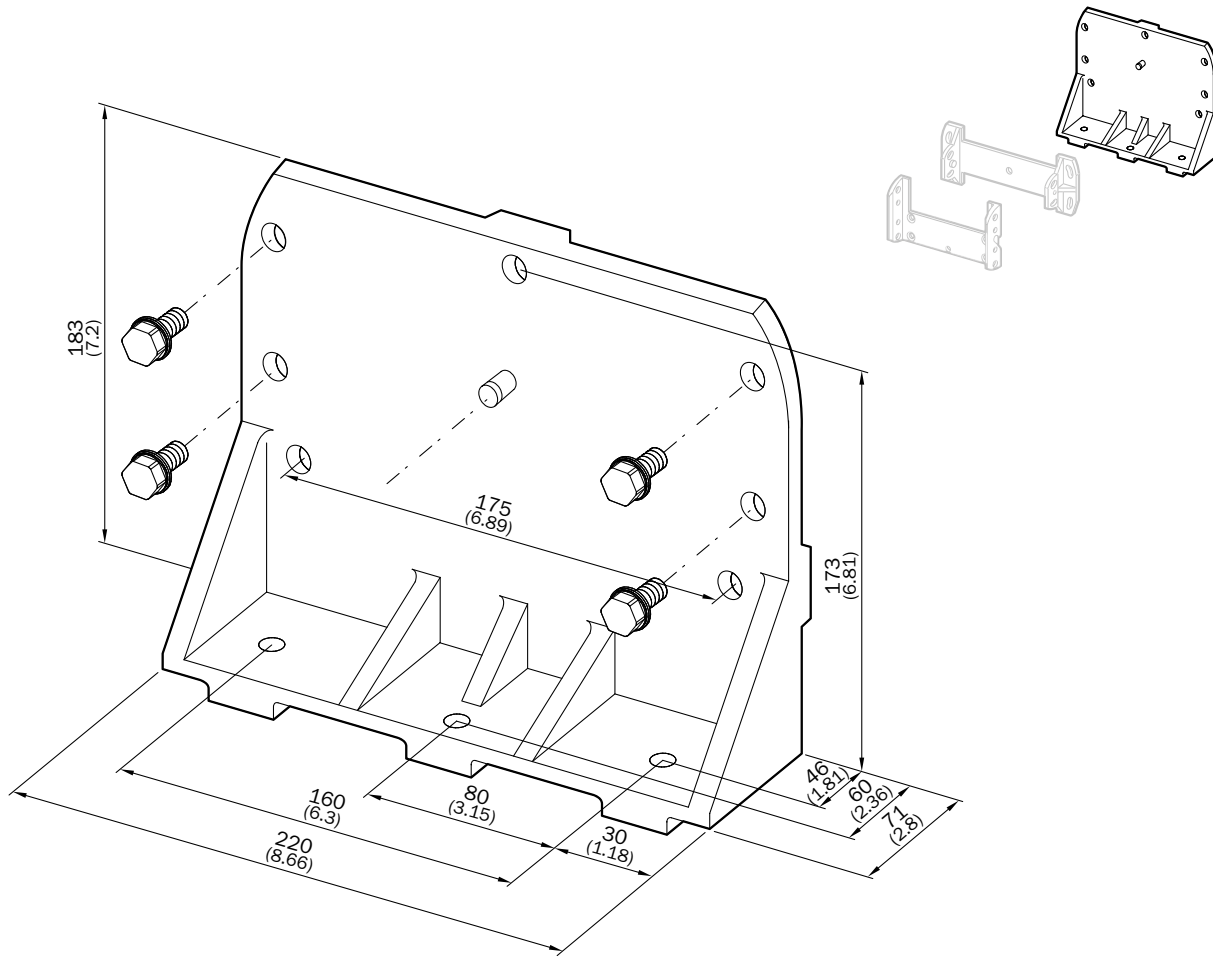


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Mounting kit 2 (2015624)



Mounting kit 3 (2015625)



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SAFETY LIGHT CURTAINS

G



Flexible, cost-saving installation and maintenance with the highest safety

Safety light curtains reliably and cost-effectively protect against access into hazardous points and areas. Depending on the variant, different machine functions are integrated or can be selected via safe control solutions. The range from small and compact types to extremely robust and resistant variants that withstand special ambient conditions up to the highest safety level.

Your benefits

- Small and compact housing simplifies machine integration
- Robust design with a high level of resistance to environmental changes ensures high machine availability, even under special ambient conditions
- Cascadability minimizes wiring costs and increases installation flexibility
- 7-segment display reduces downtime: quick alignment, protective field visualization and simple diagnostics
- Beam coding protects the systems against optical interference by ensuring a high level of reliability
- Blanking functions enable flexible and reliable adjustment of protective fields or reliable differentiation between people and material – this ensures maximum productivity
- Enhanced diagnostics and flexible configuration of the light curtain through the safety controller via EFI provides higher reliability



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deTec4G-232
deTec4 Core	G-232



deTec2G-242
deTec2 Core	G-242



C4000G-252
C4000 Standard	G-252
C4000 Standard ATEX II 3G/3D	G-278
C4000 Advanced	G-280
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C2000G-442
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Dimensional drawings for accessoriesG-450
deTec4 / deTec2	G-450
C4000	G-453
M4000 Curtain	G-458
miniTwin	G-461
C2000	G-464

Selection guide



Product		Safety task				Safety-related parameters		Resolution						Ambient operating temperature			
								14 mm	20 mm	24 mm	30 mm	34 mm	40 mm	0 °C ... +55 °C	-20 °C to +55 °C	-30 °C ... +55 °C	
deTec4, deTec2			deTec4 Core	■	■	■ ¹⁾	■	4	e	■			■				■
	deTec2 Core		■	■	■ ¹⁾	■	2	c	■			■					■
C4000			C4000 Standard	■	■	■ ¹⁾	■	4	e	■	■		■		■	■	
	C4000 Standard ATEX II 3G/3D			■	■ ¹⁾	■	4	e		■		■		■	■		
	C4000 Advanced		■	■	■ ¹⁾	■	4	e	■	■		■		■	■		
	C4000 Advanced ATEX II 3G/3D			■	■ ¹⁾	■	4	e				■		■			
	C4000 Micro		■	■	■ ¹⁾	■	4	e	■			■					■
	C4000 Micro in IP69K Housing		■	■	■ ¹⁾	■	4	e	■			■					■
	C4000 Basic			■	■ ¹⁾	■	4	e	■			■		■			
	C4000 Basic Plus			■	■ ¹⁾	■	4	e	■			■		■			
	C4000 Fusion			■	■	■	4	e		■				■			
	C4000 Palletizer				■		4	e				■		■			
	C4000 Palletizer in IP69K Housing				■		4	e				■		■			
	C4000 Entry/Exit				■		4	e		■				■			
	C4000 Select		■	■	■ ¹⁾	■	4	e	■			■		■			
M4000 Curtain			M4000 Advanced Curtain		■	■ ²⁾	■	4	e	■			■				■
miniTwin			miniTwin4	■	■	■ ¹⁾	■	4	e	■		■		■			■
	miniTwin2		■	■	■ ¹⁾	■	2	c	■		■		■				■
C2000			C2000 Standard in IP69K Housing		■	■ ¹⁾	■	2	c				■				■

¹⁾ Combined with a Flexi Classic/Flexi Soft safety controller
²⁾ Combined with a UE403 muting switching amplifier or a Flexi Classic/Flexi Soft safety controller
³⁾ Combined with a UE402 switching amplifier or a Flexi Soft safety controller

Enclosure rating			Functions													Scanning range up to (m)	Page							
IP 65	IP 65, IP 67	IP 65, IP 66, IP 67, IP 69K	Restart interlock	External device monitoring (EDM)	Beam coding	Cascading	Automatic calibration of the protective field width	Configurable scanning range	Bypass	Operating mode switching	Presence Sensing Device Initiation (PSDI) mode	Reduced resolution	Fixed blanking	Floating blanking	Dynamic blanking for object pattern recognition	Self-reach dynamic blanking for goods detection	Self-reach dynamic blanking for pallet detection	Muting with override	Exit monitoring	Flexi-Loop-compatible	Safe SICK device communication via EFI			
																							10	→ G-232
																							10	→ G-242
																							19	→ G-252
																							19	→ G-278
																							19	→ G-280
																							19	→ G-306
																							6	→ G-308
																							14.5	→ G-318
																							6	→ sick.com/C4000_Basic
																							6	→ sick.com/C4000_Basic_Plus
																							19	→ G-326
																							6	→ G-344
																							4.5	→ G-360
																							19	→ G-368
																							19	→ G-380
																							19	→ G-396
																							5	→ G-414
																							8	→ G-428
																							14.5	→ G-442



PRODUCT FAMILY OVERVIEW

	 <p>deTec4 Core</p>	 <p>deTec2 Core</p>	
	Efficient integration. Quick installation. Simply safe.	Simply safe: easily operated and rugged in everyday use	

Technical data overview

Scanning range	0 m ... 7 m / 0 m ... 10 m	0 m ... 7 m / 0 m ... 10 m
Protective field height	300 mm ... 2,100 mm	300 mm ... 2,100 mm
Resolution	14 mm / 30 mm	14 mm / 30 mm
Type	Type 4 (IEC 61496)	Type 2 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)	SIL1 (IEC 61508) SILCL1 (EN 62061)
Enclosure rating	IP 65 (EN 60529) IP 67 (EN 60529)	IP 65 (EN 60529) IP 67 (EN 60529)
Ambient operating temperature	-30 °C ... +55 °C	-30 °C ... +55 °C

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Absence of blind zones
- Resolution of 14 mm or 30 mm
- Protective field height of 300 mm to 2,100 mm
- Automatic calibration on the protective field width up to 10 m range
- Ambient operating temperature of -30 °C to +55 °C
- Enclosure rating IP 65 and IP 67
- Flexi Loop-compatible M12 male connector

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- Absence of blind zones
- Resolution of 14 mm or 30 mm
- Protective field height of 300 mm to 2,100 mm
- Automatic calibration on the protective field width up to 10 m range
- Ambient operating temperature of -30 °C to +55 °C
- Enclosure rating IP 65 and IP 67
- Flexi Loop-compatible M12 male connector

Detailed information

→ G-232

→ G-242

G



C4000 Standard

Large scanning range for greater flexibility



C4000 Standard ATEX II 3G/3D

Total flexibility – even in explosive environments



C4000 Advanced

Increase productivity with greater machine safety

0 m ... 8 m / 0 m ... 19 m

150 mm ... 1,800 mm

14 mm ... 40 mm

Type 4 (IEC 61496)

SIL3 (IEC 61508)

SILCL3 (IEC 62061)

IP 65 (EN 60529)

0 °C ... +55 °C

0 m ... 8 m / 0 m ... 19 m

300 mm ... 1,800 mm

14 mm ... 40 mm

Type 4 (IEC 61496)

SIL3 (IEC 61508)

SILCL3 (IEC 62061)

IP 65 (EN 60529)

0 °C ... +55 °C

0 m ... 8 m / 0 m ... 19 m

150 mm ... 1,800 mm

14 mm ... 40 mm

Type 4 (IEC 61496)

SIL3 (IEC 61508)

SILCL3 (IEC 62061)

IP 65 (EN 60529)

0 °C ... +55 °C

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- 7-segment display
- PSDI mode with the UE402 switching amplifier
- External device monitoring (EDM) and restart interlock (RES)
- Configuration and diagnostics via PC
- Cascade up to three systems
- ADO (Application Diagnostic Output) signaling output for contamination indicator
- Accessory Clone Plug – for configuration memory

→ G-252

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- ATEX II 3G/3D (2/22 zones)
- 7-segment display
- Beam coding for correct system allocation
- Configuration and diagnostics via PC
- External device monitoring (EDM) and restart interlock (RES)
- Accessory Clone Plug – for configuration memory
- Labelling Gas: Ex nA op is IIC T4 0°C<Ta<55°C Gc X
- Labelling Dust: Ex tD A22 IP65 T123°C X




→ G-278

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Various options for blanking objects: fixed, floating, or teach-in
- 7-segment display
- PSDI mode with the UE402 switching amplifier
- External device monitoring (EDM) and restart interlock (RES)
- Beam coding for correct system allocation
- Configuration and diagnostics via PC
- Cascade up to three systems

→ G-280



PRODUCT FAMILY OVERVIEW

			
	C4000 Advanced ATEX II 3G/3D	C4000 Micro	C4000 Micro in IP69K Housing
	Total flexibility – even in explosive environments	Small and compact, cost-effective and convenient	Maximum hazardous point protection for high wash-down and cleaning requirements




Technical data overview

Scanning range	0 m ... 8 m / 0 m ... 19 m	0 m ... 6 m	0 m ... 14.5 m
Protective field height	900 mm ... 1,800 mm	150 mm ... 1,200 mm	150 mm ... 1,800 mm
Resolution	14 mm / 30 mm / 40 mm	14 mm / 30 mm	14 mm / 30 mm
Type	Type 4 (IEC 61496)	Type 4 (IEC 61496)	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)	SIL3 (IEC 61508) SILCL3 (IEC 62061)	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Enclosure rating	IP 65 (EN 60529)	IP 65 (IEC 60529)	IP 69K, IP 67, IP 66, IP 65 (IEC 60529)
Ambient operating temperature	0 °C ... +55 °C	-30 °C ... +55 °C	-30 °C ... +55 °C

At a glance

	<ul style="list-style-type: none"> • Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849) • ATEX II 3G/3D (2/22 zones) • Labelling Gas: Ex nA op is IIC T4 0°C<Ta<55°C Gc X • Labelling Dust: Ex tD A22 IP65 T123°C X • 7-segment display • External device monitoring (EDM) and restart interlock (RES) • Beam coding for correct system allocation • Configuration and diagnostics via PC 	<ul style="list-style-type: none"> • Type 4 (IEC 61496), SIL 3 (EN 62061), PL e (EN ISO 13849) • Small, compact design • 7-segment display • External device monitoring (EDM) and restart interlock (RES) • Operating temperature range from -30 °C ... 55 °C • Standardized M12 connectivity 	<ul style="list-style-type: none"> • Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849) • IP 69K, IP 67, IP 66 and IP 65 enclosure ratings incl. cable • Withstands wash-down pressure up to 100 bar and water temperature up to 80 °C • ECOLAB and Diversey certified • Resistant steel materials • Ventilation valve prevents fogging of the front screen • Smooth surfaces prevent accumulation of bacteria • Compact design up to 1,800 mm protective field height
Detailed information	→ G-306	→ G-308	→ G-318

G

		
<p>C4000 Fusion</p> <p>Multifunctional and user friendly, high-level of availability and safe</p>	<p>C4000 Palletizer</p> <p>Innovative muting alternative for access protection</p>	<p>C4000 Palletizer in IP69K Housing</p> <p>High performance safety under wash-down and cleaning requirements</p>
<p>1.5 m ... 19 m</p> <p>300 mm ... 1,800 mm</p> <p>20 mm</p> <p>Type 4 (IEC 61496)</p> <p>SIL3 (IEC 61508)</p> <p>SILCL3 (IEC 62061)</p> <p>IP 65 (EN 60529)</p> <p>0 °C ... +55 °C</p>	<p>0.5 m ... 6 m</p> <p>750 mm ... 1,800 mm</p> <p>40 mm / 30 mm</p> <p>Type 4 (IEC 61496)</p> <p>SIL3 (IEC 61508)</p> <p>SILCL3 (IEC 62061)</p> <p>IP 65 (EN 60529)</p> <p>0 °C ... +55 °C</p>	<p>0.5 m ... 4.5 m</p> <p>1,050 mm</p> <p>30 mm</p> <p>Type 4 (IEC 61496)</p> <p>SIL3 (IEC 61508)</p> <p>SILCL3 (IEC 62061)</p> <p>IP 69K, IP 67, IP 66, IP 65 (IEC 60529)</p> <p>0 °C ... +55 °C</p>
<ul style="list-style-type: none"> • Type 4 (IEC 61496), SIL 3 (EN 62061), PL e (EN ISO 13849) • Self-teaching, dynamic blanking for application-specific access protection • Hand and area protection in dirty environments • Multiple sampling • Reduced resolution • Fixed blanking • Two virtual photoelectric sensors • Integrated laser alignment 	<ul style="list-style-type: none"> • Type 4 (IEC 61496), SIL 3 (EN 62061), PL e (EN ISO 13849) • Self-teaching, dynamic blanking detects goods and pallets • Direction recognition • Multiple sampling • Reduced resolution • Muting alternative • Beam coding • Object gap suppression 	<ul style="list-style-type: none"> • Type 4 (IEC 61496), SIL 3 (EN 62061), PL e (EN ISO 13849) • IP 69K, IP 67, IP 66 and IP 65 enclosure ratings incl. cable • Withstands wash-down pressure up to 100 bar and water temperature up to 80 °C • ECOLAB and JohnsonDiversey certified • Resistant steel materials • Ventilation valve prevents fogging of the front screen • Smooth surfaces prevent accumulation of bacteria
<p>→ G-326</p>	<p>→ G-344</p>	<p>→ G-360</p>

PRODUCT FAMILY OVERVIEW

				
	C4000 Entry/Exit	C4000 Select	M4000 Advanced Curtain	
	Revolutionary access protection that differentiates between people and material	Versatility and flexibility even in harsh ambient conditions	On-site connection of the muting signals and high resolution	

Technical data overview

Scanning range	0.5 m ... 19 m	0 m ... 8 m / 0 m ... 19 m	0 m ... 8 m / 0 m ... 19 m
Protective field height	900 mm ... 1,500 mm	300 mm ... 1,800 mm	300 mm ... 1,800 mm
Resolution	20 mm	14 mm / 30 mm	14 mm / 30 mm
Type	Type 4 (IEC 61496)	Type 4 (IEC 61496)	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)	SIL3 (IEC 61508) SILCL3 (IEC 62061)	SIL3 (IEC 61508) SILCL3 (EN 62061)
Enclosure rating	IP 65 (IEC 60529)	IP 65 (EN 60529)	IP 65 (EN 60529)
Ambient operating temperature	0 °C ... +55 °C	0 °C ... +55 °C	-30 °C ... +55 °C

At a glance

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> • Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849) • Self-teaching, dynamic blanking • 7-segment display • Multiscan function increases availability • External device monitoring (EDM), restart interlock • Beam coding • Configuration and diagnostics via PC | <ul style="list-style-type: none"> • Configuration via DIP switch, without PC • Long scanning range up to 19 m • Integrated laser alignment aid and alignment display • Rugged housing with three mounting grooves for maximum mounting flexibility • Single beam / double beam blanking • Diagnostics via 7-segment display - error codes directly on the device • Beam coding for correct system allocation • Can cascade up to three light curtain systems or one safety laser scanner | <ul style="list-style-type: none"> • Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849) • Rugged housing with three mounting grooves • 7-segment display • Resolution 14 mm or 30 mm, scanning range up to 19 m • External device monitoring (EDM), restart interlock (RES), application diagnostic output (ADO), and SDL interface • Beam coding for correct system allocation • Muting: on-site connection and processing in combination with the UE403 muting switching amplifier • Configuration and diagnostics via PC |
|--|---|--|

Detailed information	→ G-368	→ G-380	→ G-396
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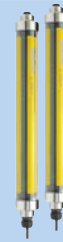
miniTwin4

The smallest light curtain with the highest protection level, PL e



miniTwin2

Small design, great flexibility, and universal possibilities



C2000 Standard in IP69K Housing

Cost efficient solution for industries with high wash-down requirements

0 m ... 4 m	0 m ... 6 m	0 m ... 4.5 m / 2.5 m ... 14.5 m
120 mm ... 1,200 mm	120 mm ... 1,200 mm	150 mm ... 1,200 mm
14 mm / 24 mm / 34 mm	14 mm / 24 mm / 34 mm	30 mm
Type 4 (IEC 61496)	Type 2 (IEC 61496)	Type 2 (IEC 61496)
SIL3 (IEC 61508)	SIL1 (IEC 61508)	SIL1 (IEC 61508)
SILCL3 (EN 62061)	SILCL1 (EN 62061)	SILCL1 (EN 62061)
IP 65 (EN 60529)	IP 65 (EN 60529)	IP 69K, IP 67, IP 66, IP 65 (EN 60529)
-20 °C ... +55 °C	-20 °C ... +55 °C	0 °C ... +55 °C

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Compact cross section (15 mm x 32 mm) with no dead zones
- Cascadable twin stick design – sender and receiver in a single housing
- Customized protective field heights in 60-mm increments from 120 mm to 1,200 mm
- Typical scanning ranges 0 m ... 5 m
- Intelligent, software-free configuration of external device monitoring (EDM) and reset function (RES)
- M12, 5-pin device connection

→ G-414

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- Blind-zone-free device concept with compact cross section (15 mm x 32 mm)
- Twin stick: sender and receiver in a single housing – cascadable
- Tailored protective field heights in 60-mm increments: from 120 mm to 1,200 mm
- Typical sensing ranges of 0 m ... 8 m
- Intelligent, software-free configuration of external device monitoring and reset function
- M12 connecting device, 5-pin


→ G-428

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- IP 69K, IP 67, IP 66 and IP 65 enclosure ratings incl. connecting cable
- Withstands wash-down pressure up to 100 bar and water temperature up to 80 °C
- ECOLAB and Diversey certified
- Resistant steel materials
- Ventilation valve prevents fogging of the front screen
- Smooth surfaces prevent accumulation of bacteria
- Compact design

→ G-442



EFFICIENT INTEGRATION. QUICK INSTALLATION. SIMPLY SAFE.



CE c UL us

Additional information

Detailed technical data G-233

Ordering information G-235

Dimensional drawing G-236

Connection diagrams G-237

Recommended accessories . . . G-238

Product description

The deTec4 Core safety light curtain is impressive with a new innovative system of brackets, no blind zones, and the increased height of its protective field. The effort required for commissioning and maintenance is minimized. The half-rounded contour of the rear of the housing enables the brackets to be positioned in any location on the housing. The FlexFix bracket facilitates alignment at up to +/-15°. Integrated LED displays, diagnostic functions, and automatic calibration on the protective field width

help to save time and costs during commissioning. The deTec4 Core is also suitable for use in harsh ambient conditions thanks to the enclosure rating IP 65 and IP 67. With ambient operating temperatures of between -30 °C and +55 °C, the safety light curtain can also be used in low-temperature environments. The deTec4 Core provides reliable hand and finger protection at the highest PL e protection level. The available protective field heights range from 300 mm to 2,100 mm.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Absence of blind zones
- Resolution of 14 mm or 30 mm
- Protective field height of 300 mm to 2.100 mm
- Automatic calibration on the protective field width up to 10 m range
- Ambient operating temperature of -30 °C to +55 °C
- Enclosure rating IP 65 and IP 67
- Flexi Loop-compatible M12 male connector

Your benefits

- Simple assembly with innovative mounting and no blind zones
- Quick commissioning thanks to integrated LED display and automatic calibration on the protective field width up to 10 m range
- Simply safe: rugged and reliable thanks to enclosure rating IP 67 and an ambient operating temperature down to -30 °C, enabling use in harsh ambient conditions
- Intelligently standardized: M12, 5-pin provide cost reductions and enables a safe series connection with Flexi Loop
- Basic function without configuration effort enables quick replacement when servicing is required

→ www.sick.com/deTec4_Core

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

	Resolution 14 mm	Resolution 30 mm
Protective field height	300 mm ... 2,100 mm (depending on type)	
Scanning range	Minimum	0 m ... 7 m
	Typical	0 m ... 8 m
Response time	≥ 11 ms (depending on type)	≥ 10 ms (depending on type)
Synchronization	Optical synchronisation	

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	3,7 x 10 ⁻⁹ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

Automatic calibration of the protective field width	✓
--	---

Interfaces

System connection	Connection type	Male connector M12, 5-pin
	Permitted cable length	≤ 50 m
Fieldbus, industrial network		
Integration via Flexi Soft safety controller		CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ¹⁾

¹⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC)	
Ripple	≤ 2.4 V _{pp} ¹⁾	
Power consumption typical	0.82 W ... 2.4 W (depending on type)	1.63 W ... 4.8 W (depending on type)
Safety outputs (OSSD)	Type of output	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ²⁾
	Switching voltage HIGH	24 V DC (V _S – 2.25 V DC ... V _S)
	Switching voltage LOW	≤ 2 V DC
	Switching current	≤ 300 mA

¹⁾ Within the limits of V_S.

²⁾ Applies to the voltage range between –30 V and +30 V.

Mechanical data

	Sender	Receiver
Housing cross-section (incl. system connection)	34 mm x 30.7 mm	
Housing material	Aluminum extruded profile	
Weight	290 g ... 1,920 g (depending on type)	300 g ... 1,930 g (depending on type)

Ambient data

Enclosure rating	IP 65 (EN 60529) IP 67 (EN 60529)
Ambient operating temperature	-30 °C ... +55 °C
Storage temperature	-30 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (EN 60068-2-6)
Shock resistance	10 g, 16 ms (EN 60068-2-29)

Other information

Wave length	850 nm
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Ordering information

Items supplied deTec4 Core:

- Safety light curtain consisting of a sender and a receiver
- 4 QuickFix brackets
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

Usage	As a standalone system
Connection types	
System connection	Male connector M12, 5-pin

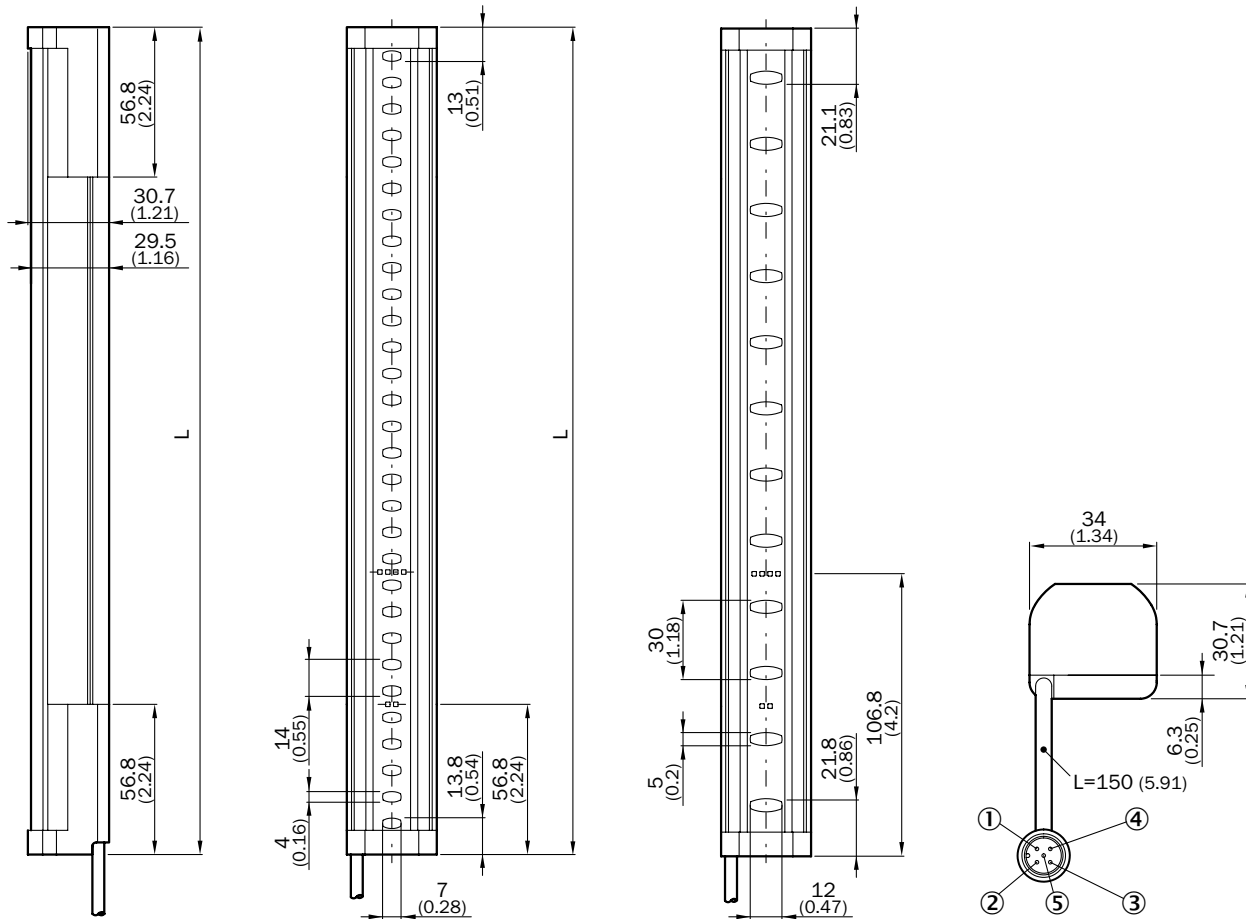
- **Resolution:** 14 mm
- **Minimum scanning range:** 0 m ... 7 m
- **Typical scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C4C-SA03010A10000	1211450	C4C-EA03010A10000	1211463
450 mm	C4C-SA04510A10000	1211469	C4C-EA04510A10000	1211470
600 mm	C4C-SA06010A10000	1211471	C4C-EA06010A10000	1211472
750 mm	C4C-SA07510A10000	1211473	C4C-EA07510A10000	1211474
900 mm	C4C-SA09010A10000	1211475	C4C-EA09010A10000	1211515
1,050 mm	C4C-SA10510A10000	1211476	C4C-EA10510A10000	1211477
1,200 mm	C4C-SA12010A10000	1211478	C4C-EA12010A10000	1211479
1,350 mm	C4C-SA13510A10000	1211480	C4C-EA13510A10000	1211481
1,500 mm	C4C-SA15010A10000	1211482	C4C-EA15010A10000	1211483
1,650 mm	C4C-SA16510A10000	1211484	C4C-EA16510A10000	1211485
1,800 mm	C4C-SA18010A10000	1211486	C4C-EA18010A10000	1211487
1,950 mm	C4C-SA19510A10000	1211488	C4C-EA19510A10000	1211489
2,100 mm	C4C-SA21010A10000	1211490	C4C-EA21010A10000	1211491

- **Resolution:** 30 mm
- **Minimum scanning range:** 0 m ... 10 m
- **Typical scanning range:** 0 m ... 12 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C4C-SA03030A10000	1211462	C4C-EA03030A10000	1211464
450 mm	C4C-SA04530A10000	1211492	C4C-EA04530A10000	1211493
600 mm	C4C-SA06030A10000	1211494	C4C-EA06030A10000	1211495
750 mm	C4C-SA07530A10000	1211496	C4C-EA07530A10000	1211497
900 mm	C4C-SA09030A10000	1211498	C4C-EA09030A10000	1211516
1,050 mm	C4C-SA10530A10000	1211499	C4C-EA10530A10000	1211500
1,200 mm	C4C-SA12030A10000	1211501	C4C-EA12030A10000	1211502
1,350 mm	C4C-SA13530A10000	1211503	C4C-EA13530A10000	1211504
1,500 mm	C4C-SA15030A10000	1211505	C4C-EA15030A10000	1211506
1,650 mm	C4C-SA16530A10000	1211507	C4C-EA16530A10000	1211508
1,800 mm	C4C-SA18030A10000	1211509	C4C-EA18030A10000	1211510
1,950 mm	C4C-SA19530A10000	1211511	C4C-EA19530A10000	1211512
2,100 mm	C4C-SA21030A10000	1211513	C4C-EA21030A10000	1211514

Dimensional drawing (Dimensions in mm (inch))

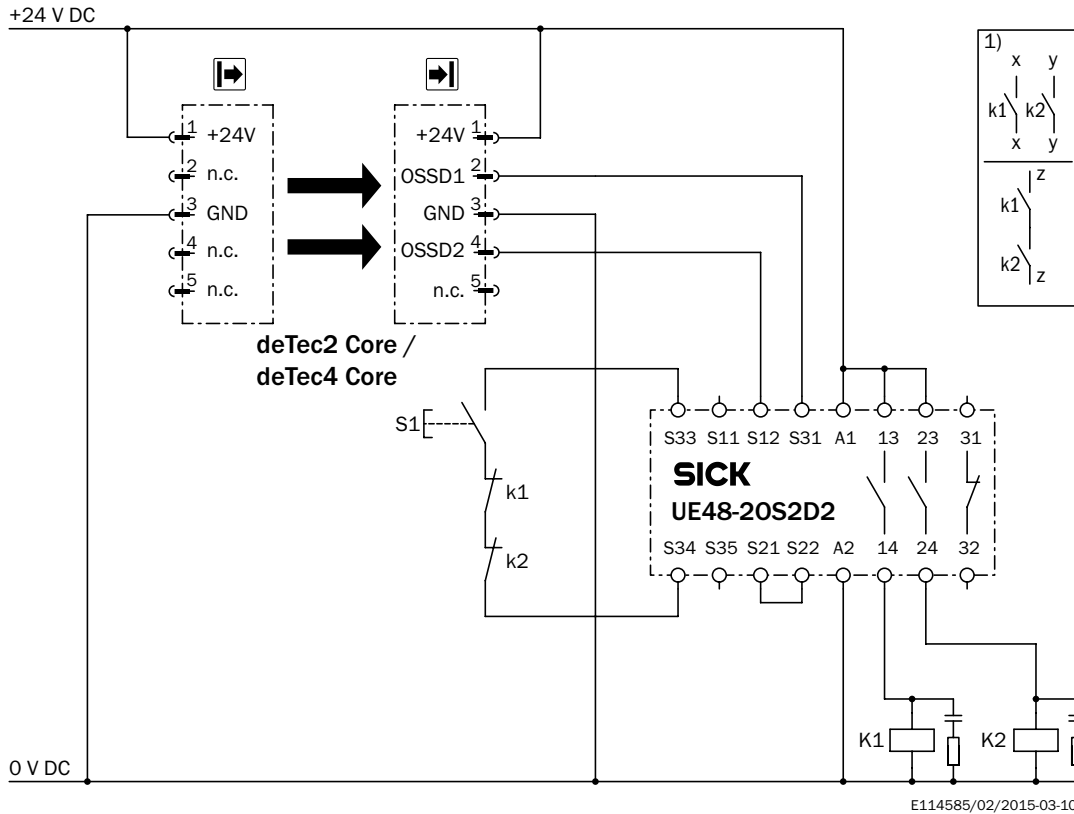


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Protective field height	L
300 (11.81)	313 (12.32)
450 (17.72)	463 (18.23)
600 (23.62)	613 (24.13)
750 (29.53)	763 (30.04)
900 (35.43)	913 (35.94)
1,050 (41.34)	1,063 (41.85)
1,200 (47.24)	1,213 (47.76)
1,350 (53.15)	1,362 (53.62)
1,500 (59.06)	1,512 (59.53)
1,650 (64.96)	1,662 (65.43)
1,800 (70.87)	1,812 (71.34)
1,950 (76.77)	1,962 (77.24)
2,100 (82.68)	2,112 (83.15)

Connection diagrams

deTec safety light curtain connected to UE48-20S safety relay



Task

Connection of a deTec4 Core safety light curtain to UE48-20S. Operating mode: with restart interlock and external device monitoring.

Function

When the light path is clear, the OSSD1 and OSSD2 outputs are live. The system is ready to switch on if K1 and K2 are de-energized. By pressing S1 (button is pressed and released), the UE48-20S is energized and its 13 - 14 and 23 - 24 contacts activate K1 and K2. On interruption of one of the light beams, the UE48-20S is de-energized by the OSSD1 and OSSD2 outputs and K1 and K2 are deactivated.

Fault analysis

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The incorrect functioning of one of the K1 or K2 contactors will be detected and does not result in the loss of the shutdown function. Jamming of the S1 button will prevent the UE48-20S from enabling.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.



Accessories required for commissioning





Description	Number	Items supplied	Further information
Mounting bracket	1	✓	→ Terminal and alignment brackets
Connecting cable	2	-	→ Plug connectors and cables
Operating instructions	1	✓	-
Test rod	1	✓	→ Test and monitoring tools

Recommended accessories

Mounting systems

Terminal and alignment brackets


Alignment brackets

Figure	Description	Packing unit	Type	Part no.
	FlexFix bracket	4 pieces	BEF-1SHABPKU4	2066614
	FlexFix brackets including alignment tool and mounting material suitable for fastening to device columns	2 pieces	BEF-1SHABBKU2	2073543
	QuickFix bracket	2 pieces	BEF-3SHABPKU2	2066048
	Replacement bracket kit replaces swivel mount brackets 2019649 and 2019659 or side brackets 2019506 with FlexFix brackets by using the existing fixing holes	4 pieces	BEF-1SHABP004	2071021

Dimensional drawings → page G-450

Device protection (mechanical)

Front screen protection

Figure	Description	Suitable for	Packing unit	Type	Part no.
	Self-adhesive protective film for the front screen (protects sensors from damage by flying sparks and welding beads)	Sufficient for two sensors with a protective field height of 2.100 mm	1 piece	Self-adhesive protective film	2069268

Other mounting accessories

Mounting tools



Figure	Description	Packing unit	Type	Part no.
	Alignment tool for deTec4 and deTec2 in areas with limited accessibility	1 piece	Alignment tool	4084133

Connection systems




Plug connectors and cables

Connecting cables with female connector

- **Model:** PUR, halogen-free, unshielded


Figure	Connection type		Conductor cross-section	Cable length	Type	Part no.
	Female connector, M12, 5-pin, angled	Cable	0.34 mm ²	2 m	DOL-1205-W02MC	6025909
				5 m	DOL-1205-W05MC	6025910
				10 m	DOL-1205-W10MC	6025911
	Female connector, M12, 5-pin, straight	Cable	0.34 mm ²	2 m	DOL-1205-G02MC	6025906
				5 m	DOL-1205-G05MC	6025907
				10 m	DOL-1205-G10MC	6025908
				20 m	DOL-1205-G20MC	6050247
				30 m	DOL-1205-G30MC	6050248

Connection cables with female connector and male connector

Figure	Connection type		Model	Cable length	Items supplied	Type	Part no.
		Male connector, M12, 5-pin, straight	PUR, halogen-free, unshielded	2 m	-	DSL-1205-G02MC	6025931
				5 m	-	DSL-1205-G05MC	6029282
				10 m	-	DSL-1205-G10MC	6038954
				15 m	-	DSL-1205-G15MC	6038956
	Female connector, M12, 5-pin, straight	Male connector, M12, 8-pin, straight	PVC, unshielded	0.25 m	Packaging unit: 2 pcs.	DSL-1285GM25034KM1	2070987
		Male connector, M26, 12-pin, straight	PVC, unshielded	0.25 m	Packaging unit: 2 pcs.	DSL-6182GM25034KM1	2070989
		Male connector, M26, 7-pin, straight	PVC, unshielded	0.25 m	Packaging unit: 2 pcs.	DSL-6187GM25034KM1	2070988

Adapters and distributors


T-junctions

Figure	Description	Type	Part no.
	T-distributor for simultaneous connection to sender and receiver, splits the cable from the control cabinet between the sender and receiver, 5-pin	DSC-1205T000025KM0	6030664

Other adapters and distributors



Figure	Description	Type	Part no.
	Terminal with 2.15 kOhm resistance	Terminal with 2.15 kOhm resistance	2073807

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790



Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for deTec4, deTec2 and MLG-2	Adapter AR60, deTec, MLG-2	4070854

Deflector mirrors

- **Mirror material:** glass

Figure	Description	Items supplied	Suitable for protective field height	Type	Part no.
	Horizontal deflection	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS125-034	1019425
			150 mm ... 450 mm	PNS125-049	1019426
			150 mm ... 600 mm	PNS125-064	1019427
			150 mm ... 750 mm	PNS125-079	1019428
			150 mm ... 900 mm	PNS125-094	1019429
			150 mm ... 1,050 mm	PNS125-109	1019430
			150 mm ... 1,200 mm	PNS125-124	1019431
			150 mm ... 1,350 mm	PNS125-139	1019432
			150 mm ... 1,500 mm	PNS125-154	1019433
			150 mm ... 1,650 mm	PNS125-169	1019434
	Vertical deflection	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS75-034	1019414
			150 mm ... 450 mm	PNS75-049	1019415
			150 mm ... 600 mm	PNS75-064	1019416
			150 mm ... 750 mm	PNS75-079	1019417
			150 mm ... 900 mm	PNS75-094	1019418
			150 mm ... 1,050 mm	PNS75-109	1019419
			150 mm ... 1,200 mm	PNS75-124	1019420
			150 mm ... 1,350 mm	PNS75-139	1019421
			150 mm ... 1,500 mm	PNS75-154	1019422
			150 mm ... 1,650 mm	PNS75-169	1019423
150 mm ... 1,800 mm	PNS75-184	1019424			

Dimensional drawings → page G-451

Optics cloths


Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
	14 mm diameter	Test rod 14 mm	2022599
	30 mm diameter	Test rod 30 mm	2022602
	Test rod holder	BEF-3WNAAAAL1	2052249


Cleaning agent

Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006


Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> • Freestanding mounting solution with external grooves for installing additional accessories • Compact, rugged design with high reliability • Easy mounting and adjustment • Device protection against external influences • Large reflector surface for efficient multi-sided protection via beam deflection • Universally applicable for multiple light beam safety devices and safety light curtains 	→ page K-664

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

SIMPLY SAFE: EASILY OPERATED AND RUGGED IN EVERYDAY USE



CE

Additional information

Detailed technical data G-243

Ordering information G-245

Dimensional drawing G-246

Connection diagrams G-247

Recommended accessories . . . G-248

Product description

The deTec2 Core safety light curtain is impressive with a new innovative system of brackets, no blind zones, and the increased height of its protective field. The effort required for commissioning and maintenance is minimized. The half-rounded contour of the rear of the housing enables the brackets to be positioned in any location on the housing. The FlexFix bracket facilitates alignment at up to +/-15°. Integrated LED displays, diagnostic functions, and automatic distance measurements help to save

time and costs during commissioning. The deTec2 Core is also suitable for use in harsh ambient conditions thanks to the enclosure rating IP 65 and IP 67. The deTec2 Core provides reliable hand and finger protection at PL c protection level. With ambient operating temperatures of between -30 °C and +55 °C, the safety light curtain can also be used in low-temperature environments. The available protective field heights range from 300 mm to 2,100 mm.

At a glance

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- Absence of blind zones
- Resolution of 14 mm or 30 mm
- Protective field height of 300 mm to 2,100 mm
- Automatic calibration on the protective field width up to 10 m range
- Ambient operating temperature of -30 °C to +55 °C
- Enclosure rating IP 65 and IP 67
- Flexi Loop-compatible M12 male connector

Your benefits

- Simple assembly with innovative mounting and no blind zones
- Quick commissioning thanks to integrated LED display and automatic calibration on the protective field width up to 10 m range
- Simply safe: rugged and reliable thanks to enclosure rating IP 67 and an ambient operating temperature down to -30 °C, enabling use in harsh ambient conditions
- Intelligently standardized: M12, 5-pin provide cost reductions and enables a safe series connection with Flexi Loop
- Basic function without configuration effort enables quick replacement when servicing is required

→ www.sick.com/deTec2_Core

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

	Resolution 14 mm	Resolution 30 mm
Protective field height	300 mm ... 2,100 mm (depending on type)	
Scanning range	Minimum	0 m ... 7 m
	Typical	0 m ... 8 m
Response time	≥ 11 ms (depending on type)	≥ 10 ms (depending on type)
Synchronization	Optical synchronisation	

Safety-related parameters

Type	Type 2 (IEC 61496)
Safety integrity level	SIL1 (IEC 61508) SILCL1 (EN 62061)
Category	Category 2 (EN ISO 13849)
Performance level	PL c (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	3.1 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

Automatic calibration of the protective field width	✓
--	---

Interfaces

System connection	Connection type	Male connector M12, 5-pin
	Permitted cable length	≤ 50 m
Fieldbus, industrial network		
Integration via Flexi Soft safety controller		CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ¹⁾

¹⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC)	
Ripple	≤ 2.4 V _{pp} ¹⁾	
Power consumption typical	0.82 W (DC) ... 1.68 W (DC) (depending on type)	1.63 W (DC) ... 3.36 W (DC) (depending on type)
Safety outputs (OSSD)	Type of output	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ²⁾
	Switching voltage HIGH	24 V DC (V _S – 2.25 V DC ... V _S)
	Switching voltage LOW	≤ 2 V DC

¹⁾ Within the limits of V_S.

²⁾ Applies to the voltage range between –30 V and +30 V.

	Sender	Receiver
Switching current	-	≤ 300 mA

¹⁾ Within the limits of V_s .

²⁾ Applies to the voltage range between -30 V and +30 V.

Mechanical data

	Sender	Receiver
Housing cross-section (incl. system connection)	34 mm x 30.7 mm	
Housing material	Aluminum extruded profile	
Weight	290 g ... 1,920 g (depending on type)	300 g ... 1,930 g (depending on type)

Ambient data

Enclosure rating	IP 65 (EN 60529) IP 67 (EN 60529)
Ambient operating temperature	-30 °C ... +55 °C
Storage temperature	-30 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (EN 60068-2-6)
Shock resistance	10 g, 16 ms (EN 60068-2-29)

Other information

Wave length	850 nm
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Ordering information

Items supplied deTec2 Core:

- Safety light curtain consisting of a sender and a receiver
- 4 QuickFix brackets
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

Usage	As a standalone system
Connection types	
System connection	Male connector M12, 5-pin

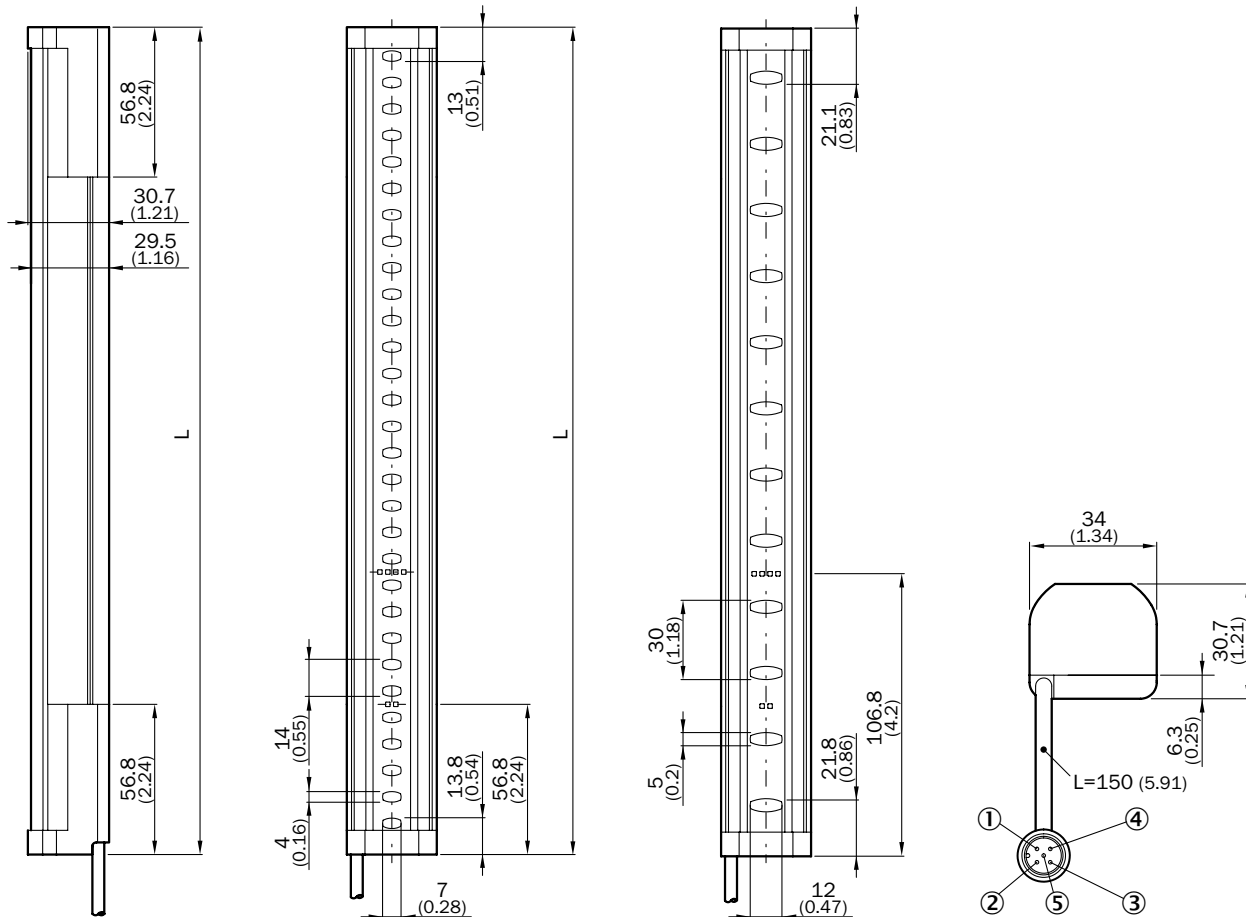
- **Resolution:** 14 mm
- **Minimum scanning range:** 0 m ... 7 m
- **Typical scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C2C-SA03010A10000	1213163	C2C-EA03010A10000	1213188
450 mm	C2C-SA04510A10000	1213189	C2C-EA04510A10000	1213190
600 mm	C2C-SA06010A10000	1213191	C2C-EA06010A10000	1213192
750 mm	C2C-SA07510A10000	1213193	C2C-EA07510A10000	1213194
900 mm	C2C-SA09010A10000	1213195	C2C-EA09010A10000	1213196
1,050 mm	C2C-SA10510A10000	1213197	C2C-EA10510A10000	1213198
1,200 mm	C2C-SA12010A10000	1213183	C2C-EA12010A10000	1213199
1,350 mm	C2C-SA13510A10000	1215643	C2C-EA13510A10000	1216120
1,500 mm	C2C-SA15010A10000	1216121	C2C-EA15010A10000	1216122
1,650 mm	C2C-SA16510A10000	1216123	C2C-EA16510A10000	1216124
1,800 mm	C2C-SA18010A10000	1216125	C2C-EA18010A10000	1216126
1,950 mm	C2C-SA19510A10000	1216127	C2C-EA19510A10000	1216128
2,100 mm	C2C-SA21010A10000	1216129	C2C-EA21010A10000	1216130

- **Resolution:** 30 mm
- **Minimum scanning range:** 0 m ... 10 m
- **Typical scanning range:** 0 m ... 12 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C2C-SA03030A10000	1213200	C2C-EA03030A10000	1213184
450 mm	C2C-SA04530A10000	1213202	C2C-EA04530A10000	1213203
600 mm	C2C-SA06030A10000	1213204	C2C-EA06030A10000	1213205
750 mm	C2C-SA07530A10000	1213206	C2C-EA07530A10000	1213207
900 mm	C2C-SA09030A10000	1213208	C2C-EA09030A10000	1213209
1,050 mm	C2C-SA10530A10000	1213210	C2C-EA10530A10000	1213211
1,200 mm	C2C-SA12030A10000	1213212	C2C-EA12030A10000	1213213
1,350 mm	C2C-SA13530A10000	1213214	C2C-EA13530A10000	1213215
1,500 mm	C2C-SA15030A10000	1213216	C2C-EA15030A10000	1213217
1,650 mm	C2C-SA16530A10000	1213218	C2C-EA16530A10000	1213219
1,800 mm	C2C-SA18030A10000	1213220	C2C-EA18030A10000	1213221
1,950 mm	C2C-SA19530A10000	1213222	C2C-EA19530A10000	1213223
2,100 mm	C2C-SA21030A10000	1213201	C2C-EA21030A10000	1213164

Dimensional drawing (Dimensions in mm (inch))

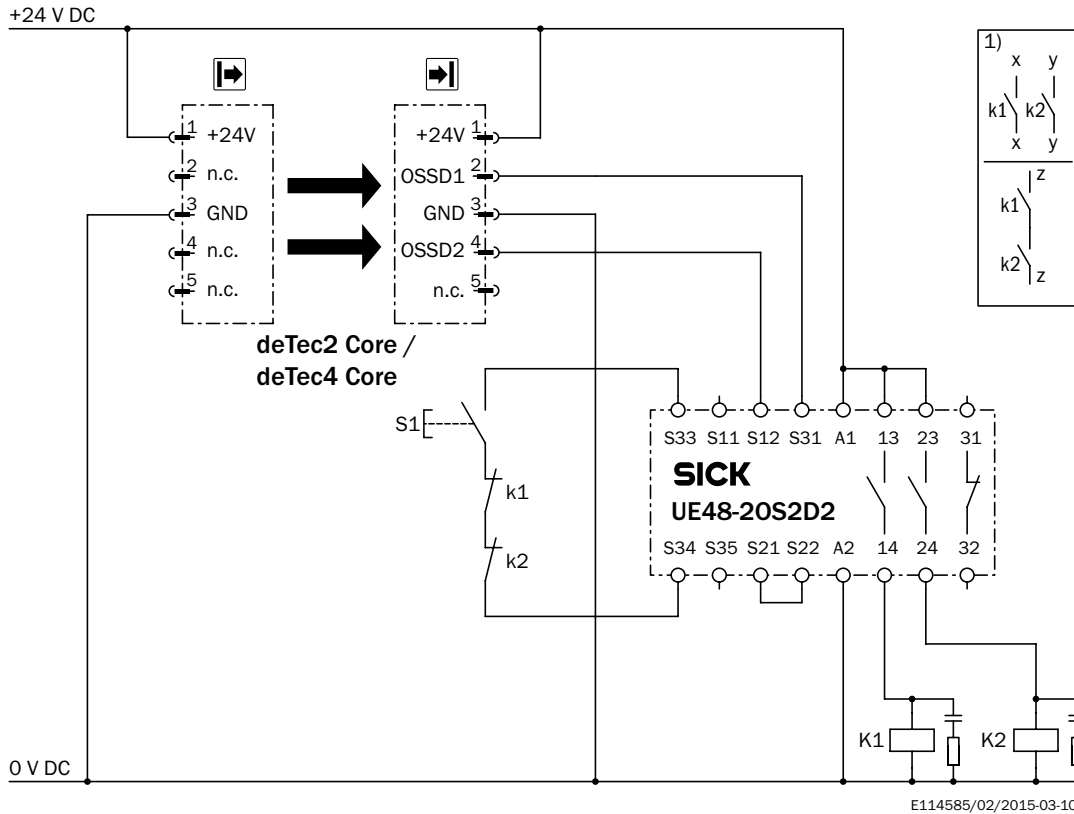


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Protective field height	L
300 (11.81)	313 (12.32)
450 (17.72)	463 (18.23)
600 (23.62)	613 (24.13)
750 (29.53)	763 (30.04)
900 (35.43)	913 (35.94)
1,050 (41.34)	1,063 (41.85)
1,200 (47.24)	1,213 (47.76)
1,350 (53.15)	1,362 (53.62)
1,500 (59.06)	1,512 (59.53)
1,650 (64.96)	1,662 (65.43)
1,800 (70.87)	1,812 (71.34)
1,950 (76.77)	1,962 (77.24)
2,100 (82.68)	2,112 (83.15)

Connection diagrams

deTec safety light curtain connected to UE48-20S safety relay



Task

Connection of a deTec2 Core safety light curtain to UE48-20S. Operating mode: with restart interlock and external device monitoring.

Function

When the light path is clear, the OSSD1 and OSSD2 outputs are live. The system is ready to switch on if K1 and K2 are de-energized. By pressing S1 (button is pressed and released), the UE48-20S is energized and its 13 - 14 and 23 - 24 contacts activate K1 and K2. On interruption of one of the light beams, the UE48-20S is de-energized by the OSSD1 and OSSD2 outputs and K1 and K2 are deactivated.

Fault analysis

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The incorrect functioning of one of the K1 or K2 contactors will be detected and does not result in the loss of the shutdown function. Jamming of the S1 button will prevent the UE48-20S from enabling.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

Accessories required for commissioning





Description	Number	Items supplied	Further information
Mounting bracket	1	✓	→ Terminal and alignment brackets
Connecting cable	2	-	→ Plug connectors and cables
Operating instructions	1	✓	-
Test rod	1	✓	→ Test and monitoring tools

Recommended accessories

Mounting systems

Terminal and alignment brackets


Alignment brackets

Figure	Description	Packing unit	Type	Part no.
	FlexFix bracket	4 pieces	BEF-1SHABPKU4	2066614
	FlexFix brackets including alignment tool and mounting material suitable for fastening to device columns	2 pieces	BEF-1SHABBKU2	2073543
	QuickFix bracket	2 pieces	BEF-3SHABPKU2	2066048
	Replacement bracket kit replaces swivel mount brackets 2019649 and 2019659 or side brackets 2019506 with FlexFix brackets by using the existing fixing holes	4 pieces	BEF-1SHABP004	2071021

Dimensional drawings → [page G-450](#)

Device protection (mechanical)

Front screen protection

Figure	Description	Suitable for	Packing unit	Type	Part no.
	Self-adhesive protective film for the front screen (protects sensors from damage by flying sparks and welding beads)	Sufficient for two sensors with a protective field height of 2.100 mm	1 piece	Self-adhesive protective film	2069268

Other mounting accessories

Mounting tools



Figure	Description	Packing unit	Type	Part no.
	Alignment tool for deTec4 and deTec2 in areas with limited accessibility	1 piece	Alignment tool	4084133

Connection systems




Plug connectors and cables

Connecting cables with female connector

- **Model:** PUR, halogen-free, unshielded


Figure	Connection type		Conductor cross-section	Cable length	Type	Part no.
	Female connector, M12, 5-pin, angled	Cable	0.34 mm ²	2 m	DOL-1205-W02MC	6025909
				5 m	DOL-1205-W05MC	6025910
				10 m	DOL-1205-W10MC	6025911
	Female connector, M12, 5-pin, straight	Cable	0.34 mm ²	2 m	DOL-1205-G02MC	6025906
				5 m	DOL-1205-G05MC	6025907
				10 m	DOL-1205-G10MC	6025908
				20 m	DOL-1205-G20MC	6050247
				30 m	DOL-1205-G30MC	6050248

Connection cables with female connector and male connector

Figure	Connection type		Model	Cable length	Items supplied	Type	Part no.
		Male connector, M12, 5-pin, straight	PUR, halogen-free, unshielded	2 m	-	DSL-1205-G02MC	6025931
				5 m	-	DSL-1205-G05MC	6029282
				10 m	-	DSL-1205-G10MC	6038954
				15 m	-	DSL-1205-G15MC	6038956
	Female connector, M12, 5-pin, straight	Male connector, M12, 8-pin, straight	PVC, unshielded	0.25 m	Packaging unit: 2 pcs.	DSL-1285GM25034KM1	2070987
		Male connector, M26, 12-pin, straight	PVC, unshielded	0.25 m	Packaging unit: 2 pcs.	DSL-6182GM25034KM1	2070989
		Male connector, M26, 7-pin, straight	PVC, unshielded	0.25 m	Packaging unit: 2 pcs.	DSL-6187GM25034KM1	2070988

Adapters and distributors


T-junctions

Figure	Description	Type	Part no.
	T-distributor for simultaneous connection to sender and receiver, splits the cable from the control cabinet between the sender and receiver, 5-pin	DSC-1205T000025KM0	6030664

Other adapters and distributors



Figure	Description	Type	Part no.
	Terminal with 2.15 kOhm resistance	Terminal with 2.15 kOhm resistance	2073807

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790



Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for deTec4, deTec2 and MLG-2	Adapter AR60, deTec, MLG-2	4070854

Deflector mirrors

- **Mirror material:** glass

Figure	Description	Items supplied	Suitable for protective field height	Type	Part no.
	Horizontal deflection	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS125-034	1019425
			150 mm ... 450 mm	PNS125-049	1019426
			150 mm ... 600 mm	PNS125-064	1019427
			150 mm ... 750 mm	PNS125-079	1019428
			150 mm ... 900 mm	PNS125-094	1019429
			150 mm ... 1,050 mm	PNS125-109	1019430
			150 mm ... 1,200 mm	PNS125-124	1019431
			150 mm ... 1,350 mm	PNS125-139	1019432
			150 mm ... 1,500 mm	PNS125-154	1019433
			150 mm ... 1,650 mm	PNS125-169	1019434
	Vertical deflection	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS75-034	1019414
			150 mm ... 450 mm	PNS75-049	1019415
			150 mm ... 600 mm	PNS75-064	1019416
			150 mm ... 750 mm	PNS75-079	1019417
			150 mm ... 900 mm	PNS75-094	1019418
			150 mm ... 1,050 mm	PNS75-109	1019419
			150 mm ... 1,200 mm	PNS75-124	1019420
			150 mm ... 1,350 mm	PNS75-139	1019421
			150 mm ... 1,500 mm	PNS75-154	1019422
			150 mm ... 1,650 mm	PNS75-169	1019423
150 mm ... 1,800 mm	PNS75-184	1019424			

Dimensional drawings → page G-451

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Optics cloths

Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
	14 mm diameter	Test rod 14 mm	2022599
	30 mm diameter	Test rod 30 mm	2022602
	Test rod holder	BEF-3WNAAAAL1	2052249


Cleaning agent

Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006


Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> • Freestanding mounting solution with external grooves for installing additional accessories • Compact, rugged design with high reliability • Easy mounting and adjustment • Device protection against external influences • Large reflector surface for efficient multi-sided protection via beam deflection • Universally applicable for multiple light beam safety devices and safety light curtains 	→ page K-664

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

LARGE SCANNING RANGE FOR GREATER FLEXIBILITY



The diagram illustrates the scanning range of the safety light curtain. On the left, a hand is shown with a vertical dashed line indicating the scanning range. On the right, a person is shown with a vertical dashed line indicating the scanning range. Below the diagrams are two yellow and black SICK C4000 Standard safety light curtain units.

CE c UL us

Additional information

Detailed technical data G-253
 Ordering information G-257
 Dimensional drawings G-264
 Connection diagrams G-270
 Recommended accessories G-271

Product description

The C4000 Standard safety light curtain reliably protects against access into hazardous points and areas. Cascading several systems offers the user a high degree of flexibility for the application. Functions such as the restart interlock (RES) and external device monitoring (EDM) provide easy machine integration. Various mounting adapters and

innovative accessories enable flexible installation. The industry-tested 7-segment display saves time during alignment and diagnostics. The C4000 Standard, which provides protective field heights from 300 mm to 1,800 mm, offers reliable machine protection up to the highest protection level, PL e.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- 7-segment display
- PSDI mode with the UE402 switching amplifier
- External device monitoring (EDM) and restart interlock (RES)
- Configuration and diagnostics via PC
- Cascade up to three systems
- ADO (Application Diagnostic Output) signaling output for contamination indicator
- Accessory Clone Plug – for configuration memory

Your benefits

- 7-segment display saves time during alignment and diagnostics
- Beam coding protects the systems against optical interference by ensuring a high level of availability
- Ability to cascade up to three systems optimizes the safety application and reduces wiring costs
- Preconfigured light curtains and the clone plug enables easy and rapid commissioning
- Precise, convenient configuration and diagnostics reduces downtime

→ www.sick.com/C4000_Standard

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

C4000 Standard**Features**

	Resolution 14 mm	Resolution 20 mm	Resolution 30 mm	Resolution 40 mm
Protective field height	300 mm ... 1,800 mm (depending on type)			
Scanning range	0 m ... 8 m	0 m ... 19 m		
Response time	≤ 26 ms ¹⁾			
Synchronization	Optical synchronisation			

¹⁾ Without beam coding, without blanking, no cascaded systems. Other response times see operating instructions.

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	1.5 x 10 ⁻⁸
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	External
External device monitoring (EDM)	✓	Deactivated
Configurable scanning range	✓	
Emergency stop / bypass at extension connection	- / ✓ (depending on type)	
Safe SICK device communication via EFI	✓	

Functions in combination with UE402

Bypass	✓
Operating mode switching	✓
PSDI mode	✓



Interfaces

System connection	
Connection type	Hirschmann male connector M26, 12-pin
Permitted cable length	≤ 50 m ¹⁾
Conductor cross-section	0.75 mm ²
Extension connection	
Connection type	Hirschmann female connector M26, 12 pin / M12, 8-pin (depending on type)
Conductor cross-section	≤ 0.25 mm ²
Configuration connection	
Connection type	Female connector M8, 4-pin
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Display elements	
7-segment display	
Fieldbus, industrial network	
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ²⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ³⁾

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

³⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Ripple	≤ 10 % ²⁾	
Power consumption	2 A	3 A
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
Switching voltage HIGH	–	24 V DC ($V_s - 2.25$ V DC ... V_s)
Switching voltage LOW	–	2 V DC
Switching current	–	≤ 500 mA

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60 204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of U_v .

Mechanical data

	Sender	Receiver
Housing cross-section	48 mm x 40 mm	
Weight	820 g ... 3,680 g (depending on type)	850 g ... 3,710 g (depending on type)

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	–25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	16 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Wave length	950 nm	–

C4000 Standard Guest

Features

	Resolution 14 mm	Resolution 30 mm
Protective field height	150 mm ... 1,800 mm (depending on type)	
Scanning range	0 m ... 8 m	0 m ... 19 m
Response time	≤ 26 ms ¹⁾	
Synchronization	Optical synchronisation	

¹⁾ Without beam coding, without blanking. Other response times see operating instructions.

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	1.5 x 10 ⁻⁸
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Interfaces

System connection	
Connection type	Fixed connection cable 320 mm with male connector M12, 8-pin
Permitted cable length	≤ 3 m ¹⁾
Conductor cross-section	0.25 mm ²
Display elements	7-segment display

¹⁾ Between host and guest.

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Ripple	≤ 10 % ²⁾	
Power consumption	2 A	3 A
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
Switching voltage HIGH	–	24 V DC (V _S – 2.25 V DC ... V _S)
Switching voltage LOW	–	2 V DC
Switching current	–	≤ 500 mA

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60 204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of U_v.

Mechanical data

Housing cross-section	48 mm x 40 mm
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Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	16 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Wave length	950 nm	-

UE402 switching amplifier

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	15 x 10 ⁻⁹ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)

Functions

Bypass	✓
Operating mode switching	✓
PSDI mode	✓

Electrical data

Protection class	III (IEC 536:1976)
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾
Residual ripple	10 % ²⁾
Power consumption	≤ 110 mA
Switch-on time	≤ 4 s
IN A1 ... A6, MCC-BDC, MCC-TDC	
Switching voltage HIGH	24 V DC (11 V DC ... 30 V DC)
Switching voltage LOW	-30 V DC ... 5 V DC
Input current HIGH	6 mA ... 20 mA
Input current LOW	-3 mA ... 0.5 mA
IN B1, IN B2, OUT B1, OUT B2	
Bypass change over time	≤ 2 s
Synchronous time monitoring	≤ 200 ms

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of V_S.

Mechanical data

Dimensions (W x H x D)	22.5 mm x 99 mm x 114.5 mm
Housing material	Plastic
Weight	120 g

Ambient data

Enclosure rating	IP 20 (IEC 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Ordering information

Items supplied C4000 Standard:

- Safety light curtain consisting of a sender and a receiver
- 8 sliding nuts for side mounting
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

C4000 Standard without extension connection

Usage	As a standalone system and as last system in a cascade
Connection types	
System connection	Hirschmann male connector M26, 12-pin
Configuration connection	Female connector M8, 4-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0301CA010	1018591	C40E-0301CA010	1018592
450 mm	C40S-0401CA010	1018347	C40E-0401CA010	1018348
600 mm	C40S-0601CA010	1018593	C40E-0601CA010	1018594
750 mm	C40S-0701CA010	1018595	C40E-0701CA010	1018596
900 mm	C40S-0901CA010	1018597	C40E-0901CA010	1018598
1,050 mm	C40S-1001CA010	1018599	C40E-1001CA010	1018600
1,200 mm	C40S-1201CA010	1018601	C40E-1201CA010	1018602
1,350 mm	C40S-1301CA010	1018603	C40E-1301CA010	1018604
1,500 mm	C40S-1501CA010	1018605	C40E-1501CA010	1018606
1,650 mm	C40S-1601CA010	1018607	C40E-1601CA010	1018608
1,800 mm	C40S-1801CA010	1018609	C40E-1801CA010	1018610



- **Resolution:** 20 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0302CA010	1018613	C40E-0302CA010	1018614
450 mm	C40S-0402CA010	1018615	C40E-0402CA010	1018616
600 mm	C40S-0602CA010	1018617	C40E-0602CA010	1018618
750 mm	C40S-0702CA010	1018619	C40E-0702CA010	1018620
900 mm	C40S-0902CA010	1018621	C40E-0902CA010	1018622
1,050 mm	C40S-1002CA010	1018623	C40E-1002CA010	1018624
1,200 mm	C40S-1202CA010	1018625	C40E-1202CA010	1018626
1,350 mm	C40S-1302CA010	1018627	C40E-1302CA010	1018628
1,500 mm	C40S-1502CA010	1018629	C40E-1502CA010	1018630
1,650 mm	C40S-1602CA010	1018631	C40E-1602CA010	1018632
1,800 mm	C40S-1802CA010	1018633	C40E-1802CA010	1018634

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0303CA010	1018635	C40E-0303CA010	1018636
450 mm	C40S-0403CA010	1018637	C40E-0403CA010	1018638
600 mm	C40S-0603CA010	1018639	C40E-0603CA010	1018640
750 mm	C40S-0703CA010	1018641	C40E-0703CA010	1018642
900 mm	C40S-0903CA010	1018643	C40E-0903CA010	1018644
1,050 mm	C40S-1003CA010	1018645	C40E-1003CA010	1018646
1,200 mm	C40S-1203CA010	1018647	C40E-1203CA010	1018648
1,350 mm	C40S-1303CA010	1018649	C40E-1303CA010	1018650
1,500 mm	C40S-1503CA010	1018651	C40E-1503CA010	1018652
1,650 mm	C40S-1603CA010	1018653	C40E-1603CA010	1018654
1,800 mm	C40S-1803CA010	1018655	C40E-1803CA010	1018656

- **Resolution:** 40 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0304CA010	1018657	C40E-0304CA010	1018658
450 mm	C40S-0404CA010	1018659	C40E-0404CA010	1018660
600 mm	C40S-0604CA010	1018661	C40E-0604CA010	1018662
750 mm	C40S-0704CA010	1018663	C40E-0704CA010	1018664
900 mm	C40S-0904CA010	1018665	C40E-0904CA010	1018666
1,050 mm	C40S-1004CA010	1018667	C40E-1004CA010	1018668
1,200 mm	C40S-1204CA010	1018669	C40E-1204CA010	1018670
1,350 mm	C40S-1304CA010	1018671	C40E-1304CA010	1018672
1,500 mm	C40S-1504CA010	1018673	C40E-1504CA010	1018674
1,650 mm	C40S-1604CA010	1018675	C40E-1604CA010	1018676
1,800 mm	C40S-1804CA010	1018677	C40E-1804CA010	1018678



C4000 Standard without extension connection, with angled system connection

Usage	As a standalone system and as last system in a cascade		
Connection types			
System connection	Hirschmann male connector M26, 12-pin		
Configuration connection	Female connector M8, 4-pin		

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0301CA020	1022267	C40E-0301CA020	1022268
450 mm	C40S-0401CA020	1026737	C40E-0401CA020	1026738

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0303CA020	1026733	C40E-0303CA020	1026734
450 mm	C40S-0403CA020	1026735	C40E-0403CA020	1026736

C4000 Standard with extension connection M26, 12-pin

Usage	As first or middle system in a cascade		
Connection types			
System connection	Hirschmann male connector M26, 12-pin		
Extension connection	Hirschmann female connector M26, 12 pin		
Configuration connection	Female connector M8, 4-pin		

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0301DA010	1018690	C40E-0301DA010	1018691
450 mm	C40S-0401DA010	1018349	C40E-0401DA010	1018350
600 mm	C40S-0601DA010	1018692	C40E-0601DA010	1018693
750 mm	C40S-0701DA010	1018694	C40E-0701DA010	1018695
900 mm	C40S-0901DA010	1018696	C40E-0901DA010	1018697
1,050 mm	C40S-1001DA010	1018698	C40E-1001DA010	1018699
1,200 mm	C40S-1201DA010	1018700	C40E-1201DA010	1018701
1,350 mm	C40S-1301DA010	1018702	C40E-1301DA010	1018703
1,500 mm	C40S-1501DA010	1018704	C40E-1501DA010	1018705
1,650 mm	C40S-1601DA010	1018706	C40E-1601DA010	1018707
1,800 mm	C40S-1801DA010	1018708	C40E-1801DA010	1018709

- **Resolution:** 20 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0302DA010	1018710	C40E-0302DA010	1018711
450 mm	C40S-0402DA010	1018712	C40E-0402DA010	1018713
600 mm	C40S-0602DA010	1018714	C40E-0602DA010	1018715
750 mm	C40S-0702DA010	1018716	C40E-0702DA010	1018717
900 mm	C40S-0902DA010	1018718	C40E-0902DA010	1018719
1,050 mm	C40S-1002DA010	1018720	C40E-1002DA010	1018721
1,200 mm	C40S-1202DA010	1018722	C40E-1202DA010	1018723
1,350 mm	C40S-1302DA010	1018724	C40E-1302DA010	1018725
1,500 mm	C40S-1502DA010	1018726	C40E-1502DA010	1018727
1,650 mm	C40S-1602DA010	1018728	C40E-1602DA010	1018729
1,800 mm	C40S-1802DA010	1018730	C40E-1802DA010	1018731

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0303DA010	1018733	C40E-0303DA010	1018734
450 mm	C40S-0403DA010	1018735	C40E-0403DA010	1018736
600 mm	C40S-0603DA010	1018737	C40E-0603DA010	1018738
750 mm	C40S-0703DA010	1018739	C40E-0703DA010	1018740
900 mm	C40S-0903DA010	1018741	C40E-0903DA010	1018742
1,050 mm	C40S-1003DA010	1018743	C40E-1003DA010	1018744
1,200 mm	C40S-1203DA010	1018745	C40E-1203DA010	1018746
1,350 mm	C40S-1303DA010	1018747	C40E-1303DA010	1018748
1,500 mm	C40S-1503DA010	1018749	C40E-1503DA010	1018750
1,650 mm	C40S-1603DA010	1018751	C40E-1603DA010	1018752
1,800 mm	C40S-1803DA010	1018753	C40E-1803DA010	1018754

- **Resolution:** 40 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0304DA010	1018755	C40E-0304DA010	1018756
450 mm	C40S-0404DA010	1018757	C40E-0404DA010	1018758
600 mm	C40S-0604DA010	1018759	C40E-0604DA010	1018760
750 mm	C40S-0704DA010	1018762	C40E-0704DA010	1018763
900 mm	C40S-0904DA010	1018765	C40E-0904DA010	1018766
1,050 mm	C40S-1004DA010	1018767	C40E-1004DA010	1018768
1,200 mm	C40S-1204DA010	1018769	C40E-1204DA010	1018770
1,350 mm	C40S-1304DA010	1018771	C40E-1304DA010	1018772
1,500 mm	C40S-1504DA010	1018773	C40E-1504DA010	1018774
1,650 mm	C40S-1604DA010	1018775	C40E-1604DA010	1018776
1,800 mm	C40S-1804DA010	1018777	C40E-1804DA010	1018778

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C4000 Standard Host with extension connection M12, 8-pin

Usage	As first system in a cascade
Connection types	
System connection	Hirschmann male connector M26, 12-pin
Extension connection	M12, 8-pin
Configuration connection	Female connector M8, 4-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0301DA040	1028969	C40E-0301DA040	1028970
450 mm	C40S-0401DA040	1028967	C40E-0401DA040	1028968
600 mm	C40S-0601DA040	1028971	C40E-0601DA040	1028972
750 mm	C40S-0701DA040	1028973	C40E-0701DA040	1028974
900 mm	C40S-0901DA040	1028975	C40E-0901DA040	1028976
1,050 mm	C40S-1001DA040	1028977	C40E-1001DA040	1028978
1,200 mm	C40S-1201DA040	1028979	C40E-1201DA040	1028980
1,350 mm	C40S-1301DA040	1028981	C40E-1301DA040	1028982
1,500 mm	C40S-1501DA040	1028983	C40E-1501DA040	1028984
1,650 mm	C40S-1601DA040	1028985	C40E-1601DA040	1028986
1,800 mm	C40S-1801DA040	1028987	C40E-1801DA040	1028988

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0303DA040	1029001	C40E-0303DA040	1029002
450 mm	C40S-0403DA040	1029003	C40E-0403DA040	1029004
600 mm	C40S-0603DA040	1029005	C40E-0603DA040	1029006
750 mm	C40S-0703DA040	1029007	C40E-0703DA040	1029008
900 mm	C40S-0903DA040	1029009	C40E-0903DA040	1029010
1,050 mm	C40S-1003DA040	1029011	C40E-1003DA040	1029012
1,200 mm	C40S-1203DA040	1029013	C40E-1203DA040	1029014
1,350 mm	C40S-1303DA040	1029015	C40E-1303DA040	1029016
1,500 mm	C40S-1503DA040	1029017	C40E-1503DA040	1029018
1,650 mm	C40S-1603DA040	1029019	C40E-1603DA040	1029020
1,800 mm	C40S-1803DA040	1029021	C40E-1803DA040	1029022



C4000 Standard Guest with straight system connection

Usage	As last system in a cascade, configurable via host
Connection types	
System connection	Fixed connection cable 320 mm with male connector M12, 8-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
150 mm	C46S-0101CT400	1028796	C46E-0101CT400	1028797
300 mm	C46S-0301CT400	1028802	C46E-0301CT400	1028803
450 mm	C46S-0401CT400	1028804	C46E-0401CT400	1028805
600 mm	C46S-0601CT400	1028806	C46E-0601CT400	1028807
750 mm	C46S-0701CT400	1028808	C46E-0701CT400	1028809
900 mm	C46S-0901CT400	1040173	C46E-0901CT400	1040174
1,050 mm	C46S-1001CT400	1040175	C46E-1001CT400	1040176
1,200 mm	C46S-1201CT400	1040177	C46E-1201CT400	1040178
1,350 mm	C46S-1301CT400	1040179	C46E-1301CT400	1040180
1,500 mm	C46S-1501CT400	1040181	C46E-1501CT400	1040214
1,650 mm	C46S-1601CT400	1040182	C46E-1601CT400	1040183
1,800 mm	C46S-1801CT400	1040184	C46E-1801CT400	1040185

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
150 mm	C46S-0103CT400	1028879	C46E-0103CT400	1028880
300 mm	C46S-0303CT400	1028881	C46E-0303CT400	1028882
450 mm	C46S-0403CT400	1028883	C46E-0403CT400	1028884
600 mm	C46S-0603CT400	1028885	C46E-0603CT400	1028886
750 mm	C46S-0703CT400	1028887	C46E-0703CT400	1028888
900 mm	C46S-0903CT400	1040193	C46E-0903CT400	1040194
1,050 mm	C46S-1003CT400	1040195	C46E-1003CT400	1040196
1,200 mm	C46S-1203CT400	1040197	C46E-1203CT400	1040198
1,350 mm	C46S-1303CT400	1040199	C46E-1303CT400	1040200
1,500 mm	C46S-1503CT400	1040201	C46E-1503CT400	1040202
1,650 mm	C46S-1603CT400	1040203	C46E-1603CT400	1040204
1,800 mm	C46S-1803CT400	1040205	C46E-1803CT400	1040206



C4000 Standard Guest with angled system connection

Usage	As last system in a cascade, configurable via host
Connection types	
System connection	Fixed connection cable 320 mm with plug M12, 8-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C46S-0301CT500	1028812	C46E-0301CT500	1028813
150 mm	C46S-0101CT500	1028810	C46E-0101CT500	1028811
450 mm	C46S-0401CT500	1028814	C46E-0401CT500	1028815
600 mm	C46S-0601CT500	1028816	C46E-0601CT500	1028817
750 mm	C46S-0701CT500	1028818	C46E-0701CT500	1028819

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
150 mm	C46S-0103CT500	1028901	C46E-0103CT500	1028902
300 mm	C46S-0303CT500	1028903	C46E-0303CT500	1028904
450 mm	C46S-0403CT500	1028905	C46E-0403CT500	1028906
600 mm	C46S-0603CT500	1028907	C46E-0603CT500	1028908
750 mm	C46S-0703CT500	1028909	C46E-0703CT500	1028910

UE402 switching amplifier

Description	Type	Part no.
Expands C4000 Standard, Advanced, Palletizer, Entry/Exit and Fusion with the functions described in the technical data, e.g., bypass, operating mode switching or in addition PSDI mode on C4000 Standard, Advanced.	UE402	1023577



Dimensional drawings (Dimensions in mm (inch))

C4000 Standard without extension connection

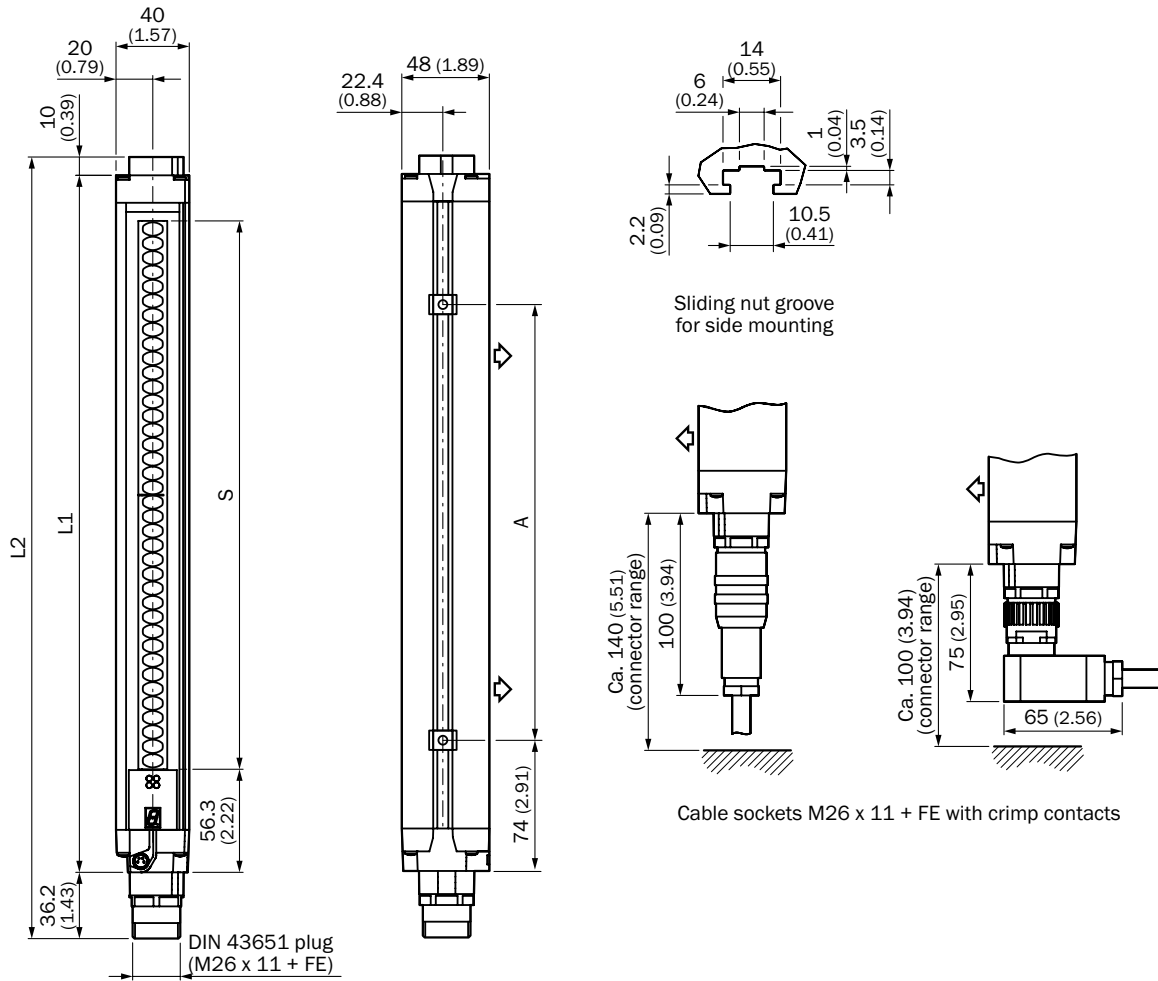


Illustration sender (receiver mirror image)

Protective field height S	L1	L2	A
300 (11.81)	381 (15.00)	427 (16.81)	224 (8.82)
450 (17.72)	532 (20.94)	578 (22.76)	374 (14.72)
600 (23.62)	682 (26.85)	728 (28.66)	524 (20.63)
750 (29.53)	833 (32.80)	879 (34.61)	674 (26.54)
900 (35.43)	984 (38.74)	1,030 (40.55)	824 (32.44)
1,050 (41.34)	1,134 (44.65)	1,180 (46.46)	974 (38.35)
1,200 (47.24)	1,283 (50.51)	1,329 (52.32)	1,124 (44.25)
1,350 (53.15)	1,435 (56.50)	1,481 (58.31)	1,274 (50.16)
1,500 (59.06)	1,586 (62.44)	1,632 (64.25)	1,424 (56.06)
1,650 (64.96)	1,736 (68.35)	1,782 (70.16)	1,574 (61.97)
1,800 (70.87)	1,887 (74.29)	1,933 (76.10)	1,724 (67.87)

C4000 Standard without extension connection, with angled system connection

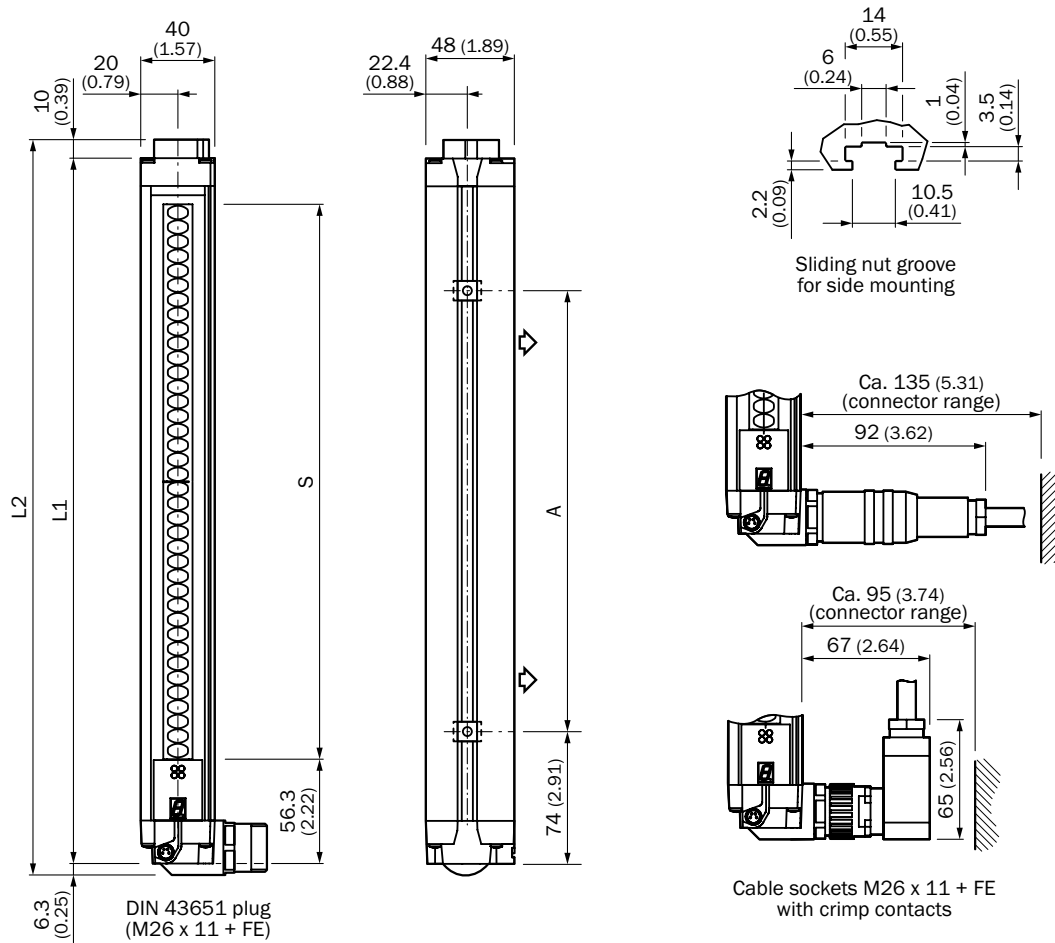


Illustration sender (receiver mirror image)

Protective field height S	L1	L2	A
300 (11.81)	381 (15.00)	397 (15.63)	224 (8.82)
450 (17.72)	532 (20.94)	548 (21.57)	374 (14.72)



C4000 Standard with extension connection M26, 12-pin

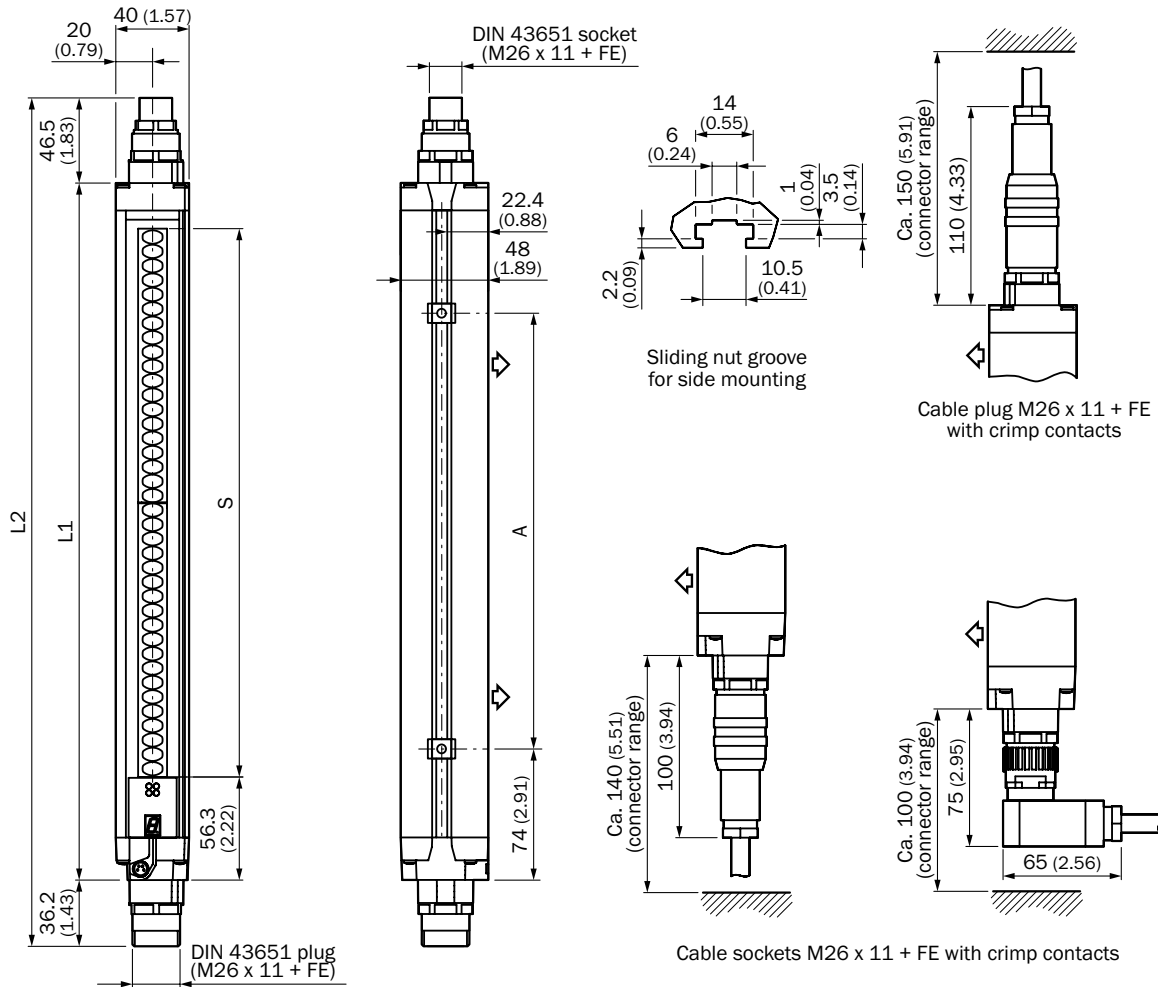


Illustration sender (receiver mirror image)

Protective field height S	L1	L2	A
300 (11.81)	381 (15.00)	464 (18.27)	224 (8.82)
450 (17.72)	532 (20.94)	614 (24.17)	374 (14.72)
600 (23.62)	682 (26.85)	765 (30.12)	524 (20.63)
750 (29.53)	833 (32.80)	915 (36.02)	674 (26.54)
900 (35.43)	984 (38.74)	1,066 (41.97)	824 (32.44)
1,050 (41.34)	1,134 (44.65)	1,216 (47.87)	974 (38.35)
1,200 (47.24)	1,283 (50.51)	1,366 (53.78)	1,124 (44.25)
1,350 (53.15)	1,435 (56.50)	1,517 (59.72)	1,274 (50.16)
1,500 (59.06)	1,586 (62.44)	1,669 (65.71)	1,424 (56.06)
1,650 (64.96)	1,736 (68.35)	1,818 (71.57)	1,574 (61.97)
1,800 (70.87)	1,887 (74.29)	1,969 (77.52)	1,724 (67.87)

C4000 Standard Host with extension connection M12, 8-pin

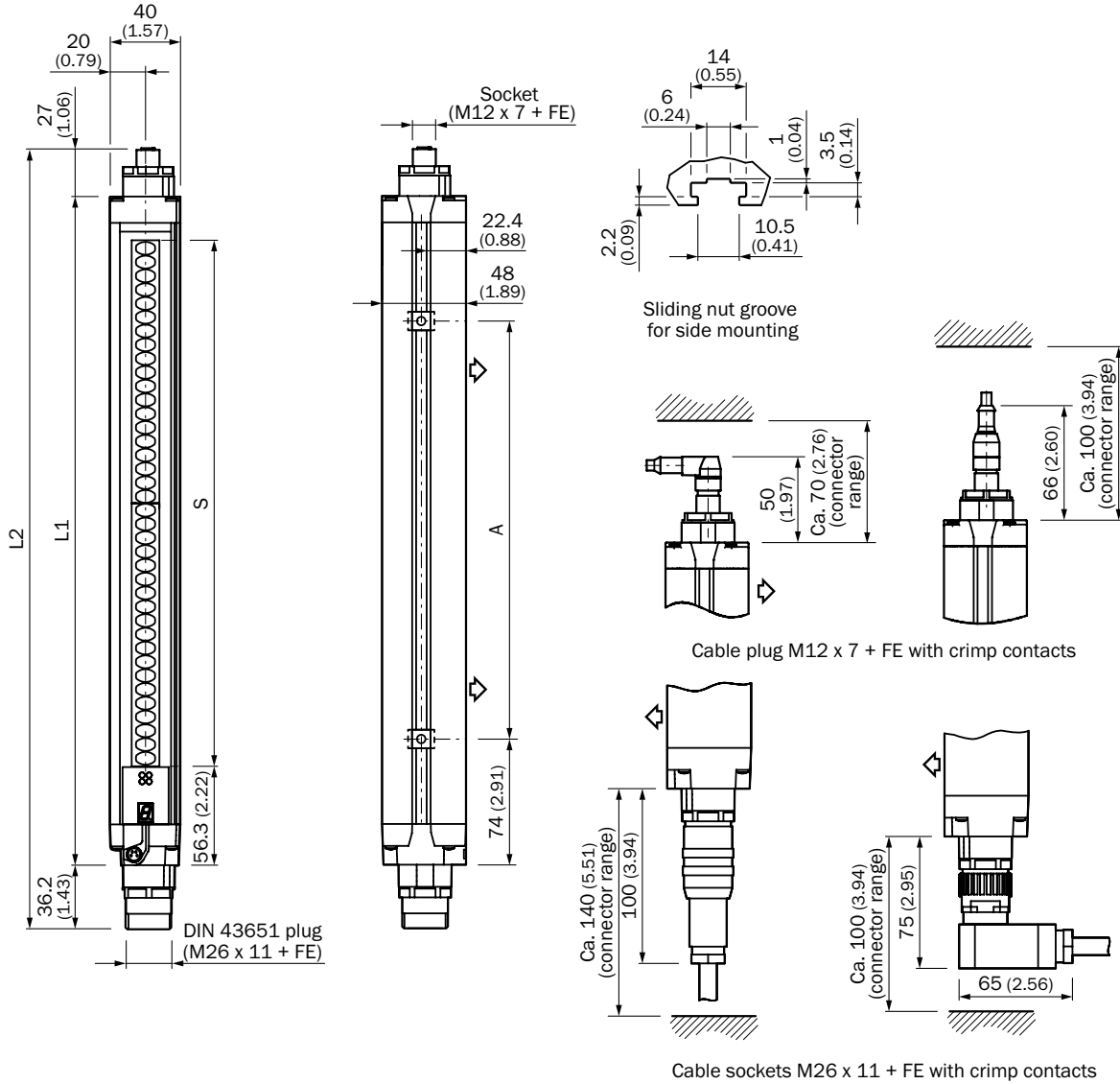


Illustration sender (receiver mirror image)

Protective field height S	L1	L2	A
300 (11.81)	381 (15.00)	444 (17.48)	224 (8.82)
450 (17.72)	532 (20.94)	594 (23.39)	374 (14.72)
600 (23.62)	682 (26.85)	744 (29.29)	524 (20.63)
750 (29.53)	833 (32.80)	895 (35.24)	674 (26.54)
900 (35.43)	984 (38.74)	1,046 (41.18)	824 (32.44)
1,050 (41.34)	1,134 (44.65)	1,196 (47.09)	974 (38.35)
1,200 (47.24)	1,283 (50.51)	1,346 (52.99)	1,124 (44.25)
1,350 (53.15)	1,435 (56.50)	1,497 (58.94)	1,274 (50.16)
1,500 (59.06)	1,586 (62.44)	1,649 (64.92)	1,424 (56.06)
1,650 (64.96)	1,736 (68.35)	1,798 (70.79)	1,574 (61.97)
1,800 (70.87)	1,887 (74.29)	1,949 (76.73)	1,724 (67.87)



C4000 Standard Guest

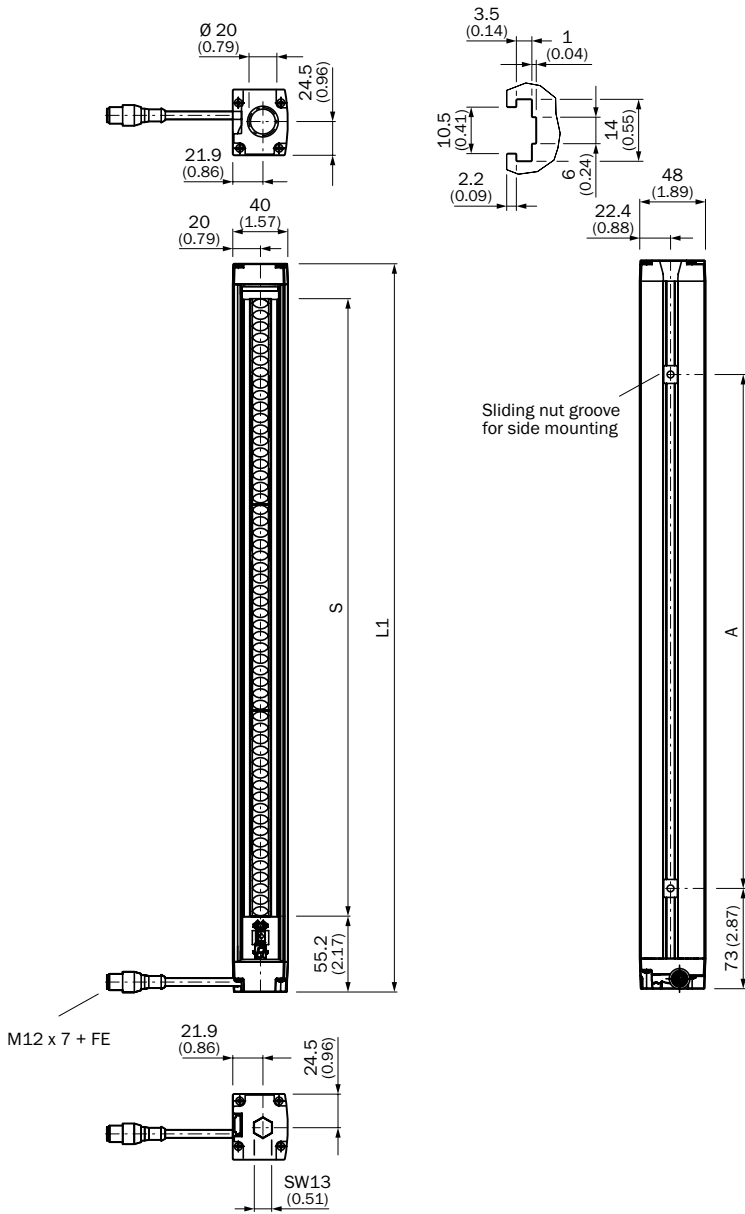
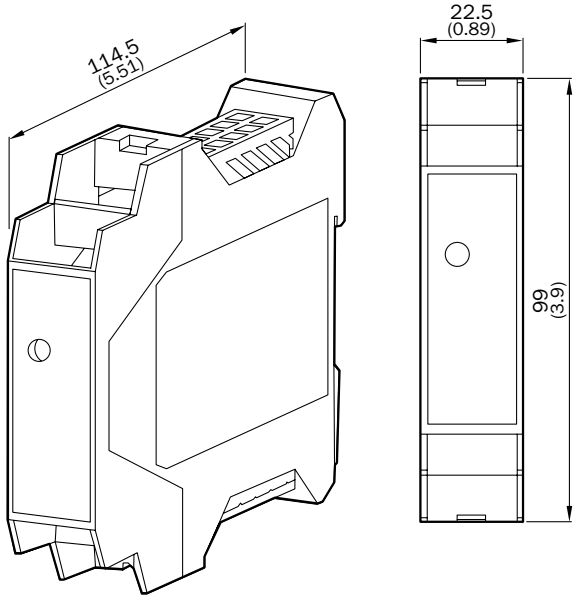


Illustration sender (receiver mirror image)

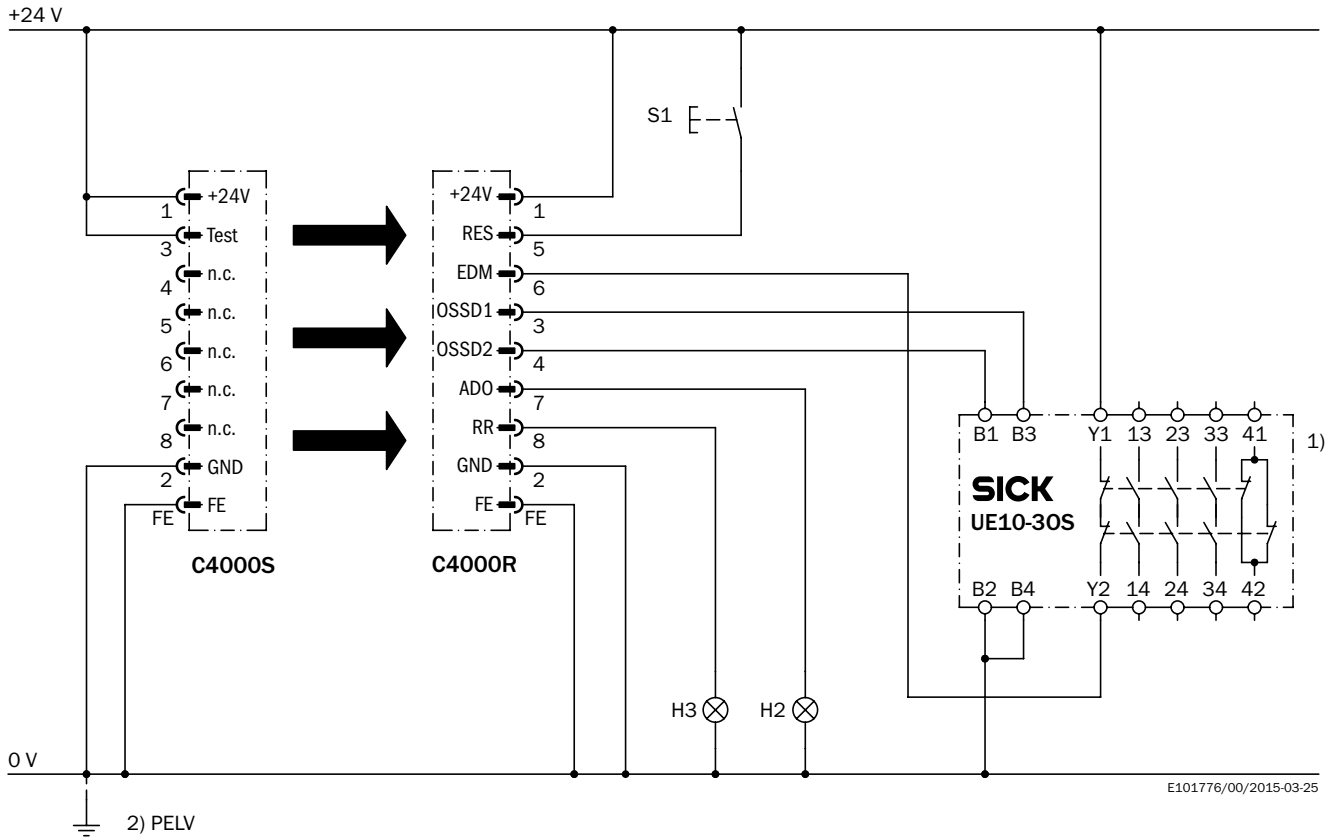
Protective field height S	L	A
150 (5.91)	220 (8.66)	76 (2.99)
300 (11.81)	380 (14.96)	224 (8.82)
450 (17.72)	530 (20.87)	374 (14.72)
600 (23.62)	680 (26.77)	524 (20.63)
750 (29.53)	830 (32.62)	674 (26.54)
900 (35.43)	981 (38.62)	825 (32.48)
1,050 (41.34)	1,131 (44.53)	975 (38.39)
1,200 (47.24)	1,281 (50.43)	1,125 (44.29)
1,350 (53.15)	1,432 (56.38)	1,275 (50.20)
1,500 (59.06)	1,583 (62.32)	1,427 (56.18)
1,650 (64.96)	1,733 (68.23)	1,504 (59.21)
1,800 (70.87)	1,884 (74.17)	1,728 (68.03)

UE402 switching amplifier



Connection diagrams

C4000 safety light curtain on UE10-30S safety relays



Task

Connection of a C4000 Standard/Advanced/Palletizer/Fusion safety light curtain to UE10-30S. Operating mode with restart interlock and external device monitoring.

Function

When the light path is clear and the UE10-30S is de-energized and functioning correctly, the yellow LED on the receiver and the H3 lamp flash. The system is ready to be switched on.

The system is enabled by pressing S1 (button is pressed and released). The OSSD1 and OSSD2 outputs are live, and the UE10-30S is switched on. Upon the interruption of one of the light beams, the UE10-30S is deactivated by the OSSD1 and OSSD2 outputs.

Possible faults

Cross-circuits and short-circuits of the OSSDs are detected and lead to the inhibited state (lock-out). The incorrect functioning of the UE10-30S will be detected, but will not result in the loss of the shutdown function. Jamming of the S1 button prevents the output circuit from enabling. H2 lamp is illuminated if there is contamination (adjustable parameter).

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and taking the risk analysis into account.

²⁾ PELV as required in EN 60204-1 / 6.4

The related operating instructions for the integrated devices must be observed.

Accessories required for commissioning



Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates → Terminal and alignment brackets
Connecting cable	2	-	→ Plug connectors and cables
Cascade connection cable (only required for cascading)	2	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-
Test rod	1	✓	→ Test and monitoring tools

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 1, mounting bracket, rigid, L-shaped, including fixing screws and washers	4 pieces	BEF-3WNGBAST4	7021352
	Mounting kit 11, exchangeable retainer, suitable for replacement of FGS	4 pieces	BEF-3WNGBCST4	2021646

Dimensional drawings → [page G-453](#)

Terminal and alignment brackets

Alignment brackets





Figure	Description	Packing unit	Type	Part no.
	Mounting kit 2, rotatable, swivel mount	4 pieces	BEF-2SMMEAKU4	2019659
	Mounting kit 3, rotatable, with shock-absorber	4 pieces	BEF-1SHADAAL4	2017752
	Mounting kit 6, side bracket, rotatable	4 pieces	BEF-1SHABAZN4	2019506
	Mounting kit C4000 Guest, swivel mount	4 pieces	BEF-2WNAEEST4	2034959
	Mounting kit, rotatable, telescopic, swivel mount	2 pieces	BEF-0SMMEA002	2046172

Figure	Description	Packing unit	Type	Part no.
	Omega bracket, rotatable, fixable with only one screw, for mounting on the swivel mount	4 pieces	BEF-2SMMEAAL4	2044847
	Reinforced stainless steel bracket, rotatable	4 pieces	BEF-2SMMVAES4	2026850


Dimensional drawings → page G-453

Terminal brackets

Figure	Description	Packing unit	Type	Part no.
	Bracket, rigid, vibration absorbing, for devices with a weight > 350 g ... ≤ 1,200 g	4 pieces	BEF-3SHADAAL4S06	2055829
	Bracket, rigid, vibration absorbing, for devices with a weight > 1,200 g ... ≤ 3,000 g	4 pieces	BEF-3SHADAAL4S07	2055830
	Bracket, rigid, vibration absorbing, for devices with a weight > 3,000 g ... ≤ 4,000 g	4 pieces	BEF-3SHADAAL4S08	2055831

Device protection (mechanical)

Front screen protection

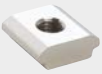
Figure	Description	Suitable for protective field height	Packing unit	Type	Part no.
 Application example	Durable front screen protection set (protects sensors from damage by flying sparks and welding beads), incl. sliding nuts and fastening screws	300 mm	2 pieces	Additional heavy duty front screen	2026853
		450 mm	2 pieces	Additional heavy duty front screen	2026854
		600 mm	2 pieces	Additional heavy duty front screen	2026855
		750 mm	2 pieces	Additional heavy duty front screen	2026856
		900 mm	2 pieces	Additional heavy duty front screen	2026857
		1,050 mm	2 pieces	Additional heavy duty front screen	2026858
		1,200 mm	2 pieces	Additional heavy duty front screen	2026859
		1,350 mm	2 pieces	Additional heavy duty front screen	2026860
		1,500 mm	2 pieces	Additional heavy duty front screen	2026861
		1,650 mm	2 pieces	Additional heavy duty front screen	2026862
		1,800 mm	2 pieces	Additional heavy duty front screen	2026863

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Figure	Description	Suitable for protective field height	Packing unit	Type	Part no.
 Application example	Snap-on front screen protection set (protects sensors from damage by flying sparks and welding beads), mounting hardware included	300 mm	2 pieces	Additional front screen	2022412
		450 mm	2 pieces	Additional front screen	2022413
		600 mm	2 pieces	Additional front screen	2022414
		750 mm	2 pieces	Additional front screen	2022415
		900 mm	2 pieces	Additional front screen	2022416
		1,050 mm	2 pieces	Additional front screen	2022417
		1,200 mm	2 pieces	Additional front screen	2022418
		1,350 mm	2 pieces	Additional front screen	2022419
		1,500 mm	2 pieces	Additional front screen	2022420
		1,650 mm	2 pieces	Additional front screen	2022421
		1,800 mm	2 pieces	Additional front screen	2022422

Other mounting accessories

Sliding nuts


Figure	Description	Packing unit	Type	Part no.
	Sliding nut set, M5, 4x, included in delivery	4 pieces	Sliding nuts	2017550
	Suitable for PNS75 and PNS125	6 pieces	Sliding nuts for deflector mirror	2030600

Connection systems

Plug connectors and cables


Connecting cables with female connector

- **Model:** PVC, unshielded





Figure	Connection type	Description	Conductor cross-section	Cable length	Type	Part no.
	Cable	-	0.75 mm ²	2.5 m	DOL-0612G2M5075KM0	2022544
				5 m	DOL-0612G05M075KM0	2022545
				7.5 m	DOL-0612G7M5075KM0	2022546
				10 m	DOL-0612G10M075KM0	2022547
				15 m	DOL-0612G15M075KM0	2022548
				20 m	DOL-0612G20M075KM0	2022549
				30 m	DOL-0612G30M075KM0	2022550
		50 m	DOL-0612G50MD75KM0	2033548		
		Without EFI: Pin 9 and 10 not connected	0.75 mm ²	5 m	DOL-0610G05M075KM1	2046888
				7.5 m	DOL-0610G7M5075KM5	2044042
				10 m	DOL-0610G10M075KM1	2046889
				20 m	DOL-0610G20M075KM1	2046890

Connecting cables with male connector

- **Model:** PVC, unshielded

Figure	Connection type	Conductor cross-section	Cable length	Type	Part no.
	Cable	0.75 mm ²	2.5 m	STL-0608G2M5075KM1	2026869
			10 m	STL-0608G10M075KM1	2026870



Connection cables with female connector and male connector

Figure	Connection type		Description	Model	Cable length	Type	Part no.	
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	For connecting the configuration connection to the serial interface of a PC	PVC, unshielded	2 m	DSL-8D04G02M025KM1	6021195	
					10 m	DSL-8D04G10M025KM1	2027649	
	Female connector, M12, 8-pin, straight	Male connector, M12, 8-pin, angled	-	PUR, halogen-free, shielded	1 m	DSL-127SA01ME25KM0	6030974	
					Male connector, M12, 8-pin, straight	1 m	DSL-127SG01ME25KM0	2076628
						20 m	DSL-127SG20ME25KM0	2078579
	Female connector, M26, 12-pin, angled	Male connector, M26, 12-pin, straight	-	PVC, unshielded	0.25 m	DSL-0612BM25075KM0	2022284	
					0.5 m	DSL-0612B0M5075KM0	2022285	
					1 m	DSL-0612B01M075KM0	2022286	
					1.5 m	DSL-0612B1M5075KM0	2022287	
					2 m	DSL-0612B02M075KM0	2022288	
					2.5 m	DSL-0612B2M5075KM0	2022289	
					3 m	DSL-0612B03M075KM0	2022290	
	Female connector, M26, 12-pin, straight	Male connector, M26, 12-pin, straight	-	PVC, unshielded	0.25 m	DSL-0612GM25075KM0	2022278	
					0.5 m	DSL-0612G0M5075KM0	2021838	
					1 m	DSL-0612G01M075KM0	2022279	
					1.5 m	DSL-0612G1M5075KM0	2022280	
					2 m	DSL-0612G02M075KM0	2022281	
					2.5 m	DSL-0612G2M5075KM0	2022282	
					3 m	DSL-0612G03M075KM0	2022283	



Connection cables with male connector and male connector


- **Model:** PVC, unshielded

Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574
				10 m	DSL-8U04G10M025KM1	6034575


Female connectors (ready to assemble)

Figure	Connection type	Permitted cross-section	Type	Part no.
	Female connector, M26, 12-pin, angled, crimp contacts	0.5 mm ² ... 1.5 mm ²	DOS-0612W000GA3KM0	6020758
	Female connector, M26, 12-pin, straight, crimp contacts	0.5 mm ² ... 1.5 mm ²	DOS-0612G000GA3KM0	6020757

Male connectors (ready to assemble)


Figure	Connection type	Permitted cross-section	Type	Part no.
	Male connector, M26, 12-pin, angled, crimp contacts	0.5 mm ² ... 1.5 mm ²	STE-0612W000GA3KM0	6021192
	Male connector, M26, 12-pin, straight, crimp contacts	0.5 mm ² ... 1.5 mm ²	STE-0612G000GA3KM0	6021191

Cables (ready to assemble)

Figure	Description	Model	Conductor cross-section	Number of cores	Items supplied	Type	Part no.
	Max. 100 m, fitting for EFI connections	PVC, unshielded	0.75 mm ²	12-wire	By the meter	Connecting cable	6021437






Adapters and distributors

Other adapters and distributors


Figure	Description	Type	Part no.
	Terminal with 182 Ohm resistance, for pin 9 and 10 on the system connection, to improve the EMC behaviour if the EFI interface is not used	Terminal with 182 Ohm resistance	2027227

Modules and gateways

EFI gateways




Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098
	PROFINET PROFI-safe	UE4740-22H0000	1046978

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for housing cross-section 48 mm x 40 mm	Adapter AR60, 48x40	4032461
	Adapter AR60 for housing cross-section 48 mm x 40 mm in PU3H device column	Adapter AR60, 48x40, PU3H	4056731

Deflector mirrors

- **Description:** horizontal deflection



Figure	Mirror material	Items supplied	Suitable for protective field height	Type	Part no.
	Glass	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS125-034	1019425
			150 mm ... 450 mm	PNS125-049	1019426
			150 mm ... 600 mm	PNS125-064	1019427
			150 mm ... 750 mm	PNS125-079	1019428
			150 mm ... 900 mm	PNS125-094	1019429
			150 mm ... 1,050 mm	PNS125-109	1019430
			150 mm ... 1,200 mm	PNS125-124	1019431
			150 mm ... 1,350 mm	PNS125-139	1019432
			150 mm ... 1,500 mm	PNS125-154	1019433
			150 mm ... 1,650 mm	PNS125-169	1019434
	Stainless steel	Incl. mounting kit swivel mount	150 mm ... 1,800 mm	PNS125-184	1019435
			150 mm ... 300 mm	PNS75-034	1019414
			150 mm ... 450 mm	PNS75-049	1019415
			150 mm ... 600 mm	PNS75-064	1019416
	Glass	Incl. mounting kit swivel mount	150 mm ... 750 mm	PNS75-079	1019417
			150 mm ... 750 mm	PNS75-079S05	1046075
			150 mm ... 900 mm	PNS75-094	1019418
			150 mm ... 1,050 mm	PNS75-109	1019419
			150 mm ... 1,200 mm	PNS75-124	1019420
			150 mm ... 1,350 mm	PNS75-139	1019421
150 mm ... 1,500 mm	PNS75-154	1019422			
150 mm ... 1,650 mm	PNS75-169	1019423			
150 mm ... 1,800 mm	PNS75-184	1019424			

Dimensional drawings → page G-456

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Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
	14 mm diameter	Test rod 14 mm	2022599
	20 mm diameter	Test rod 20 mm	2022600
	30 mm diameter	Test rod 30 mm	2022602
	40 mm diameter	Test rod 40 mm	2022604
	Test rod holder	BEF-3WNAAAAL1	2052249


Programming and configuration tools

Figure	Description	Suitable for	Type	Part no.
	Clone Plug to save and transfer configurations, IP 41, with lithium coin cell CR2032, 3.0 V	C4000 Standard, C4000 Advanced, C4000 Palletizer, C4000 Entry/Exit, C4000 Fusion, M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, M4000 Area	PLUG1-0C00100	1029665
	Host-guest plug to reset the system positions in a cascade (Host, Guest1, or Guest2), IP 41, with CR2032 lithium button cell, 3.0 V	C4000 Standard, Advanced, Palletizer, Entry/Exit	PLUG1-1R00000	1029717
	Wall-mounting bracket for mounting Clone Plug and Host-Guest Plug	-	Wall-mounting bracket	5318443


Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> Freestanding mounting solution with external grooves for installing additional accessories Compact, rugged design with high reliability Easy mounting and adjustment Device protection against external influences Large reflector surface for efficient multi-sided protection via beam deflection Universally applicable for multiple light beam safety devices and safety light curtains 	→ page K-664

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

TOTAL FLEXIBILITY – EVEN IN EXPLOSIVE ENVIRONMENTS



The diagram illustrates the safety light curtain's application. It shows a hand being detected by a vertical beam, a hand being detected by a horizontal beam, a person walking through a vertical beam, and a person walking through a horizontal beam. Below the diagrams are two yellow SICK C4000 safety light curtain units.

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Additional information

Ordering informationG-279

Recommended accessoriesG-271

Product description

The C4000 Standard ATEX II 3G/3D safety light curtain is a cost-effective, reliable solution that safeguards hazardous points and areas, even in potentially explosive atmospheres. Functions such as the restart interlock (RES) and external device monitoring (EDM) provide easy machine integration. Vari-

ous mounting adapters and innovative accessories enable flexible installation. The industry-tested 7-segment display saves time during alignment and diagnostics. Plus, the C4000 Standard ATEX II 3G/3D safeguards areas with up to an 1,800 mm protective field height.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- ATEX II 3G/3D (2/22 zones)
- 7-segment display
- Beam coding for correct system allocation
- Configuration and diagnostics via PC
- External device monitoring (EDM) and restart interlock (RES)
- Accessory Clone Plug – for configuration memory
- Labelling Gas: Ex nA op is IIC T4 0°C<Ta<55°C Gc X
- Labelling Dust: Ex tD A22 IP65 T123°C X

Your benefits

- ATEX II 3G/3D for use in 2/22 zones
- Large scanning ranges up to 19 m and sufficient power reserve for use in paint finishing lines, for example
- 7-segment display saves time during alignment and diagnostics
- Beam coding protects the systems against optical interference by ensuring a high level of availability
- Preconfigured light curtains and the clone plug enables easy and rapid commissioning
- Precise, convenient configuration and diagnostics reduces downtime

→ www.sick.com/C4000_Standard_ATEX_II_3G_3D

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Ordering information

The products of the C4000 Standard ATEX II 3G/3D family are based on products of the C4000 Standard family.

For more data on C4000 Standard → [page I-496](#)

Usage	As a standalone system
Connection types	
System connection	Hirschmann male connector M26, 12-pin
Configuration connection	Female connector M8, 4-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-S134	1058664	C40E-S134	1058665
600 mm	C40S-S130	1054538	C40E-S130	1054539
1,500 mm	C40S-S132	1056424	C40E-S132	1056425

- **Resolution:** 20 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
900 mm	C40S-S126	1051570	C40E-S126	1051571
1,200 mm	C40S-S117	1050714	C40E-S117	1050715

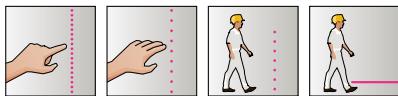

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m


Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
600 mm	C40S-S137	1064833	C40E-S137	1064834
750 mm	C40S-S111	1025786	C40E-S111	1025787
900 mm	C40S-S114	1050298	C40E-S114	1050299
1,050 mm	C40S-S118	1050716	C40E-S118	1050717
1,200 mm	C40S-S128	1053695	C40E-S128	1053696
1,350 mm	C40S-S115	1050300	C40E-S115	1050301
1,500 mm	C40S-S005	1024072	C40E-S005	1024073
1,650 mm	C40S-S123	1050747	C40E-S123	1050748
1,800 mm	C40S-S124	1051138	C40E-S124	1051139

- **Resolution:** 40 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-S127	1052310	C40E-S127	1052311
600 mm	C40S-S119	1050718	C40E-S119	1050719
750 mm	C40S-S120	1050720	C40E-S120	1050721
900 mm	C40S-S121	1050722	C40E-S121	1050723
1,050 mm	C40S-S122	1050724	C40E-S122	1050725
1,350 mm	C40S-S125	1051371	C40E-S125	1051372
1,500 mm	C40S-S113	1042292	C40E-S113	1042293
1,800 mm	C40S-S110	1024052	C40E-S110	1024053

INCREASE PRODUCTIVITY WITH GREATER MACHINE SAFETY



Additional information

Detailed technical dataG-281

Ordering information G-286

Dimensional drawings G-293

Connection diagrams G-298

Recommended accessories . . . G-299

Product description

The C4000 Advanced safety light curtain reliably protects against access into hazardous points and areas. Integrated blanking functions allow objects (such as cables or work tables), but not people, to enter the protective field. Cascading several systems offers the user a high degree of flexibility for the application solution. The restart interlock (RES) and external device monitoring (EDM) functions provide easy

machine integration. Various mounting adapters and innovative accessories enable flexible installation. The industry-tested 7-segment display saves time during alignment and diagnostics. The C4000 Advanced, which provides protective field heights from 300 mm to 1,800 mm, offers reliable machine protection up to the highest protection level, PL e.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Various options for blanking objects: fixed, floating, or teach-in
- 7-segment display
- PSDI mode with the UE402 switching amplifier
- External device monitoring (EDM) and restart interlock (RES)
- Beam coding for correct system allocation
- Configuration and diagnostics via PC
- Cascade up to three systems

Your benefits

- Blanking functions enable reliable and safe object detection and increase the productivity in the process
- 7-segment display saves time during alignment and diagnostics
- Beam coding protects the systems against optical interference by ensuring a high level of availability
- Clone plug enables easy and rapid commissioning, saving time and costs
- Ability to cascade up to three systems optimizes the safety application and reduces wiring costs
- Precise, convenient configuration and diagnostics reduce downtime

→ www.sick.com/C4000_Advanced

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

C4000 Advanced

Features

	Resolution 14 mm	Resolution 20 mm	Resolution 30 mm	Resolution 40 mm
Protective field height	300 mm ... 1,800 mm (depending on type)			
Scanning range	0 m ... 8 m	0 m ... 19 m		
Response time	≤ 26 ms ¹⁾			
Synchronization	Optical synchronisation			

¹⁾ Without beam coding, without blanking, no cascaded systems. Other response times see operating instructions.

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH _D (mean probability of a dangerous failure per hour)	1.5 x 10 ⁻⁸
T _M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	External
External device monitoring (EDM)	✓	Deactivated
Configurable scanning range	✓	
Reduced resolution	✓	
Fixed blanking	✓	
Floating blanking	✓	
Emergency stop / bypass at extension connection	- / ✓ (depending on type)	
Safe SICK device communication via EFI	✓	

Functions in combination with UE402

Bypass	✓
Operating mode switching	✓
PSDI mode	✓

Interfaces

System connection	Connection type	Hirschmann male connector M26, 12-pin
	Permitted cable length	≤ 50 m ¹⁾
	Conductor cross-section	0.75 mm ²
Extension connection	Connection type	Hirschmann female connector M26, 12 pin / M12, 8-pin (depending on type)
	Conductor cross-section	≤ 0.25 mm ²
Configuration connection	Connection type	Female connector M8, 4-pin
	Configuration method	PC with CDS (Configuration and Diagnostic Software)
Display elements		7-segment display
Fieldbus, industrial network	Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ²⁾
	Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ³⁾

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

³⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Ripple	≤ 10 % ²⁾	
Power consumption	2 A	3 A
Safety outputs (OSSD)	Type of output	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
	Switching voltage HIGH	24 V DC ($V_s - 2.25$ V DC ... V_s)
	Switching voltage LOW	2 V DC
	Switching current	≤ 500 mA

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60 204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of U_v .

Mechanical data

	Sender	Receiver
Housing cross-section	48 mm x 40 mm	
Weight	820 g ... 3,680 g (depending on type)	850 g ... 3,710 g (depending on type)

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	16 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Wave length	950 nm	-

C4000 Advanced Guest

Features

	Resolution 14 mm	Resolution 30 mm
Protective field height	150 mm ... 1,800 mm (depending on type)	
Scanning range	0 m ... 8 m	0 m ... 19 m
Response time	≤ 26 ms ¹⁾	
Synchronization	Optical synchronisation	

¹⁾ Without beam coding, without blanking. Other response times see operating instructions.

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH _D (mean probability of a dangerous failure per hour)	1.5 x 10 ⁻⁸
T _M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Interfaces

System connection	Connection type	Fixed connection cable 320 mm with male connector M12, 8-pin
	Permitted cable length	≤ 3 m ¹⁾
	Conductor cross-section	0.25 mm ²
Display elements	7-segment display	

¹⁾ Between host and guest.

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V _S	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Ripple	≤ 10 % ²⁾	
Power consumption	2 A	3 A
Safety outputs (OSSD)	Type of output	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
	Switching voltage HIGH	24 V DC (V _S - 2.25 V DC ... V _S)
	Switching voltage LOW	2 V DC
	Switching current	≤ 500 mA

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60 204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of U_v.

Mechanical data

Housing cross-section	48 mm x 40 mm
------------------------------	---------------

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	16 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Wave length	950 nm	-

UE402 switching amplifier

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	15 x 10 ⁻⁹ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)

Functions

Bypass	✓
Operating mode switching	✓
PSDI mode	✓

Electrical data

Protection class	III (IEC 536:1976)
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾
Residual ripple	10 % ²⁾
Power consumption	≤ 110 mA
Switch-on time	≤ 4 s
IN A1 ... A6, MCC-BDC, MCC-TDC	
Switching voltage HIGH	24 V DC (11 V DC ... 30 V DC)
Switching voltage LOW	-30 V DC ... 5 V DC
Input current HIGH	6 mA ... 20 mA
Input current LOW	-3 mA ... 0.5 mA
IN B1, IN B2, OUT B1, OUT B2	
Bypass change over time	≤ 2 s
Synchronous time monitoring	≤ 200 ms

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of V_S.

Mechanical data

Dimensions (W x H x D)	22.5 mm x 99 mm x 114.5 mm
Housing material	Plastic
Weight	120 g

Ambient data

Enclosure rating	IP 20 (IEC 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)



Ordering information

Items supplied C4000 Advanced:

- Safety light curtain consisting of a sender and a receiver
- 8 sliding nuts for side mounting
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

C4000 Advanced without extension connection

Usage	As a standalone system and as last system in a cascade
Connection types	
System connection	Hirschmann male connector M26, 12-pin
Configuration connection	Female connector M8, 4-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0301CA010	1018591	C40E-0301CB010	1018781
450 mm	C40S-0401CA010	1018347	C40E-0401CB010	1018782
600 mm	C40S-0601CA010	1018593	C40E-0601CB010	1018783
750 mm	C40S-0701CA010	1018595	C40E-0701CB010	1018784
900 mm	C40S-0901CA010	1018597	C40E-0901CB010	1018785
1,050 mm	C40S-1001CA010	1018599	C40E-1001CB010	1018786
1,200 mm	C40S-1201CA010	1018601	C40E-1201CB010	1018787
1,350 mm	C40S-1301CA010	1018603	C40E-1301CB010	1018788
1,500 mm	C40S-1501CA010	1018605	C40E-1501CB010	1018789
1,650 mm	C40S-1601CA010	1018607	C40E-1601CB010	1018790
1,800 mm	C40S-1801CA010	1018609	C40E-1801CB010	1018791

- **Resolution:** 20 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0302CA010	1018613	C40E-0302CB010	1018792
450 mm	C40S-0402CA010	1018615	C40E-0402CB010	1018793
600 mm	C40S-0602CA010	1018617	C40E-0602CB010	1018794
750 mm	C40S-0702CA010	1018619	C40E-0702CB010	1018795
900 mm	C40S-0902CA010	1018621	C40E-0902CB010	1018796
1,050 mm	C40S-1002CA010	1018623	C40E-1002CB010	1018797
1,200 mm	C40S-1202CA010	1018625	C40E-1202CB010	1018798
1,350 mm	C40S-1302CA010	1018627	C40E-1302CB010	1018799
1,500 mm	C40S-1502CA010	1018629	C40E-1502CB010	1018800
1,650 mm	C40S-1602CA010	1018631	C40E-1602CB010	1018801
1,800 mm	C40S-1802CA010	1018633	C40E-1802CB010	1018802

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0303CA010	1018635	C40E-0303CB010	1018803
450 mm	C40S-0403CA010	1018637	C40E-0403CB010	1018804
600 mm	C40S-0603CA010	1018639	C40E-0603CB010	1018805
750 mm	C40S-0703CA010	1018641	C40E-0703CB010	1018806
900 mm	C40S-0903CA010	1018643	C40E-0903CB010	1018807
1,050 mm	C40S-1003CA010	1018645	C40E-1003CB010	1018809
1,200 mm	C40S-1203CA010	1018647	C40E-1203CB010	1018810
1,350 mm	C40S-1303CA010	1018649	C40E-1303CB010	1018811
1,500 mm	C40S-1503CA010	1018651	C40E-1503CB010	1018812
1,650 mm	C40S-1603CA010	1018653	C40E-1603CB010	1018813
1,800 mm	C40S-1803CA010	1018655	C40E-1803CB010	1018814

- **Resolution:** 40 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0304CA010	1018657	C40E-0304CB010	1018815
450 mm	C40S-0404CA010	1018659	C40E-0404CB010	1018816
600 mm	C40S-0604CA010	1018661	C40E-0604CB010	1018817
750 mm	C40S-0704CA010	1018663	C40E-0704CB010	1018818
900 mm	C40S-0904CA010	1018665	C40E-0904CB010	1018819
1,050 mm	C40S-1004CA010	1018667	C40E-1004CB010	1018820
1,200 mm	C40S-1204CA010	1018669	C40E-1204CB010	1018821
1,350 mm	C40S-1304CA010	1018671	C40E-1304CB010	1018822
1,500 mm	C40S-1504CA010	1018673	C40E-1504CB010	1018823
1,650 mm	C40S-1604CA010	1018675	C40E-1604CB010	1018824
1,800 mm	C40S-1804CA010	1018677	C40E-1804CB010	1018825

C4000 Advanced with extension connection M26, 12-pin

Usage	As first or middle system in a cascade
Connection types	
System connection	Hirschmann male connector M26, 12-pin
Extension connection	Hirschmann female connector M26, 12 pin
Configuration connection	Female connector M8, 4-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0301DA010	1018690	C40E-0301DB010	1018827
450 mm	C40S-0401DA010	1018349	C40E-0401DB010	1018828
600 mm	C40S-0601DA010	1018692	C40E-0601DB010	1018829
750 mm	C40S-0701DA010	1018694	C40E-0701DB010	1018830
900 mm	C40S-0901DA010	1018696	C40E-0901DB010	1018831
1,050 mm	C40S-1001DA010	1018698	C40E-1001DB010	1018832
1,200 mm	C40S-1201DA010	1018700	C40E-1201DB010	1018833
1,350 mm	C40S-1301DA010	1018702	C40E-1301DB010	1018834
1,500 mm	C40S-1501DA010	1018704	C40E-1501DB010	1018835
1,650 mm	C40S-1601DA010	1018706	C40E-1601DB010	1018836
1,800 mm	C40S-1801DA010	1018708	C40E-1801DB010	1018837

- **Resolution:** 20 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0302DA010	1018710	C40E-0302DB010	1018838
450 mm	C40S-0402DA010	1018712	C40E-0402DB010	1018839
600 mm	C40S-0602DA010	1018714	C40E-0602DB010	1018840
750 mm	C40S-0702DA010	1018716	C40E-0702DB010	1018841
900 mm	C40S-0902DA010	1018718	C40E-0902DB010	1018842
1,050 mm	C40S-1002DA010	1018720	C40E-1002DB010	1018843
1,200 mm	C40S-1202DA010	1018722	C40E-1202DB010	1018844
1,350 mm	C40S-1302DA010	1018724	C40E-1302DB010	1018845
1,500 mm	C40S-1502DA010	1018726	C40E-1502DB010	1018846
1,650 mm	C40S-1602DA010	1018728	C40E-1602DB010	1018847
1,800 mm	C40S-1802DA010	1018730	C40E-1802DB010	1018848



- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0303DA010	1018733	C40E-0303DB010	1018849
450 mm	C40S-0403DA010	1018735	C40E-0403DB010	1018850
600 mm	C40S-0603DA010	1018737	C40E-0603DB010	1018851
750 mm	C40S-0703DA010	1018739	C40E-0703DB010	1018852
900 mm	C40S-0903DA010	1018741	C40E-0903DB010	1018853
1,050 mm	C40S-1003DA010	1018743	C40E-1003DB010	1018854
1,200 mm	C40S-1203DA010	1018745	C40E-1203DB010	1018855
1,350 mm	C40S-1303DA010	1018747	C40E-1303DB010	1018856
1,500 mm	C40S-1503DA010	1018749	C40E-1503DB010	1018857
1,650 mm	C40S-1603DA010	1018751	C40E-1603DB010	1018858
1,800 mm	C40S-1803DA010	1018753	C40E-1803DB010	1018859

- **Resolution:** 40 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0304DA010	1018755	C40E-0304DB010	1018860
450 mm	C40S-0404DA010	1018757	C40E-0404DB010	1018861
600 mm	C40S-0604DA010	1018759	C40E-0604DB010	1018862
750 mm	C40S-0704DA010	1018762	C40E-0704DB010	1018863
900 mm	C40S-0904DA010	1018765	C40E-0904DB010	1018864
1,050 mm	C40S-1004DA010	1018767	C40E-1004DB010	1018865
1,200 mm	C40S-1204DA010	1018769	C40E-1204DB010	1018866
1,350 mm	C40S-1304DA010	1018771	C40E-1304DB010	1018867
1,500 mm	C40S-1504DA010	1018773	C40E-1504DB010	1018868
1,650 mm	C40S-1604DA010	1018775	C40E-1604DB010	1018869
1,800 mm	C40S-1804DA010	1018777	C40E-1804DB010	1018870

C4000 Advanced Host with extension connection M12, 8-pin

Usage	As first system in a cascade
Connection types	
System connection	Hirschmann male connector M26, 12-pin
Extension connection	M12, 8-pin
Configuration connection	Female connector M8, 4-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0301DA040	1028969	C40E-0301DB040	1028989
450 mm	C40S-0401DA040	1028967	C40E-0401DB040	1028990
600 mm	C40S-0601DA040	1028971	C40E-0601DB040	1028991
750 mm	C40S-0701DA040	1028973	C40E-0701DB040	1028992
900 mm	C40S-0901DA040	1028975	C40E-0901DB040	1028993
1,050 mm	C40S-1001DA040	1028977	C40E-1001DB040	1028994
1,200 mm	C40S-1201DA040	1028979	C40E-1201DB040	1028995
1,350 mm	C40S-1301DA040	1028981	C40E-1301DB040	1028996
1,500 mm	C40S-1501DA040	1028983	C40E-1501DB040	1028997
1,650 mm	C40S-1601DA040	1028985	C40E-1601DB040	1028998
1,800 mm	C40S-1801DA040	1028987	C40E-1801DB040	1028999

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0303DA040	1029001	C40E-0303DB040	1029023
450 mm	C40S-0403DA040	1029003	C40E-0403DB040	1029024
600 mm	C40S-0603DA040	1029005	C40E-0603DB040	1029025
750 mm	C40S-0703DA040	1029007	C40E-0703DB040	1029026
900 mm	C40S-0903DA040	1029009	C40E-0903DB040	1029027
1,050 mm	C40S-1003DA040	1029011	C40E-1003DB040	1029028
1,200 mm	C40S-1203DA040	1029013	C40E-1203DB040	1029029
1,350 mm	C40S-1303DA040	1029015	C40E-1303DB040	1029030
1,500 mm	C40S-1503DA040	1029017	C40E-1503DB040	1029031
1,650 mm	C40S-1603DA040	1029019	C40E-1603DB040	1029032
1,800 mm	C40S-1803DA040	1029021	C40E-1803DB040	1029033



C4000 Advanced Guest with straight system connection

Usage	As last system in a cascade, configurable via host
Connection types	
System connection	Fixed connection cable 320 mm with male connector M12, 8-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
150 mm	C46S-0101CT400	1028796	C46E-0101CU400	1028820
300 mm	C46S-0301CT400	1028802	C46E-0301CU400	1028821
450 mm	C46S-0401CT400	1028804	C46E-0401CU400	1028822
600 mm	C46S-0601CT400	1028806	C46E-0601CU400	1028823
750 mm	C46S-0701CT400	1028808	C46E-0701CU400	1028824
900 mm	C46S-0901CT400	1040173	C46E-0901CU400	1040186
1,050 mm	C46S-1001CT400	1040175	C46E-1001CU400	1040187
1,200 mm	C46S-1201CT400	1040177	C46E-1201CU400	1040188
1,350 mm	C46S-1301CT400	1040179	C46E-1301CU400	1040189
1,500 mm	C46S-1501CT400	1040181	C46E-1501CU400	1040190
1,650 mm	C46S-1601CT400	1040182	C46E-1601CU400	1040191
1,800 mm	C46S-1801CT400	1040184	C46E-1801CU400	1040192

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
150 mm	C46S-0103CT400	1028879	C46E-0103CU400	1028889
300 mm	C46S-0303CT400	1028881	C46E-0303CU400	1028890
450 mm	C46S-0403CT400	1028883	C46E-0403CU400	1028891
600 mm	C46S-0603CT400	1028885	C46E-0603CU400	1028892
750 mm	C46S-0703CT400	1028887	C46E-0703CU400	1028893
900 mm	C46S-0903CT400	1040193	C46E-0903CU400	1040207
1,050 mm	C46S-1003CT400	1040195	C46E-1003CU400	1040208
1,200 mm	C46S-1203CT400	1040197	C46E-1203CU400	1040209
1,350 mm	C46S-1303CT400	1040199	C46E-1303CU400	1040210
1,500 mm	C46S-1503CT400	1040201	C46E-1503CU400	1040211
1,650 mm	C46S-1603CT400	1040203	C46E-1603CU400	1040212
1,800 mm	C46S-1803CT400	1040205	C46E-1803CU400	1040213



C4000 Advanced Guest with angled system connection

Usage	As last system in a cascade, configurable via host
Connection types	
System connection	Fixed connection cable 320 mm with plug M12, 8-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
150 mm	C46S-0101CT500	1028810	C46E-0101CU500	1028825
300 mm	C46S-0301CT500	1028812	C46E-0301CU500	1028826
450 mm	C46S-0401CT500	1028814	C46E-0401CU500	1028827
600 mm	C46S-0601CT500	1028816	C46E-0601CU500	1028828
750 mm	C46S-0701CT500	1028818	C46E-0701CU500	1028829

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
150 mm	C46S-0103CT500	1028901	C46E-0103CU500	1028894
300 mm	C46S-0303CT500	1028903	C46E-0303CU500	1028895
450 mm	C46S-0403CT500	1028905	C46E-0403CU500	1028896
600 mm	C46S-0603CT500	1028907	C46E-0603CU500	1028897
750 mm	C46S-0703CT500	1028909	C46E-0703CU500	1028898

G

UE402 switching amplifier

Description	Type	Part no.
Expands C4000 Standard, Advanced, Palletizer, Entry/Exit and Fusion with the functions described in the technical data, e.g., bypass, operating mode switching or in addition PSDI mode on C4000 Standard, Advanced.	UE402	1023577

Dimensional drawings (Dimensions in mm (inch))

C4000 Advanced without extension connection

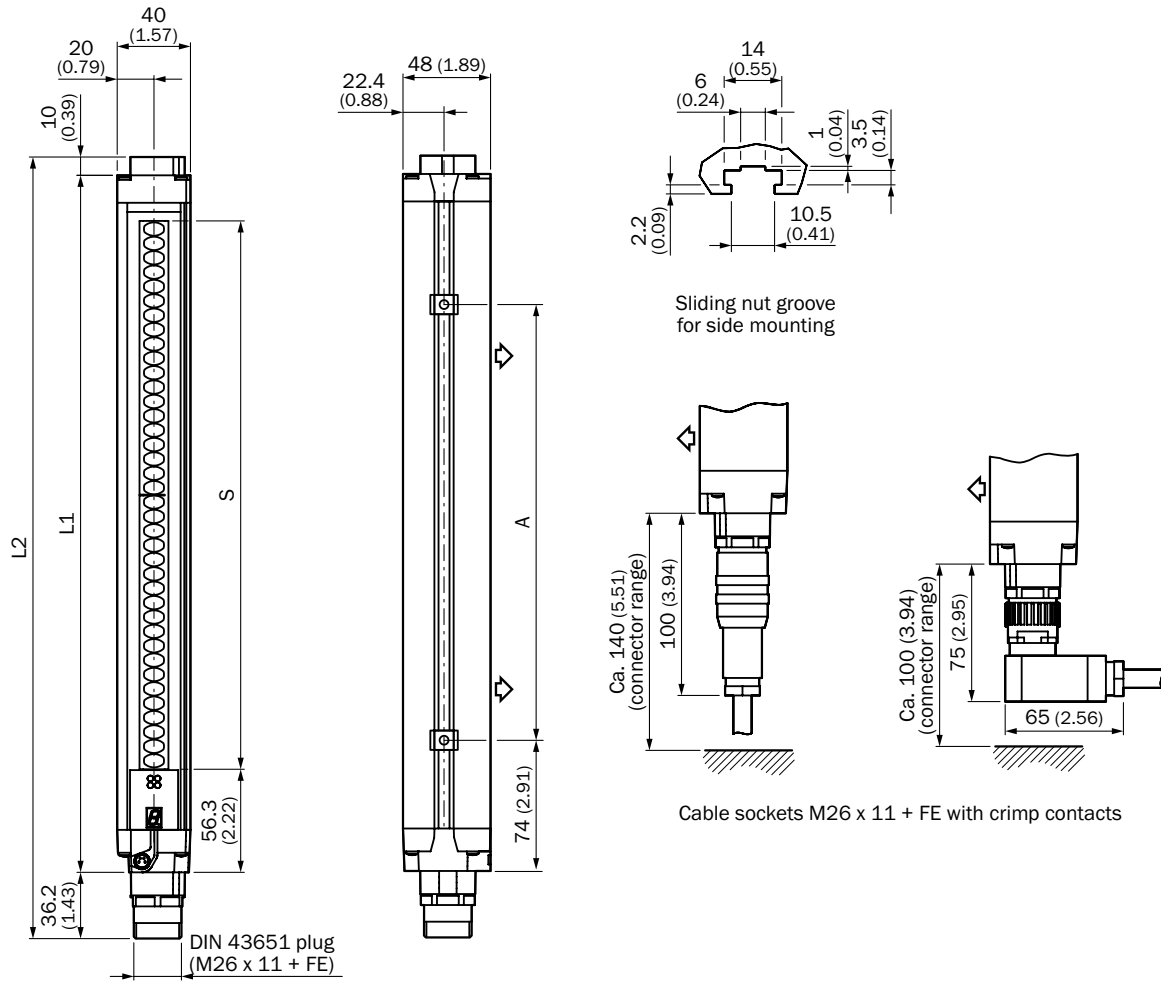


Illustration sender (receiver mirror image)

Protective field height S	L1	L2	A
300 (11.81)	381 (15.00)	427 (16.81)	224 (8.82)
450 (17.72)	532 (20.94)	578 (22.76)	374 (14.72)
600 (23.62)	682 (26.85)	728 (28.66)	524 (20.63)
750 (29.53)	833 (32.80)	879 (34.61)	674 (26.54)
900 (35.43)	984 (38.74)	1,030 (40.55)	824 (32.44)
1,050 (41.34)	1,134 (44.65)	1,180 (46.46)	974 (38.35)
1,200 (47.24)	1,283 (50.51)	1,329 (52.32)	1,124 (44.25)
1,350 (53.15)	1,435 (56.50)	1,481 (58.31)	1,274 (50.16)
1,500 (59.06)	1,586 (62.44)	1,632 (64.25)	1,424 (56.06)
1,650 (64.96)	1,736 (68.35)	1,782 (70.16)	1,574 (61.97)
1,800 (70.87)	1,887 (74.29)	1,933 (76.10)	1,724 (67.87)

C4000 Advanced with extension connection M26, 12-pin

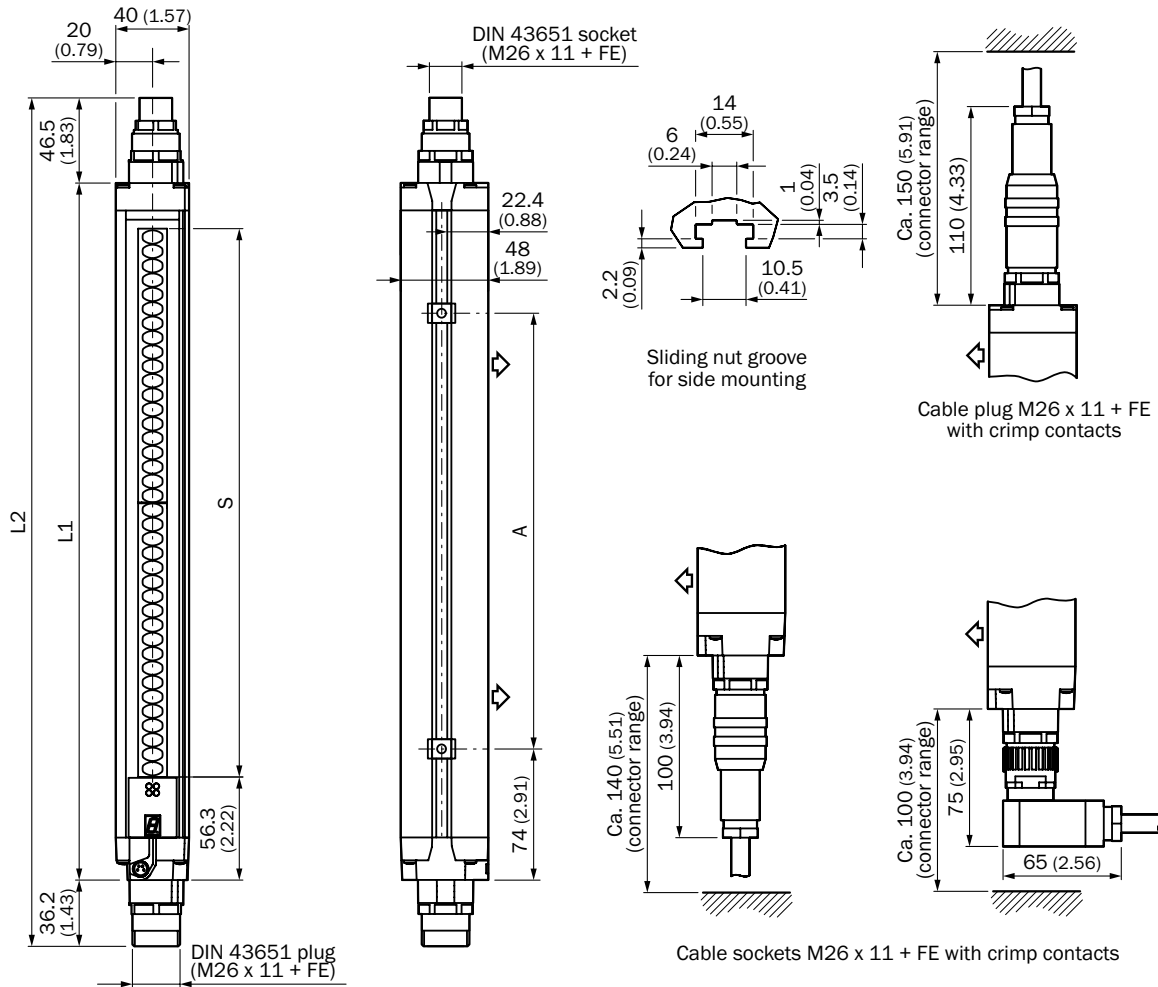


Illustration sender (receiver mirror image)

Protective field height S	L1	L2	A
300 (11.81)	381 (15.00)	464 (18.27)	224 (8.82)
450 (17.72)	532 (20.94)	614 (24.17)	374 (14.72)
600 (23.62)	682 (26.85)	765 (30.12)	524 (20.63)
750 (29.53)	833 (32.80)	915 (36.02)	674 (26.54)
900 (35.43)	984 (38.74)	1,066 (41.97)	824 (32.44)
1,050 (41.34)	1,134 (44.65)	1,216 (47.87)	974 (38.35)
1,200 (47.24)	1,283 (50.51)	1,366 (53.78)	1,124 (44.25)
1,350 (53.15)	1,435 (56.50)	1,517 (59.72)	1,274 (50.16)
1,500 (59.06)	1,586 (62.44)	1,669 (65.71)	1,424 (56.06)
1,650 (64.96)	1,736 (68.35)	1,818 (71.57)	1,574 (61.97)
1,800 (70.87)	1,887 (74.29)	1,969 (77.52)	1,724 (67.87)

C4000 Advanced Host with extension connection M12, 8-pin

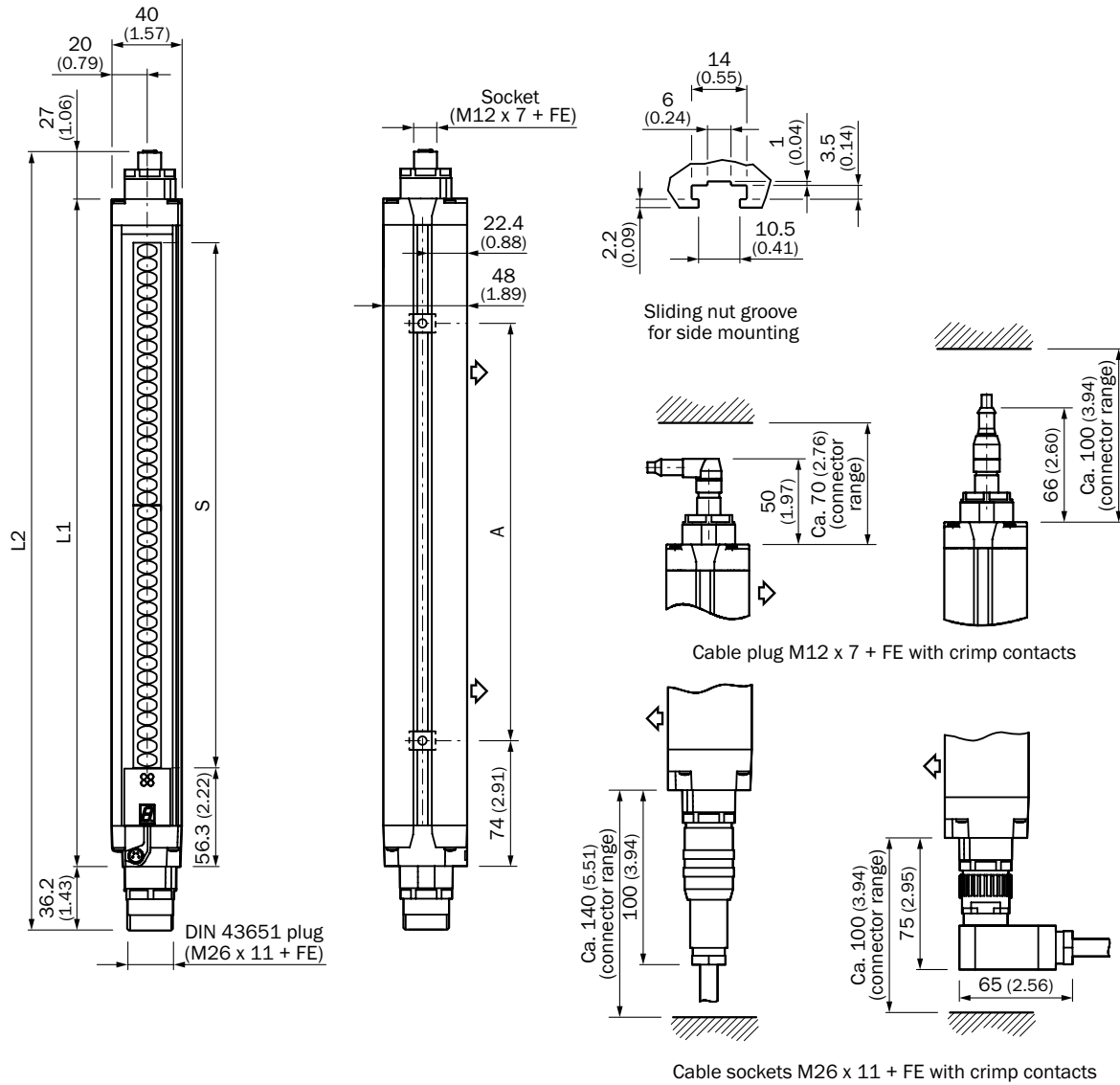
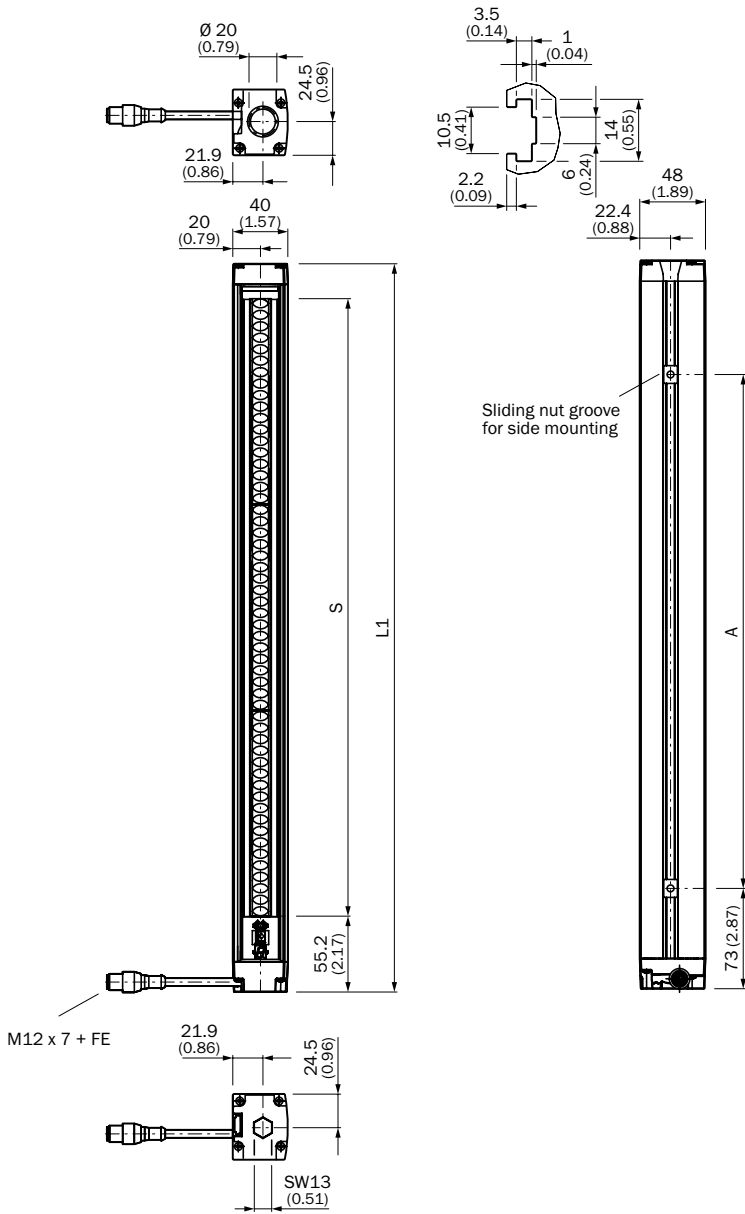


Illustration sender (receiver mirror image)

Protective field height S	L1	L2	A
300 (11.81)	381 (15.00)	444 (17.48)	224 (8.82)
450 (17.72)	532 (20.94)	594 (23.39)	374 (14.72)
600 (23.62)	682 (26.85)	744 (29.29)	524 (20.63)
750 (29.53)	833 (32.80)	895 (35.24)	674 (26.54)
900 (35.43)	984 (38.74)	1,046 (41.18)	824 (32.44)
1,050 (41.34)	1,134 (44.65)	1,196 (47.09)	974 (38.35)
1,200 (47.24)	1,283 (50.51)	1,346 (52.99)	1,124 (44.25)
1,350 (53.15)	1,435 (56.50)	1,497 (58.94)	1,274 (50.16)
1,500 (59.06)	1,586 (62.44)	1,649 (64.92)	1,424 (56.06)
1,650 (64.96)	1,736 (68.35)	1,798 (70.79)	1,574 (61.97)
1,800 (70.87)	1,887 (74.29)	1,949 (76.73)	1,724 (67.87)



C4000 Advanced Guest

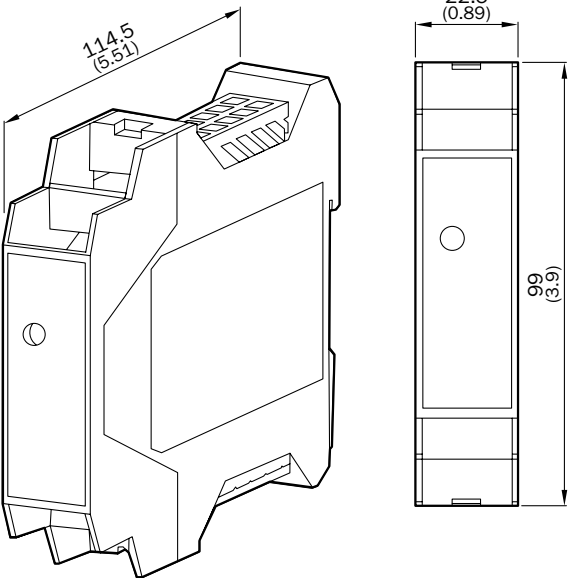


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Illustration sender (receiver mirror image)

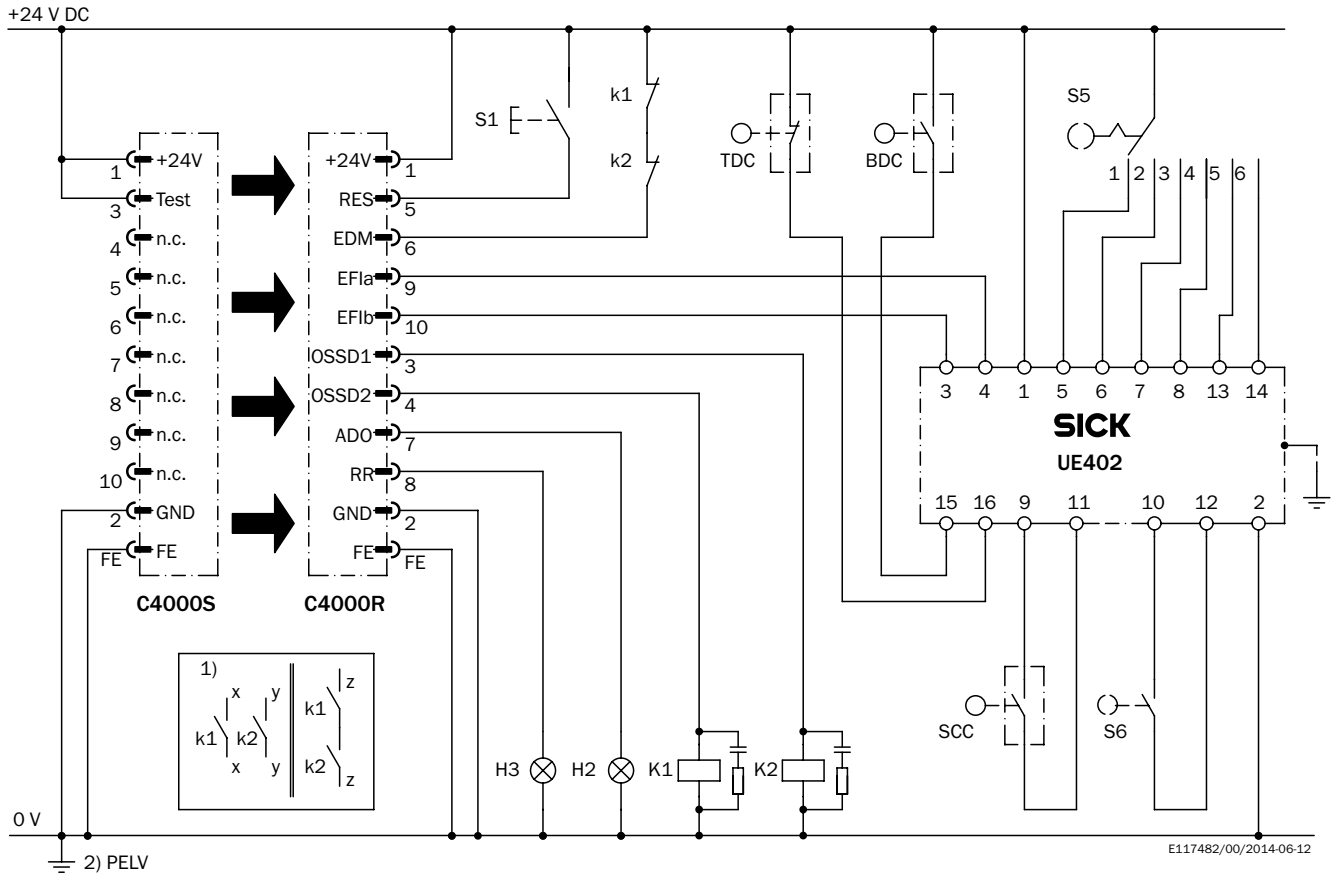
Protective field height S	L	A
150 (5.91)	220 (8.66)	76 (2.99)
300 (11.81)	380 (14.96)	224 (8.82)
450 (17.72)	530 (20.87)	374 (14.72)
600 (23.62)	680 (26.77)	524 (20.63)
750 (29.53)	830 (32.62)	674 (26.54)
900 (35.43)	981 (38.62)	825 (32.48)
1,050 (41.34)	1,131 (44.53)	975 (38.39)
1,200 (47.24)	1,281 (50.43)	1,125 (44.29)
1,350 (53.15)	1,432 (56.38)	1,275 (50.20)
1,500 (59.06)	1,583 (62.32)	1,427 (56.18)
1,650 (64.96)	1,733 (68.23)	1,504 (59.21)
1,800 (70.87)	1,884 (74.17)	1,728 (68.03)

UE402 switching amplifier



Connection diagrams

C4000 Advanced safety light curtain on UE402 safety switching amplifier



Task

Integration of a C4000 Advanced safety light curtain with UE402 in a controller. Six configurable operating modes with restart interlock and external device monitoring. PSDI mode with TDC, BDC, SCC. Teachable blanking areas.

Operating characteristics

If no object is detected in the active protective field and the K1 and K2 contactors are in the de-energized position, the H3 lamp flashes as a prompt to operate S1 control switch. The OSSDs are switched on when S1 is operated (button is pressed and released). These outputs activate K1 and K2 contactors. Upon the detection of an object in an active protective field, the OSSDs deactivate K1 and K2 contactors.

Fault analysis

The incorrect functioning of one of the K1 or K2 contactors does not result in the loss of the shutdown function. OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). On manipulation (e.g., jamming) of the S1 button, the system does not enable the output current circuits.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

²⁾ PELV in accordance with the requirements in EN 60204-1 / 6.4

Please see the operating instructions for the related devices to obtain information on the effects of the functions with configurable parameters. This information is to be observed.

Accessories required for commissioning



Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates → Terminal and alignment brackets
Connecting cable	2	-	→ Plug connectors and cables
Cascade connection cable (only required for cascading)	2	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-
Test rod	1	✓	→ Test and monitoring tools

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 1, mounting bracket, rigid, L-shaped, including fixing screws and washers	4 pieces	BEF-3WNGBAST4	7021352
	Mounting kit 11, exchangeable retainer, suitable for replacement of FGS	4 pieces	BEF-3WNGBCST4	2021646

Dimensional drawings → [page G-453](#)

Terminal and alignment brackets

Alignment brackets










Figure	Description	Packing unit	Type	Part no.
	Mounting kit 2, rotatable, swivel mount	4 pieces	BEF-2SMMEAKU4	2019659
	Mounting kit 3, rotatable, with shock-absorber	4 pieces	BEF-1SHADAAL4	2017752
	Mounting kit 6, side bracket, rotatable	4 pieces	BEF-1SHABAZN4	2019506
	Mounting kit C4000 Guest, swivel mount	4 pieces	BEF-2WNAEEST4	2034959
	Mounting kit, rotatable, telescopic, swivel mount	2 pieces	BEF-0SMMEA002	2046172
	Omega bracket, rotatable, fixable with only one screw, for mounting on the swivel mount	4 pieces	BEF-2SMMEAAL4	2044847

Figure	Description	Packing unit	Type	Part no.
	Reinforced stainless steel bracket, rotatable	4 pieces	BEF-2SMMVAES4	2026850
	Stainless steel bracket, rotatable	4 pieces	BEF-2SMMEAES4	2023708


Dimensional drawings → page G-453

Terminal brackets

Figure	Description	Packing unit	Type	Part no.
	Bracket, rigid, vibration absorbing, for devices with a weight > 350 g ... ≤ 1,200 g	4 pieces	BEF-3SHADAAL4S06	2055829
	Bracket, rigid, vibration absorbing, for devices with a weight > 1,200 g ... ≤ 3,000 g	4 pieces	BEF-3SHADAAL4S07	2055830
	Bracket, rigid, vibration absorbing, for devices with a weight > 3,000 g ... ≤ 4,000 g	4 pieces	BEF-3SHADAAL4S08	2055831

Device protection (mechanical)

Front screen protection

Figure	Description	Suitable for protective field height	Packing unit	Type	Part no.
 Application example	Durable front screen protection set (protects sensors from damage by flying sparks and welding beads), incl. sliding nuts and fastening screws	300 mm	2 pieces	Additional heavy duty front screen	2026853
		450 mm	2 pieces	Additional heavy duty front screen	2026854
		600 mm	2 pieces	Additional heavy duty front screen	2026855
		750 mm	2 pieces	Additional heavy duty front screen	2026856
		900 mm	2 pieces	Additional heavy duty front screen	2026857
		1,050 mm	2 pieces	Additional heavy duty front screen	2026858
		1,200 mm	2 pieces	Additional heavy duty front screen	2026859
		1,350 mm	2 pieces	Additional heavy duty front screen	2026860
		1,500 mm	2 pieces	Additional heavy duty front screen	2026861
		1,650 mm	2 pieces	Additional heavy duty front screen	2026862
1,800 mm	2 pieces	Additional heavy duty front screen	2026863		

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Figure	Description	Suitable for protective field height	Packing unit	Type	Part no.
 Application example	Snap-on front screen protection set (protects sensors from damage by flying sparks and welding beads), mounting hardware included	300 mm	2 pieces	Additional front screen	2022412
		450 mm	2 pieces	Additional front screen	2022413
		600 mm	2 pieces	Additional front screen	2022414
		750 mm	2 pieces	Additional front screen	2022415
		900 mm	2 pieces	Additional front screen	2022416
		1,050 mm	2 pieces	Additional front screen	2022417
		1,200 mm	2 pieces	Additional front screen	2022418
		1,350 mm	2 pieces	Additional front screen	2022419
		1,500 mm	2 pieces	Additional front screen	2022420
		1,650 mm	2 pieces	Additional front screen	2022421
1,800 mm	2 pieces	Additional front screen	2022422		

Other mounting accessories

Sliding nuts


Figure	Description	Packing unit	Type	Part no.
	Sliding nut set, M5, 4x, included in delivery	4 pieces	Sliding nuts	2017550
	Suitable for PNS75 and PNS125	6 pieces	Sliding nuts for deflector mirror	2030600

Connection systems

Plug connectors and cables


Connecting cables with female connector

- **Model:** PVC, unshielded

Figure	Connection type	Description	Conductor cross-section	Cable length	Type	Part no.
	Cable	-	0.75 mm ²	2.5 m	DOL-0612G2M5075KM0	2022544
				5 m	DOL-0612G05M075KM0	2022545
				7.5 m	DOL-0612G7M5075KM0	2022546
				10 m	DOL-0612G10M075KM0	2022547
				15 m	DOL-0612G15M075KM0	2022548
				20 m	DOL-0612G20M075KM0	2022549
				30 m	DOL-0612G30M075KM0	2022550
				50 m	DOL-0612G50MD75KM0	2033548
				5 m	DOL-0610G05M075KM1	2046888
				7.5 m	DOL-0610G7M5075KM5	2044042
		10 m	DOL-0610G10M075KM1	2046889		
		20 m	DOL-0610G20M075KM1	2046890		
				Without EFI: Pin 9 and 10 not connected	0.75 mm ²	

Connecting cables with male connector

- **Model:** PVC, unshielded

Figure	Connection type	Conductor cross-section	Cable length	Type	Part no.
	Cable	0.75 mm ²	2.5 m	STL-0608G2M5075KM1	2026869
			10 m	STL-0608G10M075KM1	2026870

Connection cables with female connector and male connector

Figure	Connection type		Description	Model	Cable length	Type	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	For connecting the configuration connection to the serial interface of a PC	PVC, unshielded	2 m	DSL-8D04G02M025KM1	6021195
					10 m	DSL-8D04G10M025KM1	2027649
	Female connector, M12, 8-pin, straight	Male connector, M12, 8-pin, angled	-	PUR, halogen-free, shielded	1 m	DSL-127SA01ME25KM0	6030974
					Male connector, M12, 8-pin, straight	-	PUR, halogen-free, shielded
		20 m	DSL-127SG20ME25KM0	2078579			
			Female connector, M26, 12-pin, angled	Male connector, M26, 12-pin, straight	-	PVC, unshielded	0.25 m
0.5 m	DSL-0612B0M5075KM0						2022285
1 m	DSL-0612B01M075KM0						2022286
1.5 m	DSL-0612B1M5075KM0						2022287
2 m	DSL-0612B02M075KM0						2022288
2.5 m	DSL-0612B2M5075KM0						2022289
3 m	DSL-0612B03M075KM0						2022290
	Female connector, M26, 12-pin, straight	Male connector, M26, 12-pin, straight	-	PVC, unshielded	0.25 m	DSL-0612GM25075KM0	2022278
					0.5 m	DSL-0612G0M5075KM0	2021838
					1 m	DSL-0612G01M075KM0	2022279
					1.5 m	DSL-0612G1M5075KM0	2022280
					2 m	DSL-0612G02M075KM0	2022281
					2.5 m	DSL-0612G2M5075KM0	2022282
					3 m	DSL-0612G03M075KM0	2022283



Connection cables with male connector and male connector

- **Model:** PVC, unshielded

Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574
				10 m	DSL-8U04G10M025KM1	6034575


Female connectors (ready to assemble)

Figure	Connection type	Permitted cross-section	Type	Part no.
	Female connector, M26, 12-pin, angled, crimp contacts	0.5 mm ² ... 1.5 mm ²	DOS-0612W000GA3KM0	6020758
	Female connector, M26, 12-pin, straight, crimp contacts	0.5 mm ² ... 1.5 mm ²	DOS-0612G000GA3KM0	6020757

Male connectors (ready to assemble)


Figure	Connection type	Permitted cross-section	Type	Part no.
	Male connector, M26, 12-pin, angled, crimp contacts	0.5 mm ² ... 1.5 mm ²	STE-0612W000GA3KM0	6021192
	Male connector, M26, 12-pin, straight, crimp contacts	0.5 mm ² ... 1.5 mm ²	STE-0612G000GA3KM0	6021191

Cables (ready to assemble)

Figure	Description	Model	Conductor cross-section	Number of cores	Items supplied	Type	Part no.
	Max. 100 m, fitting for EFI connections	PVC, unshielded	0.75 mm ²	12-wire	By the meter	Connecting cable	6021437




Adapters and distributors

Other adapters and distributors


Figure	Description	Type	Part no.
	Terminal with 182 Ohm resistance, for pin 9 and 10 on the system connection, to improve the EMC behaviour if the EFI interface is not used	Terminal with 182 Ohm resistance	2027227

Modules and gateways

EFI gateways




Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098
	PROFINET PROFI-safe	UE4740-22H0000	1046978

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790



Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for housing cross-section 48 mm x 40 mm	Adapter AR60, 48x40	4032461
	Adapter AR60 for housing cross-section 48 mm x 40 mm in PU3H device column	Adapter AR60, 48x40, PU3H	4056731

Deflector mirrors

- **Description:** horizontal deflection



Figure	Mirror material	Items supplied	Suitable for protective field height	Type	Part no.
	Glass	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS125-034	1019425
			150 mm ... 450 mm	PNS125-049	1019426
			150 mm ... 600 mm	PNS125-064	1019427
			150 mm ... 750 mm	PNS125-079	1019428
			150 mm ... 900 mm	PNS125-094	1019429
			150 mm ... 1,050 mm	PNS125-109	1019430
			150 mm ... 1,200 mm	PNS125-124	1019431
			150 mm ... 1,350 mm	PNS125-139	1019432
			150 mm ... 1,500 mm	PNS125-154	1019433
			150 mm ... 1,650 mm	PNS125-169	1019434
	Stainless steel	Incl. mounting kit swivel mount	150 mm ... 1,800 mm	PNS125-184	1019435
			150 mm ... 300 mm	PNS75-034	1019414
			150 mm ... 450 mm	PNS75-049	1019415
			150 mm ... 600 mm	PNS75-064	1019416
	Glass	Incl. mounting kit swivel mount	150 mm ... 750 mm	PNS75-079	1019417
			150 mm ... 750 mm	PNS75-079S05	1046075
			150 mm ... 900 mm	PNS75-094	1019418
			150 mm ... 1,050 mm	PNS75-109	1019419
			150 mm ... 1,200 mm	PNS75-124	1019420
			150 mm ... 1,350 mm	PNS75-139	1019421
			150 mm ... 1,500 mm	PNS75-154	1019422
			150 mm ... 1,650 mm	PNS75-169	1019423
			150 mm ... 1,800 mm	PNS75-184	1019424

Dimensional drawings → page G-456

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Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
	14 mm diameter	Test rod 14 mm	2022599
	20 mm diameter	Test rod 20 mm	2022600
	30 mm diameter	Test rod 30 mm	2022602
	40 mm diameter	Test rod 40 mm	2022604
	Test rod holder	BEF-3WNAAAAL1	2052249


Programming and configuration tools

Figure	Description	Suitable for	Type	Part no.
	Clone Plug to save and transfer configurations, IP 41, with lithium coin cell CR2032, 3.0 V	C4000 Standard, C4000 Advanced, C4000 Palletizer, C4000 Entry/Exit, C4000 Fusion, M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, M4000 Area	PLUG1-0C00100	1029665
	Host-guest plug to reset the system positions in a cascade (Host, Guest1, or Guest2), IP 41, with CR2032 lithium button cell, 3.0 V	C4000 Standard, Advanced, Palletizer, Entry/Exit	PLUG1-1R00000	1029717
	Wall-mounting bracket for mounting Clone Plug and Host-Guest Plug	-	Wall-mounting bracket	5318443

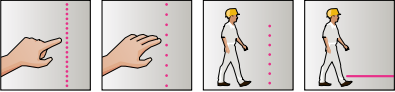

Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> Freestanding mounting solution with external grooves for installing additional accessories Compact, rugged design with high reliability Easy mounting and adjustment Device protection against external influences Large reflector surface for efficient multi-sided protection via beam deflection Universally applicable for multiple light beam safety devices and safety light curtains 	→ page K-664

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

TOTAL FLEXIBILITY – EVEN IN EXPLOSIVE ENVIRONMENTS

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Additional information

Ordering information G-307

Recommended accessories ... G-299

Product description

The C4000 Advanced ATEX II 3G/3D safety light curtain is a cost-effective, reliable solution that safeguards hazardous points and areas, even in potentially explosive atmospheres. Functions such as the restart interlock (RES) and external device monitoring (EDM) provide easy machine integration. Vari-

ous mounting adapters and innovative accessories enable flexible installation. The industry-tested 7-segment display saves time during alignment and diagnostics. Plus, the C4000 Advanced ATEX II 3G/3D safeguards areas with up to an 1,800 mm protective field height.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- ATEX II 3G/3D (2/22 zones)
- Labelling Gas: Ex nA op is IIC T4 0°C<Ta<55°C Gc X
- Labelling Dust: Ex tD A22 IP65 T123°C X
- 7-segment display
- External device monitoring (EDM) and restart interlock (RES)
- Beam coding for correct system allocation
- Configuration and diagnostics via PC

Your benefits

- ATEX II 3G/3D for use in 2/22 zones
- Large scanning ranges up to 19 m and sufficient power reserve for use in paint finishing lines, for example
- 7-segment display saves time during alignment and diagnostics
- Beam coding protects the systems against optical interference by ensuring a high level of availability
- Preconfigured light curtains and the clone plug enables easy and rapid commissioning
- Precise, convenient configuration and diagnostics reduces downtime

→ www.sick.com/C4000_Advanced_ATEX_II_3G_3D

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Ordering information

The products of the C4000 Advanced ATEX II 3G/3D family are based on products of the C4000 Advanced family.

For more data on C4000 Advanced → [page G-280](#)

Usage	As a standalone system
Connection types	
System connection	Hirschmann male connector M26, 12-pin
Configuration connection	Female connector M8, 4-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
1,050 mm	C40S-S140	1067220	C40E-S140	1067221
1,800 mm	C40S-S136	1063412	C40E-S136	1063413

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

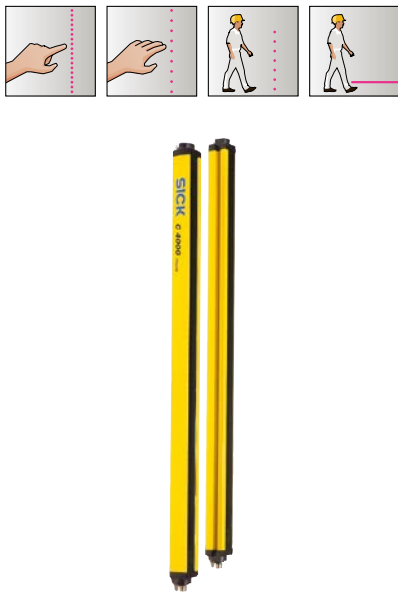
Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
900 mm	C40S-S114	1050298	C40E-S116	1050537
1,500 mm	C40S-S005	1024072	C40E-S138	1064892

- **Resolution:** 40 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
1,350 mm	C40S-S125	1051371	C40E-S133	1056824

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SMALL AND COMPACT, COST-EFFECTIVE AND CONVENIENT



CE **cUL** **us**

Additional information

Detailed technical data G-309
 Ordering information G-311
 Dimensional drawings G-312
 Connection diagrams G-313
 Recommended accessories . . . G-314

Product description

The C4000 Micro safety light curtain cost-effectively and reliably protects against access into hazardous points and areas. Its compact design and integrated functions, such as restart interlock (RES) and external device monitoring (EDM), provide easy machine integration – even when space is limited. Various mounting adapters and

innovative accessories enable flexible installation. The industry-tested 7-segment display saves time during alignment and diagnostics. The C4000 Micro, which provides protective field heights from 150 mm to 1,200 mm, offers reliable machine protection up to the highest protection level, PL e.

At a glance

- Type 4 (IEC 61496), SIL 3 (EN 62061), PL e (EN ISO 13849)
- Small, compact design
- 7-segment display
- External device monitoring (EDM) and restart interlock (RES)
- Operating temperature range from –30 °C ... 55 °C
- Standardized M12 connectivity

Your benefits

- Small and compact housing simplifies machine integration – even when space is limited
- 7-segment display saves time during alignment and diagnostics
- Cost-effective: pre-assembled M12x8 cables
- A multitude of intelligent mounting adapters enables flexible installation

→ www.sick.com/C4000_Micro

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

	Resolution 14 mm	Resolution 30 mm
Protective field height	150 mm ... 1,200 mm (depending on type)	
Scanning range	0 m ... 2.5 m / 1 m ... 5 m (depending on type)	0 m ... 6 m
Response time	≤ 20 ms	
Synchronization	Optical synchronisation	

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH _D (mean probability of a dangerous failure per hour)	1.5 x 10 ⁻⁸
T _M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	Internal
External device monitoring (EDM)	✓	Deactivated

Interfaces

Connection type	Male connector M12, 8-pin
Conductor cross-section	0.25 mm ²
Cable length	≤ 15 m
Configuration method	Hard wired
Display elements	7-segment display
Fieldbus, industrial network	
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ¹⁾

¹⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Ripple	≤ 10 % ²⁾	
Power consumption	0.35 A	0.45 A + max. 1 A OSSD-Last
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
Switching voltage HIGH	–	24 V DC (15 V DC ... 28.8 V DC)
Switching voltage LOW	–	2 V DC
Switching current	–	≤ 500 mA

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60 204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of U_v .

Mechanical data

	Sender	Receiver
Housing cross-section	33.5 mm x 28.5 mm	
Weight	370 g ... 1,235 g (depending on type)	385 g ... 1,250 g (depending on type)

Ambient data

Enclosure rating	IP 65 (IEC 60529)
Ambient operating temperature	–30 °C ... +55 °C
Storage temperature	–30 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	16 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Wave length	850 nm / 950 nm (depending on type)	–



Ordering information

Items supplied C4000 Micro:

- Safety light curtain consisting of a sender and a receiver
- 8 sliding nuts for side mounting
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

Usage	As a standalone system
Connection types	
System connection	Male connector M12, 8-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 2.5 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
150 mm	C41S-0101AA300	1024054	C41E-0101AG300	1024055
300 mm	C41S-0301AA300	1023458	C41E-0301AG300	1023459
450 mm	C41S-0401AA300	1023460	C41E-0401AG300	1023461
600 mm	C41S-0601AA300	1023462	C41E-0601AG300	1023463
750 mm	C41S-0701AA300	1023464	C41E-0701AG300	1023465
900 mm	C41S-0901AA300	1023466	C41E-0901AG300	1023467
1,050 mm	C41S-1001AA300	1023468	C41E-1001AG300	1023469
1,200 mm	C41S-1201AA300	1023470	C41E-1201AG300	1023471

- **Resolution:** 14 mm
- **Scanning range:** 1 m ... 5 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
150 mm	C41S-0101AA300	1024054	C41E-0101BG300	1024037
300 mm	C41S-0301AA300	1023458	C41E-0301BG300	1023486
450 mm	C41S-0401AA300	1023460	C41E-0401BG300	1023487
600 mm	C41S-0601AA300	1023462	C41E-0601BG300	1023488
750 mm	C41S-0701AA300	1023464	C41E-0701BG300	1023489
900 mm	C41S-0901AA300	1023466	C41E-0901BG300	1023490
1,050 mm	C41S-1001AA300	1023468	C41E-1001BG300	1023491
1,200 mm	C41S-1201AA300	1023470	C41E-1201BG300	1023492

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 6 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
150 mm	C41S-0103AA300	1023563	C41E-0103AG300	1023860
300 mm	C41S-0303AA300	1023472	C41E-0303AG300	1023473
450 mm	C41S-0403AA300	1023474	C41E-0403AG300	1023475
600 mm	C41S-0603AA300	1023476	C41E-0603AG300	1023477
750 mm	C41S-0703AA300	1023478	C41E-0703AG300	1023479
900 mm	C41S-0903AA300	1023480	C41E-0903AG300	1023481
1,050 mm	C41S-1003AA300	1023482	C41E-1003AG300	1023483
1,200 mm	C41S-1203AA300	1023484	C41E-1203AG300	1023485

Dimensional drawings (Dimensions in mm (inch))

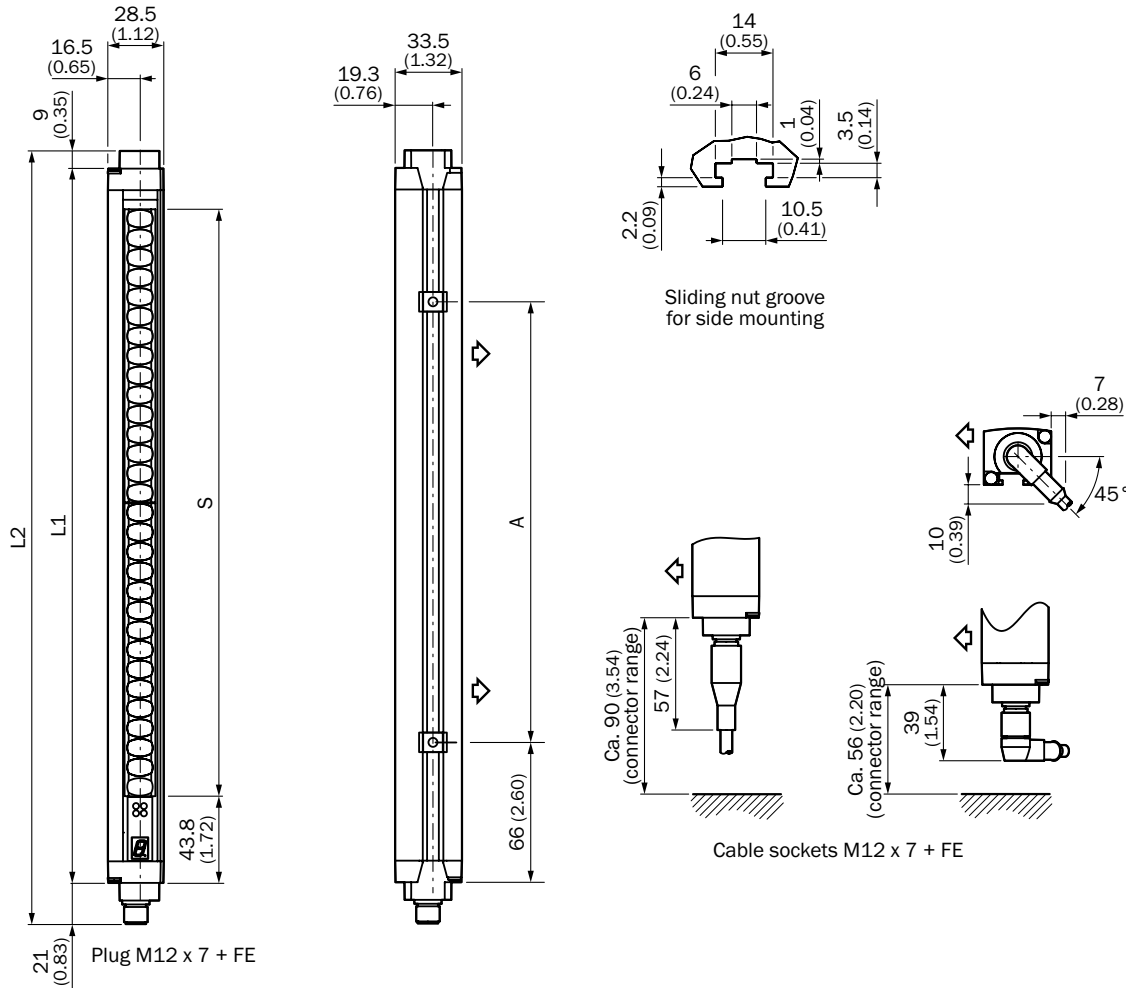
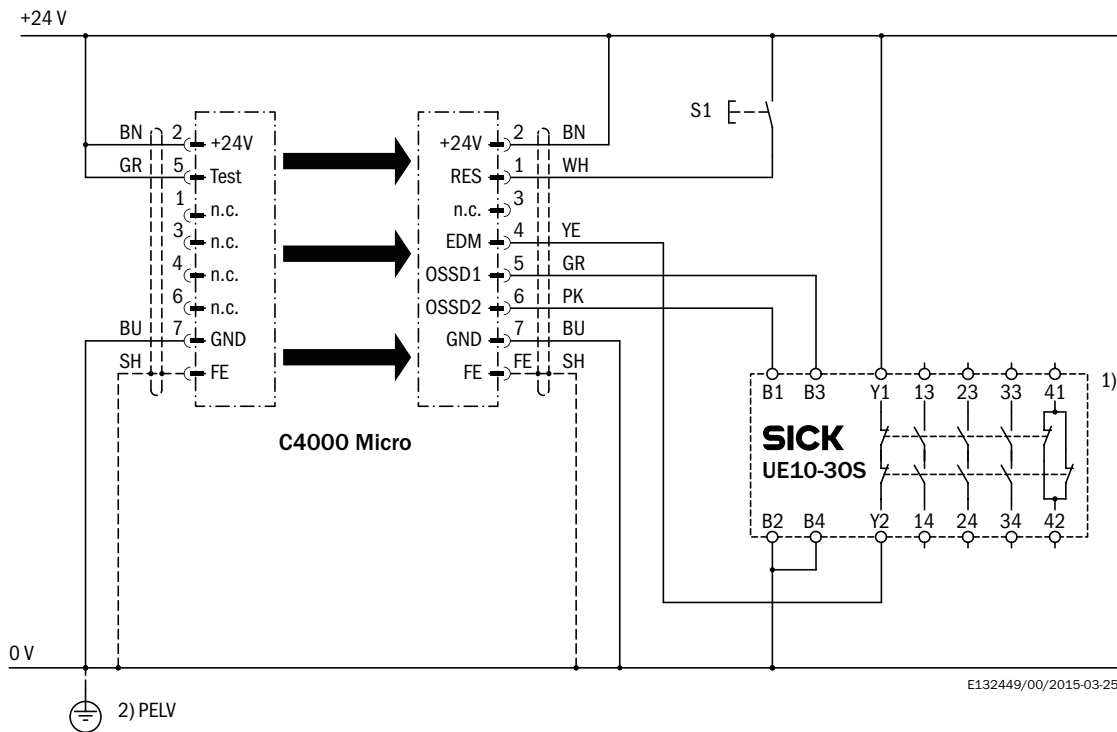


Illustration sender (receiver mirror image)

Protective field height S	L1	L2	A
150 (5.91)	246 (9.69)	276 (10.87)	106 (4.17)
300 (11.81)	364 (14.33)	394 (15.51)	224 (8.82)
450 (17.72)	515 (20.28)	545 (21.46)	374 (14.72)
600 (23.62)	666 (26.22)	696 (27.40)	524 (20.639)
750 (29.53)	816 (32.13)	846 (33.31)	674 (26.54)
900 (35.43)	967 (38.07)	997 (39.25)	824 (32.44)
1,050 (41.34)	1,117 (43.98)	1,147 (45.16)	974 (38.35)
1,200 (47.24)	1,266 (49.84)	1,296 (51.02)	1,124 (44.25)

Connection diagrams

C4000 Micro safety light curtain connected to UE10-30S safety relay



E132449/00/2015-03-25

Task

Integration of a C4000 Micro/Basic Plus safety light curtain on UE10-30S.

Operating mode: with restart interlock and external device monitoring.

Operating characteristics

When the light path is clear and the UE10-30S is de-energized and functioning correctly, the yellow LED on the receiver flashes. The system is ready to be switched on. The system is enabled by pressing S1 (button is pressed and released). The OSSD1 and OSSD2 outputs are live and the UE10-30S is switched on. Upon the interruption of one of the light beams, the UE10-30S is deactivated by the OSSD1 and OSSD2 outputs.

Fault analysis

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The incorrect functioning of the UE10-30S will be detected but will not result in the loss of the shutdown function. On manipulation (e.g., jamming) of the S1 button, the system does not enable the output current circuits.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

²⁾ PELV in accordance with the requirements in EN 60204-1 / 6.4

Take note of the operating instructions of the integrated devices.

Accessories required for commissioning



Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Terminal and alignment brackets
Connecting cable	2	-	→ Plug connectors and cables
Operating instructions	1	✓	-
Test rod	1	✓	→ Test and monitoring tools

Recommended accessories

Mounting systems





Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting bracket, rigid, including fixing screws and washers	4 pieces	BEF-3WNKBAST4	2044068
	Mounting kit 10, exchangeable bracket, suitable for replacement of FGS	4 pieces	BEF-3WNKBCST4	2021645


Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 1, rotatable, swivel mount	4 pieces	BEF-2SMKEAKU4	2019649
	Mounting kit 6, side bracket, rotatable	4 pieces	BEF-1SHABAZN4	2019506
	Omega bracket, rotatable, fixable with only one screw, for mounting on the swivel mount, including spacer discs	4 pieces	BEF-2SMKEAAL4	2044848
	Stainless steel bracket, rotatable	4 pieces	BEF-2SMKEAES4	2030288

Dimensional drawings → [page G-453](#)

Terminal brackets

Figure	Description	Packing unit	Type	Part no.
	Bracket, rigid, vibration absorbing, for devices with a weight > 350 g ... ≤ 1,200 g	4 pieces	BEF-3SHADAAL4S06	2055829
	Bracket, rigid, vibration absorbing, for devices with a weight > 1,200 g ... ≤ 3,000 g	4 pieces	BEF-3SHADAAL4S07	2055830
	Bracket, rigid, vibration absorbing, for devices with a weight > 3,000 g ... ≤ 4,000 g	4 pieces	BEF-3SHADAAL4S08	2055831

Device protection (mechanical)

Front screen protection

Figure	Description	Suitable for protective field height	Packing unit	Type	Part no.
 Application example	Snap-on front screen protection set (protects sensors from damage by flying sparks and welding beads), mounting hardware included	150 mm	2 pieces	Additional front screen	2022404
		300 mm	2 pieces	Additional front screen	2022405
		450 mm	2 pieces	Additional front screen	2022406
		600 mm	2 pieces	Additional front screen	2022407
		750 mm	2 pieces	Additional front screen	2022408
		900 mm	2 pieces	Additional front screen	2022409
		1,050 mm	2 pieces	Additional front screen	2022410
		1,200 mm	2 pieces	Additional front screen	2022411

Other mounting accessories

Sliding nuts



Figure	Description	Packing unit	Type	Part no.
	Sliding nut set, M5, 4x, included in delivery	4 pieces	Sliding nuts	2017550
	Suitable for PNS75 and PNS125	6 pieces	Sliding nuts for deflector mirror	2030600

Connection systems


Plug connectors and cables

Connecting cables with female connector


- **Model:** PUR, halogen-free, shielded

Figure	Connection type		Conductor cross-section	Cable length	Type	Part no.
	Female connector, M12, 8-pin, angled	Cable	0.25 mm ²	5 m	DOL-127SW05ME25KM0	2076548
				7.5 m	DOL-127SW7M5E25KM0	2076549
				15 m	DOL-127SW15ME25KM0	2076551
	Female connector, M12, 8-pin, straight	Cable	0.25 mm ²	2.5 m	DOL-127SG2M5E25KM0	2076540
				5 m	DOL-127SG05ME25KM0	2076541
				7.5 m	DOL-127SG7M5E25KM0	2076542
				10 m	DOL-127SG10ME25KM0	2076543
				15 m	DOL-127SG15ME25KM0	2076544

Female connectors (ready to assemble)




Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.
	Female connector, M12, 8-pin, straight, screw-type terminals	≤ 0.5 mm ²	6 mm ... 8 mm	DOS-1208-G	6028422

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790


Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for housing cross-section 34 mm x 29 mm	Adapter AR60, 34x29	4032462
	Adapter AR60 for housing cross-section 34 mm x 29 mm in PU3H device column	Adapter AR60, 34x29, PU3H	4056730

Deflector mirrors

- **Description:** horizontal deflection

Figure	Mirror material	Items supplied	Suitable for protective field height	Type	Part no.
	Glass	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS125-034	1019425
			150 mm ... 450 mm	PNS125-049	1019426
			150 mm ... 600 mm	PNS125-064	1019427
			150 mm ... 750 mm	PNS125-079	1019428
			150 mm ... 900 mm	PNS125-094	1019429
			150 mm ... 1,050 mm	PNS125-109	1019430
			150 mm ... 1,200 mm	PNS125-124	1019431
			150 mm ... 1,350 mm	PNS125-139	1019432
			150 mm ... 1,500 mm	PNS125-154	1019433
			150 mm ... 1,650 mm	PNS125-169	1019434
			150 mm ... 1,800 mm	PNS125-184	1019435
	Stainless steel	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS75-034	1019414
			150 mm ... 450 mm	PNS75-049	1019415
			150 mm ... 600 mm	PNS75-064	1019416
			150 mm ... 750 mm	PNS75-079	1019417
	Glass	Incl. mounting kit swivel mount	150 mm ... 750 mm	PNS75-079S05	1046075
			150 mm ... 900 mm	PNS75-094	1019418
			150 mm ... 1,050 mm	PNS75-109	1019419
			150 mm ... 1,200 mm	PNS75-124	1019420
			150 mm ... 1,350 mm	PNS75-139	1019421
			150 mm ... 1,500 mm	PNS75-154	1019422
			150 mm ... 1,650 mm	PNS75-169	1019423
150 mm ... 1,800 mm	PNS75-184	1019424			

Dimensional drawings → page G-456


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Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
	14 mm diameter	Test rod 14 mm	2022599
	30 mm diameter	Test rod 30 mm	2022602
	Test rod holder	BEF-3WNAAAAL1	2052249

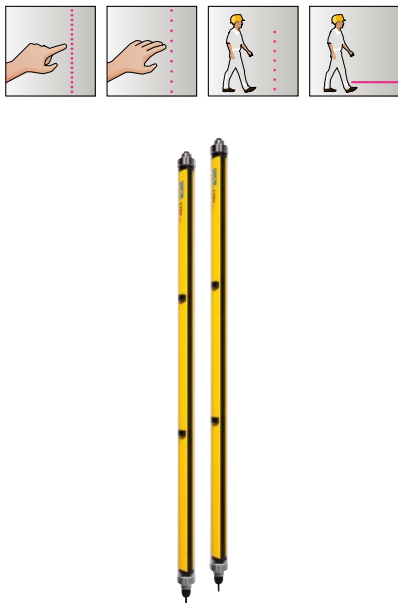
Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> • Freestanding mounting solution with external grooves for installing additional accessories • Compact, rugged design with high reliability • Easy mounting and adjustment • Device protection against external influences • Large reflector surface for efficient multi-sided protection via beam deflection • Universally applicable for multiple light beam safety devices and safety light curtains 	→ page K-664

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

MAXIMUM HAZARDOUS POINT PROTECTION FOR HIGH WASH-DOWN AND CLEANING REQUIREMENTS



The diagram illustrates the protection zones for the safety light curtain. On the left, two hands are shown with red dashed lines indicating the protection area. On the right, two figures of a person are shown with red dashed lines indicating the protection area. Below the diagrams are two vertical yellow safety light curtain units.

CE c UL us
ECOLAB Diversey

Additional information

Detailed technical data G-319
 Ordering information G-321
 Dimensional drawings G-323
 Recommended accessories . . . G-324

Product description

The IP 69K-rated C4000 Micro safety light curtain is used for hazardous point protection in wash down areas, such as those found in the food and beverage industry. These compact safety light curtains are enclosed in a housing consisting of stainless steel, PA, PMMA and PVC, enabling them to be used with popular cleaning agents. These light

curtains can even withstand the use of high pressure cleaners. In addition, a one-way valve not only ensures that the pressure is permanently balanced, but also prevents condensation from forming on the plastic tube and blocks liquids from penetrating the housing. Along with the device, the PVC cable ensures safe, reliable cable routing.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- IP 69K, IP 67, IP 66 and IP 65 enclosure ratings incl. cable
- Withstands wash-down pressure up to 100 bar and water temperature up to 80 °C
- ECOLAB and Diversey certified
- Resistant steel materials
- Ventilation valve prevents fogging of the front screen
- Smooth surfaces prevent accumulation of bacteria
- Compact design up to 1,800 mm protective field height

Your benefits

- The longer service life saves costs. IP 69K-tested product – from the housing materials right up to the connection cable
- As an alternative to hard guards, personnel can quickly access protected areas for service, keeping productivity high
- Saves time in the cleaning and is resistant to high pressure cleaners
- Reliable safeguarding, even when temperatures fluctuate

→ www.sick.com/C4000_Micro_in_IP69K_Housing

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

	Resolution 14 mm	Resolution 30 mm
Protective field height	150 mm ... 1,800 mm (depending on type)	
Scanning range	0 m ... 1.8 m / 1 m ... 4 m (depending on type)	0 m ... 4.5 m / 4 m ... 14.5 m (depending on type)
Response time	≤ 20 ms	
Synchronization	Optical synchronisation	

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH _D (mean probability of a dangerous failure per hour)	1.5 x 10 ⁻⁸
T _M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	Internal
External device monitoring (EDM)	✓	Activated

Interfaces

Connection type	Cable 15 m, PVC
Conductor cross-section	0.25 mm ²
Cable length	≤ 15 m
Configuration method	Hard wired
Display elements	7-segment display
Fieldbus, industrial network	
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ¹⁾

¹⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V _s	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Ripple	≤ 10 % ²⁾	
Power consumption	350 mA	450 mA
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60 204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of U_v.

	Sender	Receiver
Switching voltage HIGH	-	24 V DC (15 V DC ... 28.8 V DC)
Switching voltage LOW	-	2 V DC
Switching current	-	≤ 500 mA

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60 204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of Uv.

Mechanical data

Housing diameter	50 mm
Material	
End caps	Stainless steel V4A
Plastic tube	PMMA
Compensating element (membrane)	PA 6
PG connector	PA 6

Ambient data

Enclosure rating	IP 69K, IP 67, IP 66, IP 65 (IEC 60529)
Ambient operating temperature	-30 °C ... +55 °C
Storage temperature	-30 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	16 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Wave length	850 nm / 950 nm (depending on type)	-



Ordering information

C4000 Micro in IP69K Housing, including 15 m IP69K-rated cable

Items supplied C4000 Micro in IP69K Housing :

- Safety light curtain consisting of a sender and a receiver
- 2 PVC connection cables, 15 m
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

Usage	As a standalone system
Connection types	
System connection	Cable 15 m, PVC

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 1.8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
150 mm	C45S-0101AA220	1025720	C45E-0101AG220	1025721
300 mm	C45S-0301AA220	1025722	C45E-0301AG220	1025723
450 mm	C45S-0401AA220	1025727	C45E-0401AG220	1025728
600 mm	C45S-0601AA220	1025732	C45E-0601AG220	1025733
750 mm	C45S-0701AA220	1025737	C45E-0701AG220	1025738
900 mm	C45S-0901AA220	1025742	C45E-0901AG220	1025743
1,050 mm	C45S-1001AA220	1025747	C45E-1001AG220	1025748
1,200 mm	C45S-1201AA220	1025753	C45E-1201AG220	1025754
1,350 mm	C45S-1301AA220	1055506	C45E-1301AG220	1055507
1,500 mm	C45S-1501AA220	1055511	C45E-1501AG220	1055512
1,650 mm	C45S-1601AA220	1055516	C45E-1601AG220	1055517
1,800 mm	C45S-1801AA220	1055521	C45E-1801AG220	1055522

- **Resolution:** 14 mm
- **Scanning range:** 1 m ... 4 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
150 mm	C45S-0101AA220	1025720	C45E-0101BG220	1025719
300 mm	C45S-0301AA220	1025722	C45E-0301BG220	1025726
450 mm	C45S-0401AA220	1025727	C45E-0401BG220	1025731
600 mm	C45S-0601AA220	1025732	C45E-0601AG220	1025736
750 mm	C45S-0701AA220	1025737	C45E-0701BG220	1025741
900 mm	C45S-0901AA220	1025742	C45E-0901BG220	1025746
1,050 mm	C45S-1001AA220	1025747	C45E-1001BG220	1025752
1,200 mm	C45S-1201AA220	1025753	C45E-1201BG220	1025757
1,350 mm	C45S-1301AA220	1055506	C45E-1301BG220	1055510
1,500 mm	C45S-1501AA220	1055511	C45E-1501BG220	1055515
1,650 mm	C45S-1601AA220	1055516	C45E-1601BG220	1055520
1,800 mm	C45S-1801AA220	1055521	C45E-1801BG220	1055525



- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 4.5 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
150 mm	C45S-0103AA220	1025717	C45E-0103AG220	1025718
300 mm	C45S-0303AA220	1025724	C45E-0303AG220	1025725
450 mm	C45S-0403AA220	1025729	C45E-0403AG220	1025730
600 mm	C45S-0603AA220	1025734	C45E-0603AG220	1025735
750 mm	C45S-0703AA220	1025739	C45E-0703AG220	1025740
900 mm	C45S-0903AA220	1025744	C45E-0903AG220	1025745
1,050 mm	C45S-1003AA220	1025749	C45E-1003AG220	1025750
1,200 mm	C45S-1203AA220	1025755	C45E-1203AG220	1025756
1,350 mm	C45S-1303AA220	1055508	C45E-1303AG220	1055509
1,500 mm	C45S-1503AA220	1055513	C45E-1503AG220	1055514
1,650 mm	C45S-1603AA220	1055518	C45E-1603AG220	1055519
1,800 mm	C45S-1803AA220	1055523	C45E-1803AG220	1055524

- **Resolution:** 30 mm
- **Scanning range:** 4 m ... 14.5 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
150 mm	C45S-0103BA220	1055626	C45E-0103AG220	1025718
300 mm	C45S-0303BA220	1055627	C45E-0303AG220	1025725
450 mm	C45S-0403BA220	1055628	C45E-0403AG220	1025730
600 mm	C45S-0603BA220	1055629	C45E-0603AG220	1025735
750 mm	C45S-0703BA220	1055630	C45E-0703AG220	1025740
900 mm	C45S-0903BA220	1055631	C45E-0903AG220	1025745
1,050 mm	C45S-1003BA220	1055632	C45E-1003AG220	1025750
1,200 mm	C45S-1203BA220	1055633	C45E-1203AG220	1025756
1,350 mm	C45S-1303BA220	1055634	C45E-1303AG220	1055509
1,500 mm	C45S-1503BA220	1055635	C45E-1503AG220	1055514
1,650 mm	C45S-1603BA220	1055636	C45E-1603AG220	1055519
1,800 mm	C45S-1803BA220	1055637	C45E-1803AG220	1055524

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Dimensional drawings (Dimensions in mm (inch))

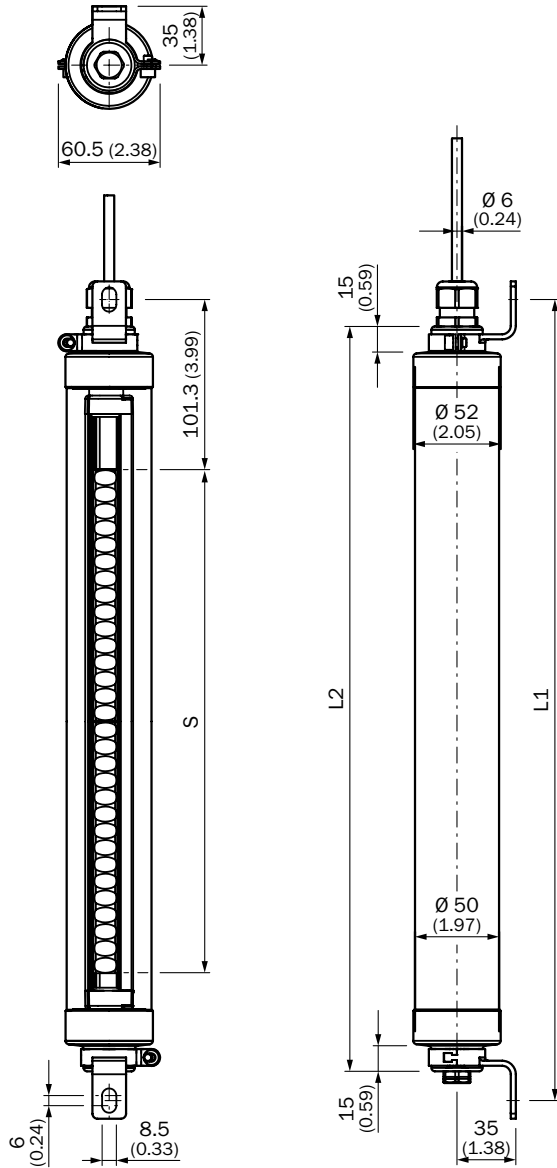


Illustration sender (receiver mirror image)

Protective field height S	L1	L2
150 (5.91)	357 (14.06)	324 (12.76)
300 (11.81)	476 (18.74)	443 (17.44)
450 (17.72)	626 (24.65)	593 (23.35)
600 (23.62)	777 (30.59)	744 (29.29)
750 (29.53)	927 (36.50)	894 (35.20)
900 (35.43)	1,078 (42.44)	1,045 (41.14)
1,050 (41.34)	1,228 (48.35)	1,195 (47.05)
1,200 (47.24)	1,377 (54.21)	1,344 (52.91)
1,350 (53.15)	1,529 (60.20)	1,496 (58.90)
1,500 (59.06)	1,680 (66.14)	1,647 (64.84)
1,650 (64.96)	1,830 (72.05)	1,797 (70.75)
1,800 (70.87)	1,981 (77.99)	1,948 (76.69)

Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Terminal and alignment brackets
Operating instructions	1	✓	-
Test rod	1	✓	→ Test and monitoring tools

Recommended accessories

Mounting systems

Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.
	Reinforced stainless steel bracket, rotatable	4 pieces	BEF-2SMMVAES4	2026850
	Stainless steel bracket, rotatable	4 pieces	BEF-2SMMEAES4	2023708
	Stainless steel support bracket	2 pieces	BEF-2AAADES2	2026849



Dimensional drawings → [page G-453](#)


Device protection (mechanical)

Protective caps


Figure	Description	Type	Part no.
	Bidirectional ventilation membrane made from Gore-Tex	Bidirectional ventilation membrane	5309082

Other mounting accessories

Sliding nuts


Figure	Description	Packing unit	Type	Part no.
	Suitable for PNS75 and PNS125	6 pieces	Sliding nuts for deflector mirror	2030600

Mounting tools

Figure	Description	Packing unit	Type	Part no.
	Mounting tool for M12 cable socket, small housing	1 piece	Installation wrench	4034690


Connection systems

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

Reflectors and optics

Deflector mirrors

Figure	Mirror material	Description	Items supplied	Suitable for protective field height	Type	Part no.
	Stainless steel	Horizontal deflection	Incl. mounting kit swivel mount	150 mm ... 750 mm	PNS75-079S05	1046075


Dimensional drawings → [page G-456](#)

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
	14 mm diameter	Test rod 14 mm	2022599
	30 mm diameter	Test rod 30 mm	2022602
	Test rod holder	BEF-3WNAAAAL1	2052249

Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> Freestanding mounting solution with external grooves for installing additional accessories Compact, rugged design with high reliability Easy mounting and adjustment Device protection against external influences Large reflector surface for efficient multi-sided protection via beam deflection Universally applicable for multiple light beam safety devices and safety light curtains 	→ page K-664

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

MULTIFUNCTIONAL AND USER FRIENDLY, HIGH-LEVEL OF AVAILABILITY AND SAFE



Product description

The C4000 Fusion safety light curtain offers a variety of functions that make it ideal for a wide range of safeguarding applications. The C4000 Fusion can be used as a compact muting alternative (without additional sensors), or as a high-availability protection device for hazardous point and area protection. This solution can be customized to prevent access to machines that require product to enter/exit the area safely, where reliable differentiation

between people and material is vital. Designed for use in harsh environments, the C4000 Fusion combines maximum operational safety with optimal productivity, ergonomics, and cost efficiency. Contamination can be suppressed in the monitored field and the resolution can be adjusted to protect hands or the entire person. As a result, availability of the protective device is maximized and machine and plant downtime are minimized.

At a glance

- Type 4 (IEC 61496), SIL 3 (EN 62061), PL e (EN ISO 13849)
- Self-teaching, dynamic blanking for application-specific access protection
- Hand and area protection in dirty environments
- Multiple sampling
- Reduced resolution
- Fixed blanking
- Two virtual photoelectric sensors
- Integrated laser alignment

Your benefits

- Plant productivity is increased, since falling debris does not cause the safety light curtain to switch off
- Available: skids are detected, interference objects such as cables are blanked
- Cost-effective: No additional muting sensors or protective measures are required.
- Maximum access protection in automated material transport applications ensures the system reliably differentiates between people and material
- Easy integration and quick commissioning save time and costs since secondary sensors are not required
- Safe: also provides protection in areas where there is no object, unlike conventional muting solutions
- The integrated laser alignment aid enables time saving alignment of the sender and receiver



Additional information

Detailed technical data	G-327
Ordering information	G-330
Dimensional drawings	G-332
Connection diagrams	G-335
Recommended accessories . . .	G-336

→ www.sick.com/C4000_Fusion

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



G

Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

C4000 Fusion**Features**

Resolution	20 mm
Protective field height	300 mm ... 1,800 mm (depending on type)
Scanning range	0.5 m ... 19 m, configurable
Response time	≤ 21 ms ¹⁾ (depending on type)
Synchronization	Optical synchronisation

¹⁾ Without beam coding, with 1 x sampling, no cascaded systems. Other response times see operating instructions.

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	1.5 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	Internal
External device monitoring (EDM)	✓	Deactivated
Beam coding	✓	Code 1
Configurable scanning range	✓	1.5 m ... 6 m
Multiple sampling	✓	2 x sampling
Direction monitoring	✓	
Virtual photoelectric sensors	✓ ¹⁾	
Sensor gap monitoring	✓	
Sequence monitoring	✓	
Reduced resolution	✓	Deactivated
Fixed blanking	✓	
Object entry monitoring	✓	
Dynamic blanking for object pattern recognition	✓	
Self-teach dynamic blanking for goods detection	✓	
Object size monitoring	✓ ²⁾	
Teach-in of individual objects	✓	
Object gap suppression	✓ ²⁾	
Self-teach dynamic blanking for pallet detection	✓	
Detection of geometrically even objects	✓	
Safe SICK device communication via EFI	✓	

¹⁾ C4000 Fusion with extension connection on the receiver.

²⁾ Only in case when blanking of a single object is configured .

Functions in combination with UE402

	C4000 Fusion without extension connection	C4000 Fusion with extension connection on the receiver
Bypass	–	✓
Operating mode switching	–	✓

Interfaces

	C4000 Fusion without extension connection	C4000 Fusion with extension connection on the receiver
System connection		
Connection type	Hirschmann male connector M26, 12-pin	
Permitted cable length	≤ 50 m	
Conductor cross-section	0.75 mm ²	
Extension connection		
Connection type	–	Hirschmann female connector M26, 12 pin
Configuration connection		
Connection type	Female connector M8, 4-pin	
Configuration method	PC with CDS (Configuration and Diagnostic Software)	
SDL interface	✓	
Display elements	7-segment display	
Fieldbus, industrial network		
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ¹⁾	
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾	

¹⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft



Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Ripple	≤ 10 % ²⁾	
Power consumption	≤ 1 A	≤ 1.8 A
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
Switching voltage HIGH	–	24 V DC ($V_s - 2.25$ V DC ... V_s)
Switching voltage LOW	–	2 V DC
Switching current	–	≤ 500 mA

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60 204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of U_v .

Mechanical data

	Sender	Receiver
Housing cross-section	48 mm x 40 mm	
Weight	820 g ... 3,680 g (depending on type)	850 g ... 3,710 g (depending on type)

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	16 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Wave length	950 nm	-
Integrated laser alignment aid	✓	
Light source	LED	-
Laser class	1 (IEC 60825-1), eye-safe	-
Type of light	Visible red light	-

UE402 switching amplifier

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	15 x 10 ⁻⁹ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)

Functions

Bypass	✓
Operating mode switching	✓

Electrical data

Protection class	III (IEC 536:1976)
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾
Residual ripple	10 % ²⁾
Power consumption	≤ 110 mA
Switch-on time	≤ 4 s
IN A1 ... A6, MCC-BDC, MCC-TDC	
Switching voltage HIGH	24 V DC (11 V DC ... 30 V DC)
Switching voltage LOW	-30 V DC ... 5 V DC
Input current HIGH	6 mA ... 20 mA
Input current LOW	-3 mA ... 0.5 mA
IN B1, IN B2, OUT B1, OUT B2	
Bypass change over time	≤ 2 s
Synchronous time monitoring	≤ 200 ms

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of V_S.

Mechanical data

Dimensions (W x H x D)	22.5 mm x 99 mm x 114.5 mm
Housing material	Plastic
Weight	120 g

Ambient data

Enclosure rating	IP 20 (IEC 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Ordering information

Items supplied C4000 Fusion:

- Safety light curtain consisting of a sender and a receiver
- 8 sliding nuts for side mounting
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

C4000 Fusion without extension connection

Usage	As a standalone system
Connection types	
System connection	Hirschmann male connector M26, 12-pin
Configuration connection	Female connector M8, 4-pin

- **Resolution:** 20 mm
- **Scanning range:** 1.5 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0302FY010	1043224	C40E-0302FY010	1043225
450 mm	C40S-0402FY010	1043226	C40E-0402FY010	1043227
600 mm	C40S-0602FY010	1043228	C40E-0602FY010	1043229
750 mm	C40S-0702FY010	1043183	C40E-0702FY010	1043184
900 mm	C40S-0902FY010	1043185	C40E-0902FY010	1043186
1,050 mm	C40S-1002FY010	1043187	C40E-1002FY010	1043189
1,200 mm	C40S-1202FY010	1043190	C40E-1202FY010	1043191
1,350 mm	C40S-1302FY010	1043192	C40E-1302FY010	1043193
1,500 mm	C40S-1502FY010	1043194	C40E-1502FY010	1043195
1,650 mm	C40S-1602FY010	1043196	C40E-1602FY010	1043197
1,800 mm	C40S-1802FY010	1043198	C40E-1802FY010	1043199

C4000 Fusion with extension connection on the receiver

Usage	As a standalone system	
Connection types	System connection	Hirschmann male connector M26, 12-pin
	Extension connection	Hirschmann female connector M26, 12 pin ¹⁾
	Configuration connection	Female connector M8, 4-pin

¹⁾ For reset, "reset required", bypass, emergency stop, teach-in.

- **Resolution:** 20 mm
- **Scanning range:** 1.5 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C40S-0302FY010	1043224	C40E-0302GY010	1043239
450 mm	C40S-0402FY010	1043226	C40E-0402GY010	1043240
600 mm	C40S-0602FY010	1043228	C40E-0602GY010	1043241
750 mm	C40S-0702FY010	1043183	C40E-0702GY010	1043242
900 mm	C40S-0902FY010	1043185	C40E-0902GY010	1043243
1,050 mm	C40S-1002FY010	1043187	C40E-1002GY010	1043244
1,200 mm	C40S-1202FY010	1043190	C40E-1202GY010	1043245
1,350 mm	C40S-1302FY010	1043192	C40E-1302GY010	1043246
1,500 mm	C40S-1502FY010	1043194	C40E-1502GY010	1043247
1,650 mm	C40S-1602FY010	1043196	C40E-1602GY010	1043248
1,800 mm	C40S-1802FY010	1043198	C40E-1802GY010	1043249

UE402 switching amplifier

Description	Type	Part no.
Expands C4000 Standard, Advanced, Palletizer, Entry/Exit and Fusion with the functions described in the technical data, e.g., bypass, operating mode switching or in addition PSDI mode on C4000 Standard, Advanced.	UE402	1023577



Dimensional drawings (Dimensions in mm (inch))

C4000 Fusion without extension connection

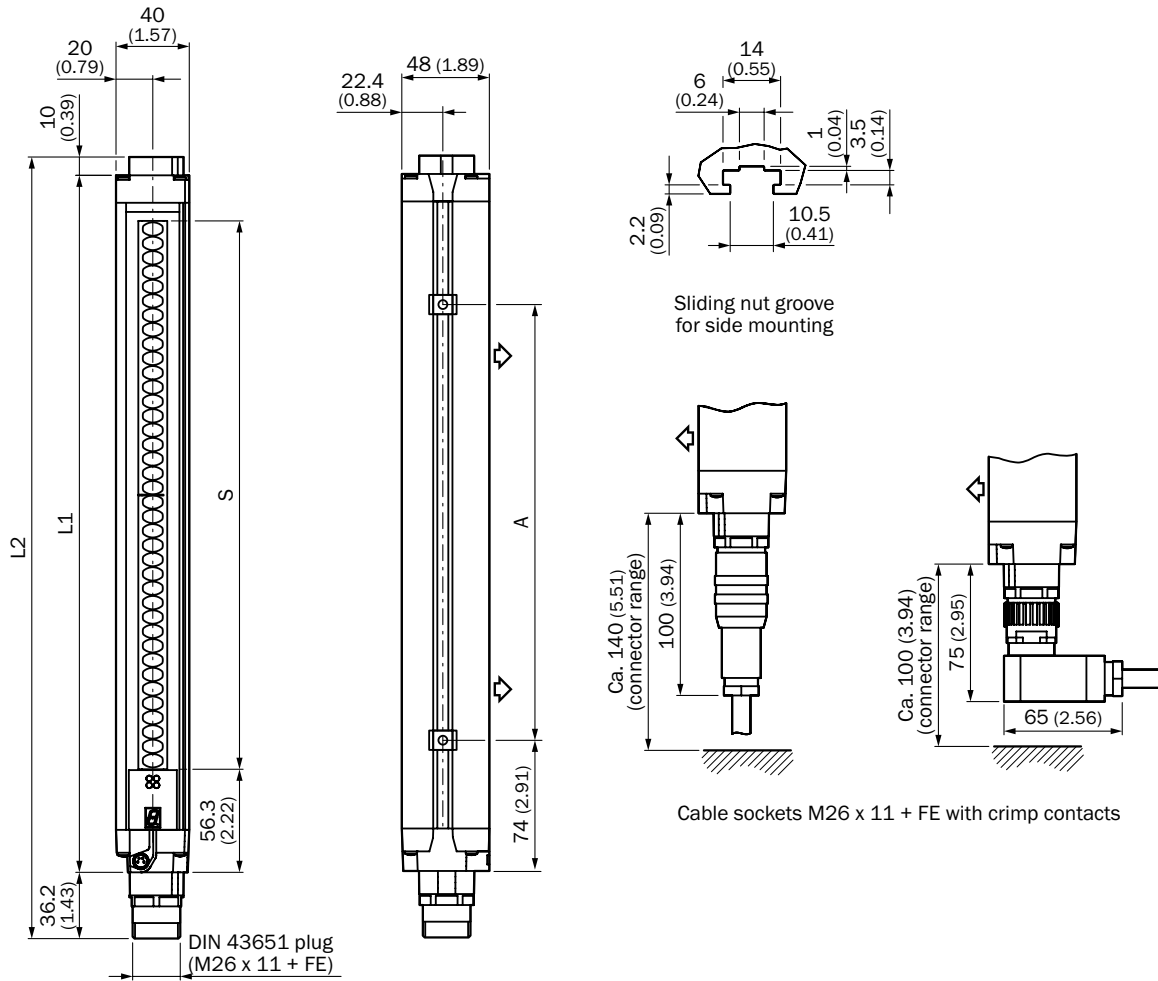


Illustration sender (receiver mirror image)

Protective field height S	L1	L2	A
300 (11.81)	381 (15.00)	427 (16.81)	224 (8.82)
450 (17.72)	532 (20.94)	578 (22.76)	374 (14.72)
600 (23.62)	682 (26.85)	728 (28.66)	524 (20.63)
750 (29.53)	833 (32.80)	879 (34.61)	674 (26.54)
900 (35.43)	984 (38.74)	1,030 (40.55)	824 (32.44)
1,050 (41.34)	1,134 (44.65)	1,180 (46.46)	974 (38.35)
1,200 (47.24)	1,283 (50.51)	1,329 (52.32)	1,124 (44.25)
1,350 (53.15)	1,435 (56.50)	1,481 (58.31)	1,274 (50.16)
1,500 (59.06)	1,586 (62.44)	1,632 (64.25)	1,424 (56.06)
1,650 (64.96)	1,736 (68.35)	1,782 (70.16)	1,574 (61.97)
1,800 (70.87)	1,887 (74.29)	1,933 (76.10)	1,724 (67.87)

C4000 Fusion with extension connection on the receiver

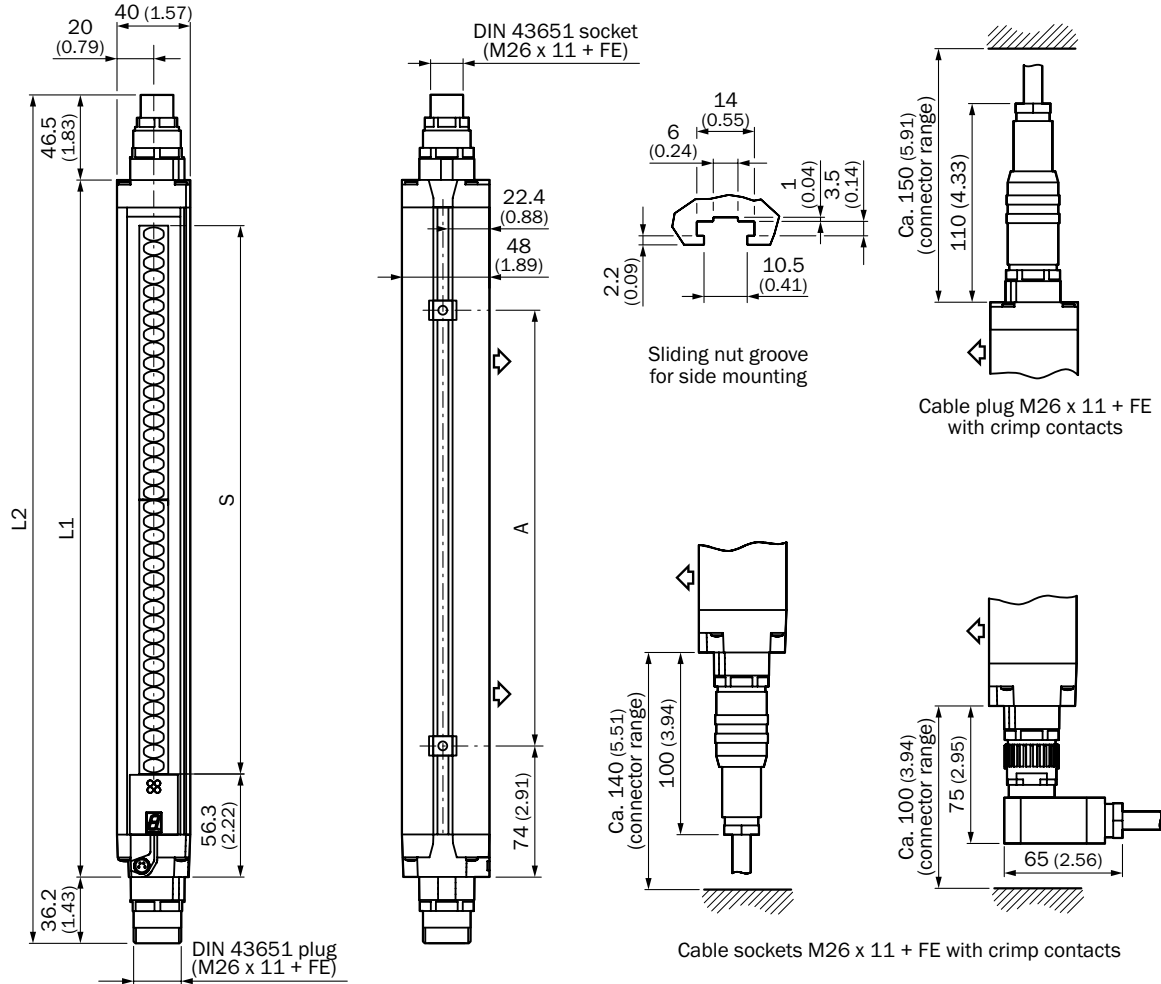
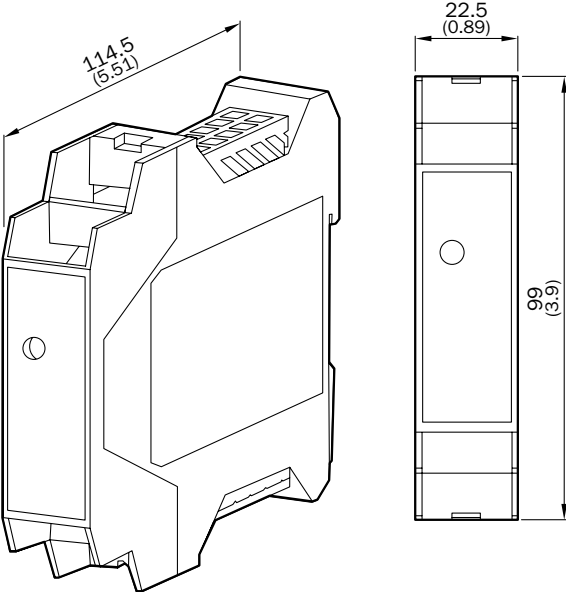


Illustration sender (receiver mirror image)

Protective field height S	L1	L2	A
300 (11.81)	381 (15.00)	464 (18.27)	224 (8.82)
450 (17.72)	532 (20.94)	614 (24.17)	374 (14.72)
600 (23.62)	682 (26.85)	765 (30.12)	524 (20.63)
750 (29.53)	833 (32.80)	915 (36.02)	674 (26.54)
900 (35.43)	984 (38.74)	1,066 (41.97)	824 (32.44)
1,050 (41.34)	1,134 (44.65)	1,216 (47.87)	974 (38.35)
1,200 (47.24)	1,283 (50.51)	1,366 (53.78)	1,124 (44.25)
1,350 (53.15)	1,435 (56.50)	1,517 (59.72)	1,274 (50.16)
1,500 (59.06)	1,586 (62.44)	1,669 (65.71)	1,424 (56.06)
1,650 (64.96)	1,736 (68.35)	1,818 (71.57)	1,574 (61.97)
1,800 (70.87)	1,887 (74.29)	1,969 (77.52)	1,724 (67.87)



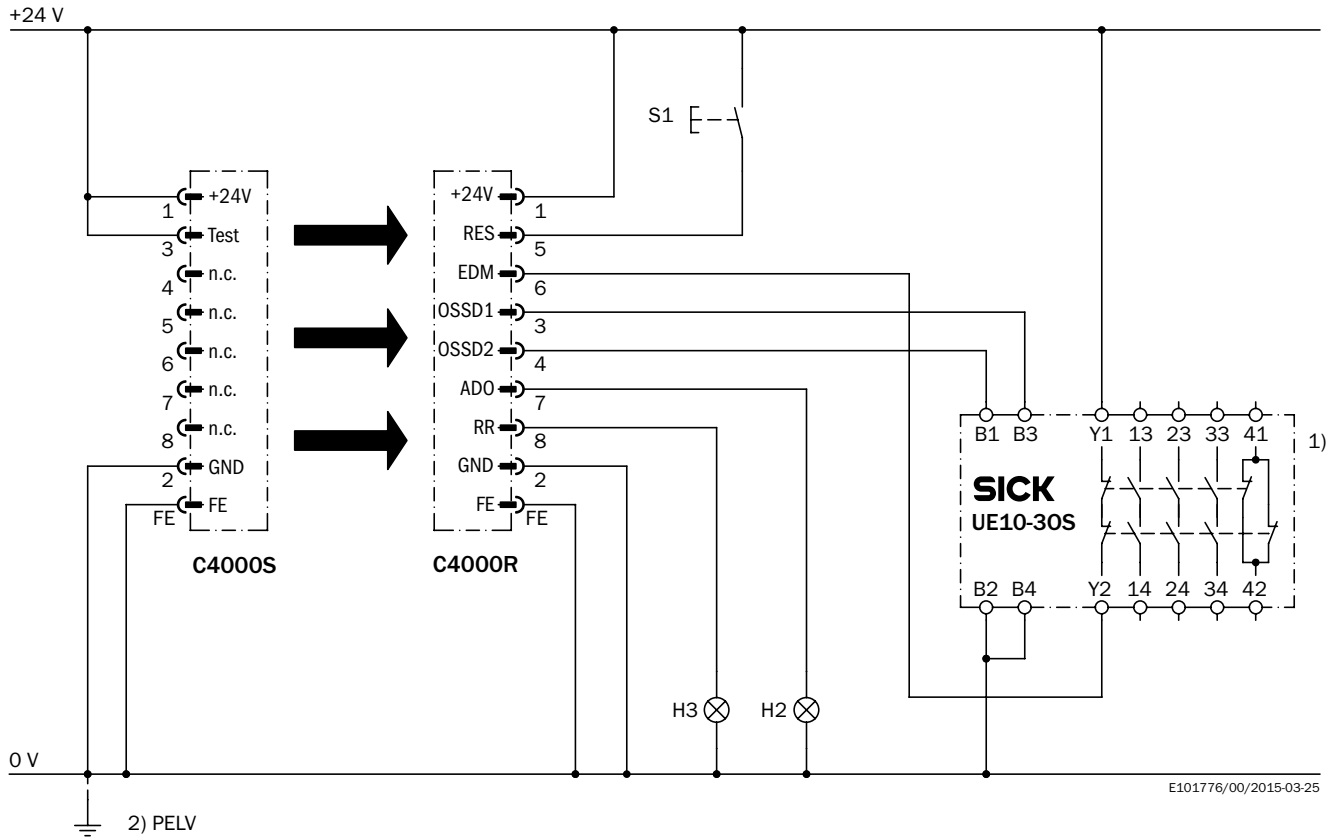
UE402 switching amplifier



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Connection diagrams

C4000 safety light curtain on UE10-30S safety relays



Task

Connection of a C4000 Standard/Advanced/Palletizer/Fusion safety light curtain to UE10-30S. Operating mode with restart interlock and external device monitoring.

Function

When the light path is clear and the UE10-30S is de-energized and functioning correctly, the yellow LED on the receiver and the H3 lamp flash. The system is ready to be switched on. The system is enabled by pressing S1 (button is pressed and released). The OSSD1 and OSSD2 outputs are live, and the UE10-30S is switched on. Upon the interruption of one of the light beams, the UE10-30S is deactivated by the OSSD1 and OSSD2 outputs.

Possible faults

Cross-circuits and short-circuits of the OSSDs are detected and lead to the inhibited state (lock-out). The incorrect functioning of the UE10-30S will be detected, but will not result in the loss of the shutdown function. Jamming of the S1 button prevents the output circuit from enabling. H2 lamp is illuminated if there is contamination (adjustable parameter).

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and taking the risk analysis into account.

²⁾ PELV as required in EN 60204-1 / 6.4

The related operating instructions for the integrated devices must be observed.

Accessories required for commissioning



Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
Connecting cable	2	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-
Test rod	1	✓	→ Test and monitoring tools

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 1, mounting bracket, rigid, L-shaped, including fixing screws and washers	4 pieces	BEF-3WNGBAST4	7021352
	Mounting kit 11, exchangeable retainer, suitable for replacement of FGS	4 pieces	BEF-3WNGBCST4	2021646

Dimensional drawings → [page G-453](#)

Terminal and alignment brackets

Alignment brackets








Figure	Description	Packing unit	Type	Part no.
	Mounting kit 2, rotatable, swivel mount	4 pieces	BEF-2SMMEAKU4	2019659
	Mounting kit 3, rotatable, with shock-absorber	4 pieces	BEF-1SHADAAL4	2017752
	Mounting kit 6, side bracket, rotatable	4 pieces	BEF-1SHABAZN4	2019506
	Mounting kit, rotatable, telescopic, swivel mount	2 pieces	BEF-0SMMEA002	2046172
	Omega bracket, rotatable, fixable with only one screw, for mounting on the swivel mount	4 pieces	BEF-2SMMEAAL4	2044847
	Reinforced stainless steel bracket, rotatable	4 pieces	BEF-2SMMVAES4	2026850

Figure	Description	Packing unit	Type	Part no.
	Stainless steel bracket, rotatable	4 pieces	BEF-2SMMEAES4	2023708

Dimensional drawings → [page G-453](#)

Terminal brackets

Figure	Description	Packing unit	Type	Part no.
	Bracket, rigid, vibration absorbing, for devices with a weight > 350 g ... ≤ 1,200 g	4 pieces	BEF-3SHADAAL4S06	2055829
	Bracket, rigid, vibration absorbing, for devices with a weight > 1,200 g ... ≤ 3,000 g	4 pieces	BEF-3SHADAAL4S07	2055830
	Bracket, rigid, vibration absorbing, for devices with a weight > 3,000 g ... ≤ 4,000 g	4 pieces	BEF-3SHADAAL4S08	2055831

Device protection (mechanical)

Front screen protection


Figure	Description	Suitable for protective field height	Packing unit	Type	Part no.
 Application example	Durable front screen protection set (protects sensors from damage by flying sparks and welding beads), incl. sliding nuts and fastening screws	300 mm	2 pieces	Additional heavy duty front screen	2026853
		450 mm	2 pieces	Additional heavy duty front screen	2026854
		600 mm	2 pieces	Additional heavy duty front screen	2026855
		750 mm	2 pieces	Additional heavy duty front screen	2026856
		900 mm	2 pieces	Additional heavy duty front screen	2026857
		1,050 mm	2 pieces	Additional heavy duty front screen	2026858
		1,200 mm	2 pieces	Additional heavy duty front screen	2026859
		1,350 mm	2 pieces	Additional heavy duty front screen	2026860
		1,500 mm	2 pieces	Additional heavy duty front screen	2026861
		1,650 mm	2 pieces	Additional heavy duty front screen	2026862
 Application example	Snap-on front screen protection set (protects sensors from damage by flying sparks and welding beads), mounting hardware included	300 mm	2 pieces	Additional front screen	2022412
		450 mm	2 pieces	Additional front screen	2022413
		600 mm	2 pieces	Additional front screen	2022414
		750 mm	2 pieces	Additional front screen	2022415
		900 mm	2 pieces	Additional front screen	2022416
		1,050 mm	2 pieces	Additional front screen	2022417
		1,200 mm	2 pieces	Additional front screen	2022418
		1,350 mm	2 pieces	Additional front screen	2022419
		1,500 mm	2 pieces	Additional front screen	2022420
		1,650 mm	2 pieces	Additional front screen	2022421
1,800 mm	2 pieces	Additional front screen	2022422		

Other mounting accessories

Sliding nuts

Figure	Description	Packing unit	Type	Part no.
	Sliding nut set, M5, 4x, included in delivery	4 pieces	Sliding nuts	2017550
	Suitable for PNS75 and PNS125	6 pieces	Sliding nuts for deflector mirror	2030600

Stands

Figure	Description	Packing unit	Type	Part no.
	Floor stands for the horizontal mounting of the safety light curtains C4000 Fusion, Entry/Exit, Palletizer, as well as the multi-beam safety light curtain M4000 Area, for mounting heights of between 70 mm and 780 mm., including mounting brackets	2 pieces	BEF-3HHOCAST2	2041661


Dimensional drawings → [page G-455](#)

Connection systems

Plug connectors and cables


Connecting cables with female connector

- **Model:** PVC, unshielded

Figure	Connection type		Description	Conductor cross-section	Cable length	Type	Part no.
	Female connector, M26, 12-pin, straight	Cable	-	0.75 mm ²	2.5 m	DOL-0612G2M5075KM0	2022544
					5 m	DOL-0612G05M075KM0	2022545
					7.5 m	DOL-0612G7M5075KM0	2022546
					10 m	DOL-0612G10M075KM0	2022547
					15 m	DOL-0612G15M075KM0	2022548
					20 m	DOL-0612G20M075KM0	2022549
					30 m	DOL-0612G30M075KM0	2022550
					50 m	DOL-0612G50MD75KM0	2033548
			Without EFI: Pin 9 and 10 not connected	0.75 mm ²	5 m	DOL-0610G05M075KM1	2046888
					7.5 m	DOL-0610G7M5075KM5	2044042
					10 m	DOL-0610G10M075KM1	2046889
					20 m	DOL-0610G20M075KM1	2046890



Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded

Figure	Connection type		Conductor cross-section	Cable length	Type	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	0.25 mm ²	2 m	DSL-8D04G02M025KM1	6021195
				10 m	DSL-8D04G10M025KM1	2027649

Connection cables with male connector and male connector

- **Model:** PVC, unshielded

Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574
				10 m	DSL-8U04G10M025KM1	6034575


Female connectors (ready to assemble)

Figure	Connection type	Permitted cross-section	Type	Part no.
	Female connector, M26, 12-pin, angled, crimp contacts	0.5 mm ² ... 1.5 mm ²	DOS-0612W000GA3KM0	6020758
	Female connector, M26, 12-pin, straight, crimp contacts	0.5 mm ² ... 1.5 mm ²	DOS-0612G000GA3KM0	6020757

Male connectors (ready to assemble)


Figure	Connection type	Permitted cross-section	Type	Part no.
	Male connector, M26, 12-pin, angled, crimp contacts	0.5 mm ² ... 1.5 mm ²	STE-0612W000GA3KM0	6021192
	Male connector, M26, 12-pin, straight, crimp contacts	0.5 mm ² ... 1.5 mm ²	STE-0612G000GA3KM0	6021191

Cables (ready to assemble)

Figure	Description	Model	Conductor cross-section	Number of cores	Items supplied	Type	Part no.
	Max. 100 m, fitting for EFI connections	PVC, unshielded	0.75 mm ²	12-wire	By the meter	Connecting cable	6021437

Adapters and distributors

Other adapters and distributors


Figure	Description	Type	Part no.
	Terminal with 182 Ohm resistance, for pin 9 and 10 on the system connection, to improve the EMC behaviour if the EFI interface is not used	Terminal with 182 Ohm resistance	2027227

Modules and gateways

EFI gateways

Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098
	PROFINET PROFI-safe	UE4740-22H0000	1046978



Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790



Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for housing cross-section 48 mm x 40 mm	Adapter AR60, 48x40	4032461
	Adapter AR60 for housing cross-section 48 mm x 40 mm in PU3H device column	Adapter AR60, 48x40, PU3H	4056731

Deflector mirrors

- **Description:** horizontal deflection

Figure	Mirror material	Items supplied	Suitable for protective field height	Type	Part no.
	Glass	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS125-034	1019425
			150 mm ... 450 mm	PNS125-049	1019426
			150 mm ... 600 mm	PNS125-064	1019427
			150 mm ... 750 mm	PNS125-079	1019428
			150 mm ... 900 mm	PNS125-094	1019429
			150 mm ... 1,050 mm	PNS125-109	1019430
			150 mm ... 1,200 mm	PNS125-124	1019431
			150 mm ... 1,350 mm	PNS125-139	1019432
			150 mm ... 1,500 mm	PNS125-154	1019433
			150 mm ... 1,650 mm	PNS125-169	1019434
			150 mm ... 1,800 mm	PNS125-184	1019435
	Stainless steel	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS75-034	1019414
			150 mm ... 450 mm	PNS75-049	1019415
			150 mm ... 600 mm	PNS75-064	1019416
			150 mm ... 750 mm	PNS75-079	1019417
	Glass	Incl. mounting kit swivel mount	150 mm ... 750 mm	PNS75-079S05	1046075
			150 mm ... 900 mm	PNS75-094	1019418
			150 mm ... 1,050 mm	PNS75-109	1019419
			150 mm ... 1,200 mm	PNS75-124	1019420
			150 mm ... 1,350 mm	PNS75-139	1019421
			150 mm ... 1,500 mm	PNS75-154	1019422
			150 mm ... 1,650 mm	PNS75-169	1019423
150 mm ... 1,800 mm	PNS75-184	1019424			

Dimensional drawings → [page G-456](#)

Further accessories

Test and monitoring tools


Figure	Description	Type	Part no.
	20 mm diameter	Test rod 20 mm	2022600
	Test rod holder	BEF-3WNAAAAL1	2052249

Programming and configuration tools


Figure	Description	Suitable for	Type	Part no.
	Clone Plug to save and transfer configurations, IP 41, with lithium coin cell CR2032, 3.0 V	C4000 Standard, C4000 Advanced, C4000 Palletizer, C4000 Entry/Exit, C4000 Fusion, M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, M4000 Area	PLUG1-0C00100	1029665

Figure	Description	Suitable for	Type	Part no.
	Wall-mounting bracket for mounting Clone Plug and Host-Guest Plug	-	Wall-mounting bracket	5318443

Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> • Freestanding mounting solution with external grooves for installing additional accessories • Compact, rugged design with high reliability • Easy mounting and adjustment • Device protection against external influences • Large reflector surface for efficient multi-sided protection via beam deflection • Universally applicable for multiple light beam safety devices and safety light curtains 	<p>→ page K-664</p>

Enhanced system solutions

Figure	Description	Further information
	<p>Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.</p>	<p>→ page L-690</p>

INNOVATIVE MUTING ALTERNATIVE FOR ACCESS PROTECTION



Product description

The C4000 Palletizer safety light curtain is an innovative muting alternative for access protection in automated material transport systems. Due to its flexible pattern detection system, this protective device is immune to false trips from defective pallets, hanging straps, or shrink wrap remnants. As a result, the C4000 Palletizer is able to provide reliable protection in dangerous areas.

And, since additional muting sensors, indicator lamps, separative protective devices, and interlocks are not required, the risk of malfunctions is minimized and the availability of the overall system is optimized. Fast, easy installation saves money and makes the C4000 Palletizer an ideal solution for many entry/exit safeguarding applications.

At a glance

- Type 4 (IEC 61496), SIL 3 (EN 62061), PL e (EN ISO 13849)
- Self-teaching, dynamic blanking detects goods and pallets
- Direction recognition
- Multiple sampling
- Reduced resolution
- Muting alternative
- Beam coding
- Object gap suppression

Your benefits

- Cost-effective: No additional muting sensors or protective measures are required.
- A compact sensor pair reduces the mounting requirements considerably – additional muting sensors are not required
- With the dynamic and self-teaching blanking function, the system can reliably differentiate between people and material – this provides maximum safety
- The assorted feasibility of pallets allows the passage of mesh boxes, Euro pallets and half pallets, increasing plant availability
- Saves storage space: pallets can be parked permanently in the protective field
- One system monitors several conveyor belts, reducing sensor costs
- Quick commissioning: Euro pallets, mesh boxes etc. are detected without any programming



Additional information

Detailed technical data	G-345
Ordering information	G-348
Dimensional drawings	G-350
Recommended accessories . . .	G-353

→ www.sick.com/C4000_Palletizer

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

C4000 Palletizer**Features**

	Resolution 40 mm	Resolution 30 mm
Protective field height	750 mm ... 1,800 mm (depending on type)	
Scanning range	0.5 m ... 6 m	
Resolution	40 mm	30 mm
Response time	≤ 12 ms ¹⁾ (depending on type)	≤ 14 ms ¹⁾ (depending on type)
Synchronization	Optical synchronisation	

¹⁾ Without beam coding, with 1 x sampling, no cascaded systems. Other response times see operating instructions.

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	1.5 x 10 ⁻⁸
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions			Delivery status
	C4000 Palletizer Standard	C4000 Palletizer Advanced	C4000 Palletizer Advanced with extension connection	
Restart interlock	✓			External
External device monitoring (EDM)	✓			Deactivated
Beam coding	✓			Code 1
Configurable scanning range	✓			
Multiple sampling	✓			2 x sampling
Emergency stop / bypass at extension connection	-		✓	
Direction monitoring	✓			
Reduced resolution	✓			3 beams
Object entry monitoring	✓			
Self-teach dynamic blanking for goods detection	✓			
Object size monitoring	✓	✓ ¹⁾		
Teach-in of individual objects	✓			
Object gap suppression	✓	✓ ¹⁾		
Self-teach dynamic blanking for pallet detection	-	✓		
Safe SICK device communication via EFI	✓			

¹⁾ Only in case when blanking of a single object is configured.

Functions in combination with UE402

Bypass	✓
Operating mode switching	✓

Interfaces

System connection	
Connection type	Hirschmann male connector M26, 12-pin
Permitted cable length	≤ 50 m ¹⁾
Conductor cross-section	0.75 mm ²
Extension connection	
Connection type	Hirschmann female connector M26, 12 pin
Configuration connection	
Connection type	Female connector M8, 4-pin
Configuration method	PC with CDS (Configuration and Diagnostic Software)
SDL interface	
	✓
Display elements	
	7-segment display
Fieldbus, industrial network	
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ²⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ³⁾

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

³⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Ripple	≤ 10 % ²⁾	
Power consumption	1 A	1.8 A
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
Switching voltage HIGH	–	24 V DC ($V_S - 2.25$ V DC ... V_S)
Switching voltage LOW	–	2 V DC
Switching current	–	≤ 500 mA
Switch off time	–	≥ 1,000 ms

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60 204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of U_v .

Mechanical data

	Sender	Receiver
Housing cross-section	48 mm x 40 mm	
Weight	1,670 g ... 3,680 g (depending on type)	1,700 g ... 3,710 g (depending on type)

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	–25 °C ... +70 °C

Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	16 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Wave length	950 nm	-

UE402 switching amplifier

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	15 x 10 ⁻⁹ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)

Functions

Bypass	✓
Operating mode switching	✓

Electrical data

Protection class	III (IEC 536:1976)
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾
Residual ripple	10 % ²⁾
Power consumption	≤ 110 mA
Switch-on time	≤ 4 s
IN A1 ... A6, MCC-BDC, MCC-TDC	
Switching voltage HIGH	24 V DC (11 V DC ... 30 V DC)
Switching voltage LOW	-30 V DC ... 5 V DC
Input current HIGH	6 mA ... 20 mA
Input current LOW	-3 mA ... 0.5 mA
IN B1, IN B2, OUT B1, OUT B2	
Bypass change over time	≤ 2 s
Synchronous time monitoring	≤ 200 ms

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of V_S.

Mechanical data

Dimensions (W x H x D)	22.5 mm x 99 mm x 114.5 mm
Housing material	Plastic
Weight	120 g

Ambient data

Enclosure rating	IP 20 (IEC 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Ordering information

Items supplied C4000 Palletizer:

- Safety light curtain consisting of a sender and a receiver
- 8 sliding nuts for side mounting
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

C4000 Palletizer Standard

Usage	As a standalone system
Connection types	
System connection	Hirschmann male connector M26, 12-pin
Configuration connection	Female connector M8, 4-pin

- **Resolution:** 40 mm
- **Scanning range:** 0.5 m ... 6 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
750 mm	C40S-0704CD010	1043445	C40E-0704FP010	1043171
900 mm	C40S-0904CD010	1043446	C40E-0904FP010	1043172
1,050 mm	C40S-1004CD010	1043447	C40E-1004FP010	1043173
1,200 mm	C40S-1204CD010	1043448	C40E-1204FP010	1043174
1,350 mm	C40S-1304CD010	1043449	C40E-1304FP010	1043175
1,500 mm	C40S-1504CD010	1043450	C40E-1504FP010	1043176
1,650 mm	C40S-1604CD010	1043451	C40E-1604FP010	1043177
1,800 mm	C40S-1804CD010	1043452	C40E-1804CP010	1043178

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C4000 Palletizer Advanced without extension connection

Usage	As a standalone system		
Connection types	System connection	Hirschmann male connector M26, 12-pin	
	Configuration connection	Female connector M8, 4-pin	
	Extension connection		

- **Resolution:** 30 mm
- **Scanning range:** 0.5 m ... 6 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
750 mm	C40S-0703CD010	1041900	C40E-0703FK010	1043155
900 mm	C40S-0903CD010	1041901	C40E-0903FK010	1043156
1,050 mm	C40S-1003CD010	1041902	C40E-1003FK010	1043157
1,200 mm	C40S-1203CD010	1041903	C40E-1203FK010	1043158
1,350 mm	C40S-1303CD010	1041904	C40E-1303FK010	1043159
1,500 mm	C40S-1503CD010	1041905	C40E-1503FK010	1043160
1,650 mm	C40S-1603CD010	1041907	C40E-1603FK010	1043161
1,800 mm	C40S-1803CD010	1041908	C40E-1803FK010	1043162

C4000 Palletizer Advanced with extension connection

Usage	As a standalone system		
Connection types	System connection	Hirschmann male connector M26, 12-pin	
	Extension connection	Hirschmann female connector M26, 12 pin	
	Configuration connection	Female connector M8, 4-pin	
	Configuration connection		

- **Resolution:** 30 mm
- **Scanning range:** 0.5 m ... 6 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
750 mm	C40S-0703CD010	1041900	C40E-0703GK010	1043220
900 mm	C40S-0903CD010	1041901	C40E-0903GK010	1043179
1,050 mm	C40S-1003CD010	1041902	C40E-1003GK010	1043180
1,200 mm	C40S-1203CD010	1041903	C40E-1203GK010	1043221
1,350 mm	C40S-1303CD010	1041904	C40E-1303GK010	1043181
1,500 mm	C40S-1503CD010	1041905	C40E-1503GK010	1043222
1,650 mm	C40S-1603CD010	1041907	C40E-1603GK010	1043223
1,800 mm	C40S-1803CD010	1041908	C40E-1803GK010	1043182

UE402 switching amplifier

Description	Type	Part no.
Expands C4000 Standard, Advanced, Palletizer, Entry/Exit and Fusion with the functions described in the technical data, e.g., bypass, operating mode switching or in addition PSDI mode on C4000 Standard, Advanced.	UE402	1023577

Dimensional drawings (Dimensions in mm (inch))

C4000 Palletizer Standard, C4000 Palletizer Advanced without extension connection

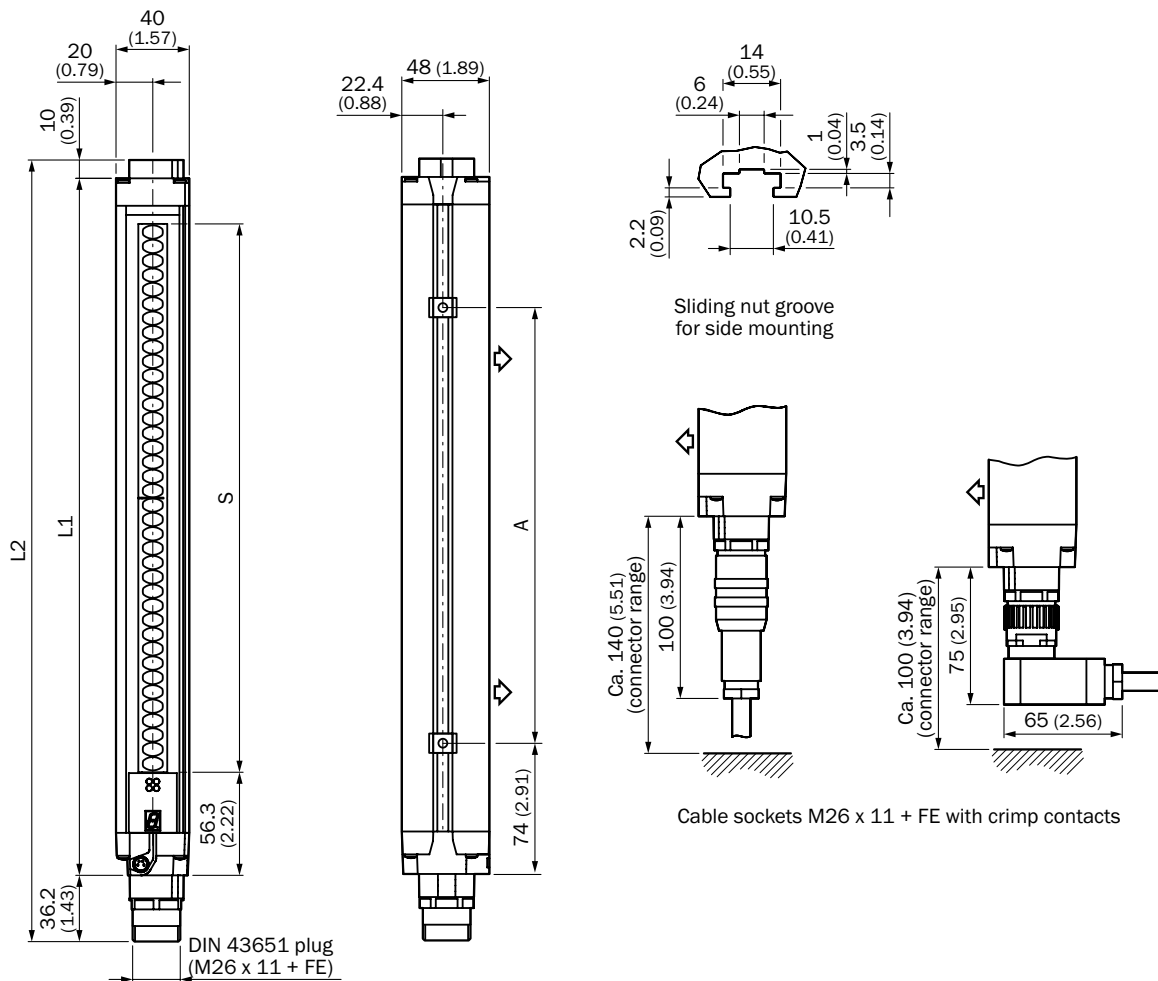


Illustration sender (receiver mirror image)

Protective field length S	L1	L2	A
750 (29.53)	833 (32.80)	879 (34.61)	674 (26.54)
900 (35.43)	984 (38.74)	1,030 (40.55)	824 (32.44)
1,050 (41.34)	1,134 (44.65)	1,180 (46.46)	974 (38.35)
1,200 (47.24)	1,283 (50.51)	1,329 (52.32)	1,124 (44.25)
1,350 (53.15)	1,435 (56.50)	1,481 (58.31)	1,274 (50.16)
1,500 (59.06)	1,586 (62.44)	1,632 (64.25)	1,424 (56.06)
1,650 (64.96)	1,736 (68.35)	1,782 (70.16)	1,574 (61.97)
1,800 (70.87)	1,887 (74.29)	1,933 (76.10)	1,724 (67.87)

C4000 Palletizer Advanced with extension connection

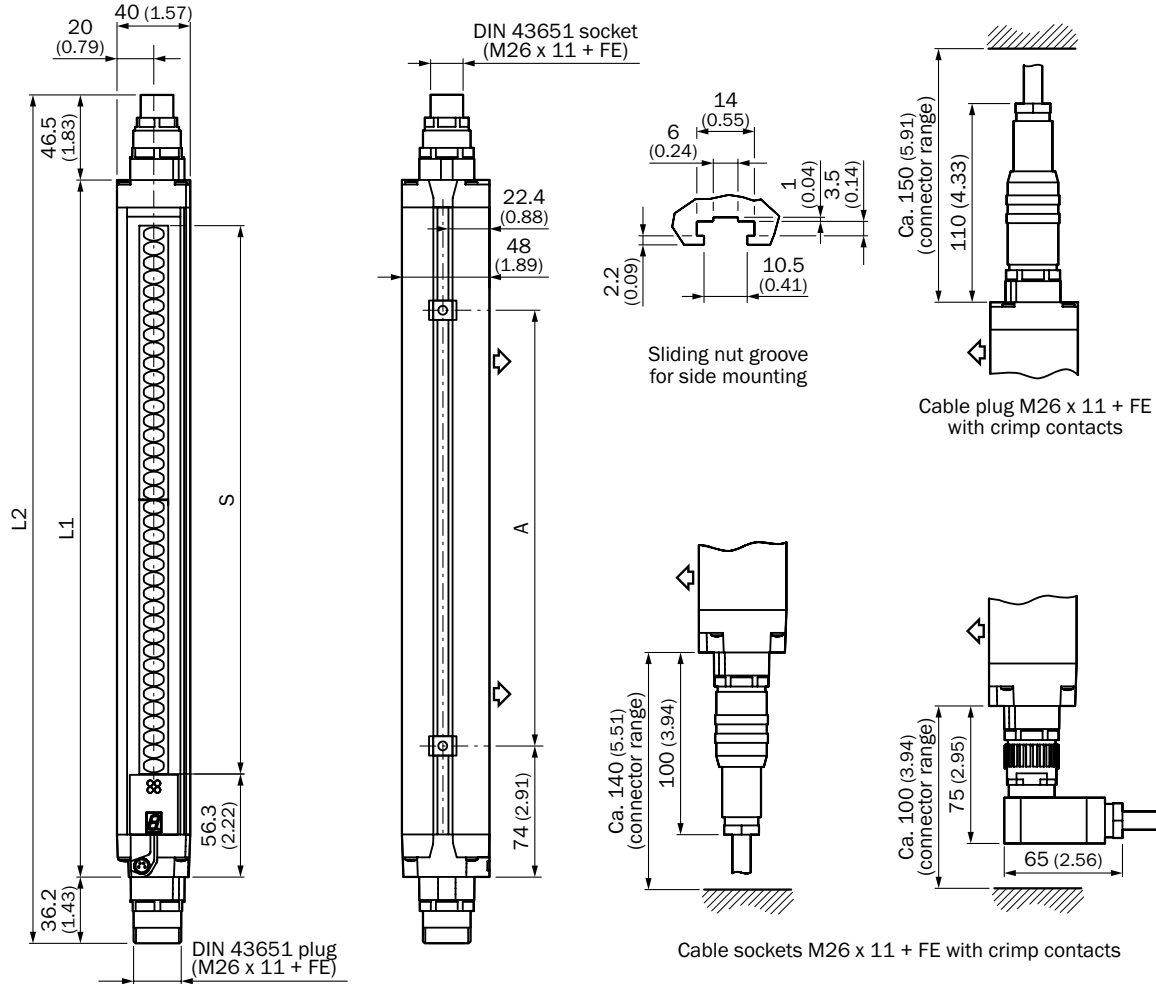
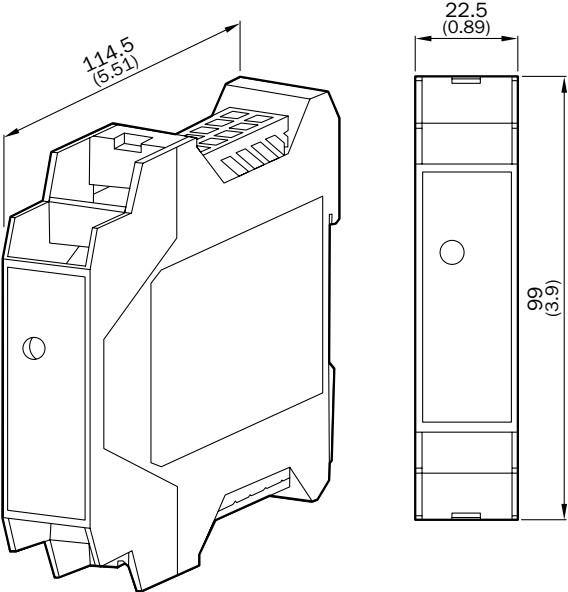


Illustration sender (receiver mirror image)

Protective field length S	L1	L2	A
750 (29.53)	833 (32.80)	895 (35.24)	674 (26.54)
900 (35.43)	984 (38.74)	1,046 (41.18)	824 (32.44)
1,050 (41.34)	1,134 (44.65)	1,196 (47.09)	974 (38.35)
1,200 (47.24)	1,283 (50.51)	1,346 (52.99)	1,124 (44.25)
1,350 (53.15)	1,435 (56.50)	1,497 (58.94)	1,274 (50.16)
1,500 (59.06)	1,586 (62.44)	1,649 (64.92)	1,424 (56.06)
1,650 (64.96)	1,736 (68.35)	1,798 (70.79)	1,574 (61.97)
1,800 (70.87)	1,887 (74.29)	1,949 (76.73)	1,724 (67.87)



UE402 switching amplifier



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Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
Connecting cable	2	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-
Test rod	1	✓	→ Test and monitoring tools

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 1, mounting bracket, rigid, L-shaped, including fixing screws and washers	4 pieces	BEF-3WNGBAST4	7021352
	Mounting kit 11, exchangeable retainer, suitable for replacement of FGS	4 pieces	BEF-3WNGBCST4	2021646

Dimensional drawings → [page G-453](#)

Terminal and alignment brackets

Alignment brackets








Figure	Description	Packing unit	Type	Part no.
	Mounting kit 2, rotatable, swivel mount	4 pieces	BEF-2SMMEAKU4	2019659
	Mounting kit 3, rotatable, with shock-absorber	4 pieces	BEF-1SHADAAL4	2017752
	Mounting kit 6, side bracket, rotatable	4 pieces	BEF-1SHABAZN4	2019506
	Mounting kit, rotatable, telescopic, swivel mount	2 pieces	BEF-0SMMEA002	2046172
	Omega bracket, rotatable, fixable with only one screw, for mounting on the swivel mount	4 pieces	BEF-2SMMEAAL4	2044847
	Reinforced stainless steel bracket, rotatable	4 pieces	BEF-2SMMVAES4	2026850

Figure	Description	Packing unit	Type	Part no.
	Stainless steel bracket, rotatable	4 pieces	BEF-2SMMEAES4	2023708

Dimensional drawings → page G-453

Terminal brackets

Figure	Description	Packing unit	Type	Part no.
	Bracket, rigid, vibration absorbing, for devices with a weight > 350 g ... ≤ 1,200 g	4 pieces	BEF-3SHADAAL4S06	2055829
	Bracket, rigid, vibration absorbing, for devices with a weight > 1,200 g ... ≤ 3,000 g	4 pieces	BEF-3SHADAAL4S07	2055830
	Bracket, rigid, vibration absorbing, for devices with a weight > 3,000 g ... ≤ 4,000 g	4 pieces	BEF-3SHADAAL4S08	2055831

Device protection (mechanical)

Front screen protection


Figure	Description	Suitable for protective field height	Packing unit	Type	Part no.
 Application example	Durable front screen protection set (protects sensors from damage by flying sparks and welding beads), incl. sliding nuts and fastening screws	750 mm	2 pieces	Additional heavy duty front screen	2026856
		900 mm	2 pieces	Additional heavy duty front screen	2026857
		1,050 mm	2 pieces	Additional heavy duty front screen	2026858
		1,200 mm	2 pieces	Additional heavy duty front screen	2026859
		1,350 mm	2 pieces	Additional heavy duty front screen	2026860
		1,500 mm	2 pieces	Additional heavy duty front screen	2026861
		1,650 mm	2 pieces	Additional heavy duty front screen	2026862
		1,800 mm	2 pieces	Additional heavy duty front screen	2026863
 Application example	Snap-on front screen protection set (protects sensors from damage by flying sparks and welding beads), mounting hardware included	750 mm	2 pieces	Additional front screen	2022415
		900 mm	2 pieces	Additional front screen	2022416
		1,050 mm	2 pieces	Additional front screen	2022417
		1,200 mm	2 pieces	Additional front screen	2022418
		1,350 mm	2 pieces	Additional front screen	2022419
		1,500 mm	2 pieces	Additional front screen	2022420
		1,650 mm	2 pieces	Additional front screen	2022421
		1,800 mm	2 pieces	Additional front screen	2022422

Other mounting accessories

Sliding nuts

Figure	Description	Packing unit	Type	Part no.
	Sliding nut set, M5, 4x, included in delivery	4 pieces	Sliding nuts	2017550

Stands

Figure	Description	Packing unit	Type	Part no.
	Floor stands for the horizontal mounting of the safety light curtains C4000 Fusion, Entry/Exit, Palletizer, as well as the multi-beam safety light curtain M4000 Area, for mounting heights of between 70 mm and 780 mm., including mounting brackets	2 pieces	BEF-3HHOCAST2	2041661


Dimensional drawings → [page G-455](#)

Connection systems

Plug connectors and cables


Connecting cables with female connector

- **Model:** PVC, unshielded

Figure	Connection type	Description	Conductor cross-section	Cable length	Type	Part no.	
	Female connector, M26, 12-pin, straight	Cable	-	0.75 mm ²	2.5 m	DOL-0612G2M5075KM0	2022544
					5 m	DOL-0612G05M075KM0	2022545
					7.5 m	DOL-0612G7M5075KM0	2022546
					10 m	DOL-0612G10M075KM0	2022547
					15 m	DOL-0612G15M075KM0	2022548
					20 m	DOL-0612G20M075KM0	2022549
					30 m	DOL-0612G30M075KM0	2022550
			Without EFI: Pin 9 and 10 not connected	0.75 mm ²	5 m	DOL-0610G05M075KM1	2046888
					7.5 m	DOL-0610G7M5075KM5	2044042
					10 m	DOL-0610G10M075KM1	2046889
					20 m	DOL-0610G20M075KM1	2046890



Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded

Figure	Connection type	Cable length	Type	Part no.	
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649

Connection cables with male connector and male connector

- **Model:** PVC, unshielded

Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574
				10 m	DSL-8U04G10M025KM1	6034575

Female connectors (ready to assemble)


Figure	Connection type	Permitted cross-section	Type	Part no.
	Female connector, M26, 12-pin, angled, crimp contacts	0.5 mm ² ... 1.5 mm ²	DOS-0612W000GA3KM0	6020758
	Female connector, M26, 12-pin, straight, crimp contacts	0.5 mm ² ... 1.5 mm ²	DOS-0612G000GA3KM0	6020757

Male connectors (ready to assemble)

Figure	Connection type	Permitted cross-section	Type	Part no.
	Male connector, M26, 12-pin, angled, crimp contacts	0.5 mm ² ... 1.5 mm ²	STE-0612W000GA3KM0	6021192
	Male connector, M26, 12-pin, straight, crimp contacts	0.5 mm ² ... 1.5 mm ²	STE-0612G000GA3KM0	6021191

Adapters and distributors

Other adapters and distributors

Figure	Description	Type	Part no.
	Terminal with 182 Ohm resistance, for pin 9 and 10 on the system connection, to improve the EMC behaviour if the EFI interface is not used	Terminal with 182 Ohm resistance	2027227


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Modules and gateways

EFI gateways



Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098
	PROFINET PROFI-safe	UE4740-22H0000	1046978

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

Reflectors and optics

Alignment aids



Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for housing cross-section 48 mm x 40 mm	Adapter AR60, 48x40	4032461
	Adapter AR60 for housing cross-section 48 mm x 40 mm in PU3H device column	Adapter AR60, 48x40, PU3H	4056731

Further accessories

Test and monitoring tools


Figure	Description	Type	Part no.
	30 mm diameter	Test rod 30 mm	2022602
	40 mm diameter	Test rod 40 mm	2022604
	Test rod holder	BEF-3WNAAAAL1	2052249

Programming and configuration tools

Figure	Description	Suitable for	Type	Part no.
	Clone Plug to save and transfer configurations, IP 41, with lithium coin cell CR2032, 3.0 V	C4000 Standard, C4000 Advanced, C4000 Palletizer, C4000 Entry/Exit, C4000 Fusion, M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, M4000 Area	PLUG1-0C00100	1029665
	Host-guest plug to reset the system positions in a cascade (Host, Guest1, or Guest2), IP 41, with CR2032 lithium button cell, 3.0 V	C4000 Standard, Advanced, Palletizer, Entry/Exit	PLUG1-1R00000	1029717
	Wall-mounting bracket for mounting Clone Plug and Host-Guest Plug	-	Wall-mounting bracket	5318443

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Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690



HIGH PERFORMANCE SAFETY UNDER WASH-DOWN AND CLEANING REQUIREMENTS



Product description

The C4000 Palletizer in IP69K Housing safety light curtain is an innovative muting alternative for access protection in automated material transport systems. Due to its flexible pattern detection system, this protective device is immune to false trips from defective pallets, hanging straps, or shrink wrap remnants. As a result, the C4000 Palletizer is able to

provide reliable protection in dangerous areas. And, since additional muting sensors, indicator lamps, physical guards, and interlocks are not required, the risk of malfunctions is minimized and the availability of the overall system is optimized. Quick and easy installation saves money and makes the C4000 Palletizer an ideal solution for many applications.

At a glance

- Type 4 (IEC 61496), SIL 3 (EN 62061), PL e (EN ISO 13849)
- IP 69K, IP 67, IP 66 and IP 65 enclosure ratings incl. cable
- Withstands wash-down pressure up to 100 bar and water temperature up to 80 °C
- ECOLAB and JohnsonDiversey certified
- Resistant steel materials
- Ventilation valve prevents fogging of the front screen
- Smooth surfaces prevent accumulation of bacteria

Your benefits

- The longer service life saves costs. IP 69K-tested product – from the housing materials right up to the connection cable
- As an alternative to hard guards, personnel can quickly access protected areas for service, keeping productivity high
- Saves time in the cleaning and is resistant to high pressure cleaners
- Reliable safeguarding, even when temperatures fluctuate
- Standard M12 8pin connection for easy machine integration



Additional information

- Detailed technical data G-361
- Ordering information G-364
- Dimensional drawings G-365
- Recommended accessories . . . G-366

→ www.sick.com/C4000_Palletizer_in_IP69K_Housing

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

C4000 Palletizer in IP69K Housing**Features**

Protective field height	1,050 mm
Scanning range	0.5 m ... 4.5 m
Resolution	30 mm
Response time	≤ 12 ms ¹⁾
Synchronization	Optical synchronisation

¹⁾ Without beam coding, with 1 x sampling, no cascaded systems. Other response times see operating instructions.

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	1.5 x 10 ⁻⁸
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	Internal
External device monitoring (EDM)	✓	Deactivated
Beam coding	✓	Code 1
Multiple sampling	✓	2 x sampling
Direction monitoring	✓	
Reduced resolution	✓	3 beams
Object entry monitoring	✓	
Self-teach dynamic blanking for goods detection	✓	
Object size monitoring	✓	
Teach-in of individual objects	✓	
Object gap suppression	✓	
Self-teach dynamic blanking for pallet detection	✓	



Interfaces

Connection type	Cable 15 m, PVC
Conductor cross-section	0.75 mm ²
Cable length	≤ 15 m
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Display elements	7-segment display
Fieldbus, industrial network	
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ¹⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾

¹⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Ripple	≤ 10 % ²⁾	
Power consumption	1 A	1.8 A
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
Switching voltage HIGH	–	24 V DC (V _s – 2.25 V DC ... V _s)
Switching voltage LOW	–	2 V DC
Switching current	–	≤ 500 mA
Switch off time	–	≥ 1,000 ms

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60 204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of U_v.

Mechanical data

Housing diameter	80 mm
Material	
End caps	Stainless steel V4A
Plastic tube	PMMA
Compensating element (membrane)	PA 6
PG connector	PA 6

Ambient data

Enclosure rating	IP 69K, IP 67, IP 66, IP 65 (IEC 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	–25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	16 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Wave length	950 nm	–

UE402 switching amplifier

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH _D (mean probability of a dangerous failure per hour)	15 x 10 ⁻⁹ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)

Functions

Bypass	✓
Operating mode switching	✓

Electrical data

Protection class	III (IEC 536:1976)
Supply voltage V _S	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾
Residual ripple	10 % ²⁾
Power consumption	≤ 110 mA
Switch-on time	≤ 4 s
IN A1 ... A6, MCC-BDC, MCC-TDC	
Switching voltage HIGH	24 V DC (11 V DC ... 30 V DC)
Switching voltage LOW	-30 V DC ... 5 V DC
Input current HIGH	6 mA ... 20 mA
Input current LOW	-3 mA ... 0.5 mA
IN B1, IN B2, OUT B1, OUT B2	
Bypass change over time	≤ 2 s
Synchronous time monitoring	≤ 200 ms

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of V_S.

Mechanical data

Dimensions (W x H x D)	22.5 mm x 99 mm x 114.5 mm
Housing material	Plastic
Weight	120 g

Ambient data

Enclosure rating	IP 20 (IEC 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Ordering information

Items supplied C4000 Palletizer in IP69K Housing:

- Safety light curtain consisting of a sender and a receiver
- 2 PVC connection cables, 15 m
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

C4000 Palletizer in IP69K Housing, including 15 m IP69K-rated cable

Usage	As a standalone system
Connection types	
System connection	Cable 15 m, PVC

- **Resolution:** 30 mm
- **Scanning range:** 0.5 m ... 4.5 m

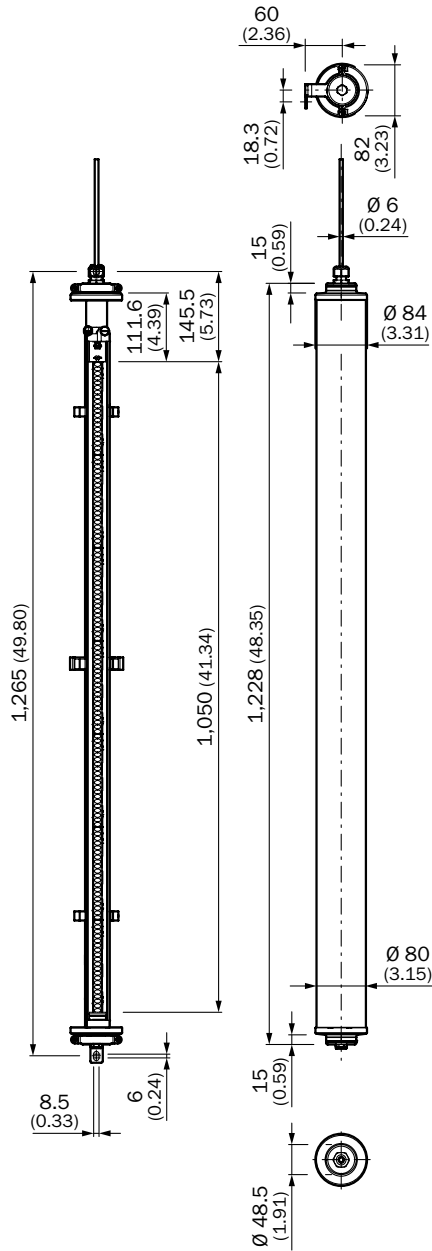
Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
1,050 mm	C45S-S025	1053825	C45E-S025	1053826

UE402 switching amplifier

Description	Type	Part no.
Expands C4000 Standard, Advanced, Palletizer, Entry/Exit and Fusion with the functions described in the technical data, e.g., bypass, operating mode switching or in addition PSDI mode on C4000 Standard, Advanced.	UE402	1023577



Dimensional drawings (Dimensions in mm (inch))



UE402 switching amplifier

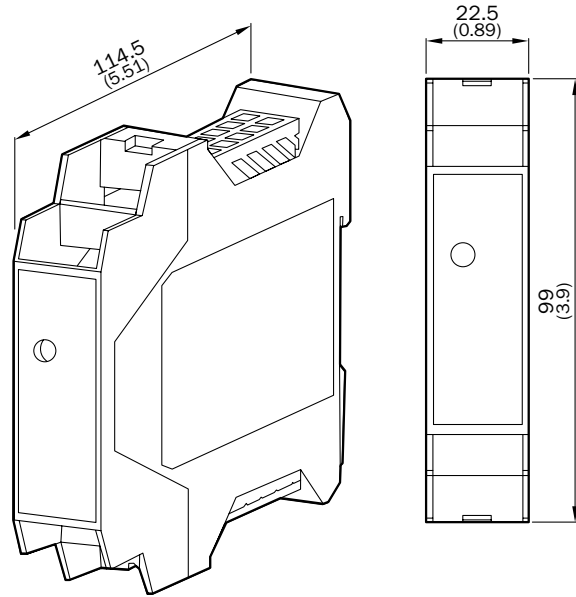


Illustration sender (receiver mirror image)



Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-
Test rod	1	✓	→ Test and monitoring tools

Recommended accessories

Mounting systems

Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.
	Reinforced stainless steel bracket, rotatable	4 pieces	BEF-2SMGVAES4	2060165
	Stainless steel support bracket	2 pieces	BEF-2AAAAOES2	2060164

Dimensional drawings → [page G-453](#)

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Device protection (mechanical)

Protective caps

Figure	Description	Type	Part no.
	Bidirectional ventilation membrane made from Gore-Tex	Bidirectional ventilation membrane	5309082

Other mounting accessories






Mounting tools

Figure	Description	Packing unit	Type	Part no.
	Mounting tool for M12 cable socket, large housing	1 piece	Mounting key	4067618


Connection systems

Modules and gateways

EFI gateways



Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098
	PROFINET PROFI-safe	UE4740-22H0000	1046978

Power supply units and power cord connectors


Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

Further accessories

Test and monitoring tools

Figure	Description	Type	Part no.
	30 mm diameter	Test rod 30 mm	2022602
	Test rod holder	BEF-3WNAAAAL1	2052249

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

REVOLUTIONARY ACCESS PROTECTION THAT DIFFERENTIATES BETWEEN PEOPLE AND MATERIAL



Product description

The C4000 Entry/Exit safety light curtain is used to prevent human access to dangerous areas, while still enabling the automatic transport of materials into these areas. Instead of using ad-

ditional muting sensors, these safety light curtains use pattern recognition to reliably differentiate between people and material.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Self-teaching, dynamic blanking
- 7-segment display
- Multiscan function increases availability
- External device monitoring (EDM), restart interlock
- Beam coding
- Configuration and diagnostics via PC

Your benefits

- Cost-effective: No additional muting sensors or protective measures are required.
- A compact sensor pair reduces the mounting requirements considerably – additional muting sensors are not required
- With the dynamic and self-teaching blanking function, the system can reliably differentiate between people and material – this provides maximum safety
- Beam coding protects the systems against optical interference by ensuring a high level of availability
- Time saving alignment and diagnostics by means of the 7-segment display



Additional information

- Detailed technical data G-369
- Ordering information G-372
- Dimensional drawings G-373
- Recommended accessories . . . G-375

→ www.sick.com/C4000_Entry_Exit

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

C4000 Entry/Exit**Features**

Protective field height	900 mm ... 1,500 mm (depending on type)
Scanning range	0.5 m ... 19 m
Resolution	20 mm
Response time	≤ 38 ms ¹⁾
Synchronization	Optical synchronisation

¹⁾ Without beam coding, multiple sampling 3 times. Other response times see operating instructions.

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	1.5 x 10 ⁻⁸
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	External
External device monitoring (EDM)	✓	Deactivated
Beam coding	✓	Non-coded
Configurable scanning range	✓	
Dynamic blanking for object pattern recognition	✓	None
Safe SICK device communication via EFI	✓	

Functions in combination with UE402

Operating mode switching	✓
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Interfaces

System connection		
Connection type	Hirschmann male connector M26, 12-pin	
Permitted cable length	≤ 50 m ¹⁾	
Conductor cross-section	0.75 mm ²	
Configuration connection		
Connection type	Female connector M8, 4-pin	
Configuration method	PC with CDS (Configuration and Diagnostic Software)	
Display elements		7-segment display
Fieldbus, industrial network		
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ²⁾	
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ³⁾	

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

³⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Ripple	≤ 10 % ²⁾	
Power consumption	1 A	1.8 A
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
Switching voltage HIGH	–	24 V DC ($V_S - 2.25$ V DC ... V_S)
Switching voltage LOW	–	2 V DC
Switching current	–	≤ 500 mA

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60 204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of U_v .

Mechanical data

	Sender	Receiver
Housing cross-section	48 mm x 40 mm	
Weight	1,960 g ... 3,110 g (depending on type)	1,990 g ... 3,140 g (depending on type)

Ambient data

Enclosure rating	IP 65 (IEC 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	–25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	16 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Wave length	950 nm	–

UE402 switching amplifier

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH _D (mean probability of a dangerous failure per hour)	15 x 10 ⁻⁹ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)

Functions

Bypass	✓
Operating mode switching	✓
PSDI mode	✓

Electrical data

Protection class	III (IEC 536:1976)
Supply voltage V _S	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾
Residual ripple	10 % ²⁾
Power consumption	≤ 110 mA
Switch-on time	≤ 4 s
IN A1 ... A6, MCC-BDC, MCC-TDC	
Switching voltage HIGH	24 V DC (11 V DC ... 30 V DC)
Switching voltage LOW	-30 V DC ... 5 V DC
Input current HIGH	6 mA ... 20 mA
Input current LOW	-3 mA ... 0.5 mA
IN B1, IN B2, OUT B1, OUT B2	
Bypass change over time	≤ 2 s
Synchronous time monitoring	≤ 200 ms

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of V_S.

Mechanical data

Dimensions (W x H x D)	22.5 mm x 99 mm x 114.5 mm
Housing material	Plastic
Weight	120 g

Ambient data

Enclosure rating	IP 20 (IEC 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Ordering information

Items supplied C4000 Entry/Exit:

- Safety light curtain consisting of a sender and a receiver
- 8 sliding nuts for side mounting
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

C4000 Entry/Exit

Usage	As a standalone system
Connection types	
System connection	Hirschmann male connector M26, 12-pin
Configuration connection	Female connector M8, 4-pin

- **Resolution:** 20 mm
- **Scanning range:** 0.5 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
900 mm	C40S-0902CI010	1023968	C40E-0902CI010	1023969
1,050 mm	C40S-1002CI010	1024044	C40E-1002CI010	1024045
1,200 mm	C40S-1202CI010	1024046	C40E-1202CI010	1024047
1,350 mm	C40S-1302CI010	1024048	C40E-1302CI010	1024049
1,500 mm	C40S-1502CI010	1024050	C40E-1502CI010	1024051

UE402 switching amplifier

Description	Type	Part no.
Expands C4000 Standard, Advanced, Palletizer, Entry/Exit and Fusion with the functions described in the technical data, e.g., bypass, operating mode switching or in addition PSDI mode on C4000 Standard, Advanced.	UE402	1023577



Dimensional drawings (Dimensions in mm (inch))

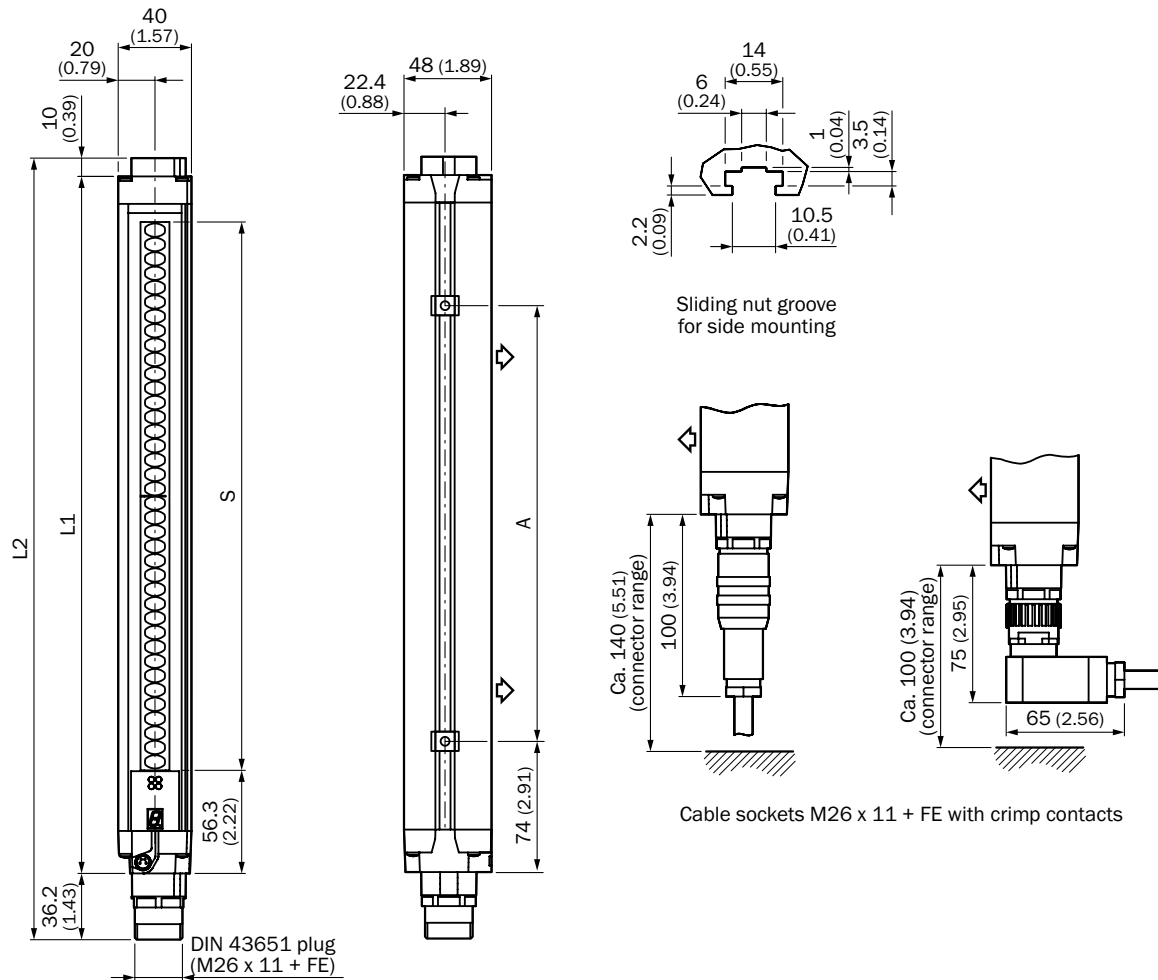
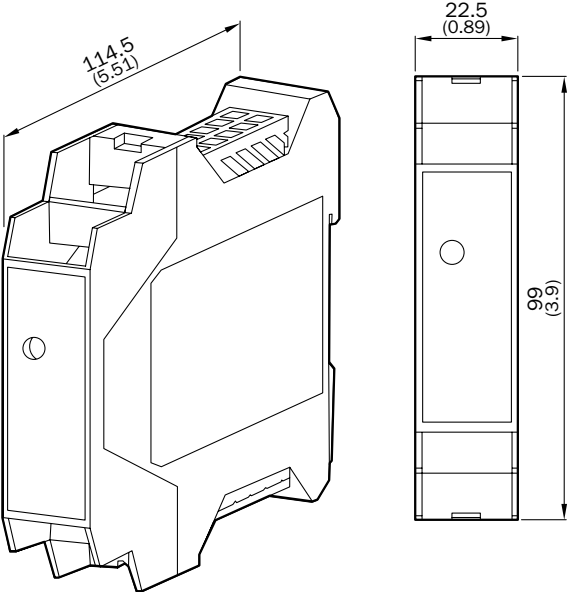


Illustration sender (receiver mirror image)

Protective field length S	L1	L2	A
900 (35.43)	984 (38.74)	1,030 (40.55)	824 (32.44)
1,050 (41.34)	1,134 (44.65)	1,180 (46.46)	974 (38.35)
1,200 (47.24)	1,283 (50.51)	1,329 (52.32)	1,124 (44.25)
1,350 (53.15)	1,435 (56.50)	1,481 (58.31)	1,274 (50.16)
1,500 (59.06)	1,586 (62.44)	1,632 (64.25)	1,424 (56.06)



UE402 switching amplifier



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Accessories required for commissioning



Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
Connecting cable	2	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-
Test rod	1	✓	→ Test and monitoring tools

Recommended accessories

Mounting systems

Mounting brackets and mounting plates







Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 1, mounting bracket, rigid, L-shaped, including fixing screws and washers	4 pieces	BEF-3WNGBAST4	7021352
	Mounting kit 11, exchangeable retainer, suitable for replacement of FGS	4 pieces	BEF-3WNGBCST4	2021646

Dimensional drawings → [page G-453](#)


Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 2, rotatable, swivel mount	4 pieces	BEF-2SMMEAKU4	2019659
	Mounting kit 3, rotatable, with shock-absorber	4 pieces	BEF-1SHADAAL4	2017752
	Mounting kit 6, side bracket, rotatable	4 pieces	BEF-1SHABAZN4	2019506
	Mounting kit, rotatable, telescopic, swivel mount	2 pieces	BEF-0SMMEA002	2046172
	Reinforced stainless steel bracket, rotatable	4 pieces	BEF-2SMMVAES4	2026850
	Stainless steel bracket, rotatable	4 pieces	BEF-2SMMEAES4	2023708



Dimensional drawings → [page G-453](#)

Terminal brackets

Figure	Description	Packing unit	Type	Part no.
	Bracket, rigid, vibration absorbing, for devices with a weight > 350 g ... ≤ 1,200 g	4 pieces	BEF-3SHADAAL4S06	2055829
	Bracket, rigid, vibration absorbing, for devices with a weight > 1,200 g ... ≤ 3,000 g	4 pieces	BEF-3SHADAAL4S07	2055830
	Bracket, rigid, vibration absorbing, for devices with a weight > 3,000 g ... ≤ 4,000 g	4 pieces	BEF-3SHADAAL4S08	2055831

Device protection (mechanical)

Front screen protection


Figure	Description	Suitable for protective field height	Packing unit	Type	Part no.
 Application example	Durable front screen protection set (protects sensors from damage by flying sparks and welding beads), incl. sliding nuts and fastening screws	900 mm	2 pieces	Additional heavy duty front screen	2026857
		1,050 mm	2 pieces	Additional heavy duty front screen	2026858
		1,200 mm	2 pieces	Additional heavy duty front screen	2026859
		1,350 mm	2 pieces	Additional heavy duty front screen	2026860
		1,500 mm	2 pieces	Additional heavy duty front screen	2026861
 Application example	Snap-on front screen protection set (protects sensors from damage by flying sparks and welding beads), mounting hardware included	900 mm	2 pieces	Additional front screen	2022416
		1,050 mm	2 pieces	Additional front screen	2022417
		1,200 mm	2 pieces	Additional front screen	2022418
		1,350 mm	2 pieces	Additional front screen	2022419
		1,500 mm	2 pieces	Additional front screen	2022420

Other mounting accessories

Sliding nuts

Figure	Description	Packing unit	Type	Part no.
	Sliding nut set, M5, 4x, included in delivery	4 pieces	Sliding nuts	2017550

Stands

Figure	Description	Packing unit	Type	Part no.
	Floor stands for the horizontal mounting of the safety light curtains C4000 Fusion, Entry/Exit, Palletizer, as well as the multi-beam safety light curtain M4000 Area, for mounting heights of between 70 mm and 780 mm., including mounting brackets	2 pieces	BEF-3HHOCAST2	2041661


Dimensional drawings → [page G-455](#)

Connection systems

Plug connectors and cables

Connecting cables with female connector

- **Model:** PVC, unshielded

Figure	Connection type		Description	Conductor cross-section	Cable length	Type	Part no.
	Female connector, M26, 12-pin, straight	Cable	-	0.75 mm ²	2.5 m	DOL-0612G2M5075KM0	2022544
					5 m	DOL-0612G05M075KM0	2022545
					7.5 m	DOL-0612G7M5075KM0	2022546
					10 m	DOL-0612G10M075KM0	2022547
					15 m	DOL-0612G15M075KM0	2022548
					20 m	DOL-0612G20M075KM0	2022549
					30 m	DOL-0612G30M075KM0	2022550
			Without EFI: Pin 9 and 10 not connected	0.75 mm ²	5 m	DOL-0610G05M075KM1	2046888
					7.5 m	DOL-0610G7M5075KM5	2044042
					10 m	DOL-0610G10M075KM1	2046889
					20 m	DOL-0610G20M075KM1	2046890


Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded

Figure	Connection type		Cable length	Type	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649

Connection cables with male connector and male connector


- **Model:** PVC, unshielded

Figure	Connection type		Description	Cable length	Type	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396
		10 m	DSL-8U04G10M025KM1	6034575		

Female connectors (ready to assemble)


Figure	Connection type	Permitted cross-section	Type	Part no.
	Female connector, M26, 12-pin, angled, crimp contacts	0.5 mm ² ... 1.5 mm ²	DOS-0612W000GA3KM0	6020758
	Female connector, M26, 12-pin, straight, crimp contacts	0.5 mm ² ... 1.5 mm ²	DOS-0612G000GA3KM0	6020757

Cables (ready to assemble)

Figure	Description	Model	Conductor cross-section	Number of cores	Items supplied	Type	Part no.
	Max. 100 m, fitting for EFI connections	PVC, unshielded	0.75 mm ²	12-wire	By the meter	Connecting cable	6021437






Adapters and distributors

Other adapters and distributors


Figure	Description	Type	Part no.
	Terminal with 182 Ohm resistance, for pin 9 and 10 on the system connection, to improve the EMC behaviour if the EFI interface is not used	Terminal with 182 Ohm resistance	2027227

Modules and gateways

EFI gateways

Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098
	PROFINET PROFI-safe	UE4740-22H0000	1046978



Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

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Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for housing cross-section 48 mm x 40 mm	Adapter AR60, 48x40	4032461
	Adapter AR60 for housing cross-section 48 mm x 40 mm in PU3H device column	Adapter AR60, 48x40, PU3H	4056731

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
	20 mm diameter	Test rod 20 mm	2022600
	Test rod holder	BEF-3WNAAAAL1	2052249

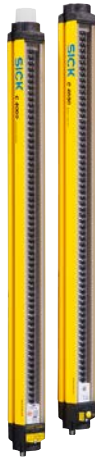
Programming and configuration tools

Figure	Description	Suitable for	Type	Part no.
	Clone Plug to save and transfer configurations, IP 41, with lithium coin cell CR2032, 3.0 V	C4000 Standard, C4000 Advanced, C4000 Palletizer, C4000 Entry/Exit, C4000 Fusion, M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, M4000 Area	PLUG1-0C00100	1029665
	Host-guest plug to reset the system positions in a cascade (Host, Guest1, or Guest2), IP 41, with CR2032 lithium button cell, 3.0 V	C4000 Standard, Advanced, Palletizer, Entry/Exit	PLUG1-1R00000	1029717
	Wall-mounting bracket for mounting Clone Plug and Host-Guest Plug	-	Wall-mounting bracket	5318443

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

VERSATILITY AND FLEXIBILITY EVEN IN HARSH AMBIENT CONDITIONS



Product description

The C4000 Select safety light curtain reliably protects against access into hazardous points and hazardous areas. Integrated floating blanking functions allow the presence of defined objects – such as cables or work pieces – in the protective field, while the operator safety is provided at the same time. All configuration is done via DIP switches – no programming required. Cascading several systems offers the user a high degree of flexibility for the application solution. Safety laser scanners can also be cascaded. Various mounting adapt-

ers and innovative accessories enable flexible installation. The integrated laser alignment aid and display is used for time saving alignment. Optional integrated 360-degree LED indicator lamp. The tried and tested 7-segment display is used for the diagnostics; the error codes are found directly on the device. The C4000 Select offers reliable machine access protection up to the highest protection level, PL e. The available protective field heights range from 300 to 1800 mm.

At a glance

- Configuration via DIP switch, without PC
- Long scanning range up to 19 m
- Integrated laser alignment aid and alignment display
- Rugged housing with three mounting grooves for maximum mounting flexibility
- Single beam / double beam blanking
- Diagnostics via 7-segment display - error codes directly on the device
- Beam coding for correct system allocation
- Can cascade up to three light curtain systems or one safety laser scanner

Your benefits

- The blanking functions for reliable and safe object detection increase productivity
- The 7-segment display reduces alignment and diagnostics time
- Beam coding protects the system against optical interference by ensuring a high level of reliability
- Ability to cascade up to three light curtain systems or one light curtain system together with a safety laser scanner increases application flexibility and reduces wiring costs
- DIP switches provide precise and convenient configuration and diagnostics
- The integrated laser alignment aid in combination with the alignment display enables time saving alignment of the sender and receiver
- Optional integrated LED endcap display provides a 360° status indication



Additional information

- Detailed technical data G-381
- Ordering information G-383
- Dimensional drawings G-390
- Recommended accessories . . . G-392

→ www.sick.com/C4000_Select

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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Detailed technical data

Note: C4000 Select is only available in North America!

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

	Resolution 14 mm	Resolution 30 mm
Protective field height	300 mm ... 1,800 mm (depending on type)	
Scanning range	0 m ... 8 m	0 m ... 19 m
Resolution	14 mm	30 mm
Response time	≤ 26 ms ¹⁾ (depending on type)	≤ 15 ms ¹⁾ (depending on type)
Synchronization	Optical synchronisation	

¹⁾ Without beam coding, without blanking, no cascaded systems. Other response times see operating instructions.

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	3.2 x 10 ⁻⁸
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Beam coding	✓	Non-coded
Configurable scanning range	✓	

Interfaces

System connection	
Connection type	Male connector M12, 5-pin
Permitted cable length	≤ 50 m ¹⁾
Configuration method	DIP switch
Display elements	7-segment display
Fieldbus, industrial network	
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Ripple	≤ 10 % ²⁾	
Power consumption	4.9 W ... 9.3 W (depending on type)	7.6 W ... 11.2 W (depending on type)
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
Switching voltage HIGH	–	24 V DC ($V_s - 2.25$ V DC ... V_s)
Switching voltage LOW	–	2 V DC
Switching current	–	≤ 500 mA
Switch off time	–	≥ 100 ms

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60 204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of U_v .

Mechanical data

Housing material	Aluminum alloy ALMGS1 0.5
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Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	–25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	16 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Wave length	950 nm	–
Integrated laser alignment aid	✓	
Light source	LED	–
Laser class	1 (IEC 60825-1), eye-safe	–
Type of light	Visible red light	–



Ordering information

Note: C4000 Select is only available in North America!

Items supplied C4000 Select:

- Safety light curtain consisting of a sender and a receiver
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions on CD-ROM and quick start (instructions for quick commissioning)
- Adhesive label with information on the daily check

C4000 Select without extension connection

Usage	As a standalone system and as last system in a cascade
Connection types	
System connection	Male connector M12, 5-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	XC40S-0301A0A00AA0	1208918	XC40E-0301A0A0AAA0	1208951
450 mm	XC40S-0401A0A00AA0	1208825	XC40E-0401A0A0AAA0	1208824
600 mm	XC40S-0601A0A00AA0	1208919	XC40E-0601A0A0AAA0	1208952
750 mm	XC40S-0701A0A00AA0	1208920	XC40E-0701A0A0AAA0	1208953
900 mm	XC40S-0901A0A00AA0	1208921	XC40E-0901A0A0AAA0	1208954
1,050 mm	XC40S-1001A0A00AA0	1208922	XC40E-1001A0A0AAA0	1208955
1,200 mm	XC40S-1201A0A00AA0	1208923	XC40E-1201A0A0AAA0	1208956
1,350 mm	XC40S-1301A0A00AA0	1208924	XC40E-1301A0A0AAA0	1208957
1,500 mm	XC40S-1501A0A00AA0	1208925	XC40E-1501A0A0AAA0	1208958
1,650 mm	XC40S-1601A0A00AA0	1208926	XC40E-1601A0A0AAA0	1208959
1,800 mm	XC40S-1801A0A00AA0	1208927	XC40E-1801A0A0AAA0	1208960

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	XC40S-0303A0A00AA0	1204061	XC40E-0303A0A0AAA0	1204063
450 mm	XC40S-0403A0A00AA0	1208853	XC40E-0403A0A0AAA0	1208852
600 mm	XC40S-0603A0A00AA0	1204068	XC40E-0603A0A0AAA0	1204116
750 mm	XC40S-0703A0A00AA0	1208855	XC40E-0703A0A0AAA0	1208854
900 mm	XC40S-0903A0A00AA0	1204071	XC40E-0903A0A0AAA0	1204191
1,050 mm	XC40S-1003A0A00AA0	1208856	XC40E-1003A0A0AAA0	1208857
1,200 mm	XC40S-1203A0A00AA0	1204118	XC40E-1203A0A0AAA0	1204102
1,350 mm	XC40S-1303A0A00AA0	1208858	XC40E-1303A0A0AAA0	1208859
1,500 mm	XC40S-1503A0A00AA0	1204119	XC40E-1503A0A0AAA0	1204137
1,650 mm	XC40S-1603A0A00AA0	1208860	XC40E-1603A0A0AAA0	1208861
1,800 mm	XC40S-1803A0A00AA0	1204112	XC40E-1803A0A0AAA0	1204138

C4000 Select with top end cap extension connection

Usage	As a standalone system and as first, middle or last system in a cascade
Connection types	
System connection	Male connector M12, 5-pin
Extension connection	Female connector M12, 5-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	XC40S-0301A0A00AB0	1208928	XC40E-0301A0A0CAB0	1208972
450 mm	XC40S-0401A0A00AB0	1208929	XC40E-0401A0A0CAB0	1208973
600 mm	XC40S-0601A0A00AB0	1208930	XC40E-0601A0A0CAB0	1208974
750 mm	XC40S-0701A0A00AB0	1208931	XC40E-0701A0A0CAB0	1208975
900 mm	XC40S-0901A0A00AB0	1208932	XC40E-0901A0A0CAB0	1208976
1,050 mm	XC40S-1001A0A00AB0	1208933	XC40E-1001A0A0CAB0	1208977
1,200 mm	XC40S-1201A0A00AB0	1208934	XC40E-1201A0A0CAB0	1208978
1,350 mm	XC40S-1301A0A00AB0	1208935	XC40E-1301A0A0CAB0	1208979
1,500 mm	XC40S-1501A0A00AB0	1208936	XC40E-1501A0A0CAB0	1208980
1,650 mm	XC40S-1601A0A00AB0	1208937	XC40E-1601A0A0CAB0	1208981
1,800 mm	XC40S-1801A0A00AB0	1208938	XC40E-1801A0A0CAB0	1208982

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	XC40S-0303A0A00AB0	1204069	XC40E-0303A0A0CAB0	1204134
450 mm	XC40S-0403A0A00AB0	1208867	XC40E-0403A0A0CAB0	1208868
600 mm	XC40S-0603A0A00AB0	1204132	XC40E-0603A0A0CAB0	1204146
750 mm	XC40S-0703A0A00AB0	1208869	XC40E-0703A0A0CAB0	1208870
900 mm	XC40S-0903A0A00AB0	1204145	XC40E-0903A0A0CAB0	1204147
1,050 mm	XC40S-1003A0A00AB0	1208871	XC40E-1003A0A0CAB0	1208872
1,200 mm	XC40S-1203A0A00AB0	1204148	XC40E-1203A0A0CAB0	1204149
1,350 mm	XC40S-1303A0A00AB0	1208873	XC40E-1303A0A0CAB0	1208874
1,500 mm	XC40S-1503A0A00AB0	1204150	XC40E-1503A0A0CAB0	1204151
1,650 mm	XC40S-1603A0A00AB0	1208875	XC40E-1603A0A0CAB0	1208876
1,800 mm	XC40S-1803A0A00AB0	1204152	XC40E-1803A0A0CAB0	1204153



C4000 Select with integrated LED indicator lamp

Usage	As a standalone system and as last system in a cascade
Connection types	
System connection	Male connector M12, 5-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	XC40S-0301A0A00AA0	1208918	XC40E-0301A0A0AAC0	1208961
450 mm	XC40S-0401A0A00AA0	1208825	XC40E-0401A0A0AAC0	1208962
600 mm	XC40S-0601A0A00AA0	1208919	XC40E-0601A0A0AAC0	1208963
750 mm	XC40S-0701A0A00AA0	1208920	XC40E-0701A0A0AAC0	1208964
900 mm	XC40S-0901A0A00AA0	1208921	XC40E-0901A0A0AAC0	1208965
1,050 mm	XC40S-1001A0A00AA0	1208922	XC40E-1001A0A0AAC0	1208966
1,200 mm	XC40S-1201A0A00AA0	1208923	XC40E-1201A0A0AAC0	1208967
1,350 mm	XC40S-1301A0A00AA0	1208924	XC40E-1301A0A0AAC0	1208968
1,500 mm	XC40S-1501A0A00AA0	1208925	XC40E-1501A0A0AAC0	1208969
1,650 mm	XC40S-1601A0A00AA0	1208926	XC40E-1601A0A0AAC0	1208970
1,800 mm	XC40S-1801A0A00AA0	1208927	XC40E-1801A0A0AAC0	1208971

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	XC40S-0303A0A00AA0	1204061	XC40E-0303A0A0AAC0	1204139
450 mm	XC40S-0403A0A00AA0	1208853	XC40E-0403A0A0AAC0	1208862
600 mm	XC40S-0603A0A00AA0	1204068	XC40E-0603A0A0AAC0	1204140
750 mm	XC40S-0703A0A00AA0	1208855	XC40E-0703A0A0AAC0	1208863
900 mm	XC40S-0903A0A00AA0	1204071	XC40E-0903A0A0AAC0	1204141
1,050 mm	XC40S-1003A0A00AA0	1208856	XC40E-1003A0A0AAC0	1208864
1,200 mm	XC40S-1203A0A00AA0	1204118	XC40E-1203A0A0AAC0	1204142
1,350 mm	XC40S-1303A0A00AA0	1208858	XC40E-1303A0A0AAC0	1208865
1,500 mm	XC40S-1503A0A00AA0	1204119	XC40E-1503A0A0AAC0	1204143
1,650 mm	XC40S-1603A0A00AA0	1208860	XC40E-1603A0A0AAC0	1208866
1,800 mm	XC40S-1803A0A00AA0	1204112	XC40E-1803A0A0AAC0	1204144



C4000 Select with bottom end cap system and extension connections

Usage	As a standalone system and as first, middle or last system in a cascade
Connection types	
System connection	Male connector M12, 5-pin
Extension connection	Female connector M12, 5-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	XC40S-0301A0A00BA0	1208939	XC40E-0301A0A0CBA0	1208983
450 mm	XC40S-0401A0A00BA0	1208940	XC40E-0401A0A0CBA0	1208984
600 mm	XC40S-0601A0A00BA0	1208941	XC40E-0601A0A0CBA0	1208985
750 mm	XC40S-0701A0A00BA0	1208942	XC40E-0701A0A0CBA0	1208986
900 mm	XC40S-0901A0A00BA0	1208944	XC40E-0901A0A0CBA0	1208987
1,050 mm	XC40S-1001A0A00BA0	1208943	XC40E-1001A0A0CBA0	1208988
1,200 mm	XC40S-1201A0A00BA0	1208945	XC40E-1201A0A0CBA0	1208989
1,350 mm	XC40S-1301A0A00BA0	1208946	XC40E-1301A0A0CBA0	1208990
1,500 mm	XC40S-1501A0A00BA0	1208947	XC40E-1501A0A0CBA0	1208991
1,650 mm	XC40S-1601A0A00BA0	1208948	XC40E-1601A0A0CBA0	1208992
1,800 mm	XC40S-1801A0A00BA0	1208949	XC40E-1801A0A0CBA0	1208993

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	XC40S-0303A0A00BA0	1204154	XC40E-0303A0A0CBA0	1204155
450 mm	XC40S-0403A0A00BA0	1208877	XC40E-0403A0A0CBA0	1208878
600 mm	XC40S-0603A0A00BA0	1204156	XC40E-0603A0A0CBA0	1204157
750 mm	XC40S-0703A0A00BA0	1208879	XC40E-0703A0A0CBA0	1208894
900 mm	XC40S-0903A0A00BA0	1204158	XC40E-0903A0A0CBA0	1204159
1,050 mm	XC40S-1003A0A00BA0	1208880	XC40E-1003A0A0CBA0	1208881
1,200 mm	XC40S-1203A0A00BA0	1204160	XC40E-1203A0A0CBA0	1204161
1,350 mm	XC40S-1303A0A00BA0	1208882	XC40E-1303A0A0CBA0	1208883
1,500 mm	XC40S-1503A0A00BA0	1204162	XC40E-1503A0A0CBA0	1204163
1,650 mm	XC40S-1603A0A00BA0	1208884	XC40E-1603A0A0CBA0	1208885
1,800 mm	XC40S-1803A0A00BA0	1204164	XC40E-1803A0A0CBA0	1204165



C4000 Select with bottom end cap system/extension connections and integrated LED indicator lamp

Usage	As a standalone system and as first, middle or last system in a cascade
Connection types	
System connection	Male connector M12, 5-pin
Extension connection	Female connector M12, 5-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	XC40S-0301A0A00BA0	1208939	XC40E-0301A0A0CBC0	1208994
450 mm	XC40S-0401A0A00BA0	1208940	XC40E-0401A0A0CBC0	1208995
600 mm	XC40S-0601A0A00BA0	1208941	XC40E-0601A0A0CBC0	1208996
750 mm	XC40S-0701A0A00BA0	1208942	XC40E-0701A0A0CBC0	1208997
900 mm	XC40S-0901A0A00BA0	1208944	XC40E-0901A0A0CBC0	1208998
1,050 mm	XC40S-1001A0A00BA0	1208943	XC40E-1001A0A0CBC0	1208999
1,200 mm	XC40S-1201A0A00BA0	1208945	XC40E-1201A0A0CBC0	1209000
1,350 mm	XC40S-1301A0A00BA0	1208946	XC40E-1301A0A0CBC0	1209001
1,500 mm	XC40S-1501A0A00BA0	1208947	XC40E-1501A0A0CBC0	1209002
1,650 mm	XC40S-1601A0A00BA0	1208948	XC40E-1601A0A0CBC0	1209003
1,800 mm	XC40S-1801A0A00BA0	1208949	XC40E-1801A0A0CBC0	1209004

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	XC40S-0303A0A00BA0	1204154	XC40E-0303A0A0CBC0	1204166
450 mm	XC40S-0403A0A00BA0	1208877	XC40E-0403A0A0CBC0	1208950
600 mm	XC40S-0603A0A00BA0	1204156	XC40E-0603A0A0CBC0	1204167
750 mm	XC40S-0703A0A00BA0	1208879	XC40E-0703A0A0CBC0	1208886
900 mm	XC40S-0903A0A00BA0	1204158	XC40E-0903A0A0CBC0	1204168
1,050 mm	XC40S-1003A0A00BA0	1208880	XC40E-1003A0A0CBC0	1208887
1,200 mm	XC40S-1203A0A00BA0	1204160	XC40E-1203A0A0CBC0	1204169
1,350 mm	XC40S-1303A0A00BA0	1208882	XC40E-1303A0A0CBC0	1208888
1,500 mm	XC40S-1503A0A00BA0	1204162	XC40E-1503A0A0CBC0	1204170
1,650 mm	XC40S-1603A0A00BA0	1208884	XC40E-1603A0A0CBC0	1208889
1,800 mm	XC40S-1803A0A00BA0	1204164	XC40E-1803A0A0CBC0	1204171



C4000 Select with bottom extension connection (receiver only)

Usage	As a standalone system and as first system in a cascade with safety laser scanner S300 or S3000
Connection types	
System connection	Male connector M12, 5-pin
Extension connection	Female connector M12, 5-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	XC40S-0301A0A00AA0	1208918	XC40E-0301A0A0CBA0	1208983
450 mm	XC40S-0401A0A00AA0	1208825	XC40E-0401A0A0CBA0	1208984
600 mm	XC40S-0601A0A00AA0	1208919	XC40E-0601A0A0CBA0	1208985
750 mm	XC40S-0701A0A00AA0	1208920	XC40E-0701A0A0CBA0	1208986
900 mm	XC40S-0901A0A00AA0	1208921	XC40E-0901A0A0CBA0	1208987
1,050 mm	XC40S-1001A0A00AA0	1208922	XC40E-1001A0A0CBA0	1208988
1,200 mm	XC40S-1201A0A00AA0	1208923	XC40E-1201A0A0CBA0	1208989
1,350 mm	XC40S-1301A0A00AA0	1208924	XC40E-1301A0A0CBA0	1208990
1,500 mm	XC40S-1501A0A00AA0	1208925	XC40E-1501A0A0CBA0	1208991
1,650 mm	XC40S-1601A0A00AA0	1208926	XC40E-1601A0A0CBA0	1208992
1,800 mm	XC40S-1801A0A00AA0	1208927	XC40E-1801A0A0CBA0	1208993

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	XC40S-0303A0A00AA0	1204061	XC40E-0303A0A0CBA0	1204155
450 mm	XC40S-0403A0A00AA0	1208853	XC40E-0403A0A0CBA0	1208878
600 mm	XC40S-0603A0A00AA0	1204068	XC40E-0603A0A0CBA0	1204157
750 mm	XC40S-0703A0A00AA0	1208855	XC40E-0703A0A0CBA0	1208894
900 mm	XC40S-0903A0A00AA0	1204071	XC40E-0903A0A0CBA0	1204159
1,050 mm	XC40S-1003A0A00AA0	1208856	XC40E-1003A0A0CBA0	1208881
1,200 mm	XC40S-1203A0A00AA0	1204118	XC40E-1203A0A0CBA0	1204161
1,350 mm	XC40S-1303A0A00AA0	1208858	XC40E-1303A0A0CBA0	1208883
1,500 mm	XC40S-1503A0A00AA0	1204119	XC40E-1503A0A0CBA0	1204163
1,650 mm	XC40S-1603A0A00AA0	1208860	XC40E-1603A0A0CBA0	1208885
1,800 mm	XC40S-1803A0A00AA0	1204112	XC40E-1803A0A0CBA0	1204165



C4000 Select with bottom extension connection and integrated LED indicator lamp (receiver only)

Usage	As a standalone system and as first system in a cascade with safety laser scanner S300 or S3000
Connection types	
System connection	Male connector M12, 5-pin
Extension connection	Female connector M12, 5-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	XC40S-0301A0A00AA0	1208918	XC40E-0301A0A0CBC0	1208994
450 mm	XC40S-0401A0A00AA0	1208825	XC40E-0401A0A0CBC0	1208995
600 mm	XC40S-0601A0A00AA0	1208919	XC40E-0601A0A0CBC0	1208996
750 mm	XC40S-0701A0A00AA0	1208920	XC40E-0701A0A0CBC0	1208997
900 mm	XC40S-0901A0A00AA0	1208921	XC40E-0901A0A0CBC0	1208998
1,050 mm	XC40S-1001A0A00AA0	1208922	XC40E-1001A0A0CBC0	1208999
1,200 mm	XC40S-1201A0A00AA0	1208923	XC40E-1201A0A0CBC0	1209000
1,350 mm	XC40S-1301A0A00AA0	1208924	XC40E-1301A0A0CBC0	1209001
1,500 mm	XC40S-1501A0A00AA0	1208925	XC40E-1501A0A0CBC0	1209002
1,650 mm	XC40S-1601A0A00AA0	1208926	XC40E-1601A0A0CBC0	1209003
1,800 mm	XC40S-1801A0A00AA0	1208927	XC40E-1801A0A0CBC0	1209004

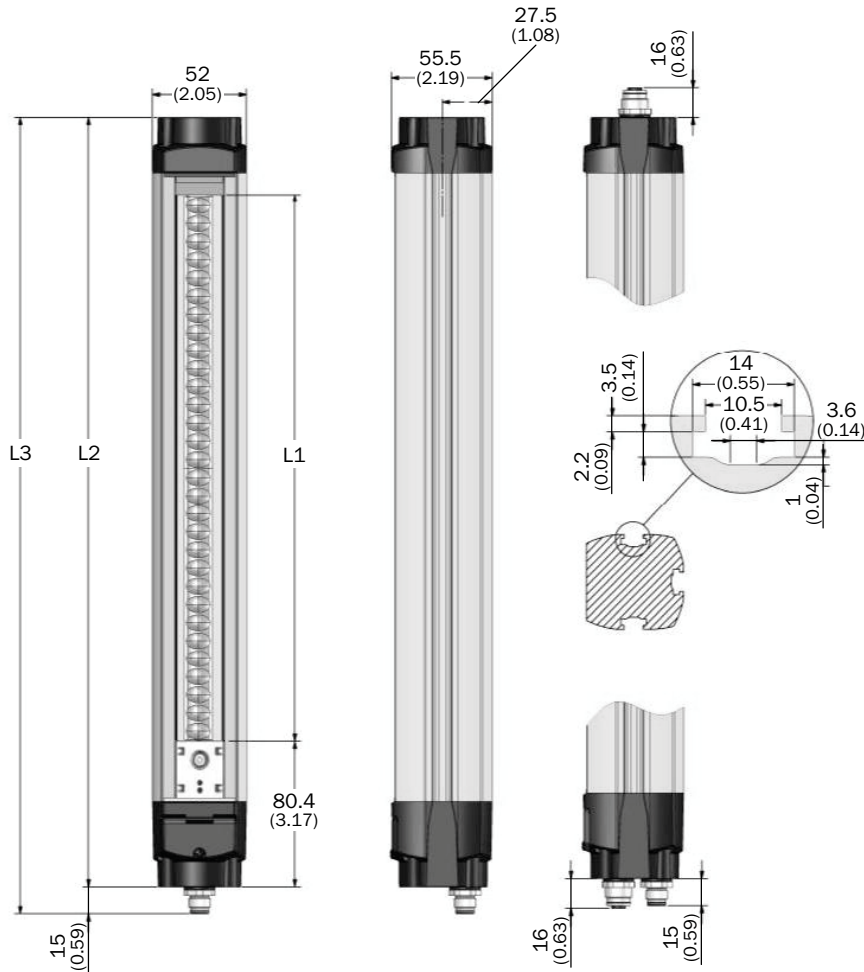
- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	XC40S-0303A0A00AA0	1204061	XC40E-0303A0A0CBC0	1204166
450 mm	XC40S-0403A0A00AA0	1208853	XC40E-0403A0A0CBC0	1208950
600 mm	XC40S-0603A0A00AA0	1204068	XC40E-0603A0A0CBC0	1204167
750 mm	XC40S-0703A0A00AA0	1208855	XC40E-0703A0A0CBC0	1208886
900 mm	XC40S-0903A0A00AA0	1204071	XC40E-0903A0A0CBC0	1204168
1,050 mm	XC40S-1003A0A00AA0	1208856	XC40E-1003A0A0CBC0	1208887
1,200 mm	XC40S-1203A0A00AA0	1204118	XC40E-1203A0A0CBC0	1204169
1,350 mm	XC40S-1303A0A00AA0	1208858	XC40E-1303A0A0CBC0	1208888
1,500 mm	XC40S-1503A0A00AA0	1204119	XC40E-1503A0A0CBC0	1204170
1,650 mm	XC40S-1603A0A00AA0	1208860	XC40E-1603A0A0CBC0	1208889
1,800 mm	XC40S-1803A0A00AA0	1204112	XC40E-1803A0A0CBC0	1204171



Dimensional drawings (Dimensions in mm (inch))

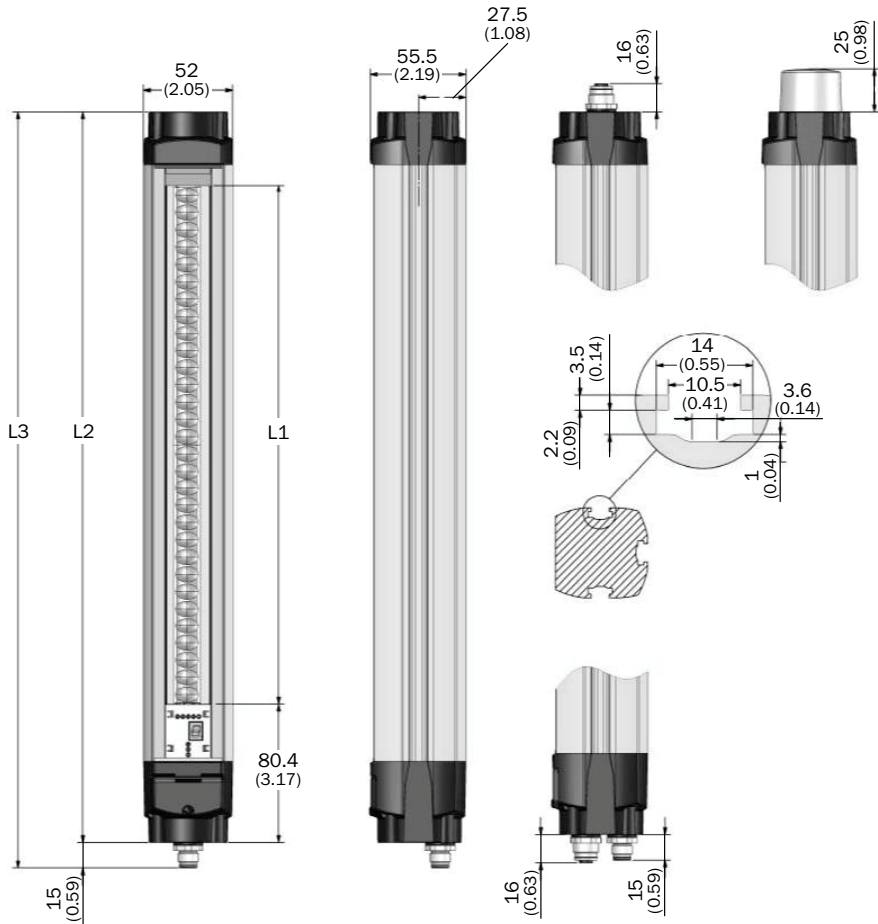
Sender



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Protective field height S	L1	L2	L3
300 (11.81)	302 (11.89)	425 (16.73)	440 (17.32)
450 (17.72)	452 (17.80)	575 (22.64)	590 (23.23)
600 (23.62)	602 (23.70)	725 (28.54)	740 (29.13)
750 (29.53)	752 (29.61)	875 (34.45)	890 (35.04)
900 (35.43)	902 (35.51)	1,025 (40.35)	1,040 (40.94)
1,050 (41.34)	1,052 (41.42)	1,175 (46.26)	1,190 (46.85)
1,200 (47.24)	1,202 (47.32)	1,325 (52.17)	1,340 (52.76)
1,350 (53.15)	1,352 (53.23)	1,475 (58.07)	1,490 (58.66)
1,500 (59.06)	1,502 (59.13)	1,625 (63.98)	1,640 (64.57)
1,650 (64.96)	1,652 (65.04)	1,775 (69.88)	1,790 (70.47)
1,800 (70.87)	1,802 (70.94)	1,925 (75.79)	1,940 (76.38)

Receiver



Protective field height S	L1	L2	L3
300 (11.81)	302 (11.89)	425 (16.73)	440 (17.32)
450 (17.72)	452 (17.80)	575 (22.64)	590 (23.23)
600 (23.62)	602 (23.70)	725 (28.54)	740 (29.13)
750 (29.53)	752 (29.61)	875 (34.45)	890 (35.04)
900 (35.43)	902 (35.51)	1,025 (40.35)	1,040 (40.94)
1,050 (41.34)	1,052 (41.42)	1,175 (46.26)	1,190 (46.85)
1,200 (47.24)	1,202 (47.32)	1,325 (52.17)	1,340 (52.76)
1,350 (53.15)	1,352 (53.23)	1,475 (58.07)	1,490 (58.66)
1,500 (59.06)	1,502 (59.13)	1,625 (63.98)	1,640 (64.57)
1,650 (64.96)	1,652 (65.04)	1,775 (69.88)	1,790 (70.47)
1,800 (70.87)	1,802 (70.94)	1,925 (75.79)	1,940 (76.38)

Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Terminal and alignment brackets
Connecting cable	2	-	→ Plug connectors and cables
Operating instructions	1	✓	-
Test rod	1	✓	→ Test and monitoring tools

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 1, mounting bracket, rigid, L-shaped, including fixing screws and washers	4 pieces	BEF-3WNGBAST4	7021352

Dimensional drawings → [page G-453](#)


Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 12, rotatable, swivel mount	4 pieces	BEF-2SMGEAKU4	2030510
	Mounting kit 2, rotatable	4 pieces	BEF-1SHABAAL4	2017751
	Mounting kit 3, rotatable, with shock-absorber	4 pieces	BEF-1SHADAAL4	2017752
	Mounting kit 6, side bracket, rotatable	4 pieces	BEF-1SHABAZN4	2019506
	Omega bracket, rotatable, fixable with only one screw, for mounting on the swivel mount, including spacer discs	4 pieces	BEF-2SMGEAAL4	2044846

Dimensional drawings → [page G-453](#)

Terminal brackets

Figure	Description	Packing unit	Type	Part no.
	Bracket, rigid, vibration absorbing, for devices with a weight > 350 g ... ≤ 1,200 g	4 pieces	BEF-3SHADAAL4S06	2055829
	Bracket, rigid, vibration absorbing, for devices with a weight > 1,200 g ... ≤ 3,000 g	4 pieces	BEF-3SHADAAL4S07	2055830
	Bracket, rigid, vibration absorbing, for devices with a weight > 3,000 g ... ≤ 4,000 g	4 pieces	BEF-3SHADAAL4S08	2055831

Device protection (mechanical)

Front screen protection

Figure	Description	Suitable for protective field height	Packing unit	Type	Part no.
 Application example	Front screen protection set (protects sensors from damage by flying sparks and welding beads), incl. sliding nuts and fastening screws	300 mm	2 pieces	Additional front screen	2033235
		600 mm	2 pieces	Additional front screen	2033237
		900 mm	2 pieces	Additional front screen	2033239
		1,200 mm	2 pieces	Additional front screen	2033241
		1,500 mm	2 pieces	Additional front screen	2033243
		1,800 mm	2 pieces	Additional front screen	2033245

Protective caps

Packing unit	Type	Part no.
1 piece	Protective cap	5311099
10 pieces	Protective cap	2019706

Other mounting accessories


Sliding nuts

Figure	Description	Packing unit	Type	Part no.
	Sliding nut set, M5, 4x, included in delivery	4 pieces	Sliding nuts	2017550
	Suitable for PNS75 and PNS125	6 pieces	Sliding nuts for deflector mirror	2030600

Connection systems


Plug connectors and cables

Connecting cables with female connector


Figure	Connection type		Model	Conductor cross-section	Cable length	Type	Part no.
 Illustration may differ	Female connector, M12, 5-pin, straight	Cable	Unshielded	-	30 m	Connecting cable	6032956
			PVC, unshielded	0.34 mm ²	2 m	DOL-1205-G02M	6008899
					5 m	DOL-1205-G05M	6009868
					10 m	DOL-1205-G10M	6010544
					15 m	DOL-1205-G15M	6029215

Connecting cables with male connector

- **Model:** PUR, halogen-free, unshielded


Figure	Connection type		Conductor cross-section	Cable length	Type	Part no.
	Male connector, M12, 5-pin, straight	Cable	0.34 mm ²	2 m	Connecting cable	6026133
				5 m	Connecting cable	6026134
				10 m	Connecting cable	6026135

Connection cables with female connector and male connector


Figure	Connection type		Model	Cable length	Type	Part no.
	-	-	Unshielded	2 m	Connecting cable	2044610
				5 m	Connecting cable	2044611
				10 m	Connecting cable	2044612
				15 m	Connecting cable	2044613
				30 m	Connecting cable	2044614
	Female connector, M12, 5-pin, straight	Male connector, M12, 5-pin, straight	PUR, halogen-free, unshielded	1 m	DSL-1205-G01MC	6029280
				2 m	DSL-1205-G02MC	6025931
				5 m	DSL-1205-G05MC	6029282

Adapters and distributors

T-junctions

Figure	Description	Type	Part no.
	T-distributor for simultaneous connection to sender and receiver, splits the cable from the control cabinet between the sender and receiver, 5-pin	DSC-1205T000025KM0	6030664


Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

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Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741

Deflector mirrors


- **Mirror material:** glass

Figure	Description	Items supplied	Suitable for protective field height	Type	Part no.
	Horizontal deflection	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS125-034	1019425
			150 mm ... 600 mm	PNS125-064	1019427
			150 mm ... 900 mm	PNS125-094	1019429
			150 mm ... 1,200 mm	PNS125-124	1019431
			150 mm ... 1,500 mm	PNS125-154	1019433
			150 mm ... 1,800 mm	PNS125-184	1019435
			150 mm ... 300 mm	PNS75-034	1019414
			150 mm ... 600 mm	PNS75-064	1019416
			150 mm ... 900 mm	PNS75-094	1019418
			150 mm ... 1,200 mm	PNS75-124	1019420
			150 mm ... 1,500 mm	PNS75-154	1019422
			150 mm ... 1,800 mm	PNS75-184	1019424


Dimensional drawings → [page G-456](#)

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
	14 mm diameter	Test rod 14 mm	2022599
	30 mm diameter	Test rod 30 mm	2022602
	Test rod holder	BEF-3WNAAAAL1	2052249


Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> • Freestanding mounting solution with external grooves for installing additional accessories • Compact, rugged design with high reliability • Easy mounting and adjustment • Device protection against external influences • Large reflector surface for efficient multi-sided protection via beam deflection • Universally applicable for multiple light beam safety devices and safety light curtains 	<p>→ page K-664</p>

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	<p>→ page L-690</p>

ON-SITE CONNECTION OF THE MUTING SIGNALS AND HIGH RESOLUTION



CE c UL us

Additional information

Detailed technical data G-397
 Ordering information G-401
 Dimensional drawings G-403
 Connection diagrams G-405
 Recommended accessories . . . G-406

Product description

The M4000 Advanced Curtain safety light curtain, together with the UE403 muting switching amplifier, provides an efficient solution for conventional muting applications involving automatic material transport. It is ideal for applications that require high resolutions due to a short safety distance. The simple configuration via PC and the local connection of the muting signals ensure maximum availability. Various mounting adapters and innovative accessories enable flexible installation of both the

device and muting sensors. Integrated functions, as well as status and diagnostics information, ensure quick commissioning and prevent unnecessary machine downtime. The modular design allows the coordination of device features and provides a cost-effective solution for higher-level machine safety. Lastly, sens:Control devices, accessories, and service concepts provide a complete packaged solution designed specifically for the application.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Rugged housing with three mounting grooves
- 7-segment display
- Resolution 14 mm or 30 mm, scanning range up to 19 m
- External device monitoring (EDM), restart interlock (RES), application diagnostic output (ADO), and SDL interface
- Beam coding for correct system allocation
- Muting: on-site connection and processing in combination with the UE403 muting switching amplifier
- Configuration and diagnostics via PC

Your benefits

- High resolution (14 mm/30 mm) reduces the safety distances for access protection – both with and without muting
- The robust housing and high power reserve enable reliable use, even in harsh ambient conditions
- Mounting grooves on three housing sides ensure more flexibility in the installation and simplify machine integration
- User-friendly interfaces and status indicators facilitate commissioning and maintenance
- On-site connection of the muting signals on the UE403 muting switching amplifier minimizes the time spent laying cables and facilitates commissioning procedures and maintenance
- Reduced downtimes through all-around-visible LED and diagnostics displays as well as configuration memory in the UE403 muting switching amplifier

→ www.sick.com/M4000_Advanced_Curtain

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

M4000 Advanced Curtain

Features

	Resolution 14 mm	Resolution 30 mm
Protective field height	300 mm ... 1,800 mm (depending on type)	
Scanning range	0 m ... 8 m	0 m ... 19 m
Response time	With beam coding ≤ 12 ms ... ≤ 21 ms (depending on type) Without beam coding ≤ 10 ms ... ≤ 13 ms (depending on type)	
Synchronization	Optical synchronisation	

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH _D (mean probability of a dangerous failure per hour)	2.8 x 10 ⁻⁸ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	Activated
External device monitoring (EDM)	✓	Activated
Beam coding	✓	Non-coded
Configurable application diagnostic output	✓	Contamination (OWS)
Sender test	✓	Deactivated
Configurable scanning range	✓	2.5 m / 6 m (depending on type)
Safe SICK device communication via EFI	✓	

Functions in combination with UE403

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Concurrence monitoring	✓	–
Monitoring of total muting time	✓	–
Sensor gap monitoring	✓	–
Belt stop	✓	–
Muting with override	✓	–
Exit monitoring	✓	–
End of muting by ESPE	✓	–

Interfaces

	Sender	Receiver
System connection		
Connection type	Hirschmann male connector M26, 12-pin	
Permitted cable length	≤ 50 m ¹⁾	
Permitted cross-section	≥ 0.75 mm ²	
Extension connection		
Connection type	-	Male connector M12, 5-pin
Configuration connection		
Connection type	-	Female connector M8, 4-pin
Configuration method	PC with CDS (Configuration and Diagnostic Software)	
Display elements	7-segment display	
Status display	LEDs	
Fieldbus, industrial network		
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ²⁾	
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ³⁾	

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

³⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_s	24 V (19.2 V ... 28.8 V) ¹⁾	
Residual ripple	≤ 10 %	
Power consumption	≤ 0.2 A	≤ 0.6 A ²⁾
Safety outputs (OSSD)		
Type of output	-	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ³⁾
Switching voltage HIGH	-	24 V DC (UV - 2,25 V ... UV)
Switching voltage LOW	-	2 V DC
Switching current	-	0 mA ... 500 mA
Diagnostic outputs		
Switching voltage HIGH	-	24 V DC (UV - 4,2 V ... UV)
Switching voltage LOW	-	High resistance
Switching current	-	0 mA ... 100 mA

¹⁾ The external voltage supply of the devices must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 602041. Suitable power supplies are available as accessories from SICK.

²⁾ Without load.

³⁾ Applies to the voltage range between -30 V and +30 V.

Mechanical data

Housing cross-section	52 mm x 55.5 mm
Housing material	Aluminum alloy ALMGSI 0.5
Surface treatment	Powder coated
Front screen material	Polycarbonate, scratch-resistant coating

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-30 °C ... +55 °C
Storage temperature	-30 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (EN 60068-2-29)

Other information

Wave length	950 nm
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UE403 muting switching amplifier

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH _D (mean probability of a dangerous failure per hour)	1.0 x 10 ⁻⁸ (EN ISO 13849) ¹⁾
T _M (mission time)	20 years (EN ISO 13849) ¹⁾

¹⁾ Only in conjunction with M4000 Advanced, M4000 Advanced A/P and M4000 Advanced Curtain.

Functions

Concurrence monitoring	✓
Monitoring of total muting time	✓
Sensor gap monitoring	✓
Belt stop	✓
Muting with override	✓
Exit monitoring	✓
End of muting by ESPE	✓

Interfaces

Connection type	Female connector M12, 5-pin
Permitted cable length	≤ 10 m
Diagnostic display	LEDs



Electrical data

Protection class	III (EN 50178)
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾
Power consumption	≤ 2 A
Inputs: override, reset, C1, belt stop, muting sensors	
Switching voltage HIGH	24 V DC (11 V DC ... 30 V DC)
Switching voltage LOW	0 V DC (-30 V DC ... 5 V DC)
Input current HIGH	6 mA ... 15 mA
Input current LOW	-0.5 mA ... 1.5 mA
Outputs: voltage supply for reset, override, C1	
Supply voltage	24 V DC (15 V DC ... 28.8 V DC)
Output current	≤ 400 mA ²⁾
Outputs: muting sensors	
Supply voltage	24 V DC (15 V DC ... 28.8 V DC)
Output current	≤ 500 mA ²⁾
Muting lamp	
Output current HIGH (monitored)	20 mA ... 400 mA ³⁾
Output current HIGH (not monitored)	0 mA ... 400 mA ³⁾

¹⁾ Via connected ESPE.

²⁾ Total of all supply currents from the connections RES/OVR, A1, A2, B1 and B2 (pin 1 in each case): max. 1000 mA.

³⁾ At max. 5 W power consumption.

Mechanical data

Mounting	Flexible mounting to the M4000 Advanced or directly in the system
Dimensions (W x H x D)	76.5 mm x 225.2 mm x 40 mm
Housing material	Aluminum die cast, powder coated
Material, connector strip	Polyamide
Weight	600 g

Ambient data

Enclosure rating	IP 65 (IEC 60529)
Ambient operating temperature	-30 °C ... +55 °C
Storage temperature	-30 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Ordering information

Items supplied M4000 Advanced Curtain:

- Safety light curtain consisting of a sender and a receiver
- 8 sliding nuts for side mounting
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

M4000 Advanced Curtain

Usage	As a standalone system
Connection types	
System connection	Hirschmann male connector M26, 12-pin
Extension connection	Male connector M12, 5-pin
Configuration connection	Female connector M8, 4-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	M40S-60A503AA0	1203262	M40E-60A503RB0	1203263
450 mm	M40S-61A503AA0	1203264	M40E-61A503RB0	1203265
600 mm	M40S-62A503AA0	1203266	M40E-62A503RB0	1203267
750 mm	M40S-63A503AA0	1203240	M40E-63A503RB0	1203241
900 mm	M40S-64A503AA0	1203268	M40E-64A503RB0	1203269
1,050 mm	M40S-65A503AA0	1203270	M40E-65A503RB0	1203271
1,350 mm	M40S-67A503AA0	1203274	M40E-67A503RB0	1203275
1,200 mm	M40S-66A503AA0	1203272	M40E-66A503RB0	1203273
1,500 mm	M40S-68A503AA0	1203276	M40E-68A503RB0	1203277
1,650 mm	M40S-69A503AA0	1203278	M40E-69A503RB0	1203279
1,800 mm	M40S-70A503AA0	1203250	M40E-70A503RB0	1203280

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	M40S-60A303AA0	1201570	M40E-60A303RB0	1201572
450 mm	M40S-61A303AA0	1201127	M40E-61A303RB0	1201214
600 mm	M40S-62A303AA0	1201463	M40E-62A303RB0	1201464
750 mm	M40S-63A303AA0	1201571	M40E-63A303RB0	1201573
900 mm	M40S-64A303AA0	1201441	M40E-64A303RB0	1201442
1,050 mm	M40S-65A303AA0	1201482	M40E-65A303RB0	1201483
1,200 mm	M40S-66A303AA0	1201036	M40E-66A303RB0	1201035
1,350 mm	M40S-67A303AA0	1203236	M40E-67A303RB0	1203242
1,500 mm	M40S-68A303AA0	1203237	M40E-68A303RB0	1203243
1,650 mm	M40S-69A303AA0	1203238	M40E-69A303RB0	1203244
1,800 mm	M40S-70A303AA0	1203239	M40E-70A303RB0	1203245

M4000 Advanced Curtain includes end cap with integrated LED

Usage	As a standalone system
Connection types	
System connection	Hirschmann male connector M26, 12-pin
Extension connection	Male connector M12, 5-pin
Configuration connection	Female connector M8, 4-pin

- **Resolution:** 14 mm
- **Scanning range:** 0 m ... 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	M40S-60A503AAO	1203262	M40E-60A523RBO	1205622
450 mm	M40S-61A503AAO	1203264	M40E-61A523RBO	1205623
600 mm	M40S-62A503AAO	1203266	M40E-62A523RBO	1205625
750 mm	M40S-63A503AAO	1203240	M40E-63A523RBO	1205303
900 mm	M40S-64A503AAO	1203268	M40E-64A523RBO	1205626
1,050 mm	M40S-65A503AAO	1203270	M40E-65A523RBO	1205627
1,200 mm	M40S-66A503AAO	1203272	M40E-66A523RBO	1204827
1,350 mm	M40S-67A503AAO	1203274	M40E-67A523RBO	1205628
1,500 mm	M40S-68A503AAO	1203276	M40E-68A523RBO	1203511
1,650 mm	M40S-69A503AAO	1203278	M40E-69A523RBO	1205629
1,800 mm	M40S-70A503AAO	1203250	M40E-70A523RBO	1204828

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 19 m

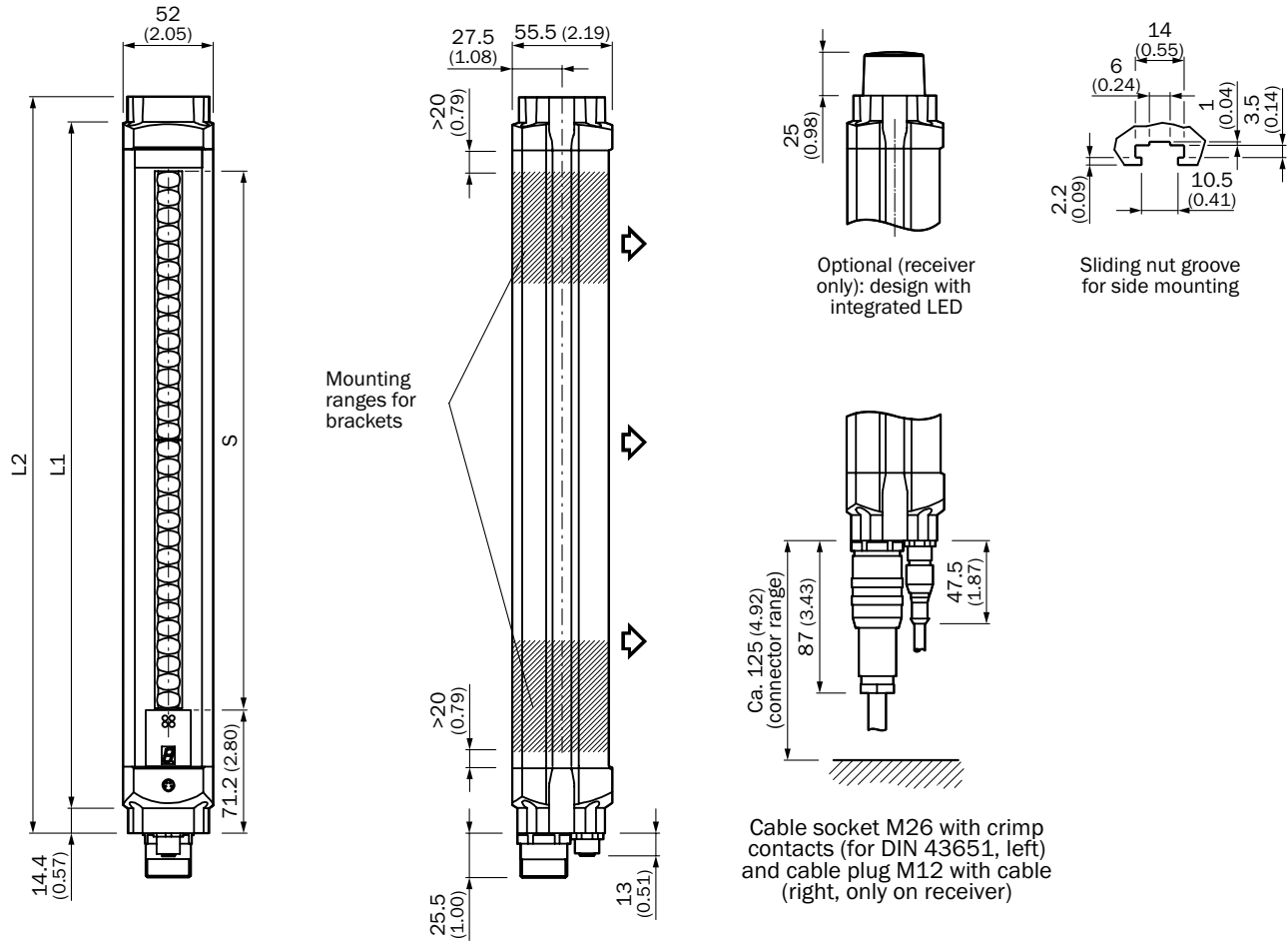
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Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	M40S-60A303AAO	1201570	M40E-60A323RBO	1205630
450 mm	M40S-61A303AAO	1201127	M40E-61A323RBO	1205631
600 mm	M40S-62A303AAO	1201463	M40E-62A323RBO	1204362
750 mm	M40S-63A303AAO	1201571	M40E-63A323RBO	1205392
900 mm	M40S-64A303AAO	1201441	M40E-64A323RBO	1204680
1,050 mm	M40S-65A303AAO	1201482	M40E-65A323RBO	1205632
1,200 mm	M40S-66A303AAO	1201036	M40E-66A323RBO	1204764
1,350 mm	M40S-67A303AAO	1203236	M40E-67A323RBO	1205633
1,500 mm	M40S-68A303AAO	1203237	M40E-68A323RBO	1204598
1,650 mm	M40S-69A303AAO	1203238	M40E-69A323RBO	1205634
1,800 mm	M40S-70A303AAO	1203239	M40E-70A323RBO	1204829

UE403 muting switching amplifier

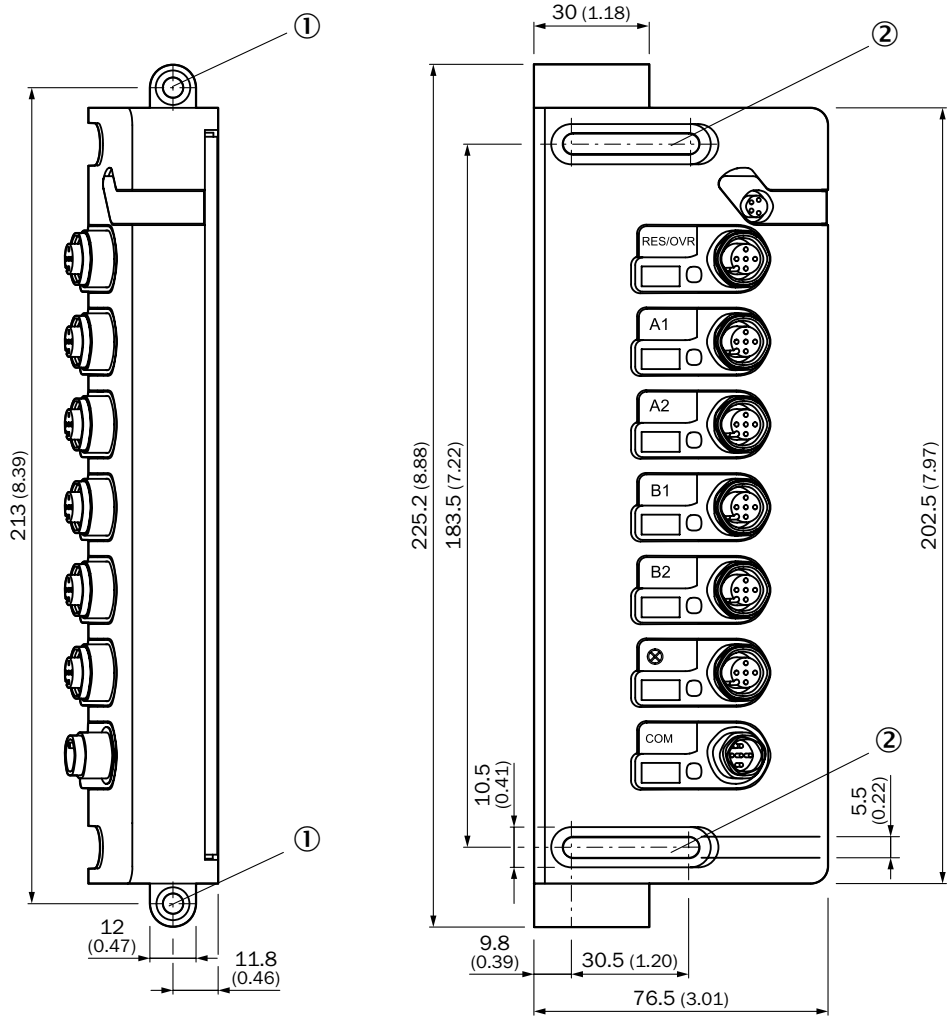
Description	Type	Part no.
UE403 muting switching amplifier	UE403-A0930	1026287

Dimensional drawings (Dimensions in mm (inch))

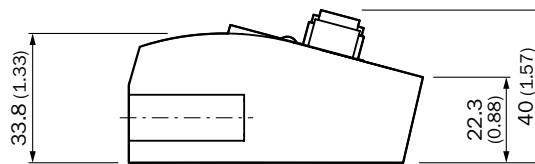


Protective field height S	L1	L2
300 (11.81)	387 (15.24)	416 (16.38)
450 (17.72)	537 (21.14)	566 (22.28)
600 (23.62)	687 (27.05)	716 (28.19)
750 (29.53)	837 (32.95)	866 (34.09)
900 (35.43)	987 (38.86)	1,016 (40.00)
1,050 (41.34)	1,137 (44.76)	1,166 (45.91)
1,200 (47.24)	1,287 (50.67)	1,316 (51.81)
1,350 (53.15)	1,437 (56.57)	1,466 (57.72)
1,500 (59.06)	1,587 (62.48)	1,616 (63.62)
1,650 (64.96)	1,737 (68.39)	1,766 (69.53)
1,800 (70.87)	1,887 (74.29)	1,916 (75.43)

UE403 muting switching amplifier

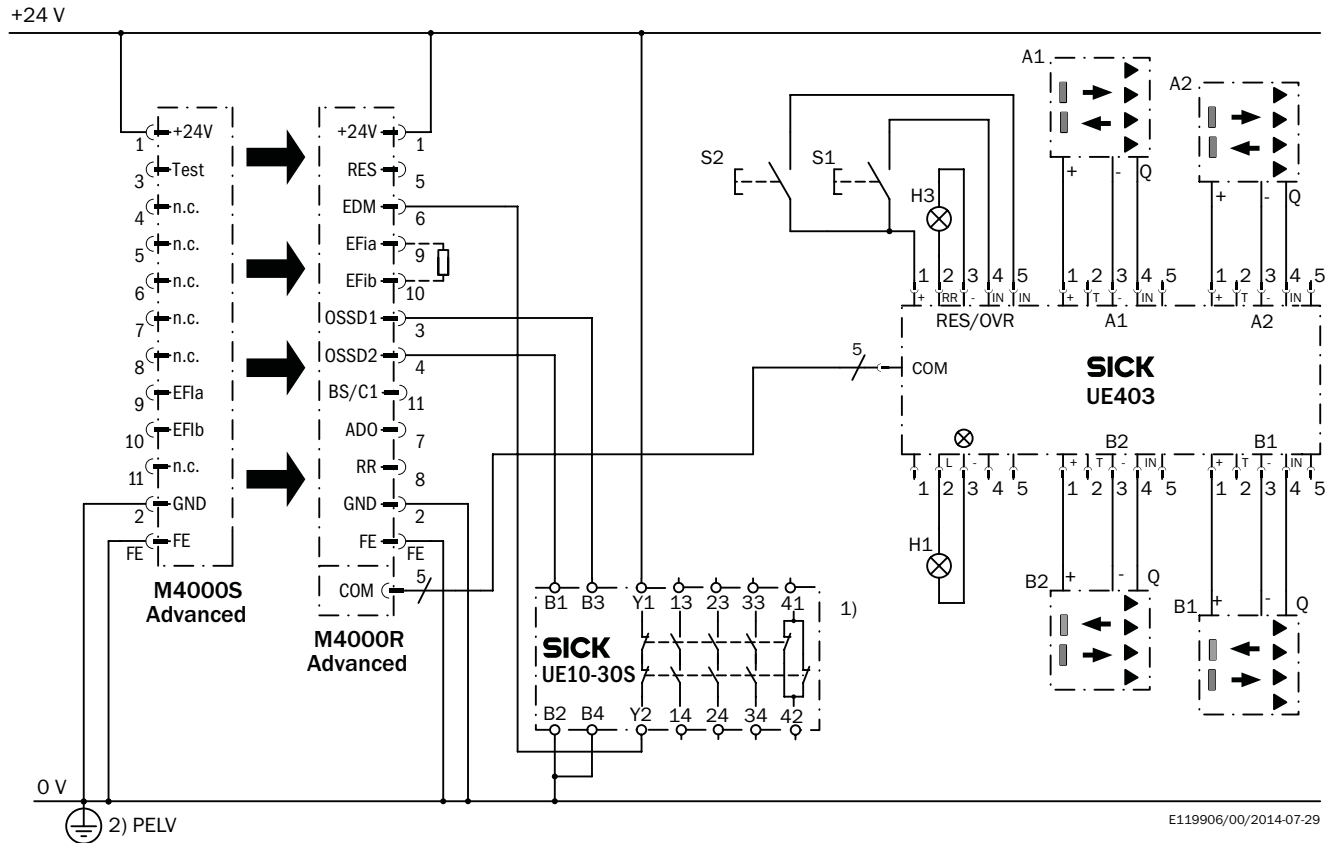


Note:
The fixing holes ① and slots ② are suitable for cheese head screws M5 x 30 as per DIN EN ISO 4762.



Connection diagrams

M4000 Advanced with UE403 switching amplifier connected to UE10-30S safety relay



E119906/00/2014-07-29

Task

Connection of an M4000 Advanced Curtain safety light curtain with UE403 switching amplifier to a UE10-30S safety relay. Muting with 4 photoelectric reflex switches (dark-switching, PNP).

Operating mode: with restart interlock and external device monitoring.

Operating characteristics

When the light path is clear and the UE10-30S is de-energized and functioning correctly, the yellow LED on the receiver and the H3 lamp flash. The system is ready for switch-on and waits for an input signal/switch-on signal. The system is enabled by pressing and releasing the S1 button. The OSSD1 and OSSD2 outputs are live and the UE10-30S is switched on. Upon interruption of one or several of the light beams, the UE10-30S is de-energized by the OSSD1 and OSSD2 outputs.

Muting and override

When the light path is clear and the muting input conditions are valid, muting starts. The H1 muting lamp illuminates. Different time and monitoring functions can be configured. When the light path is interrupted and muting sensors are active, e.g., because of muting errors or a new power on, override is enabled by pressing and releasing the S2 button.

Fault analysis

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The erroneous behavior of the UE10-30S will be detected. The shutdown function is retained. On manipulation (e.g., jamming) of the S1 button, the system does not enable the output current circuits.

The failure of one muting sensor will be detected by the muting sequence, and prohibit a new muting cycle. On manipulation (e.g., jamming) of the S2 button, the system does not enable override. A permanent use of the override function will be inhibited through the device.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

²⁾ PELV in accordance with the requirements in EN 60204-1 / 6.4

Take note of the operating instructions of the integrated devices. This applies particularly to the use of configurable functions.

Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates → Terminal and alignment brackets
Connecting cable	2	-	→ Plug connectors and cables
UE403 muting switching amplifier	1	-	-
UE403 connection cable	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-
Test rod	1	✓	→ Test and monitoring tools

Recommended accessories

Mounting systems

Mounting brackets and mounting plates



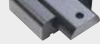


Mounting brackets

Figure	Description	Packing unit	Type	Part no.	M4000	UE403
	Mounting kit 1, mounting bracket, rigid, L-shaped, including fixing screws and washers	4 pieces	BEF-3WNGBAST4	7021352	●	-

Dimensional drawings → [page G-458](#)

Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.	M4000	UE403
	Mounting kit 12, rotatable, swivel mount	4 pieces	BEF-2SMGEAKU4	2030510	●	-
	Mounting kit 2, rotatable	4 pieces	BEF-1SHABAAL4	2017751	●	-
	Mounting kit 3, rotatable, with shock-absorber	4 pieces	BEF-1SHADAAL4	2017752	●	-
	Mounting kit 6, side bracket, rotatable	4 pieces	BEF-1SHABAZN4	2019506	●	-
	Omega bracket, rotatable, fixable with only one screw, for mounting on the swivel mount, including spacer discs	4 pieces	BEF-2SMGEAAL4	2044846	●	-

Dimensional drawings → [page G-458](#)

Terminal brackets

Figure	Description	Packing unit	Type	Part no.	M4000	UE403
	Bracket, rigid, vibration absorbing, for devices with a weight > 350 g ... ≤ 1,200 g	4 pieces	BEF-3SHADAAL4S06	2055829	●	-
	Bracket, rigid, vibration absorbing, for devices with a weight > 1,200 g ... ≤ 3,000 g	4 pieces	BEF-3SHADAAL4S07	2055830	●	-
	Bracket, rigid, vibration absorbing, for devices with a weight > 3,000 g ... ≤ 4,000 g	4 pieces	BEF-3SHADAAL4S08	2055831	●	-

Device protection (mechanical)

Front screen protection

Figure	Description	Suitable for protective field height	Packing unit	Type	Part no.	M4000	UE403
 Application example	Front screen protection set (protects sensors from damage by flying sparks and welding beads), incl. sliding nuts and fastening screws	300 mm	2 pieces	Additional front screen	2033235	●	-
		450 mm	2 pieces	Additional front screen	2033236	●	-
		600 mm	2 pieces	Additional front screen	2033237	●	-
		750 mm	2 pieces	Additional front screen	2033238	●	-
		900 mm	2 pieces	Additional front screen	2033239	●	-
		1,050 mm	2 pieces	Additional front screen	2033240	●	-
		1,200 mm	2 pieces	Additional front screen	2033241	●	-
		1,350 mm	2 pieces	Additional front screen	2033242	●	-
		1,500 mm	2 pieces	Additional front screen	2033243	●	-
		1,650 mm	2 pieces	Additional front screen	2033244	●	-
1,800 mm	2 pieces	Additional front screen	2033245	●	-		

Protective caps

Figure	Description	Type	Part no.	M4000	UE403
	Protective cap for device socket, M12 x 1	Protective cap	6011170	-	●

Other mounting accessories

Sliding nuts


Figure	Description	Packing unit	Type	Part no.	M4000	UE403
	Fastening screws with sliding nuts, Included in delivery	2 pieces	Fixing screws	2033250	-	●
	Sliding nut set, M5, 4x, included in delivery	4 pieces	Sliding nuts	2017550	●	-
	Suitable for PNS75 and PNS125	6 pieces	Sliding nuts for deflector mirror	2030600	●	-

Connection systems

Plug connectors and cables


Connecting cables with female connector

- **Model:** PVC, unshielded

Figure	Connection type		Description	Conductor cross-section	Cable length	Type	Part no.	M4000	UE403
	Female connector, M26, 12-pin, straight	Cable	-	0.75 mm ²	2.5 m	DOL-0612G2M5075KM0	2022544	●	-
					5 m	DOL-0612G05M075KM0	2022545	●	-
					7.5 m	DOL-0612G7M5075KM0	2022546	●	-
					10 m	DOL-0612G10M075KM0	2022547	●	-
					15 m	DOL-0612G15M075KM0	2022548	●	-
					20 m	DOL-0612G20M075KM0	2022549	●	-
					30 m	DOL-0612G30M075KM0	2022550	●	-
			50 m	DOL-0612G50MD75KM0	2033548	●	-		
			Without EFI: Pin 9 and 10 not connected	0.75 mm ²	5 m	DOL-0610G05M075KM1	2046888	●	-
					7.5 m	DOL-0610G7M5075KM5	2044042	●	-
					10 m	DOL-0610G10M075KM1	2046889	●	-
					20 m	DOL-0610G20M075KM1	2046890	●	-

Connecting cables with male connector

- **Model:** PUR, halogen-free, unshielded

Figure	Connection type		Conductor cross-section	Cable length	Type	Part no.	M4000	UE403
	Male connector, M12, 5-pin, straight	Cable	0.34 mm ²	2 m	Connecting cable	6026133	-	●
				5 m	Connecting cable	6026134	-	●
				10 m	Connecting cable	6026135	-	●

Connection cables with female connector and male connector



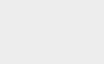
Figure	Connection type		Description	Model	Cable length	Type	Part no.	M4000	UE403
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	For connecting the configuration connection to the serial interface of a PC	PVC, unshielded	2 m	DSL-8D04G02M025KM1	6021195	●	●
					10 m	DSL-8D04G10M025KM1	2027649	●	●
	Female connector, M12, 3-pin, angled	Male connector, M12, 3-pin, straight	Pin 2 (connector) not connected	PUR, halogen-free, unshielded	1 m	DSL-1203B01MC34KM1	6026106	●	●
					2 m	DSL-1203B02MC34KM1	6026107	●	●
					5 m	DSL-1203B05MC34KM2	6025118	●	●
	Female connector, M12, 4-pin, angled	Male connector, M12, 4-pin, straight	-	PUR, halogen-free	1 m	DSL-1204B01MC34KM0	6025974	●	●
					2 m	DSL-1204B02MC34KM0	6025975	●	●
					5 m	DSL-1204B05MC34KM1	6025087	●	●

Figure	Connection type		Description	Model	Cable length	Type	Part no.	M4000	UE403
	Female connector, M12, 4-pin, angled	Male connector, M12, 4-pin, straight	Pin 4 (connector) rotated to pin 2 (female connector), pin 2 (connector) not connected	PUR, halogen-free, unshielded	1 m	DSL-1204B01MC34KM2	6025944	●	●
					2 m	DSL-1204B02MC34KM2	6025945	●	●
					5 m	DSL-1204B05MC34KM2	6025116	●	●
	Female connector, M12, 5-pin, straight	Male connector, M12, 5-pin, straight	-	PUR, halogen-free, unshielded	0.6 m	DSL-1205-G0M6C	6025930	●	●
					1 m	DSL-1205-G01MC	6029280	●	●
					1.5 m	DSL-1205-G1M5C	6029281	●	●
					2 m	DSL-1205-G02MC	6025931	●	●
					5 m	DSL-1205-G05MC	6029282	●	●
	Female connector, M26, 12-pin, straight	Male connector, M26, 12-pin, straight	-	PUR, halogen-free	1 m	DSL-6182G01M034KM1	2072829	●	-

Connection cables with male connector and male connector



- **Model:** PVC, unshielded

Figure	Connection type		Description	Cable length	Type	Part no.	M4000	UE403
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396	●	-
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574	●	●
				10 m	DSL-8U04G10M025KM1	6034575	●	●

Female connectors (ready to assemble)


Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.	M4000	UE403
	Female connector, M12, 4-pin, angled, screw-type terminals	$\leq 0.75 \text{ mm}^2$	3 mm ... 6.5 mm	DOS-1204-W	6007303	-	●
	Female connector, M12, 4-pin, straight, cutting technology	$\leq 0.75 \text{ mm}^2$	3.5 mm ... 6 mm	DOS-1204-GQU6	6042088	-	●
			4 mm ... 7.5 mm	DOS-1204-GQU8	6053328	-	●
	Female connector, M26, 12-pin, angled, crimp contacts	$0.5 \text{ mm}^2 \dots 1.5 \text{ mm}^2$	-	DOS-0612W000GA3KM0	6020758	●	-
	Female connector, M26, 12-pin, straight, crimp contacts	$0.5 \text{ mm}^2 \dots 1.5 \text{ mm}^2$	-	DOS-0612G000GA3KM0	6020757	●	-

Male connectors (ready to assemble)

Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.	M4000	UE403
	Male connector, M12, 4-pin, straight	$\leq 0.75 \text{ mm}^2$	3 mm ... 6.5 mm	STE-1204-GQU6	6042089	-	●
	Male connector, M12, 4-pin, straight, screw-type terminals	$\leq 0.75 \text{ mm}^2$	4 mm ... 6 mm	STE-1204-G	6009932	-	●
	Male connector, M12, 5-pin, straight, A-coded, Spring-cage connection	0.14 mm ² ... 0.5 mm ²	4 mm ... 8 mm	STE-1205-GFE	6044999	-	●






Adapters and distributors

Other adapters and distributors


Figure	Description	Type	Part no.	M4000	UE403
	Terminal with 182 Ohm resistance, for pin 9 and 10 on the system connection, to improve the EMC behaviour if the EFI interface is not used	Terminal with 182 Ohm resistance	2027227	●	-

Modules and gateways

EFI gateways



Figure	Description	Type	Part no.	M4000	UE403
	CANopen	UE1940-I220000	1040397	●	-
	Ethernet TCP/IP	UE1840-22H0000	1029100	●	-
	PROFIBUS DP	UE1140-22I0000	1029099	●	-
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098	●	-
	PROFINET PROFI-safe	UE4740-22H0000	1046978	●	-

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.	M4000	UE403
	100 V AC ... 240 V AC	24 V DC	$\leq 2.1 \text{ A}$	PS50WE24V	7028789	●	-
			$\leq 3.9 \text{ A}$	PS95WE24V	7028790	●	-



Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.	M4000	UE403
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741	●	-
	Adapter AR60 for M4000 and M4000 Curtain	Adapter AR60, M4000	4040006	●	-

Deflector mirrors

- **Description:** horizontal deflection

Figure	Mirror material	Items supplied	Suitable for protective field height	Type	Part no.	M4000	UE403
	Glass	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS125-034	1019425	●	-
			150 mm ... 450 mm	PNS125-049	1019426	●	-
			150 mm ... 600 mm	PNS125-064	1019427	●	-
			150 mm ... 750 mm	PNS125-079	1019428	●	-
			150 mm ... 900 mm	PNS125-094	1019429	●	-
			150 mm ... 1,050 mm	PNS125-109	1019430	●	-
			150 mm ... 1,200 mm	PNS125-124	1019431	●	-
			150 mm ... 1,350 mm	PNS125-139	1019432	●	-
			150 mm ... 1,500 mm	PNS125-154	1019433	●	-
			150 mm ... 1,650 mm	PNS125-169	1019434	●	-
	Stainless steel	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS75-034	1019414	●	-
			150 mm ... 450 mm	PNS75-049	1019415	●	-
			150 mm ... 600 mm	PNS75-064	1019416	●	-
			150 mm ... 750 mm	PNS75-079	1019417	●	-
	Glass	Incl. mounting kit swivel mount	150 mm ... 750 mm	PNS75-079S05	1046075	●	-
			150 mm ... 900 mm	PNS75-094	1019418	●	-
			150 mm ... 1,050 mm	PNS75-109	1019419	●	-
			150 mm ... 1,200 mm	PNS75-124	1019420	●	-
			150 mm ... 1,350 mm	PNS75-139	1019421	●	-
			150 mm ... 1,500 mm	PNS75-154	1019422	●	-
150 mm ... 1,650 mm	PNS75-169	1019423	●	-			
150 mm ... 1,800 mm	PNS75-184	1019424	●	-			


Dimensional drawings → [page G-459](#)

Further accessories

Test and monitoring tools

Figure	Description	Type	Part no.	M4000	UE403
	14 mm diameter	Test rod 14 mm	2022599	●	-
	30 mm diameter	Test rod 30 mm	2022602	●	-
	Test rod holder	BEF-3WNAAL1	2052249	●	-

Programming and configuration tools

Figure	Description	Suitable for	Type	Part no.	M4000	UE403
	Clone Plug to save and transfer configurations, IP 41, with lithium coin cell CR2032, 3.0 V	C4000 Standard, C4000 Advanced, C4000 Palletizer, C4000 Entry/Exit, C4000 Fusion, M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, M4000 Area	PLUG1-0C00100	1029665	●	-
	Wall-mounting bracket for mounting Clone Plug and Host-Guest Plug	-	Wall-mounting bracket	5318443	●	-

Muting accessories







Figure	Description	Suitable for	Items supplied	Type	Part no.	M4000	UE403
 Illustration may differ	-	-	Inclusive male connector M12 and connection cable (2 m), mounting bracket and mounting kit	Muting indicator lamp	2033118	-	●
			Inclusive male connector M12 and connection cable (10 m), mounting bracket and mounting kit	Muting indicator lamp	2033119	-	●
	Cross muting (2 sensors), muting sensor brackets for mounting on M4000 housing profile or device columns with external mounting grooves	M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, PU3Hxx	2 x muting arm active: 2 x WL100-P1429 pre-mounted together with M12 angled plug and 2 m cable; 2 x muting arm passive: 2 x reflector P250 pre-mounted	Muting arm kit M4000, 2 sensors, cross muting	2046171	●	-
	Parallel muting (2 sensors), muting sensor brackets for mounting on M4000 housing profile or device columns with external mounting grooves	M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, PU3Hxx	2 x round steel arm, 4 x universal bracket, 2 x WL280 incl. cable and male connector, 2 x reflector P250	Muting arm kit M4000, 2 sensors, parallel muting	2060157	●	-




Figure	Description	Suitable for	Items supplied	Type	Part no.	M4000	UE403
	Parallel muting (2 sensors), muting sensor brackets for mounting on M4000 housing profile or device column with external mounting grooves	M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, PU3Hxx	2 x muting arm, 2 x WL100-P1429 incl. cable and male connector, 2 x reflector P250	Muting arm kit M4000, 2 sensors, parallel muting	2060156	●	-
	Parallel muting (4 sensors), muting sensor brackets for mounting on M4000 housing profile or device columns with external mounting grooves		2 x muting arm active: 4 x WL100-P1429 pre-mounted in fixed position and M12 angled plug incl. 2 m cable	Muting arm kit M4000, 4 sensors, parallel muting	2046170	●	-
	Reset pushbutton	Muting applications with UE403	Including retaining clip and "RESET" cover	ER12-SB3C4S01	6034585	-	●

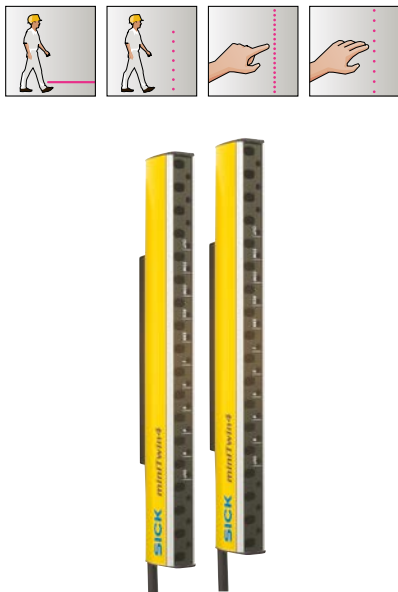
Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> Freestanding mounting solution with external grooves for installing additional accessories Compact, rugged design with high reliability Easy mounting and adjustment Device protection against external influences Large reflector surface for efficient multi-sided protection via beam deflection Universally applicable for multiple light beam safety devices and safety light curtains 	<p>→ page K-664</p>

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	<p>→ page L-690</p>

THE SMALLEST LIGHT CURTAIN WITH THE HIGHEST PROTECTION LEVEL, PL E



CE cULus

Additional information

Detailed technical data G-415
 Ordering informationG-417
 Dimensional drawing G-423
 Recommended accessories . . . G-424

Product description

The miniTwin4 safety light curtain is the smallest electro-sensitive protective device of its kind. It is mainly used at hazardous points for finger and hand protection. The miniTwin, which is based on a twin stick design, combines the technologies of both sender and receiver into one compact housing unit. Whether it is used as a stand-alone device or it is cascaded with other miniTwin light curtains, the miniTwin4 enables machine access protection

up to the highest safety level, PL e. Protective field heights, in 60-mm increments, from 120 mm to 1,200 mm are available and it is possible to cascade up to three systems. Commissioning, which is almost completely automatic, requires no software. This along with the bracket sets saves valuable installation time. The miniTwin4 offers a modern, industrial design that combines an intuitive operating system with sustainable optics.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Compact cross section (15 mm x 32 mm) with no dead zones
- Cascadable twin stick design – sender and receiver in a single housing
- Customized protective field heights in 60-mm increments from 120 mm to 1,200 mm
- Typical scanning ranges 0 m ... 5 m
- Intelligent, software-free configuration of external device monitoring (EDM) and reset function (RES)
- M12, 5-pin device connection

Your benefits

- Cost-effective machine integration: the miniature design, cascading, and fine stepping of the protective field lengths enable flexible adaptation to the machine design
- Standardization saves time and resources by making logistics, order processing, and service more straightforward
- Exemplary handling: software-free, almost fully automatic commissioning and intuitive operation with sustainable optics
- LED-guided start-up together with colored LEDs for quick alignment and unequivocal protective field visualization ensure rapid diagnostics
- A continuous protective field for cascade applications eliminates blind zones, reduces the safety distance, and thereby increases productivity
- Application-specific brackets increase mounting flexibility, while reducing the mounting time

→ www.sick.com/miniTwin4

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Resolution	14 mm / 24 mm / 34 mm (depending on type)
Protective field height	120 mm ... 1,200 mm (depending on type)
Scanning range	Minimum 0 m ... 4 m
	Typical 0 m ... 5 m
Response time	≤ 17 ms ¹⁾ (depending on type)
Synchronization	Optical, without separate synchronization

¹⁾ Standalone devices, no cascaded systems. Other response times can be found in the operating instructions.

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	Standalone system: 4.3×10^{-9} (EN ISO 13849) / cascaded systems: 1.3×10^{-8} (EN ISO 13849) (depending on type)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	Deactivated
External device monitoring (EDM)	✓	Deactivated
Beam coding	Automatic	

Interfaces

System connection	Connection type	Male connector M12, 5-pin
	Cable length	160 mm / 350 mm / 700 mm (depending on type)
	Permitted cable length	≤ 20 m ¹⁾
	Conductor cross-section	0.34 mm ²
Extension connection	Connection type	Female connector M12, 5-pin
	Cable length	160 mm / 350 mm / 700 mm (depending on type)
Configuration method	Hard wired	
Display elements	LEDs	
Fieldbus, industrial network	Integration via Flexi Soft safety controller	
	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾	

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	III (EN 61140)
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC)
Ripple	$\leq 10\%$ ¹⁾
Power consumption	$\leq 3\text{ A}$ ²⁾
Safety outputs (OSSD)	
Type of output	PNP semiconductors, short-circuit protected, cross-circuit monitored ³⁾
Switching voltage HIGH	24 V DC ($V_S - 2.25\text{ V DC} \dots V_S$)
Switching voltage LOW	$\leq 2\text{ V DC}$
Switching current	$\leq 300\text{ mA}$

¹⁾ Within the limits of V_S .

²⁾ Maximum power consumption of a host/guest/guest system with 1,200 mm protective field height and a resolution of 14 mm.

³⁾ Applies to the voltage range between -30 V and +30 V.

Mechanical data

Housing cross-section (incl. system connection)	15 mm x 32 mm
Housing material	Aluminum alloy ALMGSI 0.5
Weight	50 g ... 420 g (depending on type)

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-20 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (EN 60068-2-6)
Shock resistance	10 g, 16 ms (EN 60068-2-27)

Other information

Wave length	850 nm
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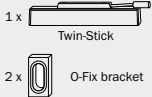
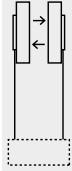


Ordering information

miniTwin4 as a standalone device

Items supplied:

- Safety light curtain, consisting of two identical twin sticks
- 2 standalone system plugs, including cable with male connector, M12, 5-pin
- 4 O-Fix brackets including 4 M5 screws (EN ISO 4762)
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

Consists of		Usage	
 <p>1 x Twin-Stick 2 x O-Fix bracket</p>	<ul style="list-style-type: none"> • Twin-Stick with standalone system plug and connecting cable with plug M12, 5-pin • 2 O-Fix brackets • Operating instructions on CD-ROM 		<ul style="list-style-type: none"> • As a standalone device

Usage	miniTwin4 as a standalone device		
Connection types			
	System connection	Male connector M12, 5-pin	
Scanning range			
	Minimum	0 m ... 4 m	
	Typical	0 m ... 5 m	

- **Resolution:** 14 mm

Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C4MT-01214ABB03BB0	1206951
	180 mm	C4MT-01814ABB03BB0	1206945
350 mm	240 mm	C4MT-02414ABB03DB0	1206954
	300 mm	C4MT-03014ABB03DB0	1206953
	360 mm	C4MT-03614ABB03DB0	1206955
	420 mm	C4MT-04214ABB03DB0	1206956
	480 mm	C4MT-04814ABB03DB0	1206957
	540 mm	C4MT-05414ABB03DB0	1206958
	600 mm	C4MT-06014ABB03FB0	1206959
700 mm	660 mm	C4MT-06614ABB03FB0	1206960
	720 mm	C4MT-07214ABB03FB0	1206961
	780 mm	C4MT-07814ABB03FB0	1206962
	840 mm	C4MT-08414ABB03FB0	1206963
	900 mm	C4MT-09014ABB03FB0	1206964
	960 mm	C4MT-09614ABB03FB0	1206965
	1,020 mm	C4MT-10214ABB03FB0	1206966
	1,080 mm	C4MT-10814ABB03FB0	1206967
	1,140 mm	C4MT-11414ABB03FB0	1206968
	1,200 mm	C4MT-12014ABB03FB0	1206969

• Resolution: 24 mm

Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C4MT-01224ABB03BB0	1207318
	180 mm	C4MT-01824ABB03BB0	1207177
350 mm	240 mm	C4MT-02424ABB03DB0	1207319
	300 mm	C4MT-03024ABB03DB0	1207320
	360 mm	C4MT-03624ABB03DB0	1207321
	420 mm	C4MT-04224ABB03DB0	1207322
	480 mm	C4MT-04824ABB03DB0	1207178
	540 mm	C4MT-05424ABB03DB0	1207323
	600 mm	C4MT-06024ABB03FB0	1207324
700 mm	660 mm	C4MT-06624ABB03FB0	1207325
	720 mm	C4MT-07224ABB03FB0	1207326
	780 mm	C4MT-07824ABB03FB0	1207327
	840 mm	C4MT-08424ABB03FB0	1207328
	900 mm	C4MT-09024ABB03FB0	1207329
	960 mm	C4MT-09624ABB03FB0	1207330
	1,020 mm	C4MT-10224ABB03FB0	1207331
	1,080 mm	C4MT-10824ABB03FB0	1207332
	1,140 mm	C4MT-11424ABB03FB0	1207180
	1,200 mm	C4MT-12024ABB03FB0	1207333

• Resolution: 34 mm

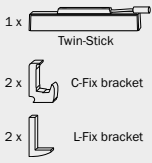
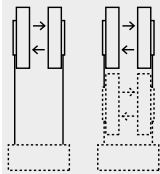
Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C4MT-01234ABB03BB0	1207334
	180 mm	C4MT-01834ABB03BB0	1207335
350 mm	240 mm	C4MT-02434ABB03DB0	1207336
	300 mm	C4MT-03034ABB03DB0	1207337
	360 mm	C4MT-03634ABB03DB0	1207338
	420 mm	C4MT-04234ABB03DB0	1207339
	480 mm	C4MT-04834ABB03DB0	1207340
	540 mm	C4MT-05434ABB03DB0	1207341
	600 mm	C4MT-06034ABB03FB0	1207342
700 mm	660 mm	C4MT-06634ABB03FB0	1207343
	720 mm	C4MT-07234ABB03FB0	1207344
	780 mm	C4MT-07834ABB03FB0	1207345
	840 mm	C4MT-08434ABB03FB0	1207346
	900 mm	C4MT-09034ABB03FB0	1207347
	960 mm	C4MT-09634ABB03FB0	1207348
	1,020 mm	C4MT-10234ABB03FB0	1207349
	1,080 mm	C4MT-10834ABB03FB0	1207350
	1,140 mm	C4MT-11434ABB03FB0	1207351
	1,200 mm	C4MT-12034ABB03FB0	1207169



miniTwin4 as a standalone device or cascade end unit

Items supplied:

- Safety light curtain, consisting of two identical twin sticks
- 2 standalone system plugs, including cable with male connector, M12, 5-pin
- 4 C-Fix brackets with L-Fix bracket including 8 M5 screws (DIN 7984/6912)
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

Consists of		Usage	
 <p>1 x Twin-Stick 2 x C-Fix bracket 2 x L-Fix bracket</p>	<ul style="list-style-type: none"> • Twin-Stick with standalone system plug and connecting cable with plug M12, 5-pin • 2 C-Fix brackets with L-Fix bracket • Operating instructions on CD-ROM 		<ul style="list-style-type: none"> • As a standalone device • As a cascade end unit

Usage	miniTwin4 as a standalone device or cascade end unit		
Connection types			
	System connection	Male connector M12, 5-pin	
Scanning range			
	Minimum	0 m ... 4 m	
	Typical	0 m ... 5 m	

- **Resolution:** 14 mm

Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C4MT-01214ABB03BE0	1207094
	180 mm	C4MT-01814ABB03BE0	1207097
350 mm	240 mm	C4MT-02414ABB03DE0	1207098
	300 mm	C4MT-03014ABB03DE0	1207099
	360 mm	C4MT-03614ABB03DE0	1207100
	420 mm	C4MT-04214ABB03DE0	1207101
	480 mm	C4MT-04814ABB03DE0	1207102
	540 mm	C4MT-05414ABB03DE0	1207103
700 mm	600 mm	C4MT-06014ABB03FE0	1207104
	660 mm	C4MT-06614ABB03FE0	1207105
	720 mm	C4MT-07214ABB03FE0	1207106
	780 mm	C4MT-07814ABB03FE0	1207107
	840 mm	C4MT-08414ABB03FE0	1207108
	900 mm	C4MT-09014ABB03FE0	1207109
	960 mm	C4MT-09614ABB03FE0	1207110
	1,020 mm	C4MT-10214ABB03FE0	1207111
	1,080 mm	C4MT-10814ABB03FE0	1207112
	1,140 mm	C4MT-11414ABB03FE0	1207113
1,200 mm	C4MT-12014ABB03FE0	1207114	

• Resolution: 24 mm

Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C4MT-01224ABB03BE0	1207222
	180 mm	C4MT-01824ABB03BE0	1207223
350 mm	240 mm	C4MT-02424ABB03DE0	1207224
	300 mm	C4MT-03024ABB03DE0	1207225
	360 mm	C4MT-03624ABB03DE0	1207227
	420 mm	C4MT-04224ABB03DE0	1207228
	480 mm	C4MT-04824ABB03DE0	1207229
	540 mm	C4MT-05424ABB03DE0	1207230
	700 mm	600 mm	C4MT-06024ABB03FE0
660 mm		C4MT-06624ABB03FE0	1207232
720 mm		C4MT-07224ABB03FE0	1207233
780 mm		C4MT-07824ABB03FE0	1207234
840 mm		C4MT-08424ABB03FE0	1207235
900 mm		C4MT-09024ABB03FE0	1207236
960 mm		C4MT-09624ABB03FE0	1207237
1,020 mm		C4MT-10224ABB03FE0	1207238
1,080 mm		C4MT-10824ABB03FE0	1207239
1,140 mm		C4MT-11424ABB03FE0	1207240
1,200 mm	C4MT-12024ABB03FE0	1207241	

• Resolution: 34 mm

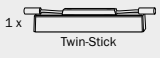
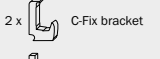
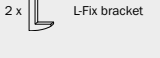
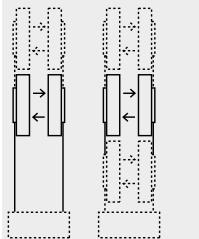
Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C4MT-01234ABB03BE0	1207242
	180 mm	C4MT-01834ABB03BE0	1207243
350 mm	240 mm	C4MT-02434ABB03DE0	1207244
	300 mm	C4MT-03034ABB03DE0	1207245
	360 mm	C4MT-03634ABB03DE0	1207246
	420 mm	C4MT-04234ABB03DE0	1207247
	480 mm	C4MT-04834ABB03DE0	1207248
	540 mm	C4MT-05434ABB03DE0	1207249
	700 mm	600 mm	C4MT-06034ABB03FE0
660 mm		C4MT-06634ABB03FE0	1207251
720 mm		C4MT-07234ABB03FE0	1207252
780 mm		C4MT-07834ABB03FE0	1207253
840 mm		C4MT-08434ABB03FE0	1207254
900 mm		C4MT-09034ABB03FE0	1207255
960 mm		C4MT-09634ABB03FE0	1207256
1,020 mm		C4MT-10234ABB03FE0	1207257
1,080 mm		C4MT-10834ABB03FE0	1207258
1,140 mm		C4MT-11434ABB03FE0	1207259
1,200 mm	C4MT-12034ABB03FE0	1207260	



miniTwin4 as a cascaded host or guest device – not as a cascade end unit

Items supplied:

- Safety light curtain, consisting of two identical twin sticks
- 2 cascade system plugs, including cables with male and female connectors, M12, 5-pin
- 4 C-Fix brackets with L-Fix bracket including 8 M5 screws (DIN 7984/6912)
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

Consists of		Usage
 1 x Twin-Stick  2 x C-Fix bracket  2 x L-Fix bracket	<ul style="list-style-type: none"> • Twin-Stick with cascade system plug and 2 connecting cables with plug and socket M12, 5-pin • 2 C-Fix brackets with L-Fix bracket • Operating instructions on CD-ROM 	 <ul style="list-style-type: none"> • As a cascaded host or guest device - not as a cascade end unit

Usage	miniTwin4 as a cascaded host or guest device – not as a cascade end unit		
Connection types	System connection	Male connector M12, 5-pin	
	Extension connection	Female connector M12, 5-pin	
Scanning range	Minimum	0 m ... 4 m	
	Typical	0 m ... 5 m	

- **Resolution:** 14 mm

Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C4MT-01214ABB04BE0	1207115
	180 mm	C4MT-01814ABB04BE0	1207116
350 mm	240 mm	C4MT-02414ABB04DE0	1207117
	300 mm	C4MT-03014ABB04DE0	1207118
	360 mm	C4MT-03614ABB04DE0	1207119
	420 mm	C4MT-04214ABB04DE0	1207120
	480 mm	C4MT-04814ABB04DE0	1207121
	540 mm	C4MT-05414ABB04DE0	1207122
700 mm	600 mm	C4MT-06014ABB04FE0	1207123
	660 mm	C4MT-06614ABB04FE0	1207124
	720 mm	C4MT-07214ABB04FE0	1207125
	780 mm	C4MT-07814ABB04FE0	1207126
	840 mm	C4MT-08414ABB04FE0	1207127
	900 mm	C4MT-09014ABB04FE0	1207128
	960 mm	C4MT-09614ABB04FE0	1207129
	1,020 mm	C4MT-10214ABB04FE0	1207130
	1,080 mm	C4MT-10814ABB04FE0	1207131
	1,140 mm	C4MT-11414ABB04FE0	1207132
1,200 mm	C4MT-12014ABB04FE0	1207133	

• Resolution: 24 mm

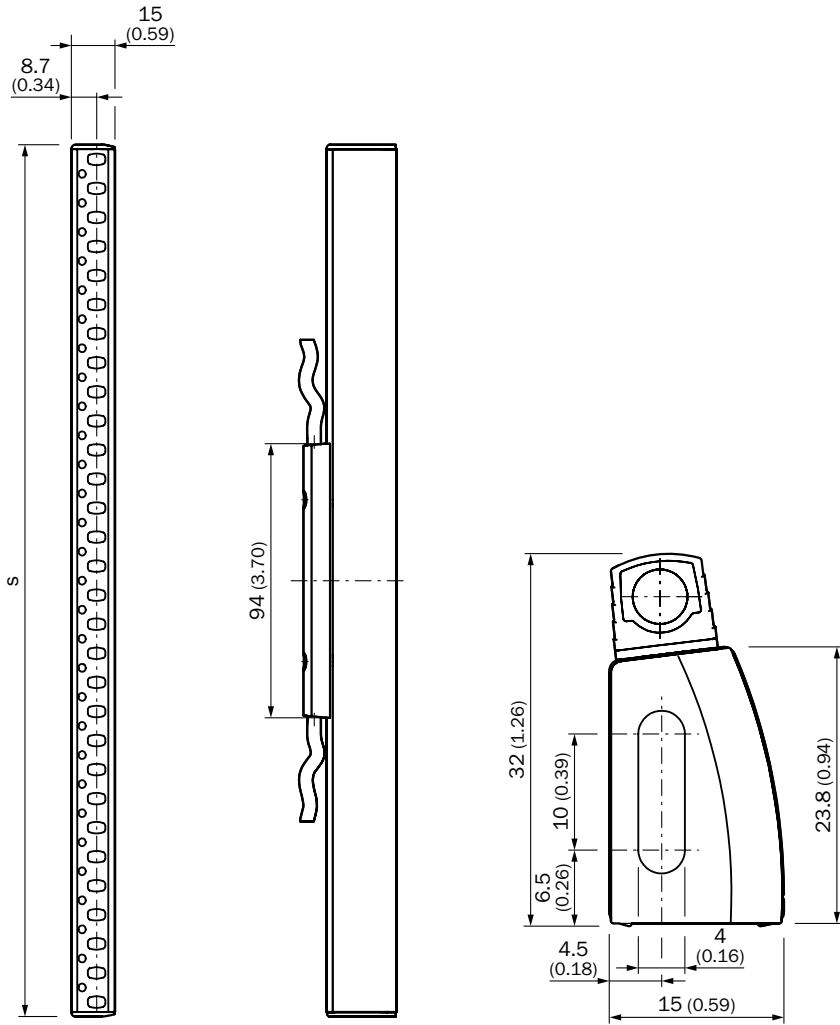
Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C4MT-01224ABB04BE0	1207168
	180 mm	C4MT-01824ABB04BE0	1207283
350 mm	240 mm	C4MT-02424ABB04DE0	1207284
	300 mm	C4MT-03024ABB04DE0	1207285
	360 mm	C4MT-03624ABB04DE0	1207286
	420 mm	C4MT-04224ABB04DE0	1207287
	480 mm	C4MT-04824ABB04DE0	1207181
	540 mm	C4MT-05424ABB04DE0	1207288
	600 mm	C4MT-06024ABB04FE0	1207289
700 mm	660 mm	C4MT-06624ABB04FE0	1207290
	720 mm	C4MT-07224ABB04FE0	1207291
	780 mm	C4MT-07824ABB04FE0	1207292
	840 mm	C4MT-08424ABB04FE0	1207293
	900 mm	C4MT-09024ABB04FE0	1207294
	960 mm	C4MT-09624ABB04FE0	1207295
	1,020 mm	C4MT-10224ABB04FE0	1207296
	1,080 mm	C4MT-10824ABB04FE0	1207297
	1,140 mm	C4MT-11424ABB04FE0	1207298
	1,200 mm	C4MT-12024ABB04FE0	1207299

• Resolution: 34 mm

Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C4MT-01234ABB04BE0	1207300
	180 mm	C4MT-01834ABB04BE0	1207301
350 mm	240 mm	C4MT-02434ABB04DE0	1207302
	300 mm	C4MT-03034ABB04DE0	1207303
	360 mm	C4MT-03634ABB04DE0	1207304
	420 mm	C4MT-04234ABB04DE0	1207305
	480 mm	C4MT-04834ABB04DE0	1207306
	540 mm	C4MT-05434ABB04DE0	1207307
	600 mm	C4MT-06034ABB04FE0	1207308
700 mm	660 mm	C4MT-06634ABB04FE0	1207309
	720 mm	C4MT-07234ABB04FE0	1207310
	780 mm	C4MT-07834ABB04FE0	1207311
	840 mm	C4MT-08434ABB04FE0	1207312
	900 mm	C4MT-09034ABB04FE0	1207313
	960 mm	C4MT-09634ABB04FE0	1207314
	1,020 mm	C4MT-10234ABB04FE0	1207315
	1,080 mm	C4MT-10834ABB04FE0	1207316
	1,140 mm	C4MT-11434ABB04FE0	1207317
	1,200 mm	C4MT-12034ABB04FE0	1206993

G

Dimensional drawing (Dimensions in mm (inch))



S = protective field height = housing length

Accessories required for commissioning




Description	Number	Items supplied	Further information
Mounting bracket	1	✓	→ Mounting brackets and mounting plates
Connecting cable	2	-	→ Plug connectors and cables
Cascade connection cable (only required for cascading)	2	-	→ Plug connectors and cables
Operating instructions	1	✓	-
Test rod	1	✓	→ Test and monitoring tools

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	C-Fix-Flex bracket, adjustable +4°/-4°, metal version, for flat and connector side assembly/assembling/construction/mounting, for all protective field heights	2 pieces	BEF-1SHABMAL2	2056598
	Combination C-Fix bracket with L-Fix bracket, 2 pieces each, for all sizes, for all protective field heights	2 pieces	BEF-3AAA0MKU2S04	2045843
	O-Fix bracket, 2 pieces, for all sizes, for all protective field heights	2 pieces	BEF-3SHAEMKU2	2045835

Dimensional drawings → page G-461



Device protection (mechanical)

Front screen protection

- **Description:** Front screen protection set (protects sensors from damage by flying sparks and welding beads)




Suitable for protective field height	Suitable for	Type	Part no.
120 mm	C#MT-012xxxxxxxxx	Additional front screen	2058479
180 mm	C#MT-018xxxxxxxxx	Additional front screen	2058482
240 mm	C#MT-024xxxxxxxxx	Additional front screen	2058483
300 mm	C#MT-030xxxxxxxxx	Additional front screen	2058484
360 mm	C#MT-036xxxxxxxxx	Additional front screen	2058485
420 mm	C#MT-042xxxxxxxxx	Additional front screen	2058486
480 mm	C#MT-048xxxxxxxxx	Additional front screen	2058487
540 mm	C#MT-054xxxxxxxxx	Additional front screen	2058488
600 mm	C#MT-060xxxxxxxxx	Additional front screen	2058489
660 mm	C#MT-066xxxxxxxxx	Additional front screen	2058490
720 mm	C#MT-072xxxxxxxxx	Additional front screen	2058491
780 mm	C#MT-078xxxxxxxxx	Additional front screen	2058492
840 mm	C#MT-084xxxxxxxxx	Additional front screen	2058493
900 mm	C#MT-090xxxxxxxxx	Additional front screen	2058494
960 mm	C#MT-096xxxxxxxxx	Additional front screen	2058495
1,020 mm	C#MT-102xxxxxxxxx	Additional front screen	2058496
1,080 mm	C#MT-108xxxxxxxxx	Additional front screen	2058497
1,140 mm	C#MT-114xxxxxxxxx	Additional front screen	2058498
1,200 mm	C#MT-120xxxxxxxxx	Additional front screen	2058499

Connection systems

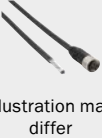

Plug connectors and cables

System plugs


- **Model:** unshielded

Figure	Description	Cable length	Type	Part no.
	For stand-alone miniTwin, with 1 connecting cable	10 m	System plug standalone	2051290
	For stand-alone miniTwin, with 1 connecting cable and male connector, M12, 5-pin	0.16 m	System plug standalone	2046447
		0.35 m	System plug standalone	2046449
		0.7 m	System plug standalone	2046451
	For cascaded Mini Twin, with 2 cables and 1 male and 1 female connector M12, 5-pin	0.16 m	Cascade system plug	2046452
		0.35 m	Cascade system plug	2046454
		0.7 m	Cascade system plug	2046456


Connecting cables with female connector

Figure	Connection type		Model	Conductor cross-section	Cable length	Type	Part no.
 Illustration may differ	Female connector, M12, 5-pin, straight	Cable	PVC, unshielded	0.34 mm ²	2 m	DOL-1205-G02M	6008899
					5 m	DOL-1205-G05M	6009868
					10 m	DOL-1205-G10M	6010544
					15 m	DOL-1205-G15M	6029215
			PUR, halogen-free, shielded	0.34 mm ²	20 m	DOL-1205-G20MAC	6036386


Connection cables with female connector and male connector

Figure	Connection type		Model	Cable length	Type	Part no.
	Female connector, M12, 5-pin, straight	Male connector, M12, 5-pin, straight	PUR, halogen-free, unshielded	1 m	DSL-1205-G01MC	6029280
				2 m	DSL-1205-G02MC	6025931

Female connectors (ready to assemble)



Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.
	Female connector, M12, 5-pin, straight	-	6 mm ... 8 mm	DOS-1205-GX	6047950
	Female connector, M12, 5-pin, straight, screw-type terminals	≤ 0.75 mm ²	4 mm ... 6 mm	DOS-1205-G	6009719

Male connectors (ready to assemble)

Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.
	Male connector, M12, 5-pin, straight, screw-type terminals	≤ 0.75 mm ²	4 mm ... 6 mm	STE-1205-G	6022083

Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for miniTwin4 and miniTwin2	Adapter AR60, miniTwin	4064710

Deflector mirrors



- **Description:** horizontal deflection

Figure	Mirror material	Items supplied	Suitable for protective field height	Type	Part no.
	Glass	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS125-034	1019425
			150 mm ... 450 mm	PNS125-049	1019426
			150 mm ... 600 mm	PNS125-064	1019427
			150 mm ... 750 mm	PNS125-079	1019428
			150 mm ... 900 mm	PNS125-094	1019429
			150 mm ... 1,050 mm	PNS125-109	1019430
			150 mm ... 1,200 mm	PNS125-124	1019431
			150 mm ... 1,350 mm	PNS125-139	1019432
			150 mm ... 1,500 mm	PNS125-154	1019433
			150 mm ... 1,650 mm	PNS125-169	1019434
			150 mm ... 1,800 mm	PNS125-184	1019435
	Stainless steel	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS75-034	1019414
			150 mm ... 450 mm	PNS75-049	1019415
			150 mm ... 600 mm	PNS75-064	1019416
			150 mm ... 750 mm	PNS75-079	1019417
	Glass	Incl. mounting kit swivel mount	150 mm ... 750 mm	PNS75-079S05	1046075
			150 mm ... 900 mm	PNS75-094	1019418
			150 mm ... 1,050 mm	PNS75-109	1019419
			150 mm ... 1,200 mm	PNS75-124	1019420
			150 mm ... 1,350 mm	PNS75-139	1019421
			150 mm ... 1,500 mm	PNS75-154	1019422
			150 mm ... 1,650 mm	PNS75-169	1019423
150 mm ... 1,800 mm	PNS75-184	1019424			


Dimensional drawings → page G-462

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
	14 mm diameter	Test rod 14 mm	2022599
	24 mm diameter	Test rod 24 mm	2045592
	34 mm diameter	Test rod 34 mm	2045593
	Test rod holder	BEF-3WNAAAAL1	2052249


Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> • Freestanding mounting solution with external grooves for installing additional accessories • Compact, rugged design with high reliability • Easy mounting and adjustment • Device protection against external influences • Large reflector surface for efficient multi-sided protection via beam deflection • Universally applicable for multiple light beam safety devices and safety light curtains 	→ page K-664

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

SMALL DESIGN, GREAT FLEXIBILITY, AND UNIVERSAL POSSIBILITIES



CE c UL US

Additional information

Detailed technical data G-429

Ordering information G-431

Dimensional drawing G-437

Recommended accessories . . . G-438

Product description

The miniTwin2 safety light curtain is currently the smallest electro-sensitive protective device of its kind. It is mainly used at hazardous points for finger and hand protection. The sender and receiver are combined and integrated into an extremely compact housing. Whether it is used as a standalone device or it is cascaded with other miniTwin light curtains, the miniTwin2 enables machine access protection up to the safety level PL c. Protective field heights ranging from 120 mm to 1,200 mm are avail-

able and it is possible to cascade up to three systems. Individual protective fields are extremely easy to implement by virtue of housing lengths in 60-mm increments. Commissioning, which is almost completely automatic, requires no software. This along with the bracket sets saves valuable installation time. The miniTwin2 offers a first-rate, modern, industrial design that combines an intuitive operating system with sustainable optics.

At a glance

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- Blind-zone-free device concept with compact cross section (15 mm x 32 mm)
- Twin stick: sender and receiver in a single housing – cascadable
- Tailored protective field heights in 60-mm increments: from 120 mm to 1,200 mm
- Typical sensing ranges of 0 m ... 8 m
- Intelligent, software-free configuration of external device monitoring and reset function
- M12 connecting device, 5-pin

Your benefits

- Cost-effective machine integration: the miniature design, cascading, and fine stepping of the protective field lengths enable flexible adaptation to the machine design
- Standardization saves time and resources by making logistics, order processing, and service more straightforward
- Exemplary handling: software-free, almost fully automatic commissioning and intuitive operation with sustainable optics
- LED-guided start-up together with colored LEDs for quick alignment and unequivocal protective field visualization ensure rapid diagnostics
- A continuous protective field for cascade applications eliminates blind zones, reduces the safety distance, and thereby increases productivity
- Application-specific brackets increase mounting flexibility, while reducing the mounting time

→ www.sick.com/miniTwin2

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Resolution	14 mm / 24 mm / 34 mm (depending on type)
Protective field height	120 mm ... 1,200 mm (depending on type)
Scanning range	Minimum 0 m ... 6 m
	Typical 0 m ... 8 m
Response time	≤ 17 ms ¹⁾ (depending on type)
Synchronization	Optical, without separate synchronization

¹⁾ Standalone devices, no cascaded systems. Other response times can be found in the operating instructions.

Safety-related parameters

Type	Type 2 (IEC 61496)
Safety integrity level	SIL1 (IEC 61508) SILCL1 (EN 62061)
Category	Category 2 (EN ISO 13849)
Test rate (internal test)	58 /s / 47 /s (depending on type)
Maximum demand rate	≤ 34 /min (EN ISO 13849) ¹⁾ ≤ 28 /min (EN ISO 13849) ¹⁾ (depending on type)
Performance level	PL c (EN ISO 13849), Pay attention to optical characteristics! ²⁾
PFH_D (mean probability of a dangerous failure per hour)	Standalone system: 2.4 x 10 ⁻⁸ (EN ISO 13849) / cascaded systems: 5.2 x 10 ⁻⁸ (EN ISO 13849) (depending on type)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

¹⁾ Between two requirements on a safety-related response of the device, at least 100 internal or external tests must be carried out.

²⁾ The performance level does not include any specific requirements regarding aspects such as optical performance features. For more information, see page xx.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	Deactivated
External device monitoring (EDM)	✓	Deactivated
Beam coding	Automatic	

Interfaces

System connection	Connection type	Male connector M12, 5-pin
	Cable length	160 mm / 350 mm / 700 mm (depending on type)
	Permitted cable length	≤ 20 m ¹⁾
	Conductor cross-section	0.34 mm ²
Extension connection	Connection type	Female connector M12, 5-pin
	Cable length	160 mm / 350 mm / 700 mm (depending on type)
Configuration method		Hard wired
Display elements		LEDs
Fieldbus, industrial network	Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class		III (EN 61140)
Supply voltage V_s		24 V DC (19.2 V DC ... 28.8 V DC)
Ripple		≤ 10 % ¹⁾
Power consumption		≤ 3 A ²⁾
Safety outputs (OSSD)	Type of output	PNP semiconductors, short-circuit protected, cross-circuit monitored ³⁾
	Switching voltage HIGH	24 V DC ($V_s - 2.25$ V DC ... V_s)
	Switching voltage LOW	≤ 2 V DC
	Switching current	≤ 300 mA

¹⁾ Within the limits of V_s .

²⁾ Maximum power consumption of a host/guest/guest system with 1,200 mm protective field height and a resolution of 14 mm.

³⁾ Applies to the voltage range between -30 V and +30 V.

Mechanical data

Housing cross-section (incl. system connection)	15 mm x 32 mm
Housing material	Aluminum alloy ALMGSI 0.5
Weight	50 g ... 420 g (depending on type)

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-20 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (EN 60068-2-6)
Shock resistance	10 g, 16 ms (EN 60068-2-27)

Other information

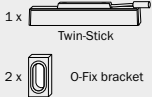
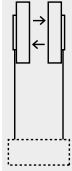
Wave length	850 nm
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Ordering information

miniTwin2 as a standalone device

Items supplied:

- Safety light curtain, consisting of two identical twin sticks
- 2 standalone system plugs, including cable with male connector, M12, 5-pin
- 4 O-Fix brackets including 4 M5 screws (EN ISO 4762)
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

Consists of		Usage	
 <p>1 x Twin-Stick 2 x O-Fix bracket</p>	<ul style="list-style-type: none"> • Twin-Stick with standalone system plug and connecting cable with plug M12, 5-pin • 2 O-Fix brackets • Operating instructions on CD-ROM 		<ul style="list-style-type: none"> • As a standalone device

Usage	miniTwin2 as a standalone device		
Connection types			
	System connection	Male connector M12, 5-pin	
Scanning range			
	Minimum	0 m ... 6 m	
	Typical	0 m ... 8 m	

- **Resolution:** 14 mm

Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C2MT-01214BBC03BB0	1207923
	180 mm	C2MT-01814BBC03BB0	1207924
350 mm	240 mm	C2MT-02414BBC03DB0	1207925
	300 mm	C2MT-03014BBC03DB0	1207926
	360 mm	C2MT-03614BBC03DB0	1207927
	420 mm	C2MT-04214BBC03DB0	1207928
	480 mm	C2MT-04814BBC03DB0	1207929
	540 mm	C2MT-05414BBC03DB0	1207930
	600 mm	C2MT-06014BBC03FB0	1207931
700 mm	660 mm	C2MT-06614BBC03FB0	1207932
	720 mm	C2MT-07214BBC03FB0	1207933
	780 mm	C2MT-07814BBC03FB0	1207934
	840 mm	C2MT-08414BBC03FB0	1207935
	900 mm	C2MT-09014BBC03FB0	1207936
	960 mm	C2MT-09614BBC03FB0	1207937
	1,020 mm	C2MT-10214BBC03FB0	1207938
	1,080 mm	C2MT-10814BBC03FB0	1207939
	1,140 mm	C2MT-11414BBC03FB0	1207940
	1,200 mm	C2MT-12014BBC03FB0	1207941

• Resolution: 24 mm

Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C2MT-01224BBC03BB0	1207942
	180 mm	C2MT-01824BBC03BB0	1207943
350 mm	240 mm	C2MT-02424BBC03DB0	1207944
	300 mm	C2MT-03024BBC03DB0	1207945
	360 mm	C2MT-03624BBC03DB0	1207946
	420 mm	C2MT-04224BBC03DB0	1207947
	480 mm	C2MT-04824BBC03DB0	1207948
	540 mm	C2MT-05424BBC03DB0	1207949
	600 mm	C2MT-06024BBC03FB0	1207950
700 mm	660 mm	C2MT-06624BBC03FB0	1207951
	720 mm	C2MT-07224BBC03FB0	1207952
	780 mm	C2MT-07824BBC03FB0	1207953
	840 mm	C2MT-08424BBC03FB0	1207954
	900 mm	C2MT-09024BBC03FB0	1207955
	960 mm	C2MT-09624BBC03FB0	1207956
	1,020 mm	C2MT-10224BBC03FB0	1207957
	1,080 mm	C2MT-10824BBC03FB0	1207958
	1,140 mm	C2MT-11424BBC03FB0	1207959
	1,200 mm	C2MT-12024BBC03FB0	1207960

• Resolution: 34 mm

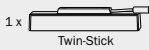




Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C2MT-01234BBC03BB0	1207961
	180 mm	C2MT-01834BBC03BB0	1207962
350 mm	240 mm	C2MT-02434BBC03DB0	1207963
	300 mm	C2MT-03034BBC03DB0	1207964
	360 mm	C2MT-03634BBC03DB0	1207965
	420 mm	C2MT-04234BBC03DB0	1207966
	480 mm	C2MT-04834BBC03DB0	1207967
	540 mm	C2MT-05434BBC03DB0	1207968
	600 mm	C2MT-06034BBC03FB0	1207969
700 mm	660 mm	C2MT-06634BBC03FB0	1207970
	720 mm	C2MT-07234BBC03FB0	1207971
	780 mm	C2MT-07834BBC03FB0	1207972
	840 mm	C2MT-08434BBC03FB0	1207973
	900 mm	C2MT-09034BBC03FB0	1207974
	960 mm	C2MT-09634BBC03FB0	1207975
	1,020 mm	C2MT-10234BBC03FB0	1207976
	1,080 mm	C2MT-10834BBC03FB0	1207977
	1,140 mm	C2MT-11434BBC03FB0	1207978
	1,200 mm	C2MT-12034BBC03FB0	1207979



miniTwin2 as a standalone device or cascade end unit

Items supplied:

- Safety light curtain, consisting of two identical twin sticks
- 2 standalone system plugs, including cable with male connector, M12, 5-pin
- 4 C-Fix brackets with L-Fix bracket including 8 M5 screws (DIN 7984/6912)
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

Consists of		Usage	
 1 x Twin-Stick  2 x C-Fix bracket  2 x L-Fix bracket	<ul style="list-style-type: none"> • Twin-Stick with standalone system plug and connecting cable with plug M12, 5-pin • 2 C-Fix brackets with L-Fix bracket • Operating instructions on CD-ROM 	 	<ul style="list-style-type: none"> • As a standalone device • As a cascade end unit

Usage	miniTwin2 as a standalone device or cascade end unit		
Connection types			
	System connection	Male connector M12, 5-pin	
Scanning range			
	Minimum	0 m ... 6 m	
	Typical	0 m ... 8 m	

- **Resolution:** 14 mm

Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C2MT-01214BBC03BE0	1207793
	180 mm	C2MT-01814BBC03BE0	1207794
350 mm	240 mm	C2MT-02414BBC03DE0	1207795
	300 mm	C2MT-03014BBC03DE0	1207796
	360 mm	C2MT-03614BBC03DE0	1207797
	420 mm	C2MT-04214BBC03DE0	1207798
	480 mm	C2MT-04814BBC03DE0	1207799
	540 mm	C2MT-05414BBC03DE0	1207800
700 mm	600 mm	C2MT-06014BBC03FE0	1207801
	660 mm	C2MT-06614BBC03FE0	1207802
	720 mm	C2MT-07214BBC03FE0	1207803
	780 mm	C2MT-07814BBC03FE0	1207813
	840 mm	C2MT-08414BBC03FE0	1207814
	900 mm	C2MT-09014BBC03FE0	1207816
	960 mm	C2MT-09614BBC03FE0	1207817
	1,020 mm	C2MT-10214BBC03FE0	1207818
	1,080 mm	C2MT-10814BBC03FE0	1207819
	1,140 mm	C2MT-11414BBC03FE0	1207820
1,200 mm	C2MT-12014BBC03FE0	1207821	

G

• **Resolution:** 24 mm

Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C2MT-01224BBC03BE0	1207822
	180 mm	C2MT-01824BBC03BE0	1207823
350 mm	240 mm	C2MT-02424BBC03DE0	1207824
	300 mm	C2MT-03024BBC03DE0	1207825
	360 mm	C2MT-03624BBC03DE0	1207832
	420 mm	C2MT-04224BBC03DE0	1207833
	480 mm	C2MT-04824BBC03DE0	1207834
	540 mm	C2MT-05424BBC03DE0	1207835
	600 mm	C2MT-06024BBC03FE0	1207836
700 mm	660 mm	C2MT-06624BBC03FE0	1207837
	720 mm	C2MT-07224BBC03FE0	1207838
	780 mm	C2MT-07824BBC03FE0	1207839
	840 mm	C2MT-08424BBC03FE0	1207840
	900 mm	C2MT-09024BBC03FE0	1207841
	960 mm	C2MT-09624BBC03FE0	1207842
	1,020 mm	C2MT-10224BBC03FE0	1207843
	1,080 mm	C2MT-10824BBC03FE0	1207844
	1,140 mm	C2MT-11424BBC03FE0	1207845
	1,200 mm	C2MT-12024BBC03FE0	1207846

• **Resolution:** 34 mm

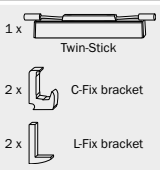
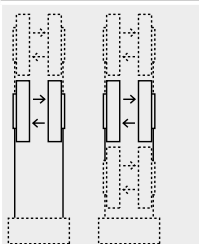
Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C2MT-01234BBC03BE0	1207847
	180 mm	C2MT-01834BBC03BE0	1207848
350 mm	240 mm	C2MT-02434BBC03DE0	1207849
	300 mm	C2MT-03034BBC03DE0	1207850
	360 mm	C2MT-03634BBC03DE0	1207851
	420 mm	C2MT-04234BBC03DE0	1207852
	480 mm	C2MT-04834BBC03DE0	1207853
	540 mm	C2MT-05434BBC03DE0	1207854
	600 mm	C2MT-06034BBC03FE0	1207855
700 mm	660 mm	C2MT-06634BBC03FE0	1207856
	720 mm	C2MT-07234BBC03FE0	1207857
	780 mm	C2MT-07834BBC03FE0	1207858
	840 mm	C2MT-08434BBC03FE0	1207859
	900 mm	C2MT-09034BBC03FE0	1207860
	960 mm	C2MT-09634BBC03FE0	1207861
	1,020 mm	C2MT-10234BBC03FE0	1207862
	1,080 mm	C2MT-10834BBC03FE0	1207863
	1,140 mm	C2MT-11434BBC03FE0	1207864
	1,200 mm	C2MT-12034BBC03FE0	1207865



miniTwin2 as a cascaded host or guest device – not as a cascade end unit

Items supplied:

- Safety light curtain, consisting of two identical twin sticks
- 2 cascade system plugs, including cables with male and female connectors, M12, 5-pin
- 4 C-Fix brackets with L-Fix bracket including 8 M5 screws (DIN 7984/6912)
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

Consists of		Usage
 <p>1 x Twin-Stick 2 x C-Fix bracket 2 x L-Fix bracket</p>	<ul style="list-style-type: none"> • Twin-Stick with cascade system plug and 2 connecting cables with plug and socket M12, 5-pin • 2 C-Fix brackets with L-Fix bracket • Operating instructions on CD-ROM 	 <ul style="list-style-type: none"> • As a cascaded host or guest device - not as a cascade end unit

Usage	miniTwin2 as a cascaded host or guest device – not as a cascade end unit		
Connection types	System connection	Male connector M12, 5-pin	
	Extension connection	Female connector M12, 5-pin	
Scanning range	Minimum	0 m ... 6 m	
	Typical	0 m ... 8 m	

- **Resolution:** 14 mm

Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C2MT-01214BBC04BE0	1207866
	180 mm	C2MT-01814BBC04BE0	1207867
350 mm	240 mm	C2MT-02414BBC04DE0	1207868
	300 mm	C2MT-03014BBC04DE0	1207869
	360 mm	C2MT-03614BBC04DE0	1207870
	420 mm	C2MT-04214BBC04DE0	1207871
	480 mm	C2MT-04814BBC04DE0	1207872
	540 mm	C2MT-05414BBC04DE0	1207873
700 mm	600 mm	C2MT-06014BBC04FE0	1207874
	660 mm	C2MT-06614BBC04FE0	1207875
	720 mm	C2MT-07214BBC04FE0	1207876
	780 mm	C2MT-07814BBC04FE0	1207877
	840 mm	C2MT-08414BBC04FE0	1207878
	900 mm	C2MT-09014BBC04FE0	1207879
	960 mm	C2MT-09614BBC04FE0	1207880
	1,020 mm	C2MT-10214BBC04FE0	1207881
1,080 mm	C2MT-10814BBC04FE0	1207882	
1,140 mm	C2MT-11414BBC04FE0	1207883	
1,200 mm	C2MT-12014BBC04FE0	1207884	

• **Resolution:** 24 mm

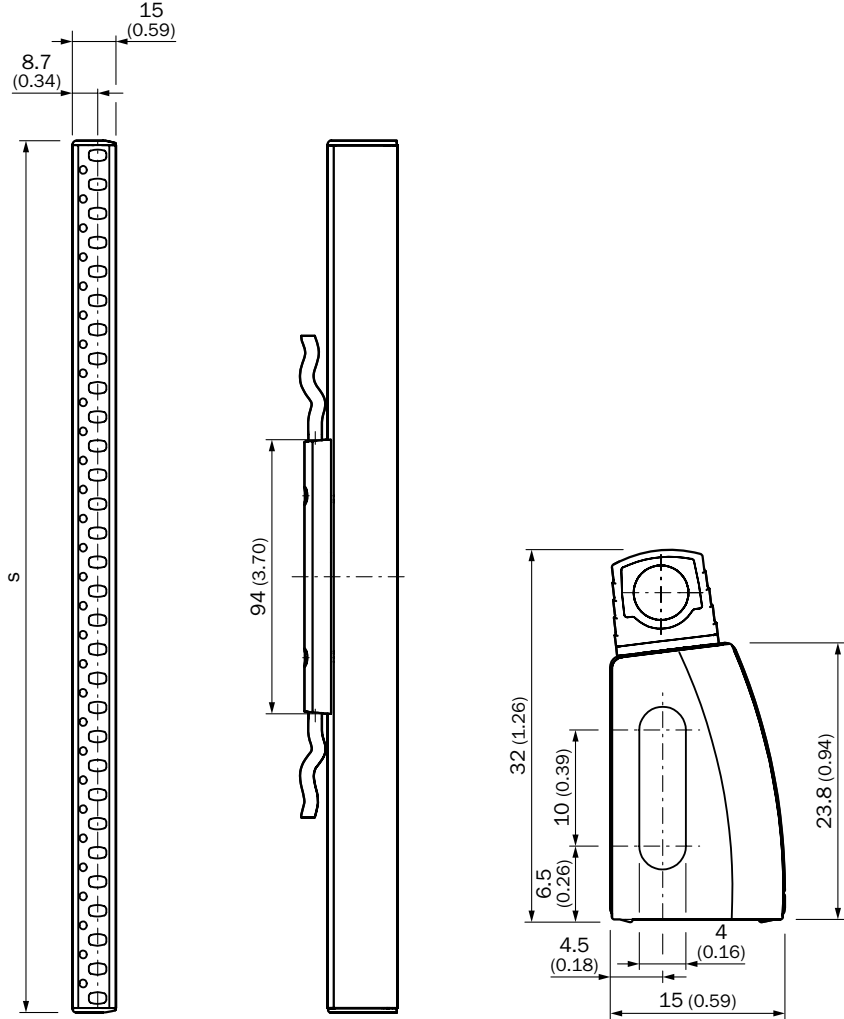
Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C2MT-01224BBC04BE0	1207885
	180 mm	C2MT-01824BBC04BE0	1207886
350 mm	240 mm	C2MT-02424BBC04DE0	1207887
	300 mm	C2MT-03024BBC04DE0	1207888
	360 mm	C2MT-03624BBC04DE0	1207889
	420 mm	C2MT-04224BBC04DE0	1207890
	480 mm	C2MT-04824BBC04DE0	1207891
	540 mm	C2MT-05424BBC04DE0	1207892
	600 mm	C2MT-06024BBC04FE0	1207893
700 mm	660 mm	C2MT-06624BBC04FE0	1207894
	720 mm	C2MT-07224BBC04FE0	1207895
	780 mm	C2MT-07824BBC04FE0	1207896
	840 mm	C2MT-08424BBC04FE0	1207897
	900 mm	C2MT-09024BBC04FE0	1207898
	960 mm	C2MT-09624BBC04FE0	1207899
	1,020 mm	C2MT-10224BBC04FE0	1207900
	1,080 mm	C2MT-10824BBC04FE0	1207901
	1,140 mm	C2MT-11424BBC04FE0	1207902
	1,200 mm	C2MT-12024BBC04FE0	1207903

• **Resolution:** 34 mm

Cable length	Protective field height	Type	Part no.
160 mm	120 mm	C2MT-01234BBC04BE0	1207904
	180 mm	C2MT-01834BBC04BE0	1207905
350 mm	240 mm	C2MT-02434BBC04DE0	1207906
	300 mm	C2MT-03034BBC04DE0	1207907
	360 mm	C2MT-03634BBC04DE0	1207908
	420 mm	C2MT-04234BBC04DE0	1207909
	480 mm	C2MT-04834BBC04DE0	1207910
	540 mm	C2MT-05434BBC04DE0	1207911
	600 mm	C2MT-06034BBC04FE0	1207912
700 mm	660 mm	C2MT-06634BBC04FE0	1207913
	720 mm	C2MT-07234BBC04FE0	1207914
	780 mm	C2MT-07834BBC04FE0	1207915
	840 mm	C2MT-08434BBC04FE0	1207916
	900 mm	C2MT-09034BBC04FE0	1207917
	960 mm	C2MT-09634BBC04FE0	1207918
	1,020 mm	C2MT-10234BBC04FE0	1207919
	1,080 mm	C2MT-10834BBC04FE0	1207920
	1,140 mm	C2MT-11434BBC04FE0	1207921
	1,200 mm	C2MT-12034BBC04FE0	1207922



Dimensional drawing (Dimensions in mm (inch))



S = protective field height = housing length



Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	✓	→ Mounting brackets and mounting plates
Connecting cable	2	-	→ Plug connectors and cables
Cascade connection cable (only required for cascading)	2	-	→ Plug connectors and cables
Operating instructions	1	✓	-
Test rod	1	✓	→ Test and monitoring tools

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	C-Fix-Flex bracket, adjustable +4°/-4°, metal version, for flat and connector side assembly/assembling/construction/mounting, for all protective field heights	2 pieces	BEF-1SHABMAL2	2056598
	Combination C-Fix bracket with L-Fix bracket, 2 pieces each, for all sizes, for all protective field heights	2 pieces	BEF-3AAA0MKU2S04	2045843
	O-Fix bracket, 2 pieces, for all sizes, for all protective field heights	2 pieces	BEF-3SHAEMKU2	2045835

Dimensional drawings → page G-461



Device protection (mechanical)

Front screen protection

- **Description:** Front screen protection set (protects sensors from damage by flying sparks and welding beads)




Suitable for protective field height	Suitable for	Type	Part no.
120 mm	C#MT-012xxxxxxxxx	Additional front screen	2058479
180 mm	C#MT-018xxxxxxxxx	Additional front screen	2058482
240 mm	C#MT-024xxxxxxxxx	Additional front screen	2058483
300 mm	C#MT-030xxxxxxxxx	Additional front screen	2058484
360 mm	C#MT-036xxxxxxxxx	Additional front screen	2058485
420 mm	C#MT-042xxxxxxxxx	Additional front screen	2058486
480 mm	C#MT-048xxxxxxxxx	Additional front screen	2058487
540 mm	C#MT-054xxxxxxxxx	Additional front screen	2058488
600 mm	C#MT-060xxxxxxxxx	Additional front screen	2058489
660 mm	C#MT-066xxxxxxxxx	Additional front screen	2058490
720 mm	C#MT-072xxxxxxxxx	Additional front screen	2058491
780 mm	C#MT-078xxxxxxxxx	Additional front screen	2058492
840 mm	C#MT-084xxxxxxxxx	Additional front screen	2058493
900 mm	C#MT-090xxxxxxxxx	Additional front screen	2058494
960 mm	C#MT-096xxxxxxxxx	Additional front screen	2058495
1,020 mm	C#MT-102xxxxxxxxx	Additional front screen	2058496
1,080 mm	C#MT-108xxxxxxxxx	Additional front screen	2058497
1,140 mm	C#MT-114xxxxxxxxx	Additional front screen	2058498
1,200 mm	C#MT-120xxxxxxxxx	Additional front screen	2058499

Connection systems



Plug connectors and cables

System plugs


- **Model:** unshielded

Figure	Description	Cable length	Type	Part no.
	For stand-alone miniTwin, with 1 connecting cable	10 m	System plug standalone	2051290
	For stand-alone miniTwin, with 1 connecting cable and male connector, M12, 5-pin	0.16 m	System plug standalone	2046447
		0.35 m	System plug standalone	2046449
		0.7 m	System plug standalone	2046451
	For cascaded mini Twin, with 2 cables and 1 male and 1 female connector M12, 5-pin	0.16 m	Cascade system plug	2046452
		0.35 m	Cascade system plug	2046454
		0.7 m	Cascade system plug	2046456


Connecting cables with female connector

Figure	Connection type		Model	Conductor cross-section	Cable length	Type	Part no.	
	Illustration may differ	Female connector, M12, 5-pin, straight	Cable	PVC, unshielded	0.34 mm ²	2 m	DOL-1205-G02M	6008899
						5 m	DOL-1205-G05M	6009868
						10 m	DOL-1205-G10M	6010544
						15 m	DOL-1205-G15M	6029215
			PUR, halogen-free, shielded	0.34 mm ²	20 m	DOL-1205-G20MAC	6036386	


Connection cables with female connector and male connector

Figure	Connection type		Model	Cable length	Type	Part no.
	Female connector, M12, 5-pin, straight	Male connector, M12, 5-pin, straight	PUR, halogen-free, unshielded	1 m	DSL-1205-G01MC	6029280
				2 m	DSL-1205-G02MC	6025931

Female connectors (ready to assemble)



Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.
	Female connector, M12, 5-pin, straight	-	6 mm ... 8 mm	DOS-1205-GX	6047950
	Female connector, M12, 5-pin, straight, screw-type terminals	≤ 0.75 mm ²	4 mm ... 6 mm	DOS-1205-G	6009719

Male connectors (ready to assemble)

Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.
	Male connector, M12, 5-pin, straight, screw-type terminals	≤ 0.75 mm ²	4 mm ... 6 mm	STE-1205-G	6022083



Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for miniTwin4 and miniTwin2	Adapter AR60, miniTwin	4064710

Deflector mirrors



- **Description:** horizontal deflection

Figure	Mirror material	Items supplied	Suitable for protective field height	Type	Part no.
	Glass	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS125-034	1019425
			150 mm ... 450 mm	PNS125-049	1019426
			150 mm ... 600 mm	PNS125-064	1019427
			150 mm ... 750 mm	PNS125-079	1019428
			150 mm ... 900 mm	PNS125-094	1019429
			150 mm ... 1,050 mm	PNS125-109	1019430
			150 mm ... 1,200 mm	PNS125-124	1019431
			150 mm ... 1,350 mm	PNS125-139	1019432
			150 mm ... 1,500 mm	PNS125-154	1019433
			150 mm ... 1,650 mm	PNS125-169	1019434
			150 mm ... 1,800 mm	PNS125-184	1019435
	Stainless steel	Incl. mounting kit swivel mount	150 mm ... 300 mm	PNS75-034	1019414
			150 mm ... 450 mm	PNS75-049	1019415
			150 mm ... 600 mm	PNS75-064	1019416
			150 mm ... 750 mm	PNS75-079	1019417
	Glass	Incl. mounting kit swivel mount	150 mm ... 750 mm	PNS75-079S05	1046075
			150 mm ... 900 mm	PNS75-094	1019418
			150 mm ... 1,050 mm	PNS75-109	1019419
			150 mm ... 1,200 mm	PNS75-124	1019420
			150 mm ... 1,350 mm	PNS75-139	1019421
			150 mm ... 1,500 mm	PNS75-154	1019422
			150 mm ... 1,650 mm	PNS75-169	1019423
150 mm ... 1,800 mm	PNS75-184	1019424			


Dimensional drawings → page G-462

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
	14 mm diameter	Test rod 14 mm	2022599
	24 mm diameter	Test rod 24 mm	2045592
	34 mm diameter	Test rod 34 mm	2045593
	Test rod holder	BEF-3WNAAAAL1	2052249

Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> • Freestanding mounting solution with external grooves for installing additional accessories • Compact, rugged design with high reliability • Easy mounting and adjustment • Device protection against external influences • Large reflector surface for efficient multi-sided protection via beam deflection • Universally applicable for multiple light beam safety devices and safety light curtains 	→ page K-664

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

COST EFFICIENT SOLUTION FOR INDUSTRIES WITH HIGH WASH-DOWN REQUIREMENTS



Product description

The IP 69K-rated C2000 Standard safety light curtain is used for hazardous point protection in wash down areas, such as those found in the food and beverage industry. These compact safety light curtains are enclosed in a housing consisting of stainless steel, PA, PMMA and PVC, enabling them to be used with popular cleaning agents. These light

curtains can even withstand the use of high pressure cleaners. In addition, a one-way valve not only ensures that the pressure is permanently balanced, but also prevents condensation from forming on the plastic tube and blocks liquids from penetrating the housing. Along with the device, the PVC cable ensures safe, reliable cable routing.

At a glance

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- IP 69K, IP 67, IP 66 and IP 65 enclosure ratings incl. connecting cable
- Withstands wash-down pressure up to 100 bar and water temperature up to 80 °C
- ECOLAB and Diversey certified
- Resistant steel materials
- Ventilation valve prevents fogging of the front screen
- Smooth surfaces prevent accumulation of bacteria
- Compact design

Your benefits

- IP 69K-rated housing and connection cables provide a longer service life, which saves costs
- As an alternative to hard guards, personnel can quickly access and service protected areas, keeping productivity high
- Resistance to high pressure cleaners saves time in the cleaning process
- Reliable safeguarding, even when temperatures fluctuate



Additional information

- Detailed technical data G-443
- Ordering information G-445
- Dimensional drawing G-446
- Connection diagrams G-447
- Recommended accessories . . . G-448

→ www.sick.com/C2000_Standard_in_IP69K_Housing

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



G

Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Resolution	30 mm
Protective field height	150 mm ... 1,200 mm (depending on type)
Scanning range	0 m ... 4.5 m / 2.5 m ... 14.5 m (depending on type)
Response time	≤ 19 ms
Synchronization	Optical synchronisation

Safety-related parameters

Type	Type 2 (IEC 61496)
Safety integrity level	SIL1 (IEC 61508) SILCL1 (EN 62061)
Category	Category 2 (EN ISO 13849)
Test rate (internal test)	13 /s (EN ISO 13849) ¹⁾
Maximum demand rate	≤ 8 /min (EN ISO 13849) ²⁾
Performance level	PL c (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	2.2 x 10 ⁻⁸ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

¹⁾ Internal test. The test rate may not be exceeded if an external test is performed.

²⁾ Between two requirements on a safety-related response of the device, at least 100 internal or external tests must be carried out.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
External device monitoring (EDM)	✓	Activated
Beam coding	✓	Non-coded

Interfaces

System connection	
Connection type	Cable 15 m, PVC
Conductor cross-section	0.25 mm ²
Configuration method	Hard wired
Display elements	7-segment display
Status display	LEDs
Fieldbus, industrial network	
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ¹⁾

¹⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft



Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Safety outputs (OSSD)		
Type of output	-	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ¹⁾
Switching voltage HIGH	-	24 V DC ($V_S - 2.25 \text{ V DC} \dots V_S$)
Switching voltage LOW	-	≤ 3.5 V DC
Switching current	-	≤ 500 mA

¹⁾ Applies to the voltage range between -30 V and +30 V.

Mechanical data

Housing diameter	50 mm
Material	
End caps	Stainless steel V4A
Plastic tube	PMMA
Compensating element (membrane)	PA 6
PG connector	PA 6

Ambient data

Enclosure rating	IP 69K, IP 67, IP 66, IP 65 (EN 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 68-2-6)
Shock resistance	10 g, 16 ms (EN 60068-2-29)

Other information

Wave length	950 nm
--------------------	--------



Ordering information

Items supplied C2000 Standard in IP69K Housing:

- Safety light curtain consisting of a sender and a receiver
- 2 PVC connection cables, 15 m
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

C2000 Standard IP69K Housing, including 15 m IP69K-rated cable

Usage	As a standalone system
Housing diameter	50 mm
Connection types	
System connection	Cable 15 m, PVC

- **Resolution:** 30 mm
- **Scanning range:** 0 m ... 4.5 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
150 mm	C25S-015103C11	1024184	C25E-015303C11	1024185
300 mm	C25S-030103C11	1024187	C25E-030303C11	1024188
450 mm	C25S-045103C11	1024190	C25E-045303C11	1024191
600 mm	C25S-060103C11	1024193	C25E-060303C11	1024194
750 mm	C25S-075103C11	1024196	C25E-075303C11	1024197
900 mm	C25S-090103C11	1024199	C25E-090303C11	1024200
1,050 mm	C25S-105103C11	1024202	C25E-105303C11	1024203
1,200 mm	C25S-120103C11	1024205	C25E-120303C11	1024206

- **Resolution:** 30 mm
- **Scanning range:** 2.5 m ... 14.5 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C25S-030203C11	1024189	C25E-030303C11	1024188
450 mm	C25S-045203C11	1024192	C25E-045303C11	1024191
600 mm	C25S-060203C11	1024195	C25E-060303C11	1024194
750 mm	C25S-075203C11	1024198	C25E-075303C11	1024197
900 mm	C25S-090203C11	1024201	C25E-090303C11	1024200
1,050 mm	C25S-105203C11	1024204	C25E-105303C11	1024203
1,200 mm	C25S-120203C11	1024207	C25E-120303C11	1024206



Dimensional drawing (Dimensions in mm (inch))

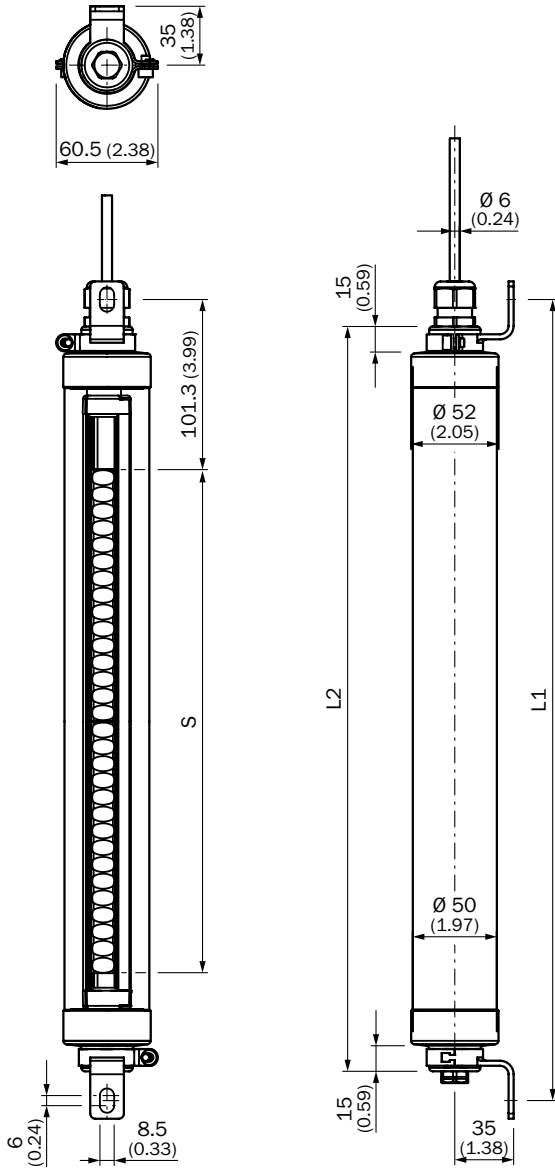
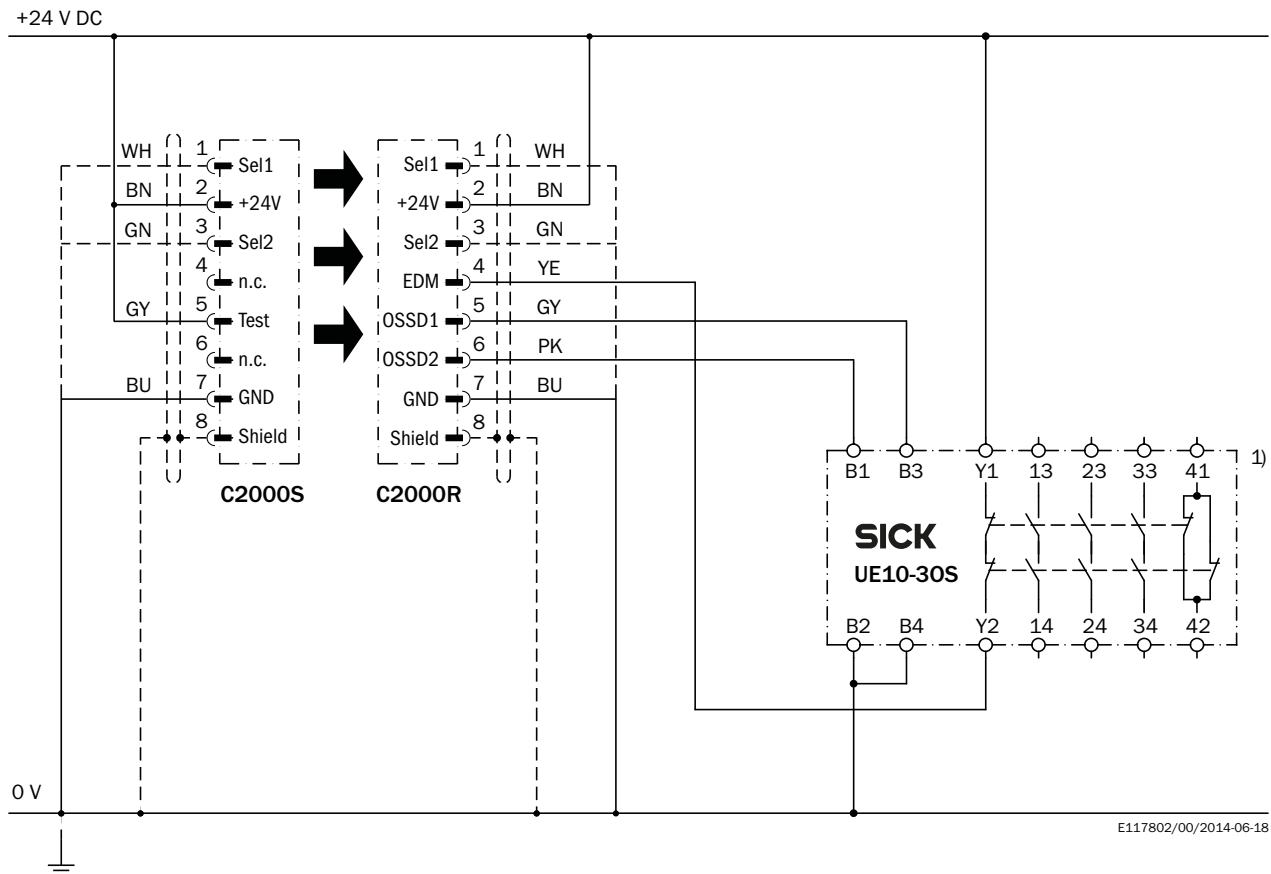


Illustration sender (receiver mirror image)

Protective field height S	L1	L2
150 (5.91)	357 (14.06)	324 (12.76)
300 (11.81)	476 (18.74)	443 (17.44)
450 (17.72)	626 (24.65)	593 (23.35)
600 (23.62)	777 (30.59)	744 (29.29)
750 (29.53)	927 (36.50)	894 (35.20)
900 (35.43)	1,078 (42.44)	1,045 (41.14)
1,050 (41.34)	1,228 (48.35)	1,195 (47.05)
1,200 (47.24)	1,382 (54.41)	1,349 (53.11)

Connection diagrams**C2000 Standard on UE10-30S safety relay****Task**

Connection of a C2000 Standard safety light curtain to UE10-30S.

Operating mode: without restart interlock and with external device monitoring.

Operating characteristics

When the light path is clear and the UE10-30S is de-energized and functioning correctly, the system is enabled. The OSSD1 and OSSD2 outputs are live, the UE10-30S is switched on. On the interruption of one of the light beams, the UE10-30S is deactivated by the OSSD1 and OSSD2 outputs.

Fault analysis

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The erroneous behavior of the UE10-30S will be detected. The shutdown function is retained.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

²⁾ PELV in accordance with the requirements in EN 60204-1 / 6.4

Take note of the operating instructions of the integrated devices.

Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Terminal and alignment brackets
Operating instructions	1	✓	-
Test rod	1	✓	→ Test and monitoring tools

Recommended accessories

Mounting systems

Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.
	Reinforced stainless steel bracket, rotatable	4 pieces	BEF-2SMMVAES4	2026850
	Stainless steel bracket, rotatable	4 pieces	BEF-2SMMEAES4	2023708
	Stainless steel support bracket	2 pieces	BEF-2AAADES2	2026849



Dimensional drawings → [page G-464](#)


Device protection (mechanical)

Protective caps


Figure	Description	Type	Part no.
	Bidirectional ventilation membrane made from Gore-Tex	Bidirectional ventilation membrane	5309082

Other mounting accessories

Sliding nuts


Figure	Description	Packing unit	Type	Part no.
	Suitable for PNS75 and PNS125	6 pieces	Sliding nuts for deflector mirror	2030600

Mounting tools

Figure	Description	Packing unit	Type	Part no.
	Mounting tool for M12 cable socket, small housing	1 piece	Installation wrench	4034690

Connection systems

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

Reflectors and optics

Deflector mirrors

Figure	Mirror material	Description	Items supplied	Suitable for protective field height	Type	Part no.
	Stainless steel	Horizontal deflection	Incl. mounting kit swivel mount	150 mm ... 750 mm	PNS75-079S05	1046075


Dimensional drawings → [page G-465](#)

Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
	30 mm diameter	Test rod 30 mm	2022602
	Test rod holder	BEF-3WNAAAAL1	2052249

Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> Freestanding mounting solution with external grooves for installing additional accessories Compact, rugged design with high reliability Easy mounting and adjustment Device protection against external influences Large reflector surface for efficient multi-sided protection via beam deflection Universally applicable for multiple light beam safety devices and safety light curtains 	→ page K-664

Enhanced system solutions

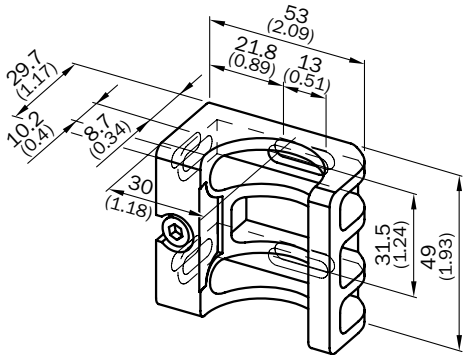
Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

deTec4 / deTec2 (Dimensions in mm (inch))

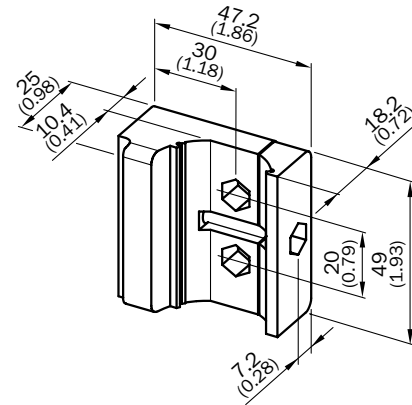
Terminal and alignment brackets

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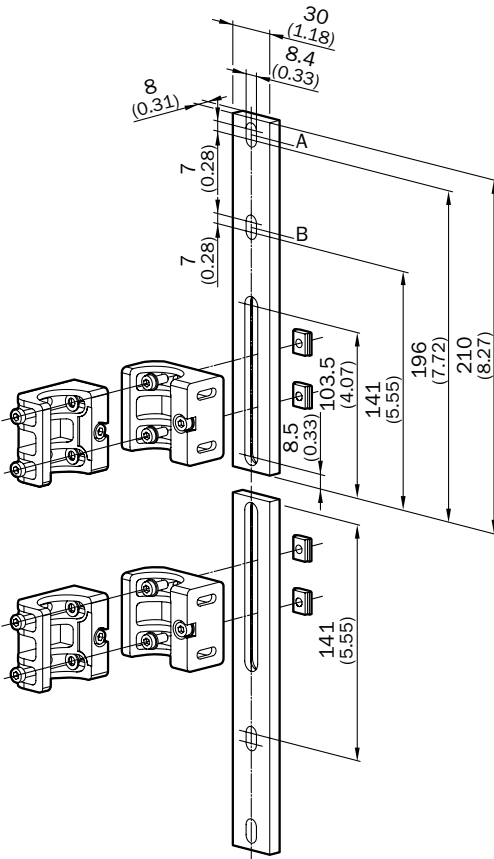
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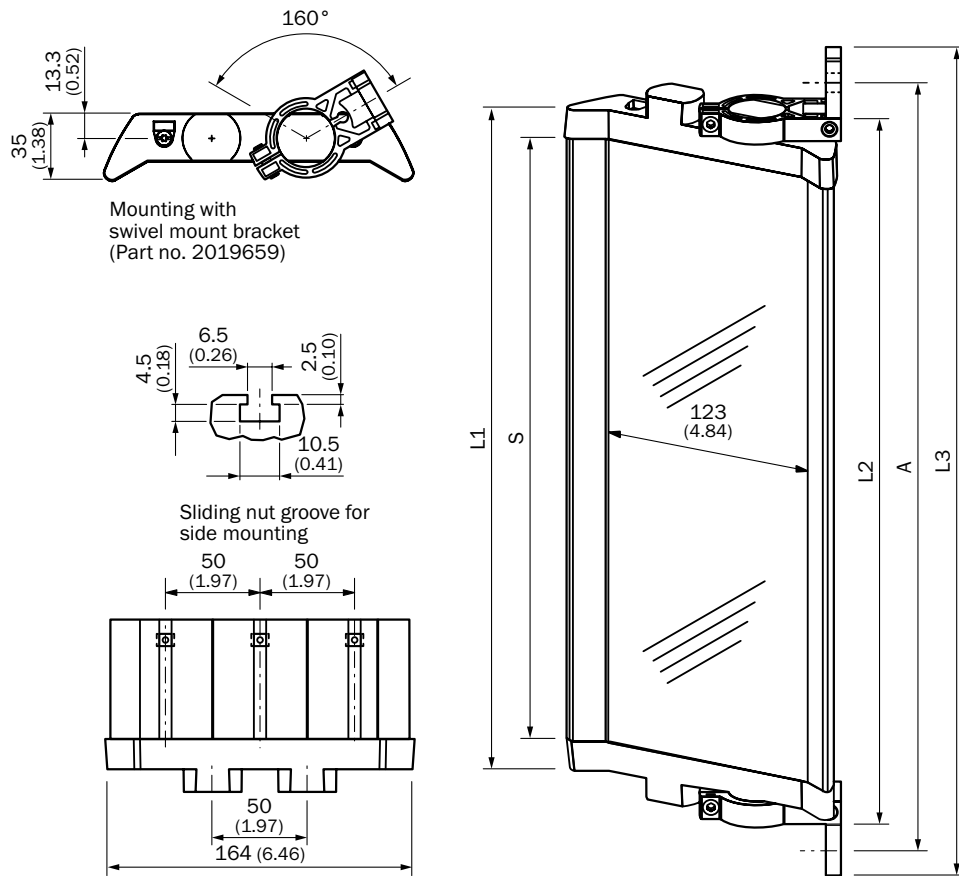
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Deflector mirrors

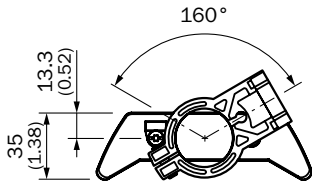
PNS125



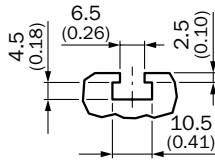
Mirror height S	L1	L2	L3	A
340 (13.39)	372 (14.65)	396 (15.59)	460 (18.11)	440 (17.32)
490 (19.29)	522 (20.55)	546 (21.5)	610 (24.02)	590 (23.23)
640 (25.2)	672 (26.46)	696 (27.4)	760 (29.92)	740 (29.13)
790 (31.1)	822 (32.36)	846 (33.31)	910 (35.83)	890 (35.04)
940 (37.01)	972 (38.27)	996 (39.21)	1,060 (41.73)	1,040 (40.94)
1,090 (42.91)	1,122 (44.17)	1,146 (45.12)	1,210 (47.64)	1,190 (46.85)
1,240 (48.82)	1,272 (50.08)	1,296 (51.02)	1,360 (53.54)	1,340 (52.76)
1,390 (54.72)	1,422 (55.98)	1,446 (56.93)	1,510 (59.45)	1,490 (58.66)
1,540 (60.63)	1,572 (61.89)	1,596 (62.83)	1,660 (65.35)	1,640 (64.57)
1,690 (66.54)	1,722 (67.8)	1,746 (68.74)	1,810 (71.26)	1,790 (70.47)
1,840 (72.44)	1,872 (73.7)	1,896 (74.65)	1,960 (77.17)	1,940 (76.38)



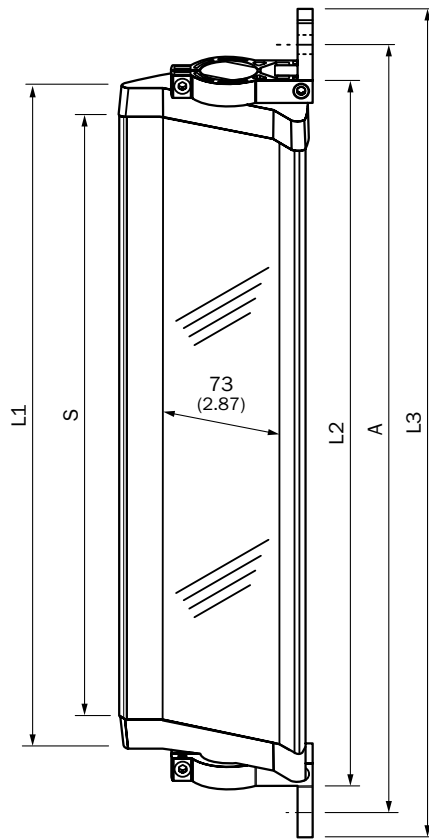
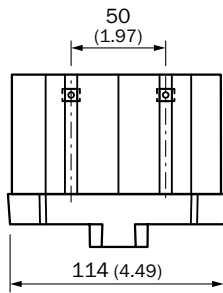
PNS75



Mounting with swivel mount bracket (Part no. 2019659)



Sliding nut groove for side mounting

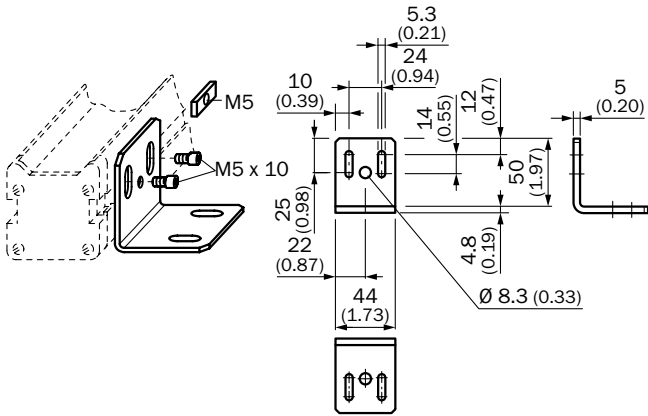


Mirror height S	L1	L2	L3	A
340 (13.39)	372 (14.65)	396 (15.59)	460 (18.11)	440 (17.32)
490 (19.29)	522 (20.55)	546 (21.50)	610 (24.02)	590 (23.23)
640 (25.20)	672 (26.46)	696 (27.40)	760 (29.92)	740 (29.13)
790 (31.10)	822 (32.36)	846 (33.31)	910 (35.83)	890 (35.04)
940 (37.01)	972 (38.27)	996 (39.21)	1,060 (41.73)	1,040 (40.94)
1,090 (42.91)	1,122 (44.17)	1,146 (45.12)	1,210 (47.64)	1,190 (46.85)
1,240 (48.82)	1,272 (50.08)	1,296 (51.02)	1,360 (53.54)	1,340 (52.76)
1,390 (54.72)	1,422 (55.98)	1,446 (56.93)	1,510 (59.45)	1,490 (58.66)
1,540 (60.63)	1,572 (61.89)	1,596 (62.83)	1,660 (65.35)	1,640 (64.57)
1,690 (66.54)	1,722 (67.80)	1,746 (68.74)	1,810 (71.26)	1,790 (70.47)
1,840 (72.44)	1,872 (73.70)	1,896 (74.65)	1,960 (77.17)	1,940 (76.38)

C4000 (Dimensions in mm (inch))

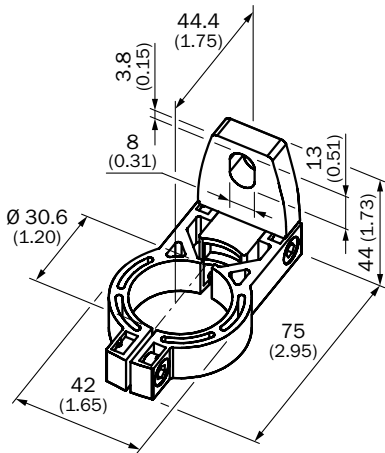
Mounting brackets and mounting plates

BEF-3WNGBAST4 (7021352)

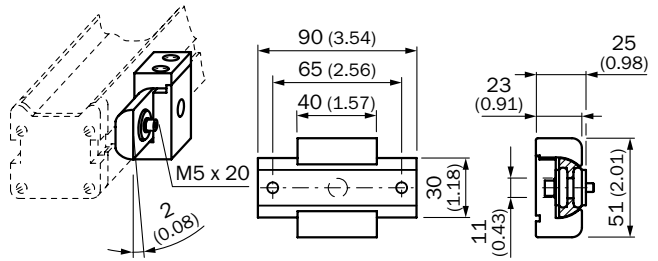


Terminal and alignment brackets

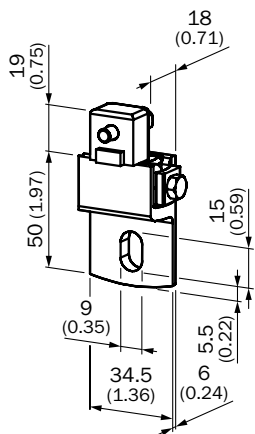
BEF-2SMMEAKU4 (2019659)



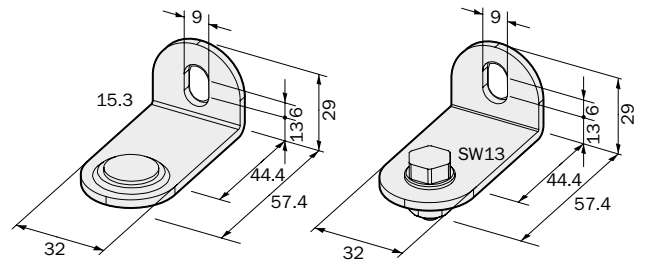
BEF-1SHADAAL4 (2017752)



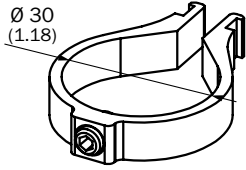
BEF-1SHABAZN4 (2019506)



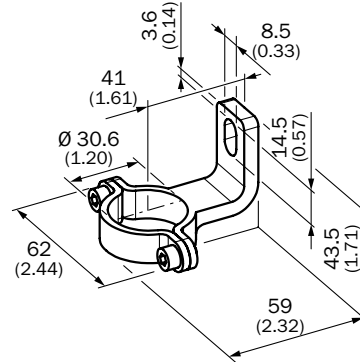
BEF-2WNAEEST4 (2034959)



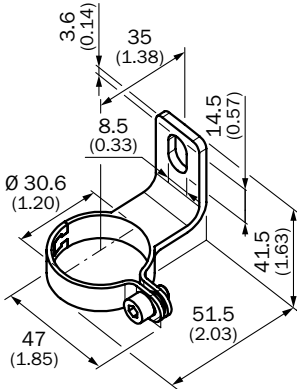
BEF-2SMMEAAL4 (2044847)



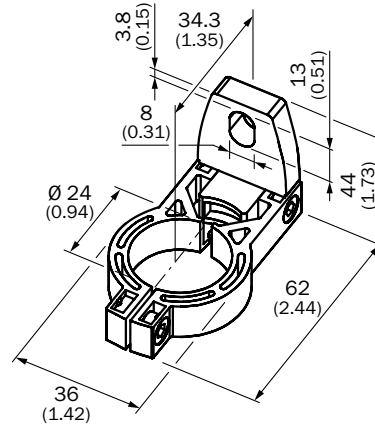
BEF-2SMMVAES4 (2026850)



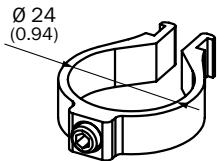
BEF-2SMMEAES4 (2023708)



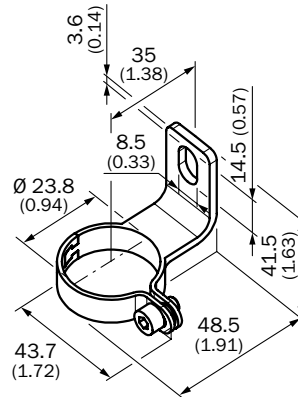
BEF-2SMKEAKU4 (2019649)



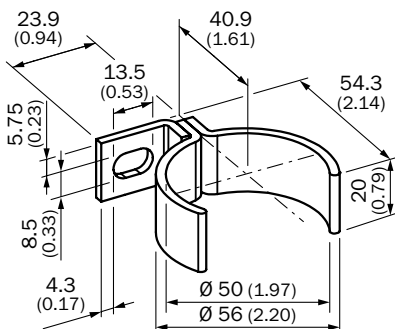
BEF-2SMKEAAL4 (2044848)



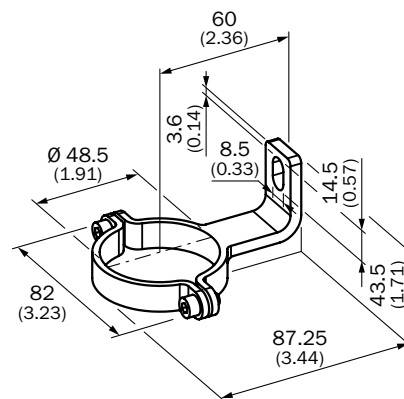
BEF-2SMKEAES4 (2030288)



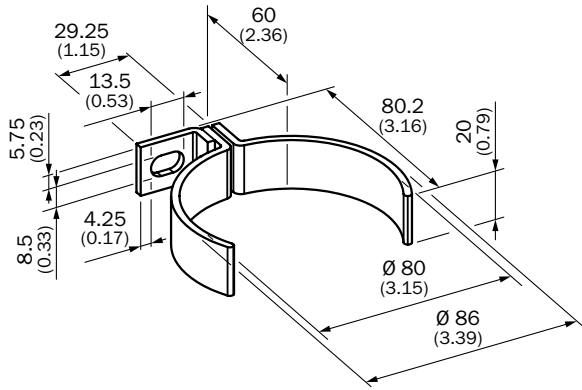
BEF-2AAADES2 (2026849)



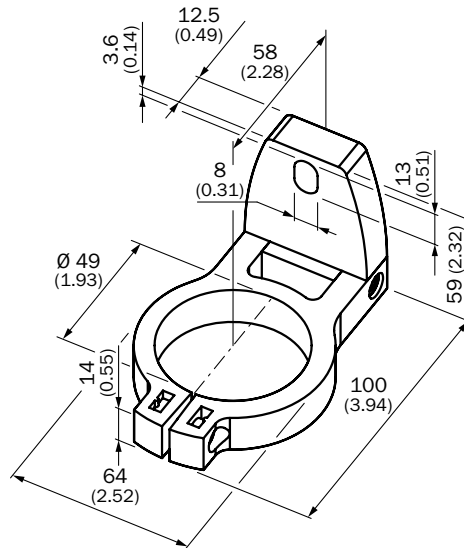
BEF-2SMGVAES4 (2060165)



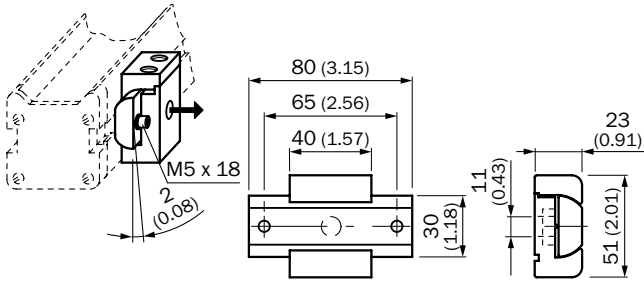
BEF-2AAAAOES2 (2060164)



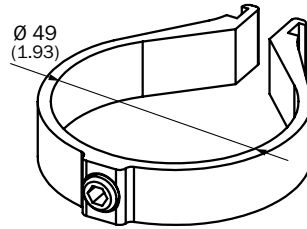
BEF-2SMGEAKU4 (2030510)



BEF-1SHABAAL4 (2017751)

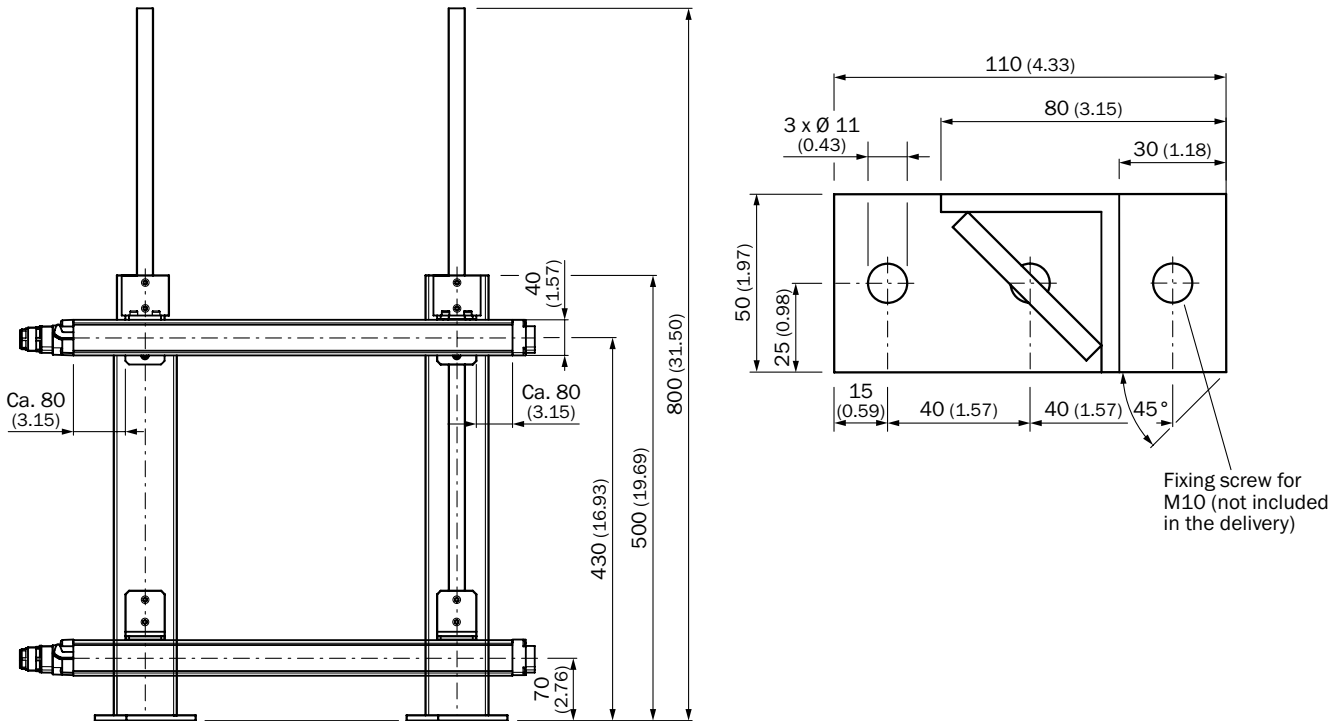


BEF-2SMGEAAL4 (2044846)



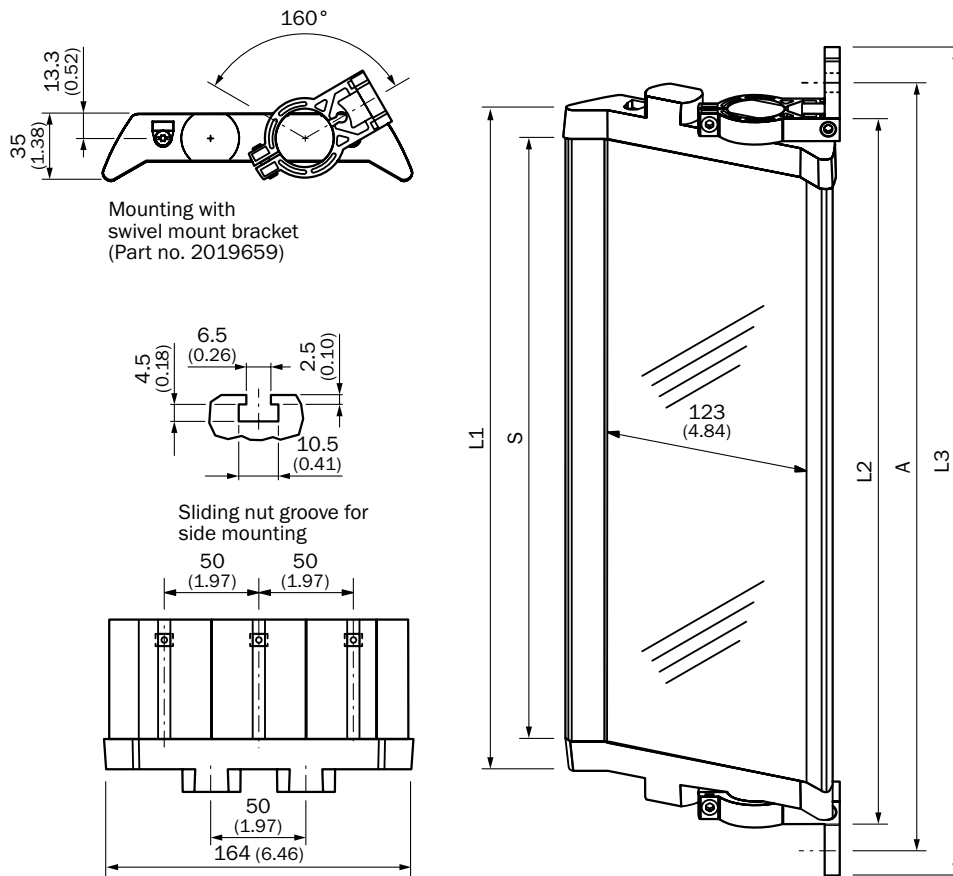
Other mounting accessories

BEF-3HHOCAST2 (2041661)



Deflector mirrors

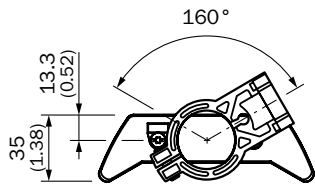
PNS125



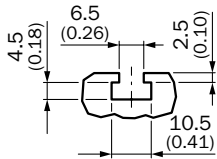
Mirror height S	L1	L2	L3	A
340 (13.39)	372 (14.65)	396 (15.59)	460 (18.11)	440 (17.32)
490 (19.29)	522 (20.55)	546 (21.5)	610 (24.02)	590 (23.23)
640 (25.2)	672 (26.46)	696 (27.4)	760 (29.92)	740 (29.13)
790 (31.1)	822 (32.36)	846 (33.31)	910 (35.83)	890 (35.04)
940 (37.01)	972 (38.27)	996 (39.21)	1,060 (41.73)	1,040 (40.94)
1,090 (42.91)	1,122 (44.17)	1,146 (45.12)	1,210 (47.64)	1,190 (46.85)
1,240 (48.82)	1,272 (50.08)	1,296 (51.02)	1,360 (53.54)	1,340 (52.76)
1,390 (54.72)	1,422 (55.98)	1,446 (56.93)	1,510 (59.45)	1,490 (58.66)
1,540 (60.63)	1,572 (61.89)	1,596 (62.83)	1,660 (65.35)	1,640 (64.57)
1,690 (66.54)	1,722 (67.8)	1,746 (68.74)	1,810 (71.26)	1,790 (70.47)
1,840 (72.44)	1,872 (73.7)	1,896 (74.65)	1,960 (77.17)	1,940 (76.38)



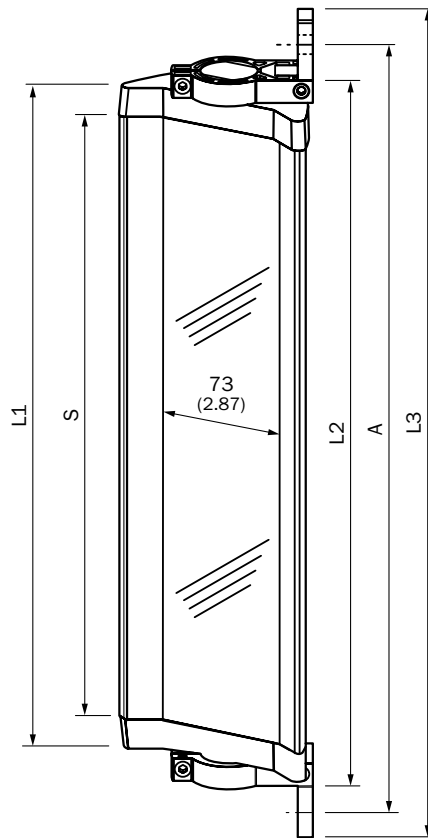
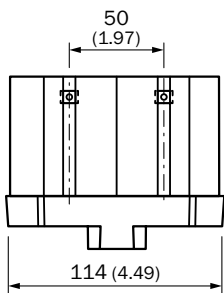
PNS75



Mounting with swivel mount bracket (Part no. 2019659)



Sliding nut groove for side mounting



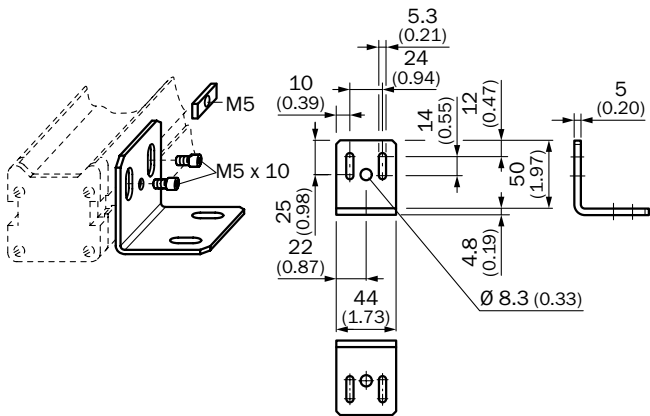
Mirror height S	L1	L2	L3	A
340 (13.39)	372 (14.65)	396 (15.59)	460 (18.11)	440 (17.32)
490 (19.29)	522 (20.55)	546 (21.50)	610 (24.02)	590 (23.23)
640 (25.20)	672 (26.46)	696 (27.40)	760 (29.92)	740 (29.13)
790 (31.10)	822 (32.36)	846 (33.31)	910 (35.83)	890 (35.04)
940 (37.01)	972 (38.27)	996 (39.21)	1,060 (41.73)	1,040 (40.94)
1,090 (42.91)	1,122 (44.17)	1,146 (45.12)	1,210 (47.64)	1,190 (46.85)
1,240 (48.82)	1,272 (50.08)	1,296 (51.02)	1,360 (53.54)	1,340 (52.76)
1,390 (54.72)	1,422 (55.98)	1,446 (56.93)	1,510 (59.45)	1,490 (58.66)
1,540 (60.63)	1,572 (61.89)	1,596 (62.83)	1,660 (65.35)	1,640 (64.57)
1,690 (66.54)	1,722 (67.80)	1,746 (68.74)	1,810 (71.26)	1,790 (70.47)
1,840 (72.44)	1,872 (73.70)	1,896 (74.65)	1,960 (77.17)	1,940 (76.38)



M4000 Curtain (Dimensions in mm (inch))

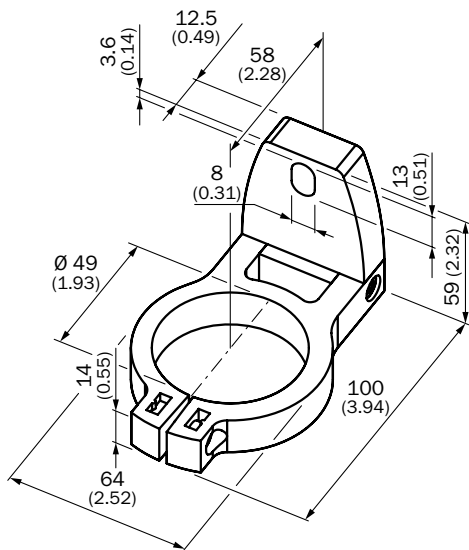
Mounting brackets and mounting plates

BEF-3WNGBAST4 (7021352)

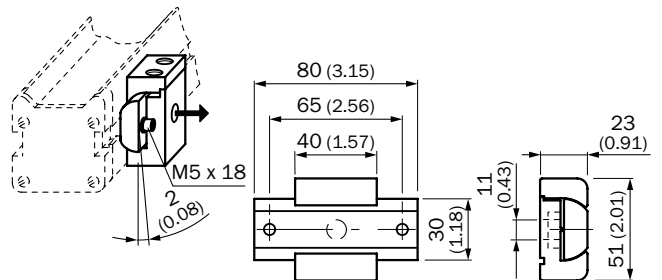


Terminal and alignment brackets

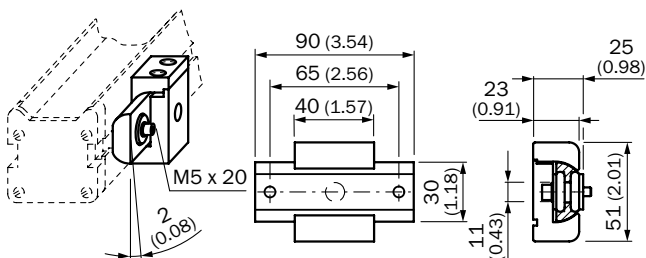
BEF-2SMGEAKU4 (2030510)



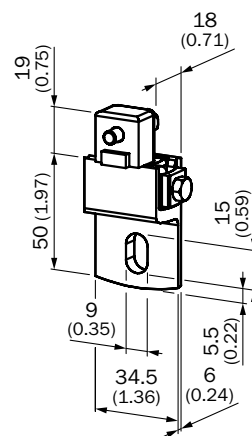
BEF-1SHABAAL4 (2017751)



BEF-1SHADAAL4 (2017752)

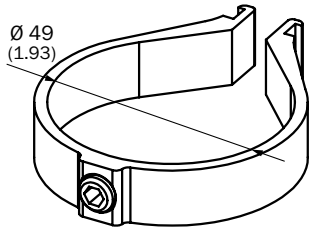


BEF-1SHABAZN4 (2019506)



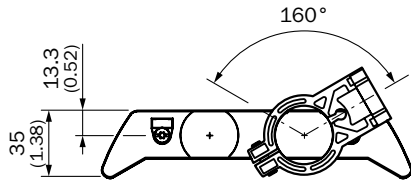
G

BEF-2SMGEAAL4 (2044846)

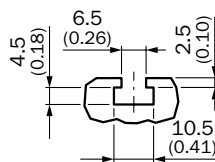


Deflector mirrors

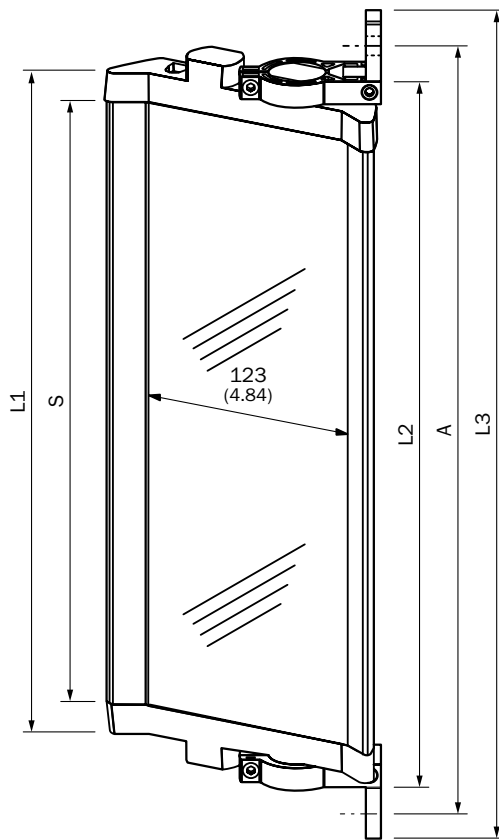
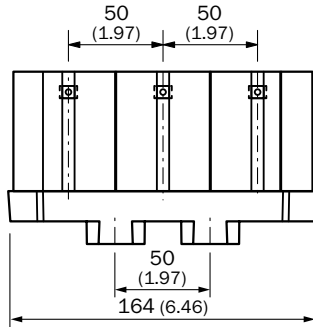
PNS125



Mounting with swivel mount bracket (Part no. 2019659)



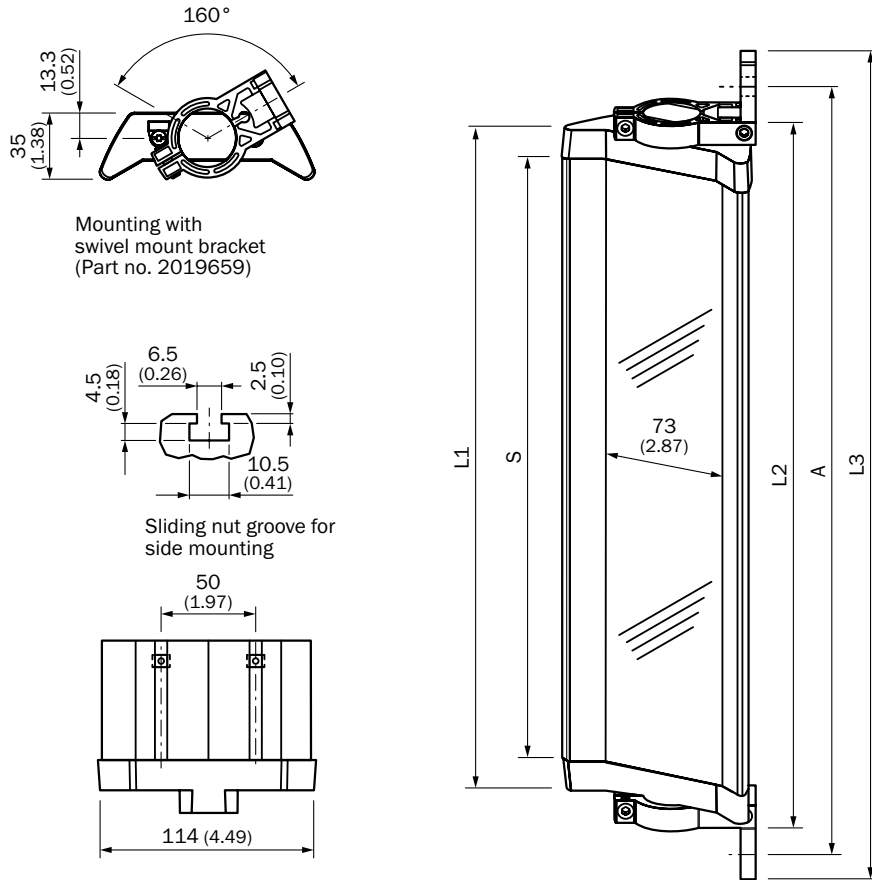
Sliding nut groove for side mounting



G

Mirror height S	L1	L2	L3	A
340 (13.39)	372 (14.65)	396 (15.59)	460 (18.11)	440 (17.32)
490 (19.29)	522 (20.55)	546 (21.5)	610 (24.02)	590 (23.23)
640 (25.2)	672 (26.46)	696 (27.4)	760 (29.92)	740 (29.13)
790 (31.1)	822 (32.36)	846 (33.31)	910 (35.83)	890 (35.04)
940 (37.01)	972 (38.27)	996 (39.21)	1,060 (41.73)	1,040 (40.94)
1,090 (42.91)	1,122 (44.17)	1,146 (45.12)	1,210 (47.64)	1,190 (46.85)
1,240 (48.82)	1,272 (50.08)	1,296 (51.02)	1,360 (53.54)	1,340 (52.76)
1,390 (54.72)	1,422 (55.98)	1,446 (56.93)	1,510 (59.45)	1,490 (58.66)
1,540 (60.63)	1,572 (61.89)	1,596 (62.83)	1,660 (65.35)	1,640 (64.57)
1,690 (66.54)	1,722 (67.8)	1,746 (68.74)	1,810 (71.26)	1,790 (70.47)
1,840 (72.44)	1,872 (73.7)	1,896 (74.65)	1,960 (77.17)	1,940 (76.38)

PNS75

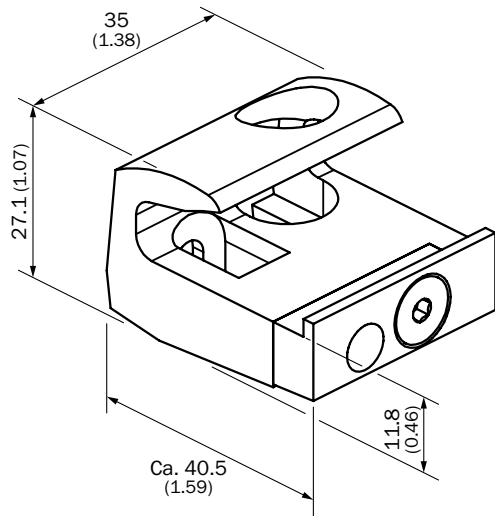


Mirror height S	L1	L2	L3	A
340 (13.39)	372 (14.65)	396 (15.59)	460 (18.11)	440 (17.32)
490 (19.29)	522 (20.55)	546 (21.50)	610 (24.02)	590 (23.23)
640 (25.20)	672 (26.46)	696 (27.40)	760 (29.92)	740 (29.13)
790 (31.10)	822 (32.36)	846 (33.31)	910 (35.83)	890 (35.04)
940 (37.01)	972 (38.27)	996 (39.21)	1,060 (41.73)	1,040 (40.94)
1,090 (42.91)	1,122 (44.17)	1,146 (45.12)	1,210 (47.64)	1,190 (46.85)
1,240 (48.82)	1,272 (50.08)	1,296 (51.02)	1,360 (53.54)	1,340 (52.76)
1,390 (54.72)	1,422 (55.98)	1,446 (56.93)	1,510 (59.45)	1,490 (58.66)
1,540 (60.63)	1,572 (61.89)	1,596 (62.83)	1,660 (65.35)	1,640 (64.57)
1,690 (66.54)	1,722 (67.80)	1,746 (68.74)	1,810 (71.26)	1,790 (70.47)
1,840 (72.44)	1,872 (73.70)	1,896 (74.65)	1,960 (77.17)	1,940 (76.38)

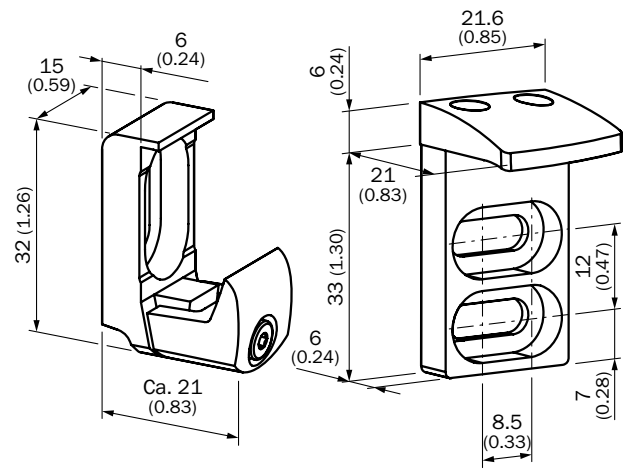
miniTwin (Dimensions in mm (inch))

Mounting brackets and mounting plates

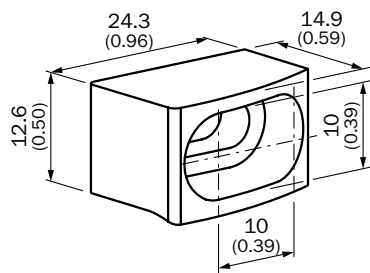
BEF-1SHABMAL2 (2056598)



BEF-3AAA0MKU2S04 (2045843)

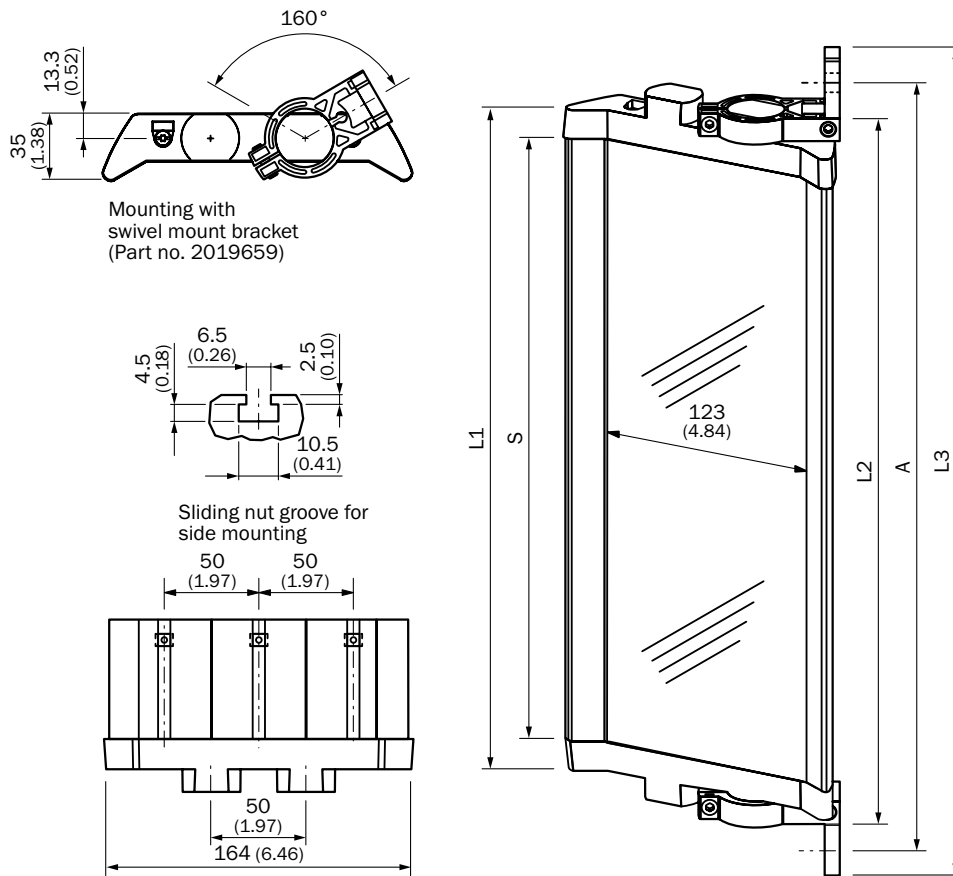


BEF-3SHAEMKU2 (2045835)



Deflector mirrors

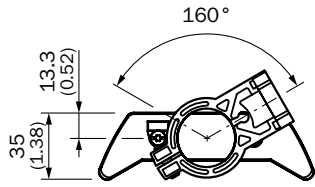
PNS125



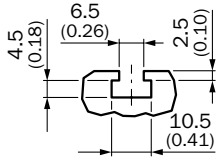
Mirror height S	L1	L2	L3	A
340 (13.39)	372 (14.65)	396 (15.59)	460 (18.11)	440 (17.32)
490 (19.29)	522 (20.55)	546 (21.5)	610 (24.02)	590 (23.23)
640 (25.2)	672 (26.46)	696 (27.4)	760 (29.92)	740 (29.13)
790 (31.1)	822 (32.36)	846 (33.31)	910 (35.83)	890 (35.04)
940 (37.01)	972 (38.27)	996 (39.21)	1,060 (41.73)	1,040 (40.94)
1,090 (42.91)	1,122 (44.17)	1,146 (45.12)	1,210 (47.64)	1,190 (46.85)
1,240 (48.82)	1,272 (50.08)	1,296 (51.02)	1,360 (53.54)	1,340 (52.76)
1,390 (54.72)	1,422 (55.98)	1,446 (56.93)	1,510 (59.45)	1,490 (58.66)
1,540 (60.63)	1,572 (61.89)	1,596 (62.83)	1,660 (65.35)	1,640 (64.57)
1,690 (66.54)	1,722 (67.8)	1,746 (68.74)	1,810 (71.26)	1,790 (70.47)
1,840 (72.44)	1,872 (73.7)	1,896 (74.65)	1,960 (77.17)	1,940 (76.38)



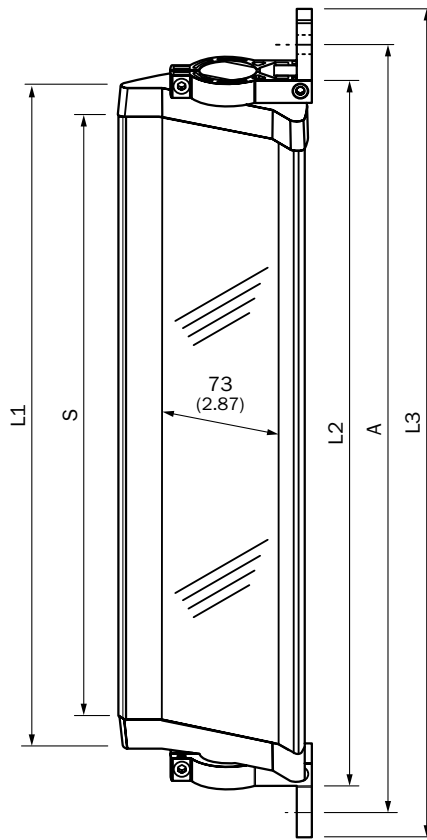
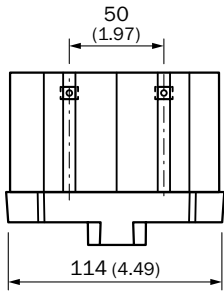
PNS75



Mounting with swivel mount bracket (Part no. 2019659)



Sliding nut groove for side mounting



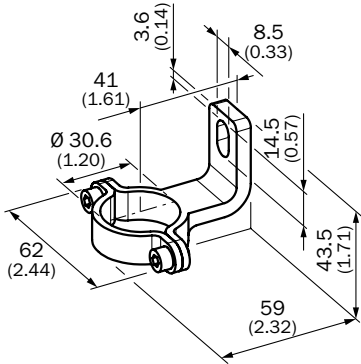
Mirror height S	L1	L2	L3	A
340 (13.39)	372 (14.65)	396 (15.59)	460 (18.11)	440 (17.32)
490 (19.29)	522 (20.55)	546 (21.50)	610 (24.02)	590 (23.23)
640 (25.20)	672 (26.46)	696 (27.40)	760 (29.92)	740 (29.13)
790 (31.10)	822 (32.36)	846 (33.31)	910 (35.83)	890 (35.04)
940 (37.01)	972 (38.27)	996 (39.21)	1,060 (41.73)	1,040 (40.94)
1,090 (42.91)	1,122 (44.17)	1,146 (45.12)	1,210 (47.64)	1,190 (46.85)
1,240 (48.82)	1,272 (50.08)	1,296 (51.02)	1,360 (53.54)	1,340 (52.76)
1,390 (54.72)	1,422 (55.98)	1,446 (56.93)	1,510 (59.45)	1,490 (58.66)
1,540 (60.63)	1,572 (61.89)	1,596 (62.83)	1,660 (65.35)	1,640 (64.57)
1,690 (66.54)	1,722 (67.80)	1,746 (68.74)	1,810 (71.26)	1,790 (70.47)
1,840 (72.44)	1,872 (73.70)	1,896 (74.65)	1,960 (77.17)	1,940 (76.38)



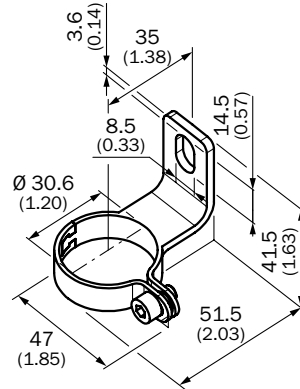
C2000 (Dimensions in mm (inch))

Terminal and alignment brackets

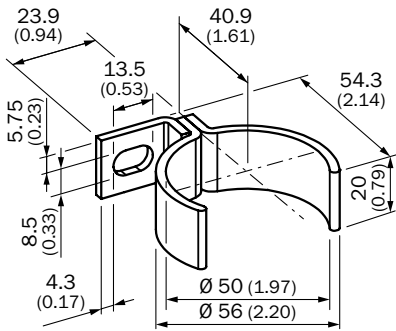
BEF-2SMMVAES4 (2026850)



BEF-2SMMEAES4 (2023708)

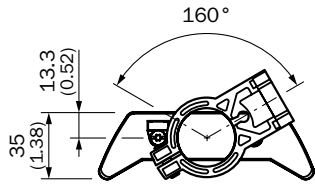


BEF-2AAADES2 (2026849)

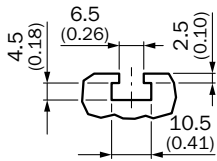


Deflector mirrors

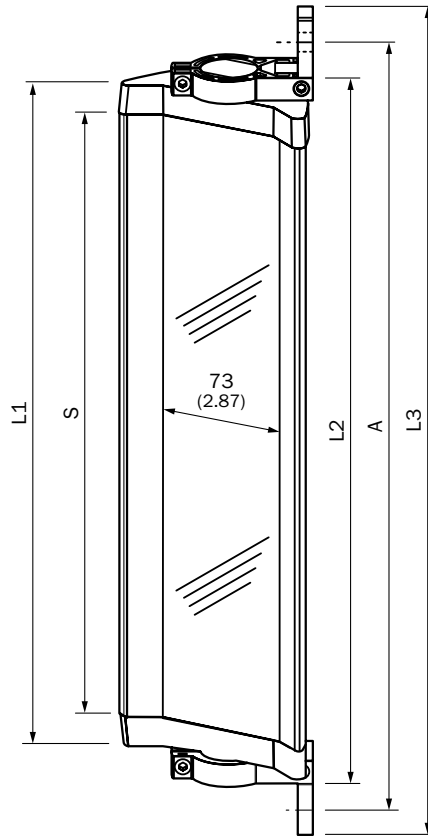
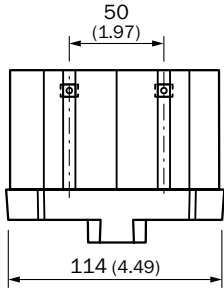
PNS75



Mounting with swivel mount bracket (Part no. 2019659)



Sliding nut groove for side mounting



Mirror height S	L1	L2	L3	A
790 (31.10)	822 (32.36)	846 (33.31)	910 (35.83)	890 (35.04)





SAFETY CAMERA SYSTEMS



H

Quick and easy protection for hazardous points and hazardous areas

Safety camera systems from SICK are electro-sensitive protective devices based on image processing technology. The sender and receiver are integrated into a single housing unit. The compact camera systems do not require any additional software, and can be commissioned at the push of a button. The automatic alignment allows a high level of flexibility when defining the protective field, and the high degree of freedom in the machine design provides maximum ergonomics.

Your benefits

- Individual definition of protective fields allows high flexibility for machine design
- Quick commissioning without additional software
- User friendly one-button operation and automatic alignment
- No variants: one-device concept for all aperture sizes
- Reduced storage, logistics and commissioning costs
- No expert knowledge required
- High machine availability and simple maintenance



	Product family overviewH-468
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	Dimensional drawings for accessoriesH-486
	Safety camera systems.	H-486



PRODUCT FAMILY OVERVIEW



V300 Work Station Extended

Perfect protection with minimal space requirements

Technical data overview

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
Resolution	20 mm, 24 mm, 30 mm
Maximum protective field range	1.41 m, 1.7 m, 2.12 m
Optical field of view size	1 m x 1 m 1.2 m x 1.2 m 1.5 m x 1.5 m
Response time	≤ 20 ms

At a glance

- Type 3 (IEC 61496), SIL2 (IEC 61508), PL d (EN ISO 13849)
- Protective field size from 0.4 m x 0.4 m to 1.5 m x 1.5 m
- Resolution 20 mm, 24 mm, and 30 mm
- One device only: integrated sender and receiver
- Intuitive one-button operation
- Automatic alignment
- Synchronization of 2 systems
- Restart/Reset, EDM integrated

Detailed information

→ H-470



**V200 Work Station Extended**

Perfect protection with minimal space requirements

Type 2 (IEC 61496)

SIL1 (IEC 61508)

SILCL1 (EN 62061)

Category 2 (EN ISO 13849)

PL c (EN ISO 13849)

20 mm, 24 mm, 30 mm

1.41 m, 1.7 m, 2.12 m

1 m x 1 m

1.2 m x 1.2 m

1.5 m x 1.5 m

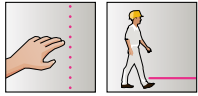
≤ 20 ms

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- Protective field size from 0.4 m x 0.4 m to 1.5 m x 1.5 m
- Resolution 20 mm, 24 mm, and 30 mm
- One device only: integrated sender and receiver
- Intuitive one-button operation
- Automatic alignment
- Synchronization of 2 systems
- Restart/Reset, EDM integrated

→ H-478



PERFECT PROTECTION WITH MINIMAL SPACE REQUIREMENTS



Product description

The V300 Work Station Extended provides innovative camera technology as standard. The clever device concept integrates the sender and receiver so that they can be mounted in corners, for example, to save space. This allows smooth integration into the work environment. The V300's camera sensor is identical for all aperture sizes. It meets the requirements of the latest safety standards: SIL as defined in IEC 61508 and IEC 62061, and PL as defined in ISO 13849 (SIL2 and PL d). The entire sys-

tem is based on the selection of resolutions using the corresponding resolution set. Users can choose between three sets as appropriate for the resolution (20 mm, 24 mm, and 30 mm). Aperture sizes from 1 m to 1.5 m can easily be achieved as well as flexible protective field geometries which fit the applications like a well-tailored suit. The system also has an outstanding automatic alignment function which makes it quick to use.

At a glance

- Type 3 (IEC 61496), SIL2 (IEC 61508), PL d (EN ISO 13849)
- Protective field size from 0.4 m x 0.4 m to 1.5 m x 1.5 m
- Resolution 20 mm, 24 mm, and 30 mm
- One device only: integrated sender and receiver
- Intuitive one-button operation
- Automatic alignment
- Synchronization of 2 systems
- Restart/Reset, EDM integrated

Your benefits

- Individual definition of protective fields allows high flexibility for machine design
- Quick commissioning without additional software
- Intuitive, time-saving operation
- No variants: one-device concept for all aperture sizes
- Reduced storage, logistics and commissioning costs
- No expert knowledge for commissioning required
- High machine availability and simple maintenance



Additional information

Detailed technical data	H-471
Ordering information	H-473
Dimensional drawing	H-473
Connection diagrams	H-474
Recommended accessories	H-476

→ www.sick.com/V300_Work_Station_Extended

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Resolution	20 mm, 24 mm, 30 mm ¹⁾
Protective field range	
20 mm resolution	1.41 m
24 mm resolution	1.7 m
30 mm resolution	2.12 m
Protective field size	
20 mm resolution	1 m x 1 m
24 mm resolution	1.2 m x 1.2 m
30 mm resolution	1.5 m x 1.5 m
Aspect ratio protective field	1:1 to 2:1
Response time	20 ms

¹⁾ Depending on resolution set.

Safety-related parameters

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	5.6 x 10 ⁻⁹ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	Deactivated
External device monitoring (EDM)	✓	Deactivated
Cascading	✓	
Teach/sync	✓	

Interfaces

Connection type	Male connector M12, 8-pin
Status display	LEDs
Diagnostic display	LEDs
Fieldbus, industrial network	
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ¹⁾

¹⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	III (EN 50178)
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC)
Power consumption	≤ 165 mA ¹⁾ ≤ 690 mA ²⁾
Safety outputs (OSSD)	
Type of output	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
Switching voltage HIGH	$V_s - 2.7$ V DC ... V_s
Switching voltage LOW	≤ 3.5 V DC
Switching current	6 mA ... 250 mA

¹⁾ At 24 V DC without output load.

²⁾ Including maximum output load.

Mechanical data

Dimensions (W x H x D)	93.9 mm x 50 mm x 93.9 mm
Housing material	Aluminum die cast
Weight	355 g

Ambient data

Enclosure rating	IP 54 (EN 60529)
Ambient operating temperature	0 °C ... +50 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (EN 60068-2-6)
Shock resistance	10 g, 16 ms (EN 60068-2-27)

Other information

Wave length	850 nm
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Ordering information

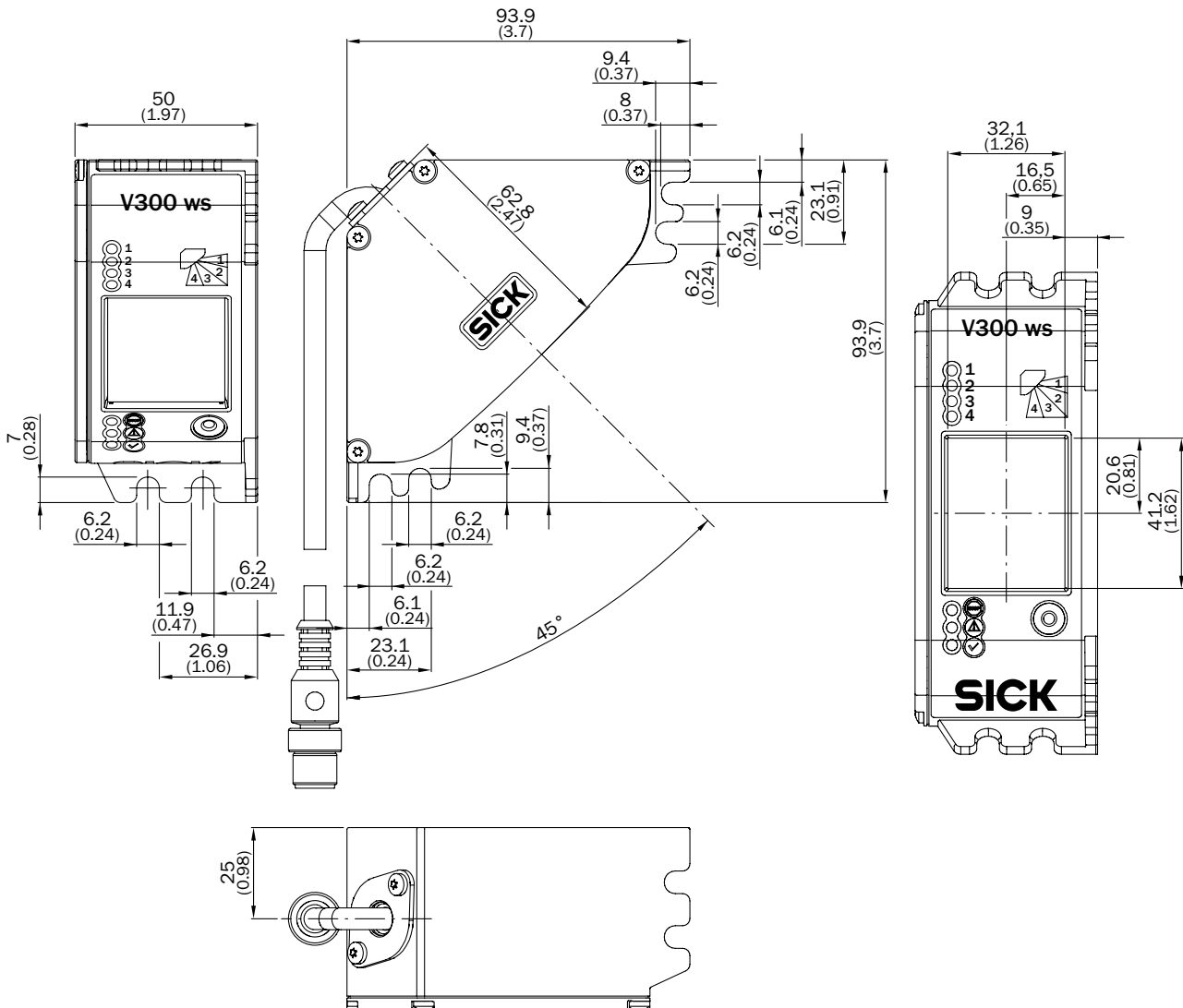
Items supplied V300 Work Station Extended:

- Camera
- Teach-in pin
- Adhesive label with information on the daily check
- Operating instructions on CD-ROM
- Quick start (instructions for quick commissioning), multilingual

A resolution set has to be ordered separately!

Description	Type	Part no.
V300 Work Station Extended	V30W-0101000	1041542

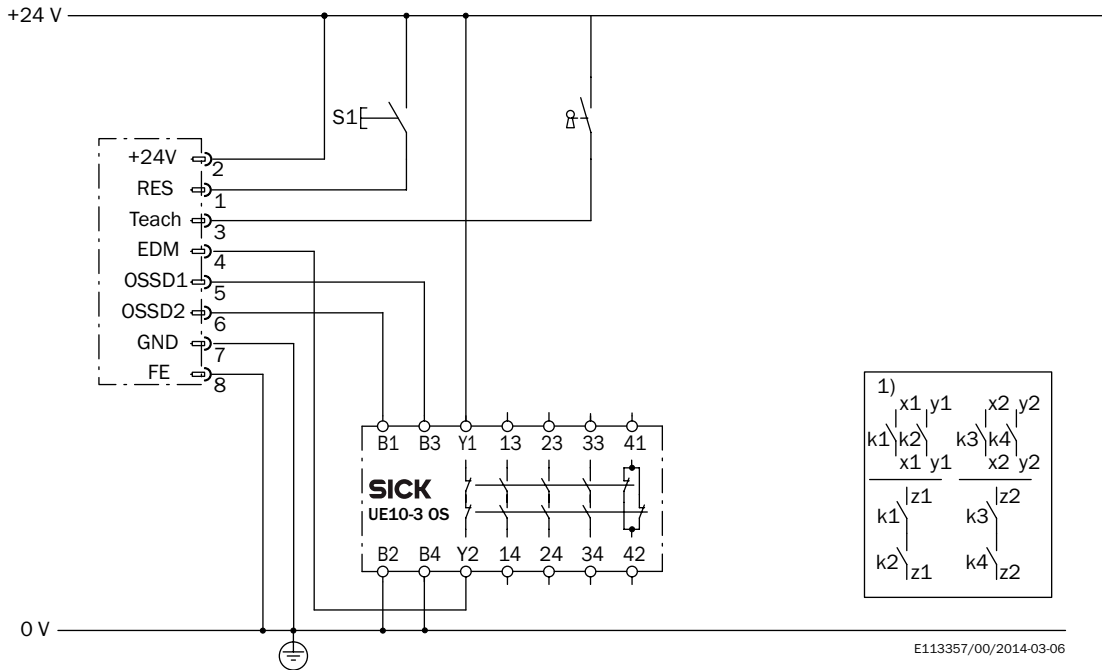
Dimensional drawing (Dimensions in mm (inch))



H

Connection diagrams

Safety camera system on UE10-30S safety relay



E113357/00/2014-03-06

Task

The V300 Work Station Extended safety camera system can be integrated into a relay controller/contactor controller with the aid of the UE10-30S safety relay. Operation is with external device monitoring (EDM) and internal restart interlock.

Function

If the light path is clear and there are no errors in the inactive state of the UE10-30S, the status LED on the V300 Work Station Extended flashes (reset required). The system is ready for switch-on and waits for an input signal/switch-on signal. The system is enabled by pressing and releasing the S1 button. The OSSD1 and OSSD2 outputs carry power. The UE10-30S is switched on. On interruption of the light path, the UE10-30S is de-energized by the OSSD1 and OSSD2 outputs.

Possible faults

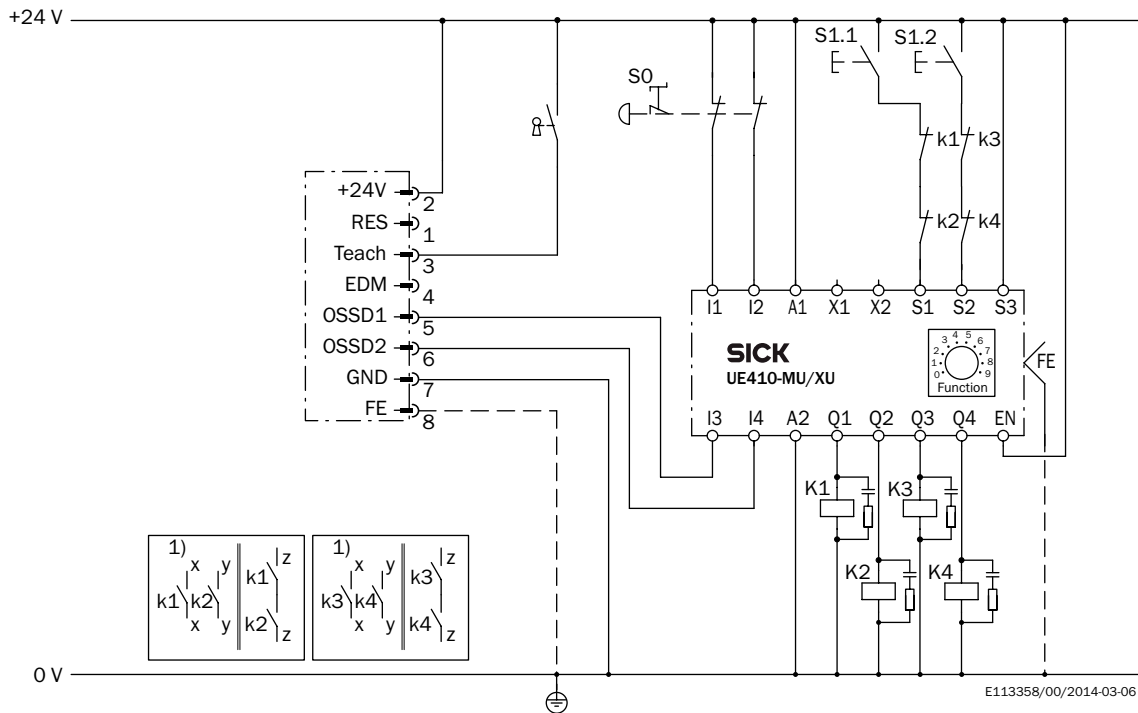
Cross-circuits and short-circuits on the OSSD1 and OSSD2 outputs are detected and will result in “lock-out.” Malfunctions on the UE10-30S are detected. The shutdown function is retained. If the S1 button is tampered with (e.g., by jamming), the system will not re-enable the output circuits.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.



Safety camera system on Flexi Classic safety controller

**Task**

The V300 Work Station Extended safety camera system can be integrated into a relay controller/contactor controller with the aid of the modular Flexi Classic (UE410-MU with expansion UE410-XU) safety controller. Operation is with external device monitoring and internal restart interlock on the V300 Work Station Extended as well as restart interlock for the emergency stop.

Function

When the light path on the V300 Work Station Extended is clear and the input conditions on the Flexi Classic are valid, the system is ready for switch-on and waits for an input signal/switch-on signal. The system's corresponding logic path is enabled by pressing and releasing the related S1 button. The related output on the Flexi Classic carries power. If the input conditions are no longer met, the related outputs on the Flexi Classic shut down.

Possible faults

Cross-circuits and short-circuits on the connection cables for the V300 Work Station Extended are detected and result in "lock-out." Malfunctions on the K1 to K4 contactors are detected. The shutdown function is retained. If the S1.x button is tampered with (e.g., by jamming), the system will not re-enable the output circuits.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

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Accessories required for commissioning

Description	Number	Items supplied	Further information
Connecting cable	1	-	→ Plug connectors and cables
Resolution set (consisting of reflective tape and test rod)	1	-	→ Sets and kits
Teach-in pin	1	✓	→ Programming and configuration tools
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Terminal and alignment brackets

Terminal brackets

Figure	Description	Type	Part no.
	Mounting kit for mounting the sensor on the profile frame	Mounting kit	2045375



Dimensional drawings → [page H-486](#)

Connection systems


Plug connectors and cables

Connecting cables with female connector

- **Model:** PUR, halogen-free, shielded

Figure	Connection type	Conductor cross-section	Cable length	Type	Part no.
	Female connector, M12, 8-pin, angled	0.25 mm ²	5 m	DOL-127SW05ME25KM0	2076548
	Female connector, M12, 8-pin, straight	0.25 mm ²	2.5 m	DOL-127SG2M5E25KM0	2076540
			5 m	DOL-127SG05ME25KM0	2076541
			7.5 m	DOL-127SG7M5E25KM0	2076542

Power supply units and power cord connectors


Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

Reflectors and optics

Reflectors

Reflective tape

- **Mounting system type:** self-adhesive


Figure	Practicable protective field size	Dimensions (L x W x H)	Items supplied	Type	Part no.
	0.4 m x 0.4 m ... 1.0 m x 1.0 m	1,000 mm x 37 mm x 0.8 mm	2 pieces	Reflective tape 2 x 1.0 m	2046005
	0.6 m x 0.6 m ... 1.5 m x 1.5 m	1,500 mm x 48 mm x 0.8 mm	2 pieces	Reflective tape 2 x 1.5 m	2051582
	0.4 m x 0.4 m ... 1.2 m x 1.2 m	1,200 mm x 37 mm x 0.8 mm	2 pieces	Reflective tape 2 x 1.2 m	2051581

Optics cloths



Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories

Sets and kits

Figure	Description	Items supplied	Type	Part no.
 Illustration may differ	Resolution set for 20 mm resolution and protective field size from 0.4 x 0.4 m to 1.0 m x 1.0 m	2 x reflective tape 1.0 m, 1 x test rod 20 mm diameter	Resolution set 20 mm	2051336
	Resolution set for 24 mm resolution and protective field size from 0.4 x 0.4 m to 1.2 m x 1.2 m	2 x reflective tape 1.2 m, 1 x test rod 24 mm diameter	Resolution set 24 mm	2051338
	Resolution set for 30 mm resolution and protective field size from 0.6 x 0.6 m to 1.5 m x 1.5 m	2 x reflective tape 1.5 m, 1 x test rod 30 mm diameter	Resolution set 30 mm	2051339


Test and monitoring tools

Figure	Description	Type	Part no.
	20 mm diameter	Test rod 20 mm	2022600
	24 mm diameter	Test rod 24 mm	2045592
	30 mm diameter	Test rod 30 mm	2022602
	Test rod holder	BEF-3WNAAAAL1	2052249


Programming and configuration tools

Figure	Description	Type	Part no.
	Teach-in pin for safety camera systems	Teaching pen	4052939

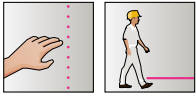
Cleaning agent

Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006
	Solvent for adhesive, spray bottle, suitable for removing reflective tapes	Solvent for adhesive	5602135

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

PERFECT PROTECTION WITH MINIMAL SPACE REQUIREMENTS



Product description

The V200 Work Station Extended provides innovative camera technology as standard. The clever device concept integrates the sender and receiver so that they can be mounted in corners, for example, to save space. This allows smooth integration into the work environment. The V200's camera sensor is identical for all aperture sizes. It meets the requirements of the latest safety standards: SIL as defined in IEC 61508 and IEC 62061, and PL as defined in ISO 13849 (SIL1 and PL c). The entire sys-

tem is based on the selection of resolutions using the corresponding resolution set. Users can choose between three sets as appropriate for the resolution (20 mm, 24 mm, and 30 mm). Aperture sizes from 1 m to 1.5 m can easily be achieved as well as flexible protective field geometries which fit the applications like a well-tailored suit. The system also has an outstanding automatic alignment function which makes it quick to use.

At a glance

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- Protective field size from 0.4 m x 0.4 m to 1.5 m x 1.5 m
- Resolution 20 mm, 24 mm, and 30 mm
- One device only: integrated sender and receiver
- Intuitive one-button operation
- Automatic alignment
- Synchronization of 2 systems
- Restart/Reset, EDM integrated

Your benefits

- Individual definition of protective fields allows high flexibility for machine design
- Quick commissioning without additional software
- Intuitive, time-saving operation
- No variants: one-device concept for all aperture sizes
- Reduced storage, logistics and commissioning costs
- No expert knowledge required
- High machine availability and simple maintenance



Additional information

Detailed technical data	H-479
Ordering information	H-481
Dimensional drawing	H-481
Connection diagrams	H-482
Recommended accessories . . .	H-484

→ www.sick.com/V200_Work_Station_Extended

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



H

Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Resolution	20 mm, 24 mm, 30 mm ¹⁾
Protective field range	
20 mm resolution	1.41 m
24 mm resolution	1.7 m
30 mm resolution	2.12 m
Protective field size	
20 mm resolution	1 m x 1 m
24 mm resolution	1.2 m x 1.2 m
30 mm resolution	1.5 m x 1.5 m
Aspect ratio protective field	1:1 to 2:1
Response time	20 ms

¹⁾ Depending on resolution set.

Safety-related parameters

Type	Type 2 (IEC 61496)
Safety integrity level	SIL1 (IEC 61508) SILCL1 (EN 62061)
Category	Category 2 (EN ISO 13849)
Test rate (internal test)	50 /s (EN ISO 13849)
Maximum demand rate	≤ 30 /min (EN ISO 13849) ¹⁾
Performance level	PL c (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	5.6 x 10 ⁻⁹ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

¹⁾ Between two requirements on a safety-related response of the device, at least 100 internal or external tests must be carried out.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	Deactivated
External device monitoring (EDM)	✓	Deactivated
Cascading	✓	
Teach/sync	✓	

Interfaces

Connection type	Male connector M12, 8-pin
Status display	LEDs
Diagnostic display	LEDs
Fieldbus, industrial network	
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ¹⁾

¹⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	III (EN 50178)
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC)
Power consumption	≤ 165 mA ¹⁾ ≤ 690 mA ²⁾
Safety outputs (OSSD)	
Type of output	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
Switching voltage HIGH	$V_s - 2.7$ V DC ... V_s
Switching voltage LOW	≤ 3.5 V DC
Switching current	6 mA ... 250 mA

¹⁾ At 24 V DC without output load.

²⁾ Including maximum output load.

Mechanical data

Dimensions (W x H x D)	93.9 mm x 50 mm x 93.9 mm
Housing material	Aluminum die cast
Weight	355 g

Ambient data

Enclosure rating	IP 54 (EN 60529)
Ambient operating temperature	0 °C ... +50 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (EN 60068-2-6)
Shock resistance	10 g, 16 ms (EN 60068-2-27)

Other information

Wave length	850 nm
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Ordering information

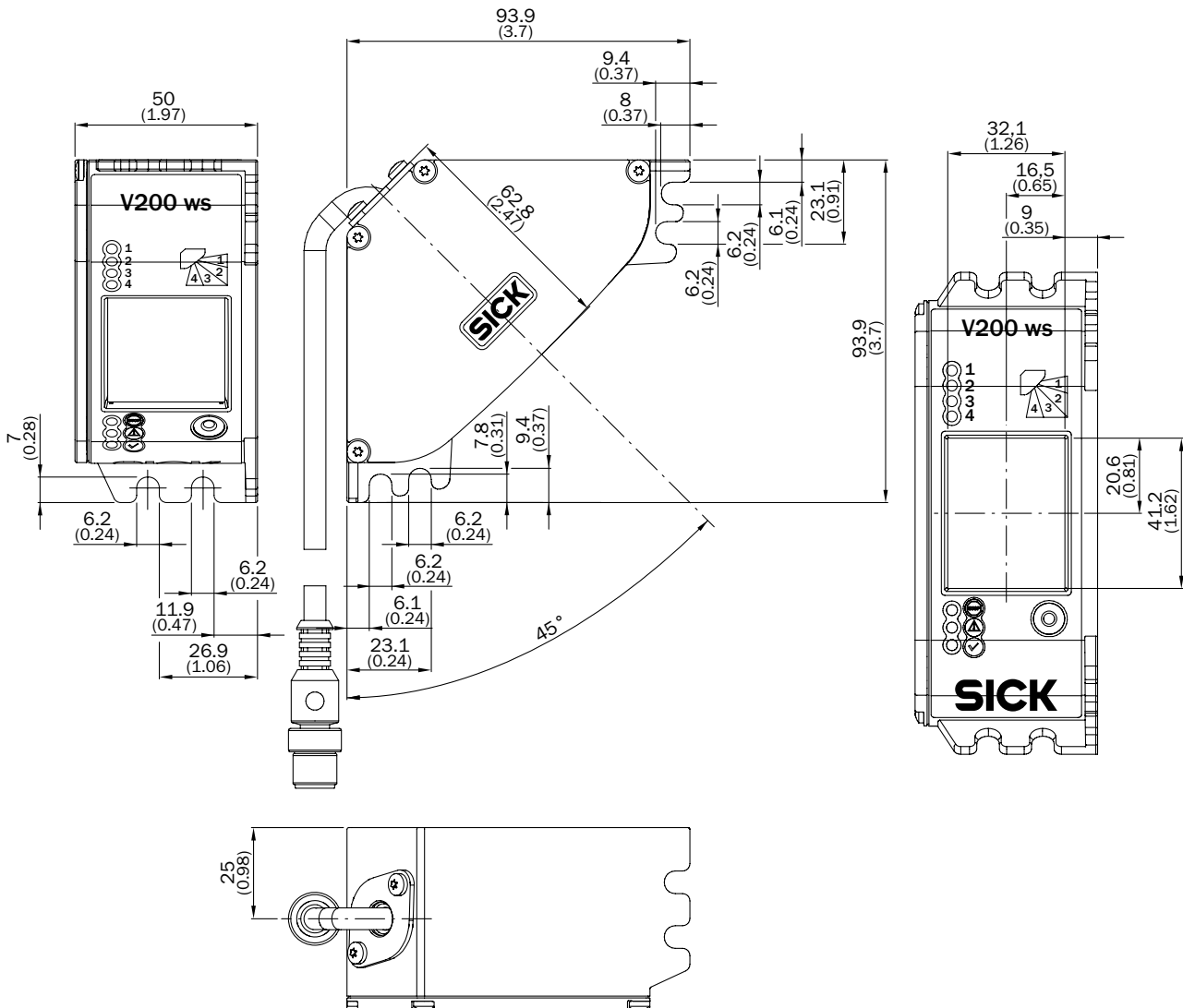
Items supplied V200 Work Station Extended:

- Camera
- Teach-in pin
- Adhesive label with information on the daily check
- Operating instructions on CD-ROM
- Quick start (instructions for quick commissioning), multilingual

A resolution set has to be ordered separately!

Description	Type	Part no.
V200 Work Station Extended	V20W-0101000	1042027

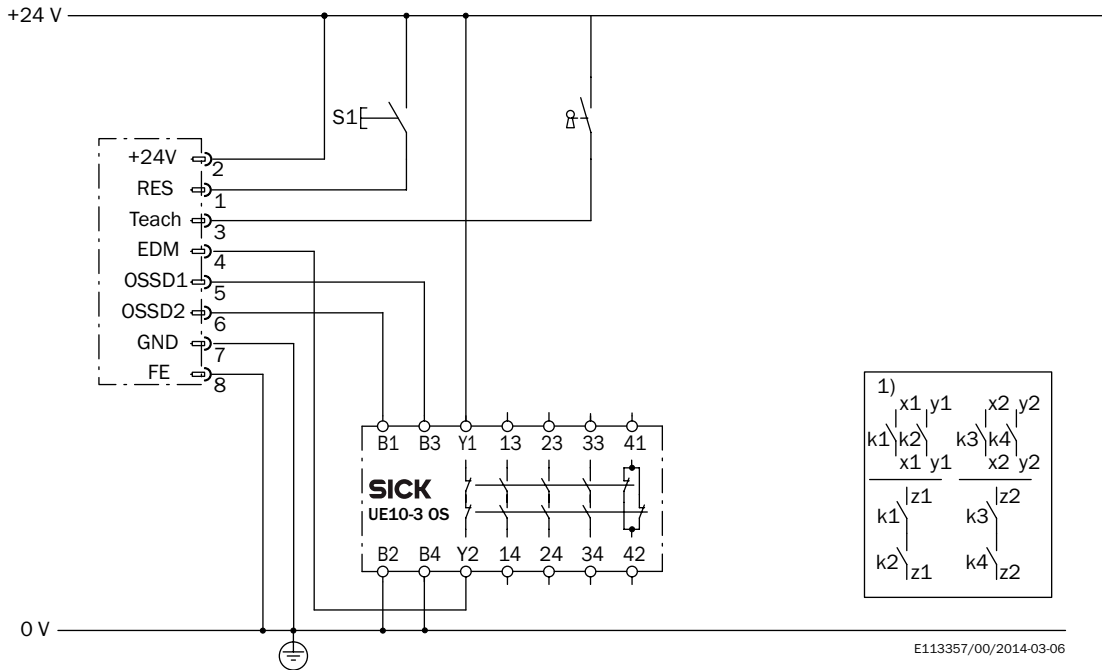
Dimensional drawing (Dimensions in mm (inch))



H

Connection diagrams

Safety camera system on UE10-30S safety relay



Task

The V200 Work Station Extended safety camera system can be integrated into a relay controller/contactor controller with the aid of the UE10-30S safety relay. Operation is with external device monitoring (EDM) and internal restart interlock.

Function

If the light path is clear and there are no errors in the inactive state of the UE10-30S, the status LED on the V200 Work Station Extended flashes (reset required). The system is ready for switch-on and waits for an input signal/switch-on signal. The system is enabled by pressing and releasing the S1 button. The OSSD1 and OSSD2 outputs carry power. The UE10-30S is switched on. On interruption of the light path, the UE10-30S is de-energized by the OSSD1 and OSSD2 outputs.

Possible faults

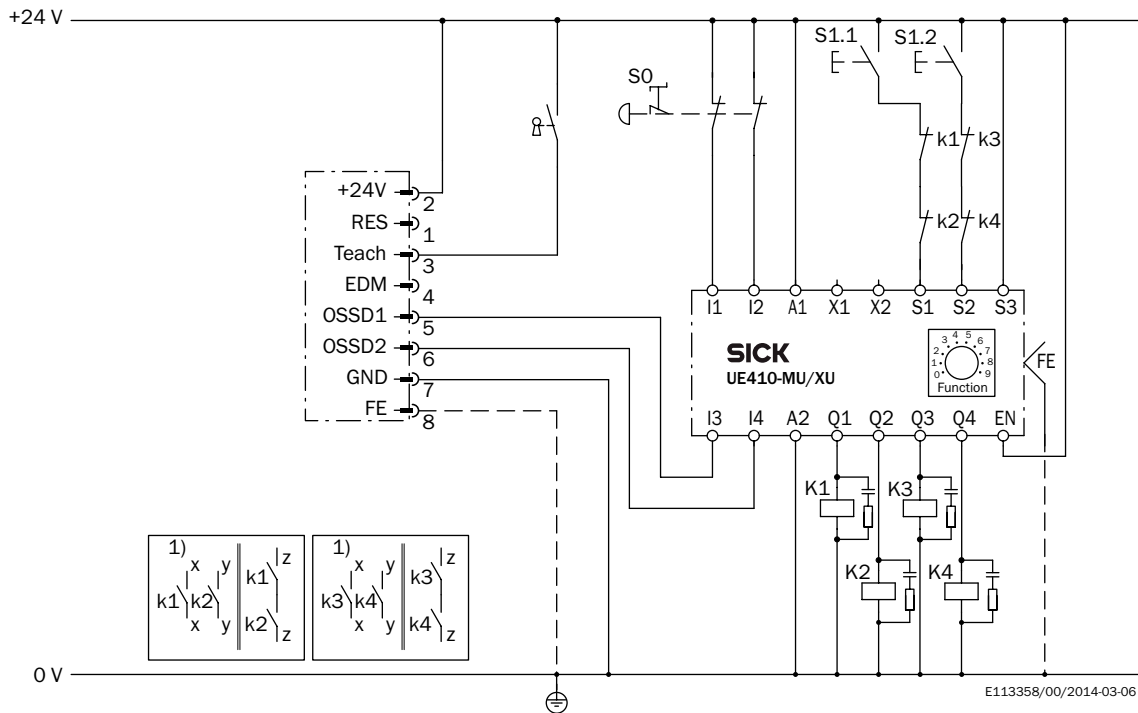
Cross-circuits and short-circuits on the OSSD1 and OSSD2 outputs are detected and will result in “lock-out.” Malfunctions on the UE10-30S are detected. The shutdown function is retained. If the S1 button is tampered with (e.g., by jamming), the system will not re-enable the output circuits.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.



Safety camera system on Flexi Classic safety controller

**Task**

The V200 Work Station Extended safety camera system can be integrated into a relay controller/contactor controller with the aid of the modular Flexi Classic (UE410-MU with expansion UE410-XU) safety controller. Operation is with external device monitoring and internal restart interlock on the V200 Work Station Extended as well as restart interlock for the emergency stop.

Function

When the light path on the V200 Work Station Extended is clear and the input conditions on the Flexi Classic are valid, the system is ready for switch-on and waits for an input signal/switch-on signal. The system's corresponding logic path is enabled by pressing and releasing the related S1 button. The related output on the Flexi Classic carries power. If the input conditions are no longer met, the related outputs on the Flexi Classic shut down.

Possible faults

Cross-circuits and short-circuits on the connection cables for the V200 Work Station Extended are detected and result in "lock-out." Malfunctions on the K1 to K4 contactors are detected. The shutdown function is retained. If the S1.x button is tampered with (e.g., by jamming), the system will not re-enable the output circuits.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

H

Accessories required for commissioning

Description	Number	Items supplied	Further information
Connecting cable	1	-	→ Plug connectors and cables
Resolution set (consisting of reflective tape and test rod)	1	-	→ Sets and kits
Teach-in pin	1	✓	→ Programming and configuration tools
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Terminal and alignment brackets

Terminal brackets

Figure	Description	Type	Part no.
	Mounting kit for mounting the sensor on the profile frame	Mounting kit	2045375



Dimensional drawings → [page H-486](#)

Connection systems


Plug connectors and cables

Connecting cables with female connector

- **Model:** PUR, halogen-free, shielded

Figure	Connection type	Conductor cross-section	Cable length	Type	Part no.
	Female connector, M12, 8-pin, angled	0.25 mm ²	5 m	DOL-127SW05ME25KM0	2076548
	Female connector, M12, 8-pin, straight	0.25 mm ²	2.5 m	DOL-127SG2M5E25KM0	2076540
			5 m	DOL-127SG05ME25KM0	2076541
			7.5 m	DOL-127SG7M5E25KM0	2076542

Power supply units and power cord connectors


Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

Reflectors and optics

Reflectors

Reflective tape

- **Mounting system type:** self-adhesive


Figure	Practicable protective field size	Dimensions (L x W x H)	Items supplied	Type	Part no.
	0.4 m x 0.4 m ... 1.0 m x 1.0 m	1,000 mm x 37 mm x 0.8 mm	2 pieces	Reflective tape 2 x 1.0 m	2046005
	0.6 m x 0.6 m ... 1.5 m x 1.5 m	1,500 mm x 48 mm x 0.8 mm	2 pieces	Reflective tape 2 x 1.5 m	2051582
	0.4 m x 0.4 m ... 1.2 m x 1.2 m	1,200 mm x 37 mm x 0.8 mm	2 pieces	Reflective tape 2 x 1.2 m	2051581

Optics cloths



Figure	Description	Type	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories

Sets and kits

Figure	Description	Items supplied	Type	Part no.
 Illustration may differ	Resolution set for 20 mm resolution and protective field size from 0.4 x 0.4 m to 1.0 m x 1.0 m	2 x reflective tape 1.0 m, 1 x test rod 20 mm diameter	Resolution set 20 mm	2051336
	Resolution set for 24 mm resolution and protective field size from 0.4 x 0.4 m to 1.2 m x 1.2 m	2 x reflective tape 1.2 m, 1 x test rod 24 mm diameter	Resolution set 24 mm	2051338
	Resolution set for 30 mm resolution and protective field size from 0.6 x 0.6 m to 1.5 m x 1.5 m	2 x reflective tape 1.5 m, 1 x test rod 30 mm diameter	Resolution set 30 mm	2051339


Test and monitoring tools

Figure	Description	Type	Part no.
	20 mm diameter	Test rod 20 mm	2022600
	24 mm diameter	Test rod 24 mm	2045592
	30 mm diameter	Test rod 30 mm	2022602
	Test rod holder	BEF-3WNAAAAL1	2052249


Programming and configuration tools

Figure	Description	Type	Part no.
	Teach-in pin for safety camera systems	Teaching pen	4052939

Cleaning agent

Figure	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006
	Solvent for adhesive, spray bottle, suitable for removing reflective tapes	Solvent for adhesive	5602135

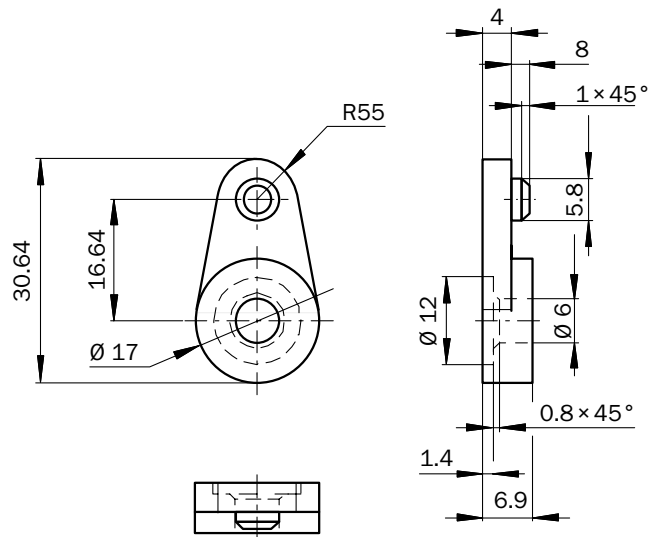
Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

Safety camera systems (Dimensions in mm (inch))

Terminal and alignment brackets

Mounting kit (2045375)



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MULTIPLE LIGHT BEAM SAFETY DEVICES



Economical, efficient multiple light beam safety devices



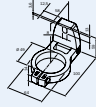
Multiple light beam safety devices are electro-sensitive protective devices with two or more light beams. If one or more of the light beams is interrupted, a deactivation signal is sent to the machine so that any dangerous state on a machine or system can be stopped. A system consists of a sender and a receiver. In active/passive systems, the sender and receiver are located in a housing unit while a deflection unit on the passive side provides beam deflection.

Your benefits



- The wide scanning range allows the device to be customized according to the application
- Robust design with a high level of resistance to environmental changes ensures high machine availability, even under special ambient conditions
- Customized protection field adaption with deflection mirror reduces installation costs

- Customer-friendly interfaces and status display simplify commissioning and maintenance
- Intelligent muting solution: For 2- and 4-sensor muting, the on-site connection of the muting signals significantly minimizes wiring costs and simplifies commissioning and maintenance
- Reduced downtime through 360° visible LED and diagnostics displays
- Economical active/passive variants minimize the wiring costs and installation time



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Selection guide

Product	Safety task				Safety-related parameters		Number of beams									Resolution		
	One-sided access protection with person detection	Multi-sided access protection with person detection	One-sided access protection with differentiation between persons and material / muting	Stationary hazardous area protection with person detection in the presence	Type (IEC 61496)	Performance level (EN ISO 13849)	2	3	4	5	6	7	8	9	60 mm	80 mm	116 mm	
M4000																		
	M4000 Standard	■	■	■ ²⁾		4 e	■	■	■	■	■	■	■					
	M4000 Standard A/P	■	■	■ ²⁾		4 e	■		■									
	M4000 Standard in IP69K Housing	■	■	■ ²⁾		4 e		■										
	M4000 Standard A/P in IP69K Housing	■	■	■ ²⁾		4 e			■									
	M4000 Advanced	■	■	■ ¹⁾		4 e	■	■	■	■	■	■	■	■				
	M4000 Advanced A/P	■	■	■ ¹⁾		4 e	■		■									
	M4000 Area				■	4 e									■	■		
M2000																		
	M2000 Standard	■	■	■ ²⁾		2 c	■	■	■	■	■	■	■				■	
	M2000 Standard A/P	■	■	■ ²⁾		2 c	■											
	M2000 Standard in IP69K Housing	■	■	■ ²⁾		2 c	■	■	■									
	M2000 Cascadable	■	■	■ ²⁾		2 c	■	■	■		■	■	■	■				■
	M2000 RES/EDM	■	■	■ ²⁾		2 c	■	■	■		■	■	■	■				■
	M2000 A/P RES/EDM	■	■	■ ²⁾		2 c	■											■

¹⁾ Combined with a UE403 muting switching amplifier or a Flexi Classic/Flexi Soft safety controller

²⁾ Combined with a Flexi Classic/Flexi Soft safety controller

Beam separation							Ambient operating temperature		Enclosure rating		Functions										Scanning range up to (m)	Page
170 mm	220 mm	300 mm	400 mm	450 mm	500 mm	600 mm	0 °C ... +55 °C	-10 °C ... +55 °C	-30 °C ... +55 °C	IP 65	IP 65, IP 66, IP 67, IP 69K	Restart interlock	External device monitoring (EDM)	Beam coding	Sender test	Configurable scanning range	Configurable application diagnostic output	Muting	Muting with override	Safe SICK device communication via EFI		

		■	■	■	■	■				■	■		■	■	■	■	■	■ ²⁾	■ ²⁾		70	→ I-496
			■			■			■	■		■	■	■			■	■ ²⁾	■ ²⁾		7.5	→ I-508
				■					■		■	■	■	■			■	■ ²⁾	■ ²⁾		53	→ I-518
			■						■		■	■	■				■	■ ²⁾	■ ²⁾		4	→ I-524
	■	■	■	■	■	■			■	■		■	■	■	■	■	■	■ ¹⁾	■ ¹⁾	■	70	→ I-530
		■			■				■	■		■	■	■			■	■ ¹⁾	■ ¹⁾	■	7.5	→ I-548
							■		■		■	■	■	■	■	■					70	→ I-564




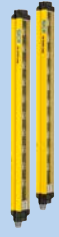
■	■	■	■	■	■		■			■			■	■			■ ²⁾	■ ²⁾		70	→ I-574
					■		■		■		■						■ ²⁾	■ ²⁾		6	→ I-584
		■	■		■		■		■		■	■		■			■ ²⁾	■ ²⁾		19	→ I-592
■		■	■		■		■		■		■	■					■ ²⁾	■ ²⁾		25	→ sick.com/M2000_Cascadable
■	■	■	■	■	■		■		■		■	■	■				■ ²⁾	■ ²⁾		70	→ sick.com/M2000_RES_EDM
				■	■		■		■		■	■					■ ²⁾	■ ²⁾		6	→ sick.com/M2000_RES_EDM_A_P

PRODUCT FAMILY OVERVIEW

		
M4000 Standard	M4000 Standard A/P	M4000 Standard in IP69K Housing
High efficient solutions with maximum availability	Intelligent wiring and maximum availability	Person detection under wash-down and cleaning requirements

Technical data overview			
Type	Type 4 (EN 61496)	Type 4 (EN 61496)	Type 4 (EN 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)	SIL3 (IEC 61508) SILCL3 (EN 62061)	SIL3 (IEC 61508) SILCL3 (EN 62061)
Performance level	PL e (EN ISO 13849)	PL e (EN ISO 13849)	PL e (EN ISO 13849)
Scanning range	0.5 m ... 70 m, configurable	0.5 m ... 4.5 m / 0.5 m ... 7.5 m	0.5 m ... 15.5 m / 9 m ... 53 m
Number of beams	2 ... 8	2 / 4	3
Beam separation or resolution	220 mm ... 600 mm	500 mm / 300 mm	400 mm
Length of the monitored area	-	-	-
Integrated laser alignment aid	- / ✓	-	-
End cap with integrated LED	- / ✓	- / ✓	-
Enclosure rating	IP 65 (EN 60529)	IP 65 (EN 60529)	IP 69K, IP 67, IP 66, IP 65 (EN 60529)

At a glance			
	<ul style="list-style-type: none"> • Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849) • Robust housing with three mounting grooves • Wide scanning range, up to 70 m • External device monitoring (EDM), restart interlock and application diagnostic output • Standardized M12 connectivity • 7-segment display • Configuration keys located directly on the device • Optional integration features: laser alignment aid, LED or AS-i interface 	<ul style="list-style-type: none"> • Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849) • Sender/receiver in a single housing, scanning range up to 7.5 m • External device monitoring (EDM), restart interlock and application diagnostic output • Standardized M12 connectivity • 7-segment display • Configuration keys for setting directly on the device • Beam coding for correct system allocation • Optional integrated: LED, AS-i interface 	<ul style="list-style-type: none"> • Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849) • IP 69K, IP 67, IP 66 and IP 65 enclosure ratings incl. cable • Withstands wash-down pressure up to 100 bar and water temperature up to 80 °C • ECOLAB and Diversey certified • Resistant steel materials • Ventilation valve prevents fogging of the front screen • Smooth surfaces prevent accumulation of bacteria
Detailed information	→ I-496	→ I-508	→ I-518

 <p>M4000 Standard A/P in IP69K Housing</p>	 <p>M4000 Advanced</p>	 <p>M4000 Advanced A/P</p>	 <p>M4000 Area</p>
<p>Person detection under wash-down and cleaning requirements</p>	<p>Intelligent and efficient: connection of the muting signals directly on site</p>	<p>Intelligent and efficient: connection of the muting signals directly on site</p>	<p>Large scanning ranges protect hazardous areas</p>
<p>Type 4 (EN 61496) SIL3 (IEC 61508) SILCL3 (EN 62061) PL e (EN ISO 13849) 0.5 m ... 4 m 4 300 mm - - - IP 69K, IP 67, IP 66, IP 65 (EN 60529)</p>	<p>Type 4 (EN 61496) SIL3 (IEC 61508) SILCL3 (EN 62061) PL e (EN ISO 13849) 0.5 m ... 70 m, configurable 2 ... 8 220 mm ... 600 mm - - / ✓ - / ✓ IP 65 (EN 60529)</p>	<p>Type 4 (EN 61496) SIL3 (IEC 61508) SILCL3 (EN 62061) PL e (EN ISO 13849) 0.5 m ... 7.5 mm 0.5 m ... 4.5 mm 2 / 4 500 mm / 300 mm - - - / ✓ IP 65 (EN 60529)</p>	<p>Type 4 (EN 61496) SIL3 (IEC 61508) SILCL3 (EN 62061) PL e (EN ISO 13849) 0.5 m ... 19 m / 0.5 m ... 70 m - 60 mm / 80 mm 300 mm ... 1,800 mm - - IP 65 (EN 60529)</p>
<ul style="list-style-type: none"> Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849) IP 69K, IP 67, IP 66 and IP 65 enclosure ratings incl. cable Withstands wash-down pressure up to 100 bar and water temperature up to 80 °C ECOLAB and Diversey certified Resistant steel materials Ventilation valve prevents fogging of the front screen Smooth surfaces prevent accumulation of bacteria Unique A/P version for comfortable integration 	<ul style="list-style-type: none"> Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849) Robust housing with three mounting grooves Wide scanning range, up to 70 m External device monitoring (EDM), restart interlock, application diagnostic output, SDL interface Muting in combination with the UE403 muting switching amplifier 7-segment display Configuration and diagnostics via PC Optional integration features: laser alignment aid, LED 	<ul style="list-style-type: none"> Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849) Sender/receiver in a single housing, scanning range up to 7.5 m External device monitoring (EDM), restart interlock, application diagnostic output, SDL interface Muting in combination with the UE403 muting switching amplifier 7-segment display Configuration and diagnostics via PC Optional integrated: LED 	<ul style="list-style-type: none"> Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849) Robust housing with three mounting grooves Wide scanning range, up to 70 m Resolution 60 mm or 80 mm External device monitoring (EDM), restart interlock, application diagnostic output, SDL interface 7-segment display Configuration and diagnostics via PC Beam coding for correct system allocation
<p>→ I-524</p>	<p>→ I-530</p>	<p>→ I-548</p>	<p>→ I-564</p>

PRODUCT FAMILY OVERVIEW



M2000 Standard

Economical solution for one-sided or multi-sided protection

Technical data overview

Type	Type 2 (EN 61496)
Safety integrity level	SIL1 (IEC 61508) SILCL1 (EN 62061)
Performance level	PL c (EN ISO 13849)
Scanning range	0 m ... 25 m / 0 m ... 70 m
Number of beams	2 ... 9
Beam separation or resolution	116 mm ... 500 mm
Enclosure rating	IP 65 (EN 60529)

At a glance

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- Robust, industrial housing
- Wide scanning range, up to 70 m
- External device monitoring (EDM) and internal self-testing configurable without PC
- Standardized M12 connectivity available
- 7-segment display
- Beam coding for correct system allocation

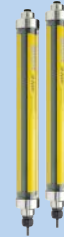
Detailed information

→ I-574



M2000 Standard A/P

Intelligent wiring and maximum availability with a proven industrial design



M2000 Standard in IP69K Housing

Cost efficient solution for industries with high wash-down requirements

Type 2 (EN 61496)
 SIL1 (IEC 61508)
 SILCL1 (EN 62061)
 PL c (EN ISO 13849)
 0 m ... 6 m
 2
 500 mm
 IP 65 (EN 60529)

Type 2 (EN 61496)
 SIL1 (IEC 61508)
 SILCL1 (EN 62061)
 PL c (EN ISO 13849)
 0 m ... 19 m, configurable
 2 / 3 / 4
 500 mm / 400 mm / 300 mm
 IP 69K, IP 67, IP 66, IP 65 (EN 60529)

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- Robust, industrial housing
- Scanning range up to 6 m
- External device monitoring (EDM) and internal self-testing configurable without PC
- Standardized M12 connectivity is available
- 7-segment display
- Unique A/P version minimize the wiring costs

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- IP 69K, IP 67, IP 66 and IP 65 enclosure ratings incl. cable
- Withstands wash-down pressure up to 100 bar and water temperature up to 80 °C
- ECOLAB and Diversey certified
- Resistant steel materials
- Ventilation valve prevents fogging of the front screen
- Smooth surfaces prevent accumulation of bacteria
- Compact design

→ I-584

→ I-592

HIGH EFFICIENT SOLUTIONS WITH MAXIMUM AVAILABILITY



Product description

The M4000 Standard multiple light beam safety device is the solution for one-sided or multi-sided access protection. The M4000's large scanning range and extensive functions provide efficient access protection and maximum reliability. The functions are easy to understand and are set via the configuration keys located directly on the device. Integrated functions and status information enable quick commissioning and mini-

mize machine downtime. The modular concept enables a high level of machine safety since device properties can be adapted to meet specific application requirements. Separate deflection mirrors are a cost-effective way to flexibly configure protective fields. In addition, sens:Control devices, accessories, and services complete the product offering and form packaged solutions designed specifically for industrial environments.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Robust housing with three mounting grooves
- Wide scanning range, up to 70 m
- External device monitoring (EDM), restart interlock and application diagnostic output
- Standardized M12 connectivity
- 7-segment display
- Configuration keys located directly on the device
- Optional integration features: laser alignment aid, LED or AS-i interface

Your benefits

- The wide scanning range allows the device to be customized according to the application
- Robust design with a high level of resistance to environmental changes ensures high machine availability, even under special ambient conditions
- Customized protection field adaption with deflection mirror reduces installation costs
- Customer-friendly interfaces and status display simplify commissioning and maintenance
- Mounting grooves on three housing sides ensure more flexibility during mounting and simplify machine integration
- Fast start-up times due to easy alignment, using the optional laser alignment aid and performing configuration directly on the device
- Reduced downtime through 360° visible LED and diagnostics displays



Additional information

Detailed technical data I-497
 Ordering information I-500
 Dimensional drawing I-502
 Connection diagrams I-504
 Recommended accessories I-505

→ www.sick.com/M4000_Standard

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Scanning range	0.5 m ... 70 m, configurable
Number of beams	2 ... 8 (depending on type)
Beam separation	220 mm ... 600 mm (depending on type)
Response time	10 ms / 11 ms (depending on type)
Synchronization	Optical synchronisation
Integrated laser alignment aid	- / ✓ (depending on type)
End cap with integrated LED	- / ✓ (depending on type)

Safety-related parameters

Type	Type 4 (EN 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH _D (mean probability of a dangerous failure per hour)	6.6 x 10 ⁻⁹ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	Internal
External device monitoring (EDM)	✓	Activated
Beam coding	✓	Non-coded
Sender test	✓	Deactivated
Configurable scanning range	✓	0.5 m ... 20 m
Configurable application diagnostic output	✓	Contamination (OWS)

Interfaces

System connection	Connection type	Male connector M12, 8-pin
	Permitted cable length	≤ 15 m ¹⁾
	Permitted cross-section	≥ 0.25 mm ²
Configuration method	Configuration buttons	
Display elements	LEDs 7-segment display	
Fieldbus, industrial network	Integration via Flexi Soft safety controller	
	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾	

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Residual ripple	≤ 10 % ²⁾	
Power consumption	≤ 0.2 A	≤ 0.6 A ³⁾
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ⁴⁾
Switching voltage HIGH	–	24 V DC ($V_s - 2.25$ V DC ... V_s)
Switching voltage LOW	–	≤ 2 V DC
Switching current	–	≤ 500 mA
Diagnostic outputs		
Type of output	–	PNP semiconductor, short-circuit protected
Switching voltage HIGH	–	24 V DC ($V_s - 4.2$ V DC ... V_s)
Switching voltage LOW	–	High resistance
Switching current	–	≤ 100 mA

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of V_s .

³⁾ Without load.

⁴⁾ Applies to the voltage range between –30 V and +30 V.

Mechanical data

Housing cross-section	52 mm x 55.5 mm
Housing material	Aluminum alloy ALMGSI 0.5
Surface treatment	Powder coated
Front screen material	Polycarbonate, scratch-resistant coating

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	–30 °C ... +55 °C
Storage temperature	–30 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Wave length	950 nm	-
Integrated laser alignment aid	- / ✓ (depending on type)	
Laser class	-	2 (IEC 60825-1), do not stare into beam!
Light source	-	LED
Type of light	-	Visible red light
Wave length	-	630 nm ... 680 nm
Power consumption	-	≤ 1 mW

Ordering information

Items supplied M4000 Standard:

- Multiple light beam safety device consisting of a sender and a receiver
- 8 sliding nuts for side mounting
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

M4000 Standard

- **Scanning range:** 0.5 m ... 70 m, configurable

Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M40S-025000ARO	1200000	M40E-025000RRO	1200017
	600 mm	M40S-026000ARO	1200001	M40E-026000RRO	1200018
3	220 mm	M40S-032200ARO	1200002	M40E-032200RRO	1200019
	400 mm	M40S-034000ARO	1200003	M40E-034000RRO	1200020
	450 mm	M40S-034500ARO	1200004	M40E-034500RRO	1200021
4	220 mm	M40S-042200ARO	1200005	M40E-042200RRO	1200022
	300 mm	M40S-043000ARO	1200006	M40E-043000RRO	1200023
5	220 mm	M40S-052200ARO	1200007	M40E-052200RRO	1200024
6	220 mm	M40S-062200ARO	1200008	M40E-062200RRO	1200025
7	220 mm	M40S-072200ARO	1200009	M40E-072200RRO	1200026
8	220 mm	M40S-082200ARO	1200010	M40E-082200RRO	1200027

M4000 Standard with integrated alignment aid

- **Scanning range:** 0.5 m ... 70 m, configurable

Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M40S-025010ARO	1200011	M40E-025010RRO	1200028
	600 mm	M40S-026010ARO	1200012	M40E-026010RRO	1200029
3	400 mm	M40S-034010ARO	1200013	M40E-034010RRO	1200030
	450 mm	M40S-034510ARO	1200014	M40E-034510RRO	1200031
4	300 mm	M40S-043010ARO	1200015	M40E-043010RRO	1200032

M4000 Standard with end cap with integrated LED

- **Scanning range:** 0.5 m ... 70 m, configurable

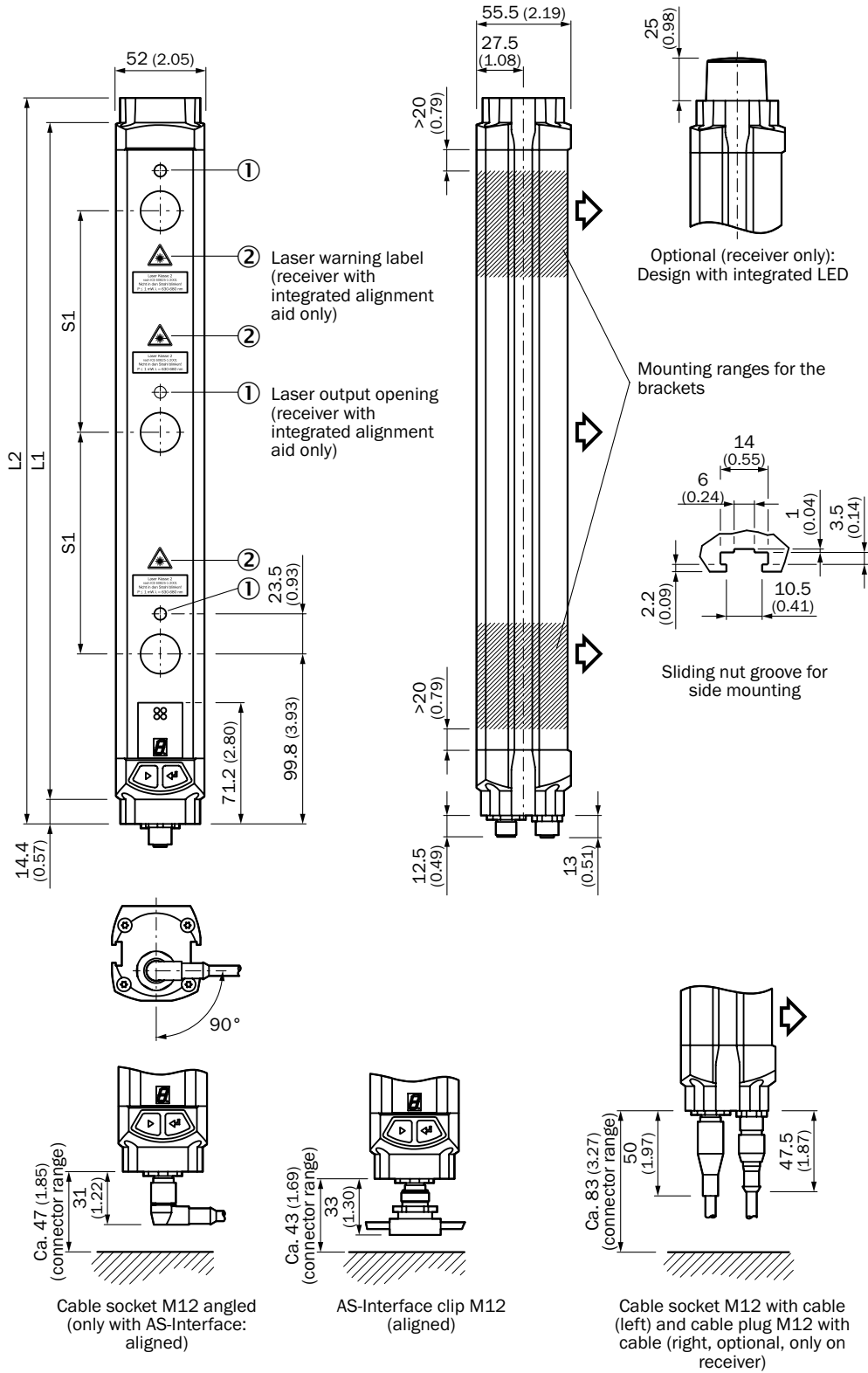
Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M40S-025000AR0	1200000	M40E-025020RR0	1200033
	600 mm	M40S-026000AR0	1200001	M40E-026020RR0	1200034
3	220 mm	M40S-032200AR0	1200002	M40E-032220RR0	1207020
	400 mm	M40S-034000AR0	1200003	M40E-034020RR0	1200035
	450 mm	M40S-034500AR0	1200004	M40E-034520RR0	1200036
4	220 mm	M40S-042200AR0	1200005	M40E-042220RR0	1207019
	300 mm	M40S-043000AR0	1200006	M40E-043020RR0	1200037
6	220 mm	M40S-062200AR0	1200008	M40E-062220RR0	1200121
7	220 mm	M40S-072200AR0	1200009	M40E-072220RR0	1203892

M4000 Standard with integrated alignment aid and end cap with integrated LED

- **Scanning range:** 0.5 m ... 70 m, configurable

Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M40S-025010AR0	1200011	M40E-025030RR0	1200038
	600 mm	M40S-026010AR0	1200012	M40E-026030RR0	1200039
3	400 mm	M40S-034010AR0	1200013	M40E-034030RR0	1200040
	450 mm	M40S-034510AR0	1200014	M40E-034530RR0	1200041
4	300 mm	M40S-043010AR0	1200015	M40E-043030RR0	1200042

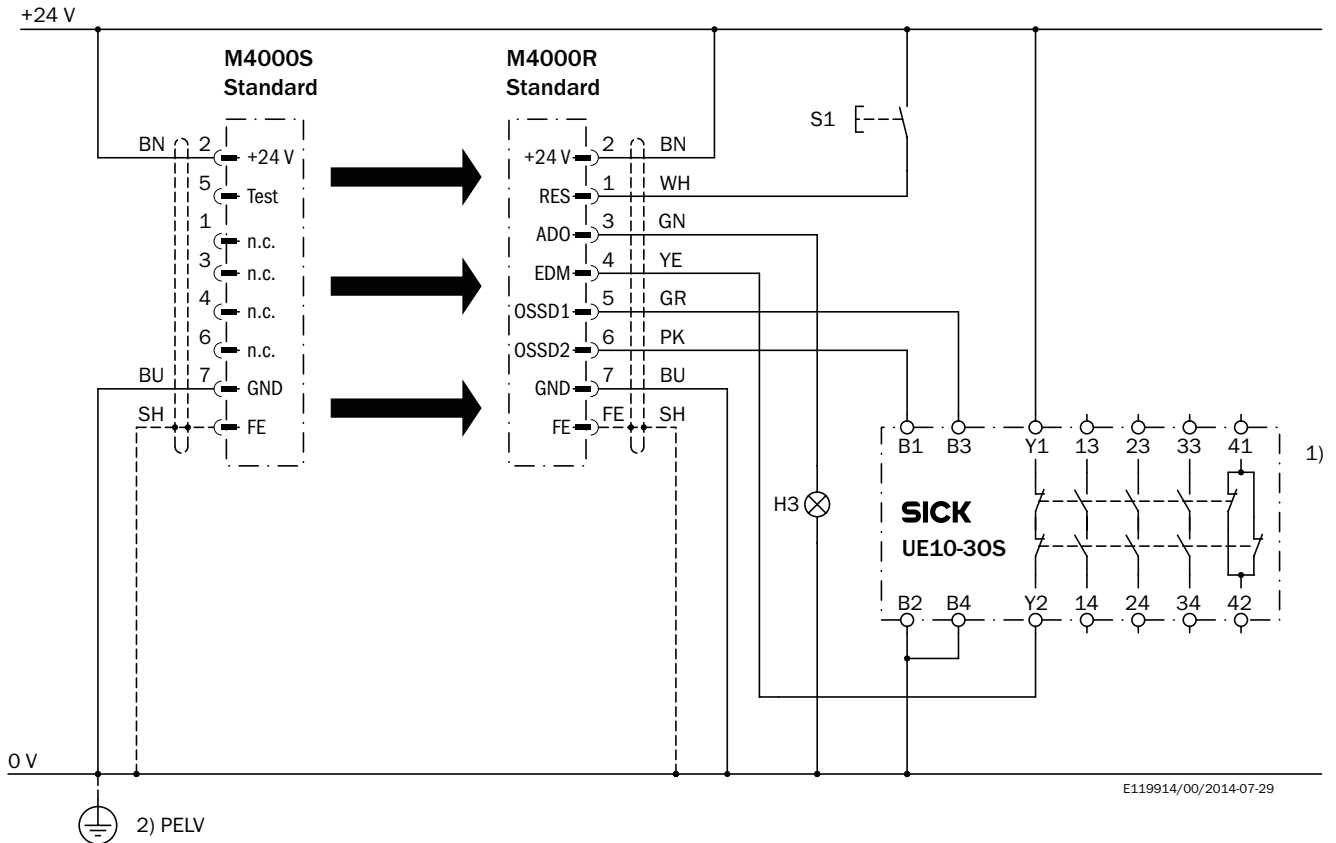
Dimensional drawing (Dimensions in mm (inch))



Number of beams	Beam separation S1	L1	L2
2	500 (19.69)	643 (25.31)	672 (26.46)
	600 (23.62)	743 (29.25)	772 (30.39)
3	220 (8.66)	583 (22.95)	612 (24.09)
	400 (15.75)	943 (37.13)	972 (38.27)
	450 (17.72)	1,043 (41.06)	1,072 (42.20)
4	220 (8.66)	803 (31.61)	832 (32.76)
	300 (11.81)	1,043 (41.06)	1,072 (42.20)
5	220 (8.66)	1,023 (40.28)	1,052 (41.42)
6		1,243 (48.94)	1,272 (50.08)
7		1,462 (57.56)	1,491 (58.70)
8		1,682 (66.22)	1,711 (67.36)

Connection diagrams

M4000 Standard connected to UE10-30S safety relay



Task

Connection of an M4000 Standard multiple light beam safety device to a UE10-30S safety relay.

Operating mode: with restart interlock and external device monitoring.

Operating characteristics

When the light path is clear and the UE10-30S is de-energized and functioning correctly, the yellow LED on the receiver and the H3 lamp flash. The system is ready for switch-on and waits for an input signal/switch-on signal. The system is enabled by pressing and releasing the S1 button. The OSSD1 and OSSD2 outputs are live, the UE10-30S is switched on. On interruption of one or several of the light beams, the UE10-30S is de-energized by the OSSD1 and OSSD2 outputs.

Fault analysis

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The erroneous behavior of the UE10-30S will be detected. The shutdown function is retained. On manipulation (e.g., jamming) of the S1 button, the system does not enable the output current circuits.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

²⁾ PELV in accordance with the requirements in EN 60204-1 / 6.4

Take note of the operating instructions of the integrated devices.

Accessories required for commissioning


Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Terminal and alignment brackets
Connecting cable	2	-	→ Plug connectors and cables
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates





Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 1, mounting bracket, rigid, L-shaped, including fixing screws and washers	4 pieces	BEF-3WNGBAST4	7021352

Dimensional drawings → [page I-598](#)


Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 12, rotatable, swivel mount	4 pieces	BEF-2SMGEAKU4	2030510
	Mounting kit 2, rotatable	4 pieces	BEF-1SHABAAL4	2017751
	Mounting kit 3, rotatable, with shock-absorber	4 pieces	BEF-1SHADAAL4	2017752
	Mounting kit 6, side bracket, rotatable	4 pieces	BEF-1SHABAZN4	2019506
	Omega bracket, rotatable, fixable with only one screw, for mounting on the swivel mount, including spacer discs	4 pieces	BEF-2SMGEAAL4	2044846

Dimensional drawings → [page I-598](#)

Terminal brackets

Figure	Description	Packing unit	Type	Part no.
	Bracket, rigid, vibration absorbing, for devices with a weight > 350 g ... ≤ 1,200 g	4 pieces	BEF-3SHADAAL4S06	2055829
	Bracket, rigid, vibration absorbing, for devices with a weight > 1,200 g ... ≤ 3,000 g	4 pieces	BEF-3SHADAAL4S07	2055830
	Bracket, rigid, vibration absorbing, for devices with a weight > 3,000 g ... ≤ 4,000 g	4 pieces	BEF-3SHADAAL4S08	2055831


Device protection (mechanical)

Front screen protection

Figure	Description	Suitable for	Packing unit	Type	Part no.
 <p>Application example</p>	Front screen protection set (protects sensors from damage by flying sparks and welding beads), incl. sliding nuts and fastening screws	M40x-0250xxxx	2 pieces	Additional front screen	2033225
		M40x-0260xxxx	2 pieces	Additional front screen	2033226
		M40x-0322xxxx	2 pieces	Additional front screen	2033227
		M40x-0340xxxx	2 pieces	Additional front screen	2033228
		M40x-0345xxxx	2 pieces	Additional front screen	2033229
		M40x-0422xxxx	2 pieces	Additional front screen	2033230
		M40x-0522xxxx	2 pieces	Additional front screen	2033231
		M40x-0622xxxx	2 pieces	Additional front screen	2033232
		M40x-0722xxxx	2 pieces	Additional front screen	2033233
		M40x-0822xxxx	2 pieces	Additional front screen	2033234

Other mounting accessories

Sliding nuts


Figure	Description	Packing unit	Type	Part no.
	Sliding nut set, M5, 4x, Included in delivery	4 pieces	Sliding nuts	2017550
	Suitable for PNS75 and PNS125	6 pieces	Sliding nuts for deflector mirror	2030600

Connection systems


Plug connectors and cables

Connecting cables with female connector


- **Model:** PUR, halogen-free, shielded

Figure	Connection type	Conductor cross-section	Cable length	Type	Part no.	
	Female connector, M12, 8-pin, straight	Cable	0.25 mm ²	2.5 m	DOL-127SG2M5E25KM0	2076540
				5 m	DOL-127SG05ME25KM0	2076541
				7.5 m	DOL-127SG7M5E25KM0	2076542
				10 m	DOL-127SG10ME25KM0	2076543
				15 m	DOL-127SG15ME25KM0	2076544

Female connectors (ready to assemble)



Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.
	Female connector, M12, 8-pin, straight, screw-type terminals	≤ 0.5 mm ²	6 mm ... 8 mm	DOS-1208-G	6028422

Power supply units and power cord connectors


Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

Reflectors and optics


Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for M4000 and M4000 Curtain	Adapter AR60, M4000	4040006
	Alignment template for integrated laser alignment aid	Alignment template for M4000	4040263


Deflector mirrors

Figure	Mirror material	Description	Items supplied	Type	Part no.
	Glass	Horizontal deflection, 75 mm x 80 mm reflector surface	Incl. mounting kit (2 x swivel mount)	PNS75-008	1026647

Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> Freestanding mounting solution with external grooves for installing additional accessories Compact, rugged design with high reliability Easy mounting and adjustment Device protection against external influences Large reflector surface for efficient multi-sided protection via beam deflection Universally applicable for multiple light beam safety devices and safety light curtains 	→ page K-664

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

INTELLIGENT WIRING AND MAXIMUM AVAILABILITY



Product description

The M4000 Standard A/P multiple light beam safety device is the economical solution for access protection. It is particularly economical since only the active side must be wired, which reduces the installation time. The M4000's large scanning range and extensive functions provide efficient access protection and maximum reliability. The functions are easy to understand and are set via the configuration keys located directly on the device. Integrated functions

and status information enable quick commissioning and minimize machine downtime. The modular concept enables a high level of machine safety since device properties can be adapted to meet specific application requirements. In addition, sens:Control devices, accessories, and services complete the product offering and form packaged solutions designed specifically for industrial environments.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Sender/receiver in a single housing, scanning range up to 7.5 m
- External device monitoring (EDM), restart interlock and application diagnostic output
- Standardized M12 connectivity
- 7-segment display
- Configuration keys for setting directly on the device
- Beam coding for correct system allocation
- Optional integrated: LED, AS-i interface

Your benefits

- Economical active/passive variants minimize the wiring costs and installation time
- Robust design with a high level of resistance to environmental changes ensures high machine availability, even under special ambient conditions
- Mounting grooves on three housing sides ensure more installation flexibility and simplify machine integration
- Customer-friendly interfaces and status display simplify commissioning and maintenance
- Fast start-up times due to easy configuration keys located directly on the device, without any PC
- Reduced downtime through 360° visible LED and diagnostics displays



Additional information

Detailed technical data I-509
 Ordering information I-511
 Dimensional drawings I-512
 Recommended accessories I-514

→ www.sick.com/M4000_Standard_A_P

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

	Mirror deflection	Fibre-optic deflection
Scanning range	0.5 m ... 7.5 m	0.5 m ... 4.5 m
Number of beams	2	2 / 4 (depending on type)
Beam separation	500 mm	500 mm / 300 mm (depending on type)
Response time	10 ms	
Synchronization	Optical synchronisation	
End cap with integrated LED	- / ✓ (depending on type)	

Safety-related parameters

Type	Type 4 (EN 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH _D (mean probability of a dangerous failure per hour)	6.6 x 10 ⁻⁹ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	Internal
External device monitoring (EDM)	✓	Activated
Beam coding	✓	Non-coded
Configurable application diagnostic output	✓	Contamination (OWS)

Interfaces

System connection	Connection type	Male connector M12, 8-pin
	Permitted cable length	≤ 15 m ¹⁾
	Permitted cross-section	≥ 0.25 mm ²
Configuration method	Configuration buttons	
Display elements	LEDs 7-segment display	
Fieldbus, industrial network	Integration via Flexi Soft safety controller	
	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾	

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	III (EN 50178)
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾
Residual ripple	$\leq 10\%$ ²⁾
Power consumption	$\leq 0.6\text{ A}$ ³⁾
Safety outputs (OSSD)	
Type of output	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ⁴⁾
Switching voltage HIGH	24 V DC ($V_S - 2.25\text{ V DC} \dots V_S$)
Switching voltage LOW	$\leq 2\text{ V DC}$
Switching current	$\leq 500\text{ mA}$
Diagnostic outputs	
Type of output	PNP semiconductor, short-circuit protected
Switching voltage HIGH	24 V DC ($V_S - 4.2\text{ V DC} \dots V_S$)
Switching voltage LOW	High resistance
Switching current	$\leq 100\text{ mA}$

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of V_S .

³⁾ Without load.

⁴⁾ Applies to the voltage range between -30 V and $+30\text{ V}$.

Mechanical data

Housing cross-section	52 mm x 55.5 mm
Housing material	Aluminum alloy ALMGSI 0.5
Surface treatment	Powder coated
Front screen material	Polycarbonate, scratch-resistant coating

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	$-30\text{ °C} \dots +55\text{ °C}$
Storage temperature	$-30\text{ °C} \dots +70\text{ °C}$
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Other information

Wave length	850 nm
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Ordering information

Items supplied M4000 Standard A/P:

- Multiple light beam safety device consisting of sender/receiver in one housing and a deflector unit
- 8 sliding nuts for side mounting
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

M4000 Standard A/P

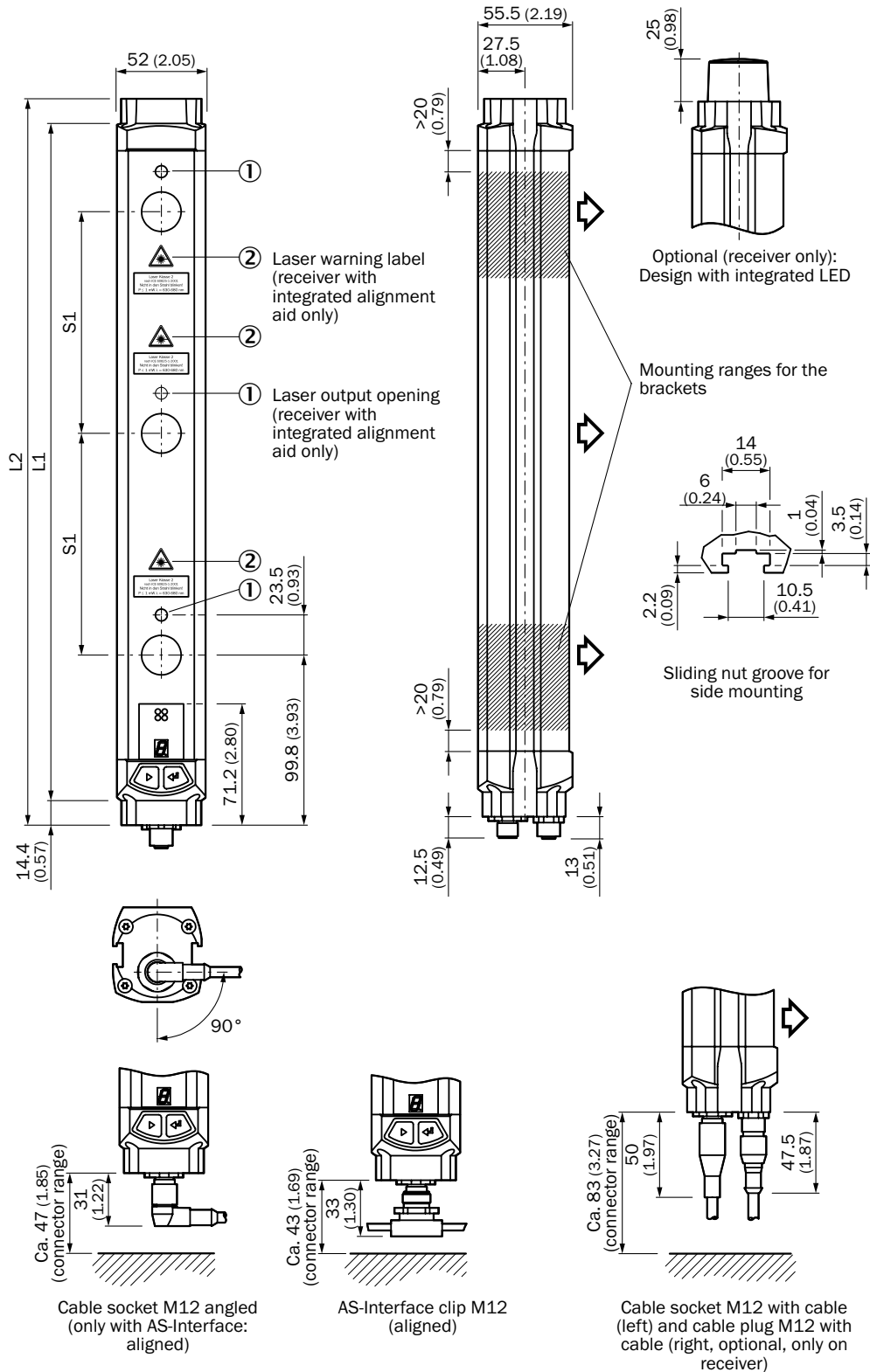
Scanning range	Number of beams	Beam separation	Sender/receiver in one housing		Deflector unit	
			Type	Part no.	Type	Part no.
0.5 m ... 4.5 m	2	500 mm	M40Z-025000TR0	1200122	PSD01-2501	1027907
	4	300 mm	M40Z-043000TR0	1200123	PSD02-2301	1027908
0.5 m ... 7.5 m	2	500 mm	M40Z-025000RR0	1200120	PSD01-1501	1027906

M4000 Standard A/P with end cap with integrated LED

Scanning range	Number of beams	Beam separation	Sender/receiver in one housing		Deflector unit	
			Type	Part no.	Type	Part no.
0.5 m ... 4.5 mm	2	500 mm	M40Z-025020TR0	1200129	PSD01-2501	1027907
	4	300 mm	M40Z-043020TR0	1200130	PSD02-2301	1027908
0.5 m ... 7.5 mm	2	500 mm	M40Z-025020RR0	1200124	PSD01-1501	1027906

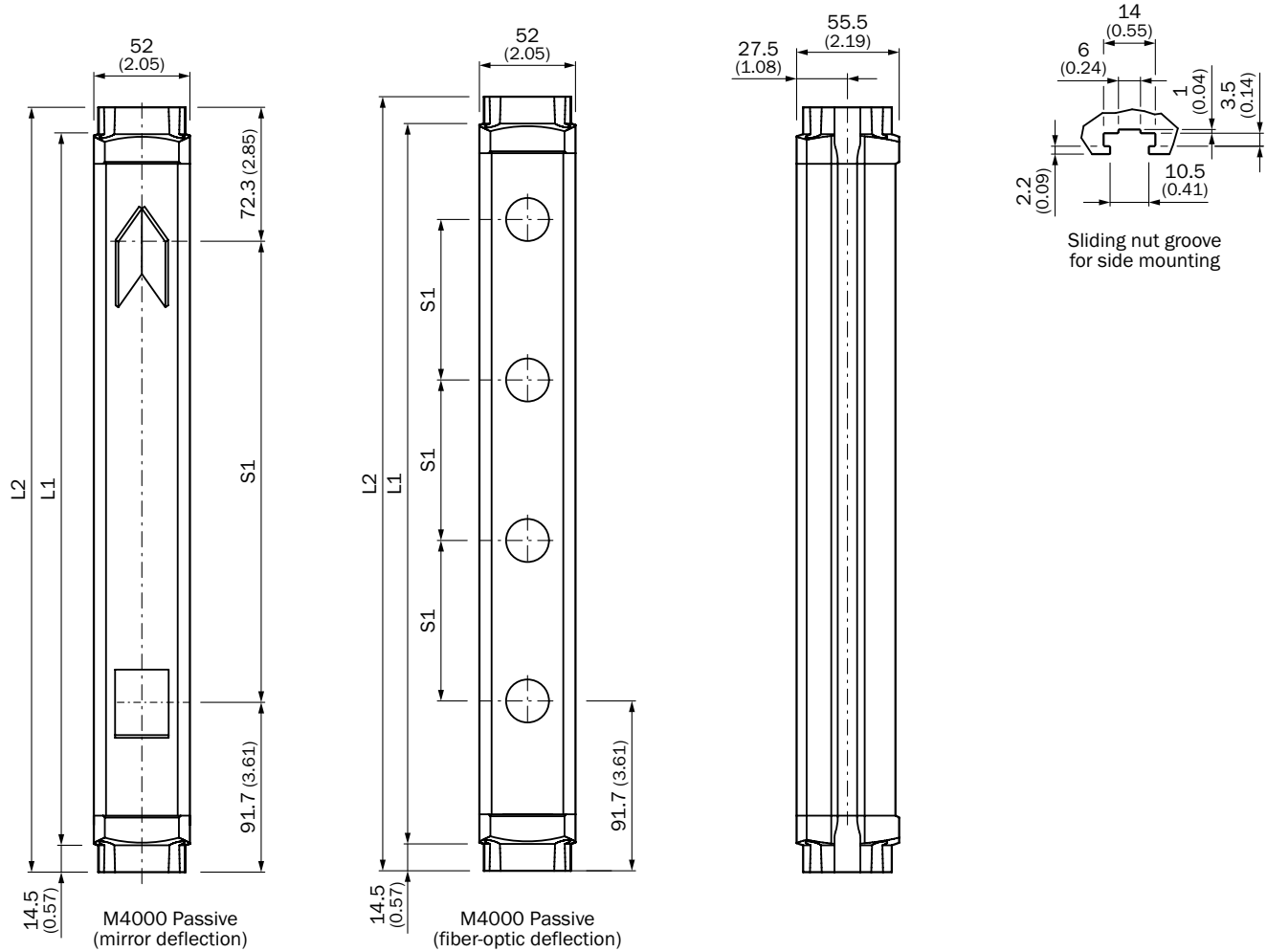
Dimensional drawings (Dimensions in mm (inch))

M4000 Standard A/P



Number of beams	Beam separation S1	L1	L2
2	500 (19.69)	643 (25.31)	672 (26.46)
4	300 (11.81)	1,043 (41.06)	1,072 (42.20)

Deflector units for M4000 Standard A/P



Number of beams	Beam separation S1	L1	L2
2	500 (19.69)	643 (25.31)	672 (26.46)
4	300 (11.81)	1,043 (41.06)	1,072 (42.20)

Accessories required for commissioning


Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Terminal and alignment brackets
Connecting cable	1	-	→ Plug connectors and cables
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates





Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 1, mounting bracket, rigid, L-shaped, including fixing screws and washers	4 pieces	BEF-3WNGBAST4	7021352

Dimensional drawings → [page I-598](#)


Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 12, rotatable, swivel mount	4 pieces	BEF-2SMGEAKU4	2030510
	Mounting kit 2, rotatable	4 pieces	BEF-1SHABAAL4	2017751
	Mounting kit 3, rotatable, with shock-absorber	4 pieces	BEF-1SHADAAL4	2017752
	Mounting kit 6, side bracket, rotatable	4 pieces	BEF-1SHABAZN4	2019506
	Omega bracket, rotatable, fixable with only one screw, for mounting on the swivel mount, including spacer discs	4 pieces	BEF-2SMGEAAL4	2044846

Dimensional drawings → [page I-598](#)

Terminal brackets

Figure	Description	Packing unit	Type	Part no.
	Bracket, rigid, vibration absorbing, for devices with a weight > 350 g ... ≤ 1,200 g	4 pieces	BEF-3SHADAAL4S06	2055829
	Bracket, rigid, vibration absorbing, for devices with a weight > 1,200 g ... ≤ 3,000 g	4 pieces	BEF-3SHADAAL4S07	2055830
	Bracket, rigid, vibration absorbing, for devices with a weight > 3,000 g ... ≤ 4,000 g	4 pieces	BEF-3SHADAAL4S08	2055831

Device protection (mechanical)

Front screen protection

Figure	Description	Suitable for	Packing unit	Type	Part no.
 Application example	Front screen protection set (protects sensors from damage by flying sparks and welding beads), incl. sliding nuts and fastening screws	M40x-0250xxxx	2 pieces	Additional front screen	2033225
		M40x-0260xxxx	2 pieces	Additional front screen	2033226
		M40x-0322xxxx	2 pieces	Additional front screen	2033227
		M40x-0340xxxx	2 pieces	Additional front screen	2033228
		M40x-0345xxxx	2 pieces	Additional front screen	2033229
		M40x-0422xxxx	2 pieces	Additional front screen	2033230
		M40x-0522xxxx	2 pieces	Additional front screen	2033231
		M40x-0622xxxx	2 pieces	Additional front screen	2033232
		M40x-0722xxxx	2 pieces	Additional front screen	2033233
		M40x-0822xxxx	2 pieces	Additional front screen	2033234

Other mounting accessories

Sliding nuts


Figure	Description	Packing unit	Type	Part no.
	Sliding nut set, M5, 4x, Included in delivery	4 pieces	Sliding nuts	2017550
	Suitable for PNS75 and PNS125	6 pieces	Sliding nuts for deflector mirror	2030600

Connection systems


Plug connectors and cables

Connecting cables with female connector


- **Model:** PUR, halogen-free, shielded

Figure	Connection type	Conductor cross-section	Cable length	Type	Part no.	
	Female connector, M12, 8-pin, straight	Cable	0.25 mm ²	2.5 m	DOL-127SG2M5E25KM0	2076540
				5 m	DOL-127SG05ME25KM0	2076541
				7.5 m	DOL-127SG7M5E25KM0	2076542
				10 m	DOL-127SG10ME25KM0	2076543
				15 m	DOL-127SG15ME25KM0	2076544

Female connectors (ready to assemble)



Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.
	Female connector, M12, 8-pin, straight, screw-type terminals	$\leq 0.5 \text{ mm}^2$	6 mm ... 8 mm	DOS-1208-G	6028422

Power supply units and power cord connectors

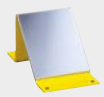
Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	$\leq 2.1 \text{ A}$	PS50WE24V	7028789
			$\leq 3.9 \text{ A}$	PS95WE24V	7028790

Reflectors and optics

Alignment aids


Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for M4000 and M4000 Curtain	Adapter AR60, M4000	4040006

Deflector mirrors


Figure	Mirror material	Description	Items supplied	Type	Part no.
	Glass	Deflector mirror for 90° deflection, mirror surface 97 mm x 80 mm, not suitable for column mounting	Mounting hardware included	PSK45	5306053

Dimensional drawings → [page I-600](#)

Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> Freestanding mounting solution with external grooves for installing additional accessories Compact, rugged design with high reliability Easy mounting and adjustment Device protection against external influences Large reflector surface for efficient multi-sided protection via beam deflection Universally applicable for multiple light beam safety devices and safety light curtains 	→ page K-664

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

PERSON DETECTION UNDER WASH-DOWN AND CLEANING REQUIREMENTS



Product description

The M4000 multiple light beam safety device in the IP 69K housing is used for access and hazardous point protection in wash down environments, such as those found in the food and beverage industry. The compact design and the use of stainless steel, PA, PMMA and PVC materials provide a high resistance to common cleaning agents. The device

withstands the use of high pressure cleaners with a water pressure of up to 100 bar and water temperatures up to 80 °C. A special diaphragm element ensures that the pressure is balanced and prevents condensation on the plastic pipe and stops liquids from penetrating. The use of IP 69K-suitable PVC cables ensures safe cable routing.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- IP 69K, IP 67, IP 66 and IP 65 enclosure ratings incl. cable
- Withstands wash-down pressure up to 100 bar and water temperature up to 80 °C
- ECOLAB and Diversey certified
- Resistant steel materials
- Ventilation valve prevents fogging of the front screen
- Smooth surfaces prevent accumulation of bacteria

Your benefits

- High resistance reduces risk of contamination and increases the production quality
- Cost reduction through long-lasting products, enclosure rating IP 69K for all materials including cable
- Replacement for mechanical guards, with the following advantages:
- Fast access for personnel and service increases productivity
- Saving potential for cleaning time and use of detergents



Additional information

Detailed technical data I-519
 Ordering information I-521
 Dimensional drawing I-521
 Recommended accessories I-522

→ www.sick.com/M4000_Standard_in_IP69K_Housing

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Scanning range	0.5 m ... 15.5 m / 9 m ... 53 m (depending on type)
Number of beams	3
Beam separation	400 mm
Response time	10 ms
Synchronization	Optical synchronisation

Safety-related parameters

Type	Type 4 (EN 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	6.6 x 10 ⁻⁹ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Beam coding	✓	Code 1
Sender test	✓	Deactivated
Configurable application diagnostic output	✓	Contamination (OWS)

Interfaces

System connection		
	Connection type	PVC cable, 8-pin
	Cable length	15 m
	Conductor cross-section	0.25 mm ²
Configuration method		None
	Specialty	The devices are sealed in the IP69K Housing from the factory and cannot be re-configured.
Display elements		LEDs 7-segment display
Fieldbus, industrial network		
	Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ¹⁾

¹⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Residual ripple	$\leq 10\%$ ²⁾	
Power consumption	≤ 0.2 A	≤ 0.6 A ³⁾
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ⁴⁾
Switching voltage HIGH	–	24 V DC ($V_S - 2.25$ V DC ... V_S)
Switching voltage LOW	–	≤ 2 V DC
Switching current	–	≤ 500 mA
Diagnostic outputs		
Type of output	–	PNP semiconductor, short-circuit protected
Switching voltage HIGH	–	24 V DC ($V_S - 4.2$ V DC ... V_S)
Switching voltage LOW	–	High resistance
Switching current	–	≤ 100 mA

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of V_S .

³⁾ Without load.

⁴⁾ Applies to the voltage range between -30 V and $+30$ V.

Mechanical data

Housing diameter	80 mm
Material	
End caps	Stainless steel
Plastic tube	PMMA
Compensating element (membrane)	PA 6
PG connector	PA 6

Ambient data

Enclosure rating	IP 69K, IP 67, IP 66, IP 65 (EN 60529)
Ambient operating temperature	-30 °C ... $+55$ °C
Storage temperature	-30 °C ... $+70$ °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Other information

Wave length	950 nm
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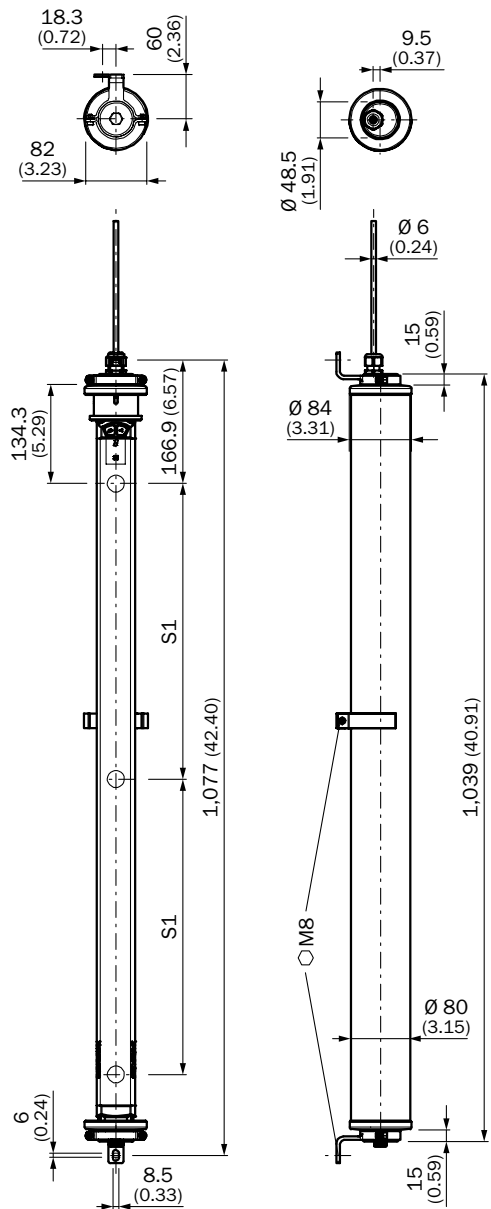
Ordering information

Items supplied M4000 Standard in IP69K Housing:

- Multiple light beam safety device consisting of a sender and a receiver
- PVC connection cable, 15 m
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

Scanning range	Number of beams	Beam separation	Sender		Receiver	
			Type	Part no.	Type	Part no.
0.5 m ... 15.5 m	3	400 mm	M45S-034000ELO	1057664	M45E-034000ELO	1057665
9 m ... 53 m	3	400 mm	M45S-034000ELO	1057664	M45E-034000FLO	1057666

Dimensional drawing (Dimensions in mm (inch))



Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Terminal and alignment brackets
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.
	Reinforced stainless steel bracket, rotatable	4 pieces	BEF-2SMGVAES4	2060165
	Stainless steel support bracket	2 pieces	BEF-2AAAAOES2	2060164

Dimensional drawings → [page I-598](#)


Device protection (mechanical)

Protective caps

Figure	Description	Type	Part no.
	Bidirectional ventilation membrane made from Gore-Tex	Bidirectional ventilation membrane	5309082


Other mounting accessories

Mounting tools


Figure	Description	Packing unit	Type	Part no.
	Mounting tool for M12 cable socket, large housing	1 piece	Mounting key	4067618

Connection systems

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

Enhanced system solutions

Figure	Description	Further information
	<p>Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.</p>	<p>→ page L-690</p>

PERSON DETECTION UNDER WASH-DOWN AND CLEANING REQUIREMENTS



Product description

The M4000 multiple light beam safety device in the IP 69K housing is used for access and hazardous point protection in wash down environments, such as those found in the food and beverage industry. The compact design and the use of stainless steel, PA, PMMA and PVC materials provide a high resistance to common cleaning agents. The device

withstands the use of high pressure cleaners with a water pressure of up to 100 bar and water temperatures up to 80 °C. A special diaphragm element ensures that the pressure is balanced and prevents condensation on the plastic pipe and stops liquids from penetrating. The use of IP 69K-suitable PVC cables ensures safe cable routing.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- IP 69K, IP 67, IP 66 and IP 65 enclosure ratings incl. cable
- Withstands wash-down pressure up to 100 bar and water temperature up to 80 °C
- ECOLAB and Diversey certified
- Resistant steel materials
- Ventilation valve prevents fogging of the front screen
- Smooth surfaces prevent accumulation of bacteria
- Unique A/P version for comfortable integration

Your benefits

- High resistance reduces risk of contamination and increases the production quality
- Cost reduction through long-lasting products, enclosure rating IP 69K for all materials including cable
- Replacement for mechanical guards, with the following advantages:
- Fast access for personnel and service increases productivity
- Saving potential for cleaning time and use of detergents



Additional information

Detailed technical data	I-525
Ordering information	I-527
Dimensional drawing	I-527
Recommended accessories	I-528

→ www.sick.com/M4000_Standard_A_P_in_IP69K_Housing

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Scanning range	0.5 m ... 4 m
Number of beams	4
Beam separation	300 mm
Response time	10 ms
Synchronization	Optical synchronisation

Safety-related parameters

Type	Type 4 (EN 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH _D (mean probability of a dangerous failure per hour)	6.6 x 10 ⁻⁹ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Beam coding	✓	Code 1
Configurable application diagnostic output	✓	Contamination (OWS)

Interfaces

System connection	Connection type	PVC cable, 8-pin
	Cable length	15 m
	Conductor cross-section	0.25 mm ²
Configuration method		None
	Specialty	The devices are sealed in the IP69K Housing from the factory and cannot be re-configured.
Display elements		LEDs 7-segment display
Fieldbus, industrial network		
	Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ¹⁾

¹⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	III (EN 50178)
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾
Residual ripple	$\leq 10\%$ ²⁾
Power consumption	$\leq 0.6\text{ A}$ ³⁾
Safety outputs (OSSD)	
Type of output	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ⁴⁾
Switching voltage HIGH	24 V DC ($V_S - 2.25\text{ V DC} \dots V_S$)
Switching voltage LOW	$\leq 2\text{ V DC}$
Switching current	$\leq 500\text{ mA}$
Diagnostic outputs	
Type of output	PNP semiconductor, short-circuit protected
Switching voltage HIGH	24 V DC ($V_S - 4.2\text{ V DC} \dots V_S$)
Switching voltage LOW	High resistance
Switching current	$\leq 100\text{ mA}$

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of V_S .

³⁾ Without load.

⁴⁾ Applies to the voltage range between -30 V and $+30\text{ V}$.

Mechanical data

Housing diameter	80 mm
Material	
End caps	Stainless steel
Plastic tube	PMMA
Compensating element (membrane)	PA 6
PG connector	PA 6

Ambient data

Enclosure rating	IP 69K, IP 67, IP 66, IP 65 (EN 60529)
Ambient operating temperature	$-30\text{ °C} \dots +55\text{ °C}$
Storage temperature	$-30\text{ °C} \dots +70\text{ °C}$
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Other information

Wave length	850 nm
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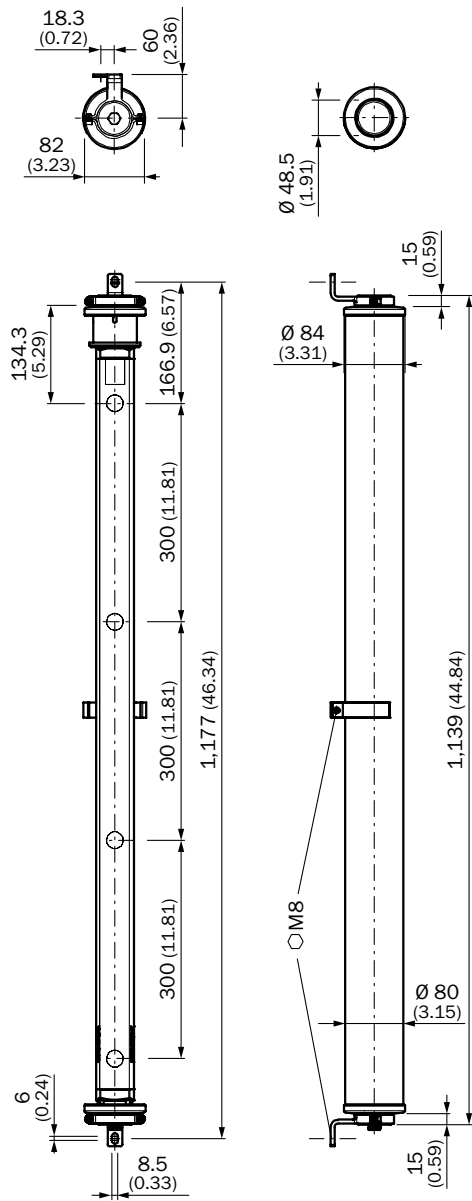
Ordering information

Items supplied M4000 Standard A/P in IP69K Housing:

- Multiple light beam safety device consisting of sender/receiver in one housing and a deflector unit
- 2 PVC connection cables, 15 m
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

Scanning range	Number of beams	Beam separation	Sender/receiver in one housing		Deflector unit	
			Type	Part no.	Type	Part no.
0.5 m ... 4 m	4	300 mm	M45Z-043000FLO	1057667	PSIO2-2302	1057668

Dimensional drawing (Dimensions in mm (inch))



Accessories required for commissioning



Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Terminal and alignment brackets
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Terminal and alignment brackets


Alignment brackets

Figure	Description	Packing unit	Type	Part no.
	Reinforced stainless steel bracket, rotatable	4 pieces	BEF-2SMGVAES4	2060165
	Stainless steel support bracket	2 pieces	BEF-2AAAAOES2	2060164

Dimensional drawings → [page I-598](#)


Device protection (mechanical)

Protective caps

Figure	Description	Type	Part no.
	Bidirectional ventilation membrane made from Gore-Tex	Bidirectional ventilation membrane	5309082


Other mounting accessories

Mounting tools


Figure	Description	Packing unit	Type	Part no.
	Mounting tool for M12 cable socket, large housing	1 piece	Mounting key	4067618

Connection systems

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

Enhanced system solutions

Figure	Description	Further information
	<p>Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.</p>	<p>→ page L-690</p>

INTELLIGENT AND EFFICIENT: CONNECTION OF THE MUTING SIGNALS DIRECTLY ON SITE



Product description

The M4000 Advanced multiple light beam safety device with the UE403 muting switching amplifier is an efficient solution for conventional muting applications involving automatic material transport. The configuration via PC and the on-site connection of the muting signals ensure maximum reliability. Various mounting adapters and innovative accessories enable flexible mounting. Integrated functions and status and

diagnostics information allow quick commissioning and minimize machine downtime. The modular concept enables a high level of machine safety since device properties can be adapted to meet specific application requirements. In addition, sens:Control devices, accessories, and services complete the product offering and form packaged solutions designed specifically for industrial environments.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Robust housing with three mounting grooves
- Wide scanning range, up to 70 m
- External device monitoring (EDM), restart interlock, application diagnostic output, SDL interface
- Muting in combination with the UE403 muting switching amplifier
- 7-segment display
- Configuration and diagnostics via PC
- Optional integration features: laser alignment aid, LED

Your benefits

- The wide scanning range allows the device to be customized according to the application
- Robust design with a high level of resistance to environmental changes ensures high machine availability, even under special ambient conditions
- Mounting grooves on three housing sides ensure more mounting flexibility and simplify machine integration
- Customer-friendly interfaces and status display simplify commissioning and maintenance
- For 2- and 4-sensor muting, the on-site connection of the muting signals significantly minimizes wiring costs and simplifies commissioning and maintenance
- Reduced downtime due to 360° visible LED, diagnostics displays and configuration memory in the UE403 muting switching amplifier



Additional information

Detailed technical data I-531
 Ordering information I-535
 Dimensional drawings I-537
 Connection diagrams I-539
 Recommended accessories I-540

→ www.sick.com/M4000_Advanced

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

M4000 Advanced

Features

Scanning range	0.5 m ... 70 m, configurable
Number of beams	2 ... 8 (depending on type)
Beam separation	220 mm ... 600 mm (depending on type)
Response time	10 ms / 11 ms (depending on type)
Synchronization	Optical synchronisation
Integrated laser alignment aid	- / ✓ (depending on type)
End cap with integrated LED	- / ✓ (depending on type)

Safety-related parameters

Type	Type 4 (EN 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	6.6 x 10 ⁻⁹ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	Internal
External device monitoring (EDM)	✓	Activated
Beam coding	✓	Non-coded
Sender test	✓	Deactivated
Configurable scanning range	✓	0.5 m ... 20 m
Configurable application diagnostic output	✓	Contamination (OWS)
Safe SICK device communication via EFI	✓	

Interfaces

	Sender	Receiver
System connection		
Connection type	Hirschmann male connector M26, 12-pin	
Permitted cable length	≤ 50 m ¹⁾	
Permitted cross-section	≥ 0.75 mm ²	
Extension connection		
Connection type	-	Male connector M12, 5-pin
Configuration method	PC with CDS (Configuration and Diagnostic Software)	
Configuration connection		
Connection type	Female connector M8, 4-pin	
Display elements	LEDs 7-segment display	
Fieldbus, industrial network		
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ²⁾	
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ³⁾	

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

³⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Residual ripple	≤ 10 % ²⁾	
Power consumption	≤ 0.2 A	≤ 0.6 A ³⁾
Safety outputs (OSSD)		
Type of output	-	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ⁴⁾
Switching voltage HIGH	-	24 V DC ($V_S - 2.25$ V DC ... V_S)
Switching voltage LOW	-	≤ 2 V DC
Switching current	-	≤ 500 mA
Diagnostic outputs		
Type of output	-	PNP semiconductor, short-circuit protected
Switching voltage HIGH	-	24 V DC ($V_S - 4.2$ V DC ... V_S)
Switching voltage LOW	-	High resistance
Switching current	-	≤ 100 mA

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of V_S .

³⁾ Without load.

⁴⁾ Applies to the voltage range between -30 V and +30 V.

Mechanical data

Housing cross-section	52 mm x 55.5 mm
Housing material	Aluminum alloy ALMGSI 0.5
Surface treatment	Powder coated
Front screen material	Polycarbonate, scratch-resistant coating

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-30 °C ... +55 °C
Storage temperature	-30 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Wave length	950 nm	-
Integrated laser alignment aid	- / ✓ (depending on type)	
Laser class	-	2 (IEC 60825-1), do not stare into beam!
Light source	-	LED
Type of light	-	Visible red light
Wave length	-	630 nm ... 680 nm
Power consumption	-	≤ 1 mW

UE403 muting switching amplifier

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	1.0 x 10 ⁻⁸ (EN ISO 13849) ¹⁾
T_M (mission time)	20 years (EN ISO 13849) ¹⁾

¹⁾ Only in conjunction with M4000 Advanced, M4000 Advanced A/P and M4000 Advanced Curtain.

Functions

Concurrence monitoring	✓
Monitoring of total muting time	✓
Sensor gap monitoring	✓
Belt stop	✓
Muting with override	✓
Exit monitoring	✓
End of muting by ESPE	✓

Interfaces

Connection type	Female connector M12, 5-pin
Permitted cable length	≤ 10 m
Diagnostic display	LEDs

Electrical data

Protection class	III (EN 50178)
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾
Power consumption	≤ 2 A
Inputs: override, reset, C1, belt stop, muting sensors	
Switching voltage HIGH	24 V DC (11 V DC ... 30 V DC)
Switching voltage LOW	0 V DC (-30 V DC ... 5 V DC)
Input current HIGH	6 mA ... 15 mA
Input current LOW	-0.5 mA ... 1.5 mA
Outputs: voltage supply for reset, override, C1	
Supply voltage	24 V DC (15 V DC ... 28.8 V DC)
Output current	≤ 400 mA ²⁾
Outputs: muting sensors	
Supply voltage	24 V DC (15 V DC ... 28.8 V DC)
Output current	≤ 500 mA ²⁾
Muting lamp	
Output current HIGH (monitored)	20 mA ... 400 mA ³⁾
Output current HIGH (not monitored)	0 mA ... 400 mA ³⁾

¹⁾ Via connected ESPE.

²⁾ Total of all supply currents from the connections RES/OVR, A1, A2, B1 and B2 (pin 1 in each case): max. 1000 mA.

³⁾ At max. 5 W power consumption.

Mechanical data

Mounting	Flexible mounting to the M4000 Advanced or directly in the system
Dimensions (W x H x D)	76.5 mm x 225.2 mm x 40 mm
Housing material	Aluminum die cast, powder coated
Material, connector strip	Polyamide
Weight	600 g

Ambient data

Enclosure rating	IP 65 (IEC 60529)
Ambient operating temperature	-30 °C ... +55 °C
Storage temperature	-30 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	IEC 60068-2-6
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Ordering information

Items supplied M4000 Advanced:

- Multiple light beam safety device consisting of a sender and a receiver
- 8 sliding nuts for side mounting
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

M4000 Advanced

- **Scanning range:** 0.5 m ... 70 m, configurable

Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M40S-025003AA0	1200060	M40E-025003RB0	1200065
	600 mm	M40S-026003AA0	1200070	M40E-026003RB0	1200096
3	220 mm	M40S-032203AA0	1200063	M40E-032203RB0	1200097
	400 mm	M40S-034003AA0	1200061	M40E-034003RB0	1200064
	450 mm	M40S-034503AA0	1200071	M40E-034503RB0	1200098
4	220 mm	M40S-042203AA0	1200072	M40E-042203RB0	1200099
	300 mm	M40S-043003AA0	1200073	M40E-043003RB0	1200100
5	220 mm	M40S-052203AA0	1200074	M40E-052203RB0	1200101
6	220 mm	M40S-062203AA0	1200075	M40E-062203RB0	1200102
7	220 mm	M40S-072203AA0	1200076	M40E-072203RB0	1200103
8	220 mm	M40S-082203AA0	1200077	M40E-082203RB0	1200104

M4000 Advanced with integrated alignment aid

- **Scanning range:** 0.5 m ... 70 m, configurable

Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M40S-025013AA0	1200057	M40E-025013RB0	1200058
	600 mm	M40S-026013AA0	1200078	M40E-026013RB0	1200105
3	400 mm	M40S-034013AA0	1200069	M40E-034013RB0	1200106
	450 mm	M40S-034513AA0	1200082	M40E-034513RB0	1200107
4	300 mm	M40S-043013AA0	1200080	M40E-043013RB0	1200108

M4000 Advanced includes end cap with integrated LED

- **Scanning range:** 0.5 m ... 70 m, configurable

Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M40S-025003AAO	1200060	M40E-025023RB0	1200062
	600 mm	M40S-026003AAO	1200070	M40E-026023RB0	1200079
3	220 mm	M40S-032203AAO	1200063	M40E-032223RB0	1200066
	400 mm	M40S-034003AAO	1200061	M40E-034023RB0	1200067
	450 mm	M40S-034503AAO	1200071	M40E-034523RB0	1200081
4	220 mm	M40S-042203AAO	1200072	M40E-042223RB0	1210279
	300 mm	M40S-043003AAO	1200073	M40E-043023RB0	1200109
5	220 mm	M40S-052203AAO	1200074	M40E-052223RB0	1208161
6	220 mm	M40S-062203AAO	1200075	M40E-062223RB0	1203850
7	220 mm	M40S-072203AAO	1200076	M40E-072223RB0	1201247
8	220 mm	M40S-082203AAO	1200077	M40E-082223RB0	1206683

M4000 Advanced with integrated alignment aid and end cap with integrated LED

- **Scanning range:** 0.5 m ... 70 m, configurable

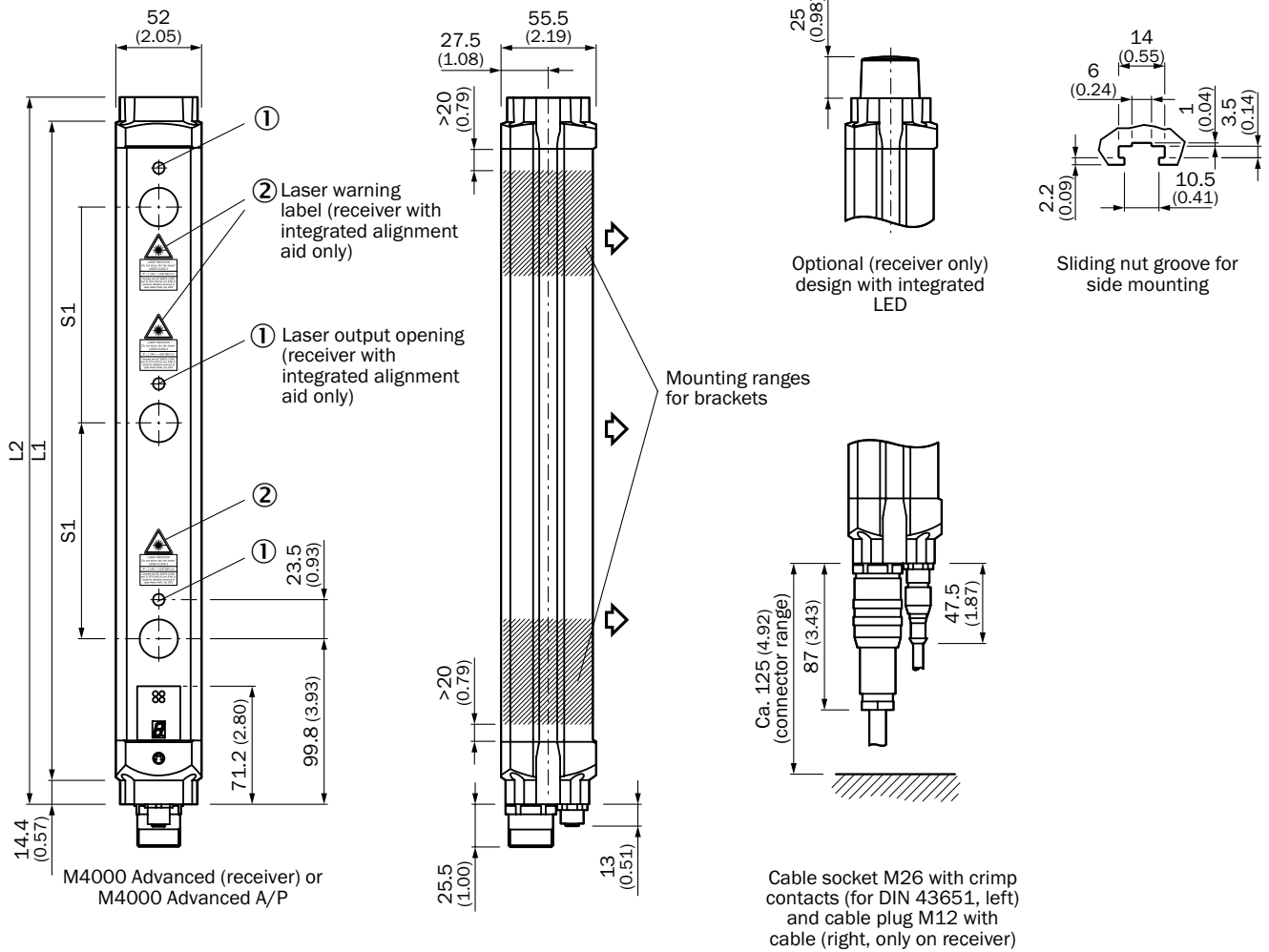
Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M40S-025013AAO	1200057	M40E-025033RB0	1200110
	600 mm	M40S-026013AAO	1200078	M40E-026033RB0	1200111
3	400 mm	M40S-034013AAO	1200069	M40E-034033RB0	1200068
	450 mm	M40S-034513AAO	1200082	M40E-034533RB0	1200112
4	300 mm	M40S-043013AAO	1200080	M40E-043033RB0	1200113

UE403 muting switching amplifier

Description	Type	Part no.
UE403 muting switching amplifier	UE403-A0930	1026287

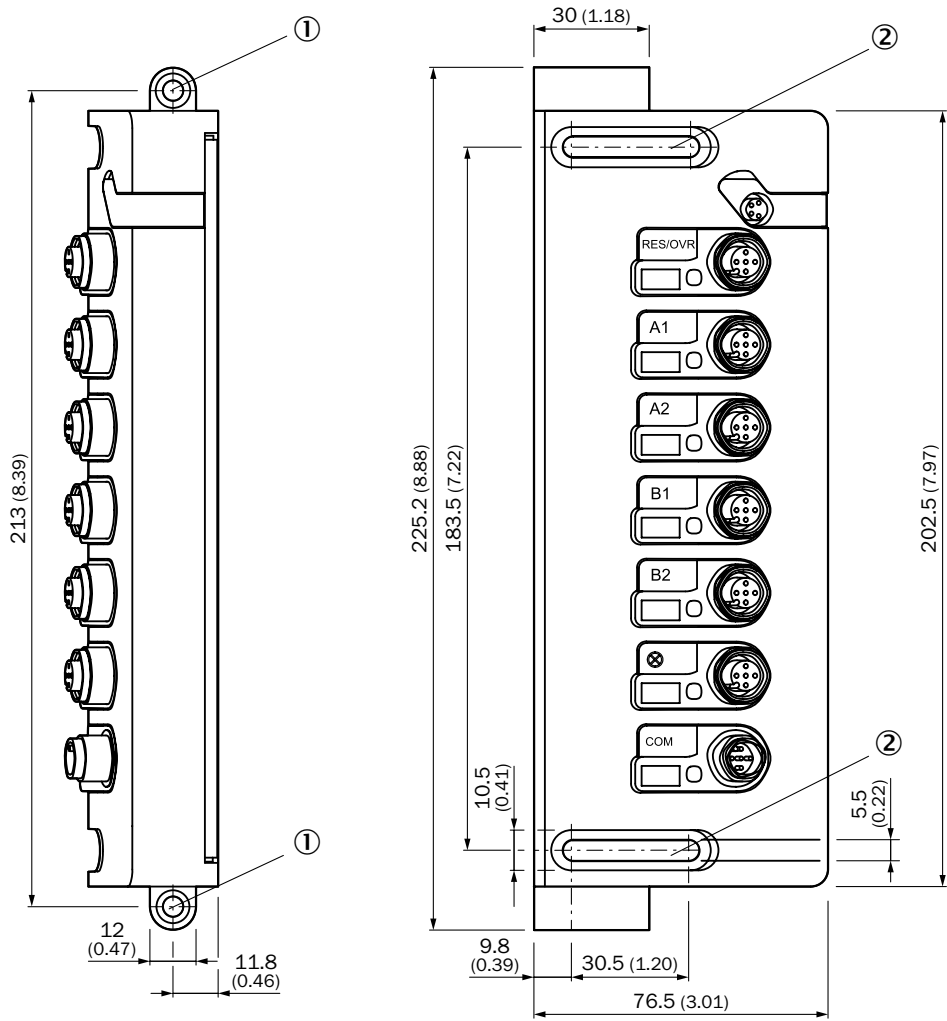
Dimensional drawings (Dimensions in mm (inch))

M4000 Advanced

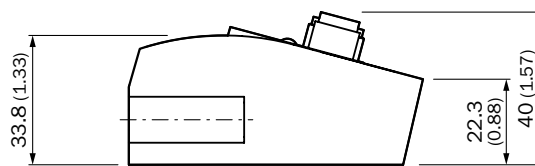


Number of beams	Beam separation S1	L1	L2
2	500 (19.69)	643 (25.31)	672 (26.46)
	600 (23.62)	743 (29.25)	772 (30.39)
3	220 (8.66)	583 (22.95)	612 (24.09)
	400 (15.75)	943 (37.13)	972 (38.27)
4	450 (17.72)	1,043 (41.06)	1,072 (42.20)
	220 (8.66)	803 (31.61)	832 (32.76)
5	300 (11.81)	1,043 (41.06)	1,072 (42.20)
		1,023 (40.28)	1,052 (41.42)
6		1,243 (48.94)	1,272 (50.08)
		1,462 (57.56)	1,491 (58.70)
7		1,682 (66.22)	1,711 (67.36)
8			

UE403 muting switching amplifier

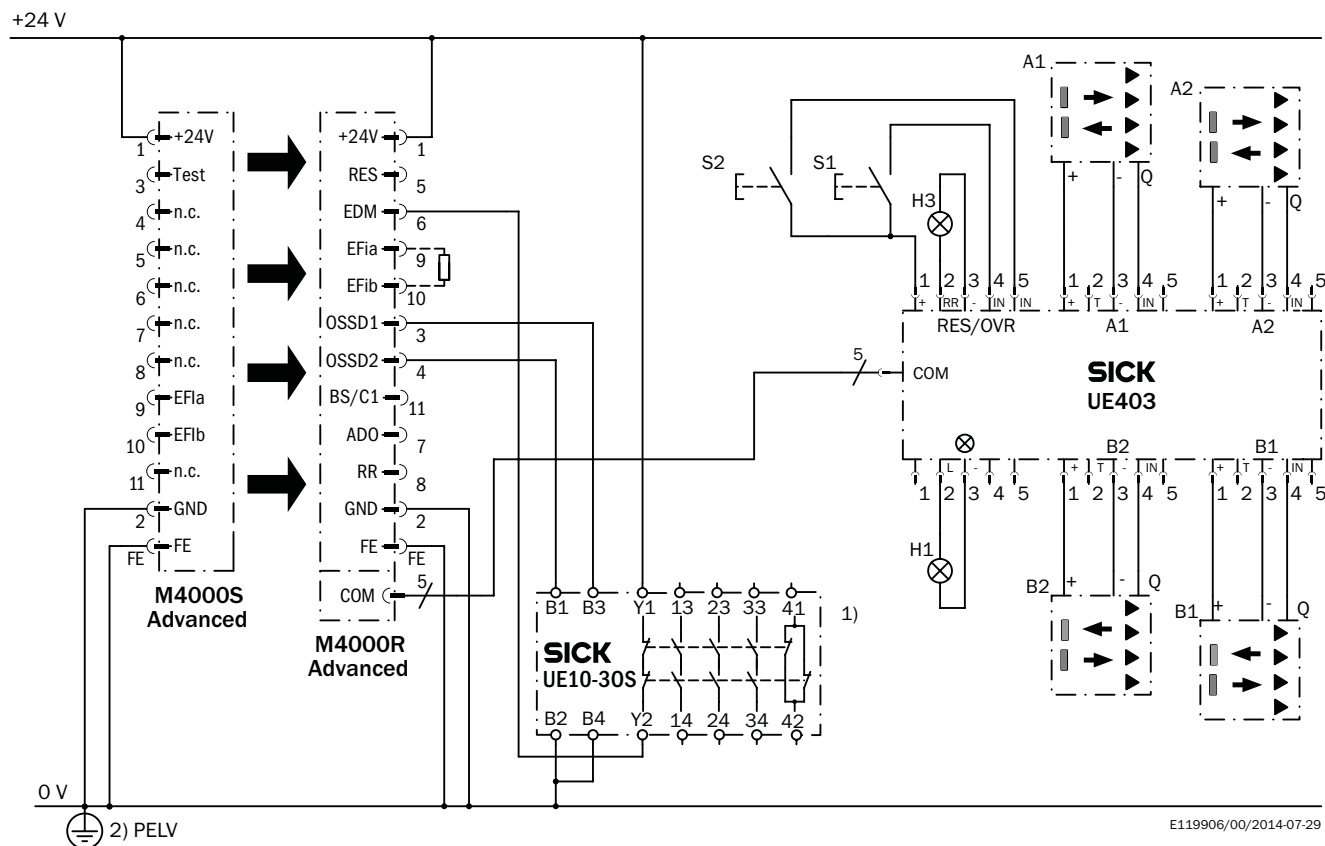


Note:
The fixing holes ① and slots ② are suitable for cheese head screws M5 x 30 as per DIN EN ISO 4762.



Connection diagrams

M4000 Advanced with UE403 switching amplifier connected to UE10-30S safety relay



E119906/00/2014-07-29

Task

Connection of an M4000 Advanced multiple light beam safety device with UE403 switching amplifier to a UE10-30S safety relay.

Muting with 4 photoelectric reflex switches (dark-switching, PNP).

Operating mode: with restart interlock and external device monitoring.

Operating characteristics

When the light path is clear and the UE10-30S is de-energized and functioning correctly, the yellow LED on the receiver and the H3 lamp flash. The system is ready for switch-on and waits for an input signal/switch-on signal. The system is enabled by pressing and releasing the S1 button. The OSSD1 and OSSD2 outputs are live, the UE10-30S is switched on. On interruption of one or several of the light beams, the UE10-30S is de-energized by the OSSD1 and OSSD2 outputs.

Muting and override

When the light path is clear and the muting input conditions are valid, muting starts. The H1 muting lamp illuminates. Different time and monitoring functions can be configured.

When the light path is interrupted and muting sensors are active, e.g., because of muting errors or a new power on, override is enabled by pressing and releasing the S2 button.

Fault analysis

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The erroneous behavior of the UE10-30S will be detected. The shutdown function is retained. On manipulation (e.g., jamming) of the S1 button, the system does not enable the output current circuits.

The failure of one muting sensor will be detected by the muting sequence and prohibit a new muting cycle. On manipulation (e.g., jamming) of the S2 button, the system does not enable override. A permanent use of the override function will be inhibited through the device.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

²⁾ PELV in accordance with the requirements in EN 60204-1 / 6.4

Take note of the operating instructions of the integrated devices. This applies particularly to the use of configurable functions.

Accessories required for commissioning


Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
Connecting cable	2	-	→ Plug connectors and cables
UE403 muting switching amplifier	1	-	-
UE403 connection cable	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates





Mounting brackets

Figure	Description	Packing unit	Type	Part no.	M4000	UE403
	Mounting kit 1, mounting bracket, rigid, L-shaped, including fixing screws and washers	4 pieces	BEF-3WNGBAST4	7021352	●	-

Dimensional drawings → [page I-598](#)

Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.	M4000	UE403
	Mounting kit 12, rotatable, swivel mount	4 pieces	BEF-2SMGEAKU4	2030510	●	-
	Mounting kit 2, rotatable	4 pieces	BEF-1SHABAAL4	2017751	●	-
	Mounting kit 3, rotatable, with shock-absorber	4 pieces	BEF-1SHADAAL4	2017752	●	-
	Mounting kit 6, side bracket, rotatable	4 pieces	BEF-1SHABAZN4	2019506	●	-
	Omega bracket, rotatable, fixable with only one screw, for mounting on the swivel mount, including spacer discs	4 pieces	BEF-2SMGEAAL4	2044846	●	-


Dimensional drawings → [page I-598](#)

Terminal brackets

Figure	Description	Packing unit	Type	Part no.	M4000	UE403
	Bracket, rigid, vibration absorbing, for devices with a weight > 350 g ... ≤ 1,200 g	4 pieces	BEF-3SHADAAL4S06	2055829	●	-
	Bracket, rigid, vibration absorbing, for devices with a weight > 1,200 g ... ≤ 3,000 g	4 pieces	BEF-3SHADAAL4S07	2055830	●	-
	Bracket, rigid, vibration absorbing, for devices with a weight > 3,000 g ... ≤ 4,000 g	4 pieces	BEF-3SHADAAL4S08	2055831	●	-

Device protection (mechanical)

Front screen protection

Figure	Description	Suitable for	Packing unit	Type	Part no.	M4000	UE403
 Application example	Front screen protection set (protects sensors from damage by flying sparks and welding beads), incl. sliding nuts and fastening screws	M40x-0250xxxx	2 pieces	Additional front screen	2033225	●	-
		M40x-0260xxxx	2 pieces	Additional front screen	2033226	●	-
		M40x-0322xxxx	2 pieces	Additional front screen	2033227	●	-
		M40x-0340xxxx	2 pieces	Additional front screen	2033228	●	-
		M40x-0345xxxx	2 pieces	Additional front screen	2033229	●	-
		M40x-0422xxxx	2 pieces	Additional front screen	2033230	●	-
		M40x-0522xxxx	2 pieces	Additional front screen	2033231	●	-
		M40x-0622xxxx	2 pieces	Additional front screen	2033232	●	-
		M40x-0722xxxx	2 pieces	Additional front screen	2033233	●	-
M40x-0822xxxx	2 pieces	Additional front screen	2033234	●	-		

Protective caps

Figure	Description	Type	Part no.	M4000	UE403
	Protective cap for device socket, M12 x 1	Protective cap	6011170	-	●

Other mounting accessories

Sliding nuts


Figure	Description	Packing unit	Type	Part no.	M4000	UE403
	Fastening screws with sliding nuts, Included in delivery	2 pieces	Fixing screws	2033250	-	●
	Sliding nut set, M5, 4x, Included in delivery	4 pieces	Sliding nuts	2017550	●	-
	Suitable for PNS75 and PNS125	6 pieces	Sliding nuts for deflector mirror	2030600	●	-

Connection systems

Plug connectors and cables


Connecting cables with female connector

- **Model:** PVC, unshielded

Figure	Connection type		Description	Conductor cross-section	Cable length	Type	Part no.	M4000	UE403
	Female connector, M26, 12-pin, straight	Cable	-	0.75 mm ²	2.5 m	DOL-0612G2M5075KM0	2022544	●	-
					5 m	DOL-0612G05M075KM0	2022545	●	-
					7.5 m	DOL-0612G7M5075KM0	2022546	●	-
					10 m	DOL-0612G10M075KM0	2022547	●	-
					15 m	DOL-0612G15M075KM0	2022548	●	-
					20 m	DOL-0612G20M075KM0	2022549	●	-
					30 m	DOL-0612G30M075KM0	2022550	●	-
					50 m	DOL-0612G50MD75KM0	2033548	●	-
			Without EFI: Pin 9 and 10 not connected	0.75 mm ²	5 m	DOL-0610G05M075KM1	2046888	●	-
					7.5 m	DOL-0610G7M5075KM5	2044042	●	-
					10 m	DOL-0610G10M075KM1	2046889	●	-
					20 m	DOL-0610G20M075KM1	2046890	●	-

Connecting cables with male connector

- **Model:** PUR, halogen-free, unshielded

Figure	Connection type		Conductor cross-section	Cable length	Type	Part no.	M4000	UE403
	Male connector, M12, 5-pin, straight	Cable	0.34 mm ²	2 m	Connecting cable	6026133	●	●
				5 m	Connecting cable	6026134	●	●
				10 m	Connecting cable	6026135	●	●

Connection cables with female connector and male connector


Figure	Connection type		Description	Model	Cable length	Type	Part no.	M4000	UE403
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	For connecting the configuration connection to the serial interface of a PC	PVC, unshielded	2 m	DSL-8D04G02M025KM1	6021195	●	●
					10 m	DSL-8D04G10M025KM1	2027649	●	●

Figure	Connection type		Description	Model	Cable length	Type	Part no.	M4000	UE403
	Female connector, M12, 3-pin, angled	Male connector, M12, 3-pin, straight	Pin 2 (connector) not connected	PUR, halogen-free, unshielded	1 m	DSL-1203B01MC34KM1	6026106	●	●
					2 m	DSL-1203B02MC34KM1	6026107	●	●
					5 m	DSL-1203B05MC34KM2	6025118	●	●
	Female connector, M12, 4-pin, angled	Male connector, M12, 4-pin, straight	-	PUR, halogen-free	1 m	DSL-1204B01MC34KM0	6025974	●	●
					2 m	DSL-1204B02MC34KM0	6025975	●	●
					5 m	DSL-1204B05MC34KM1	6025087	●	●
	Female connector, M12, 4-pin, angled	Male connector, M12, 4-pin, straight	Pin 4 (connector) rotated to pin 2 (female connector), pin 2 (connector) not connected	PUR, halogen-free, unshielded	1 m	DSL-1204B01MC34KM2	6025944	●	●
					2 m	DSL-1204B02MC34KM2	6025945	●	●
					5 m	DSL-1204B05MC34KM2	6025116	●	●
	Female connector, M12, 5-pin, straight	Male connector, M12, 5-pin, straight	-	PUR, halogen-free, unshielded	0.6 m	DSL-1205-G0M6C	6025930	●	●
					1 m	DSL-1205-G01MC	6029280	●	●
					1.5 m	DSL-1205-G1M5C	6029281	●	●
					2 m	DSL-1205-G02MC	6025931	●	●
					5 m	DSL-1205-G05MC	6029282	●	●
	Female connector, M26, 12-pin, straight	Male connector, M12, 5-pin, straight	-	PUR, halogen-free	1 m	DSL-6182G01M034KM1	2072829	●	-



Connection cables with male connector and male connector

- **Model:** PVC, unshielded



Figure	Connection type		Description	Cable length	Type	Part no.	M4000	UE403
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	35 cm	Converter RS-232 to USB	6035396	●	-
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	2 m	DSL-8U04G02M025KM1	6034574	●	●
				10 m	DSL-8U04G10M025KM1	6034575	●	●

Female connectors (ready to assemble)

Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.	M4000	UE403
	Female connector, M12, 4-pin, angled, screw-type terminals	≤ 0.75 mm ²	3 mm ... 6.5 mm	DOS-1204-W	6007303	-	●
 Illustration may differ	Female connector, M12, 4-pin, straight, cutting technology	≤ 0.75 mm ²	3.5 mm ... 6 mm	DOS-1204-GQU6	6042088	-	●
			4 mm ... 7.5 mm	DOS-1204-GQU8	6053328	-	●


Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.	M4000	UE403
	Female connector, M26, 12-pin, angled, crimp contacts	0.5 mm ² ... 1.5 mm ²	-	DOS-0612W000GA3KM0	6020758	●	-
	Female connector, M26, 12-pin, straight, crimp contacts	0.5 mm ² ... 1.5 mm ²	-	DOS-0612G000GA3KM0	6020757	●	-

Male connectors (ready to assemble)

Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.	M4000	UE403
	Male connector, M12, 4-pin, straight	≤ 0.75 mm ²	3 mm ... 6.5 mm	STE-1204-GQU6	6042089	-	●
	Male connector, M12, 4-pin, straight, screw-type terminals	≤ 0.75 mm ²	4 mm ... 6 mm	STE-1204-G	6009932	-	●
	Male connector, M12, 5-pin, straight, A-coded, Spring-cage connection	0.14 mm ² ... 0.5 mm ²	4 mm ... 8 mm	STE-1205-GFE	6044999	-	●






Adapters and distributors

Other adapters and distributors


Figure	Description	Type	Part no.	M4000	UE403
	Terminal with 182 Ohm resistance, for pin 9 and 10 on the system connection, to improve the EMC behaviour if the EFI interface is not used	Terminal with 182 Ohm resistance	2027227	●	-

Modules and gateways

EFI gateways



Figure	Description	Type	Part no.	M4000	UE403
	CANopen	UE1940-I220000	1040397	●	-
	Ethernet TCP/IP	UE1840-22H0000	1029100	●	-
	PROFIBUS DP	UE1140-22I0000	1029099	●	-
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098	●	-
	PROFINET PROFI-safe	UE4740-22H0000	1046978	●	-

Power supply units and power cord connectors


Figure	Input voltage	Output voltage	Output current	Type	Part no.	M4000	UE403
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789	●	-
			≤ 3.9 A	PS95WE24V	7028790	●	-

Reflectors and optics

Alignment aids


Figure	Description	Type	Part no.	M4000	UE403
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741	●	-
	Adapter AR60 for M4000 and M4000 Curtain	Adapter AR60, M4000	4040006	●	-
	Alignment template for integrated laser alignment aid	Alignment template for M4000	4040263	●	-

Deflector mirrors







Figure	Mirror material	Description	Items supplied	Type	Part no.	M4000	UE403
	Glass	Horizontal deflection, 75 mm x 80 mm reflector surface	Incl. mounting kit (2 x swivel mount)	PNS75-008	1026647	●	-

Further accessories


Programming and configuration tools

Figure	Description	Suitable for	Type	Part no.	M4000	UE403
	Clone Plug to save and transfer configurations, IP 41, with lithium coin cell CR2032, 3.0 V	C4000 Standard, C4000 Advanced, C4000 Palletizer, C4000 Entry/Exit, C4000 Fusion, M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, M4000 Area	PLUG1-0C00100	1029665	●	-
	Wall-mounting bracket for mounting Clone Plug and Host-Guest Plug	-	Wall-mounting bracket	5318443	●	-


Muting accessories

Figure	Description	Suitable for	Items supplied	Type	Part no.	M4000	UE403
						-	●
 <p>Illustration may differ</p>	Muting indicator lamp	-	Inclusive male connector M12 and connection cable (2 m), mounting bracket and mounting kit	Muting indicator lamp	2033118	-	●
			Inclusive male connector M12 and connection cable (10 m), mounting bracket and mounting kit	Muting indicator lamp	2033119	-	●
	Cross muting (2 sensors), muting sensor brackets for mounting on M4000 housing profile or device columns with external mounting grooves	M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, PU3Hxx	2 x muting arm active: 2 x WL100-P1429 pre-mounted together with M12 angled plug and 2 m cable; 2 x muting arm passive: 2 x reflector P250 pre-mounted	Muting arm kit M4000, 2 sensors, cross muting	2046171	●	-
	Parallel muting (2 sensors), muting sensor brackets for mounting on M4000 housing profile or device column with external mounting grooves	M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, PU3Hxx	2 x muting arm, 2 x WL100-P1429 incl. cable and male connector, 2 x reflector P250	Muting arm kit M4000, 2 sensors, parallel muting	2060156	●	-
		M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, PU3Hxx	2 x round steel arm, 4 x universal bracket, 2 x WL280 incl. cable and male connector, 2 x reflector P250	Muting arm kit M4000, 2 sensors, parallel muting	2060157	●	-
	Parallel muting (4 sensors), muting sensor brackets for mounting on M4000 housing profile or device columns with external mounting grooves	M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, PU3Hxx	2 x muting arm active: 4 x WL100-P1429 pre-mounted in fixed position and M12 angled plug incl. 2 m cable	Muting arm kit M4000, 4 sensors, parallel muting	2046170	●	-
	Reset pushbutton	Muting applications with UE403	Including retaining clip and "RESET" cover	ER12-SB3C4S01	6034585	-	●

Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> • Freestanding mounting solution with external grooves for installing additional accessories • Compact, rugged design with high reliability • Easy mounting and adjustment • Device protection against external influences • Large reflector surface for efficient multi-sided protection via beam deflection • Universally applicable for multiple light beam safety devices and safety light curtains 	<p style="text-align: center;">→ page K-664</p>

Enhanced system solutions

Figure	Description	Further information
	<p>Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.</p>	<p style="text-align: center;">→ page L-690</p>

INTELLIGENT AND EFFICIENT: CONNECTION OF THE MUTING SIGNALS DIRECTLY ON SITE



Product description

The M4000 Advanced multiple light beam safety device with the UE403 muting switching amplifier is an efficient solution for conventional muting applications involving automatic material transport. The configuration via PC and the on-site connection of the muting signals ensure maximum reliability. Various mounting adapters and innovative accessories enable flexible mounting. Integrated functions and status and

diagnostics information allow quick commissioning and minimize machine downtime. The modular concept enables a high level of machine safety since device properties can be adapted to meet specific application requirements. In addition, sens:Control devices, accessories, and services complete the product offering and form packaged solutions designed specifically for industrial environments.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Sender/receiver in a single housing, scanning range up to 7.5 m
- External device monitoring (EDM), restart interlock, application diagnostic output, SDL interface
- Muting in combination with the UE403 muting switching amplifier
- 7-segment display
- Configuration and diagnostics via PC
- Optional integrated: LED

Your benefits

- The wide scanning range allows the device to be customized according to the application
- Robust design with a high level of resistance to environmental changes ensures high machine availability, even under special ambient conditions
- Mounting grooves on three housing sides ensure more mounting flexibility and simplify machine integration
- Customer-friendly interfaces and status display simplify commissioning and maintenance
- For 2- and 4-sensor muting, the on-site connection of the muting signals significantly minimizes wiring costs and simplifies commissioning and maintenance
- Reduced downtime due to 360° visible LED, diagnostics displays and configuration memory in the UE403 muting switching amplifier



Additional information

- Detailed technical data I-549
- Ordering information I-553
- Dimensional drawings I-554
- Recommended accessories I-557

→ www.sick.com/M4000_Advanced_A_P

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

M4000 Advanced A/P

Features

	Mirror deflection	Fibre-optic deflection
Scanning range	0.5 m ... 7.5 m	0.5 m ... 4.5 m
Number of beams	2	2 / 4 (depending on type)
Beam separation	500 mm	500 mm / 300 mm (depending on type)
Response time	10 ms	
Synchronization	Optical synchronisation	
End cap with integrated LED	- / ✓ (depending on type)	

Safety-related parameters

Type	Type 4 (EN 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH _D (mean probability of a dangerous failure per hour)	6.6 x 10 ⁻⁹ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	Internal
External device monitoring (EDM)	✓	Activated
Beam coding	✓	Non-coded
Configurable application diagnostic output	✓	Contamination (OWS)
Safe SICK device communication via EFI	✓	

Interfaces

System connection	
Connection type	Hirschmann male connector M26, 12-pin
Permitted cable length	≤ 50 m ¹⁾
Permitted cross-section	≥ 0.75 mm ²
Extension connection	
Connection type	Male connector M12, 5-pin
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Configuration connection	
Connection type	Female connector M8, 4-pin
Display elements	LEDs 7-segment display
Fieldbus, industrial network	
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ²⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ³⁾

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

³⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	III (EN 50178)
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾
Residual ripple	≤ 10 % ²⁾
Power consumption	≤ 0.6 A ³⁾
Safety outputs (OSSD)	
Type of output	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ⁴⁾
Switching voltage HIGH	24 V DC ($V_s - 2.25$ V DC ... V_s)
Switching voltage LOW	≤ 2 V DC
Switching current	≤ 500 mA
Diagnostic outputs	
Type of output	PNP semiconductor, short-circuit protected
Switching voltage HIGH	24 V DC ($V_s - 4.2$ V DC ... V_s)
Switching voltage LOW	High resistance
Switching current	≤ 100 mA

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of V_s .

³⁾ Without load.

⁴⁾ Applies to the voltage range between -30 V and +30 V.

Mechanical data

Housing cross-section	52 mm x 55.5 mm
Housing material	Aluminum alloy ALMGSI 0.5
Surface treatment	Powder coated
Front screen material	Polycarbonate, scratch-resistant coating

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-30 °C ... +55 °C
Storage temperature	-30 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Other information

Wave length	850 nm
--------------------	--------

UE403 muting switching amplifier

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	1.0 x 10 ⁻⁸ (EN ISO 13849) ¹⁾
T_M (mission time)	20 years (EN ISO 13849) ¹⁾

¹⁾ Only in conjunction with M4000 Advanced, M4000 Advanced A/P and M4000 Advanced Curtain.

Functions

Concurrence monitoring	✓
Monitoring of total muting time	✓
Sensor gap monitoring	✓
Belt stop	✓
Muting with override	✓
Exit monitoring	✓
End of muting by ESPE	✓

Interfaces

Connection type	Female connector M12, 5-pin
Permitted cable length	≤ 10 m
Diagnostic display	LEDs

Electrical data

Protection class	III (EN 50178)
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾
Power consumption	≤ 2 A
Inputs: override, reset, C1, belt stop, muting sensors	
Switching voltage HIGH	24 V DC (11 V DC ... 30 V DC)
Switching voltage LOW	0 V DC (-30 V DC ... 5 V DC)
Input current HIGH	6 mA ... 15 mA
Input current LOW	-0.5 mA ... 1.5 mA
Outputs: voltage supply for reset, override, C1	
Supply voltage	24 V DC (15 V DC ... 28.8 V DC)
Output current	≤ 400 mA ²⁾
Outputs: muting sensors	
Supply voltage	24 V DC (15 V DC ... 28.8 V DC)
Output current	≤ 500 mA ²⁾
Muting lamp	
Output current HIGH (monitored)	20 mA ... 400 mA ³⁾
Output current HIGH (not monitored)	0 mA ... 400 mA ³⁾

¹⁾ Via connected ESPE.

²⁾ Total of all supply currents from the connections RES/OVR, A1, A2, B1 and B2 (pin 1 in each case): max. 1000 mA.

³⁾ At max. 5 W power consumption.

Mechanical data

Mounting	Flexible mounting to the M4000 Advanced or directly in the system
Dimensions (W x H x D)	76.5 mm x 225.2 mm x 40 mm
Housing material	Aluminum die cast, powder coated
Material, connector strip	Polyamide
Weight	600 g

Ambient data

Enclosure rating	IP 65 (IEC 60529)
Ambient operating temperature	-30 °C ... +55 °C
Storage temperature	-30 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	IEC 60068-2-6
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Ordering information

Items supplied M4000 Advanced A/P:

- Multiple light beam safety device consisting of sender/receiver in one housing and a deflector unit
- 8 sliding nuts for side mounting
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check

M4000 Advanced A/P

Scanning range	Number of beams	Beam separation	Sender/receiver in one housing		Deflector unit	
			Type	Part no.	Type	Part no.
0.5 m ... 4.5 mm	2	500 mm	M40Z-025003TB0	1200128	PSD01-2501	1027907
	4	300 mm	M40Z-043003TB0	1200127	PSD02-2301	1027908
0.5 m ... 7.5 mm	2	500 mm	M40Z-025003RB0	1200115	PSD01-1501	1027906

M4000 Advanced A/P includes end cap with integrated LED

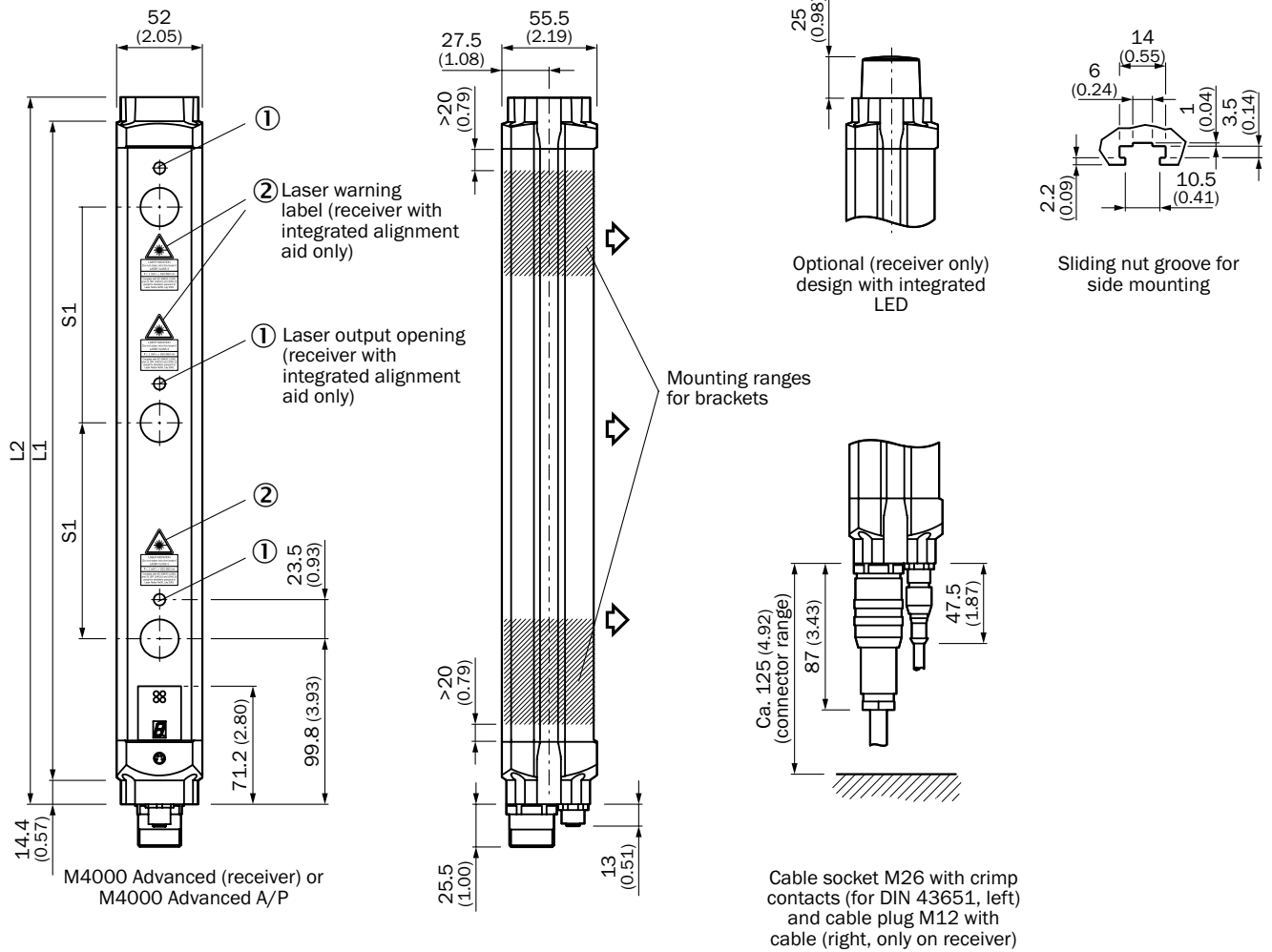
Scanning range	Number of beams	Beam separation	Sender/receiver in one housing		Deflector unit	
			Type	Part no.	Type	Part no.
0.5 m ... 4.5 mm	2	500 mm	M40Z-025023TB0	1200125	PSD01-2501	1027907
	4	300 mm	M40Z-043023TB0	1200131	PSD02-2301	1027908
0.5 m ... 7.5 mm	2	500 mm	M40Z-025023RB0	1200126	PSD01-1501	1027906

UE403 muting switching amplifier

Description	Type	Part no.
UE403 muting switching amplifier	UE403-A0930	1026287

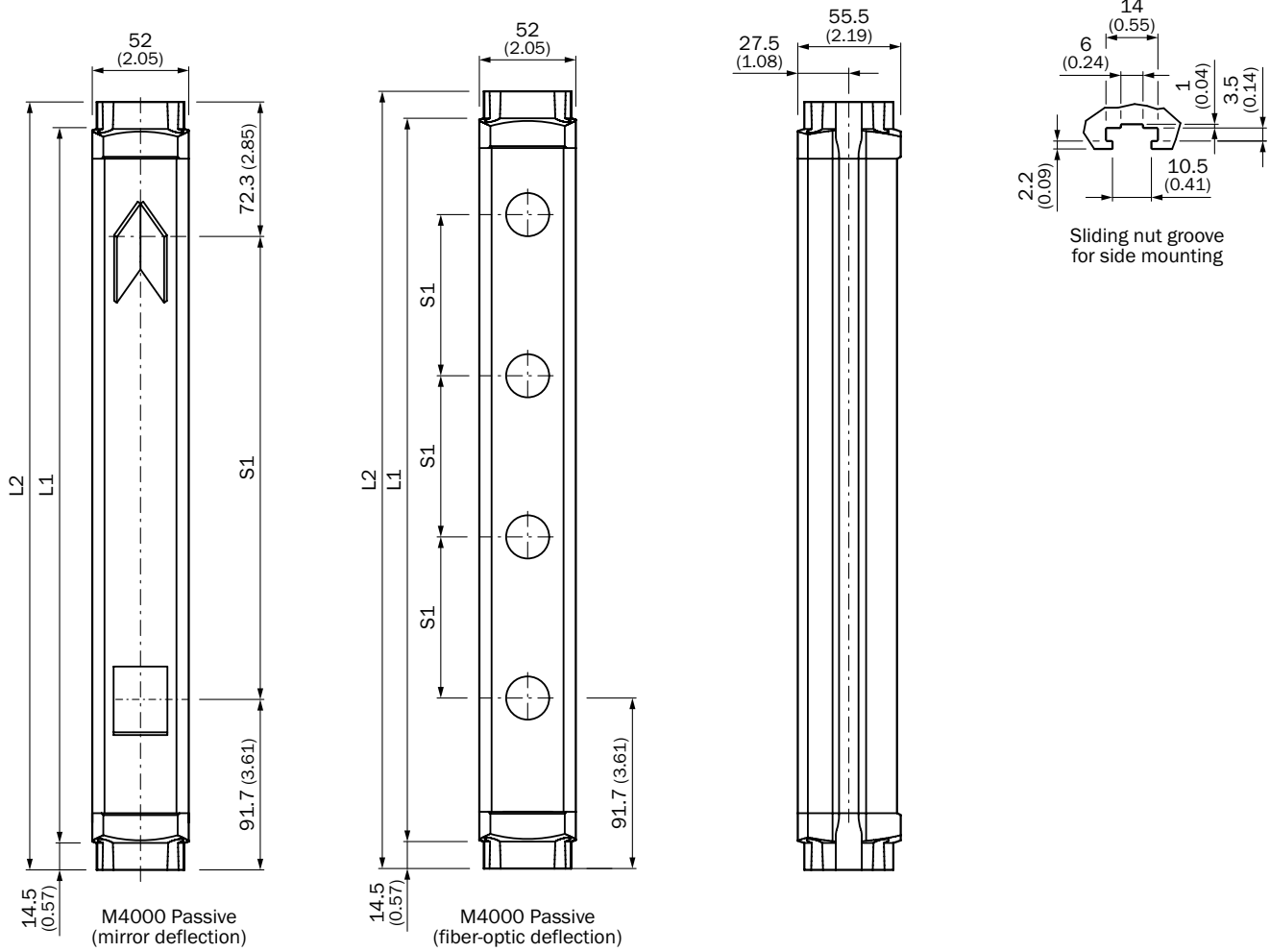
Dimensional drawings (Dimensions in mm (inch))

M4000 Advanced



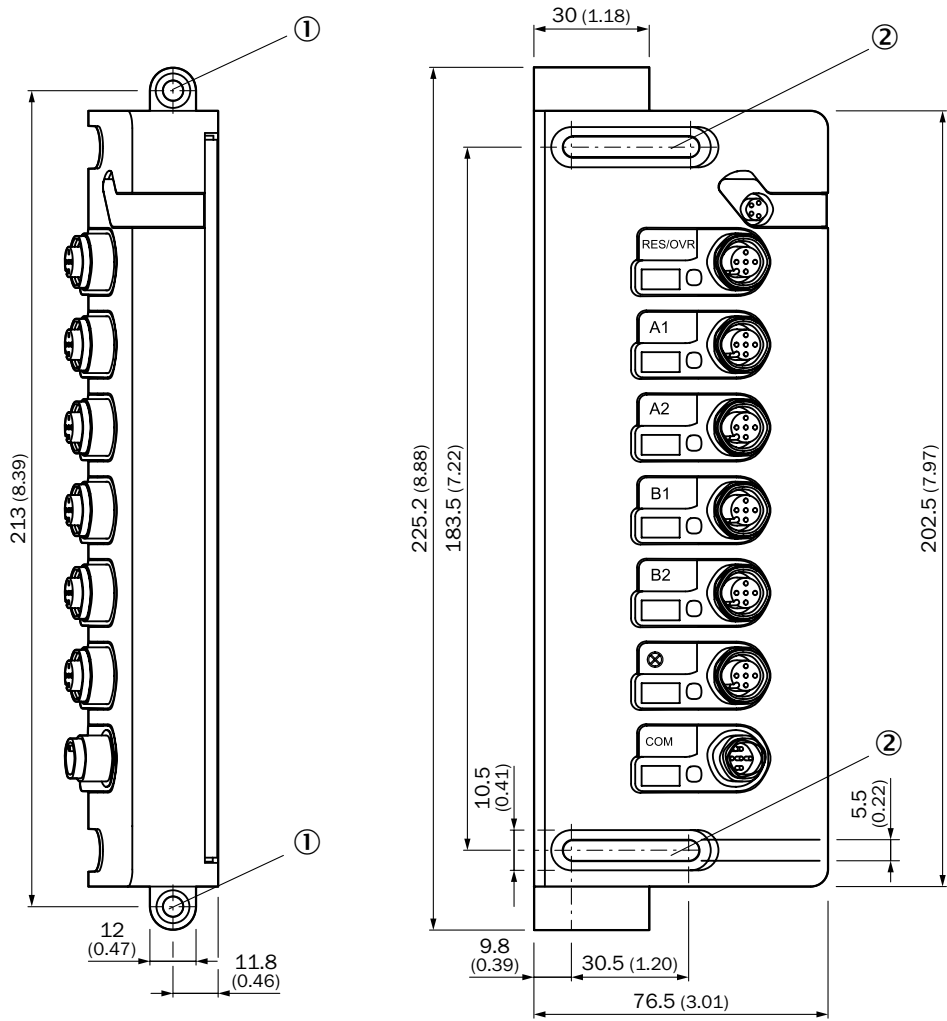
Number of beams	Beam separation S1	L1	L2
2	500 (19.69)	643 (25.31)	672 (26.46)
4	300 (11.81)	1,043 (41.06)	1,072 (42.20)

Deflector units for M4000 Standard A/P

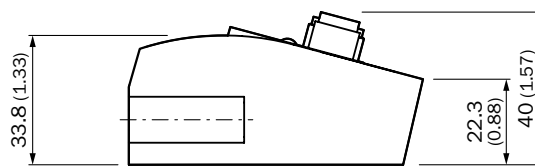


Number of beams	Beam separation S1	L1	L2
2	500 (19.69)	643 (25.31)	672 (26.46)
4	300 (11.81)	1,043 (41.06)	1,072 (42.20)

UE403 muting switching amplifier



Note:
The fixing holes ① and slots ② are suitable for cheese head screws M5 x 30 as per DIN EN ISO 4762.



Accessories required for commissioning


Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Terminal and alignment brackets
Connecting cable	1	-	→ Plug connectors and cables
UE403 muting switching amplifier	1	-	-
UE403 connection cable	1	-	→ Plug connectors and cables
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates





Mounting brackets

Figure	Description	Packing unit	Type	Part no.	M4000	UE403
	Mounting kit 1, mounting bracket, rigid, L-shaped, including fixing screws and washers	4 pieces	BEF-3WNGBAST4	7021352	●	-

Dimensional drawings → [page I-598](#)

Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.	M4000	UE403
	Mounting kit 12, rotatable, swivel mount	4 pieces	BEF-2SMGEAKU4	2030510	●	-
	Mounting kit 2, rotatable	4 pieces	BEF-1SHABAAL4	2017751	●	-
	Mounting kit 3, rotatable, with shock-absorber	4 pieces	BEF-1SHADAAL4	2017752	●	-
	Mounting kit 6, side bracket, rotatable	4 pieces	BEF-1SHABAZN4	2019506	●	-
	Omega bracket, rotatable, fixable with only one screw, for mounting on the swivel mount, including spacer discs	4 pieces	BEF-2SMGEAAL4	2044846	●	-


Dimensional drawings → [page I-598](#)

Terminal brackets

Figure	Description	Packing unit	Type	Part no.	M4000	UE403
	Bracket, rigid, vibration absorbing, for devices with a weight > 350 g ... ≤ 1,200 g	4 pieces	BEF-3SHADAAL4S06	2055829	●	-
	Bracket, rigid, vibration absorbing, for devices with a weight > 1,200 g ... ≤ 3,000 g	4 pieces	BEF-3SHADAAL4S07	2055830	●	-
	Bracket, rigid, vibration absorbing, for devices with a weight > 3,000 g ... ≤ 4,000 g	4 pieces	BEF-3SHADAAL4S08	2055831	●	-

Device protection (mechanical)

Front screen protection

Figure	Description	Suitable for	Packing unit	Type	Part no.	M4000	UE403
 Application example	Front screen protection set (protects sensors from damage by flying sparks and welding beads), incl. sliding nuts and fastening screws	M40x-0250xxxxx	2 pieces	Additional front screen	2033225	●	-
		M40x-0260xxxxx	2 pieces	Additional front screen	2033226	●	-
		M40x-0322xxxxx	2 pieces	Additional front screen	2033227	●	-
		M40x-0340xxxxx	2 pieces	Additional front screen	2033228	●	-
		M40x-0345xxxxx	2 pieces	Additional front screen	2033229	●	-
		M40x-0422xxxxx	2 pieces	Additional front screen	2033230	●	-
		M40x-0522xxxxx	2 pieces	Additional front screen	2033231	●	-
		M40x-0622xxxxx	2 pieces	Additional front screen	2033232	●	-
		M40x-0722xxxxx	2 pieces	Additional front screen	2033233	●	-
M40x-0822xxxxx	2 pieces	Additional front screen	2033234	●	-		

Protective caps

Figure	Description	Type	Part no.	M4000	UE403
	Protective cap for device socket, M12 x 1	Protective cap	6011170	-	●

Other mounting accessories

Sliding nuts


Figure	Description	Packing unit	Type	Part no.	M4000	UE403
	Fastening screws with sliding nuts, Included in delivery	2 pieces	Fixing screws	2033250	-	●
	Sliding nut set, M5, 4x, Included in delivery	4 pieces	Sliding nuts	2017550	●	-
	Suitable for PNS75 and PNS125	6 pieces	Sliding nuts for deflector mirror	2030600	●	-

Connection systems

Plug connectors and cables


Connecting cables with female connector

- **Model:** PVC, unshielded

Figure	Connection type		Description	Conductor cross-section	Cable length	Type	Part no.	M4000	UE403
								●	-
	Female connector, M26, 12-pin, straight	Cable	-	0.75 mm ²	2.5 m	DOL-0612G2M5075KM0	2022544	●	-
					5 m	DOL-0612G05M075KM0	2022545	●	-
					7.5 m	DOL-0612G7M5075KM0	2022546	●	-
					10 m	DOL-0612G10M075KM0	2022547	●	-
					15 m	DOL-0612G15M075KM0	2022548	●	-
					20 m	DOL-0612G20M075KM0	2022549	●	-
					30 m	DOL-0612G30M075KM0	2022550	●	-
					50 m	DOL-0612G50MD75KM0	2033548	●	-
			Without EFI: Pin 9 and 10 not connected	0.75 mm ²	5 m	DOL-0610G05M075KM1	2046888	●	-
					7.5 m	DOL-0610G7M5075KM5	2044042	●	-
					10 m	DOL-0610G10M075KM1	2046889	●	-
					20 m	DOL-0610G20M075KM1	2046890	●	-

Connecting cables with male connector

- **Model:** PUR, halogen-free, unshielded

Figure	Connection type		Conductor cross-section	Cable length	Type	Part no.	M4000	UE403
							●	●
	Male connector, M12, 5-pin, straight	Cable	0.34 mm ²	2 m	Connecting cable	6026133	●	●
				5 m	Connecting cable	6026134	●	●
				10 m	Connecting cable	6026135	●	●

Connection cables with female connector and male connector



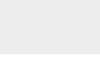
Figure	Connection type		Description	Model	Cable length	Type	Part no.	M4000	UE403
								●	●
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	For connecting the configuration connection to the serial interface of a PC	PVC, unshielded	2 m	DSL-8D04G02M025KM1	6021195	●	●
					10 m	DSL-8D04G10M025KM1	2027649	●	●
	Female connector, M12, 3-pin, angled	Male connector, M12, 3-pin, straight	Pin 2 (connector) not connected	PUR, halogen-free, unshielded	1 m	DSL-1203B01MC34KM1	6026106	●	●
					2 m	DSL-1203B02MC34KM1	6026107	●	●
					5 m	DSL-1203B05MC34KM2	6025118	●	●
	Female connector, M12, 4-pin, angled	Male connector, M12, 4-pin, straight	-	PUR, halogen-free	1 m	DSL-1204B01MC34KM0	6025974	●	●
					2 m	DSL-1204B02MC34KM0	6025975	●	●
					5 m	DSL-1204B05MC34KM1	6025087	●	●

Figure	Connection type		Description	Model	Cable length	Type	Part no.	M4000	UE403
	Female connector, M12, 4-pin, angled	Male connector, M12, 4-pin, straight	Pin 4 (connector) rotated to pin 2 (female connector), pin 2 (connector) not connected	PUR, halogen-free, unshielded	1 m	DSL-1204B01MC34KM2	6025944	●	●
					2 m	DSL-1204B02MC34KM2	6025945	●	●
					5 m	DSL-1204B05MC34KM2	6025116	●	●
	Female connector, M12, 5-pin, straight	Male connector, M12, 5-pin, straight	-	PUR, halogen-free, unshielded	0.6 m	DSL-1205-G0M6C	6025930	●	●
					1 m	DSL-1205-G01MC	6029280	●	●
					1.5 m	DSL-1205-G1M5C	6029281	●	●
					2 m	DSL-1205-G02MC	6025931	●	●
					5 m	DSL-1205-G05MC	6029282	●	●
	Female connector, M26, 12-pin, straight	Male connector, M12, 5-pin, straight	-	PUR, halogen-free	1 m	DSL-6182G01M034KM1	2072829	●	-

Connection cables with male connector and male connector



- **Model:** PVC, unshielded

Figure	Connection type		Description	Conductor cross-section	Cable length	Type	Part no.	M4000	UE403
	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	-	35 cm	Converter RS-232 to USB	6035396	●	-
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	0.25 mm ²	2 m	DSL-8U04G02M025KM1	6034574	●	●
					10 m	DSL-8U04G10M025KM1	6034575	●	●

Female connectors (ready to assemble)


Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.	M4000	UE403
	Female connector, M12, 4-pin, angled, screw-type terminals	≤ 0.75 mm ²	3 mm ... 6.5 mm	DOS-1204-W	6007303	-	●
	Female connector, M12, 4-pin, straight, cutting technology	≤ 0.75 mm ²	3.5 mm ... 6 mm	DOS-1204-GQU6	6042088	-	●
			4 mm ... 7.5 mm	DOS-1204-GQU8	6053328	-	●
	Female connector, M26, 12-pin, angled, crimp contacts	0.5 mm ² ... 1.5 mm ²	-	DOS-0612W000GA3KM0	6020758	●	-
	Female connector, M26, 12-pin, straight, crimp contacts	0.5 mm ² ... 1.5 mm ²	-	DOS-0612G000GA3KM0	6020757	●	-

Male connectors (ready to assemble)

Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.	M4000	UE403
	Male connector, M12, 4-pin, straight	≤ 0.75 mm ²	3 mm ... 6.5 mm	STE-1204-GQU6	6042089	-	●
	Male connector, M12, 4-pin, straight, screw-type terminals	≤ 0.75 mm ²	4 mm ... 6 mm	STE-1204-G	6009932	-	●
	Male connector, M12, 5-pin, straight, A-coded, Spring-cage connection	0.14 mm ² ... 0.5 mm ²	4 mm ... 8 mm	STE-1205-GFE	6044999	-	●






Adapters and distributors

Other adapters and distributors


Figure	Description	Type	Part no.	M4000	UE403
	Terminal with 182 Ohm resistance, for pin 9 and 10 on the system connection, to improve the EMC behaviour if the EFI interface is not used	Terminal with 182 Ohm resistance	2027227	●	-

Modules and gateways

EFI gateways


Figure	Description	Type	Part no.	M4000	UE403
	CANopen	UE1940-I220000	1040397	●	-
	Ethernet TCP/IP	UE1840-22H0000	1029100	●	-
	PROFIBUS DP	UE1140-22I0000	1029099	●	-
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098	●	-
	PROFINET PROFI-safe	UE4740-22H0000	1046978	●	-

Power supply units and power cord connectors

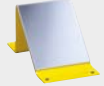
Figure	Input voltage	Output voltage	Output current	Type	Part no.	M4000	UE403
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789	●	-
			≤ 3.9 A	PS95WE24V	7028790	●	-

Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.	M4000	UE403
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741	●	-
	Adapter AR60 for M4000 and M4000 Curtain	Adapter AR60, M4000	4040006	●	-


Deflector mirrors

Figure	Mirror material	Description	Items supplied	Type	Part no.	M4000	UE403
	Glass	Deflector mirror for 90° deflection, mirror surface 97 mm x 80 mm, not suitable for column mounting	Mounting hardware included	PSK45	5306053	●	-

Dimensional drawings → [page I-600](#)

Further accessories

Programming and configuration tools

Figure	Description	Suitable for	Type	Part no.	M4000	UE403
	Clone Plug to save and transfer configurations, IP 41, with lithium coin cell CR2032, 3.0 V	C4000 Standard, C4000 Advanced, C4000 Palletizer, C4000 Entry/Exit, C4000 Fusion, M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, M4000 Area	PLUG1-0C00100	1029665	●	-
	Wall-mounting bracket for mounting Clone Plug and Host-Guest Plug	-	Wall-mounting bracket	5318443	●	-

Muting accessories









Figure	Description	Suitable for	Items supplied	Type	Part no.	M4000	UE403
 Illustration may differ	Muting indicator lamp	-	Inclusive male connector M12 and connection cable (2 m), mounting bracket and mounting kit	Muting indicator lamp	2033118	-	●
			Inclusive male connector M12 and connection cable (10 m), mounting bracket and mounting kit	Muting indicator lamp	2033119	-	●

Figure	Description	Suitable for	Items supplied	Type	Part no.	M4000	UE403
	Cross muting (2 sensors), muting sensor brackets for mounting on M4000 housing profile or device columns with external mounting grooves	M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, PU3Hxx	2 x muting arm active: 2 x WL100-P1429 pre-mounted together with M12 angled plug and 2 m cable; 2 x muting arm passive: 2 x reflector P250 pre-mounted	Muting arm kit M4000, 2 sensors, cross muting	2046171	●	-
	Parallel muting (2 sensors), muting sensor brackets for mounting on M4000 housing profile or device column with external mounting grooves	M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, PU3Hxx	2 x muting arm, 2 x WL100-P1429 incl. cable and male connector, 2 x reflector P250	Muting arm kit M4000, 2 sensors, parallel muting	2060156	●	-
	Parallel muting (2 sensors), muting sensor brackets for mounting on M4000 housing profile or device column with external mounting grooves	M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, PU3Hxx	2 x round steel arm, 4 x universal bracket, 2 x WL280 incl. cable and male connector, 2 x reflector P250	Muting arm kit M4000, 2 sensors, parallel muting	2060157	●	-
	Parallel muting (4 sensors), muting sensor brackets for mounting on M4000 housing profile or device columns with external mounting grooves	M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, PU3Hxx	2 x muting arm active: 4 x WL100-P1429 pre-mounted in fixed position and M12 angled plug incl. 2 m cable	Muting arm kit M4000, 4 sensors, parallel muting	2046170	●	-
	Reset pushbutton	Muting applications with UE403	Including retaining clip and "RESET" cover	ER12-SB3C4S01	6034585	-	●

Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> Freestanding mounting solution with external grooves for installing additional accessories Compact, rugged design with high reliability Easy mounting and adjustment Device protection against external influences Large reflector surface for efficient multi-sided protection via beam deflection Universally applicable for multiple light beam safety devices and safety light curtains 	→ page K-664

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

LARGE SCANNING RANGES PROTECT HAZARDOUS AREAS



Product description

The M4000 Area multiple light beam safety device is an efficient solution for area protection or for preventing employees from standing behind the point-of-operation. The menu-driven configuration via PC and the high scanning ranges ensure maximum reliability. The integrated EFI interface allows the use

of additional sensor functions. Integrated functions and status and diagnostics information allow quick commissioning and minimize downtime. In addition, sensors: Control devices, accessories, and services complete the product offering and form packaged solutions designed specifically for industrial environments.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Robust housing with three mounting grooves
- Wide scanning range, up to 70 m
- Resolution 60 mm or 80 mm
- External device monitoring (EDM), restart interlock, application diagnostic output, SDL interface
- 7-segment display
- Configuration and diagnostics via PC
- Beam coding for correct system allocation

Your benefits

- The wide scanning range allows the device to be customized according to the application
- Robust design with a high level of resistance to environmental changes ensures high machine availability, even under special ambient conditions
- Mounting grooves on three housing sides ensure more mounting flexibility and simplify machine integration
- Customer-friendly interfaces and status display simplify commissioning and maintenance



Additional information

Detailed technical data I-565
 Ordering information I-567
 Dimensional drawing I-568
 Connection diagrams I-569
 Recommended accessories I-570

→ www.sick.com/M4000_Area

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

	Resolution 60 mm	Resolution 80 mm
Scanning range	0.5 m ... 19 m, configurable	0.5 m ... 70 m, configurable
Length of the monitored area	300 mm ... 1,800 mm (depending on type)	
Response time	17 ms	
Synchronization	Optical synchronisation	

Safety-related parameters

Type	Type 4 (EN 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFH _D (mean probability of a dangerous failure per hour)	1.4 * E-08 (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	Internal
External device monitoring (EDM)	✓	Activated
Beam coding	✓	Non-coded
Sender test	✓	Deactivated
Configurable scanning range	✓	0.5 m ... 6 m / 0.5 m ... 20 m (depending on type)
Configurable application diagnostic output	✓	Contamination (OWS)
Safe SICK device communication via EFI	✓	

Interfaces

System connection	
Connection type	Hirschmann male connector M26, 12-pin
Permitted cable length	≤ 50 m ¹⁾
Permitted cross-section	≥ 0.75 mm ²
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Configuration connection	
Connection type	Female connector M8, 4-pin
Display elements	LEDs 7-segment display
Fieldbus, industrial network	
Integration via EFI gateways	CANopen, Ethernet TCP/IP, PROFIBUS DP, PROFIBUS PROFI-safe, PROFINET PROFI-safe ²⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ³⁾

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

³⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Residual ripple	$\leq 10\%$ ²⁾	
Power consumption	$\leq 0.2\text{ A}$	$\leq 0.6\text{ A}$ ³⁾
Safety outputs (OSSD)		
Type of output	-	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ⁴⁾
Switching voltage HIGH	-	24 V DC ($V_s - 2.25\text{ V DC} \dots V_s$)
Switching voltage LOW	-	$\leq 2\text{ V DC}$
Switching current	-	$\leq 500\text{ mA}$
Diagnostic outputs		
Type of output	-	PNP semiconductor, short-circuit protected
Switching voltage HIGH	-	24 V DC ($V_s - 4.2\text{ V DC} \dots V_s$)
Switching voltage LOW	-	High resistance
Switching current	-	$\leq 100\text{ mA}$

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Within the limits of V_s .

³⁾ Without load.

⁴⁾ Applies to the voltage range between -30 V and +30 V.

Mechanical data

Housing cross-section	52 mm x 55.5 mm
Housing material	Aluminum alloy ALMGSI 0.5
Surface treatment	Powder coated
Front screen material	Polycarbonate, scratch-resistant coating

Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Other information

Wave length	850 nm / 950 nm (depending on type)
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Ordering information

Items supplied M4000 Area:

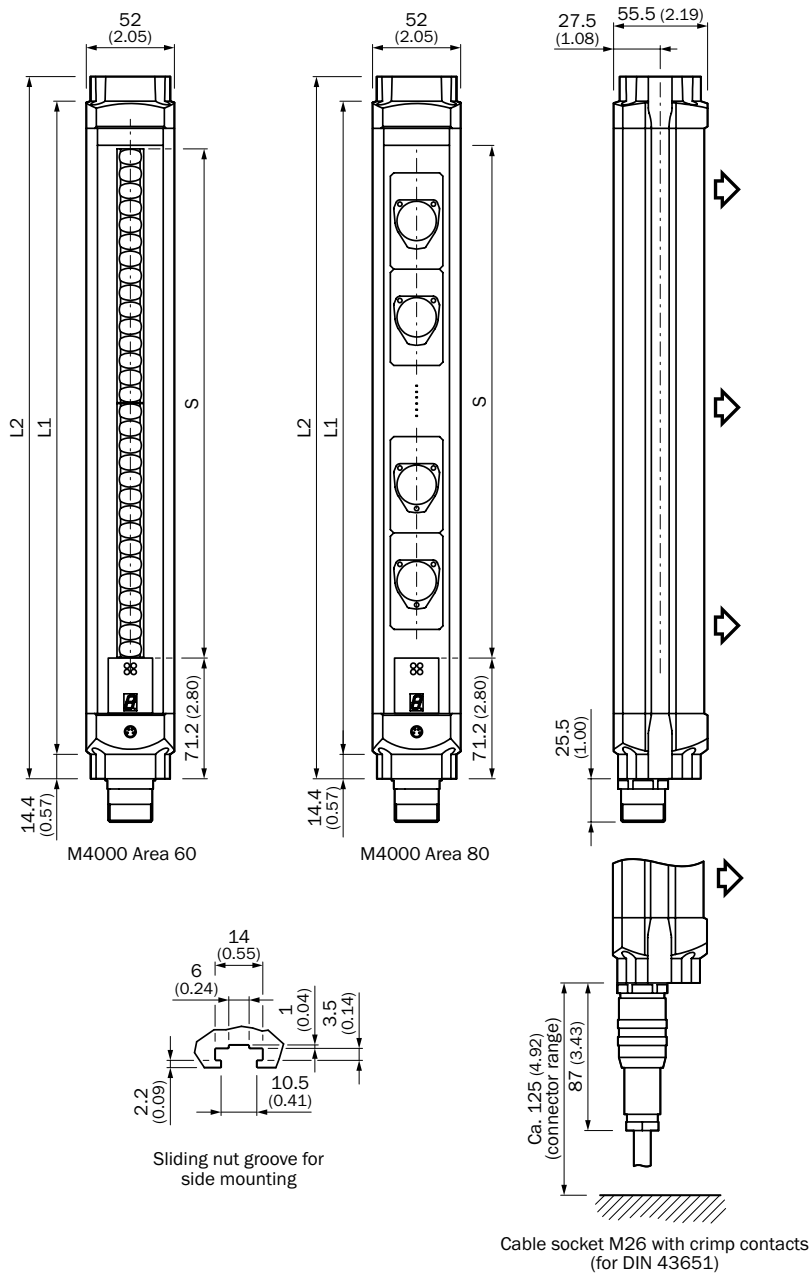
- Multiple light beam safety device consisting of a sender and a receiver
- 8 sliding nuts for side mounting
- Operating instructions and CDS (Configuration & Diagnostic Software) on DVD
- Adhesive label with information on the daily check
- **Scanning range:** 0.5 m ... 19 m, configurable
- **Resolution:** 60 mm

Length of the monitored area	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	M40S-60A005AA0	1200915	M40E-60A005RA0	1200916
450 mm	M40S-61A005AA0	1200138	M40E-61A005RA0	1200137
600 mm	M40S-60A005AA0	1201067	M40E-62A005RA0	1201068
750 mm	M40S-63A005AA0	1200674	M40E-63A005RA0	1200914
900 mm	M40S-64A005AA0	1200506	M40E-64A005RA0	1200508
1,050 mm	M40S-65A005AA0	1200507	M40E-65A005RA0	1200509
1,200 mm	M40S-66A005AA0	1200805	M40E-66A005RA0	1200806
1,350 mm	M40S-67A005AA0	1200837	M40E-67A005RA0	1200838
1,500 mm	M40S-68A005AA0	1200850	M40E-68A005RA0	1200849
1,650 mm	M40S-60A005AA0	1200912	M40E-69A005RA0	1200913
1,800 mm	M40S-70A005AA0	1200147	M40E-70A005RA0	1200146

- **Scanning range:** 0.5 m ... 70 m, configurable
- **Resolution:** 80 mm

Length of the monitored area	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	M40S-60A105AA0	1207202	M40E-60A105RA0	1207203
450 mm	M40S-61A105AA0	1207205	M40E-61A105RA0	1207204
600 mm	M40S-62A105AA0	1200139	M40E-62A105RA0	1200140
750 mm	M40S-63A105AA0	1200134	M40E-63A105RA0	1200685
900 mm	M40S-64A105AA0	1201655	M40E-64A105RA0	1201656
1,050 mm	M40S-65A105AA0	1200586	M40E-65A105RA0	1200587
1,200 mm	M40S-66A105AA0	1201046	M40E-66A105RA0	1201045
1,350 mm	M40S-67A105AA0	1200604	M40E-67A105RA0	1200605
1,500 mm	M40S-68A105AA0	1200588	M40E-68A105RA0	1200589
1,650 mm	M40S-69A105AA0	1200686	M40E-69A105RA0	1200687
1,800 mm	M40S-70A105AA0	1200149	M40E-70A105RA0	1200148

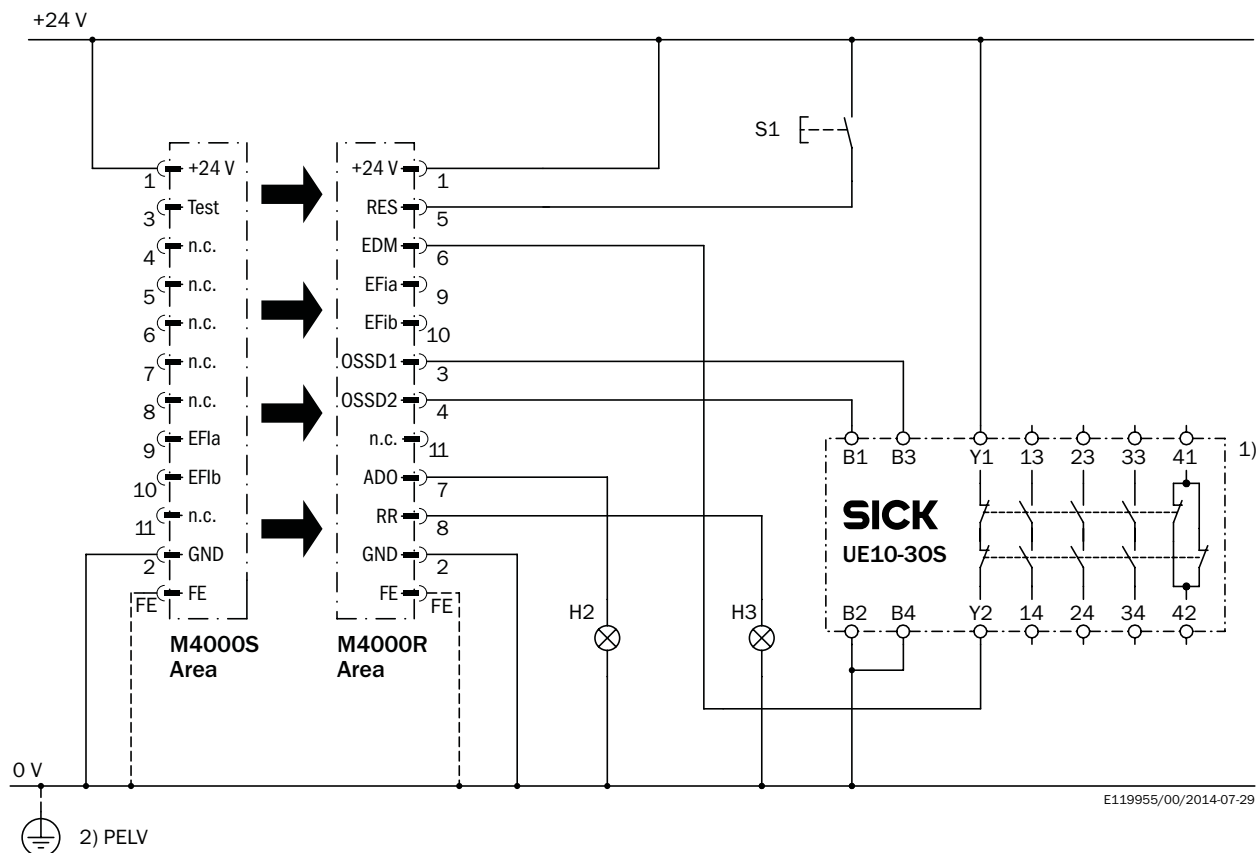
Dimensional drawing (Dimensions in mm (inch))



Length of the monitored area S	L1	L2
300 (11.81)	387 (15.24)	416 (16.38)
450 (17.72)	537 (21.14)	566 (22.28)
600 (23.62)	687 (27.05)	716 (28.19)
750 (29.53)	837 (32.95)	866 (34.09)
900 (35.43)	987 (38.86)	1,016 (40.00)
1,050 (41.34)	1,137 (44.76)	1,166 (45.91)
1,200 (47.24)	1,287 (50.67)	1,316 (51.81)
1,350 (53.15)	1,437 (56.57)	1,466 (57.72)
1,500 (59.06)	1,587 (62.48)	1,616 (63.62)
1,650 (64.96)	1,737 (68.39)	1,766 (69.53)
1,800 (70.87)	1,887 (74.29)	1,916 (75.43)

Connection diagrams

M4000 Area connected to UE10-30S safety relay



E119955/00/2014-07-29

Task

Connection of an M4000 Area multiple light beam safety device to a UE10-30S safety relay.

Operating mode: with restart interlock and external device monitoring.

Operating characteristics

When the light path is clear and the UE10-30S is de-energized and functioning correctly, the yellow LED on the receiver and the H3 lamp flash. The system is ready for switch-on and waits for an input signal/switch-on signal. The system is enabled by pressing and releasing the S1 button. The OSSD1 and OSSD2 outputs are live, the UE10-30S is switched on. On interruption of one or several of the light beams, the UE10-30S is de-energized by the OSSD1 and OSSD2 outputs.

If the optics are dirty, H2 indicator illuminates.

Fault analysis

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The erroneous behavior of the UE10-30S will be detected. The shutdown function is retained. On manipulation (e.g., jamming) of the S1 button, the system does not enable the output current circuits.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

²⁾ PELV in accordance with the requirements in EN 60204-1 / 6.4

Take note of the operating instructions of the integrated devices. This applies particularly to the use of configurable functions.

Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Terminal and alignment brackets
Connecting cable	2	-	→ Plug connectors and cables
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 1, mounting bracket, rigid, L-shaped, including fixing screws and washers	4 pieces	BEF-3WNGBAST4	7021352

Dimensional drawings → [page I-598](#)


Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 12, rotatable, swivel mount	4 pieces	BEF-2SMGEAKU4	2030510
	Mounting kit 2, rotatable	4 pieces	BEF-1SHABAAL4	2017751
	Mounting kit 3, rotatable, with shock-absorber	4 pieces	BEF-1SHADAAL4	2017752
	Mounting kit 6, side bracket, rotatable	4 pieces	BEF-1SHABAZN4	2019506
	Omega bracket, rotatable, fixable with only one screw, for mounting on the swivel mount, including spacer discs	4 pieces	BEF-2SMGEAAL4	2044846

Dimensional drawings → [page I-598](#)

Terminal brackets

Figure	Description	Packing unit	Type	Part no.
	Bracket, rigid, vibration absorbing, for devices with a weight > 350 g ... ≤ 1,200 g	4 pieces	BEF-3SHADAAL4S06	2055829
	Bracket, rigid, vibration absorbing, for devices with a weight > 1,200 g ... ≤ 3,000 g	4 pieces	BEF-3SHADAAL4S07	2055830
	Bracket, rigid, vibration absorbing, for devices with a weight > 3,000 g ... ≤ 4,000 g	4 pieces	BEF-3SHADAAL4S08	2055831

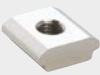
Device protection (mechanical)

Front screen protection


Figure	Description	Suitable for protective field height	Packing unit	Type	Part no.
 <p>Application example</p>	Front screen protection set (protects sensors from damage by flying sparks and welding beads), incl. sliding nuts and fastening screws	300 mm	2 pieces	Additional front screen	2033235
		450 mm	2 pieces	Additional front screen	2033236
		600 mm	2 pieces	Additional front screen	2033237
		750 mm	2 pieces	Additional front screen	2033238
		900 mm	2 pieces	Additional front screen	2033239
		1,050 mm	2 pieces	Additional front screen	2033240
		1,200 mm	2 pieces	Additional front screen	2033241
		1,350 mm	2 pieces	Additional front screen	2033242
		1,500 mm	2 pieces	Additional front screen	2033243
		1,650 mm	2 pieces	Additional front screen	2033244
1,800 mm	2 pieces	Additional front screen	2033245		

Other mounting accessories

Sliding nuts

Figure	Description	Packing unit	Type	Part no.
	Sliding nut set, M5, 4x, Included in delivery	4 pieces	Sliding nuts	2017550
	Suitable for PNS75 and PNS125	6 pieces	Sliding nuts for deflector mirror	2030600

Stands

Figure	Description	Packing unit	Type	Part no.
	Floor stands for the horizontal mounting of the safety light curtains C4000 Fusion, Entry/Exit, Palletizer, as well as the multi-beam safety light curtain M4000 Area, for mounting heights of between 70 mm and 780 mm., including mounting brackets	2 pieces	BEF-3HHOCAST2	2041661


Dimensional drawings → [page I-599](#)

Connection systems

Plug connectors and cables

Connecting cables with female connector

- **Model:** PVC, unshielded






Figure	Connection type		Description	Conductor cross-section	Cable length	Type	Part no.
	Female connector, M26, 12-pin, straight	Cable	-	0.75 mm ²	2.5 m	DOL-0612G2M5075KM0	2022544
					5 m	DOL-0612G05M075KM0	2022545
					7.5 m	DOL-0612G7M5075KM0	2022546
					10 m	DOL-0612G10M075KM0	2022547
					15 m	DOL-0612G15M075KM0	2022548
					20 m	DOL-0612G20M075KM0	2022549
					30 m	DOL-0612G30M075KM0	2022550
					50 m	DOL-0612G50MD75KM0	2033548
			Without EFI: Pin 9 and 10 not connected	0.75 mm ²	5 m	DOL-0610G05M075KM1	2046888
					7.5 m	DOL-0610G7M5075KM5	2044042
					10 m	DOL-0610G10M075KM1	2046889
					20 m	DOL-0610G20M075KM1	2046890

Female connectors (ready to assemble)


Figure	Connection type	Permitted cross-section	Type	Part no.
	Female connector, M26, 12-pin, angled, crimp contacts	0.5 mm ² ... 1.5 mm ²	DOS-0612W000GA3KM0	6020758
	Female connector, M26, 12-pin, straight, crimp contacts	0.5 mm ² ... 1.5 mm ²	DOS-0612G000GA3KM0	6020757

Modules and gateways

EFI gateways



Figure	Description	Type	Part no.
	CANopen	UE1940-I220000	1040397
	Ethernet TCP/IP	UE1840-22H0000	1029100
	PROFIBUS DP	UE1140-22I0000	1029099
	PROFIBUS PROFI-safe	UE4140-22I0000	1029098
	PROFINET PROFI-safe	UE4740-22H0000	1046978

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790


Reflectors and optics

Alignment aids


Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for M4000 and M4000 Curtain	Adapter AR60, M4000	4040006

Further accessories

Programming and configuration tools

Figure	Description	Suitable for	Type	Part no.
	Clone Plug to save and transfer configurations, IP 41, with lithium coin cell CR2032, 3.0 V	C4000 Standard, C4000 Advanced, C4000 Palletizer, C4000 Entry/Exit, C4000 Fusion, M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, M4000 Area	PLUG1-0C00100	1029665
	Wall-mounting bracket for mounting Clone Plug and Host-Guest Plug	-	Wall-mounting bracket	5318443

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

ECONOMICAL SOLUTION FOR ONE-SIDED OR MULTI-SIDED PROTECTION



Product description

The M2000 Standard multiple light beam safety device is an economical solution for one-sided or multi-sided access protection. High scanning ranges and high signal reserves open a wide range of application possibilities, even under harsh ambient conditions. The functions are easy to understand and the mechanical and electrical interfaces are simple to manage. Integrated func-

tions and status information enable quick commissioning and minimize machine downtime. The modularity of the M2000 Standard enables the sensor to adapt to the application requirements. In addition, sens:Control devices, accessories, and services complete the product offering and form packaged solutions designed specifically for industrial environments.

At a glance

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- Robust, industrial housing
- Wide scanning range, up to 70 m
- External device monitoring (EDM) and internal self-testing configurable without PC
- Standardized M12 connectivity available
- 7-segment display
- Beam coding for correct system allocation

Your benefits

- The wide scanning range allows the device to be customized according to the application
- Robust design with a high level of resistance to environmental changes ensures high machine availability, even under special ambient conditions
- Customized protection field adaption with deflection mirror reduces installation costs
- Customer-friendly interfaces and status display simplify commissioning and maintenance
- Reduced downtime due to diagnostics displays located directly on the device
- Fast start-up times due to easy alignment using the optional laser alignment aid (separate accessories)



Additional information

Detailed technical data I-575
 Ordering information I-576
 Dimensional drawing I-578
 Connection diagrams I-579
 Recommended accessories I-580

→ www.sick.com/M2000_Standard

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Scanning range	0 m ... 25 m / 0 m ... 70 m (depending on type)
Number of beams	2 ... 9 (depending on type)
Beam separation or resolution	116 mm ... 500 mm (depending on type)
Response time	8 ms
Synchronization	Optical synchronisation

Safety-related parameters

Type	Type 2 (EN 61496)
Safety integrity level	SIL1 (IEC 61508) SILCL1 (EN 62061)
Category	Category 2 (EN ISO 13849)
Test rate (internal test)	13 /s (EN ISO 13849) ¹⁾
Maximum demand rate	≤ 8 /min (EN ISO 13849) ²⁾
Performance level	PL c (EN ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	6.6 x 10 ⁻⁹ (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

¹⁾ Internal test. The test rate may not be exceeded if an external test is performed.

²⁾ Between two requirements on a safety-related response of the device, at least 100 internal or external tests must be carried out.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
External device monitoring (EDM)	- / ✓ (depending on type)	
Beam coding	✓	Non-coded
Configurable scanning range	✓	

Interfaces

	Hirschmann plug M26, 7-pin	Male connector M12, 8-pin
System connection		
Connection type	Hirschmann plug M26, 7-pin	Male connector M12, 8-pin
Permitted cable length	≤ 60 m ¹⁾	≤ 15 m ¹⁾
Permitted cross-section	≥ 1 mm ²	≥ 0.25 mm ²
Configuration method	Hard wired	
Display elements	LEDs 7-segment display	
Fieldbus, industrial network		
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾	

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Power consumption	≤ 3.7 W (DC)	≤ 5 W (DC)
Safety outputs (OSSD)	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ²⁾	
Type of output	–	24 V DC ($V_s - 2.25 \text{ V DC} \dots V_s$)
Switching voltage HIGH	–	≤ 1 V DC
Switching voltage LOW	–	≤ 500 mA
Switching current	–	

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Applies to the voltage range between -30 V and +30 V.

Mechanical data

Housing cross-section	48 mm x 40 mm
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Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Other information

Wave length	950 nm
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Ordering information

Items supplied M2000 Standard:

- Multiple light beam safety device consisting of a sender and a receiver
- 4 sliding nuts for side mounting
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check
- **System connection:** Hirschmann plug M26, 7-pin
- **External device monitoring (EDM):** –
- **Scanning range:** 0 m ... 25 m, configurable

Number of beams	Beam separation or resolution	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M20S-02150A120	1016405	M20E-02150A120	1016421
3	400 mm	M20S-03140A120	1016428	M20E-03140A120	1016429
4	300 mm	M20S-04130A120	1016509	M20E-04130A120	1016510
6	170 mm	M20S-061A3A120	1016446	M20E-061A3A120	1016447
7	170 mm	M20S-071A3A120	1016434	M20E-071A3A120	1016435
8	116 mm	M20S-081A2A120	1016438	M20E-081A2A120	1016439
	170 mm	M20S-081A3A120	1016440	M20E-081A3A120	1016441
9	170 mm	M20S-091A3A120	1016442	M20E-091A3A120	1016443

- **System connection:** male connector M12, 8-pin
- **External device monitoring (EDM):** ✓
- **Scanning range:** 0 m ... 25 m, configurable

Number of beams	Beam separation or resolution	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M20S-02150A122	1018186	M20E-02150A122	1018187
3	400 mm	M20S-03140A122	1018188	M20E-03140A122	1018189
4	300 mm	M20S-04130A122	1018190	M20E-04130A122	1018191
6	170 mm	M20S-061A3A122	1018192	M20E-061A3A122	1018193
7	170 mm	M20S-071A3A122	1018194	M20E-071A3A122	1018195
8	116 mm	M20S-081A2A122	1018196	M20E-081A2A122	1018197
	170 mm	M20S-081A3A122	1018198	M20E-081A3A122	1018199
9	170 mm	M20S-091A3A122	1018200	M20E-091A3A122	1018201

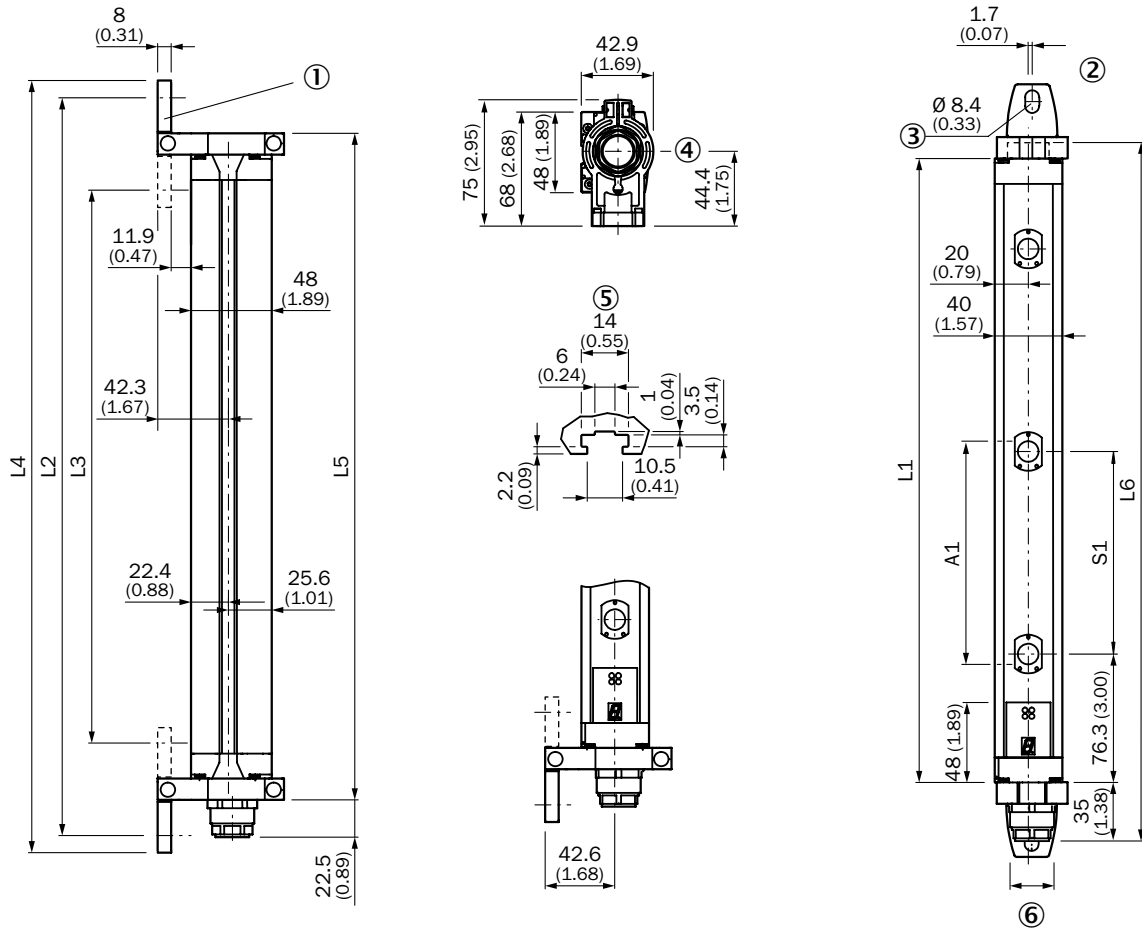
- **System connection:** Hirschmann plug M26, 7-pin
- **External device monitoring (EDM):** -
- **Scanning range:** 0 m ... 70 m, configurable

Number of beams	Beam separation or resolution	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M20S-02250A120	1018172	M20E-02250A120	1018173
3	400 mm	M20S-03240A120	1018176	M20E-03240A120	1018177
4	300 mm	M20S-04230A120	1018180	M20E-04230A120	1018181

- **System connection:** male connector M12, 8-pin
- **External device monitoring (EDM):** ✓
- **Scanning range:** 0 m ... 70 m, configurable

Number of beams	Beam separation or resolution	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M20S-02250A122	1018174	M20E-02250A122	1018175
3	400 mm	M20S-03240A122	1018178	M20E-03240A122	1018179
4	300 mm	M20S-04230A122	1018182	M20E-04230A122	1018183

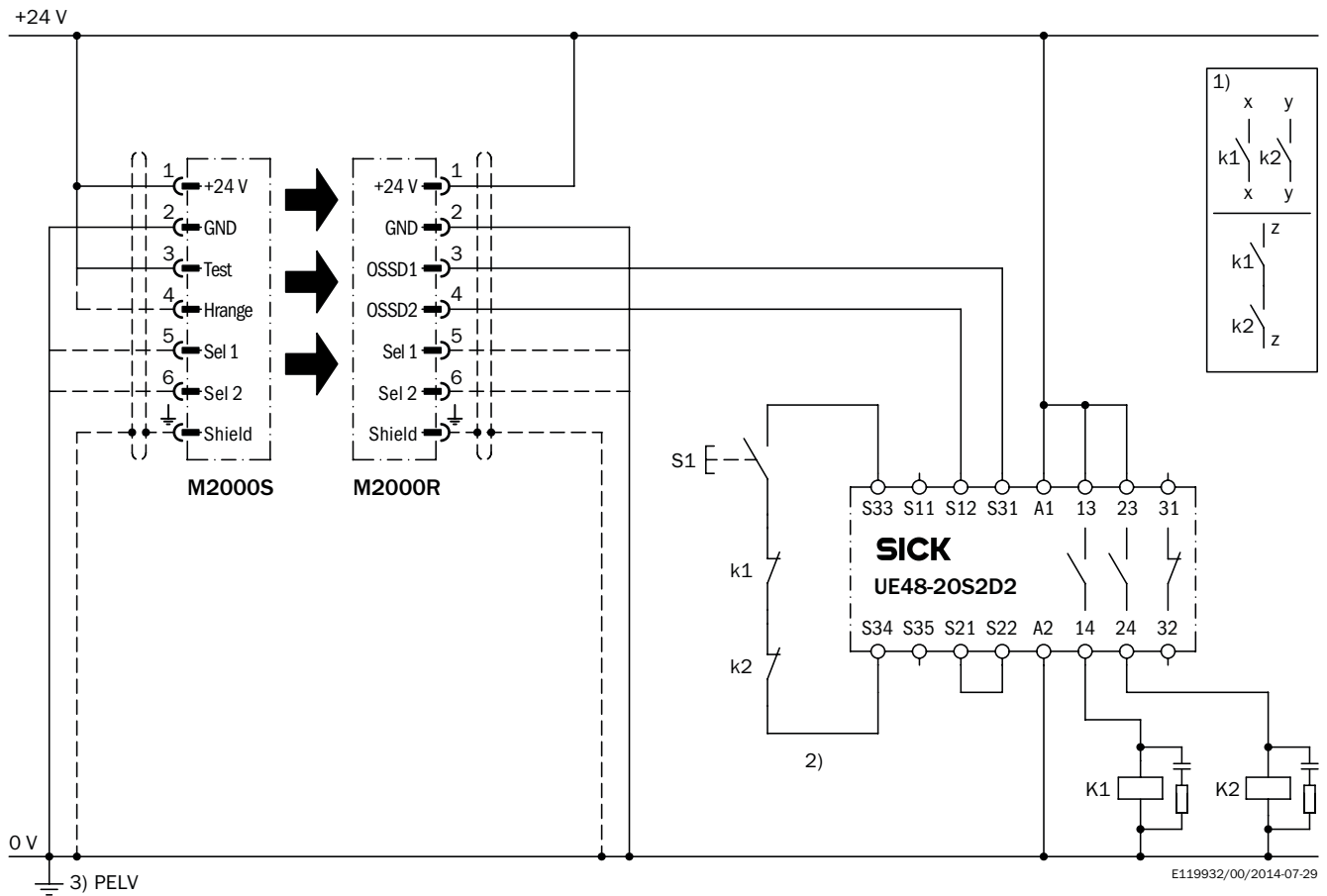
Dimensional drawing (Dimensions in mm (inch))



Number of beams	Beam separation	Resolution	L1	L2	L3	L4	L5	L6
2	500	-	630	697	588	718	655	675
3	400	-	931	998	888	1,019	956	976
4	300	-	1,031	1,098	989	1,119	1,056	1,076
6	-	170	916	983	874	1,004	941	960
7	-	170	1,073	1,140	1,031	1,161	1,098	1,118
8	-	116	851	919	809	939	877	896
8	-	170	1,231	1,298	1,189	1,319	1,256	1,275
9	-	170	1,388	1,455	1,346	1,476	1,413	1,433

Connection diagrams

M4000 Standard connected to UE10-30S safety relay



Task

Connection of an M2000 Standard multi-beam photoelectric safety switch to UE48-20S.

Operating mode: with restart interlock and external device monitoring.

Function

When the light path is clear, the OSSD1 and OSSD2 outputs are live. The system is ready to switch on if K1 and K2 are de-energized. By pressing S1 (button is pressed and released), the UE48-20S is energized and its 13 - 14 and 23 - 24 contacts activate K1 and K2. On interruption of one of the light beams, the UE48-20S is de-energized by the OSSD1 and OSSD2 outputs and K1 and K2 are deactivated.

Fault analysis

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The incorrect functioning of one of the K1 or K2 contactors will be detected and does not result in the loss of the shutdown function. Jamming of the S1 button will prevent the UE48-20S from enabling.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

²⁾ The external device monitoring is only static.

³⁾ PELV as required in EN 60204-1 / 6.4

The related operating instructions for the integrated devices must be observed.

Accessories required for commissioning


Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Terminal and alignment brackets
Connecting cable	2	-	→ Plug connectors and cables
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 1, mounting bracket, rigid, L-shaped, including fixing screws and washers	4 pieces	BEF-3WNGBAST4	7021352

Dimensional drawings → [page I-601](#)


Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 2, rotatable	4 pieces	BEF-1SHABAAL4	2017751
	Mounting kit 2, rotatable, swivel mount	4 pieces	BEF-2SMMEAKU4	2019659
	Mounting kit 3, rotatable, with shock-absorber	4 pieces	BEF-1SHADAAL4	2017752
	Mounting kit 6, side bracket, rotatable	4 pieces	BEF-1SHABAZN4	2019506
	Mounting kit, rotatable, telescopic, swivel mount	2 pieces	BEF-0SMMEA002	2046172
	Omega bracket, rotatable, fixable with only one screw, for mounting on the swivel mount	4 pieces	BEF-2SMMEAAL4	2044847
	Reinforced stainless steel bracket, rotatable	4 pieces	BEF-2SMMVAES4	2026850
	Stainless steel bracket, rotatable	4 pieces	BEF-2SMMEAES4	2023708

Dimensional drawings → [page I-601](#)

Terminal brackets



Figure	Description	Packing unit	Type	Part no.
	Bracket, rigid, vibration absorbing, for devices with a weight > 350 g ... ≤ 1,200 g	4 pieces	BEF-3SHADAAL4S06	2055829
	Bracket, rigid, vibration absorbing, for devices with a weight > 1,200 g ... ≤ 3,000 g	4 pieces	BEF-3SHADAAL4S07	2055830
	Bracket, rigid, vibration absorbing, for devices with a weight > 3,000 g ... ≤ 4,000 g	4 pieces	BEF-3SHADAAL4S08	2055831

Connection systems


Plug connectors and cables

Connecting cables with female connector


- **Model:** PUR, halogen-free, shielded

Figure	Connection type		Conductor cross-section	Cable length	Type	Part no.
	Female connector, M12, 8-pin, angled	Cable	0.25 mm ²	5 m	DOL-127SW05ME25KM0	2076548
				7.5 m	DOL-127SW7M5E25KM0	2076549
				15 m	DOL-127SW15ME25KM0	2076551
	Female connector, M12, 8-pin, straight	Cable	0.25 mm ²	2.5 m	DOL-127SG2M5E25KM0	2076540
				5 m	DOL-127SG05ME25KM0	2076541
				7.5 m	DOL-127SG7M5E25KM0	2076542
				10 m	DOL-127SG10ME25KM0	2076543
				15 m	DOL-127SG15ME25KM0	2076544

Female connectors (ready to assemble)



Figure	Connection type	Permitted cross-section	Type	Part no.
	Female connector, M26, 7-pin, angled, screw contacts	0.5 mm ² ... 1.5 mm ²	DOS-0607W000IA3KU0	6007363
	Female connector, M26, 7-pin, straight, crimp contacts	0.5 mm ² ... 1.5 mm ²	DOS-0607G000GA3KM0	6006612

Power supply units and power cord connectors


Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

Reflectors and optics


Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for housing cross-section 48 mm x 40 mm	Adapter AR60, 48x40	4032461
	Adapter AR60 for housing cross-section 48 mm x 40 mm in PU3H device column	Adapter AR60, 48x40, PU3H	4056731

Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> • Freestanding mounting solution with external grooves for installing additional accessories • Compact, rugged design with high reliability • Easy mounting and adjustment • Device protection against external influences • Large reflector surface for efficient multi-sided protection via beam deflection • Universally applicable for multiple light beam safety devices and safety light curtains 	<p>→ page K-664</p>

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	<p>→ page L-690</p>



INTELLIGENT WIRING AND MAXIMUM AVAILABILITY WITH A PROVEN INDUSTRIAL DESIGN



Product description

The M2000 Standard A/P multiple light beam safety device is an ideal solution for simple access protection. It is particularly economical since only the active side must be wired, which reduces the required installation considerably. The functions are easy to understand and the mechanical and electrical interfaces are simple to manage. Integrated functions and status information enable

quick commissioning and minimize machine downtime. The modular concept makes it possible to customize the device features according to the application requirements and ensures high machine safety. In addition, sens:Control devices, accessories, and services complete the product offering and form packaged solutions designed specifically for industrial environments.

At a glance

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- Robust, industrial housing
- Scanning range up to 6 m
- External device monitoring (EDM) and internal self-testing configurable without PC
- Standardized M12 connectivity is available
- 7-segment display
- Unique A/P version minimize the wiring costs

Your benefits

- Economical active/passive variants minimize the wiring costs and installation time
- Robust design with a high level of resistance to environmental changes ensures high machine availability, even under special ambient conditions
- Customer-friendly interfaces and status display simplify commissioning and maintenance
- Reduced downtime due to diagnostics displays located directly on the device
- Fast start-up times due to easy alignment using the optional laser alignment aid (separate accessories)



Additional information

- Detailed technical data I-585
- Ordering information I-587
- Dimensional drawing I-587
- Recommended accessories I-588

→ www.sick.com/M2000_Standard_A_P

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Scanning range	0 m ... 6 m
Number of beams	2
Beam separation	500 mm
Response time	7 ms
Synchronization	Optical synchronisation

Safety-related parameters

Type	Type 2 (EN 61496)
Safety integrity level	SIL1 (IEC 61508) SILCL1 (EN 62061)
Category	Category 2 (EN ISO 13849)
Test rate (internal test)	13 /s (EN ISO 13849) ¹⁾
Maximum demand rate	≤ 8 /min (EN ISO 13849) ²⁾
Performance level	PL c (EN ISO 13849)
PFH _D (mean probability of a dangerous failure per hour)	6.6 x 10 ⁻⁹ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

¹⁾ Internal test. The test rate may not be exceeded if an external test is performed.

²⁾ Between two requirements on a safety-related response of the device, at least 100 internal or external tests must be carried out.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
External device monitoring (EDM)	- / ✓ (depending on type)	
Beam coding	✓	Code 1

Interfaces

	Hirschmann male connector M26, 12-pin	Hirschmann plug M26, 7-pin	Male connector M12, 8-pin
System connection			
Connection type	Hirschmann male connector M26, 12-pin	Hirschmann plug M26, 7-pin	Male connector M12, 8-pin
Permitted cable length	≤ 60 m ¹⁾		≤ 15 m ¹⁾
Permitted cross-section	≥ 1 mm ²		≥ 0.25 mm ²
Configuration method	Hard wired		
Display elements	LEDs 7-segment display		
Fieldbus, industrial network			
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾		

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

Protection class	III (EN 50178)
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾
Power consumption	≤ 7.5 W (DC)
Safety outputs (OSSD)	
Type of output	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ²⁾
Switching voltage HIGH	24 V DC ($V_s - 2.25$ V DC ... V_s)
Switching voltage LOW	≤ 1 V DC
Switching current	≤ 500 mA

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Applies to the voltage range between -30 V and +30 V.

Mechanical data

Housing cross-section	48 mm x 40 mm
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Ambient data

Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Other information

Wave length	950 nm
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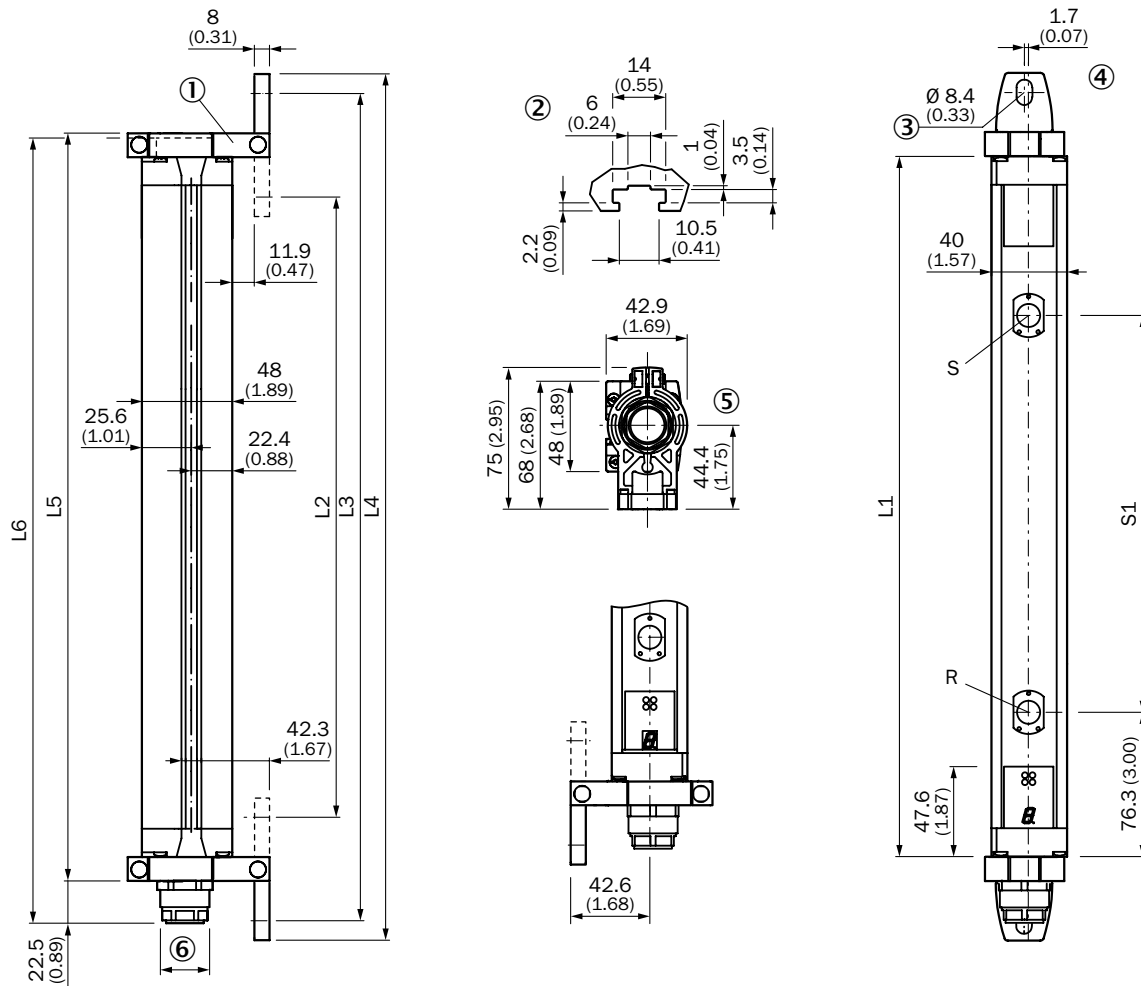
Ordering information

Items supplied M4000 Standard A/P:

- Multiple light beam safety device consisting of sender/receiver in one housing and a deflector unit
- 4 sliding nuts for side mounting
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check
- **Scanning range:** 0 m ... 6 m
- **Number of beams:** 2
- **Beam separation:** 500 mm

System connection	External device monitoring (EDM)	Sender/receiver in one housing		Deflector unit	
		Type	Part no.	Type	Part no.
Hirschmann male connector M26, 12-pin	-	M20Z-02550A121	1016513	PSR01-1501	1016677
Hirschmann plug M26, 7-pin	-	M20Z-02550A120	1026510	PSR01-1501	1016677
Male connector M12, 8-pin	✓	M20Z-02550A122	1018361	PSR01-1501	1016677

Dimensional drawing (Dimensions in mm (inch))



Number of beams	Beam separation	L1	L2	L3	L4	L5	L6
2	500	653	611	720	741	678	700

Accessories required for commissioning


Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Terminal and alignment brackets
Connecting cable	1	-	→ Plug connectors and cables
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Type	Part no.
	Mounting kit 1, mounting bracket, rigid, L-shaped, including fixing screws and washers	4 pieces	BEF-3WNGBAST4	7021352

Dimensional drawings → [page I-601](#)

Terminal and alignment brackets

Alignment brackets









Figure	Description	Packing unit	Type	Part no.
	Mounting kit 2, rotatable	4 pieces	BEF-1SHABAAL4	2017751
	Mounting kit 2, rotatable, swivel mount	4 pieces	BEF-2SMMEAKU4	2019659
	Mounting kit 3, rotatable, with shock-absorber	4 pieces	BEF-1SHADAAL4	2017752
	Mounting kit 6, side bracket, rotatable	4 pieces	BEF-1SHABAZN4	2019506
	Mounting kit 9, rotatable, 2-piece swivel mount for M2000 A/P and 2-piece side bracket for deflector mirror PSR01-1501	4 pieces	BEF-0AAAA0004S01	2021569
	Mounting kit, rotatable, telescopic, swivel mount	2 pieces	BEF-0SMMEA002	2046172
	Omega bracket, rotatable, fixable with only one screw, for mounting on the swivel mount	4 pieces	BEF-2SMMEAAL4	2044847
	Reinforced stainless steel bracket, rotatable	4 pieces	BEF-2SMMVAES4	2026850

Figure	Description	Packing unit	Type	Part no.
	Stainless steel bracket, rotatable	4 pieces	BEF-2SMMEAES4	2023708

Dimensional drawings → [page I-601](#)

Terminal brackets



Figure	Description	Packing unit	Type	Part no.
	Bracket, rigid, vibration absorbing, for devices with a weight > 350 g ... ≤ 1,200 g	4 pieces	BEF-3SHADAAL4S06	2055829
	Bracket, rigid, vibration absorbing, for devices with a weight > 1,200 g ... ≤ 3,000 g	4 pieces	BEF-3SHADAAL4S07	2055830
	Bracket, rigid, vibration absorbing, for devices with a weight > 3,000 g ... ≤ 4,000 g	4 pieces	BEF-3SHADAAL4S08	2055831

Connection systems

Plug connectors and cables

Connecting cables with female connector


- **Model:** PUR, halogen-free, shielded

Figure	Connection type		Conductor cross-section	Cable length	Type	Part no.
	Female connector, M12, 8-pin, angled	Cable	0.25 mm ²	5 m	DOL-127SW05ME25KM0	2076548
				7.5 m	DOL-127SW7M5E25KM0	2076549
				15 m	DOL-127SW15ME25KM0	2076551
	Female connector, M12, 8-pin, straight	Cable	0.25 mm ²	2.5 m	DOL-127SG2M5E25KM0	2076540
				5 m	DOL-127SG05ME25KM0	2076541
				7.5 m	DOL-127SG7M5E25KM0	2076542
				10 m	DOL-127SG10ME25KM0	2076543
				15 m	DOL-127SG15ME25KM0	2076544

Female connectors (ready to assemble)



Figure	Connection type	Permitted cross-section	Type	Part no.
	Female connector, M26, 12-pin, angled, crimp contacts	0.5 mm ² ... 1.5 mm ²	DOS-0612W000GA3KM0	6020758
	Female connector, M26, 12-pin, straight, crimp contacts	0.5 mm ² ... 1.5 mm ²	DOS-0612G000GA3KM0	6020757
	Female connector, M26, 7-pin, angled, screw contacts	0.5 mm ² ... 1.5 mm ²	DOS-0607W000IA3KU0	6007363
	Female connector, M26, 7-pin, straight, crimp contacts	0.5 mm ² ... 1.5 mm ²	DOS-0607G000GA3KM0	6006612

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

Reflectors and optics


Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for housing cross-section 48 mm x 40 mm	Adapter AR60, 48x40	4032461
	Adapter AR60 for housing cross-section 48 mm x 40 mm in PU3H device column	Adapter AR60, 48x40, PU3H	4056731


Deflector mirrors

Description	Type	Part no.
Active/passive deflector unit with end caps for swivel mount bracket (large housing) and front screen	PSR01-S04	1025227

Mirror columns and device columns

Figure	Description	Further information
	<ul style="list-style-type: none"> Freestanding mounting solution with external grooves for installing additional accessories Compact, rugged design with high reliability Easy mounting and adjustment Device protection against external influences Large reflector surface for efficient multi-sided protection via beam deflection Universally applicable for multiple light beam safety devices and safety light curtains 	→ page K-664

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

COST EFFICIENT SOLUTION FOR INDUSTRIES WITH HIGH WASH-DOWN REQUIREMENTS



Product description

The M2000 multiple light beam safety device in the IP69K housing is used for access and hazardous point protection in wash down environments, such as those found in the food and beverage industry. The compact design and the use of stainless steel, PA, PMMA and PVC materials provide a high resistance to common cleaning agents. The device

withstands the use of high pressure cleaners with a water pressure of up to 100 bar and water temperatures up to 80 °C. A special diaphragm element ensures that the pressure is balanced and prevents condensation on the plastic pipe and stops liquids from penetrating. The use of IP69K-suitable PVC cables ensures safe cable routing.

At a glance

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- IP 69K, IP 67, IP 66 and IP 65 enclosure ratings incl. cable
- Withstands wash-down pressure up to 100 bar and water temperature up to 80 °C
- ECOLAB and Diversey certified
- Resistant steel materials
- Ventilation valve prevents fogging of the front screen
- Smooth surfaces prevent accumulation of bacteria
- Compact design

Your benefits

- IP 69K-rated housing and connection cables provide a longer service life, which saves costs
- Chemically resistant housing materials improve production quality and save costs
- As an alternative to hard guards, personnel can quickly access and service protected areas, keeping productivity high
- Resistant even when high pressure cleaners are used
- Reliable protection, even when temperatures fluctuate



Additional information

Detailed technical data	I-593
Ordering information	I-595
Dimensional drawing	I-595
Recommended accessories	I-596

→ www.sick.com/M2000_Standard_in_IP69K_Housing

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Scanning range	0 m ... 19 m, configurable
Number of beams	2 / 3 / 4 (depending on type)
Beam separation	500 mm / 400 mm / 300 mm (depending on type)
Response time	8 ms
Synchronization	Optical synchronisation

Safety-related parameters

Type	Type 2 (EN 61496)
Safety integrity level	SIL1 (IEC 61508) SILCL1 (EN 62061)
Category	Category 2 (EN ISO 13849)
Test rate (internal test)	13 /s (EN ISO 13849) ¹⁾
Maximum demand rate	≤ 8 /min (EN ISO 13849) ²⁾
Performance level	PL c (EN ISO 13849)
PFH _D (mean probability of a dangerous failure per hour)	6.6 x 10 ⁻⁹ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

¹⁾ Internal test. The test rate may not be exceeded if an external test is performed.

²⁾ Between two requirements on a safety-related response of the device, at least 100 internal or external tests must be carried out.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
External device monitoring (EDM)	✓	
Beam coding	✓	Non-coded

Interfaces

System connection	Connection type	PVC cable, 8-pin
	Cable length	15 m
	Conductor cross-section	0.25 mm ²
Configuration method	Hard wired	
Display elements	LEDs 7-segment display	
Fieldbus, industrial network	Integration via Flexi Soft safety controller	
	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ¹⁾	

¹⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC) ¹⁾	
Power consumption	≤ 3.7 W (DC)	≤ 5 W (DC)
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ²⁾
Switching voltage HIGH	–	24 V DC ($V_s - 2.25 \text{ V DC} \dots V_s$)
Switching voltage LOW	–	≤ 1 V DC
Switching current	–	≤ 500 mA

¹⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

²⁾ Applies to the voltage range between -30 V and +30 V.

Mechanical data

Housing diameter	50 mm	
Material		
End caps	Stainless steel	
Plastic tube	PMMA	
Compensating element (membrane)	PA 6	
PG connector	PA 6	

Ambient data

Enclosure rating	IP 69K, IP 67, IP 66, IP 65 (EN 60529)
Ambient operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Other information

Wave length	950 nm
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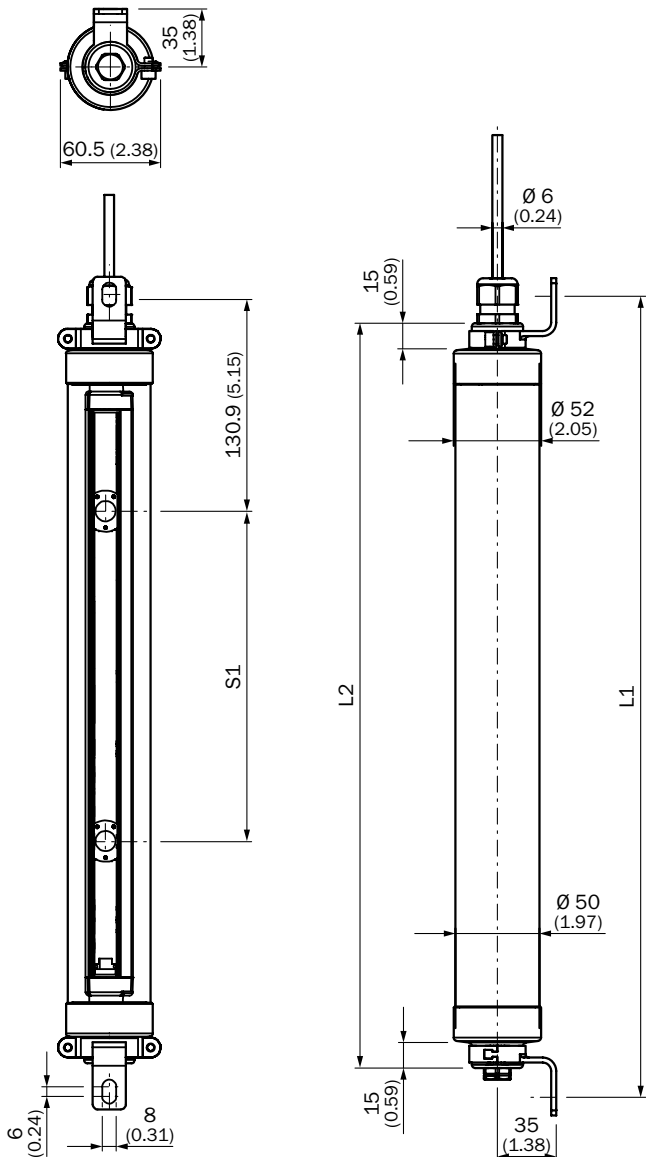
Ordering information

Items supplied M2000 Standard in IP69K Housing:

- Multiple light beam safety device consisting of a sender and a receiver
- 2 PVC connection cables, 15 m
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check
- **Scanning range:** 0 m ... 19 m, configurable
- **External device monitoring (EDM):** ✓

Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M25S-02150C112	1024208	M25E-02150C112	1024209
3	400 mm	M25S-03140C112	1024210	M25E-03140C112	1024211
4	300 mm	M25S-04130C112	1024212	M25E-04130C112	1024213

Dimensional drawing (Dimensions in mm (inch))



Number of beams	Beam separation	L1	L2
2	500	777	744
3	400	1,078	1,045
4	300	1,228	1,195

Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Terminal and alignment brackets
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.
	Reinforced stainless steel bracket, rotatable	4 pieces	BEF-2SMMVAES4	2026850
	Stainless steel bracket, rotatable	4 pieces	BEF-2SMMEAES4	2023708
	Stainless steel support bracket	2 pieces	BEF-2AAAADES2	2026849

Dimensional drawings → [page I-601](#)


Device protection (mechanical)

Protective caps

Figure	Description	Type	Part no.
	Bidirectional ventilation membrane made from Gore-Tex	Bidirectional ventilation membrane	5309082


Other mounting accessories

Mounting tools


Figure	Description	Packing unit	Type	Part no.
	Mounting tool for M12 cable socket, small housing	1 piece	Installation wrench	4034690

Connection systems

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

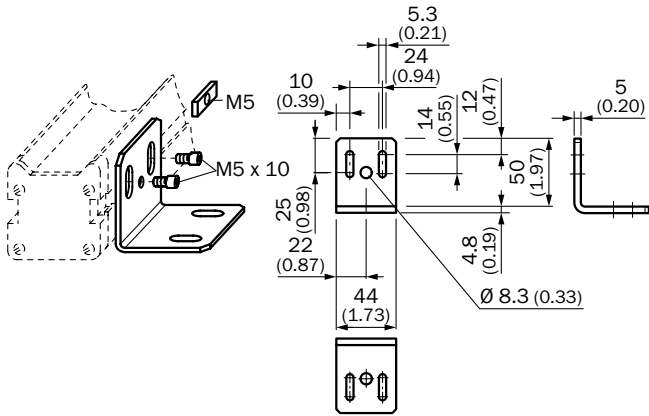
Enhanced system solutions

Figure	Description	Further information
	<p>Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.</p>	<p>→ page L-690</p>

M4000 (Dimensions in mm (inch))

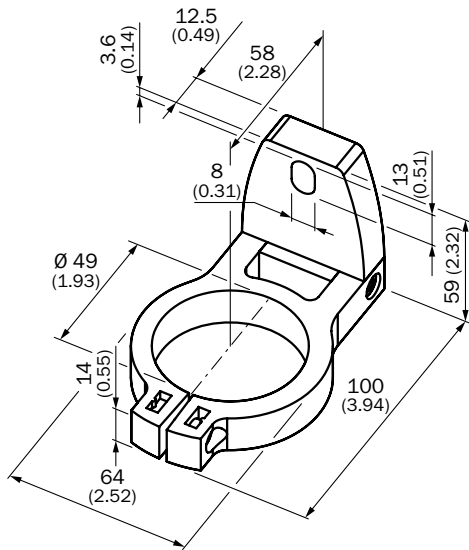
Mounting brackets and mounting plates

BEF-3WNGBAST4 (7021352)

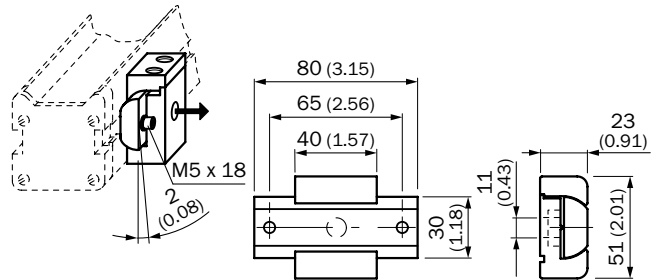


Terminal and alignment brackets

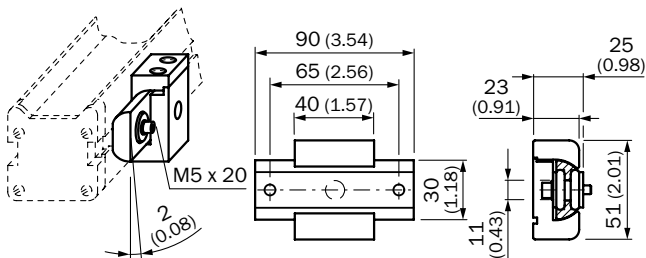
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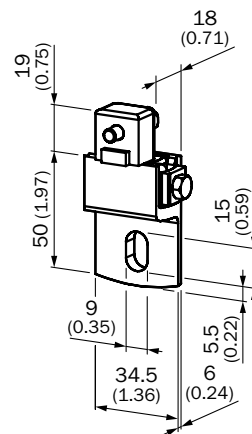
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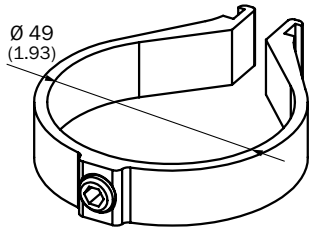
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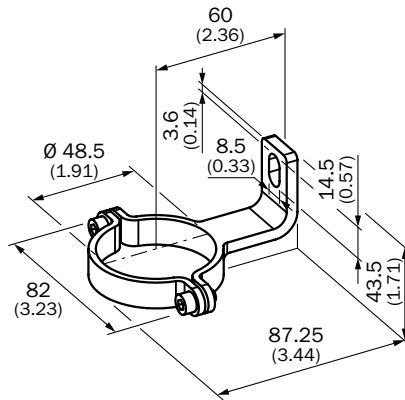
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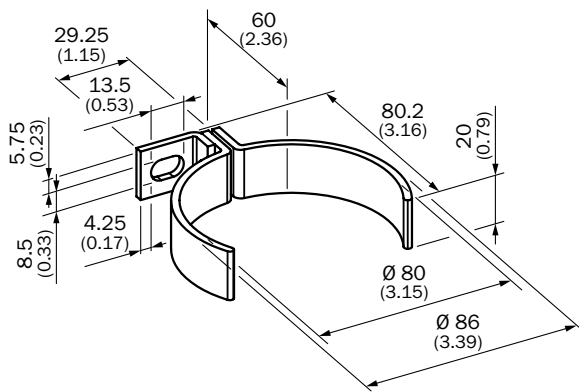
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BEF-2SMGVAES4 (2060165)

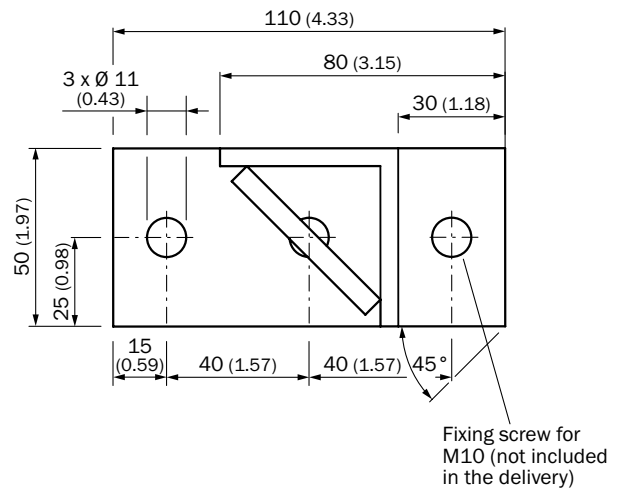
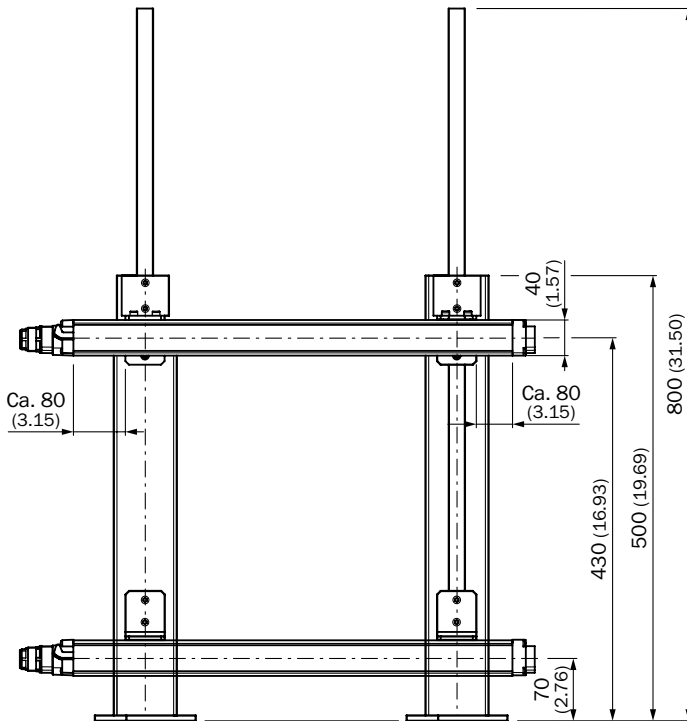


BEF-2AAAAOES2 (2060164)



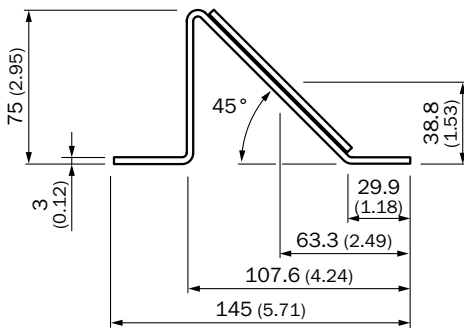
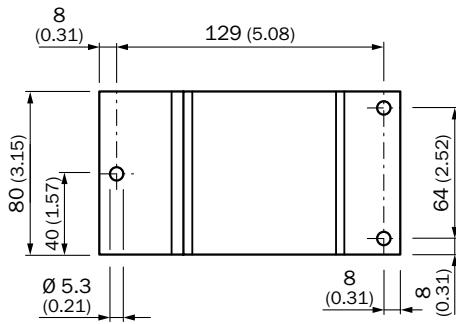
Other mounting accessories

BEF-3HHOCAST2 (2041661)



Deflector mirrors

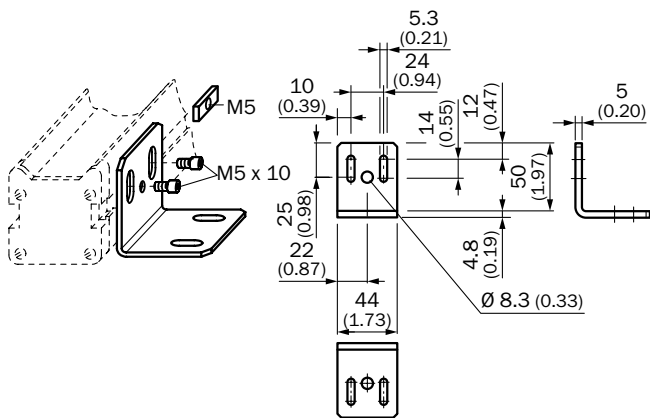
PSK45 (5306053)



M2000 (Dimensions in mm (inch))

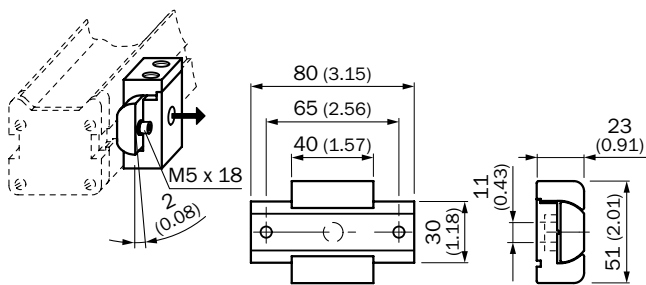
Mounting brackets and mounting plates

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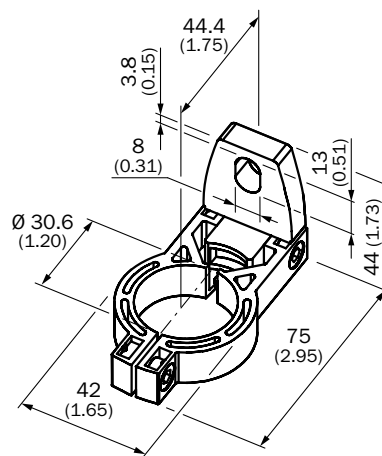


Terminal and alignment brackets

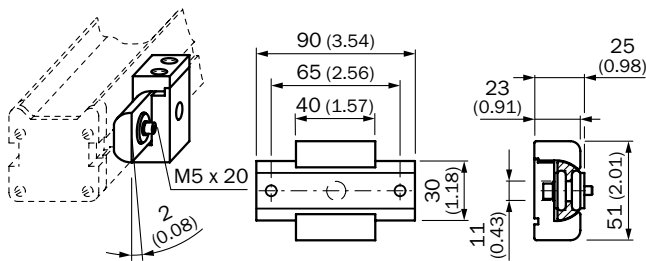
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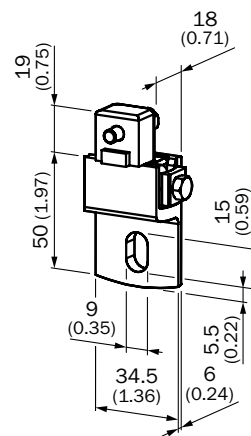
BEF-2SMMEAKU4 (2019659)



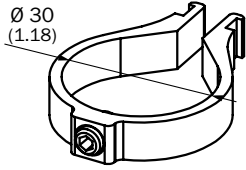
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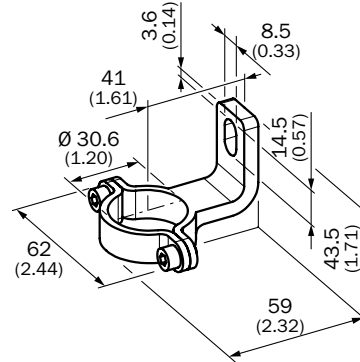
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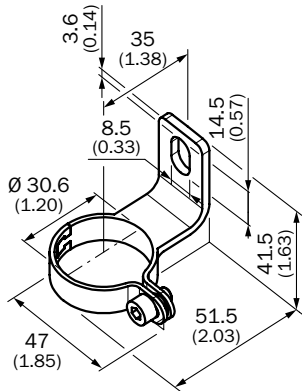
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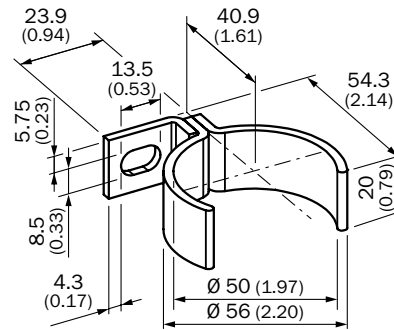
BEF-2SMMVAES4 (2026850)



BEF-2SMMEAES4 (2023708)



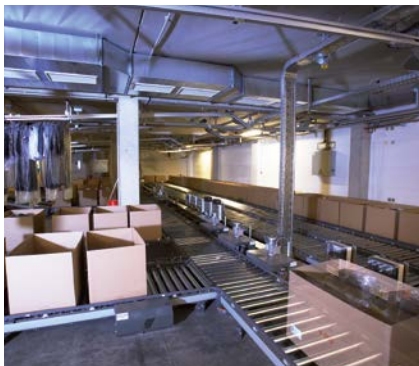
BEF-2AAADES2 (2026849)







SINGLE-BEAM PHOTOELECTRIC SAFETY SWITCHES



Photoelectric safety switches for use in extreme application conditions








Single-beam photoelectric safety switches from SICK offer maximum safety performance. They comprise self-testing senders and receivers or testable senders and receivers combined with an evaluation unit. They have long ranges and come in a variety of types and sizes.

They comply with Type 2 and/or Type 4 in acc. with EN 61496, and PL c and/or PL e in acc. with EN ISO 13849. Applications include robots, processing machinery, machining centers, palletizers, high-bay warehouses and transfer lines.

Your benefits

- Compact versions with maximum range ensure easy integration
- Flexible device integration makes it easy to set up individual access protections
- Ideal for extreme ambient conditions, such as heat, cold or moisture
- Directly connect to a safety controller – reducing costs



	Selection guide	J-606
	Product family overview	J-608
	WSU/WEU26-3 Rugged, ensures reliability under extreme ambient conditions	J-610
	L4000 Systems Complete system that is highly reliable and offers fast response times	J-616
	L41 Universal use up to type 4, with safe control solutions from SICK	J-626
	L21 Cylindrical design for safety applications up to type 2	J-634
	L27 Standard type and long ranges for safety applications up to type 2	J-642
	L28 Compact type for optimum integration into safety applications up to type 2	J-648
	Dimensional drawings for accessories	J-656
	WSU/WEU	J-656
	L4000	J-658
	L2000	J-660



Selection guide

Product		Safety task	Features					
			Type (IEC 61496)	Performance level (EN ISO 13849)	Enclosure rating IP 67	Number of sensors ¹⁾	Number of sensors ¹⁾ with UE401	Number of sensors ¹⁾ with Flexi Classic/Flexi Soft
WSU/WEU								
	WSU/WEU26-3	■	4	e	■	1		
L4000								
	L4000 systems	■	4	e	■		8	
	L41	■	4	e	■			4
L2000								
	L21	■	2	c	■			4
	L27	■	2	c	■			4
	L28	■	2	c	■			4

¹⁾ Sensor = sender and receiver

²⁾ Combined with a Flexi Classic/Flexi Soft safety controller

Ambient operating temperature				Functions			Scanning range in m		Page
-20 °C ... + 55 °C	-25 °C ... + 55 °C	-40 °C ... + 55 °C	-40 °C ... + 60 °C	External device monitoring (EDM)	Restart interlock	Front screen heating	Minimum	Maximum	
	■					■	0.5 15	20 70	→ J-610
■				■	■		0 0 0	5 10 60	→ J-616
		■		■ ²⁾	■ ²⁾		0 0 0	5 10 60	→ J-626
		■		■ ²⁾	■ ²⁾		0 0 0	5 16 60	→ J-634
			■	■ ²⁾	■ ²⁾	■	0	35	→ J-642
			■	■ ²⁾	■ ²⁾		0	18	→ J-648

PRODUCT FAMILY OVERVIEW

	 <p>WSU/WEU26-3</p>	 <p>L4000 Systems</p>	 <p>L41</p>	
	<p>Rugged, ensures reliability under extreme ambient conditions</p>	<p>Complete system that is highly reliable and offers fast response times</p>	<p>Universal use up to type 4, with safe control solutions from SICK</p>	

Technical data overview

Scanning range	0.5 m ... 20 m / 15 m ... 70 m	0 m ... 60 m	0 m ... 60 m	
Light sender/type of light	Infrared light	LED / visible red light	LED / visible red light	
Construction size	50 mm x 156 mm x 116 mm	M18 / M30	M18 / M30	
Supply voltage	24 V DC (19.2 V DC ... 28.8 V DC)	24 V DC (19.2 V DC ... 28.8 V DC)	24 V DC (19.2 V DC ... 28.8 V DC)	
Enclosure rating	IP 67 (EN 60529)	IP 67 (EN 60529)	IP 67 (EN 60529)	
Ambient operating temperature	-25 °C ... +55 °C	-20 °C ... +55 °C	-40 °C ... +55 °C	
Type	Type 4 (IEC 61496)	Type 4 (IEC 61496)	Type 4 (IEC 61496)	
Performance level	PL e (EN ISO 13849)	PL e (EN ISO 13849)	PL e (EN ISO 13849)	

At a glance

	<ul style="list-style-type: none"> • Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849) • Rugged construction • Universal application possibilities • Ranges up to 70 m • Relay outputs • Front screen heating 	<ul style="list-style-type: none"> • Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849), only in conjunction with UE401 • Small M18 sensors with ranges up to 10 m • Compact M30 sensors with ranges up to 60 m • Enclosure rating IP 67 • Temperature range from -20 °C ... 55 °C • Narrow evaluation device (22.5 mm) with external device monitoring (EDM) and restart interlock (RES) • Fast response time of max. 30 ms • Up to 8 sensors can be cascaded 	<ul style="list-style-type: none"> • Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849), only in conjunction with suitable testing device, e.g., Flexi Classic or Flexi Soft • Small M18 sensors with ranges up to 10 m • Compact M30 sensors with ranges up to 60 m • Enclosure rating IP 67 • Temperature range from -40 °C ... +55 °C • Radial optics (90° deflector mirror) 	
<p>Detailed information</p>	<p>→ J-610</p>	<p>→ J-616</p>	<p>→ J-626</p>	





L21

Cylindrical design for safety applications up to type 2



L27

Standard type and long ranges for safety applications up to type 2



L28

Compact type for optimum integration into safety applications up to type 2

0 m ... 60 m

LED / visible red light

M18 / M30

24 V DC (19.2 V DC ... 28.8 V DC)

IP 67 (EN 60529)

-40 °C ... +55 °C

Type 2 (IEC 61496)

PL c (EN ISO 13849)

0 m ... 25 m

LED / visible red light

24.6 mm x 92.8 mm x 54 mm

24 V DC (19.2 V DC ... 28.8 V DC)

IP 67 (EN 60529)

-40 °C ... +60 °C

Type 2 (IEC 61496)

PL c (EN ISO 13849)

0 m ... 12 m

LED / visible red light

17.6 mm x 87.5 mm x 33.5 mm

24 V DC (16.8 V DC ... 28.8 V DC)

IP 67 (EN 60529)

-40 °C ... +60 °C

Type 2 (IEC 61496)

PL c (EN ISO 13849)

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849), only in conjunction suitable testing device, e.g., Flexi Classic or Flexi Soft
- Small M18 sensors with ranges up to 10 m
- Compact M30 sensors with ranges up to 60 m
- Enclosure rating IP 67
- Temperature range from -40 °C ... 55 °C
- Metal and plastic version
- Radial optics (90° deflector mirror)
- Straightforward diagnostics and service

→ J-634

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849), only in conjunction with suitable testing device, e.g., Flexi Classic or Flexi Soft
- Compact size with ranges up to 35 m
- Integrated heating
- Enclosure rating IP 67
- Temperature range from -40 °C to +60 °C

→ J-642

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849), only in conjunction with suitable testing device, e.g., Flexi Classic or Flexi Soft
- Compact size with ranges up to 18 m
- Plastic housing, ABS
- Enclosure rating IP 67
- Temperature range from -40 °C to +60 °C

→ J-648

RUGGED, ENSURES RELIABILITY UNDER EXTREME AMBIENT CONDITIONS



Product description

The WSU/WEU26-3 photoelectric safety switch is used for access protection for hazardous areas on machines or systems. It has a self-testing sender and receiver. The devices are firmly mounted

in the access area with the necessary safety distance from the nearest hazardous point, and send a deactivation signal to the machine or system if the light beam is interrupted.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Rugged construction
- Universal application possibilities
- Ranges up to 70 m
- Relay outputs
- Front screen heating

Your benefits

- Extremely tough, ensures high system reliability
- Well suited to withstand extreme ambient conditions such as heat, cold or moisture
- Few variants because of a uniform sender
- Easy electrical integration using cable gland and relay outputs



Additional information

- Detailed technical data J-611
- Ordering information J-612
- Dimensional drawings J-612
- Recommended accessories J-613

→ www.sick.com/WSU_WEU26-3

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



J

Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Scanning range	0.5 m ... 20 m / 15 m ... 70 m (depending on type)
Number of beams	1
Detection capability	30 mm
Response time	≤ 22 ms
Front screen heating	✓
Synchronization	Optical synchronisation

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
B _{10d} parameter	1 x 10 ⁶ switching cycles (AC-15, 230 V, 0.4 A), 2.6 x 10 ⁵ switching cycles (AC-15, 230 V, 2.0 A), 1 x 10 ⁶ switching cycles (DC-13, 24 V, 0.6 A), 2 x 10 ⁵ switching cycles (DC-13, 24 V, 1.5 A)
PFH _D (mean probability of a dangerous failure per hour)	4.0 x 10 ⁻⁹ (EN ISO 13849)
T _M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Interfaces

Connection type	PG gland (13,5)
Diagnostic display	LEDs
Fieldbus, industrial network	
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ¹⁾

¹⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	I (EN 50178)	
Supply voltage V _S	24 V DC (19.2 V DC ... 28.8 V DC)	
Power consumption	≤ 6 W	≤ 8 W
Switch-on time	≤ 10 s ¹⁾	
Test input	Volt-free N/C contact	–
Switching outputs	Relays	
Usage category	–	
Switching voltage	AC-15/DC-13 (EN 60947-5-1)	
	10 V DC ... 30 V DC	
	10 V AC ... 230 V AC	
Switching current	–	
	0.02 A ... 2 A	
Contact material	–	
	Ag alloy with Au coating	
Electrical life (relay contacts)	–	
	≥ 1 x 10 ⁵ switching cycles	
Mechanical life (relay contacts)	–	
	≥ 1 x 10 ⁷ switching cycles	

¹⁾ Upon applying the supply voltage.

Mechanical data

Design	Rectangular
Dimensions (W x H x D)	50 mm x 156 mm x 116 mm
Housing material	Aluminum die cast
Front screen material	Polycarbonate, scratch-resistant coating
Weight	1 kg

Ambient data

Enclosure rating	IP 67 (EN 60529)
Ambient operating temperature	-25 °C ... +55 °C
Storage temperature	-25 °C ... +75 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Type of light	Infrared light	-
Wave length	950 nm	-

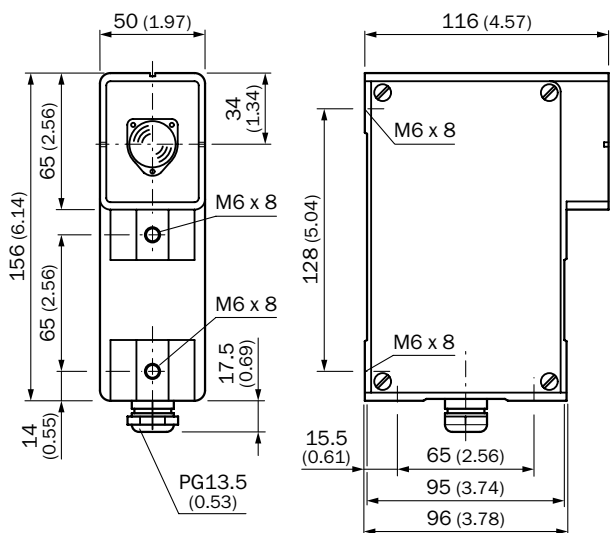
Ordering information

Items supplied WSU/WEU26-3:

- Single-beam photoelectric safety switch consisting of a sender and a receiver
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

Scanning range	Sender		Receiver	
	Type	Part no.	Type	Part no.
0.5 m ... 20 m	WSU26/3-103A00	1047984	WEU26/3-103A00	1047985
15 m ... 70 m	WSU26/3-103A00	1047984	WEU26/3-203A00	1048379

Dimensional drawings (Dimensions in mm (inch))



Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Type	Part no.
	Bracket, face side mounting position	BEF-4WNAEFAL1	2007900

Dimensional drawings → [page J-656](#)

Mounting plates

Figure	Description	Type	Part no.
	Spring mounting for PSK1 deflector mirror	BEF-4AAAAHST3	2012473

Terminal and alignment brackets

Alignment brackets

Figure	Description	Type	Part no.
	Bracket for PSK1 deflector mirror	BEF-4GHAHAL1	2009292

Dimensional drawings → [page J-656](#)

Device protection (mechanical)

Protective housings and protective pipes

Figure	Description	Type	Part no.
	Dust protection tube	Dust protection tube	1003556
	Snow protection tube	Snow protection tube	1003619

Dimensional drawings → [page J-656](#)

Connection systems

Adapters and distributors


Other adapters and distributors

Description	Type	Part no.
PG expansion with 2 cable entries PG21	Two-way splitter	5305978

Reduction and extension pieces



Description	Type	Part no.
Adapter for cable entry from PG 13 to PG 21	PG expansion	5306052

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789
			≤ 3.9 A	PS95WE24V	7028790

Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for WSU/WEU26-3 and WSU/WEU26/2	Adapter AR60, WSU/WEU26	4031156

Deflector mirrors

- **Mirror material:** glass

Figure	Description	Items supplied	Type	Part no.
	Horizontal deflection, 75 mm x 80 mm reflector surface	Incl. mounting kit (2 x swivel mount)	PNS75-008	1026647
	Horizontal deflection, 96 mm x 124 mm reflector surface	-	PSK1	1005229
	Deflector mirror for 90° deflection, mirror surface 97 mm x 80 mm, not suitable for column mounting	Mounting hardware included	PSK45	5306053

Dimensional drawings → page J-657

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Further accessories


Test and monitoring tools

Figure	Description	Type	Part no.
	30 mm diameter	Test rod 30 mm	2022602
	Test rod holder	BEF-3WNAAAAL1	2052249

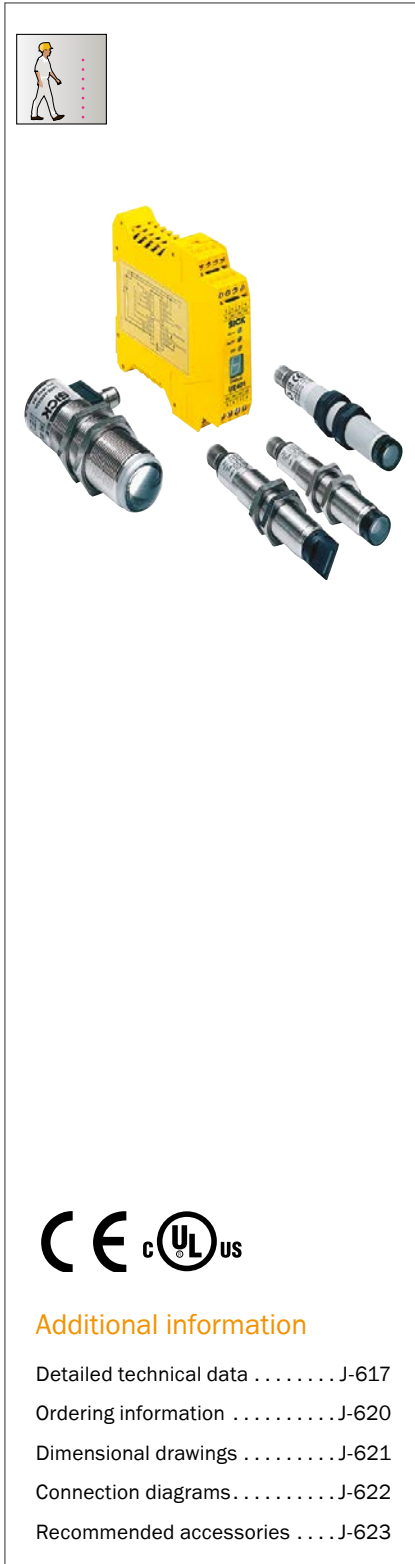
Electrical device protection (arc-suppressors)

Description	Type	Part no.
0.22 µF/220 Ohm for 110 V AC ... 220 V AC	RC-A	6001224
2.2 µF/100 Ohm for 24 V AC/DC ... 48 V AC/DC	RC-AD	6001225

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

COMPLETE SYSTEM THAT IS HIGHLY RELIABLE AND OFFERS FAST RESPONSE TIMES



Product description

The L4000 system consists of the UE401 safety evaluation device and photoelectric safety switches. The UE401 safety evaluation device functions as the link between the photoelectric safety switches and the machine controller. It makes it possible to connect up to 4 sensor pairs (sender/receiver combination) or up to 8 cascaded sensor pairs. Color LEDs provide local information about the operational

status. Quickly see diagnostic data using status and error messages on the 7-segment display of the UE401 safety evaluation unit. Even complex protection tasks can be performed due to the ability to connect up to 8 sensor pairs, a range of versions that can be selected according to requirements, suitability for outdoor applications and the use of deflector mirrors.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849), only in conjunction with UE401
- Small M18 sensors with ranges up to 10 m
- Compact M30 sensors with ranges up to 60 m
- Enclosure rating IP 67
- Temperature range from -20 °C ... 55 °C
- Narrow evaluation device (22.5 mm) with external device monitoring (EDM) and restart interlock (RES)
- Fast response time of max. 30 ms
- Up to 8 sensors can be cascaded

Your benefits

- Easy integration due to small, compact versions with maximum range
- Flexible device integration makes it possible to set up individual access protections
- Fast response times reduces safety distance and saves production area
- Extremely well suited for extreme ambient conditions such as heat, cold or moisture
- Straightforward configuration without a computer, only with the help of jumpers



Additional information

- Detailed technical data J-617
- Ordering information J-620
- Dimensional drawings J-621
- Connection diagrams J-622
- Recommended accessories J-623

→ www.sick.com/L4000_Systems

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



J

Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

L40 sensors**Features**

	M18 radial	M18 axial	M30 axial
Scanning range	0 m ... 5 m	0 m ... 10 m	0 m ... 60 m
Number of beams	1		
Detection capability	30 mm		
Optical axis	Radial	Axial	
Response time	0.4 ms 0.4 ms + response time of the test device (UE401)		

Safety-related parameters

Type	Type 4 (IEC 61496) ¹⁾
Safety integrity level	SIL3 (IEC 61508) ¹⁾ SILCL3 (EN 62061) ¹⁾
Category	Category 4 (EN ISO 13849) ¹⁾
Performance level	PL e (EN ISO 13849) ¹⁾
PFH_D (mean probability of a dangerous failure per hour)	2.9 x 10 ⁻¹⁰ (EN ISO 13849) ¹⁾
T_M (mission time)	20 years (EN ISO 13849) ¹⁾

¹⁾ Only in conjunction with UE401.

Interfaces

	M18 radial	M18 axial	M30 axial
Connection type	Connector M12, 4-pin, straight		Connector M12, 4-pin, angled
Diagnostic display	LED		
Fieldbus, industrial network Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ¹⁾		

¹⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC)	
Power consumption	≤ 60 mA	≤ 30 mA

Mechanical data

	M18 radial	M18 axial	M30 axial
Design	Cylindrical		
Dimensions (diameter x length)	M18 x 107.7 mm	M18 x 97.7 mm	M30 x 100 mm
Housing material	Nickel-plated brass	Nickel-plated brass / plastic (depending on type)	Nickel-plated brass
Lens material	Glass		
Weight	67 g	67 g / 30 g (depending on type)	212 g

Ambient data

Enclosure rating	IP 67 (EN 60529)
Ambient operating temperature	-20 °C ... +55 °C
Storage temperature	-25 °C ... +75 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Light source	LED	-
Type of light	Visible red light	-
Wave length	660 nm	-
Aperture angle/receiving angle	± 2.5° / ± 2.5°	

UE401 evaluation unit

Features

Number of sensor pairs (sender and receiver)	1 ... 8
Response time	≤ 30 ms

Safety-related parameters

Type	Type 4 (EN 61496) ¹⁾
Safety integrity level	SIL3 (IEC 61508) ¹⁾ SILCL3 (EN 62061) ¹⁾
Category	Category 4 (EN ISO 13849) ¹⁾
Performance level	PL e (EN ISO 13849) ¹⁾
PFH _D (mean probability of a dangerous failure per hour)	2.9 x 10 ⁻¹⁰ (EN ISO 13849) ¹⁾
T _M (mission time)	20 years (EN ISO 13849) ¹⁾
Safe state in the event of a fault	At least one OSSD is in the OFF state.

¹⁾ Only in conjunction with L40 sensors.

Functions

Further information on functions → [page E-54](#) as well as enhanced system solutions → [page L-690](#)

	Functions	Delivery status
Restart interlock	✓	Activated
External device monitoring (EDM)	✓	Activated

Interfaces

Connection type	Plug-in screw-type terminals
Permitted cable length	≤ 100 m
Permitted cross-section	0.25 mm ² ... 2.5 mm ²
Configuration method	Hard wired
Diagnostic display	7-segment display
Status display	LEDs

Electrical data

Protection class	III (EN 50178)
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC)
Residual ripple	$\leq 5 V_{pp}$
Power consumption	$\leq 3.6 W$ (DC)
Switch-on time	$\leq 2.5 s$
Safety outputs (OSSD)	
Type of output	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ¹⁾
Switching voltage HIGH	24 V DC (17.5 V DC ... 28.8 V DC)
Switching voltage LOW	$\leq 1.3 V$ DC
Switching current	$\leq 0.5 A$

¹⁾ Applies to the voltage range between -30 V and +30 V.

Mechanical data

Mounting	Snap-on mounting on 35 mm mounting rail according to EN 60715
Dimensions (W x H x D)	22.6 mm x 99 mm x 113.5 mm
Weight	160 g

Ambient data

Enclosure rating	IP 20 (EN 60529)
Ambient operating temperature	-20 °C ... +55 °C
Storage temperature	-25 °C ... +75 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (EN 60068-2-29)

Ordering information

L40 sensors

Items supplied L4000 Systems:

- Single-beam photoelectric safety switch consisting of a sender and a receiver
- Operating instructions as hard copy

Scanning range	Model	Housing material	Sender		Receiver	
			Type	Part no.	Type	Part no.
0 m ... 5 m	M18 radial	Nickel-plated brass	L40S-11MA1A	6027341	L40E-11MA1A	6027342
0 m ... 10 m	M18 axial	Nickel-plated brass	L40S-21MA1A	6027339	L40E-21MA1A	6027340
		Plastic	L40S-21KA1A	6027337	L40E-21KA1A	6027338
0 m ... 60 m	M30 axial	Nickel-plated brass	L40S-33MA2A	6027335	L40E-33MA2A	6027336

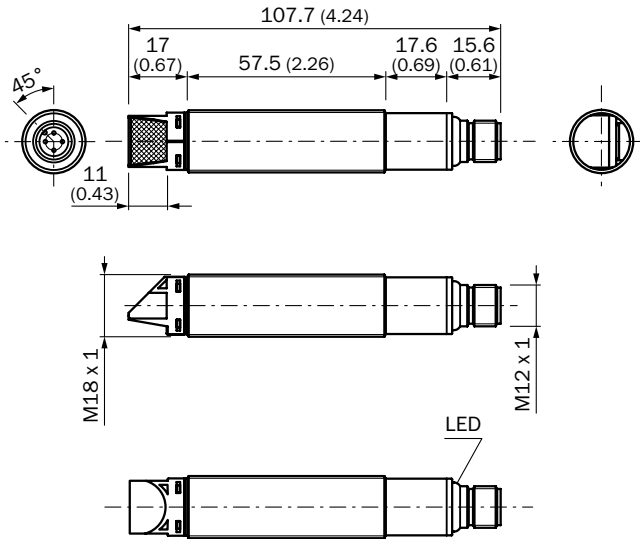
UE401 evaluation unit

Description	Type	Part no.
UE401 evaluation unit	UE401-A0010	6027343

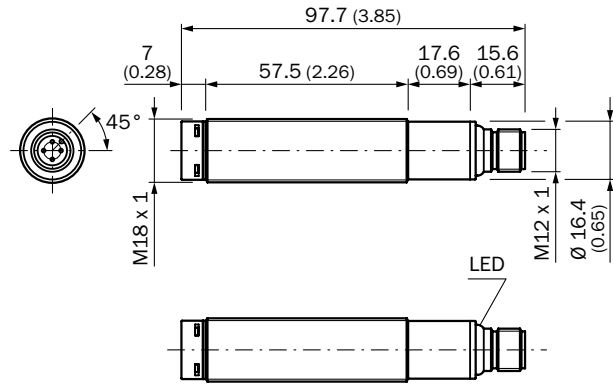


Dimensional drawings (Dimensions in mm (inch))

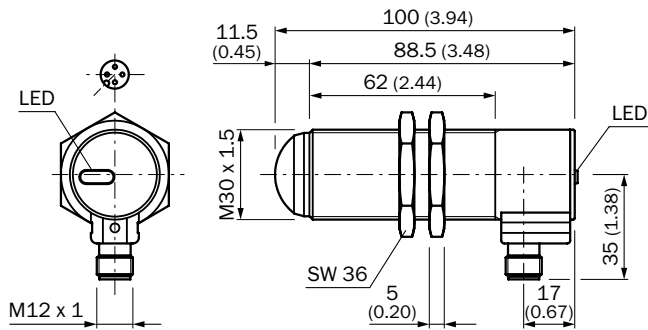
M18 radial



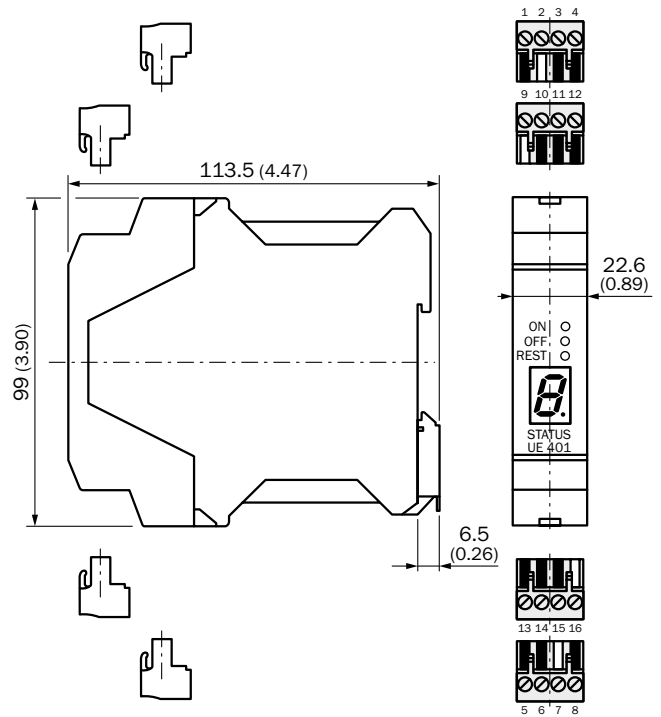
M18 axial



M30 axial

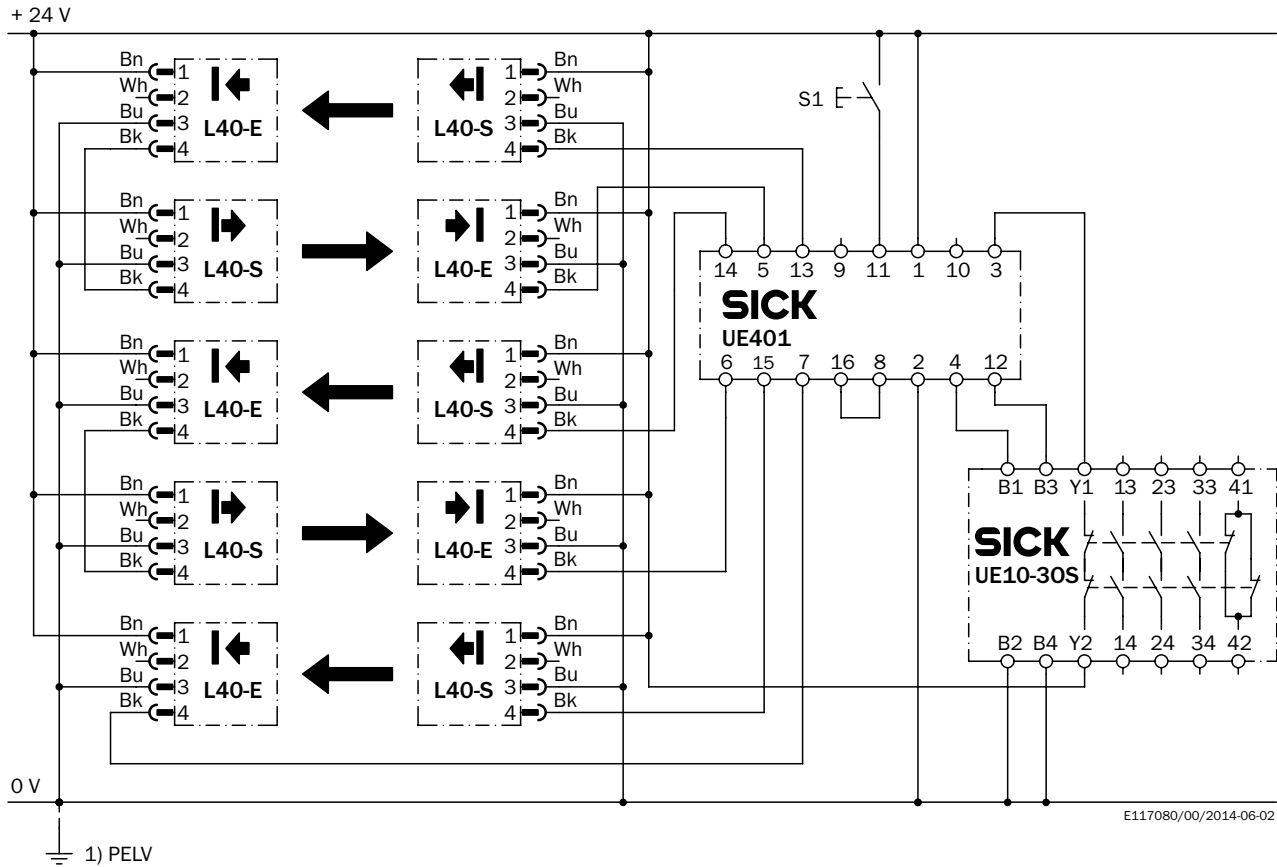


UE401



Connection diagrams

5 x L4000 (two pairs cascaded) on UE401 with UE10-30S



E117080/00/2014-06-02

Task

Integrate five single-beam L400/L4000 photoelectric safety switches (2 pairs cascaded) with a UE401 safety evaluation device and a UE10-30S safety relay.
 Operating mode: with restart interlock and external device monitoring.

Function

When the light path is clear and the UE10 is de-energized and functioning correctly, the yellow LED on the UE401 flashes. The system is ready to be switched on. The system is ready to be switched and is enabled when the S1 button is pressed and released. OSSD1 and OSSD2 outputs are then live and the UE10 is switched on. If one of the light beams is interrupted, the UE10 is deactivated as the OSSD1 and OSSD2 output signals drop out.

Possible faults

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The incorrect functioning of the UE10 will be detected and will not result in the loss of the shutdown function. Jamming of the S1 button prevents output circuit to enable.

Comments

¹⁾ PELV as required in EN 60204-1 / 6.4
 The related operating instructions for the integrated devices must be observed!



Accessories required for commissioning



Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
Connecting cable	2	-	→ Plug connectors and cables
UE401 evaluation unit	1	-	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Type	Part no.
	Mounting bracket, M18 thread without mounting hardware	BEF-WN-M18	5308446
	Mounting bracket, M30 thread without mounting hardware	BEF-WN-M30	5308445

Dimensional drawings → [page J-658](#)

Mounting plates

Figure	Description	Type	Part no.
	Spring mounting for PSK1 deflector mirror	BEF-4AAAAHST3	2012473

Terminal and alignment brackets


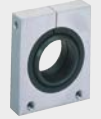

Alignment brackets

Figure	Description	Type	Part no.
	Bracket for PSK1 deflector mirror	BEF-4GHAHAL1	2009292

Dimensional drawings → [page J-658](#)



Terminal brackets





Figure	Description	Type	Part no.
	M18 mounting bracket, radial rotation possible, with 4 mm fixing holes, without mounting hardware	BEF-HA-M18R	5313513
	Mounting bracket, M30, axial rotation possible, with threaded mounting hole M6, without mounting hardware	BEF-HA-M30A	5311527
	Mounting bracket M30, radial rotation possible, with fixing holes for M4, without mounting hardware	BEF-HA-M30R	5311528

Dimensional drawings → [page J-658](#)

Connection systems

Plug connectors and cables


Connecting cables with female connector

Figure	Connection type	Model	Conductor cross-section	Cable length	Type	Part no.	
 Illustration may differ	Female connector, M12, 4-pin, angled	Cable	PVC, unshielded	0.25 mm ²	2 m	DOL-1204-W02M	6009383
					5 m	DOL-1204-W05M	6009867
					10 m	DOL-1204-W10M	6010541
					15 m	DOL-1204-W15M	6036474
					20 m	DOL-1204-W20M	6033559
			PUR, halogen-free, unshielded	0.34 mm ²	5 m	DOL-1204-W05MC	6025904
 Illustration may differ	Female connector, M12, 4-pin, straight	Cable	PVC, unshielded	0.25 mm ²	2 m	DOL-1204-G02M	6009382
					5 m	DOL-1204-G05M	6009866
					10 m	DOL-1204-G10M	6010543
					15 m	DOL-1204-G15M	6010753
					5 m	DOL-1204-G05MC	6025901
			PUR, halogen-free, unshielded	0.34 mm ²	5 m	DOL-1204-G05MC	6025901

Female connectors (ready to assemble)



Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.
	Female connector, M12, 4-pin, angled, screw-type terminals	≤ 0.75 mm ²	3 mm ... 6.5 mm	DOS-1204-W	6007303
 Illustration may differ	Female connector, M12, 4-pin, straight, cutting technology	≤ 0.75 mm ²	3.5 mm ... 6 mm	DOS-1204-GQU6	6042088
			4 mm ... 7.5 mm	DOS-1204-GQU8	6053328
	Female connector, M12, 4-pin, straight, screw-type terminals	≤ 0.75 mm ²	4 mm ... 6 mm	DOS-1204-G	6007302

Male connectors (ready to assemble)

Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.
	Male connector, M12, 4-pin, straight	≤ 0.75 mm ²	3 mm ... 6.5 mm	STE-1204-GQU6	6042089
	Male connector, M12, 4-pin, straight, screw-type terminals	≤ 0.75 mm ²	4 mm ... 6 mm	STE-1204-G	6009932

Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for M18 sensors (L41 and L21)	Adapter AR60, M18 sensors	5313533
	Adapter AR60 for M30 sensors (L4000 Systems, L41 and L21)	Adapter AR60, M30 sensors	5311529


Deflector mirrors

- **Mirror material:** glass

Figure	Description	Items supplied	Type	Part no.
	Horizontal deflection, 75 mm x 80 mm reflector surface	Incl. mounting kit (2 x swivel mount)	PNS75-008	1026647
	Horizontal deflection, 96 mm x 124 mm reflector surface	-	PSK1	1005229
	Deflector mirror for 90° deflection, mirror surface 97 mm x 80 mm, not suitable for column mounting	Mounting hardware included	PSK45	5306053

Dimensional drawings → [page J-659](#)

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

UNIVERSAL USE UP TO TYPE 4, WITH SAFE CONTROL SOLUTIONS FROM SICK



Product description

The L41 single-beam photoelectric safety switch consists of a sender and receiver. The test input of the sender allows direct functional tests. Performance level PL e in acc. with EN ISO 13849 or Type 4 in acc. with IEC 61496 can be achieved in conjunction with a safety controller. Suitable safety controllers are, for example,

Flexi Classic or Flexi Soft. Color LEDs provide local information about the operational status. The required range can be selected from various device versions. All versions are suitable for outdoor applications and enable even complex safeguarding tasks to be accomplished by using deflector mirrors.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849), only in conjunction with suitable testing device, e.g., Flexi Classic or Flexi Soft
- Small M18 sensors with ranges up to 10 m
- Compact M30 sensors with ranges up to 60 m
- Enclosure rating IP 67
- Temperature range from -40 °C ... +55 °C
- Radial optics (90° deflector mirror)

Your benefits

- Easy integration due to small, compact versions with maximum range
- Directly connect to a safety controller – reducing costs
- Flexible device integration makes it possible to set up individual access protections
- Well suited to withstand extreme ambient conditions such as heat, cold or moisture



Additional information

Detailed technical data J-627
 Ordering information J-629
 Dimensional drawings J-629
 Connection diagrams J-630
 Recommended accessories J-631

→ www.sick.com/L41

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

	M18 radial	M18 axial	M30 axial
Scanning range	0 m ... 5 m	0 m ... 10 m	0 m ... 60 m
Number of beams	1		
Detection capability	30 mm		
Optical axis	Radial	Axial	
Response time	0.2 ms 0.2 ms + response time of the test device		

Safety-related parameters

Type	Type 4 (IEC 61496) ¹⁾
Safety integrity level	SIL3 (IEC 61508) ¹⁾ SILCL3 (EN 62061) ¹⁾
Category	Category 4 (EN ISO 13849) ¹⁾
Performance level	PL e (EN ISO 13849) ¹⁾
PFH _D (mean probability of a dangerous failure per hour)	8.1 x 10 ⁻¹⁰ (EN ISO 13849) ¹⁾
T _M (mission time)	20 years (EN ISO 13849)

¹⁾ Only in conjunction with suitable testing device, e.g., Flexi Classic or Flexi Soft.

Interfaces

	M18 radial	M18 axial	M30 axial
Connection type	Connector M12, 4-pin, straight		Connector M12, 4-pin, angled
Diagnostic display	LED		

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V _s	24 V DC (19.2 V DC ... 28.8 V DC)	
Power consumption	≤ 20 mA	≤ 30 mA
Switching outputs	–	PNP, Q ¹⁾
Switching current	–	≤ 70 mA

¹⁾ Short-circuit protected.

Mechanical data

	M18 radial	M18 axial	M30 axial
Design	Cylindrical		
Dimensions (diameter x length)	M18 x 107.7 mm	M18 x 97.7 mm	M30 x 100 mm
Housing material	Nickel-plated brass	Nickel-plated brass / plastic (depending on type)	Nickel-plated brass
Lens material	Glass		
Weight	67 g	67 g / 30 g (depending on type)	212 g

Ambient data

Enclosure rating	IP 67 (EN 60529)
Ambient operating temperature	-40 °C ... +55 °C
Storage temperature	-40 °C ... +75 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Light source	LED	-
Type of light	Visible red light	-
Wave length	660 nm	-
Aperture angle/receiving angle	± 2.5° / ± 2.5°	



Ordering information

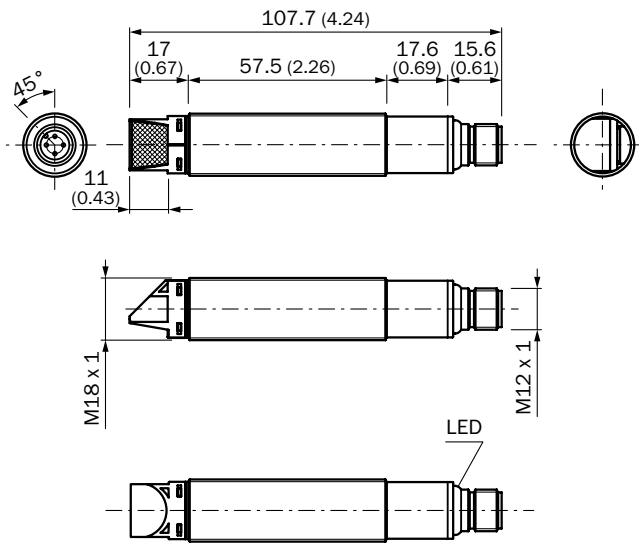
Items supplied L41:

- Single-beam photoelectric safety switch consisting of a sender and a receiver
- Operating instructions as hard copy

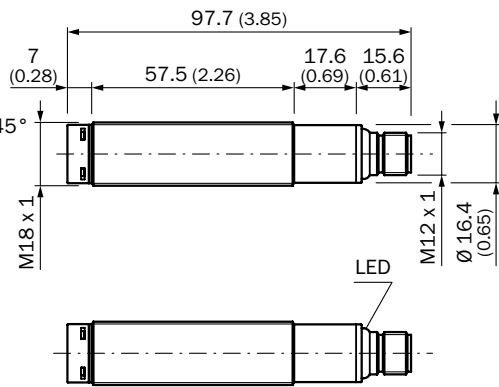
Scanning range	Model	Housing material	Sender		Receiver	
			Type	Part no.	Type	Part no.
0 m ... 5 m	M18 radial	Nickel-plated brass	L41S-11MA1A	6034868	L41E-11MA1A	6034869
0 m ... 10 m	M18 axial	Nickel-plated brass	L41S-21MA1A	6034866	L41E-21MA1A	6034867
		Plastic	L41S-21KA1A	6034864	L41E-21KA1A	6034865
0 m ... 60 m	M30 axial	Nickel-plated brass	L41S-33MA2A	6034863	L41E-33MA2A	6034862

Dimensional drawings (Dimensions in mm (inch))

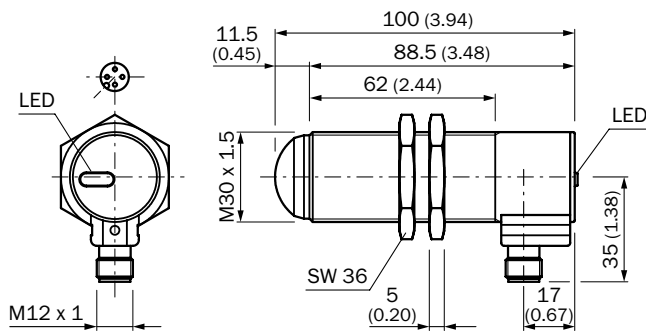
M18 radial



M18 axial

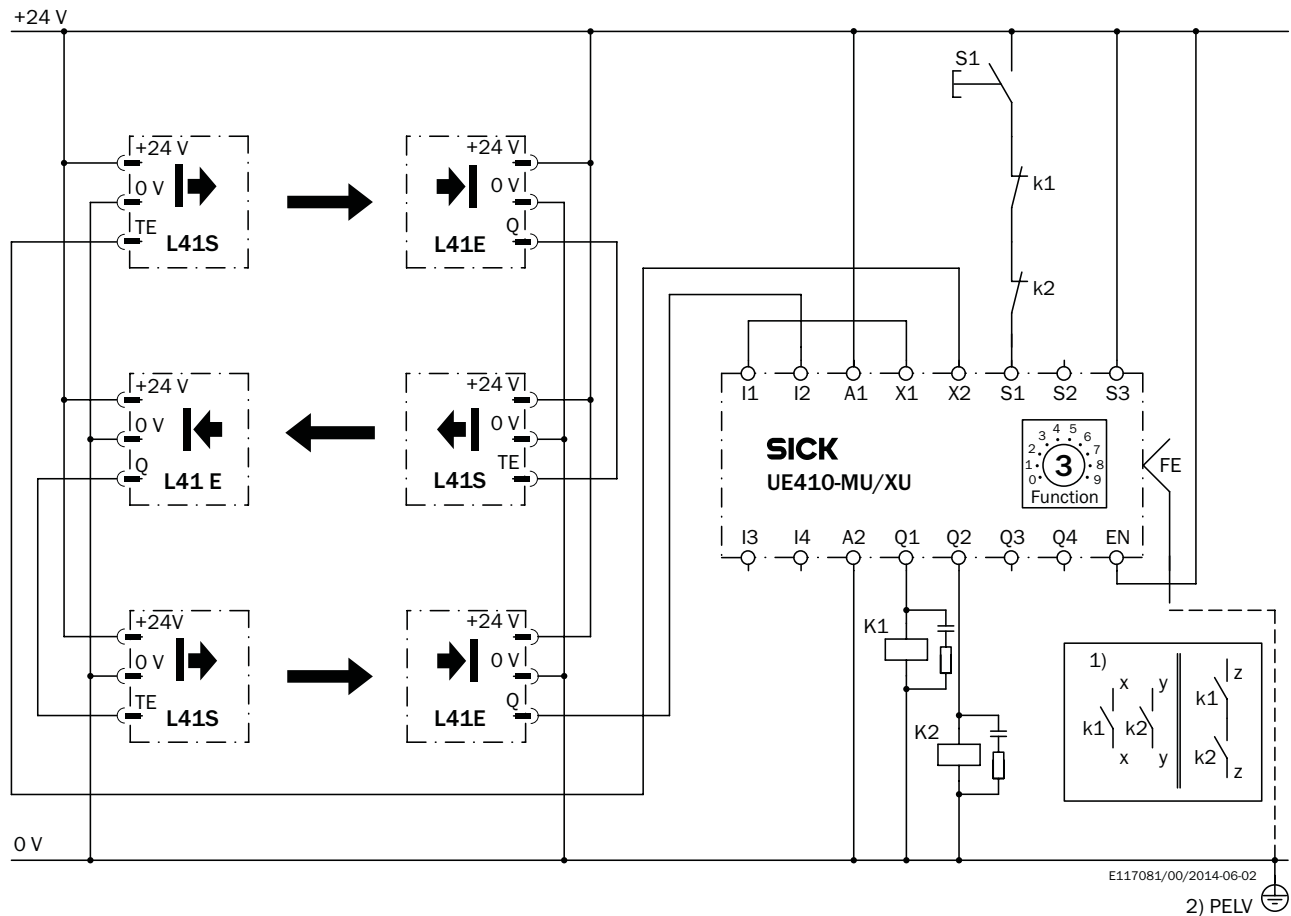


M30 axial



Connection diagrams

3 x L41 (cascaded) on Flexi Classic main unit and extension unit



Task

Integration of three cascaded L4000 (L41) family single-beam photoelectric safety switches with a UE410-MU/XU safety controller into a relay controller/contactor controller. Operating mode: with restart interlock and with external device monitoring.

Function

When the input conditions are valid, the system is ready for switch-on and waits for an input signal/switch-on signal. The system is enabled by pressing and releasing the S1 button. The related output on the UE410-MU/XU carries power. If the input conditions are no longer met, the related outputs on the UE410-MU/XU shut down.

Possible faults

The incorrect function of the K1 and K2 contactors will be detected. The shutdown function is retained. On manipulation (e.g., jamming) of the S1 button, the system does not enable the output current circuits.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

²⁾ PELV as required in EN 60204-1 / 6.4

Optical short-circuits must be avoided. Take note of the operating instructions for the integrated devices. The safety-related parameters (safety integrity level and response time) are dependent on the types used.

Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
Connecting cable	2	-	→ Plug connectors and cables
External testing device, e.g., Flexi Classic or Flexi Soft	1	-	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Type	Part no.
	Mounting bracket, M18 thread without mounting hardware	BEF-WN-M18	5308446
	Mounting bracket, M30 thread without mounting hardware	BEF-WN-M30	5308445

Dimensional drawings → [page J-658](#)

Mounting plates

Figure	Description	Type	Part no.
	Spring mounting for PSK1 deflector mirror	BEF-4AAAAHST3	2012473




Terminal and alignment brackets

Alignment brackets

Figure	Description	Type	Part no.
	Bracket for PSK1 deflector mirror	BEF-4GHAHAL1	2009292

Dimensional drawings → [page J-658](#)

Terminal brackets





Figure	Description	Type	Part no.
	M18 mounting bracket, radial rotation possible, with 4 mm fixing holes, without mounting hardware	BEF-HA-M18R	5313513
	Mounting bracket, M30, axial rotation possible, with threaded mounting hole M6, without mounting hardware	BEF-HA-M30A	5311527
	Mounting bracket M30, radial rotation possible, with fixing holes for M4, without mounting hardware	BEF-HA-M30R	5311528

Dimensional drawings → [page J-658](#)

Connection systems

Plug connectors and cables

Connecting cables with female connector

Figure	Connection type	Model	Conductor cross-section	Cable length	Type	Part no.	
 Illustration may differ	Female connector, M12, 4-pin, angled	Cable	PVC, unshielded	0.25 mm ²	2 m	DOL-1204-W02M	6009383
					5 m	DOL-1204-W05M	6009867
					10 m	DOL-1204-W10M	6010541
					15 m	DOL-1204-W15M	6036474
					20 m	DOL-1204-W20M	6033559
			PUR, halogen-free, unshielded	0.34 mm ²	5 m	DOL-1204-W05MC	6025904
 Illustration may differ	Female connector, M12, 4-pin, straight	Cable	PVC, unshielded	0.25 mm ²	2 m	DOL-1204-G02M	6009382
					5 m	DOL-1204-G05M	6009866
					10 m	DOL-1204-G10M	6010543
					15 m	DOL-1204-G15M	6010753
					5 m	DOL-1204-G05MC	6025901
			PUR, halogen-free, unshielded	0.34 mm ²	5 m	DOL-1204-G05MC	6025901

Female connectors (ready to assemble)



Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.
	Female connector, M12, 4-pin, angled, screw-type terminals	≤ 0.75 mm ²	3 mm ... 6.5 mm	DOS-1204-W	6007303
 Illustration may differ	Female connector, M12, 4-pin, straight, cutting technology	≤ 0.75 mm ²	3.5 mm ... 6 mm	DOS-1204-GQU6	6042088
			4 mm ... 7.5 mm	DOS-1204-GQU8	6053328
	Female connector, M12, 4-pin, straight, screw-type terminals	≤ 0.75 mm ²	4 mm ... 6 mm	DOS-1204-G	6007302

Male connectors (ready to assemble)

Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.
	Male connector, M12, 4-pin, straight	≤ 0.75 mm ²	3 mm ... 6.5 mm	STE-1204-GQU6	6042089
	Male connector, M12, 4-pin, straight, screw-type terminals	≤ 0.75 mm ²	4 mm ... 6 mm	STE-1204-G	6009932

Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for M18 sensors (L41 and L21)	Adapter AR60, M18 sensors	5313533
	Adapter AR60 for M30 sensors (L4000 Systems, L41 and L21)	Adapter AR60, M30 sensors	5311529


Deflector mirrors

- **Mirror material:** glass

Figure	Description	Items supplied	Type	Part no.
	Horizontal deflection, 75 mm x 80 mm reflector surface	Incl. mounting kit (2 x swivel mount)	PNS75-008	1026647
	Horizontal deflection, 96 mm x 124 mm reflector surface	-	PSK1	1005229
	Deflector mirror for 90° deflection, mirror surface 97 mm x 80 mm, not suitable for column mounting	Mounting hardware included	PSK45	5306053

Dimensional drawings → [page J-659](#)

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

CYLINDRICAL DESIGN FOR SAFETY APPLICATIONS UP TO TYPE 2



Product description

The L21 single-beam photoelectric safety switch consists of a sender and receiver. The test input on the sender allows direct functional tests. Performance level PL c in acc. with EN ISO 13849-1 or Type 2 in acc. with IEC 61496 can be achieved in conjunction with a safety controller. Suitable safety controllers are, for example,

Flexi Classic or Flexi Soft. Color LEDs provide local information about the operational status. The required range can be selected from various device versions. All versions are suitable for outdoor applications and enable even complex safeguarding tasks to be accomplished by using deflector mirrors.

At a glance

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849), only in conjunction suitable testing device, e.g., Flexi Classic or Flexi Soft
- Small M18 sensors with ranges up to 10 m
- Compact M30 sensors with ranges up to 60 m
- Enclosure rating IP 67
- Temperature range from -40 °C ... 55 °C
- Metal and plastic version
- Radial optics (90° deflector mirror)
- Straightforward diagnostics and service

Your benefits

- Easy integration due to small, compact versions with maximum range
- Directly connect to a safety controller – reducing costs
- Flexible device integration makes it possible to set up individual access protections
- Well suited to withstand extreme ambient conditions such as heat, cold or moisture



Additional information

Detailed technical data J-635
 Ordering information J-637
 Dimensional drawings J-637
 Connection diagrams J-638
 Recommended accessories J-639

→ www.sick.com/L21

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



J

Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

	M18 radial	M18 axial	M30 axial
Scanning range	0 m ... 5 m	0 m ... 10 m	0 m ... 60 m
Number of beams	1		
Optical axis	Radial	Axial	
Response time	0.2 ms 0.2 ms + response time of the test device		

Safety-related parameters

Type	Type 2 (IEC 61496) ¹⁾
Safety integrity level	SIL1 (IEC 61508) ¹⁾ SILCL1 (EN 62061) ¹⁾
Category	Category 2 (EN ISO 13849) ¹⁾
Test rate (external test)	100 /s (EN ISO 13849) ²⁾
Maximum demand rate	≤ 60 /min (EN ISO 13849) ³⁾
Performance level	PL c (EN ISO 13849) ¹⁾
PFH _D (mean probability of a dangerous failure per hour)	1.0 x 10 ⁻⁶ (EN ISO 13849) ¹⁾
T _M (mission time)	20 years (EN ISO 13849)

¹⁾ Only in conjunction with suitable testing device, e.g., Flexi Classic or Flexi Soft.

²⁾ The test rate shall not be exceeded.

³⁾ Between two requirements on a safety-related response of the device, at least 100 internal or external tests must be carried out.

Interfaces

	M18 radial	M18 axial	M30 axial
Connection type	Connector M12, 4-pin, straight		Connector M12, 4-pin, angled
Fieldbus, industrial network	Integration via Flexi Soft safety controller		
	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ¹⁾		

¹⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V _s	24 V DC (19.2 V DC ... 28.8 V DC)	
Power consumption	≤ 20 mA	≤ 30 mA
Switching outputs	–	PNP, Q ¹⁾
Switching current	–	≤ 70 mA

¹⁾ Short-circuit protected.

Mechanical data

	M18 radial	M18 axial	M30 axial
Design	Cylindrical		
Dimensions (diameter x length)	M18 x 107.7 mm	M18 x 97.7 mm	M30 x 100 mm
Housing material	Nickel-plated brass	Nickel-plated brass / plastic (depending on type)	Nickel-plated brass
Lens material	Glass		
Weight	67 g	67 g/ 30 g (depending on type)	212 g

Ambient data

Enclosure rating	IP 67 (EN 60529)
Ambient operating temperature	-40 °C ... +55 °C
Storage temperature	-40 °C ... +75 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Light source	LED	-
Type of light	Visible red light	-
Wave length	660 nm	-
Aperture angle/receiving angle	± 5° / ± 5°	



Ordering information

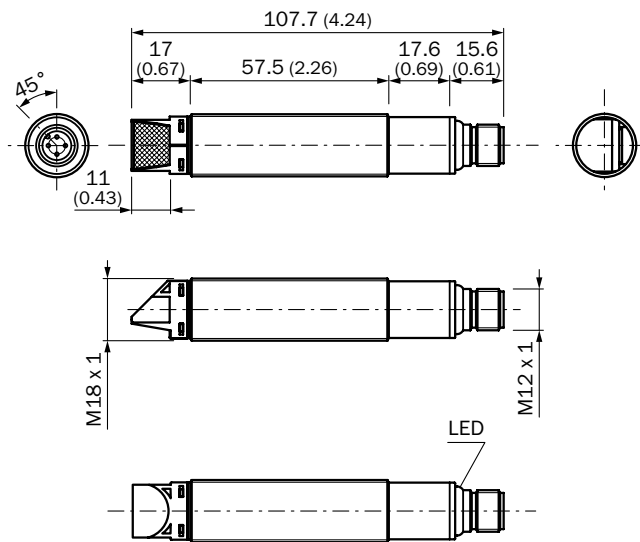
Items supplied L21:

- Single-beam photoelectric safety switch consisting of a sender and a receiver
- Operating instructions as hard copy

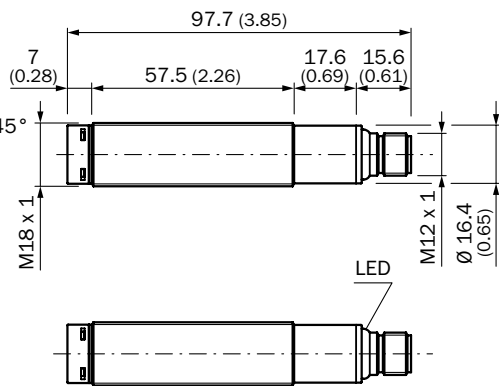
Scanning range	Model	Housing material	Sender		Receiver	
			Type	Part no.	Type	Part no.
0 m ... 5 m	M18 radial	Nickel-plated brass	L21S-11MA1A	6034876	L21E-11MA1A	6034877
0 m ... 10 m	M18 axial	Nickel-plated brass	L21S-21MA1A	6034874	L21E-21MA1A	6034875
		Plastic	L21S-21KA1A	6034872	L21E-21KA1A	6034873
0 m ... 60 m	M30 axial	Nickel-plated brass	L21S-33MA2A	6034870	L21E-33MA2A	6034871

Dimensional drawings (Dimensions in mm (inch))

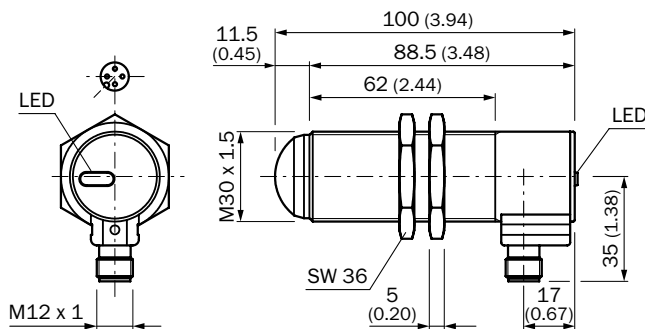
M18 radial



M18 axial

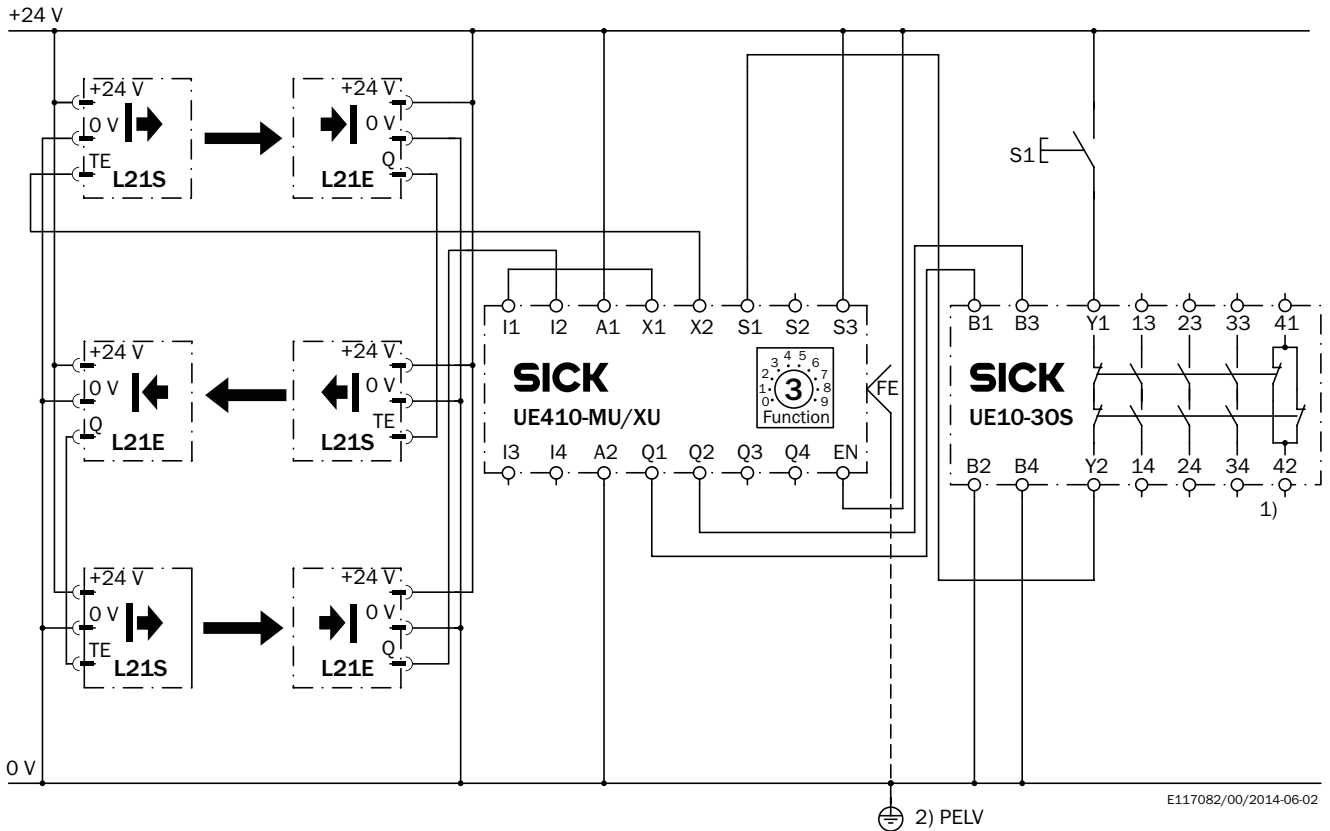


M30 axial



Connection diagrams

3 x L21 (cascaded) with Flexi Classic main unit and expansion module on UE10-30S



Task

Integration of three cascaded L2000 (L21) family single-beam photoelectric safety switches with a UE410-MU/XU safety controller and a UE10-30S safety relay.

Operating mode: with restart interlock and external device monitoring.

Function

The system is ready when the light path is clear and the UE10-30S is de-energized and functioning correctly. When the S1 button is pressed and released, the Q1 and Q2 outputs on the UE410-MU/XU are live and the UE10-30S is switched on. If one of the light beams is interrupted, the Q1 and Q2 outputs on the UE410-MU/XU shut down the UE10-30S.

Possible faults

Malfunctions in the UE10-30S will be detected. The shutdown function is retained.

Comments

¹⁾ Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

²⁾ PELV as required in EN 60204-1 / 6.4

Take note of the operating instructions for the integrated devices. The safety-related parameters (safety integrity level and response time) are dependent on the types used.

Accessories required for commissioning


Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
Connecting cable	2	-	→ Plug connectors and cables
External testing device, e.g., Flexi Classic or Flexi Soft	1	-	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Type	Part no.
	Mounting bracket, M18 thread without mounting hardware	BEF-WN-M18	5308446
	Mounting bracket, M30 thread without mounting hardware	BEF-WN-M30	5308445

Dimensional drawings → [page J-660](#)

Mounting plates

Figure	Description	Type	Part no.
	Spring mounting for PSK1 deflector mirror	BEF-4AAAAHST3	2012473




Terminal and alignment brackets

Alignment brackets

Figure	Description	Type	Part no.
	Bracket for PSK1 deflector mirror	BEF-4GHAHAL1	2009292

Dimensional drawings → [page J-661](#)

Terminal brackets





Figure	Description	Type	Part no.
	M18 mounting bracket, radial rotation possible, with 4 mm fixing holes, without mounting hardware	BEF-HA-M18R	5313513
	Mounting bracket, M30, axial rotation possible, with threaded mounting hole M6, without mounting hardware	BEF-HA-M30A	5311527
	Mounting bracket M30, radial rotation possible, with fixing holes for M4, without mounting hardware	BEF-HA-M30R	5311528

Dimensional drawings → [page J-661](#)

Connection systems

Plug connectors and cables


Connecting cables with female connector

Figure	Connection type	Model	Conductor cross-section	Cable length	Type	Part no.	
 Illustration may differ	Female connector, M12, 4-pin, angled	Cable	PVC, unshielded	0.25 mm ²	2 m	DOL-1204-W02M	6009383
					5 m	DOL-1204-W05M	6009867
					10 m	DOL-1204-W10M	6010541
					15 m	DOL-1204-W15M	6036474
					20 m	DOL-1204-W20M	6033559
			PUR, halogen-free, unshielded	0.34 mm ²	5 m	DOL-1204-W05MC	6025904
 Illustration may differ	Female connector, M12, 4-pin, straight	Cable	PVC, unshielded	0.25 mm ²	2 m	DOL-1204-G02M	6009382
					5 m	DOL-1204-G05M	6009866
					10 m	DOL-1204-G10M	6010543
					15 m	DOL-1204-G15M	6010753
					5 m	DOL-1204-G05MC	6025901
			PUR, halogen-free, unshielded	0.34 mm ²	5 m	DOL-1204-G05MC	6025901

Female connectors (ready to assemble)



Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.
	Female connector, M12, 4-pin, angled, screw-type terminals	≤ 0.75 mm ²	3 mm ... 6.5 mm	DOS-1204-W	6007303
 Illustration may differ	Female connector, M12, 4-pin, straight, cutting technology	≤ 0.75 mm ²	3.5 mm ... 6 mm	DOS-1204-GQU6	6042088
			4 mm ... 7.5 mm	DOS-1204-GQU8	6053328
	Female connector, M12, 4-pin, straight, screw-type terminals	≤ 0.75 mm ²	4 mm ... 6 mm	DOS-1204-G	6007302

Male connectors (ready to assemble)

Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.
	Male connector, M12, 4-pin, straight	≤ 0.75 mm ²	3 mm ... 6.5 mm	STE-1204-GQU6	6042089
	Male connector, M12, 4-pin, straight, screw-type terminals	≤ 0.75 mm ²	4 mm ... 6 mm	STE-1204-G	6009932

Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741
	Adapter AR60 for M18 sensors (L41 and L21)	Adapter AR60, M18 sensors	5313533
	Adapter AR60 for M30 sensors (L4000 Systems, L41 and L21)	Adapter AR60, M30 sensors	5311529


Deflector mirrors

- **Mirror material:** glass

Figure	Description	Items supplied	Type	Part no.
	Horizontal deflection, 75 mm x 80 mm reflector surface	Incl. mounting kit (2 x swivel mount)	PNS75-008	1026647
	Horizontal deflection, 96 mm x 124 mm reflector surface	-	PSK1	1005229
	Deflector mirror for 90° deflection, mirror surface 97 mm x 80 mm, not suitable for column mounting	Mounting hardware included	PSK45	5306053

Dimensional drawings → [page J-662](#)

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690



STANDARD TYPE AND LONG RANGES FOR SAFETY APPLICATIONS UP TO TYPE 2



Product description

The L27 single-beam photoelectric safety switch consists of a sender and receiver. The test input of the sender allows direct functional tests. Performance level PL c in acc. with EN ISO 13849-1 or Type 2 in acc. with IEC 61496 can be achieved in conjunction with an evaluation unit. Suitable evaluation units are, for example,

Flexi Classic or Flexi Soft. Color LEDs provide local information about the operational status. The required range can be selected from various device versions. All versions are suitable for outdoor applications and enable even complex safeguarding tasks to be accomplished by using deflector mirrors.

At a glance

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849), only in conjunction with suitable testing device, e.g., Flexi Classic or Flexi Soft
- Compact size with ranges up to 35 m
- Integrated heating
- Enclosure rating IP 67
- Temperature range from -40 °C to +60 °C

Your benefits

- Easy integration due to small, compact versions with maximum range
- Directly connect to a safety controller – reducing costs
- Flexible device integration makes it possible to set up individual protective fields
- Well suited to withstand extreme ambient conditions such as heat, cold or moisture



Additional information

Detailed technical data	J-643
Ordering information	J-644
Dimensional drawings	J-644
Connection diagrams	J-645
Recommended accessories	J-646

→ www.sick.com/L27

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



J

Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Scanning range	0 m ... 25 m
Number of beams	1
Response time	0.54 ms 0.54 ms + response time of the test device
Front screen heating	- / ✓ (depending on type)

Safety-related parameters

Type	Type 2 (IEC 61496) ¹⁾
Safety integrity level	SIL1 (IEC 61508) ¹⁾ SILCL1 (EN 62061) ¹⁾
Category	Category 2 (EN ISO 13849) ¹⁾
Test rate (external test)	100 /s (EN ISO 13849) ²⁾
Maximum demand rate	≤ 60 /min (EN ISO 13849) ³⁾
Performance level	PL c (EN ISO 13849) ¹⁾
PFH _D (mean probability of a dangerous failure per hour)	1.0 x 10 ⁻⁶ (EN ISO 13849) ¹⁾
T _M (mission time)	20 years (EN ISO 13849)

¹⁾ Only in conjunction with suitable testing device, e.g., Flexi Classic or Flexi Soft.

²⁾ The test rate shall not be exceeded.

³⁾ Between two requirements on a safety-related response of the device, at least 100 internal or external tests must be carried out.

Interfaces

Connection type	Connector M12, 4-pin, straight
Diagnostic display	LED
Fieldbus, industrial network Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ¹⁾

¹⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	II (EN 50178)	
Supply voltage V _S	24 V DC (19.2 V DC ... 28.8 V DC)	
Power consumption	≤ 35 mA	≤ 25 mA
Power consumption (with heating)	≤ 50 mA	≤ 40 mA
Test input voltage	UV (sender on), 0 V DC (sender off)	–
Test duration	≤ 2.6 ms ¹⁾	–
Switching outputs	–	PNP, Q ²⁾
Switching current	–	≤ 100 mA
Switching frequency	–	≤ 1,000 Hz

¹⁾ Signal propagation time for resistive load, for test signal application (sender) and output signal reaction (receiver)

²⁾ Short-circuit protected.

Mechanical data

Design	Rectangular
Dimensions (W x H x D)	24.6 mm x 92.8 mm x 54 mm
Housing material	ABS (plastic)
Weight	100 g

Ambient data

Enclosure rating	IP 67 (EN 60529)
Ambient operating temperature	-40 °C ... +60 °C
Storage temperature	-40 °C ... +75 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Light source	LED	-
Type of light	Visible red light	-
Wave length	660 nm	-
Light spot diameter (distance)	200 mm (10 m)	-
Aperture angle/receiving angle	± 5° / ± 5°	-

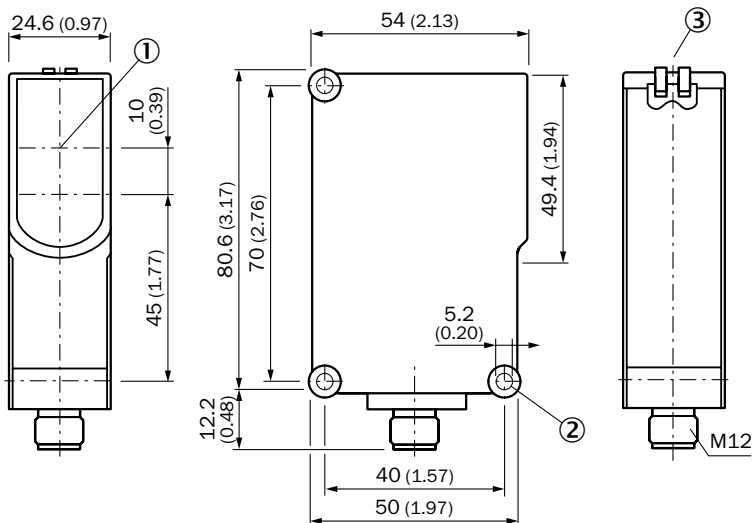
Ordering information

Items supplied L27:

- Single-beam photoelectric safety switch consisting of a sender and a receiver
- Operating instructions as hard copy

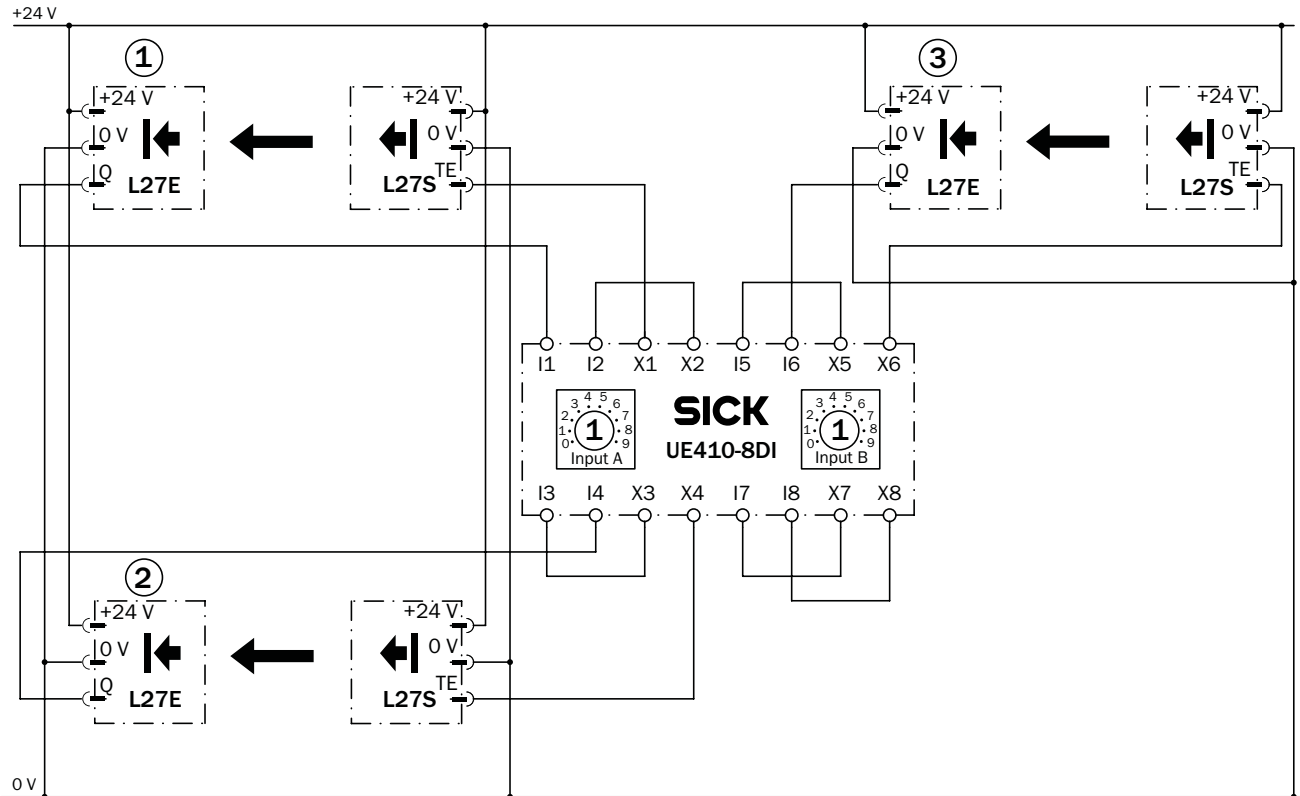
Scanning range	Housing material	Front screen heating	Sender		Receiver	
			Type	Part no.	Type	Part no.
0 m ... 25 m	ABS (plastic)	-	L27S-3D2430	2043906	L27E-3P2430	2043904
		✓	L27S-3D2450	2043877	L27E-3P2450	2043876

Dimensional drawings (Dimensions in mm (inch))



Connection diagrams

3 x L27 with a Flexi Classic UE410-8DI input expansion unit



E117083/00/2014-06-02

Task

Integration of three L2000 (L27) family single-beam photoelectric safety switches in a UE410-8DI input expansion unit.

Function

The sensors switch when the light beam is clear. When sensor 1 and sensor 2 switch, the input condition for input A is met. When sensor 3 has switched, the input condition for input B is met. If a light beam is interrupted, the related input condition (input A or input B) shuts down the UE410-8DI.

Possible faults

A UE410-8DI has two test pulse generators. This means that short-circuits between odd (X1) and evenly (X2) numbered outputs will be detected. Short-circuits between two odd (i.e., X1 and X3) or two evenly (i.e., X2 and X4) numbered outputs will not be detected. In this case, short-circuits between X1 and X4 and X1 and X6 are detected, but short-circuits between X4 and X6 are not detected.

Comments

Take note of the operating instructions for the integrated devices.

The safety-related parameters (safety integrity level and response time) are dependent on the types used.



Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
Connecting cable	2	-	→ Plug connectors and cables
External testing device, e.g., Flexi Classic or Flexi Soft	1	-	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Type	Part no.
	Mounting bracket with articulated arm for W11-2, W27, Dx50, mounting hardware included	BEF-WN-MULTI	2064469
	Mounting bracket with hinged arm, mounting hardware included	BEF-WN-W27	2009122

Dimensional drawings → [page J-660](#)

Mounting plates

Figure	Description	Type	Part no.
	Spring mounting for PSK1 deflector mirror	BEF-4AAAAHST3	2012473

Terminal and alignment brackets

Alignment brackets

Figure	Description	Type	Part no.
	Bracket for PSK1 deflector mirror	BEF-4GHAHAL1	2009292

Dimensional drawings → [page J-661](#)

Connection systems

Plug connectors and cables

Connecting cables with female connector



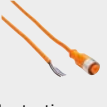



Figure	Connection type	Model	Conductor cross-section	Cable length	Type	Part no.	
 Illustration may differ	Female connector, M12, 4-pin, angled	Cable	PVC, unshielded	0.25 mm ²	2 m	DOL-1204-W02M	6009383
					5 m	DOL-1204-W05M	6009867
					10 m	DOL-1204-W10M	6010541
					15 m	DOL-1204-W15M	6036474
					20 m	DOL-1204-W20M	6033559
			PUR, halogen-free, unshielded	0.34 mm ²	5 m	DOL-1204-W05MC	6025904

Figure	Connection type		Model	Conductor cross-section	Cable length	Type	Part no.
 Illustration may differ	Female connector, M12, 4-pin, straight	Cable	PVC, unshielded	0.25 mm ²	2 m	DOL-1204-G02M	6009382
					5 m	DOL-1204-G05M	6009866
					10 m	DOL-1204-G10M	6010543
					15 m	DOL-1204-G15M	6010753
			PUR, halogen-free, unshielded	0.34 mm ²	5 m	DOL-1204-G05MC	6025901




Female connectors (ready to assemble)

Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.
	Female connector, M12, 4-pin, angled, screw-type terminals	≤ 0.75 mm ²	3 mm ... 6.5 mm	DOS-1204-W	6007303
	Female connector, M12, 4-pin, straight, screw-type terminals	≤ 0.75 mm ²	4 mm ... 6 mm	DOS-1204-G	6007302

Reflectors and optics


Deflector mirrors

- **Mirror material:** glass

Figure	Description	Items supplied	Type	Part no.
	Horizontal deflection, 75 mm x 80 mm reflector surface	Incl. mounting kit (2 x swivel mount)	PNS75-008	1026647
	Horizontal deflection, 96 mm x 124 mm reflector surface	-	PSK1	1005229
	Deflector mirror for 90° deflection, mirror surface 97 mm x 80 mm, not suitable for column mounting	Mounting hardware included	PSK45	5306053

Dimensional drawings → [page J-662](#)

Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

COMPACT TYPE FOR OPTIMUM INTEGRATION INTO SAFETY APPLICATIONS UP TO TYPE 2



Product description

The L28 single-beam photoelectric safety switch consists of a sender and receiver. The test input of the sender allows direct functional tests. Performance level PL c in acc. with EN ISO 13849-1 or Type 2 in acc. with IEC 61496 can be achieved in conjunction with a safety controller. Suitable safety controllers are, for example,

Flexi Classic or Flexi Soft. Color LEDs provide local information about the operational status. The required range can be selected from various device versions. All versions are suitable for outdoor applications and enable even complex safeguarding tasks to be accomplished by using deflector mirrors.

At a glance

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849), only in conjunction with suitable testing device, e.g., Flexi Classic or Flexi Soft
- Compact size with ranges up to 18 m
- Plastic housing, ABS
- Enclosure rating IP 67
- Temperature range from $-40\text{ }^{\circ}\text{C}$ to $+60\text{ }^{\circ}\text{C}$

Your benefits

- Easy integration due to small, compact versions with maximum range
- Directly connect to a safety controller – reducing costs
- Flexible device integration makes it possible to set up individual access protections
- Well suited to withstand extreme ambient conditions such as heat, cold or moisture



Additional information

Detailed technical data	J-649
Ordering information	J-651
Dimensional drawings	J-651
Connection diagrams	J-652
Recommended Accessories	J-653

→ www.sick.com/L28

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



J

Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Scanning range	0 m ... 12 m
Number of beams	1
Response time	0.54 ms 0.54 ms + response time of the test device

Safety-related parameters

Type	Type 2 (IEC 61496) ¹⁾
Safety integrity level	SIL1 (IEC 61508) ¹⁾ SILCL1 (EN 62061) ¹⁾
Category	Category 2 (EN ISO 13849) ¹⁾
Test rate (external test)	100 /s (EN ISO 13849) ²⁾
Maximum demand rate	≤ 60 /min (EN ISO 13849) ³⁾
Performance level	PL c (EN ISO 13849) ¹⁾
PFH _D (mean probability of a dangerous failure per hour)	1.0 x 10 ⁻⁶ (EN ISO 13849) ¹⁾
T _M (mission time)	20 years (EN ISO 13849)

¹⁾ Only in conjunction with suitable testing device, e.g., Flexi Classic or Flexi Soft.

²⁾ The test rate shall not be exceeded.

³⁾ Between two requirements on a safety-related response of the device, at least 100 internal or external tests must be carried out.

Interfaces

Connection type	Connector M12, 4-pin, straight
Diagnostic display	LED
Fieldbus, industrial network	
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT®, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ¹⁾

¹⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	II (EN 50178)	
Supply voltage V _s	24 V DC (16.8 V DC ... 28.8 V DC)	
Power consumption	≤ 35 mA	≤ 25 mA
Test input voltage	UV (sender on), 0 V DC (sender off)	–
Test duration	≤ 2 ms ¹⁾	–
Switching outputs	–	PNP, Q and Q not ²⁾
Switching current	–	≤ 100 mA
Switching frequency	–	≤ 1,000 Hz

¹⁾ Signal propagation time for resistive load, for test signal application (sender) and output signal reaction (receiver)

²⁾ Short-circuit protected.

Mechanical data

Design	Rectangular
Dimensions (W x H x D)	17.6 mm x 87.5 mm x 33.5 mm
Housing material	ABS (plastic)
Weight	40 g

Ambient data

Enclosure rating	IP 67 (EN 60529)
Ambient operating temperature	-40 °C ... +60 °C
Storage temperature	-40 °C ... +75 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)

Other information

	Sender	Receiver
Light source	LED	-
Type of light	Visible red light	-
Wave length	660 nm	-
Light spot diameter (distance)	300 mm (10 m)	-
Aperture angle/receiving angle	± 5° / ± 5°	-

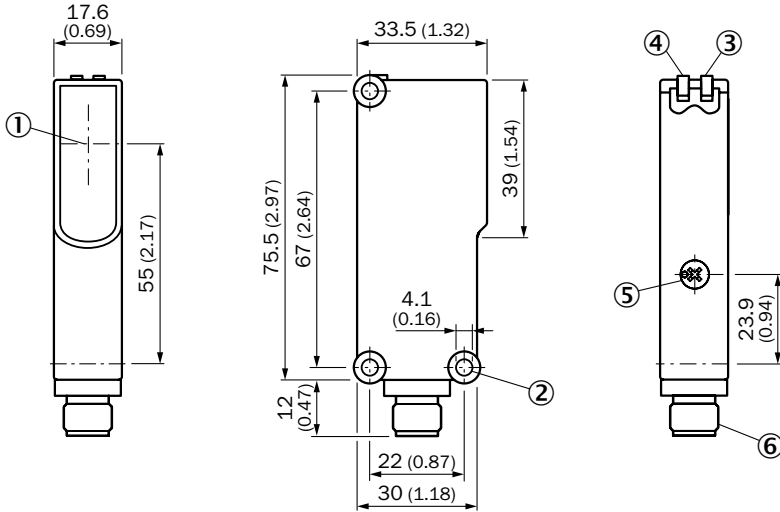
Ordering information

Items supplied L28:

- Single-beam photoelectric safety switch consisting of a sender and a receiver
- Operating instructions as hard copy

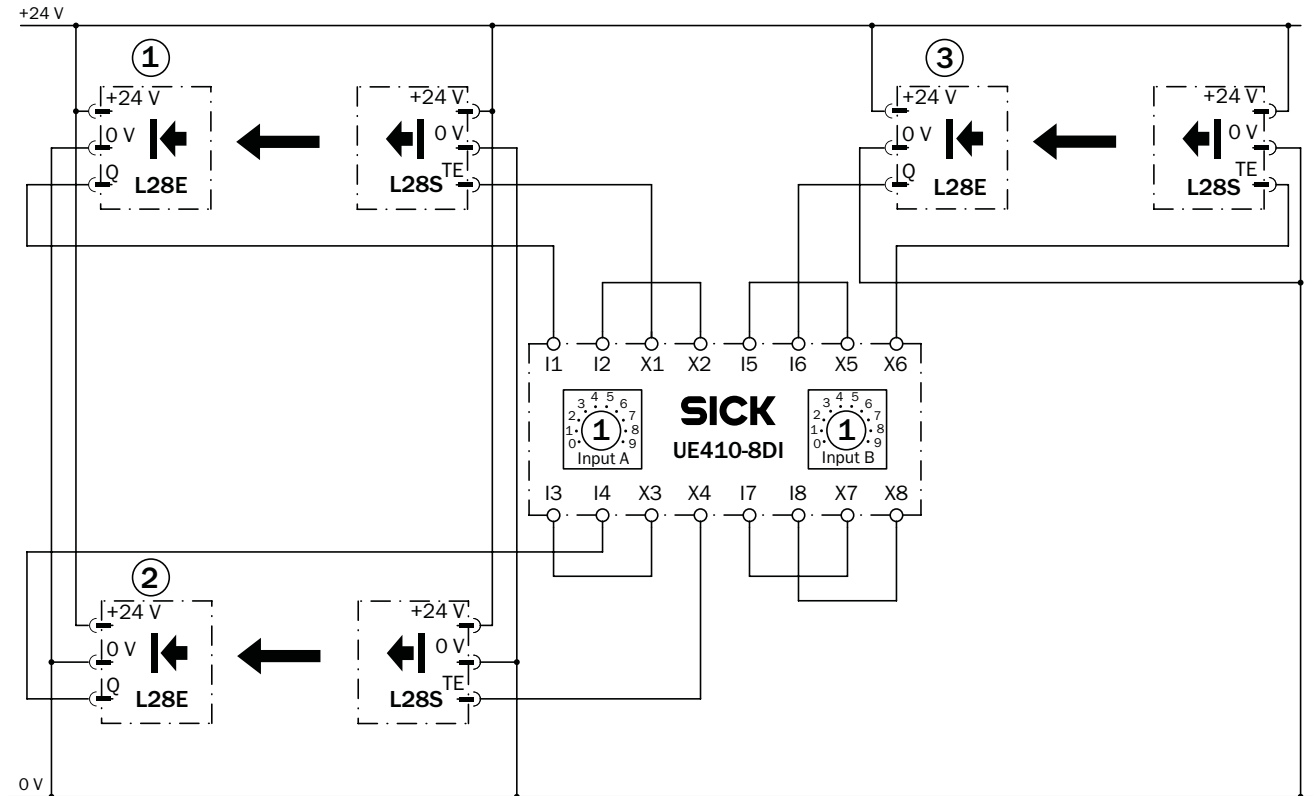
Scanning range	Housing material	Sender		Receiver	
		Type	Part no.	Type	Part no.
0 m ... 12 m	ABS (plastic)	L28S-3D2431	2044515	L28E-3P2431	2044516

Dimensional drawings (Dimensions in mm (inch))



Connection diagrams

3 x L28 with a Flexi Classic UE410-8DI input expansion unit



E117084/00/2014-06-02

Task

Integration of three L2000 (L28) family single-beam photoelectric safety switches in a UE410-8DI input expansion unit.

Function

The sensors switch when the light beam is clear. When sensor 1 and sensor 2 switch, the input condition for input A is met. If sensor 3 has switched, the input condition for input B is met. If a light beam is interrupted, the related input condition (input A or input B) shuts down the UE410-8DI.

Possible faults

A UE410-8DI has two test pulse generators. This means that short-circuits between odd (X1) and evenly (X2) numbered outputs will be detected. Short-circuits between two odd (i.e., X1 and X3) or two evenly (i.e., X2 and X4) numbered outputs will not be detected. In this case, short-circuits between X1 and X4 and X1 and X6 are detected, but short-circuits between X4 and X6 are not detected.

Comments

Take note of the operating instructions for the integrated devices.

The safety-related parameters (safety integrity level and response time) are dependent on the types used.

Accessories required for commissioning


Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
Connecting cable	2	-	→ Plug connectors and cables
External testing device, e.g., Flexi Classic or Flexi Soft	1	-	-
Operating instructions	1	✓	-

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Type	Part no.
	Mounting bracket with hinged arm mounting hardware included	BEF-WN-W18	2009317

Dimensional drawings → [page J-660](#)

Mounting plates

Figure	Description	Type	Part no.
	Spring mounting for PSK1 deflector mirror	BEF-4AAAAHST3	2012473

Terminal and alignment brackets

Alignment brackets





Figure	Description	Type	Part no.
	Bracket for PSK1 deflector mirror	BEF-4GHAHAL1	2009292

Dimensional drawings → [page J-661](#)



Connection systems

Plug connectors and cables

Connecting cables with female connector

Figure	Connection type	Model	Conductor cross-section	Cable length	Type	Part no.
 Illustration may differ	Female connector, M12, 4-pin, angled	Cable	PVC, unshielded 0.25 mm ²	2 m	DOL-1204-W02M	6009383
				5 m	DOL-1204-W05M	6009867
				10 m	DOL-1204-W10M	6010541
				15 m	DOL-1204-W15M	6036474
				20 m	DOL-1204-W20M	6033559
			PUR, halogen-free, unshielded 0.34 mm ²	5 m	DOL-1204-W05MC	6025904
 Illustration may differ	Female connector, M12, 4-pin, straight	Cable	PVC, unshielded 0.25 mm ²	2 m	DOL-1204-G02M	6009382
				5 m	DOL-1204-G05M	6009866
				10 m	DOL-1204-G10M	6010543
				15 m	DOL-1204-G15M	6010753
			PUR, halogen-free, unshielded 0.34 mm ²	5 m	DOL-1204-G05MC	6025901


Female connectors (ready to assemble)

Figure	Connection type	Permitted cross-section	Permitted cable diameter	Type	Part no.
	Female connector, M12, 4-pin, angled, screw-type terminals	≤ 0.75 mm ²	3 mm ... 6.5 mm	DOS-1204-W	6007303
	Female connector, M12, 4-pin, straight, screw-type terminals	≤ 0.75 mm ²	4 mm ... 6 mm	DOS-1204-G	6007302

Reflectors and optics


Deflector mirrors

- **Mirror material:** glass

Figure	Description	Items supplied	Type	Part no.
	Horizontal deflection, 75 mm x 80 mm reflector surface	Incl. mounting kit (2 x swivel mount)	PNS75-008	1026647
	Horizontal deflection, 96 mm x 124 mm reflector surface	-	PSK1	1005229
	Deflector mirror for 90° deflection, mirror surface 97 mm x 80 mm, not suitable for column mounting	Mounting hardware included	PSK45	5306053

Dimensional drawings → [page J-662](#)

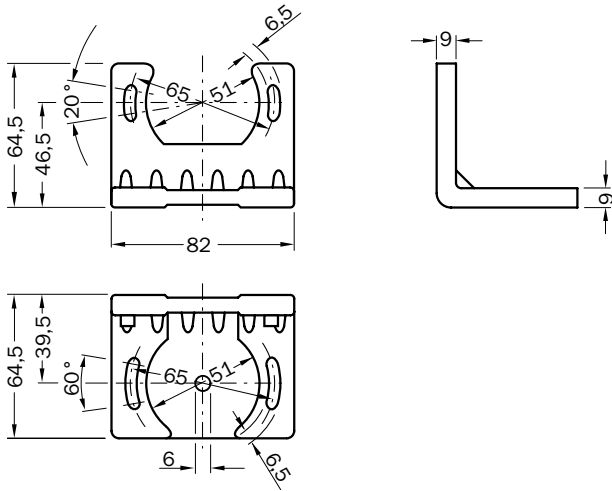
Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control – safe control solutions from SICK satisfy these criteria.	→ page L-690

WSU/WEU (Dimensions in mm (inch))

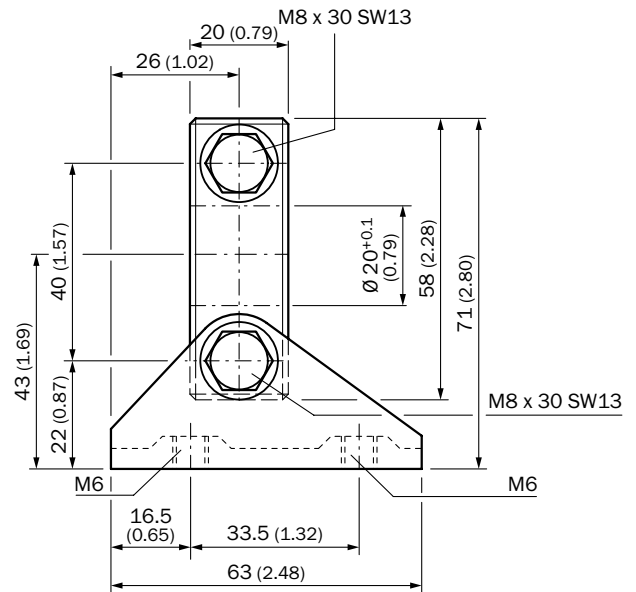
Mounting brackets and mounting plates

BEF-4WNAEFAL1 (2007900)



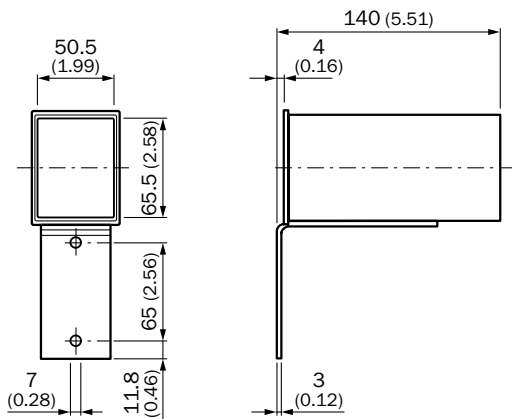
Terminal and alignment brackets

BEF-4GHAHAL1 (2009292)

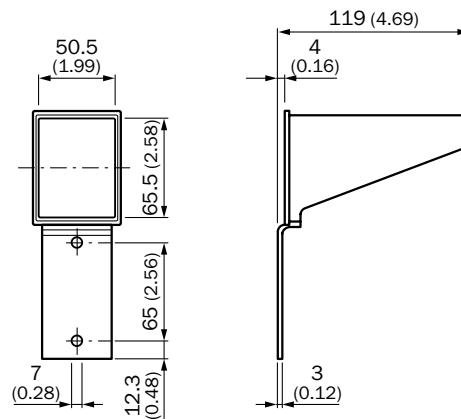


Device protection (mechanical)

Dust protection tube (1003556)

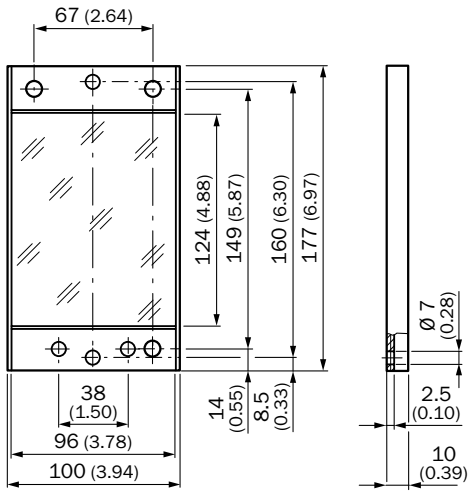


Snow protection tube (1003619)

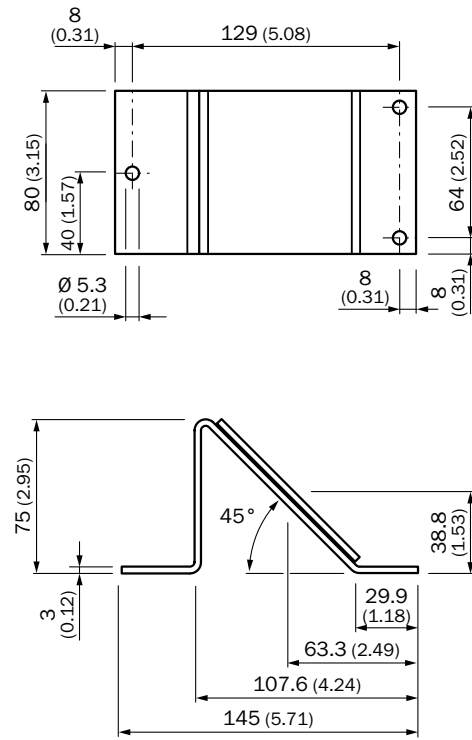


Deflector mirrors

PSK1 (1005229)



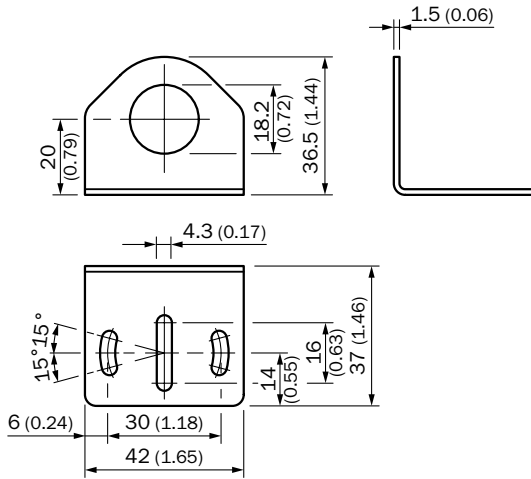
PSK45 (5306053)



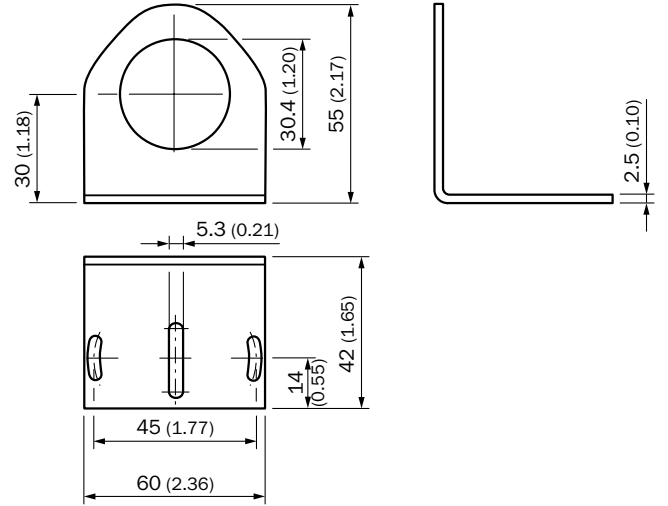
L4000 (Dimensions in mm (inch))

Mounting brackets and mounting plates

BEF-WN-M18 (5308446)

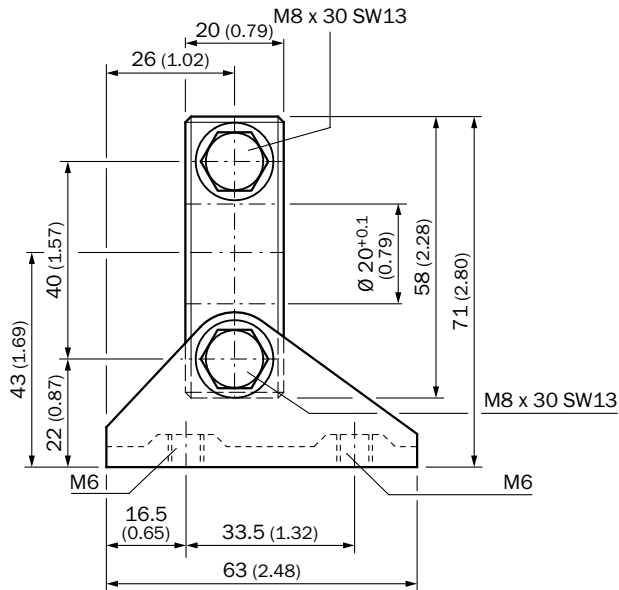


BEF-WN-M30 (5308445)

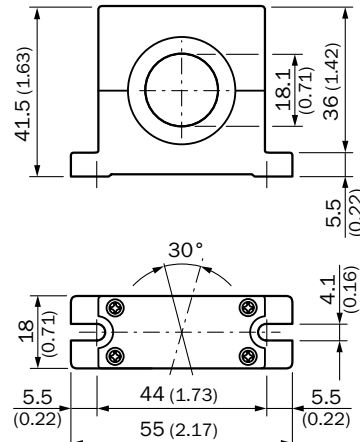


Terminal and alignment brackets

BEF-4GHAHAL1 (2009292)

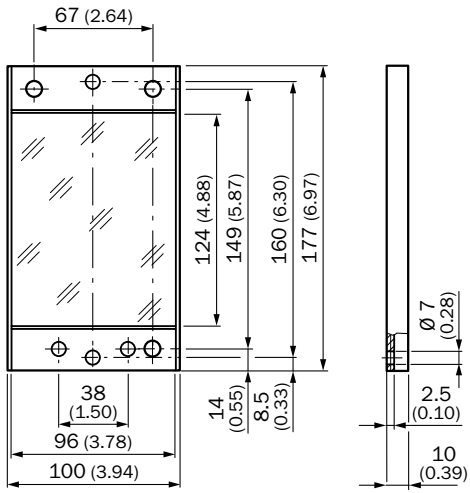


BEF-HA-M18R (5313513)

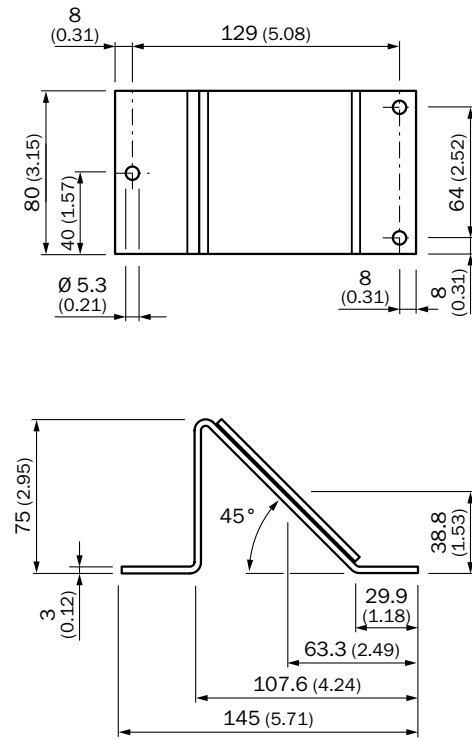


Deflector mirrors

PSK1 (1005229)



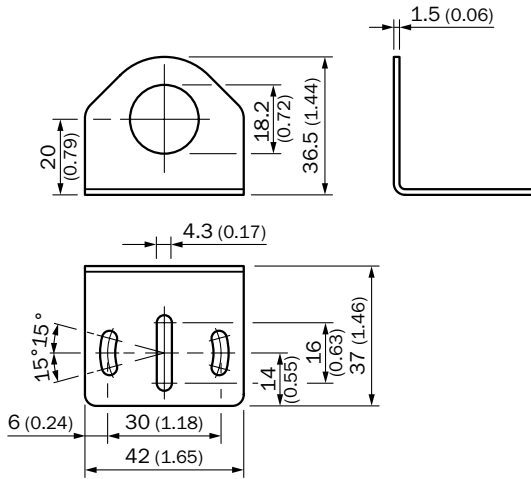
PSK45 (5306053)



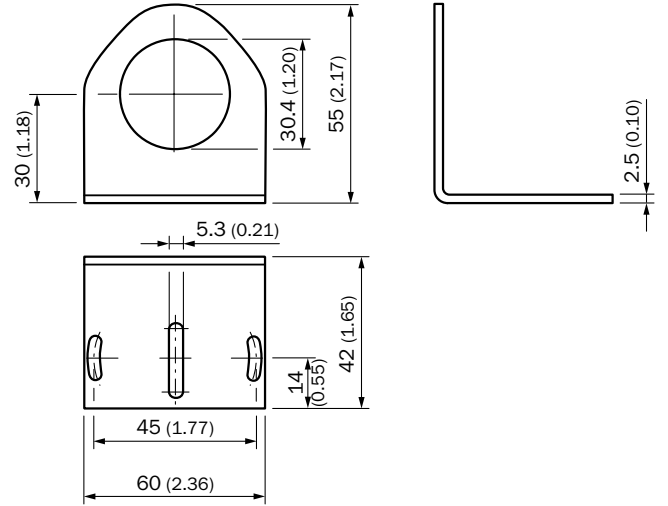
L2000 (Dimensions in mm (inch))

Mounting brackets and mounting plates

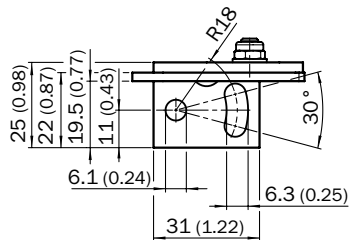
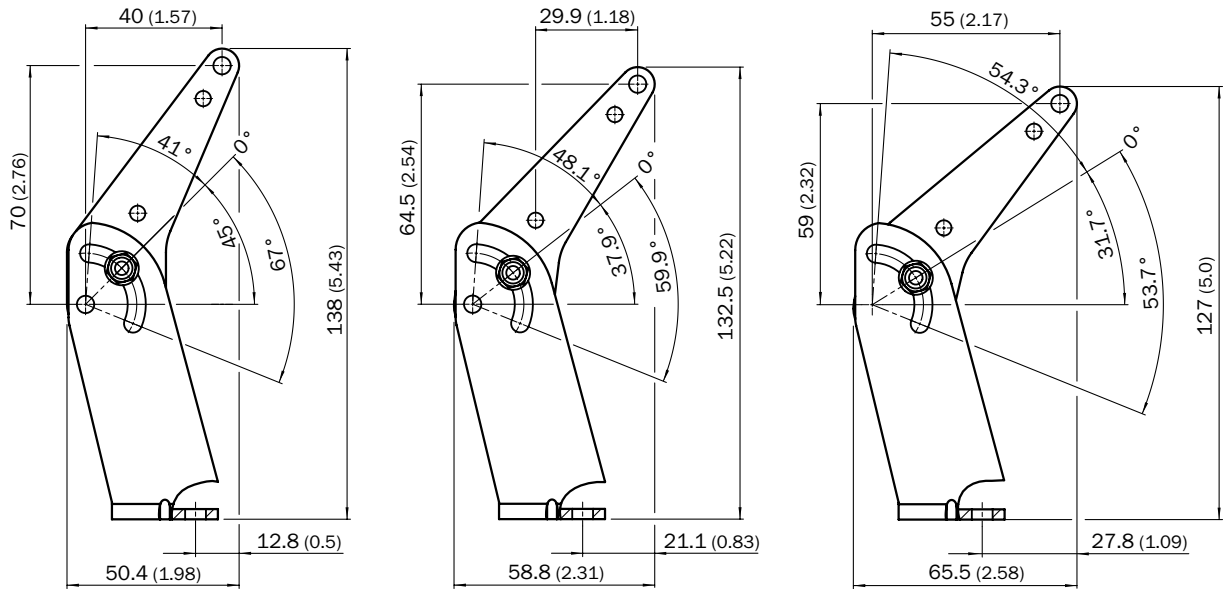
BEF-WN-M18 (5308446)



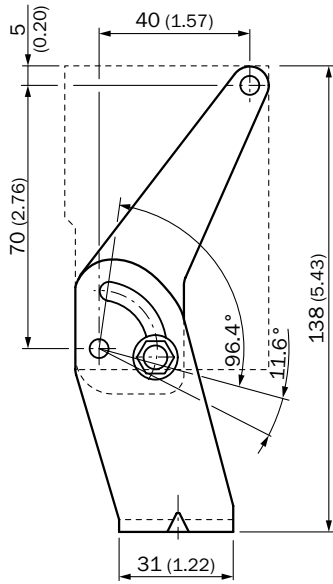
BEF-WN-M30 (5308445)



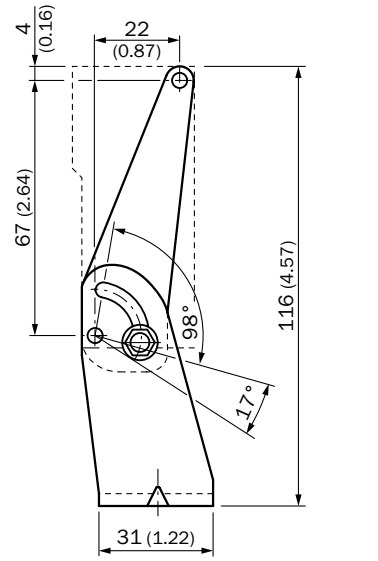
BEF-WN-MULTI (2064469)



BEF-WN-W27 (2009122)

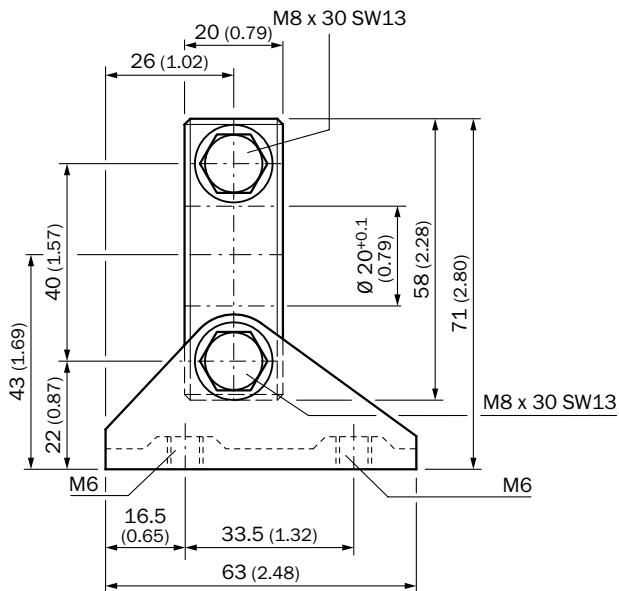


BEF-WN-W18 (2009317)

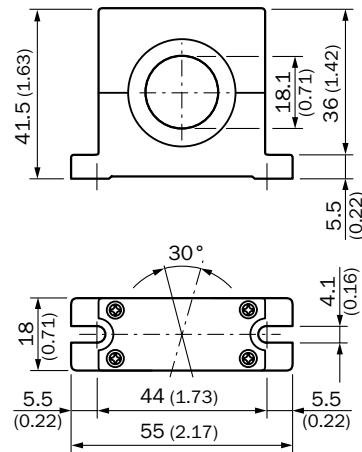


Terminal and alignment brackets

BEF-4GHAHAL1 (2009292)

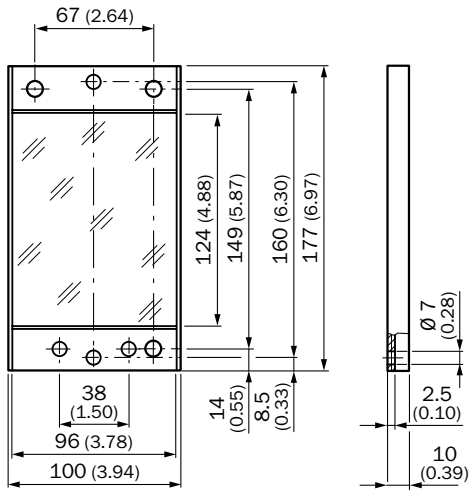


BEF-HA-M18R (5313513)

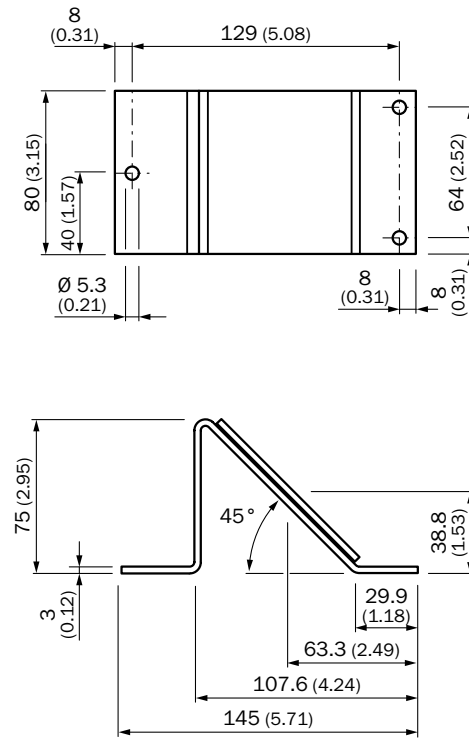


Deflector mirrors

PSK1 (1005229)



PSK45 (5306053)





MIRROR COLUMNS AND DEVICE COLUMNS



Stand-alone mounting solution for access protection

Free choice of space for the safety: Mirror and device columns from SICK are used in applications where it is difficult to mount optoelectronic protective devices. Used together, mirror and device columns are the ideal solution to protect multi-sided areas in machining centers or material transfer applications. The optoelectronic devices can be mounted to freestanding device columns to ensure hazardous areas are properly safeguarded.




Mirror columns are used in conjunction with device columns to deflect the beam from the sender to the receiver. Since multiple sides of a machine can be protected with a single pair of devices, the overall wiring is reduced. In addition to reliable device protection, the device columns have two external mounting grooves, which enable muting arms to be installed.

Your benefits



- Sturdy, torsion-free device protection prevents damage and reduces costs
- Simple, convenient installation of additional accessories due to the external mounting grooves on the device column
- Multi-sided protection with deflector mirror eliminates additional active devices, which reduces cabling effort and costs
- Increased productivity due to unhindered access to the system while maintaining protection
- Separate adjustable mirrors simplify commissioning

K



	Product family overviewK-666
	Mirror columnsK-668
	Mirror columns with protective field height mirror	K-668
	Mirror columns with separate mirrors	K-672
	Device columnsK-678
	Device columns with external grooves.	K-678
	Device columns for outdoor use	K-684
	Dimensional drawings for accessoriesK-688
	Mirror columns	K-688
	Device columns	K-688

PRODUCT FAMILY OVERVIEW

			
	Mirror columns with protective field height mirror	Mirror columns with separate mirrors	
	Smart multi-sided protection of the area around hazardous points	Smart multi-sided protection of the area around hazardous points	

Technical data overview			
Model	Mirror columns with protective field height mirror	Mirror columns with up to 4 separate adjustable mirrors	
Suitable for	Safety light curtains Multiple light beam safety devices	Multiple light beam safety devices	
Suitable for protective field height	150 mm ... 1,800 mm	-	
Suitable for number of beams	Any	2 / 3 / 4	
Suitable for beam separation	Any	300 mm ... 600 mm	
Mirror length	1,082 mm ... 1,832 mm	90 mm	
Mirror width	125 mm	100 mm	
Column height	1,281.5 mm ... 2,216.5 mm	985 mm / 1,185 mm / 1,285 mm	

At a glance			
	<ul style="list-style-type: none"> • Free-standing mounting solution • Compact, rugged design and extremely high stability • Simple mounting and adjustment • Large reflector surface for efficient multi-sided protection via beam deflection and high availability • Mirror columns in various lengths • With a continuous mirror for safety light curtains and for multiple light beam safety devices with any number of beams 	<ul style="list-style-type: none"> • Freestanding mounting solution • Compact, rugged design with high reliability • Easy mounting and adjustment • Large mirror surface for efficient multi-sided protection via beam deflection • Mirror columns in various lengths • With individual mirrors for multiple light beam safety devices 	
Detailed information	→ K-668	→ K-672	





Device columns with external grooves

Smart solutions for access and area protection



Device columns for outdoor use

Heatable front screen for a clear view

Device columns with two external mounting grooves

Safety light curtains
Multiple light beam safety devices
150 mm ... 1,800 mm

Any
Any

-
-
985 mm ... 2,420 mm

Device columns with front screen heating for outdoor use

Multiple light beam safety devices

-

2 / 3
500 mm / 400 mm

-
-
1,223 mm

- Free-standing mounting solution
- Compact, rugged design and extremely high stability
- Simple mounting and adjustment
- Device protection against external influences
- Universal application for:
- Multiple light beam safety devices
- Safety light curtains

→ K-678

- Use of heatable front screen in outdoor areas
- Freestanding mounting solution
- Compact, rugged design with high reliability
- Easy mounting and adjustment
- Device protection against external influences
- Applicable for M4000 multiple light beam safety devices

→ K-684

SMART MULTI-SIDED PROTECTION OF THE AREA AROUND HAZARDOUS POINTS



Product description

Free choice of location ensures safety: Mirror columns from SICK are used in areas in which multi-sided protection of hazardous points, such as machining centers, is required. The right solution is to combine multiple light beam safety devices or safety light curtains with mirror columns to deflect the light beam. Several sides of a machine can be

protected with just one pair of sensors, which reduces wiring effort significantly. It is easy to adjust the deflector mirrors, which are mounted in stable columns. Unimpeded access for feeding operations and tool and program changes is another advantage compared to a mechanical fence and results in higher productivity.

At a glance

- Free-standing mounting solution
- Compact, rugged design and extremely high stability
- Simple mounting and adjustment
- Large reflector surface for efficient multi-sided protection via beam deflection and high availability
- Mirror columns in various lengths
- With a continuous mirror for safety light curtains and for multiple light beam safety devices with any number of beams

Your benefits

- Multi-sided protection using deflector mirrors eliminates additional active devices, which reduces cabling effort and costs
- Increased productivity due to unhindered access to the system while maintaining protection

K

→ www.sick.com/Mirror_columns_with_protective_field_height_mirror

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Model	Mirror columns with protective field height mirror
Type of diversion	Horizontal
Suitable for	Safety light curtains Multiple light beam safety devices
Suitable for protective field height	1,050 mm ... 1,800 mm (depending on type)
Suitable for number of beams	Any
Suitable for beam separation	Any

Mechanical data

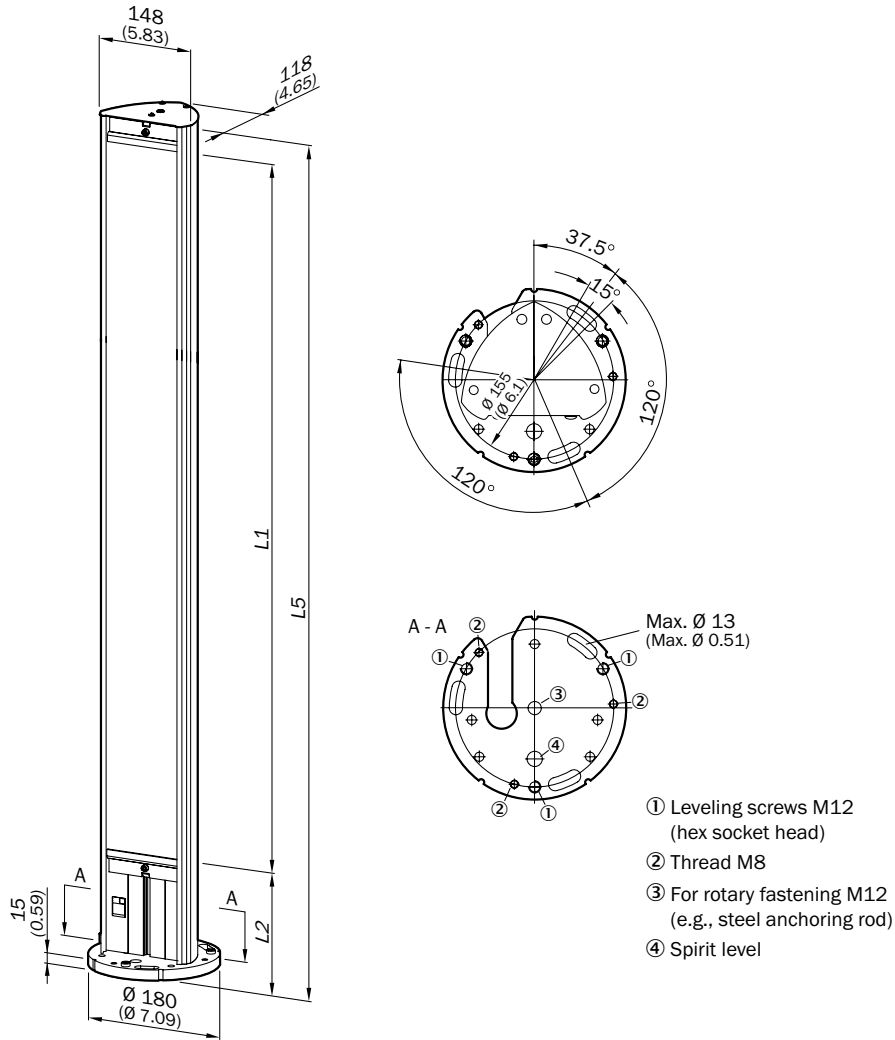
Number of mirrors	1
Mirror length	1,082 mm ... 1,832 mm (depending on type)
Mirror width	125 mm
Column height	1,281.5 mm ... 2,216.5 mm (depending on type)

Ordering information

Suitable for protective field height	Mirror length	Column height	Type	Part no.
≤ 1,050 mm	1,082 mm	1,281.5 mm	PM3C13-00030000	1043453
≤ 1,500 mm	1,532 mm	1,716.5 mm	PM3C17-00030000	1043454
≤ 1,650 mm	1,682 mm	2,016.5 mm	PM3C19-00030000	1043455
≤ 1,800 mm	1,832 mm	2,216.5 mm	PM3C20-00030000	1043456

Note: The use of deflector mirrors reduce the scanning range of the opto-electronic protective device used. See corresponding operating instructions of the safety light curtain or the multiple light beam safety device.

Dimensional drawing (Dimensions in mm (inch))



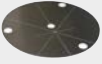
Suitable for protective field height	L1	L2	L5	Part no.
≤ 1,050 (41.34)	1,082 (42.60)	160 (6.30)	1,281.5 (50.45)	1043453
≤ 1,350 (53.15)	1,382 (54.41)	145 (5.71)	1,569 (61.77)	1077525
≤ 1,500 (59.06)	1,532 (60.31)	145 (5.71)	1,716.5 (67.58)	1043454
≤ 1,650 (64.96)	1,682 (66.22)	295 (11.61)	2,016.5 (79.39)	1043455
≤ 1,800 (70.87)	1,832 (72.13)	345 (13.58)	2,216.5 (87.26)	1043456



Recommended accessories**Mounting systems**


Mounting brackets and mounting plates

Mounting plates

Figure	Description	Type	Part no.
	Adjusting plate for floor mounting of device columns, height 3 mm	Adjusting plate	4031053


Dimensional drawings → [page K-688](#)**Other mounting accessories**

Others

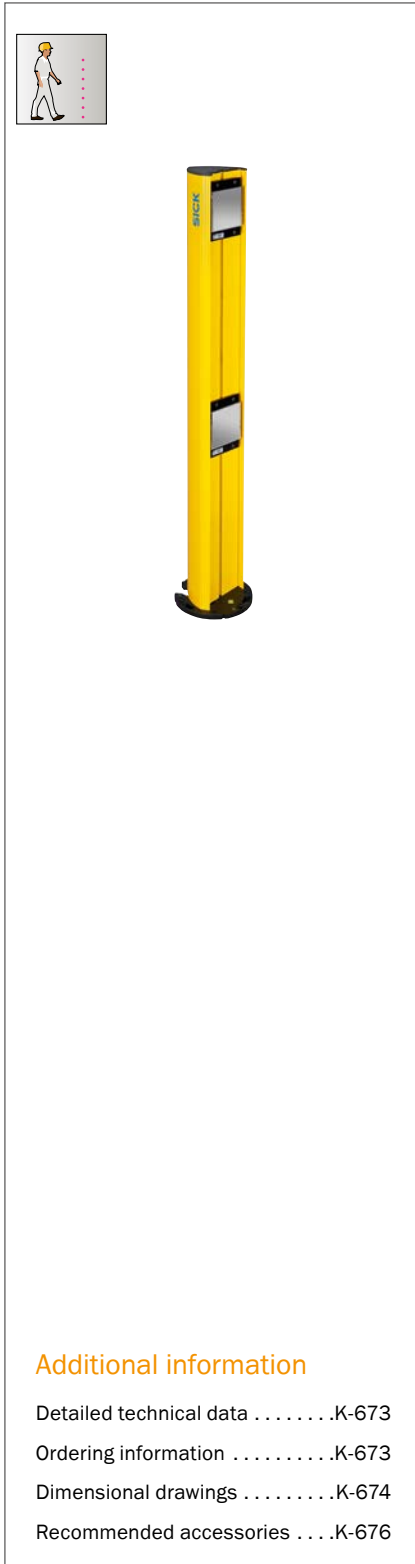
Figure	Description	Packing unit	Type	Part no.
	M10 steel wall plug, for floor mounting the compensation plate for device columns	1 piece	Steel plugs	5308961

Dimensional drawings → [page K-688](#)**Reflectors and optics**

Mirror adapters

Figure	Description	Items supplied	Type	Part no.
	For back area monitoring. Suitable for all mirror columns PM3Sxx-xxxxxxx and PM3Cxx-xxxxxxx.	Inclusive spacing bolts	Rear area reflector	2034938

SMART MULTI-SIDED PROTECTION OF THE AREA AROUND HAZARDOUS POINTS



Product description

Free choice of space for the safety: Mirror columns from SICK are used in applications where protection of hazardous points, e.g. machining centers, on several sides is required. The combination of multiple light beam safety devices with mirror columns used for beam deflection is the right solution here. Since multiple sides of a machine

can be protected with a single pair of sensors devices, the overall wiring is reduced. The deflector mirrors can be easily adjusted in the rugged columns. Unhindered access for loading and changing tools and programs is a further advantage of using deflector mirrors over mechanical fencing and leads to increased productivity.

At a glance

- Freestanding mounting solution
- Compact, rugged design with high reliability
- Easy mounting and adjustment
- Large mirror surface for efficient multi-sided protection via beam deflection
- Mirror columns in various lengths
- With individual mirrors for multiple light beam safety devices

Your benefits

- Multi-sided protection using deflector mirrors eliminates additional active devices, which reduces cabling effort and costs
- Increased productivity due to unhindered access to the system while maintaining protection
- Separate adjustable mirrors simplify commissioning

Additional information

- Detailed technical dataK-673
- Ordering informationK-673
- Dimensional drawingsK-674
- Recommended accessories . . .K-676

→ www.sick.com/Mirror_columns_with_separate_mirrors

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



K

Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Model	Mirror columns with up to 4 separate adjustable mirrors
Suitable for	Multiple light beam safety devices
Suitable for number of beams	2 / 3 / 4 (depending on type)
Suitable for beam separation	300 mm ... 600 mm (depending on type)
Type of diversion	Horizontal / vertical (depending on type)

Mechanical data

Number of mirrors	2 / 3 / 4 (depending on type)
Mirror length	90 mm
Mirror width	100 mm
Column height	985 mm / 1,185 mm / 1,285 mm (depending on type)
Height of first beam above ground	400 mm / 300 mm (depending on type)

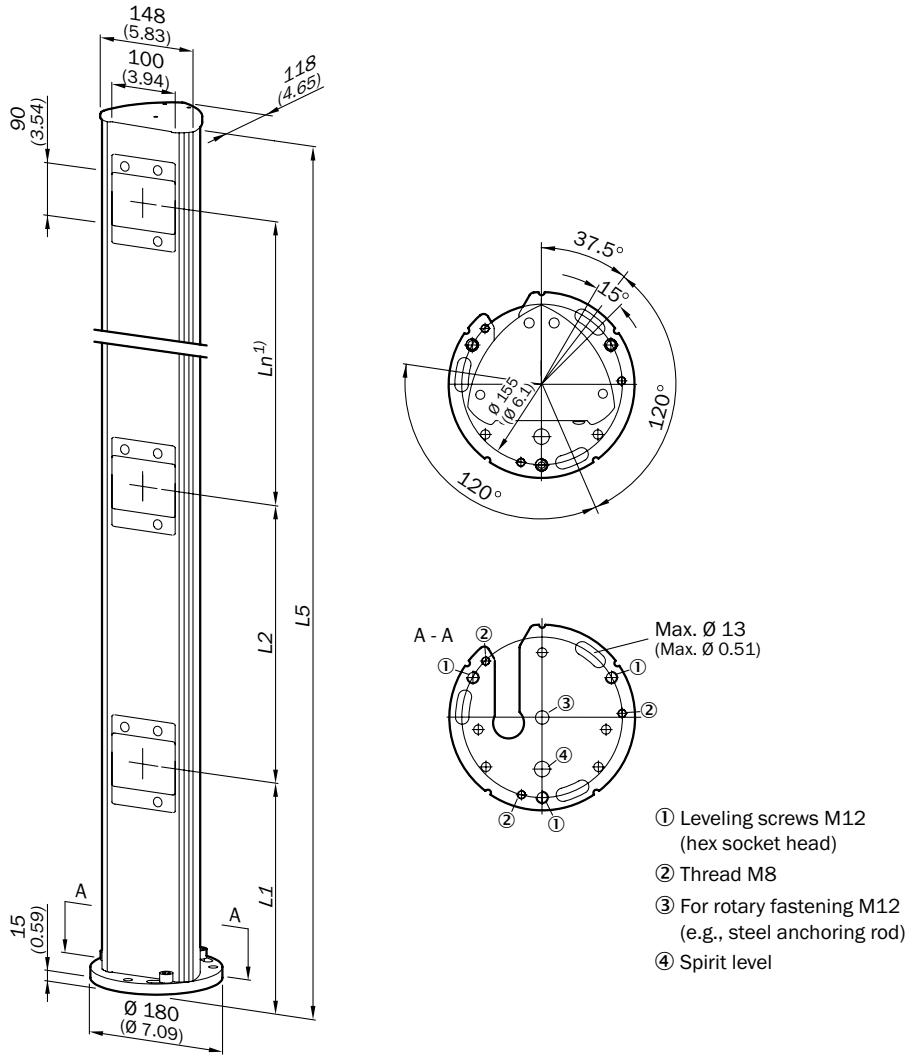
Ordering information

Type of diversion	Suitable for	Suitable for number of beams	Suitable for beam separation	Column height	Type	Part no.
Horizontal	M40x-0250xxxxx M20x-02x05xxxx	2	500 mm	985 mm	PM3S96-00240020	1040619
	M40x-0260xxxxx	2	600 mm	985 mm	PM3S96-00230060	1040620
	M40x-0340xxxxx M20x-03x40x1xx	3	400 mm	1,185 mm	PM3S11-00330030	1040625
	M40x-0345xxxxx	3	450 mm	1,285 mm	PM3S13-00330050	1040624
	M40x-0430xxxxx M20x-04x30xxxx	4	300 mm	1,285 mm	PM3S13-00430040	1040626
Vertical	M40Z-02500xxxx M40Z-02501xxxx	2	500 mm	985 mm	PM3Z96-00240020	1041917

Note: The use of deflector mirrors reduce the scanning range of the opto-electronic protective device used. See corresponding operating instructions of the multiple light beam safety device.

Dimensional drawings (Dimensions in mm (inch))

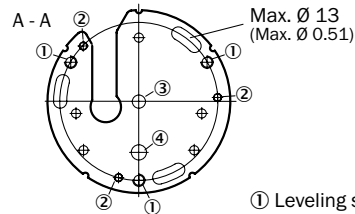
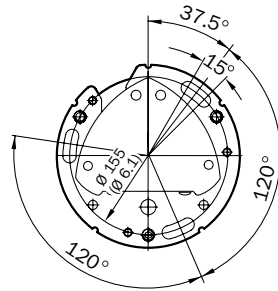
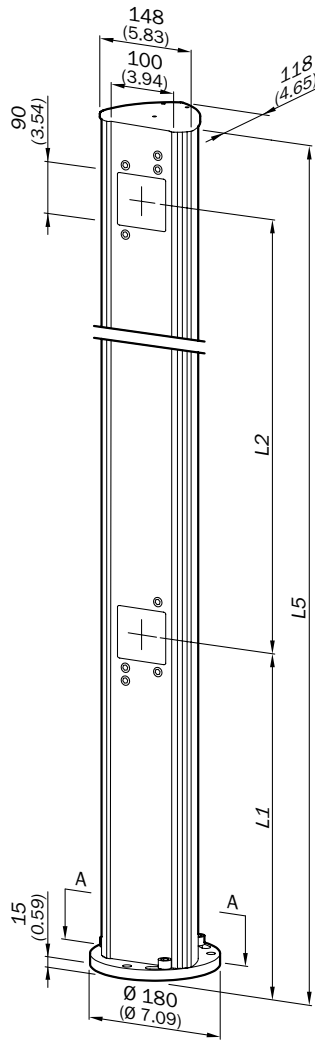
Horizontal deflection



Suitable for number of beams	L1	L2	L3	L4	L5	Part no.
2	400 (15.75)	500 (19.69)	-	-	985 (38.78)	1040619
2	300 (11.81)	600 (23.62)	-	-	985 (38.78)	1040620
3	300 (11.81)	400 (15.75)	400 (15.75)	-	1,185 (46.65)	1040625
3	300 (11.81)	450 (17.72)	450 (17.72)	-	1,285 (50.59)	1040624
4	300 (11.81)	300 (11.81)	300 (11.81)	300 (11.81)	1,285 (50.59)	1040626



Vertical deflection



- ① Leveling screws M12 (hex socket head)
- ② Thread M8
- ③ For rotary fastening M12 (e.g., steel anchoring rod)
- ④ Spirit level

Suitable for number of beams	L1	L2	L5	Part no.
2	400 (15.75)	500 (19.69)	985 (38.78)	1041917

Recommended accessories

Mounting systems

Mounting brackets and mounting plates


Mounting plates

Figure	Description	Type	Part no.
	Adjusting plate for floor mounting of device columns, height 3 mm	Adjusting plate	4031053

Dimensional drawings → [page K-688](#)

Other mounting accessories

Others

Figure	Description	Packing unit	Type	Part no.
	M10 steel wall plug, for floor mounting the compensation plate for device columns	1 piece	Steel plugs	5308961

Dimensional drawings → [page K-688](#)

Reflectors and optics

Mirror adapters

Figure	Description	Items supplied	Type	Part no.
	For back area monitoring. Suitable for all mirror columns PM3Sxx-xxxxxxx and PM3Cxx-xxxxxxx.	Inclusive spacing bolts	Rear area reflector	2034938



SMART SOLUTIONS FOR ACCESS AND AREA PROTECTION



Product description

Free choice of location ensures safety: Device columns from SICK are used wherever there are no mounting options for opto-electronic protective devices. The opto-electronic protective devices are mounted on free-standing device columns to provide protection at machining centers and material locks. For locks that convey material automatically, a muting system is frequently used for protection. The stable device columns

with two grooves on the outside, working together with mounting arms, brackets and protective plates, ensure flexible and straightforward attachment of the muting sensors. Pre-mounted kits significantly reduce order volume and the time needed for on-site installation. Suitable accessories such as compensating plates and steel anchors simplify installation in the floor and alignment of the device columns.

At a glance

- Free-standing mounting solution
- Compact, rugged design and extremely high stability
- Simple mounting and adjustment
- Device protection against external influences
- Universal application for multiple light beam safety devices and safety light curtains

Your benefits

- Sturdy, torsion-free device protection prevents damage and reduces costs
- Simple, convenient installation of additional accessories due to the external mounting grooves on the device column
- Increased productivity due to unhindered access to the system while maintaining protection

K

→ www.sick.com/Device_columns_with_external_grooves

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Model	Device columns with two external mounting grooves
Suitable for	Safety light curtains Multiple light beam safety devices
Suitable for protective field height	
C2000, C4000, M4000 Curtain	600 mm ... 1,800 mm (depending on type)
deTec2, deTec4	900 mm ... 2,100 mm (depending on type)
Suitable for number of beams	Any
Suitable for beam separation	Any

Mechanical data

Column height	985 mm ... 2,420 mm (depending on type)
Max. installation length	965 mm ... 2,400 mm (depending on type)

Ordering information

Device columns for safety light curtains

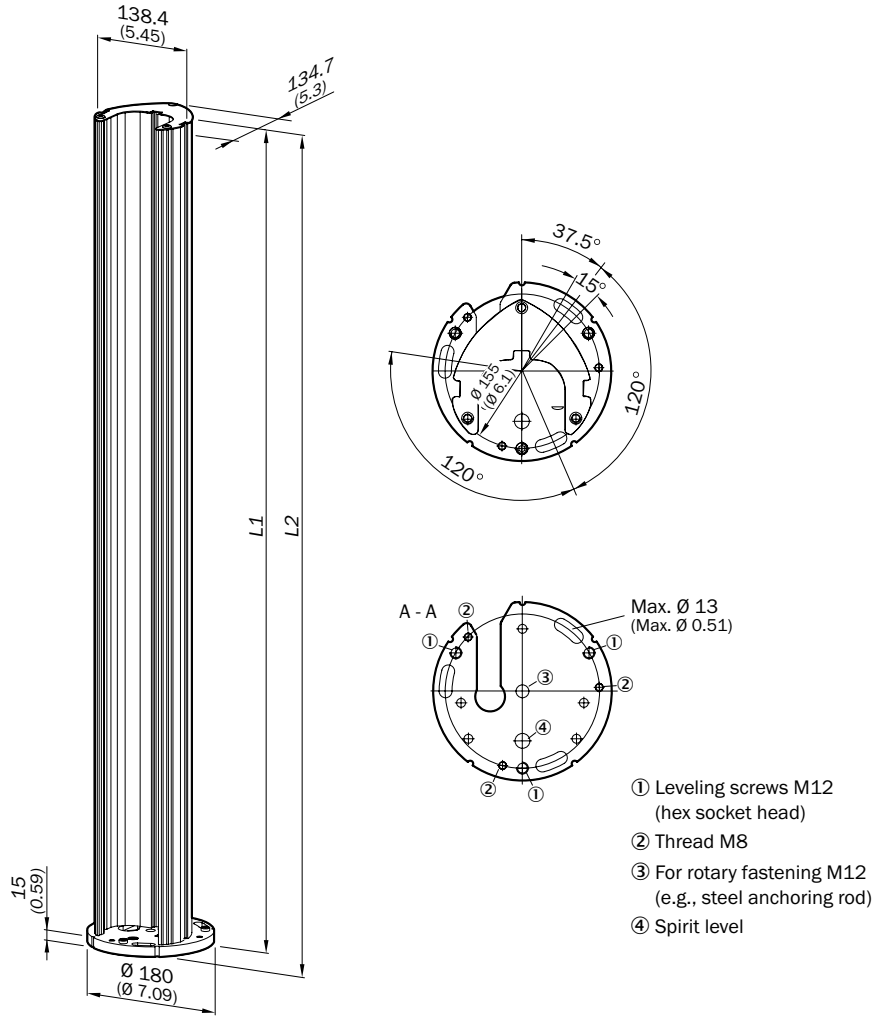
Suitable for protective field height		Max. installation length	Column height	Type	Part no.
C2000, C4000, M4000 Curtain	deTec2, deTec4				
≤ 600 mm	≤ 900 mm	965 mm	985 mm	PU3H96-00000000	2045490
≤ 900 mm	≤ 1,050 mm	1,165 mm	1,185 mm	PU3H11-00000000	2045641
≤ 1,050 mm	≤ 1,200 mm	1,265 mm	1,285 mm	PU3H13-00000000	2045642
≤ 1,350 mm	≤ 1,500 mm	1,550 mm	1,570 mm	PU3H15-00000000	2068813
	≤ 1,650 mm	1,720 mm	1,740 mm	PU3H17-00000000	2045643
≤ 1,650 mm	≤ 1,950 mm	2,020 mm	2,040 mm	PU3H21-00000000	2045644
≤ 1,800 mm	≤ 2,100 mm	2,250 mm	2,270 mm	PU3H22-00000000	2045645
		2,400 mm	2,420 mm	PU3H24-00000000	2045646

Device columns for multiple light beam safety devices

Suitable for number of beams	Height of first beam above ground	Max. installation length	Column height	Type	Part no.
2	400 mm	965 mm	985 mm	PU3H96-00000000	2045490
3	300 mm	1,165 mm	1,185 mm	PU3H11-00000000	2045641
4	300 mm	1,265 mm	1,285 mm	PU3H13-00000000	2045642
-	-	1,550 mm	1,570 mm	PU3H15-00000000	2068813
		1,720 mm	1,740 mm	PU3H17-00000000	2045643
-	-	2,020 mm	2,040 mm	PU3H21-00000000	2045644
-	-	2,250 mm	2,270 mm	PU3H22-00000000	2045645
		2,400 mm	2,420 mm	PU3H24-00000000	2045646



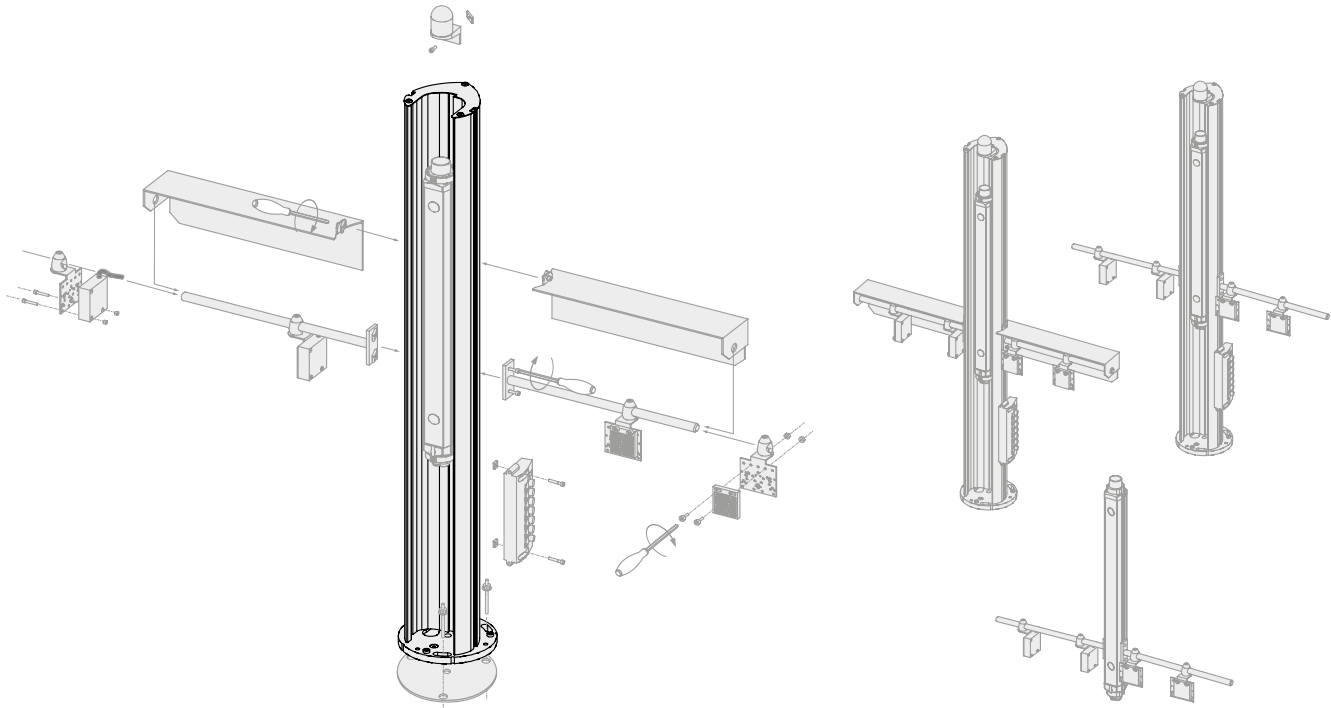
Dimensional drawing (Dimensions in mm (inch))



Suitable for protective field height		Suitable for number of beams	L1	L2	Part no.
C2000, C4000, M4000 Curtain	deTec2, deTec4				
≤ 600 (23.62)	≤ 900 (35.43)	2	965 (37.99)	985 (38.78)	2045490
≤ 900 (35.43)	≤ 1,050 (41.34)	3	1,165 (45.87)	1,185 (46.65)	2045641
≤ 1,050 (41.34)	≤ 1,200 (47.24)	4	1,265 (49.80)	1,285 (50.59)	2045642
≤ 1,350 (53.15)	≤ 1,500 (59.06)	-	1,550 (61.02)	1,570 (61.81)	2068813
≤ 1,350 (53.15)	≤ 1,650 (64.96)	-	1,720 (67.72)	1,740 (68.50)	2045643
≤ 1,650 (64.96)	≤ 1,950 (76.77)	-	2,020 (79.53)	2,040 (80.31)	2045644
≤ 1,800 (70.87)	≤ 2,100 (82.68)	-	2,250 (88.58)	2,270 (89.37)	2045645
≤ 1,800 (70.87)	≤ 2,100 (82.68)	-	2,400 (94.49)	2,420 (95.28)	2045646



Overall layout of the device columns with muting accessories

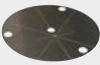


Recommended accessories

Mounting systems

Mounting brackets and mounting plates



Mounting plates

Figure	Description	Type	Part no.
	Adjusting plate for floor mounting of device columns, height 3 mm	Adjusting plate	4031053

Dimensional drawings → [page K-688](#)



Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.
	FlexFix brackets including alignment tool and mounting material suitable for fastening to device columns	2 pieces	BEF-1SHABBKU2	2073543
	Omega bracket (24 mm), mounting position: face side	2 pieces	BEF-2SMKEAAL2	2045884
	Omega bracket (30 mm), mounting position: face side	2 pieces	BEF-2SMMEAAL2	2045883
	Omega bracket (49 mm), mounting position: face side	2 pieces	BEF-2SMGEAAL2	2045736

Dimensional drawings → [page K-688](#)


Terminal brackets

Figure	Description	Type	Part no.
	Round steel arm 400 mm, for mounting universal brackets, mounting hardware and sliding nuts included	Round steel arm	2045879
	Universal bracket for round steel arm 400 mm, for mounting sensors or reflectors	Universal bracket	2044953

Dimensional drawings → [page K-689](#)

Device protection (mechanical)


Protective housings and protective pipes

Figure	Description	Type	Part no.
	Guard plate for round steel arm, right, mounting hardware included	Muting sensor protection	2045737
	Guard plate for round steel arm, left, mounting hardware included	Muting sensor protection	2045738


Dimensional drawings → [page K-689](#)

Other mounting accessories

Mounting tools

Figure	Description	Packing unit	Type	Part no.
	Alignment tool for deTec4 and deTec2 in areas with limited accessibility	1 piece	Alignment tool	4084133













Others

Figure	Description	Packing unit	Type	Part no.
	M10 steel wall plug, for floor mounting the compensation plate for device columns	1 piece	Steel plugs	5308961

Dimensional drawings → [page K-689](#)

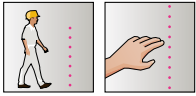
Further accessories

Muting accessories

Figure	Description	Suitable for	Items supplied	Type	Part no.
 Illustration may differ	Muting lamp	-	Including M12 male connector and connection cable (2 m), mounting bracket and mounting kit	Indicator lamp	2033116
			Inclusive male connector M12 and connection cable (10 m), mounting bracket and mounting kit	Indicator lamp	2033117
 Illustration may differ	-	-	Inclusive male connector M12 and connection cable (10 m), mounting bracket and mounting kit	Muting indicator lamp	2033119
			Inclusive male connector M12 and connection cable (2 m), mounting bracket and mounting kit	Muting indicator lamp	2033118
	Round steel arm 400 mm, including two universal brackets with a mounted sensor WL280P132	PU3H column profile and M4000 device profile	Including fixing screws, rhombus sliding nuts and plug M12 x 4 straight for the sensor connection	Muting arm-kit	2045730
	Round steel arm 400 mm, including one universal bracket with a mounted sensor WL280P132	PU3H column profile and M4000 device profile	Including fixing screws, rhombus sliding nuts and plug M12 x 4 straight for the sensor connection	Muting arm-kit	2045729
	Round steel arm 400 mm, including one universal bracket with a mounted reflector P250	PU3H column profile and M4000 device profile	Including fixing screws and rhombus sliding nuts	Muting arm-kit	2045513
	Round steel arm 400 mm, including two universal brackets	PU3H column profile and M4000 device profile	Including fixing screws and rhombus sliding nuts	Muting arm-kit	2045507
	Round steel arm 400 mm, including one universal bracket	PU3H column profile and M4000 device profile	Including fixing screws and rhombus sliding nuts	Muting arm-kit	2045506
	Round steel arm 400 mm, including two universal brackets with a mounted reflector P250	PU3H column profile and M4000 device profile	Including fixing screws and rhombus sliding nuts	Muting arm-kit	2045512
	Cross muting (2 sensors), muting sensor brackets for mounting on M4000 housing profile or device columns with external mounting grooves	M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, PU3Hxx	2 x muting arm active: 2 x WL100-P1429 pre-mounted together with M12 angled plug and 2 m cable; 2 x muting arm passive: 2 x reflector P250 pre-mounted	M4000 muting arm-kit with two crossed-muting sensors	2046171
	Parallel muting (2 sensors), muting sensor brackets for mounting on M4000 housing profile or device columns with external mounting grooves	M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, PU3Hxx	2 x round steel arm, 4 x universal bracket, 2 x WL280 incl. cable and plug, 2 x reflector P250	M4000 muting arm-kit with two parallel-muting sensors	2060157
	Parallel muting (2 sensors), muting sensor brackets for mounting on M4000 housing profile or device columns with external mounting grooves	M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, PU3Hxx	2 x muting arm, 2 x WL100-P1429 incl. cable and plug, 2 x reflector P250	M4000 muting arm-kit with two parallel-muting sensors	2060156
	Parallel muting (4 sensors), muting sensor brackets for mounting on M4000 housing profile or device columns with external mounting grooves	M4000 Advanced, M4000 Advanced A/P, M4000 Advanced Curtain, PU3Hxx	2 x muting arm active: 4 x WL100-P1429 pre-mounted together with M12 angled plug and 2 m cable; 2 x muting arm passive: 4 x reflector P250 pre-mounted	M4000 muting arm-kit with four parallel-muting sensors	2046170



HEATABLE FRONT SCREEN FOR A CLEAR VIEW



Product description

The heatable device column is used to mount M4000 multiple light beam safety devices in outdoor areas. The sender and receiver are mounted in the columns. The heater mounted on the front screen prevents the screen from fogging up and also ensures that the multiple light beam safety device

remains at the operating temperature. The components have a limited level of corrosion resistance when exposed to environmental influences such as salt water. Suitable accessories such as the compensating plate and steel dowels enable the device columns to be fixed to the floor and aligned quickly.

At a glance

- Use of heatable front screen in outdoor areas
- Freestanding mounting solution
- Compact, rugged design with high reliability
- Easy mounting and adjustment
- Device protection against external influences
- Applicable for M4000 multiple light beam safety devices

Your benefits

- Sturdy, torsion-free device protection prevents damage and reduces costs
- Increased productivity due to unhindered access to the system while maintaining protection

Additional information

- Detailed technical data K-685
- Ordering information K-685
- Dimensional drawing K-686
- Recommended accessories . . . K-687

→ www.sick.com/Device_columns_for_outdoor_use

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



K

Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Model	Device columns with front screen heating for outdoor use
Suitable for	Multiple light beam safety devices
Suitable for number of beams	2 / 3 (depending on type)
Suitable for beam separation	500 mm / 400 mm (depending on type)

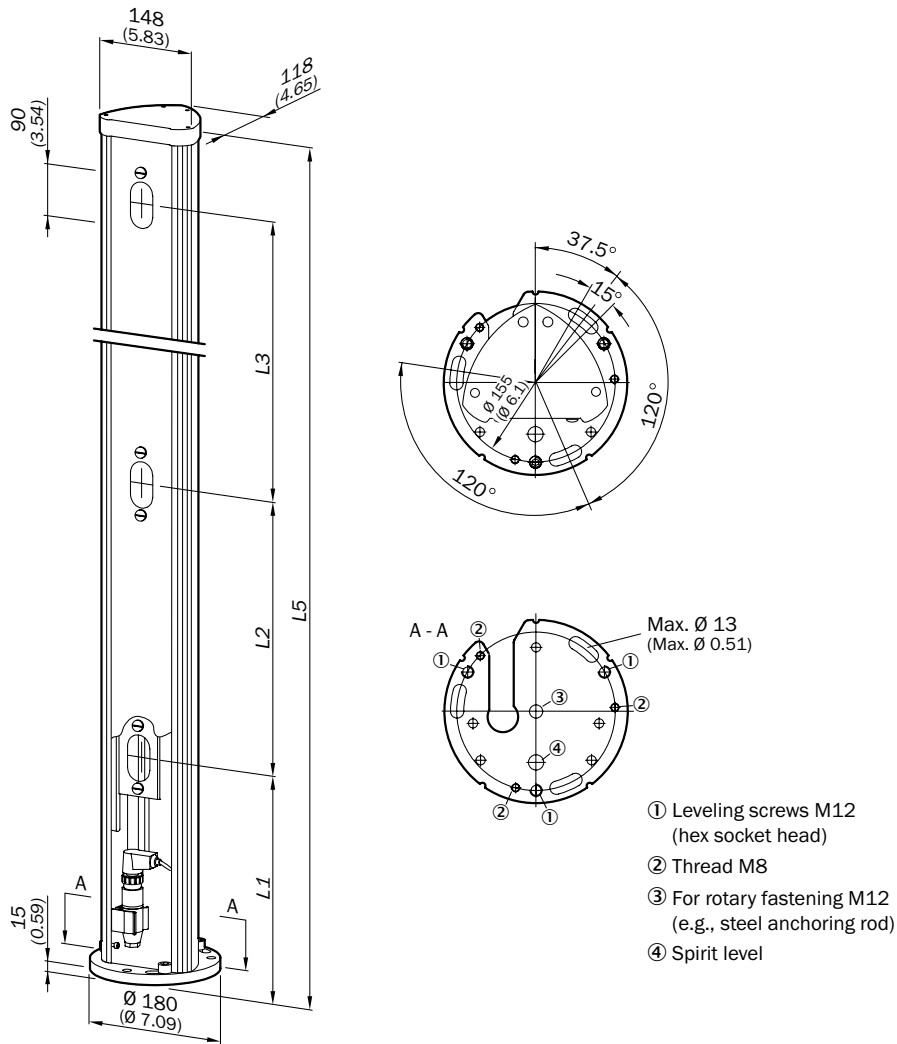
Mechanical data

Column height	1,223 mm
Max. installation length	1,203 mm
Height of first beam above ground	400 mm / 300 mm (depending on type)

Ordering information

Suitable for	Suitable for number of beams	Suitable for beam separation	Height of first beam above ground	Type	Part no.
M40x-0250x0xx0 M40x-0250x3xx0	2	500 mm	400 mm	PUM12-S02	2019654
M40x-0340x0xx0 M40x-0340x3xx0	3	400 mm	300 mm	PUM12-S01	2020800

Dimensional drawing (Dimensions in mm (inch))



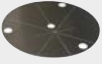
Suitable for number of beams	L1	L2	L3	L5	Part no.
2	400 (15.75)	500 (19.69)	-	1,223 (48.15)	2019654
3	300 (11.81)	400 (15.75)	400 (15.75)	1,223 (48.15)	2020800



Recommended accessories**Mounting systems**


Mounting brackets and mounting plates

Mounting plates

Figure	Description	Type	Part no.
	Adjusting plate for floor mounting of device columns, height 3 mm	Adjusting plate	4031053

Dimensional drawings → [page K-688](#)**Other mounting accessories**

Others

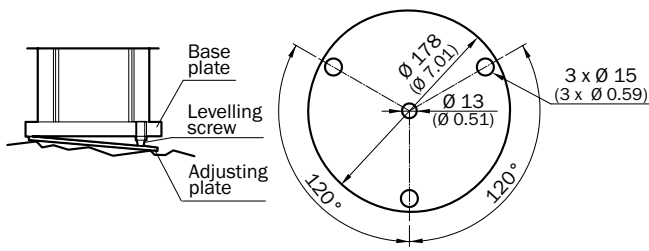
Figure	Description	Packing unit	Type	Part no.
	M10 steel wall plug, for floor mounting the compensation plate for device columns	1 piece	Steel plugs	5308961

Dimensional drawings → [page K-689](#)

Mirror columns (Dimensions in mm (inch))

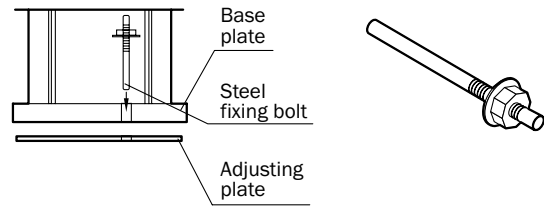
Mounting brackets and mounting plates

Adjusting plate (4031053)



Other mounting accessories

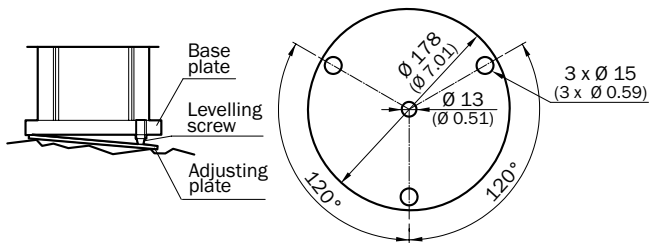
Steel plugs (5308961)



Device columns (Dimensions in mm (inch))

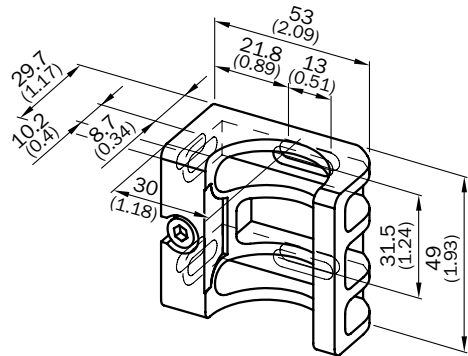
Mounting brackets and mounting plates

Adjusting plate (4031053)

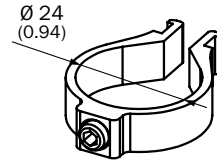


Terminal and alignment brackets

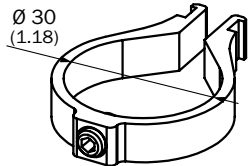
BEF-1SHABBKU2 (2073543)



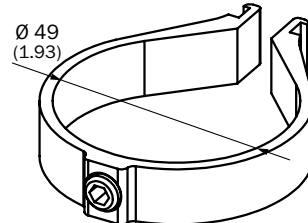
BEF-2SMKEAAL2 (2045884)



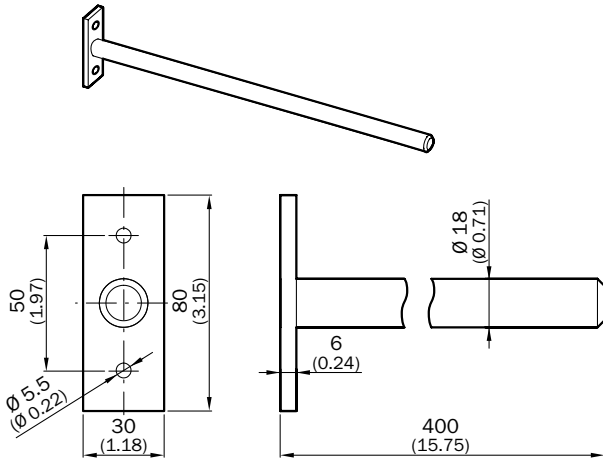
BEF-2SMMEAAL2 (2045883)



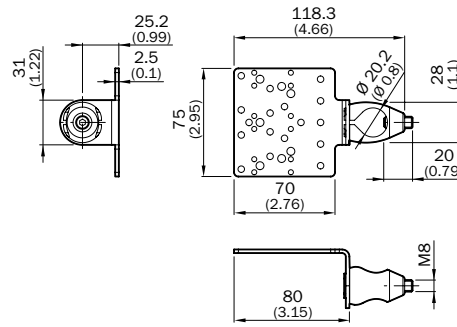
BEF-2SMGEAAL2 (2045736)



Round steel arm (2045879)

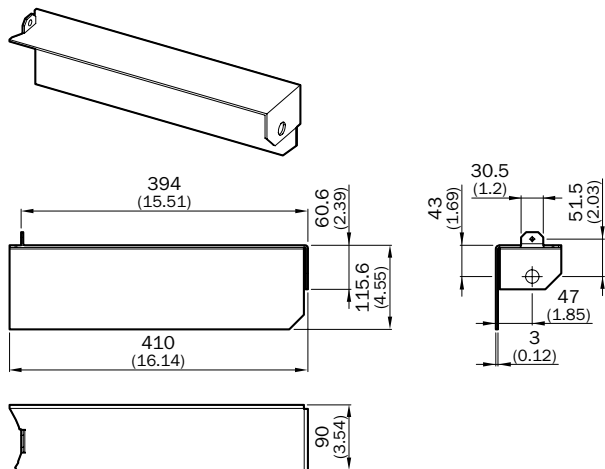


Universal bracket (2044953)

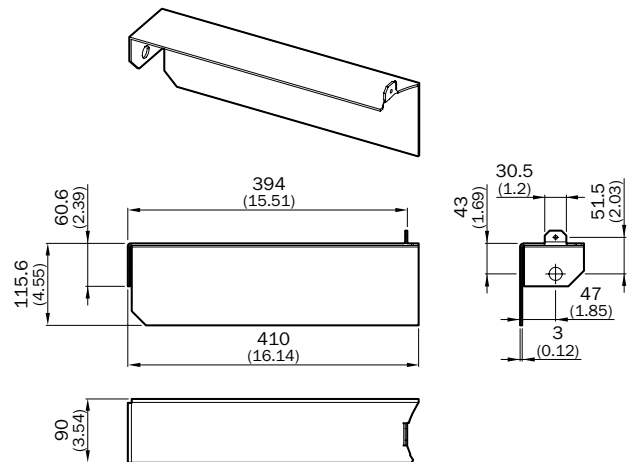


Device protection (mechanical)

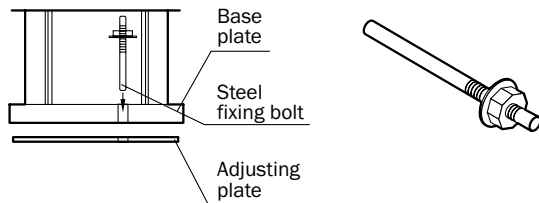
Muting sensor protection (2045737)

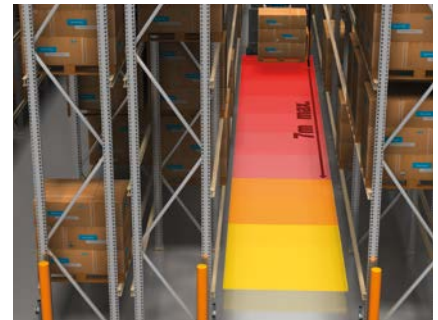
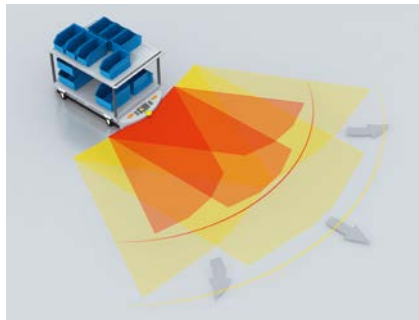
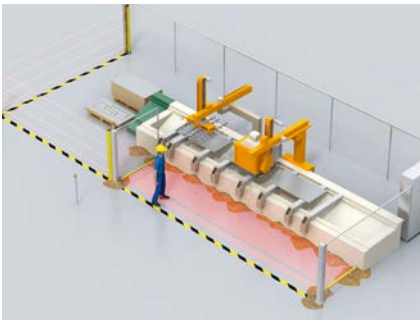
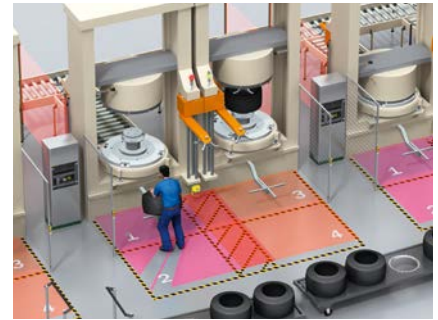
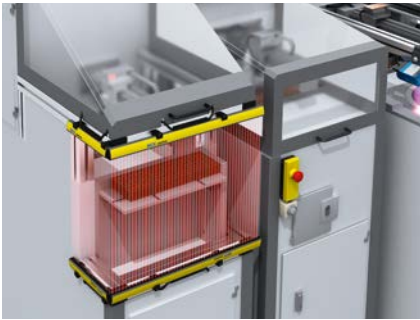


Muting sensor protection (2045738)



Steel plugs (5308961)





ENHANCED SYSTEM SOLUTIONS

Clever product combinations for more intelligence: SICK sensors + logic

SICK sens:Control – safe control solutions are the bridge between opto-electronic protective devices and enhanced system solutions.

Clever product combinations increase the functional scope of the sensors. They optimize processes in a range of applications in a manner that would not be possible based on individual components.

SICK enhanced system solutions are characterized by simple commissioning and modularity as well as a perfectly coordinated interaction between sensors and logic:

- Safe sensor cascades enable the cost-effective integration of multiple sensors, including a range of diagnostic options.

- Safety controllers provide intelligent and connected safety functions.
- Gateways enable integration in higher automation levels.
- Motion control safety controllers improve the productivity of machines with a range of drive safety functions.
- Safety relays enable straightforward functional extensions, such as restart interlock and external device monitoring.





Safe sensor cascade



Flexi LoopL-692
 Cost-saving, safe sensor cascade with diagnostic function

Safety controllers



Flexi ClassicL-692
 Efficient and easy-to-use safety controller



Flexi SoftL-693
 The software-programmable safety controller

Motion Control safety controllers



Flexi Soft Drive MonitorL-693
 Flexible, high-performance drive monitoring

Safety relays



UE10-2FGL-694
 The ideal solution to integrate relay outputs



UE12-2FGL-694
 Minimum required space with a maximum of contact outputs



UE10-30SL-695
 The universal output expansion module



UE48-20SL-695
 Safety relay for all common safety applications



UE48-30SL-696
 Safety relay with 3 safety outputs for all common safety applications



UE10-4XTL-696
 Contact expansion for all safety relays



UE11-4DXL-697
 Time-delayed contact expansion for all safety relays





Flexi Loop

- Ability to cascade 32 sensors with up to 100 m per segment in compliance with performance level e
- Compatible with sensors from all manufacturers
- Detailed diagnostic information
- Integrated standard inputs and outputs
- Power supply for sensors is included
- Unscreened standard cable with M12 connectivity
- IP 65 and IP 67 enclosure rating
- Intelligent accessories for field diagnostics and commissioning

Your benefits

- Cascading of safety switches and safety sensors with OSSD outputs minimizes the wiring effort and the number of inputs of the safety controller, which saves costs
- Easy retrofitting of existing machines
- Simple calculation of the performance level saves time since the Flexi Loop node monitors each sensor individually
- User-friendly due to quick and easy configuration
- Ability to be used over long distances increases application flexibility
- Detailed diagnostic information minimizes system downtime
- Seamless system integration and communication with other SICK safety controllers
- Detailed status information on Flexi Loop components, diagnostics accessories, and safety controller enable quick and easy field diagnostics

→ www.sick.com/Flexi_Loop

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



Flexi Classic

- Rotary DIP switch for easy adjustment
- Modularly expandable
- Direct wiring for all types of sensors
- Logic functions: AND, OR, Muting, Bypass, Reset, EDM
- Integration into all common field-buses
- Integration of the safe sensor cascade Flexi Loop
- Special muting modules are able to meet all the requirements of a demanding muting application

Your benefits

- Optimal scalability prevents extra inputs and outputs, reducing hardware
- Configuration via rotary DIP switch simplifies logic configuration
- The Flexi Classic Configurator tool offers easy logic configuration and wiring help
- Complete diagnostics of the system reduces downtime
- Its compact design makes it possible to save space in the control cabinet
- Significantly reduced wiring compared with conventional safety solutions. Wiring with Flexi Loop is even easier.

→ www.sick.com/Flexi_Classic

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.





Flexi Soft

- Expansion modules, Motion Control modules, and gateways for all common fieldbuses
- Configuration data stored in the system plug
- Safe networking of up to 32 Flexi Soft stations

- Integration of sensor cascade
- Multi-language, license-free configuration software: exceptionally simple operation, plausibility check, simulation mode, wiring diagram, parts list, documentation, and data recorder

Your benefits

- Scalable for an efficient and cost-optimized safety application solution
- Cost savings: Flexi Soft offers a modular structure that is in line with your requirements, and thus offers an ideal level of granularity
- Intuitive configuration software featuring comprehensive functions enables continuous monitoring of the configuration
- Rapid verification of the safety application: The configuration software provides documentation and a wiring diagram

- Safety logic is easy to create thanks to ready-made, TÜV-certified function blocks
- The main module's diagnostics interfaces and the configuration storage facility in the system plug enable rapid commissioning, component replacement, and troubleshooting, resulting in minimum downtimes

→ www.sick.com/Flexi_Soft

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



Flexi Soft Drive Monitor

- 7 drive safety functions: SS1, SS2, SOS, SSM, SLS, SDI and SBC
- For all common encoder interfaces
- Programmable logic

- Monitoring of up to 10 speed levels and 4 brake ramps
- Possible to monitor multiple axes

Your benefits

- Integration into a Flexi Soft system with a software tool and a project file allows quick project planning and commissioning
- Easy logic development using pre-defined, modifiable, freely configurable applications
- Maximum level of integration into higher-level controllers via all common fieldbus systems using gateways

- Documentation of the entire safety application simplifies machine acceptance and validation
- Monitoring movements instead of shutting down increases machine productivity
- Flexibility due to a wide range of drive safety functions

→ www.sick.com/Flexi_Soft_Drive_Monitor

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.





UE10-2FG

- Ideal for applications with opto-electronic protective devices and safety controllers with OSSD outputs
- Fast response time of 10 ms
- Compact design
- 2 contact outputs
- Feedback path for external device monitoring (EDM)
- Screw-type terminals or plug-in screw-type terminals
- Coded plugs for all slots

Your benefits

- Faster response times provide short safety distances
- Saves space in the control cabinet thanks to its compact design
- Reduced wiring effort for fast and easy system commissioning

→ www.sick.com/UE10-2FG

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



UE12-2FG

- Ideal for applications with opto-electronic protective devices and safety controllers with OSSD outputs
- Fast response time of 10 ms
- Compact design
- 2 contact outputs
- Up to 20 contact outputs via cascading
- Feedback path for external device monitoring (EDM)
- Screw-type terminals or plug-in screw-type terminals
- Coded plugs for all slots

Your benefits

- Faster response times provide short safety distances
- Saves space in the control cabinet thanks to its compact design
- Reduced wiring effort for fast and easy system commissioning
- No unnecessary outputs, thereby reducing costs

→ www.sick.com/UE12-2FG

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.





UE10-30S

- Ideal for applications with opto-electronic protective devices and safety controllers with OSSD outputs
- Output expansion for a safe processing of OSSD output signals
- 3 safety outputs, 1 application diagnostic output
- Feedback path for external device monitoring (EDM)
- Coded plugs for all slots

Your benefits

- Offers all needed contact paths in a compact form
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry

→ www.sick.com/UE10-30S

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



UE48-20S

- Ideal for the evaluation of emergency stop pushbuttons, safety switches, safety light curtains, safety laser scanners and safety pressure sensitive mats
- Cross circuit detection and sequence monitoring for dual-channel actuation
- 2 safety outputs, 1 application diagnostic output
- Manual or automatic reset
- External device monitoring (EDM)
- Coded plugs for all slots

Your benefits

- One module for all common applications simplifies machine integration
- Complete monitoring and evaluation of sensors
- The sequence monitoring takes over the evaluation of non-contact safety switches
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry

→ www.sick.com/UE48-20S

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.





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→ www.sick.com/UE48-30S

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



UE10-4XT

- Contact expansions enable four additional safety outputs for evaluation units in the safety relays product family group
- 4 safety outputs, 2 application diagnostic outputs
- Feedback path for external device monitoring (EDM)
- Coded plugs for all slots

Your benefits

- Offers all needed contact paths in a compact form
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry

→ www.sick.com/UE10-4XT

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.





UE11-4DX

- Contact expansions enable four additional safety outputs for evaluation units in the safety relay product family group
- 4 safety outputs, 2 application diagnostic outputs
- Predefined time delays
- Feedback signal for external device monitoring (EDM)
- Coded type for all plug-in positions

Your benefits

- Offers all needed contact paths in a compact form
- Time delay for optimal protection of brake applications
- Fast diagnostics via status information reduces downtime
- Fast, tool-free exchange via coded, plug-in screw-type terminals
- Combines the advantages of classic relays and easy circuitry

→ www.sick.com/UE11-4DX

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



A

Actuator

Control element: Component, e.g., actuating motor, clutch, or solenoid valve, which intervenes in the process.

ADO (Application Diagnostic Output)

Configurable application diagnostic output, which displays a protective device status.

AOPD (active opto-electronic protective device)

Device with a sensor function produced by opto-electronic send and receive elements which detect a break in the optical radiation generated in the device due to the presence of an opaque object in the defined protective field (or in the case of a photoelectric switch, on the axis of the light beam). (CLC/TS 61496-2)

Automatic calibration of the protective field width

When switched on, the safety light curtain automatically calibrates to the protective field width.

B

B_{10d}

Number of cycles after which a dangerous failure has occurred on 10% of the components (for pneumatic and electro-mechanical components)

Belt stop

The belt stop function and a belt stop signal can be used to stop the following time monitors so that a valid muting condition is not eliminated by the expiration of time monitors:

- Monitoring the entire muting time
- Concurrence monitoring
- Muting hold time

Beam coding

Ensures that the receiver only recognizes and assesses the light from its particular sender.

Beam separation

Distance between the beams of light in a multiple light beam safety device.

Blanking

An optional ESPE function, which allows an object whose size exceeds the detection capability or physical resolution of the ESPE to enter the protective field without the output signal switching devices (OSSDs) being switched to the off state. The object is blanked out of the protective field.

- In fixed blanking, the position of the blanked object does not change during operation.
- In floating blanking, the blanked object can move into the protective field during operation. This function is used when the permissible interruption of the protective field is not linked to a set position in the protective field. For instance, if a cable or hose runs through the protective field.

In both cases, the detection capability of the remaining protective field of the electro-sensitive protective equipment remains unchanged.

Blind zone

The zone directly in front of a sensor in which an object or reflector is not detected. The blind zone always starts at 0 mm.

Bypass

Temporary manual muting of the safety function for special operating modes, e.g., setup mode or unlocking the system. As the safety function is not active, the system must be switched to safe mode if this function is used.

C

Cascading

Describes the ability, especially of light curtains, to connect to a host unit via a guest unit's cable connection.

Category

Categorization of the safety-related parts of a control system in relation to their resistance to faults and their subsequent behavior in the event of a fault.

Concurrence monitoring

Monitors whether both muting sensors in a sensor pair are actuated within a certain time in muting applications.

Configurable scanning range

Adaptation of the scanning range to the protective field range to prevent malfunctions due to reflections.

Connection type

Mechanical design of the electrical connection to the equipment. Design as a plug connection, solder joint, crimp connection, screw connection, spring terminal, wire-wrap connection, cable entry via screw fittings, or male connector.

Contour as reference

Reference objects (e.g., barriers, walls, or floors) in the environment can be integrated into the monitoring. The protective device (safety laser scanner) is triggered if the object is no longer present, the contour changes, or the safety laser scanner system is distorted. In personnel protection systems, this function must be used for vertical operation to monitor the correct position of the safety laser scanner (adjustment monitoring and manipulation protection).

Cross-/Short-circuit detection

Detection of cross-/short-circuits or a reduction in the insulation resistance between two contacts, or a short-circuit between two wires.

D

Dangerous state

State that may lead to personal injuries. Safety devices prevent this risk when protective devices are used as intended.

Detection capability

→ see **Resolution**

Detection of geometrically uniform objects

Reliable differentiation of materials and people by defining fixed geometries.

Direction detection

Detection of the incorrect direction of transport of material for muting applications. If direction detection is activated, a sensor pair must trigger and release the muting function in a certain order. The material can then only pass through the protective device in one direction.

Dynamic blanking for object pattern recognition

Reliable differentiation of materials and people by defining fixed geometries

Dynamic protective field switching

In mobile applications, encoders transmit information on a change of direction and/or changes of speed, which are used to switch between various previously stored monitoring cases.

E

EDM (external device monitoring)

→ see **External device monitoring (EDM)**

EFI (enhanced function interface)

Safe SICK device interfaces which transmit safety signals. A bus connection to a safe fieldbus is possible via the SICK EFI gateways.

EMC (electromagnetic compatibility)

Ability of an item of electrical equipment to work satisfactorily in its electromagnetic environment and at the same time not to excessively interfere with this environment, which also includes other items of equipment.

Enclosure ratings

Enclosure ratings indicate the degree of protection of a machine or sensor against contact and penetration by impurities and water. IEC 60529 describes standardized protection classes, which a product housing complies with, if the product is installed correctly. The enclosure ratings begin with the letters IP, followed by the first digit, which indicates the degree of protection provided against touch and impurities. The second digit describes the protection against the ingress of water. The higher the number, the greater the protection indicated by that digit. Enclosure ratings of IP 65 and higher have established themselves as the standard for industrial applications.

ESPE (electro-sensitive protective equipment)

Assembly of devices and/or components working together for protective tripping or presence-sensing purposes and comprising as a minimum (IEC 61 496-1/EN 61 496-1):

- A sensor element
- Control/monitoring devices
- Switching outputs (OSSD)

ESPE is used to protect individuals working on machines and systems where there is a risk of physical injury. They cause the machine or system to adopt a safe state before a person can be exposed to a dangerous situation.

Exit monitoring

The protective device monitors access to the hazardous area. Material transport from the hazardous area is possible by muting the protective device via two muting sensors fitted in the hazardous area.

Extended measured data output

Extension of the measured data output by safety laser scanners with additional data. This additional measured data includes the detection of reflector positions and safety laser scanner input and output data, such as the speed detected by an encoder and the output states of the OSSDs.

External device monitoring (EDM)

Means by which the electro-sensitive protective equipment (ESPE) monitors the status of control devices which are external to the ESPE (IEC 61496-1/EN 61496-1). The use of EDM is not limited to ESPE.

F

Fieldbus

Bus system in the process area for the direct connection of sensors and actuators that have their own intelligence. Smaller data volumes are transferred between sensors, actuators and control devices in digital form via a fieldbus. This transfer must be as rapid as possible, i.e., in real time. This requires a fixed minimum and maximum response time.

Fixed blanking

→ see **Blanking**

Floating blanking

→ see **Blanking**

Functional safety

Part of the overall safety related to the machine and the machine control system that depends on the correct function of the → **SRECS (safety-related electrical control system)**, the safety-related systems in other technologies, and the external equipment for risk reduction.

H

Hazardous area

Any area in and/or around a machine in which a person may be at risk. (ISO 12100-1/EN ISO 12100-1)

Hazardous point

Located right inside a machine: If a person is working very close to a machine and reaches into it, they must be protected. Safety light curtains and safety camera systems protect hands and fingers.

I

Integrated configuration memory

The configuration memory is located in the system plug in safety laser scanners. In the event of a device replacement, the existing configuration is automatically transferred to the newly connected safety laser scanner.

ISO

International Organization for Standardization – a global federation of national standardization institutions consisting of 148 countries. The ISO mark is not an acronym of the organization's name, rather it represents the first three letters of the Greek word “isos”, meaning “equal”.

→ www.iso.ch

L

Laser class

Classification of laser systems into classes. The relevant limit values for photo-chemical hazards are defined in classes 1 to 4 for the accessible radiation.

Light curtain

An AOPD with a resolution of ≤ 116 mm.

Light spot

Light spot dimension that determines the resolution of the sensor.

M

Machinery Directive

Machinery Directive 2006/42/EC addresses the manufacturers and distributors of machines and safety components. It establishes the necessary tasks for new machines to meet health and safety requirements in order to dismantle trade barriers within Europe and to guarantee a high level of health and safety for users and operators.

It applies to machines and to safety components individually placed on the markets, as well as to used machines and devices from third-party countries which are placed on the market in the European Economic Area for the first time (e.g., from the USA or Japan).

Measured data output

Measured data output by safety laser scanners, which can be used for general monitoring and control tasks. They are particularly applicable for navigation support purposes for automated guided vehicles (AGVs).

Minimum switch-on time

Minimum time that a signal must be present in the input circuit before a reset can take place (switch from LOW to HIGH).

Monitoring case switching

A configured field set for a safety laser scanner is assigned to a monitoring case. Switching using the control inputs can be used to adjust the monitoring case for the safety laser scanner to match a machine's operating mode or the movement of an automated guided system.

Monitoring the entire muting time

This ensures that the protective device is only muted for as long as required for the material transport. This minimizes unintentional entry into the hazardous area by an individual.

MPCE (machine primary control element)

Element of the power circuit that interrupts the power circuit in order to stop the machine (IEC 61496-1/EN 61496-1).

MTTFd (mean time to failure)

Expected value for the mean time to dangerous failure (ISO 13849-1/EN ISO 13849-1).

→ see "Guide for Safe Machinery" (8007988)

Multiple sampling

If multiple sampling is set, an object must be scanned multiple times before the protective device signals an intervention in the protective field. This reduces the probability that insects, welding sparks, or other particles cause a machine or system to shut down. The use of multiple sampling increases the overall response time.

Muting

Muting function. Temporary automatic muting of one or more safety functions by safety-related parts of the control system (IEC 61496-1/EN 61496-1).

→ see "Guide for Safe Machinery" (8007988)

Muting-dependent manual muting

→ see **Override**

N

N/C

Normally closed

N/O

Normally open

Number of beams

Number of beams in a multiple light beam safety device.

O

Object entry monitoring

The transport direction of objects is monitored.

Operating mode switching

The opportunity to switch between various operating modes (setup operation, PSDI mode, bypass, etc.) previously stored in the device using a key switch.

OSSD (output signal switching device)

The part of the electro-sensitive protective equipment (ESPE) that is connected to the machine controller, and that changes to the off state when the sensor section is triggered during correct operation.

Output current

Load current at the output.

Override

This function permits the activation of the muting function and mutes the ESPE by the manual actuation of a control switch in order to (for example) free blockages in a roller conveyor's muting area. The override function may only be activated if at least one muting sensor is active. The manually introduced override is either deactivated automatically following a correct muting sequence, or after a preset time (IEC 61496-1/EN 61496-1).

P

Partial safety function

The part of a → **Safety function** that is performed by a safety-related subsystem (e.g., actuator) for risk reduction.

Partial blanking

Only a partial area of the electro-sensitive protective equipment is blanked if a muting condition applies. One or more light beams remain permanently active.

PELV (protective extra-low voltage)

Protective extra-low voltage with safe separation (IEC 60364-4-41). The PELV protective measure only differs from → **SELV (separated or safety extra low voltage)** in the case of grounding connections. A PELV circuit exists if (for example) the secondary circuit is grounded for operational reasons. The maximum allowable nominal voltage for the PELV protective measure may not exceed 25 V AC or 60 V DC. This applies under normal conditions in dry areas and provided that large areas are not expected to come into contact with body parts. In all other cases, the maximum allowable nominal voltage amounts to 12 V AC or 30 V DC. For further requirements, see IEC 60204:2007, Section 6.4.

PFH_p (probability of dangerous failure per hour)

Mean probability of a dangerous failure per hour (1/h).

→ see “**Guide for Safe Machinery**” (8007988)

PL (performance level)

Discrete level used to specify the ability of the safety-related parts of a control system to perform a safety function under foreseeable conditions (EN ISO 13849-1).

→ see “**Guide for Safe Machinery**” (8007988)

Power-up delay

The time required by the safety module to reach operational readiness after applying the supply voltage.

Protective field

The area in which the test object specified by the manufacturer is detected by the electro-sensitive protective equipment (ESPE).

- Safety light curtain: The protective field lies between the sender unit and the receiver unit. It is defined by the protective field height and the protective field width.
- Safety laser scanner: The protective field secures the hazardous area on a machine or vehicle. The field is defined by the scanning range, scanning angle, response time, and resolution of the device used (see technical specifications).

Protective field height/protective field length

The height of the active protective field in the longitudinal axis of a safety light curtain.

Protective field width

The protective field width is defined by the dimension of the light path between the sender and receiver for safety light curtains. The maximum allowable protective field width must not be exceeded in order to ensure the reliability of the protective function.

PSDI mode

Manual intervention at hazardous points during the working cycle of the machine. The protection measures must reach a high safety level during the monitoring of the protective device as well as signal processing. If these requirements are met, in this type of operating mode, the protective device can be safely reset in the safe mode of the start command.

R

Reduced resolution

An optional function of electro-sensitive protective equipment (especially light curtains): Several occasionally penetrating objects up to a certain size are tolerated by the protective field without switching the OSSD to the off state, provided that a certain number of adjacent light axes are not interrupted.

Reset

Resetting the protective device to the monitored status.

- A manual reset is performed by a separate manually-operated device, e.g., using a reset button.
- Automatic reset by the protective device is only permitted in exceptional cases: It must not be possible for persons to be in the hazardous area without the protective device triggering, or it must be ensured there are no persons in the hazardous area during and after reset.

Reset/restart

→ see **Reset**

→ see **Restart**

Restart

Putting the machine back into operation. After the triggering of the protective function, or after a fault, the protective device can be → **Reset** to make it possible to subsequently restart the machine.

Restart interlock

A device to prevent the automatic restarting of a machine following the triggering of the safety function during a dangerous part of the machine operating cycle, after a change in the operating mode or type of actuation of the machine, or after a change to the machine's start controller (IEC 61496-1/EN 61496-1).

Resolution

The limit for the sensor parameter that causes the electro-sensitive protective equipment (ESPE) to respond. The limit is defined by the manufacturer.

Response time

The maximum time between the occurrence of an event which activates the sensor unit and the switching output (OSSDs) being switched to the off state.

Risk assessment

A risk assessment includes the entire procedure from the identification of hazards through to the assessment and evaluation of the risks. A risk assessment supports the selection of appropriate measures and the evaluation of their effectiveness. Risk assessment is described in standard EN ISO 14121.

While key requirements target a high level of safety, the resources must remain proportional to the associated risk. The protection of an operator who manually inserts and removes parts at a metal press cannot be considered in the same way as the protection of an operator who works on a machine on which the maximum risk is the trapping of a finger. In addition, the same machine may have different access points with different hazardous points. As a result, different measures can be taken for different parts of the safety-related machine control.

Standard ISO 13849-1/EN ISO 13849-1 helps designers specify the performance of different parts of the safety-related control system based on the following parameters:

- Possible severity of injury
- Frequency and/or duration of exposure
- Possibility of preventing a hazard

→ see "Guide for Safe Machinery" (8007988)

Risk estimation

Risk estimation is part of the → **Risk estimation**.

A risk estimation is required to identify the measures needed to achieve the safety objectives and the resulting solutions.

The required safety solutions are defined in consideration of the risk parameters and the level of risk.

→ see "Guide for Safe Machinery" (8007988)

S

Safe SICK device communication via EFI

→ see **EFI (enhanced function interface)**

Safety function

The function of a machine whose failure can lead to the immediate increase of risk. (EN ISO 12100-1). A safety function is provided by safety-related parts of control systems (SRP/CS).

→ see **Partial safety function**

Safety outputs

→ see **OSSD (output signal switching device)**

Scanning range

For devices with a separate sender and receiver unit, the scanning range is the useful distance between the sender and the receiver, or the distance between the sensor and the reflector for reflecting devices.

Self-teach dynamic blanking for pallet detection

Reliable differentiation of an individual object (e.g., package or goods on a pallet) from other objects, especially people.

Self-teach dynamic blanking for goods detection

Differentiation of several moving objects with a static clearance (e.g., the feet of pallets or mesh crates or a carriage's castors) from other objects, especially people.

Self-monitoring

Ensures that safety functions implemented by protective measures are triggered if a device or element function is impaired, or the process conditions have changed in such a way that hazards exist.

Self-monitoring either detects a fault immediately or performs periodic thorough checks so that the fault is detected before the safety function is subsequently triggered.

In both cases, the protective measure may be triggered immediately or delayed until a certain event occurs (e.g., the start of a machine's operating cycle). (ISO 12100-1/EN ISO 12100-1)

SELV (separated or safety extra low voltage)

A SELV system is an electrical system in which the voltage cannot exceed the ELV under normal conditions and under single-fault conditions, including grounding faults in other circuits. (IEC 61140)

A SELV circuit must satisfy the following requirements:

Protective separation (double or reinforced insulation or protective covering) of all other circuits that can conduct higher voltages than SELV or PELV circuits

or

The simple separation of other SELV systems from PELV systems and protection against grounding

The SELV protective measure differs from → **PELV (protective extra-low voltage)**. SELV circuits must not be grounded via secondary circuits or connected to other voltage systems. The maximum nominal voltage for the SELV protective measure amounts to 50 V AC and 120 V DC.

Sensor detection capacity

→ see **Resolution**

Sensor gap monitoring

If a valid muting condition is provided for a sensor pair, a sensor may become free (deactivated) for a defined period without eliminating the applicable muting condition.

Sequence monitoring

Detection of the incorrect order of actuation for muting sensors.

SICK CDS (Configuration & Diagnostic Software)

Configuration and diagnostic software for SICK safety systems.

SIL (safety integrity level)

Discrete level (one out of a possible three) for specifying the safety integrity of the safety functions assigned to the safety-related system, where safety integrity level 3 has the highest level of safety integrity and safety integrity level 1 has the lowest (IEC 62061/EN 62061).

→ see **“Guide for Safe Machinery” (8007988)**

SILCL (SIL claim limit)

SIL claim limit (for a subsystem): Maximum SIL that can be claimed for a → **SRECS (safety-related electrical control system)** subsystem in relation to architectural constraints and systematic safety integrity (IEC 62061/EN 62061).

→ see **“Guide for Safe Machinery” (8007988)**

Simultaneous protective field monitoring

Simultaneous and independent monitoring of multiple hazardous areas by a single safety laser scanner.

SRECS (safety-related electrical control system)

Electrical control system for a machine whose failure results in an immediate increase in risk or risks.

Static protective field switching

Static protective field switching is possible by using static safety laser scanner inputs. The evaluation of the static inputs may be complementary or 1-of-n.

Switching output

→ see **OSSD (output signal switching device)**

Synchronization

To prevent the mutual interference of adjacent sensors via a synchronization input that is used to start a measuring cycle.

Synchronous time monitoring

The switching of the input circuit within a defined time is monitored (only for automatic reset/restart).

A release is only provided if input circuit 2 closes no more than 0.5 s after input circuit 1. Monitoring is not active if input circuit 2 closes before input circuit 1.

T

T_{10d}

Limitation of the operating time of a device. Mean time until a dangerous fault occurs on 10% of the components.

The identified → **MTTFd (mean time to failure)** of devices subject to wear only applies for this time.

→ see **“Guide for Safe Machinery” (8007988)**

Test rod

An opaque cylindrical element used to verify the detection capability of the active opto-electronic protective device (AOPD) (IEC/TS 61496-2, CLC/TS 61496-2).

Type of electro-sensitive protective equipment

The type characterizes the → **ESPE (electro-sensitive protective equipment)**. The differences relate to the capability of the electro-sensitive protective equipment in the presence of faults and under the influence of environmental conditions. The machine manufacturer and/or the user is responsible for defining which type of electro-sensitive protective equipment is required for the specific application (IEC 61496-1).

→ see **“SICK whitepaper: Changes to IEC 61496 and its effects on electro-sensitive protective equipment”**

V

Virtual photoelectric switches

Configurable function for safety light curtains. For example, virtual photoelectric switches can be used to signal the position of objects in the protective field. Signals must not be used to control the application or to influence safety-related functions.

Voltage type

Sensor design as direct current (DC), alternating current (AC), or alternating/direct current (AC/DC).

W

Warning field

For safety laser scanners, the warning field may be placed in front of the protective field and in front of the actual hazardous area. Objects in the warning field trigger a warning signal.

Warning field output

The part of electro-sensitive protective equipment (ESPE) that is connected to the machine controller and that changes to the off state when the warning field of the sensor part is triggered during correct operation.

Recommended product combinations

The following table provides a quick overview of which sensors can be directly combined with which safety control solution products in a technically sensible manner. Safety aspects are not considered in this representation.

		Safety laser scanner										Safety light curtains																		
Connection via		S300 Mini Standard	S300 Mini Remote	S300 Standard	S300 Advanced	S300 Professional	S300 Expert	S3000 Standard	S3000 Advanced	S3000 Professional	S3000 Expert	S3000 Remote	S3000 PROFINET IO Advanced	S3000 PROFINET IO Professional	S3000 Cold Store	deTec4 Core	deTec2 Core	C4000 Standard	C4000 Advanced	C4000 Micro	C4000 Micro in IP69K Housing	C4000 Fusion	C4000 Palletizer	C4000 Palletizer in IP69K Housing	C4000 Entry/Exit	C4000 ATEX II 3G/3D	M4000 Advanced Curtain	miniTwin4	miniTwin2	C2000 Standard in IP69K Housing
Safe sensor cascade																														
Flexi Loop	Signal inputs																■	■												■
Safety controllers																														
Flexi Classic	Signal inputs	■		■	■	■	■	■	■	■	■				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Flexi Soft	Signal inputs	■		■	■	■	■	■	■	■	■				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Flexi Soft	EFI		■	■	■	■	■	■	■	■	■	■			■			■	■			■	■	■	■	■	■			
Motion Control safety controllers																														
Flexi Soft drive monitor	Encoder interfaces																													
Speed monitor	Signal inputs																													
Standstill monitor	Motor winding																													
Safety relay																														
UE10-2FG/UE12-2FG	Signal inputs	■		■	■	■	■	■	■	■	■				■			■	■	■	■	■	■	■	■	■	■	■	■	
UE10-30S	Signal inputs	■		■	■	■	■	■	■	■	■				■			■	■	■	■	■	■	■	■	■	■	■	■	
UE23-2MF/UE23-3MF	Signal inputs																													
UE42-2HD	Signal inputs																													
UE43-2MF/UE43-3MF	Signal inputs																													
UE43-3AR/UE43-4AR	Signal inputs																													
UE44-3SL	Signal inputs																													
UE45-3S1	Signal inputs																													
UE48-20S/UE48-30S	Signal inputs	■		■	■	■	■	■	■	■	■				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
EFI Gateways																														
PROFINET IO PROFIsafe EFI gateway UE4740	EFI		■	■	■	■	■	■	■	■	■				■			■	■			■	■	■	■	■	■	■	■	
PROFIBUS PROFIsafe EFI Gateway UE4140	EFI		■	■	■	■	■	■	■	■	■				■			■	■			■	■	■	■	■	■	■	■	
CANopen EFI gateway UE1940	EFI			■	■	■	■	■	■	■	■				■			■	■			■	■	■	■	■	■	■	■	
Ethernet EFI gateway UE1840	EFI			■	■	■	■	■	■	■	■				■			■	■			■	■	■	■	■	■	■	■	
PROFIBUS EFI gateway UE1140	EFI			■	■	■	■	■	■	■	■				■			■	■			■	■	■	■	■	■	■	■	
Other switching amplifiers																														
UE402	EFI																	■	■											
UE403	EFI																											■		

■ Technically sensible and recommended device combinations



RECOMMENDED PRODUCT COMBINATIONS

Product	Safety camera systems
V200/V300 Work Station Extended	
M4000 Standard	
M4000 Standard A/P	
M4000 Standard in IP69K Housing	
M4000 Advanced	
M4000 Advanced A/P	
M4000 Advanced with UE403	
M4000 area	
M2000 Standard	
M2000 Standard A/P	
M2000 Standard in IP69K Housing	
WSU/WEU26-3	
L4000 systems (with UE401)	
L4000/L41	
L2000/L21, L27, L28	
i12S, i16S, i17S, i110S	
i10 Lock, i15 Lock, i110 Lock, i200 Lock (mechanically locked)	
i10 Lock, i15 Lock, i110 Lock, i200 Lock (electrically locked)	
i10P, i10R, i110P, i110R	
i10H	
RE11, RE21 (antivalent switching)	
RE13, RE23, RE27 (equivalent switching)	
TR4 Direct	
IN3000 Direct, IN4000 Direct	
IN4000 Standard	
ES11, ES21	
ER12	
i110RP, i150RP	
E100	
DFS60S	
DFS60, DBS36, DKS40, DRS26, AFS/AFM60 (SSI), ATM90 (SSI)	
DL100, DME4000, DME5000, OLM100	
Lincoder L230, KH53, TTK70	
Proximity sensors 24 V-switching	

SYMBOLS AND THEIR MEANING

Safety tasks



Hazardous point protection with finger or hand detection



Hazardous point protection with hand and person detection



One-sided access protection with person detection



Multi-sided access protection with person detection



One-sided access protection with differentiating between persons and material / muting



Stationary hazardous area protection with person detection in the presence



Mobile hazardous area protection with person detection when approaching

Fields of application



Finger detection



Hand detection



Access protection



Hazardous area protection



Safe SICK device communication via EFI

LIST OF PRODUCT FAMILIES

Safety laser scanners

S300 Mini Standard	F-78
S300 Mini Remote	F-86
S300 Standard	F-96
S300 Advanced	F-106
S300 Professional.	F-116
S300 Expert	F-128
S3000 Standard	F-138
S3000 Advanced	F-148
S3000 Professional.	F-158
S3000 Expert	F-170
S3000 Remote	F-182
S3000 PROFINET IO Advanced.	F-192
S3000 PROFINET IO Professional	F-200
S3000 Cold Store	F-208

Safety light curtains

deTec4 Core	G-232
deTec2 Core	G-242
C4000 Standard	G-252
C4000 Standard ATEX II 3G/3D	G-278
C4000 Advanced	G-280
C4000 Advanced ATEX II 3G/3D	G-306
C4000 Micro	G-308
C4000 Micro in IP69K Housing	G-318
C4000 Fusion	G-326
C4000 Palletizer	G-344
C4000 Palletizer in IP69K Housing	G-360
C4000 Entry/Exit	G-368
C4000 Select	G-380
M4000 Advanced Curtain	G-396
miniTwin4	G-414
miniTwin2	G-428
C2000 Standard in IP69K Housing	G-442

Safety camera systems

V300 Work Station Extended	H-470
V200 Work Station Extended	H-478

Multiple light beam safety devices

M4000 Standard	I-496
M4000 Standard A/P.	I-508
M4000 Standard in IP69K Housing	I-518
M4000 Standard A/P in IP69K Housing	I-524
M4000 Advanced	I-530
M4000 Advanced A/P	I-548
M4000 Area.	I-564
M2000 Standard	I-574
M2000 Standard A/P.	I-584
M2000 Standard in IP69K Housing	I-592

Single-beam photoelectric safety switches

WSU/WEU26-3	J-610
L4000 Systems	J-616
L41.	J-626
L21.	J-634
L27.	J-642
L28.	J-648

Mirror columns and device columns

Mirror columns with protective field height mirror	K-668
Mirror columns with separate mirrors	K-672
Device columns with external grooves	K-678
Device columns for outdoor use	K-684

Enhanced system solutions

Flexi Loop	L-692
Flexi Classic	L-692
Flexi Soft.	L-693
Flexi Soft Drive Monitor	L-693
UE10-2FG	L-694
UE12-2FG	L-694
UE10-30S	L-695
UE48-20S	L-695
UE48-30S	L-696
UE10-4XT	L-696
UE11-4DX	L-697

MACHINE SAFETY AND TRAINING IN THE SICK PORTFOLIO

Opto-electronic protective devices



- Safety laser scanners
- Safety light curtains
- Safety camera systems
- Multiple light beam safety devices
- Single-beam photoelectric safety switches
- Mirror columns and device columns

→ Part number: 8016301

sens:Control – safe control solutions



- Safe sensor cascade
- Safety controllers
- Motion control safety controllers
- Safety relays

→ Part number: 8016303

Available from the second half of 2016

Safety switches



- Electro-mechanical safety switches
- Non-contact safety switches
- Safety locking devices
- Safety command devices

→ Part number: 8016305

Available from the second half of 2016

Guide for Safe Machinery



- Six steps to a safe machine
- Legal requirements for machines
- Safety-relevant European guidelines, directives and standards
- Selection and use of protective devices

→ European edition: 8007988

→ North American edition: 7028282

Service solutions for safe machines and systems



- Consulting and design
- Product and system support
- Verification and optimization
- Upgrades and retrofits

→ Part number: 8014871

International training program



- International training and seminar offers
- User training
- Customized training courses

→ Part number: 8008729

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With almost 7,000 employees and over 50 subsidiaries and equity investments as well as numerous representative offices worldwide, we are always close to our customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in various industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services round out our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

Worldwide presence:

Australia, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, India, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, USA, Vietnam.

Detailed addresses and additional representatives → www.sick.com