

SMART
SENSOR
BUSINESS



 **Leuze electronic**

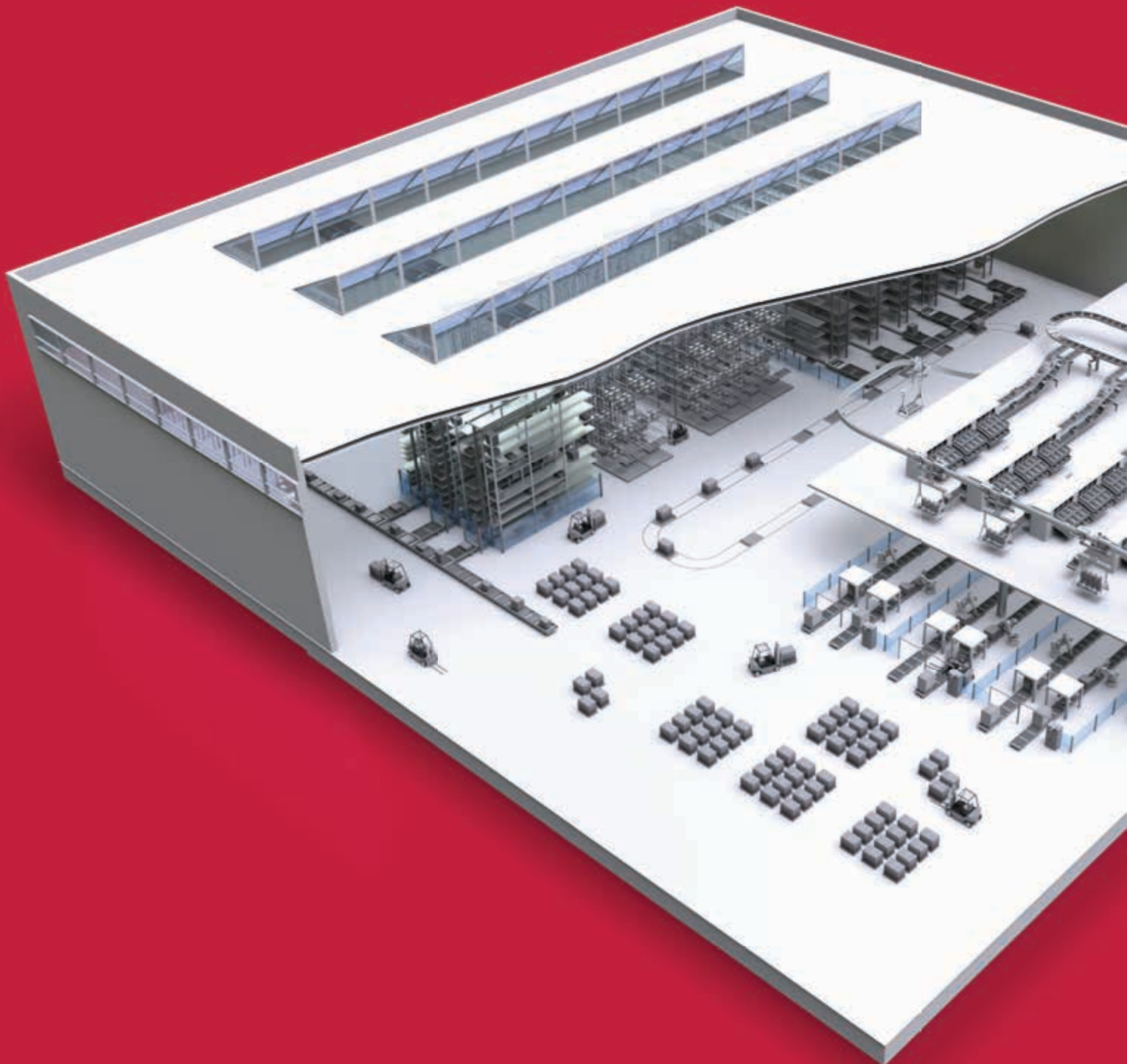
the **sensor** people



Sensor solutions for
INTRALOGISTICS



WE ARE YOUR **SENSOR SYSTEM PARTNER** FOR **INTRALOGISTICS**

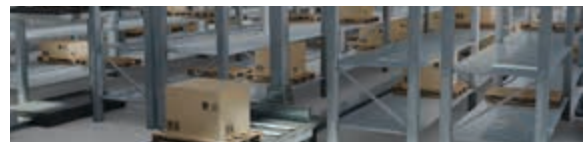


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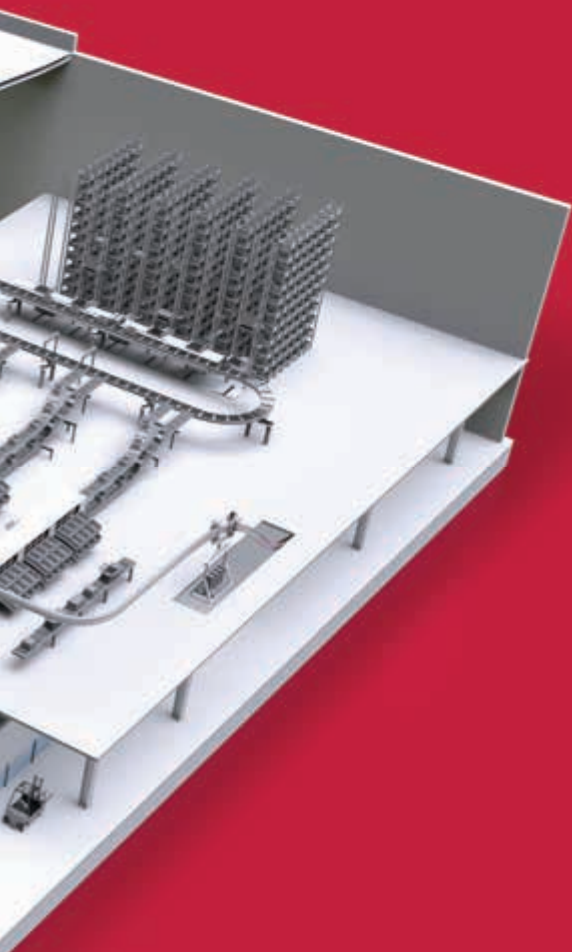


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SMART
SENSOR
BUSINESS

SMART IS
TO THINK **EASY**,
TO SHARE **EXPERIENCE**,
TO BE **CLOSE**,
TO CREATE THE **FUTURE**

More than 50 years of experience made Leuze electronic a real expert in innovative and efficient sensor solutions for industrial automation. With our wide sales- and service-network, our knowledgeable consulting and our reliable customer service we are always close to you – worldwide.



www.smart-sensor-business.com/en/

Felix Beintner,
Order Management
International

EASY

Technology must serve people. Complex and technically sophisticated products should be as **easy** and intuitive to use as possible by our customers. This is both an aspiration and a development maxim – to the benefit of our customers.

EXPERI- ENCE

More than 50 years of **experience** and a close relationship with our customers have made us true experts in specific industries. This is how we develop individual sensor solutions for and with our customers.

PROXIM- ITY

Think global, act local – this characterizes the sensor people. **Customer proximity** means not only being there for our customers 24/7, providing them with sound advice, and supporting them with an extensive range of services, but also responding to their individual desires and needs worldwide.

FUTURE

Sensors are the basis for all automation and for Industry 4.0 or IIoT. Together with our customers and strategic partners we are working on **future-oriented technologies** in order to make data and information available worldwide.

SMART IS TO CREATE **FUTURE**

Intelligent sensors provide the foundation for Industry 4.0 / IIoT. We have a very clear idea of what the future will look like, and we develop innovative sensor concepts for it.

Together with international technology partners such as Microsoft and the OPC Foundation, we design the technological standards of tomorrow and optimally prepare our products for the challenges of Industry 4.0 / IIoT. Our sensors already transmit their data via OPC UA to all levels of the automation pyramid or directly to the cloud, for example our BCL300i bar code readers.

There, the data can be used for further analysis and services provided by the Microsoft Azure Cloud services. Integrated interfaces such as IO-Link, PROFINET, EtherNet-IP, and EtherCAT are further driving forward the networking of sensors, and they make extensive machine data accessible and available globally through integration in the cloud.

Management level – ERP

Process control level – MES/SCADA

Control level – PLC

Field level

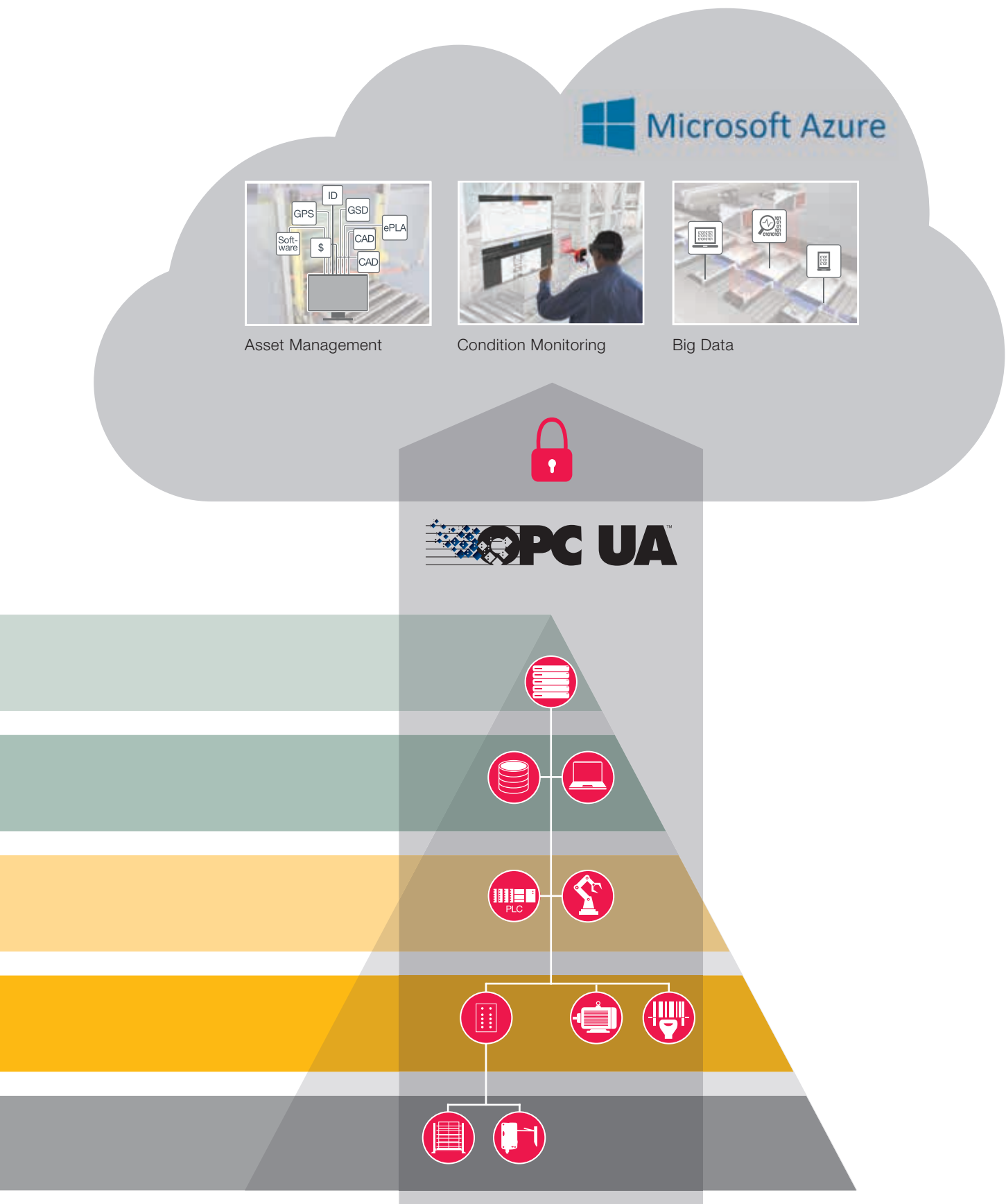


EtherNet/IP™
conformance tested

EtherCAT®

Sensor / Actuator

 **IO-Link**





FUTURE-ORIENTED SOLUTIONS FOR INTRALOGISTICS

As industry experts, we are familiar with the various fields of application of intralogistics and their unique requirements, and we develop products tailored to them. This enables our customers to offer competitive solutions.

“Global online commerce demands ever faster reaction times. Efficiency and automation are in demand. Our sensors facilitate sustainable and dynamic warehouse logistics.”

Market leaders such as Amazon, Tesco, or Zalando use standards that set the bar. Developments such as same-day or one-hour delivery require sophisticated logistics and highly automated distribution centers. The basis for this is an intelligent sensor system that works effectively and thus ensures maximum system availability.

Our smart 4.0-compatible sensors enable efficient and transparent processes. Individual sensors are becoming increasingly powerful. This means that the number of sensors can be reduced. The sensors inspect themselves, which means that there is virtually no downtime. Modern cloud solutions make the process data available worldwide for maintenance and monitoring tasks.

Matthias Göhner,
Industry Manager Intralogistics



Condition monitoring ensures maximum system availability

Our smart sensors verify their own functionality and thus enable predictive maintenance. This guarantees maximum system availability. Using an integrated interface, the data can be transmitted worldwide, e.g., to the Microsoft Azure Cloud, for maintenance and monitoring tasks.



We know your needs

We have been developing sensors specifically for intralogistics for many decades and are leading industry specialists. Our proximity to the customers and the various applications yield products that are tailored exactly to the customers' needs, such as the optical data transceiver DDLS 500 with its numerous additional functions and options.



Cost reduction through performance

Our product range is characterized by fast commissioning, intuitive operation, and high performance. We develop sensors for our customers that are more affordable in terms of overall costs due to their functionality, such as camera-based compartment fine positioning with the IPS 200i.



Full-service provider for intralogistics

Our claim as an industry specialist is to find the right solution for every intralogistics application. Our sensors ensure that the systems work reliably. The all-inclusive worry-free package consisting of solutions and services also includes 24/7 service.



SENSOR SOLUTIONS FOR **HIGH-BAY STORAGE DEVICES**

Aiming high: fast throughput and maximum availability guaranteed.

High-bay storage devices handle the storage and retrieval of goods in automatic high-bay warehouses. The speed and reliability of the high-bay storage devices - also in the low temperature range - are decisive for the overall performance and system availability. Our sensor solutions ensure that the high-bay storage device works

optimally. Dynamic and precise storage and retrieval of the goods ensures a high throughput speed. Optical compartment occupation checks and push-through protection reliably protect the stored goods and system. The easy alignment of the sensors enable fast and error-free commissioning.



1 Positioning (linear, curve-going)

BPS 300i

2 Positioning (linear)

AMS 300i

3 Data transmission

DDLS 200

4 Data transmission

DDLS 500

5 Single-depth compartment fine positioning in X- and Y-axis

IPS 200i

6 Compartment fine positioning,

double-depth in X- and Y-axis
LSIS 472i

7 Bay positioning

HRTR 25B-XL, HT 46C

8 Single-/multi-depth shelf positioning

HT 46C, HT 10

9 Compartment occupation check, push-through protection

HRT 25B (long range), 10 series

10 Clearance monitoring on the load receptacle

3C, 5, 25C, 46C series

Positioning (linear, curve-going)



Bar code positioning
systems
BPS 300i

- Accuracy ± 0.15 mm
- Positioning up to 10,000 m
- 3 selectable connection technologies
- Monitoring of availability, speed and distance to the tape
- Fast, secure mounting and position-neutral replacement
- Curve-going, horizontally and vertically
- Integrated PROFINET, PROFIBUS, SSI, RS232, RS422, or RS485 interface
- Optionally with heating and display

Positioning (linear)



Laser distance
measurement devices
AMS 300i

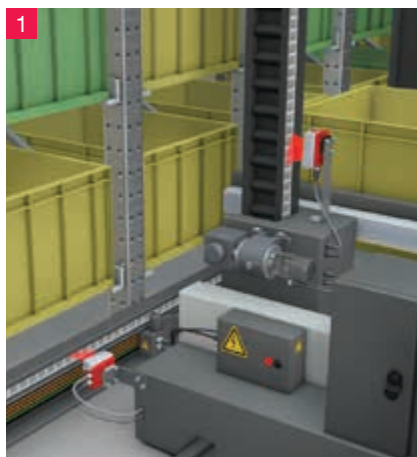
- Accuracy of ± 2 mm at 200 m
- Speed output and monitoring, $V_{\max} = 10$ m/sec
- Integrated PROFIBUS, PROFINET, INTERBUS, DeviceNet, Ethernet IP, CANopen, EtherCAT, Ethernet, SSI, RS232, RS422, or RS485 interface
- SSI and PROFINET or SSI and PROFIBUS in one device
- Fault-free parallel operation with data transmission system DDLS 500, DDLS 200
- Optionally with heating

Data transmission



Data transmission systems
DDLS 200

- 2 Mbit transparent, serial data transmission
- Integrated PROFIBUS, CANopen, DeviceNet interfaces
- Multifunctional control panel with bar graph
- Not affected by ambient light
- Interference-free parallel operation with AMS 300i laser distance measurement device
- Integrated "one-man" alignment device
- Optionally with heating



Data transmission



Data transmission systems
DDL 500

- 100Mbit transparent data transmission of all Ethernet protocols such as PROFINET, EtherNet IP, EtherCAT, etc.
- Laser alignment aid for quick and easy basic installation
- Monitoring of availability
- Interference-free parallel operation with AMS 300i laser distance measurement device
- Operating ranges of 40 m, 120 m and 200 m
- Access to all diagnostic data via an integrated web server
- Transfer of diagnostic data to the control as PROFINET participant (DDL 548i)
- Integrated mounting and alignment plate
- Optionally with heating

Compartment fine positioning, single-depth in x- and y-axis



Camera-based sensor for compartment fine positioning
IPS 200i

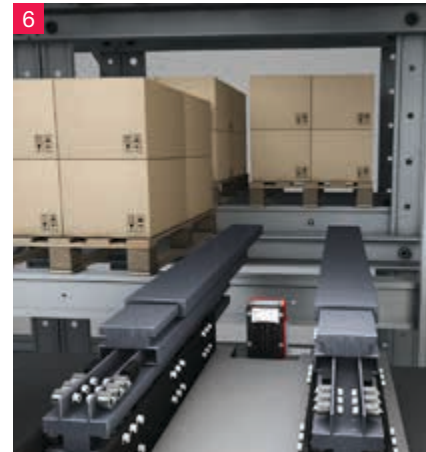
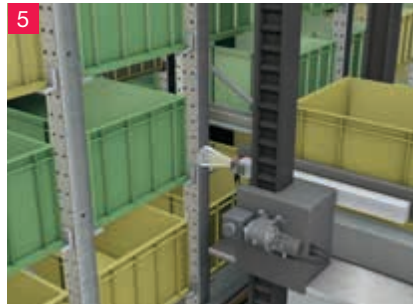
- Operating range up to 600 mm
- Consistency typically 0.1 mm
- Fast commissioning via web-based configuration tool
- Innovative alignment system via 4 feedback LEDs
- Quality score improves the system availability and reduces standstills
- Positioning on marker, hole or reflector
- Optionally with heating

Compartment fine positioning, double-depth in X- and Y-axis



Camera-based sensor for compartment fine positioning
LSIS 472i

- Operating range up to 1,800 mm
- Accuracy in X- and Y-direction ± 2 mm
- Integrated infrared illumination
- Integrated display
- Image transfer via FTP
- Integrated RS232 and Ethernet TCP/IP "on-board" interface
- Interface connection via the MA 2xxi modular connection unit
- Optionally with heating



Bay positioning



Diffuse sensors
HRTR 25B-XL, HT 46C

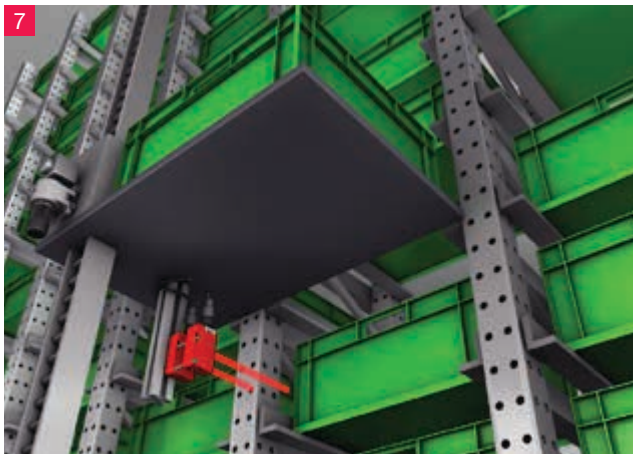
- Reliable detection of a wide range of profile types (e.g. sigma profile, etc.), colored and glossy surfaces
- Visible light spot for time-saving alignment
- Optimized beam path for reliable function for columns with holes

Shelf positioning Single or multi-depth



Diffuse sensors
HT 46C, HT 10

- Simple alignment through brightly visible light spot
- Precise switching behavior independent of background conditions
- Reliable detection of a wide range of profile types and surfaces
- Up to 3 independent switching outputs
- Operating range up to 8 m



Compartment occupation check, push-through protection



Diffuse sensors HRT 25B (long range), 10 series

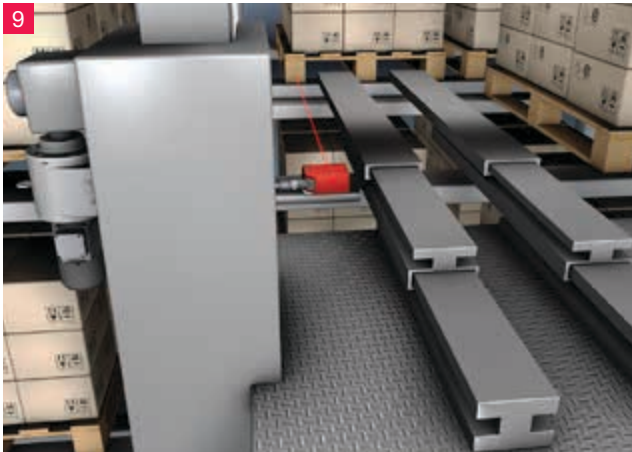
- Reliable detection of a wide range of pallets and containers
- Multiple switching points for multi-depth storage systems
- Reliable push-through detection by means of precise switching point (window function) and fast line teach
- Simple teaching thanks to large buttons
- SR 10: up to 3 switching outputs, analog output
- HRT 25B: large infrared light spot

Clearance monitoring on the load receptacle



Cubic series 3C, 5, 25C, 46C series

- Highest functional reliability even when soiled
- Easy alignment through highly visible light spot
- Functional reliability for tape- or shrink-wrapped pallets, bundles and containers with openings



Signaling of status information



Warning lights and signaling columns **C3, E4 and E7**

Ready-made C3

- Slim column with 3 LED modules
- Fast mounting because no assembly is required
- Delivery incl. 1 m cable, open ends

Modular E4 and E7

- Flexible configuration and mounting
- Mounting bracket for wall, post and horizontal mounting
- Vertical mounting: up to 5 modules
- Horizontal mounting: 2-sided, up to 10 modules
- Optional sound modules with the same high degree of protection



Access guarding with and without locking device



Safety switches, safety locking devices **S series, L series**

- Locking devices with and without guard interlocking in acc. with EN ISO 14119
- Integration in control circuits up to category 4 in accordance with EN ISO 13849-1
- Robust designs in metal housing and degree of protection IP 67
- Economical solutions with plastic housing
- Flexible installation thanks to different actuators and approach directions
- Non-contact safety switches with high coding level for maximum protection against tampering



Visual monitoring



Webcam
LCAM 408i

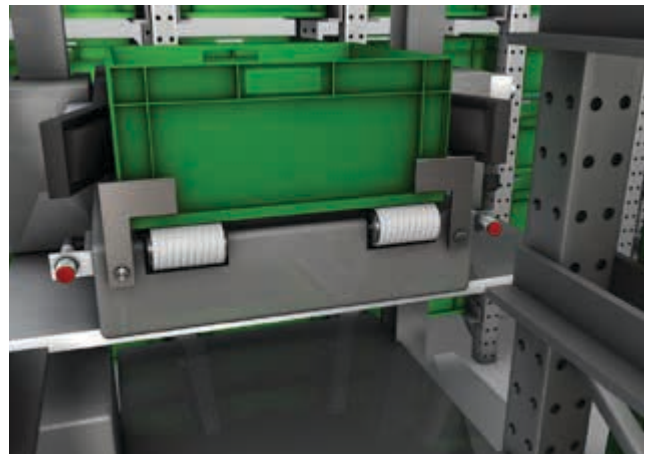
- Robust metal housing with degree of protection IP 65/IP 67 and easy to clean glass pane
- High image quality and fast live image transfer via the 5-Megapixel color camera with gigabit-Ethernet interface
- Easy integration via 24V voltage supply and M12 connections
- Configuration via standard browser
- Universal mounting options via dovetail, threaded holes and an extensive selection of mounting accessories

Transport safeguarding



Inductive switches
IS 208, 212, 218

- Extensive portfolio with designs up to M30
- Scanning ranges up to 40 mm
- Compact housing for space-saving installations
- Pressure-proof full-metal housing for extreme environments, also resistant to cleaning agents
- Short designs available



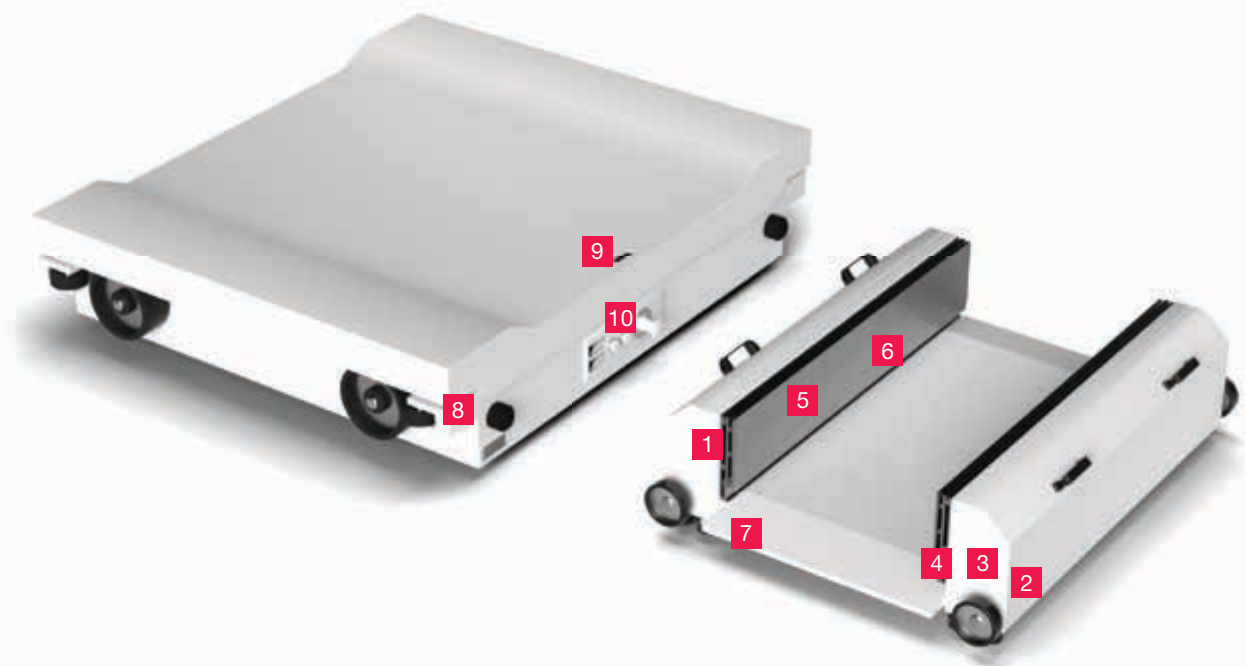
SENSOR SOLUTIONS FOR SHUTTLES

Make way: swift and safe storage and retrieval of goods.

Shuttles are compact warehouse vehicles for automatic operation of high-bay warehouses, which are used in parallel and which largely move independently in the rack construction.

The dynamic shuttles are tasked with transporting the goods safely, reliably identify open spaces, and avoid collisions.

This is ensured by our sensors for compartment fine positioning, detecting open spaces, and for presence control. For optimum positioning, sensors that can switch within milliseconds are used. The space-saving sensors can also be easily integrated in low vehicles and allow a flexible design. Their user-friendly design facilitates quick installation and commissioning.



**1 Collision protection
(transportation path free)**

10 series, HRT 25B (long range)

2 End of transportation path (referencing)

PRK 3C, HRT 3C

**3 Compartment occupation check,
single-depth**

HT 3C, HRT 25B (long range)

**4 Compartment occupation check,
multi-depth**

10 series, HRT 25B (long range)

5 Monitoring load pick-up, container position

PRK 2, PRK 5

6 Detection of the finger position

IS 208

7 Compartment fine positioning

HT 3C L

8 Positioning

10 series, HRT 25B (long range)

9 Load presence

HT 25C, FT 5, FT 328

10 Aisle end

10 series, HRT 25B (long range)

Collision protection (transportation path free)



Measuring and switching
distance sensors
10 series, HRT 25B
(long range)

- Working range from 50 – 8,000 mm (25 m against reflective tape)
- Reliable detection of dark, glossy and colored objects
- Very high angle tolerance
- Status LED visible from above and from front
- Measuring with analog output and IO-Link
- Switching with up to 3 switching outputs and IO-Link
- Laser class 1
- Operating temperature –40 to +50°C

End of transportation path (referencing)



Miniaturized diffuse sensors
and retro-reflective photo-
electric sensors
PRK 3C, HRT 3C

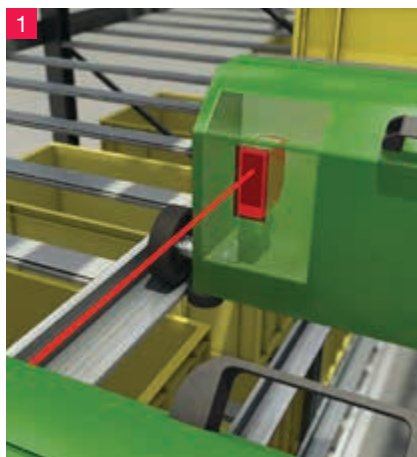
- Easy alignment through highly visible light spot
- Highly precise switching point
- Functions at zero distance
- Compact design
- A²LS active extraneous and active ambient light suppression
- Simple, one-point teaching
- Degree of protection IP 67
- Low energy consumption

Overhang control



Miniaturized throughbeam
and Retro-reflective
photoelectric sensors
LSR 2, PRK 2, PRK 5

- Very compact housing 12 x 8 x 23 mm
- Simple alignment through visible light spot
- Very small light spot for exact switching
- Very small minimum distance of 7 mm
- High switching frequency
- Glass optics and polarized light for reliable switching behavior with glossy surfaces
- Degree of protection IP 67
- Low energy consumption



Compartment occupation check, single-depth



Diffuse sensors
HT 3C, HRT 25B
(long range)

- Very high color and angle tolerance for reliable detection
- Excellent background suppression
- Not sensitive to soiling
- Also available with XL light spot
- Easy alignment through highly visible light spot
- A²LS active extraneous and active ambient light suppression
- Degree of protection IP 67
- Low energy consumption

Compartment occupation check, multi-depth



Measuring and switching
distance sensors
10 series, HRT 25B
(long range)

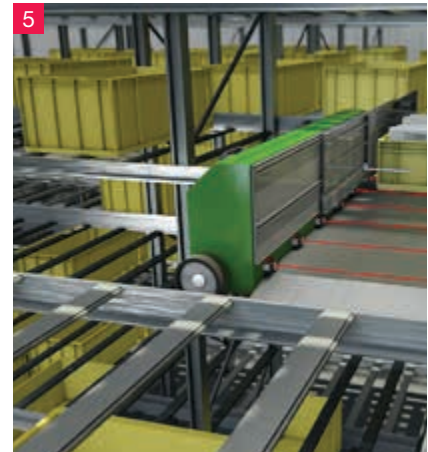
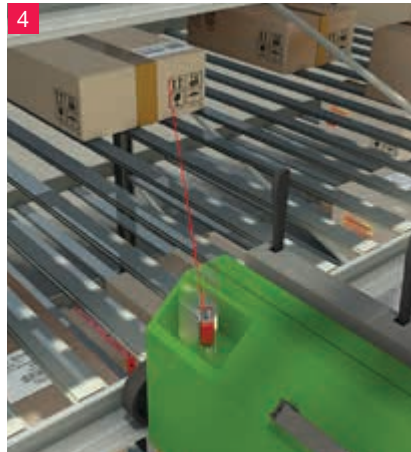
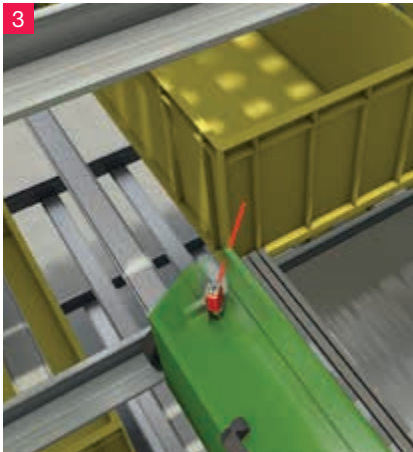
- Working range from 50 – 8,000 mm (25 m against reflective tape)
- Reliable detection of dark, glossy and colored objects
- Very high angle tolerance
- Status LED visible from above and from front
- Measuring with analog output and IO-Link
- Switching with up to 3 switching outputs and IO-Link
- Low energy consumption
- Laser class 1
- Operating temperature –40 to +50°C

Monitoring load pick-up, container position



Retro-reflective
photoelectric sensors
PRK 2, PRK 5

- Very attractive price
- Easy alignment through highly visible light spot
- No faulty switching in the case of reflective objects through use of polarization
- Compact design
- A²LS active extraneous and active ambient light suppression
- Integrated teach button
- Degree of protection IP 67
- Low energy consumption



Detection of the finger position



Inductive switches
in the M8 housing
IS 208

- Large operating ranges
- Short housing models available for use in confined spaces
- Standardized M8/M12 connection technology or cable for quick and fault-free commissioning
- Bright status LEDs at the connection with display of the function reserve (flashing LED)
- Robust metal housing for highest demands
- Correction factor-1 versions, miniature design and versions with increased scanning ranges

Identification of the telescopic fork



Inductive switches
in cubic designs
IS 288

- Large operating ranges
- Short housing models available for use in confined spaces
- Standardized M8/M12 connection technology or cable for quick and fault-free commissioning
- Bright status LEDs at the connection with display of the function reserve (flashing LED)
- Robust metal housing for highest demands
- Correction factor-1 versions, miniature design and versions with increased scanning ranges

Compartment fine positioning



Miniaturized
laser diffuse sensors
HT 3C L

- Easy alignment through highly visible light spot
- Highly precise switching point
- Reliable detection of marks
- Functions at zero distance
- Compact design
- A²LS active extraneous and active ambient light suppression
- Simple, one-point teaching
- Degree of protection IP 67 / 69K
- Low energy consumption



Positioning



Measuring and switching distance sensors
10 series, HRT 25B
(long range)

- Working range from 50 – 8,000 mm (25 m against reflective tape)
- Reliable detection of dark, glossy and colored objects
- Very high angle tolerance
- Highest process reliability thanks to prefailure message
- Status LED visible from above and from front
- Measuring with analog output and IO-Link
- Switching with up to 3 switching outputs and IO-Link
- Laser class 1
- Operating temperature –40 to +50 °C

Load presence



Sensor with background suppression
HT 25C, FT 5, FT 328

- Very high color and angle tolerance for reliable detection
- Excellent background suppression
- Not sensitive to soiling
- Also available with XL light spot
- Easy alignment with bright light spot
- A²LS active extraneous and active ambient light suppression
- Low energy consumption
- Degree of protection IP 67 / 69K

Aisle end



Measuring and switching distance sensors
10 series, HRT 25B
(long range)

- Working range from 50 – 8,000 mm (25 m against reflective tape)
- Very high angle tolerance
- Highest process reliability thanks to prefailure message
- Status LED visible from above and from front
- Measuring with analog output and IO-Link
- Switching with up to 3 switching outputs and IO-Link
- Laser class 1
- Operating temperature –40 to +50 °C

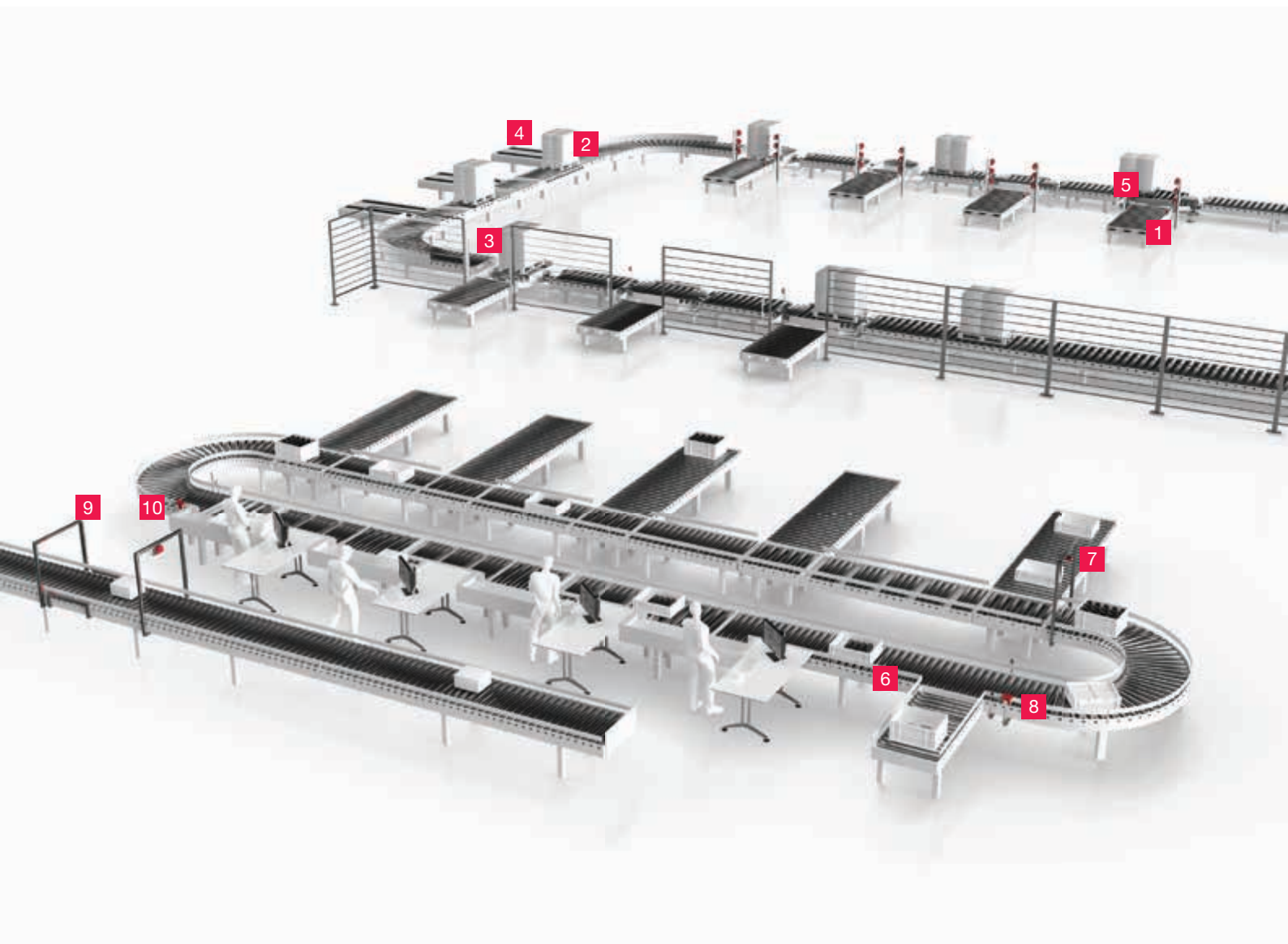


SENSOR SOLUTIONS FOR CONTINUOUS CONVEYORS

Always reliable: fast object detection even under difficult conditions.

Continuous conveyors ensure the continuous flow of goods. The presence of goods must be identified in the system, dimensions and fill levels checked, and bar codes must be read reliably. This guarantees a seamless production process. A comprehensive range of sensor solutions facilitates safe and fast object detection and protects people and the system. Individually deployable reading principles, such as bar code, 2D-code, and RFID guarantee maximum flexibility.

Our sensors offer reliable detection through high performance reserve even with glossy, dark or stretch-wrapped packages, and rough environmental conditions. The intelligent mounting technology, fast alignment, and easy integration into existing systems such as PROFINET by means of fieldbus interfaces enable swift commissioning of our sensors.



1 Object detection with light-band

RK 46C.DXL3 VarOS

2 Projection monitoring for pallet loading

CSL 710, CSL 505

3 Access guarding without muting sensors

MLC 530 SPG

4 Safeguarding of pallet transfer stations

MLD 300, MLD 500

5 Pallet identification

BCL 500i

6 Object detection

318B, 5, 25C, 28, 46C series

7 Fill level monitoring

LRS 36

8 Container identification

BCL 300i

9 Volume measurement

LSC 200

10 Carton identification

BCL 600i

Object detection with light-band



Retro-reflective photoelectric sensor
RK 46C.DXL3 VarOS

- 45–60 mm wide light-band with 7/14 mm resolution
- Reliable detection of all kinds of objects, even objects with openings
- Versatile use through 2 preselectable sensitivity levels and fine tuning
- Easy alignment through highly visible light spot
- One sensor for 50 mm detection replaces multiple individual sensors or light barriers

Projection monitoring for pallet loading



Switching light curtains
CSL 710, CSL 505

- Affordable dimension and contour monitoring for the entire area
- Measurement field heights from 35–3,100 mm
- Operating range up to 8 m
- Beam resolutions 5, 12.5, 25, 50, 100 mm
- Narrow design
- Plug & Play for simple installation
- Warning function when soiled

Integration of safety functions in AS-i bus systems



AS-Interface Safety at Work
ASM1E, ASM2E

- High safety standard (type 4, SILCL 3, PL e)
- Coupling of safety switches, protective sensors, safety light curtains, and E-stop command devices in AS-Interface networks
- Control of decentral AS-i actuators, shutdown of actuator groups
- Supports muting applications (2-sensor, parallel, 4-sensor, sequential)



Access guarding without muting sensors



Safety light curtains
MLC 530 SPG

- No muting sensors required
- Allows systems to be very compact and thus saves valuable space
- High security against tampering and high availability
- No alignment of the sensors necessary when changing the transport material
- Suitable for low temperature environments as low as -30°C

Access guarding



Multiple light beam
safety devices
MLD 300, MLD 500

- 3-beam transceiver models offer cost-effective solutions that are easy to install
- Suitable for low temperature environments as low as -30°C
- Simple device exchange by means of Plug & Play with no programming
- MLD 300: Type 2, SILCL 2, PL c
- MLD 500: Type 4, SILCL 3, PL e
- Optional AS-i interface

Safeguarding of pallet transfer stations



Multiple light beam
safety devices
MLD 300, MLD 500

- Integrated muting functions – easily configurable without a PC
- Customized variants for fast implementation of typical muting solutions (2-sensor muting, parallel, 4-sensor muting, sequential)
- Immediately ready for operation through optimal mechanical and electrical calibration
- Pre-mounted, ready-to-use muting sensor sets further facilitate installation



Pallet identification



Bar code reader
BCL 500i

- Large reading range with medium and large modules (e.g. module 1.0 – 2,400 mm)
- Code reconstruction technology (CRT) for high system availability
- Integrated PROFINET, PROFIBUS, Ethernet, Ethernet IP, multiNet RS232, RS485, or RS422 interface
- Integrated display
- Diagnostics and configuration via WebConfig
- Optionally with heating

Object detection



Photoelectric sensors
318B, 5, 25C, 28, 46C series

- Highest functional reliability even when soiled
- Easy alignment through highly visible light spot
- Robust active ambient light suppression
- Functional reliability for tape- or shrink-wrapped pallets, bundles and containers with openings
- Simple integration through pre-mounted brackets, special cable lengths
- Development of customer-specific mounting brackets



Air vane identification



Inductive switches
ISS 244, IS 240, IS 288

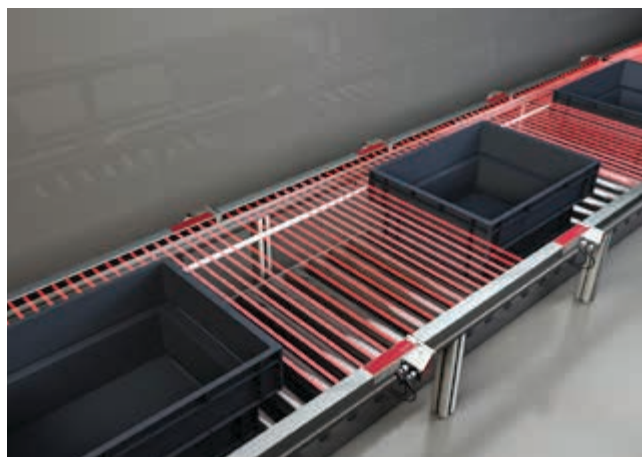
- Compact cubic designs for space-saving integration
- LED display visible from all sides
- Large switching distances up to 40 mm

Gap control



Measuring light curtains
CML 700i

- Short response time per beam (10/30 µs)
- Flexible fastening concept with standard profile for uncomplicated mounting
- Integrated PROFIBUS, PROFINET, CANopen, RS485, or IO-Link interface
- Easy-to-read display with robust membrane keyboard and bar graph display for easy alignment
- Measurement field length up to 3,000 mm
- Sturdy metal housing also for use in rough industrial environments
- Ex model (zone 2/22)



Fill level monitoring



Switching light section sensor
LRS 36

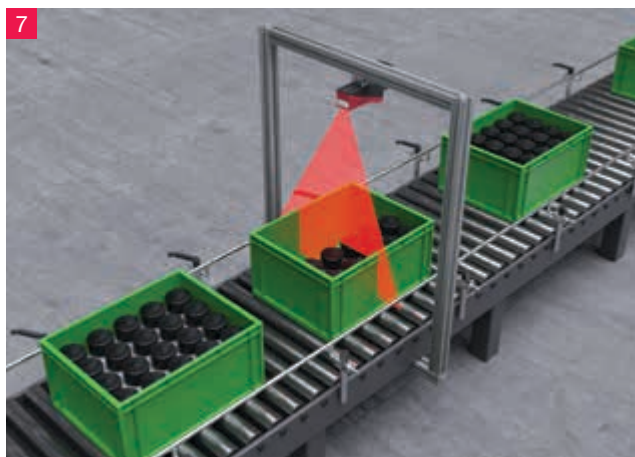
- Light section sensor for object detection
- Detection area up to 800 mm
- Laser line up to 600 mm
- Response time of 10 ms
- Up to 16 detection fields with logical linking option
- Up to 16 inspection tasks
- System connection via Ethernet
- Teach-in function

Container identification



Bar code reader
BCL 300i

- Reading distances from 20–700 mm
- Modular connection technology by means of pluggable connection hoods with M12 connector, clamp connection or fixed connection cables
- Integrated PROFINET, PROFIBUS, Ethernet, Ethernet IP, multiNet RS232, RS485, or RS422 interface
- Variants as line scanners, raster scanners, deflecting and oscillating mirrors available
- Code reconstruction technology (CRT) for reliable identification of damaged codes
- Optionally with display and heating



Container identification



RFID read systems
RFI 32

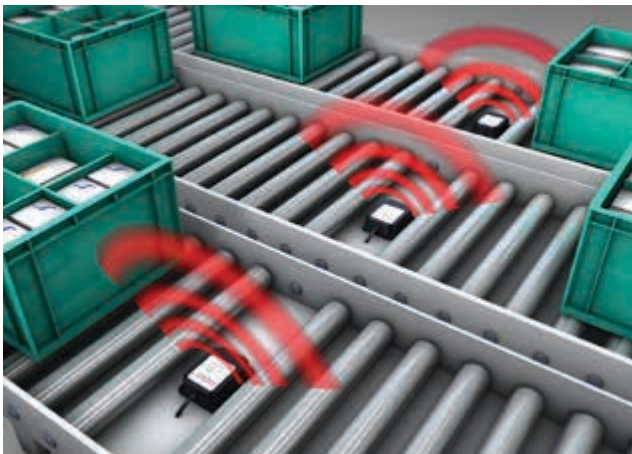
- Frequency of 125 kHz
- RFID device for identification purposes only (read only)
- Permanent coding
- Reading distance up to 90 mm
- Compatible transponders available
- Degree of protection IP 67

Container identification



RFID read/write systems
RFM 12/32/62

- Frequency of 13.56 MHz (HF)
- Reading distance up to 400 mm (HF)
- Continuous detection via trigger function and no-read, even in the case of failure
- Function adjustment via configuration saved in the device
- Time-optimized writing while driving by via pre-transmission of data to the write unit
- Very flexible options for connection to the fieldbus interfaces
- Wide product spectrum of devices as well as matching transponders
- RFM 32 Ex-n with EX certification zone 2



Height measurement



Measuring sensors ODS 10, ultrasonic sensors

ODS 10

- For precise measurement of moving objects
- Adjustment and diagnosis via OLED display
- Measurement range of 50–8,000 mm
- Reliable detection of dark, glossy and colored objects

Ultrasonic sensors

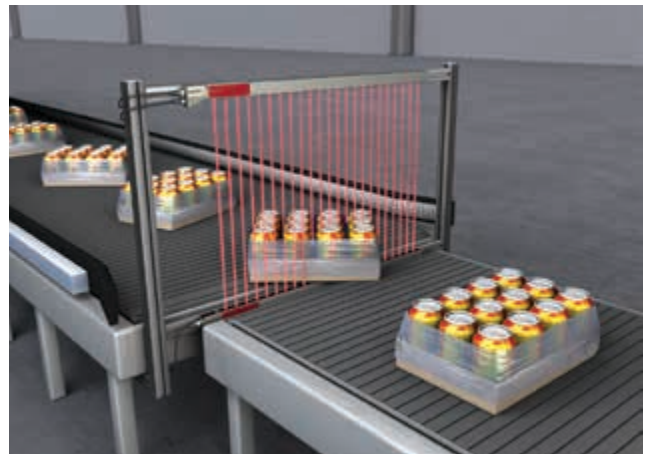
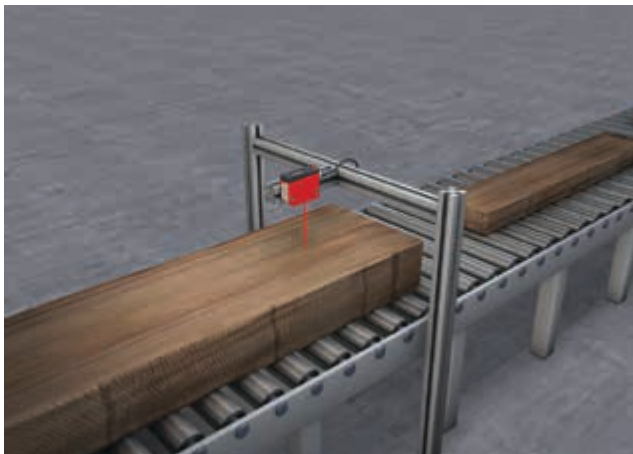
- For the reliable measurement on transparent and liquid media
- Measurement range up to 6,000 mm
- Resolution of 1 mm

Width/height measurement



Measuring light curtains CML 700i

- Short response time per beam (10/30 µs)
- Flexible fastening concept with standard profile for uncomplicated mounting
- Integrated PROFIBUS, PROFINET, CANopen, RS485, or IO-Link interface
- Easy-to-read display with robust membrane keyboard and bar graph display for easy alignment
- Max. measurement field length of 3,000 mm
- Sturdy metal housing also for use in rough industrial environments
- Ex model (zone 2/22)



Height/position checking



Measuring sensors
ROD4-3x

- Detection range of 0–65,000 mm
- High availability with short boot time and extended cleaning intervals
- Device parameters are stored in the connector (Config-Plug), permitting ultra-easy device exchange without reconfiguration
- Convenient configuration software RODsoft permits 8 detection field pairs and 4 detection fields, simultaneously
- Scanning rate of 25 scans/s
- Angular resolution of 0.36°

Volume measurement



Complete system
LSC 200

- Combine various sensors
- Measurement data filters can be adapted to the application
- Integrated EtherCAT, Ethernet, or PROFIBUS interface
- Detection of transparent objects
- Graphical user interface for commissioning
- Detection and output of the angular position
- Can be expanded with 1D- or 2D-code identification



Carton identification



Bar code reader
BCL 600i

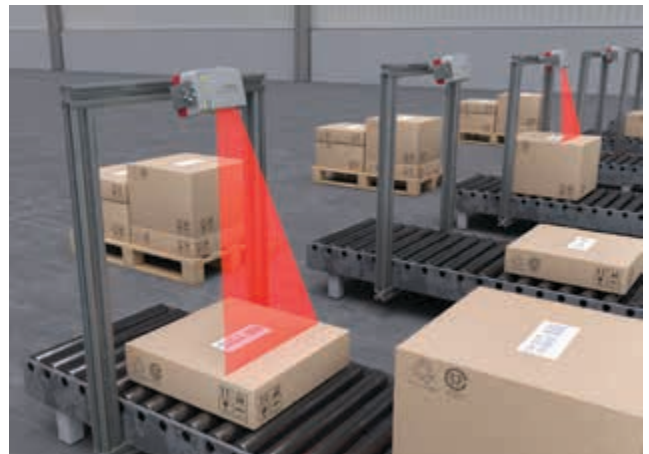
- Large reading range with small modules (e.g., with 0.3 mm module up to 1,050 mm)
- Integrated PROFINET, PROFIBUS, or Ethernet TCP/IP interface
- Blue laser diode
- No focus adjustment necessary
- multiScan via PROFINET or Ethernet TCP/IP
- Configuration via GSDML file or via WebConfig

Carton identification

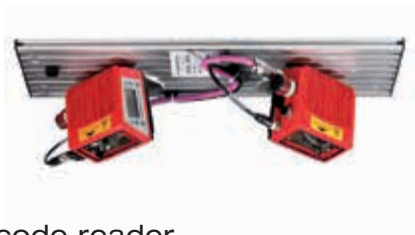


Bar code reader
BCL 900i

- Large reading range with small modules (e.g., with 0.3 mm module up to 1,450 mm)
- Integrated PROFINET, Ethernet IP, Ethernet TCP/IP, UDP, RS232, or RS422 interface
- No focus changeover
- Diagnostics and configuration via WebConfig
- Integrated switch
- Simple teaching-in of codes using easily accessible buttons



Omnidirectional identification



Bar code reader
MSPi systems

- Pre-mounted, can be used for a variety of standard applications
- Code reconstruction technology (CRT)
- Based on BCL 500i and 600i
- Expanded modular system for up to 32 devices
- Plug & Play solution



SENSOR SOLUTIONS FOR ELECTRICAL MONORAIL SYSTEMS

No deadlock: highest accuracy and efficient production processes.

Electrical monorail systems are rail-guided transport systems to transport goods from A to B. They must be flexible to use, precisely position the goods, and ensure an efficient production process.

An intelligent and sophisticated sensor system positions with millimeter accuracy, provides reliable all-around protection, and increases the

system's productivity. The bar code positioning system BPS ensures safe positioning (down to the millimeter) in bends, on gradients and on track switches. Monitoring sensors ensure reliable collision protection and safety laser scanners ensure the protection of danger zones. Powerful identification technologies (bar code/2D-code/RFID) also increase productivity of the system.



1 Positioning (curve-going)

BPS 8

2 Positioning (curve-going)

BPS 300i

3 Collision protection

HT 10

4 Safeguarding of the load pick-up and drop-off areas

RSL 400

5 Vehicle bodies identification

BCL 500i, BCL 600i

6 Skid identification

RFM 12/32/62

Positioning (curve-going)



Bar code positioning
systems
BPS 8

- Integrated RS232 interface
- All popular fieldbus and Ethernet systems via Leuze connection units MA8 or MA200
- Absolute positioning up to 10,000 m with reproducible accuracy of ± 1 mm
- Speeds up to 4 m/s
- Curve-going, horizontally and vertically
- Simple attachment using special mounting device
- Special labels permit the precise and problem-free positioning on/at switches

Positioning (curve-going)



Bar code positioning
systems
BPS 300i

- Absolute positioning up to 10,000 m with reproducible accuracy of ± 0.15 mm
- Integrated PROFINET, PROFIBUS, SSI, RS232, RS422, or RS485 interface
- Curve-going, horizontally and vertically
- 3 selectable connection technologies
- Monitoring of availability, speed and distance to the tape
- Optionally with heating and display

Collision protection



Laser diffuse sensor
HT 10

- Flexible selection of creeping movement and stop via 3 independently adjustable/teachable switching points
- Detection of reflective tape only, therefore not influenced by objects in the background or in the track area
- Scanning range limit of 0.05–25 m



Safeguarding of the load pick-up and drop-off area



Safety laser scanner
RSL 400

- Safeguarding of expansive danger zones of up to 8.25 m of operating range and 270° of scanning angle
- 2 autonomous protective functions with 2 safety-related switching output pairs (OSSDs)
- Large plain-text display for easy-to-read status messages
- Integrated Bluetooth and Ethernet TCP/IP interfaces simplify commissioning
- Simple mounting and easy device exchange by means of separate connection unit with M12 or cable connection

Vehicle bodies # identification



Bar code readers
BCL 500i, BCL 600i

- Code reconstruction technology (CRT) for high system availability
- Integrated PROFINET, PROFIBUS, Ethernet, Ethernet IP, multiNet, RS232, RS485, or RS422 interface
- Integrated display
- Large read field even with small modules
- No focus adjustment necessary
- multiScan via PROFINET or Ethernet TCP/IP

Skid identification



RFID read/write systems
RFM 12/32/62

- Frequency of 13.56 MHz (HF)
- Reading distance up to 400 mm (HF)
- Reliable identification without line-of-sight
- Very flexible options for connection to the fieldbus interfaces
- Wide product spectrum of devices as well as matching transponders
- RFM 32 Ex-n with EX certification zone 2

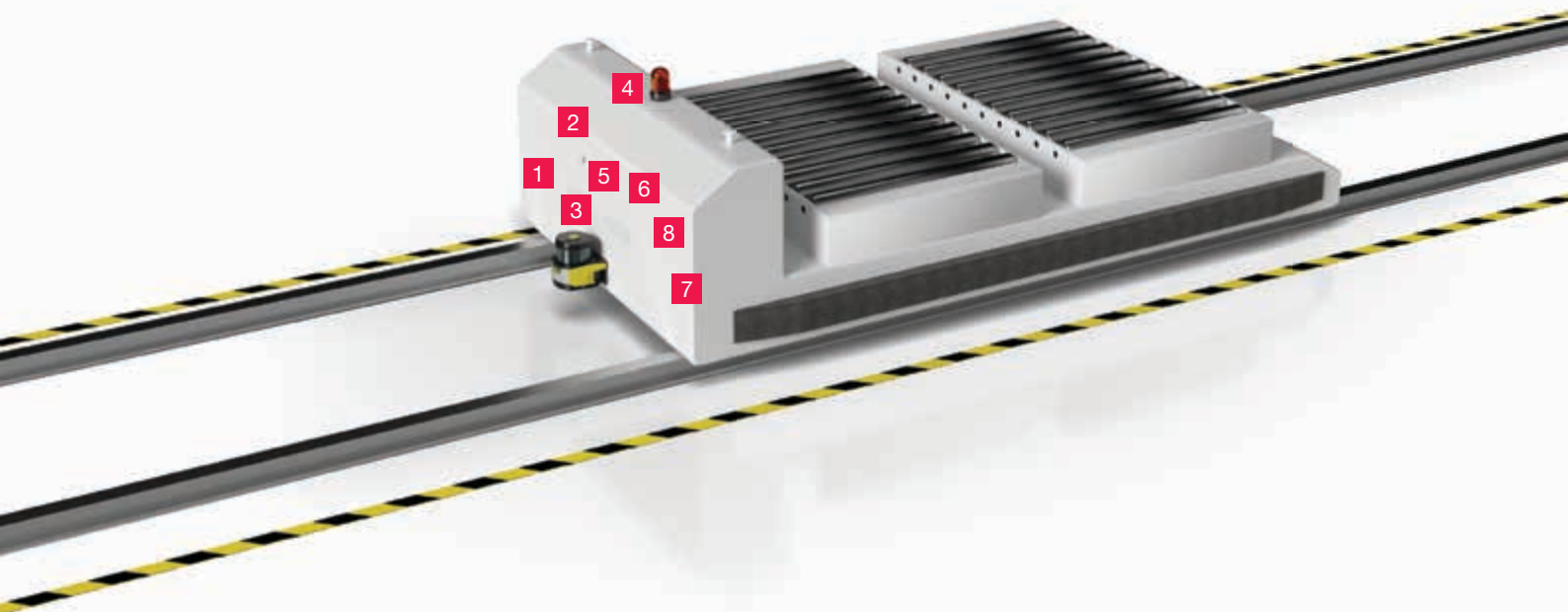


SENSOR SOLUTIONS FOR **AUTOMATED GUIDED VEHICLES**

Expert control: highly flexible and collision-free,
even when using multiple vehicles.

Automated guided vehicles move goods from A to B. The distances can be easily adapted, which renders the production system very flexible. The demands on dynamics and safety are high, especially when several vehicles are used at the same time.

Intelligent sensor solutions are a prerequisite for smooth operation and to prevent collisions. Safety laser scanners safeguard the vehicles. High-resolution and dynamic sensor solutions enable exact navigation of the automated guided vehicles. They measure and transfer optical data, thereby ensuring real-time monitoring of the systems.

**1 Data transmission**

DDLS 500

2 Data transmission

DDLS 200

3 Transportation path safeguarding

RSL 400

4 Signaling of status information

C3, E4 and E7

5 Optical guidance

OGS 600

6 Navigation

RSL 400

7 Positioning

ODSL 30, ODS 10

8 Positioning

AMS 300i

Data transmission



Data transmission systems
DDLS 500

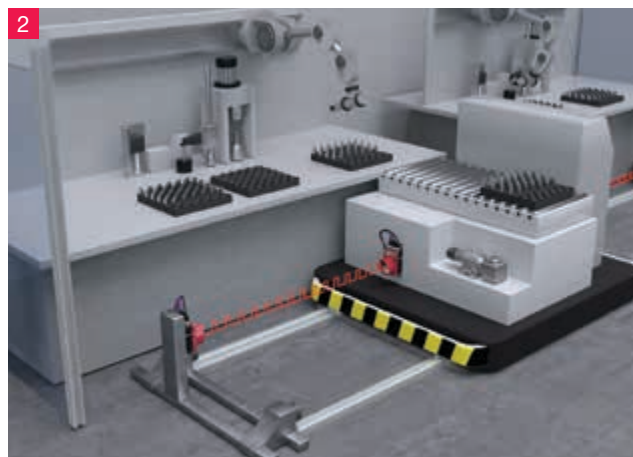
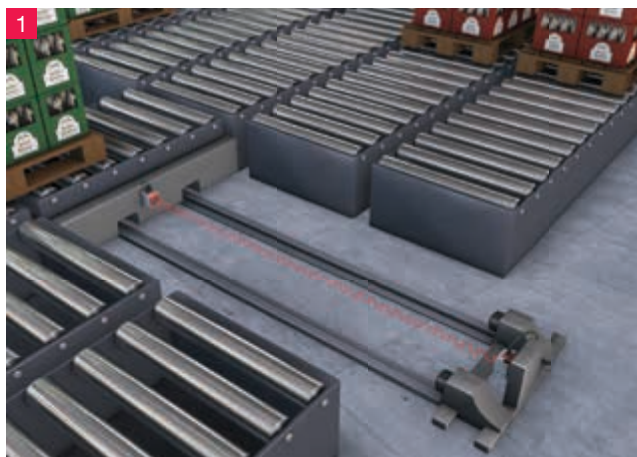
- 100 Mbit transparent data transmission of all Ethernet protocols such as PROFINET, EtherNet IP, EtherNet TCP/IP, EtherCAT, UDP etc.
- Laser alignment aid
- Monitoring of availability, speed and distance
- Interference-free parallel operation with AMS 300i laser distance measurement device
- Integrated “one-man” alignment device
- Operating ranges of 40 m, 120 m and 200 m
- Access to all diagnostic data via an integrated web server
- Transfer of diagnostic data to the control (DDLS 548i)
- Optionally with heating

Data transmission



Data transmission systems
DDLS 200

- 2 Mbit transparent serial data transmission
- Integrated interfaces, such as PROFIBUS, CANopen, DeviceNet
- Integrated “one-man” alignment device
- Multifunctional control panel with bar graph
- Not affected by ambient light
- Interference-free parallel operation with AMS 300i laser distance measurement device
- Optionally with heating



Transportation path safeguarding



Safety laser scanner
RSL 400

- Staggered operating ranges from 3–8.25 m
- Scanning angle of 270° enables all-around safeguarding of all four sides with just two devices
- Up to 100 reversible field pairs or 50 reversible 4-field sets allow for optimum adaptation to the movement situation
- 2 autonomous protective functions with 2 safety-related switching output pairs (OSSDs), e.g., for safe speed reduction
- Simple configuration by means of graphical programming tool with online help
- Integrated Ethernet TCP/IP and Bluetooth interfaces facilitate commissioning

Signaling of status information



Warning lights and signaling columns
C3, E4 and E7

Ready-made C3

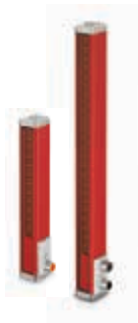
- Slim column with 3 LED modules
- Fast mounting because no assembly is required
- Delivery incl. 1 m cable, open ends

Modular E4 and E7

- Flexible configuration and mounting
- Mounting bracket for wall, post and horizontal mounting
- Vertical mounting: up to 5 modules
- Horizontal mounting: 2-sided, up to 10 modules
- Optional sound modules with the same high degree of protection



Optical guidance



Sensors for optical guidance
OGS 600

- High depth of field for optimum loading tolerance
- Integration in flat vehicles through lowest minimum distance to the floor
- Separate warning output for fault messages
- Large detection width allows routes with narrow curves
- Short response time for high travel speeds
- High degree of functional and extraneous light protection

Navigation



Safety laser scanner with navigation
RSL 400

- Replaces an additional navigation scanner in many cases
- Data output via UDP telegram, compatible with common navigation systems
- High angular resolution of 0.1° (output of distance) and remission value for each beam in 40 ms cycle
- Only minor impact on distance values due to material surface (e.g., black to reflector)
- All safety-relevant functions and product benefits are available simultaneously



Positioning



Measuring sensors
ODSL 30, ODS 10

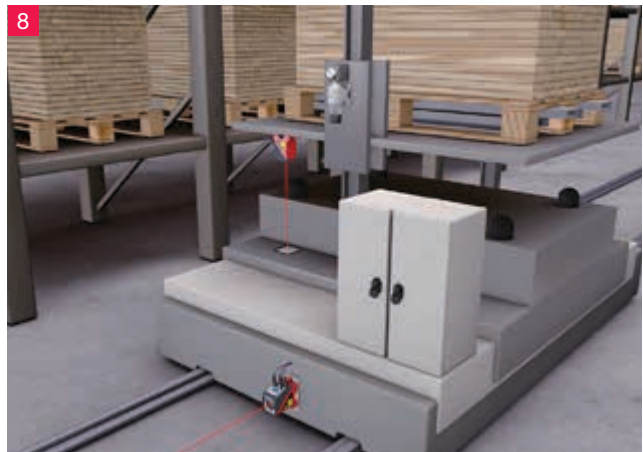
- Measurement range of 200 – 30,000 mm
- Measurement time from 30 – 100 ms
- Resolution up to 1 mm
- Absolute measurement accuracy up to ± 2 mm
- Simple and fast operation via display on the device
- Can be used universally with or without reflector
- Analog value or data output

Positioning



Laser distance measurement devices
AMS 300i

- Accuracy of ± 2 mm at 200 m
- Speed output and monitoring,
 $V_{\max} = 10$ m/sec
- Integrated PROFIBUS, PROFINET, INTERBUS, DeviceNet,
Ethernet IP, CANopen, EtherCAT, Ethernet, SSI, RS232,
RS422, or RS485 interface
- SSI and PROFINET or SSI and PROFIBUS in one device
- Fault-free parallel operation with data transmission system
DDLS 500, DDLS 200
- Simple alignment through decoupling of fastening
and alignment mechanics
- Optionally with heating



SENSOR SOLUTIONS FOR **SIDE-TRACKING SHELVES**

Well ordered: efficient storage with exact positioning and synchronization.

Side-tracking shelves allow for the storage location to be used economically and efficiently. It must be possible to access the goods in single racks quickly and safely when needed.

Our sensors ensure precise positioning and synchronization of shelves and drives. For safeguarding aisle and foot space and monitoring aisles, Leuze electronic offers tailor-made sensor solutions, too.

Foot space protection



Single light
beam safety devices
SLS 46C

- For applications up to PL c (type 2) and PL d/e (type 4), in combination with MSI-TR1 and MSI-TRM safety monitoring devices
- Operating ranges up to 40 m / 70 m
- Infrared and red-light variants
- Degree of protection IP 67 / 69K
- Use to -30 °C
- Status LED display visible from all sides
- Fast alignment thanks to easily visible light spot

Positioning / synchronization



Diffuse sensors with
background suppression
HT 25C, HT 46C

- Precise positioning even for glossy objects
- High repeatability
- Versions with 2 individual switching points in one sensor

Signaling of status information



Warning lights
EMS, FBA and D9

EMS alarm indicator

- Sound chart (32 sounds) includes standardized volume

FBA single lamp

- Bright, vibration-resistant, shock-resistant
- Also suitable for outdoor use

Individual solutions with EMS & FBA

- Can be mechanically combined by means of mounting kit

D9 wall lamp in refined design

- Complete 3-color, semicircular signal lamp with sound module



SENSOR SOLUTIONS FOR **ORDER PICKING**

Mission accomplished: deliver quickly and reliably with powerful identification technologies.

Order picking is the process of collecting goods for customer or production orders. The goods have to be identified reliably and in a user-friendly manner.

Our readers ensure fast order processing both for manual and automatic allocation of the goods to a respective order. Reliable and high-performance identification increases cost effectiveness considerably.

Pick & place



Switching light curtains
CSL 505

- Area-covering, effective access control
- Operating range up to 5 m
- Beam resolutions 5, 12.5, 25, 50, 100 mm
- Plug & Play for simple installation
- Warning function (soiling, defect)
- Narrow, space-saving profile

1D-code identification



Mobile code readers

- Bar code reading by touch
- Rough industrial use, up to degree of protection IP 65
- Partially as wireless model via radio (Bluetooth)
- Wide range of hand-held readers for bar codes used in a wide range of applications
- Extensive selection of accessories
- Can be integrated in all common fieldbus systems via MA 200

2D-code and RF identification



Ident systems

- Wide range of readers for 2D-codes
- HCR 6200, HS 65x8 optimized for directly marked parts
- Extensive selection of accessories
- Partially as wireless model via radio (Bluetooth)



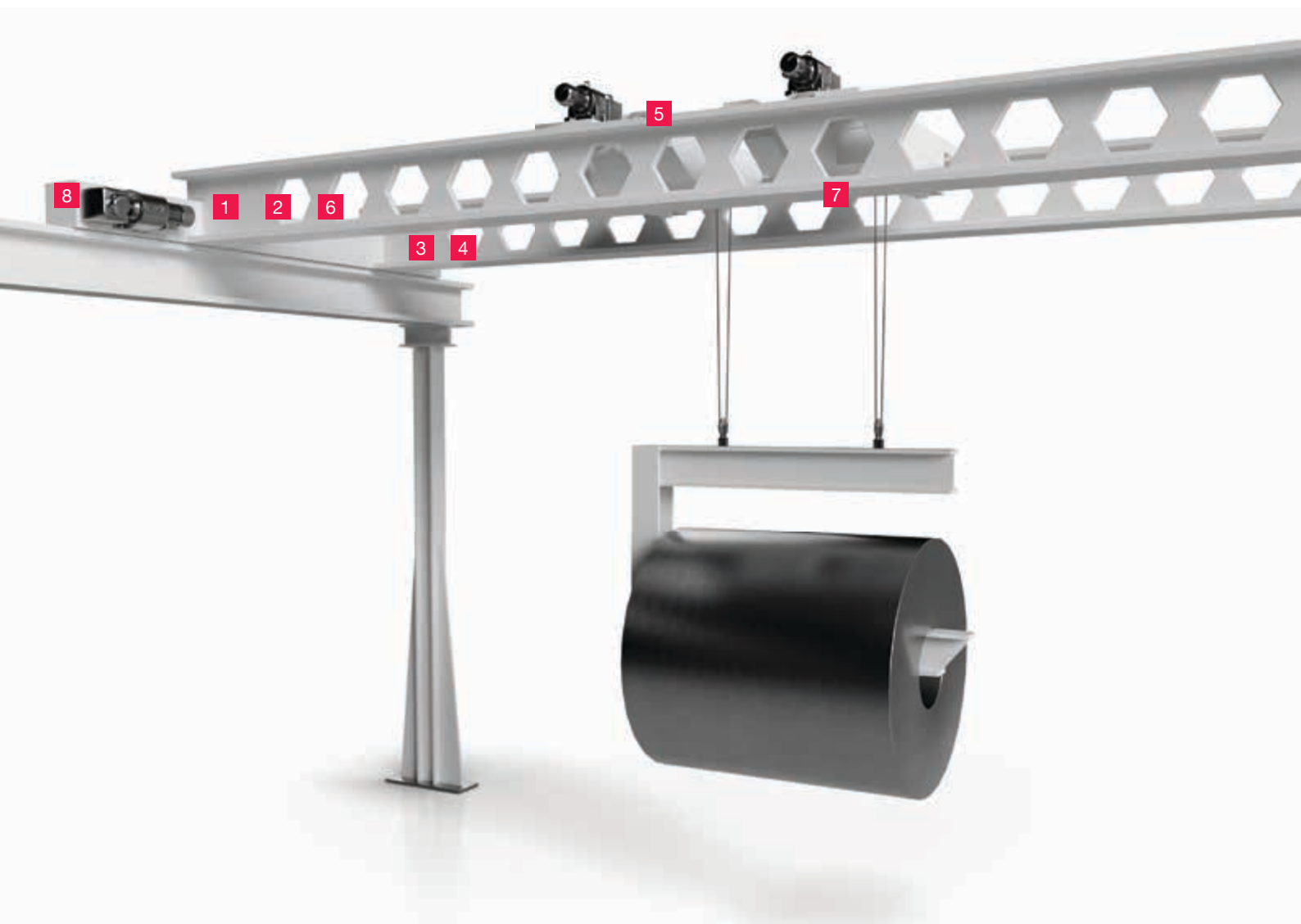
SENSOR SOLUTIONS FOR **CRANES**

Heavy duty: automation of crane systems for more productivity and process safety.

Goods are warehoused or stored temporarily with industrial crane systems. Automatic positioning of the crane can make the production process significantly more effective.

The use of our sensors significantly increases process safety, productivity and availability of the system, and contributes to the protection of

people and materials. The connection between the crane and control is established via optical data transmission. Tailor-made to the individual needs of a wide variety of applications, our sensors provide exact crane positioning and manipulator control. Collision protection is preventing possible collisions.



1 Data transmission

DDLS 500

2 Data transmission

DDLS 200

3 Collision protection, distance monitoring

10 series, PRK 46C

4 Final position monitoring

IS 244

5 Positioning

BPS 300i

6 Positioning

AMS 300i, ODSL 30

7 Manipulator control

ROD4plus

8 Collision protection

MLD 500, SLS 46C

Data transmission



Data transmission systems
DDLS 500

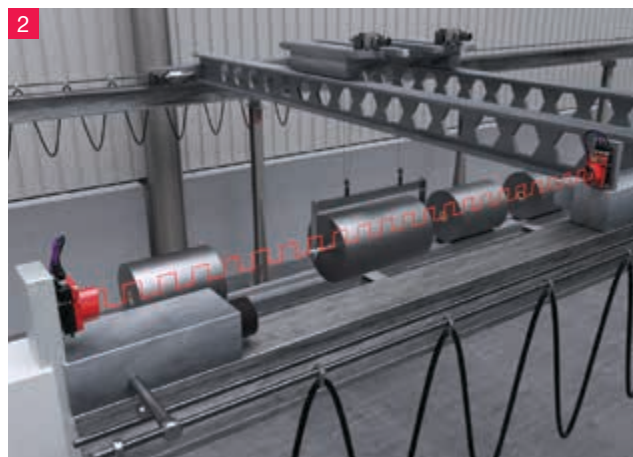
- 100 Mbit transparent data transmission of all Ethernet protocols such as PROFINET, EtherNet IP, EtherNet TCP/IP, EtherCAT, UDP etc.
- Laser alignment aid
- Monitoring of availability, speed and distance
- Interference-free parallel operation with AMS 300i laser distance measurement device
- Integrated "one-man" alignment device
- Operating ranges of 40 m, 120 m and 200 m
- Access to all diagnostic data via an integrated web server
- Transfer of diagnostic data to the control (DDLS 548i)
- Optionally with heating

Data transmission



Data transmission systems
DDLS 200

- 2 Mbit transparent serial data transmission
- Integrated interfaces, such as PROFIBUS, CANopen, DeviceNet
- Integrated "one-man" alignment device
- Operating ranges of 40 m, 120 m, 200 m and 300 m
- Multifunctional control panel with bar graph
- Not affected by ambient light
- Interference-free parallel operation with AMS 300i laser distance measurement device
- Optionally with heating



Collision protection, distance monitoring



Diffuse sensors
Retro-reflective photoelectric sensors
10 series, PRK 46C

- Long operating range up to 25 m
- High function reserve guarantees high availability under extreme environmental conditions
- Very good ambient light suppression for uninterrupted operation
- Area monitoring via window function
- Function test via activation input
- SR 10: up to 3 switching outputs, analog output

Final position monitoring



Cubic inductive sensors
IS 244

- Switching distances up to 40 mm for reliable detection at a distance
- Sensor field can be oriented in 5 directions
- Comfortable terminal compartment up to 2.5 mm²
- Also available as M12 variant



Positioning



Bar code positioning systems
BPS 300i

- 3 selectable connection technologies
- Monitoring of availability, velocity and distance to the tape via the interface, via warning output or online via WebConfig
- Fast, secure mounting and position-neutral replacement
- Absolute positioning up to 10,000 m with reproducible accuracy of ± 0.15 mm
- Twin tapes for parallel driving of the crane bridge
- Optionally with heating and display

Positioning



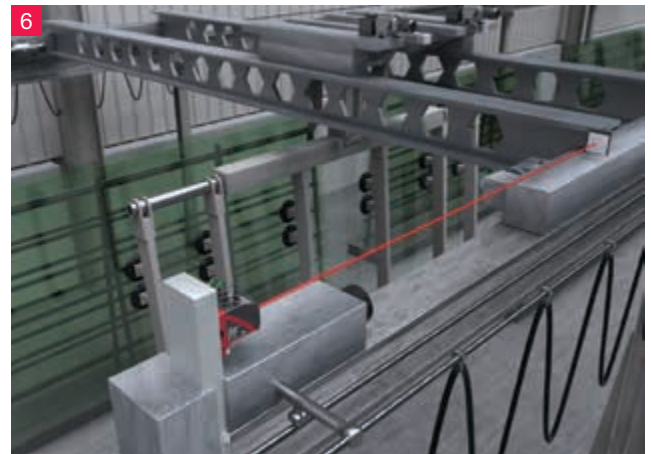
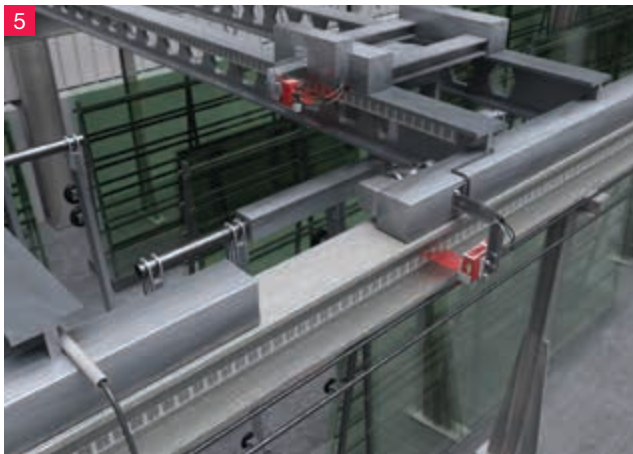
Measuring sensors
AMS 300i, ODSL 30

AMS 300i

- Accuracy of ± 2 mm at 200 m
- Speed measurement
- Integrated PROFIBUS, PROFINET, INTERBUS, DeviceNet, Ethernet IP, CANopen, EtherCAT, Ethernet, SSI, RS232, RS422, or RS485 interface
- Diagnosis and prefailure messages
- Display in 5 languages

ODSL 30

- Measurement range of 200 – 30,000 mm
- Measurement time from 30 – 100 ms
- Absolute measurement accuracy ± 2 mm



Manipulator control



Laser distance sensors
ROD4plus

- Measurement range of 0 – 65,000 mm
- Scanning angle 190°
- Fast measurement data transfer through Fast Ethernet 100 MBit, scanning rate 50 Hz
- Robust, surface-independent measurement

Collision protection



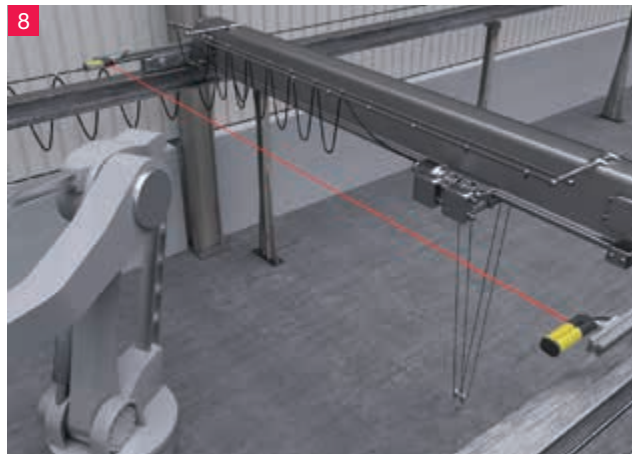
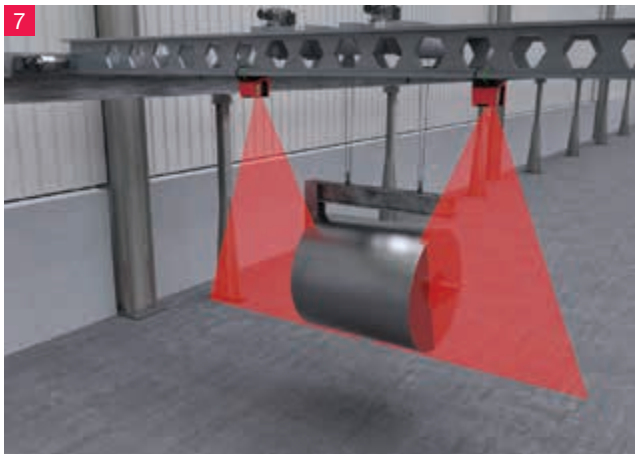
Single light beam safety devices
MLD 500, SLS 46C

MLD 500

- Easy installation and integration with internal testing and OSSD outputs
- Easy device change without programming through configuration per wiring
- Optionally with integrated laser alignment aid, AS-i interface, 7-segment display
- Operating range up to 100 m

SLS 46C

- Compact design
- External testing with safety relay MSI-TRM
- Infrared and red light variants to prevent mutual interference
- Operating range up to 70 m



ALL PRODUCTS FROM A SINGLE SOURCE

Full performance with the right accessories and attuned components.

In addition to device functionality and quality, optimally adapted accessories are necessary for the reliable and efficient use of sensors. No matter

if you need easy mounting and connecting or reliable signal provision – it takes the right accessories to unleash the full power.





Cables

To facilitate the integration of our sensors, we offer a large variety of connection and interconnection cables with M8, M12, and M23 connectors – straight or angled, and with or without LED.



Connection units

Today, sensors, safety switches and cameras are linked together via active or passive sensor distribution boxes with fieldbus interfaces from our product range to ensure more flexibility and transparency during installation.



Power supply

A reliable and machine-independent power supply with 1- and 3-phase power supplies is an elementary part of an optimum and efficient sensor system. For this reason, we also offer load circuit monitoring modules to ensure a higher level of safeguarding against failure.

Mounting accessories

We place great emphasis on our products being easy to mount and simple to align. For this reason, you will find specially-attuned mounting systems in our product range such as mounting brackets, rod holders or device columns.



Reflectors

Just how reliably retro-reflective photoelectric sensors can detect depends upon the selected reflector, among other things. That is why we offer various fitting solutions made of plastic, film, and glass for all conceivable conditions.



Signal elements

For signaling in automated systems, we offer an extensive product range of single- and multi-colored transducers in order to ensure productivity and efficiency.



SMART
SENSOR
BUSINESS

WE ARE THE **SENSOR PEOPLE**

For more than 50 years, we have been developing, producing, and marketing efficient sensor solutions for industrial automation.

Leuze electronic at a glance

Foundation	1963
Company structure	GmbH & Co. KG, wholly family-owned
Executive management	Ulrich Balbach
Headquarters	Owen, Germany
Distribution companies	18
Production locations	5
Technological competence centers	3
Distributors	42
Employees	> 1,000

Product range

Switching sensors
Measuring sensors
Products for safety at work
Identification
Data transmission systems
Industrial image processing
Accessories

Industry expertise

Intralogistics
Packaging industry
Machine tools
Automotive industry
Medical technology

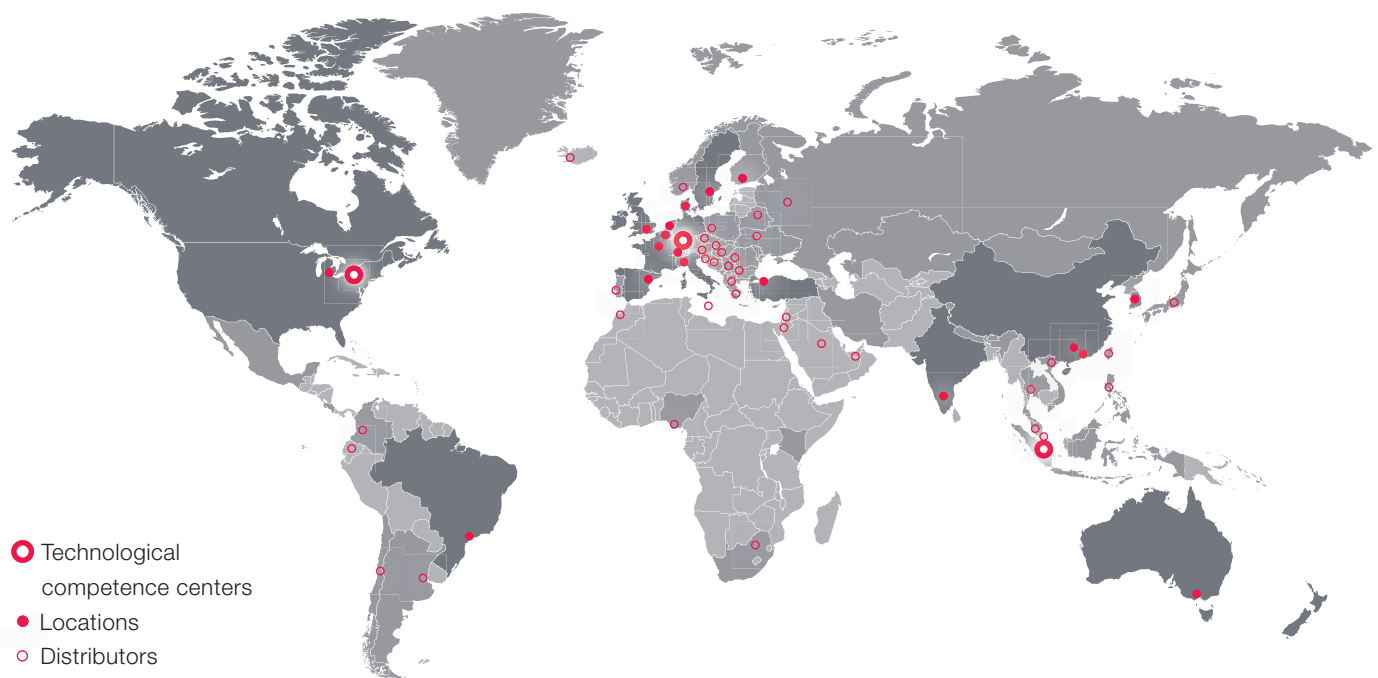


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www.leuze.com

ALWAYS CLOSE TO YOU

Short distances are important to us – both within and outside of our company. We therefore place great value on being personally, quickly, and easily accessible to you at our locations around the world. We produce our sensors on four continents, allowing us to offer you reliable product availability.



Australia / New Zealand | Belgium | Brazil | China | Denmark / Sweden | France | Germany | Great Britain | Hong Kong | India | Italy | the Netherlands | Switzerland | Singapore | Spain | South Korea | Turkey | USA / Canada

Switching Sensors

Optical Sensors
Ultrasonic Sensors
Fiber Optic Sensors
Inductive Switches
Forked Sensors
Light Curtains
Special Sensors

Measuring Sensors

Distance Sensors
Sensors for Positioning
3D Sensors
Light Curtains
Forked Sensors

Products for Safety at Work

Optoelectronic Safety Sensors
Safe Locking Devices, Switches and Proximity Sensors
Safe Control Components
Machine Safety Services

Identification

Bar Code Identification
2D-Code Identification
RF Identification

Data Transmission / Control Components

MA Modular Connection Units
Data Transmission
Safe Control Components
Signaling Devices
Connection Technology and Passive Distribution Boxes

Industrial Image Processing

Light Section Sensors
Smart Camera

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