



MINE-SIC100 EPS Excavator Protection System

Collision Warning and Loading Assistance
for Shovels and Excavators

MINESIC100 EPS

Excavator Protection System

Protection of mine site equipment, infrastructure and personnel is a highly sophisticated task and presents great demands on collision awareness solutions. Building on experience with the development of advanced driver assistance systems, SICK's MINESIC100 EPS is a turnkey proximity detection operator assist and collision awareness system for shovels and excavators used in the mining industry.

Challenges in Collision Awareness and Proximity Detection

Heavy mining vehicle operators have to accomplish a difficult task. The increase in mine productivity has led to a proportional increase in the size of the equipment used. Shovels and Excavators have considerable operator blind spots. Despite the best efforts of mine management and plant operators, accidents on mine sites remain an industry wide problem.

The avoidance of mine site accidents demands a combination of technologies to assist operators and reduce risk; any collision awareness and assistance technology applied must be able to also warn of these risks i.e. close proximity crush or incidents during loading or unloading.

The effective combination of proven technologies used in the MINESIC100 EPS gives the mine and its operators the right system to maximize productivity while reducing downtime due to operator injury or shovels and excavator damage.

SICK's solution MINESIC100 EPS – Excavator Protection System

The MINESIC100 EPS is a high performance collision awareness and excavator protection system, detecting possible collisions with other vehicles and the highwall face. This robust system actively assists excavator operators with efficient and safe production, while allowing precise loading into large haul trucks.

The MINESIC100 EPS uses advanced laser scanners (Class 1 Eye Safe) combined with GPS. Qualified obstacle information from these sensors is utilized in a sophisticated warning strategy, which alerts an operator, via a simple user interface to take evasive action. Obstacles are displayed with their real object outline and audible warnings are given in critical situations.

The system allows for cost effective retrofitting onto a variety of shovels and excavators, and offers further integration into fleet management systems. The digital outputs of the system are used for signal lights to guide haul trucks into the perfect loading position.



Advanced System Functionality

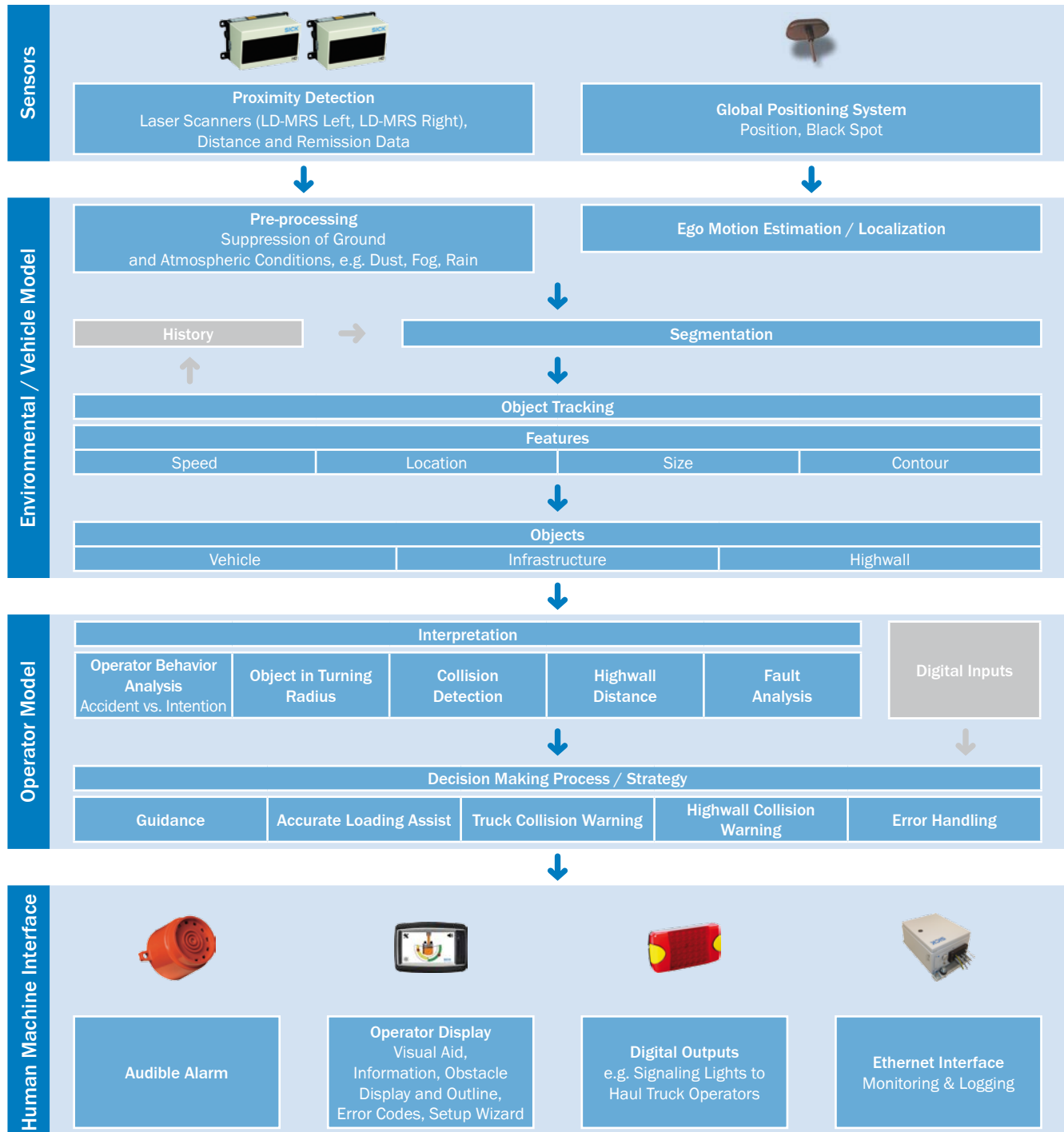
Collisions with haul trucks, dozers and the highwall are prevented by alerting the operator, displaying only relevant information and alarming audibly, if necessary. The MINESIC100 EPS has been developed to be an aid to the operator, not a hindrance. No nuisance alarms to distract normal driver operation. It delivers active assistance for the difficult task of loading, positioning and operating in confined spaces by displaying all obstacles surrounding the excavator (highwall, vehicles, personnel) in scale, distance and in real time.

SICK LifeTime Services option

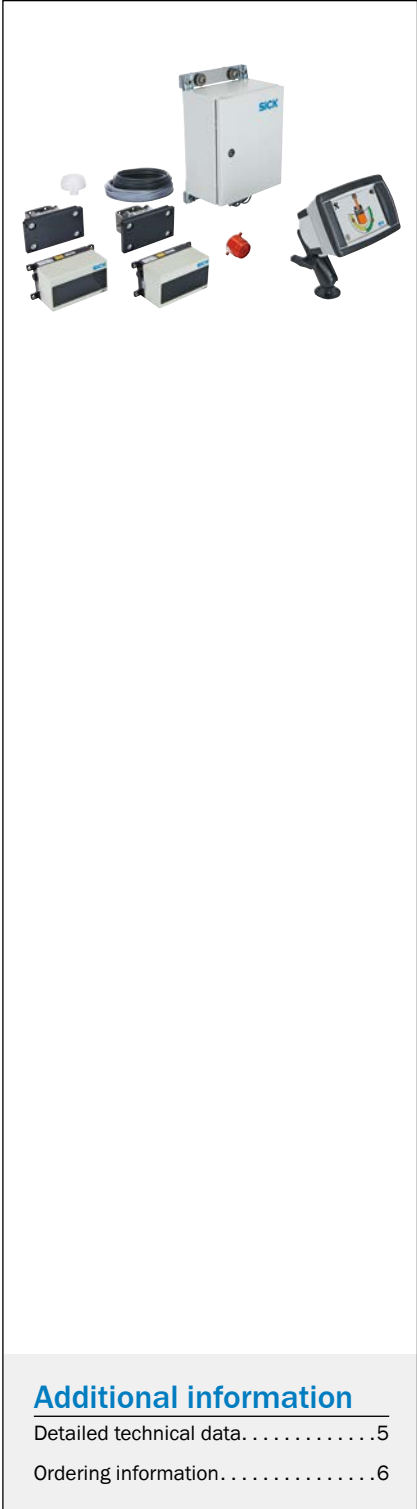
To ensure reliable, repeatable and safe operation the MINESIC100 EPS requires a maintenance program which includes a number of system checks. SICK Service Engineers are qualified to perform this service maintenance.

Installation, service and maintenance training can be provided by SICK.

Excavator Protection System



Collision Warning and Loading Assistance for Shovels and Excavators



Product description

The MINESIC100 EPS is a high performance collision awareness and protection system ideally suited for excavator operations in open-cut (surface) mining. This robust system utilizing multi layer and multi echo laser scanner technology

provides excavator operator assistance in correct vehicle positioning and safe loading of heavy haul trucks. The system is easily installed on a variety of shovels and excavators.

At a glance

- Active collision warnings for shovel operator and other heavy vehicles
- Vehicle positioning and loading assistance
- Highwall collision warning
- Visual feedback (touch screen operator display) and audible alarm
- Open interface to fleet management / dispatch systems & event logging

Your benefits

- Reduction of incidents, downtime and repair costs
- Detection and tracking of moving and stationary obstacles without the need for RFID tags
- Active situation dependent warning with low false alarm rates
- Simple installation, easy to operate
- Easy to maintain – Integrated test function and reporting
- Configurable to mine site operational requirements
- Full service package provided by SICK LifeTime Services
- Sound system knowledge thanks to comprehensive user training

Application

- Hydraulic shovels and excavators
- Drag lines
- Rope shovels

Additional information

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→ www.mysick.com/en/MINESIC100_EPS

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

System

Supply voltage	DC, 24 V, $\pm 10\%$ (24 V nominal)
Power consumption	40 W 100 W (Peak power consumption with internal sensor heating)
Ambient operating temperature	-40 ... +70 °C ¹⁾ -30 ... +70 °C ²⁾
Storage temperature	-40 ... +85 °C
Interfaces	Ethernet (SICK application event protocol, customised object data protocol) Digital I/O (e.g. audible alarm, signalling lights)
Weight	Approx. 20 kg

¹⁾ Components outside cabin (ambient)

²⁾ Components inside cabin (ambient)

Laser scanner

	LD-MRS HD "Left" and "Right"
Operating range	0.3 ... 150 m (up to 18 m at 10% remission)
Operating conditions	Outdoor (dust, rain, snow, fog)
Scanning angle	85° operating angle with 4 measurement layers, 25° work area expansion with 2 measurement layers Total: 110°
Angular resolution	0.125° / 0.25° / 0.5°
Horizontal measurement area	0.8° per measurement layers Total: 3.2°
Scanning frequency	12.5 Hz / 25 Hz / 50 Hz
Number of measurement pulses (Multi-Echo)	3
Dimensions (W x H x D)	88 mm x 164.5 mm x 93.2 mm (including fastening tabs)
Weight	900 g
Error / Distance Accuracy	100 mm
MTBF	$\geq 50,000$ h (at 25 °C)
Enclosure rating	No external protection IP 69K With weather protection IP 69K or better Plug (2 m / 24 h) IP 68 (EN 60529 (1991-10) + A1:2000-02)
Protection class	III (EN 50178 (1997;10))
EMC	EN 61000-6-3 (2007-01), Interference emission EN 61000-6-2 (2005-08), Interference immunity
Repeated bump / shock Immunity	13 g, 16 ms, 30 min per axis, all three axis (EN 60068-2-29 (1993-04))
Vibration, broadband random and guidance	10 Hz ... 150 Hz, all 3 axes, 8 h per axis (total 24 h), 5 g rms, EN 60068-2-6:1995-04

Operator Panel PC

Dimensions (W x H x D)	160 mm x 100 mm x 55 mm (landscape or portrait)
Weight	< 1 kg
Screen	Touch Screen, TFT, transmissive
Enclosure rating	IP 67
Repeated bump / shock Immunity	ISO 15003-5.5.2, IEC 60068-2-27, EN 60068-2-29: 1993-04
Vibration, broadband random and guidance	ISO 15003-5.6, IEC 60086-2-6, -2-47, -2-64
EMC	ISO 16750-2 - electrical loads ISO 15003 EN 61000-6-3, 6-4 EN 61000-6-2

Control Cabinet

Enclosure rating	IP 66
Weight	8 kg
Fuse	7.5 A (2x, one in each V+ and GND)
Signal ground	Single GND (vehicle GND) for all supply, input and output signals
Repeated bump / shock Immunity	25 g, 11 ms, 3+3 per axis, all three axis (total 18) (EN 60068-2-29 (1993-04))
Vibration, broadband random and guidance	5 ... 2,000 Hz, all 3 axis, 8h per axis (total 24 h), 3 g rms, EN 60086-2-6:1994-06

Ancillary Items

Components	GPS Receiver Set Mounting Operator Panel PC Cables – Plugin Electrical Connection Siren – Audible Warning Vibration Mounts
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Options

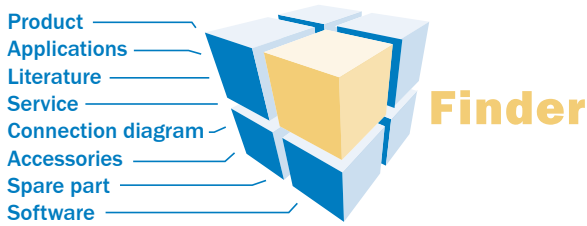
Software package	Loading Assist Highwall Collision Warning Vehicle Collision Warning
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Ordering information

Our regional sales organization will help you to select the best fitting device configuration.

www.mysick.com – search online and order

Search online quickly and safely – with the SICK “Finders”

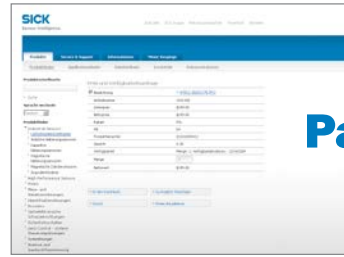


Product Finder: We can help you to quickly target the product that best matches your application.

Applications Finder: Select the application description on the basis of the challenge posed, industrial sector, or product group.

Literature Finder: Go directly to the operating instructions, technical information, and other literature on all aspects of SICK products.

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Request or view a quote: You can have a quote generated online here. Every quote is confirmed to you via e-mail.

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For safety and productivity: SICK LifeTime Services

SICK LifeTime Services is a comprehensive set of high-quality services provided to support the entire life cycle of products and applications from system design all the way 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.



Consulting & Design

Globally available experts for cost-effective solutions



Product & System Support

Fast and reliable, by telephone or on location



Verification & Optimization

Checks and recommendations for increased availability



Upgrade & Retrofits

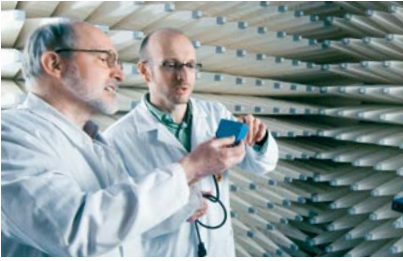
Uncovers new potential for machines and systems



Training & Education

Employee qualification for increased competitiveness

SICK at a glance



Leading technologies

With a staff of more than 6,000 and over 40 subsidiaries and representations worldwide, SICK is one of the leading and most successful manufacturers of sensor technology. The power of innovation and solution competency have made SICK the global market leader. No matter what the project and industry may be, talking with an expert from SICK will provide you with an ideal basis for your plans – there is no need to settle for anything less than the best.



Unique product range

- Non-contact detecting, counting, classifying, positioning and measuring of any type of object or media
- Accident and operator protection with sensors, safety software and services
- Automatic identification with bar code and RFID readers
- Laser measurement technology for detecting the volume, position and contour of people and objects
- Complete system solutions for analysis and flow measurement of gases and liquids



Comprehensive services

- SICK LifeTime Services – for safety and productivity
- Application centers in Europe, Asia and North America for the development of system solutions under real-world conditions
- E-Business Partner Portal www.mysick.com – price and availability of products, requests for quotation and online orders

Worldwide presence with subsidiaries in the following countries:

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United Arab Emirates
USA

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