Leuze

Products and solutions for **identification**

The Sensor People

Identified – in any position

Optical code readers or RFID systems are used for the detection and tracking of objects in material flow or production processes. The fields of application range from code reading on a wide range of transport containers, motor parts or medical samples to identification without visual contact through the use of RFID technology.

Our mobile and stationary identification systems read all common 1D- and 2D-codes or the data stored on transponders with extremely high reliability. Identification often occurs independent of the alignment and positioning of the object, even at high movement speeds.

Equipped for all requirements:

- Even soiled or damaged codes can be reliably read using code reconstruction technology
- Devices are available with especially compact design for installation in constrained spaces
- Our hand-held scanners – with various optics – enable code reading from distances of up to 16 meters
- Various device models as well as modular connection systems enable data transmission by using all standard fieldbus/industrial bus interfaces

Shaping change
Yesterday. Today. Tomorrow.

With curiosity and determination, we – the Sensor People – have been partners for technological milestones in industrial automation for more than 50 years. The success of our customers is what drives us. Yesterday. Today. Tomorrow.

The right technology

To offer the optimum solution for all requirements, we use various technologies. These range from optically reading 1D- and 2D-codes to contact-free data transmission through radio frequency identification.

1D-code

With 1D-codes, the information is represented using lines and gaps of various widths.
The black bars and white gaps reflect the light emitted by the 1D-code reader to different degrees. Less light is reflected by the black bars. This is detected by the receiver module of the reader, which converts the information into binary data that can subsequently be processed further and output via an interface.

Advantages
- Simple and inexpensive to create
- Through an integrated check digit, the code is directly checked for validity, thereby making possible high first-pass read rates


1D-code

Areas of application
- Electronics, automotive and consumer goods industries
- Transport logistics
- Postal shipping

2D-code

There are two types of 2D-codes: the matrix code and the stacked code. With the matrix code, the information is represented by arranging small geometric cells. The stacked code is a special case. Here, the information is represented by lines and gaps in multiple rows. The camera of the sensor takes a picture of the code. The camera chip detects the contrast between the white gaps and the black cells and converts the information into binary data. This is then processed further and output via an interface.
Unlike the 1D-code, the information is contained in the arrangement of the cells.


2D matrix code

Advantages
- Minimal space requirement
- Highest-possible information content
- Through the integrated error correction algorithm, even damaged codes can be read error-free

Areas of application
- Transport logistics
- Electronics and automotive industries
- Consumer goods and travel sectors
- Pharmaceutical industry

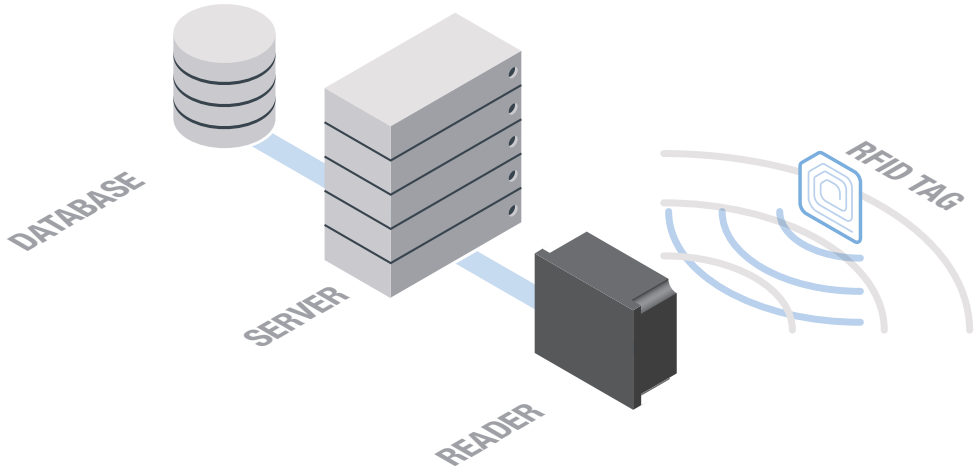

2D stacked code

Advantages
- Compact code compared to 1D-codes
- Variable width and height
- Through the integrated error correction algorithm, even damaged codes can be read error-free

Areas of application
- Transport logistics
- Consumer goods industry
- Travel sector

Radio Frequency Identification – RFID

An RFID system consists of a read/write system with integrated and/or external antenna as well as at least one transponder and uses electromagnetic waves for data transmission. Each transponder consists of an antenna and a microchip on which a unique, unchangeable serial number (Unique ID) as well as – depending on the type of transponder – other object-related data is stored.



While active transponders use an integrated power source for data transmission, passive transponders draw the energy required for data transmission from the electromagnetic field of the reader. RFID systems use low frequencies/LF (125 kHz to 134 kHz), high frequencies/HF (13.56 MHz) or ultra-high frequencies/UHF (865 MHz to 928 MHz). The used frequencies vary depending on operating range, transmission rate and susceptibility to interference. In general: the reading ranges achieved by the system increase with frequency, but so too does the susceptibility to interference.

Advantages

- "Visual contact" is not required between write/read unit and transponder: the radio waves penetrate materials such as wood, cardboard or plastic depending on the frequency range
- Transponders can be integrated in the product or in the transport medium
- RFID systems are robust and also function reliably in harsh environments independent of contamination
- When using writable transponders, production and quality data can be stored directly on the transponders during the production process

Areas of application

- Production control
- Access control
- Identification of persons and objects
- Skid, container and pallet identification
- Material flow control in conveyor and storage systems or the automotive industry

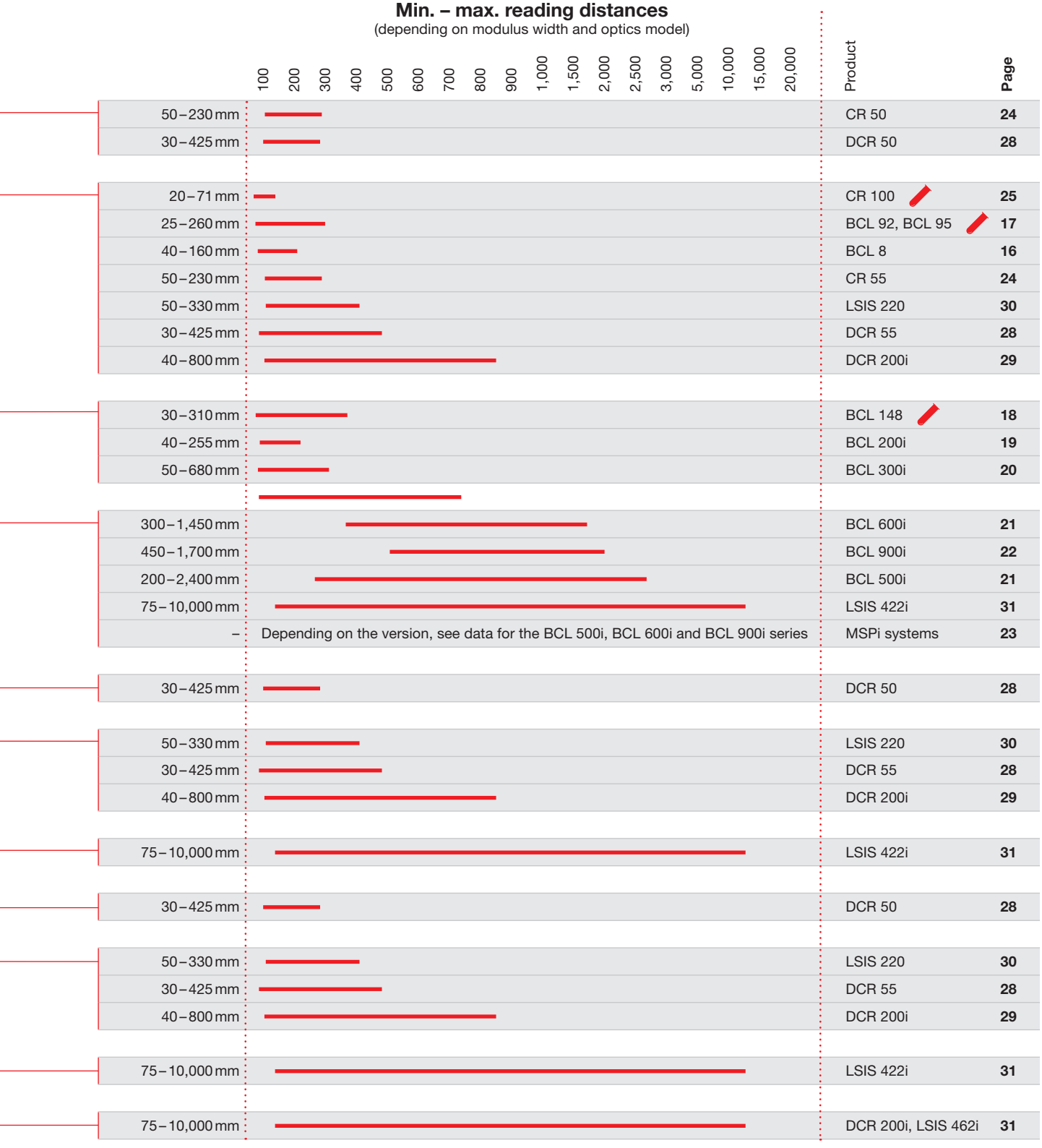
Selection guide

Stationary use
Optical

- 1D-bar code
  - Without housing
  - Industrial housing
    - Relatively small
    - Compact
    - Relatively large
- Stacked code
  - Without housing
  - Industrial housing
    - Relatively small
    - Compact
- 2D-code
  - Without housing
  - Industrial housing
    - Relatively small
    - Compact
- Directly marked codes (DPM)

Min. – max. reading distances

(depending on modulus width and optics model)



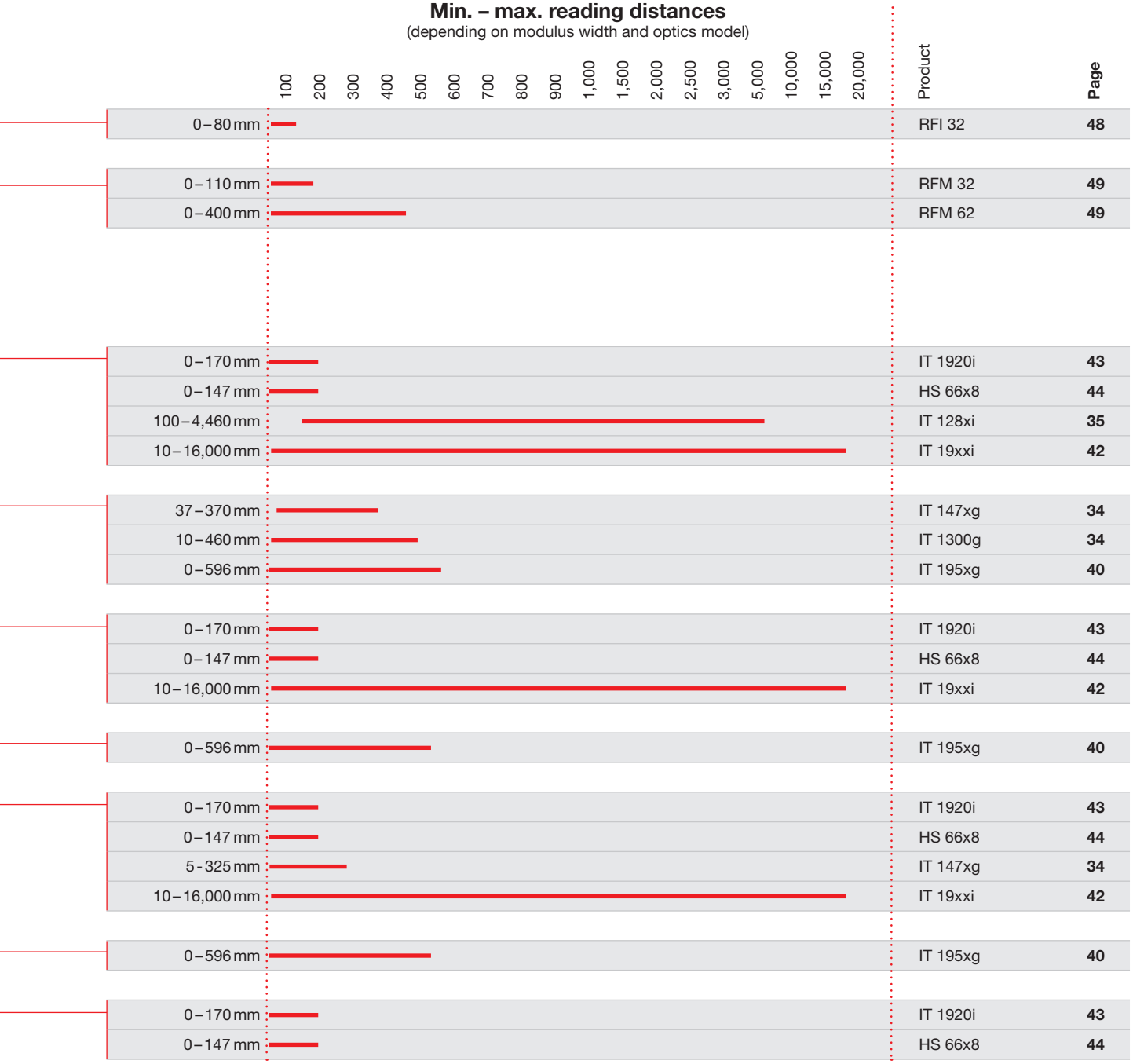
Devices for use in laboratory automation

Selection guide

- Stationary use **RFID**
  - LF (125 kHz)
  - HF (13.56 MHz)
- Mobile use **hand-held scanners**
  - 1D-bar code 
    - Industrial housing
    - Multi-purpose
  - Stacked code 
    - Industrial housing
    - Multi-purpose
  - 2D-code 
    - Industrial housing
    - Multi-purpose
  - Directly marked codes (DPM)

Min. – max. reading distances

(depending on modulus width and optics model)

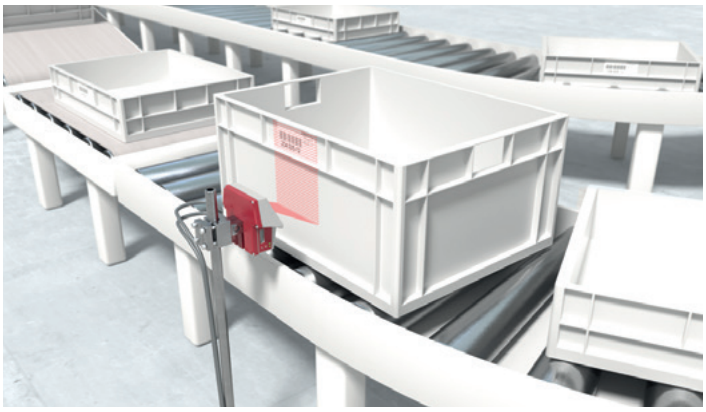


	Product	Page
0 – 80 mm	RFI 32	48
0 – 110 mm	RFM 32	49
0 – 400 mm	RFM 62	49
0 – 170 mm	IT 1920i	43
0 – 147 mm	HS 66x8	44
100 – 4,460 mm	IT 128xi	35
10 – 16,000 mm	IT 19xxi	42
37 – 370 mm	IT 147xg	34
10 – 460 mm	IT 1300g	34
0 – 596 mm	IT 195xg	40
0 – 170 mm	IT 1920i	43
0 – 147 mm	HS 66x8	44
10 – 16,000 mm	IT 19xxi	42
0 – 596 mm	IT 195xg	40
0 – 170 mm	IT 1920i	43
0 – 147 mm	HS 66x8	44
5 - 325 mm	IT 147xg	34
10 – 16,000 mm	IT 19xxi	42
0 – 596 mm	IT 195xg	40
0 – 170 mm	IT 1920i	43
0 – 147 mm	HS 66x8	44

1D-code readers

Code reading on objects of various height

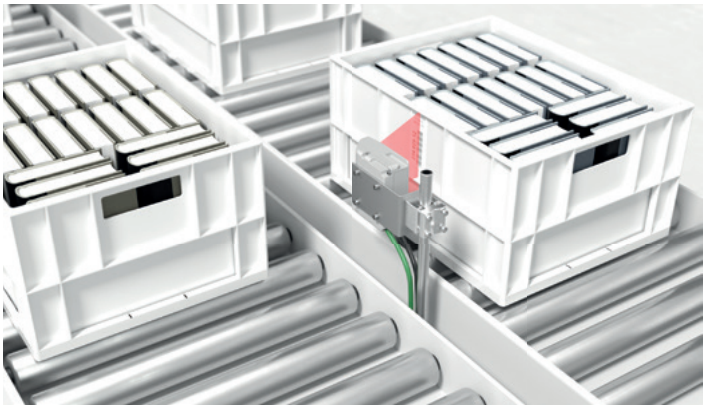
Requirement: If objects of various height are transported on a conveyor line, it must be guaranteed that the 1D-codes are read independent of their position.



Solution: The BCL 300i and BCL 500i 1D-code readers are available in models with oscillating mirror that can read moving objects at different heights.

Code reading in constrained spaces

Requirement: If 1D-code readers are used in applications with small installation depth, a device with lateral beam exit may be necessary.



Solution: The BCL 200i 1D bar code readers are optimized by means of a lateral cable outlet and deflecting mirror for constrained spaces between the conveyor line. Thanks to the integrated code reconstruction technology, you can even read damaged codes reliably.

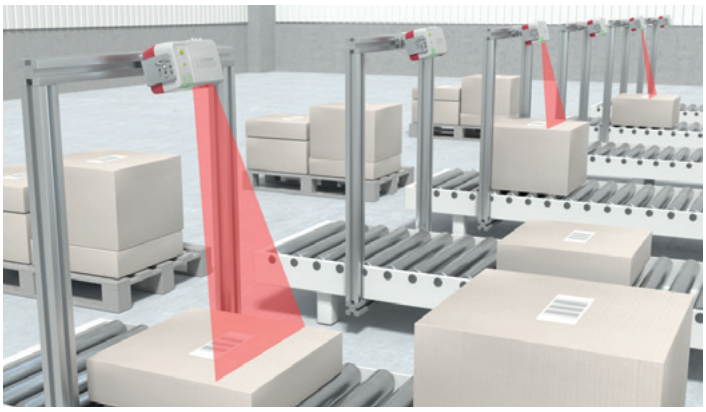
Code reading on pallets

Requirement: If codes with low modulus size need to be read on objects from a relatively far distance, a 1D-code reader with the largest possible reading field depth is necessary.

Solution: The BCL 600i 1D-code readers achieve a 50% greater depth of field with their blue laser diode than devices with red laser light. The high reading field depth reduces the sensitivity in the event of fluctuations in distance and eliminates the need for manual focus adjustment.

Code reading from long distances

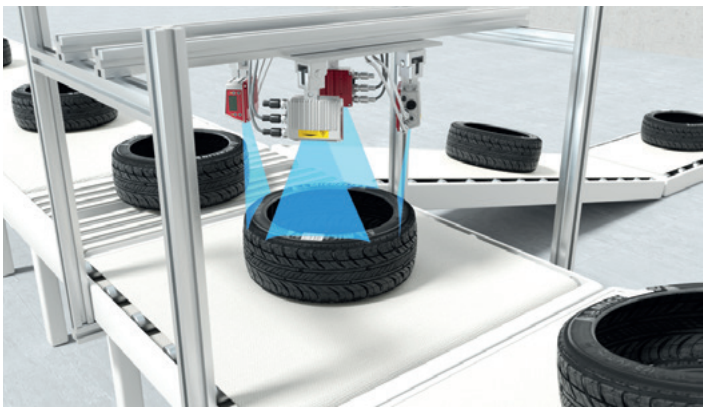
Requirement: If objects of various height are transported on a conveyor line at high speed, it must be guaranteed that the 1D-codes are read independent of their distance to the reader.



Solution: The BCL 900i 1D-code readers have an especially large reading field due to their opening angle of 60°. The high scanning rate of up to 1,000 scans/s guarantees code reading even at high conveyor speeds.

Omnidirectional code reading

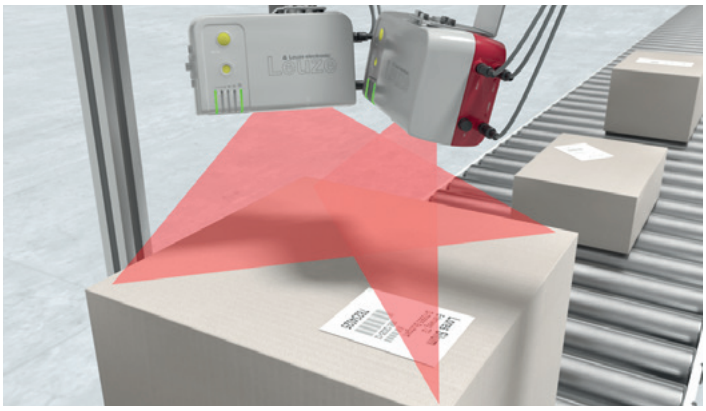
Requirement: Codes must be read independent of their alignment and position.



Solution: The BCL 500i, 600i and 900i 1D-code readers are each available as modular scanner systems. Through their arrangement, omnidirectional reading is possible.

Code reading for objects of various height

Requirement: Codes must be read on objects with high movement speed independent of their alignment, position and height.

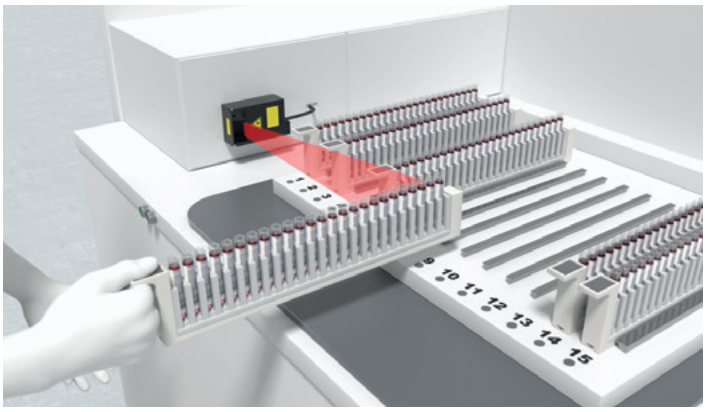


Solution: The BCL 900i 1D-code readers are available as modular scanner systems for omnidirectional reading. Through their high scanning rate and operating range, codes can be read on quickly moving objects of various height.

1D-code readers

Code reading of multiple rows of racks

Requirement: A large number of codes must be read at various distances within a short time.

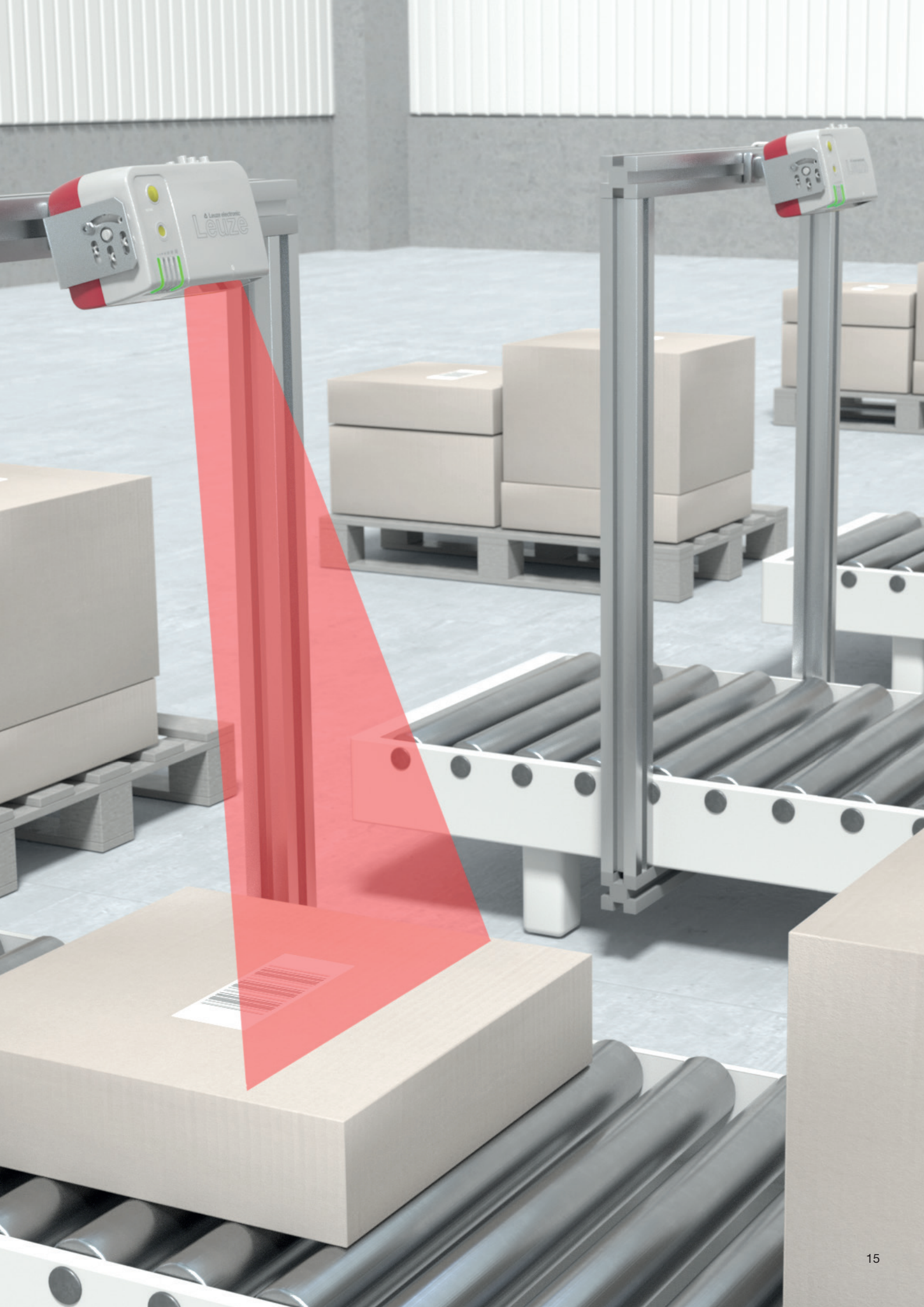


Solution: With their focus adjustment, the BCL 148 1D-code readers enable a reading field depth of up to 310 mm. As a result, codes with a small modulus size can be read even from a relatively long distance. The fast decoding and reading by the device enable a high process speed.

Code reading on samples in constrained spaces

Requirement: Codes must be read in constrained spaces while at a standstill or while moving slowly.

Solution: Thanks to their extremely small design, the CR 50 / 55 1D-code readers are suitable for use in constrained spaces.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BCL 8

Compact 1D-code readers with especially high degree of protection of the housing

Areas of application

— Code reading in harsh industrial environments
— Code reading on objects with medium to high movement speed

Operating principle

— Laser single line, deflecting mirror

Advantages for you

VERY ROBUST
Compact housing with high degree of protection for the highest requirements in constrained spaces

FLEXIBLE INSTALLATION
Turning connector enables adaptation of the cable outlet to the application requirements

EASY HANDLING
Integrated control functions such as reference code comparison eliminate the need for additional hardware for this purpose

Features

— Reliable reading of all common 1D-codes including Pharmacodes
— Flexible installation options through front or perpendicular beam exit as well as turning connector
— Reading range: 40 – 160 mm
— Modulus size: 0.15 – 0.5 mm
— Constant high scanning rate of up to 600 scans/s
— Ambient temperature (operation): 0 – 40°C
— Interface: RS 232
— Degree of protection: IP 67
— Dimensions (W × H × L): 40.3 × 48 × 15 mm

BCL 92, BCL 95

1D-code reader with high depth of field

Areas of application

- Code reading across up to 7 rows of racks
- Code reading on objects with medium to high movement speeds

Operating principle

- Laser single line, deflecting mirror

Advantages for you

SPACE-SAVING
Large reading field height even at short reading distance reduces installation depth

FAST COMMISSIONING
Configuration via Sensor Studio software enables fast commissioning

FLEXIBLE INSTALLATION
Adaptation to the application requirements thanks to flexible cable outlet

Features

- Reliable reading of all common 1D-codes including Pharmacodes
- Flexible installation options through front or perpendicular beam exit
- Reading range:
  - BCL 92: 25 – 260 mm
  - BCL 95: 50 – 180 mm
- Modulus size: 0.15 – 0.5 mm
- Scanning rate of maximum 600 scans/s also enables fast manual or automated rack insertion
- Ambient temperature (operation): 0 – 50°C
- Interface: RS 232
- Degree of protection: IP 54
- Dimensions (W × H × L):
  - Standard model (front beam exit): 62 × 43.5 × 23.8 mm
  - Model with deflecting mirror: 62 × 56.9 × 23.8 mm
- High reading field height at short distances

BCL 148

1D-code reader with adjustable focus

Areas of application

— Code reading across up to 16 rows of racks

Operating principle

— Laser single line with focus adjustment

Advantages for you

SPACE-SAVING
Large reading field height even at short reading distance reduces installation depth

FLEXIBLE OPERATING RANGE
Adjustable focus enables the reading of codes from various distances

Features

— Reliable reading of all common 1D-codes including Pharmacodes
— Front beam exit
— Reading range: 30 – 310 mm
— Modulus size: 0.127 – 0.5 mm
— Scanning rate of up to 750 scans/s also enables fast manual or automated rack insertion
— Ambient temperature (operation): 5 – 40°C
— Interfaces: RS 232, RS 485
— Degree of protection: IP 65
— Dimensions (W × H × L): 71 × 38 × 118.5 mm
— High reading field height at short distances
— Focus adjustment for sample codes and reagents
— Robust metal housing with cable connection

BCL 200i

1D-code reader for container/ tray identification

Areas of application

- Code reading in constrained spaces
- Code reading on objects with high movement speed

Operating principle

- Laser single line, raster scanner, deflecting mirror

Advantages for you

HIGH SYSTEM AVAILABILITY
Integrated code reconstruction technology enables reliable reading of damaged codes and, thus, a smooth process sequence

SIMPLE INTEGRATION
Module selection in the GSDML files enables simple integration in PROFINET networks

FAST COMMISSIONING
Configuration via browser-based webConfig enables fast commissioning

Features

- Reliable reading of all common 1D-codes
- Flexible installation options by means of lateral cable outlet and perpendicular beam exit
- Reading range: 40 – 255 mm*
- Modulus size: 0.2 – 0.5 mm*
- High scanning rate of up to 1,000 scans/s for objects with high movement speed
- Ambient temperature (operation): 0 – 40°C
- Interfaces: PROFINET IO/RT, Ethernet TCP/IP, UDP, as 1-port model
- Degree of protection: IP 65
- Dimensions (W × H × L): 92 × 38 × 84 mm
- Connection via permanent connection cables with M12 connector

* depending on model

BCL 300i

1D-code reader for medium to large operating ranges

Areas of application

- Code reading on objects of various height
- Code reading in constrained spaces
- Code reading on objects with high movement speed

Operating principle

- Laser single line, raster scanner, deflecting mirror, oscillating mirror

Advantages for you

HIGH SYSTEM AVAILABILITY
Integrated code reconstruction technology enables reliable reading of damaged codes and, thus, a smooth process sequence

SIMPLE INTEGRATION
Module selection in the GSD/GSDML files enables simple integration in PROFIBUS or PROFINET networks

FAST DEVICE EXCHANGE
The storage of parameters in the integrated memory enables fast exchange

Features

- Reliable reading of all common 1D-codes
- Flexible installation options through front or perpendicular beam exit
- Reading range: 50 – 680 mm*
- Modulus size: 0.127 – 0.8 mm*
- High scanning rate of up to 1,000 scans/s for objects with high movement speed
- Ambient temperature (operation): 0 – 40°C (without heating), –35 – 40°C (with heating)
- Interfaces: PROFIBUS, PROFINET IO/RT, Ethernet TCP/IP, UDP, Ethernet IP, EtherCAT, multiNet, RS 232, RS 422, RS 485
- Degree of protection: IP 65
- Dimensions (W × H × L): 95 × 44 × 68 mm (single line scanner), 125 × 58 × 110 mm (oscillating mirror), 103 × 44 × 96 mm (deflecting mirror)
- Connection by means of modular connection hoods with M12 connector, clamp connection or fixed connection cables
- Models available with display and heating

* depending on model

BCL 500i, BCL 600i

1D-code readers for large operating ranges and codes with small modulus width

Areas of application

- Code reading on objects of various height
- Code reading on objects from a far distance
- Code reading on objects with high movement speed

Operating principle

- Laser single line, oscillating mirror

Advantages for you

HIGH SYSTEM AVAILABILITY
Integrated code reconstruction technology enables reliable reading of damaged codes and, thus, a smooth process sequence

FAST COMMISSIONING
Configuration via browser-based webConfig enables fast commissioning

SIMPLE INTEGRATION
Module selection in the GSD/GSDML files enables simple integration in PROFIBUS or PROFINET networks

Features

- Reliable reading of all common 1D-codes
- Flexible installation options through front or perpendicular beam exit
- Reading range: 200 – 2,400 mm*
- Modulus size: 0.25 – 1 mm (depending on device model)
- High scanning rate of up to 1,000 scans/s for objects with high movement speed
- Ambient temperature (operation): 0 – 40°C (without heating), –35 – 40°C (with heating)
- Interfaces: PROFIBUS, PROFINET IO/RT, Ethernet TCP/IP, UDP, Ethernet IP, multiNet, RS 232, RS 422, RS 485
- Degree of protection: IP 65
- Dimensions (W × H × L): 123.5 × 63 × 106.5 mm (single line scanner), 173 × 84 × 147 mm (oscillating mirror)
- Diagnostics and configuration via browser-based webConfig or directly via the PLC by means of GSD/GSDML file
- Models available with display and heating
- BCL 600i: Blue laser diode enables an extended reading field without changing the focus adjustment

* depending on model

BCL 900i

1D-code reader for very large operating ranges

Areas of application
- Code reading on objects of various height
- Code reading on objects from a very far distance

Operating principle
- Laser single line

Advantages for you

VERY FAST
Very high reading rate ensures a very high object throughput

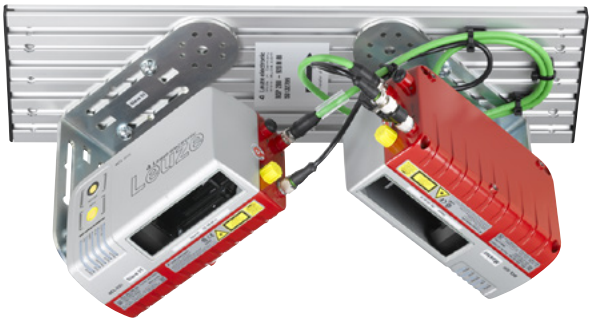
SIMPLE DETECTION
The available object tracking enables shorter distances to the code

MAXIMUM EFFICIENCY
Integrated dual optics enable a large reading field and reduce the number of devices that are required

Features
- Reliable reading of all common 1D-codes
- Front beam exit
- Reading range: 450 – 1,700 mm
- Modulus size: 0.25 – 0.5 mm
- High scanning rate of up to 1,000 scans/s for objects with high movement speed
- Ambient temperature (operation): 0 – 50°C
- Interfaces: Ethernet IP, Ethernet TCP/IP UDP, RS 232, RS 422
- Degree of protection: IP 65
- Dimensions (W × H × L): 216 × 96 × 127 mm
- Simple teaching-in of codes using a control buttons
- Diagnostics and configuration via browser-based webConfig
- Simple focus changeover through integrated dual optics
- Integrated Ethernet switch

MSPi systems

Modular scanner systems



Areas of application

— Code reading independent of position and alignment

Operating principle

— Laser single line

Advantages for you

FAST INSTALLATION
Pre-assembled Plug&Play system enables simple mounting and commissioning

FAST COMMISSIONING
Configuration via browser-based webConfig enables fast commissioning

Features

— Reliable reading of all common 1D-codes
— Omnidirectional arrangement enables code reading independent of the code alignment
— Models available with the BCL 500i, BCL 600i or BCL 900i 1D-code readers
— Expanded modular system for up to 32 devices
— Interfaces: PROFIBUS, PROFINET IO/RT, Ethernet TCP/IP, UDP, Ethernet IP, multiNet, RS 232, RS 422, RS 485

CR 50, CR 55

Compact 1D-code readers with large reading field

Areas of application

- Code reading in constrained spaces
- Code reading on objects at a standstill or with slow movement speed

Operating principle

- Single line scanner with CCD image sensor

Advantages for you

SMALL SIZE
Large reading range in compact housing

FAST COMMISSIONING
Configuration via Sensor Studio software enables fast commissioning

Features

- Reliable reading of all common 1D-codes
- Front beam exit
- Reading range: 40 – 250 mm
- Modulus size: 0.1 – 0.5 mm
- Scanning rate of up to 330 scans/s for applications at a standstill or moving slowly
- Ambient temperature (operation): 0 – 50°C
- Interfaces: USB, RS 232
- Degree of protection: IP 54
- Miniature code reader in 2 mounting variants:
  - CR 50: Open module for integration in instrument parts, e.g., via the 12-pin connector directly on the circuit board
  - CR 55: Metal housing with optics cover and cable connection for installation at any location
- Dimensions (W × H × L):
  - CR 50: 22.5 × 14 × 33 mm
  - CR 55: 31 × 18.3 × 45.5 mm

CR 100

Compact 1D-code readers with extra large reading field at close range

Areas of application

- Code reading in constrained spaces
- Reading of codes in ladder orientation

Operating principle

- Single line scanner with CCD image sensor, deflecting mirror

Advantages for you

SPACE-SAVING
Large reading field height even at short reading distance reduces installation depth

FAST COMMISSIONING
Configuration via browser-based webConfig enables fast commissioning

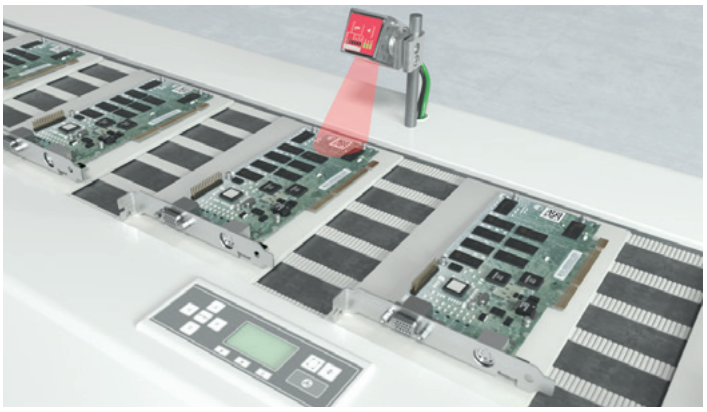
Features

- Reliable reading of all common 1D-codes including Pharmacodes
- Flexible installation options through front or perpendicular beam exit
- Reading range: 15 – 72 mm
- Modulus size: 0.15 – 0.5 mm
- Scanning rate of up to 700 scans/s for reliable reading, even while in motion
- Ambient temperature (operation): 0 – 45°C
- Interface: RS 232
- Degree of protection: IP 40
- Dimensions (W × H × L): 55 × 20 × 47 mm
- Especially well suited for use in automatic analyzers through a large reading field at short distances
- Firmware with a wide range of customization options enables fast realization of customer-specific requirements

1D-/2D-code readers

Code reading in the production area

Requirement: In final assembly, codes are used for the traceability of individual components. These must be read on a conveyor line that – at times – moves at high speeds.



Solution: Thanks to their high scanning rate, the DCR 200i 1D-/2D-code readers enable the reading of codes on quickly moving objects. In addition, optics models are available for various reading ranges.

Manual code reading and reading in presentation mode

Requirement: In assembly processes in which large, various components are moved by hand, both automatic as well as manual code reading must be possible.

Solution: The LSIS 220 1D-/2D-code readers are equipped with various trigger options for automatic and manual operation.

Label inspection

Requirement: In addition to the reading of codes, it is often necessary during label inspection to check the position and print quality of the codes.

Solution: The LSIS 462i 1D-/2D-code readers compare the print position of the code with a position defined in advance. In addition, the built-in image processing can be used to check the print quality and presence of plain text on labels.

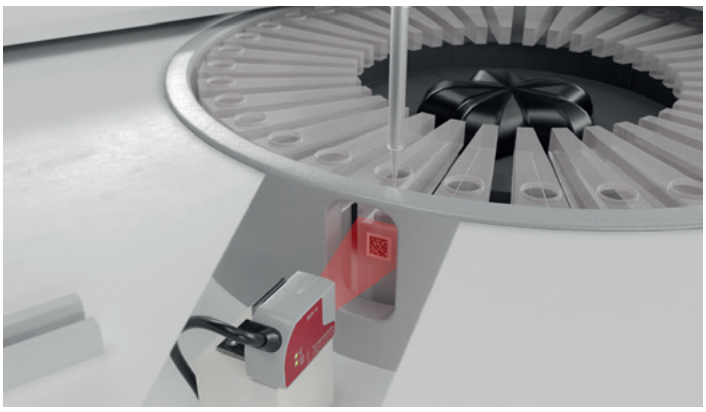
Code reading in presentation mode

Requirement: 1D-/2D-codes must be read on samples by an automatic analyzer. Devices with modular construction are necessary for use in small automatic analyzers.

Solution: With their very small size and open design, the DCR 50 1D-/2D-code readers can be optimally integrated in constrained spaces.

Code reading on reagents

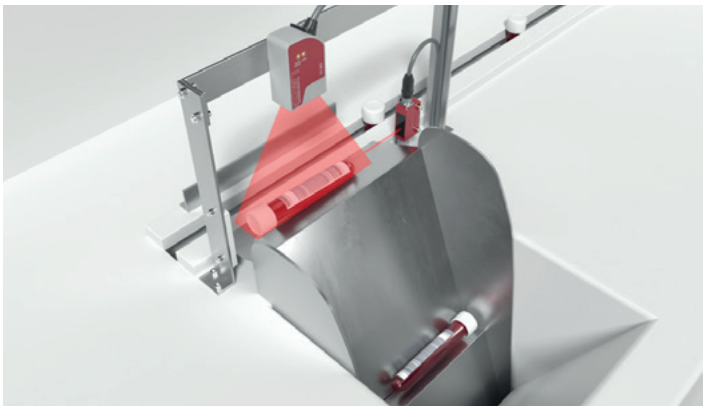
Requirement: 1D-/2D-codes must be read on samples or reagents by an automatic analyzer. Devices with modular construction are necessary for use in small automatic analyzers.



Solution: The DCR 55 1D-/2D-code readers can read codes in a large reading field on slowly moving objects. For very restricted installation situations, the DCR 50 is available as a model without housing.

Code reading in tube sorters

Requirement: Prior to further processing, 1D-/2D-codes must be read for sorting.



Solution: The DCR 55 1D-/2D-code readers can read codes in a large reading field. For very restricted installation situations, the DCR 50 is available without housing.

DCR 50, DCR 55

Compact 1D- and 2D-code readers

Areas of application

- Code reading on objects at a standstill or with slow movement speed
- Code reading in constrained spaces

Operating principle

- CMOS image sensor and Rolling Shutter technology

Advantages for you

QUICK INTEGRATION
Contacting possible directly on the circuit board by means of connectors

VERY ROBUST
Compact metal housing with lens cover for the highest requirements in constrained spaces

FAST COMMISSIONING
Configuration via Sensor Studio software enables fast commissioning

Features

- Reliable reading of all common 1D- and 2D-codes independent of position and alignment
- Reading range: 30 – 425 mm
- Modulus size: 0.127 – 0.528 mm
- Ambient temperature (operation): 0 – 50°C
- Dimensions (W × H × L):
  - DCR 50: 31.6 × 12.7 × 27.5 mm
  - DCR 55: 31.5 × 20 × 40.3 mm
- Miniature code reader in 2 mounting variants:
  - DCR 50: The open design enables the integration in instruments and the direct fastening to the pipettor. Connection to the circuit board can be established via a 12-pin connector
  - DCR 55: Compact size enables integration in devices and instruments with limited available space

DCR 200i

Fast 1D- and 2D-code readers with modular design

Areas of application

— Code reading on objects with high movement speed

Operating principle

— Camera-based CMOS image sensor and Global Shutter technology

Advantages for you

FAST COMMISSIONING
Configuration via installation wizard saves time and prevents errors

VERY FLEXIBLE
Easy-to-change housing hoods enable fast adaptation to changing requirements

FAST READING
A high depth of field even with fast object movement enables a high throughput

Features

— Reliable reading of all common 1D- and 2D-codes including Pharmacodes independent of their position and alignment
— Possible to read directly marked codes
— Reading range: 40 – 800 mm (depending on optics model)
— High resolution of 1.3 megapixels enables the reading of small codes
— Modulus size: 0.1 – 1 mm
— Ambient temperatures (operation): 0 – 50°C (without heating), –30 – 50°C (with heating)
— Interfaces: PROFINET IO/RT, Ethernet TCP/IP, UDP, RS 232, RS 422
— Degree of protection: IP 65
— Dimensions (W × H × L): 43 × 61 × 44 mm
— Powerful LED illumination enables use under poor contrast conditions
— Intelligent decoder algorithms allow code reading even with poor print quality
— Diagnostics and configuration via browser-based webConfig or directly via the PLC by means of GSDML file
— Model with stainless steel housing and degree of protection IP 67/69K available

LSIS 220

Compact 1D- and 2D-code readers

Areas of application

— Manual code reading and reading in presentation mode

Operating principle

— Camera-based 1D-/2D-code reader with CMOS image sensor and Global Shutter technology

Advantages for you

VERY ROBUST
Compact housing with high degree of protection for the highest requirements in constrained spaces

FLEXIBLE INSTALLATION
Turning connector allows the cable outlet to be adapted to the application requirements

Features

— Reliable reading of all common 1D- and 2D-codes independent of their position and alignment
— Flexible installation options through M12 turning connector
— Reading range: 50 – 330 mm
— Modulus size: 0.127 – 1 mm
— Ambient temperature (operation): 0 – 40°C
— Interfaces: USB, RS 232
— Degree of protection: IP 65
— Dimensions (W × H × L): 40 × 32 × 47 mm
— Optimized camera resolution enables code reading in situations with slight movement
— Integrated optics for larger read field and in-focus detection all the way to the edge areas
— LED indicator signals that reading has been performed
— Trigger button for manual activation and configuration

LSIS 422i, LSIS 462i

High-performance 1D- and 2D-code readers with motor-driven focus adjustment

Areas of application
- Code reading of 1D- and 2D-codes
- Label inspection

Operating principle
- Camera-based 1D-/2D-code reader with CMOS image sensor and Global Shutter technology

Advantages for you

HIGH READING QUALITY
Homogeneous illumination ensures high read quality even in unfavorable lighting conditions

INTEGRATED TEST FUNCTION
Models for printout inspection of labels available

FLEXIBLE OPERATING RANGE
Motor-driven focus adjustment enables a large reading field and reduces the number of required devices

Features
- Reliable reading of all common 1D- and 2D-codes (including directly marked) independent of their position and alignment
- Reading range: 50 – 10,000 mm
- Modulus size: 0.2 – 1 mm
- Ambient temperature (operation): 0 – 45°C
- Interfaces: Ethernet TCP/IP, UDP, RS 232
- Degree of protection: IP 67
- Dimensions (W × H × L): 75 × 55 × 113 mm
- Commissioning and operation via browser-based webConfig
- Reference code comparison possible

1D-hand-held scanners

Code reading during storage

Requirement: During storage, codes on a wide range of objects and components must be read independent of their position and alignment.

Solution: The IT 145xg, IT 190xg and IT 1300g hand-held scanners read codes independent of their position and orientation thanks to their camera-based reading technology. The devices are suitable for use in dry and clean environments.

Code reading in order processing

Requirement: During the processing of customer and production orders, 1D- or 2D-codes must be read on the corresponding order papers for each order to record and assign individual orders.

Solution: The IT 145xg and IT 190xg hand-held scanners read all common printed 1D- and 2D-codes. The especially lightweight and ergonomic housing design is gentle on the user during continuous use. The devices are suitable for use in dry and clean environments.

Code reading during order picking

Requirement: During the detection of larger goods or groups of goods, codes must generally also be read from a far distance and in harsh environments.

Solution: The IT 128xi and IT 19xxi hand-held scanners are characterized by large reading ranges. Furthermore, their housing and functionality are not affected by typical contamination (e.g., oil) or aggressive cleaning agents.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Erlenweg 72
D-70565 Stuttgart
Herr Müller
ANVC/MKL 72A
78234-025-12

IT 147xg, IT 1300g

Hand-held scanners for all common 1D-codes

Areas of application

— Code reading in dry and clean environments

Operating principle

— Area Imager, Linear Imager

Advantages for you

COMFORTABLE USE Easy handling through especially light-weight and ergonomic housing design

EASY TO CONNECT Simple connection options to common fieldbuses and Industrial Ethernet

FAST COMMISSIONING Configuration via configuration codes or software enables fast commissioning

Features

— Reliable reading of all common 1D-codes independent of their position
— Reading range: 10 – 460 mm
— Ambient temperature (operation): 0 – 50°C
— Interfaces: RS 232, USB. Via MA 200i also Ethernet, CANopen, PROFINET, DeviceNet, Ethernet IP and EtherCAT
— Cable-connected and Bluetooth models available
— Dimensions (W × H × L):
  – IT 1300g: 79 × 150 × 112 mm
  – IT 147xg: 82 × 173 × 62 mm
— Drop height of up to 1.5 m onto concrete floor
— Degree of protection: IT 1300g: IP 41
  IT 1472g: IP 42

IT 128xi

Industry-compatible hand-held scanners for all common 1D-codes

Areas of application
— Use in rough or contamination-susceptible environments

Operating principle
— Single line scanner

Advantages for you

VERY ROBUST
Housing with high degree of protection for the highest application requirements

EASY TO CONNECT
Simple connection options to common fieldbuses and Industrial Ethernet

FAST COMMISSIONING
Configuration via configuration codes or software enables fast commissioning

Features
— Reliable reading of all common 1D-Codes independent of their position and alignment
— Reading range: 25 – 4,460 mm
— Ambient temperatures (operation):
– Cable connection: –30 – 50 °C
— Interfaces: RS 232, USB. Via MA 200i also Ethernet, CANopen, PROFINET, DeviceNet, Ethernet IP and EtherCAT
— Cable-connected and Bluetooth models available
— Dimensions (W × H × L): 75 × 195 × 133 mm
— Drop height of up to 2 m onto concrete floor
— Degree of protection: IP 65

1D-/2D-hand-held scanners

Code reading during order picking

Requirement: During the order picking of delivery orders, 1D- and 2D-codes must be read on various moving objects.

Solution: The IT 145xg and IT 1300g hand-held scanners read all common 1D-codes. The IT 190xg hand-held scanners also read all 2D-codes, independent of their position and alignment. The devices are suitable for use in dry and clean environments.

Code reading during storage

Requirement: During the storage of larger objects, 1D- and 2D-codes must often be read in harsh industrial environments in which there is a risk of contamination by oil or lubricants.

Solution: The IT 128xi and 19xxi hand-held scanners read all common 1D- and 2D-codes independent of their position and alignment. Due to their high degree of protection, the devices are suitable for the increased requirements of industrial application environments.

Code reading for the traceability of components

Requirement: During the processing of electronic components, directly marked 1D- and 2D-codes on the individual components must often be read before they are processed further. Traceability can thereby be ensured, e.g., in the event of product recalls.

Solution: The IT 1920i DPM hand-held scanner reads all common 1D- and 2D-codes. The devices are DPM-capable and can, thus, reliably read directly marked codes.
The high degree of protection of the housing also protects against damage to the sensitive components.

Code reading for the traceability of components

Requirement: During the mounting of individual components, small 1D- and 2D-codes must be read for traceability purposes.
Because the environment is often harsh and prone to contamination, directly marked codes are used in particular.

Solution: The IT 1920i and HS 66x8 hand-held scanners can withstand the high demands just as the applied codes. The devices are DPM-capable and can, thus, reliably read the directly marked codes.

Code reading in engine assembly

Requirement: During engine assembly, directly marked 2D-codes must be read on the individual components. In addition, the stress on the housing is especially high due to oily surfaces and hard floors.

Solution: The IT 1920i and HS 66x8 hand-held scanners can withstand especially demanding application environments thanks to their high degree of protection of the housing. The devices are DPM-capable and can, thus, reliably read the directly marked codes.

Code reading on medical instruments after cleaning

Requirement: To guarantee that only sterile medical instruments are used in surgical operations, directly marked 1D- and 2D-codes must be read on the instruments for the traceability of the cleaning.

Solution: The IT 1920i and HS 66x8 hand-held scanners are resistant to common cleaning agents used in this area due to the degree of protection of the housing. The devices are DPM-capable and can, thus, reliably read the directly marked codes.

1D-/2D-hand-held scanners

Code reading for verifying samples

Requirement: To verify medical samples or reagents prior to analysis, small and – in many cases – directly marked 1D- and 2D-codes must be read on these items.

Solution: The IT 1920i and HS 66x8 hand-held scanners are DPM-capable and are therefore used to read directly marked codes.

IT 195xg

Performance hand-held scanner for all common 1D- and 2D-codes

Areas of application
— Code reading in dry and clean environments

Operating principle
— Area Imager

Advantages for you

COMFORTABLE USE
Easy handling through especially lightweight and ergonomic housing design

EASY TO CONNECT
Connection options to common fieldbuses and Industrial Ethernet

FAST COMMISSIONING
Configuration via configuration codes or software enables fast commissioning

Features
— Reliable reading of all common 1D- and 2D-codes independent of their position and alignment
— Reading range: 0 – 822 mm
— Ambient temperature (operation): 0 – 50°C
— Interfaces: RS 232, USB. Via MA 200i also Ethernet, CANopen, PROFINET, DeviceNet, Ethernet IP and EtherCAT
— Cable-connected and Bluetooth models available
— Dimensions (W × H × L): 70 × 160 × 80 mm
— Drop height of up to 1.8 m onto concrete floor
— Degree of protection: IP 41
— Optics models for various reading ranges

IT 147xg-2D

Hand-held scanners for all common 1D- and 2D-codes

Areas of application
— Code reading in dry and clean environments

Operating principle
— Area Imager

Advantages for you

COMFORTABLE USE
Easy handling through especially lightweight and ergonomic housing design

EASY TO CONNECT
Connection options to common fieldbuses and Industrial Ethernet

FAST COMMISSIONING
Configuration via configuration codes or software enables fast commissioning

Features
— Reliable reading of all common 1D- and 2D-codes independent of their position and alignment
— Reading range: 5 – 400 mm
— Ambient temperature (operation): 0 – 50°C
— Interfaces: RS 232, USB. Via MA 200i also Ethernet, CANopen, PROFINET, DeviceNet, Ethernet IP and EtherCAT
— Cable-connected and Bluetooth models available
— Dimensions (W × H × L): 62 × 169 × 82 mm
— Drop height of up to 1.8 m onto concrete floor
— Degree of protection: IT 1470g: IP 40
IT 1472g: IP 42
— Optics models for various reading ranges

IT 19xxi

Industry-compatible hand-held scanners for all common 1D- and 2D-codes

Areas of application

— Code reading in rough or contamination-susceptible industrial environments

Operating principle

— Area Imager

Advantages for you

LARGE OPERATING RANGE
Reading range of up to 16 meters allows codes to be read on objects located at even relatively far distances

EASY TO CONNECT
Connection options to common fieldbuses and Industrial Ethernet

FAST COMMISSIONING
Configuration via configuration codes or software enables fast commissioning

Features

— Reliable reading of all common 1D- and 2D-codes independent of their position and alignment
— Reading range: 10 – 16,000 mm
— Ambient temperatures (operation):
  – Wireless: –20 – 50°C
  – Cable connection: –30 – 50°C
— Interfaces: RS 232, USB. Via MA 200i also Ethernet, CANopen, PROFINET, DeviceNet, Ethernet IP and EtherCAT
— Cable-connected and Bluetooth models available
— Dimensions (W × H × L): 75 × 195 × 133 mm
— Drop height of up to 2 m onto concrete floor
— Degree of protection: IT 1980i / 1981i: IP 65
  IT 1990i / 1991i: IP 65 / IP 67

IT 1920i

Industry-compatible hand-held scanners for common directly marked 1D- and 2D-codes

Areas of application

— Reading of directly marked 1D- and 2D-codes in harsh or contamination-prone industrial environments

Operating principle

— Area Imager

Advantages for you

HIGHEST PRECISION
The built-in laser alignment aid prevents the reading of an incorrect code on objects with multiple markings

EASY TO CONNECT
Connection options to fieldbuses and Industrial Ethernet

FAST COMMISSIONING
Configuration via configuration codes or software enables fast commissioning

Features

— Reliable reading of all common directly marked 1D- and 2D-codes independent of their position and alignment
— Reading range: 0 – 170 mm
— Ambient temperature (operation): –30 – 50°C
— Interfaces: RS 232, USB. Via MA 200i also Ethernet, CANopen, PROFINET, DeviceNet, Ethernet IP and EtherCAT
— Dimensions (W × H × L): 74.5 × 193 × 134 mm
— Drop height of up to 2 m onto concrete floor
— Degree of protection: IP 65
— Various illumination options enable the reading of low-contrast codes

HS 66x8

Industry-compatible hand-held scanners for common directly marked 1D- and 2D-codes

Areas of application

— Reading of directly marked 1D- and 2D-codes in harsh or contamination-prone industrial environments

Operating principle

— Area Imager

Advantages for you

LARGE VARIETY
Various optics and illumination models enable reliable detection, even of codes with very low contrast on different surfaces

EASY TO CONNECT
Connection options to common fieldbuses and Industrial Ethernet

FAST COMMISSIONING
Configuration via configuration codes or software enables fast commissioning

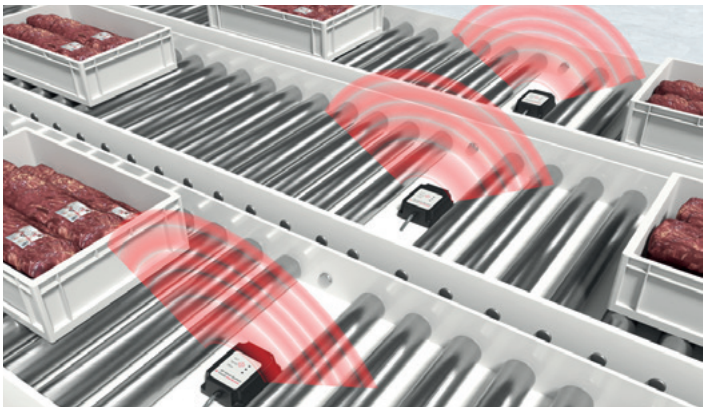
Features

— Reliable reading of all common directly marked 1D- and 2D-codes independent of position and alignment
— Reading range: 0 – 147 mm
— Ambient temperatures (operation):
  – Wireless: –20 – 50°C
  – Cable connection: –30 – 50°C
— Interfaces: RS 232, USB. Via MA 200i also Ethernet, CANopen, PROFINET, DeviceNet, Ethernet IP and EtherCAT
— Cable-connected and Bluetooth models available
— Dimensions (W × H × L): 77 × 185 × 132 mm
— Drop height of up to 2.4 m onto concrete floor
— Degree of protection: IP 67
— Various illumination options enable optimum reading performance with engraved, dot-peened and laser-etched codes

RFID

RFID container identification

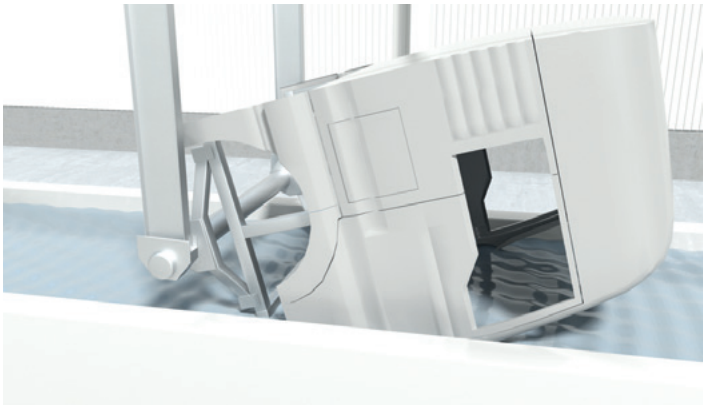
Requirement: In the food industry, the containers and, thus, the data carriers are exposed to various cleaning processes and chemicals. To be able to read and, if necessary, store product-related data at every processing point, the data carriers must be especially robust.



Solution: Thanks to their high degree of protection of up to IP 68/69K, the TFM and TFI transponders are – in combination with the RFM and RFI read/write devices – very well suited for use in the food industry. On the TFM transponders, quality data and process data can be stored during the production process.

RFID skid identification

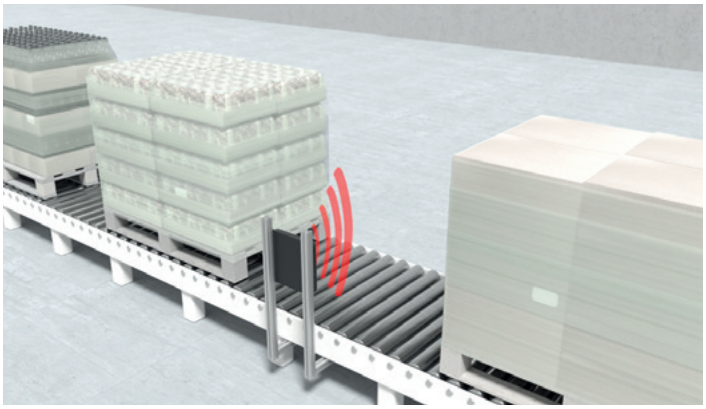
Requirement: In the automotive industry, data carriers must, to some extent, withstand high temperatures during processes for the surface treatment of body parts. Furthermore, paint particles can prevent visual contact with the data carrier.



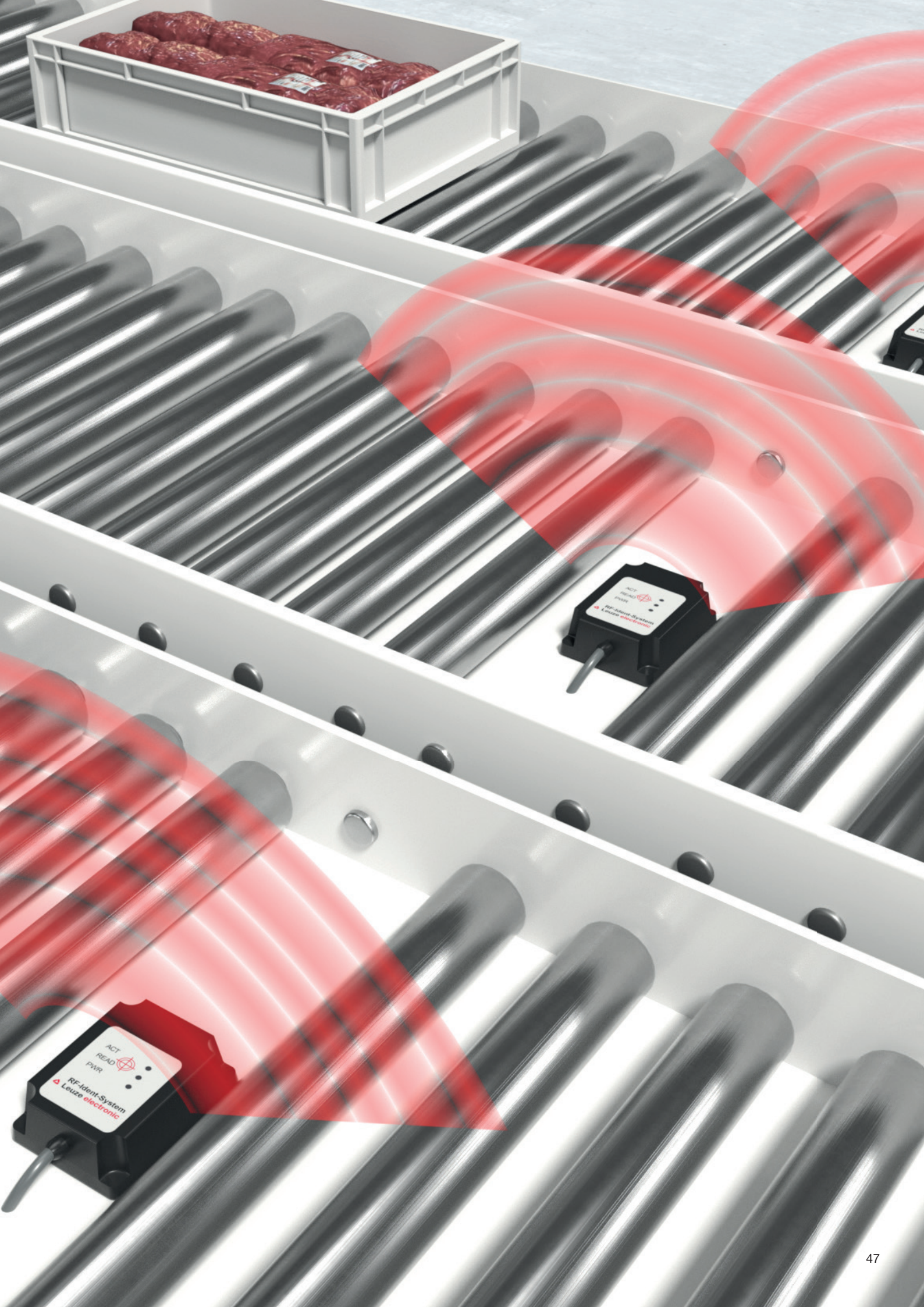
Solution: The RFID waves of the RFM read/write devices can penetrate even layers of paint. The corresponding transponders can withstand temperatures of up to 250°C.

RFID pallet identification

Requirement: During pallet identification, the data carriers are either on the pallet or on the material that is to be transported. Here, the pallet feet may be soiled or the data carrier may be located under the packaging film. Thus, visual contact between the identification device and data carrier is possible only to a limited extent if at all.



Solution: With the RFM read/write devices, the data carriers can be read from and written to even without visual contact. Insensitive to dirt, the transponders of the TFM series are available as hard tags or smart labels.


ACT
READ
PWR
RF-Ident-System
Leuze electronic

RFI 32

RFID readers with a frequency range of 125 kHz (LF)

Areas of application

— Part tracking in container, pallet and skid transport systems – even under harsh ambient conditions

Advantages for you

VERY ROBUST
Cast, robust housing enables use under harsh ambient conditions

FAST COMMISSIONING
Easy and fast configuration via the intuitive RF configuration tool

Features

— Evaluation unit with integrated antenna reduces installation effort and is suitable for constrained installation situations
— Reading range: 0 – 80 mm (depending on the used transponder)
— Reading speed: up to 0.6 m/s
— Ambient temperature (operation): –25 – 70°C
— Interfaces: RS 232. Via MA 200i also PROFINET, DeviceNet, Ethernet IP and EtherCAT
— Dimensions (W × H × L): 76 × 30 × 102 mm
— Degree of protection: IP 65
— Through the internal parameter memory, the parameters are retained in the device even after a power failure
— Transponders can be read in passing
— Status display directly on the device
— Insensitive to environmental materials such as water, textiles, plastic or wood

RFM 32, RFM 62

RFID read/write systems with a frequency range of 13.56 MHz (HF)

Areas of application

— Part tracking in container, pallet and skid transport systems – even under harsh ambient conditions
— Use in production control

Advantages for you

VERY ROBUST
(Partially) cast, robust housings enables use under harsh ambient conditions

FAST COMMISSIONING
Easy and fast configuration via the intuitive RF configuration tool

Features

— Evaluation unit with integrated antenna reduces installation effort and is suitable for constrained installation situations
— Global use through ISO 15693 conformity
— Staggered reading ranges:
  – RFM 32: 0 – 110 mm
  – RFM 62: 0 – 400 mm
— High reading speed of up to 6 m/s
— Ambient temperature (operation): –25 ... 65°C
— Interfaces: RS 232. Via MA 200i also PROFINET, DeviceNet, Ethernet IP and EtherCAT
— Dimensions (W × H × L):
  – RFM 32: 76 × 30 × 102 mm
  – RFM 62: 298 × 34 × 298 mm
— Degrees of protection: – RFM 32: IP 67
  – RFM 62: IP 65
— Storage of quality and production data during the production process enables use for production control
— Through internal parameter memory, the parameters are retained in the device even after a power failure
— Transponders can be read to and written from in passing
— Status display directly on the device
— RFM 32 Ex: Model available for use in potentially explosive areas

TFI

Passive RFID fixcode transponders with a frequency range of 125 kHz (LF)

Areas of application

— Part tracking in container, pallet and skid transport systems

Advantages for you

HEAT-RESISTANT
Special high-temperature transponders can also be used at high process temperatures

EVERYTHING FROM A SINGLE SOURCE
Suitable transponders for the RFI 32 reader

SAFETY
Unchangeable Unique ID offers a high level of protection against tampering

Features

— Unchangeable 8-byte Unique ID, read-only
— Degree of protection: up to IP 67
— Ambient temperature (operation): –20 – 85°C*
— Ambient temperature (storage): –40 – 200°C*
— Disc transponders with diameters of 30 and 50 mm
— Insensitive to environmental materials such as water, textiles, plastic or wood

* depending on model

TFM

Passive RFID transponders with a frequency range of 13.56 MHz (HF)

Areas of application

— Part tracking in container, pallet and skid transport systems
— Applications in production control (e.g., control of assembly or painting processes)

Advantages for you

HEAT-RESISTANT
Special high-temperature transponders can also be used at high process temperatures

EVERYTHING FROM A SINGLE SOURCE
Suitable transponders for the RFM 32/62 readers

LARGE VARIETY
Numerous models enable installation in various applications

Features

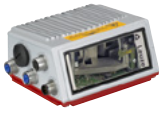
— Global use through ISO 15693 conformity
— All transponders are provided with an unchangeable Unique ID
— Storage of quality and production data during the production process enables use for production control
— Degree of protection: up to IP 68/69K
— Memory size up to 1024 bytes*
— Ambient temperature (operation): –25 – 150°C*
— Ambient temperature (storage): –40 – 250°C*
— Various designs and sizes available for different applications: disc transponders, key fobs, self-adhesive smart labels or plug-in cards
— Model available for use in potentially explosive areas

* depending on model

Technical data

	1D-code readers		
			
	BCL 8	**BCL 92** **BCL 95**	**BCL 148**
Code technology	1D	1D	1D
Operating principle	Laser single line	Laser single line	Laser single line with focus adjustment
Beam exit	Front or perpendicular with deflecting mirror	Front or perpendicular with deflecting mirror	Perpendicular with deflecting mirror
Light source	Laser, red	Laser, red	Laser, red
Reading distances (depending on modulus width and optics model)	40–160 mm	25–260 mm / 50–180 mm	30–310 mm
Modulus size **min. – max.** (depending on modulus width and optics model)	0.15–0.5 mm	6.5–20 mil / 0.165–0.5 mm	0.127–0.5 mm
Scanning rate, typical	600 scans/s	600 scans/s	750 scans/s
Ambient temperature (operation without heating)	0–40 °C	5–40 °C	5–40 °C
Ambient temperature (operation with heating)	0–40 °C	5–40 °C	5–40 °C
Interfaces	RS 232	RS 232	RS 232 / RS 485
Connection type	M12 connector, 5-pin, A-coded Cable 2,000 mm, 5-wire	M12 connector with 150 mm pigtail, 8-pin Cable 2,000 mm, 6-wire	900 mm cable with 15-pin Sub-D connector
Degree of protection	IP 67	IP 54	IP 65
Dimensions housing (W × H × L)	40.3 × 48 × 15 mm	Single line scanner: 62 × 43.5 × 23.8 mm Deflection mirror: 62 × 56.9 × 23.8 mm	71 × 38 × 118.5 mm

* Optics models: N = High Density (near), M = Medium Density (medium distance), F = Low Density (far),
L = Long Range (very long distance), J = Ink-jet



BCL 200i	BCL 300i	BCL 500i	BCL 600i	BCL 900i
1D	1D	1D	1D	1D
Laser single line Raster scanner	Laser single line Raster scanner Scanner with oscillating mirror	Laser single line Scanner with oscillating mirror	Laser single line Scanner with oscillating mirror	Laser single line
Perpendicular with deflecting mirror	Front or perpendicular with deflecting mirror	Front	Front	Front
Laser, red	Laser, red	Laser, red	Laser, blue	Laser, red
M: 40 – 255 mm	N*: 50 – 160 mm M: 60 – 320 mm F: 100 – 470 mm L: 80 – 680 mm J: 100 – 60 mm	N: 200 – 650 mm M: 300 – 1,000 mm F: 500 – 1,600 mm L: 1,000 – 2,400 mm	M: 300 – 1,150 mm F: 450 – 1,450 mm	N: 525 – 1,500 mm M: 450 – 1,700 mm
M: 0.2 – 0.5 mm	N: 0.127 – 0.2 mm M: 0.200 – 0.5 mm F: 0.300 – 0.5 mm L: 0.350 – 0.8 mm J: 0.500 – 0.8 mm	N: 0.25 – 0.5 mm M: 0.35 – 0.8 mm F: 0.50 – 1.0 mm L: 0.70 – 1.0 mm	M: 0.25 – 0.5 mm F: 0.50 – 1.0 mm	N: 0.25 – 0.38 mm M: 0.33 – 0.50 mm
1,000 scans/s	1,000 scans/s	1,000 scans/s	1,000 scans/s	1,000 scans/s
0 – 40 °C	0 – 40 °C	0 – 40 °C	5 – 40 °C	5 – 50 °C
	–35 – 40 °C	–35 – 40 °C	–35 – 40 °C	
PROFINET IO/RT Ethernet TCP/IP, UDP	RS 232 / RS 422 / RS 485 USB 1.1 (service) PROFIBUS PROFINET IO/RT Ethernet TCP/IP, UDP Ethernet IP EtherCAT	RS 232 / RS 422 / RS 485 USB 1.1 (service) PROFIBUS PROFINET IO/RT Ethernet TCP/IP, UDP Ethernet IP multiNet	RS 232 / RS 422 / RS 485 USB 1.1 (service) PROFIBUS PROFINET IO/RT Ethernet TCP/IP, UDP Ethernet IP multiNet	RS 232 / RS 422 Ethernet TCP/IP, UDP Ethernet IP
M12 connector with 0.9 m (PWR) or 0.7 m (HOST) pigtail	M12 connector Cable Plug connector	4x M12 connector USB	4x M12 connector USB	1x M12 connector, 4-pin, A-coded, male 1x M12 connector, 17-pin, A-coded, male 1x M12 connector, 4-pin, D-coded, female 1x M12 connector, 4-pin, D-coded, female
IP 65	IP 65	IP 65	IP 65	IP 65
92 × 38 × 84 mm	Single line scanner: 95 × 44 × 68 mm Oscillating mirror: 125 × 58 × 110 mm Deflecting mirror: 103 × 44 × 96 mm	Single line scanner: 123.5 × 63 × 106.5 mm Oscillating mirror: 173 × 84 × 147 mm	Single line scanner: 123.5 × 63 × 106.5 mm Oscillating mirror: 173 × 84 × 147 mm	216 × 96 × 127 mm

Technical data

	1D-code readers		
			
	CR 50	**CR 55**	**CR 100**
Code technology	1D	1D	1D
Operating principle	Single line with CCD image sensor	Single line with CCD image sensor	Single line with CCD image sensor
Beam exit	Front	Front	Front or perpendicular with deflecting mirror
Light source	LED, red	LED, red	LED, red
Reading distances (depending on modulus width and optics model)	50 – 230 mm	50 – 230 mm	20 – 72 mm
Modulus size **min. – max.** (depending on modulus width and optics model)	5 – 20 mil / 0.127 – 0.5 mm	5 – 20 mil / 0.127 – 0.5 mm	0.15 – 0.5 mm
Scanning rate, typical	330 scans/s	330 scans/s	700 scans/s
Ambient temperature (operation without heating)	0 – 50 °C	0 – 50 °C	0 – 45 °C
Ambient temperature (operation with heating)	–	–	–
Interfaces	USB 2.0, RS 232	USB 2.0, RS 232	RS 232
Connection type	Molex connector, 6-pin, male	Cable 2,000 mm, 6-wire	Cable 2,000 mm, 6-wire
Degree of protection	–	IP 54	IP 40
Housing dimensions (W × H × L)	22.5 × 14 × 33 mm	31 × 18.3 × 45.5 mm	31 × 18.3 × 45.5 mm

* Optics models: U = Ultra High Density, N = High Density (near), M = Medium Density (medium distance), F = Low Density (far), L = Long Range (very long distance), J = Ink-jet

1D-/2D-code readers

					
	DCR 50	**DCR 55**	**DCR 200i**	**LSIS 220**	**LSIS 422i** **LSIS 462i**
	1D/2D	1D/2D	1D/2D	1D/2D	1D/2D
	Camera-based CMOS image sensor and Rolling Shutter technology	Camera-based CMOS image sensor and Rolling Shutter technology	Camera-based CMOS image sensor and Global Shutter technology	Camera-based CMOS image sensor and Global Shutter technology	Camera-based CMOS image sensor and Global Shutter technology
	–	–	Front	Front	Front
	Illumination: Red LED Aimer: Blue LED	Illumination: Red LED Aimer: Blue LED	LED, red, IR	Illumination: Red LED Aimer: Green LED	LED, RGB, white, IR
	30–425 mm	30–425 mm	U: 40– 75 mm N: 40–140 mm M: 50–220 mm F: 70–360 mm L: 50–800 mm	50–330 mm	50–10,000 mm
	0.127–0.528 mm	0.127–0.528 mm	U: 0.100–0.25 mm N: 0.127–0.25 mm M: 0.190–0.33 mm F: 0.250–0.50 mm L: 0.350–1.00 mm	0.127–1 mm	0.2–1.0 mm
	–	–	–	–	–
	0–50 °C	0–50 °C	0–50 °C	5–40 °C	0–45 °C
	–	–30–50 °C	–30–50 °C	–30–50 °C	–30–50 °C
	RS 232	RS 232 USB 2.0	RS 232 / RS 422 Ethernet TCP/IP, UDP PROFINET RT	RS 232 USB 2.0	RS 232 Ethernet TCP/IP, UDP
	Molex connector, 6-pin, male	Cable 2,000 mm, 6-wire USB	1x M12 connector, 12-pin, A-coded, male 1x M12 connector, 4-pin, D-coded, female	M12 connector 8-pin, A-coded	1x M12 connector, 4-pin, D-coded, female 1x M12 connector, 8-pin, A-coded, male 1x M12 connector, 8-pin, A-coded, female
	–	IP 54	IP 65, IP 69K	IP 65	IP 65, IP 67
	31.6 × 12.7 × 27.5 mm	31.5 × 61 × 40.3 mm	43 × 61 × 44 mm	40 × 32 × 47 mm	75 × 55 × 113 mm

Technical data

	1D-hand-held scanners		
			
	IT 147xg-1D	**IT 1300g**	**IT 128xi**
Code technology	1D	1D	1D
Operating principle	Area Imager	Linear Imager	Single scan line
Min./max. reading distances (depending on modulus width)	0–400 mm	10–460 mm	100–4,460 mm
Min. modulus size	0.127–0.508 mm	0.127–01.400 mm	0.191–2.540 mm
Ambient temperature	0–40 °C, 0–50 °C	0–50 °C	–30–50 °C
Interfaces	RS 232 USB Fieldbuses and Industrial Ethernet via MA 200i	RS 232 USB Fieldbuses and Industrial Ethernet via MA 200i	PS/2, RS 232 USB Fieldbuses and Industrial Ethernet via MA 200i
Connection type	RJ41, Bluetooth	RJ41	RJ41
Degree of protection	IP 40, IP 42	IP 41	IP 65
Dimensions (W × H × L)	62 × 169 × 82 mm	79 × 150 × 112 mm	75 × 133 × 195 mm

1D-/2D-hand-held scanners

IT 147xg-2D

IT 195xg

IT 19xxi

IT 1920i

HS 66x8

1D- and 2D-codes	1D- and 2D-codes	1D- and 2D-codes	1D- and 2D-codes (DPM)	1D- and 2D-codes (DPM)
Area Imager	Area Imager	Area Imager	Area Imager	Area Imager
5 – 400 mm	0 – 822 mm 6 – 604 mm	10 – 16,000 mm 0 – 2,236 mm 0 – 837 mm	0 – 170 mm	0 – 147 mm
0.127 – 0.508 mm	0.127 – 0.508 mm	0.191 – 2.540 mm	0.076 – 0.508 mm	0.076 – 0.508 mm
0 – 40 °C, 0 – 50 °C	0 – 50 °C	–30 – 50 °C, –20 – 50 °C	–30 – 50 °C	–30 – 50 °C, –20 – 50 °C
RS 232 USB Fieldbuses and Industrial Ethernet via MA 200i	PS/2, RS 232 USB Fieldbuses and Industrial Ethernet via MA 200i	PS/2, RS 232 USB Fieldbuses and Industrial Ethernet via MA 200i	PS/2, RS 232 USB Fieldbuses and Industrial Ethernet via MA 200i	PS/2, RS 232 USB Fieldbuses and Industrial Ethernet via MA 200i
RJ41, Bluetooth	RJ41, Bluetooth	RJ41, Bluetooth	RJ41	RJ41, Bluetooth
IP 40, IP 42	IP 41	IP 65 (IP 67)	IP 65	IP 65, IP 67
62 × 169 × 82 mm	70 × 160 × 80 mm	75 × 133 × 195 mm	74.5 × 193 × 134 mm	77 × 185 × 132 mm, 77 × 185 × 143 mm

Technical data

	RFID read/write devices		
	 **RFI 32**	 **RFM 32** **RFM 32 Ex**	 **RFM 62**
Function	Read	Read and write	Read and write
Frequency range	125 kHz (LF)	13.56 MHz (HF)	13.56 MHz (HF)
Max. reading/writing range (depending on the transponder)	TFI 03: up to 60 mm TFI 05: up to 80 mm	TFM 02: up to 50 mm TFM 03/05/08: up to 110 mm	TFM 02: up to 130 mm TFM 03: up to 350 mm TFM 05: up to 220 mm TFM 08: up to 400 mm
Ambient temperature (operation)	–25 – 70 °C	–25 – 65 °C	–25 – 65 °C
Interface*	RS 232	RS 232	RS 232
Connection type	1,000 mm cable with socket connectors (10+6)	1,000 mm cable with socket connectors (10+6) RFM 32 Ex: 10 m cable	1,000 mm cable with socket connectors (10+6)
Degree of protection	IP 65	IP 67	IP 65
Dimensions (W × H × L)	76 × 30 × 102 mm	76 × 30 × 102 mm	298 × 34 × 298 mm

* via MA 200i: Ethernet, PROFINET, DeviceNet, Ethernet IP and EtherCAT

	RFID transponders			
	TFI 03 11 **TFI 05 11**	**TFI 03 16** **TFI 05 16**	**TFM 03 11** **TFM 05 11** **TFM 08 11**	**TFM 03 15** **TFM 05 15**
Frequency range	125 kHz (LF)	125 kHz (LF)	13.56 MHz (HF)	13.56 MHz (HF)
Design	Disc transponder	Disc transponder	Disc transponder	Disc transponder
Chip type	EM4102	EM4102	I-CodeSLI	I-CodeSLI
Memory	8-byte fixcode	8-byte fixcode	112 byte	112 byte
Ambient temperature (operation)	–20 – 70 °C	–20 – 85 °C	–20 – 70 °C	–25 – 85 °C
Ambient temperature (storage)	–40 – 90 °C	–20 – 200 °C	–25 – 120 °C	–40 – 140 °C

TFM 06 11	TFM 02 11	TFM 05 16	TFM 03 51	TFM 02 22 TFM 05 22	TFM 08 21
13.56 MHz (HF)	13.56 MHz (HF)	13.56 MHz (HF)	13.56 MHz (HF)	13.56 MHz (HF)	13.56 MHz (HF)
Disc transponder	Disc transponder	Disc transponder	Key fobs	Smart label Self-adhesive	Plug-in card
I-CodeSLI	TagIT HFI	I-CodeSLI	TagIT HFI	I-CodeSLI	TagIT HFI
112 byte	256 byte	112 byte	256 byte	112 byte	256 byte
–25 – 70 °C	–25 – 85 °C	–25 – 150 °C	–20 – 70 °C	–20 – 50 °C	–20 – 70 °C
–25 – 110 °C	–25 – 160 °C	–40 – 250 °C (1,000 h or 1,000 cycles)	–25 – 85 °C	–20 – 70 °C	–25 – 85 °C

Suitable products

1D-/2D-code readers

Mounting system for rod
Suitable for BCL 300i, BCL 500i, LSIS 400i

Mounting bracket
Stainless steel / galvanized.
Suitable for BCL 300i, DCR 200i

Mounting system for rod
Adjustable, turnable 360°, galvanized.
Suitable for DCR 200i

Connection units
Suitable for BCL 300i, BPS 300i

Cover hoods
For replacing if operating conditions change.
Suitable for DCR 200i

Starter kit
Scan engine, mounted on additional circuit board with Micro-USB socket, USB cable, USB flash memory stick with drivers and documentation.
Suitable for CR 50 and CR 55

Interchangeable lenses
With various focal lengths (6–75 mm) and diaphragms (1.4–2.8).
Suitable for LSIS 4xx M49-x9

MA-CR adapter circuit board
For laboratory and test purposes.
Suitable for CR 100, BCL 95, DCR 50, DCR 55

Additional lighting
Ring light or flood light.
Suitable for DCR 200i

Fieldbus gateways
MA 200i for field use for connecting bar code readers and identification systems

RFID

Spacer transponders
Suitable for TFI, TFM

Mounting device
For use in painting lines.
Suitable for TFM 05 16

Our company
Everything at a glance

In a constantly changing industrial world, we work together with our customers to find the best solution for their sensor applications: innovatively, precisely and efficiently.

Key figures

Foundation	1963
Company structure	GmbH + Co. KG, wholly family-owned
Executive management	Ulrich Balbach
Headquarters	Owen, Germany
Distribution companies	21
Production locations	5
Technological competence centers	3
Distributors	40
Employees	> 1,200

Product range

- Switching sensors
- Measuring sensors
- Safety
- Identification
- Data transmission
- Network and connection technology
- Industrial image processing
- Accessories and supplementary products

Focus industries

- Intralogistics
- Packaging industry
- Machine tools
- Automotive industry
- Laboratory automation

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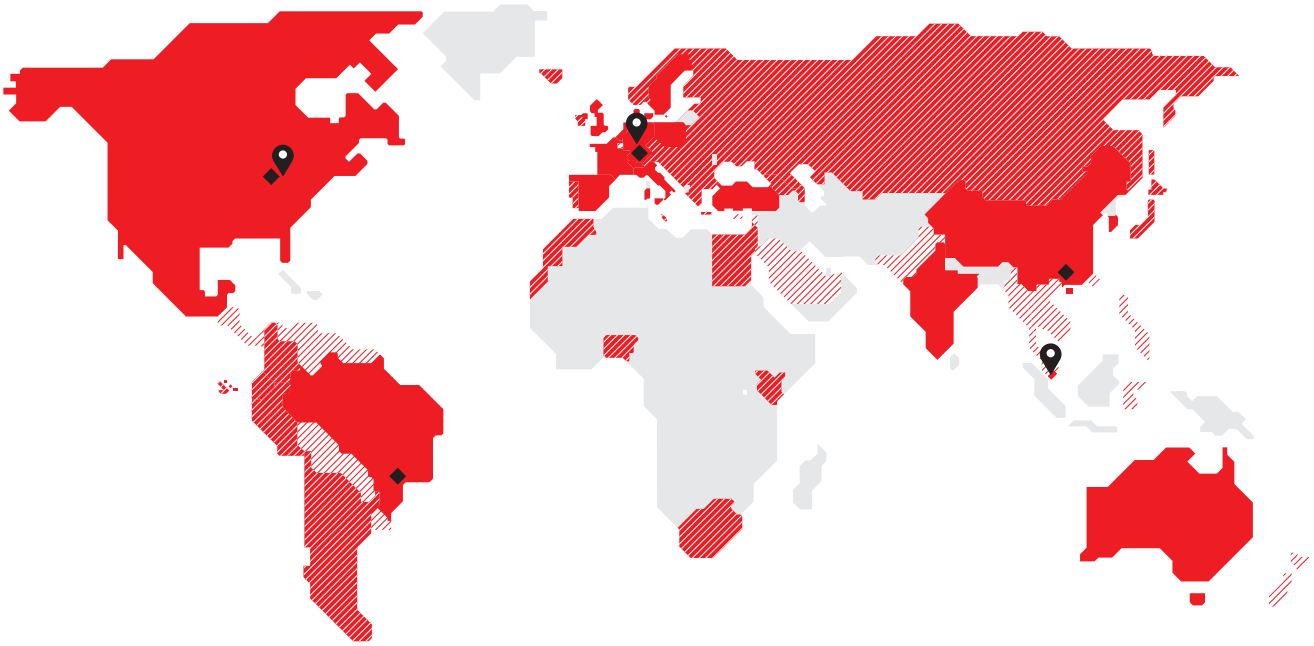
Our Locations
At work for you around the world

Your success is our motivation. We therefore place great value on always being personally, quickly, and easily accessible to you. We produce on four continents, allowing us to offer you reliable product availability.



- Technological competence centers
- Production locations
- Subsidiaries
- Distributors
- Distribution through neighboring country

Technological competence centers

Owen, Germany
New Hudson/Detroit, USA
Singapore

Production locations

Owen, Germany
Unterstadion, Germany
New Hudson/Detroit, USA
Shenzhen, China
São Paulo, Brazil

Distribution companies

Australia/New Zealand
Belgium
Brazil
China
Denmark/Sweden
France
Germany – headquarters
Germany – distribution company
Great Britain
Hong Kong
India
Italy
Mexico
Poland
Singapore
South Korea
Spain
Switzerland
The Netherlands
Turkey
USA/Canada

Our product range at a glance

Switching Sensors
- Optical Sensors
- Inductive Switches
- Capacitive Sensors
- Ultrasonic Sensors
- Fiber Optic Sensors
- Fork Sensors
- Light Curtains
- Special Sensors

Measuring Sensors
- Distance Sensors
- Sensors for Positioning
- 3D Sensors
- Light Curtains
- Bar Code Positioning Systems
- Fork Sensors

Safety
- Safety Solutions
- Safety Laser Scanners
- Safety Light Curtains
- Single and Multiple Light Beam Safety Devices
- Safety Radar Sensors
- Safe Locking Devices, Switches and Proximity Sensors
- Safety PLCs and Relays
- Machine Safety Services

Identification
- Bar Code Identification
- 2D-Code Identification
- RF Identification

Data Transmission
- Optical Data Transmission Systems

Network and Connection Technology
- Connection Technology
- Modular Connection Units

Industrial Image Processing
- Light Section Sensors
- Smart Camera

Accessories and Supplementary Products
- Signaling Devices
- Mounting Systems
- Reflectors

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Subject to modifications and errors