



## MINECIC100 WPS Wheel Loader Protection System

Collision Warning and Reverse Assist  
for Front End Loaders and Dozers

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**SICK**  
Sensor Intelligence.

# MINESIC100 WPS

## Wheel Loader 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 WPS is a turn-key proximity detection operator assist and collision awareness system for front end loaders and dozers 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. Wheel loaders and dozers 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. Collision awareness and assistance technology applied must be able to also warn of these risks ie. close proximity crush or incidents during loading or unloading.

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

### SICK's solution MINESIC100 WPS – Wheel loader Protection System

The MINESIC100 WPS is a high performance operator assistance and guidance system, detecting possible collisions with other vehicles, mine site equipment and infrastructure. This robust system actively assists front end loader operators to maneuver safely and efficiently around the mine site.

The MINESIC100 WPS 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.

The system allows for cost effective retrofitting into a variety of wheel loaders and dozers. The system offers further integration into fleet management systems. Digital outputs are included and can be used for external signal lighting warning of the close proximity of the vehicle.



## Advanced system functionality

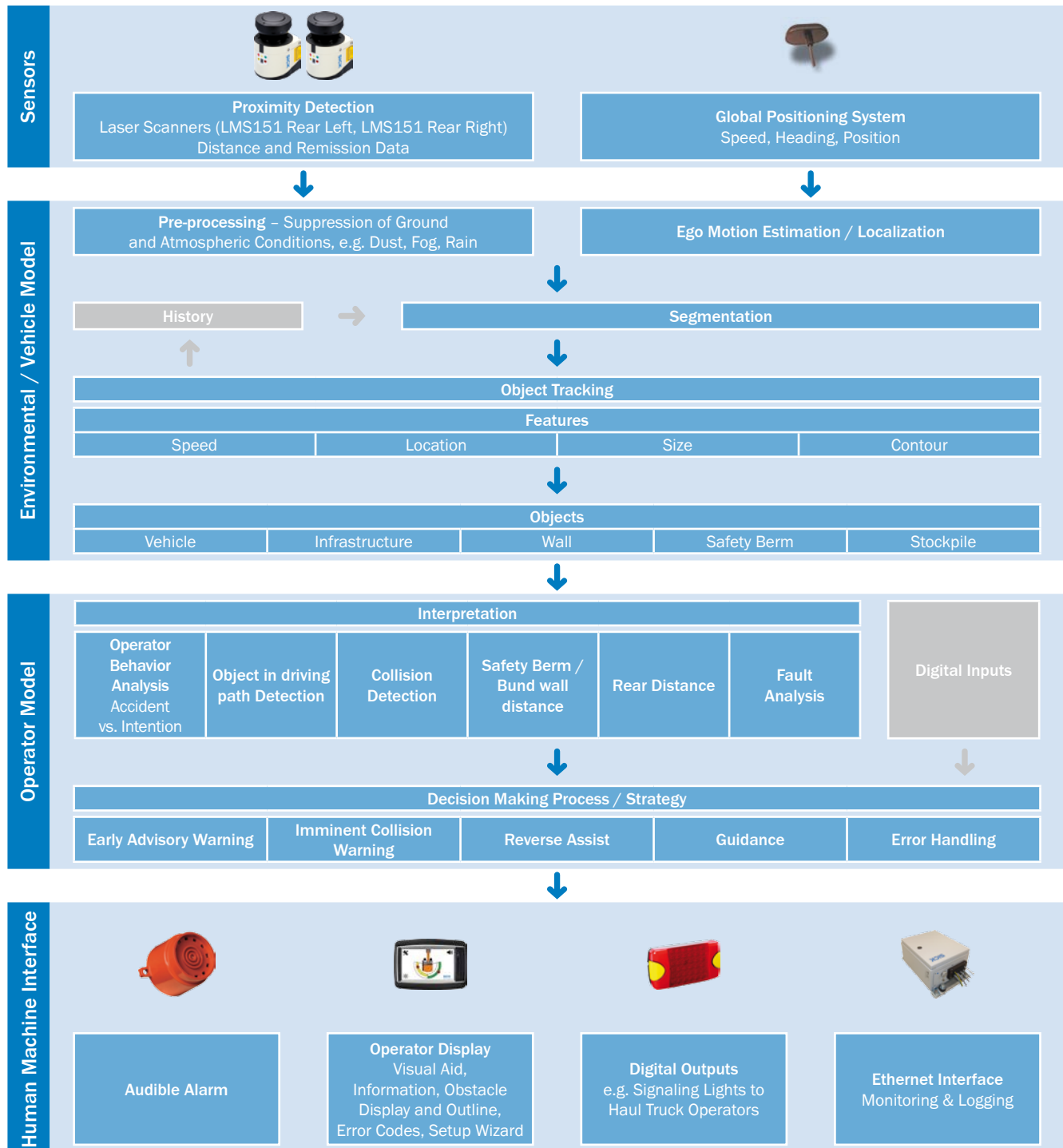
Reversing incidents are prevented with the system alerting the operator, displaying only relevant information and if necessary alarming audibly. Active assistance is provided for maneuvering in confined spaces, displaying all obstacles behind the vehicle (other vehicles, infrastructure and personnel) in scale and distance in real time. The MINESIC100 WPS has been developed to be an aid to the operator, not a hindrance. No nuisance alarms to distract normal driver operation. It has an inbuilt recognition of intentional driving behavior, i.e. travelling forward and reversing.

## SICK LifeTime Services option

To ensure reliable, repeatable and safe operation the MINESIC100 WPS 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.

## Wheel Loader Protection System



## Collision Warning and Reverse Assist for Front End Loaders and Dozers



### Product description

The MINESIC100 WPS is a high performance collision awareness and protection system ideally suited for wheel loader operations in open-cut (surface) mining. This robust system utilizing advanced laser scanners and specialized

sensors, provides operator assistance by allowing for safe and efficient maneuvering of large front end loaders on mine sites. The system is easily installed on a variety of front end wheel loaders.

### At a glance

- Full coverage rear-end collision warning
- Visual feedback (touch screen operator display) and audible alarm
- Open interface to fleet management / dispatch systems & event logging
- Full functional operation across speed range (0...V<sub>max</sub>)
- Active reverse assist for maneuvering in confined spaces
- Displays accurately all obstacles behind the vehicle (windrows, vehicles, personnel) in real time

### 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 dependant 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

- Wheel loader in surface mines
- Wheel dozer in surface mines

**Additional information**

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→ [www.mysick.com/en/MINESIC100\\_WPS](http://www.mysick.com/en/MINESIC100_WPS)

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

<b>Application speed range</b>	0 ... 60 km/h
<b>Supply voltage</b>	DC, 24 V, $\pm 10\%$ (24 V nominal)
<b>Power consumption</b>	40 W 165 W (Peak power consumption with internal sensor heating)
<b>Ambient operating temperature</b>	-20 ... +50 °C <sup>1)</sup> -30 ... +70 °C <sup>2)</sup>
<b>Storage temperature</b>	-40 ... +85 °C
<b>Interfaces</b>	Ethernet (SICK application event protocol, customised object data protocol) Digital I/O (e.g. audible alarm, signalling lights)
<b>Weight</b>	Approx. 20 kg

<sup>1)</sup> Components outside cabin (ambient)

<sup>2)</sup> Components inside cabin (ambient)

### Laser scanner

	LMS151 "WPS Rear/Right"	LMS151 "WPS Rear/Left"
<b>Operating range</b>	0.2 ... 50 m (up to 18 m at 10% remission)	
<b>Operating conditions</b>	Outdoor (dust, rain, snow, fog)	
<b>Scanning angle</b>	270° (total horizontal)	
<b>Angular resolution</b>	0.25° / 0.5°	
<b>Scanning frequency</b>	25 Hz / 50 Hz	
<b>Number of measurement pulses (Multi-Echo)</b>	2	
<b>Dimensions (W x H x D)</b>	102 mm x 162 mm x 105 mm	
<b>Weight</b>	1,100 g	
<b>Error / Distance Accuracy</b>	12 mm	
<b>MTBF</b>	≥ 50,000 h (at 25 °C)	
<b>Protection class</b>	III (EN 50178 (1997;10))	
<b>EMC</b>	EN 61000-6-3 (2007-01), Interference emission EN 61000-6-2 (2005-08), Interference immunity	

### Operator Panel PC

<b>Dimensions (W x H x D)</b>	130 mm x 95 mm x 55 mm (landscape or portrait)
<b>Weight</b>	< 1 kg
<b>Screen</b>	Touch Screen, TFT, transmissive
<b>Enclosure rating</b>	IP 67
<b>Repeated bump / shock Immunity</b>	ISO 15003-5.5.2, IEC 60068-2-27, EN 60068-2-29: 1993-04
<b>Vibration, broadband random and guidance</b>	ISO 15003-5.6, IEC 60086-2-6, -2-47, -2-64
<b>EMC</b>	ISO 16750-2 – electrical loads ISO 15003 EN 61000-6-3, 6-4 EN 61000-6-2

## Control Cabinet

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

## Ancillary Items

<b>Components</b>	<ul style="list-style-type: none"> <li>GPS Receiver Set</li> <li>Mounting Operator Panel PC</li> <li>Cables – Plugin Electrical Connection</li> <li>Siren – Audible Warning</li> <li>Vibration Mounts</li> </ul>
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## Options

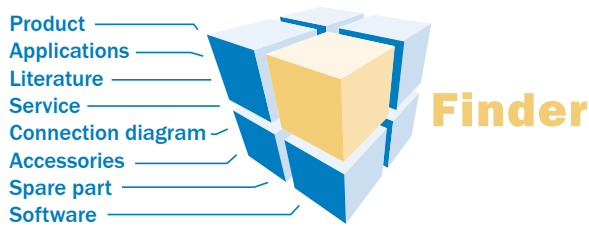
<b>Software package</b>	<ul style="list-style-type: none"> <li>Reverse Assist</li> <li>Black Spot Warning</li> </ul>
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## Ordering information

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”

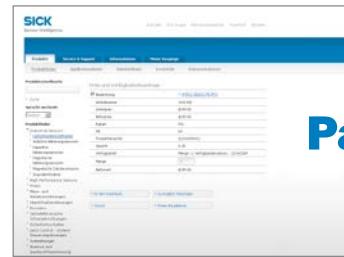


**Product Finder:** We can help you to quickly target the product that best matches your application.

**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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**Partner Portal**  
www.mysick.com

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**Order online:** You can go through the ordering process in just a few steps.

## 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**

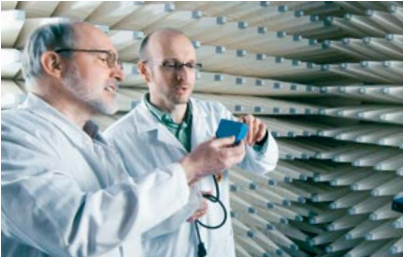
Uncovers new potential for machines and systems



**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](http://www.mysick.com) – price and availability of products, requests for quotation and online orders

Worldwide presence with subsidiaries in the following countries:

Australia  
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Česká Republika  
Canada  
China  
Danmark  
Deutschland  
España  
France  
Great Britain  
India  
Israel  
Italia  
Japan

México  
Nederland  
Norge  
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