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the **sensor** people

#### Optoelectronic Sensors

Cubic Series  
Cylindrical Sensors, Mini Sensors, Fibre Optic Amplifiers  
Measuring Sensors  
Special Sensors  
Light curtains  
Forked Sensors  
Double Sheet Monitoring, Splice Detection  
Accessories

#### Identification Systems

##### Data Transmission Systems

##### Distance Measurement

Barcode Readers  
RF-IDent-Systems  
Modular Interfacing Units  
Industrial Image Processing Systems  
Optical Data Transmission Systems  
Optical Distance Measurement/Positioning  
Hand-Held Readers

#### Safety Sensors

##### Safety Systems

##### Safety Services

Safety Laser Scanners  
Safety light curtains  
Transceivers and Multiple Light Beam Safety Devices  
Single Light Beam Safety Devices  
AS-i-Safety Product Range  
Safety Sensor Technology for PROFIBUS DP  
Safety Switches and Safety Locking Devices  
Safety Relays and Safety Interfaces  
Sensor Accessories and Signal Devices  
Safety Engineering Software  
Machine Safety Services

## Sensor solutions for intra-logistics



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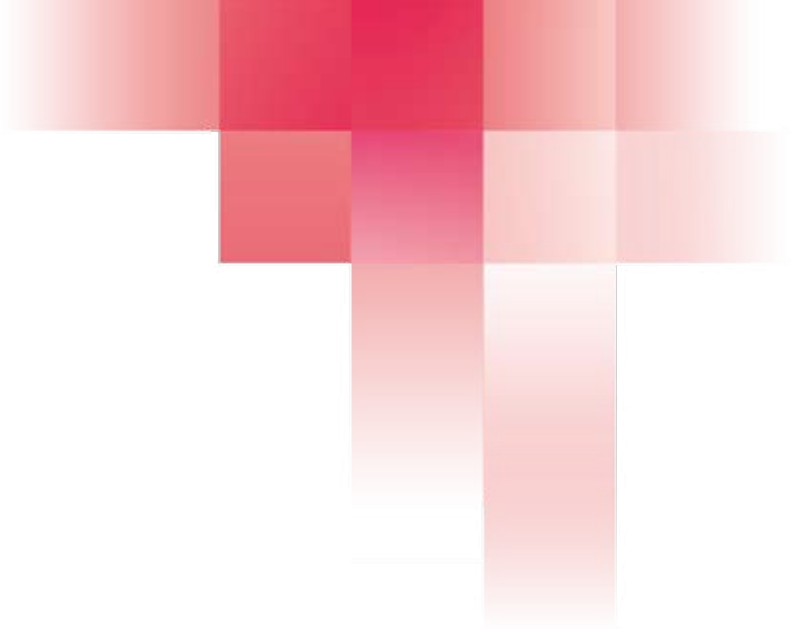
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No wishes left unanswered.  
The sensor solutions for intra-logistics by  
Leuze electronic.

Contents

Many good reasons for your success.

In all areas, success is the result of optimal interplay of various factors. For Leuze electronic, they are a broad and closely coordinated product program, applications experience developed over decades, and innovative, market-driven product developments for all common interfaces and network environments. It is the combination of these factors that makes Leuze electronic one of the leading suppliers of optoelectronic sensors. The close contact with our customers and thus your needs and requirements is one of our particular strengths. This doesn't just apply to technical questions but increasingly also to the service sector.

For more than 40 years, Leuze electronic has been developing and producing optoelectronic sensors, identification systems, image processing systems, data transmission systems and optoelectronic safety sensor systems for industrial automation. Leuze electronic is known worldwide as one leader in innovation for the entire spectrum of optical sensors in factory automation.

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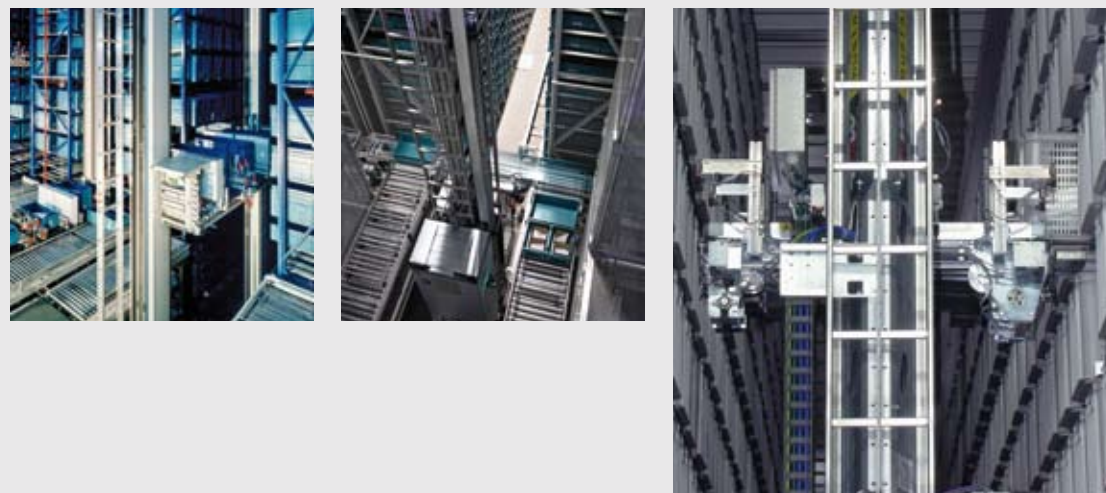


## High-bay warehouse/high-bay storage device



### Fast throughput at high availability.

Sensors made by Leuze electronic ensure a high throughput when merchandise is placed into or removed from storage, due to dynamic and precise positioning and detail positioning, even under ambient light interference. A high reproducibility and simple alignment of the sensors translate into short commissioning and repair times. Optical compartment occupation checks and push-through protection reliably ensure protection of the merchandise. A complete performance package of sensor solutions designed for the requirements of coolstore applications ensures maximum availability even under rough environmental conditions.



### Positioning

Barcode positioning systems  
**BPS 34/37**



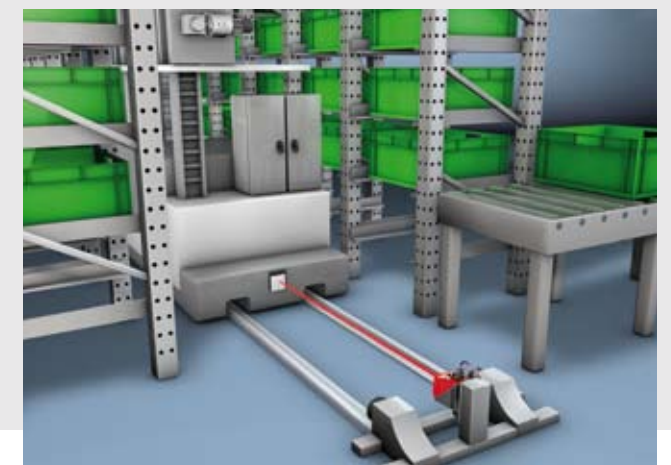
- Absolute positioning up to 10,000 m
- Curve-going, horizontally and vertically
- Integrated PROFIBUS or SSI interface
- If areas of the barcode tape are damaged, a repair kit can be downloaded from the Internet
- Integrated speed measurement and monitoring
- Optionally with optics heating for coolstore applications (down to -30°C)
- Up to a speed of 10 m/s
- Fast and simple installation
- Absolute measurement accuracy  $\pm 1$  mm

### Positioning

Laser distance measurement devices  
**AMS 200**



- Absolute measurement accuracy of  $\pm 2$  mm to 120 m ( $\pm 3$  mm to 200 m)
- Output and monitoring of the speed
- Interfaces: PROFIBUS and SSI, Interbus, RS 232
- Diagnostic and prefailure messages
- Display in 5 languages
- M 12 Connection technology
- Optionally with heating (down to -30°C)
- Failure-free parallel operation with optical data transceiver DDLS 200
- Easy adjustment by decoupling of attachment and alignment mechanisms







## Bay positioning

Diffuse reflection scanners  
**RTR 25**



- Scanning range 40–200 mm
- Secure detection of a wide range of profile types (e.g., sigma profile, etc.), coloured and glossy surfaces
- Visible light spot for time-saving alignment
- Optimised beam trajectory for secure functioning on bays with holes

## Shelf positioning single or multi-depth

Diffuse reflection scanners  
**HRT 96**



- Scanning range 10–2,500 mm
- Secure detection of a wide range of profile types (e.g., sigma profile, etc.), coloured and glossy surfaces
- Easy alignment via laser light even for multi-depth storage
- Precise switching behaviour independent of background conditions

## Push-through protection

Measuring Sensors  
**ODS 96B**



- Measurement range 60–2,000 mm
- Measurement frequency up to 1 kHz
- Measurement display in mm and configuration via OLED display directly at the sensor
- Precise switching behaviour

## Clearance monitoring Load receptacle

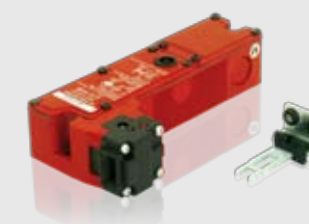
Cubic Series  
**3B, 25B, 46B Series**



- Highest functional reliability even when soiled
- Simple alignment via brightVision®
- Functional reliability for tape- or shrink-wrapped pallets, bundles and containers

## Safety gate monitoring and interlocking

Safety interlocks  
**L30**



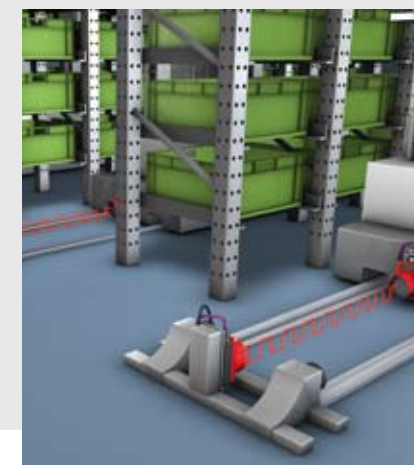
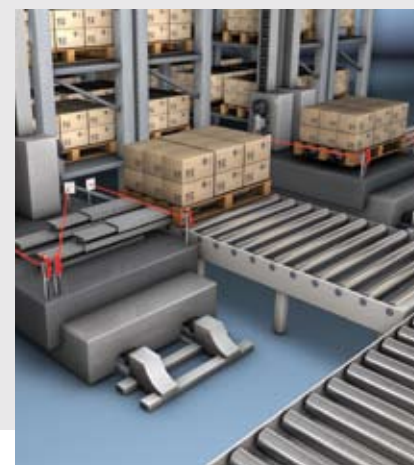
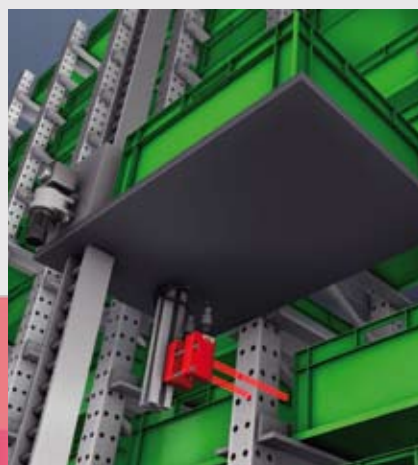
- Optimum integration through narrow construction
- Universal application due to turning head (90°)
- Versions operated via spring or magnetic tension
- Erroneous locking protection, manual auxiliary unblocking
- Contact set for safety integration up to Category 4 acc. to EN 954-1
- With self-centering and dust protection plate

## Data transmission

Optical data transceivers  
**DDLs 200**



- Serialinfrared data transmission
- All internationally important interfaces available (e.g., Ethernet, etc.)
- PROFIBUS and Ethernet models optionally with M 12 connector technology
- Multi-functional control panel with bar graph
- Optionally with heating (down to -30°C)
- Not affected by extraneous light
- Interference-free parallel operation with laser distance measurement device AMS 200
- Integrated "one-man" alignment process





# Continuous handling equipment "retrieval line"

## Secure and fast object detection.

Due to maximal performance reserves, sensors made by Leuze electronic ensure the efficient and uninterrupted throughput of merchandise. The intelligent mounting technology of the sensors, the fast adjustment via a very bright light spot, and the easy integration via built-in field bus connectivity are the key for speedy commissioning.

Individually deployable reading principles, such as barcode, 2D code, and RFID guarantee a high performance. Our sensors offer secure detection and thus high availability of the systems in particular in case of partially damaged codes, glossy, dark or tape-wrapped packages, and rough environmental conditions.



### Object detection

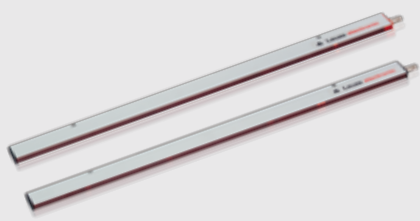
Cubic Series  
**3B, 25B, 46B Series**



- Highest functional reliability even when soiled
- Simple alignment via brightVision®
- Functional reliability for tape- or shrink-wrapped pallets, bundles and containers

### Projection monitoring of the palette load

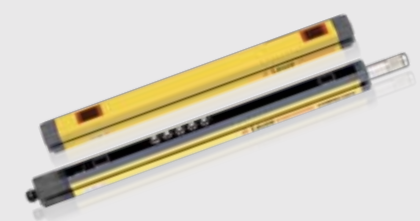
Switching light curtains  
**VARIO B**



- Affordable dimension monitoring for the entire area
- Specified operating range of 5 m
- Beam resolutions 5, 12.5, 25, 50, 100 mm
- Plug & Play for ultra-simple installation
- Warning function (soiling, defect)

### Access protection via muting

Multiple Light Beam  
Safety Devices  
**COMPACTplus**



- Access protection with bridging function
- Type 4 acc. to IEC/EN 61496, SIL 3 acc. to IEC 61508
- Various muting operating modes
- Muting sensors, operational controls, and optional emergency-off or protective switches can be connected directly to the device
- Muting override function for the secure retraction movement after shutdowns

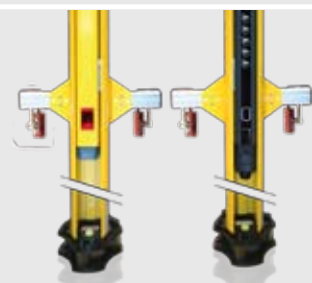






### Safeguarding of pallet transfer station forklift/roller conveyor

Multiple light beam safety devices  
**COMPACTplus muting set (CPSET)**



- Implementing muting applications easily and quickly
- Complete plug & play muting solution
- Various sets with multi-beam safety light barrier or muting transceiver, pre-installed in equipment column
- Includes pre-installed muting components and acknowledgment unit for unlocking the start/restart interlock
- Muting via optical sensors or induction loops

### Height measurement

Measuring Sensors  
**ODS 96B, ultrasonic sensors**



- ODS 96B**
- For the precise measurement of moving objects
  - Measurement range 60–2,000 mm
  - Resolution up to 0.1 mm
- Ultrasonic sensors**
- For the secure measurement on transparent and liquid media
  - Measurement range up to 6,000 mm
  - Resolution 1 mm

### Width/height measurement

Measuring light curtains  
**KONTURflex**



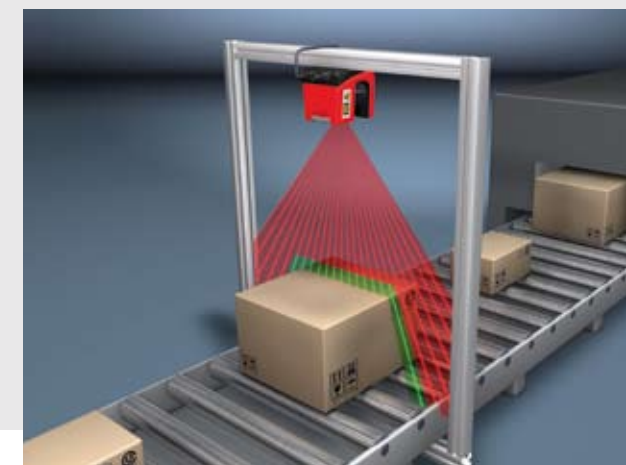
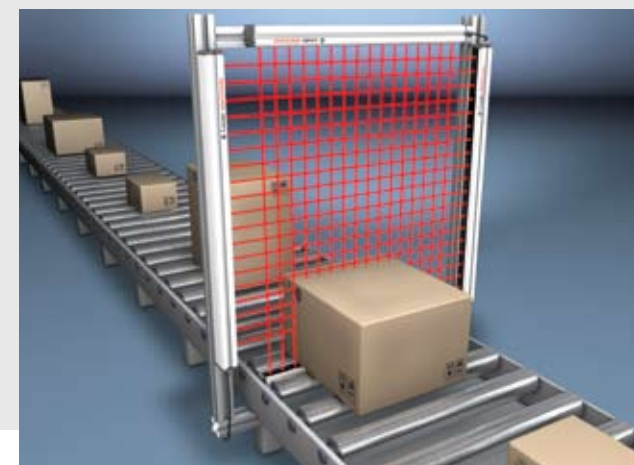
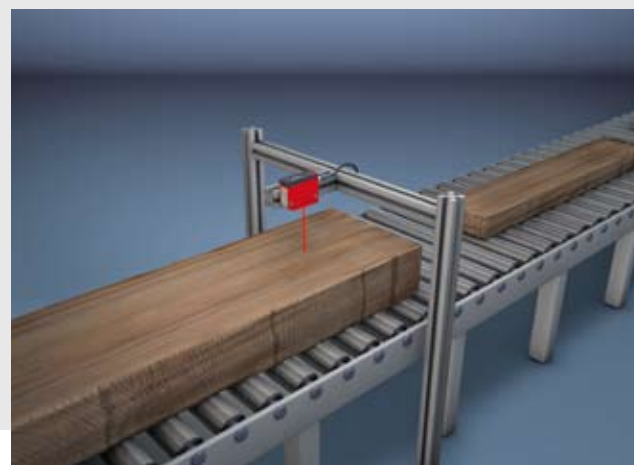
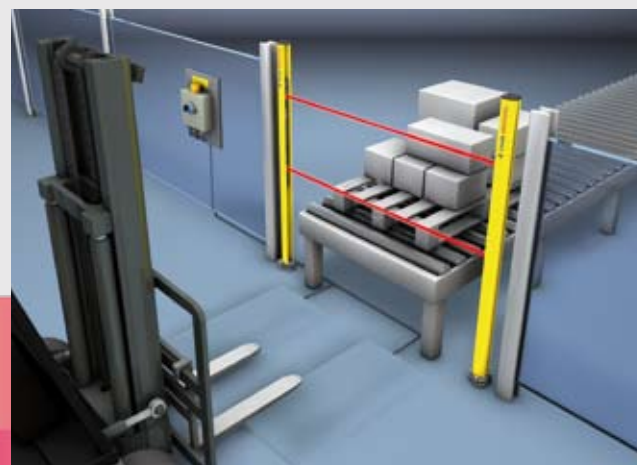
- Measurement time < 25 m/s (configuration-dependent)
- Beam resolutions 5, 10, 20, 40 mm
- System connection to PROFIBUS, CANopen, MODBUS, and RS232

### Height/position checking

Measuring Sensors  
**ROD4 -2x**



- High availability with short boot time of 6 sec. and extended cleaning intervals
- Device parameters are stored in the connector (ConfigPlug), permitting ultra-easy device exchange without reconfiguration
- Convenient configuration software RODsoft permits 8 detection field pairs and 4 detection fields, simultaneously





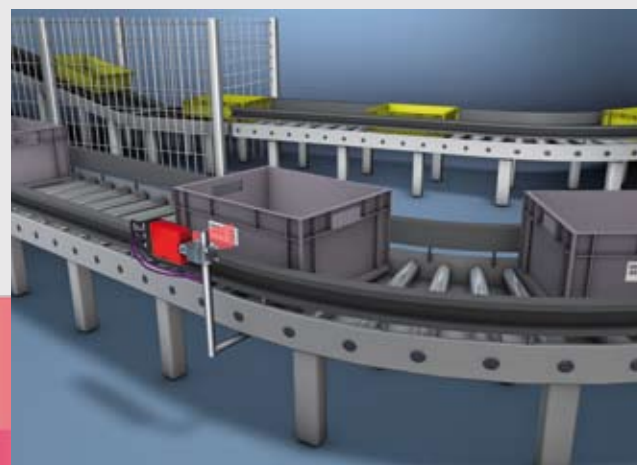


## Identification

### Barcode Readers BCL 31/32/34



- BCL 31/32 standalone or networkable via multiNet
- BCL 34:
  - integrated PROFIBUS
  - Plug and Play
  - direct configuration via PLC
  - Maximum transmission rate 12 MBd
- Various optics models, e.g., ink jet codes on cardboard
- Simple mounting (even between 2 retrieval lines due to very shallow installation depth)
- Read distances 10–750 mm
- Optionally with heating (down to -30°C)
- High scanning rate 800–1,200 scans/s
- Available as line and raster scanner



## Identification

### Barcode Readers BCL 500i/501i/504i/508i



- Code fragment technology (CRT) permits the identification of partially destroyed and distorted codes, ensuring a high system availability
- Integrated fieldbus connectivity
- WEB Config: graphical user interface based on web technology integrated into the scanner
- High scanning rate 800–1,200 scans/s
- Models: line scanner, oscillating and deflection mirror
- Simple operation through clear, multi-lingual display
- M12 "Ultra-Lock™" connection technology and Leuze electronic mounting concept
- Optionally with heating (down to -30°C)
- Read distances 200–1,600 mm



## Identification

### Barcode readers BCL 90, BCL 90 CAX



#### BCL 90

- High-end scanner
- Code fragment technology (CRT)
- Integrated autofocus function
- Smallest construction volume in its performance class
- Read distances 400–2,100 mm

#### BCL 90 CAX

- Compact omni-scanner for tape widths up to 400 mm
- Code fragment technology (CRT)
- Integrated autofocus function
- Read distances 500–1,750 mm
- "Tracking"-capable



## Identification

### Barcode readers BCL 90 MSP systems



- "Modular scanner portal" – permits individual adaptation to demanding applications
- Integrated autofocus function
- Extremely deep depth of field for small modules
- "Tracking"-capable







## Identification

RFID IDent systems  
**RFI 32**



- Frequency: 125kHz
- RFID device for identification purposes only (read only)
- Permanent encoding
- Max. reading distance 90 mm
- Compatible transponders available
- Protection class: IP 67

## Identification

RFID IDent systems  
**HFM 12 / RFM 12/32/62**



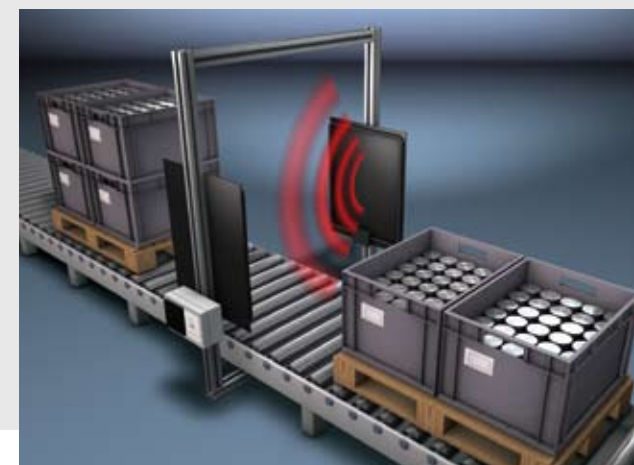
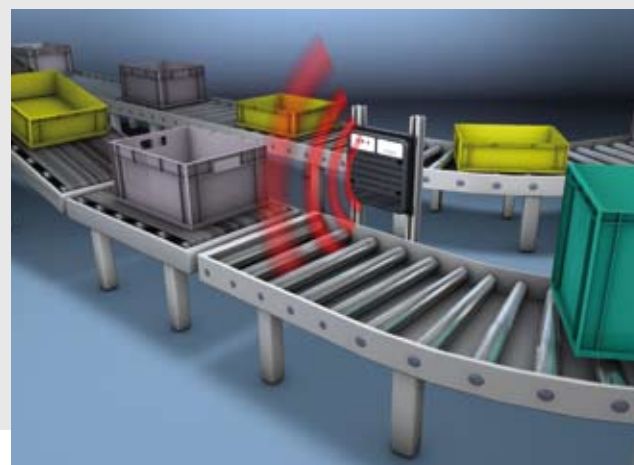
- Frequency: 13.56kHz
- Max. reading distance at RFM 62: 400 mm
- Continuous detection via trigger function and no-read, even in the case of failure
- Function adaptation by using the configuration stored in the device
- Time-optimised drive-by writing through pre-transmission of the data to writing unit
- Highly flexible connection options to fieldbus interfaces
- Wide product range of devices and compatible transponders
- RFM 32 Ex-n with EX rating Zone 2

## Identification

RFID IDent systems  
**RFM 82** (also as gate)



- Frequency: 13.56kHz
- For more demanding applications with higher operating range up to 1,200 mm
- Extensive function range
- Suitable for multi-transponder applications
- Large field extension of up to 700 mm in height
- Flexible connection options to fieldbus interfaces





## Telpher lines



### Intelligent positioning and protection.

The flexibility and efficiency of the rail-guided transport system depends significantly on the selection of the correct sensors. The barcode positioning system BPS ensures the precise positioning (down to the millimetre) of the suspension gear in bends, on gradients and on track switches. Monitoring sensors ensure reliable collision protection and safety laser scanners ensure the reliable protection of danger areas. State-of-the-art identification technologies (barcode/2D code/RFID) offer the highest productivity possible.



#### Positioning

Barcode positioning systems  
**BPS 8**



- Absolute positioning up to 10,000 m
- Curve-going, horizontally and vertically
- Protection class: IP 67
- Simple attachment via special mounting device
- Various protocols on RS 232 or RS 485 via MA 8-xx
- Very compact construction
- Max. speeds up to 4 m/s
- M12 Connection technology
- Customer-specific configuration
- If areas of the barcode tape are damaged, a repair kit can be downloaded from the Internet
- Special labels permit the precise and problem-free positioning on/at switches

#### Positioning

Barcode positioning systems  
**BPS 34/37**



- Absolute positioning up to 10,000 m
- Curve-going, horizontally and vertically
- Integrated PROFIBUS or SSI interface
- If areas of the barcode tape are damaged, a repair kit can be downloaded from the Internet
- Special labels permit the continuous precise positioning on/at switches
- With optics heating for operation at temperatures as low as -30 °C
- Max. speeds up to 10 m/s







### Collision protection

Diffuse reflection scanners  
**HRT 96 wide angle**



- Large detection range for reliable collision protection even on bends
- Flexible selection of creeping movement and stop via two 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 10–5,000 mm (during straight movement) 10–2,500 mm (in curves)

### Protection of the load pick-up and load drop-off areas

Safety Laser Scanners  
**ROTOSCAN RS4**



- Protecting large danger areas
- Type 3 acc. to IEC/EN 61496, SIL 2 acc. to IEC 61508
- Arbitrary protection and warning field contours configurable
- Compact design and user-friendly software
- Automatic configuration at device exchange via intelligent ConfigPlug device plug
- Models with AS-i Safety at Work and PROFIsafe interface available

### Identification

Barcode readers  
**BCL 500i/501i/504i/508i**



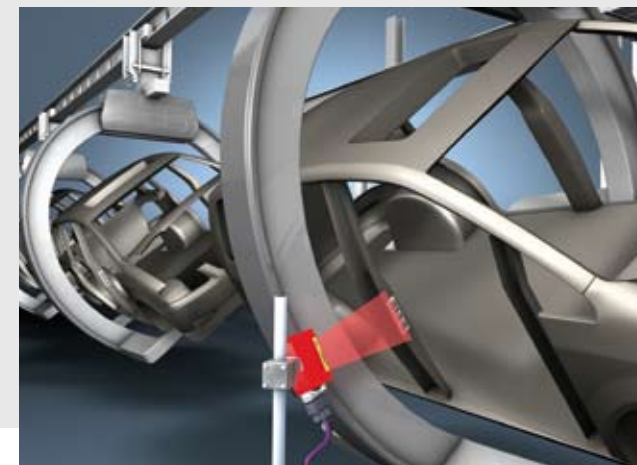
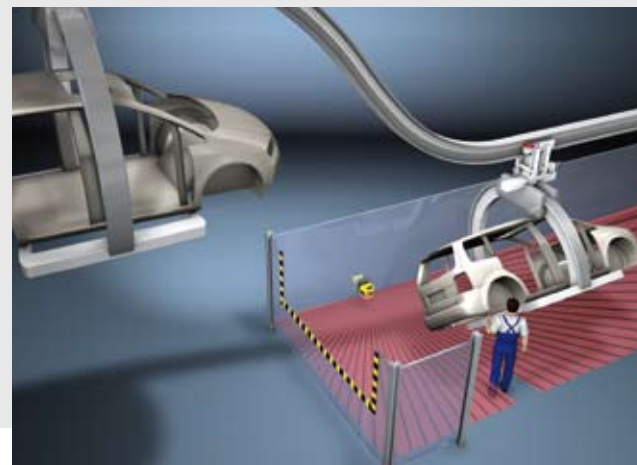
- Code fragment technology (CRT) permits the identification of partially destroyed and distorted codes, ensuring a high system availability
- Integrated fieldbus connectivity
- WEB Config: graphical user interface based on web technology integrated into the scanner
- High scanning rate 800–1,200 scans/s
- Models: line scanner, oscillating and deflection mirror
- Simple operation through clear, multi-lingual display
- M12 "Ultra-Lock™" connection technology and Leuze electronic mounting concept
- Optionally with heating (down to -30°C)
- Read distances 200–1,600 mm

### Identification

RFID IDent systems  
**HFM 12/RFM 12/32/62**



- Frequency: 13.56 kHz
- Max. reading distance at RFM 62: 400 mm
- Continuous detection via trigger function and no-read, even in the case of failure
- Secure identification without line-of-sight
- Flexible process control via data updates (write)
- Highly flexible connection options to fieldbus interfaces
- Wide product range of devices and compatible transponders
- RFM 32 Ex-n with EX rating Zone 2





## Driverless transportation systems / side-tracking skates



### Reaching the goal safely with sensors.

The constantly increasing demands on the dynamics of floor-bound driverless transportation systems (DTS) in production plants require top performance from sensors, too. The DTS must be "intelligent" to avoid collisions and a smooth operation, in particular if many DTS operate on a single track. Sensors by Leuze electronic protect danger areas, measure and transfer optical data from the vehicle and ensure real-time monitoring of the tracks and the secure operation.



#### Data transmission

Optical Data Transmission Systems  
**DLSP 160S**



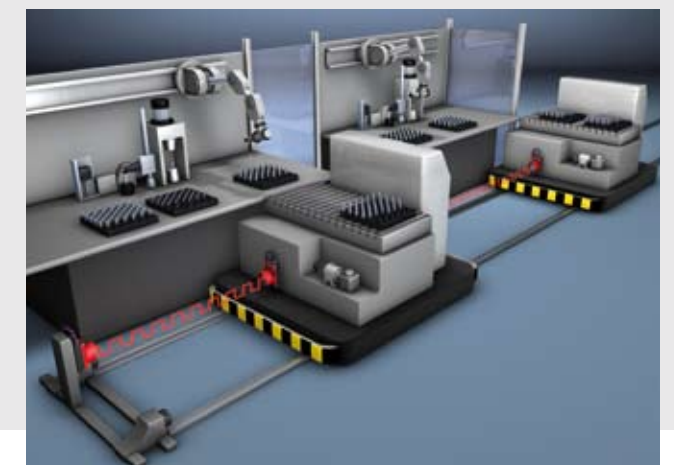
- Parallel data transmission
- 8 inputs and outputs bidirectional
- Simple 24V technology
- Very wide opening angle, no alignment necessary
- Smallest device on the market

#### Data transmission

Optical Data Transceiver  
**DDL 200**



- Serial infrared data transmission
- All internationally important interfaces available (e.g., Ethernet, etc.)
- PROFIBUS and Ethernet models optionally with M 12 connector technology
- Integrated "one-man" alignment process
- Multi-functional control panel with bar graph
- Optionally with heating (down to -30°C)
- Not affected by extraneous light
- Interference-free parallel operation with AMS 200







### Drive path protection on DTS and side-tracking skates

Safety Laser Scanners  
**ROTOSCAN RS4**



- Drive path protection at side-tracking skates, protected field 4 m, warning field 15 m
- Type 3 acc. to IEC/EN 61496, SIL 2 acc. to IEC 61508
- Arbitrary protection and warning field contours configurable
- 8 different protected field pairs, protected field switching during operation possible (state-/speed-dependent)
- Distance measurement for positioning
- Compact design and low power consumption
- Automatic configuration at device exchange via intelligent ConfigPlug device plug

### Collision protection/object measurement

Laser Distance Sensors  
**ROD4plus**



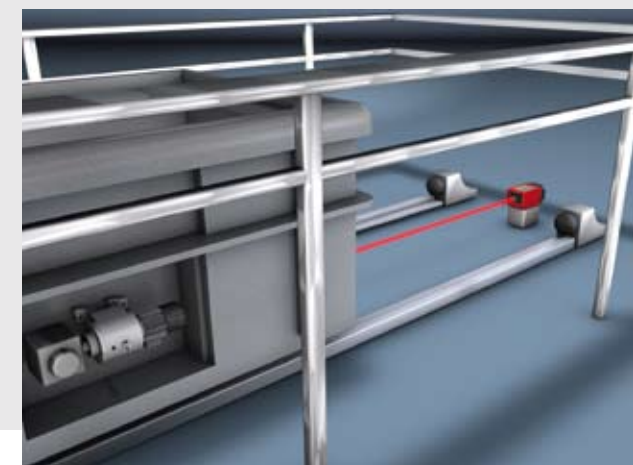
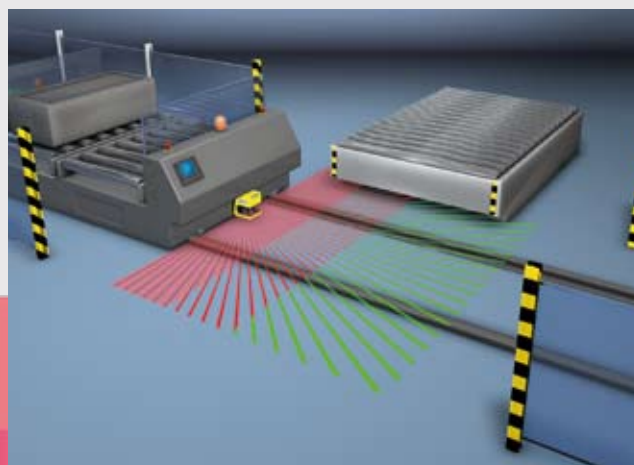
- For collision avoidance in applications without danger zone protection
- Fast: measurement data transfer via Fast Ethernet 100 MBit/s
- Integrated and compact: everything in one sensor – no additional hardware required
- Measurement data preprocessing: targeted measurement data output – configurable during operation
- Fast commissioning using configuration software

### Positioning

Measuring Sensors  
**ODSL 30**



- Measurement range 200–30.000 mm
- Measurement time 30–100 m/s
- Absolute measurement accuracy  $\pm 2$  mm
- Simple and fast operation via LC display at the device
- All-purpose system without reflector for fast and simple installation





## Cranes

### Tailor-made sensor solutions for the automation of crane systems.

Optical sensors by Leuze electronic for a wide range of industrial crane systems.

With the individual requirements of a wide range of industries in mind, Leuze electronic offers sensors for exact crane positioning and manipulator control, and for reliable collision protection. The use of these sensors increases process safety, productivity and availability of the system, and contributes to the protection of people and materials.



### Data Transmission

Optical Data Transceivers  
**DDL S 200**



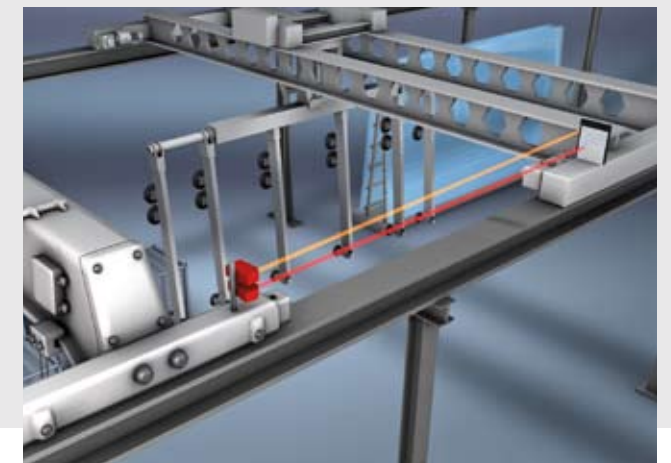
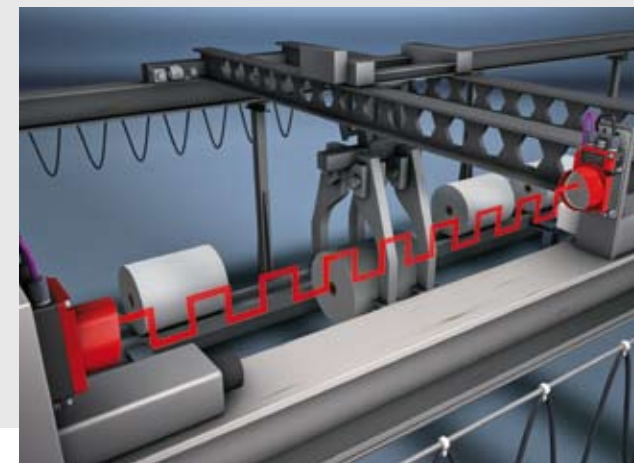
- Serial infrared data transmission
- All internationally important interfaces available (e.g., Ethernet, etc.)
- PROFIBUS and Ethernet models optionally with M 12 connector technology
- Integrated "one-man" alignment process
- Multi-functional control panel with bar graph
- Optionally with heating
- Not affected by extraneous light
- Interference-free parallel operation with AMS 200

### Collision Protection

Retro-reflective Photoelectric Sensors  
**PRK 96**



- Long range up to 24 m
- Robust housing made from metal or plastic
- High performance reserve guarantees high availability under extreme environmental conditions
- Very good extraneous light suppression for uninterrupted operation







## Positioning

### Barcode Positioning Systems **BPS 8**



- Absolute positioning up to 10,000 m
- Curve-going, horizontally and vertically
- Protection class: IP 67
- Simple attachment using special mounting device
- Various protocols on RS 232 or RS 485 via MA 8-xx
- Very compact construction
- Modular construction
- M 12 Connection technology
- Customer-specific configuration
- If areas of the barcode tape are damaged, a repair kit can be downloaded from the Internet
- Up to a speed of 4 m/s

## Positioning

### Barcode Positioning Systems **BPS 34/37**



- Absolute positioning up to 10,000 m
- Curve-going, horizontally and vertically
- Integrated PROFIBUS or SSI interface
- If areas of the barcode tape are damaged, a repair kit can be downloaded from the Internet
- Integrated speed measurement and monitoring
- Optionally with optics heating for applications in the coolstore applications down to -30°
- Up to a speed of 10 m/s
- Simple mounting and fastening

## Collision protection

### Single Light Beam Safety Devices **SLS 78/R**



- Type 4 acc. to IEC/EN 61496
- 0–60 m Operating range
- Operating temperature -25 °C to +60 °C
- Integrated optics heating
- Extraneous light suppression
- High mechanical and chemical resilience

## Positioning

### Measuring Sensors **AMS 200/ODSL 30**

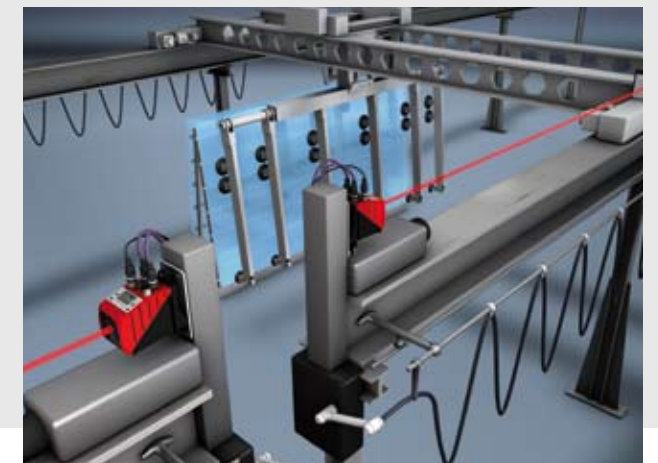
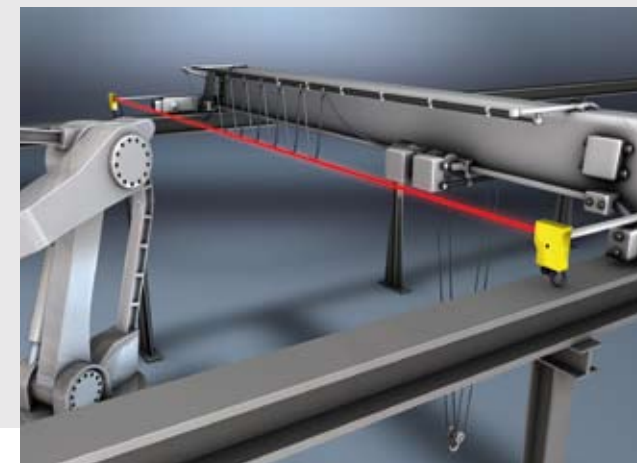


#### AMS 200

- Absolute measurement accuracy of  $\pm 2$  mm to 120 m ( $\pm 3$  mm to 200 m)
- Output and monitoring of the speed
- Interfaces: PROFIBUS and SSI, Interbus, RS 232
- Diagnostic and prefailure messages
- Display in 5 languages
- Optionally with heating (down to -30°C)

#### ODSL 30

- Measurement range 200–30.000 mm
- Measurement time 30–100 m/s
- Absolute measurement accuracy  $\pm 2$  mm
- Fast and simple operation via LC display





## Side-tracking shelves



### The merchandise you want at the time you want it.

Short access times and a high system availability are critical for the economic use of side-tracking shelves. This requires the precise positioning and synchronisation of shelves and drives, as well as safe accessing to the respective storage aisle. For the protection of aisle and the foot space, the positioning and aisle monitoring, Leuze electronic offers an extensive portfolio of tailor-made sensor solutions.



#### Foot space protection

Single Light Beam Safety Devices  
**SLS 96**



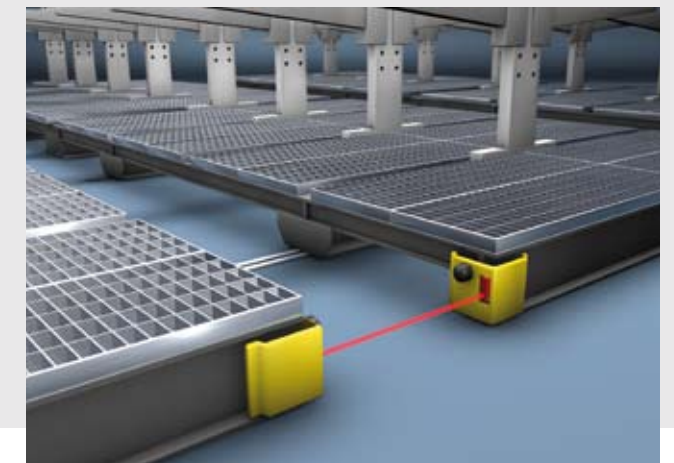
- Type 2 acc. to IEC/EN 61496 (in combination with test monitoring unit TNT 35)
- Operating range up to 50 m
- High performance reserve in the visible red light and infrared light spectrum
- Wide voltage range 10–30 V
- Model with optics heating for use down to -20 °C

#### Positioning/Synchronisation

Diffuse Reflection Scanners  
**HRT 25**



- Precise positioning even for glossy objects
- High repeatability





## Commissioning



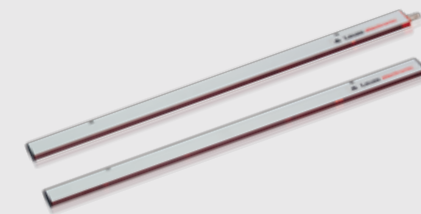
### The right product to the right addressee.

The commissioning requires the precise and reliable identification of merchandise for order-specific assignment. Hand-held readers of barcodes or highly modern Ident technologies in 2D code and RFID technology offer ideal conditions for both manual and automatic identification. The powerful and diversified product portfolio for the identification increases performance and ultimately the cost-effectiveness of the system.



#### Pick & Place

Switching Light Curtains  
**VARIO B**



- Area-covering, effective access control
- Specified operating range of 5 m
- Beam resolutions 5, 12.5, 25, 50, 100 mm
- Plug & Play for ultra-simple installation
- Warning function (soiling, defect)

#### Identification (barcode)

Hand-Held Readers



- Barcode reading by touch
- Rough industrial use, up to IP 54
- Partially as wireless model via radio (Bluetooth)
- Wide range of hand-held barcode readers for highly diverse areas of application
- Extensive selection of accessories

#### 2D-Code Identification

Ident Systems



- Wide range of hand-held readers for 2D codes
- IT 6300 DPM, optimized for directly part marking
- Extensive selection of accessories
- Partially as wireless model via radio (Bluetooth)

