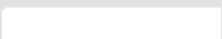




Products and solutions for  
**IDENTIFICATION**





# IDENTIFIED – IN ANY POSITION

Optical code readers or RFID systems are used for the identification 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. In many cases the identification has to be done independent of the orientation and positioning of the object, even at high movement speeds.

Equipped for all requirements:

- Even dirty or damaged codes can be reliably read using code reconstruction technology
- Devices are available with compact housing for the installation in cramped 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

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## SELECTION GUIDE

Page 6–9

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## APPLICATIONS/ PRODUCT OVERVIEW

### 1D-CODE READERS

Page 10–23

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### 1D-/2D-CODE READERS

Page 24–31

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### 1D-HAND-HELD SCANNERS

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### 1D-/2D-HAND-HELD SCANNERS

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### RFID

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### TECHNICAL DATA

Page 50–57

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### SUITABLE PRODUCTS

Page 58–61

# THE RIGHT TECHNOLOGY

To offer the optimum solution for all requirements, we use various technologies. These range from optically reading of 1D- and 2D-codes to a 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 reading rates



1D-code

### Areas of application

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

## 2D-codes

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



2D stacked code

### Advantages

- Minimal space requirement
- Highest-possible information content
- Through the integrated error 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

### Advantages

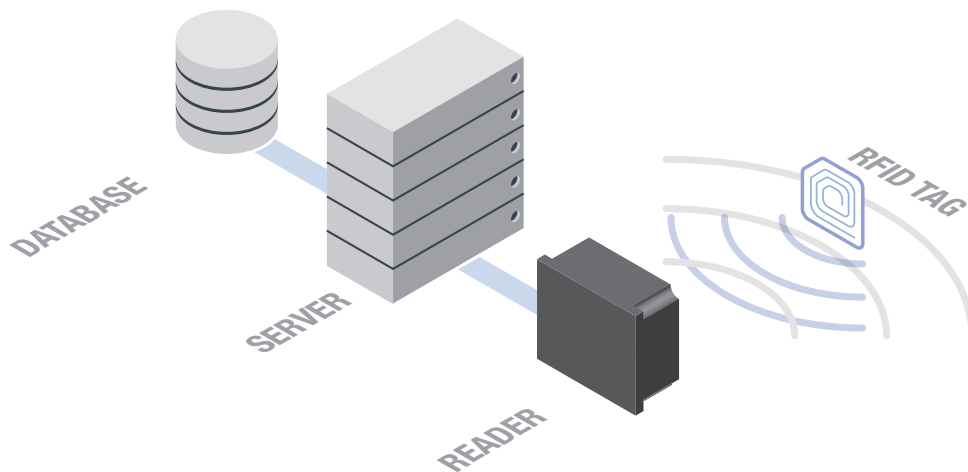
- Compact code compared to 1D-codes
- Variable width and height
- Through the integrated error algorithm, even damaged codes can be read error-free

### 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.

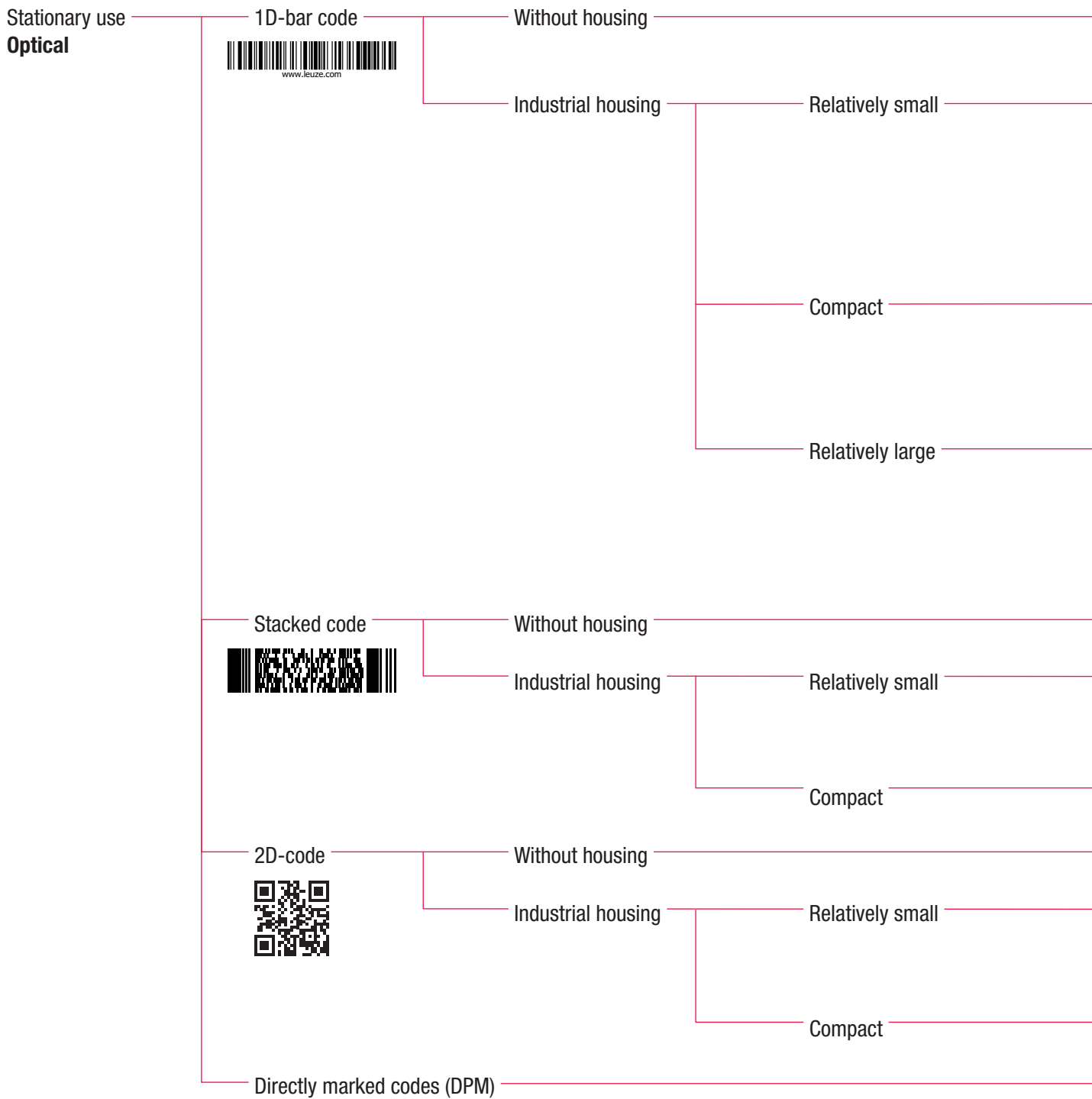
### Advantages

- “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



**Min./max. reading distances**  
(depending on modulus width and optics model)

	100	200	300	400	500	600	700	800	900	1,000	1,500	2,000	2,500	3,000	5,000	10,000	15,000	20,000	Product	Page
50–230 mm																			CR 50	<b>22</b>
30–425 mm																			DCR 50	<b>27</b>
20–71 mm																			CR 100	<b>23</b>
40–160 mm																			BCL 8	<b>14</b>
50–230 mm																			CR 55	<b>22</b>
50–330 mm																			LSIS 220	<b>30</b>
30–425 mm																			DCR 55	<b>28</b>
40–800 mm																			DCR 200i	<b>29</b>
30–310 mm																			BCL 148	<b>17</b>
50–450 mm																			BCL 20	<b>15</b>
50–180 mm																			BCL 95	<b>16</b>
50–680 mm																			BCL 300i	<b>18</b>
300–1,450 mm																			BCL 600i	<b>19</b>
450–1,700 mm																			BCL 900i	<b>20</b>
200–2,400 mm																			BCL 500i	<b>19</b>
75–10,000 mm																			LSIS 422	<b>31</b>
–	Depending on the version, see data for the BCL 500i, BCL 600i and BCL 900i series																		MSPi systems	<b>31</b>
30–425 mm																			DCR 50	<b>27</b>
50–330 mm																			LSIS 220	<b>30</b>
30–425 mm																			DCR 55	<b>28</b>
40–800 mm																			DCR 200i	<b>29</b>
75–10,000 mm																			LSIS 422i	<b>31</b>
30–425 mm																			DCR 50	<b>27</b>
50–330 mm																			LSIS 220	<b>30</b>
30–425 mm																			DCR 55	<b>28</b>
40–800 mm																			DCR 200i	<b>29</b>
75–10,000 mm																			LSIS 422i	<b>31</b>
75–10,000 mm																			LSIS 462i	<b>31</b>

Devices for use in lab 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

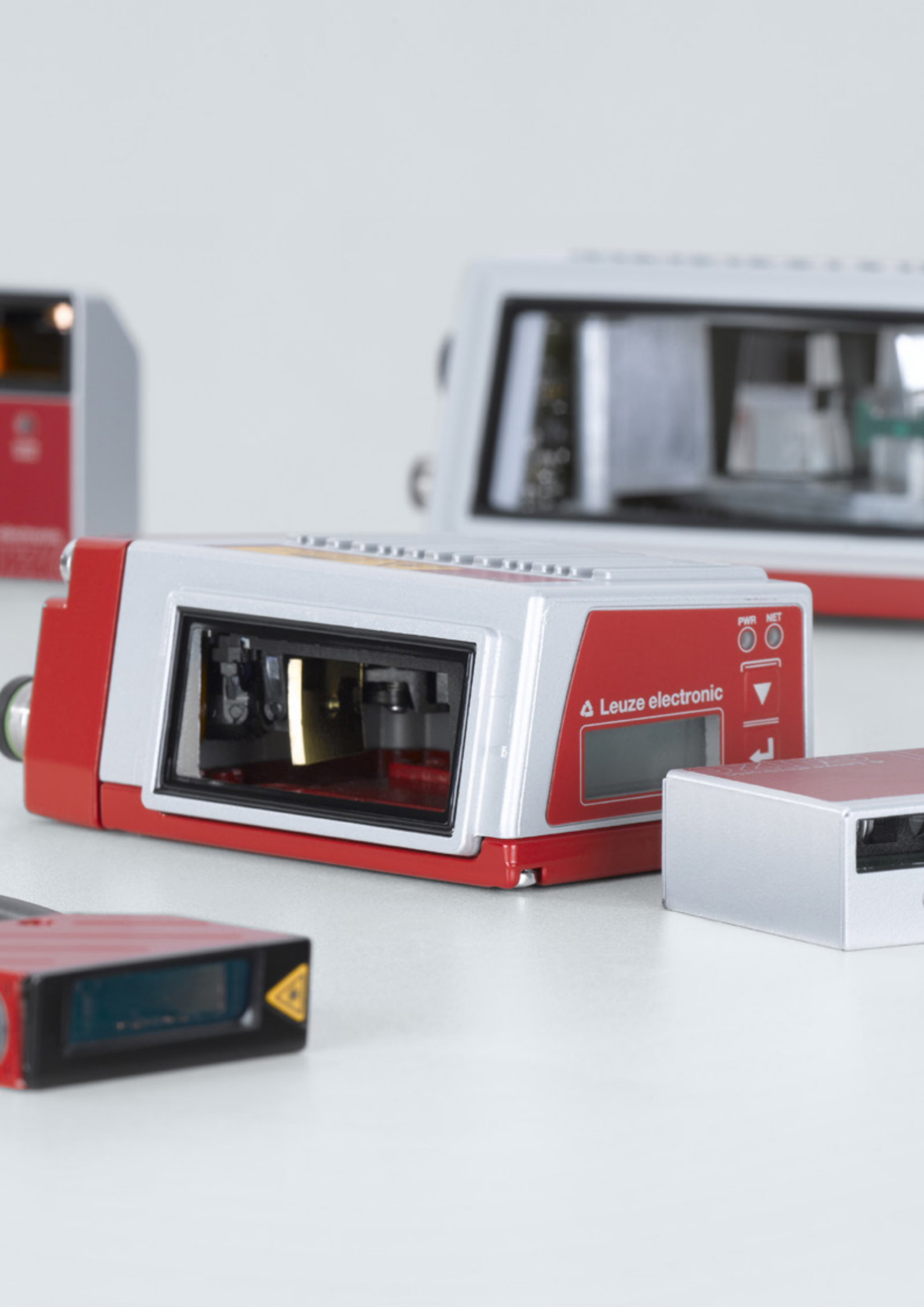
Multi-purpose

Directly marked codes (DPM)



**Min./max. reading distances**  
(depending on modulus width and optics model)

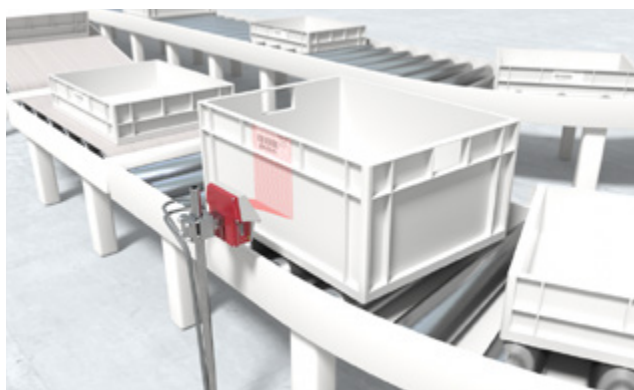
	100	200	300	400	500	600	700	800	900	1,000	1,500	2,000	2,500	3,000	5,000	10,000	15,000	20,000	Product	Page
0–80 mm	—																		RFI 32	46
0–45 mm	—																		RFM 12	47
0–110 mm	—	—																	RFM 32	47
0–400 mm	—	—	—	—															RFM 62	47
0–170 mm	—	—																	IT 1920i	42
0–147 mm	—	—																	HS 66x8	43
100–4,460 mm	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				IT 128xi	35
10–16,000 mm	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	IT 19xxi	41
37–370 mm	—	—	—																IT 145xg	34
10–460 mm	—	—	—	—															IT 1300g	34
25–596 mm	—	—	—	—	—														IT 19xxi-1D	35
0–596 mm	—	—	—	—	—														IT 19xxg	40
0–170 mm	—	—																	IT 1920i	42
0–147 mm	—	—																	HS 66x8	43
10–16,000 mm	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	IT 19xxi	41
0–596 mm	—	—	—	—	—														IT 19xxg	40
0–170 mm	—	—																	IT 1920i	42
0–147 mm	—	—																	HS 66x8	43
10–16,000 mm	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	IT 19xxi	41
0–596 mm	—	—	—	—	—														IT 19xxg	40
0–147 mm	—	—																	HS 66x8	43



# 1D-CODE READER APPLICATIONS

## Code reading on objects of various height

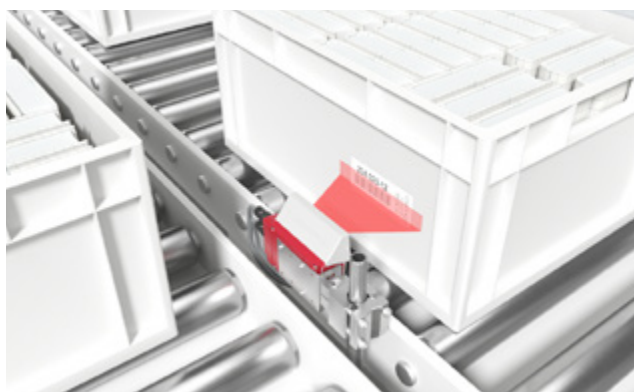
**Requirement:** If objects of various height are transported on a conveyor line, it must be guaranteed that the 1D-codes are read independent of their position.



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

## Code reading in compined spaces

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



**Solution:** Through models with built-in deflecting mirror, the BCL 300i 1D-code readers enable a lateral beam exit. Thanks to the integrated code reconstruction technology, they can even read damaged codes reliably.

## Code reading on pallets

**Requirement:** If codes with low modul 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.

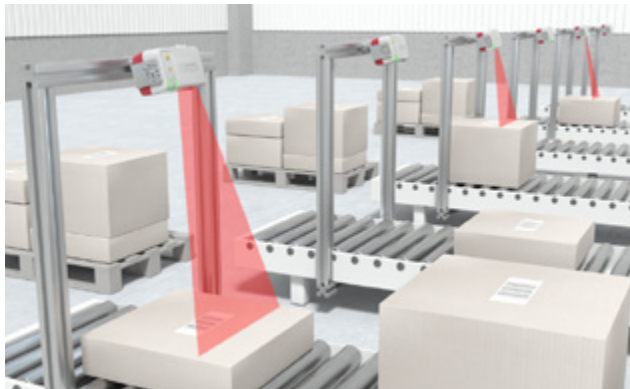


**Solution:** The BCL 600i 1D-code readers achieve a 50% greater depth of field with their blue laser diode than devices with red laser light. The high reading field depth reduces the sensitivity in the event of variation in distance and eliminates the need for manual focus adjustment.

# APPLICATIONS

## Code reading from long distances

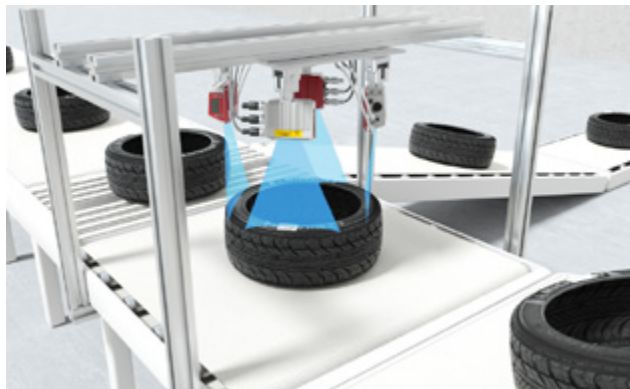
**Requirement:** If objects of various height are transported on a conveyor line at high speed, it must be guaranteed that the 1D-codes are read independent of their distance to the reader.



**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

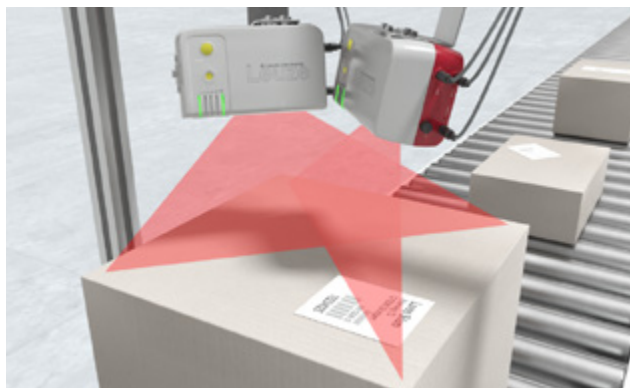
**Requirement:** Codes must be read independent of their orientation and position.



**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 orientation, 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 fast moving objects of various height.

## 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 modul 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 compined spaces

**Requirement:** Codes must be read in compined 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 compined spaces.

## BCL 8

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

### Areas of application

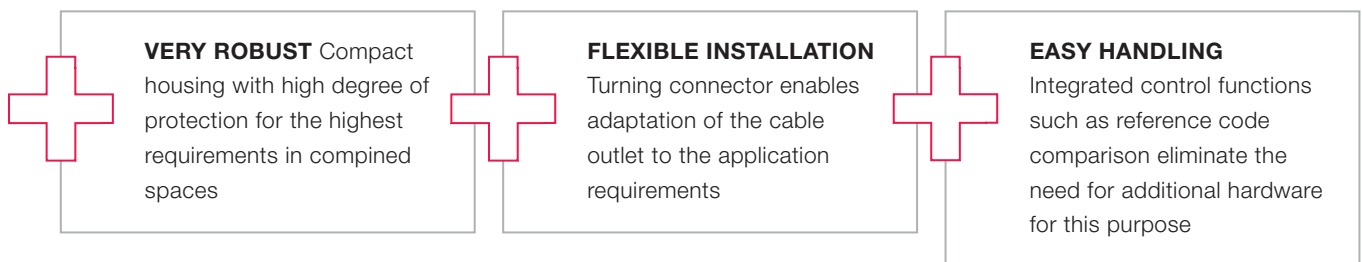
- Code reading in harsh industrial environments
- Code reading on objects with medium to high movement speed



### Operating principle

- Laser single line, deflecting mirror

### Advantages for you



### 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
- Modul 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 mm × 48 mm × 15 mm

## BCL 20

1D-code reader with flexible installation options

### Areas of application

- Code reading on objects with high movement speed
- Reading of 1D-codes on cylindrical objects

### Operating principle

- Laser single line, raster scanner, deflecting mirror



### Advantages for you



#### FAST COMMISSIONING

Online commands such as AutoConfig enable optimum adjustment of the devices without any additional programming work



#### LARGE VARIETY

Numerous models and optics enable use in various applications

### Features

- Reliable reading of all common 1D-codes including Pharmacodes
- Flexible installation options through front or perpendicular beam exit
- Operating range: 50 – 450 mm (depending on device model)
- Modul size: 0.15 – 1 mm (depending on device model)
- Reading of high-resolution 1D-codes
- High scanning rate of up to 1,000 scans/s for fast movements
- Ambient temperature (operation): 0 – 40 °C
- Interfaces: RS 232, RS 485
- Degree of protection: IP 65
- Dimensions (W × H × L): 68 mm × 82 mm × 28 mm
- Models available with large depth of field and wide opening angle

## BCL 95

1D-code reader with high depth of field

### Areas of application

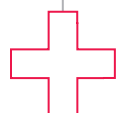

- Code reading across up to 7 rows of racks

### Operating principle

- Laser single line, deflecting mirror



### Advantages for you

 <p><b>SPACE-SAVING</b> Large reading field height even at short reading distance reduces installation depth</p>	 <p><b>FAST COMMISSIONING</b> Configuration via Sensor Studio software enables fast commissioning</p>
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### Features

- Reliable reading of all common 1D-codes including Pharmacodes
- Flexible installation options through front or perpendicular beam exit
- Reading range: 50 – 180 mm
- Modul 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 mm × 43.5 mm × 23.8 mm
  - Model with deflecting mirror: 62 mm × 56.9 mm × 23.8 mm
- High reading field height at short distances



## BCL 148

1D-code reader with adjustable focus

### Areas of application

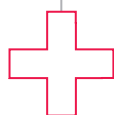
- Code reading across up to 15 rows of racks

### 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
- Modul 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 mm × 38 mm × 118.5 mm
- High reading field height at short distances
- Focus adjustment for sample codes and reagents
- Robust metal housing with cable connection

## BCL 300i

1D-code reader for medium to large operating ranges



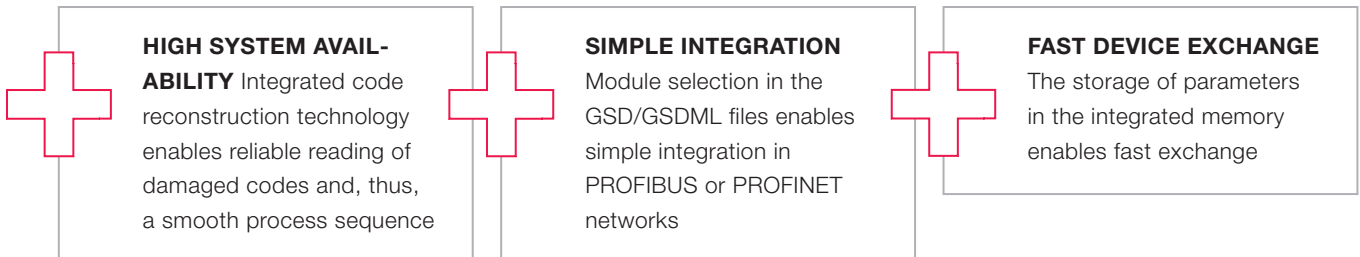
### Areas of application

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

### Operating principle

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

### Advantages for you



### Features

- Reliable reading of all common 1D-codes
- Flexible installation options through front or perpendicular beam exit
- Reading range: 50 – 680 mm\*
- Modul 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 mm × 44 mm × 68 mm (single line scanner),  
125 mm × 58 mm × 110 mm (oscillating mirror),  
103 mm × 44 mm × 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 reader 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 AVAIL-

**ABILITY** 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\*
- Modul 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 mm × 63 mm × 106.5 mm (single line scanner),  
173 mm × 84 mm × 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

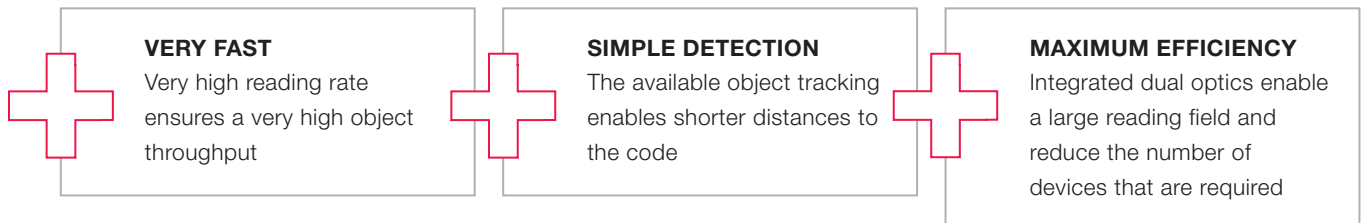
- Code reading on objects of various height
- Code reading on objects from a very far distance

### Operating principle

- Laser single line



### Advantages for you



### Features

- Reliable reading of all common 1D-codes
- Front beam exit
- Reading range: 450 – 1,700 mm\*
- Modul 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 or RS 422
- Degree of protection: IP 65
- Dimensions (W × H × L): 216 mm × 96 mm × 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

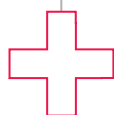
- Code reading independent of position and orientation

### 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 orientation
- 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 cramped 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

	<p><b>SMALL SIZE</b> Large reading range in compact housing</p>		<p><b>FAST COMMISSIONING</b> Configuration via Sensor Studio software enables fast commissioning</p>
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### Features

- Reliable reading of all common 1D-codes
- Front beam exit
- Reading range: 40 – 250 mm
- Modul 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 mm × 14 mm × 33 mm
  - CR 55: 31 mm × 18.3 mm × 45.5 mm

## CR 100

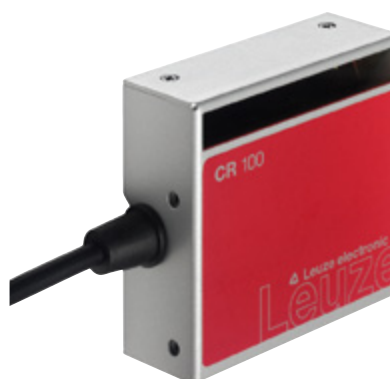
Compact 1D-code readers with extra large reading field at close range

### Areas of application

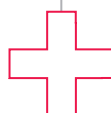

- Code reading in cramped spaces
- Reading of codes in ladder orientation

### Operating principle

- Single line scanner with CCD image sensor, deflecting mirror

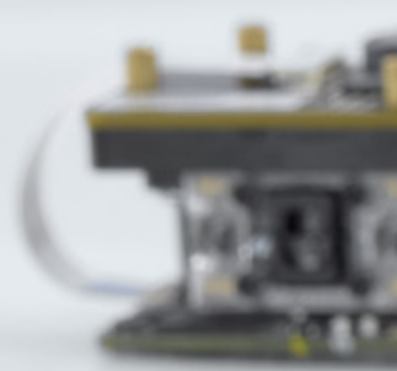


### Advantages for you

 <p><b>SPACE-SAVING</b> Large reading field height even at short reading distance reduces installation depth</p>	 <p><b>FAST COMMISSIONING</b> Configuration via browser-based webConfig enables fast commissioning</p>
--	---

### Features

- Reliable reading of all common 1D-codes including Pharmacodes
- Flexible installation options through front or perpendicular beam exit
- Reading range: 15 – 72 mm
- Modul 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 mm × 20 mm × 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

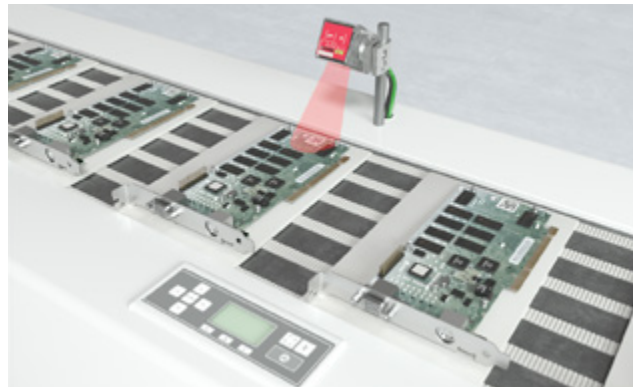




# 1D-/2D-CODE READER APPLICATIONS

## 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.

# APPLICATIONS

## Code reading in presentation mode

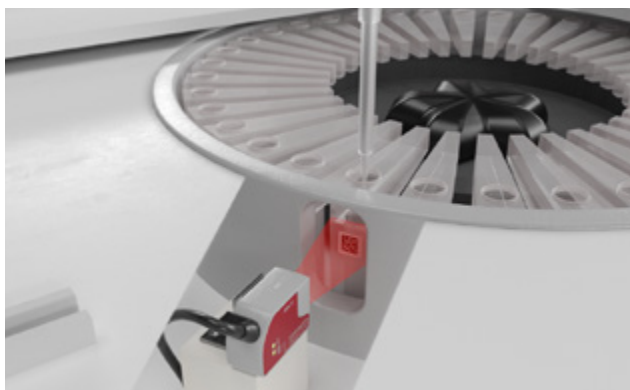
**Requirement:** 1D-/2D-codes must be read on samples by an automatic analyzer. Devices with modular construction are necessary for use in small automatic analyzers.



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

## Code reading on reagents

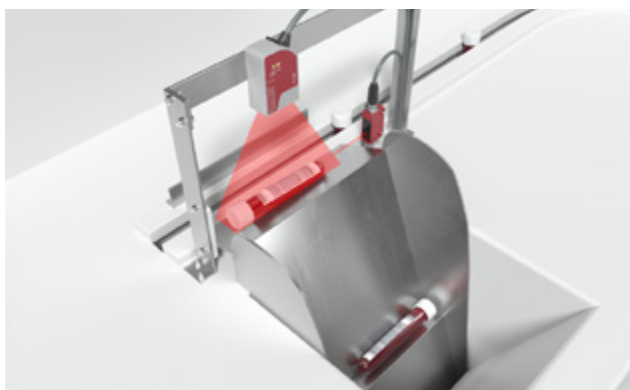
**Requirement:** 1D-/2D-codes must be read on samples or reagents by an automatic analyzer. Devices with modular construction are necessary for use in small automatic analyzers.



**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

Camera-based built-in module for reading 1D- and 2D-codes



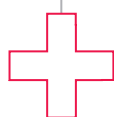
### Areas of application

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



#### FAST COMMISSIONING

Configuration via Sensor Studio software enables fast commissioning

### Features

- Reliable reading of all common 1D- and 2D-codes independent of position and orientation
- Reading range: 30 – 425 mm
- Modul size: 0.127 – 0.528 mm
- Ambient temperature (operation): 0 – 50 °C
- Interface: RS 232
- Dimensions (W × H × L): 31.6 mm × 12.7 mm × 27.5 mm
- 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

Especially small 1D- and 2D-code readers

### Areas of application

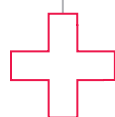
- Code reading on stationary or slowly moving objects

### Operating principle

- CMOS image sensor and Rolling Shutter technology



### Advantages for you



**VERY ROBUST** Compact metal housing with lens cover for the highest requirements in cramped 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 orientation
- Reading range: 30 – 425 mm
- Modul size: 0.127 – 0.528 mm
- Ambient temperature (operation): 0 – 50 °C
- Interfaces: USB, RS 232
- Degree of protection: IP 54
- Dimensions (W × H × L): 31.5 mm × 20 mm × 40.3 mm
- 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

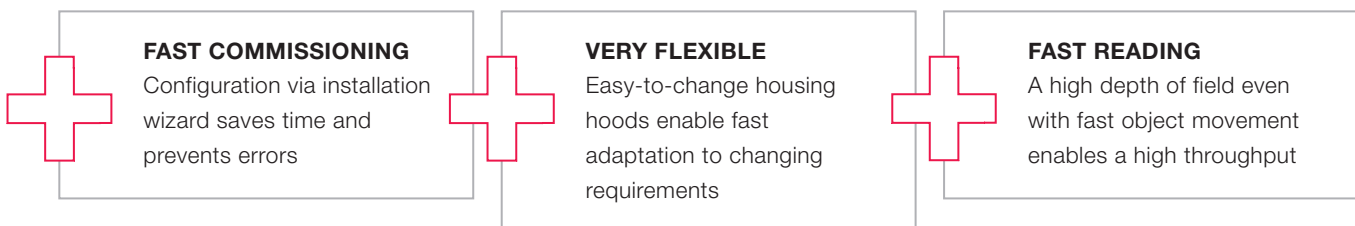
- Code reading on objects with high movement speed

### Operating principle

- Camera-based CMOS image sensor and Global Shutter technology



### Advantages for you



### Features

- Reliable reading of all common 1D- and 2D-codes including Pharmacodes independent of their position and orientation
- 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
- Modul 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 mm × 61 mm × 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



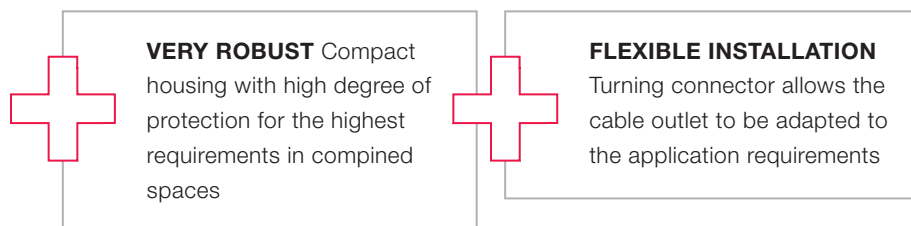
### Areas of application

- 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 cramped 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 orientation
- Flexible installation options through M12 turning connector
- Reading range: 50 – 330 mm
- Modul 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 mm × 32 mm × 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

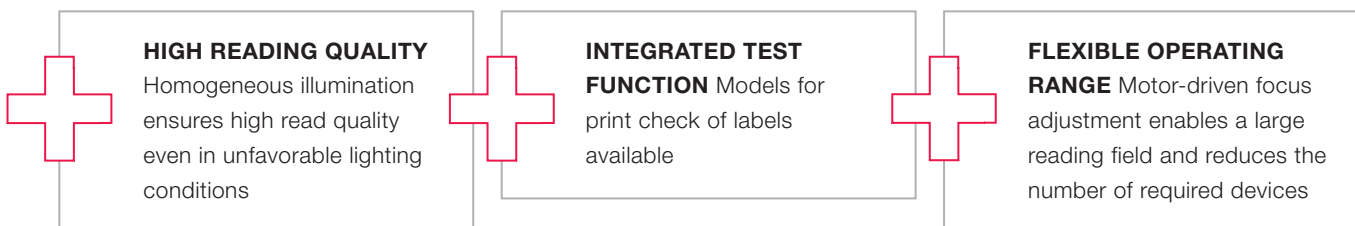
- Code reading of 1D- and 2D-codes
- Label inspection

### Operating principle

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



### Advantages for you



### Features

- Reliable reading of all common 1D- and 2D-codes (including directly marked) independent of their position and orientation
- Reading range: 50 – 10,000 mm
- Modul 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 mm × 55 mm × 113 mm
- Commissioning and operation via browser-based webConfig
- Reference code comparison possible





# 1D-HAND-HELD SCANNER APPLICATIONS

## Code reading during storage

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



**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.

## IT 145xg, 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

 <p><b>COMFORTABLE USE</b> Easy handling through especially lightweight and ergonomic housing design</p>	 <p><b>EASY TO CONNECT</b> Simple connection options to common fieldbuses and Industrial Ethernet</p>	 <p><b>FAST COMMISSIONING</b> Configuration via configuration codes or software enables fast commissioning</p>
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### 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 mm × 150 mm × 112 mm
  - IT 145xg: 82 mm × 173 mm × 62 mm
- Drop height of up to 1.5 m onto concrete floor
- Degree of protection: IP 42

## IT 191xi-1D, IT 128xi

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

### Areas of application

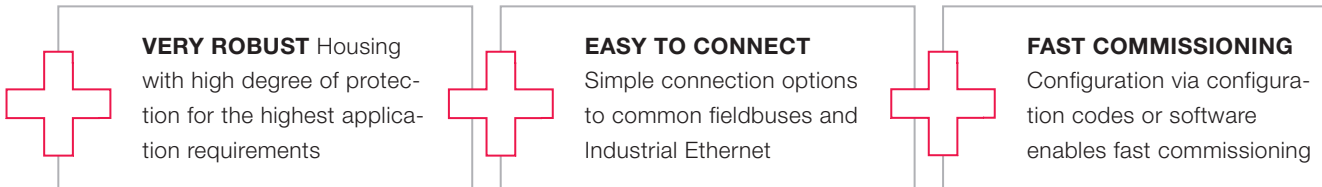
- Use in rough or contamination-susceptible environments

### Operating principle

- Single Line Laser, Area Imager



### Advantages for you



### Features

- Reliable reading of all common 1D-Codes independent of their position and orientation
- Reading range: 25 – 4,460 mm
- Ambient temperatures (operation):
  - Wireless: –20 – 50 °C
  - Cable-connected: –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 mm × 195 mm × 133 mm
- Drop height of up to 2 m onto concrete floor
- Degree of protection: IP 65



# 1D-/2D-HAND-HELD SCANNER APPLICATIONS

## Code reading during order picking

**Requirement:** During the 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 orientation. 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 orientation. 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.

# APPLICATIONS

## 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 the especially demanding application environment 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.

## 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 19xxg

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

 <p><b>COMFORTABLE USE</b> Easy handling through especially lightweight and ergonomic housing design</p>	 <p><b>EASY TO CONNECT</b> Connection options to common fieldbuses and Industrial Ethernet</p>	 <p><b>FAST COMMISSIONING</b> Configuration via configuration codes or software enables fast commissioning</p>
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### Features

- Reliable reading of all common 1D- and 2D-codes independent of their position and orientation
- Reading range: 0 – 596 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 mm × 160 mm × 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 19xxi

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



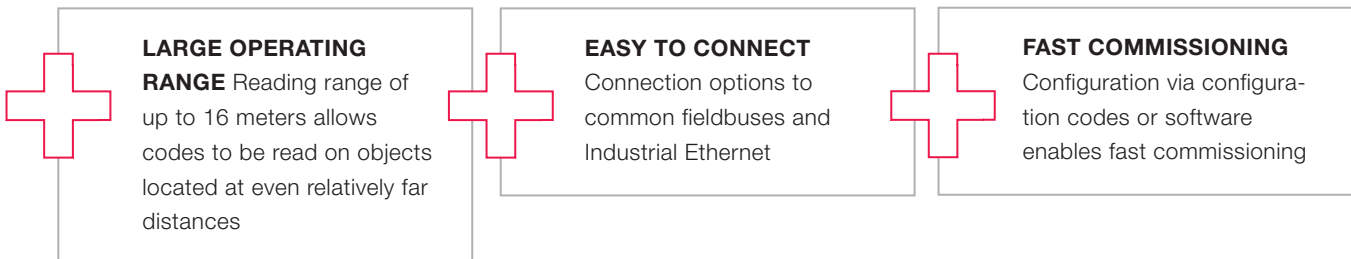
### Areas of application

- Code reading in rough or contamination-susceptible industrial environments

### Operating principle

- Area Imager

### Advantages for you



### Features

- Reliable reading of all common 1D- and 2D-codes independent of their position and orientation
- Reading range: 10 – 16,000 mm
- Ambient temperatures (operation):
  - Wireless: –20 – 50 °C
  - Cable-connected: –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 mm × 195 mm × 133 mm
- Drop height of up to 2 m onto concrete floor
- Degree of protection: IP 65

## IT 1920i

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

### Areas of application

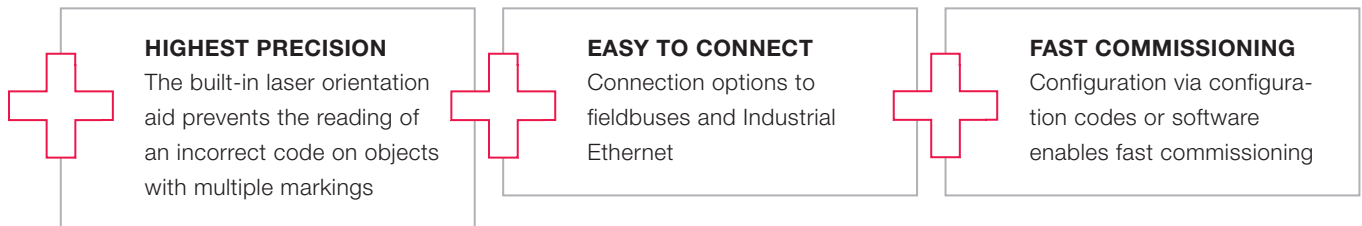
- Reading of directly marked 1D- and 2D-codes in harsh or contamination-prone industrial environments

### Operating principle

- Area Imager



### Advantages for you



### Features

- Reliable reading of all common directly marked 1D- and 2D-codes independent of their position and orientation
- 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 mm × 193 mm × 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

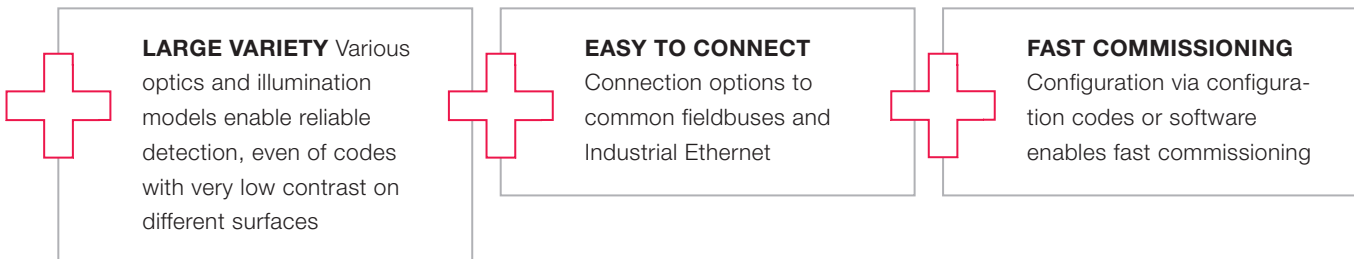
- Reading of directly marked 1D- and 2D-codes in harsh or contamination-prone industrial environments

### Operating principle

- Area Imager



### Advantages for you



### Features

- Reliable reading of all common directly marked 1D- and 2D-codes independent of position and orientation
- Reading range: 0 – 147 mm
- Ambient temperatures (operation):
  - Wireless: –20 – 50 °C
  - Cable-connected: –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 mm × 185 mm × 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

## APPLICATIONS

### RFID container identification

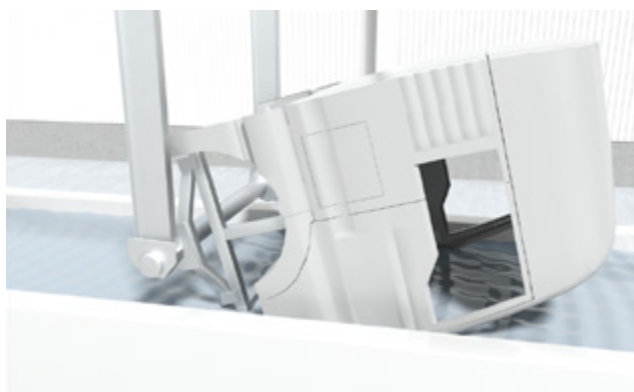
**Requirement:** In the food industry, the containers and, thus, the data carriers are exposed to various cleaning processes and chemicals. To be able to read and, if necessary, store product-related data at every processing point, the data carriers must be especially robust.



**Solution:** Thanks to their high degree of protection of up to IP68/69K, 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

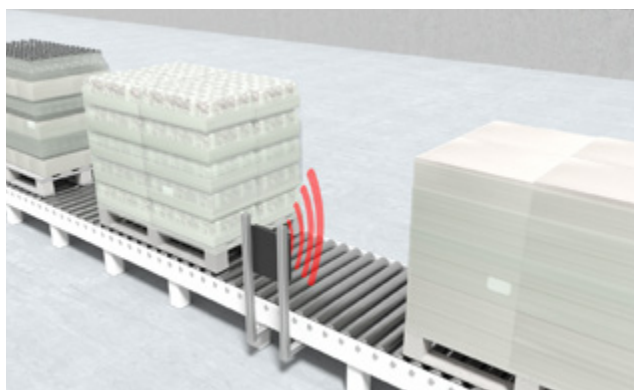
**Requirement:** In the automotive industry, data carriers must, to some extent, withstand high temperatures during processes for the surface treatment of body parts. Furthermore, paint particles can prevent visual contact with the data carrier.



**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.

## 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

 <p><b>VERY ROBUST</b> Cast, robust housing enables use under harsh ambient conditions</p>	 <p><b>FAST COMMISSIONING</b> Easy and fast configuration via the intuitive RF configuration tool</p>
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### Features

- Evaluation unit with integrated antenna reduces installation effort and is suitable for compact installation situations
- Reading range: 0–8 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 Ethernet, PROFINET, DeviceNET, Ethernet IP and EtherCAT
- Dimensions (W × H × L): 76 mm × 30 mm × 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 to and written from in passing
- Status display directly on the device
- Insensitive to environmental materials such as water, textiles, plastic or wood

## RFM 12, 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 configura-  
tion tool

### Features

- Evaluation unit with integrated antenna reduces installation effort and is suitable for cramped installation situations
- Global use through ISO 15693 conformity
- Staggered reading ranges:
  - RFM 12: 0 – 45 mm
  - RFM 32: 0 – 110 mm
  - RFM 62: 0 – 400 mm
- High reading speed of up to 2 m/s (RFM 12) or up to 6 m/s (RFM 32, RFM 62)
- Ambient temperature (operation): –25 – 65 °C
- Interfaces: RS 232, via MA 200i also Ethernet, PROFINET, DeviceNET, Ethernet IP and EtherCAT
- Dimensions (W × H × L):
  - RFM 12: M30 × 98 mm
  - RFM 32: 76 mm × 30 mm × 102 mm
  - RFM 62: 298 mm × 34 mm × 298 mm
- Degrees of protection:
  - RFM 12, 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



### Features

- Unchangeable 8-byte Unique ID, read-only
- Degree of protection: up to IP 67
- Ambient temperature (operation):  $-20 - 85\text{ }^{\circ}\text{C}^*$
- Ambient temperature (storage):  $-40 - 200\text{ }^{\circ}\text{C}^*$
- 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



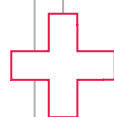
#### HEAT-RESISTANT

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



#### EVERYTHING FROM A SINGLE SOURCE

Suitable transponders for the RFM 12/32/62 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):  $-25 - 100\text{ }^{\circ}\text{C}^*$
- Ambient temperature (storage):  $-40 - 250\text{ }^{\circ}\text{C}^*$
- 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 20**

**BCL 95**

**BCL 148**

	<b>BCL 8</b>	<b>BCL 20</b>	<b>BCL 95</b>	<b>BCL 148</b>
<b>Code technology</b>	1D	1D	1D	1D
<b>Operating principle</b>	Laser single line	Laser single line Raster scanner	Laser single line	Laser single line with focus adjustment
<b>Beam exit</b>	Front or perpendicular with deflecting mirror	Front or perpendicular with deflecting mirror	Front or perpendicular with deflecting mirror	Perpendicular with deflecting mirror
<b>Light source</b>	Laser, red	Laser, red	Laser, red	Laser, red
<b>Reading distances</b> (depending on modulus width and optics model)	40 – 160 mm	50 – 450 mm	50 – 180 mm	30 – 310 mm
<b>Modul size min. – max.</b> (depending on modulus width and optics model)	0.15 – 0.5 mm	0.15 – 1 mm	6.5 – 20 mil / 0.165 – 0.5 mm	0.127 – 0.5 mm
<b>Scanning rate, typical</b>	600 scans/s	800 scans/s	600 scans/s	750 scans/s
<b>Ambient temperature</b> (operation without heating)	0 – 40 °C	0 – 40 °C	5 – 40 °C	5 – 40 °C
<b>Ambient temperature</b> (operation with heating)	0 – 40 °C	0 – 40 °C	5 – 40 °C	5 – 40 °C
<b>Interfaces</b>	RS 232	RS 232 / RS 485	RS 232	RS 232 / RS 485
<b>Connection type</b>	M12 connector, 5-pin, A-coded Cable 2,000 mm, 5-wire	800 mm cable with socket connectors (10+6) Cable with Sub-D connector, 15-pin	M12 connector with 150 mm pigtail, 8-pin Cable 2,000 mm, 6-wire	900 mm cable with 15-pin Sub-D connector
<b>Degree of protection</b>	IP 67	IP 65	IP 54	IP 65
<b>Housing dimensions</b> (W × H × L)	40.3 mm × 48 mm × 15 mm	68 mm × 82 mm × 28 mm	Single line scanner: 62 mm × 43.5 mm × 23.8 mm Deflecting mirror: 62 mm × 56.9 mm × 23.8 mm	71 mm × 38 mm × 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 300i**

**BCL 500i**

**BCL 600i**

**BCL 900i**

1D	1D	1D	1D
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
Front or perpendicular with deflecting mirror	Front	Front	Front
Laser, red	Laser, red	Laser, blue	Laser, red
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
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
0–40 °C	0–40 °C	5–40 °C	5–50 °C
–35–40 °C	–35–40 °C	–35–40 °C	
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 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
Single line scanner: 95 mm × 44 mm × 68 mm Oscillating mirror: 125 mm × 58 mm × 110 mm Deflecting mirror: 103 mm × 44 mm × 96 mm	Single line scanner: 123.5 mm × 63 mm × 106.5 mm Oscillating mirror: 173 mm × 84 mm × 147 mm	Single line scanner: 123.5 mm × 63 mm × 106.5 mm Oscillating mirror: 173 mm × 84 mm × 147 mm	216 mm × 96 mm × 127 mm

# TECHNICAL DATA

## 1D-code readers


**CR 50**

**CR 55**

**CR 100**

## 1D-/2D-code readers


**DCR 50**

	<b>CR 50</b>	<b>CR 55</b>	<b>CR 100</b>	<b>DCR 50</b>
<b>Code technology</b>	1D	1D	1D	1D / 2D
<b>Operating principle</b>	Single line with CCD image sensor	Single line with CCD image sensor	Single line with CCD image sensor	Camera-based CMOS image sensor and Rolling Shutter technology
<b>Beam exit</b>	Front	Front	Front or perpendicular with deflecting mirror	–
<b>Light source</b>	LED, red	LED, red	LED, red	Illumination: Red LED Aimer: Blue LED
<b>Reading distances</b> (depending on modulus width and optics model)	50 – 230 mm	50 – 230 mm	20 – 72 mm	30 – 425 mm
<b>Modul size min. – max.</b> (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	0.127 – 0.528 mm
<b>Scanning rate, typical</b>	330 scans/s	330 scans/s	700 scans/s	–
<b>Ambient temperature</b> (operation without heating)	0 – 50 °C	0 – 50 °C	0 – 45 °C	0 – 50 °C
<b>Ambient temperature</b> (operation with heating)	–	–	–	–
<b>Interfaces</b>	USB 2.0, RS 232	USB 2.0, RS 232	RS 232	RS 232
<b>Connection type</b>	Molex connector, 6-pin, male	Cable 2,000 mm, 6-wire	Cable 2,000 mm, 6-wire	Molex connector, 6-pin, male
<b>Degree of protection</b>	–	IP 54	IP 40	–
<b>Housing dimensions</b> (W × H × L)	22.5 mm × 14 mm × 33 mm	31 mm × 18.3 mm × 45.5 mm	31 mm × 18.3 mm × 45.5 mm	31.6 mm × 12.7 mm × 27.5 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



**DCR 55**



**DCR 200i**



**LSIS 220**



**LSIS 422i  
LSIS 462i**

DCR 55	DCR 200i	LSIS 220	LSIS 422i LSIS 462i
1D / 2D	1D / 2D	1D / 2D	1D / 2D
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	LED, red, IR	Illumination: Red LED Aimer: Green LED	LED, RGB, white, IR
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	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	5 – 40 °C	0 – 45 °C
–30 – 50 °C	–30 – 50 °C	–30 – 50 °C	–30 – 50 °C
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
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
31.5 mm × 61 mm × 40.3 mm	43 mm × 61 mm × 44 mm	40 mm × 32 mm × 47 mm	75 mm × 55 mm × 113 mm

# TECHNICAL DATA

## 1D-hand-held scanner



	IT 145xg	IT 1300g	IT 191xi-1D	IT 128xi
<b>Code technology</b>	1D	1D	1D	1D
<b>Operating principle</b>	Area Imager	Linear Imager	Area Imager	Single scan line
<b>Min./max. reading distances</b> (depending on modulus width)	37 – 370 mm	10 – 460 mm	25 – 596 mm	100 – 4,460 mm
<b>Min. modul size</b>	0.127 – 0.508 mm	0.127 – 01.400 mm	0.191 – 2.540 mm	0.191 – 2.540 mm
<b>Ambient temperature</b>	0 – 40 °C, 0 – 50 °C	0 – 50 °C	–30 – 50 °C, –20 – 50 °C	–30 – 50 °C
<b>Interfaces</b>	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	PS/2, RS 232 USB Fieldbuses and Industrial Ethernet via MA 200i
<b>Connection type</b>	RJ41, Bluetooth	RJ41	RJ41, Bluetooth	RJ41
<b>Degree of protection</b>	IP 40, IP 42	IP 41	IP 65	IP 65
<b>Dimensions</b> (W × H × L)	62 × 169 × 82 mm	79 × 150 × 112 mm	75 × 133 × 195 mm	75 × 133 × 195 mm

**1D-/2D-hand-held scanner**



**IT 19xxg**

**IT 19xxi**

**IT 1920i**

**HS 66x8**

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
10 – 584 mm 0 – 233 mm 25 – 596 mm	10 – 16.000 mm 25 – 596 mm	0 – 170 mm	0 – 147 mm
0.127 – 0.508 mm	0.191 – 2.540 mm	0.076 – 0.508 mm	0.076 – 0.508 mm
0 – 50 °C	–30 – 50 °C, –20 – 50 °C	–30 – 50 °C	–30 – 50 °C, –20 – 50 °C
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	RJ41, Bluetooth
IP 41	IP 65	IP 65	IP 65, IP 67
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 12**

**RFM 32  
RFM 32 Ex**

Function	Read	Read and write	Read and write
<b>Frequency range</b>	125 kHz (LF)	13.56 MHz (HF)	13.56 MHz (HF)
<b>Max. reading/writing range</b> (depending on the transponder)	TFI 03: up to 60 mm TFI 05: up to 80 mm	TFM 02: up to 25 mm TFM 03: up to 35 mm TFM 05/08: up to 45 mm	TFM 02: up to 50 mm TFM 03/05/08: up to 110 mm
<b>Ambient temperature</b> (operation)	-25 – 70 °C	-25 – 65 °C	-25 – 65 °C
<b>Interface*</b>	RS 232	RS 232	RS 232
<b>Connection type</b>	1,000 mm cable with socket connectors (10+6)	1,000 mm cable with socket connectors (10+6)	1,000 mm cable with socket connectors (10+6) RFM 32 Ex: 10 m cable
<b>Degree of protection</b>	IP 65	IP 67	IP 67
<b>Dimensions</b> (W × H × L)	76 × 30 × 102 mm	M30 × 98 mm	76 × 30 × 102 mm

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

## RFID transponders

	<b>TFI 03 11 TFI 05 11</b>	<b>TFI 03 16 TFI 05 16</b>	<b>TFM 03 11 TFM 05 11 TFM 08 11</b>	<b>TFM 03 15 TFM 05 15</b>	<b>TFM 06 11</b>
<b>Frequency range</b>	125 kHz (LF)	125 kHz (LF)	13.56 MHz (HF)	13.56 MHz (HF)	13.56 MHz (HF)
<b>Design</b>	Disc transponder	Disc transponder	Disc transponder	Disc transponder	Disc transponder
<b>Chip type</b>	EM4102	EM4102	I-CodeSLI	I-CodeSLI	I-CodeSLI
<b>Memory</b>	8-byte fixcode	8-byte fixcode	112 byte	112 byte	112 byte
<b>Ambient temperature</b> (operation)	-20 – 70 °C	-20 – 85 °C	-20 – 70 °C	-25 – 85 °C	-25 – 70 °C
<b>Ambient temperature</b> (storage)	-40 – 90 °C	-20 – 200 °C	-25 – 120 °C	-40 – 140 °C	-25 – 110 °C





**RFM 62**

Read and write
13.56 MHz (HF)
TFM 02: up to 130 mm TFM 03: up to 350 mm TFM 05: up to 220 mm TFM 08: up to 400 mm
-25 – 65 °C
RS 232
1,000 mm cable with socket connectors (10+6)
IP 65
298 × 34 × 298 mm

<b>TFM 04 11</b>	<b>TFM 02 11</b>	<b>TFM 05 16</b>	<b>TFM 03 51</b>	<b>TFM 02 22</b> <b>TFM 05 22</b>	<b>TFM 08 21</b>
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
Infineon MyD	TagIT HFI	I-CodeSLI	TagIT HFI	I-CodeSLI	TagIT HFI
1024 byte	256 byte	112 byte	256 byte	112 byte	256 byte
-20 – 70 °C	-25 – 85 °C	-25 – 150 °C	-20 – 70 °C	-20 – 50 °C	-20 – 70 °C
-25 – 120 °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 reader



**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  
Suitable for DCR 200i

**RFID**



**Mounting device**

Suitable for RFM 12



**Mounting device**

For use in painting lines  
Suitable for TFM 05 16



**Spacer transponders**

Suitable for TFI, TFM

# SUITABLE PRODUCTS

## Hand-held scanners



**Wall mount**

Plastic, with fastening holes



**Table supports**

Plastic and metal,  
with flexible neck



**Base station**

For communication and charging  
Suitable for wireless scanners



**Interconnection cables**

For USB and RS 232



**Batteries**

Suitable for wireless scanners



**Battery charging stations**

Suitable for external charging  
of batteries

**Other**



**Connection and interconnection cables**

With M12 connection in 3-, 4- and 5-pin version



**User-configurable connectors and Y distribution boxes**

With M12 connection



**Power supplies**

For optimum sensor supply 1- and 3-phase



**Passive distribution box / with IO-Link**

For bundling of signals or bus connection



**Optical / acoustic signaling devices**

For status visualization, pre-mounted or modular



**Modular connection unit RS 232 to host interface**

For ODS with RS interface

SMART  
**SENSOR**  
BUSINESS

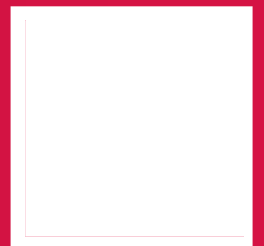
SMART IS  
TO THINK **EASY**,  
TO SHARE **EXPERIENCE**,  
TO BE **CLOSE**,  
TO CREATE THE **FUTURE**



*“More than 50 years of experience made Leuze electronic a real expert in innovative and efficient sensor solutions for industrial automation.*

*With our wide sales- and service-network, our knowledgeable consulting and our reliable customer service we are always close to you – worldwide.”*

Ulrich Balbach,  
Managing Director



## EASY

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

## EXPERI- ENCE

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

## PROXI- MITY

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

## FUTURE

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

## **Switching Sensors**

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

## **Measuring Sensors**

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

## **Products for Safety at Work**

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

## **Identification**

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

## **Data Transmission / Control Components**

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

## **Industrial Image Processing**

- Light Section Sensors
- Smart Camera