PRODUCT INFORMATION

ULTRASONIC SENSORS

ULTIMATE ULTRASONIC SENSOR SOLUTION FROM SICK

UM30, UM18, UM12, UC30, UC12, UC4

SICK
Sensor Intelligence.

VIRTUALLY UNLIMITED USE – REGARDLESS OF COLOR, SHINE, AND TRANSPARENCY

Ultrasonic sensors from SICK perform measurement and detection in a wide variety of application areas on colored, shiny, or transparent surfaces, which are particularly challenging for optical sensors. Even adverse ambient conditions such as dust, dirt, or fog hardly affect the measurement result. The broad detection range also allows for a large field to be monitored with just one sensor – with a measuring range of 13 mm to 8 m.

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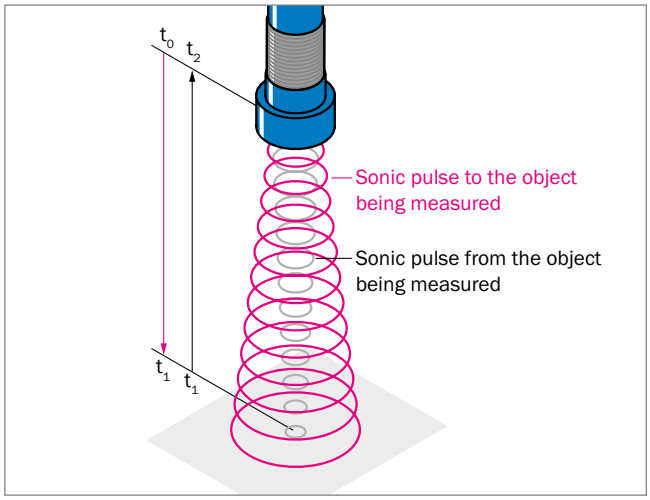
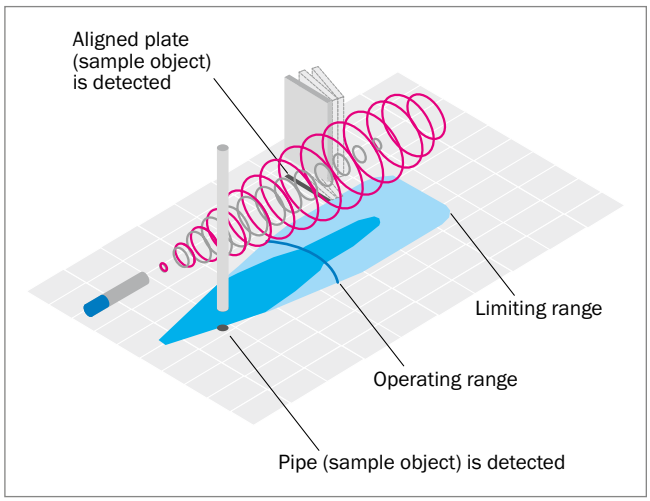
FOR MAXIMUM RELIABILITY ON DEMANDING SURFACES

- Maximum reliability through intelligent analysis of measured values
- Precise measurement results thanks to temperature measurement directly in the sensor head with automatic temperature compensation
- Synchronization and multiplexing for optimal process workflows when using several sensors with short mounting distances
- Simple and reliable solution for virtually any application using the “Distance to object”, “Window”, and “Object between sensor and background” switching modes
- Solution for complex applications thanks to adjustable filter settings
- Individually adjustable sound cone for optimal adaptation to the application

DISTANCE MEASUREMENT – AS FAST AS THE SPEED OF SOUND



(Sonic) time-of-flight measurement



Sensing ranges

(Sonic) time-of-flight measurement

The sensor emits an sonic pulse that is reflected by the object being detected. The time required for the pulse to go from the sensor to the object and come back again is measured and evaluated and converted into the distance as follows.

$$\text{Distance} = \text{speed of sound} \times \frac{\text{total sonic time of flight } (t_2)}{2}$$

Sensing ranges of ultrasonic sensors

In general on ultrasonic sensors, the less sound the object being measured absorbs, the greater the possible sensing range. The operating range specifies the distance up to which measurement on common objects with sufficient functional reserves is possible. Under ideal conditions, the sensor can even be used up to its limiting range.

Switch panels are used for ideal assessment of application capability. The dark blue area shown in these switch panels shows an example of the sensor's working area if a round pipe is detected. The light blue area shows the maximum detection range which can be achieved under ideal conditions for easily detectable objects, such as the aligned plate given here. This area between the sensor and the object being measured should be kept free of other objects to prevent them from being detected accidently.

The detectability and detection range of an object depend on its reflective properties, size and alignment. Depending on the application, the sensor may also be able to detect very small objects, e.g. metal wire.

IO-LINK FOR TOP PRODUCTION PERFORMANCE

Integrated communications right down to the lowest field level of the automation pyramid is crucial in order to better exploit the performance of modern sensors and actuators and make your machines and systems more productive.

With IO-Link, leading automation manufacturers have established a benchmark solution to the problem of clearing those final hurdles in the communication chain, by seamlessly integrating sensors into an automation network. This brings new ways of increasing flexibility, reliability, and efficiency and can reduce the costs associated with your system.

Like to know more about IO-Link?

IO-Link

Speak to your contact person at SICK or click here ➜ IO-Link

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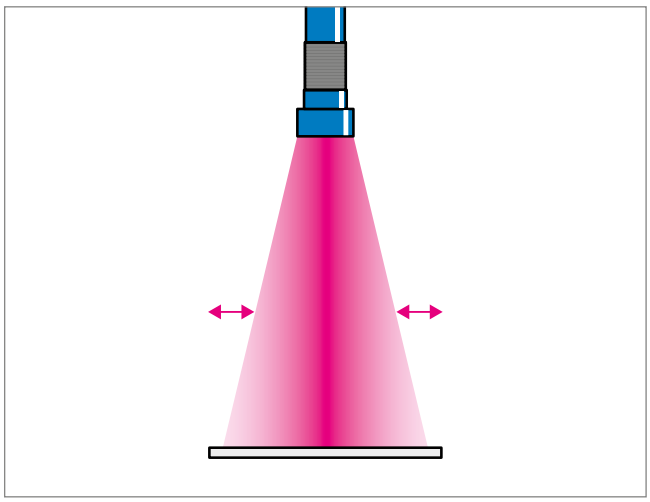
INDIVIDUALLY ADJUSTABLE SOUND CONE – AN OPTIMAL SOLUTION FOR YOUR APPLICATION

You now have infinitely variable adjustment options for your SICK ultrasonic sensor's detection range, so it can be adapted perfectly to suit your application.

Adjusting the sensor sensitivity gives you direct control over the sound cone's behavior and, therefore,over the sensor's detection range. This means that objects in the immediate surroundings can be displayed or hidden. Up until now, there were three pre-configured sensitivity levels available – now, the detection range can also be adjusted variably. It does not matter whether the sound cone is large or small, narrow or wide, or whether the detection range is slowly increasing or the largest size possible from the beginning of the measurement on: with our Connect+ accessory, the adjustment possibilities are endless.

Tank walls, for example, can be hidden in level applications, different container sizes can be verified when inspecting empty containers, and even larger areas can be monitored with just one sensor.

This functionality, which is unique on the market, represents an individual and therefore optimal solution for your application. Even in changing conditions, the sensor can always be optimized to meet your requirements.



3-level setting or variable setting

Ultrasonic sensors with adjustable sound cone

UM30-2 ➜ page 14 UC30-2 ➜ page 36

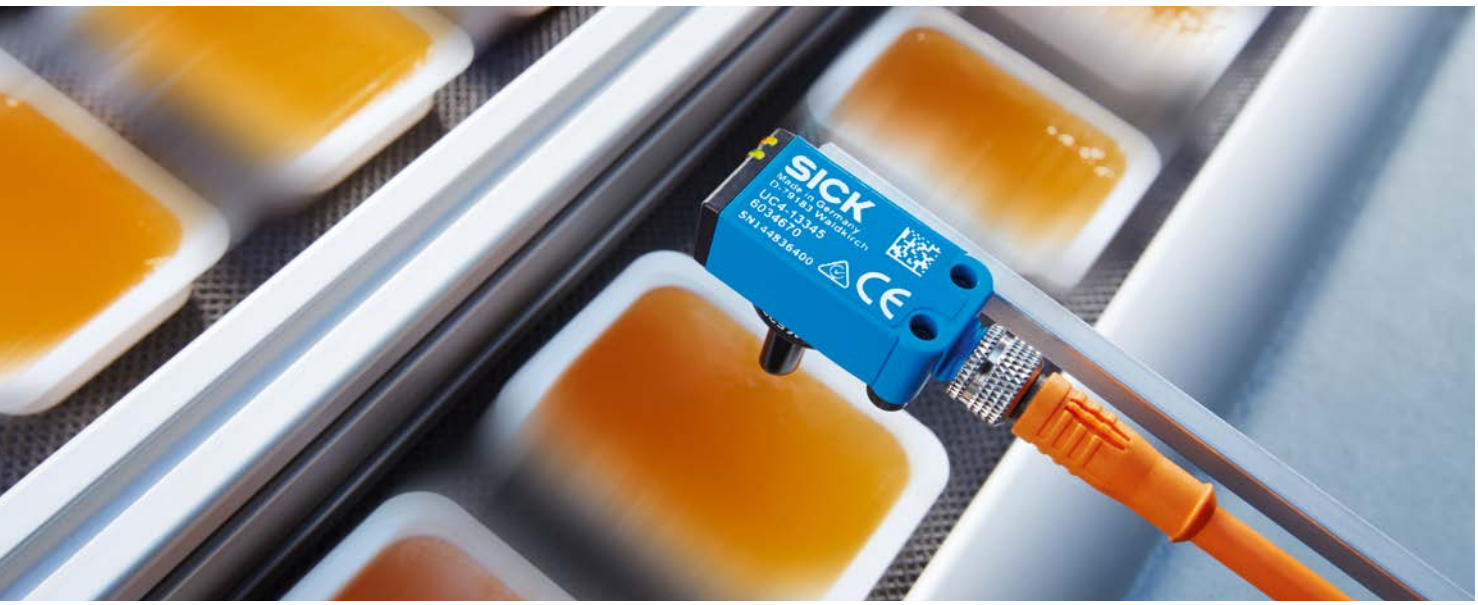
IO-Link offers you a number of benefits

- Sensor integration at fieldbus level offers integrated communication to increase system productivity
- Easy device replacement with automatic configuration increases machine availability
- Interference-proof signal transmission increases system reliability
- Automatic sensor configuration according to the manufacturing process increases flexibility within the application
- Minimal cabling and use of unshielded cables reduce the cost of projects
- Visualization on a PC provides a clear overview of the sensor functionality to find the optimal solution for your application
- Several diagnostic options, e.g. when signal strength decreases, to avoid downtime and to enable planning
- Automated electronic parts lists using device IDs simplify the documentation process, reducing the costs related to this

Ultrasonic sensors with IO-Link

UM18-2 Pro ➜ page 22 UC30-2 ➜ page 36

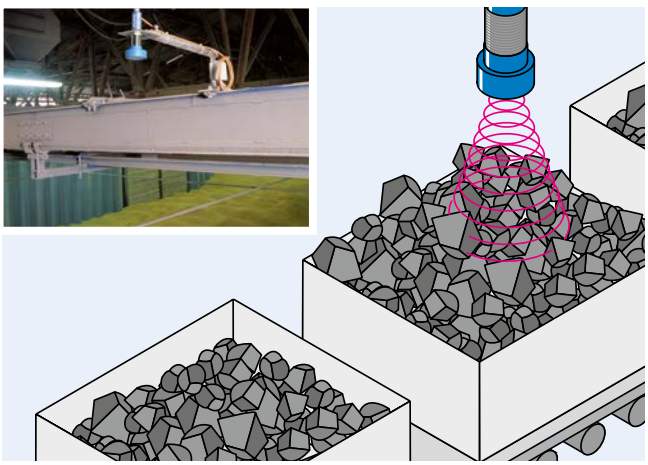
THE SUITABLE ULTRASONIC SENSOR FOR EVERY CHALLENGING APPLICATION



Ultrasonic sensors are true all-rounders. Whether it is position detection, distance measurement or the detection of solid, powdered or liquid substances: Ultrasonic sensors from SICK demonstrate their reliability and precision in virtually any application

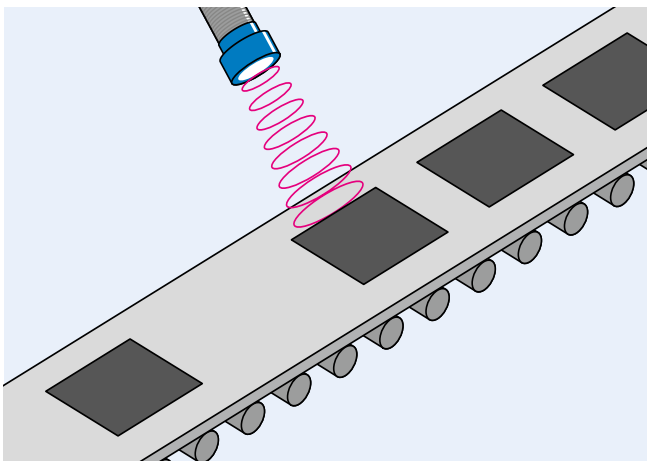
The choice is yours – every ultrasonic sensor in the SICK portfolio can handle the following applications:

Filling level control



Regulating and monitoring the filling level of liquids and bulk materials ensures process reliability regardless of the material in question

Presence detection of flat objects



Detecting very flat objects which are difficult to detect optically using edge detection maximizes productivity

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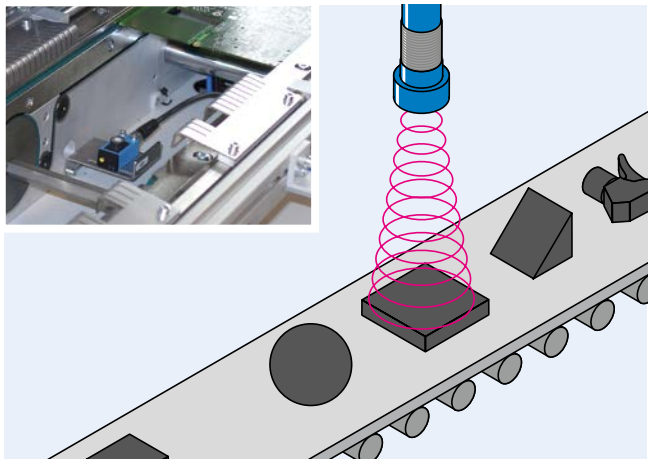
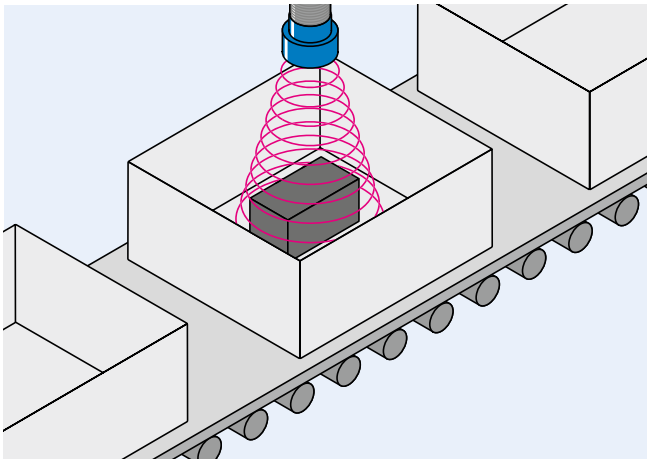
Presence detection of different objects



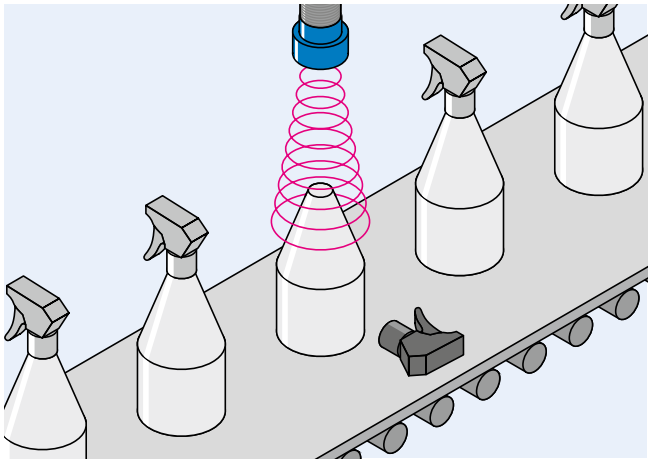
Detecting objects with different shapes and reflective properties maximizes machine flexibility

Monitoring of empty containers



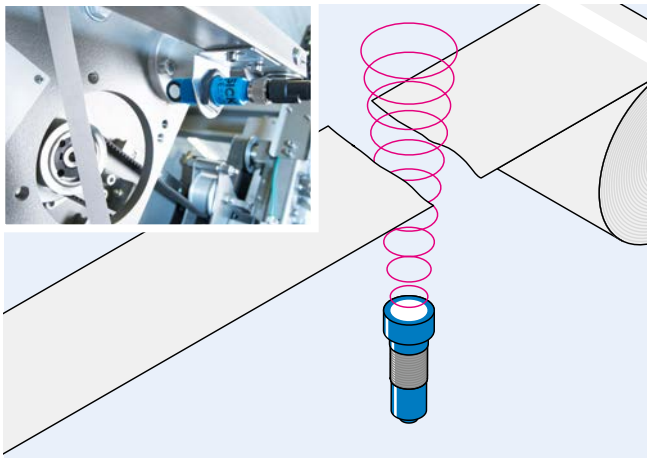
Monitoring the presence of different objects in containers increases efficiency in logistical applications

Process and quality control



Detecting incorrectly produced or unfinished goods and incorrect alignment reduces system downtimes and ensures highest productivity

Rip detection



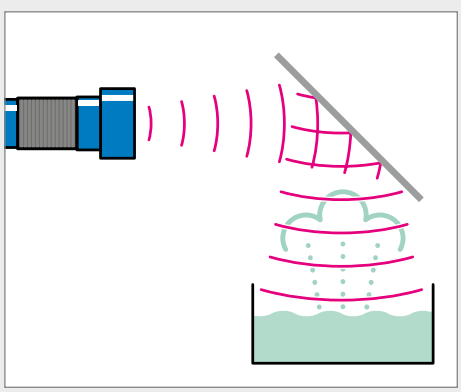
Detecting rips or tears in paper and metal rolls, films, textiles, and wires reduces system downtimes

TIP

Sonic deflection

When installation space is restricted, it may be a good idea to use a deflecting plate. Ideally, the deflecting plate should be installed in the blind zone of the sensor.

Turning the sound deflection downward keeps aggressive chemical outgassing away from the sensor head and extends its service life. Turning the sound deflection upward prevents deposits accumulating on the sensor head, e.g. in a contaminated, oily or humid atmosphere. This helps to optimize measurement and detection.

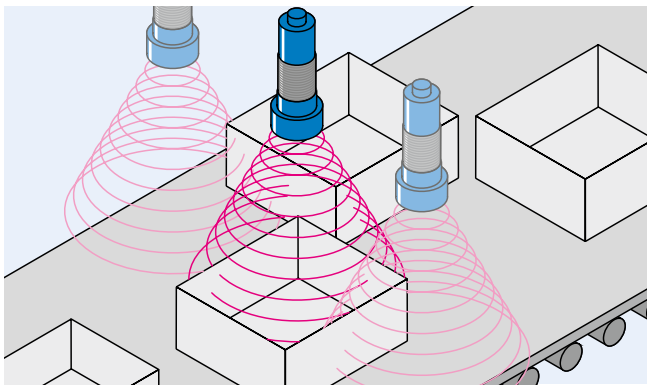




A case for all-rounders

The UM30, UM18 and UC30 in particular demonstrate their full potential in the following applications.

Area monitoring



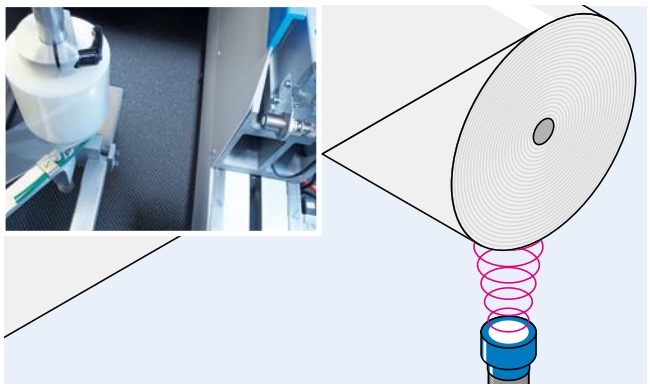
UM30, UM18 and UC30

When using multiple sensors: Implementing synchronization mode by simply connecting pin 5 increases the detection range and reduces mutual interference between the sensors. This improves the process stability.

All ultrasonic sensors from SICK

Three-dimensional detection range provides cost-effective coverage of large areas

Diameter control



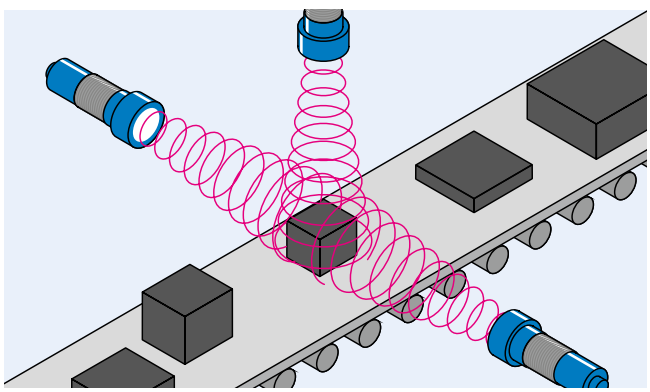
UM30, UM18 and UC30

Regulating the rolling and unrolling of different materials for the purposes of process monitoring increases system reliability

All ultrasonic sensors from SICK

As the material is unrolled, the distance between the roll and the sensor increases. When this distance exceeds a set value, the sensor outputs a signal indicating that the roll needs to be changed. This reduces the system downtime.

Dimension measurement



UM30, UM18 and UC30

Measuring the dimensions of different objects helps to increase system flexibility. Implementing multiplex mode simply by connecting pin 5 and assigning an address in the sensor prevents mutual interference between the sensors. This guarantees maximum process stability.

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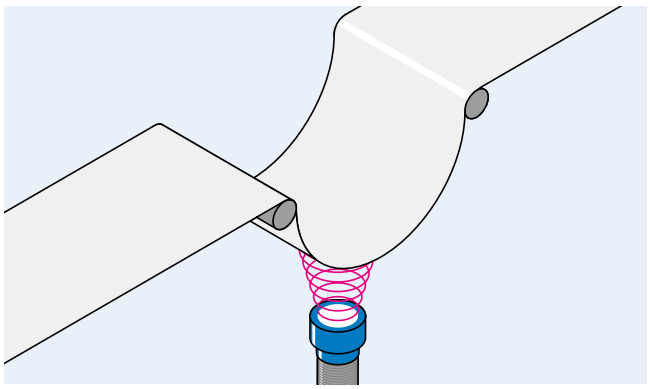
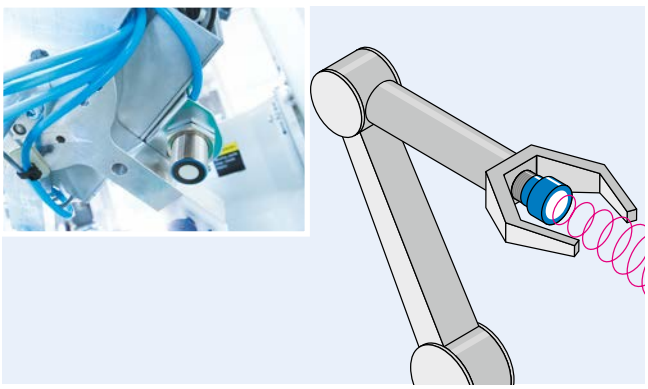
Slack regulation



UM30, UM18 and UC30

Adjusting the material feed according to the slack depth improves the process quality

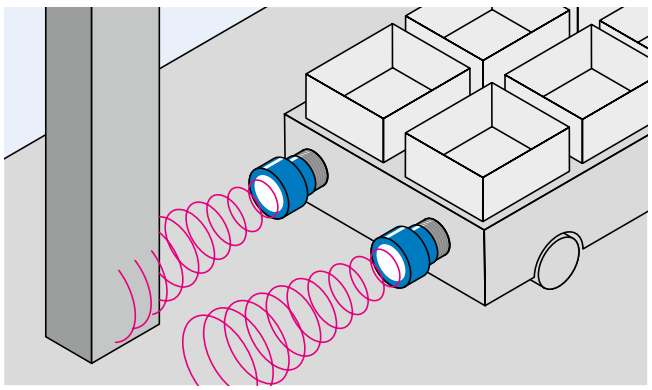
Positioning



UM30, UM18 and UC30

Distance measurement for different materials ensures reliable positioning

Collision prevention



UM30, UM18 and UC30

Detecting obstructions over a large area in order to control and brake automated guided vehicle enables a high level of automation

Are you looking for ultrasonic sensors with a higher level of pressure and chemical resistance?

We can help you here too and would be delighted to help you choose the right sensor for your application.

➜ www.mysick.com/en/UP56

Can't find your application?

Your SICK contact partners will be happy to help you find the suitable ultrasonic sensor solution to meet your requirements.
You can find contact information on the back page of this product information leaflet or at

➜ www.sick.com

	Interfaces	Operating range, limiting range **Repeatability (in % of the current measurement value)** Response time 10 mm … 100 mm
UM30-2  ➜ page 14	Analog (mA/V) Switching output OBSB Window	**30 mm ... 250 mm, 350 mm** **± 0.15 %** 50 ms
UM18-2  Core ➜ page 22	Switching output OBSB Window	**20 mm ... 150 mm, 250 mm** **± 0.15 %** 32 ms **30 mm ... 250 mm, 350 mm** **± 0.15 %** 32 ms
 Pro ➜ page 22	Analog (mA) Analog (V) IO-Link Switching output OBSB Window	
UM12  ➜ page 30	Analog (mA) Analog (V) Switching output OBSB Window	**20 mm ... 150 mm, 250 mm** **± 0.15 %** 24 ms **40 mm ... 240 mm, 350 mm** **± 0.15 %** 30 ms
UC30  ➜ page 36	Analog (mA) Analog (V) IO-Link Switching output OBSB Window	
UC12  ➜ page 42	Switching output OBSB Window	**20 mm ... 150 mm, 250 mm** **± 0.15 %** 30 ms
UC4  ➜ page 48	Analog (mA) Analog (V) Switching output OBSB Window	**13 mm ... 100 mm, 150 mm** **± 0.15 %** 30 ms **13 mm ... 150 mm, 250 mm** **± 0.15 %** 10 ms/30 ms
		10 mm … 100 mm

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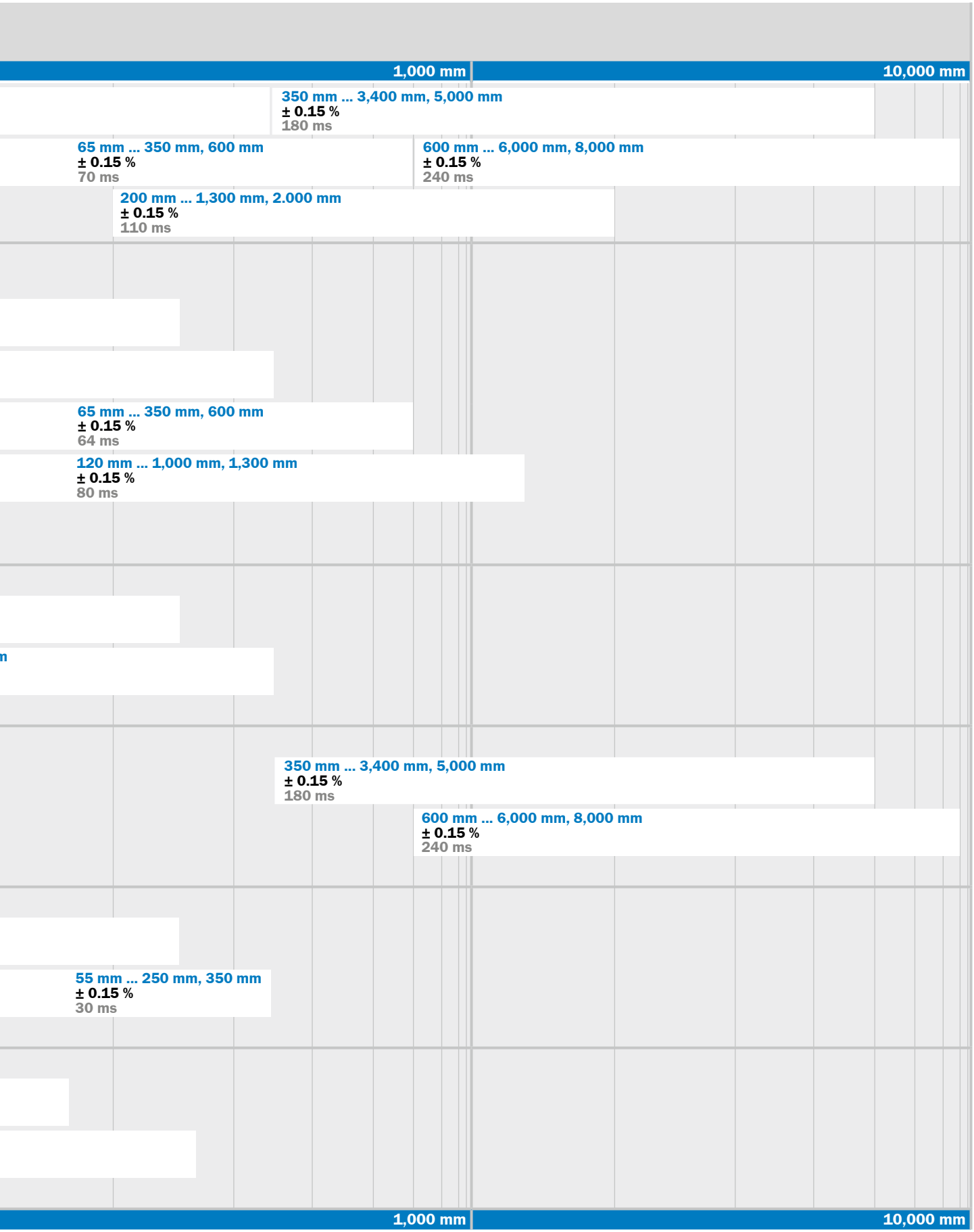
1,000 mm
10,000 mm
350 mm ... 3,400 mm, 5,000 mm
± 0.15 %
180 ms
65 mm ... 350 mm, 600 mm
± 0.15 %
70 ms
600 mm ... 6,000 mm, 8,000 mm
± 0.15 %
240 ms
200 mm ... 1,300 mm, 2.000 mm
± 0.15 %
110 ms
65 mm ... 350 mm, 600 mm
± 0.15 %
64 ms
120 mm ... 1,000 mm, 1,300 mm
± 0.15 %
80 ms
350 mm ... 3,400 mm, 5,000 mm
± 0.15 %
180 ms
600 mm ... 6,000 mm, 8,000 mm
± 0.15 %
240 ms
55 mm ... 250 mm, 350 mm
± 0.15 %
30 ms
1,000 mm
10,000 mm

				
	UM30	**UM18**	**UM12**	
	The universal application solver	Simple set up, perfect detection	Small sensor, great benefits	
Technical data overview				
Working range, limiting range	30 mm ... 6,000 mm, 8,000 mm	20 mm ... 1,000 mm, 1,300 mm	20 mm ... 240 mm, 350 mm	
Resolution	≥ 0.18 mm	≥ 0.069 mm ≥ 0.2 mm	≥ 0.069 mm	
Repeatability	± 0.15 %	± 0.15 %	± 0.15 %	
Response time	50 ms ... 240 ms	32 ms ... 80 ms	24 ms ... 30 ms	
Output time	8 ms ... 60 ms	8 ms ... 20 ms	8 ms ... 10 ms	
Analog output	1 x 4 mA ... 20 mA / 1 x 0 V ... 10 V	1 x 4 mA ... 20 mA / 1 x 0 V ... 10 V	1 x 4 mA ... 20 mA / 1 x 0 V ... 10 V	
Switching output	1 x PNP 1 x NPN 2 x PNP 2 x NPN	1 x PNP 1 x NPN 2 x PNP 2 x NPN 1 x push-pull: PNP/NPN	1 x PNP 1 x NPN	
At a glance				
	• Integrated time-of-flight technology detects objects such as glass, liquids and transparent foils, independent of color • Range up to 8,000 mm • Display enables fast and flexible sensor adjustment • Immune to dust, dirt and fog • Available with combined analog and digital outputs • Synchronization and multiplexing • Adjustable sensitivity • Three operation modes: Distance to Object (DtO), Window (Wnd) or Object between sensor and background (ObSB)	• Reliable measurement independent of material color, transparency, gloss and ambient light • Four ranges up to 1,300 mm • Short metal or plastic M18 housing with a length of 41 mm • Straight or right-angle version • High immunity to dirt, dust, humidity and fog • PNP/NPN switching output, analog output or push-pull switching output with IO-Link • Synchronization and multiplex modes are available	• Reliable measurement, regardless of material color, transparency, gloss, or ambient light • Very short and rugged M12 metal housing • Variants with PNP/NPN switching output or analog output • Immune to dirt, dust, humidity, and fog • Detection, measurement, or positioning with ultrasound technology • Cable teach-in	
Detailed information	→ 14	→ 22	→ 30	

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	UC30	**UC12**	**UC4**
	Rugged. Reliable. Rectangular.	Ultrasonic technology housed in an industry-proven design	Small, precise, ultrasonic
	350 mm ... 6,000 mm, 8,000 mm	20 mm ... 250 mm, 350 mm	13 mm ... 150 mm, 250 mm
	≥ 0.18 mm	≥ 0.1 mm	≥ 0.1 mm
	± 0.15 %	± 0.15 %	± 0.15 %
	180 ms ... 240 ms	30 ms	10 ms ... 30 ms
	43 ms ... 60 ms	8 ms	5 ms ... 10 ms
	1 x 4 mA ... 20 mA / 1 x 0 V ... 10 V	–	1 x 4 mA ... 20 mA / 1 x 0 V ... 10 V
	2 x PNP 2 x NPN 1 x push-pull: PNP/NPN	2 x PNP 2 x NPN	1 x PNP 1 x NPN
	• Reliable operation, regardless of material color, transparency, gloss, and ambient light • Rugged rectangular housing with teach-in buttons • Range up to 8,000 mm • Variants with analog output, push-pull output with IO-Link or two PNP/NPN switching outputs • Immune to dirt, dust, humidity, and fog • Detection, measurement, and positioning with ultrasonic technology • Adjustable sensitivity	• Object detection independent of material color and ambient light – even transparent foils, glass, liquids and bottles are reliably detected • Fast and easy teach-in with single push-button • Immune to dirt, dust and fog • Two ambivalent switching outputs (Q, /Q) • Excellent background suppression • Three operation modes: Distance to Object (DtO), Window (Wnd) or Object between sensor and background (ObSB)	• Reliable measurement, regardless of material color, transparency, gloss, and ambient light • Ultrasonic technology in a miniature housing • Detection, measurement, and positioning with ultrasonic technology • Immune to dirt, dust, humidity, and fog • Variants with PNP/NPN switching output or analog output • Precise background suppression • Teach-in button
	→ 36	→ 42	→ 48

THE UNIVERSAL APPLICATION SOLVER

Product description

The UM30 product family provides a variety of flexible options. Sensing ranges up to 8 m, as well as various setup options, enable these sensors to solve nearly any application. Its high measurement accuracy – due to internal temperature compensation – along with the color-independent detection of objects, immunity to dirt and dust, and a high operational temperature range up to 70 °C, enable reliable operation – even under the most challenging conditions.

At a glance

- Integrated time-of-flight technology detects objects such as glass, liquids and transparent foils, independent of color
- Range up to 8,000 mm
- Display enables fast and flexible sensor adjustment
- Immune to dust, dirt and fog
- Available with combined analog and digital outputs
- Synchronization and multiplexing
- Adjustable sensitivity
- Three operation modes: Distance to Object (DtO), Window (Wnd) or Object between sensor and background (ObSB)

Your benefits

- Easy machine integration due to compact size
- Various setup options ensure flexible adaptation to applications
- Multiplex mode eliminates cross-talk interference for consistent and reliable detection and high measurement reliability
- Synchronization mode allows multiple sensors to work as one large sensor, providing a low-cost solution for area detection
- Display enables setup prior to installation, reducing on-site installation time
- Integrated temperature compensation and time-of-flight technology ensure high measurement accuracy
- ObSB-mode enables detection of any object between the sensor and a taught background

RoHS 2011/65/EU

Additional information

→ www.mysick.com/en/UM30

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

Performance

Resolution	≥ 0.18 mm
Repeatability [1]	± 0.15 %
Accuracy [1] [2]	± 1 %
Temperature compensation	✔
Switching frequency	
30 mm ... 250 mm, 350 mm	11 Hz
65 mm ... 350 mm, 600 mm	8 Hz
200 mm ... 1,300 mm, 2,000 mm	6 Hz
350 mm ... 3,400 mm, 5,000 mm	3 Hz
600 mm ... 6,000 mm, 8,000 mm	2 Hz
Ultrasonic frequency (typical)	
30 mm ... 250 mm, 350 mm	320 kHz
65 mm ... 350 mm, 600 mm	400 kHz
200 mm ... 1,300 mm, 2,000 mm	200 kHz
350 mm ... 3,400 mm, 5,000 mm	120 kHz
600 mm ... 6,000 mm, 8,000 mm	80 kHz
Detection area (typical)	See diagrams
Additional function [3]	Set switching mode: Distance to object (DtO) / Window (Wnd) / Object between sensor and background (ObSB) Teach-in and parameterization of switching output, invertible Teach-in and parameterization of analog output, invertible Automatic selection of analog current or voltage output Temperature compensation Synchronization and multiplexing (no cross talk) of up to 10 sensors Set measurement filters: value filter, filter strength, set on delay, adjustable sensitivity, foreground suppression and detection area Switch-off display and lock user interface

[1] Referring to current measurement value.

[2] Temperature compensation can be switched off, without temperature compensation: 0.17 % / K.

[3] Functions may vary depending on sensor type.

Interfaces

Resolution analog output	12 bit
Multifunctional input (MF)	1 x MF
Hysteresis	
30 mm ... 250 mm, 350 mm	3 mm
65 mm ... 350 mm, 600 mm	5 mm
200 mm ... 1,300 mm, 2,000 mm	20 mm
350 mm ... 3,400 mm, 5,000 mm	50 mm
600 mm ... 6,000 mm, 8,000 mm	100 mm

Mechanics/electronics

Supply voltage V_s [1] [2]	DC 9 V ... 30 V
Power consumption [3]	≤ 2.4 W
Initialization time	< 300 ms
Design	Cylindrical

[1] Limit values, reverse-polarity protected, operation in short-circuit protected network: max. 8 A.

[2] 15 V ... 30 V when using analog voltage output.

[3] Without load.

Housing material	Nickel-plated brass, PBT, display: TPU, ultrasonic transducer: polyurethane foam, glass epoxy resin
Connection type	Male connector, M12, 5-pin
Indication	LED display, 2 x LED
Weight	150 g ... 270 g

[1] Limit values, reverse-polarity protected, operation in short-circuit protected network: max. 8 A.
[2] 15 V ... 30 V when using analog voltage output.
[3] Without load.

Ambient data

Enclosure rating	IP 67
Protection class	III
Ambient temperature	Operation: –25 °C ... +70 °C Storage: –40 °C ... +85 °C

Ordering information

UM30-2

- **Sending axis:** straight

Working range, limiting range	Response time	Output time	Switching output [1]	Analog output	Type	Part no.
30 mm ... 250 mm, 350 mm	50 ms	8 ms	1 x PNP (200 mA) [2]	–	UM30-211111	6037660
				1 x 0 V ... 10 V (≥ 100 kΩ) [3] 1 x 4 mA ... 20 mA (≤ 500 Ω) [3] [4] [5]	UM30-211118	6036921
			2 x PNP (200 mA) [2]	–	UM30-211112	6037664
			1 x NPN (200 mA) [6]	–	UM30-211115	6037669
			2 x NPN (200 mA) [6]	–	UM30-211114	6037674
			–	1 x 0 V ... 10 V (≥ 100 kΩ) [3] 1 x 4 mA ... 20 mA (≤ 500 Ω) [3] [4] [5]	UM30-211113	6036916
65 mm ... 350 mm, 600 mm	70 ms	16 ms	1 x PNP (200 mA) [2]	–	UM30-212111	6037661
				1 x 0 V ... 10 V (≥ 100 kΩ) [3] 1 x 4 mA ... 20 mA (≤ 500 Ω) [3] [4] [5]	UM30-212118	6036922
			2 x PNP (200 mA) [2]	–	UM30-212112	6037665
			1 x NPN (200 mA) [6]	–	UM30-212115	6037670
			2 x NPN (200 mA) [6]	–	UM30-212114	6037675
			–	1 x 0 V ... 10 V (≥ 100 kΩ) [3] 1 x 4 mA ... 20 mA (≤ 500 Ω) [3] [4] [5]	UM30-212113	6036917
200 mm ... 1,300 mm, 2,000 mm	110 ms	23 ms	1 x PNP (200 mA) [2]	–	UM30-213111	6037537
				1 x 0 V ... 10 V (≥ 100 kΩ) [3] 1 x 4 mA ... 20 mA (≤ 500 Ω) [3] [4] [5]	UM30-213118	6036923
			2 x PNP (200 mA) [2]	–	UM30-213112	6037666
			1 x NPN (200 mA) [6]	–	UM30-213115	6037671
			2 x NPN (200 mA) [6]	–	UM30-213114	6037676
			–	1 x 0 V ... 10 V (≥ 100 kΩ) [3] 1 x 4 mA ... 20 mA (≤ 500 Ω) [3] [4] [5]	UM30-213113	6036918

[1] Output Q short-circuit protected.
[2] PNP: HIGH = V_S - (< 2 V) / LOW = 0 V.
[3] Automatic selection of analog current or voltage output dependent on load.
[4] For 4 mA ... 20 mA and V_s ≤ 20 V max. load ≤ 100 Ω.
[5] Subsequent smoothing of the analog output, depending on the application, may increase the response time by up to 200 %.
[6] NPN: HIGH ≤ 2 V / LOW = V_S.

Working range, limiting range	Response time	Output time	Switching output [1]	Analog output	Type	Part no.
350 mm ... 3,400 mm, 5,000 mm	180 ms	43 ms	1 x PNP (200 mA) [2]	–	UM30-214111	6037662
				1 x 0 V ... 10 V (≥ 100 kΩ) [3] 1 x 4 mA ... 20 mA (≤ 500 Ω) [3] [4] [5]	UM30-214118	6036924
			2 x PNP (200 mA) [2]	–	UM30-214112	6037667
			1 x NPN (200 mA) [6]	–	UM30-214115	6037672
			2 x NPN (200 mA) [6]	–	UM30-214114	6037677
			–	1 x 0 V ... 10 V (≥ 100 kΩ) [3] 1 x 4 mA ... 20 mA (≤ 500 Ω) [3] [4] [5]	UM30-214113	6036919
600 mm ... 6,000 mm, 8,000 mm	240 ms	60 ms	1 x PNP (200 mA) [2]	–	UM30-215111	6037663
				1 x 0 V ... 10 V (≥ 100 kΩ) [3] 1 x 4 mA ... 20 mA (≤ 500 Ω) [3] [4] [5]	UM30-215118	6036925
			2 x PNP (200 mA) [2]	–	UM30-215112	6037668
			1 x NPN (200 mA) [6]	–	UM30-215115	6037673
			2 x NPN (200 mA) [6]	–	UM30-215114	6037678
			–	1 x 0 V ... 10 V (≥ 100 kΩ) [3] 1 x 4 mA ... 20 mA (≤ 500 Ω) [3] [4] [5]	UM30-215113	6036920

[1] Output Q short-circuit protected.

[2] PNP: HIGH = V_S - (< 2 V) / LOW = 0 V.

[3] Automatic selection of analog current or voltage output dependent on load.

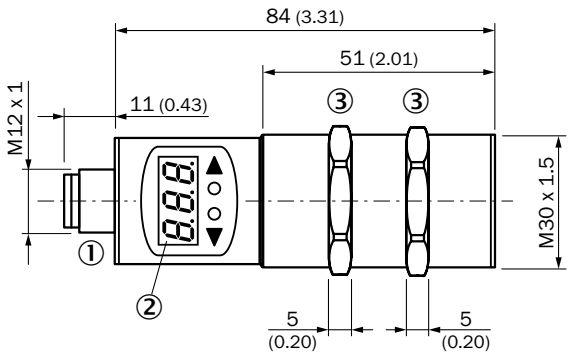
[4] For 4 mA ... 20 mA and V_s ≤ 20 V max. load ≤ 100 Ω.

[5] Subsequent smoothing of the analog output, depending on the application, may increase the response time by up to 200 %.

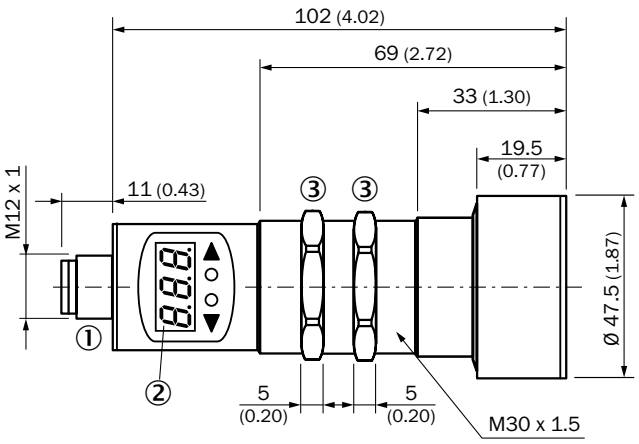
[6] NPN: HIGH ≤ 2 V / LOW = V_S.

Dimensional drawings (Dimensions in mm (inch))

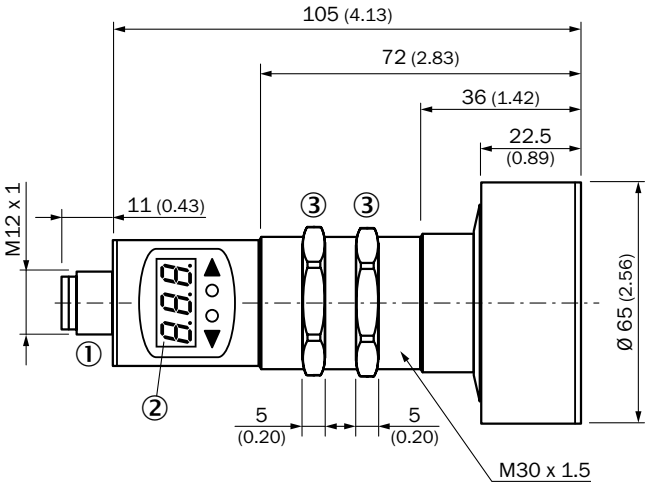
UM30-211, UM30-212, UM30-213



UM30-214



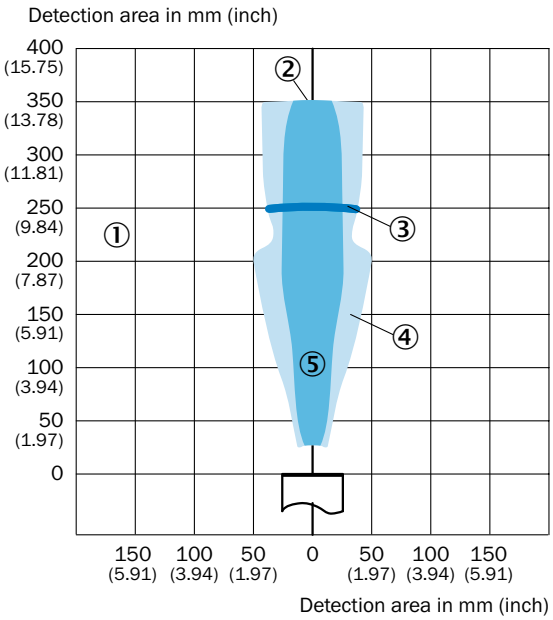
UM30-215



① Connection
② Display
③ Mounting nuts, SW 36 mm

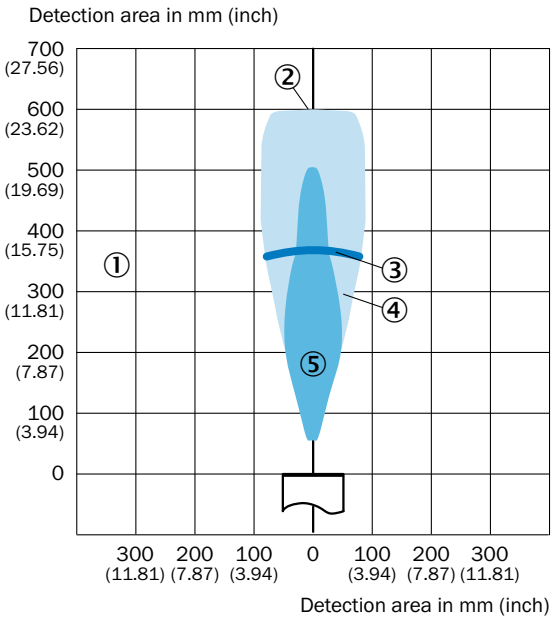
Detection ranges

UM30-211



① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 500 mm x 500 mm
⑤ Example object: pipe with 10 mm diameter

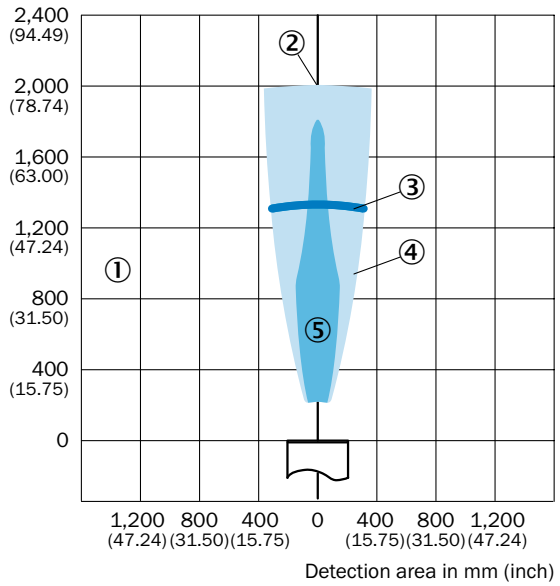
UM30-212



① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 500 mm x 500 mm
⑤ Example object: pipe with 27 mm diameter

UM30-213

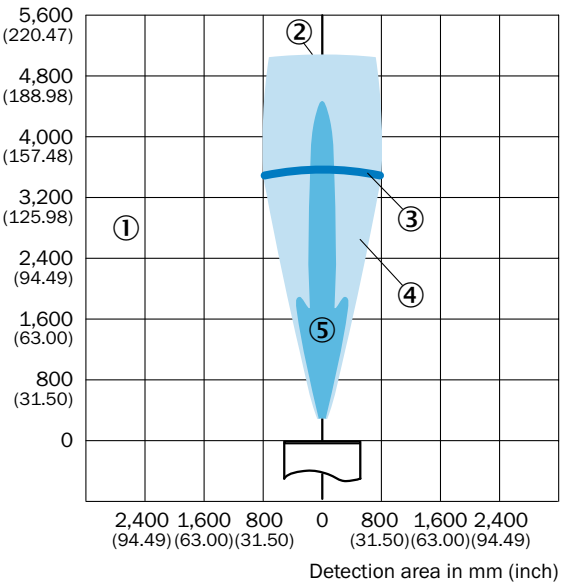
Detection area in mm (inch)



① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 500 mm x 500 mm
⑤ Example object: pipe with 27 mm diameter

UM30-214

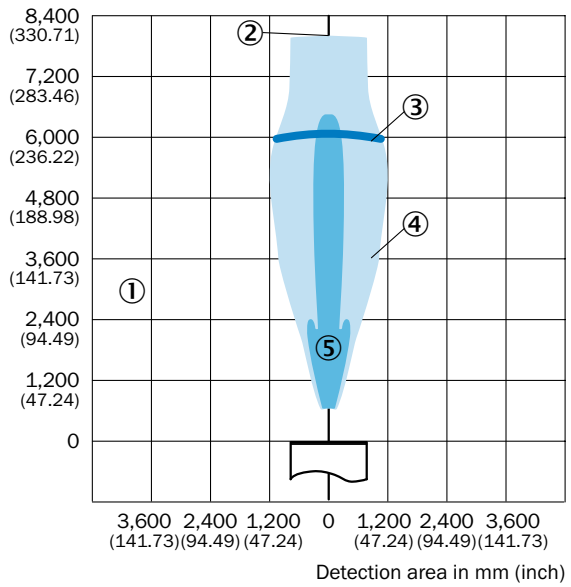
Detection area in mm (inch)



① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 500 mm x 500 mm
⑤ Example object: pipe with 27 mm diameter

UM30-215

Detection area in mm (inch)



① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 500 mm x 500 mm
⑤ Example object: pipe with 27 mm diameter

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

	Brief description	Part no.
	Mounting plate for M30 sensors	5321871
	Mounting bracket, M30 thread	5308445

Terminal and alignment brackets

	Brief description	Part no.
	Mounting bracket, M30, axial rotation possible, with threaded mounting hole M6	5311527

Connection systems

Plug connectors and cables

	Connection type head A	Connection type head B	Cable	Cable length	Part no.
 Illustration may differ	Female connector, M12, 5-pin, straight	Cable	PVC, unshielded	2 m	6008899
 Illustration may differ	Female connector, M12, 5-pin, angled	Cable	PVC, unshielded	2 m	6008900

Further accessories

Programming and configuration tools

	Brief description	Type	Part no.
	Tool for visualization, configuration and cloning, 3-digit LED display, supply voltage: DV 9 V ... 30 V	Connect+ adapter (CPA)	6037782

SIMPLE SET UP, PERFECT DETECTION

Product description

The UM18 ultrasonic sensor family provides simplicity and high functionality. The UM18 ultrasonic sensors are available in straight and right-angle versions for easy machine integration. A metal or plastic housing allows use in demanding environmental conditions. Due to four sensing ranges up to 1,300 mm and LED status feedback, the sensors are suitable for a broad range of applications. In addition to variants with an analog current or voltage output, versions with a PNP/NPN switching output or a push-pull switching output with IO-Link are available.

At a glance

- Reliable measurement independent of material color, transparency, gloss and ambient light
- Four ranges up to 1,300 mm
- Short metal or plastic M18 housing with a length of 41 mm
- Straight or right-angle version
- High immunity to dirt, dust, humidity and fog
- PNP/NPN switching output, analog output or push-pull switching output with IO-Link
- Synchronization and multiplex modes are available

Your benefits

- Four sensing ranges up to 1,300 mm provide a range of flexible mounting options
- Easy machine integration due to short M18 housing available in straight or right-angle versions
- Intelligent measurement filters and versions with temperature compensation guarantee reliable measurement results for maximum process reliability
- Solid, one-piece housing secures highest machine availability
- Synchronization or multiplex mode enables simultaneous operation of up to 10 sensors, improving application flexibility and process reliability
- Easy system integration due to a wide range of available output signals
- Unintentional adjustments to sensor settings are eliminated since teach-in process is done with an external wire
- Variety of application solutions due to insensitivity and reliability of ultrasound technology

RoHS 2011/65/EU

IO-Link

Additional information

→ www.mysick.com/en/UM18

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.

8014787/2015-08-28
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Detailed technical data

Performance

	UM18-2 Core	UM18-2 Pro
Resolution	0.2 mm	≥ 0.069 mm
Repeatability [1]	± 0.15 %	
Accuracy [1]	0.17 % / K	± 1 % [2]
Temperature compensation	–	✔
Switching frequency		
20 mm ... 150 mm, 250 mm	25 Hz	
30 mm ... 250 mm, 350 mm	25 Hz	
65 mm ... 350 mm, 600 mm	12 Hz	
120 mm ... 1,000 mm, 1,300 mm	10 Hz	
Ultrasonic frequency (typical)		
20 mm ... 150 mm, 250 mm	380 kHz	
30 mm ... 250 mm, 350 mm	320 kHz	
65 mm ... 350 mm, 600 mm	400 kHz	
120 mm ... 1,000 mm, 1,300 mm	200 kHz	
Detection area (typical)	See diagrams	
Additional function [3]	Set switching mode: Distance to object (DtO) / Window (Wnd) / Object between sensor and background (ObSB) Teach-in and parameterization of switching outputs, invertible	Set switching mode: Distance to object (DtO) / Window (Wnd) / Object between sensor and background (ObSB), Teach-in and parameterization of switching output, invertible Teach-in and parameterization of analog output, invertible Temperature compensation IO-Link Synchronization and multiplexing (no cross talk) of up to 10 sensors

[1] Referring to current measurement value.

[2] Temperature compensation can be switched off, without temperature compensation: 0.17 % / K.

[3] Functions may vary depending on sensor type.

Interfaces

	UM18-2 Core	UM18-2 Pro
Resolution analog output	–	12 bit
Multifunctional input (MF)	–	1 x MF
Hysteresis		
20 mm ... 150 mm, 250 mm	2 mm	
30 mm ... 250 mm, 350 mm	3 mm	
65 mm ... 350 mm, 600 mm	5 mm	
120 mm ... 1,000 mm, 1,300 mm	20 mm	
Data interface	–	IO-Link

Mechanics/electronics

	UM18-2 Core	UM18-2 Pro
Supply voltage V_s [1]	DC 10 V ... 30 V	DC 10 V ... 30 V [2]
Power consumption [3]	≤ 1.2 W	

[1] Limit values, reverse-polarity protected, operation in short-circuit protected network: max. 8 A.

[2] 15 V ... 30 V when using analog voltage output.

[3] Without load.

	UM18-2 Core	UM18-2 Pro
Initialization time	< 300 ms	
Design	Cylindrical	
Housing material	PBT, ultrasonic transducer: polyurethane foam, glass epoxy resin	Nickel-plated brass, ultrasonic transducer: polyurethane foam, glass epoxy resin
Connection type	Male connector, M12, 4-pin	Male connector, M12, 5-pin
Indication	2 x LED	
Weight	15 g ... 20 g	

[1] Limit values, reverse-polarity protected, operation in short-circuit protected network: max. 8 A.

[2] 15 V ... 30 V when using analog voltage output.

[3] Without load.

Ambient data

Enclosure rating	IP 67
Protection class	III
Ambient temperature	Operation: –25 °C ... +70 °C Storage: –40 °C ... +85 °C

Ordering information

UM18-2 Core

Working range, limiting range	Response time	Output time	Sending axis	Switching output	Type	Part no.
20 mm ... 150 mm, 250 mm	32 ms	8 ms	Straight	1 x PNP (200 mA) [1]	UM18-217161101	6048408
				1 x NPN (200 mA) [2]	UM18-217165101	6048410
			Angled	1 x PNP (200 mA) [1]	UM18-217161102	6048409
				1 x NPN (200 mA) [2]	UM18-217165102	6048411
30 mm ... 250 mm, 350 mm	32 ms	8 ms	Straight	1 x PNP (200 mA) [1]	UM18-211161101	6048412
				1 x NPN (200 mA) [2]	UM18-211165101	6048414
			Angled	1 x PNP (200 mA) [1]	UM18-211161102	6048413
				1 x NPN (200 mA) [2]	UM18-211165102	6048415
65 mm ... 350 mm, 600 mm	64 ms	16 ms	Straight	1 x PNP (200 mA) [1]	UM18-212161101	6048416
				1 x NPN (200 mA) [2]	UM18-212165101	6048418
			Angled	1 x PNP (200 mA) [1]	UM18-212161102	6048417
				1 x NPN (200 mA) [2]	UM18-212165102	6048419
120 mm ... 1,000 mm, 1,300 mm	80 ms	20 ms	Straight	1 x PNP (200 mA) [1]	UM18-218161101	6048420
				1 x NPN (200 mA) [2]	UM18-218165101	6048422
			Angled	1 x PNP (200 mA) [1]	UM18-218161102	6048421
				1 x NPN (200 mA) [2]	UM18-218165102	6048423

[1] PNP: HIGH = V_S - (< 2 V) / LOW = 0 V.

[2] NPN: HIGH ≤ 2 V / LOW = V_S.

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UM18-2 Pro

Working range, limiting range	Response time	Output time	Sending axis	Switching output [1] [2]	Analog output	Type	Part no.
20 mm ... 150 mm, 250 mm	32 ms	8 ms	Straight	1 x push-pull: PNP/ NPN (100 mA); IO-Link	–	UM18-21712A211	6048384
				–	1 x 4 mA ... 20 mA (≤ 500 Ω) [3]	UM18-217126111	6048386
					1 x 0 V ... 10 V (≥ 100 kΩ)	UM18-217127111	6048388
			Angled	1 x push-pull: PNP/ NPN (100 mA); IO-Link	–	UM18-21712A212	6048385
				–	1 x 4 mA ... 20 mA (≤ 500 Ω) [3]	UM18-217126112	6048387
					1 x 0 V ... 10 V (≥ 100 kΩ)	UM18-217127112	6048389
30 mm ... 250 mm, 350 mm	32 ms	8 ms	Straight	1 x push-pull: PNP/ NPN (100 mA); IO-Link	–	UM18-21112A211	6048390
				–	1 x 4 mA ... 20 mA (≤ 500 Ω) [3]	UM18-211126111	6048392
					1 x 0 V ... 10 V (≥ 100 kΩ)	UM18-211127111	6048394
			Angled	1 x push-pull: PNP/ NPN (100 mA); IO-Link	–	UM18-21112A212	6048391
				–	1 x 4 mA ... 20 mA (≤ 500 Ω) [3]	UM18-211126112	6048393
					1 x 0 V ... 10 V (≥ 100 kΩ)	UM18-211127112	6048395
65 mm ... 350 mm, 600 mm	64 ms	16 ms	Straight	1 x push-pull: PNP/ NPN (100 mA); IO-Link	–	UM18-21212A211	6048396
				–	1 x 4 mA ... 20 mA (≤ 500 Ω) [3]	UM18-212126111	6048398
					1 x 0 V ... 10 V (≥ 100 kΩ)	UM18-212127111	6048400
			Angled	1 x push-pull: PNP/ NPN (100 mA); IO-Link	–	UM18-21212A212	6048397
				–	1 x 4 mA ... 20 mA (≤ 500 Ω) [3]	UM18-212126112	6048399
					1 x 0 V ... 10 V (≥ 100 kΩ)	UM18-212127112	6048401
120 mm ... 1,000 mm, 1,300 mm	80 ms	20 ms	Straight	1 x push-pull: PNP/ NPN (100 mA); IO-Link	–	UM18-21812A211	6048402
				–	1 x 4 mA ... 20 mA (≤ 500 Ω) [3]	UM18-218126111	6048404
					1 x 0 V ... 10 V (≥ 100 kΩ)	UM18-218127111	6048406
			Angled	1 x push-pull: PNP/ NPN (100 mA); IO-Link	–	UM18-21812A212	6048403
				–	1 x 4 mA ... 20 mA (≤ 500 Ω) [3]	UM18-218126112	6048405
					1 x 0 V ... 10 V (≥ 100 kΩ) [4]	UM18-218127112	6048407

[1] Output Q short-circuit protected.

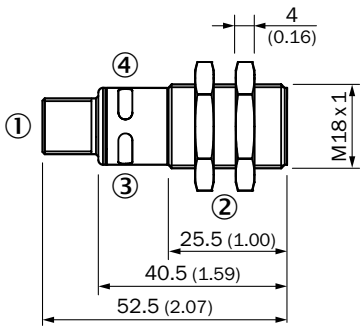
[2] Push-Pull: PNP/NPN HIGH = U_V - (< 4 V) / LOW < 2 V.

[3] For 4 mA ... 20 mA and V_s ≤ 20 V max. load ≤ 100 Ω.

[4] Subsequent smoothing of the analog output, depending on the application, may increase the response time by up to 200 %.

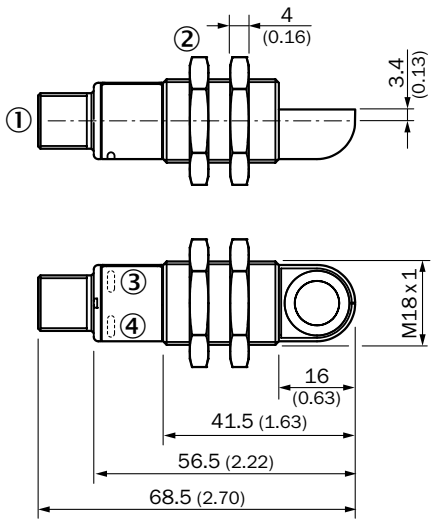
Dimensional drawings (Dimensions in mm (inch))

UM18-2xxxxxx1



① Connection
② Mounting nuts, SW 24 mm
③ Status indicator power on (green)
④ Status indicator switching/analog output (orange)

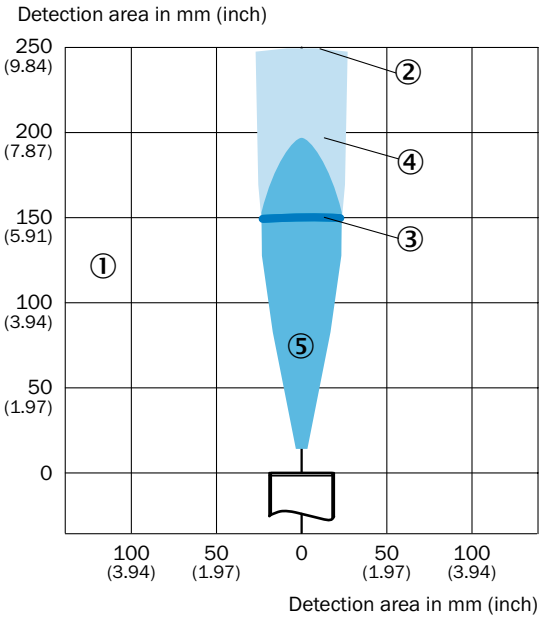
UM18-2xxxxxx2



① Connection
② Mounting nuts, SW 24 mm
③ Status indicator power on (green)
④ Status indicator switching/analog output (orange)

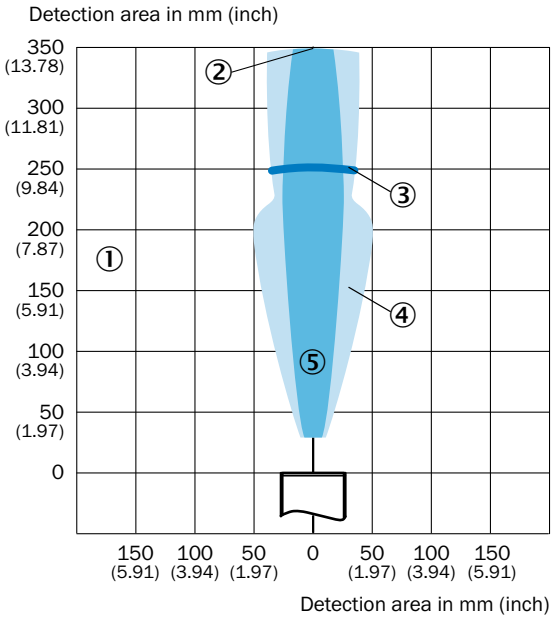
Detection ranges

UM18-217



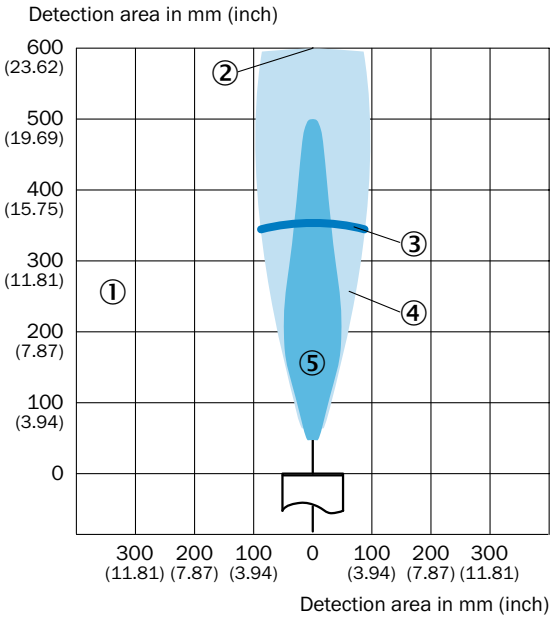
① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 500 mm x 500 mm
⑤ Example object: pipe with 10 mm diameter

UM18-211



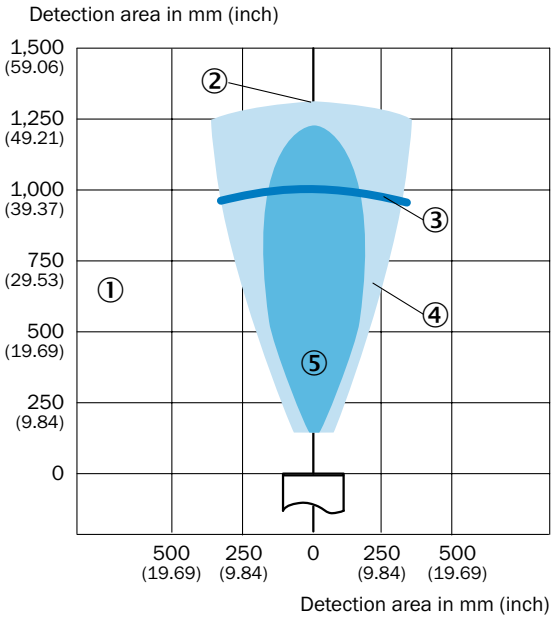
① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 500 mm x 500 mm
⑤ Example object: pipe with 10 mm diameter

UM18-212



① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 500 mm x 500 mm
⑤ Example object: pipe with 27 mm diameter

UM18-218



① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 500 mm x 500 mm
⑤ Example object: pipe with 27 mm diameter

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

	Brief description	Part no.	UM18-2 Core	UM18-2 Pro
	Mounting plate for M18 sensors	5321870	●	●
	Mounting bracket, M18 thread	5308446	●	●

Terminal and alignment brackets

	Brief description	Part no.	UM18-2 Core	UM18-2 Pro
	Clamping block for round sensors M18, with fixed stop	2051482	●	●
	Mounting bracket with ball-and-socket	5312973	●	●

Universal bar clamp systems

	Brief description	Part no.	UM18-2 Core	UM18-2 Pro
	Plate H for universal clamp bracket	2022465	●	●

Connection systems

Modules and gateways

	Brief description	Type	Part no.	UM18-2 Core	UM18-2 Pro
	IO-Link V1.1 Class A port, USB2.0 port, optional external power supply 24V / 1A	SiLink2 Master	1061790	●	●

Plug connectors and cables

	Connection type head A	Connection type head B	Cable	Cable length	Part no.	UM18-2 Core	UM18-2 Pro
 Illustration may differ	Female connector, M12, 4-pin, straight	Cable	PVC, unshielded	2 m	6009382	●	–
 Illustration may differ	Female connector, M12, 4-pin, angled	Cable	PVC, unshielded	2 m	6009383	●	–
 Illustration may differ	Female connector, M12, 5-pin, straight	Cable	PVC, unshielded	2 m	6008899	–	●
 Illustration may differ	Female connector, M12, 5-pin, angled	Cable	PVC, unshielded	2 m	6008900	–	●

Further accessories

Programming and configuration tools

	Brief description	Type	Part no.	UM18-2 Core	UM18-2 Pro
	Tool for visualization, configuration and cloning, 3-digit LED display, supply voltage: DV 9 V ... 30 V	Connect+ adapter (CPA)	6037782	–	●

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SMALL SENSOR, GREAT BENEFITS

Product description

The sensors in the UM12 product family impress with their compact dimensions in a rugged metal housing. Two sensing ranges up to 350 mm and four available output signals – analog current or voltage output, PNP or NPN switching output – maximize flexibility even where installation space is limited. Color-independent detection, high contamination tolerance, and outstanding background suppression deliver stable measurement results even under challenging conditions. With the UM12 ultrasonic sensor in an M12 housing, SICK is now able to offer the proven technology for any application.

At a glance

- Reliable measurement, regardless of material color, transparency, gloss, or ambient light
- Very short and rugged M12 metal housing
- Variants with PNP/NPN switching output or analog output
- Immune to dirt, dust, humidity, and fog
- Detection, measurement, or positioning with ultrasound technology
- Cable teach-in

Your benefits

- Very compact housing dimensions for straightforward machine integration
- Proven M12 housing design ensures compatibility with other technologies
- Analog variants in compact design for complex measuring tasks
- Rugged, one-piece metal housing ensures highest machine uptimes
- Teach-in via cable prevents unintentional sensor adjustment reducing machine downtime
- The sensor's immunity to external factors enables it to take accurate measurements even in dirty, dusty, humid, and foggy conditions
- Integrated temperature compensation ensures high measurement accuracy at any time for best process quality

RoHS 2011/65/EU

Additional information

→ www.mysick.com/en/UM12

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.

8014787/2015-08-28
Subject to change without notice

Detailed technical data

Performance

Resolution	≥ 0.069 mm
Repeatability [1]	± 0.15 %
Accuracy [1]	± 1 %
Temperature compensation	✔
Switching frequency	
20 mm ... 150 mm, 250 mm	30 Hz
40 mm ... 240 mm, 350 mm	25 Hz
Ultrasonic frequency (typical)	
20 mm ... 150 mm, 250 mm	380 kHz
40 mm ... 240 mm, 350 mm	500 kHz
Additional function [2]	Set switching mode: Distance to object (DtO) / switching window (Wnd) / Object Between Sensor and Background (ObSB) Teach-in and parameterization of switching output, invertible Teach-in and parameterization of analog output, invertible Temperature compensation

[1] Referring to current measurement value.

[2] Functions may vary depending on sensor type.

Interfaces

Hysteresis	
20 mm ... 150 mm, 250 mm	2 mm
40 mm ... 240 mm, 350 mm	3 mm

Mechanics/electronics

Supply voltage V_s [1]	DC 10 V ... 30 V [2]
Power consumption [3]	≤ 1.2 W
Initialization time	< 300 ms
Design	Cylindrical
Housing material	Nickel-plated brass, PBT, ultrasonic transducer: polyurethane foam, glass epoxy resin
Connection type	Male connector, M12, 4-pin
Indication	2 x LED
Weight	15 g

[1] Limit values, reverse-polarity protected, operation in short-circuit protected network: max. 8 A.

[2] 15 V ... 30 V when using analog voltage output.

[3] Without load.

Ambient data

Enclosure rating	IP 67
Protection class	III
Ambient temperature	Operation: –25 °C ... +70 °C Storage: –40 °C ... +85 °C

Ordering information

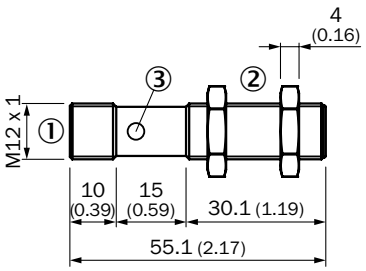
- **Sending axis:** straight

Working range, limiting range	Response time	Output time	Switching output	Analog output	Type	Part no.
20 mm ... 150 mm, 250 mm	24 ms	8 ms	PNP	–	UM12-1172211	6053542
			NPN	–	UM12-1172251	6053543
			–	1 x 4 mA ... 20 mA (≤ 500 Ω) [1]	UM12-1172261	6053544
				1 x 0 V ... 10 V (≥ 100 kΩ)	UM12-1172271	6053545
40 mm ... 240 mm, 350 mm	30 ms	10 ms	PNP	–	UM12-1192211	6053546
			NPN	–	UM12-1192251	6053547
			–	1 x 4 mA ... 20 mA (≤ 500 Ω) [1]	UM12-1192261	6053548
				1 x 0 V ... 10 V (≥ 100 kΩ)	UM12-1192271	6053549

[1] For 4 mA ... 20 mA and V_s ≤ 20 V max. load ≤ 100 Ω.

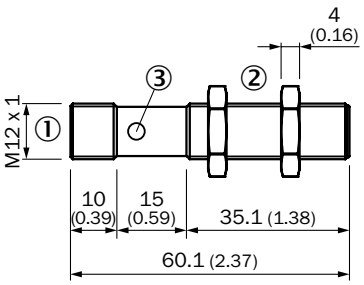
Dimensional drawings (Dimensions in mm (inch))

UM12-11x2211, UM12-11x2251



① Connection
② Mounting nuts, SW 17 mm
③ Status indicator power on (green), Switching/analog output (orange)

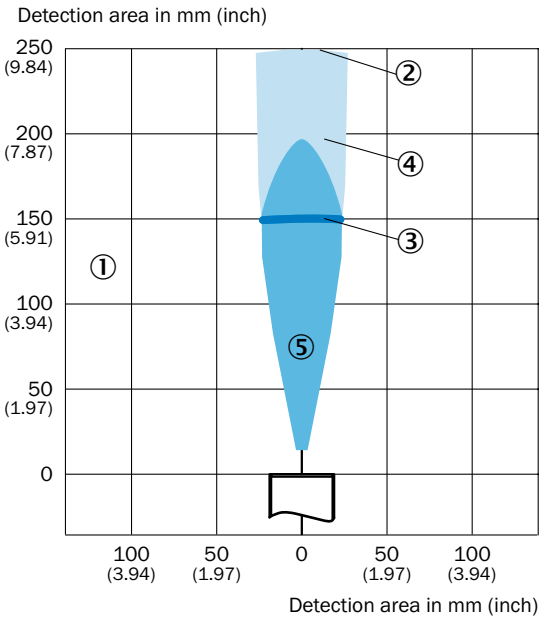
UM12-11x2261, UM12-11x2271



① Connection
② Mounting nuts, SW 17 mm
③ Status indicator power on (green), Switching/analog output (orange)

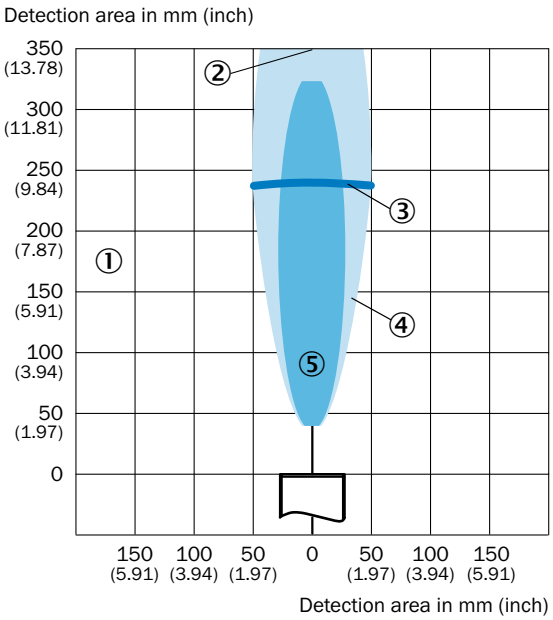
Detection ranges

UM12-117



① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 500 mm x 500 mm
⑤ Example object: pipe with 10 mm diameter

UM12-119



① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 500 mm x 500 mm
⑤ Example object: pipe with 10 mm diameter

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

	Brief description	Part no.
	Mounting plate for M12 sensors	5321869
	Mounting bracket, M12 thread	5308447

Terminal and alignment brackets

	Brief description	Part no.
	Clamping block for round sensors M12, without fixed stop	2051479

Universal bar clamp systems

	Brief description	Part no.
	Plate N05 for universal clamp bracket, M12	2051611

Connection systems

Plug connectors and cables

	Connection type head A	Connection type head B	Cable	Cable length	Part no.
 Illustration may differ	Female connector, M12, 4-pin, straight	Cable	PVC, unshielded	2 m	6009382
 Illustration may differ	Female connector, M12, 4-pin, angled	Cable	PVC, unshielded	2 m	6009383

8014787/2015-08-28

RUGGED. RELIABLE. RECTANGULAR.

Product description

The UC30 ultrasonic sensor family impress with outstanding performance within a compact rectangular housing. Due to color-independent measurement, high contamination tolerance, and outstanding background suppression, the UC30 delivers stable measurement results even under the most challenging conditions. A variety of output signals with sensing ranges of up to 8,000 mm and high measurement accuracy due to integrated temperature compensation ensure that solutions are provided for all applications. The range of diagnostic and parameterization options for these ultrasonic sensors is extended even further by teach-in buttons and IO-Link.

At a glance

- Reliable operation, regardless of material color, transparency, gloss, and ambient light
- Rugged rectangular housing with teach-in buttons
- Range up to 8,000 mm
- Variants with analog output, push-pull output with IO-Link or two PNP/NPN switching outputs
- Immune to dirt, dust, humidity, and fog
- Detection, measurement, and positioning with ultrasonic technology
- Adjustable sensitivity

Your benefits

- Compact rectangular housing for straightforward machine integration
- Rugged plastic housing ensures highest machine uptimes
- Various output options provide solutions for complex applications
- IO-Link with advanced diagnostic possibilities for optimized operation and straightforward maintenance
- Teach-in buttons for fast and easy commissioning
- The sensor's immunity to optically difficult environment enables it to take accurate measurements even in dirty, dusty, humid, and foggy conditions
- Integrated temperature compensation ensures high measurement accuracy at all times for optimum process quality

RoHS 2011/65/EU

IO-Link

Additional information

→ www.mysick.com/en/UC30

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.

8014787/2015-08-28
Subject to change without notice

Detailed technical data

Performance

Resolution	≥ 0.18 mm
Repeatability [1]	± 0.15 %
Accuracy [1] [2]	± 1 %
Temperature compensation	✔
Switching frequency	
350 mm ... 3,400 mm, 5,000 mm	4 Hz
600 mm ... 6,000 mm, 8,000 mm	3 Hz
Ultrasonic frequency (typical)	
350 mm ... 3,400 mm, 5,000 mm	120 kHz
600 mm ... 6,000 mm, 8,000 mm	80 kHz
Detection area (typical)	See diagrams
Additional function [3]	Set switching mode: Distance to object (DtO) / Window (Wnd) / Object between sensor and background (ObSB) Teach-in and parameterization of switching output, invertible Teach-in and parameterization of analog output, invertible Temperature compensation IO-Link Synchronization and multiplexing (no cross talk) of up to 10 sensors Set measurement filters: value filter, filter strength, set on delay, adjustable sensitivity, foreground suppression and detection area Switch-off display and lock user interface

[1] Referring to current measurement value.

[2] Temperature compensation can be switched off, without temperature compensation: 0.17 % / K.

[3] Functions may vary depending on sensor type.

Interfaces

Resolution analog output	12 bit
Multifunctional input (MF)	1 x MF
Hysteresis	
350 mm ... 3,400 mm, 5,000 mm	50 mm
600 mm ... 6,000 mm, 8,000 mm	100 mm
Data interface	IO-Link

Mechanics/electronics

Supply voltage V_s [1]	DC 9 V ... 30 V [2]
Power consumption [3]	≤ 1.2 W
Initialization time [4]	
350 mm ... 3,400 mm, 5,000 mm	< 380 ms
600 mm ... 6,000 mm, 8,000 mm	< 450 ms
Design	Rectangular
Housing material	PBT, PET, ultrasonic transducer: polyurethane foam, glass epoxy resin
Connection type	Male connector, M12, 5-pin
Indication	2 x LED
Weight	180 g ... 240 g

[1] Limit values, reverse-polarity protected, operation in short-circuit protected network: max. 8 A.

[2] 15 V ... 30 V when using analog voltage output.

[3] Without load.

[4] Subsequent smoothing of the analog output, depending on the application, may increase the initialization time by up to 200 %.

Ambient data

Enclosure rating	IP 67
Protection class	III
Ambient temperature	Operation: –25 °C ... +70 °C Storage: –40 °C ... +85 °C

Ordering information

UC30-2

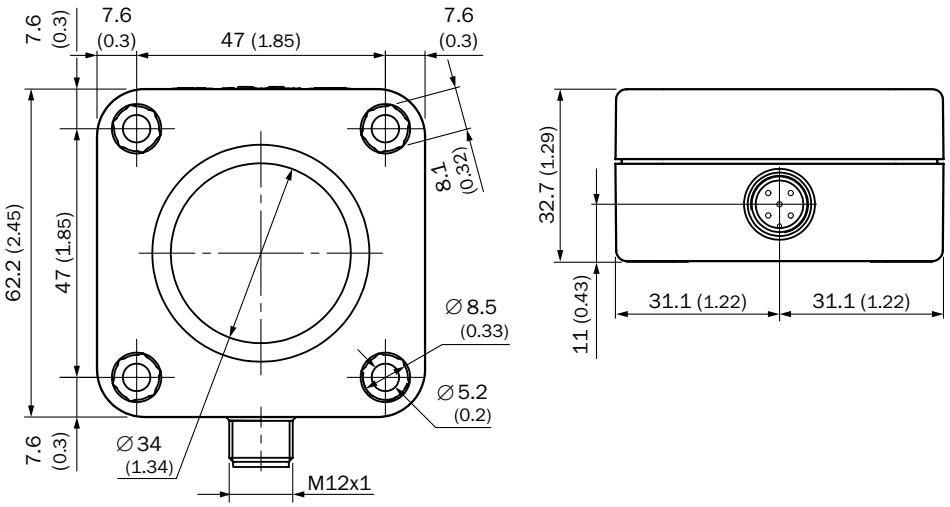
- **Sending axis:** straight

Working range, limiting range	Response time	Output time	Switching output [1]	Analog output	Type	Part no.
350 mm ... 3,400 mm, 5,000 mm	180 ms	43 ms	1 x push-pull: PNP/NPN (100 mA); IO-Link [2]	–	UC30-21416A	6054710
			2 x PNP (200 mA) [3]	–	UC30-214162	6054711
			–	1 x 0 V ... 10 V (≥ 100 kΩ) [4] 1 x 4 mA ... 20 mA (≤ 500 Ω) [4] [5]	UC30-214163	6054712
			2 x NPN (200 mA) [6]	–	UC30-214164	6054713
600 mm ... 6,000 mm, 8,000 mm	240 ms	60 ms	1 x push-pull: PNP/NPN (100 mA); IO-Link [2]	–	UC30-21516A	6054714
			2 x PNP (200 mA) [3]	–	UC30-215162	6054715
			–	1 x 0 V ... 10 V (≥ 100 kΩ) [4] 1 x 4 mA ... 20 mA (≤ 500 Ω) [4] [5]	UC30-215163	6054716
			2 x NPN (200 mA) [7]	–	UC30-215164	6054717

[1] Output Q short-circuit protected.
[2] Push-Pull: PNP/NPN HIGH = U_V - (< 4 V) / LOW < 2 V.
[3] PNP: HIGH = V_S - (< 2 V) / LOW = 0 V.
[4] Automatic selection of analog current or voltage output dependent on load.
[5] For 4 mA ... 20 mA and V_s ≤ 20 V max. load ≤ 100 Ω.
[6] NPN: HIGH = ≤ 2 V / LOW = V_S.
[7] NPN: HIGH ≤ 2 V / LOW = V_S.

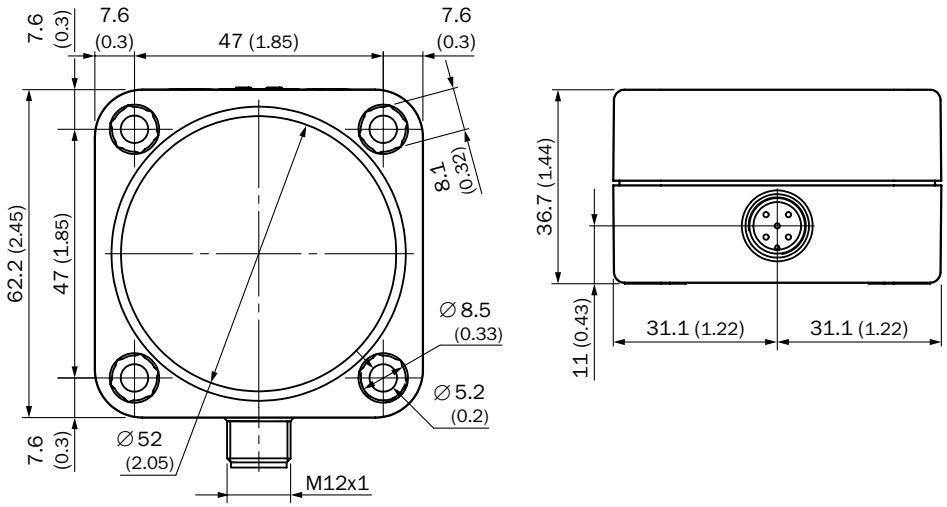
Dimensional drawings (Dimensions in mm (inch))

UC30-214



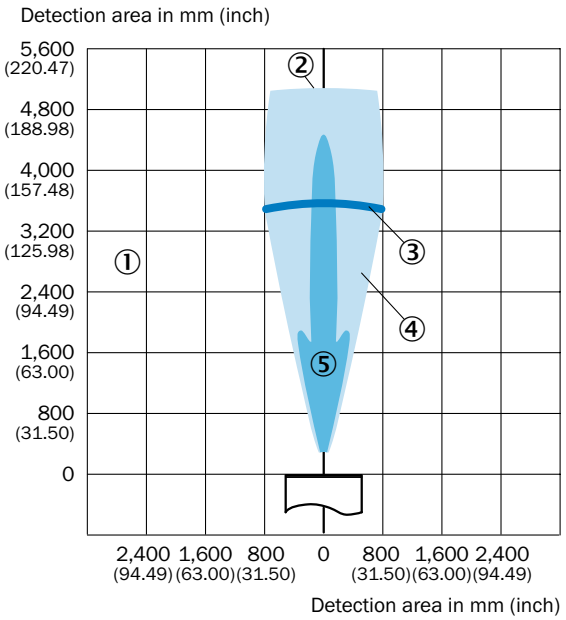
8014787/2015-08-28

UC30-215



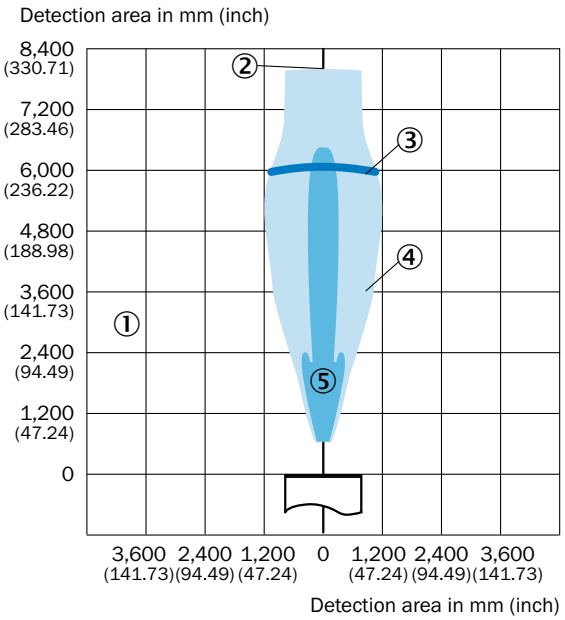
Detection ranges

UC30-214



① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 500 mm x 500 mm
⑤ Example object: pipe with 27 mm diameter

UC30-215



① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 500 mm x 500 mm
⑤ Example object: pipe with 27 mm diameter

Recommended accessories

Mounting systems

Universal bar clamp systems

	Brief description	Part no.
	Plate K for universal clamp bracket	2022718

Connection systems

Modules and gateways

	Brief description	Type	Part no.
	IO-Link V1.1 Class A port, USB2.0 port, optional external power supply 24V / 1A	SiLink2 Master	1061790

Plug connectors and cables

	Connection type head A	Connection type head B	Cable	Cable length	Part no.
 Illustration may differ	Female connector, M12, 5-pin, straight	Cable	PVC, unshielded	2 m	6008899
 Illustration may differ	Female connector, M12, 5-pin, angled	Cable	PVC, unshielded	2 m	6008900

Further accessories

Programming and configuration tools

	Brief description	Type	Part no.
	Tool for visualization, configuration and cloning, 3-digit LED display, supply voltage: DV 9 V ... 30 V	Connect+ adapter (CPA)	6037782

8014787/2015-08-28

ULTRASONIC TECHNOLOGY HOUSED IN AN INDUSTRY-PROVEN DESIGN

Product description

Ultrasonic technology provides reliable results where optical sensors reach their limits. The UC12 shares the same housing as common photoelectric sensors. In addition a single teach-in button enables easy setup. Dark or transparent objects are easily detected.

At a glance

- Object detection independent of material color and ambient light – even transparent foils, glass, liquids and bottles are reliably detected
- Fast and easy teach-in with single push-button
- Immune to dirt, dust and fog
- Two ambivalent switching outputs (Q, /Q)
- Excellent background suppression
- Three operation modes: Distance to Object (DtO), Window (Wnd) or Object between sensor and background (ObSB)

Your benefits

- Fast commissioning due to single-button teach-in
- Full mechanical compatibility to photoelectric sensors increase application flexibility without machine modification
- Standard proximity, window and reflection modes provide application flexibility, which increases reliability and productivity
- Integrated temperature compensation ensures high measurement accuracy
- Complementary switching outputs immediately signal broken wiring, reducing faulty production results

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Additional information

➜ www.mysick.com/en/UC12

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

Performance

Resolution	≥ 0.1 mm
Repeatability [1]	± 0.15 %
Accuracy [1]	± 1 %
Temperature compensation	✔
Switching frequency	25 Hz
Ultrasonic frequency (typical)	
20 mm ... 150 mm, 250 mm	380 kHz
55 mm ... 250 mm, 350 mm	500 kHz
Detection area (typical)	See diagrams
Additional function	Set switching mode: Distance to object (DtO) / Window (Wnd) / Object between sensor and background (ObSB) Teach-in and parameterization of switching output Temperature compensation Lock user interface

[1] Referring to current measurement value.

Interfaces

Hysteresis	2 mm

Mechanics/electronics

Supply voltage V_S [1]	DC 10 V ... 30 V
Power consumption [2]	≤ 1.2 W
Initialization time	< 300 ms
Design	Rectangular
Housing material	Die-cast zinc, ultrasonic transducer: polyurethane foam, glass epoxy resin
Connection type	Male connector, M12, 4-pin
Indication	Dual LED
Weight	75 g

[1] Limit values, reverse-polarity protected, operation in short-circuit protected network: max. 8 A.

[2] Without load.

Ambient data

Enclosure rating	IP 67
Protection class	III
Ambient temperature	Operation: –25 °C ... +70 °C Storage: –40 °C ... +85 °C

Ordering information

- **Response time:** 30 ms
- **Output time:** 8 ms
- **Sending axis:** straight

Working range, limiting range	Switching output [1] [2]	Type	Part no.
20 mm ... 150 mm, 250 mm	2 x PNP (500 mA) [3]	UC12-11231	6029831
	2 x NPN (500 mA) [4]	UC12-11235	6029833

[1] Output Q short-circuit protected.

[2] Complementary switching outputs (Q, $\overline{Q}$)

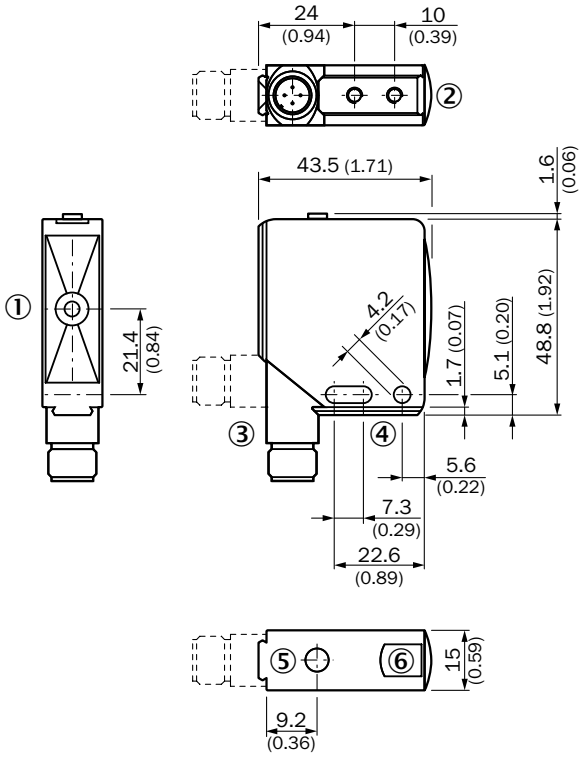
[3] PNP: HIGH = V_S - (< 2 V) / LOW = 0 V.

[4] NPN: HIGH ≤ 2 V / LOW = V_S.

Working range, limiting range	Switching output [1] [2]	Type	Part no.
55 mm ... 250 mm, 350 mm	2 x PNP (500 mA) [3]	UC12-12231	6029832
	2 x NPN (500 mA) [4]	UC12-12235	6029834

[1] Output Q short-circuit protected.
[2] Complementary switching outputs (Q, $\overline{Q}$)
[3] PNP: HIGH = V_S - (< 2 V) / LOW = 0 V.
[4] NPN: HIGH ≤ 2 V / LOW = V_S.

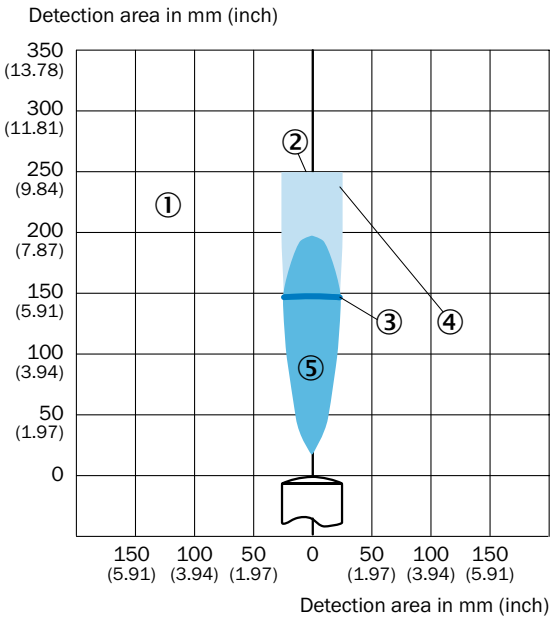
Dimensional drawing (Dimensions in mm (inch))



① Transmission and reception axis
② M4 threaded mounting hole, 4 mm deep
③ Connection
④ Mounting hole
⑤ Control elements
⑥ Status indicator switching output (orange) and power on (green)

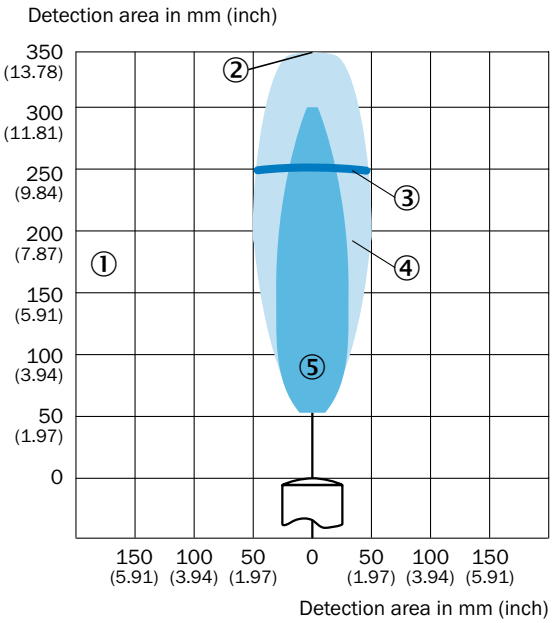
Detection ranges

UC12-11



① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 10 mm x 10 mm
⑤ Example object: pipe with 10 mm diameter

UC12-12



① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 10 mm x 10 mm
⑤ Example object: pipe with 10 mm diameter

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

	Brief description	Part no.
	Mounting bracket, large	2013942
	Mounting bracket, small	2012938

Universal bar clamp systems

	Brief description	Part no.
	Plate D for universal clamp bracket	2022461
	Plate L for universal clamp bracket	2023057
	Plate N02 for universal clamp bracket	2051608

Connection systems

Plug connectors and cables

	Connection type head A	Connection type head B	Cable	Cable length	Part no.
 Illustration may differ	Female connector, M12, 4-pin, straight	Cable	PVC, unshielded	2 m	6009382
 Illustration may differ	Female connector, M12, 4-pin, angled	Cable	PVC, unshielded	2 m	6009383

8014787/2015-08-28

SMALL, PRECISE, ULTRASONIC

Product description

The UC4 ultrasonic sensor family combines state-of-the-art ultrasonic technology in a miniature housing. With reliable functionality in even difficult operating conditions, the UC4 is a real miniature all-rounder when it comes to demanding, specialized tasks such as detecting transparent objects or measuring the levels of fluids and bulk materials. Even in situations with high requirements for background suppression or contamination tolerance, the UC4 with switching or analog output has proven itself as the ideal choice. And to top it all off, the portfolio even includes variants with increased switching frequency.

At a glance

- Reliable measurement, regardless of material color, transparency, gloss, and ambient light
- Ultrasonic technology in a miniature housing
- Detection, measurement, and positioning with ultrasonic technology
- Immune to dirt, dust, humidity, and fog
- Variants with PNP/NPN switching output or analog output
- Precise background suppression
- Teach-in button

Your benefits

- Mini housing allows for quick and easy integration, even in the most confined spaces
- The sensor's immunity to optically difficult environment enables it to take accurate measurements even in dirty, dusty, humid, and foggy conditions
- Integrated temperature compensation ensures high measurement accuracy at all times for optimum process quality
- Various operating modes provide optimal application flexibility and solutions, which increase reliability and productivity
- Full mechanical compatibility to photoelectric sensors allows for the use of the suitable technology for every application without machine modification
- Teach-in button for fast and easy commissioning

RoHS 2011/65/EU

Additional information

→ www.mysick.com/en/UC4

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.

8014787/2015-08-28
Subject to change without notice

Detailed technical data

Performance

Resolution	≥ 0.1 mm
Repeatability [1]	± 0.15 %
Accuracy [1]	
13 mm ... 100 mm, 150 mm	0.17 % / K
13 mm ... 150 mm, 250 mm	± 1 %
Temperature compensation	
13 mm ... 100 mm, 150 mm	–
13 mm ... 150 mm, 250 mm	✔
Switching frequency [1]	
13 mm ... 100 mm, 150 mm	25 Hz
13 mm ... 150 mm, 250 mm	25 Hz / 100 Hz (depending on type)
Ultrasonic frequency (typical)	380 kHz
Detection area (typical)	See diagrams
Additional function [2]	Set switching mode: Distance to object (DtO) / Window (Wnd) / Object between sensor and background (ObSB) Teach-in and parameterization of switching output, invertible Teach-in and parameterization of analog output, invertible Temperature compensation Lock user interface

[1] Referring to current measurement value.

[2] Functions may vary depending on sensor type.

Interfaces

Resolution analog output	12 bit
Hysteresis	2 mm

Mechanics/electronics

Supply voltage V_s [1]	DC 15 V ... 30 V
Power consumption [2]	≤ 0.9 W
Initialization time	< 300 ms
Design	Rectangular
Housing material	ABS-plastic, ultrasonic transducer: polyurethane foam, glass epoxy resin
Connection type	Male connector, M8, 3-pin
Indication	2 x LED
Weight	10 g

[1] Limit values, reverse-polarity protected, operation in short-circuit protected network: max. 8 A.

[2] Without load.

Ambient data

Enclosure rating	IP 67
Protection class	III
Ambient temperature	Operation: –25 °C ... +70 °C [1] Storage: –40 °C ... +85 °C

[1] At operating temperatures of > 50 °C, the rear side of the UC4 must be installed with its surface flat against a bracket.

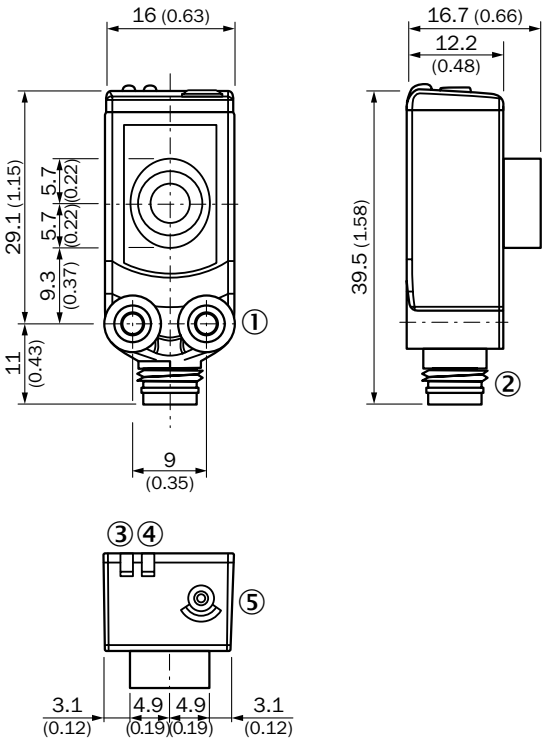
Ordering information

- **Sending axis:** straight

Working range, limiting range [1]	Response time	Output time	Switching output [2]	Analog output	Type	Part no.
13 mm ... 100 mm, 150 mm	10 ms	10 ms	1 x PNP (200 mA) [3]	–	UC4-11341	6034667
			1 x NPN (200 mA) [4]	–	UC4-11345	6034668
13 mm ... 150 mm, 250 mm	30 ms	10 ms	1 x PNP (200 mA) [3]	–	UC4-13341	6034669
			1 x NPN (200 mA) [4]	–	UC4-13345	6034670
	10 ms	5 ms	1 x PNP (200 mA) [3]	–	UC4-13341S01	6049509
			1 x NPN (200 mA) [4]	–	UC4-13345S02	6049510
	30 ms	10 ms	–	1 x 4 mA ... 20 mA (≤ 500 Ω) [5]	UC4-13346	6054708
				1 x 0 V ... 10 V (≥ 100 kΩ)	UC4-13347	6054709

[1] Teach-in from 21 mm.
[2] Output Q short-circuit protected.
[3] PNP: HIGH = V_S - (< 2 V) / LOW = 0 V.
[4] NPN: HIGH ≤ 2 V / LOW = V_S.
[5] For 4 mA ... 20 mA and V_s ≤ 20 V max. load ≤ 100 Ω.

Dimensional drawing (Dimensions in mm (inch))



① Threaded mounting hole M3
② Connection
③ Status indicator switching output (orange)
④ Status indicator power on (green)
⑤ Control elements

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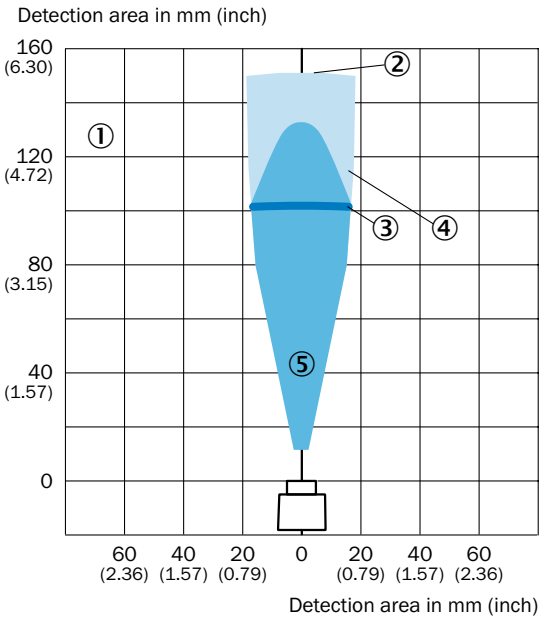
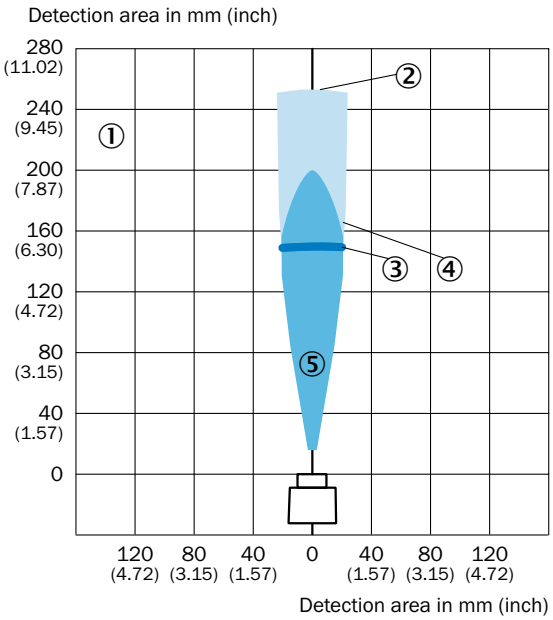
Detection ranges

UC4-11



① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 100 mm x 100 mm
⑤ Example object: pipe with 10 mm diameter

UC4-13



① Sensing range dependent on reflection properties, size and orientation of the object
② Limiting range
③ Working range
④ Example object: aligned plate 100 mm x 100 mm
⑤ Example object: pipe with 10 mm diameter

Recommended accessories

Mounting systems

Mounting brackets and mounting plates

	Brief description	Part no.
	Mounting bracket for wall mounting	2051628

Terminal and alignment brackets

	Brief description	Part no.
	Ball clamp bracket	2027128

Universal bar clamp systems

	Brief description	Part no.
	Plate H for universal clamp bracket	2022465

Connection systems

Plug connectors and cables

	Connection type head A	Connection type head B	Cable	Cable length	Part no.
	Female connector, M8, 3-pin, straight	Cable	PVC, unshielded	2 m	6010785
	Female connector, M8, 3-pin, angled	Cable	PVC, unshielded	2 m	6008489

Further accessories

Hardware

	Brief description	Type	Part no.
	Accessory for ultrasonic channeling for the product family UC4	SonicTube UC4	5329249

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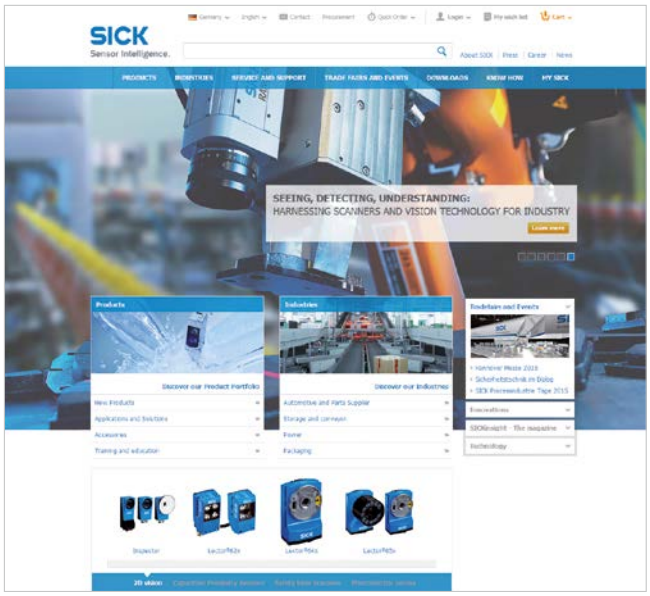

SERVICES FOR MACHINES AND SYSTEMS: SICK LifeTime Services

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

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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

SICK
Sensor Intelligence.