Leuze electronic

the sensor people

Catalog 2013

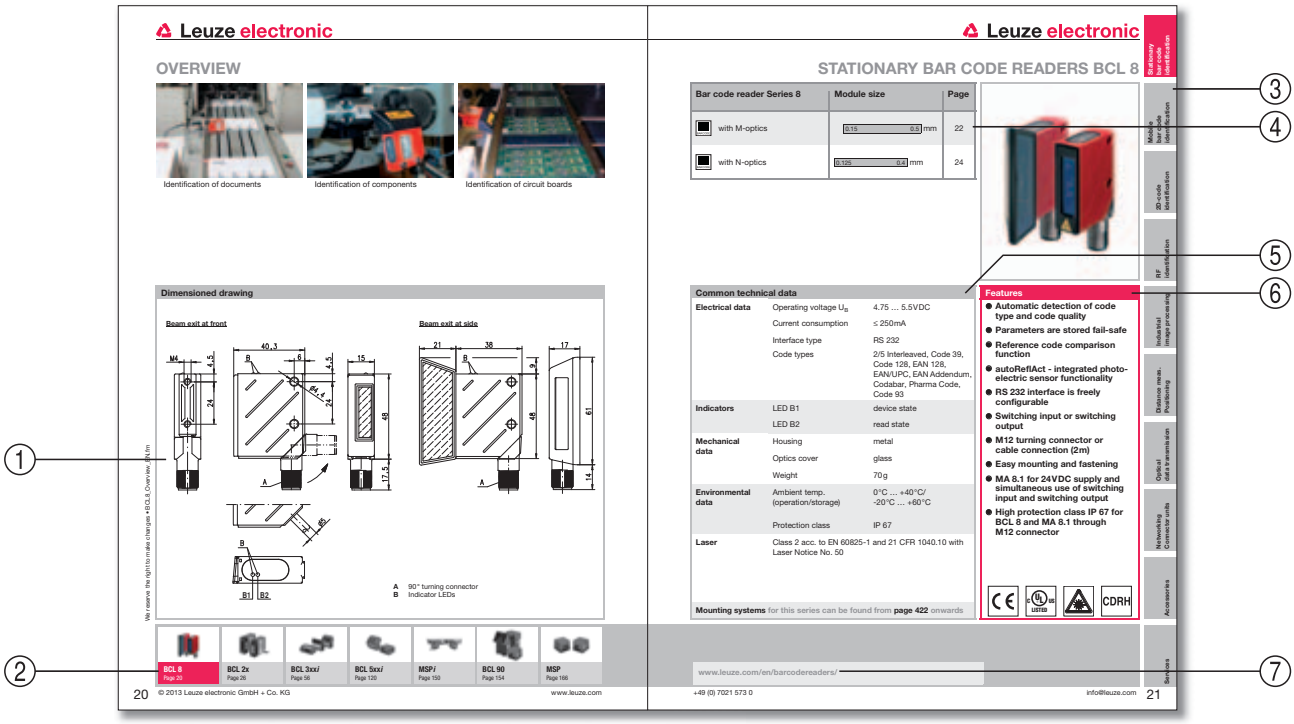


Identification Systems
Data Transmission Systems
Distance Measurement

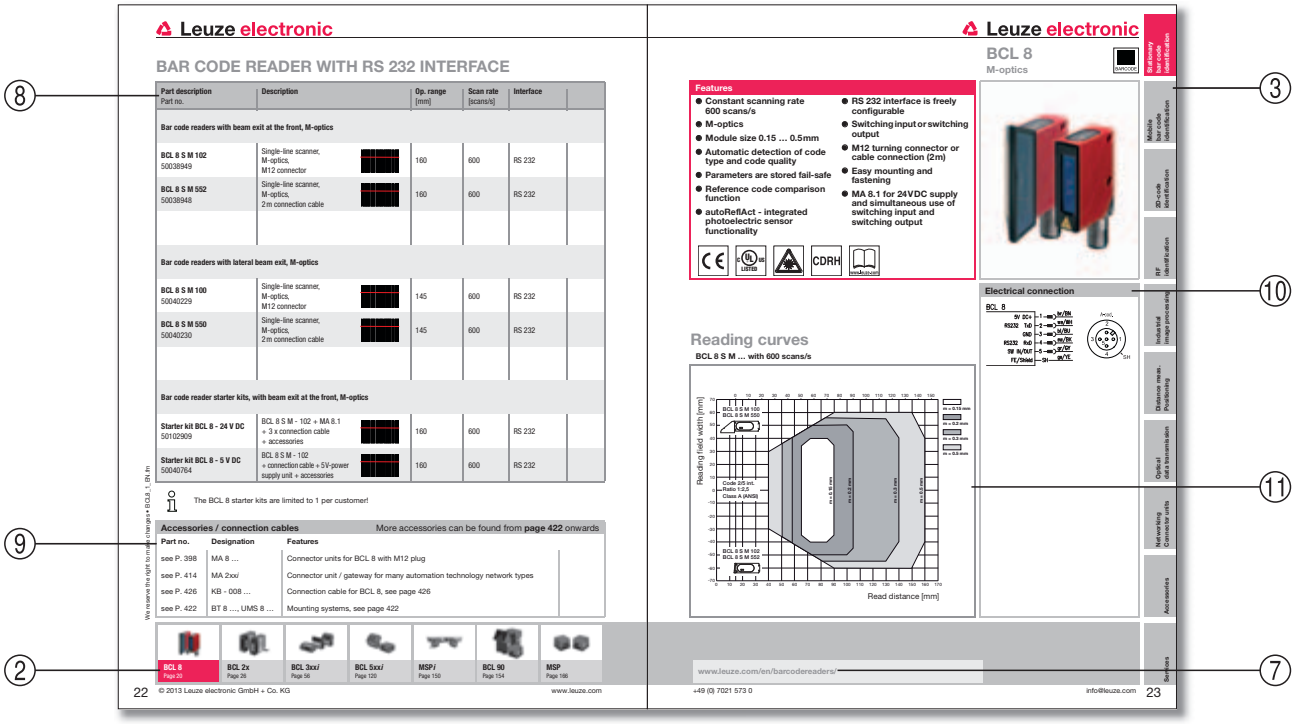
PRODUCT LINE

How to find the product you're looking for

The series/product group overview pages …



The product selection tables …



① Dimensioned drawing
② Current subchapter
③ Current chapter
④ Available product models
⑤ Technical data
⑥ Special features
⑦ Web link
⑧ Product selection table with specific data
⑨ Table with accessories
⑩ Electrical connection diagrams
⑪ Product-specific additional information

COMPANY PORTRAIT

At Leuze electronic, we are "the sensor people": for 50 years we have been the specialists for innovative and practical solutions in the area of optical sensors for factory automation. Our systems are used in the automobile industry, in conveyor and storage technology as well as in packing material and analysis technologies, not to mention in handling and assembly technology and electronics.

Our dedicated employees are characterized, above all, by their customer focus. There's one thing Leuze electronic customers can count on – on us.

The range of products extends from simple optical electronic sensors and inductive switches, identification and data transmission systems to complex image processing systems and optical electronic solutions for workplace safety.

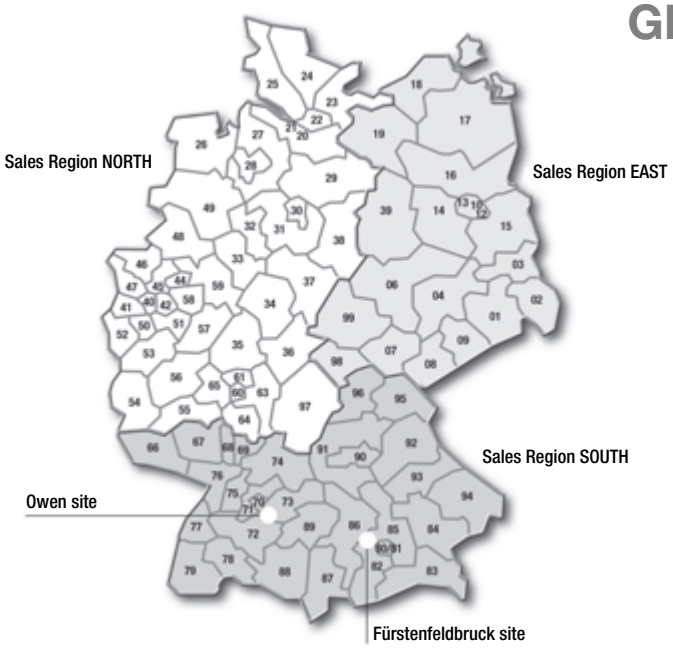
On the basis of extensive research and development work and the large application know-how possessed by our engineers, we are constantly further developing our systems.



All with the goal of being able to offer our customers increasingly efficient and higher performance solutions at an optimal price / performance ratio.

We are the right partner for both standard applications as well as for high-end solutions, and with an extensive sales and service network, we can always be reached quickly.

GERMAN SALES

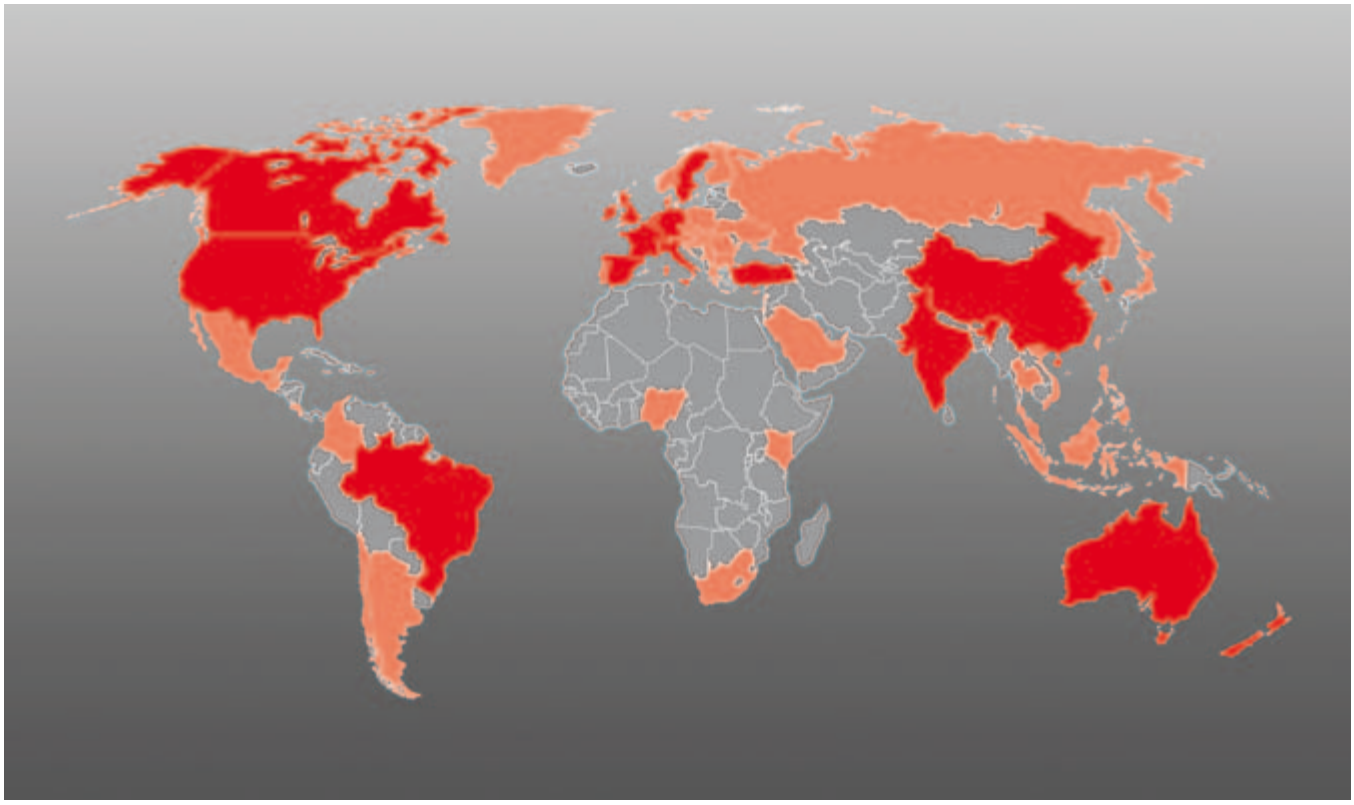


With a staff of qualified field representatives and our capable Customer Center, we are able to provide you with service around the clock. Our dedication to qualified service and focus on the customer have always been among our distinguishing characteristics.

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Through our constantly growing number of subsidiaries and sales partners around the world, we can guarantee you a uniform level of qualified advice, fast delivery times and reliable support during mounting and commissioning of your systems at nearly every location on earth.

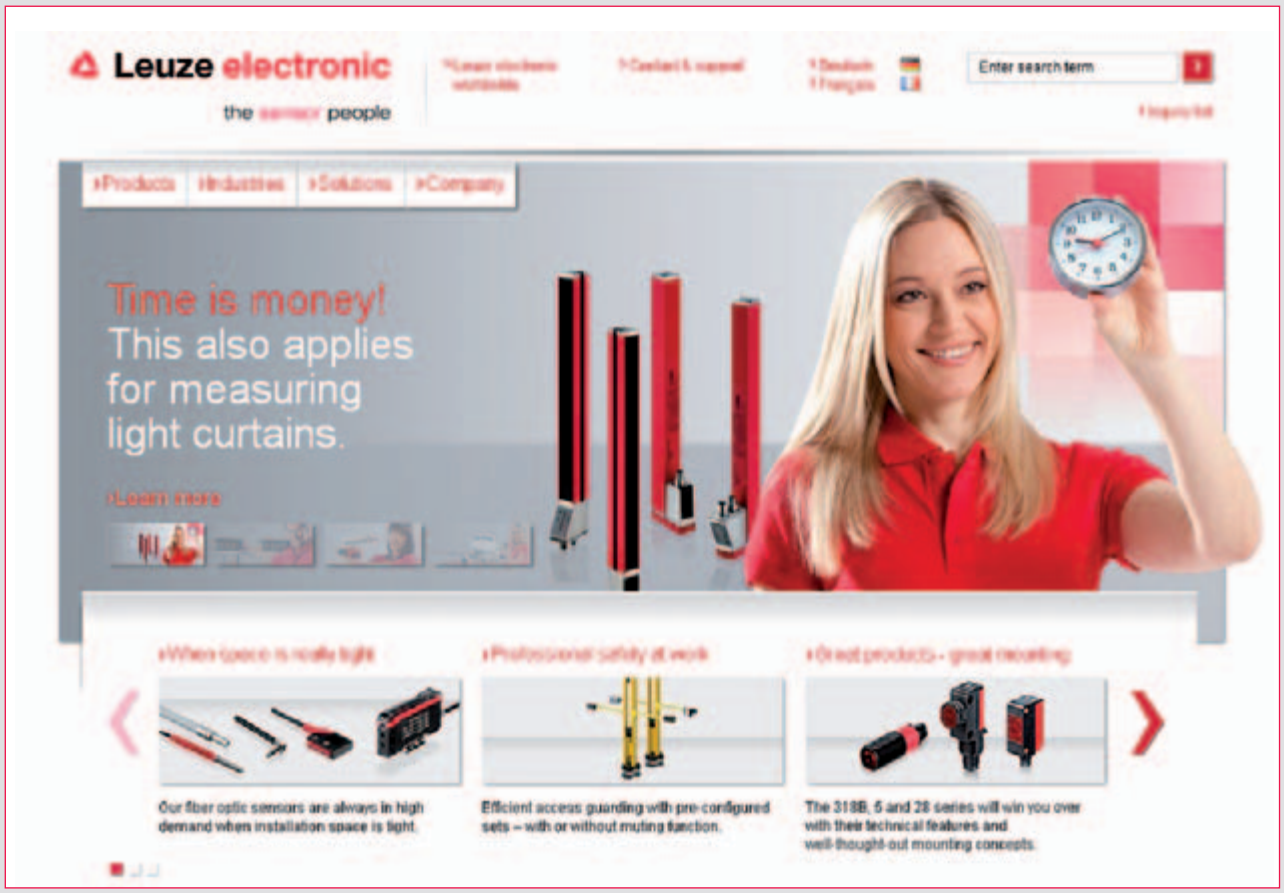
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Product information, solutions, service



Product selector
Product selection using technical features with part comparison list

Downloads
Download of technical documentation, 3D-CAD drawings and software

Combination products
Display of combination products such as transmitter and receiver

Industry solutions
Concrete suggestions for solving industry-specific tasks

www.leuze.com

Contact and support
Quick access to application advice and commissioning support

Technical features
Product detail pages with all technical features

Machine Safety Services
Extensive information on Machine Safety Services

Matching accessories
Display of similar products and matching accessories

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IDENTIFICATION TECHNOLOGIES

This overview presents several proven, industrially used identification technologies as well as their advantages and disadvantages:

Code technology	Advantages	Disadvantages
Linear (1D) bar codes 	● Size: < 50 characters ● Standardization of the codes ● Automatic identification with lowest error rate ● High productivity and throughput (piece number) ● Reliable reading systems economically available ● Simple further processing of the read results in automated systems ● With an additional line of plain-text on the label, bar code information can be made legible for people ● Economical labels and printers	● Environmental influences ● Low information density ● No data updating ● Identification only ● Optical technology, i.e. sensitive to environmental influences such as soiling, wetness or even extraneous light
Stacked Codes 	● Size: from a few hundred to up to 2000 characters ● Variable code lengths (as with bar codes, as opposed to 2D Codes) ● Various data sets (numerical, alphanumerical) ● Adjustable security levels	● Precise alignment for reading with laser scanners (as with 1D Codes) or ● Cameras frequently needed (as with 2D Codes) ● Reading only of contents, plain text rather uncommon ● Optical technology, i.e. sensitive to environmental influences such as soiling, wetness or even extraneous light
2D Codes 	● Size: currently greater than 3000 characters ● More information ● Higher information density ● Lower space requirements for labels ● Omnidirectional reading ● Increased reading reliability	● Optical technology, i.e. sensitive to environmental influences such as soiling, wetness or even extraneous light ● 2D code readers are usually more expensive than bar code readers ● Read only ● Complex reading systems are necessary for directly marked codes with very low contrast as well as for reading while in motion
RFID 	● Mechanically robust ● Decentral automation ● Data can be updated ("writing") ● Data can be imported ("read") and used to make decisions ● Largely insensitive to environmental influences (soiling, wetness, temperature) ● Data carrier can be hidden from view ● Tags available with various memory capacity	● Operating range dependent on antenna diameter ● Conveying speed Read: approx. 6 m/s Write: approx. 3 m/s ● Some incompatibilities between different manufacturers or countries (frequency dependent) ● Relatively high transponder costs in comparison to printed or directly marked codes

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BAR CODE TECHNOLOGY

Of the types presented in the overview, this coding technology is the most well known and most widely used identification technology. Based on the diverse and affordable print technologies, designations are created during the production of products ("inline") or are a part e.g. of printer output ("offline", such as the ISBN number affixed or printed during book printing).

This technology will remain an important part of automated identification systems in the foreseeable future.

Bar code types can also be divided into various groups which, to a certain extent, overlap one another:

- **2-width or 4-width codes**
- **Binary, numerical, alphanumerical codes**
- **Integrated security: none, with start/stop character, with check digit**
- **Use: national, international, industry-specific codes**
- **Manufacturing/printing processes**
- **And many others**

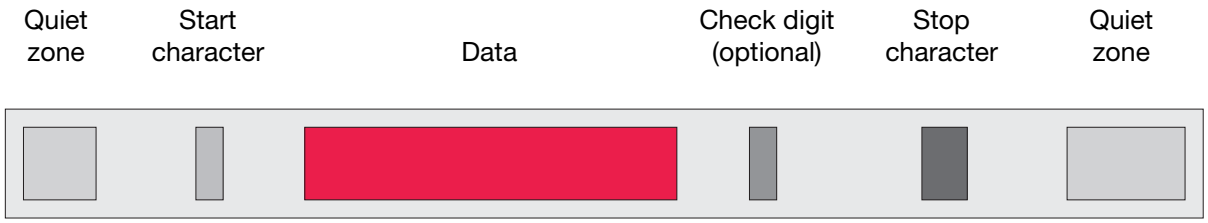
Codes which are frequently used today are listed in the following table to provide an overview of the used bar codes according to their type of use:

	Numerical symbols	Alphanumerical symbols	Binary symbols
TRADE	**EAN 8/13** + Add On UPC A/E **EAN 128 C** **GS1 DataBar** (not composite)	**EAN 128 A, B** **GS1 DataBar Expanded**	
INDUSTRY	**2/5 Interleaved** **Code 128 C**	Code 39 **Code 128 A, B** Codabar Monarch Code 93	OMR-Code
PHARMACEUTICS	**PZN** Code 39	Code 39	Pharma Code

If you have free range in the selection of the bar code type, we will be glad to provide you with advice.

STRUCTURE OF A ONE-DIMENSIONAL BAR CODE

A bar code is always structured as shown in the following diagram:



LABEL

The code is always surrounded by a **quiet zone** BEFORE and AFTER the vertical bars. The quiet zone refers to the light, unprinted area in which the bar code reader prepares for the incoming code. The beginning of the code is marked with a **start character**. This often indicates the **code type**. The content of the machine-readable information is stored in the **data**. Some codes optionally offer integrated error correction in the form of a **check digit**. The **stop character** of the given bar code type is located at the end. Based on the order of start and stop character, the bar code reader can also deduce the read direction of the code and, if necessary, perform a check.

With some code types, it is even possible to omit the start/stop characters (OMR code or Pharmacode) or even the check digit.



M = **Module**:
The most narrow bar or most narrow gap in a bar code.

Z_B = Wide bar or gap:
Wide bars or gaps are always a multiple of the module.
Module x Ratio = Z_B (the ratio of 1 : 2.5 is normal)

B_Z = Quiet zone:
The light area before the start character and after the stop character on a bar code. The quiet zone (min. 10 x module) is necessary for indicating the start of a bar code to the scanner.

L = Length of the bar code:
The length of the bar code including start/stop characters (in mm). Depending on the definition, the quiet zone may need to be added.

S_L = Length of a bar (in mm).

In most cases, the bar code type and, due to the printing method, the resulting bar code size are specified.

In addition to its geometric dimensions, the bar code is primarily characterized by the so-called module size.

This specifies the dimension of the narrowest element (bar or gap). Possible optics for the laser scanner are selected on basis of the module. Each scanner family offers a number of optics variants for different applications. In addition to the optical resolution, they differ from one another primarily with regards to the so-called reading field, i.e. the (planar) area in which the code can be reliably read.

Through additional optical functionality, this area can also be used spatially: rastered polygon mirror wheel or oscillating mirror (oscillating or specified value). Very high-quality bar code readers also offer a focus adjustment (manually by means of specified value or autofocus) for further spatially expanding the reading field.

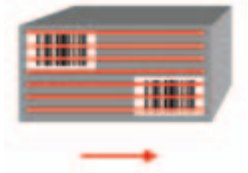
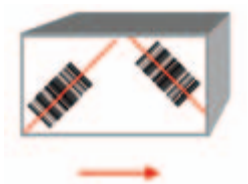
In addition to the laser bar code readers used in stationary applications, there are also so-called CCD bar code readers. This reading method is widely accepted particularly with mobile readers and is usually used in stationary units only when reading at a standstill.

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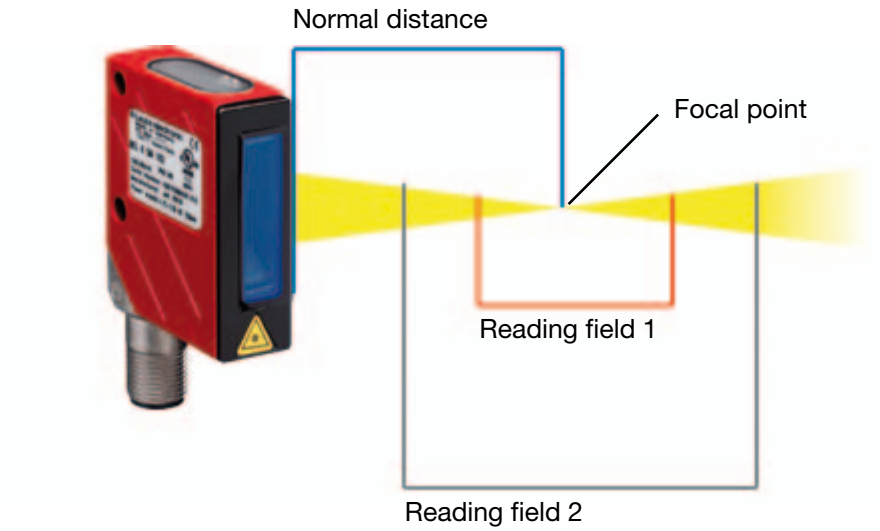
READING METHODS

The laser bar code reader generates its reading line by means of a beam of laser light which is deflected by a rotating polygon mirror wheel. If the white gaps and black bars of a code structure are detected in this line by the change in contrast, it is decoded by the decoder integrated in the bar code reader. Additional successful scans can be used to verify a code (Equal Scans = number of scans with the same code content, type and length). With a high reading rate from 800 … 1200 scans/s, these bar code readers thus offer high reading reliability even for fast events, such as are encountered in packaging machinery and similar systems.

Line scanner 	● The bars of the bar code are parallel to the direction of transport. ● Through the movement, the entire bar code is automatically transported through the scanning beam. Thus, even codes with localized errors are read. ● The max. transport speed is directly dependent on the bar code height (bar length) and the read rate of the laser scanner in scans/s. ● Normally, the laser beam and the direction of transport form a right angle. Movement parallel to the laser line is, however, possible as well provided certain prerequisites are fulfilled. The latter case is used with, among other applications, binary codes on packing material. ● This reading method is not suitable for reading with stationary laser scanners while at a standstill.
Raster 	● The bars of the bar code are vertical with respect to the direction of transport. ● With the raster configuration, it is possible to read the bar code at various positions. As a result, it is possible to minimize non-readings caused by printing errors or damage. ● This reading method is preferably used for reading while at a standstill with stationary bar code readers.
Oscillating mirror 	● As with the raster scanner, the bars must be oriented vertically with respect to the direction of transport. ● The oscillating mirror moves its scanning beam over the product; the spatial reading field is much larger than that of a raster scanner. ● Through the use of integrated measurement methods, it is possible to detect various labels at various positions. ● Oscillation frequency, start/stop position etc. are adjustable.
Line scanner with T-Code 	● With an oversquare T-bar code, it is not necessary to align the code. ● The entire bar code is automatically moved through the scanning beam. ● With the oversquare T-bar code, the bar code can be read omnidirectionally with only one bar code reader.
Omnidirectional 	● Single beam X, or V reading. ● With an oversquare bar code and 2 read heads in a V-configuration, alignment of the bar code is not necessary. ● If the bar code is not oversquare, more scanners are to be used depending on the possible positions of the unaligned code. ● The use of bar code scanners with code fragmentation technology is ideal in this case and can reduce the number of required bar code readers.

READING FIELD

The reading field of a bar code reader describes the area in which the defined and standardized codes can be reliably identified. Based on the given characteristics of the laser beam, each laser bar code reader has a point at which the diameter of the laser beam is a minimum. In this area (reading field 1), codes with small modules are reliably detected. In the next area away from the center, codes with relatively large modules can still be reliably identified (reading field 2).



Reading field 1:
For bar codes with a more narrow bar thickness

Reading field 2:
For bar codes with a correspondingly wider bar thickness

The following therefore applies:
The higher the resolution and the smaller the module size, the lower the depth of field.

AREA AND DEPTH OF FIELD

Area:

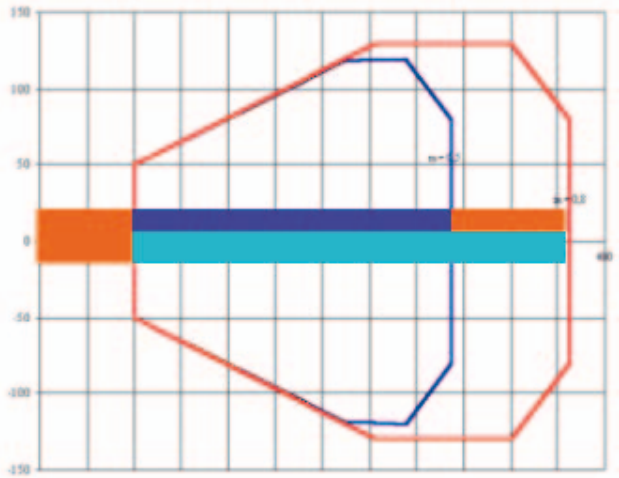
Maximum read distance

Depth of field

Reading field A

Depth of field

Reading field B



The reading field is characterized by the depth of field, i.e. the distance from the bar code reader (reading window) to the code. The area directly in front of the reading window is generally a dead zone in which no codes can be read.

The reading field width (or height for a turned bar code reader) describes the maximum reading field width as a function of distance.

The depth of field of the reading field is dependent on the module size and increases as the module size increases. The lowest depth of field for the smallest possible code is located around the focal point of the bar code reader. Thus, the depth of field area also increases with module size.

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READING IN MOTION

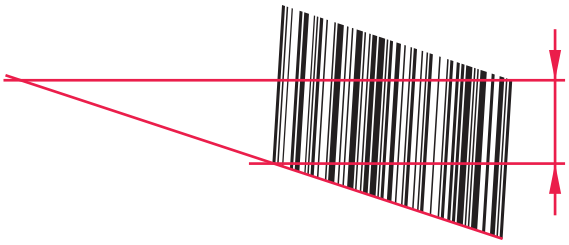
The transport speed must be taken into consideration for all automated code reading tasks:

The effective code length is dependent on simple physical parameters. The result is the number of possible complete scans. This number must be greater than the number of Equal Scans which is set for reliability.

$$A = s_L \bullet f / v - 1$$

where

A = Number of scans
S_L = Effective bar length
f = Scanning rate
v = Transport speed



Effective bar length

If the bar code is moved along the laser line, the number of scans is calculated with

$$A = (b - L) \bullet f / v$$

where

A = Number of scans
L = Bar code length incl. quiet zone
b = Reading field width (laser length)
f = Scanning rate
v = Transport speed

With both calculations, note that both the first and last scan are to be subtracted as incomplete scans.

HOW IS A SOLUTION FOUND FOR AN APPLICATION?!

1. Determine which code you have/would like to use.
- Code type and number of digits
- Module size (including code size and height)

2. What geometric arrangements are to be taken into account?
- Orientation of the bar code on the object (-> single line / raster scanner)
- Transport speed (high or medium reading speed)
- Read distance between object and bar code reader (constant or variable -> depth of field)

3. Decide on a bar code reader type based on the module size(s) and depth of field.

4. Select the interface.
- Is the bar code reader networked or do you require a gateway for integration in open standards?

5. Select the appropriate connector unit and the necessary accessories.

We do, of course, have a much more detailed planning form for finding the best solution for your reading application - talk to us.

EXPLANATION OF TERMS

AutoConfig

With the aid of the AutoConfig commands, the bar code reader can be set for the given reading application without any additional knowledge about the code. Code type and number of digits as well as the number of bar codes to be read in a reading gate are detected and stored in a fail-safe way in the device.

AutoReflAct (reflector polling)

A stationary bar code reader with this function facilitates control of the reading gate without an external, triggering photoelectric sensor. The bar code reader is activated and deactivated with the aid of a reflector which is mounted in the scanning area of the bar code reader. The bar code reader itself detects a reflector in the laser line. As soon as this is covered by an object, the bar code reader activates itself, performs its defined read task and again switches over to reflector detection.

Code fragmentation technology

Code fragmentation technology considerably expands the reading field of a bar code reader. It facilitates the reading of codes which are never completely located under a laser line. In this case, the structures of the code are stored in the decoder and then merged together into a single unit. The result is a representation of the complete code and, thus, of its contents.



Labels which are transported at different angles can be read, even omnidirectionally. These codes are reliably decoded even in the event of soiling or printing errors in the codes.

Alignment mode

A command can be used to activate the bar code reader to read and output the decoding capability on the interface. The number of successful readings is output as a percentage of the maximum possible number of readings. The test is performed while at a standstill and facilitates an estimate of the read quality in the application.

Label polling

Similar to AutoReflAct, however a defined bar code is used within the reading field instead of a reflector depending on the bar code reader family.

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EXPLANATION OF TERMS

LEUZE NETWORK multiNet plus

Up to 31 bar code readers can be operated in this network. These can be addressed either individually or all together and then make the read results available at the master for the control. Commissioning as well as configuration from a central point is very simple and facilitates fast setup and reliable operation.

LEUZE NETWORK OPERATION multiScan

The difference between this and **multiNet plus** is that the master centrally controls the reading gate of the bar code reader. The complete system behaves as a SINGLE bar code reader.

If one of the bar code readers has read, the reading gates of all scanners are closed. The single result is passed on by the master to the PLC.

Multiple reading

The bar code reader can be appropriately configured if more than one code is expected for reading. The bar code reader appropriately outputs all decoded information at the read gate end either separately or together. If code information is missing, a NoRead character is output.

Modular connector units / connection system

Modular connector units offer the possibility of networking a number of devices and integrating them as a gateway in existing industrial networks.

The following possibilities for integrating with modular connector units are thus possible:

- Stand-alone operation or point-to-point connection
- Company-specific networks for connecting multiple devices of the same type (closed standard)
- Fieldbus systems, e.g. PROFIBUS (open standard)

Reference code comparison

The Leuze bar code readers offer the possibility of subjecting decoded codes to another check. During this code comparison, the saved reference codes are utilized and compared according to type and/or length and/or contents. The result can be output immediately via the digital I/Os. This relieves the network and the primary control and facilitates checks in real time.

SELECTION TABLE

Series		Dimensions in mm (WxHxD)	Housing material: Plastic	Housing material: Metal	Read distance in mm (module dependent): 10	50	100	500	2500
	BCL 8	40.3 x 48 x 15 (58 x 48 x 18) 1)		●		40	160		
	BCL 21	68 x 82 x 28	●			50	450		
	BCL 22	68 x 82 x 28	●			50	450		

1) Lateral beam exit

Detailed information on the dimensioned drawings or the specifications can be found in the respective data sheet or in the technical description.

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STATIONARY BAR CODE READERS

	Reading method					Interfaces D = direct, G = via Gateway												Page
	Single Line	Raster	Single Line with deflection mirror	Raster with deflection mirror	Oscillating mirror	RS 232	RS 485	RS 422	PROFIBUS DP	PROFINET	Interbus-S	Ethernet	EtherNet/IP	DeviceNet	CANopen	EtherCAT	multiNet plus	
	●		●			D	G		G	G	G	G	G	G	G	G	G	20
	●	●	●	●			D										D	26
	●	●	●	●		D			G	G	G	G	G	G	G	G	G	26

SELECTION TABLE

Series	Dimensions in mm (WxHxD)	Housing material: Plastic	Housing material: Metal	Read distance in mm (module dependent): 10	50	100	500	2500
 BCL 300*i*	89 x 44 x 67 (97 x 44 x 96)[1] (124 x 56 x 112)[2]		●		20 – 700			
 BCL 301*i*	89 x 44 x 67 (97 x 44 x 96)[1] (124 x 56 x 112)[2]		●		20 – 700			
 BCL 304*i*	89 x 44 x 67 (97 x 44 x 96)[1] (124 x 56 x 112)[2]		●		20 – 700			
 BCL 308*i*	89 x 44 x 67 (97 x 44 x 96)[1] (124 x 56 x 112)[2]		●		20 – 700			
 BCL 348*i*	89 x 44 x 67 (97 x 44 x 96)[1] (124 x 56 x 112)[2]		●		20 – 700			
 BCL 358*i*	89 x 44 x 67 (97 x 44 x 96)[1] (124 x 56 x 112)[2]		●		20 – 700			

1) Deflection mirror version
2) Oscillating mirror version

Detailed information on the dimensioned drawings or the specifications can be found in the respective data sheet or in the technical description.

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STATIONARY BAR CODE READERS

Reading method					Interfaces D = direct, G = via Gateway												Page
Single Line	Raster	Single Line with deflection mirror	Raster with deflection mirror	Oscillating mirror	RS 232	RS 485	RS 422	PROFIBUS DP	PROFINET	Interbus-S	Ethernet	EtherNet/IP	DeviceNet	CANopen	EtherCAT	multiNet plus	
●	●	●	●	●	D		D	G	G	G	G	G	G	G	G		56
●	●	●	●	●		D										D	56
●	●	●	●	●				D									56
●	●	●	●	●							D						56
●	●	●	●	●					D								56
●	●	●	●	●								D					56

SELECTION TABLE

Series	Dimensions in mm (WxHxD)	Housing material: Plastic	Housing material: Metal	Read distance in mm (module dependent): 10	50	100	500	2500
 BCL 500*i*	124 x 63 x 107 (173 x 84 x 147) 1)		●				200	2400
 BCL 501*i*	124 x 63 x 107 (173 x 84 x 147) 1)		●				200	2400
 BCL 504*i*	124 x 63 x 107 (173 x 84 x 147) 1)		●				200	2400
 BCL 508*i*	124 x 63 x 107 (173 x 84 x 147) 1)		●				200	2400
 BCL 548*i*	124 x 63 x 107 (173 x 84 x 147) 1)		●				200	2400
 BCL 90	117 x 94 x 117 (128 x 183 x 98) 1)		●					500 2100

1) Oscillating mirror / deflection mirror version

Detailed information on the dimensioned drawings or the specifications can be found in the respective data sheet or in the technical description.

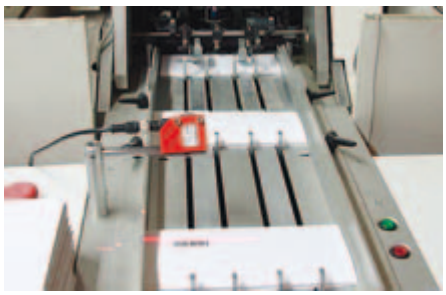
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STATIONARY BAR CODE READERS

	Reading method					Interfaces D = direct, G = via Gateway												Page
	Single Line	Raster	Single Line with deflection mirror	Raster with deflection mirror	Oscillating mirror	RS 232	RS 485	RS 422	PROFIBUS DP	PROFINET	Interbus-S	Ethernet	EtherNet/IP	DeviceNet	CANopen	EtherCAT	multiNet plus	
	●		●		●	D	D	D	G	G	G	G	G	G	G	G	D	120
	●		●		●		D										D	120
	●		●		●				D									120
	●		●		●							D						120
	●		●		●					D								120
	●				●	D	D	D	G	G	G	G	G	G	G	G	D	154

OVERVIEW



Identification of documents



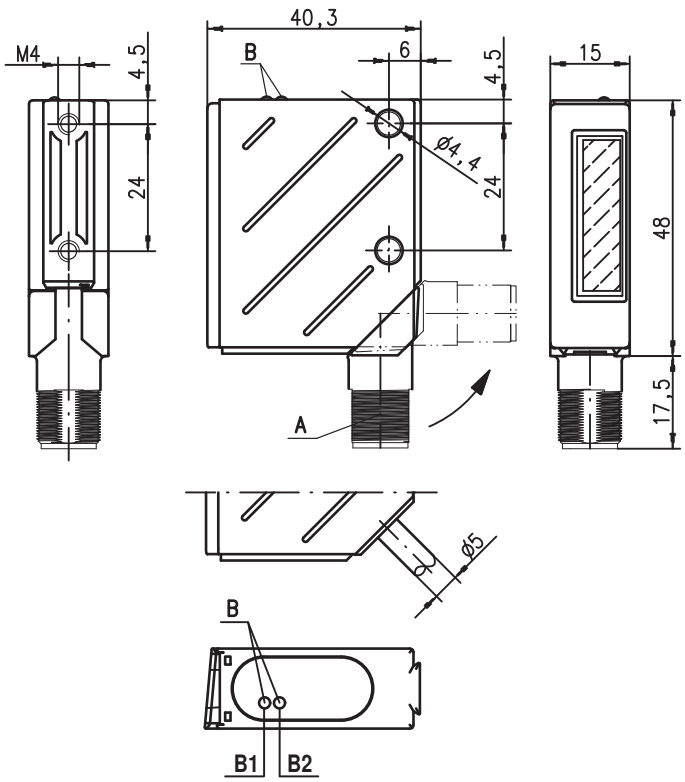
Identification of components



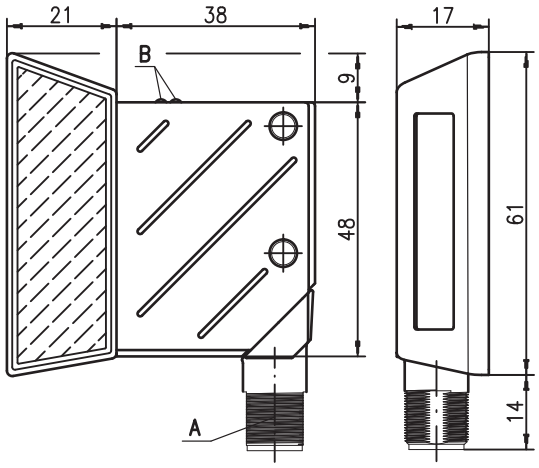
Identification of circuit boards

Dimensioned drawing

Beam exit at front



Beam exit at side



A 90° turning connector
B Indicator LEDs


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STATIONARY BAR CODE READERS BCL 8

Bar code reader Series 8	Module size	Page
with M-optics	0.15 … 0.5 mm	22
with N-optics	0.125 … 0.4 mm	24



Common technical data

Electrical data	Operating voltage U_B	4.75 … 5.5VDC
	Current consumption	≤ 250mA
	Interface type	RS 232
	Code types	2/5 Interleaved, Code 39, Code 128, EAN 128, EAN/UPC, EAN Addendum, Codabar, Pharma Code, Code 93
Indicators	LED B1	device state
	LED B2	read state
Mechanical data	Housing	metal
	Optics cover	glass
	Weight	70g
Environmental data	Ambient temp. (operation/storage)	0°C … +40°C/ -20°C … +60°C
	Protection class	IP 67
Laser	Class 2 acc. to EN 60825-1 and 21 CFR 1040.10 with Laser Notice No. 50	

Mounting systems for this series can be found from **page 422** onwards

Features

- **Automatic detection of code type and code quality**
- **Parameters are stored fail-safe**
- **Reference code comparison function**
- **autoReflAct - integrated photo-electric sensor functionality**
- **RS 232 interface is freely configurable**
- **Switching input or switching output**
- **M12 turning connector or cable connection (2m)**
- **Easy mounting and fastening**
- **MA 8.1 for 24VDC supply and simultaneous use of switching input and switching output**
- **High protection class IP 67 for BCL 8 and MA 8.1 through M12 connector**

BAR CODE READER WITH RS 232 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
Bar code readers with beam exit at the front, M-optics					
BCL 8 S M 102 50038949	Single-line scanner, M-optics, M12 connector	160	600	RS 232	
BCL 8 S M 552 50038948	Single-line scanner, M-optics, 2m connection cable	160	600	RS 232	
Bar code readers with lateral beam exit, M-optics					
BCL 8 S M 100 50040229	Single-line scanner, M-optics, M12 connector	145	600	RS 232	
BCL 8 S M 550 50040230	Single-line scanner, M-optics, 2m connection cable	145	600	RS 232	
Bar code reader starter kits, with beam exit at the front, M-optics					
Starter kit BCL 8 - 24 V DC 50102909	BCL 8 S M - 102 + MA 8.1 + 3 x connection cable + accessories	160	600	RS 232	
Starter kit BCL 8 - 5 V DC 50040764	BCL 8 S M - 102 + connection cable + 5V-power supply unit + accessories	160	600	RS 232	

The BCL 8 starter kits are limited to 1 per customer!

Accessories / connection cables More accessories can be found from **page 422** onwards

Part no.	Designation	Features
see P. 398	MA 8 …	Connector units for BCL 8 with M12 plug
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types
see P. 426	KB - 008 …	Connection cable for BCL 8, see page 426
see P. 422	BT 8 …, UMS 8 …	Mounting systems, see page 422


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BCL 8

M-optics

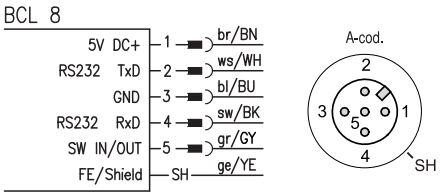
BARCODE

Features

- Constant scanning rate 600 scans/s
- M-optics
- Module size 0.15 ... 0.5mm
- Automatic detection of code type and code quality
- Parameters are stored fail-safe
- Reference code comparison function
- autoReflAct - integrated photoelectric sensor functionality
- RS 232 interface is freely configurable
- Switching input or switching output
- M12 turning connector or cable connection (2m)
- Easy mounting and fastening
- MA 8.1 for 24VDC supply and simultaneous use of switching input and switching output

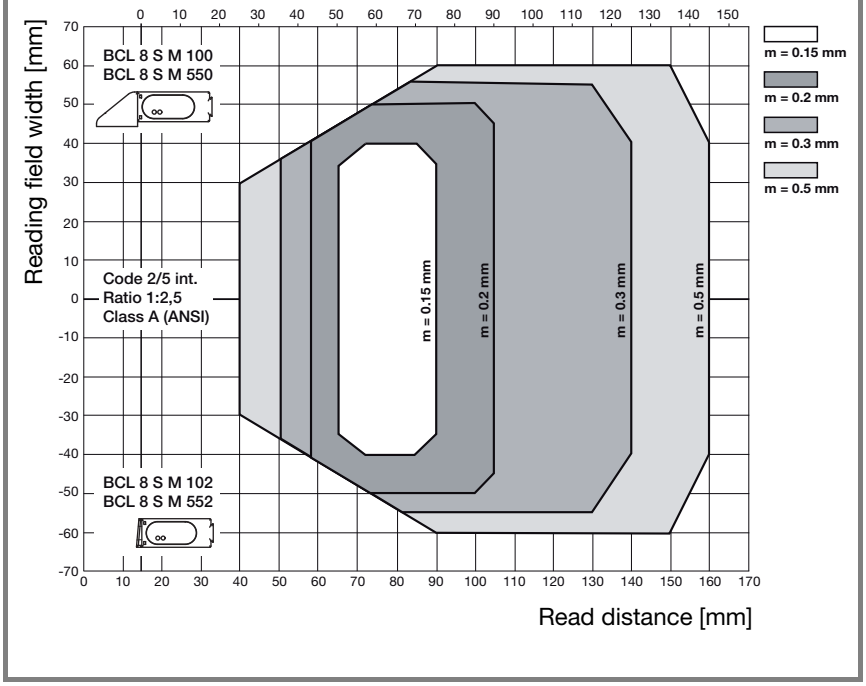


Electrical connection



Reading curves

BCL 8 S M ... with 600 scans/s



BAR CODE READER WITH RS 232 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
Bar code readers with beam exit at the front, N-optics					
BCL 8 S N 102 50105418	Single-line scanner, N-optics, M12 connector	110	500	RS 232	
BCL 8 S N 552 50105420	Single-line scanner, N-optics, 2m connection cable	110	500	RS 232	
Bar code readers with lateral beam exit, N-optics					
BCL 8 S N 100 50105417	Single-line scanner, N-optics, M12 connector	95	500	RS 232	
BCL 8 S N 550 50105419	Single-line scanner, N-optics, 2m connection cable	95	500	RS 232	

Accessories / connection cables More accessories can be found from **page 422** onwards

Part no.	Designation	Features
see P. 398	MA 8 …	Connector units for BCL 8 with M12 plug
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types
see P. 426	KB - 008 …	Connection cable for BCL 8, see page 426
see P. 422	BT 8 …, UMS 8 …	Mounting systems, see page 422


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BCL 8

N-optics

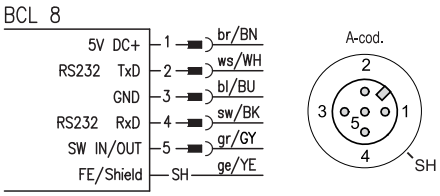
BARCODE

Features

- Constant scanning rate 500 scans/s
- N-optics
- Module size 0.125 ... 0.4mm
- Automatic detection of code type and code quality
- Parameters are stored fail-safe
- Reference code comparison function
- autoReflAct - integrated photoelectric sensor functionality
- RS 232 interface is freely configurable
- Switching input or switching output
- M12 turning connector or cable connection (2m)
- Easy mounting and fastening
- MA 8.1 for 24VDC supply and simultaneous use of switching input and switching output

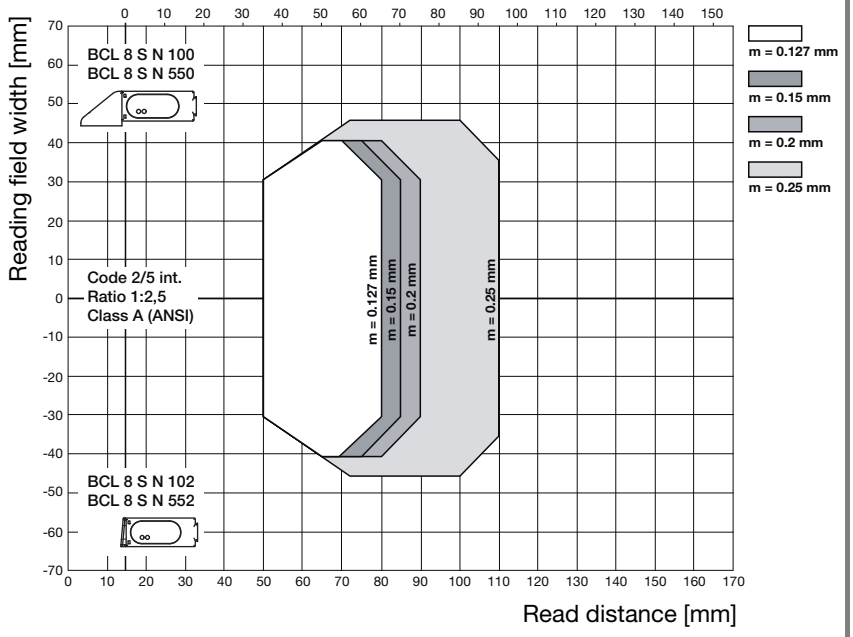


Electrical connection



Reading curves

BCL 8 S N ... with 500 scans/s



OVERVIEW



Packaging technology

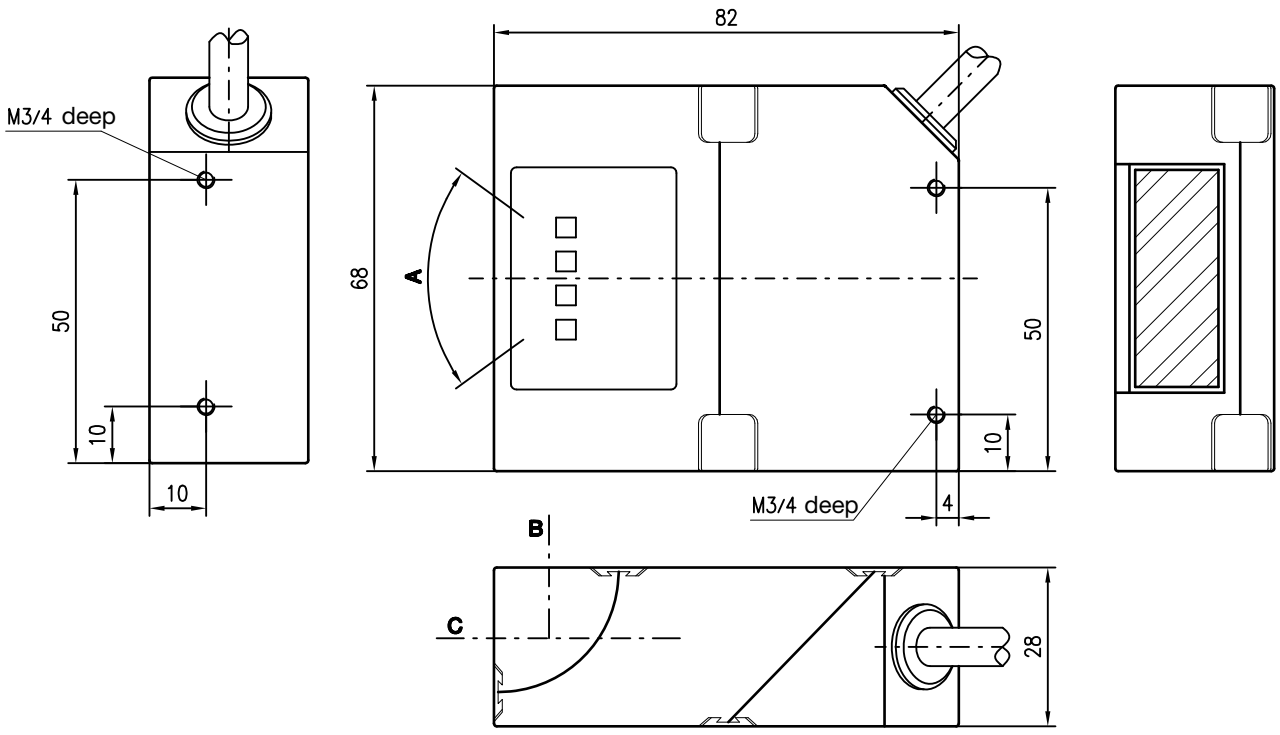


Target control - identification of containers



Document identification

Dimensioned drawing



A Laser beam
B Optical axis (angled version)
C Optical axis (axial version)


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STATIONARY BAR CODE READERS BCL 21/22

Bar code reader Series 21/22	Module size	Page
with N-optics	0.15 0.5 mm	28
with B-optics	0.165 0.5 mm	36
with M-optics	0.2 0.8 mm	40
with F-optics	0.5 1.0 mm	48



Common technical data

Electrical data	Operating voltage U_B	10 … 30 VDC
	Power consumption	3.2 W
	Interface type	BCL 21: RS 485 BCL 22: RS 232 Service: RS 232
	Code types	2/5 Interleaved, Code 39 (Full ASCII), Code 128, EAN 128, EAN/UPC, EAN Addendum, Codabar, Pharma Code, Code 93
	Sw. inputs/outputs	BCL 21: 1 each/BCL 22: 2 each
Indicators	LED PWR/Ready (green) LED ERR/Error (red) LED DEC/Decode (red)	operating voltage/state device error/state read state
Mechanical data	Housing / Optical window	ABS/glass
	Weight	180 g/260 g with cable
Environmental data	Ambient temp. (operation/storage)	0 °C … +40 °C/ -20 °C … +60 °C
	Protection class	IP 65
Laser	Laser diode, red, wavelength 655 nm (N-, M-, F-optics) or laser diode, blue, wavelength 405 nm (B-optics) Class 2 acc. to EN 60825-1 and 21 CFR 1040.10 with Laser Notice No. 50	

Mounting systems for this series can be found from **page 423** onwards

Features

- **Automatic detection of code type and code quality**
- **Raster scanner or single-line scanner versions**
- **Parameters are stored fail-safe**
- **Reference code comparison function**
- **Label polling: integrated photo-electric sensor functionality**
- **Interfaces are freely configurable**
- **Up to 2 switching inputs and 2 switching outputs**
- **Easy mounting and fastening**
- **Sub-D connector or system connector for plugging directly into the MA … connector units**
- **Integrated multiNet and daisy-chain network functionality**

BAR CODE READER WITH RS 485 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with N-optics				
BCL 21 S N 200 50030986	Single-line scanner, perp. beam exit, 0.8 m connection cable, system connector	95	800	RS 485
BCL 21 S N 202 50030987	Single-line scanner, front beam exit, 0.8 m connection cable, system connector	95	800	RS 485
BCL 21 S N 300 50031070	Single-line scanner, perp. beam exit, 0.8 m connection cable, Sub-D connector	95	800	RS 485
BCL 21 S N 302 50031072	Single-line scanner, front beam exit, 0.8 m connection cable, Sub-D connector	95	800	RS 485
BCL 21 S N 210 50032028	Single-line scanner, perp. beam exit, 3.0 m connection cable, system connector	95	800	RS 485
BCL 21 S N 212 50032030	Single-line scanner, front beam exit, 3.0 m connection cable, system connector	95	800	RS 485
BCL 21 S N 310 50032032	Single-line scanner, perp. beam exit, 3.0 m connection cable, Sub-D connector	95	800	RS 485
BCL 21 S N 312 50032034	Single-line scanner, front beam exit, 3.0 m connection cable, Sub-D connector	95	800	RS 485

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables

More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50060503	BT 20	Mounting device for rod and sheet metal clamp installation
50037473	BT 21	Mounting device for inserting the BCL 21/22, stainless steel
50031256	MA 2	Connector unit, stand-alone or multiNet slave
50031537	MA 4	Connector unit, stand-alone or multiNet slave, parameter memory
50031536	MA 4D	Connector unit, stand-alone or multiNet slave, parameter memory, display
see P. 410	MA 31 1…	Connector unit, multiNet master, parameter memory, various interfaces


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BCL 21

N-optics, Single-Line

BARCODE

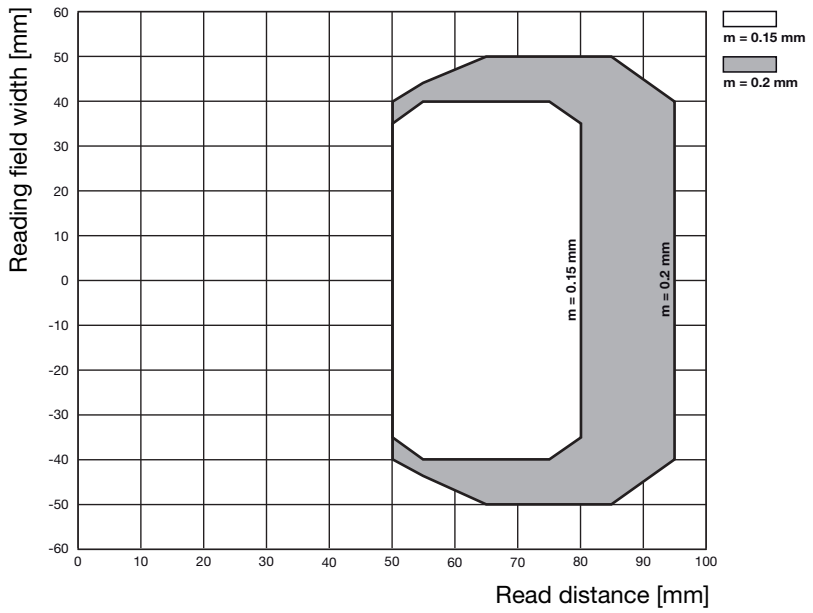
Features

- Single-line scanner
- N-optics
- For module sizes m = 0.15 ... 0.5mm
- Large reading field with high resolution
- RS 485 interface
- 1 switching output and 1 switching input
- System circuit-board connector or 15-pin Sub-D connector



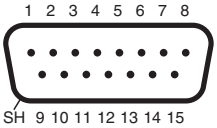
Reading curves

BCL 21 with N-optics



Electrical connection

Cable with Sub-D connector - male



PIN	Signal
1	RS 485 GND
2	SWIN1
3	RS 485 A
4	RS 485 B
5	/MA0
6	/MA1
7	/Serv
8	VIN
9	/MA4
10	SWOUT1
11	RxD_Serv
12	TxD_Serv
13	/MA2
14	/MA3
15	GNDIN
SH	Shield

Cable with 2 system connectors - female

10-pole (ZHR10)

PIN	Colour	Signal
1	br/BN	GND
2	rt/RD	CTS_RSA
3	or/OG	RTS_RSB
4	ge/YE	RS 232 RxD
5	gn/GN	RS 232 TxD
6	bl/BU	/Serv
7	vi/VI	SWIN1
8	gr/GY	VIN
9	ws/WH	GNDIN
10	SH	PE

6-pole (ZHR6)

PIN	Colour	Signal
1	ws-br/WH-BN	/MNA0
2	ws-rt/WH-RD	SO2_MNA1
3	ws-or/WH-OG	/MNA2
4	ws-ge/WH-YE	/MNA3
5	ws-gn/WH-GN	SI2_MNA4
6	ws-sw/WH-BK	SWOUT1

BAR CODE READER WITH RS 485 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with N-optics				
BCL 21 R1 N 200 50061281	Raster scanner, perp. beam exit, 0.8 m connection cable, system connector	95	800	RS 485
BCL 21 R1 N 202 50061283	Raster scanner, front beam exit, 0.8 m connection cable, system connector	95	800	RS 485
BCL 21 R1 N 300 50061285	Raster scanner, perp. beam exit, 0.8 m connection cable, Sub-D connector	95	800	RS 485
BCL 21 R1 N 302 50061287	Raster scanner, front beam exit, 0.8 m connection cable, Sub-D connector	95	800	RS 485
BCL 21 R1 N 210 50032036	Raster scanner, perp. beam exit, 3.0 m connection cable, system connector	95	800	RS 485
BCL 21 R1 N 212 50032038	Raster scanner, front beam exit, 3.0 m connection cable, system connector	95	800	RS 485
BCL 21 R1 N 310 50032040	Raster scanner, perp. beam exit, 3.0 m connection cable, Sub-D connector	95	800	RS 485
BCL 21 R1 N 312 50032042	Raster scanner, front beam exit, 3.0 m connection cable, Sub-D connector	95	800	RS 485

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables

More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50060503	BT 20	Mounting device for rod and sheet metal clamp installation
50037473	BT 21	Mounting device for inserting the BCL 21/22, stainless steel
50031256	MA 2	Connector unit, stand-alone or multiNet slave
50031537	MA 4	Connector unit, stand-alone or multiNet slave, parameter memory
50031536	MA 4D	Connector unit, stand-alone or multiNet slave, parameter memory, display
see P. 410	MA 31 1…	Connector unit, multiNet master, parameter memory, various interfaces


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BCL 21

N-optics, Raster

BARCODE

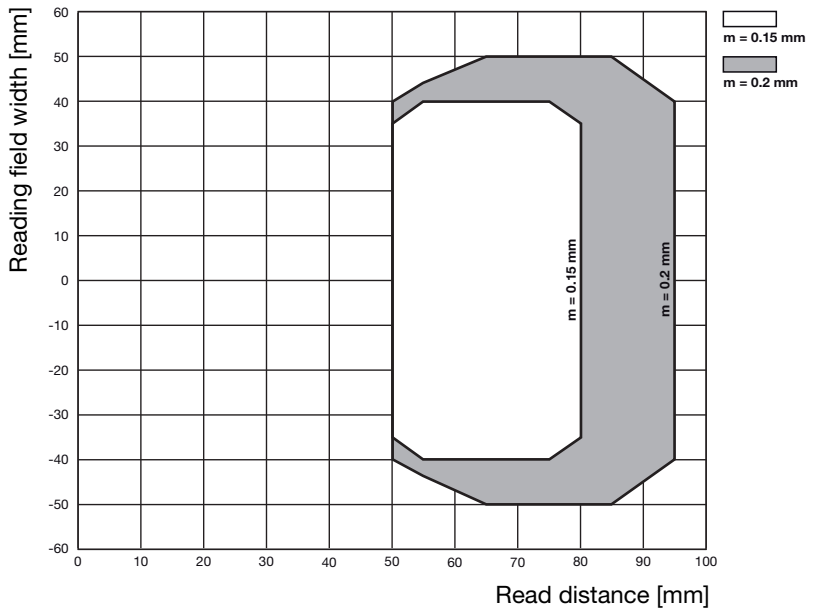
Features

- Raster scanner (10 lines)
- N-optics
- For module sizes m = 0.15 … 0.5mm
- Large reading field with high resolution
- Scanning field (area from 1st to last scanning beam): approx. 16mm at a distance of 100mm
- RS 485 interface
- 1 switching output and 1 switching input
- System circuit-board connector or 15-pin Sub-D connector



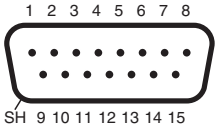
Reading curves

BCL 21 with N-optics



Electrical connection

Cable with Sub-D connector - male



PIN	Signal
1	RS 485 GND
2	SWIN1
3	RS 485 A
4	RS 485 B
5	/MA0
6	/MA1
7	/Serv
8	VIN
9	/MA4
10	SWOUT1
11	RxD_Serv
12	TxD_Serv
13	/MA2
14	/MA3
15	GNDIN
SH	Shield

Cable with 2 system connectors - female

10-pole (ZHR10) / 6-pole (ZHR6)

PIN	Colour	Signal	PIN	Colour	Signal
1	br/BN	GND	1	ws-br/WH-BN	/MNA0
2	rt/RD	CTS_RSA	2	ws-rt/WH-RD	SO2_MNA1
3	or/OG	RTS_RSB	3	ws-or/WH-OG	/MNA2
4	ge/YE	RS 232 RxD	4	ws-ge/WH-YE	/MNA3
5	gn/GN	RS 232 TxD	5	ws-gn/WH-GN	SI2_MNA4
6	bl/BU	/Serv	6	ws-sw/WH-BK	SWOUT1
7	vi/VI	SWIN1			
8	gr/GY	VIN			
9	ws/WH	GNDIN			
10	SH	PE			

BAR CODE READER WITH RS 232 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with N-optics				
BCL 22 S N 200 50031088	Single-line scanner, perp. beam exit, 0.8 m connection cable, system connector	95	800	RS 232
BCL 22 S N 202 50031090	Single-line scanner, front beam exit, 0.8 m connection cable, system connector	95	800	RS 232
BCL 22 S N 300 50030990	Single-line scanner, perp. beam exit, 0.8 m connection cable, Sub-D connector	95	800	RS 232
BCL 22 S N 302 50030991	Single-line scanner, front beam exit, 0.8 m connection cable, Sub-D connector	95	800	RS 232
BCL 22 S N 210 50032075	Single-line scanner, perp. beam exit, 3.0 m connection cable, system connector	95	800	RS 232
BCL 22 S N 212 50061451	Single-line scanner, front beam exit, 3.0 m connection cable, system connector	95	800	RS 232
BCL 22 S N 310 50032078	Single-line scanner, perp. beam exit, 3.0 m connection cable, Sub-D connector	95	800	RS 232
BCL 22 S N 312 50032080	Single-line scanner, front beam exit, 3.0 m connection cable, Sub-D connector	95	800	RS 232

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables

More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50060503	BT 20	Mounting device for rod and sheet metal clamp installation
50037473	BT 21	Mounting device for inserting the BCL 21/22, stainless steel
50031496	MA 22 DC	Connector unit, daisy chain, networking of up to 4 BCL 22 units without master
50031256	MA 2	Connector unit, stand-alone or multiNet slave
50031537	MA 4	Connector unit, stand-alone or multiNet slave, parameter memory
50031536	MA 4D	Connector unit, stand-alone or multiNet slave, parameter memory, display
see P. 410	MA 31 1…	Connector unit, multiNet master, parameter memory, various interfaces
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types

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BCL 22

N-optics, Single-Line

BARCODE

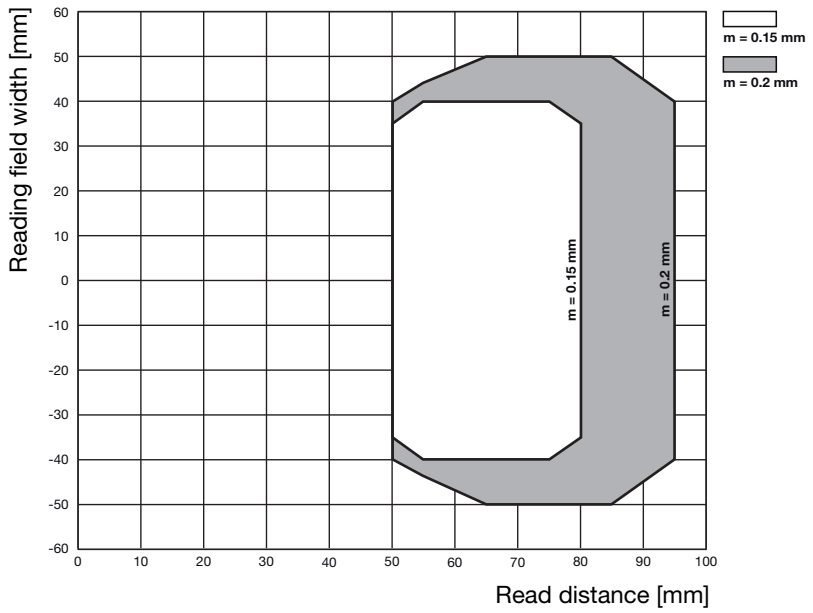
Features

- Single-line scanner
- N-optics
- For module sizes m = 0.15 ... 0.5mm
- Large reading field with high resolution
- RS 232 interface
- 2 switching outputs and 2 switching inputs
- System circuit-board connector or 15-pin Sub-D connector



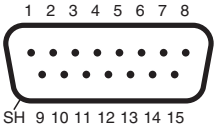
Reading curves

BCL 22 with N-optics



Electrical connection

Cable with Sub-D connector - male



PIN	Signal
1	Res.
2	SWIN1
3	RS 232 CTS
4	RS 232 RTS
5	Res.
6	SWOUT2
7	/Serv
8	VIN
9	SWIN2
10	SWOUT1
11	RS 232 RxD
12	RS 232 TxD
13	Res.
14	Res.
15	GNDIN
SH	Shield

Cable with 2 system connectors - female

10-pole (ZHR10)

PIN	Colour	Signal
1	br/BN	GND
2	rt/RD	CTS_RSA
3	or/OG	RTS_RSB
4	ge/YE	RS 232 RxD
5	gn/GN	RS 232 TxD
6	bl/BU	/Serv
7	vi/VI	SWIN1
8	gr/GY	VIN
9	ws/WH	GNDIN
10	SH	PE

6-pole (ZHR6)

PIN	Colour	Signal
1	ws-br/WH-BN	/MNA0
2	ws-rt/WH-RD	SO2_MNA1
3	ws-or/WH-OG	/MNA2
4	ws-ge/WH-YE	/MNA3
5	ws-gn/WH-GN	SI2_MNA4
6	ws-sw/WH-BK	SWOUT1

BAR CODE READER WITH RS 232 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with N-optics				
BCL 22 R1 N 200 50061305	Raster scanner, perp. beam exit, 0.8 m connection cable, system connector	95	800	RS 232
BCL 22 R1 N 202 50061307	Raster scanner, front beam exit, 0.8 m connection cable, system connector	95	800	RS 232
BCL 22 R1 N 300 50061309	Raster scanner, perp. beam exit, 0.8 m connection cable, Sub-D connector	95	800	RS 232
BCL 22 R1 N 302 50061311	Raster scanner, front beam exit, 0.8 m connection cable, Sub-D connector	95	800	RS 232
BCL 22 R1 N 210 50032082	Raster scanner, perp. beam exit, 3.0 m connection cable, system connector	95	800	RS 232
BCL 22 R1 N 212 50032084	Raster scanner, front beam exit, 3.0 m connection cable, system connector	95	800	RS 232
BCL 22 R1 N 310 50032087	Raster scanner, perp. beam exit, 3.0 m connection cable, Sub-D connector	95	800	RS 232
BCL 22 R1 N 312 50032089	Raster scanner, front beam exit, 3.0 m connection cable, Sub-D connector	95	800	RS 232

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables

More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50060503	BT 20	Mounting device for rod and sheet metal clamp installation
50037473	BT 21	Mounting device for inserting the BCL 21/22, stainless steel
50031496	MA 22 DC	Connector unit, daisy chain, networking of up to 4 BCL 22 units without master
50031256	MA 2	Connector unit, stand-alone or multiNet slave
50031537	MA 4	Connector unit, stand-alone or multiNet slave, parameter memory
50031536	MA 4D	Connector unit, stand-alone or multiNet slave, parameter memory, display
see P. 410	MA 31 1…	Connector unit, multiNet master, parameter memory, various interfaces
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types


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BCL 22

N-optics, Raster

BARCODE

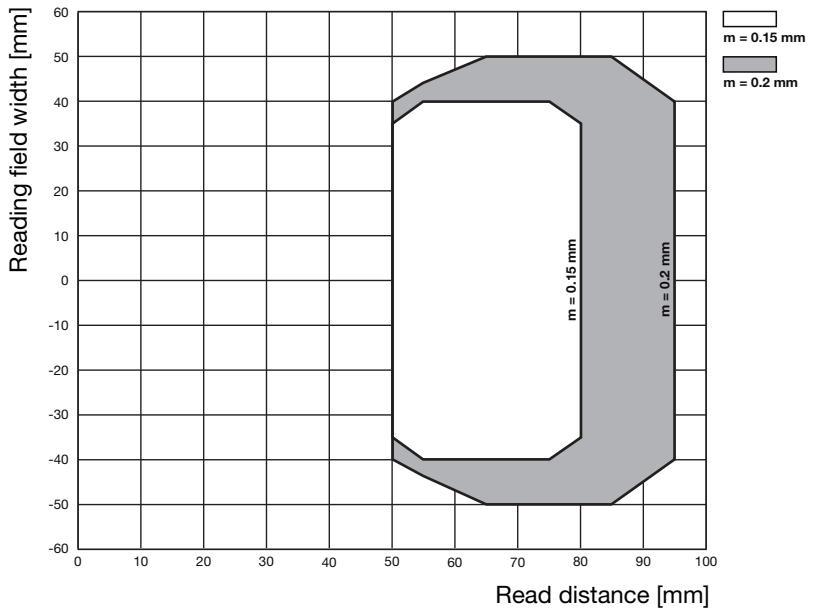
Features

- Raster scanner (10 lines)
- N-optics
- For module sizes m = 0.15 ... 0.5mm
- Large reading field with high resolution
- Scanning field (area from 1st to last scanning beam): approx. 16mm at a distance of 100mm
- RS 232 interface
- 2 switching outputs and 2 switching inputs
- System circuit-board connector or 15-pin Sub-D connector



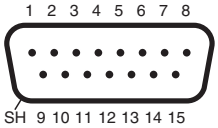
Reading curves

BCL 22 with N-optics



Electrical connection

Cable with Sub-D connector - male



PIN	Signal
1	Res.
2	SWIN1
3	RS 232 CTS
4	RS 232 RTS
5	Res.
6	SWOUT2
7	/Serv
8	VIN
9	SWIN2
10	SWOUT1
11	RS 232 RxD
12	RS 232 TxD
13	Res.
14	Res.
15	GNDIN
SH	Shield

Cable with 2 system connectors - female

10-pole (ZHR10) / 6-pole (ZHR6)

PIN	Colour	Signal	PIN	Colour	Signal
1	br/BN	GND	1	ws-br/WH-BN	/MNA0
2	rt/RD	CTS_RSA	2	ws-rt/WH-RD	SO2_MNA1
3	or/OG	RTS_RSB	3	ws-or/WH-OG	/MNA2
4	ge/YE	RS 232 RxD	4	ws-ge/WH-YE	/MNA3
5	gn/GN	RS 232 TxD	5	ws-gn/WH-GN	SI2_MNA4
6	bl/BU	/Serv	6	ws-sw/WH-BK	SWOUT1
7	vi/VI	SWIN1			
8	gr/GY	VIN			
9	ws/WH	GNDIN			
10	SH	PE			

BAR CODE READER WITH RS 485 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
Bar code readers with B-optics					
BCL 21 S B 200 50117069	Single-line scanner, perp. beam exit, 0.8 m connection cable, system connector	220	800	RS 485	
BCL 21 S B 202 50117070	Single-line scanner, front beam exit, 0.8 m connection cable, system connector	220	800	RS 485	
BCL 21 S B 300 50114706	Single-line scanner, perp. beam exit, 0.8 m connection cable, Sub-D connector	220	800	RS 485	
BCL 21 S B 302 50114707	Single-line scanner, front beam exit, 0.8 m connection cable, Sub-D connector	220	800	RS 485	

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50060503	BT 20	Mounting device for rod and sheet metal clamp installation
50037473	BT 21	Mounting device for inserting the BCL 21/22, stainless steel
50031256	MA 2	Connector unit, stand-alone or multiNet slave
50031537	MA 4	Connector unit, stand-alone or multiNet slave, parameter memory
50031536	MA 4D	Connector unit, stand-alone or multiNet slave, parameter memory, display
see P. 410	MA 31 1…	Connector unit, multiNet master, parameter memory, various interfaces


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BCL 21

B-optics, Single-Line

BARCODE

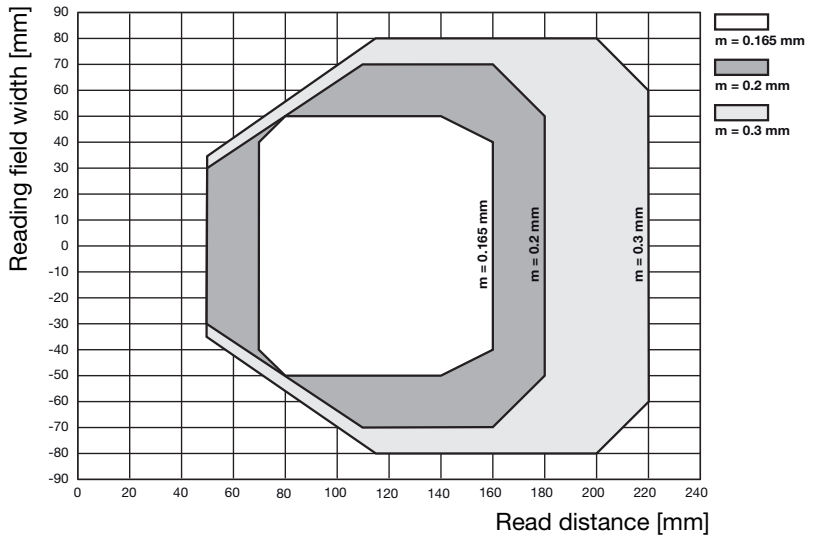
Features

- Single-line scanner
- B-optics
- For module sizes m = 0.165 … 0.5 mm
- Large reading field with high resolution
- High depth of field without focus adjustment
- RS 485 interface
- 1 switching output and 1 switching input
- System circuit-board connector or 15-pin Sub-D connector



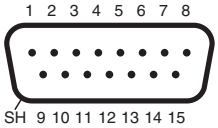
Reading curves

BCL 21 with B-optics



Electrical connection

Cable with Sub-D connector - male



PIN	Signal
1	RS 485 GND
2	SWIN1
3	RS 485 A
4	RS 485 B
5	/MA0
6	/MA1
7	/Serv
8	VIN
9	/MA4
10	SWOUT1
11	RxD_Serv
12	TxD_Serv
13	/MA2
14	/MA3
15	GNDIN
SH	Shield

Cable with 2 system connectors - female

10-pole (ZHR10) / 6-pole (ZHR6)

PIN	Colour	Signal	PIN	Colour	Signal
1	br/BN	GND	1	ws-br/WH-BN	/MNA0
2	rt/RD	CTS_RSA	2	ws-rt/WH-RD	SO2_MNA1
3	or/OG	RTS_RSB	3	ws-or/WH-OG	/MNA2
4	ge/YE	RS 232 RxD	4	ws-ge/WH-YE	/MNA3
5	gn/GN	RS 232 TxD	5	ws-gn/WH-GN	SI2_MNA4
6	bl/BU	/Serv	6	ws-sw/WH-BK	SWOUT1
7	vi/VI	SWIN1			
8	gr/GY	VIN			
9	ws/WH	GNDIN			
10	SH	PE			

BAR CODE READER WITH RS 232 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
Bar code readers with B-optics					
BCL 22 S B 200 50117071	Single-line scanner, perp. beam exit, 0.8 m connection cable, system connector	220	800	RS 232	
BCL 22 S B 202 50117072	Single-line scanner, front beam exit, 0.8 m connection cable, system connector	220	800	RS 232	
BCL 22 S B 300 50114714	Single-line scanner, perp. beam exit, 0.8 m connection cable, Sub-D connector	220	800	RS 232	
BCL 22 S B 302 50114715	Single-line scanner, front beam exit, 0.8 m connection cable, Sub-D connector	220	800	RS 232	

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50060503	BT 20	Mounting device for rod and sheet metal clamp installation
50037473	BT 21	Mounting device for inserting the BCL 21/22, stainless steel
50031496	MA 22 DC	Connector unit, daisy chain, networking of up to 4 BCL 22 units without master
50031256	MA 2	Connector unit, stand-alone or multiNet slave
50031537	MA 4	Connector unit, stand-alone or multiNet slave, parameter memory
50031536	MA 4D	Connector unit, stand-alone or multiNet slave, parameter memory, display
see P. 410	MA 31 1…	Connector unit, multiNet master, parameter memory, various interfaces
see P. 414	MA 2x*xi*	Connector unit / gateway for many automation technology network types


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BCL 22

B-optics, Single-Line

BARCODE

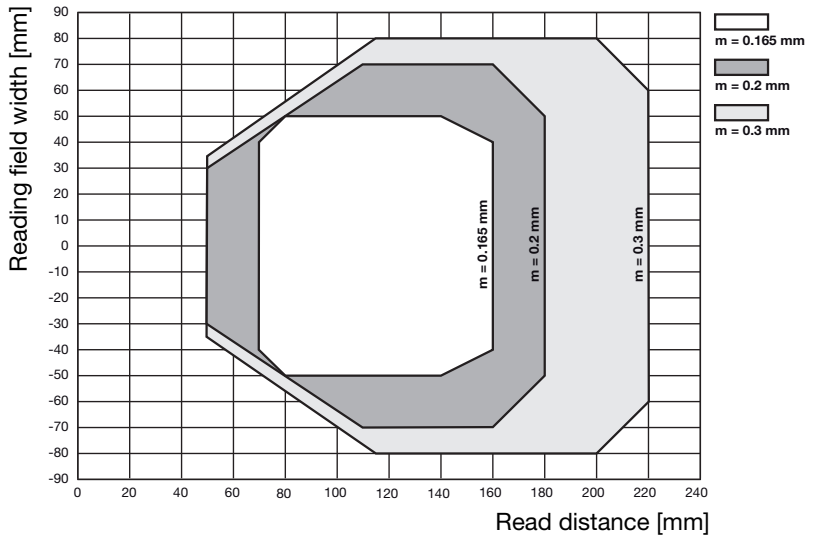
Features

- Single-line scanner
- B-optics
- For module sizes m = 0.165 … 0.5 mm
- Large reading field with high resolution
- High depth of field without focus adjustment
- RS 232 interface
- 2 switching outputs and 2 switching inputs
- System circuit-board connector or 15-pin Sub-D connector



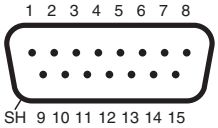
Reading curves

BCL 22 with B-optics



Electrical connection

Cable with Sub-D connector - male



PIN	Signal
1	Res.
2	SWIN1
3	RS 232 CTS
4	RS 232 RTS
5	Res.
6	SWOUT2
7	/Serv
8	VIN
9	SWIN2
10	SWOUT1
11	RS 232 RxD
12	RS 232 TxD
13	Res.
14	Res.
15	GNDIN
SH	Shield

Cable with 2 system connectors - female

10-pole (ZHR10)

PIN	Colour	Signal
1	br/BN	GND
2	rt/RD	CTS_RSA
3	or/OG	RTS_RSB
4	ge/YE	RS 232 RxD
5	gn/GN	RS 232 TxD
6	bl/BU	/Serv
7	vi/VI	SWIN1
8	gr/GY	VIN
9	ws/WH	GNDIN
10	SH	PE

6-pole (ZHR6)

PIN	Colour	Signal
1	ws-br/WH-BN	/MNA0
2	ws-rt/WH-RD	SO2_MNA1
3	ws-or/WH-OG	/MNA2
4	ws-ge/WH-YE	/MNA3
5	ws-gn/WH-GN	SI2_MNA4
6	ws-sw/WH-BK	SWOUT1

BAR CODE READER WITH RS 485 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with M-optics				
BCL 21 S M 200 50030988	Single-line scanner, perp. beam exit, 0.8 m connection cable, system connector	260	1000	RS 485
BCL 21 S M 202 50030989	Single-line scanner, front beam exit, 0.8 m connection cable, system connector	260	1000	RS 485
BCL 21 S M 300 50031076	Single-line scanner, perp. beam exit, 0.8 m connection cable, Sub-D connector	260	1000	RS 485
BCL 21 S M 302 50031078	Single-line scanner, front beam exit, 0.8 m connection cable, Sub-D connector	260	1000	RS 485
BCL 21 S M 210 50032044	Single-line scanner, perp. beam exit, 3.0 m connection cable, system connector	260	1000	RS 485
BCL 21 S M 212 50031720	Single-line scanner, front beam exit, 3.0 m connection cable, system connector	260	1000	RS 485
BCL 21 S M 310 50032047	Single-line scanner, perp. beam exit, 3.0 m connection cable, Sub-D connector	260	1000	RS 485
BCL 21 S M 312 50032049	Single-line scanner, front beam exit, 3.0 m connection cable, Sub-D connector	260	1000	RS 485

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables

More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50060503	BT 20	Mounting device for rod and sheet metal clamp installation
50037473	BT 21	Mounting device for inserting the BCL 21/22, stainless steel
50031256	MA 2	Connector unit, stand-alone or multiNet slave
50031537	MA 4	Connector unit, stand-alone or multiNet slave, parameter memory
50031536	MA 4D	Connector unit, stand-alone or multiNet slave, parameter memory, display
see P. 410	MA 31 1…	Connector unit, multiNet master, parameter memory, various interfaces


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BCL 21

M-optics, Single-Line

BARCODE

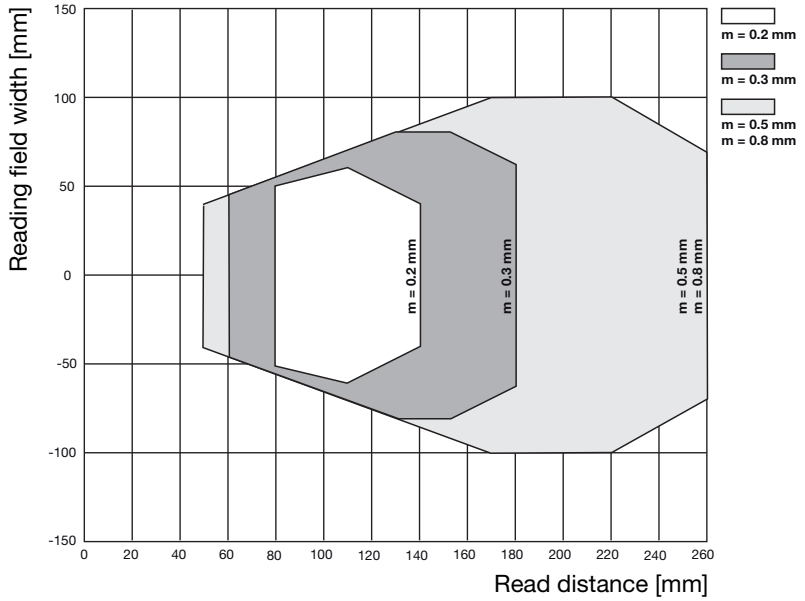
Features

- Single-line scanner
- M-optics
- For module sizes m = 0.2 ... 0.8mm
- Large reading field with high resolution
- RS 485 interface
- 1 switching output and 1 switching input
- System circuit-board connector or 15-pin Sub-D connector



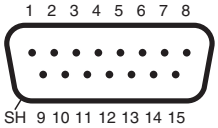
Reading curves

BCL 21 with M-optics



Electrical connection

Cable with Sub-D connector - male



PIN	Signal
1	RS 485 GND
2	SWIN1
3	RS 485 A
4	RS 485 B
5	/MA0
6	/MA1
7	/Serv
8	VIN
9	/MA4
10	SWOUT1
11	RxD_Serv
12	TxD_Serv
13	/MA2
14	/MA3
15	GNDIN
SH	Shield

Cable with 2 system connectors - female

10-pole (ZHR10)

PIN	Colour	Signal
1	br/BN	GND
2	rt/RD	CTS_RSA
3	or/OG	RTS_RSB
4	ge/YE	RS 232 RxD
5	gn/GN	RS 232 TxD
6	bl/BU	/Serv
7	vi/VI	SWIN1
8	gr/GY	VIN
9	ws/WH	GNDIN
10	SH	PE

6-pole (ZHR6)

PIN	Colour	Signal
1	ws-br/WH-BN	/MNA0
2	ws-rt/WH-RD	SO2_MNA1
3	ws-or/WH-OG	/MNA2
4	ws-ge/WH-YE	/MNA3
5	ws-gn/WH-GN	SI2_MNA4
6	ws-sw/WH-BK	SWOUT1

BAR CODE READER WITH RS 485 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with M-optics				
BCL 21 R1 M 200 50061289	Raster scanner, perp. beam exit, 0.8 m connection cable, system connector	260	1000	RS 485
BCL 21 R1 M 202 50061291	Raster scanner, front beam exit, 0.8 m connection cable, system connector	260	1000	RS 485
BCL 21 R1 M 300 50061293	Raster scanner, perp. beam exit, 0.8 m connection cable, Sub-D connector	260	1000	RS 485
BCL 21 R1 M 302 50061295	Raster scanner, front beam exit, 0.8 m connection cable, Sub-D connector	260	1000	RS 485
BCL 21 R1 M 210 50032051	Raster scanner, perp. beam exit, 3.0 m connection cable, system connector	260	1000	RS 485
BCL 21 R1 M 212 50032053	Raster scanner, front beam exit, 3.0 m connection cable, system connector	260	1000	RS 485
BCL 21 R1 M 310 50032055	Raster scanner, perp. beam exit, 3.0 m connection cable, Sub-D connector	260	1000	RS 485
BCL 21 R1 M 312 50032057	Raster scanner, front beam exit, 3.0 m connection cable, Sub-D connector	260	1000	RS 485

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables

More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50060503	BT 20	Mounting device for rod and sheet metal clamp installation
50037473	BT 21	Mounting device for inserting the BCL 21/22, stainless steel
50031256	MA 2	Connector unit, stand-alone or multiNet slave
50031537	MA 4	Connector unit, stand-alone or multiNet slave, parameter memory
50031536	MA 4D	Connector unit, stand-alone or multiNet slave, parameter memory, display
see P. 410	MA 31 1…	Connector unit, multiNet master, parameter memory, various interfaces


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BCL 21

M-optics, Raster

BARCODE

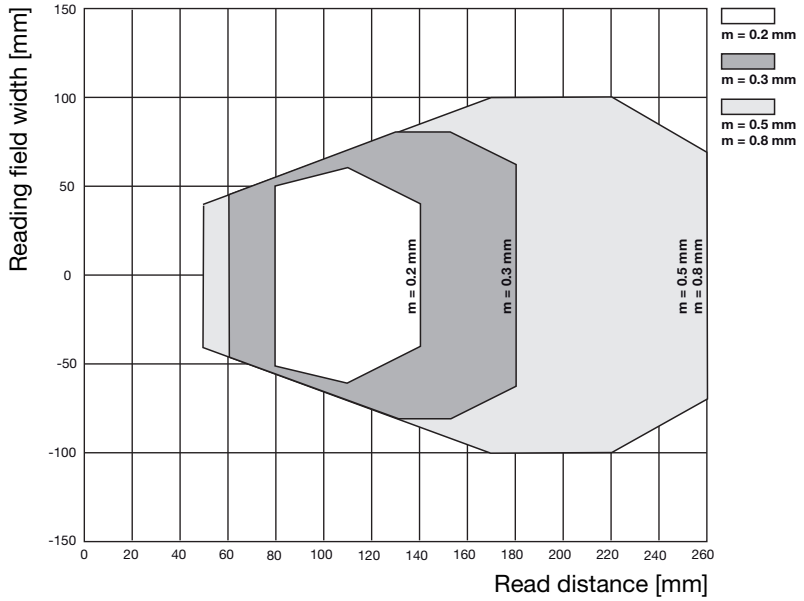
Features

- Raster scanner (10 lines)
- M-optics
- For module sizes m = 0.2 ... 0.8mm
- Large reading field with high resolution
- Scanning field (area from 1st to last scanning beam):
  approx. 16mm at 100mm
  approx. 29mm at 200mm
  approx. 42mm at 300mm
- RS 485 interface
- 1 switching output and 1 switching input
- System circuit-board connector or 15-pin Sub-D connector



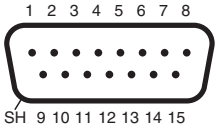
Reading curves

BCL 21 with M-optics



Electrical connection

Cable with Sub-D connector - male



PIN	Signal
1	RS 485 GND
2	SWIN1
3	RS 485 A
4	RS 485 B
5	/MA0
6	/MA1
7	/Serv
8	VIN
9	/MA4
10	SWOUT1
11	RxD_Serv
12	TxD_Serv
13	/MA2
14	/MA3
15	GNDIN
SH	Shield

Cable with 2 system connectors - female

10-pole (ZHR10)

PIN	Colour	Signal
1	br/BN	GND
2	rt/RD	CTS_RSA
3	or/OG	RTS_RSB
4	ge/YE	RS 232 RxD
5	gn/GN	RS 232 TxD
6	bl/BU	/Serv
7	vi/VI	SWIN1
8	gr/GY	VIN
9	ws/WH	GNDIN
10	SH	PE

6-pole (ZHR6)

PIN	Colour	Signal
1	ws-br/WH-BN	/MNA0
2	ws-rt/WH-RD	SO2_MNA1
3	ws-or/WH-OG	/MNA2
4	ws-ge/WH-YE	/MNA3
5	ws-gn/WH-GN	SI2_MNA4
6	ws-sw/WH-BK	SWOUT1

BAR CODE READER WITH RS 232 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with M-optics				
BCL 22 S M 200 50031094	Single-line scanner, perp. beam exit, 0.8 m connection cable, system connector	260	1000	RS 232
BCL 22 S M 202 50031096	Single-line scanner, front beam exit, 0.8 m connection cable, system connector	260	1000	RS 232
BCL 22 S M 300 50030992	Single-line scanner, perp. beam exit, 0.8 m connection cable, Sub-D connector	260	1000	RS 232
BCL 22 S M 302 50030993	Single-line scanner, front beam exit, 0.8 m connection cable, Sub-D connector	260	1000	RS 232
BCL 22 S M 210 50032091	Single-line scanner, perp. beam exit, 3.0 m connection cable, system connector	260	1000	RS 232
BCL 22 S M 212 50032093	Single-line scanner, front beam exit, 3.0 m connection cable, system connector	260	1000	RS 232
BCL 22 S M 310 50032095	Single-line scanner, perp. beam exit, 3.0 m connection cable, Sub-D connector	260	1000	RS 232
BCL 22 S M 312 50032097	Single-line scanner, front beam exit, 3.0 m connection cable, Sub-D connector	260	1000	RS 232

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables

More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50060503	BT 20	Mounting device for rod and sheet metal clamp installation
50037473	BT 21	Mounting device for inserting the BCL 21/22, stainless steel
50031496	MA 22 DC	Connector unit, daisy chain, networking of up to 4 BCL 22 units without master
50031256	MA 2	Connector unit, stand-alone or multiNet slave
50031537	MA 4	Connector unit, stand-alone or multiNet slave, parameter memory
50031536	MA 4D	Connector unit, stand-alone or multiNet slave, parameter memory, display
see P. 410	MA 31 1…	Connector unit, multiNet master, parameter memory, various interfaces
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types


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BCL 22

M-optics, Single-Line

BARCODE

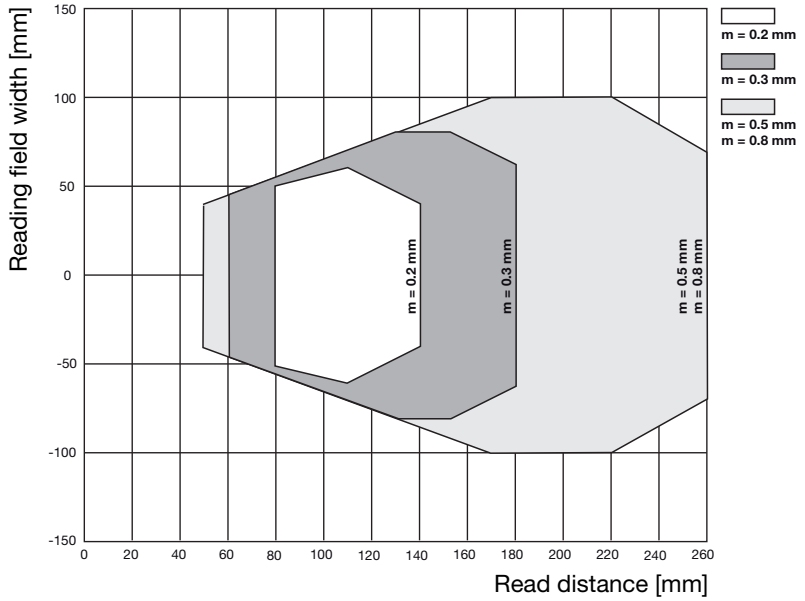
Features

- Single-line scanner
- M-optics
- For module sizes m = 0.2 ... 0.8mm
- Large reading field with high resolution
- RS 232 interface
- 2 switching outputs and 2 switching inputs
- System circuit-board connector or 15-pin Sub-D connector



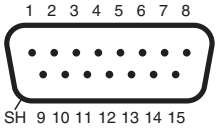
Reading curves

BCL 22 with M-optics



Electrical connection

Cable with Sub-D connector - male



PIN	Signal
1	Res.
2	SWIN1
3	RS 232 CTS
4	RS 232 RTS
5	Res.
6	SWOUT2
7	/Serv
8	VIN
9	SWIN2
10	SWOUT1
11	RS 232 RxD
12	RS 232 TxD
13	Res.
14	Res.
15	GNDIN
SH	Shield

Cable with 2 system connectors - female

10-pole (ZHR10)

PIN	Colour	Signal
1	br/BN	GND
2	rt/RD	CTS_RSA
3	or/OG	RTS_RSB
4	ge/YE	RS 232 RxD
5	gn/GN	RS 232 TxD
6	bl/BU	/Serv
7	vi/VI	SWIN1
8	gr/GY	VIN
9	ws/WH	GNDIN
10	SH	PE

6-pole (ZHR6)

PIN	Colour	Signal
1	ws-br/WH-BN	/MNA0
2	ws-rt/WH-RD	SO2_MNA1
3	ws-or/WH-OG	/MNA2
4	ws-ge/WH-YE	/MNA3
5	ws-gn/WH-GN	SI2_MNA4
6	ws-sw/WH-BK	SWOUT1

BAR CODE READER WITH RS 232 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with M-optics				
BCL 22 R1 M 200 50061313	Raster scanner, perp. beam exit, 0.8 m connection cable, system connector	260	1000	RS 232
BCL 22 R1 M 202 50061315	Raster scanner, front beam exit, 0.8 m connection cable, system connector	260	1000	RS 232
BCL 22 R1 M 300 50061317	Raster scanner, perp. beam exit, 0.8 m connection cable, Sub-D connector	260	1000	RS 232
BCL 22 R1 M 302 50061319	Raster scanner, front beam exit, 0.8 m connection cable, Sub-D connector	260	1000	RS 232
BCL 22 R1 M 210 50032099	Raster scanner, perp. beam exit, 3.0 m connection cable, system connector	260	1000	RS 232
BCL 22 R1 M 212 50032101	Raster scanner, front beam exit, 3.0 m connection cable, system connector	260	1000	RS 232
BCL 22 R1 M 310 50031704	Raster scanner, perp. beam exit, 3.0 m connection cable, Sub-D connector	260	1000	RS 232
BCL 22 R1 M 312 50032104	Raster scanner, front beam exit, 3.0 m connection cable, Sub-D connector	260	1000	RS 232

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables

More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50060503	BT 20	Mounting device for rod and sheet metal clamp installation
50037473	BT 21	Mounting device for inserting the BCL 21/22, stainless steel
50031496	MA 22 DC	Connector unit, daisy chain, networking of up to 4 BCL 22 units without master
50031256	MA 2	Connector unit, stand-alone or multiNet slave
50031537	MA 4	Connector unit, stand-alone or multiNet slave, parameter memory
50031536	MA 4D	Connector unit, stand-alone or multiNet slave, parameter memory, display
see P. 410	MA 31 1…	Connector unit, multiNet master, parameter memory, various interfaces
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types


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BCL 22

M-optics, Raster

BARCODE

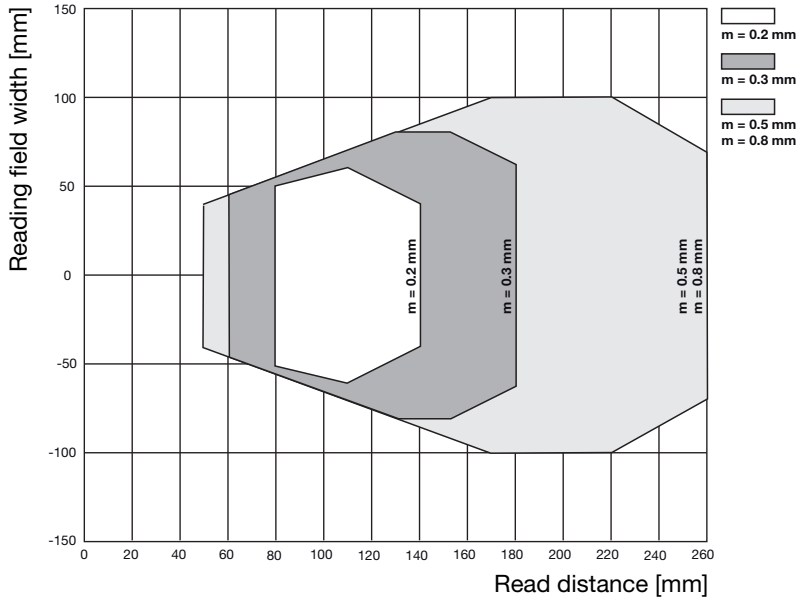
Features

- Raster scanner (10 lines)
- M-optics
- For module sizes m = 0.2 ... 0.8mm
- Large reading field with high resolution
- Scanning field (area from 1st to last scanning beam):
  approx. 16mm at 100mm
  approx. 29mm at 200mm
  approx. 42mm at 300mm
- RS 232 interface
- 2 switching outputs and 2 switching inputs
- System circuit-board connector or 15-pin Sub-D connector



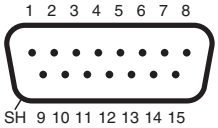
Reading curves

BCL 22 with M-optics



Electrical connection

Cable with Sub-D connector - male



PIN	Signal
1	Res.
2	SWIN1
3	RS 232 CTS
4	RS 232 RTS
5	Res.
6	SWOUT2
7	/Serv
8	VIN
9	SWIN2
10	SWOUT1
11	RS 232 RxD
12	RS 232 TxD
13	Res.
14	Res.
15	GNDIN
SH	Shield

Cable with 2 system connectors - female

10-pole (ZHR10)

PIN	Colour	Signal
1	br/BN	GND
2	rt/RD	CTS_RSA
3	or/OG	RTS_RSB
4	ge/YE	RS 232 RxD
5	gn/GN	RS 232 TxD
6	bl/BU	/Serv
7	vi/VI	SWIN1
8	gr/GY	VIN
9	ws/WH	GNDIN
10	SH	PE

6-pole (ZHR6)

PIN	Colour	Signal
1	ws-br/WH-BN	/MNA0
2	ws-rt/WH-RD	SO2_MNA1
3	ws-or/WH-OG	/MNA2
4	ws-ge/WH-YE	/MNA3
5	ws-gn/WH-GN	SI2_MNA4
6	ws-sw/WH-BK	SWOUT1

BAR CODE READER WITH RS 485 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with F-optics				
BCL 21 S F 200 50031080	Single-line scanner, perp. beam exit, 0.8 m connection cable, system connector	450	800	RS 485
BCL 21 S F 202 50031082	Single-line scanner, front beam exit, 0.8 m connection cable, system connector	450	800	RS 485
BCL 21 S F 300 50031084	Single-line scanner, perp. beam exit, 0.8 m connection cable, Sub-D connector	450	800	RS 485
BCL 21 S F 302 50031086	Single-line scanner, front beam exit, 0.8 m connection cable, Sub-D connector	450	800	RS 485
BCL 21 S F 210 50032059	Single-line scanner, perp. beam exit, 3.0 m connection cable, system connector	450	800	RS 485
BCL 21 S F 212 50032061	Single-line scanner, front beam exit, 3.0 m connection cable, system connector	450	800	RS 485
BCL 21 S F 310 50032063	Single-line scanner, perp. beam exit, 3.0 m connection cable, Sub-D connector	450	800	RS 485
BCL 21 S F 312 50032065	Single-line scanner, front beam exit, 3.0 m connection cable, Sub-D connector	450	800	RS 485

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables

More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50060503	BT 20	Mounting device for rod and sheet metal clamp installation
50037473	BT 21	Mounting device for inserting the BCL 21/22, stainless steel
50031256	MA 2	Connector unit, stand-alone or multiNet slave
50031537	MA 4	Connector unit, stand-alone or multiNet slave, parameter memory
50031536	MA 4D	Connector unit, stand-alone or multiNet slave, parameter memory, display
see P. 410	MA 31 1…	Connector unit, multiNet master, parameter memory, various interfaces


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BCL 21

F-optics, Single-Line

BARCODE

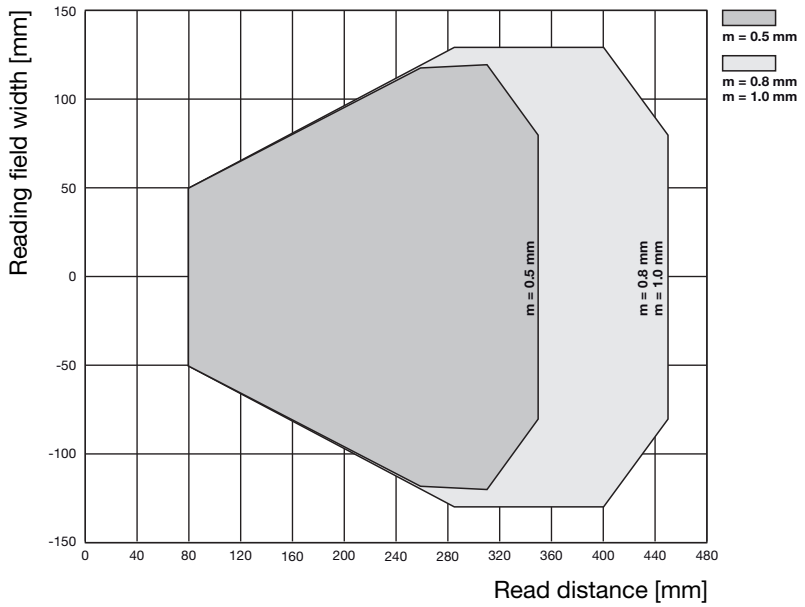
Features

- Single-line scanner
- F-optics
- For module sizes m = 0.5 ... 1.0mm
- Large reading field for large bar codes
- RS 485 interface
- 1 switching output and 1 switching input
- System circuit-board connector or 15-pin Sub-D connector



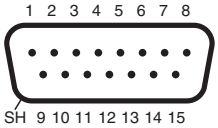
Reading curves

BCL 21 with F-optics



Electrical connection

Cable with Sub-D connector - male



PIN	Signal
1	RS 485 GND
2	SWIN1
3	RS 485 A
4	RS 485 B
5	/MA0
6	/MA1
7	/Serv
8	VIN
9	/MA4
10	SWOUT1
11	RxD_Serv
12	TxD_Serv
13	/MA2
14	/MA3
15	GNDIN
SH	Shield

Cable with 2 system connectors - female

10-pole (ZHR10) / 6-pole (ZHR6)

PIN	Colour	Signal	PIN	Colour	Signal
1	br/BN	GND	1	ws-br/WH-BN	/MNA0
2	rt/RD	CTS_RSA	2	ws-rt/WH-RD	SO2_MNA1
3	or/OG	RTS_RSB	3	ws-or/WH-OG	/MNA2
4	ge/YE	RS 232 RxD	4	ws-ge/WH-YE	/MNA3
5	gn/GN	RS 232 TxD	5	ws-gn/WH-GN	SI2_MNA4
6	bl/BU	/Serv	6	ws-sw/WH-BK	SWOUT1
7	vi/VI	SWIN1			
8	gr/GY	VIN			
9	ws/WH	GNDIN			
10	SH	PE			

BAR CODE READER WITH RS 485 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with F-optics				
BCL 21 R1 F 200 50061297	Raster scanner, perp. beam exit, 0.8 m connection cable, system connector	450	800	RS 485
BCL 21 R1 F 202 50061299	Raster scanner, front beam exit, 0.8 m connection cable, system connector	450	800	RS 485
BCL 21 R1 F 300 50061301	Raster scanner, perp. beam exit, 0.8 m connection cable, Sub-D connector	450	800	RS 485
BCL 21 R1 F 302 50061303	Raster scanner, front beam exit, 0.8 m connection cable, Sub-D connector	450	800	RS 485
BCL 21 R1 F 210 50032067	Raster scanner, perp. beam exit, 3.0 m connection cable, system connector	450	800	RS 485
BCL 21 R1 F 212 50032069	Raster scanner, front beam exit, 3.0 m connection cable, system connector	450	800	RS 485
BCL 21 R1 F 310 50032071	Raster scanner, perp. beam exit, 3.0 m connection cable, Sub-D connector	450	800	RS 485
BCL 21 R1 F 312 50032073	Raster scanner, front beam exit, 3.0 m connection cable, Sub-D connector	450	800	RS 485

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables

More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50060503	BT 20	Mounting device for rod and sheet metal clamp installation
50037473	BT 21	Mounting device for inserting the BCL 21/22, stainless steel
50031256	MA 2	Connector unit, stand-alone or multiNet slave
50031537	MA 4	Connector unit, stand-alone or multiNet slave, parameter memory
50031536	MA 4D	Connector unit, stand-alone or multiNet slave, parameter memory, display
see P. 410	MA 31 1…	Connector unit, multiNet master, parameter memory, various interfaces


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BCL 21

F-optics, Raster

BARCODE

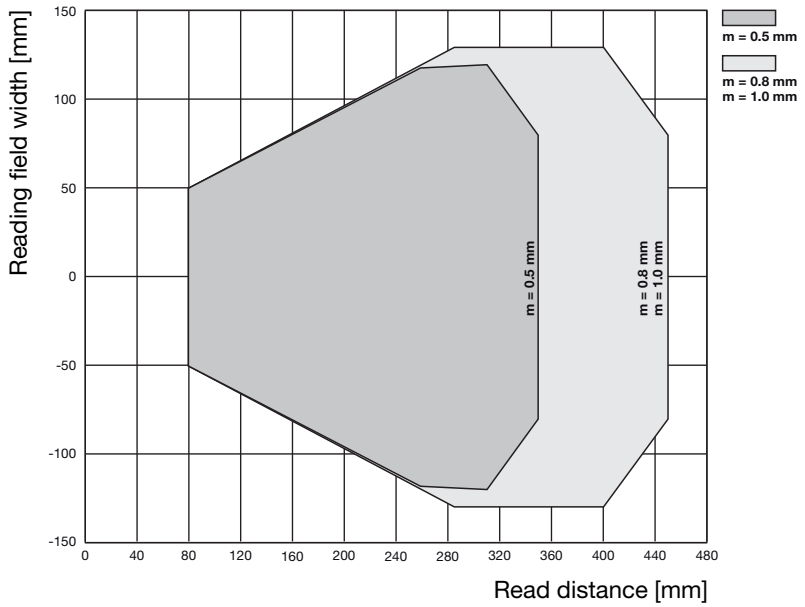
Features

- Raster scanner (10 lines)
- F-optics
- For module sizes m = 0.5 ... 1.0mm
- Large reading field for large bar codes
- Scanning field (area from 1st to last scanning beam):
  approx. 16mm at 100mm
  approx. 29mm at 200mm
  approx. 42mm at 300mm
  approx. 55mm at 400mm
- RS 485 interface
- 1 switching output and 1 switching input
- System circuit-board connector or 15-pin Sub-D connector



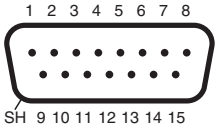
Reading curves

BCL 21 with F-optics



Electrical connection

Cable with Sub-D connector - male



PIN	Signal
1	RS 485 GND
2	SWIN1
3	RS 485 A
4	RS 485 B
5	/MA0
6	/MA1
7	/Serv
8	VIN
9	/MA4
10	SWOUT1
11	RxD_Serv
12	TxD_Serv
13	/MA2
14	/MA3
15	GNDIN
SH	Shield

Cable with 2 system connectors - female

10-pole (ZHR10) / 6-pole (ZHR6)

PIN	Colour	Signal	PIN	Colour	Signal
1	br/BN	GND	1	ws-br/WH-BN	/MNA0
2	rt/RD	CTS_RSA	2	ws-rt/WH-RD	SO2_MNA1
3	or/OG	RTS_RSB	3	ws-or/WH-OG	/MNA2
4	ge/YE	RS 232 RxD	4	ws-ge/WH-YE	/MNA3
5	gn/GN	RS 232 TxD	5	ws-gn/WH-GN	SI2_MNA4
6	bl/BU	/Serv	6	ws-sw/WH-BK	SWOUT1
7	vi/VI	SWIN1			
8	gr/GY	VIN			
9	ws/WH	GNDIN			
10	SH	PE			

BAR CODE READER WITH RS 232 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with F-optics				
BCL 22 S F 200 50031100	Single-line scanner, perp. beam exit, 0.8 m connection cable, system connector	450	800	RS 232
BCL 22 S F 202 50031102	Single-line scanner, front beam exit, 0.8 m connection cable, system connector	450	800	RS 232
BCL 22 S F 300 50031104	Single-line scanner, perp. beam exit, 0.8 m connection cable, Sub-D connector	450	800	RS 232
BCL 22 S F 302 50031106	Single-line scanner, front beam exit, 0.8 m connection cable, Sub-D connector	450	800	RS 232
BCL 22 S F 210 50032106	Single-line scanner, perp. beam exit, 3.0 m connection cable, system connector	450	800	RS 232
BCL 22 S F 212 50032108	Single-line scanner, front beam exit, 3.0 m connection cable, system connector	450	800	RS 232
BCL 22 S F 310 50032110	Single-line scanner, perp. beam exit, 3.0 m connection cable, Sub-D connector	450	800	RS 232
BCL 22 S F 312 50032112	Single-line scanner, front beam exit, 3.0 m connection cable, Sub-D connector	450	800	RS 232

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables

More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50060503	BT 20	Mounting device for rod and sheet metal clamp installation
50037473	BT 21	Mounting device for inserting the BCL 21/22, stainless steel
50031496	MA 22 DC	Connector unit, daisy chain, networking of up to 4 BCL 22 units without master
50031256	MA 2	Connector unit, stand-alone or multiNet slave
50031537	MA 4	Connector unit, stand-alone or multiNet slave, parameter memory
50031536	MA 4D	Connector unit, stand-alone or multiNet slave, parameter memory, display
see P. 410	MA 31 1…	Connector unit, multiNet master, parameter memory, various interfaces
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types


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BCL 22

F-optics, Single-Line

BARCODE

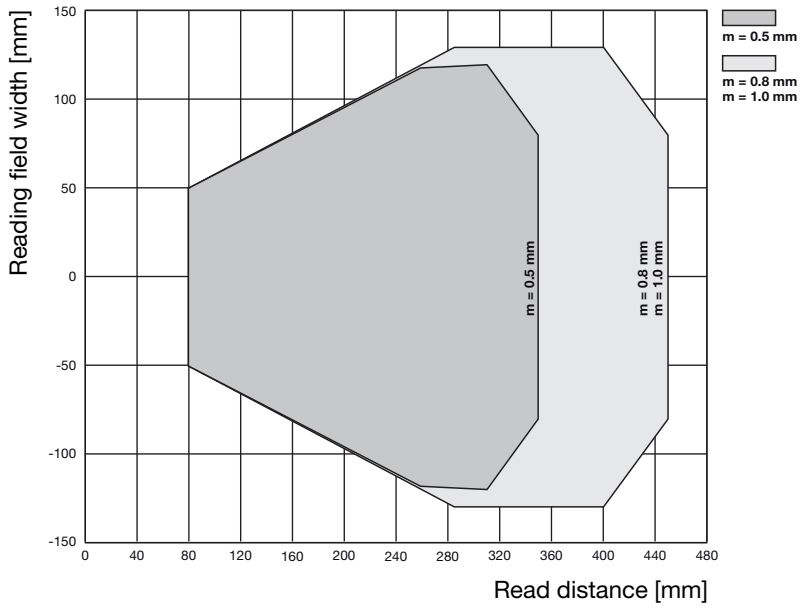
Features

- Single-line scanner
- F-optics
- For module sizes m = 0.5 ... 1.0mm
- Large reading field for large bar codes
- RS 232 interface
- 2 switching outputs and 2 switching inputs
- System circuit-board connector or 15-pin Sub-D connector



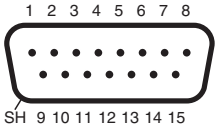
Reading curves

BCL 22 with F-optics



Electrical connection

Cable with Sub-D connector - male



PIN	Signal
1	Res.
2	SWIN1
3	RS 232 CTS
4	RS 232 RTS
5	Res.
6	SWOUT2
7	/Serv
8	VIN
9	SWIN2
10	SWOUT1
11	RS 232 RxD
12	RS 232 TxD
13	Res.
14	Res.
15	GNDIN
SH	Shield

Cable with 2 system connectors - female

10-pole (ZHR10)

PIN	Colour	Signal
1	br/BN	GND
2	rt/RD	CTS_RSA
3	or/OG	RTS_RSB
4	ge/YE	RS 232 RxD
5	gn/GN	RS 232 TxD
6	bl/BU	/Serv
7	vi/VI	SWIN1
8	gr/GY	VIN
9	ws/WH	GNDIN
10	SH	PE

6-pole (ZHR6)

PIN	Colour	Signal
1	ws-br/WH-BN	/MNA0
2	ws-rt/WH-RD	SO2_MNA1
3	ws-or/WH-OG	/MNA2
4	ws-ge/WH-YE	/MNA3
5	ws-gn/WH-GN	SI2_MNA4
6	ws-sw/WH-BK	SWOUT1

BAR CODE READER WITH RS 232 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with F-optics				
BCL 22 R1 F 200 50061321	Raster scanner, perp. beam exit, 0.8 m connection cable, system connector	450	800	RS 232
BCL 22 R1 F 202 50061323	Raster scanner, front beam exit, 0.8 m connection cable, system connector	450	800	RS 232
BCL 22 R1 F 300 50061325	Raster scanner, perp. beam exit, 0.8 m connection cable, Sub-D connector	450	800	RS 232
BCL 22 R1 F 302 50061327	Raster scanner, front beam exit, 0.8 m connection cable, Sub-D connector	450	800	RS 232
BCL 22 R1 F 210 50032114	Raster scanner, perp. beam exit, 3.0 m connection cable, system connector	450	800	RS 232
BCL 22 R1 F 212 50032116	Raster scanner, front beam exit, 3.0 m connection cable, system connector	450	800	RS 232
BCL 22 R1 F 310 50032118	Raster scanner, perp. beam exit, 3.0 m connection cable, Sub-D connector	450	800	RS 232
BCL 22 R1 F 312 50032120	Raster scanner, front beam exit, 3.0 m connection cable, Sub-D connector	450	800	RS 232

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables

More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50060503	BT 20	Mounting device for rod and sheet metal clamp installation
50037473	BT 21	Mounting device for inserting the BCL 21/22, stainless steel
50031496	MA 22 DC	Connector unit, daisy chain, networking of up to 4 BCL 22 units without master
50031256	MA 2	Connector unit, stand-alone or multiNet slave
50031537	MA 4	Connector unit, stand-alone or multiNet slave, parameter memory
50031536	MA 4D	Connector unit, stand-alone or multiNet slave, parameter memory, display
see P. 410	MA 31 1…	Connector unit, multiNet master, parameter memory, various interfaces
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types


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BCL 22

F-optics, Raster

BARCODE

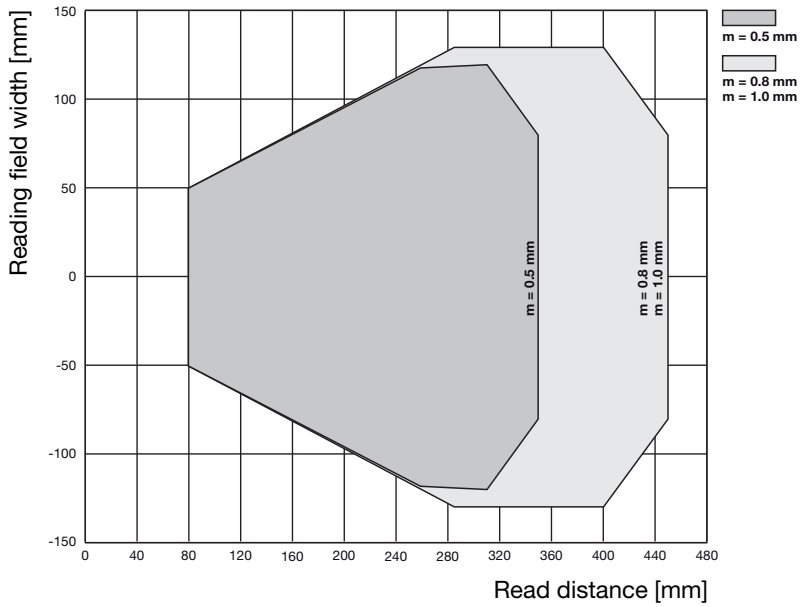
Features

- Raster scanner (10 lines)
- F-optics
- For module sizes m = 0.5 ... 1.0mm
- Large reading field for large bar codes
- Scanning field (area from 1st to last scanning beam):
  approx. 16mm at 100mm
  approx. 29mm at 200mm
  approx. 42mm at 300mm
  approx. 55mm at 400mm
- RS 232 interface
- 2 switching outputs and 2 switching inputs
- System circuit-board connector or 15-pin Sub-D connector



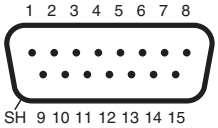
Reading curves

BCL 22 with F-optics



Electrical connection

Cable with Sub-D connector - male



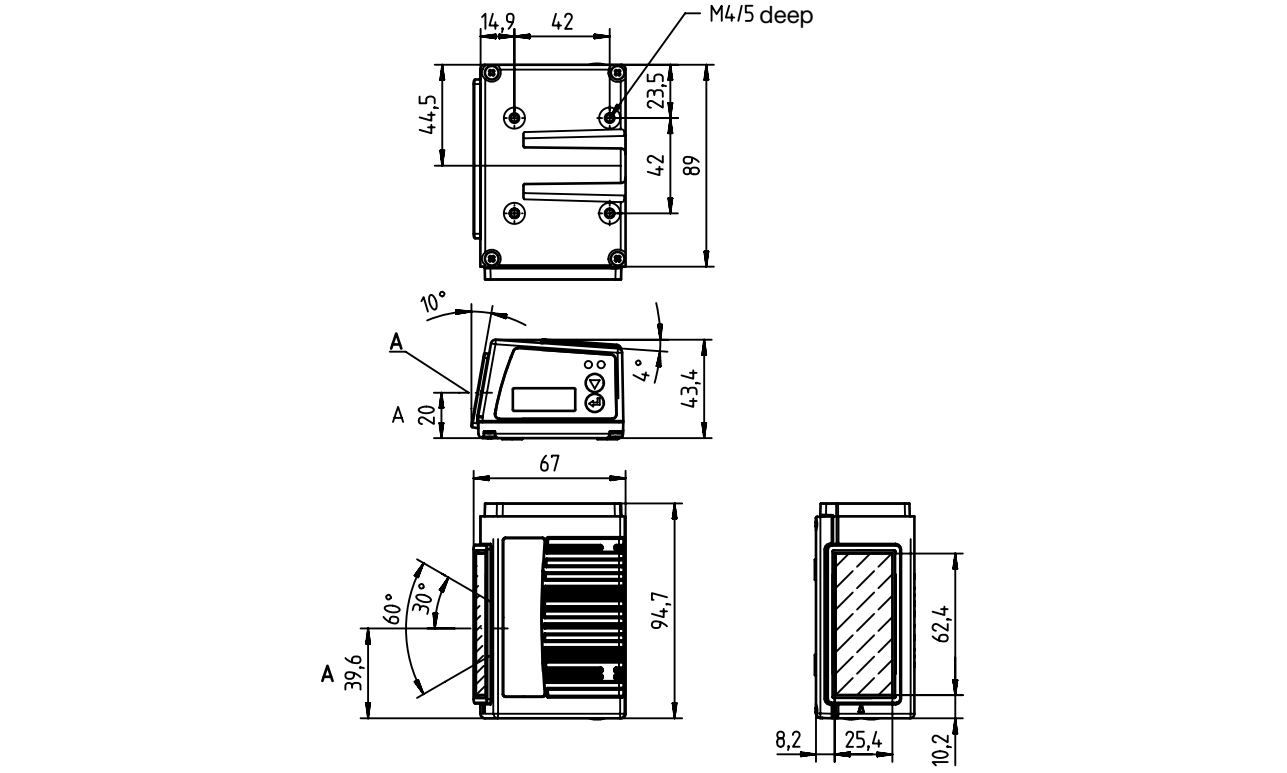
PIN	Signal
1	Res.
2	SWIN1
3	RS 232 CTS
4	RS 232 RTS
5	Res.
6	SWOUT2
7	/Serv
8	VIN
9	SWIN2
10	SWOUT1
11	RS 232 RxD
12	RS 232 TxD
13	Res.
14	Res.
15	GNDIN
SH	Shield

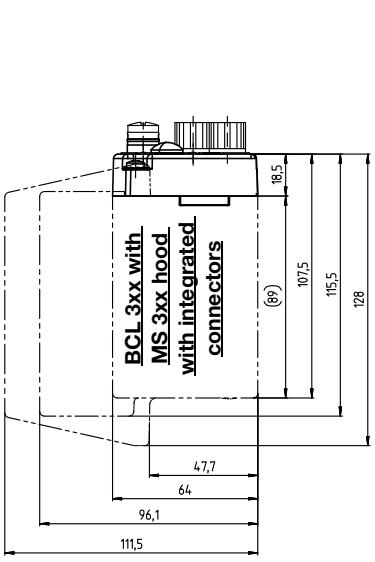
Cable with 2 system connectors - female

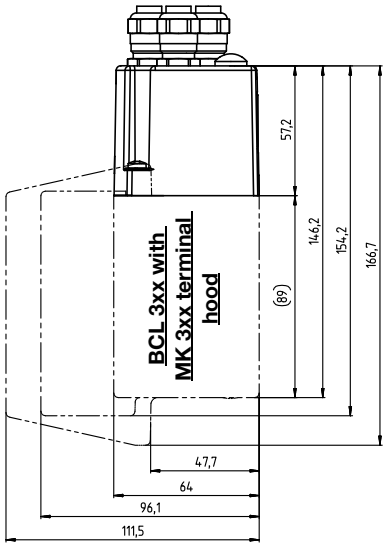
10-pole (ZHR10)			6-pole (ZHR6)		
PIN	Colour	Signal	PIN	Colour	Signal
1	br/BN	GND	1	ws-br/WH-BN	/MNA0
2	rt/RD	CTS_RSA	2	ws-rt/WH-RD	SO2_MNA1
3	or/OG	RTS_RSB	3	ws-or/WH-OG	/MNA2
4	ge/YE	RS 232 RxD	4	ws-ge/WH-YE	/MNA3
5	gn/GN	RS 232 TxD	5	ws-gn/WH-GN	SI2_MNA4
6	bl/BU	/Serv	6	ws-sw/WH-BK	SWOUT1
7	vi/VI	SWIN1			
8	gr/GY	VIN			
9	ws/WH	GNDIN			
10	SH	PE			

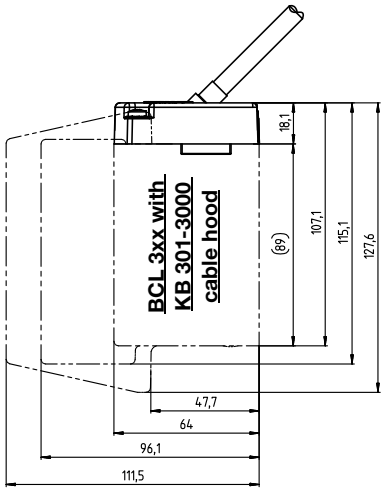
OVERVIEW

Dimensioned drawing









A Optical axis

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STATIONARY BAR CODE READERS BCL 3xx*i*

Bar code reader Series 300*i*	Module size	Page
with N-optics	0.127 0.2 mm	58
with M-optics	0.2 0.5 mm	64
with F-optics	0.3 0.8 mm	70
with L-optics	0.35 0.8 mm	76



Common technical data

Electrical data	Operating voltage U_B	18 … 30 VDC
	Power consumption	w/o heating: max. 4.5 W w. heating: max. 27 W
	Interface type	RS 232, RS 422, RS 485, Ethernet, PROFIBUS, PROFINET, Service: USB 2.0
	Protocols	Leuze Standard, Leuze multiNet plus, ACK/NAK, TCP/IP, UDP, PROFIBUS DP, PROFINET RT, EtherNet/IP
	Code types	all common bar codes
	Sw. inputs/outputs	2, configurable
Indicators and operational controls	LEDs	2 (power, bus state)
	Display/buttons (option)	monochrome, 128x32 pixels / 2
Mechanical data	Housing / Optical window	diecast aluminum / glass
	Weight	approx. 270 g (w/o conn. hood)
Environmental data	Ambient temperature operation (storage)	w/o heating: 0 °C … +40 °C w. heating: -35 °C … +40 °C (-20 °C … +70 °C)
	Protection class	IP 65
Laser	Laser diode, red, wavelength 655 nm Class 2 acc. to EN 60825-1 and 21 CFR 1040.10 with Laser Notice No. 50	

Features

- **Line scanner with beam exit at the front**
- **Code fragment technology**
- **Small construction volume**
- **Large depth of field**
- **Large reading field width**
- ***'i'* - integrated fieldbus connectivity**
- **Stand-alone operation possible**
- **Stand-alone, multiNet slave, Ethernet, PROFIBUS and PROFINET device variants**
- **Modular connection technology by means of pluggable connection hoods**
- **Parameters are stored fail-safe**
- **Easy mounting and fastening**
- **Optionally with display**
- **Devices with integrated heating available**

BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with N-optics				
BCL 300i S N 102 50116226	Single-line scanner for small module codes, modular connection technology	160	1000	RS 232/422
BCL 300i S N 102 D 50116225	Single-line scanner for small module codes, display, modular connection technology	160	1000	RS 232/422
BCL 300i S N 102 D H 50116224	Single-line scanner for small module codes, display and heating, modular connection technology	160	1000	RS 232/422
BCL 301i S N 102 50116319	Single-line scanner for small module codes, modular connection technology	160	1000	RS 485
BCL 301i S N 102 D 50116318	Single-line scanner for small module codes, display, modular connection technology	160	1000	RS 485
BCL 301i S N 102 D H 50116317	Single-line scanner for small module codes, display and heating, modular connection technology	160	1000	RS 485
BCL 304i S N 102 50116367	Single-line scanner for small module codes, modular connection technology	160	1000	PROFIBUS DP
BCL 304i S N 102 D 50116366	Single-line scanner for small module codes, display, modular connection technology	160	1000	PROFIBUS DP
BCL 304i S N 102 D H 50116365	Single-line scanner for small module codes, display and heating, modular connection technology	160	1000	PROFIBUS DP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 3xx*i* ...

N-optics, Single-Line

BARCODE

Features

- Line scanner with beam exit at the front
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- N-optics
- For module sizes m = 0.127 ... 0.2mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



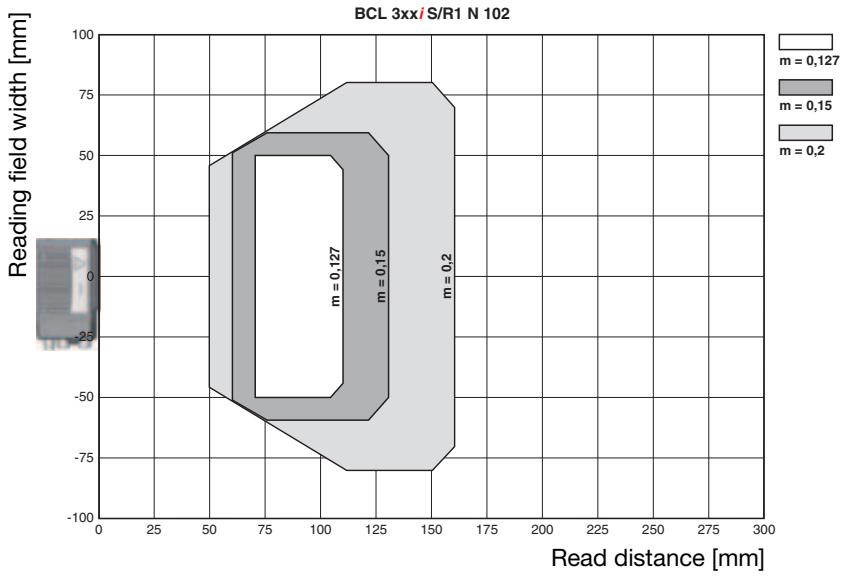
Electrical connection

www.leuze.com

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* S N 102 with N-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with N-optics				
BCL 308i S N 102 50116414	Single-line scanner for small module codes, modular connection technology	160	1000	Ethernet
BCL 308i S N 102 D 50116413	Single-line scanner for small module codes, display, modular connection technology	160	1000	Ethernet
BCL 308i S N 102 D H 50116412	Single-line scanner for small module codes, display and heating, modular connection technology	160	1000	Ethernet
BCL 348i S N 102 50116462	Single-line scanner for small module codes, modular connection technology	160	1000	PROFINET RT
BCL 348i S N 102 D 50116461	Single-line scanner for small module codes, display, modular connection technology	160	1000	PROFINET RT
BCL 348i S N 102 D H 50116460	Single-line scanner for small module codes, display and heating, modular connection technology	160	1000	PROFINET RT
BCL 358i S N 102 50120793	Single-line scanner for small module codes, modular connection technology	160	1000	EtherNet/IP
BCL 358i S N 102 D 50120794	Single-line scanner for small module codes, display, modular connection technology	160	1000	EtherNet/IP
BCL 358i S N 102 D H 50120795	Single-line scanner for small module codes, display and heating, modular connection technology	160	1000	EtherNet/IP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 3xx*i* ...

N-optics, Single-Line

BARCODE

Features

- Line scanner with beam exit at the front
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- N-optics
- For module sizes m = 0.127 ... 0.2 mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



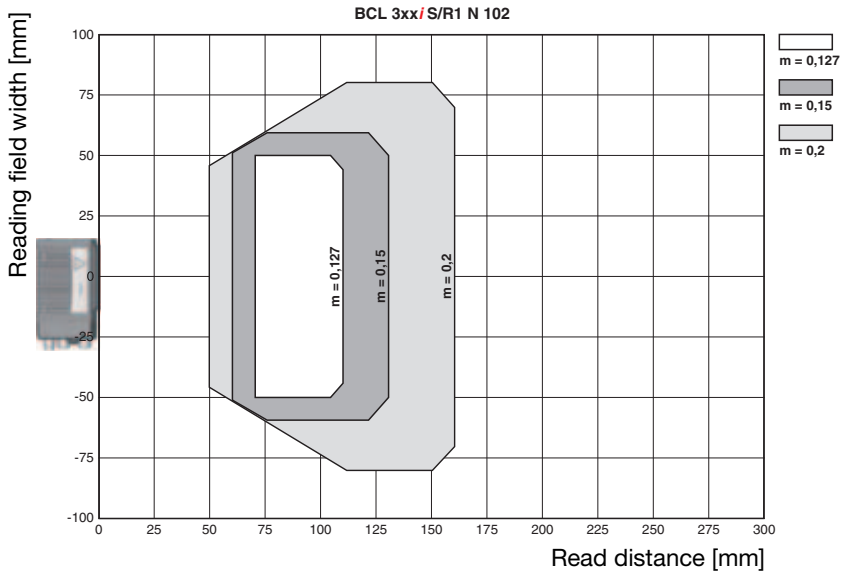
Electrical connection

www.leuze.com

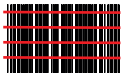
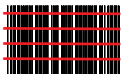
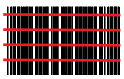
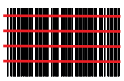
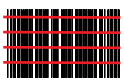
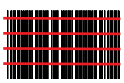
See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* S N 102 with N-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with N-optics				
BCL 300i R1 N 102 50116202	Raster scanner for small module codes, modular connection technology 	160	1000	RS 232/422
BCL 300i R1 N 102 D 50116201	Raster scanner for small module codes, display, modular connection technology 	160	1000	RS 232/422
BCL 301i R1 N 102 50116295	Raster scanner for small module codes, modular connection technology 	160	1000	RS 485
BCL 301i R1 N 102 D 50116294	Raster scanner for small module codes, display, modular connection technology 	160	1000	RS 485
BCL 304i R1 N 102 50116343	Raster scanner for small module codes, modular connection technology 	160	1000	PROFIBUS DP
BCL 304i R1 N 102 D 50116342	Raster scanner for small module codes, display, modular connection technology 	160	1000	PROFIBUS DP
BCL 308i R1 N 102 50116391	Raster scanner for small module codes, modular connection technology 	160	1000	Ethernet
BCL 308i R1 N 102 D 50116390	Raster scanner for small module codes, display, modular connection technology 	160	1000	Ethernet
BCL 348i R1 N 102 50116438	Raster scanner for small module codes, modular connection technology 	160	1000	PROFINET RT
BCL 348i R1 N 102 D 50116437	Raster scanner for small module codes, display, modular connection technology 	160	1000	PROFINET RT
BCL 358i R1 N 102 50120770	Raster scanner for small module codes, modular connection technology 	160	1000	EtherNet/IP
BCL 358i R1 N 102 D 50120771	Raster scanner for small module codes, display, modular connection technology 	160	1000	EtherNet/IP

Accessories / connection cables More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*! Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.
An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 3xx*i* ...

N-optics, Raster

BARCODE

Features

- Raster scanner (8 lines) with front beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- N-optics
- For module sizes m = 0.127 ... 0.2mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



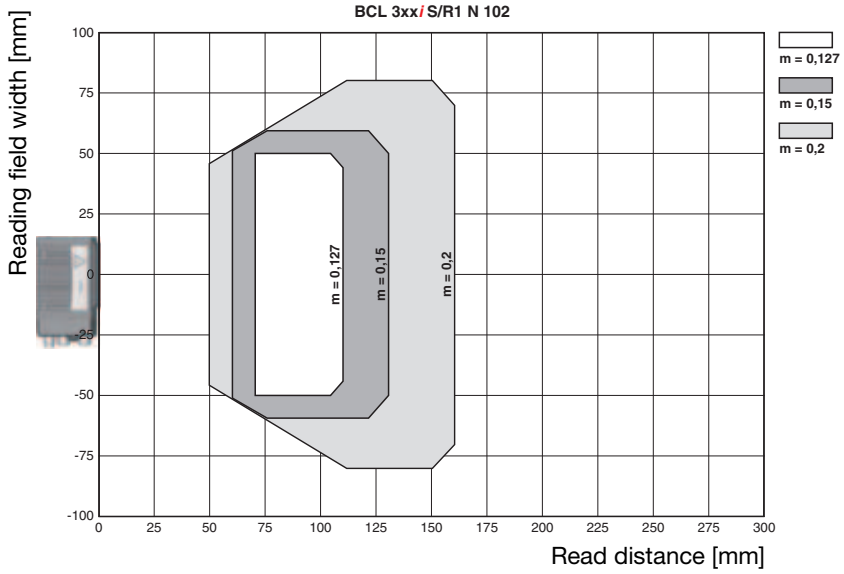
USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.
Part number code for BCL 3xx*i* on page 119.

Electrical connection

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* R1 N 102 with N-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with M-optics				
BCL 300i S M 102 50116220	Single-line scanner for medium module codes, modular connection technology	320	1000	RS 232/422
BCL 300i S M 102 D 50116219	Single-line scanner for medium module codes, display, modular connection technology	320	1000	RS 232/422
BCL 300i S M 102 D H 50116218	Single-line scanner for medium module codes, display and heating, modular connection technology	320	1000	RS 232/422
BCL 301i S M 102 50116313	Single-line scanner for medium module codes, modular connection technology	320	1000	RS 485
BCL 301i S M 102 D 50116312	Single-line scanner for medium module codes, display, modular connection technology	320	1000	RS 485
BCL 301i S M 102 D H 50116311	Single-line scanner for medium module codes, display and heating, modular connection technology	320	1000	RS 485
BCL 304i S M 102 50116361	Single-line scanner for medium module codes, modular connection technology	320	1000	PROFIBUS DP
BCL 304i S M 102 D 50116360	Single-line scanner for medium module codes, display, modular connection technology	320	1000	PROFIBUS DP
BCL 304i S M 102 D H 50116359	Single-line scanner for medium module codes, display and heating, modular connection technology	320	1000	PROFIBUS DP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

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BCL 3xx*i* ...

M-optics, Single-Line

BARCODE

Features

- Line scanner with beam exit at the front
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- M-optics
- For module sizes m = 0.2 ... 0.5mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



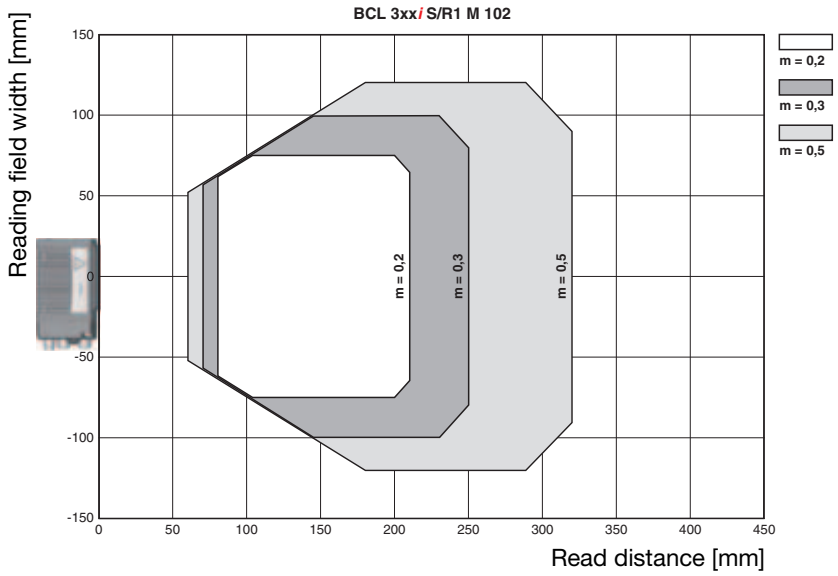
Electrical connection

www.leuze.com

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* S M 102 with M-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with M-optics				
BCL 308i S M 102 50116408	Single-line scanner for medium module codes, modular connection technology	320	1000	Ethernet
BCL 308i S M 102 D 50116407	Single-line scanner for medium module codes, display, modular connection technology	320	1000	Ethernet
BCL 308i S M 102 D H 50116406	Single-line scanner for medium module codes, display and heating, modular connection technology	320	1000	Ethernet
BCL 348i S M 102 50116456	Single-line scanner for medium module codes, modular connection technology	320	1000	PROFINET RT
BCL 348i S M 102 D 50116455	Single-line scanner for medium module codes, display, modular connection technology	320	1000	PROFINET RT
BCL 348i S M 102 D H 50116454	Single-line scanner for medium module codes, display and heating, modular connection technology	320	1000	PROFINET RT
BCL 358i S M 102 50120787	Single-line scanner for medium module codes, modular connection technology	320	1000	EtherNet/IP
BCL 358i S M 102 D 50120788	Single-line scanner for medium module codes, display, modular connection technology	320	1000	EtherNet/IP
BCL 358i S M 102 D H 50120789	Single-line scanner for medium module codes, display and heating, modular connection technology	320	1000	EtherNet/IP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 3xx*i* ...

M-optics, Single-Line

BARCODE

Features

- Line scanner with beam exit at the front
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- M-optics
- For module sizes m = 0.2 ... 0.5mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



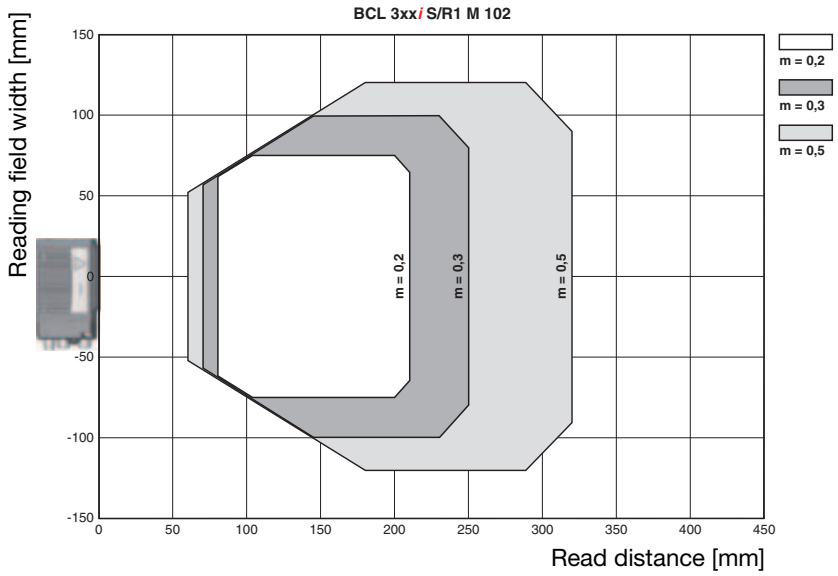
Electrical connection

www.leuze.com

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* S M 102 with M-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with M-optics				
BCL 300i R1 M 102 50116198	Raster scanner for medium module codes, modular connection technology	320	1000	RS 232/422
BCL 300i R1 M 102 D 50116197	Raster scanner for medium module codes, display, modular connection technology	320	1000	RS 232/422
BCL 301i R1 M 102 50116291	Raster scanner for medium module codes, modular connection technology	320	1000	RS 485
BCL 301i R1 M 102 D 50116290	Raster scanner for medium module codes, display, modular connection technology	320	1000	RS 485
BCL 304i R1 M 102 50116339	Raster scanner for medium module codes, modular connection technology	320	1000	PROFIBUS DP
BCL 304i R1 M 102 D 50116338	Raster scanner for medium module codes, display, modular connection technology	320	1000	PROFIBUS DP
BCL 308i R1 M 102 50116387	Raster scanner for medium module codes, modular connection technology	320	1000	Ethernet
BCL 308i R1 M 102 D 50116386	Raster scanner for medium module codes, display, modular connection technology	320	1000	Ethernet
BCL 348i R1 M 102 50116434	Raster scanner for medium module codes, modular connection technology	320	1000	PROFINET RT
BCL 348i R1 M 102 D 50116433	Raster scanner for medium module codes, display, modular connection technology	320	1000	PROFINET RT
BCL 358i R1 M 102 50120766	Raster scanner for medium module codes, modular connection technology	320	1000	EtherNet/IP
BCL 358i R1 M 102 D 50120767	Raster scanner for medium module codes, display, modular connection technology	320	1000	EtherNet/IP

Accessories / connection cables More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*! Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.
An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 3xx*i* ...

M-optics, Raster

BARCODE

Features

- Raster scanner (8 lines) with front beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- M-optics
- For module sizes m = 0.2 ... 0.5mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of pluggable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



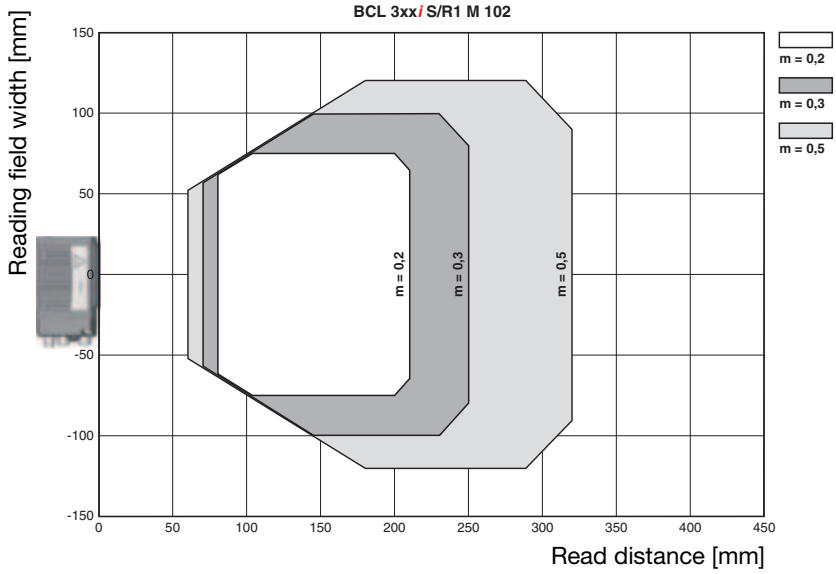
USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.
Part number code for BCL 3xx*i* on page 119.

Electrical connection

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* R1 M 102 with M-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with F-optics				
BCL 300i S F 102 50116208	Single-line scanner for large module codes, modular connection technology	550	1000	RS 232/422
BCL 300i S F 102 D 50116207	Single-line scanner for large module codes, display, modular connection technology	550	1000	RS 232/422
BCL 300i S F 102 D H 50116206	Single-line scanner for large module codes, display and heating, modular connection technology	550	1000	RS 232/422
BCL 301i S F 102 50116301	Single-line scanner for large module codes, modular connection technology	550	1000	RS 485
BCL 301i S F 102 D 50116300	Single-line scanner for large module codes, display, modular connection technology	550	1000	RS 485
BCL 301i S F 102 D H 50116299	Single-line scanner for large module codes, display and heating, modular connection technology	550	1000	RS 485
BCL 304i S F 102 50116349	Single-line scanner for large module codes, modular connection technology	550	1000	PROFIBUS DP
BCL 304i S F 102 D 50116348	Single-line scanner for large module codes, display, modular connection technology	550	1000	PROFIBUS DP
BCL 304i S F 102 D H 50116347	Single-line scanner for large module codes, display and heating, modular connection technology	550	1000	PROFIBUS DP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 3xx*i* ...

F-optics, Single-Line

BARCODE

Features

- Line scanner with beam exit at the front
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- F-optics
- For module sizes m = 0.3 ... 0.8mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



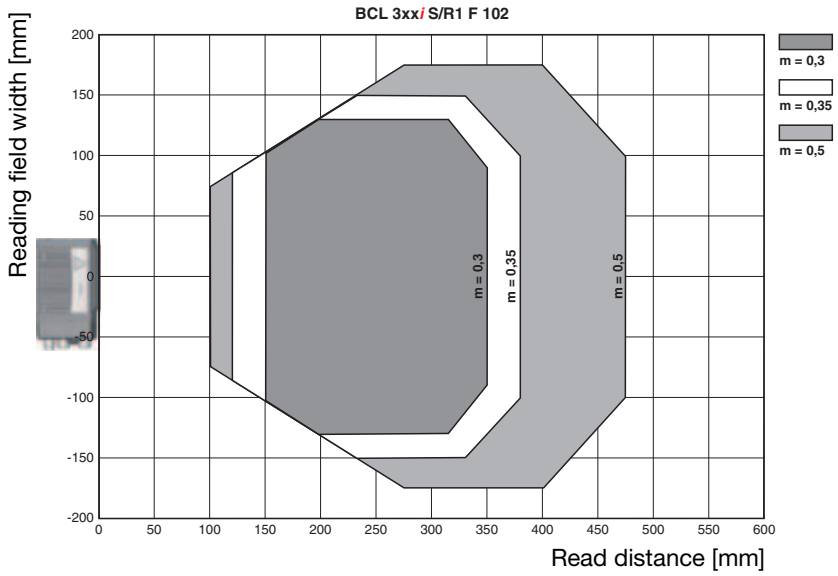
Electrical connection

www.leuze.com

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* S F 102 with F-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with F-optics				
BCL 308i S F 102 50116396	Single-line scanner for large module codes, modular connection technology	550	1000	Ethernet
BCL 308i S F 102 D 50114822	Single-line scanner for large module codes, display, modular connection technology	550	1000	Ethernet
BCL 308i S F 102 D H 50116395	Single-line scanner for large module codes, display and heating, modular connection technology	550	1000	Ethernet
BCL 348i S F 102 50116444	Single-line scanner for large module codes, modular connection technology	550	1000	PROFINET RT
BCL 348i S F 102 D 50116443	Single-line scanner for large module codes, display, modular connection technology	550	1000	PROFINET RT
BCL 348i S F 102 D H 50116442	Single-line scanner for large module codes, display and heating, modular connection technology	550	1000	PROFINET RT
BCL 358i S F 102 50120775	Single-line scanner for large module codes, modular connection technology	550	1000	EtherNet/IP
BCL 358i S F 102 D 50120776	Single-line scanner for large module codes, display, modular connection technology	550	1000	EtherNet/IP
BCL 358i S F 102 D H 50120777	Single-line scanner for large module codes, display and heating, modular connection technology	550	1000	EtherNet/IP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 3xx*i* ...

F-optics, Single-Line

BARCODE

Features

- Line scanner with beam exit at the front
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- F-optics
- For module sizes m = 0.3 ... 0.8mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



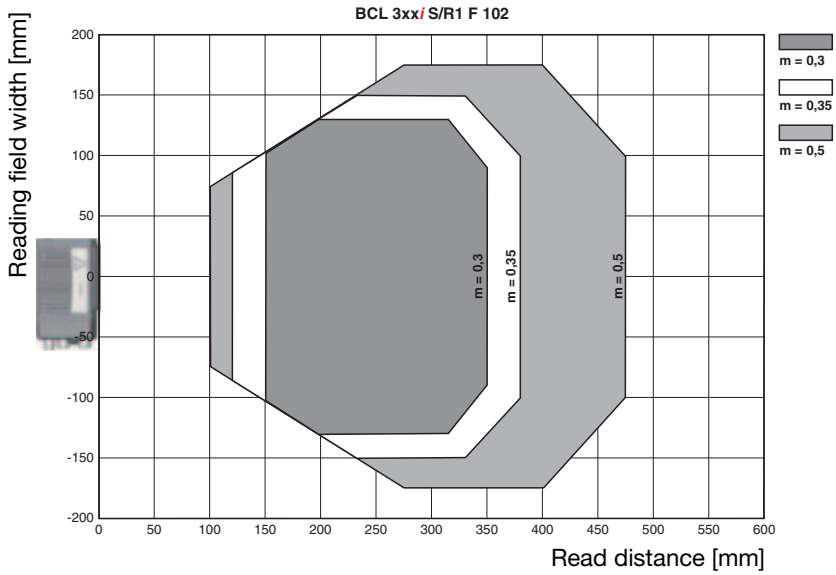
Electrical connection

www.leuze.com

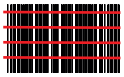
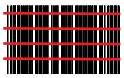
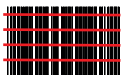
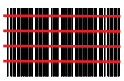
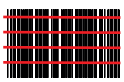
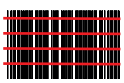
See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* S F 102 with F-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with F-optics				
BCL 300i R1 F 102 50116194	Raster scanner for large module codes, modular connection technology 	550	1000	RS 232/422
BCL 300i R1 F 102 D 50116193	Raster scanner for large module codes, display, modular connection technology 	550	1000	RS 232/422
BCL 301i R1 F 102 50116287	Raster scanner for large module codes, modular connection technology 	550	1000	RS 485
BCL 301i R1 F 102 D 50116286	Raster scanner for large module codes, display, modular connection technology 	550	1000	RS 485
BCL 304i R1 F 102 50116335	Raster scanner for large module codes, modular connection technology 	550	1000	PROFIBUS DP
BCL 304i R1 F 102 D 50116334	Raster scanner for large module codes, display, modular connection technology 	550	1000	PROFIBUS DP
BCL 308i R1 F 102 50116383	Raster scanner for large module codes, modular connection technology 	550	1000	Ethernet
BCL 308i R1 F 102 D 50116382	Raster scanner for large module codes, display, modular connection technology 	550	1000	Ethernet
BCL 348i R1 F 102 50116430	Raster scanner for large module codes, modular connection technology 	550	1000	PROFINET RT
BCL 348i R1 F 102 D 50116429	Raster scanner for large module codes, display, modular connection technology 	550	1000	PROFINET RT
BCL 358i R1 F 102 50120762	Raster scanner for large module codes, modular connection technology 	550	1000	EtherNet/IP
BCL 358i R1 F 102 D 50120763	Raster scanner for large module codes, display, modular connection technology 	550	1000	EtherNet/IP

Accessories / connection cables More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*! Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.
An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 3xx*i* ...

F-optics, Raster

BARCODE

Features

- Raster scanner (8 lines) with front beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- F-optics
- For module sizes m = 0.3 ... 0.8mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



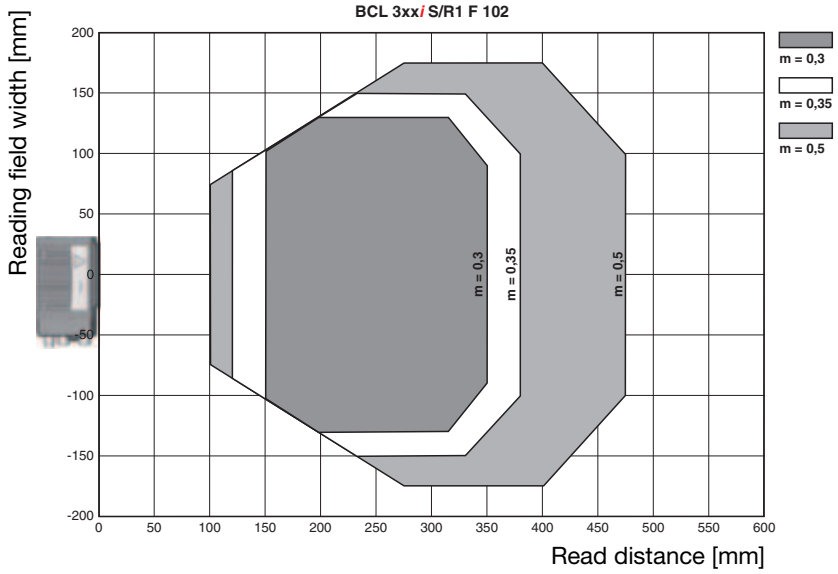
USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.
Part number code for BCL 3xx*i* on **page 119**.

Electrical connection

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* R1 F 102 with F-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with L-optics				
BCL 300i S L 102 50116214	Single-line scanner for very large module codes, modular connection technology	700	1000	RS 232/422
BCL 300i S L 102 D 50116213	Single-line scanner for very large module codes, display, modular connection technology	700	1000	RS 232/422
BCL 300i S L 102 D H 50116212	Single-line scanner for very large module codes, display and heating, modular connection technology	700	1000	RS 232/422
BCL 301i S L 102 50116307	Single-line scanner for very large module codes, modular connection technology	700	1000	RS 485
BCL 301i S L 102 D 50116306	Single-line scanner for very large module codes, display, modular connection technology	700	1000	RS 485
BCL 301i S L 102 D H 50116305	Single-line scanner for very large module codes, display and heating, modular connection technology	700	1000	RS 485
BCL 304i S L 102 50116355	Single-line scanner for very large module codes, modular connection technology	700	1000	PROFIBUS DP
BCL 304i S L 102 D 50116354	Single-line scanner for very large module codes, display, modular connection technology	700	1000	PROFIBUS DP
BCL 304i S L 102 D H 50116353	Single-line scanner for very large module codes, display and heating, modular connection technology	700	1000	PROFIBUS DP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 3xx*i* ...

L-optics, Single-Line

Features

- Line scanner with beam exit at the front
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- L-optics
- For module sizes m = 0.35 ... 0.8mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening

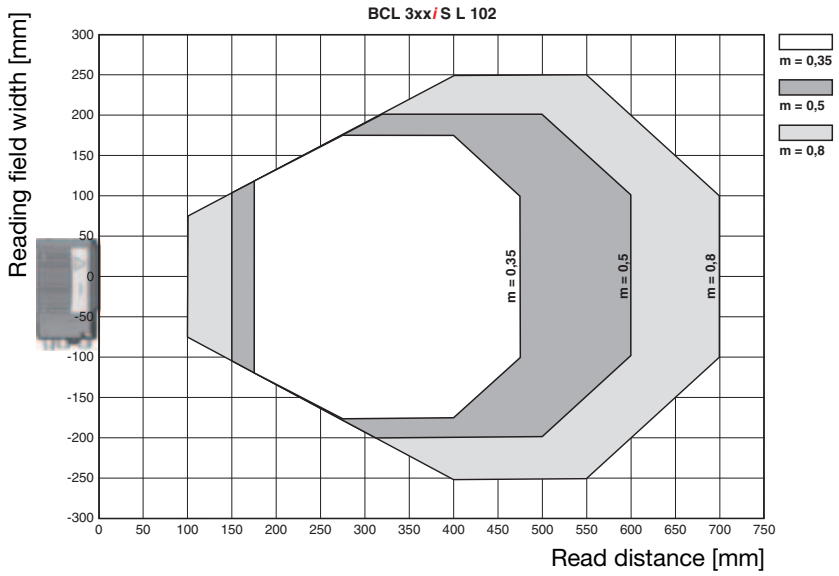


Electrical connection

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* S L 102 with L-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with L-optics				
BCL 308i S L 102 50116402	Single-line scanner for very large module codes, modular connection technology	700	1000	Ethernet
BCL 308i S L 102 D 50116401	Single-line scanner for very large module codes, display, modular connection technology	700	1000	Ethernet
BCL 308i S L 102 D H 50116400	Single-line scanner for very large module codes, display and heating, modular connection technology	700	1000	Ethernet
BCL 348i S L 102 50116450	Single-line scanner for very large module codes, modular connection technology	700	1000	PROFINET RT
BCL 348i S L 102 D 50116449	Single-line scanner for very large module codes, display, modular connection technology	700	1000	PROFINET RT
BCL 348i S L 102 D H 50116448	Single-line scanner for very large module codes, display and heating, modular connection technology	700	1000	PROFINET RT
BCL 358i S L 102 50120781	Single-line scanner for very large module codes, modular connection technology	700	1000	EtherNet/IP
BCL 358i S L 102 D 50120782	Single-line scanner for very large module codes, display, modular connection technology	700	1000	EtherNet/IP
BCL 358i S L 102 D H 50120783	Single-line scanner for very large module codes, display and heating, modular connection technology	700	1000	EtherNet/IP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 3xx*i* ...

L-optics, Single-Line

BARCODE

Features

- Line scanner with beam exit at the front
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- L-optics
- For module sizes m = 0.35 ... 0.8mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



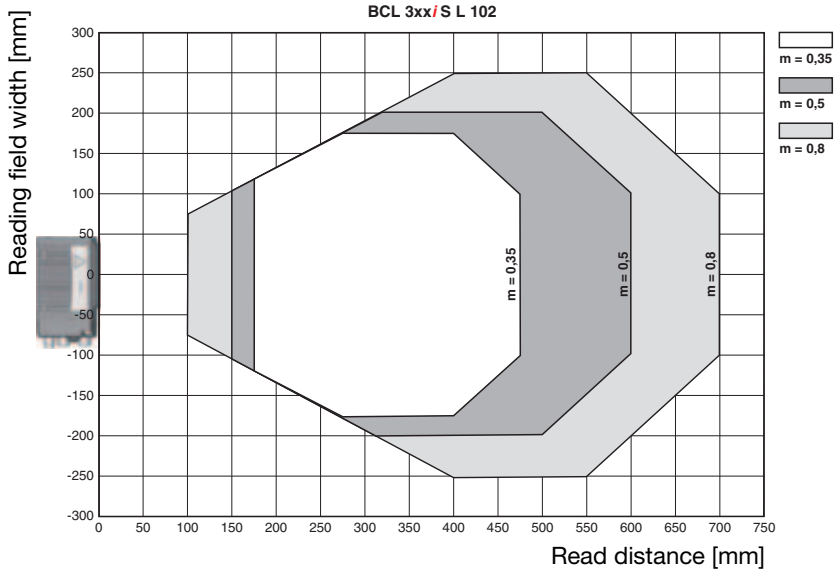
Electrical connection

www.leuze.com

See operating instructions for information on the electrical connection.

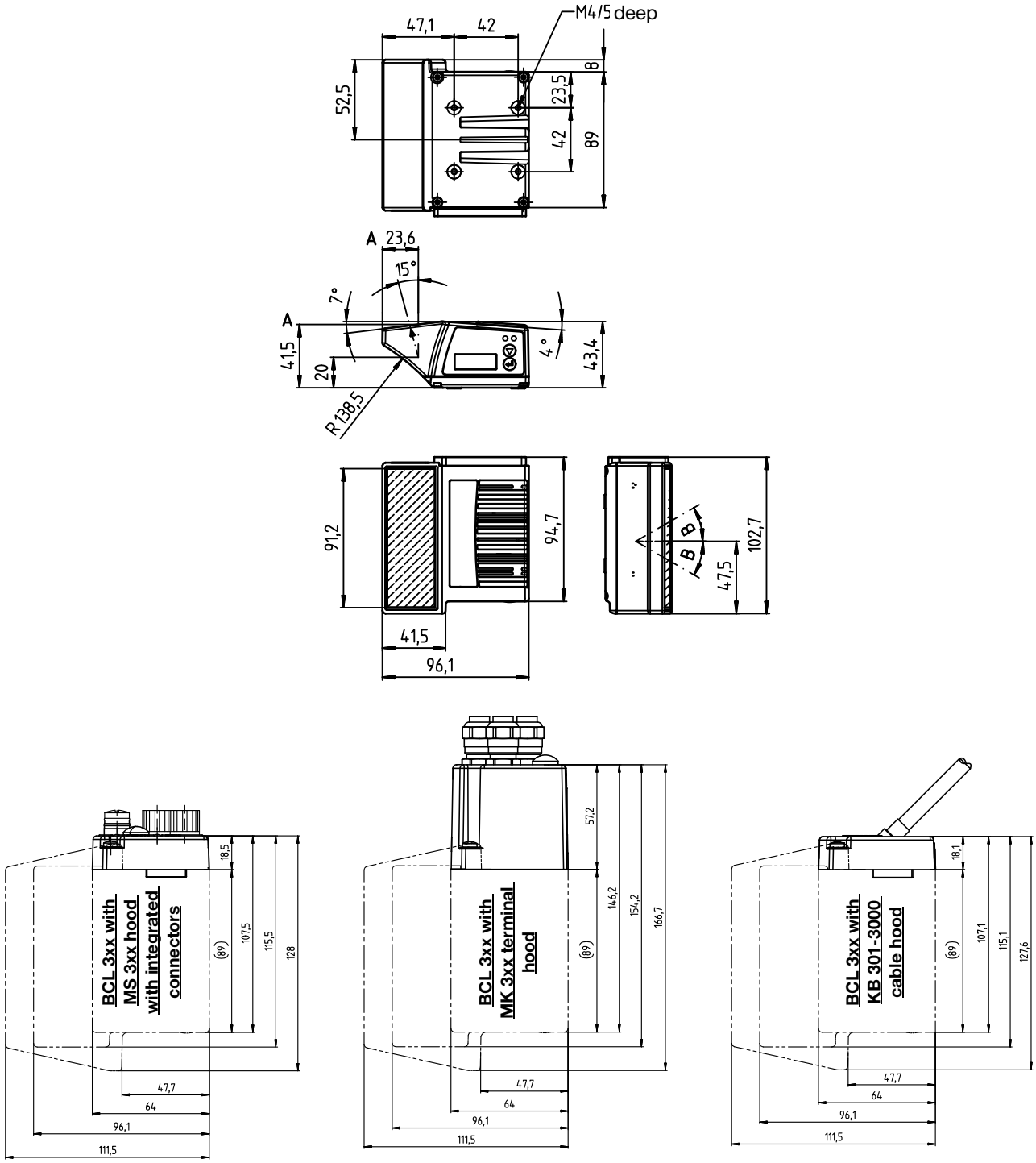
Reading curves

BCL 3xx*i* S L 102 with L-optics



OVERVIEW

Dimensioned drawing



A Optical axis
B Deflection angle of the laser beam: ± 30°

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STATIONARY BAR CODE READERS BCL 3xx*i*

Bar code reader Series 300*i*	Module size	Page
with N-optics	0.127 0.2 mm	82
with M-optics	0.2 0.5 mm	88
with F-optics	0.3 0.8 mm	94
with L-optics	0.35 0.8 mm	100



Common technical data

Electrical data	Operating voltage U_B	18 … 30 VDC
	Power consumption	w/o heating: max. 4.5 W w. heating: max. 27 W
	Interface type	RS 232, RS 422, RS 485, Ethernet, PROFIBUS, PROFINET, Service: USB 2.0
	Protocols	Leuze Standard, Leuze multiNet plus, ACK/NAK, TCP/IP, UDP, PROFIBUS DP, PROFINET RT, EtherNet/IP
	Code types	all common bar codes
	Sw. inputs/outputs	2, configurable
Indicators and operational controls	LEDs	2 (power, bus state)
	Display/buttons (option)	monochrome, 128x32 pixels / 2
Mechanical data	Housing / Optical window	diecast aluminum / glass
	Weight	approx. 350 g (w/o conn. hood)
Environmental data	Ambient temperature operation (storage)	w/o heating: 0 °C … +40 °C w. heating: -35 °C … +40 °C (-20 °C … +70 °C)
	Protection class	IP 65
Laser	Laser diode, red, wavelength 655 nm Class 2 acc. to EN 60825-1 and 21 CFR 1040.10 with Laser Notice No. 50	

Features

- **Line scanner with deflection mirror and perpendicular beam exit**
- **Code fragment technology**
- **Small construction volume**
- **Large depth of field**
- **Large reading field width**
- ***'i'* - integrated fieldbus connectivity**
- **Stand-alone operation possible**
- **Stand-alone, multiNet slave, Ethernet, PROFIBUS and PROFINET device variants**
- **Modular connection technology by means of pluggable connection hoods**
- **Parameters are stored fail-safe**
- **Easy mounting and fastening**
- **Optionally with display**
- **Devices with integrated heating available**

BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with N-optics				
BCL 300i S N 100 50116223	Deflection mirror scanner for small module codes, modular connection technology	130	1000	RS 232/422
BCL 300i S N 100 D 50116222	Deflection mirror scanner for small module codes, display, modular connection technology	130	1000	RS 232/422
BCL 300i S N 100 D H 50116221	Deflection mirror scanner for small module codes, display and heating, modular connection technology	130	1000	RS 232/422
BCL 301i S N 100 50116316	Deflection mirror scanner for small module codes, modular connection technology	130	1000	RS 485
BCL 301i S N 100 D 50116315	Deflection mirror scanner for small module codes, display, modular connection technology	130	1000	RS 485
BCL 301i S N 100 D H 50116314	Deflection mirror scanner for small module codes, display and heating, modular connection technology	130	1000	RS 485
BCL 304i S N 100 50116364	Deflection mirror scanner for small module codes, modular connection technology	130	1000	PROFIBUS DP
BCL 304i S N 100 D 50116363	Deflection mirror scanner for small module codes, display, modular connection technology	130	1000	PROFIBUS DP
BCL 304i S N 100 D H 50116362	Deflection mirror scanner for small module codes, display and heating, modular connection technology	130	1000	PROFIBUS DP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 2x Page 26


BCL 3xx*i* Page 56


BCL 5xx*i* Page 120


MSP*i* Page 150


BCL 90 Page 154


MSP Page 166

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BCL 3xx*i* ...

N-optics, Deflect. Mirror

BARCODE

Features

- Line scanner with deflection mirror and perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- N-optics
- For module sizes m = 0.127 ... 0.2mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



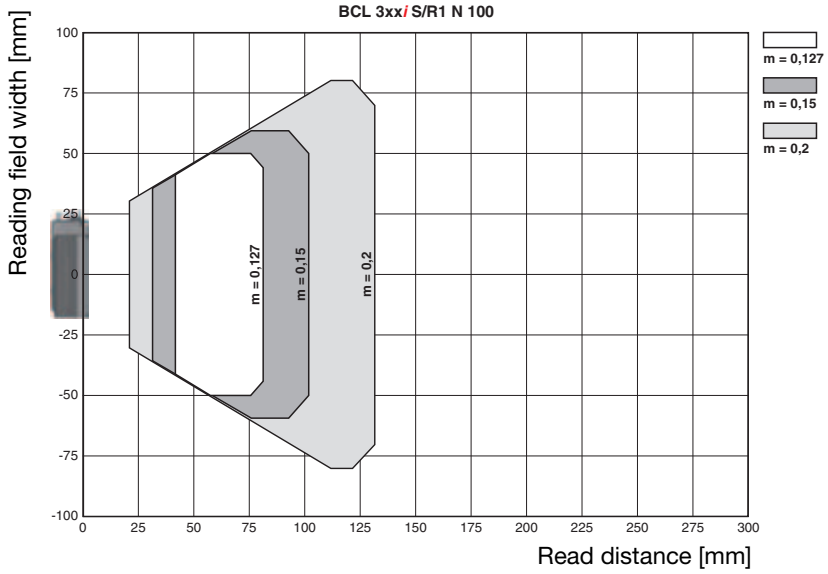
Electrical connection

www.leuze.com

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* S N 100 with N-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with N-optics				
BCL 308i S N 100 50116411	Deflection mirror scanner for small module codes, modular connection technology	130	1000	Ethernet
BCL 308i S N 100 D 50116410	Deflection mirror scanner for small module codes, display, modular connection technology	130	1000	Ethernet
BCL 308i S N 100 D H 50116409	Deflection mirror scanner for small module codes, display and heating, modular connection technology	130	1000	Ethernet
BCL 348i S N 100 50116459	Deflection mirror scanner for small module codes, modular connection technology	130	1000	PROFINET RT
BCL 348i S N 100 D 50116458	Deflection mirror scanner for small module codes, display, modular connection technology	130	1000	PROFINET RT
BCL 348i S N 100 D H 50116457	Deflection mirror scanner for small module codes, display and heating, modular connection technology	130	1000	PROFINET RT
BCL 358i S N 100 50120790	Deflection mirror scanner for small module codes, modular connection technology	130	1000	EtherNet/IP
BCL 358i S N 100 D 50120791	Deflection mirror scanner for small module codes, display, modular connection technology	130	1000	EtherNet/IP
BCL 358i S N 100 D H 50120792	Deflection mirror scanner for small module codes, display and heating, modular connection technology	130	1000	EtherNet/IP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 3xx*i* ...

N-optics, Deflect. Mirror

BARCODE

Features

- Line scanner with deflection mirror and perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- N-optics
- For module sizes m = 0.127 ... 0.2mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



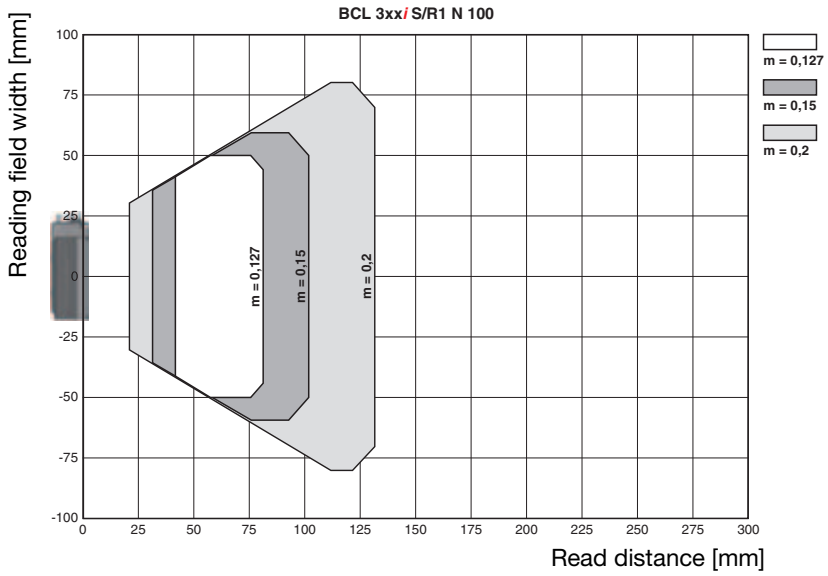
Electrical connection

www.leuze.com

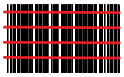
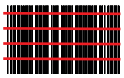
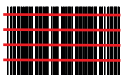
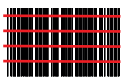
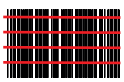
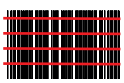
See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* S N 100 with N-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with N-optics				
BCL 300i R1 N 100 50116200	Deflection mirror raster scanner for small module codes, modular connection technology 	130	1000	RS 232/422
BCL 300i R1 N 100 D 50116199	Deflection mirror raster scanner for small module codes, display, modular connection technology 	130	1000	RS 232/422
BCL 301i R1 N 100 50116293	Deflection mirror raster scanner for small module codes, modular connection technology 	130	1000	RS 485
BCL 301i R1 N 100 D 50116292	Deflection mirror raster scanner for small module codes, display, modular connection technology 	130	1000	RS 485
BCL 304i R1 N 100 50116341	Deflection mirror raster scanner for small module codes, modular connection technology 	130	1000	PROFIBUS DP
BCL 304i R1 N 100 D 50116340	Deflection mirror raster scanner for small module codes, display, modular connection technology 	130	1000	PROFIBUS DP
BCL 308i R1 N 100 50116389	Deflection mirror raster scanner for small module codes, modular connection technology 	130	1000	Ethernet
BCL 308i R1 N 100 D 50116388	Deflection mirror raster scanner for small module codes, display, modular connection technology 	130	1000	Ethernet
BCL 348i R1 N 100 50116436	Deflection mirror raster scanner for small module codes, modular connection technology 	130	1000	PROFINET RT
BCL 348i R1 N 100 D 50116435	Deflection mirror raster scanner for small module codes, display, modular connection technology 	130	1000	PROFINET RT
BCL 358i R1 N 100 50120768	Deflection mirror raster scanner for small module codes, modular connection technology 	130	1000	EtherNet/IP
BCL 358i R1 N 100 D 50120769	Deflection mirror raster scanner for small module codes, display, modular connection technology 	130	1000	EtherNet/IP

Accessories / connection cables More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*! Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.
An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 3xx*i* ...

N-optics, Deflect. Mirror

BARCODE

Features

- Raster scanner (8 lines) with deflection mirror and perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- N-optics
- For module sizes m = 0.127 ... 0.2 mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of pluggable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



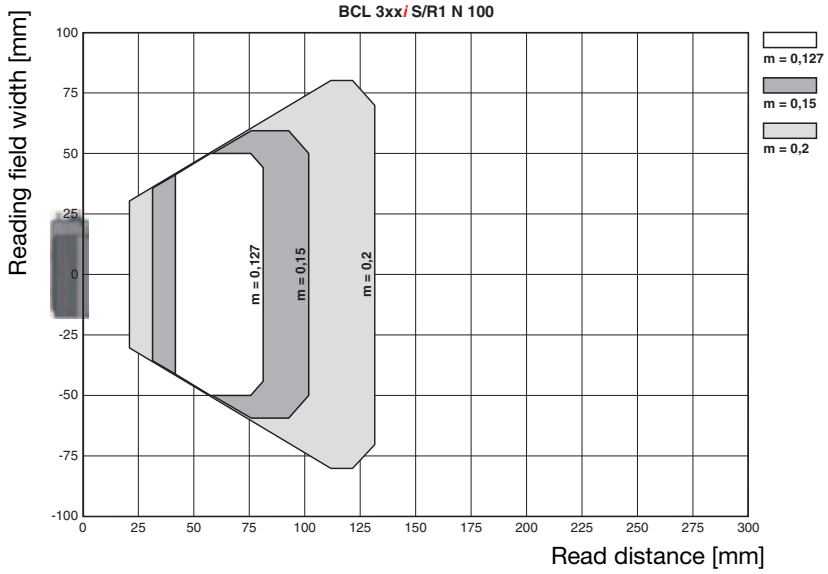
USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.
Part number code for BCL 3xx*i* on page 119.

Electrical connection

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* R1 N 100 with N-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with M-optics				
BCL 300i S M 100 50116217	Deflection mirror scanner for medium module codes, modular connection technology	290	1000	RS 232/422
BCL 300i S M 100 D 50116216	Deflection mirror scanner for medium module codes, display, modular connection technology	290	1000	RS 232/422
BCL 300i S M 100 D H 50116215	Deflection mirror scanner for medium module codes, display and heating, modular connection technology	290	1000	RS 232/422
BCL 301i S M 100 50116308	Deflection mirror scanner for medium module codes, modular connection technology	290	1000	RS 485
BCL 301i S M 100 D 50116310	Deflection mirror scanner for medium module codes, display, modular connection technology	290	1000	RS 485
BCL 301i S M 100 D H 50116309	Deflection mirror scanner for medium module codes, display and heating, modular connection technology	290	1000	RS 485
BCL 304i S M 100 50116358	Deflection mirror scanner for medium module codes, modular connection technology	290	1000	PROFIBUS DP
BCL 304i S M 100 D 50116357	Deflection mirror scanner for medium module codes, display, modular connection technology	290	1000	PROFIBUS DP
BCL 304i S M 100 D H 50116356	Deflection mirror scanner for medium module codes, display and heating, modular connection technology	290	1000	PROFIBUS DP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 3xx*i* ...

M-optics, Deflect. Mirror

BARCODE

Features

- Line scanner with deflection mirror and perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- M-optics
- For module sizes m = 0.2 ... 0.5mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening

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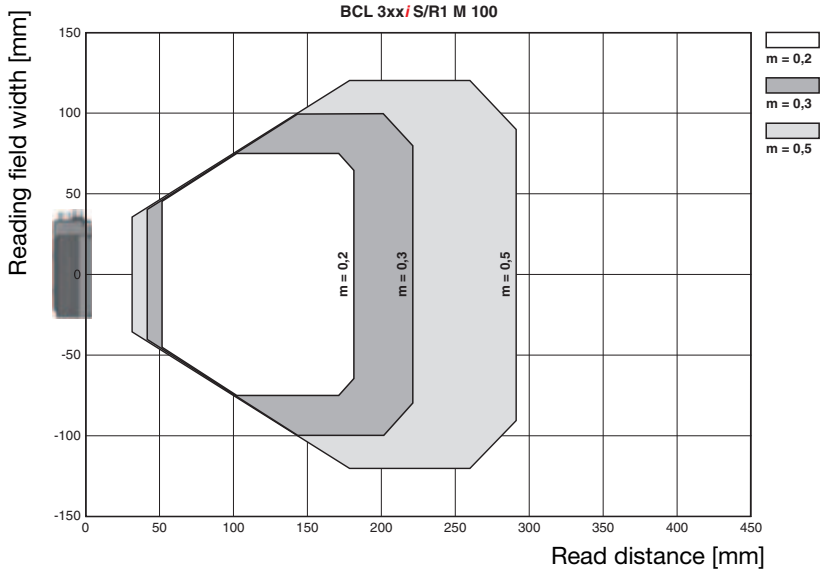
Electrical connection

www.leuze.com

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* S M 100 with M-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with M-optics				
BCL 308i S M 100 50116405	Deflection mirror scanner for medium module codes, modular connection technology	290	1000	Ethernet
BCL 308i S M 100 D 50116404	Deflection mirror scanner for medium module codes, display, modular connection technology	290	1000	Ethernet
BCL 308i S M 100 D H 50116403	Deflection mirror scanner for medium module codes, display and heating, modular connection technology	290	1000	Ethernet
BCL 348i S M 100 50116451	Deflection mirror scanner for medium module codes, modular connection technology	290	1000	PROFINET RT
BCL 348i S M 100 D 50116453	Deflection mirror scanner for medium module codes, display, modular connection technology	290	1000	PROFINET RT
BCL 348i S M 100 D H 50116452	Deflection mirror scanner for medium module codes, display and heating, modular connection technology	290	1000	PROFINET RT
BCL 358i S M 100 50120784	Deflection mirror scanner for medium module codes, modular connection technology	290	1000	EtherNet/IP
BCL 358i S M 100 D 50120785	Deflection mirror scanner for medium module codes, display, modular connection technology	290	1000	EtherNet/IP
BCL 358i S M 100 D H 50120786	Deflection mirror scanner for medium module codes, display and heating, modular connection technology	290	1000	EtherNet/IP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 2x Page 26


BCL 3xx*i* Page 56


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BCL 3xx*i* ...

M-optics, Deflect. Mirror

BARCODE

Features

- Line scanner with deflection mirror and perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- M-optics
- For module sizes m = 0.2 ... 0.5mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening

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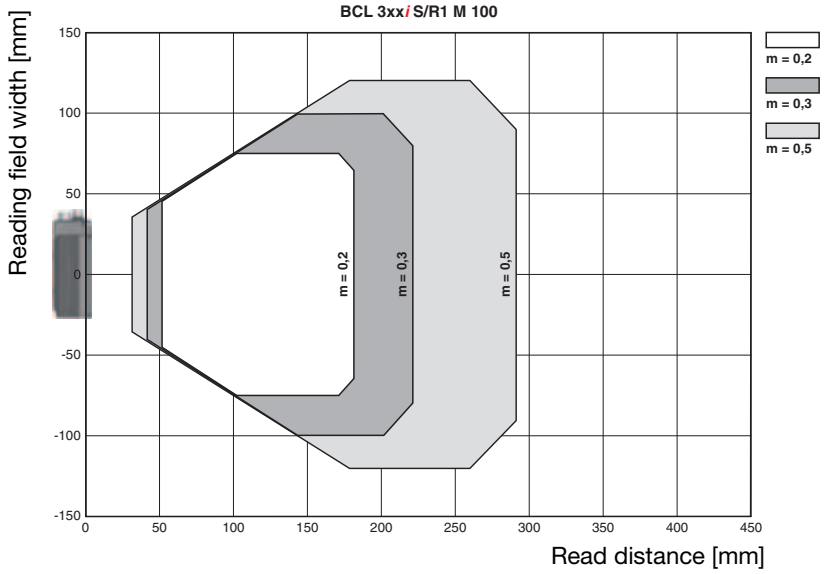
Electrical connection

www.leuze.com

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* S M 100 with M-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with M-optics				
BCL 300i R1 M 100 50116196	Deflection mirror raster scanner for medium module codes, modular connection technology	290	1000	RS 232/422
BCL 300i R1 M 100 D 50116195	Deflection mirror raster scanner for medium module codes, display, modular connection technology	290	1000	RS 232/422
BCL 301i R1 M 100 50116289	Deflection mirror raster scanner for medium module codes, modular connection technology	290	1000	RS 485
BCL 301i R1 M 100 D 50116288	Deflection mirror raster scanner for medium module codes, display, modular connection technology	290	1000	RS 485
BCL 304i R1 M 100 50116337	Deflection mirror raster scanner for medium module codes, modular connection technology	290	1000	PROFIBUS DP
BCL 304i R1 M 100 D 50116336	Deflection mirror raster scanner for medium module codes, display, modular connection technology	290	1000	PROFIBUS DP
BCL 308i R1 M 100 50116385	Deflection mirror raster scanner for medium module codes, modular connection technology	290	1000	Ethernet
BCL 308i R1 M 100 D 50116384	Deflection mirror raster scanner for medium module codes, display, modular connection technology	290	1000	Ethernet
BCL 348i R1 M 100 50116432	Deflection mirror raster scanner for medium module codes, modular connection technology	290	1000	PROFINET RT
BCL 348i R1 M 100 D 50116431	Deflection mirror raster scanner for medium module codes, display, modular connection technology	290	1000	PROFINET RT
BCL 358i R1 M 100 50120764	Deflection mirror raster scanner for medium module codes, modular connection technology	290	1000	EtherNet/IP
BCL 358i R1 M 100 D 50120765	Deflection mirror raster scanner for medium module codes, display, modular connection technology	290	1000	EtherNet/IP

Accessories / connection cables More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*! Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.
An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 5xx*i* Page 120


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BCL 3xx*i* ...

M-optics, Deflect. Mirror

BARCODE

Features

- Raster scanner (8 lines) with deflection mirror and perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- M-optics
- For module sizes m = 0.2 ... 0.5mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of pluggable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



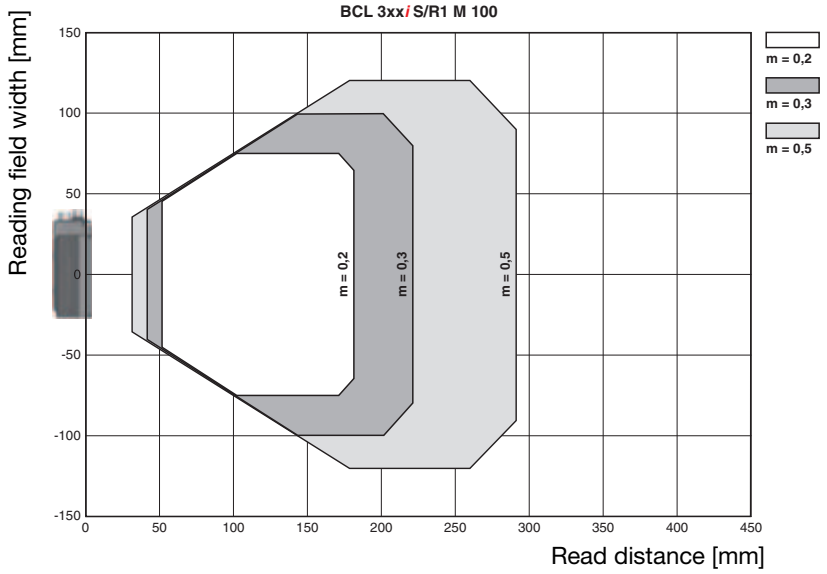
USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.
Part number code for BCL 3xx*i* on page 119.

Electrical connection

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* R1 M 100 with M-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with F-optics				
BCL 300i S F 100 50116205	Deflection mirror scanner for large module codes, modular connection technology	520	1000	RS 232/422
BCL 300i S F 100 D 50116204	Deflection mirror scanner for large module codes, display, modular connection technology	520	1000	RS 232/422
BCL 300i S F 100 D H 50116203	Deflection mirror scanner for large module codes, display and heating, modular connection technology	520	1000	RS 232/422
BCL 301i S F 100 50116298	Deflection mirror scanner for large module codes, modular connection technology	520	1000	RS 485
BCL 301i S F 100 D 50116297	Deflection mirror scanner for large module codes, display, modular connection technology	520	1000	RS 485
BCL 301i S F 100 D H 50116296	Deflection mirror scanner for large module codes, display and heating, modular connection technology	520	1000	RS 485
BCL 304i S F 100 50116346	Deflection mirror scanner for large module codes, modular connection technology	520	1000	PROFIBUS DP
BCL 304i S F 100 D 50116345	Deflection mirror scanner for large module codes, display, modular connection technology	520	1000	PROFIBUS DP
BCL 304i S F 100 D H 50116344	Deflection mirror scanner for large module codes, display and heating, modular connection technology	520	1000	PROFIBUS DP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 3xx*i* ...

F-optics, Deflect. Mirror

BARCODE

Features

- Line scanner with deflection mirror and perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- F-optics
- For module sizes m = 0.3 ... 0.8mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



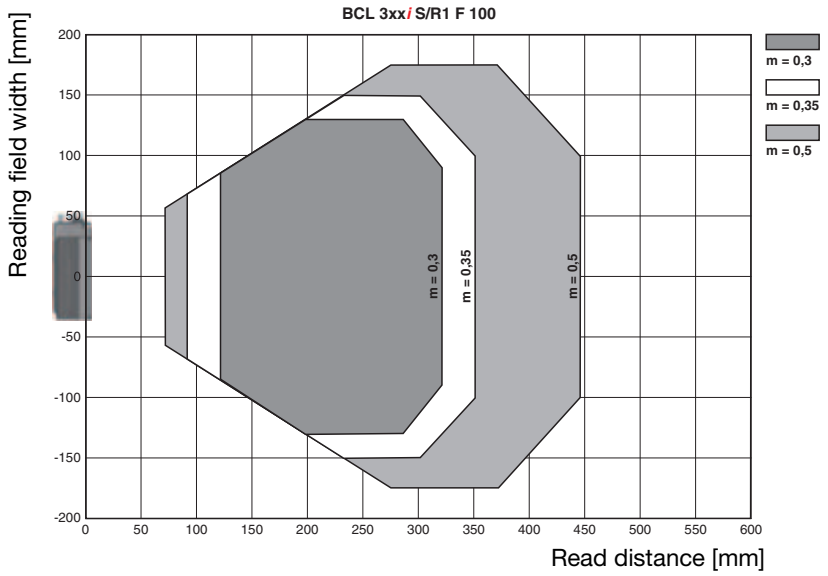
Electrical connection

www.leuze.com

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* S F 100 with F-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with F-optics				
BCL 308i S F 100 50116394	Deflection mirror scanner for large module codes, modular connection technology	520	1000	Ethernet
BCL 308i S F 100 D 50116393	Deflection mirror scanner for large module codes, display, modular connection technology	520	1000	Ethernet
BCL 308i S F 100 D H 50116392	Deflection mirror scanner for large module codes, display and heating, modular connection technology	520	1000	Ethernet
BCL 348i S F 100 50116441	Deflection mirror scanner for large module codes, modular connection technology	520	1000	PROFINET RT
BCL 348i S F 100 D 50116440	Deflection mirror scanner for large module codes, display, modular connection technology	520	1000	PROFINET RT
BCL 348i S F 100 D H 50116439	Deflection mirror scanner for large module codes, display and heating, modular connection technology	520	1000	PROFINET RT
BCL 358i S F 100 50120772	Deflection mirror scanner for large module codes, modular connection technology	520	1000	EtherNet/IP
BCL 358i S F 100 D 50120773	Deflection mirror scanner for large module codes, display, modular connection technology	520	1000	EtherNet/IP
BCL 358i S F 100 D H 50120774	Deflection mirror scanner for large module codes, display and heating, modular connection technology	520	1000	EtherNet/IP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 2x Page 26


BCL 3xx*i* Page 56


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BCL 3xx*i* ...

F-optics, Deflect. Mirror

BARCODE

Features

- Line scanner with deflection mirror and perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- F-optics
- For module sizes m = 0.3 ... 0.8mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



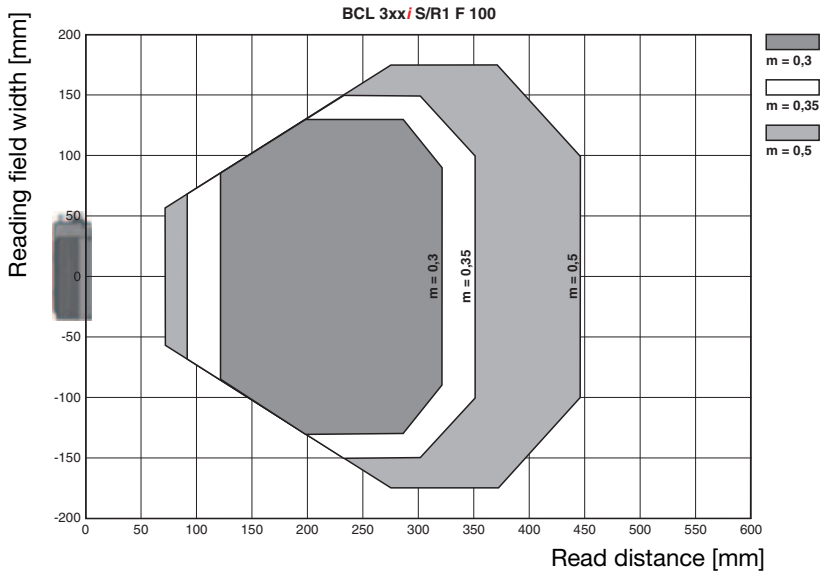
Electrical connection

www.leuze.com

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* S F 100 with F-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with F-optics				
BCL 300i R1 F 100 50116192	Deflection mirror raster scanner for large module codes, modular connection technology	520	1000	RS 232/422
BCL 300i R1 F 100 D 50116191	Deflection mirror raster scanner for large module codes, display, modular connection technology	520	1000	RS 232/422
BCL 301i R1 F 100 50116285	Deflection mirror raster scanner for large module codes, modular connection technology	520	1000	RS 485
BCL 301i R1 F 100 D 50116284	Deflection mirror raster scanner for large module codes, display, modular connection technology	520	1000	RS 485
BCL 304i R1 F 100 50116333	Deflection mirror raster scanner for large module codes, modular connection technology	520	1000	PROFIBUS DP
BCL 304i R1 F 100 D 50116332	Deflection mirror raster scanner for large module codes, display, modular connection technology	520	1000	PROFIBUS DP
BCL 308i R1 F 100 50116381	Deflection mirror raster scanner for large module codes, modular connection technology	520	1000	Ethernet
BCL 308i R1 F 100 D 50116380	Deflection mirror raster scanner for large module codes, display, modular connection technology	520	1000	Ethernet
BCL 348i R1 F 100 50116428	Deflection mirror raster scanner for large module codes, modular connection technology	520	1000	PROFINET RT
BCL 348i R1 F 100 D 50116427	Deflection mirror raster scanner for large module codes, display, modular connection technology	520	1000	PROFINET RT
BCL 358i R1 F 100 50120760	Deflection mirror raster scanner for large module codes, modular connection technology	520	1000	EtherNet/IP
BCL 358i R1 F 100 D 50120761	Deflection mirror raster scanner for large module codes, display, modular connection technology	520	1000	EtherNet/IP

Accessories / connection cables More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.


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BCL 3xx*i* ...

F-optics, Deflect. Mirror

BARCODE

Features

- Raster scanner (8 lines) with deflection mirror and perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- F-optics
- For module sizes m = 0.3 ... 0.8mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of pluggable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



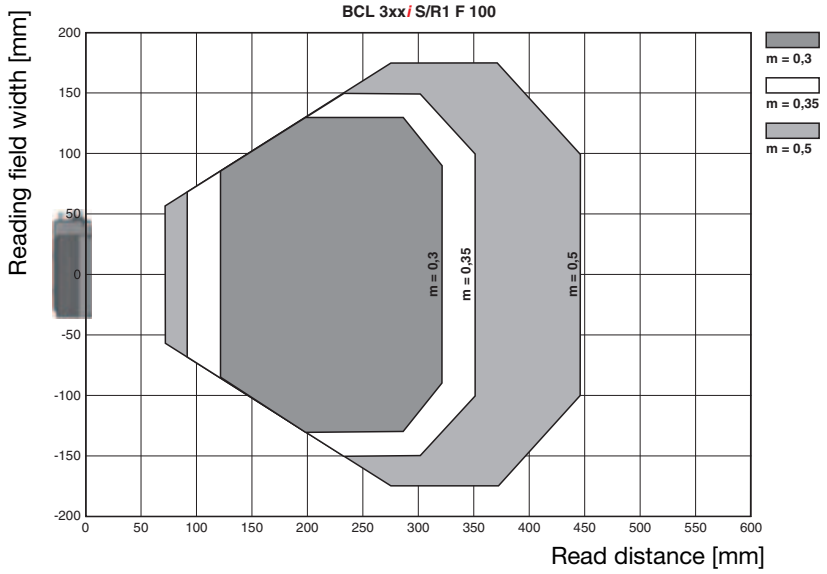
USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT),EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.
Part number code for BCL 3xx*i* on **page 119**.

Electrical connection

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* R1 F 100 with F-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with L-optics				
BCL 300i S L 100 50116211	Deflection mirror scanner for very large module codes, modular connection technology	670	1000	RS 232/422
BCL 300i S L 100 D 50116210	Deflection mirror scanner for very large module codes, display, modular connection technology	670	1000	RS 232/422
BCL 300i S L 100 D H 50116209	Deflection mirror scanner for very large module codes, display and heating, modular connection technology	670	1000	RS 232/422
BCL 301i S L 100 50116304	Deflection mirror scanner for very large module codes, modular connection technology	670	1000	RS 485
BCL 301i S L 100 D 50116303	Deflection mirror scanner for very large module codes, display, modular connection technology	670	1000	RS 485
BCL 301i S L 100 D H 50116302	Deflection mirror scanner for very large module codes, display and heating, modular connection technology	670	1000	RS 485
BCL 304i S L 100 50116352	Deflection mirror scanner for very large module codes, modular connection technology	670	1000	PROFIBUS DP
BCL 304i S L 100 D 50116351	Deflection mirror scanner for very large module codes, display, modular connection technology	670	1000	PROFIBUS DP
BCL 304i S L 100 D H 50116350	Deflection mirror scanner for very large module codes, display and heating, modular connection technology	670	1000	PROFIBUS DP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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Page 166

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BCL 3xx*i* ...

L-optics, Deflect. Mirror

BARCODE

Features

- Line scanner with deflection mirror and perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- L-optics
- For module sizes m = 0.35 ... 0.8mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening

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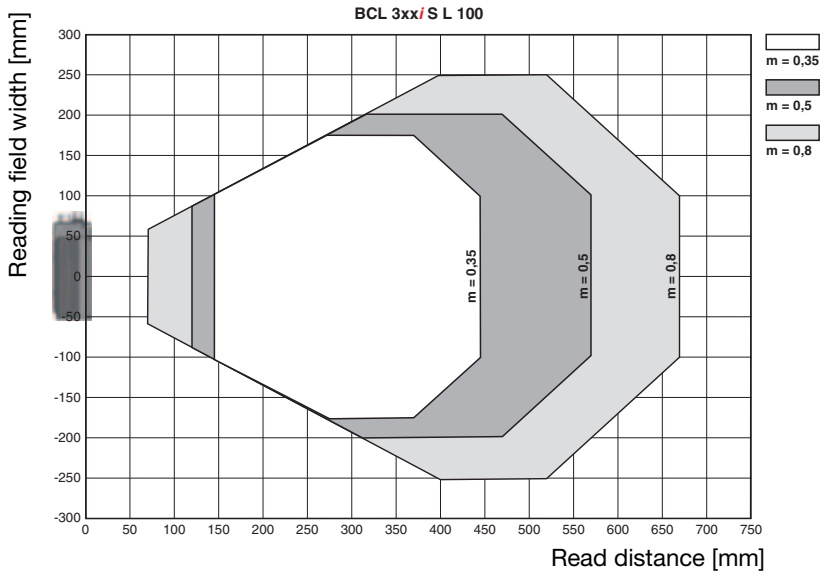
Electrical connection

www.leuze.com

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* S L 100 with L-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with L-optics				
BCL 308i S L 100 50116399	Deflection mirror scanner for very large module codes, modular connection technology	670	1000	Ethernet
BCL 308i S L 100 D 50116398	Deflection mirror scanner for very large module codes, display, modular connection technology	670	1000	Ethernet
BCL 308i S L 100 D H 50116397	Deflection mirror scanner for very large module codes, display and heating, modular connection technology	670	1000	Ethernet
BCL 348i S L 100 50116447	Deflection mirror scanner for very large module codes, modular connection technology	670	1000	PROFINET RT
BCL 348i S L 100 D 50116446	Deflection mirror scanner for very large module codes, display, modular connection technology	670	1000	PROFINET RT
BCL 348i S L 100 D H 50116445	Deflection mirror scanner for very large module codes, display and heating, modular connection technology	670	1000	PROFINET RT
BCL 358i S L 100 50120778	Deflection mirror scanner for very large module codes, modular connection technology	670	1000	EtherNet/IP
BCL 358i S L 100 D 50120779	Deflection mirror scanner for very large module codes, display, modular connection technology	670	1000	EtherNet/IP
BCL 358i S L 100 D H 50120780	Deflection mirror scanner for very large module codes, display and heating, modular connection technology	670	1000	EtherNet/IP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 3xx*i* ...

L-optics, Deflect. Mirror

BARCODE

Features

- Line scanner with deflection mirror and perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- L-optics
- For module sizes m = 0.35 ... 0.8mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening

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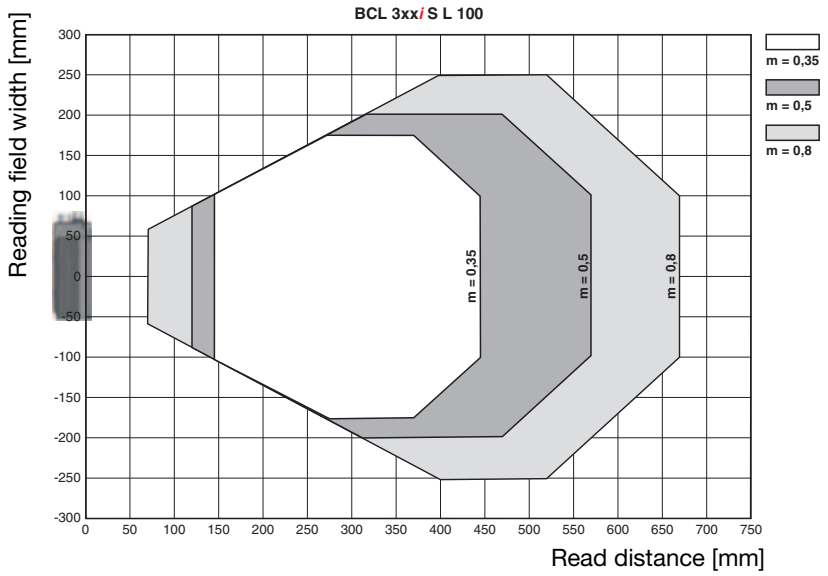
Electrical connection

www.leuze.com

See operating instructions for information on the electrical connection.

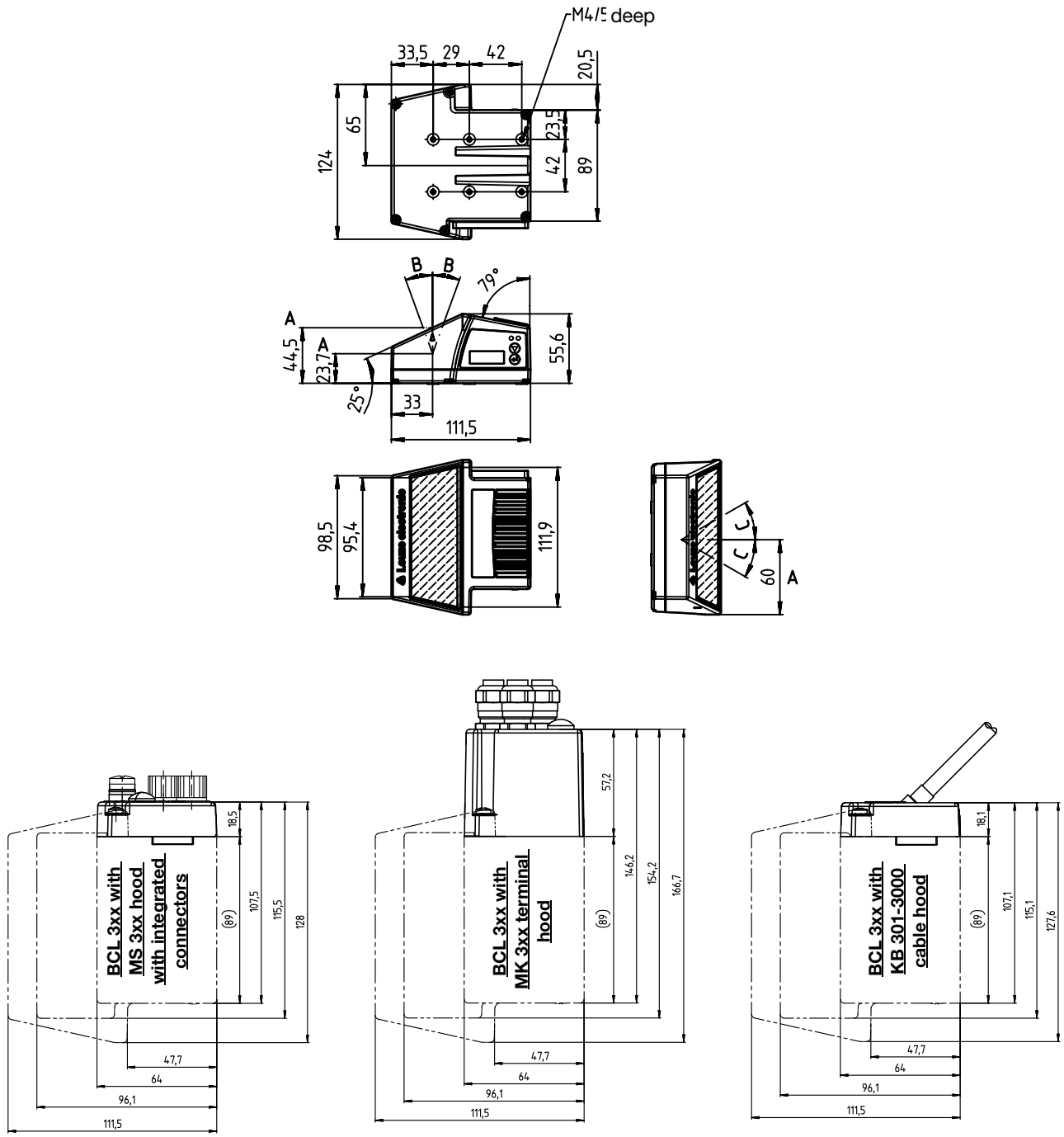
Reading curves

BCL 3xx*i* S L 100 with L-optics



OVERVIEW

Dimensioned drawing



A Optical axis
B Swivel angle of the laser beam: ± 20°
C Deflection angle of the laser beam: ± 30°

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STATIONARY BAR CODE READERS BCL 3xx*i*

Bar code reader Series 300*i*	Module size	Page
with M-optics	0.2 0.5 mm	106
with F-optics	0.3 0.8 mm	110
with L-optics	0.35 0.8 mm	114



Common technical data

Electrical data	Operating voltage U_B	18 … 30 VDC
	Power consumption	w/o heating: max. 9 W w. heating: max. 45 W
	Interface type	RS 232, RS 422, RS 485, Ethernet, PROFIBUS, PROFINET, Service: USB 2.0
	Protocols	Leuze Standard, Leuze multiNet plus, ACK/NAK, TCP/IP, UDP, PROFIBUS DP, PROFINET RT, EtherNet/IP
	Code types	all common bar codes
	Sw. inputs/outputs	2, configurable
Indicators and operational controls	LEDs	2 (power, bus state)
	Display/buttons (option)	monochrome, 128x32 pixels / 2
Mechanical data	Housing / Optical window	diecast aluminum / glass
	Weight	approx. 580 g (w/o conn. hood)
Environmental data	Ambient temperature operation (storage)	w/o heating: 0 °C … +40 °C w. heating: -35 °C … +40 °C (-20 °C … +70 °C)
	Protection class	IP 65
Laser	Laser diode, red, wavelength 655 nm Class 2 acc. to EN 60825-1 and 21 CFR 1040.10 with Laser Notice No. 50	

Features

- **Oscillating mirror scanner with perpendicular beam exit**
- **Swiveling frequency 0 … 10 Hz, adjustable**
- **Code fragment technology**
- **Small construction volume**
- **Large depth of field**
- **Large reading field width**
- ***'i'* - integrated fieldbus connectivity**
- **Stand-alone, multiNet slave, Ethernet, PROFIBUS and PROFINET device variants**
- **Modular connection technology by means of pluggable connection hoods**
- **Parameters are stored fail-safe**
- **Easy mounting and fastening**
- **Optionally with display**
- **Devices with integrated heating available**

BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with M-optics				
BCL 300i O M 100 50116185	Oscillating mirror scanner for medium module codes, modular connection technology	300	1000	RS 232/422
BCL 300i O M 100 D 50116186	Oscillating mirror scanner for medium module codes, display, modular connection technology	300	1000	RS 232/422
BCL 300i O M 100 D H 50116187	Oscillating mirror scanner for medium module codes, display and heating, modular connection technology	300	1000	RS 232/422
BCL 301i O M 100 50116278	Oscillating mirror scanner for medium module codes, modular connection technology	300	1000	RS 485
BCL 301i O M 100 D 50116279	Oscillating mirror scanner for medium module codes, display, modular connection technology	300	1000	RS 485
BCL 301i O M 100 D H 50116280	Oscillating mirror scanner for medium module codes, display and heating, modular connection technology	300	1000	RS 485
BCL 304i O M 100 50116326	Oscillating mirror scanner for medium module codes, modular connection technology	300	1000	PROFIBUS DP
BCL 304i O M 100 D 50116327	Oscillating mirror scanner for medium module codes, display, modular connection technology	300	1000	PROFIBUS DP
BCL 304i O M 100 D H 50116328	Oscillating mirror scanner for medium module codes, display and heating, modular connection technology	300	1000	PROFIBUS DP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 3xx*i* ...

M-optics, Oscill. Mirror

BARCODE

Features

- Oscillating mirror scanner with perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- M-optics
- For module sizes m = 0.2 ... 0.5mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



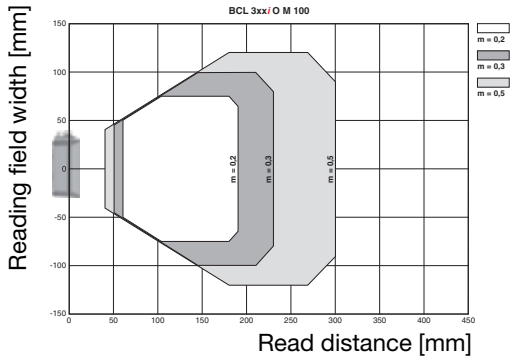
Electrical connection

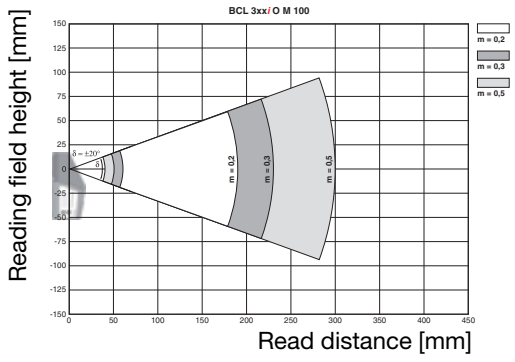
www.leuze.com

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* O M 100 with M-optics





BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with M-optics				
BCL 308i O M 100 50116374	Oscillating mirror scanner for medium module codes, modular connection technology	300	1000	Ethernet
BCL 308i O M 100 D 50116375	Oscillating mirror scanner for medium module codes, display, modular connection technology	300	1000	Ethernet
BCL 308i O M 100 D H 50116376	Oscillating mirror scanner for medium module codes, display and heating, modular connection technology	300	1000	Ethernet
BCL 348i O M 100 50116421	Oscillating mirror scanner for medium module codes, modular connection technology	300	1000	PROFINET RT
BCL 348i O M 100 D 50116422	Oscillating mirror scanner for medium module codes, display, modular connection technology	300	1000	PROFINET RT
BCL 348i O M 100 D H 50116423	Oscillating mirror scanner for medium module codes, display and heating, modular connection technology	300	1000	PROFINET RT
BCL 358i O M 100 50120754	Oscillating mirror scanner for medium module codes, modular connection technology	300	1000	EtherNet/IP
BCL 358i O M 100 D 50120755	Oscillating mirror scanner for medium module codes, display, modular connection technology	300	1000	EtherNet/IP
BCL 358i O M 100 D H 50120756	Oscillating mirror scanner for medium module codes, display and heating, modular connection technology	300	1000	EtherNet/IP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

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BCL 3xx*i* ...

M-optics, Oscill. Mirror

BARCODE

Features

- Oscillating mirror scanner with perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- M-optics
- For module sizes m = 0.2 … 0.5mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (…300*i*), multiNet slave (…301*i*), PROFIBUS DP (…304*i*), Ethernet (…308*i*), PROFINET RT (…348*i*) and EtherNet/IP (…358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



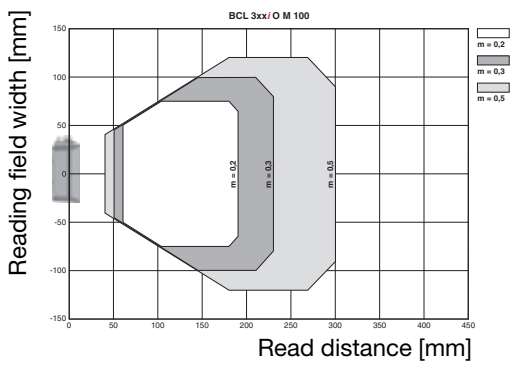
Electrical connection

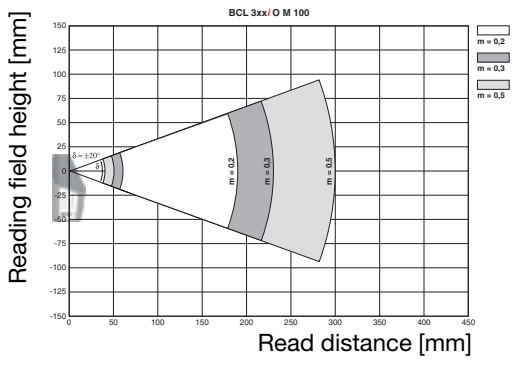
www.leuze.com

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* O M 100 with M-optics





BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with F-optics				
BCL 300i O F 100 50116179	Oscillating mirror scanner for large module codes, modular connection technology	530	1000	RS 232/422
BCL 300i O F 100 D 50116180	Oscillating mirror scanner for large module codes, display, modular connection technology	530	1000	RS 232/422
BCL 300i O F 100 D H 50116181	Oscillating mirror scanner for large module codes, display and heating, modular connection technology	530	1000	RS 232/422
BCL 301i O F 100 50116272	Oscillating mirror scanner for large module codes, modular connection technology	530	1000	RS 485
BCL 301i O F 100 D 50116273	Oscillating mirror scanner for large module codes, display, modular connection technology	530	1000	RS 485
BCL 301i O F 100 D H 50116274	Oscillating mirror scanner for large module codes, display and heating, modular connection technology	530	1000	RS 485
BCL 304i O F 100 50116320	Oscillating mirror scanner for large module codes, modular connection technology	530	1000	PROFIBUS DP
BCL 304i O F 100 D 50116321	Oscillating mirror scanner for large module codes, display, modular connection technology	530	1000	PROFIBUS DP
BCL 304i O F 100 D H 50116322	Oscillating mirror scanner for large module codes, display and heating, modular connection technology	530	1000	PROFIBUS DP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 2x Page 26


BCL 3xx*i* Page 56


BCL 5xx*i* Page 120


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BCL 90 Page 154


MSP Page 166

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BCL 3xx*i* ...

F-optics, Oscill. Mirror

BARCODE

Features

- Oscillating mirror scanner with perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- F-optics
- For module sizes m = 0.3 ... 0.8mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening

c UL us LISTED

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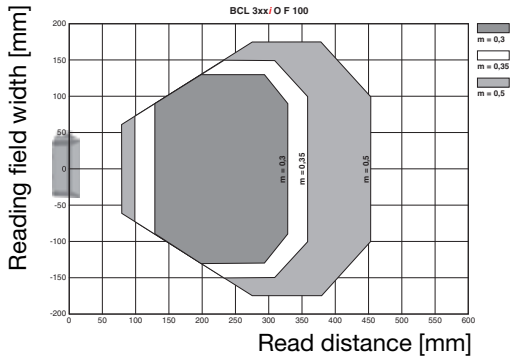
Electrical connection

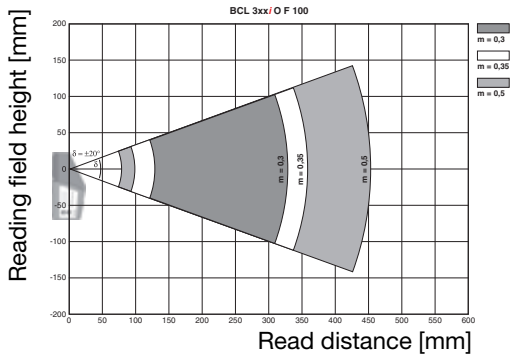
www.leuze.com

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* O F 100 with F-optics





BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with F-optics				
BCL 308i O F 100 50116368	Oscillating mirror scanner for large module codes, modular connection technology	530	1000	Ethernet
BCL 308i O F 100 D 50116369	Oscillating mirror scanner for large module codes, display, modular connection technology	530	1000	Ethernet
BCL 308i O F 100 D H 50116370	Oscillating mirror scanner for large module codes, display and heating, modular connection technology	530	1000	Ethernet
BCL 348i O F 100 50116415	Oscillating mirror scanner for large module codes, modular connection technology	530	1000	PROFINET RT
BCL 348i O F 100 D 50116416	Oscillating mirror scanner for large module codes, display, modular connection technology	530	1000	PROFINET RT
BCL 348i O F 100 D H 50116417	Oscillating mirror scanner for large module codes, display and heating, modular connection technology	530	1000	PROFINET RT
BCL 358i O F 100 50120748	Oscillating mirror scanner for large module codes, modular connection technology	530	1000	EtherNet/IP
BCL 358i O F 100 D 50120749	Oscillating mirror scanner for large module codes, display, modular connection technology	530	1000	EtherNet/IP
BCL 358i O F 100 D H 50120750	Oscillating mirror scanner for large module codes, display and heating, modular connection technology	530	1000	EtherNet/IP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 2x Page 26


BCL 3xx*i* Page 56


BCL 5xx*i* Page 120


MSP*i* Page 150


BCL 90 Page 154


MSP Page 166

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BCL 3xx*i* ...

F-optics, Oscill. Mirror

BARCODE

Features

- Oscillating mirror scanner with perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- F-optics
- For module sizes m = 0.3 ... 0.8 mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



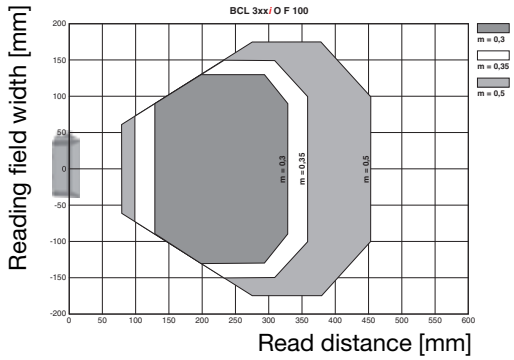
Electrical connection

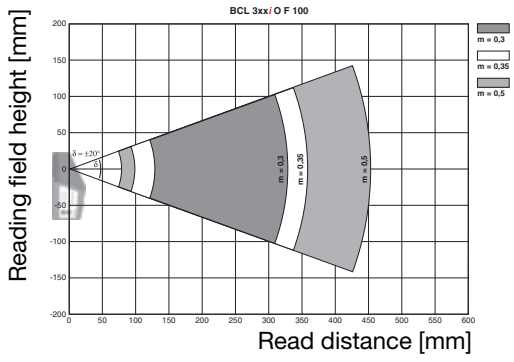
www.leuze.com

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* O F 100 with F-optics





BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with L-optics				
BCL 300i O L 100 50116182	Oscillating mirror scanner for very large module codes, modular connection technology	680	1000	RS 232/422
BCL 300i O L 100 D 50116183	Oscillating mirror scanner for very large module codes, display, modular connection technology	680	1000	RS 232/422
BCL 300i O L 100 D H 50116184	Oscillating mirror scanner for very large module codes, display and heating, modular connection technology	680	1000	RS 232/422
BCL 301i O L 100 50116275	Oscillating mirror scanner for very large module codes, modular connection technology	680	1000	RS 485
BCL 301i O L 100 D 50116276	Oscillating mirror scanner for very large module codes, display, modular connection technology	680	1000	RS 485
BCL 301i O L 100 D H 50116277	Oscillating mirror scanner for very large module codes, display and heating, modular connection technology	680	1000	RS 485
BCL 304i O L 100 50116323	Oscillating mirror scanner for very large module codes, modular connection technology	680	1000	PROFIBUS DP
BCL 304i O L 100 D 50116324	Oscillating mirror scanner for very large module codes, display, modular connection technology	680	1000	PROFIBUS DP
BCL 304i O L 100 D H 50116325	Oscillating mirror scanner for very large module codes, display and heating, modular connection technology	680	1000	PROFIBUS DP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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MSP Page 166

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BCL 3xx*i* ...

L-optics, Oscill. Mirror

BARCODE

Features

- Oscillating mirror scanner with perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- L-optics
- For module sizes m = 0.35 ... 0.8 mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



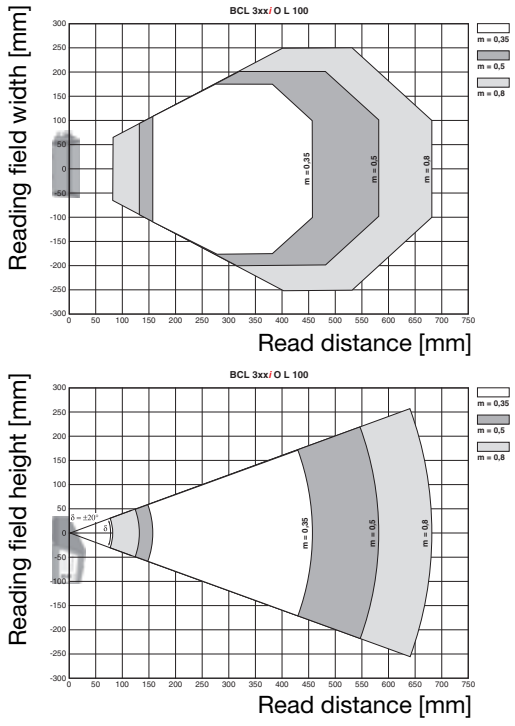
Electrical connection

www.leuze.com

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* O L 100 with L-optics



BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with L-optics				
BCL 308i O L 100 50116371	Oscillating mirror scanner for very large module codes, modular connection technology	680	1000	Ethernet
BCL 308i O L 100 D 50116372	Oscillating mirror scanner for very large module codes, display, modular connection technology	680	1000	Ethernet
BCL 308i O L 100 D H 50116373	Oscillating mirror scanner for very large module codes, display and heating, modular connection technology	680	1000	Ethernet
BCL 348i O L 100 50116418	Oscillating mirror scanner for very large module codes, modular connection technology	680	1000	PROFINET RT
BCL 348i O L 100 D 50116419	Oscillating mirror scanner for very large module codes, display, modular connection technology	680	1000	PROFINET RT
BCL 348i O L 100 D H 50116420	Oscillating mirror scanner for very large module codes, display and heating, modular connection technology	680	1000	PROFINET RT
BCL 358i O L 100 50120751	Oscillating mirror scanner for very large module codes, modular connection technology	680	1000	EtherNet/IP
BCL 358i O L 100 D 50120752	Oscillating mirror scanner for very large module codes, display, modular connection technology	680	1000	EtherNet/IP
BCL 358i O L 100 D H 50120753	Oscillating mirror scanner for very large module codes, display and heating, modular connection technology	680	1000	EtherNet/IP

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT), EDS file (EtherNet/IP) and BCLconfig configuration software - free download at *www.leuze.com*.

Part number code for BCL 3xx*i* on **page 119**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

A connection hood must be ordered for each BCL 3xx*i*!
Connection hoods for M12 connection, for terminal connection and with connection cable can be found beginning on page 446.

An extensive range of accessories for the BCL 3xx*i* stationary bar code readers can be found on page 118.


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BCL 2x Page 26


BCL 3xx*i* Page 56


BCL 5xx*i* Page 120


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BCL 3xx*i* ...

L-optics, Oscill. Mirror

BARCODE

Features

- Oscillating mirror scanner with perpendicular beam exit
- Code fragment technology
- Very small construction volume
- Large depth of field
- Large reading field width
- L-optics
- For module sizes m = 0.35 ... 0.8 mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation (...300*i*), multiNet slave (...301*i*), PROFIBUS DP (...304*i*), Ethernet (...308*i*), PROFINET RT (...348*i*) and EtherNet/IP (...358*i*) device variants
- Modular connection technology by means of plug-gable connection hoods
- Parameters are stored fail-safe
- Easy mounting and fastening



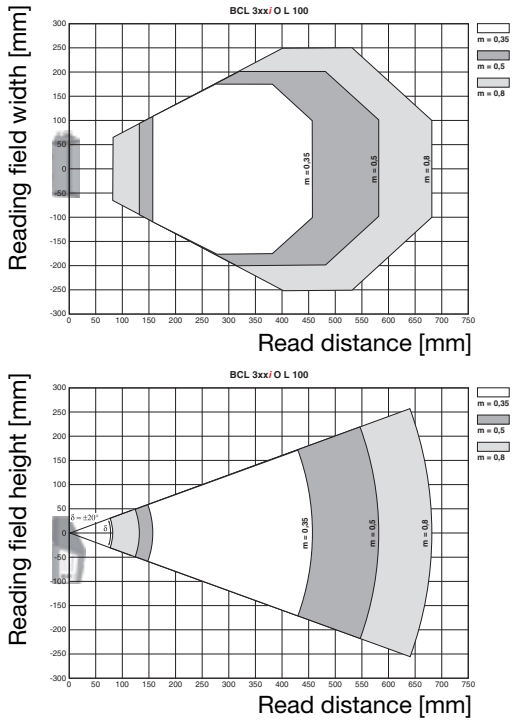
Electrical connection

www.leuze.com

See operating instructions for information on the electrical connection.

Reading curves

BCL 3xx*i* O L 100 with L-optics



BAR CODE READERS - ACCESSORIES

Accessories / connection cables More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50117011	KB USBA - USBminiB	USB service cable
see P. 446	MS 3xx	M12 hoods with integrated connectors for BCL 3xx*i*
see P. 447	MK 3xx	Terminal hoods for BCL 3xx*i*
see P. 447	KB 301 - 3000…	Cable hood for BCL 3xx*i*
50038539	TS 02-4-SA	M12 connector, integrated PROFIBUS terminating resistor
see P. 434	KB PB-…	PROFIBUS connection cables, see page 434
see P. 431	KB ET - …	Ethernet-/PROFINET connection cables, see page 431
see P. 443	KD 02 - 5 …	M12 connector for connection of the BCL 3xx*i*
50020501	KD 095 - 5 - A	M12 connector for supply voltage
50027375	BT 56	Mounting device for BCL 3xx*i*
50111224	BT 59	Mounting device for BCL 3xx*i*

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BCL 3xx*i* ...

Accessories/part no. code

Bar code reader	B C L 3 0 0 *i* S N 1 0 0 H



Type

BCL	Bar code reader

Interface (integrated fieldbus technology)

300*i*	RS 232/RS 422 (standalone)
301*i*	RS 485 (multiNet slave)
304*i*	PROFIBUS DP
308*i*	Ethernet TCP/IP, UDP
348*i*	PROFINET RT
358*i*	EtherNet/IP

Scanning principle

S	Line scanner (Single line)
R1	Line scanner (raster)
O	Oscillating mirror scanner (Oscillating mirror)

Optics

N	High Density (near)
M	Medium Density (medium distance)
F	Low Density (remote)
L	Long Range (very large distance)

Beam exit

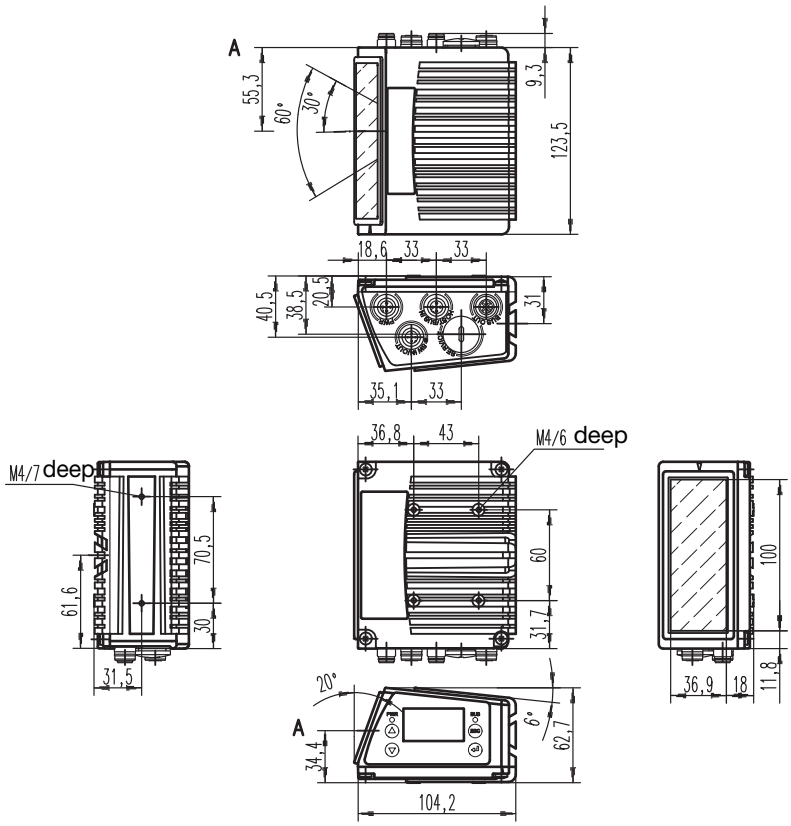
100	Lateral
102	Front

Option

D	With display
H	With heating
D H	With display and heating

OVERVIEW

Dimensioned drawing



A Optical axis


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Page 20


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STATIONARY BAR CODE READERS BCL 5xx*i*

Bar code reader Series 500*i*	Module size	Page
with N-optics	0.25 0.5 mm	122
with M-optics	0.35 1.0 mm	124
with F-optics	0.5 1.0 mm	126
with L-optics	0.7 1.0 mm	128



Common technical data

Electrical data	Operating voltage U_B	w/o heating: 10 … 30VDC w. heating: 24VDC ±20%
	Power consumption	w/o heating: approx. 10VA w. heating: approx. 75VA
	Interface type	RS 232, RS 422, RS 485, Ethernet, PROFIBUS, PROFINET, Service: USB 1.1
	Protocols	Leuze Standard, Leuze multiNet plus, ACK/NAK, TCP/IP, UDP, PROFIBUS DP, PROFINET RT
	Code types	all common bar codes
	Sw. inputs/outputs	4, configurable
Indicators and operational controls	LEDs / Buttons	2 (power, bus state) / 4
	Display	monochrome, 128 x 64 pixels
Mechanical data	Housing / Optical window	diecast aluminum / glass
	Weight	approx. 1100g
Environmental data	Ambient temperature operation (storage)	w/o heating: 0°C … +40°C w. heating: -35°C … +35°C (-20°C … +70°C)
	Protection class	IP 65
Laser	Laser diode, red, wavelength 650nm Class 2 acc. to EN 60825-1 and 21 CFR 1040.10 with Laser Notice No. 50	

Features

- **Line scanner with beam exit at the front**
- **Code fragment technology**
- **Small construction volume**
- **Large depth of field**
- **Large reading field width**
- **'*i*' - integrated fieldbus connectivity**
- **Stand-alone operation possible**
- **multiNet master, multiNet slave, Ethernet, PROFIBUS and PROFINET device variants**
- **M12 Connection technology**
- **Parameters are stored fail-safe**
- **Easy mounting and fastening**
- **Display**
- **Devices with integrated heating available**

BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with N-optics				
BCL 500i S N 102 50105454	Single-line scanner for small module codes, M12 connector	650	800 … 1200	RS 232/422, RS 485
BCL 500i S N 102 H 50105457	Single-line scanner for small module codes, heating, M12 connector	650	800 … 1200	RS 232/422, RS 485
BCL 501i S N 102 50105472	Single-line scanner for small module codes, M12 connector	650	800 … 1200	RS 485
BCL 501i S N 102 H 50105475	Single-line scanner for small module codes, heating, M12 connector	650	800 … 1200	RS 485
BCL 504i S N 102 50105490	Single-line scanner for small module codes, M12 connector	650	800 … 1200	PROFIBUS DP
BCL 504i S N 102 H 50105493	Single-line scanner for small module codes, heating, M12 connector	650	800 … 1200	PROFIBUS DP
BCL 508i S N 102 50105508	Single-line scanner for small module codes, M12 connector	650	800 … 1200	Ethernet
BCL 508i S N 102 H 50105511	Single-line scanner for small module codes, heating, M12 connector	650	800 … 1200	Ethernet
BCL 548i S N 102 50113183	Single-line scanner for small module codes, M12 connector	650	800 … 1200	PROFINET RT
BCL 548i S N 102 H 50113184	Single-line scanner for small module codes, heating, M12 connector	650	800 … 1200	PROFINET RT

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT) and BCLconfig configuration software - free download under *www.leuze.com*.

Part number code for BCL 5xx*i* on **page 149**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

An extensive range of accessories for the BCL 5xx*i* stationary bar code readers can be found on page 148.


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BCL 5xx*i* ...

N-optics, Single-Line

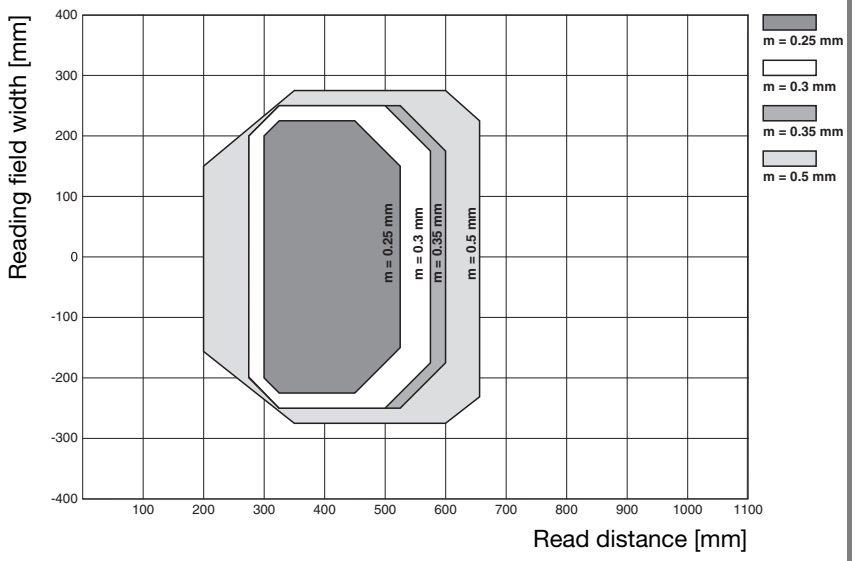
Features

- Line scanner with beam exit at the front
- Code fragment technology
- Small construction volume
- Large depth of field
- Large reading field width
- N-optics
- For module sizes m = 0.25 ... 0.5mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation possible
- multiNet master (...500*i*), multiNet slave (...501*i*), PROFIBUS DP (...504*i*), Ethernet (...508*i*) and PROFINET RT (...548*i*) device variants
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting and fastening



Reading curves

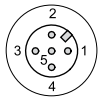
BCL 5xx*i* S N 102 with N-optics, without heating



The reading curves of the device models with heating can be found in the technical description - Download at *www.leuze.com*.

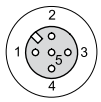
Electrical connection

PWR - male, A-cod.



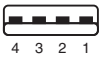
PIN	Signal
1	VIN
2	SWIO_3
3	GND
4	SWIO_4
5	FE

SW IN/OUT - female, A-cod.



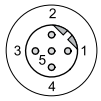
PIN	Signal
1	VOUT
2	SWIO_1
3	GND
4	SWIO_2
5	FE

SERVICE - USB Standard A



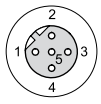
PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

HOST/BUS IN - male, B-cod.



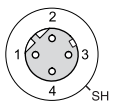
PIN	Signal 500*i* RS232/422	Signal 501*i* RS485	Signal 504*i* PROFIBUS
1	CTS/RX+	res.	res.
2	TxD/TX-	RS485 B	A (N)
3	GND_H	GND 485	res.
4	RTS/TX+	RS485 A	B (P)
5	RxD/RX-	FE	Shield/FE

BUS OUT female, B-cod.

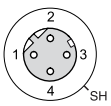


PIN	Signal 500*i* RS485	Signal 501*i* RS485	Signal 504*i* PROFIBUS
1	V CC485	V CC485	VCC
2	RS485 B	RS485 B	A (N)
3	GND 485	GND 485	GND
4	RS485 A	RS485 A	B (P)
5	FE	FE	Shield/FE

HOST/BUS IN female, D-cod.



BUS OUT female, D-cod.



PIN	Signal 508*i* / 548*i* RS485
1	TD+
2	RD+
3	TD-
4	RD-
SH	Shield

BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with M-optics				
BCL 500i S M 102 50105460	Single-line scanner for medium module codes, M12 connector	1000	800 … 1200	RS 232/422, RS 485
BCL 500i S M 102 H 50105463	Single-line scanner for medium module codes, heating, M12 connector	1000	800 … 1200	RS 232/422, RS 485
BCL 501i S M 102 50105478	Single-line scanner for medium module codes, M12 connector	1000	800 … 1200	RS 485
BCL 501i S M 102 H 50105481	Single-line scanner for medium module codes, heating, M12 connector	1000	800 … 1200	RS 485
BCL 504i S M 102 50105496	Single-line scanner for medium module codes, M12 connector	1000	800 … 1200	PROFIBUS DP
BCL 504i S M 102 H 50105499	Single-line scanner for medium module codes, heating, M12 connector	1000	800 … 1200	PROFIBUS DP
BCL 508i S M 102 50105514	Single-line scanner for medium module codes, M12 connector	1000	800 … 1200	Ethernet
BCL 508i S M 102 H 50105517	Single-line scanner for medium module codes, heating, M12 connector	1000	800 … 1200	Ethernet
BCL 548i S M 102 50113187	Single-line scanner for medium module codes, M12 connector	1000	800 … 1200	PROFINET RT
BCL 548i S M 102 H 50113188	Single-line scanner for medium module codes, heating, M12 connector	1000	800 … 1200	PROFINET RT

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT) and BCLconfig configuration software - free download under *www.leuze.com*.

Part number code for BCL 5xx*i* on **page 149**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

An extensive range of accessories for the BCL 5xx*i* stationary bar code readers can be found on page 148.


BCL 8
Page 20


BCL 2x
Page 26


BCL 3xx*i*
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BCL 5xx*i*
Page 120


MSP*i*
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BCL 90
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MSP
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BCL 5xx*i* ...

M-optics, Single-Line

BARCODE

Features

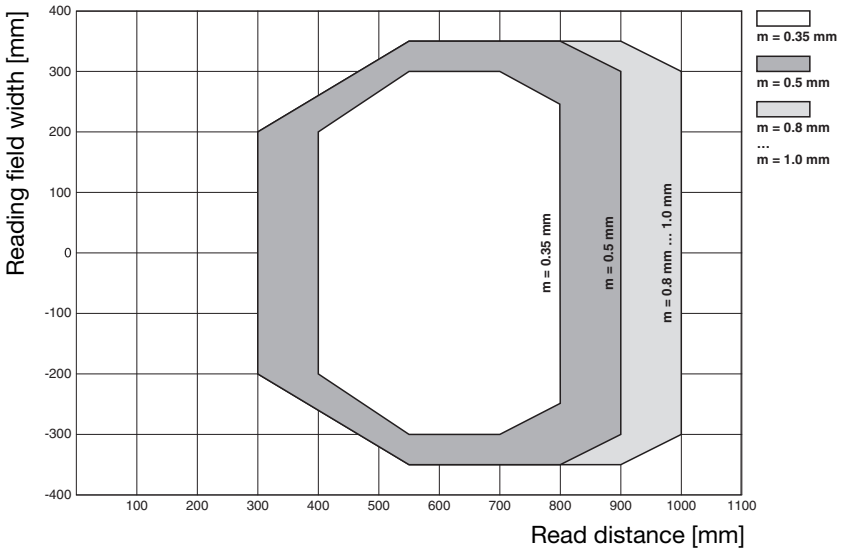
- Line scanner with beam exit at the front
- Code fragment technology
- Small construction volume
- Large depth of field
- Large reading field width
- M-optics
- For module sizes m = 0.35 ... 1.0mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation possible
- multiNet master (...500*i*), multiNet slave (...501*i*), PROFIBUS DP (...504*i*), Ethernet (...508*i*) and PROFINET RT (...548*i*) device variants
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting and fastening

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Reading curves

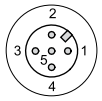
BCL 5xx*i* S M 102 with M-optics



The reading curves of the device models with heating can be found in the technical description - Download at *www.leuze.com*.

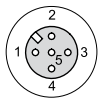
Electrical connection

PWR - male, A-cod.



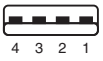
PIN	Signal
1	VIN
2	SWIO_3
3	GND
4	SWIO_4
5	FE

SW IN/OUT - female, A-cod.



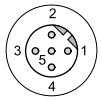
PIN	Signal
1	VOUT
2	SWIO_1
3	GND
4	SWIO_2
5	FE

SERVICE - USB Standard A



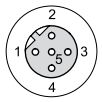
PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

HOST/BUS IN - male, B-cod.



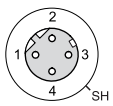
PIN	500*i* RS232/422	501*i* RS485	504*i* PROFIBUS
1	CTS/RX+	res.	res.
2	TxD/TX-	RS485 B	A (N)
3	GND_H	GND 485	res.
4	RTS/TX+	RS485 A	B (P)
5	RxD/RX-	FE	Shield/FE

BUS OUT female, B-cod.

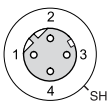


PIN	500*i* RS485	501*i* RS485	504*i* PROFIBUS
1	V CC485	V CC485	VCC
2	RS485 B	RS485 B	A (N)
3	GND 485	GND 485	GND
4	RS485 A	RS485 A	B (P)
5	FE	FE	Shield/FE

HOST/BUS IN female, D-cod.



BUS OUT female, D-cod.



PIN	508*i* / 548*i* RS485
1	TD+
2	RD+
3	TD-
4	RD-
SH	Shield

BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with F-optics				
BCL 500i S F 102 50105466	Single-line scanner for large module codes, M12 connector	1600	800 … 1200	RS 232/422, RS 485
BCL 500i S F 102 H 50105469	Single-line scanner for large module codes, heating, M12 connector	1600	800 … 1200	RS 232/422, RS 485
BCL 501i S F 102 50105484	Single-line scanner for large module codes, M12 connector	1600	800 … 1200	RS 485
BCL 501i S F 102 H 50105487	Single-line scanner for large module codes, heating, M12 connector	1600	800 … 1200	RS 485
BCL 504i S F 102 50105502	Single-line scanner for large module codes, M12 connector	1600	800 … 1200	PROFIBUS DP
BCL 504i S F 102 H 50105505	Single-line scanner for large module codes, heating, M12 connector	1600	800 … 1200	PROFIBUS DP
BCL 508i S F 102 50105520	Single-line scanner for large module codes, M12 connector	1600	800 … 1200	Ethernet
BCL 508i S F 102 H 50105523	Single-line scanner for large module codes, heating, M12 connector	1600	800 … 1200	Ethernet
BCL 548i S F 102 50113195	Single-line scanner for large module codes, M12 connector	1600	800 … 1200	PROFINET RT
BCL 548i S F 102 H 50113196	Single-line scanner for large module codes, heating, M12 connector	1600	800 … 1200	PROFINET RT

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT) and BCLconfig configuration software - free download under *www.leuze.com*.

Part number code for BCL 5xx*i* on **page 149**.

Accessories / connection cables More accessories can be found from **page 423** onwards

An extensive range of accessories for the BCL 5xx*i* stationary bar code readers can be found on page 148.


BCL 8 Page 20


BCL 2x Page 26


BCL 3xx*i* Page 56


BCL 5xx*i* Page 120


MSP*i* Page 150


BCL 90 Page 154


MSP Page 166

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BCL 5xx*i* ...

F-optics, Single-Line

BARCODE

Features

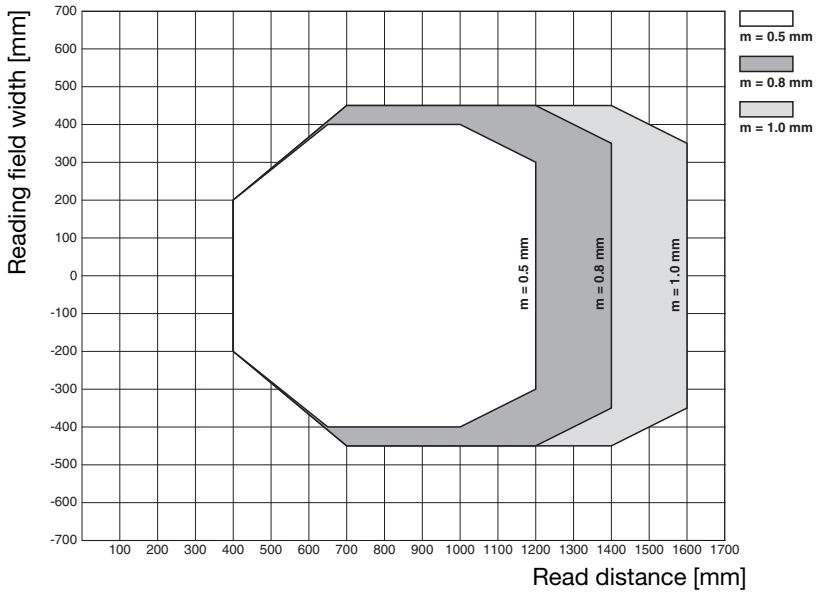
- Line scanner with beam exit at the front
- Code fragment technology
- Small construction volume
- Large depth of field
- Large reading field width
- F-optics
- For module sizes m = 0.5 ... 1.0mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation possible
- multiNet master (...500*i*), multiNet slave (...501*i*), PROFIBUS DP (...504*i*), Ethernet (...508*i*) and PROFINET RT (...548*i*) device variants
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting and fastening

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Reading curves

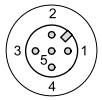
BCL 5xx*i* S F 102 with F-optics



The reading curves of the device models with heating can be found in the technical description - Download at *www.leuze.com*.

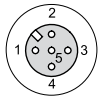
Electrical connection

PWR - male, A-cod.



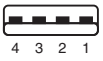
PIN	Signal
1	VIN
2	SWIO_3
3	GND
4	SWIO_4
5	FE

SW IN/OUT - female, A-cod.



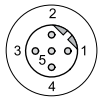
PIN	Signal
1	VOUT
2	SWIO_1
3	GND
4	SWIO_2
5	FE

SERVICE - USB Standard A



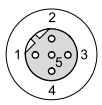
PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

HOST/BUS IN - male, B-cod.



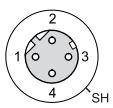
PIN	Signal 500*i* RS232/422	Signal 501*i* RS485	Signal 504*i* PROFIBUS
1	CTS/RX+	res.	res.
2	TxD/TX-	RS485 B	A (N)
3	GND_H	GND 485	res.
4	RTS/TX+	RS485 A	B (P)
5	RxD/RX-	FE	Shield/FE

BUS OUT female, B-cod.

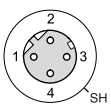


PIN	Signal 500*i* RS485	Signal 501*i* RS485	Signal 504*i* PROFIBUS
1	V CC485	V CC485	VCC
2	RS485 B	RS485 B	A (N)
3	GND 485	GND 485	GND
4	RS485 A	RS485 A	B (P)
5	FE	FE	Shield/FE

HOST/BUS IN female, D-cod.



BUS OUT female, D-cod.



PIN	Signal 508*i* / 548*i* RS485
1	TD+
2	RD+
3	TD-
4	RD-
SH	Shield

BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with L-optics				
BCL 500i S L 102 50109911	Single-line scanner for very large module codes, heating, M12 connector	2400	800 … 1200	RS 232/422, RS 485
BCL 500i S L 102 H 50109914	Single-line scanner for very large module codes, heating, M12 connector	2400	800 … 1200	RS 232/422, RS 485
BCL 501i S L 102 50109890	Single-line scanner for very large module codes, heating, M12 connector	2400	800 … 1200	RS 485
BCL 501i S L 102 H 50109893	Single-line scanner for very large module codes, heating, M12 connector	2400	800 … 1200	RS 485
BCL 504i S L 102 50109896	Single-line scanner for very large module codes, heating, M12 connector	2400	800 … 1200	PROFIBUS DP
BCL 504i S L 102 H 50109899	Single-line scanner for very large module codes, heating, M12 connector	2400	800 … 1200	PROFIBUS DP
BCL 508i S L 102 50109905	Single-line scanner for very large module codes, heating, M12 connector	2400	800 … 1200	Ethernet
BCL 508i S L 102 H 50109908	Single-line scanner for very large module codes, heating, M12 connector	2400	800 … 1200	Ethernet
BCL 548i S L 102 50113191	Single-line scanner for very large module codes, heating, M12 connector	2400	800 … 1200	PROFINET RT
BCL 548i S L 102 H 50113192	Single-line scanner for very large module codes, heating, M12 connector	2400	800 … 1200	PROFINET RT

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT) and BCLconfig configuration software - free download under *www.leuze.com*.

Part number code for BCL 5xx*i* on **page 149**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

An extensive range of accessories for the BCL 5xx*i* stationary bar code readers can be found on page 148.


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BCL 2x Page 26


BCL 3xx*i* Page 56


BCL 5xx*i* Page 120


MSP*i* Page 150


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BCL 5xx*i* ...

L-optics, Single-Line

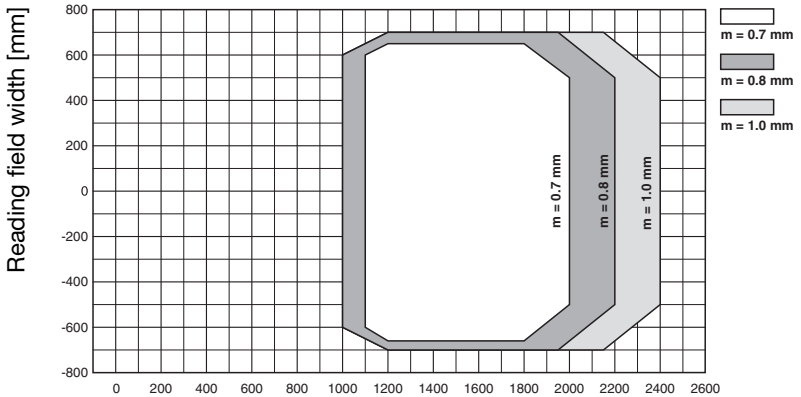
Features

- Line scanner with beam exit at the front
- Code fragment technology
- Small construction volume
- Large depth of field
- Large reading field width
- L-optics
- For module sizes m = 0.7 ... 1.0mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation possible
- multiNet master (...500*i*), multiNet slave (...501*i*), PROFIBUS DP (...504*i*), Ethernet (...508*i*) and PROFINET RT (...548*i*) device variants
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting and fastening



Reading curves

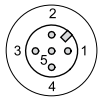
BCL 5xx*i* S L 102 with L-optics



The reading curves of the device models with heating can be found in the technical description - Download at *www.leuze.com*.

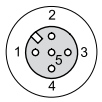
Electrical connection

PWR - male, A-cod.



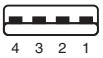
PIN	Signal
1	VIN
2	SWIO_3
3	GND
4	SWIO_4
5	FE

SW IN/OUT - female, A-cod.



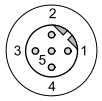
PIN	Signal
1	VOUT
2	SWIO_1
3	GND
4	SWIO_2
5	FE

SERVICE - USB Standard A



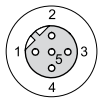
PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

HOST/BUS IN - male, B-cod.



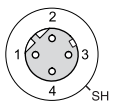
PIN	500*i* RS232/422	501*i* RS485	504*i* PROFIBUS
1	CTS/RX+	res.	res.
2	TxD/TX-	RS485 B	A (N)
3	GND_H	GND 485	res.
4	RTS/TX+	RS485 A	B (P)
5	RxD/RX-	FE	Shield/FE

BUS OUT female, B-cod.

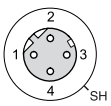


PIN	500*i* RS485	501*i* RS485	504*i* PROFIBUS
1	V CC485	V CC485	VCC
2	RS485 B	RS485 B	A (N)
3	GND 485	GND 485	GND
4	RS485 A	RS485 A	B (P)
5	FE	FE	Shield/FE

HOST/BUS IN female, D-cod.



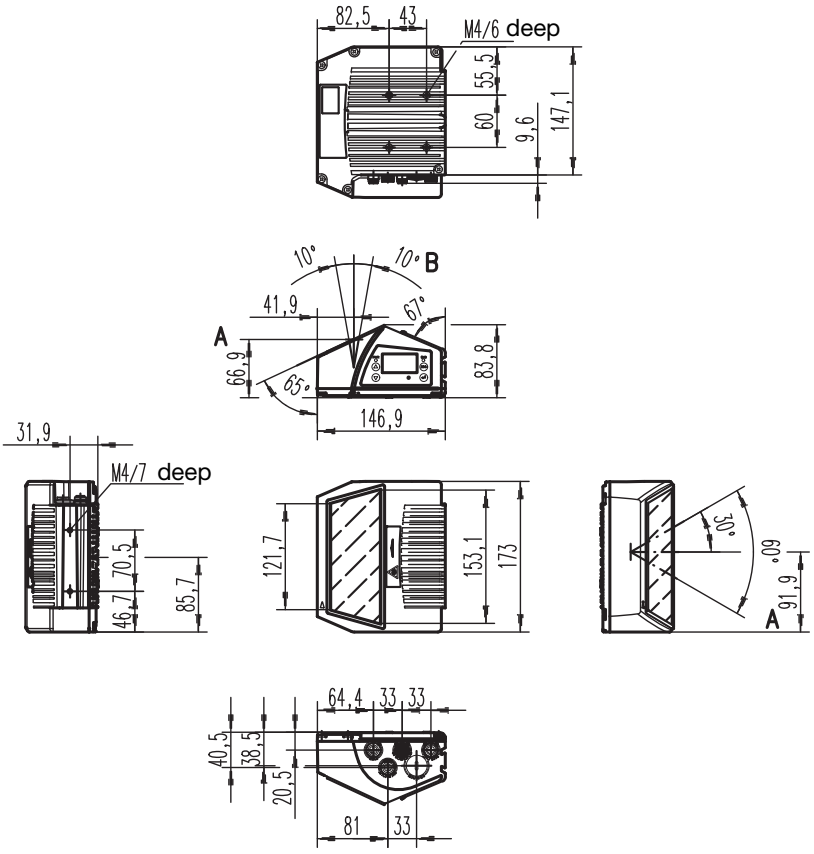
BUS OUT female, D-cod.



PIN	508*i* / 548*i* RS485
1	TD+
2	RD+
3	TD-
4	RD-
SH	Shield

OVERVIEW

Dimensioned drawing



A Optical axis
B Optical swivel range


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STATIONARY BAR CODE READERS BCL 5xx*i*

Bar code reader Series 500*i*	Module size	Page
with N-optics	0.25 0.5 mm	132
with M-optics	0.35 1.0 mm	134
with F-optics	0.5 1.0 mm	136



Common technical data

Electrical data	Operating voltage U_B	w/o heating: 10 … 30VDC w. heating: 24VDC ±20%
	Power consumption	w/o heating: approx. 10VA w. heating: approx. 75VA
	Interface type	RS 232, RS 422, RS 485, Ethernet, PROFIBUS, PROFINET, Service: USB 1.1
	Protocols	Leuze Standard, Leuze multiNet plus, ACK/NAK, TCP/IP, UDP, PROFIBUS DP, PROFINET RT
	Code types	all common bar codes
	Sw. inputs/outputs	4, configurable
Indicators and operational controls	LEDs / Buttons	2 (power, bus state) / 4
	Display	monochrome, 128 x 64 pixels
Mechanical data	Housing / Optical window	diecast aluminum / glass
	Weight	approx. 1500g
Environmental data	Ambient temperature operation (storage)	w/o heating: 0°C … +40°C w. heating: -35°C … +35°C (-20°C … +70°C)
	Protection class	IP 65
Laser	Laser diode, red, wavelength 650nm Class 2 acc. to EN 60825-1 and 21 CFR 1040.10 with Laser Notice No. 50	

Features

- **Line scanner with deflection mirror and perpendicular beam exit**
- **Swivel angle of the deflection mirror: ±10°, adjustable**
- **Code fragment technology**
- **Small construction volume**
- **Large depth of field**
- **Large reading field width**
- ***'i'* - integrated fieldbus connectivity**
- **Stand-alone operation possible**
- **multiNet master, multiNet slave, Ethernet, PROFIBUS and PROFINET device variants**
- **M12 Connection technology**
- **Parameters are stored fail-safe**
- **Easy mounting and fastening**
- **Display**
- **Devices with integrated heating available**

BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with N-optics				
BCL 500i S N 100 50105453	Deflection mirror scanner for small module codes, M12 connector	650	800 … 1200	RS 232/422, RS 485
BCL 500i S N 100 H 50105456	Deflection mirror scanner for small module codes, heating, M12 connector	650	800 … 1200	RS 232/422, RS 485
BCL 501i S N 100 50105471	Deflection mirror scanner for small module codes, M12 connector	650	800 … 1200	RS 485
BCL 501i S N 100 H 50105474	Deflection mirror scanner for small module codes, heating, M12 connector	650	800 … 1200	RS 485
BCL 504i S N 100 50105489	Deflection mirror scanner for small module codes, M12 connector	650	800 … 1200	PROFIBUS DP
BCL 504i S N 100 H 50105492	Deflection mirror scanner for small module codes, heating, M12 connector	650	800 … 1200	PROFIBUS DP
BCL 508i S N 100 50105507	Deflection mirror scanner for small module codes, M12 connector	650	800 … 1200	Ethernet
BCL 508i S N 100 H 50105510	Deflection mirror scanner for small module codes, heating, M12 connector	650	800 … 1200	Ethernet
BCL 548i S N 100 50113185	Deflection mirror scanner for small module codes, M12 connector	650	800 … 1200	PROFINET RT
BCL 548i S N 100 H 50113186	Deflection mirror scanner for small module codes, heating, M12 connector	650	800 … 1200	PROFINET RT

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT) and BCLconfig configuration software - free download under *www.leuze.com*.

Part number code for BCL 5xx*i* on **page 149**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

An extensive range of accessories for the BCL 5xx*i* stationary bar code readers can be found on page 148.


BCL 8
Page 20


BCL 2x
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BCL 3xx*i*
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BCL 5xx*i*
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BCL 5xx*i* ...

N-optics, Deflect. Mirror

BARCODE

Features

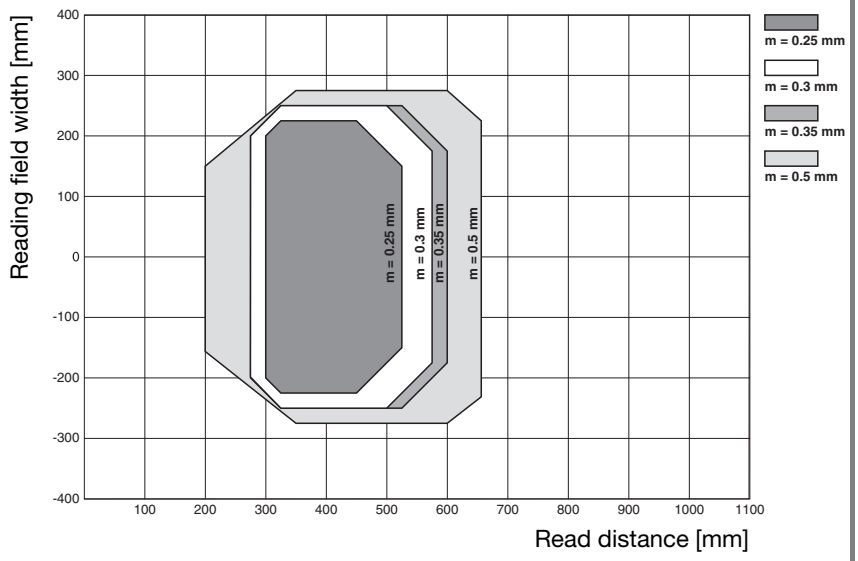
- Line scanner with deflection mirror and perpendicular beam exit
- Swivel angle of the deflection mirror: ±10°, adjustable
- Code fragment technology
- Large depth of field
- Large reading field width
- N-optics
- For module sizes m = 0.25 ... 0.5mm
- Small construction volume
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation possible
- multiNet master (...500*i*), multiNet slave (...501*i*), PROFIBUS DP (...504*i*), Ethernet (...508*i*) and PROFINET RT (...548*i*) device variants
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting

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Reading curves

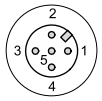
BCL 5xx*i* S N 100 with N-optics



The reading curves of the device models with heating can be found in the technical description - Download at *www.leuze.com*.

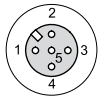
Electrical connection

PWR - male, A-cod.



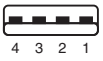
PIN	Signal
1	VIN
2	SWIO_3
3	GND
4	SWIO_4
5	FE

SW IN/OUT - female, A-cod.



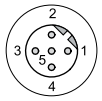
PIN	Signal
1	VOUT
2	SWIO_1
3	GND
4	SWIO_2
5	FE

SERVICE - USB Standard A



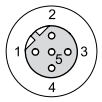
PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

HOST/BUS IN - male, B-cod.



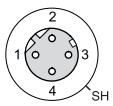
PIN	Signal 500*i* RS232/422	Signal 501*i* RS485	Signal 504*i* PROFIBUS
1	CTS/RX+	res.	res.
2	TxD/TX-	RS485 B	A (N)
3	GND_H	GND 485	res.
4	RTS/TX+	RS485 A	B (P)
5	RxD/RX-	FE	Shield/FE

BUS OUT female, B-cod.

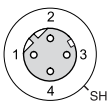


PIN	Signal 500*i* RS485	Signal 501*i* RS485	Signal 504*i* PROFIBUS
1	V CC485	V CC485	VCC
2	RS485 B	RS485 B	A (N)
3	GND 485	GND 485	GND
4	RS485 A	RS485 A	B (P)
5	FE	FE	Shield/FE

HOST/BUS IN female, D-cod.



BUS OUT female, D-cod.



PIN	Signal 508*i* / 548*i* RS485
1	TD+
2	RD+
3	TD-
4	RD-
SH	Shield

BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with M-optics				
BCL 500i S M 100 50105459	Deflection mirror scanner for medium module codes, M12 connector	1000	800 … 1200	RS 232/422, RS 485
BCL 500i S M 100 H 50105462	Deflection mirror scanner for medium module codes, heating, M12 connector	1000	800 … 1200	RS 232/422, RS 485
BCL 501i S M 100 50105477	Deflection mirror scanner for medium module codes, M12 connector	1000	800 … 1200	RS 485
BCL 501i S M 100 H 50105480	Deflection mirror scanner for medium module codes, heating, M12 connector	1000	800 … 1200	RS 485
BCL 504i S M 100 50105495	Deflection mirror scanner for medium module codes, M12 connector	1000	800 … 1200	PROFIBUS DP
BCL 504i S M 100 H 50105498	Deflection mirror scanner for medium module codes, heating, M12 connector	1000	800 … 1200	PROFIBUS DP
BCL 508i S M 100 50105513	Deflection mirror scanner for medium module codes, M12 connector	1000	800 … 1200	Ethernet
BCL 508i S M 100 H 50105516	Deflection mirror scanner for medium module codes, heating, M12 connector	1000	800 … 1200	Ethernet
BCL 548i S M 100 50113189	Deflection mirror scanner for medium module codes, M12 connector	1000	800 … 1200	PROFINET RT
BCL 548i S M 100 H 50113190	Deflection mirror scanner for medium module codes, heating, M12 connector	1000	800 … 1200	PROFINET RT

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT) and BCLconfig configuration software - free download under *www.leuze.com*.

Part number code for BCL 5xx*i* on **page 149**.

Accessories / connection cables More accessories can be found from **page 423** onwards

An extensive range of accessories for the BCL 5xx*i* stationary bar code readers can be found on page 148.


BCL 8 Page 20


BCL 2x Page 26


BCL 3xx*i* Page 56


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BCL 5xx*i* ...

M-optics, Deflect. Mirror

BARCODE

Features

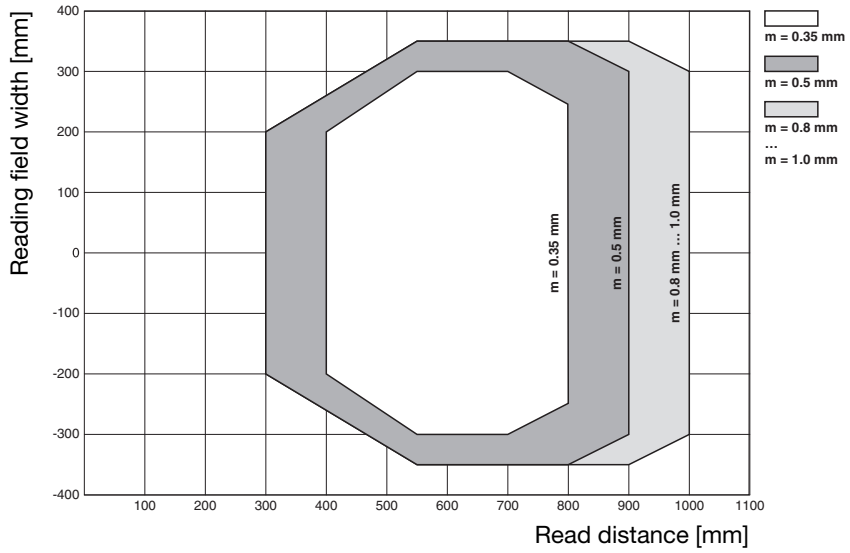
- Line scanner with deflection mirror and perpendicular beam exit
- Swivel angle of the deflection mirror: ±10°, adjustable
- Code fragment technology
- Large depth of field
- Large reading field width
- M-optics
- For module sizes m = 0.35 ... 1.0mm
- Small construction volume
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation possible
- multiNet master (...500*i*), multiNet slave (...501*i*), PROFIBUS DP (...504*i*), Ethernet (...508*i*) and PROFINET RT (...548*i*) device variants
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting

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Reading curves

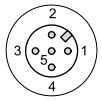
BCL 5xx*i* S M 100 with M-optics



The reading curves of the device models with heating can be found in the technical description - Download at *www.leuze.com*.

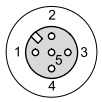
Electrical connection

PWR - male, A-cod.



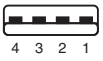
PIN	Signal
1	VIN
2	SWIO_3
3	GND
4	SWIO_4
5	FE

SW IN/OUT - female, A-cod.



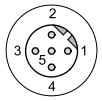
PIN	Signal
1	VOUT
2	SWIO_1
3	GND
4	SWIO_2
5	FE

SERVICE - USB Standard A



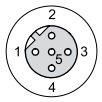
PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

HOST/BUS IN - male, B-cod.



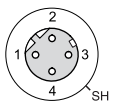
PIN	**500*i*** RS232/422	**501*i*** RS485	**504*i*** PROFIBUS
	Signal		
1	CTS/RX+	res.	res.
2	TxD/TX-	RS485 B	A (N)
3	GND_H	GND 485	res.
4	RTS/TX+	RS485 A	B (P)
5	RxD/RX-	FE	Shield/FE

BUS OUT female, B-cod.

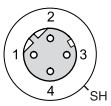


PIN	**500*i*** RS485	**501*i*** RS485	**504*i*** PROFIBUS
	Signal		
1	V CC485	V CC485	VCC
2	RS485 B	RS485 B	A (N)
3	GND 485	GND 485	GND
4	RS485 A	RS485 A	B (P)
5	FE	FE	Shield/FE

HOST/BUS IN female, D-cod.



BUS OUT female, D-cod.



PIN	**508*i* / 548*i*** RS485
	Signal
1	TD+
2	RD+
3	TD-
4	RD-
SH	Shield

BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with F-optics				
BCL 500i S F 100 50105465	Deflection mirror scanner for large module codes, M12 connector	1600	800 … 1200	RS 232/422, RS 485
BCL 500i S F 100 H 50105468	Deflection mirror scanner for large module codes, heating, M12 connector	1600	800 … 1200	RS 232/422, RS 485
BCL 501i S F 100 50105483	Deflection mirror scanner for large module codes, M12 connector	1600	800 … 1200	RS 485
BCL 501i S F 100 H 50105486	Deflection mirror scanner for large module codes, heating, M12 connector	1600	800 … 1200	RS 485
BCL 504i S F 100 50105501	Deflection mirror scanner for large module codes, M12 connector	1600	800 … 1200	PROFIBUS DP
BCL 504i S F 100 H 50105504	Deflection mirror scanner for large module codes, heating, M12 connector	1600	800 … 1200	PROFIBUS DP
BCL 508i S F 100 50105519	Deflection mirror scanner for large module codes, M12 connector	1600	800 … 1200	Ethernet
BCL 508i S F 100 H 50105522	Deflection mirror scanner for large module codes, heating, M12 connector	1600	800 … 1200	Ethernet
BCL 548i S F 100 50113197	Deflection mirror scanner for large module codes, M12 connector	1600	800 … 1200	PROFINET RT
BCL 548i S F 100 H 50113198	Deflection mirror scanner for large module codes, heating, M12 connector	1600	800 … 1200	PROFINET RT

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT) and BCLconfig configuration software - free download under *www.leuze.com*.

Part number code for BCL 5xx*i* on **page 149**.

Accessories / connection cables

More accessories can be found from **page 423** onwards

An extensive range of accessories for the BCL 5xx*i* stationary bar code readers can be found on page 148.


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BCL 3xx*i*
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BCL 5xx*i*
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BCL 5xx*i* ...

F-optics, Deflect. Mirror

BARCODE

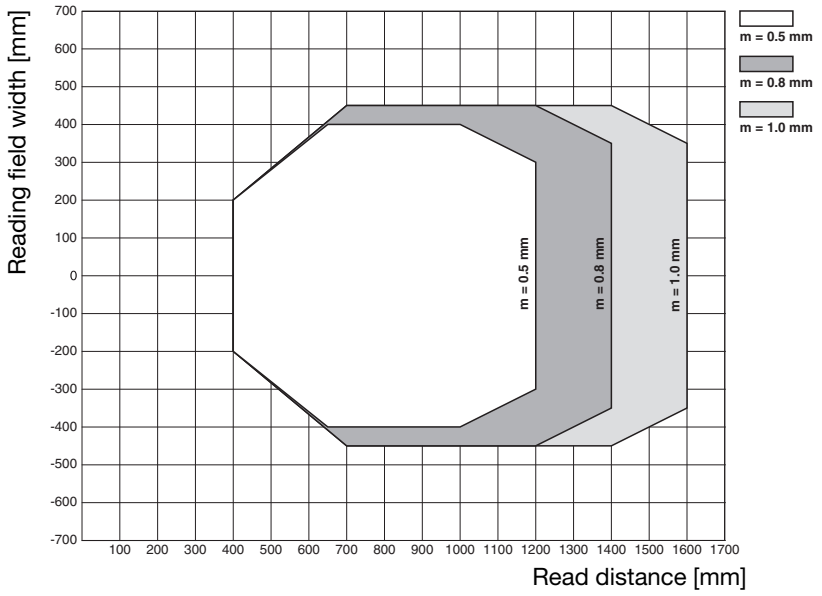
Features

- Line scanner with deflection mirror and perpendicular beam exit
- Swivel angle of the deflection mirror: ±10°, adjustable
- Code fragment technology
- Large depth of field
- Large reading field width
- F-optics
- For module sizes m = 0.5 ... 1.0mm
- Small construction volume
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation possible
- multiNet master (...500*i*), multiNet slave (...501*i*), PROFIBUS DP (...504*i*), Ethernet (...508*i*) and PROFINET RT (...548*i*) device variants
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting



Reading curves

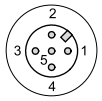
BCL 5xx*i* S F 100 with F-optics



The reading curves of the device models with heating can be found in the technical description - Download at *www.leuze.com*.

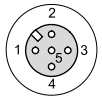
Electrical connection

PWR - male, A-cod.



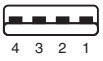
PIN	Signal
1	VIN
2	SWIO_3
3	GND
4	SWIO_4
5	FE

SW IN/OUT - female, A-cod.



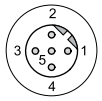
PIN	Signal
1	VOUT
2	SWIO_1
3	GND
4	SWIO_2
5	FE

SERVICE - USB Standard A



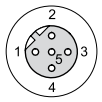
PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

HOST/BUS IN - male, B-cod.



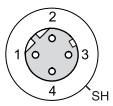
PIN	500*i* RS232/422	Signal 501*i* RS485	504*i* PROFIBUS
1	CTS/RX+	res.	res.
2	TxD/TX-	RS485 B	A (N)
3	GND_H	GND 485	res.
4	RTS/TX+	RS485 A	B (P)
5	RxD/RX-	FE	Shield/FE

BUS OUT female, B-cod.

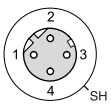


PIN	500*i* RS485	Signal 501*i* RS485	504*i* PROFIBUS
1	V CC485	V CC485	VCC
2	RS485 B	RS485 B	A (N)
3	GND 485	GND 485	GND
4	RS485 A	RS485 A	B (P)
5	FE	FE	Shield/FE

HOST/BUS IN female, D-cod.



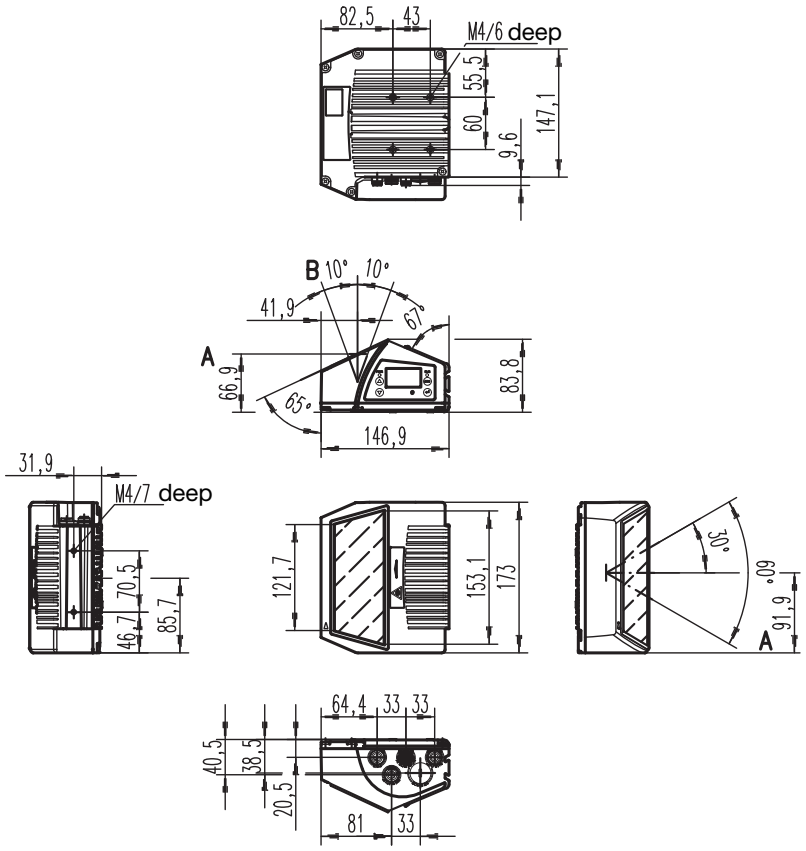
BUS OUT female, D-cod.



PIN	Signal 508*i* / 548*i* RS485
1	TD+
2	RD+
3	TD-
4	RD-
SH	Shield

OVERVIEW

Dimensioned drawing



A Optical axis
B Optical swivel range


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STATIONARY BAR CODE READERS BCL 5xx*i*

Bar code reader Series 500*i*	Module size	Page
with N-optics	0.25 0.5 mm	140
with M-optics	0.35 1.0 mm	142
with F-optics	0.5 1.0 mm	144
with L-optics	0.7 1.0 mm	146



Common technical data

Electrical data	Operating voltage U_B	w/o heating: 10 … 30VDC w. heating: 24VDC ±20%
	Power consumption	w/o heating: approx. 10VA w. heating: approx. 75VA
	Interface type	RS 232, RS 422, RS 485, Ethernet, PROFIBUS, PROFINET, Service: USB 1.1
	Protocols	Leuze Standard, Leuze multiNet plus, ACK/NAK, TCP/IP, UDP, PROFIBUS DP, PROFINET RT
	Code types	all common bar codes
	Sw. inputs/outputs	4, configurable
Indicators and operational controls	LEDs / Buttons	2 (power, bus state) / 4
	Display	monochrome, 128 x 64 pixels
Mechanical data	Housing / Optical window	diecast aluminum / glass
	Weight	approx. 1500g
Environmental data	Ambient temperature operation (storage)	w/o heating: 0°C … +40°C w. heating: -35°C … +35°C (-20°C … +70°C)
	Protection class	IP 65
Laser	Laser diode, red, wavelength 650nm Class 2 acc. to EN 60825-1 and 21 CFR 1040.10 with Laser Notice No. 50	

Features

- **Oscillating mirror scanner with perpendicular beam exit**
- **Swiveling frequency 0 … 10Hz, adjustable**
- **Code fragment technology**
- **Small construction volume**
- **Large depth of field**
- **Large reading field width**
- ***'i'* - integrated fieldbus connectivity**
- **Stand-alone operation possible**
- **multiNet master, multiNet slave, Ethernet, PROFIBUS and PROFINET device variants**
- **M12 Connection technology**
- **Parameters are stored fail-safe**
- **Easy mounting and fastening**
- **Display**
- **Devices with integrated heating available**

BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with N-optics				
BCL 500i O N 100 50105455	Oscillating mirror scanner for small module codes, M12 connector	650	800 … 1200	RS 232/422, RS 485
BCL 500i O N 100 H 50105458	Oscillating mirror scanner for small module codes, heating, M12 connector	650	800 … 1200	RS 232/422, RS 485
BCL 501i O N 100 50105473	Oscillating mirror scanner for small module codes, M12 connector	650	800 … 1200	RS 485
BCL 501i O N 100 H 50105476	Oscillating mirror scanner for small module codes, heating, M12 connector	650	800 … 1200	RS 485
BCL 504i O N 100 50105491	Oscillating mirror scanner for small module codes, M12 connector	650	800 … 1200	PROFIBUS DP
BCL 504i O N 100 H 50105494	Oscillating mirror scanner for small module codes, heating, M12 connector	650	800 … 1200	PROFIBUS DP
BCL 508i O N 100 50105509	Oscillating mirror scanner for small module codes, M12 connector	650	800 … 1200	Ethernet
BCL 508i O N 100 H 50105512	Oscillating mirror scanner for small module codes, heating, M12 connector	650	800 … 1200	Ethernet
BCL 548i O N 100 50113199	Oscillating mirror scanner for small module codes, M12 connector	650	800 … 1200	PROFINET RT
BCL 548i O N 100 H 50113200	Oscillating mirror scanner for small module codes, heating, M12 connector	650	800 … 1200	PROFINET RT

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT) and BCLconfig configuration software - free download under *www.leuze.com*.

Part number code for BCL 5xx*i* on **page 149**.

Accessories / connection cables More accessories can be found from **page 423** onwards

An extensive range of accessories for the BCL 5xx*i* stationary bar code readers can be found on page 148.


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BCL 2x Page 26


BCL 3xx*i* Page 56


BCL 5xx*i* Page 120


MSP*i* Page 150


BCL 90 Page 154


MSP Page 166

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BCL 5xx*i* ...

N-optics, Oscill. Mirror

BARCODE

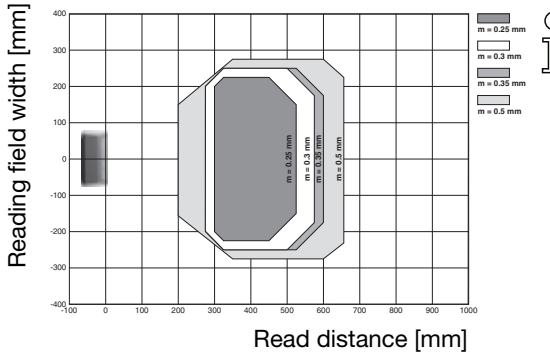
Features

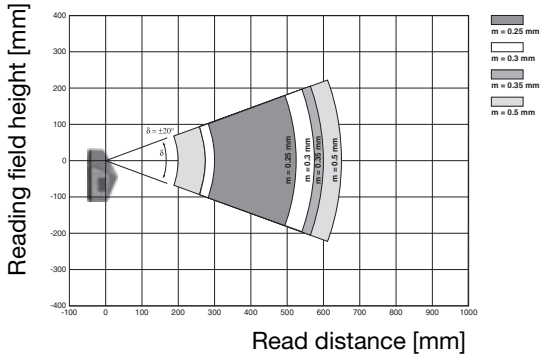
- Oscillating mirror scanner with perpendicular beam exit
- Swiveling frequency 0 ... 10Hz, adjustable
- Code fragment technology
- Small construction volume
- Large depth of field
- Large reading field width
- N-optics
- For module sizes m = 0.25 ... 0.5mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation possible
- multiNet master (...500*i*), multiNet slave (...501*i*), PROFIBUS DP (...504*i*), Ethernet (...508*i*) and PROFINET RT (...548*i*) device variants
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting



Reading curves

BCL 5xx*i* O N 100 with N-optics



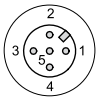


The reading curves of the device models with heating can be found in the technical description.

Download at *www.leuze.com*.

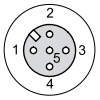
Electrical connection

PWR - male, A-cod.



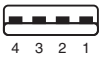
PIN	Signal
1	VIN
2	SWIO_3
3	GND
4	SWIO_4
5	FE

SW IN/OUT - female, A-cod.



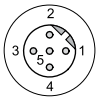
PIN	Signal
1	VOUT
2	SWIO_1
3	GND
4	SWIO_2
5	FE

SERVICE - USB Standard A



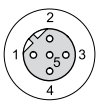
PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

HOST/BUS IN - male, B-cod.



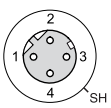
PIN	Signal 500*i* RS232/422	Signal 501*i* RS485	Signal 504*i* PROFIBUS
1	CTS/RX+	res.	res.
2	TxD/TX-	RS485 B	A (N)
3	GND_H	GND 485	res.
4	RTS/TX+	RS485 A	B (P)
5	RxD/RX-	FE	Shield/FE

BUS OUT female, B-cod.

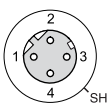


PIN	Signal 500*i* RS485	Signal 501*i* RS485	Signal 504*i* PROFIBUS
1	V CC485	V CC485	VCC
2	RS485 B	RS485 B	A (N)
3	GND 485	GND 485	GND
4	RS485 A	RS485 A	B (P)
5	FE	FE	Shield/FE

HOST/BUS IN female, D-cod.



BUS OUT female, D-cod.



PIN	Signal 508*i* / 548*i* RS485
1	TD+
2	RD+
3	TD-
4	RD-
SH	Shield

BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with M-optics				
BCL 500i O M 100 50105461	Oscillating mirror scanner for medium module codes, M12 connector	1000	800 … 1200	RS 232/422, RS 485
BCL 500i O M 100 H 50105464	Oscillating mirror scanner for medium module codes, heating, M12 connector	1000	800 … 1200	RS 232/422, RS 485
BCL 501i O M 100 50105479	Oscillating mirror scanner for medium module codes, M12 connector	1000	800 … 1200	RS 485
BCL 501i O M 100 H 50105482	Oscillating mirror scanner for medium module codes, heating, M12 connector	1000	800 … 1200	RS 485
BCL 504i O M 100 50105497	Oscillating mirror scanner for medium module codes, M12 connector	1000	800 … 1200	PROFIBUS DP
BCL 504i O M 100 H 50105500	Oscillating mirror scanner for medium module codes, heating, M12 connector	1000	800 … 1200	PROFIBUS DP
BCL 508i O M 100 50105515	Oscillating mirror scanner for medium module codes, M12 connector	1000	800 … 1200	Ethernet
BCL 508i O M 100 H 50105518	Oscillating mirror scanner for medium module codes, heating, M12 connector	1000	800 … 1200	Ethernet
BCL 548i O M 100 50113201	Oscillating mirror scanner for medium module codes, M12 connector	1000	800 … 1200	PROFINET RT
BCL 548i O M 100 H 50113202	Oscillating mirror scanner for medium module codes, heating, M12 connector	1000	800 … 1200	PROFINET RT

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT) and BCLconfig configuration software - free download under *www.leuze.com*.

Part number code for BCL 5xx*i* on **page 149**.

Accessories / connection cables More accessories can be found from **page 423** onwards

An extensive range of accessories for the BCL 5xx*i* stationary bar code readers can be found on page 148.


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BCL 2x Page 26


BCL 3xx*i* Page 56


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MSP Page 166

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BCL 5xx*i* ...

M-optics, Oscill. Mirror

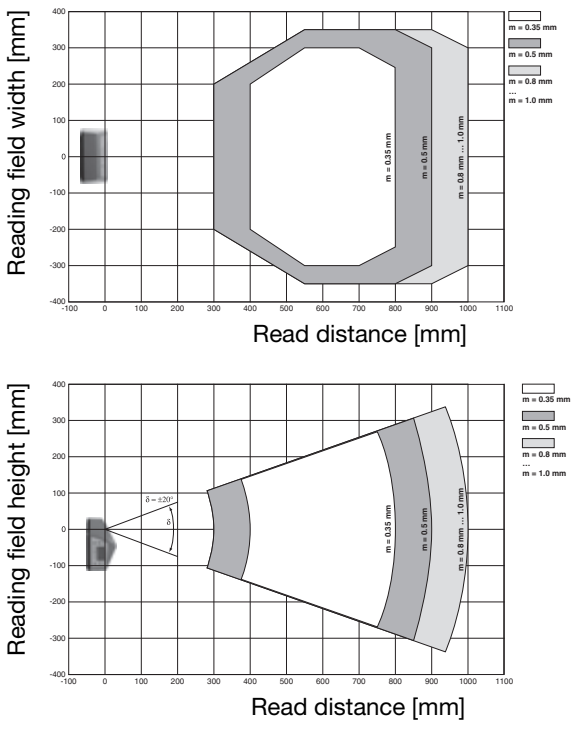
Features

- Oscillating mirror scanner with perpendicular beam exit
- Swiveling frequency 0 ... 10Hz, adjustable
- Code fragment technology
- Small construction volume
- Large depth of field
- Large reading field width
- M-optics
- For module sizes m = 0.35 ... 1.0mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation possible
- multiNet master (...500*i*), multiNet slave (...501*i*), PROFIBUS DP (...504*i*), Ethernet (...508*i*) and PROFINET RT (...548*i*) device variants
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting



Reading curves

BCL 5xx*i* O M 100 with M-optics

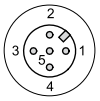


The reading curves of the device models with heating can be found in the technical description.

Download at *www.leuze.com*.

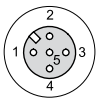
Electrical connection

PWR - male, A-cod.



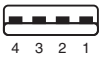
PIN	Signal
1	VIN
2	SWIO_3
3	GND
4	SWIO_4
5	FE

SW IN/OUT - female, A-cod.



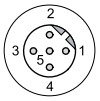
PIN	Signal
1	VOUT
2	SWIO_1
3	GND
4	SWIO_2
5	FE

SERVICE - USB Standard A



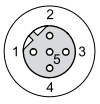
PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

HOST/BUS IN - male, B-cod.



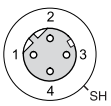
PIN	500*i* RS232/422	Signal 501*i* RS485	504*i* PROFIBUS
1	CTS/RX+	res.	res.
2	TxD/TX-	RS485 B	A (N)
3	GND_H	GND 485	res.
4	RTS/TX+	RS485 A	B (P)
5	RxD/RX-	FE	Shield/FE

BUS OUT female, B-cod.

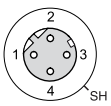


PIN	500*i* RS485	Signal 501*i* RS485	504*i* PROFIBUS
1	V CC485	V CC485	VCC
2	RS485 B	RS485 B	A (N)
3	GND 485	GND 485	GND
4	RS485 A	RS485 A	B (P)
5	FE	FE	Shield/FE

HOST/BUS IN female, D-cod.



BUS OUT female, D-cod.



PIN	Signal 508*i* / 548*i* RS485
1	TD+
2	RD+
3	TD-
4	RD-
SH	Shield

BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with F-optics				
BCL 500i O F 100 50105467	Oscillating mirror scanner for large module codes, M12 connector	1600	800 … 1200	RS 232/422, RS 485
BCL 500i O F 100 H 50105470	Oscillating mirror scanner for large module codes, heating, M12 connector	1600	800 … 1200	RS 232/422, RS 485
BCL 501i O F 100 50105485	Oscillating mirror scanner for large module codes, M12 connector	1600	800 … 1200	RS 485
BCL 501i O F 100 H 50105488	Oscillating mirror scanner for large module codes, heating, M12 connector	1600	800 … 1200	RS 485
BCL 504i O F 100 50105503	Oscillating mirror scanner for large module codes, M12 connector	1600	800 … 1200	PROFIBUS DP
BCL 504i O F 100 H 50105506	Oscillating mirror scanner for large module codes, heating, M12 connector	1600	800 … 1200	PROFIBUS DP
BCL 508i O F 100 50105521	Oscillating mirror scanner for large module codes, M12 connector	1600	800 … 1200	Ethernet
BCL 508i O F 100 H 50105524	Oscillating mirror scanner for large module codes, heating, M12 connector	1600	800 … 1200	Ethernet
BCL 548i O F 100 50113205	Oscillating mirror scanner for large module codes, M12 connector	1600	800 … 1200	PROFINET RT
BCL 548i O F 100 H 50113206	Oscillating mirror scanner for large module codes, heating, M12 connector	1600	800 … 1200	PROFINET RT

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT) and BCLconfig configuration software - free download under *www.leuze.com*.

Part number code for BCL 5xx*i* on **page 149**.

Accessories / connection cables More accessories can be found from **page 423** onwards

An extensive range of accessories for the BCL 5xx*i* stationary bar code readers can be found on page 148.


BCL 8 Page 20


BCL 2x Page 26


BCL 3xx*i* Page 56


BCL 5xx*i* Page 120


MSP*i* Page 150


BCL 90 Page 154


MSP Page 166

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BCL 5xx*i* ...

F-optics, Oscill. Mirror

BARCODE

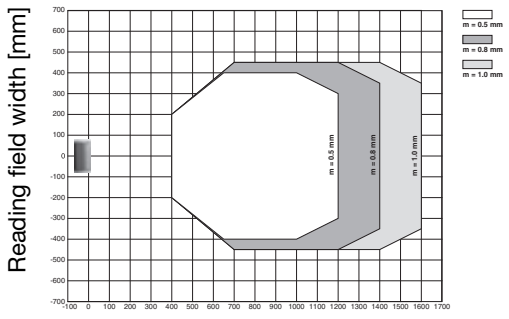
Features

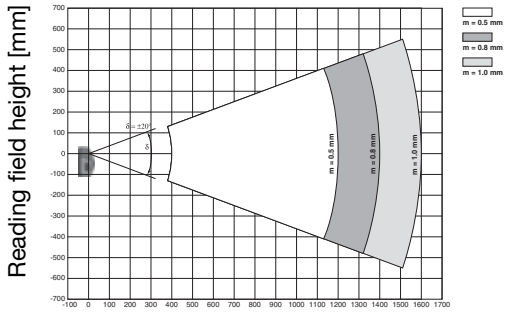
- Oscillating mirror scanner with perpendicular beam exit
- Swiveling frequency 0 ... 10Hz, adjustable
- Code fragment technology
- Small construction volume
- Large depth of field
- Large reading field width
- F-optics
- For module sizes m = 0.5 ... 1.0mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation possible
- multiNet master (...500*i*), multiNet slave (...501*i*), PROFIBUS DP (...504*i*), Ethernet (...508*i*) and PROFINET RT (...548*i*) device variants
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting



Reading curves

BCL 5xx*i* O F 100 with F-optics



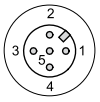


The reading curves of the device models with heating can be found in the technical description.

Download at *www.leuze.com*.

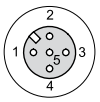
Electrical connection

PWR - male, A-cod.



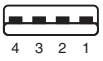
PIN	Signal
1	VIN
2	SWIO_3
3	GND
4	SWIO_4
5	FE

SW IN/OUT - female, A-cod.



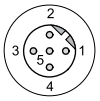
PIN	Signal
1	VOUT
2	SWIO_1
3	GND
4	SWIO_2
5	FE

SERVICE - USB Standard A



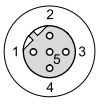
PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

HOST/BUS IN - male, B-cod.



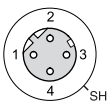
PIN	500*i* RS232/422	501*i* RS485	504*i* PROFIBUS
1	CTS/RX+	res.	res.
2	TxD/TX-	RS485 B	A (N)
3	GND_H	GND 485	res.
4	RTS/TX+	RS485 A	B (P)
5	RxD/RX-	FE	Shield/FE

BUS OUT female, B-cod.

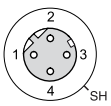


PIN	500*i* RS485	501*i* RS485	504*i* PROFIBUS
1	V CC485	V CC485	VCC
2	RS485 B	RS485 B	A (N)
3	GND 485	GND 485	GND
4	RS485 A	RS485 A	B (P)
5	FE	FE	Shield/FE

HOST/BUS IN female, D-cod.



BUS OUT female, D-cod.



PIN	508*i* / 548*i* RS485
1	TD+
2	RD+
3	TD-
4	RD-
SH	Shield

BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with L-optics				
BCL 500i O L 100 50109912	Oscillating mirror scanner for very large module codes, M12 connector	2400	800 … 1200	RS 232/422, RS 485
BCL 500i O L 100 H 50109915	Oscillating mirror scanner for very large module codes, heating, M12 connector	2400	800 … 1200	RS 232/422, RS 485
BCL 501i O L 100 50109891	Oscillating mirror scanner for very large module codes, M12 connector	2400	800 … 1200	RS 485
BCL 501i O L 100 H 50109894	Oscillating mirror scanner for very large module codes, heating, M12 connector	2400	800 … 1200	RS 485
BCL 504i O L 100 50109897	Oscillating mirror scanner for very large module codes, M12 connector	2400	800 … 1200	PROFIBUS DP
BCL 504i O L 100 H 50109900	Oscillating mirror scanner for very large module codes, heating, M12 connector	2400	800 … 1200	PROFIBUS DP
BCL 508i O L 100 50109906	Oscillating mirror scanner for very large module codes, M12 connector	2400	800 … 1200	Ethernet
BCL 508i O L 100 H 50109909	Oscillating mirror scanner for very large module codes, heating, M12 connector	2400	800 … 1200	Ethernet
BCL 548i O L 100 50113203	Oscillating mirror scanner for very large module codes, M12 connector	2400	800 … 1200	PROFINET RT
BCL 548i O L 100 H 50113204	Oscillating mirror scanner for very large module codes, heating, M12 connector	2400	800 … 1200	PROFINET RT

USB driver for the Leuze webConfig tool, GSD file (PROFIBUS DP), GSDML file (PROFINET RT) and BCLconfig configuration software - free download under *www.leuze.com*.

Part number code for BCL 5xx*i* on **page 149**.

Accessories / connection cables — More accessories can be found from **page 423** onwards

An extensive range of accessories for the BCL 5xx*i* stationary bar code readers can be found on page 148.


BCL 8 Page 20


BCL 2x Page 26


BCL 3xx*i* Page 56


BCL 5xx*i* Page 120


MSP*i* Page 150


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MSP Page 166

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BCL 5xx*i* ...

L-optics, Oscill. Mirror

BARCODE

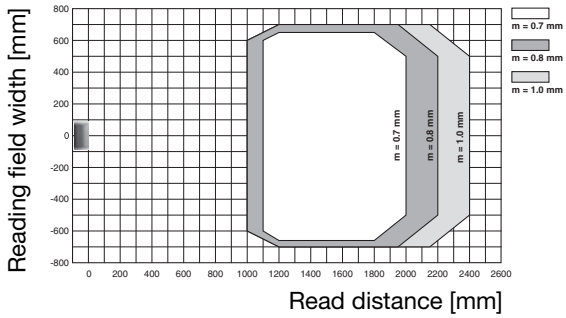
Features

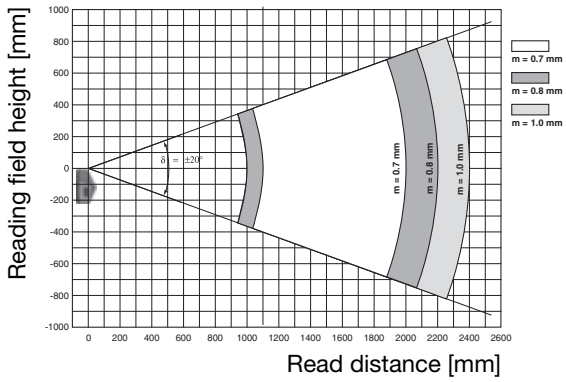
- Oscillating mirror scanner with perpendicular beam exit
- Swiveling frequency 0 ... 10Hz, adjustable
- Code fragment technology
- Small construction volume
- Large depth of field
- Large reading field width
- L-optics
- For module sizes m = 0.7 ... 1.0mm
- *'i'* - integrated fieldbus connectivity
- Stand-alone operation possible
- multiNet master (...500*i*), multiNet slave (...501*i*), PROFIBUS DP (...504*i*), Ethernet (...508*i*) and PROFINET RT (...548*i*) device variants
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting



Reading curves

BCL 5xx*i* O L 100 with L-optics



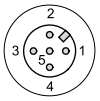


The reading curves of the device models with heating can be found in the technical description.

Download at *www.leuze.com*.

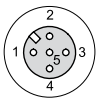
Electrical connection

PWR - male, A-cod.



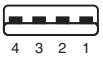
PIN	Signal
1	VIN
2	SWIO_3
3	GND
4	SWIO_4
5	FE

SW IN/OUT - female, A-cod.



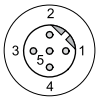
PIN	Signal
1	VOUT
2	SWIO_1
3	GND
4	SWIO_2
5	FE

SERVICE - USB Standard A



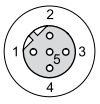
PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

HOST/BUS IN - male, B-cod.



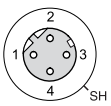
PIN	500*i* RS232/422	501*i* RS485	504*i* PROFIBUS
1	CTS/RX+	res.	res.
2	TxD/TX-	RS485 B	A (N)
3	GND_H	GND 485	res.
4	RTS/TX+	RS485 A	B (P)
5	RxD/RX-	FE	Shield/FE

BUS OUT female, B-cod.

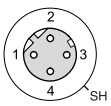


PIN	500*i* RS485	501*i* RS485	504*i* PROFIBUS
1	V CC485	V CC485	VCC
2	RS485 B	RS485 B	A (N)
3	GND 485	GND 485	GND
4	RS485 A	RS485 A	B (P)
5	FE	FE	Shield/FE

HOST/BUS IN female, D-cod.



BUS OUT female, D-cod.



PIN	508*i* / 548*i* RS485
1	TD+
2	RD+
3	TD-
4	RD-
SH	Shield

BAR CODE READERS - ACCESSORIES

Accessories / connection cables More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50107726	KB USBA - USBA	USB service cable
50108833	USB Memory Set	External USB parameter memory
50038539	TS 02-4-SA	M12 connector, integrated PROFIBUS terminating resistor
see P. 434	KB PB - …	PROFIBUS connection cables, see page 434
see P. 431	KB ET - …	Ethernet-/PROFINET connection cables, see page 431
50110240	KB 500-3000-Y	Connection cable for BCL 501*i* to MA 100 connector unit
see P. 443	KD 02 - 5 …	M12 connector for connection of the BCL 5xx*i*
50020501	KD 095 - 5 - A	M12 connector for supply voltage
50027375	BT 56	Mounting device for BCL 5xx*i*
50111224	BT 59	Mounting device for BCL 5xx*i*

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BCL 5xx*i* ...

Accessories/part no. code

BARCODE

Bar code reader	B	C	L		5	0	0	*i*		S		N		1	0	0		H



Type

BCL	Bar code reader

Interface (integrated fieldbus technology)

500*i*	RS 232 / RS 422 / RS 485 (multiNet master)
501*i*	RS 485 (multiNet slave)
504*i*	PROFIBUS DP
508*i*	Ethernet TCP/IP, UDP
548*i*	PROFINET RT

Scanning principle

S	Line scanner (Single line)
O	Oscillating mirror scanner (Oscillating mirror)

Optics

N	High Density (near)
M	Medium Density (medium distance)
F	Low Density (remote)
L	Long Range (very large distance)

Beam exit

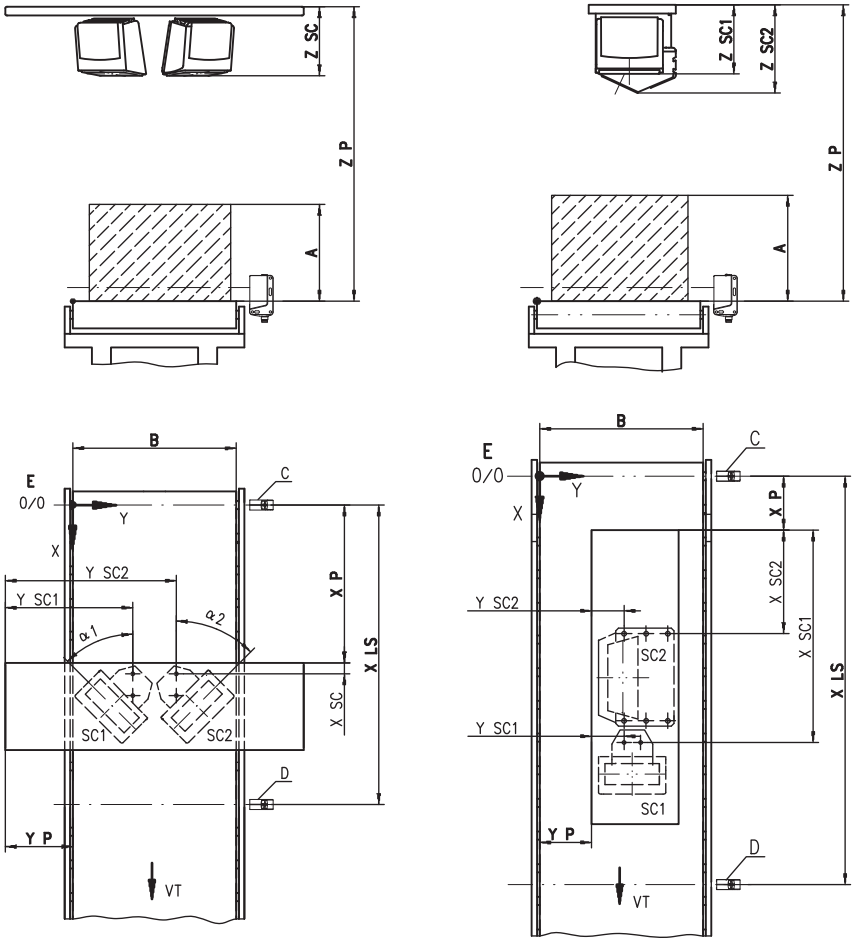
100	Lateral
102	Front

Heating

H	With heating

OVERVIEW

Dimensioned drawing



A Reading field
B Effective conveying belt width
C Photoelectric sensor start
D Photoelectric sensor stop
E Reference point
VT Transport direction

We reserve the right to make changes • MSPi_Overview_EN.fm


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BCL 2x Page 26


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BCL 5xx*i* Page 120


MSP*i* Page 150


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MODULAR SCANNER PORTALS MSP*i* SYSTEMS

Modular Scanner Portals	Module size	Page
MSP*i* ...	0.25 1.0 mm 1)	152

1) Dependent on the used devices



Common technical data

Electrical data	Operating voltage U_B	w/o heating: 10 ... 30VDC w. heating: 24VDC ±20%
	Power consumption (depend. on no. of scanners)	w/o heating: approx. 20VA w. heating: approx. 150VA
	Interface type	RS 232, RS 422, RS 485 PROFIBUS, Ethernet, PROFINET; Service: USB 1.1
	Protocols	Leuze Standard, Leuze multiScan, Leuze multiNet plus, ACK/NAK, TCP/IP, UDP, PROFINET RT
	Code types	all common bar codes
	Sw. inputs/outputs	4, configurable
Indicators and operational controls	LEDs / Buttons	2 (power, bus state) / 4
	Display	monochrome, 128 x 64 pixels
Mechanical data	Housing / Optical window	diecast aluminum / glass
	Weight	approx. 1100g
Environmental data	Ambient temperature operation (storage)	w/o heating: 0°C ... +40°C w. heating: -35°C ... +35°C (-20°C ... +70°C)
	Protection class	IP 65
Laser	Laser diode, red, wavelength 650nm Class 2 acc. to EN 60825-1 and 21 CFR 1040.10 with Laser Notice No. 50	

Features

- **Modular Scanner Portal for integrating up to 32 scanners of type BCL 500*i*/BCL 501*i***
- **Code fragment technology**
- **Series BCL 500*i* bar code reader as base device for the portal solution**
- **Omnidirectional reading**
- **Large depth of field**
- **Large reading field width**
- **Networking via Leuze multiScan**
- **Parameters are stored fail-safe**
- **Easy mounting and fastening**

MODULAR SCANNER PORTALS MSP*i* SYSTEMS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface (Host)
Modular Scanner Portal				
MSP 290i - 520 N 00 50112420	Omnidirectional bar code read system (2x BCL 500i S N 102) [1]	760	800 … 1200	RS 232 RS 422/485
MSP 290i - 511 N 00 50112417	Omnidirectional bar code read system (1x BCL 500i S N 102, 1x BCL 500i O N 100)	750	800 … 1200	RS 232 RS 422/485
MSP 290i - 520 M 00 50112419	Omnidirectional bar code read system (2x BCL 500i S M 102) [1]	1090	800 … 1200	RS 232 RS 422/485
MSP 290i - 511 M 00 50112416	Omnidirectional bar code read system (1x BCL 500i S M 102, 1x BCL 500i O M 100)	1090	800 … 1200	RS 232 RS 422/485
MSP 290i - 520 F 00 50111413	Omnidirectional bar code read system (2x BCL 500i S F 102) [1]	1320	800 … 1200	RS 232 RS 422/485
MSP 290i - 511 F 00 50111412	Omnidirectional bar code read system (1x BCL 500i S F 102, 1x BCL 500i O F 100)	1680	800 … 1200	RS 232 RS 422/485
MSP 290i - 520 L 00 50112418	Omnidirectional bar code read system (2x BCL 500i S L 102) [1]	2190	800 … 1200	RS 232 RS 422/485
MSP 290i - 511 L 00 50112415	Omnidirectional bar code read system (1x BCL 500i S L 102, 1x BCL 500i O L 100)	2490	800 … 1200	RS 232 RS 422/485

1) Including all mechanical components and connection cables, integrated decoder

Additional Modular Scanner Portals MSP*i* systems available on request!

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BCL 3xx*i* Page 56


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MSP*i* Page 150


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MSP*i* ...

Modular Scanner Portals

BARCODE

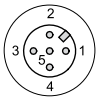
Features

- Omnidirectional reading
- Code fragment technology
- Modular Scanner Portal, combination of line and oscillating mirror scanners possible
- Small construction volume
- Large depth of field
- Large reading field width
- For module sizes m = 0.25 ... 1.0mm
- Leuze multiScan
- multiNet master (...500*i*) and multiNet slave (...501*i*) device models
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting and fastening
- Display



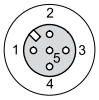
Electrical connection

PWR - male, A-cod.



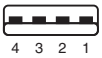
PIN	Signal
1	VIN
2	SWIO_3
3	GND
4	SWIO_4
5	FE

SW IN/OUT - female, A-cod.



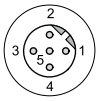
PIN	Signal
1	VOUT
2	SWIO_1
3	GND
4	SWIO_2
5	FE

SERVICE - USB Standard A



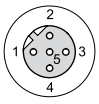
PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

HOST/BUS IN - male, B-cod.



PIN	Signal **500 *i*** RS232/422	Signal **501 *i*** RS485
1	CTS/RX+	res.
2	TxD/TX-	RS485 B
3	GND_H	GND 485
4	RTS/TX+	RS485 A
5	RxD/RX-	FE

BUS OUT female, B-cod.



PIN	Signal **500 *i*** RS485	Signal **501 *i*** RS485
1	V CC485	V CC485
2	RS485 B	RS485 B
3	GND 485	GND 485
4	RS485 A	RS485 A
5	FE	FE

Reading curves

MSP*i* systems.

The reading curves of the scanner portal systems are dependent on the given application.

Our product specialists will be happy to advise you!

OVERVIEW

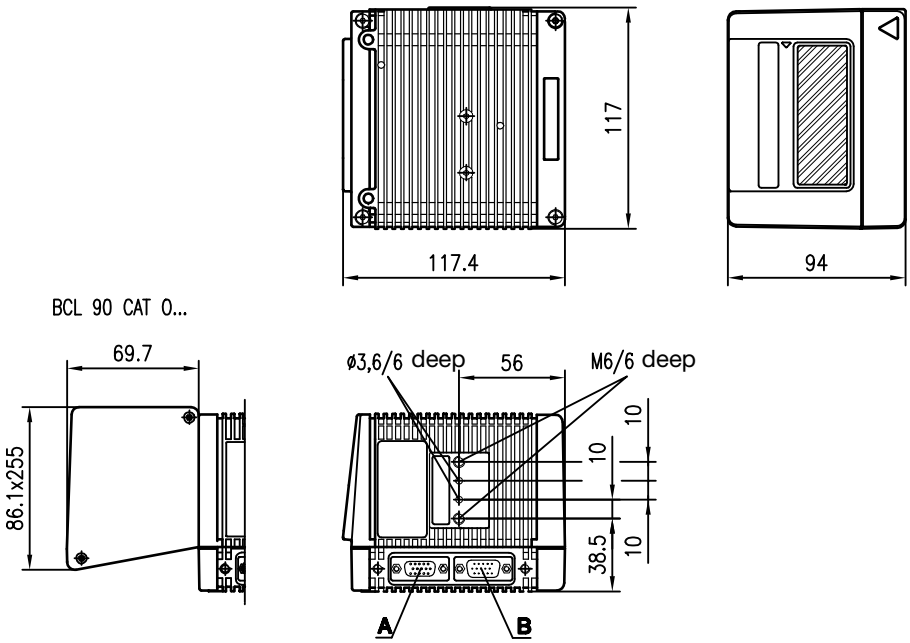


Packet identification



Packet identification

Dimensioned drawing



A Socket I/O
B HOST/TERM connector

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Page 20


BCL 2x
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BCL 3xx*i*
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BCL 5xx*i*
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MSP*i*
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BCL 90
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MSP
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STATIONARY BAR CODE READERS BCL 90

Bar code reader Series 90	Module size	Page
with N-optics	0.2 0.4 mm	156
with M-optics	0.3 1.0 mm	158
with F-optics	0.4 1.2 mm	160



Common technical data

Electrical data	Operating voltage U_B	w/o heating: 18 … 30VDC w. heating: 24VDC +20%/-10%
	Power consumption	w/o heating: max. 18W w. heating: max. 100W
	Interface type	RS 232, RS 485/RS 422 adjustable Service: RS 232
	Code types	2/5 Interleaved, Code 39, Code 128, EAN 128, EAN/UPC, Codabar, Code 93
	Sw. inputs/outputs	6/4, configurable
Indicators	4 LEDs	ready, activation, read result, data
Mechanical data	Housing / Optical window	diecast aluminum / glass
	Weight	approx. 1500g
Environmental data	Ambient temperature operation (storage)	w/o heating: 0°C … +40°C w. heating: -35°C … +35°C (-40°C … +70°C)
	Protection class	IP 65 (with hood)
Laser	Laser diode, red, wavelength 650nm Class 2 acc. to EN 60825-1	

Mounting systems for this series can be found from **page 424** onwards

Features

- **Code fragment technology**
- **Integrated autofocus**
- **Small construction volume**
- **Large depth of field**
- **Large reading field width**
- **All device variants available as oscillating mirror variant**
- **Parameters are stored fail-safe**
- **Easy mounting and fastening**
- **Devices with integrated heating available**

BAR CODE READER WITH RS 232/422/485 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with N-optics				
BCL 90 CAT N 100 50035507	Single-line scanner for small module codes, 2 x Sub-HD connector	1600	600 … 1200	RS 232 RS 422/485
BCL 90 CAT N 100 H 50035509	Single-line scanner for small module codes, heating, 2 x Sub-HD connector	1600	600 … 1200	RS 232 RS 422/485
BCL 90 CAT O N 100 50035508	Oscillating mirror scanner for small module codes, 2 x Sub-HD connector	1500	600 … 1200	RS 232 RS 422/485
BCL 90 CAT O N 100 H 50035510	Oscillating mirror scanner for small module codes, heating, 2 x Sub-HD connector	1500	600 … 1200	RS 232 RS 422/485

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables More accessories can be found from **page 424** onwards

Part no.	Designation	Features
50035319	KB 090 - 3000	BCL 90 to MA 90 connection cable, 3m, Sub-HD plug, Sub-HD socket
50035320	KB 090 - 3000 B	BCL 90 connection cable, 3m, Sub-HD socket, open ends
50035324	KB 090 - 3000 H	Hood with integrated connectors (IP 65) with 2 BCL 90 to MA 90 cables, 3m
50035325	KB 090 - 3000 HO	Hood with integrated connectors (IP 65) with 2 connection cables, 3m, open ends
50035322	KB 090 - 3000 P	Same as KB 090 - 3000 H, with parameter memory (EEPROM)
50035323	KB 090 - 3000 PO	Same as KB 090 - 3000 HO, with parameter memory (EEPROM)
50035321	KB 090 - 3000 S	BCL 90 connection cable, 3m, Sub-HD connector, open ends
see P. 410	MA 31 …	Connector unit, multiNet master, parameter memory, various interfaces
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types
50035348	MA 90	Connector unit for BCL 90
50035516	BT 90 G	Joint bracket (2 x bracket support, 2 screws M6 x 10) for BCL 90
50035514	BT 90 S	Quick-clamping device for BCL 90
50035515	BT 90 W	Bracket support, single, with 2 screws M6 x 10 for BCL 90

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BCL 90

N-optics, Single/Osc. m.

BARCODE

Features

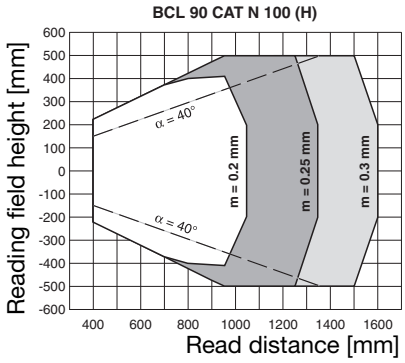
- Code fragment technology
- Integrated autofocus function in real time
- Single-line scanner
- N-optics
- For module sizes m = 0.2 ... 0.4mm
- Operating range up to 1600mm
- Oscillating mirror version

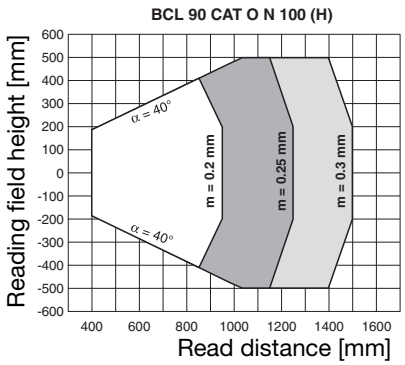
www.leuze.com

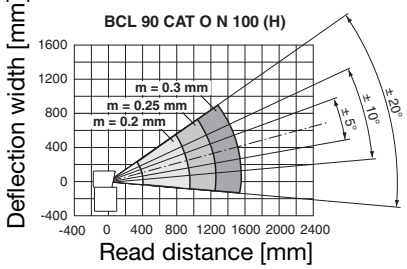


Reading curves

BCL 90 with N-optics

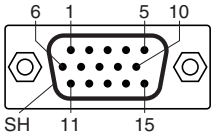






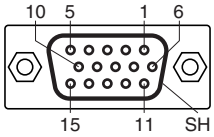
Electrical connection

Host/Term
Sub-HD connector - male



PIN	Signal
1	Vs
2	RXD Service
3	TXD Service
4	Term
5	GND
6	RD+ Host
7	RD-/RXD Host
8	TD+ Host
9	TD-/TXD Host
10	CAN H
11	Bus RT_485-
12	Bus RT_485+
13	Bus R_485-
14	Bus R_485+
15	CAN L
SH	Shield

I/O
Sub-HD connector - female



PIN	Signal
1	Vs
2	SE 3
3	SE 1
4	SWO 1
5	GND
6	SE 2
7	SE 4
8	SWO 2
9	IN GND
10	SWO 3
11	SE 5
12	SE 6
13	IC2 SDA
14	IC2 SCL
15	SWO 4
SH	Shield

BAR CODE READER WITH RS 232/422/485 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with M-optics				
BCL 90 CAT M 100 50035314	Single-line scanner for medium module codes, 2 x Sub-HD connector	2100	600 … 1200	RS 232 RS 422/485
BCL 90 CAT M 100 H 50035316	Single-line scanner for medium module codes, heating, 2 x Sub-HD connector	2100	600 … 1200	RS 232 RS 422/485
BCL 90 CAT O M 100 50035315	Oscillating mirror scanner for medium module codes, 2 x Sub-HD connector	2000	600 … 1200	RS 232 RS 422/485
BCL 90 CAT O M 100 H 50035317	Oscillating mirror scanner for medium module codes, heating, 2 x Sub-HD connector	2000	600 … 1200	RS 232 RS 422/485

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables

More accessories can be found from **page 424** onwards

Part no.	Designation	Features
50035319	KB 090 - 3000	BCL 90 to MA 90 connection cable, 3m, Sub-HD plug, Sub-HD socket
50035320	KB 090 - 3000 B	BCL 90 connection cable, 3m, Sub-HD socket, open ends
50035324	KB 090 - 3000 H	Hood with integrated connectors (IP 65) with 2 BCL 90 to MA 90 cables, 3m
50035325	KB 090 - 3000 HO	Hood with integrated connectors (IP 65) with 2 connection cables, 3m, open ends
50035322	KB 090 - 3000 P	Same as KB 090 - 3000 H, with parameter memory (EEPROM)
50035323	KB 090 - 3000 PO	Same as KB 090 - 3000 HO, with parameter memory (EEPROM)
50035321	KB 090 - 3000 S	BCL 90 connection cable, 3m, Sub-HD connector, open ends
see P. 410	MA 31 …	Connector unit, multiNet master, parameter memory, various interfaces
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types
50035348	MA 90	Connector unit for BCL 90
50035516	BT 90 G	Joint bracket (2 x bracket support, 2 screws M6 x 10) for BCL 90
50035514	BT 90 S	Quick-clamping device for BCL 90
50035515	BT 90 W	Bracket support, single, with 2 screws M6 x 10 for BCL 90

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BCL 90

M-optics, Single/Osc. m.

BARCODE

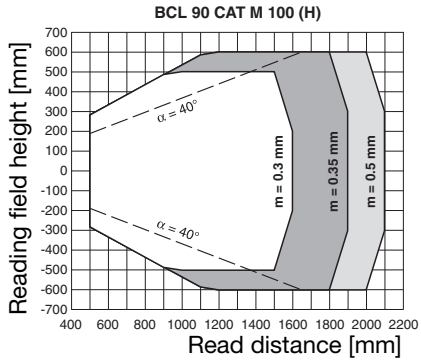
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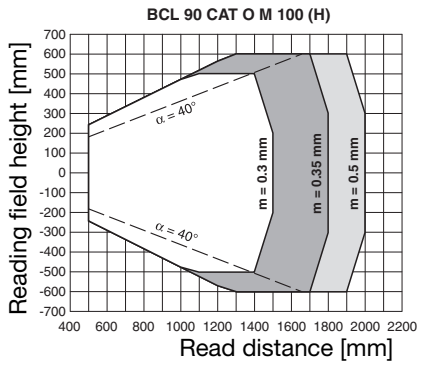
- Code fragment technology
- Integrated autofocus function in real time
- Single-line scanner
- M-optics
- For module sizes m = 0.3 ... 1.0mm
- Operating range up to 2100mm
- Oscillating mirror version

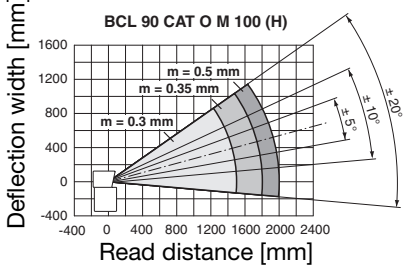


Reading curves

BCL 90 with M-optics

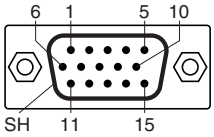






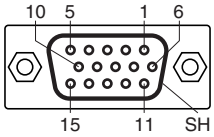
Electrical connection

Host/Term
Sub-HD connector - male



PIN	Signal
1	Vs
2	RXD Service
3	TXD Service
4	Term
5	GND
6	RD+ Host
7	RD-/RXD Host
8	TD+ Host
9	TD-/TXD Host
10	CAN H
11	Bus RT_485-
12	Bus RT_485+
13	Bus R_485-
14	Bus R_485+
15	CAN L
SH	Shield

I/O
Sub-HD connector - female



PIN	Signal
1	Vs
2	SE 3
3	SE 1
4	SWO 1
5	GND
6	SE 2
7	SE 4
8	SWO 2
9	IN GND
10	SWO 3
11	SE 5
12	SE 6
13	IC2 SDA
14	IC2 SCL
15	SWO 4
SH	Shield

BAR CODE READER WITH RS 232/422/485 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Bar code readers with F-optics				
BCL 90 CAT F 100 50035318	Single-line scanner for large module codes, 2 x Sub-HD connector	2200	600 … 1200	RS 232 RS 422/485
BCL 90 CAT F 100 H 50035512	Single-line scanner for large module codes, heating, 2 x Sub-HD connector	2200	600 … 1200	RS 232 RS 422/485
BCL 90 CAT O F 100 50035511	Oscillating mirror scanner for large module codes, 2 x Sub-HD connector	2100	600 … 1200	RS 232 RS 422/485
BCL 90 CAT O F 100 H 50035513	Oscillating mirror scanner for large module codes, heating, 2 x Sub-HD connector	2100	600 … 1200	RS 232 RS 422/485

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables

More accessories can be found from **page 424** onwards

Part no.	Designation	Features
50035319	KB 090 - 3000	BCL 90 to MA 90 connection cable, 3m, Sub-HD plug, Sub-HD socket
50035320	KB 090 - 3000 B	BCL 90 connection cable, 3m, Sub-HD socket, open ends
50035324	KB 090 - 3000 H	Hood with integrated connectors (IP 65) with 2 BCL 90 to MA 90 cables, 3m
50035325	KB 090 - 3000 HO	Hood with integrated connectors (IP 65) with 2 connection cables, 3m, open ends
50035322	KB 090 - 3000 P	Same as KB 090 - 3000 H, with parameter memory (EEPROM)
50035323	KB 090 - 3000 PO	Same as KB 090 - 3000 HO, with parameter memory (EEPROM)
50035321	KB 090 - 3000 S	BCL 90 connection cable, 3m, Sub-HD connector, open ends
see P. 410	MA 31 …	Connector unit, multiNet master, parameter memory, various interfaces
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types
50035348	MA 90	Connector unit for BCL 90
50035516	BT 90 G	Joint bracket (2 x bracket support, 2 screws M6 x 10) for BCL 90
50035514	BT 90 S	Quick-clamping device for BCL 90
50035515	BT 90 W	Bracket support, single, with 2 screws M6 x 10 for BCL 90

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BCL 90

F-optics, Single/Osc. m.

BARCODE

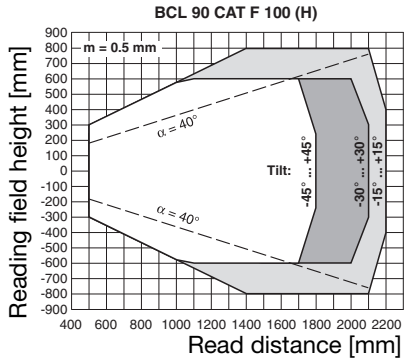
Features

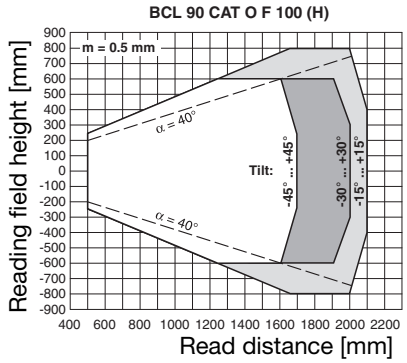
- Code fragment technology
- Integrated autofocus function in real time
- Single-line scanner
- F-optics
- For module sizes m = 0.4 ... 1.2mm
- Operating range up to 2200mm
- Oscillating mirror version

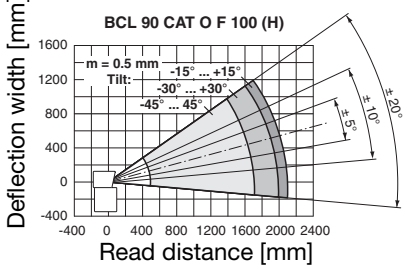


Reading curves

BCL 90 with F-optics

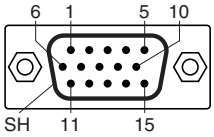






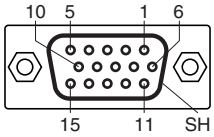
Electrical connection

Host/Term
Sub-HD connector - male



PIN	Signal
1	Vs
2	RXD Service
3	TXD Service
4	Term
5	GND
6	RD+ Host
7	RD-/RXD Host
8	TD+ Host
9	TD-/TXD Host
10	CAN H
11	Bus RT_485-
12	Bus RT_485+
13	Bus R_485-
14	Bus R_485+
15	CAN L
SH	Shield

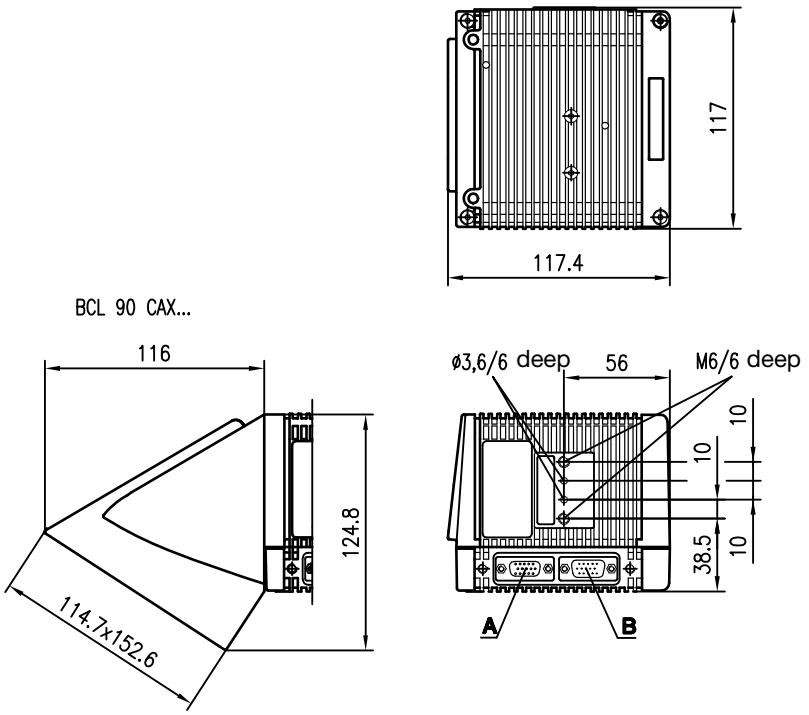
I/O
Sub-HD connector - female



PIN	Signal
1	Vs
2	SE 3
3	SE 1
4	SWO 1
5	GND
6	SE 2
7	SE 4
8	SWO 2
9	IN GND
10	SWO 3
11	SE 5
12	SE 6
13	IC2 SDA
14	IC2 SCL
15	SWO 4
SH	Shield

OVERVIEW

Dimensioned drawing



A Socket I/O
B HOST/TERM connector

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OMNIDIRECTIONAL BAR CODE READER BCL 90

Bar code reader Series 90	Module size	Page
BCL 90 CAX	0.3 1.0 mm	164



Common technical data

Electrical data	Operating voltage U_B	w/o heating: 18 … 30VDC w. heating: 24VDC +20%/-10%
	Power consumption	w/o heating: max. 18W w. heating: max. 100W
	Interface type	RS 232, RS 485/RS 422 adjustable Service: RS 232
	Code types	2/5 Interleaved, Code 39, Code 128, EAN 128, EAN/UPC, Codabar, Code 93
	Sw. inputs/outputs	6/4, configurable
Indicators	4 LEDs	ready, activation, read result, data
Mechanical data	Housing / Optical window	diecast aluminum / glass
	Weight	approx. 2000g
Environmental data	Ambient temperature operation (storage)	w/o heating: 0°C … +40°C w. heating: -35°C … +35°C (-40°C … +70°C)
	Protection class	IP 65 (with hood)
Laser	Laser diode, red, wavelength 650nm Class 2 acc. to EN 60825-1	

Mounting systems for this series can be found from **page 424** onwards

Features

- **Compact omnidirectional bar code reader**
- **Code fragment technology**
- **Integrated autofocus function in real time**
- **Stand-alone operation via RS 232 interface**
- **Can be networked via the MA 90 connector unit**
- **"Tracking" enables readability, even for the smallest object distances**
- **Devices with integrated heating available**

BAR CODE READER WITH RS 232/422/485 INTERFACE

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
Bar code readers with omnidirectional optics					
BCL 90 CAX M 100 50036660	Compact omni-bar code reader for medium modules, 2 x Sub-HD connector	1750	600 … 1200	RS 232 RS 422/485	
BCL 90 CAX M 100 H 50036661	Compact omni-bar code reader for medium modules, heating 2 x Sub-HD connector	1750	600 … 1200	RS 232 RS 422/485	

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables More accessories can be found from **page 424** onwards

Part no.	Designation	Features
50035319	KB 090 - 3000	BCL 90 to MA 90 connection cable, 3m, Sub-HD plug, Sub-HD socket
50035320	KB 090 - 3000 B	BCL 90 connection cable, 3m, Sub-HD socket, open ends
50035324	KB 090 - 3000 H	Hood with integrated connectors (IP 65) with 2 BCL 90 to MA 90 cables, 3m
50035325	KB 090 - 3000 HO	Hood with integrated connectors (IP 65) with 2 connection cables, 3m, open ends
50035322	KB 090 - 3000 P	Same as KB 090 - 3000 H, with parameter memory (EEPROM)
50035323	KB 090 - 3000 PO	Same as KB 090 - 3000 HO, with parameter memory (EEPROM)
50035321	KB 090 - 3000 S	BCL 90 connection cable, 3m, Sub-HD connector, open ends
see P. 410	MA 31 …	Connector unit, multiNet master, parameter memory, various interfaces
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types
50035348	MA 90	Connector unit for BCL 90
50035514	BT 90 S	Quick-clamping device for BCL 90
50037598	BT 90 X	Bracket support, single, with 2 screws M6 x 10 for BCL 90 CAX

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BCL 90 CAX

Omnidirectional optics

BARCODE

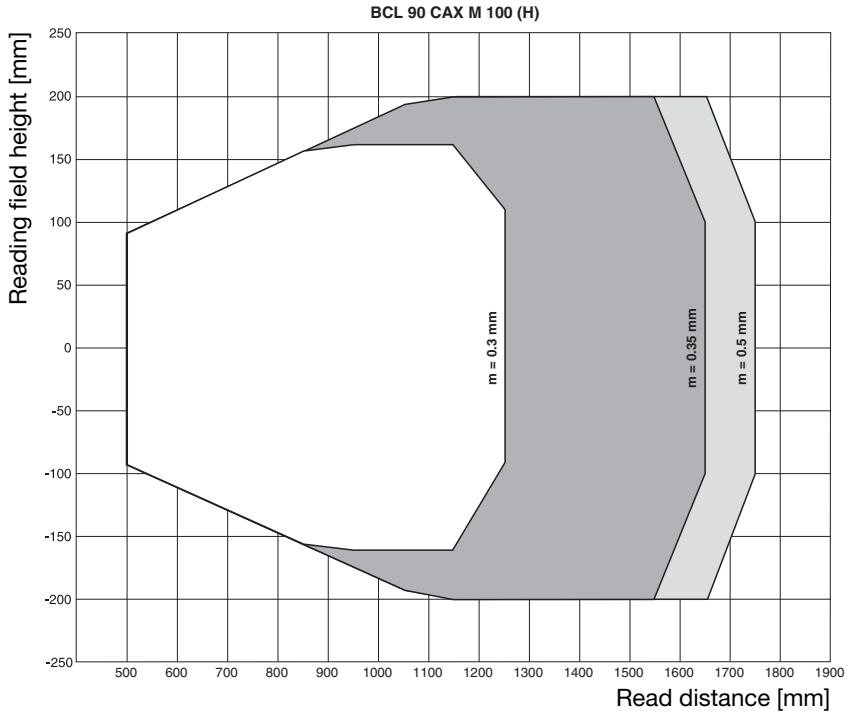
Features

- Code fragment technology
- Integrated autofocus function in real time
- Operating range up to 1750mm
- M-optics
- For module sizes m = 0.3 ... 1.0mm
- "Tracking" enables readability, even for the smallest object distances
- Stand-alone operation via RS 232 interface
- Can be networked via the MA 90 connector unit



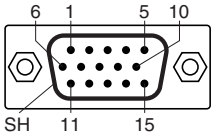
Reading curves

BCL 90 CAX with omnidirectional optics



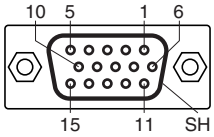
Electrical connection

Host/Term
Sub-HD connector - male



PIN	Signal
1	Vs
2	RXD Service
3	TXD Service
4	Term
5	GND
6	RD+ Host
7	RD-/RXD Host
8	TD+ Host
9	TD-/TXD Host
10	CAN H
11	Bus RT_485-
12	Bus RT_485+
13	Bus R_485-
14	Bus R_485+
15	CAN L
SH	Shield

I/O
Sub-HD connector - female

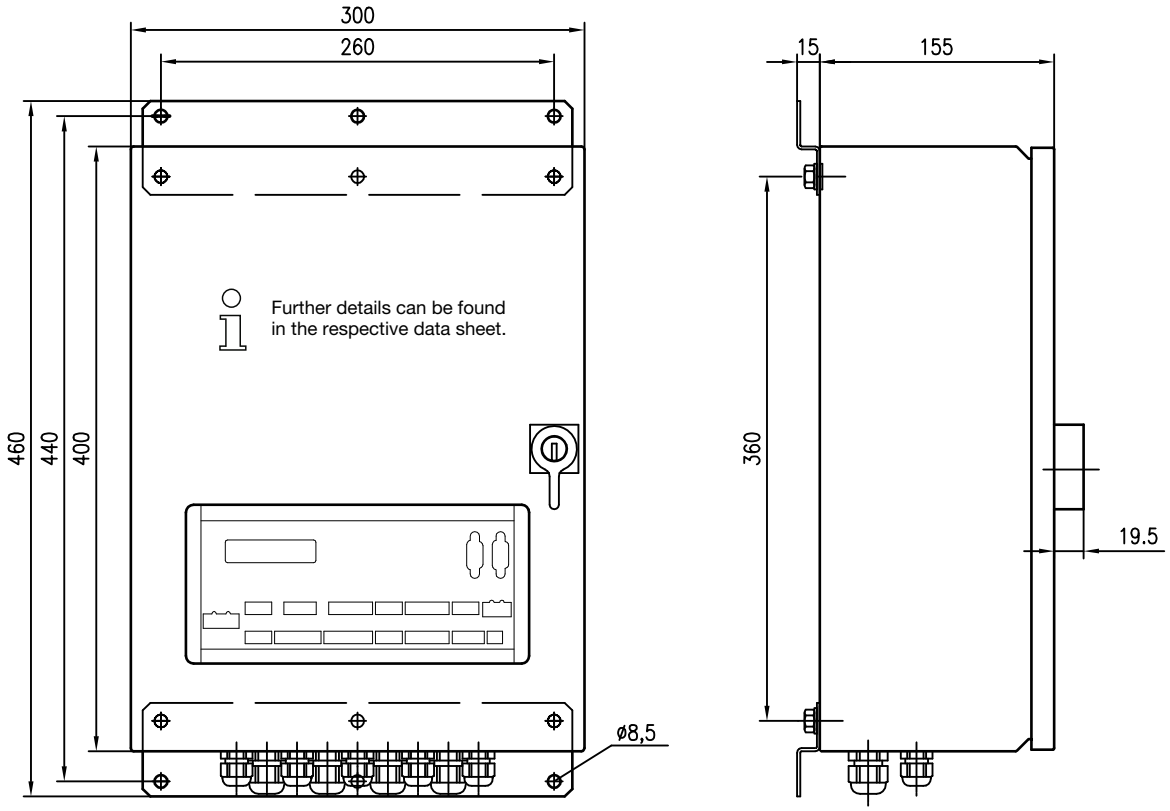


PIN	Signal
1	Vs
2	SE 3
3	SE 1
4	SWO 1
5	GND
6	SE 2
7	SE 4
8	SWO 2
9	IN GND
10	SWO 3
11	SE 5
12	SE 6
13	IC2 SDA
14	IC2 SCL
15	SWO 4
SH	Shield

OVERVIEW

Dimensioned drawing

MCU 400 control device - for dimensioned drawing of the **BCL 90 ...** scanner, see **page 154**



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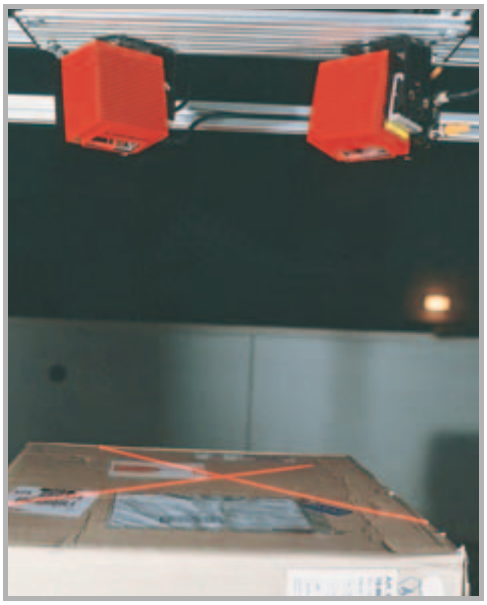

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MODULAR SCANNER PORTALS MSP SYSTEMS

Modular Scanner Portals	Module size	Page
MSP ...	0.2 1.2 mm [1]	168

1) Dependent on the used devices



Common technical data (MCU 400/TPC 400)

Electrical data	Operating voltage U_B	MCU 400: 230VAC, 50Hz TPC 400: 24VDC +20%/-10%
	Interface type (host)	RS 232, RS 485/RS 422 adjustable Service: RS 232
	Code types	2/5 Interleaved, Code 39, Code 128, EAN 128, EAN/UPC, Codabar, Code 93
	Switching inputs	16, programmable (3x trigger, 2x path increment, 11x sensor)
	Switching outputs	4x PNP, max. 30mA 1x relay, 1.5A @ 250VAC programmable
Indicators	26 LEDs	status and function indicators
Mechanical data	Housing (MCU)	painted sheet steel
	Weight (MCU)	approx. 10.3kg
Environmental data	Ambient temperature operation (storage)	0°C ... +50°C (-25°C ... +70°C)
	Protection class (MCU)	IP 65
Optical data	see technical data for the respective bar code readers	

Features

- **Modular Scanner Portal for integrating up to 24 scanners of type BCL 90**
- **Code fragment technology**
- **Series BCL 90 bar code scanner as base device for the portal solution**
- **Integrated autofocus function in real time**
- **"Tracking" enables readability, even for the smallest object distances**
- **Omnidirectional reading**

MODULAR SCANNER PORTALS MSP SYSTEMS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface (Host)
Modular Scanner Portal				
MSP 290 50035517	Omnidirectional bar code read system (2x BCL 90 CAT M 100) [1]	2100	600 … 1200	RS 232 RS 422/485
MSP 360 50035518	Omnidirectional bar code read system (3x BCL 90 CAT M 100)	2100	600 … 1200	RS 232 RS 422/485
MSP 490 50035519	Omnidirectional bar code read system (4x BCL 90 CAT M 100)	2100	600 … 1200	RS 232 RS 422/485
MSP 560 50035520	Omnidirectional bar code read system (5x BCL 90 CAT M 100)	2100	600 … 1200	RS 232 RS 422/485

1) Including all mechanical components and connection cables, integrated decoder

Additional Modular Scanner Portal systems available on request!

BCLconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables

More accessories can be found from **page 424** onwards

Part no.	Designation	Features
50035528	KB 090 - 0700 MSP	Connection cable, 0.7m, with Lumberg connector
50035522	KB 090 - 10000 B MSP	MCU supply line, 10m, 1x Lumberg connector, 1x open end
50035523	KB 090 - 10000 S MSP	MCU return line, 10m, 1x Lumberg connector, 1x open end
50035529	KB 090 - 3000 MSP	Connection cable, 3m, with Lumberg connector
50035521	KB 090 - 5000 B MSP	MCU supply line, 5m, 2x Lumberg connectors
50035530	KB 090 - 5000 MSP	Connection cable, 5m, 2x Lumberg connectors
50035526	MCU 400 - 0000	Switch cabinet with power supply unit and TPC 400
50035524	MSP Terminator	Terminating resistor for MCU
50035525	MSP - EP	Hood with integrated connectors with ext. parameter memory
50035527	TPC 400 - 0000	Tracking Portal Controller


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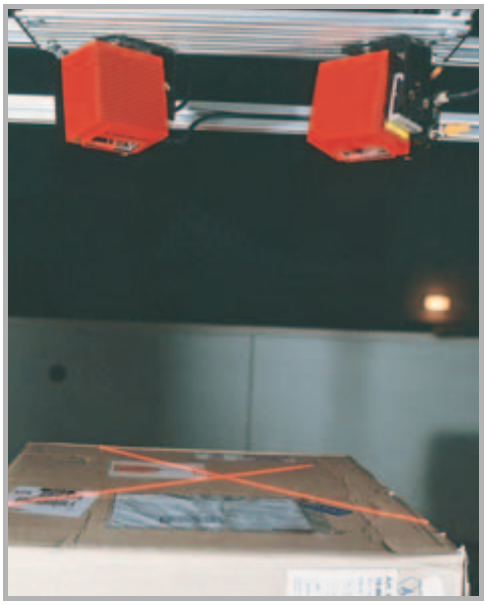
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MSP ...

Modular Scanner Portals

Features

- Code fragment technology
- Omnidirectional reading
- Series BCL 90 bar code reader as base device for the portal solution
- Integrated autofocus function in real time
- "Tracking" enables readability, even for the smallest object distances



Electrical connection

- CAN bus for internally connecting the individual scanners
- Host interface:
  RS 232, RS 422, RS 485
- Operating voltage 230VDC

For details, see www.leuze.com

Reading curves

MSP ...

The reading curves of the scanner portal systems are dependent on the given application.

Our product specialists will be happy to advise you!

SELECTION TABLE

Series		Dimensions in mm (WxHxD)	Housing material: Plastic	Housing material: Metal	Read distance in mm (module dependent)
	Z-3110	91 x 171 x 63	●		0 – 20
	IT 1300g	79 x 150 x 112	●		10 – 660
	IT 3800i	81 x 163 x 135	●		16.5 – 2080
	IT 3820	81 x 157 x 135	●		25 – 1120
	IT 3820i	81 x 157 x 135	●		25 – 1120

Detailed information on the dimensioned drawings or the specifications can be found in the respective data sheet or in the technical description.

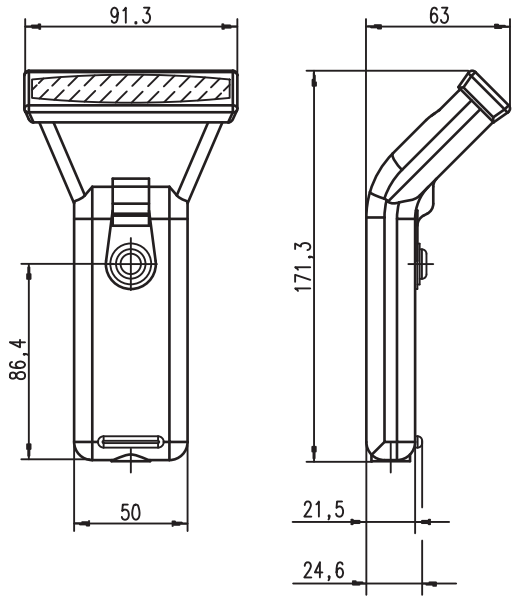
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	Reading method			Operating voltage			Interfaces G = via Gateway													Page
	Laser	Line imager	Surface imager	5VDC	4.5 … 14VDC	9VDC	RS 232	PS/2	USB	Wireless (Bluetooth)	PROFIBUS DP	PROFINET	Interbus-S	Ethernet	EtherNet/IP	DeviceNet	CANopen	EtherCAT	multiNet plus	
		●		●			●	●	●		G	G	G	G	G	G	G	G	G	172
		●		●			●	●	●		G	G	G	G	G	G	G	G	G	176
		●			●		●	●	●		G	G	G	G	G	G	G	G	G	180
		●				●	●	●	●	●	G	G	G	G	G	G	G	G	G	184
		●				●	●	●	●	●	G	G	G	G	G	G	G	G	G	188

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Dimensioned drawing




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IT 3800i
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MOBILE BAR CODE READER Z-3110

Mobile bar code reader	Module size	Page
Scanning width 80 mm	0.127 mm	174



Common technical data

Electrical data	Operating voltage U_B	5 VDC ± 10 %
	Current consumption	≤ 110 mA
	Interface types	Keyboard-Wedge USB RS 232
	Code types	2/5 Interleaved, Code 39, Full ASCII Code 39, Code 128, EAN 128, EAN/UPC, EAN Adend., Codabar, Code 93
Indicators	LED	read state
	Acoustic signaler	read state
Mechanical data	Housing	ABS plastic
	Weight	100 g without cable
Environmental data	Ambient temperature (operation)	0 °C ... +50 °C
	Air humidity	5 ... 95 % rel. humidity
	Protection class	–
	Drop height	1.5 m

Features

- **Scanning rate 200 scans/s**
- **Scanning upon reaching or touching the bar code (touch-reader)**
- **Robust trigger button**
- **Built-in decoder**
- **Display and acoustic signaler for completed read operations**
- **Light-weight and stable housing**
- **With RS 232, USB and PS/2 AT interface**

CE

MOBILE BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
Mobile bar code reader					
Z-3110 50118358	2088 pixel CCD touch reader, incl. USB cable 	20	200	RS 232, USB, PS/2 AT	

Accessories / connection cables More accessories can be found from **page 425** onwards

Part no.	Designation	Features
50108575	KB PS/2	PS/2 cable for Z-3110
50108574	KB RS232	RS 232 cable for Z-3110 with 9-pin Sub-D socket
50034617	ZCH - 91095 - HL	Bracket for Z-3110
50109333	NT 5V DC/1A Z-3010	Power supply unit 5VDC for Z-3110


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Z-3110

Mobile bar code reader

BARCODE

Features

- Scanning rate 200 scans/s
- Scanning upon reaching or touching the bar code
- Robust trigger button
- Built-in decoder
- Display and acoustic signaler for completed read operations
- Light-weight and stable housing
- With RS 232, USB and PS/2 AT interface

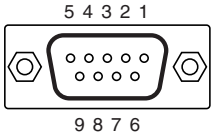


Ergonomically shaped mobile bar code reader with integrated decoder. Data transmission via configurable RS 232 interface or keyboard-wedge operation via PS/2 or USB interface.

The device is delivered with USB cable
Please order the other cables separately!

Electrical connection

RS 232 - female



PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC

PWR



PIN	Signal
A	+ 9 V DC
B	GND

PS/2 - female



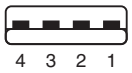
PIN	Signal
1	KB Data
2	NC
3	GND
4	+ 5 V DC
5	KB Clock
6	NC

PS/2 - male



PIN	Signal
1	PC Data
2	NC
3	GND
4	+ 5 V DC
5	PC Clock
6	NC

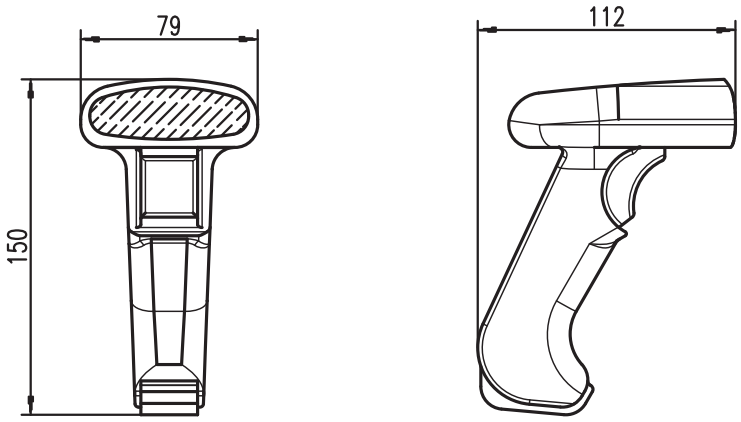
USB Standard A



PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

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MOBILE BAR CODE READER IT 1300g

Mobile bar code reader	Module size	Page
IT 1300g - 2	0.127 0.508 mm	178



Common technical data

Electrical data	Operating voltage U_B	5VDC ± 5%
	Power consumption	≤ 1W
	Interface types	Keyboard-Wedge USB RS 232
	Code types	2/5 Interleaved, Code 39, Code 128, EAN 8/13, UPC A/E, RSS, Codabar, Code 93, Codablock
Indicators	LED	read state
	Acoustic signaler	read state
Mechanical data	Housing	UL94V0 grade
	Weight	160g without cable
Environmental data	Ambient temp. (operation/storage)	0°C ... +50°C / -40°C ... +60°C
	Air humidity	0 ... 95% rel. humidity
	Protection class	IP 41
	Drop height	1.5m

Features

- **Hand-held scanner for bar codes**
- **Large reading field for the detection of codes**
- **Robust trigger button**
- **Built-in decoder**
- **Read-display**
- **With RS 232, USB and PS/2 AT interface**
- **Operating temp. from 0°C ... 50°C**
- **Protection class IP 41**

MOBILE BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
Mobile bar code reader					
IT 1300g - 2 50116864	Mobile bar code reader 	660	max. 270	(TTL-)RS 232, USB, PS/2	

Accessories / connection cables

More accessories can be found from **page 425** onwards

Part no.	Designation	Features
50115105	RS 232 cable	RS 232 cable for IT 1300g-2
50114517	TTL-RS 232 cable	TTL-RS 232 cable for IT 1300g-2, operation is possible w. and w/o power supply unit
50114519	PS2 cable	PS/2 cable for IT 1300g-2
50114521	KB USB-1 IT190x	USB cable, 3 m straight, for IT 1300g-2
50114523	KB USB-2 IT190x	USB cable, 3 m spiral, for IT 1300g-2
50114525	Power supply unit	Power supply unit 5 VDC for IT 1300g-2


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IT 1300g - 2

Mobile bar code reader

BARCODE

Features

- Hand-held scanner for bar codes
- Large reading field for the detection of codes
- Robust trigger button
- Built-in decoder
- Read-display
- With RS 232, USB and PS/2 interface
- Operating temp. from 0 °C ... 50 °C
- Protection class IP 41

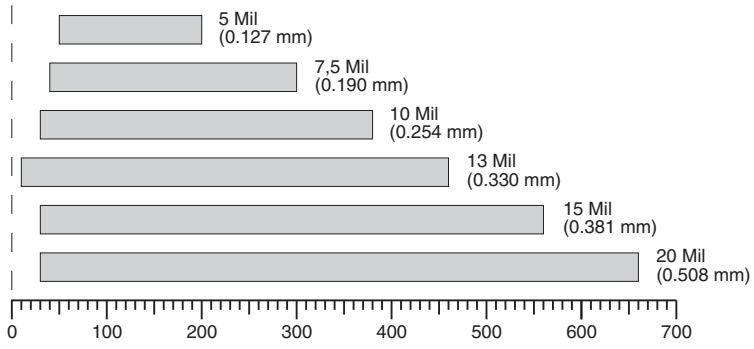


Ergonomically shaped hand-held scanner with integrated decoder. Data transmission via configurable RS 232 interface or keyboard-wedge operation via PS/2 or USB interface.

Please order the corresponding connection cables separately!

Reading field

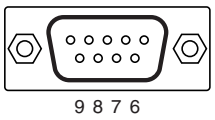
IT 1300g-2



Typ. read distance [mm]
as a function of the bar code module

Electrical connection

RS 232 - female



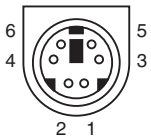
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC or NC
SH	Shield

PWR



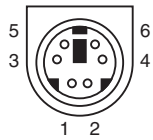
PIN	Signal
A	+ 5 V DC
B	GND

PS/2 - female



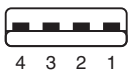
PIN	Signal
1	KB Data
2	NC
3	GND
4	+ 5 V DC
5	KB Clock
6	NC

PS/2 - male



PIN	Signal
1	PC Data
2	NC
3	GND
4	+ 5 V DC
5	PC Clock
6	NC

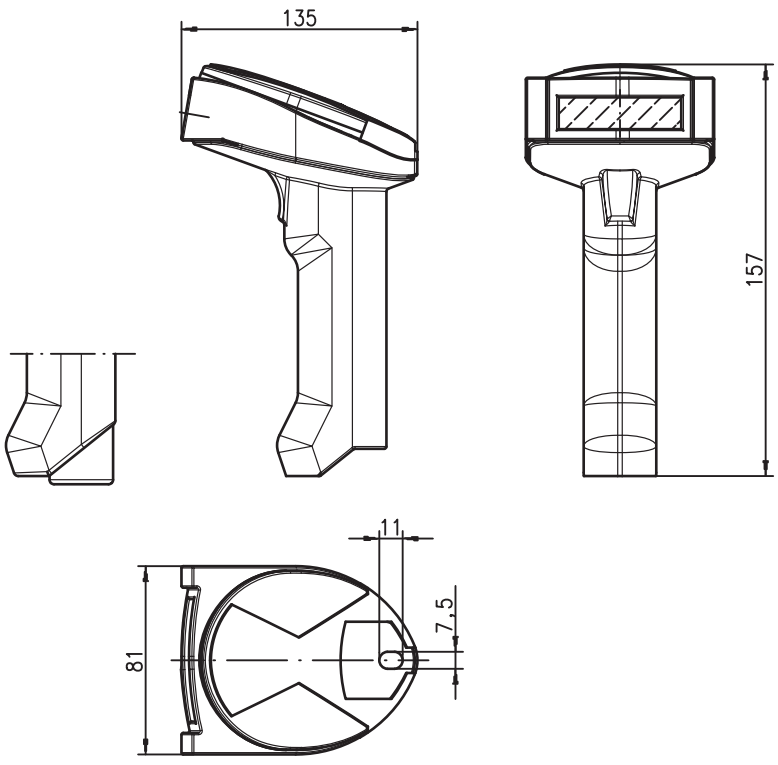
USB Standard A



PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

OVERVIEW

Dimensioned drawing



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MOBILE BAR CODE READER IT 3800i

Mobile bar code reader	Module size	Page
Reading field width max. 750mm	0.19 1.4 mm	182



Common technical data

Electrical data	Operating voltage U_B	4.5 … 14VDC
	Power consumption	≤ 1.8W
	Interface types	Keyboard-Wedge USB RS 232
	Code types	2/5 Interleaved, Code 39, Code 128, EAN 8/13, UPC A/E, RSS, Codabar, Code 93, Codablock
Indicators	LED	read state
	Acoustic signaler	read state
Mechanical data	Housing	UL94V0 grade
	Weight	213g without cable
Environmental data	Ambient temperature (operation)	-30°C … +50°C
	Air humidity	0 … 95% rel. humidity
	Protection class	IP 54
	Drop height	2m

Features

- **Robust industrial hand-held scanner with protection class IP 54**
- **Scanning rate max. 270 scans/s**
- **Large reading field for the detection of codes**
- **Robust trigger button**
- **Built-in decoder**
- **Read-display**
- **With RS 232, USB and PS/2 AT interface**

MOBILE BAR CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
Mobile bar code reader					
IT 3800 i SR030E 50106238	Industrial hand-held bar code scanner CCD	2080	max. 270	RS 232	
IT 3800 i SR050E 50106240	Industrial hand-held bar code scanner CCD	2080	max. 270	TTL-RS 232, USB, PS/2 AT	

Accessories / connection cables More accessories can be found from **page 425** onwards

Part no.	Designation	Features
50104442	TTL-RS 232 cable/ext	RS 232 cable for IT 3800i, TTL-level, supply via ext. power supply unit
50104586	TTL-RS 232 cable/PIN9	RS 232 cable for IT 3800i, TTL-level, supply via PIN 9/RS 232
50103413	RS 232 cable / ext IT4xxx	RS 232 cable for IT 3800i, supply via ext. power supply unit
50103412	RS 232 cable / PIN9 IT4xxx	RS 232 cable for IT 3800i, supply via PIN 9/RS 232
50103409	PS2 cable for IT4xxx	PS/2 cable for IT 3800i
50103404	USB cable for IT4xxx	USB cable for IT 3800i
50103402	Support for IT4xxx	Bracket for IT 3800i
50103403	Power supply for IT4x0x	Power supply unit 5VDC for IT 3800i


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IT 3800i

Mobile bar code reader

BARCODE

Features

- Robust industrial hand-held scanner with protection class IP 54
- Scanning rate max. 270 scans/s
- Large reading field for the detection of codes
- Robust trigger button
- Built-in decoder
- Read-display
- With RS 232, USB and PS/2 AT interface

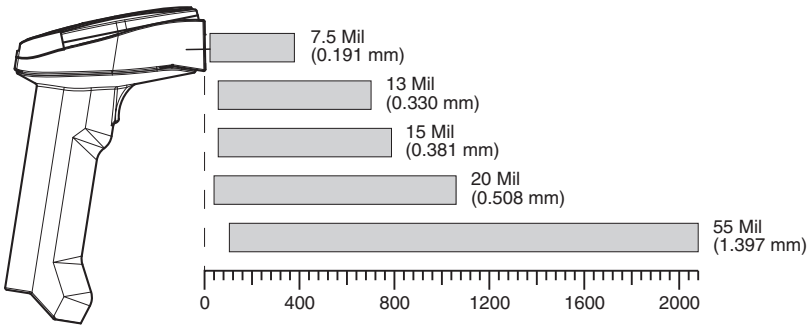


Ergonomically shaped mobile bar code reader with integrated decoder. Data transmission via configurable RS 232 interface or keyboard-wedge operation via PS/2 or USB interface.

Please order the corresponding connection cables separately!

Reading field

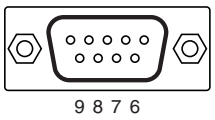
IT 3800i with up to 270 scans/s



Typ. read distance [mm]
as a function of the bar code module

Electrical connection

RS 232 - female



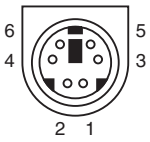
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC or NC
SH	Shield

PWR - female



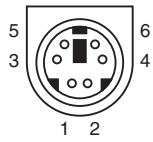
PIN	Signal
1	GND
2	+ 5 V DC
SH	Shield

PS/2 - female



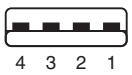
PIN	Signal
1	KB Data
2	NC
3	GND
4	+ 5 V DC
5	KB Clock
6	NC

PS/2 - male



PIN	Signal
1	PC Data
2	NC
3	GND
4	+ 5 V DC
5	PC Clock
6	NC

USB Standard A

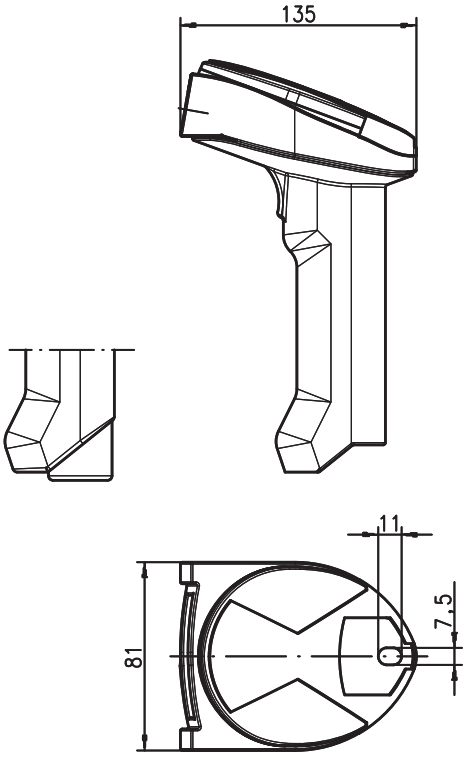


PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

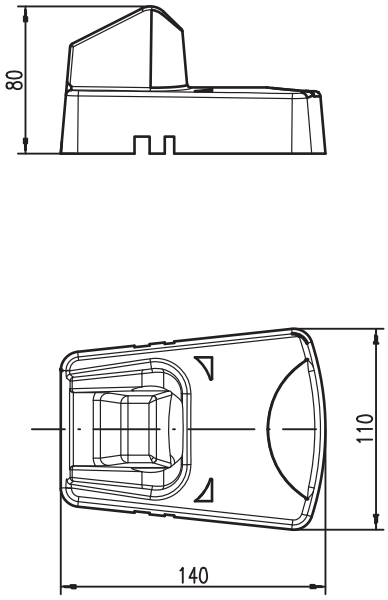
OVERVIEW

Dimensioned drawing

Mobile bar code reader IT 3820



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MOBILE BAR CODE READER IT 3820

Mobile bar code reader with Bluetooth	Module size	Page
Reading field width max. 750mm	0.19 1.4 mm	186



Common technical data

Electrical data	Operating voltage U_B	3.7VDC (int. battery) 9VDC (base station ST 2020)
	Interface types	Keyboard-Wedge USB RS 232 (TTL-level)
	Code types	2/5 Interleaved, Code 39, Code 128, EAN 8/13, UPC A/E, RSS, Codabar, Code 93, Codablock
Indicators	LED	read state
	Acoustic signaler	read state
Mechanical data	Housing	UL94V0 grade
	Weight	261g
Environmental data	Ambient temperature (operation)	-0°C ... +50°C
	Air humidity	0 ... 95% rel. humidity
	Protection class	IP 41
	Drop height	1.8m

Features

- **Scanning rate max. 270 scans/s**
- **Transmission to ST 2020 base station via Bluetooth standard V1.2, class 2**
- **Typical signal range 10m**
- **Large reading field for the detection of codes**
- **Robust trigger button**
- **Built-in decoder**
- **Read-display**
- **With RS 232, USB and PS/2 AT interface**

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MOBILE BAR CODE READERS WITH BLUETOOTH

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
Mobile bar code reader					
IT 3820 SR 0C0BE 50106242	Mobile bar code reader with Bluetooth CCD	1120	max. 270	TTL-RS 232, USB, PS/2 AT	

Accessories / connection cables More accessories can be found from **page 438** onwards

Part no.	Designation	Features
50104586	TTL-RS 232 cable	TTL-RS 232 cable for IT 3820/ST 2020, supply via PIN 9/RS 232
50103409	PS2 cable for IT4xxx	PS/2 cable for IT 3820/ST 2020
50103404	USB cable for IT4xxx	USB cable for IT 3820/ST 2020
50110663	ST 2020 - 5BE	Bluetooth base station for IT 3820
50103989	Power supply unit for IT4x2x/ST2020	Power supply 9 VDC for IT 3820/ST 2020


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IT 3820

Mobile bar code reader

BARCODE

Features

- Scanning rate max. 270 scans/s
- Transmission to ST 2020 base station via Bluetooth standard V1.2, class 2
- Typical signal range 10m
- Large reading field
- Robust trigger button
- Built-in decoder
- Read-display
- With RS 232, USB and PS/2 AT interface

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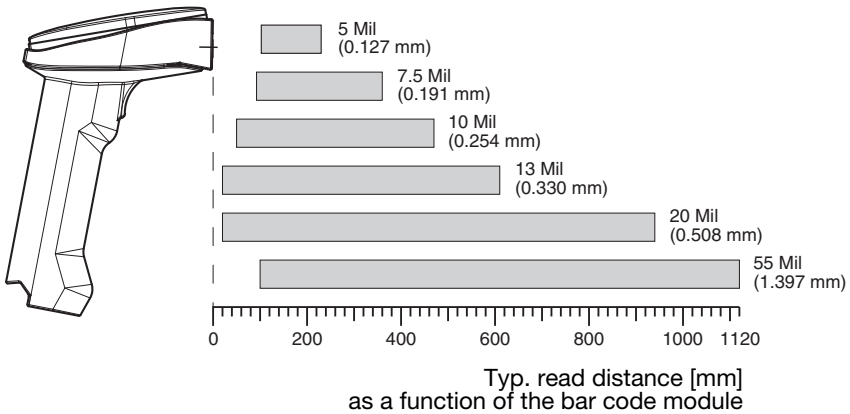


Ergonomically shaped hand-held scanner with integrated decoder. Data transmission via configurable RS 232 interface or keyboard-wedge operation via PS/2 or USB interface.

Please order the corresponding connection cables separately!

Reading field

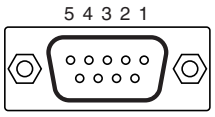
IT 3820 with up to 270 scans/s



Typ. read distance [mm]
as a function of the bar code module

Electrical connection

RS 232 - female



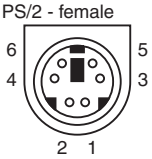
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC
SH	Shield

PWR (ST 2020)



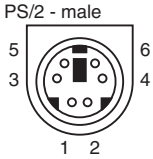
PIN	Signal
A	+ 9 V DC
B	GND

PS/2 - female



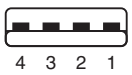
PIN	Signal
1	KB Data
2	NC
3	GND
4	+ 5 V DC
5	KB Clock
6	NC

PS/2 - male



PIN	Signal
1	PC Data
2	NC
3	GND
4	+ 5 V DC
5	PC Clock
6	NC

USB Standard A

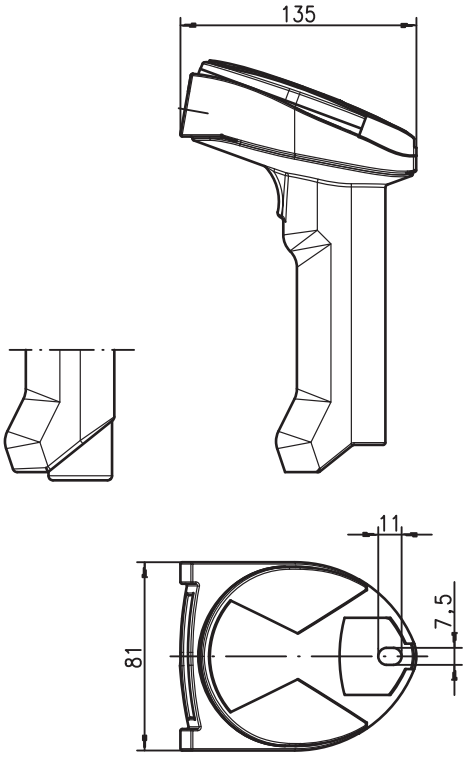


PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

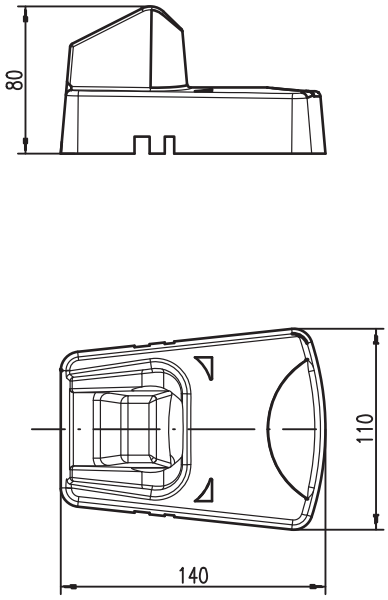
OVERVIEW

Dimensioned drawing

Mobile bar code reader IT 3820i



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MOBILE BAR CODE READER IT 3820i

Mobile bar code reader with Bluetooth	Module size	Page
Reading field width max. 750mm	0.19 1.4 mm	190



Common technical data

Electrical data	Operating voltage U_B	3.7VDC (int. battery) 9VDC (base station ST 2020)
	Interface types	Keyboard-Wedge USB RS 232 (TTL-level)
	Code types	2/5 Interleaved, Code 39, Code 128, EAN 8/13, UPC A/E, RSS, Codabar, Code 93, Codablock
Indicators	LED	read state
	Acoustic signaler	read state
Mechanical data	Housing	UL94V0 grade
	Weight	272g
Environmental data	Ambient temperature (operation)	-10°C … +50°C
	Air humidity	0 … 95% rel. humidity
	Protection class	IP 54
	Drop height	2m

Features

- **Scanning rate max. 270 scans/s**
- **Industrial version with protection class IP 54**
- **Transmission to ST 2020 base station via Bluetooth standard V2.0, class 2**
- **Typical signal range 10m**
- **Large reading field for the detection of codes**
- **Robust trigger button**
- **Built-in decoder**
- **Read-display**
- **With RS 232, USB and PS/2 AT interface**

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MOBILE BAR CODE READERS WITH BLUETOOTH

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
Mobile bar code reader					
IT 3820i SRE 50110471	Mobile industrial bar code reader with Bluetooth 	1120	max. 270	TTL-RS 232, USB, PS/2 AT	

Accessories / connection cables More accessories can be found from **page 438** onwards

Part no.	Designation	Features
50104586	TTL-RS 232 cable	TTL-RS 232 cable for IT 3820i/ST 2020, supply via PIN 9/RS 232
50103409	PS2 cable for IT4xxx	PS/2 cable for IT 3820i/ST 2020
50103404	USB cable for IT4xxx	USB cable for IT 3820i/ST 2020
50110663	ST 2020 - 5BE	Bluetooth base station for IT 3820i
50103989	Power supply unit for IT4x2x/ST2020	Power supply 9 VDC for IT 3820/ST 2020i


Z-3110
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IT 3820i
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IT 3820i

Mobile bar code reader

BARCODE

Features

- Scanning rate max. 270 scans/s
- Industrial version with protection class IP 54
- Transmission to ST 2020 base station via Bluetooth standard V2.0, class 2
- Typical signal range 10m
- Large reading field
- Robust trigger button
- Built-in decoder
- Read-display
- With RS 232, USB and PS/2 AT interface

Bluetooth is a trademark owned by Bluetooth SIG, Inc., U.S.A. and licensed to Honeywell International Inc.

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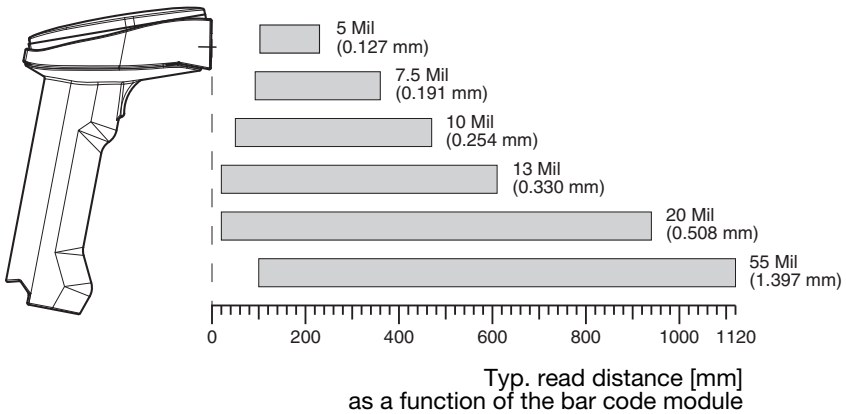


Ergonomically shaped hand-held scanner with integrated decoder. Data transmission via configurable RS 232 interface or keyboard-wedge operation via PS/2 or USB interface.

Please order the corresponding connection cables separately!

Reading field

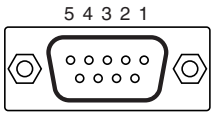
IT 3820i with up to 270 scans/s



Typ. read distance [mm]
as a function of the bar code module

Electrical connection

RS 232 - female



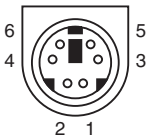
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC
SH	Shield

PWR (ST 2020)



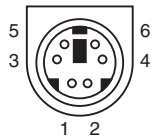
PIN	Signal
A	+ 9 V DC
B	GND

PS/2 - female



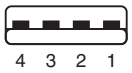
PIN	Signal
1	KB Data
2	NC
3	GND
4	+ 5 V DC
5	KB Clock
6	NC

PS/2 - male



PIN	Signal
1	PC Data
2	NC
3	GND
4	+ 5 V DC
5	PC Clock
6	NC

USB Standard A



PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

SELECTION TABLE

Series		Dimensions in mm (WxHxD)	Housing material: Plastic	Housing material: Metal	Read distance in mm (module dependent): 10	50	100	500	2500
	LSIS 22x	40 x 31.8 x 47		●			50 – 330		
	LSIS 422i	75 x 113 x 55		●		10 – ∞ LSIS 422i M49, C/Mount	50 – ∞ LSIS 422i M43, adjustable focus	75 – ∞ LSIS 422i M45, adjustable focus	

Detailed information on the dimensioned drawings or the specifications can be found in the respective data sheet or in the technical description.

We reserve the right to make changes • Auswahltabelle_2Dcode_EN.fm

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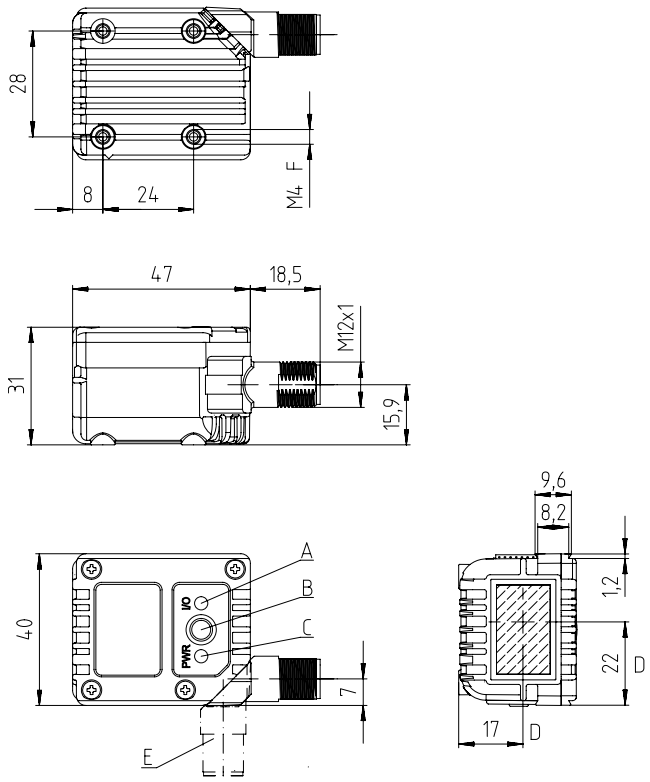
STATIONARY 2D CODE READERS

2D-CODE

	Reading method	Operating voltage			Interfaces D = direct, G = via Gateway													Page
	Surface imager	5VDC	10 … 30VDC	18 … 30VDC	RS 232	USB	RS 485	RS 422	PROFIBUS DP	PROFINET	Interbus-S	Ethernet	EtherNet/IP	DeviceNet	CANopen	EtherCAT	multiNet plus	
	●	●	●		D	D	G	G	G	G	G	G	G	G	G	G	G	194
	●			●	D		G	G	G	G	G	D	G	G	G	G	G	198

OVERVIEW

Dimensioned drawing



A Indicator diode I/O
B Trigger button
C Indicator diode PWR
D Optical axis
E M12 connector, can be turned 90°
F Thread depth 3.5mm

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LSIS 22x Page 194


LSIS 422i Page 198


IT 1900 Page 206


IT 1902 Page 210


FIS 6170 Page 214


HS 6508 DPM Page 218


HS 6578 DPM Page 222

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STATIONARY 2D-CODE READER LSIS 22x

2D-code reader	Resolution	Page
2D-CODE BARCODE LSIS 22x …	0.127 0.5 mm	196



Common technical data

Electrical data	Operating voltage U_B	10 … 30 VDC (LSIS 222) 4.75…5.25 VDC (LSIS 223)
	Current consumption	< 300 mA (LSIS 222) < 500 mA (LSIS 223)
	Interface type	USB, RS 232
	Code types Bar code	2/5 Interleaved, Code 39, Code 128, EAN 8/13, UPC A/E, RSS, Codabar, Code 93, Codablock
	Code types 2D-code	Data Matrix ECC 200, MaxiCode, PDF417, MicroPDF, QR Code, Aztec, Aztec Mesas, Code 49, EAN/UCC Composite
Mechanical data	Housing	diecast zinc
	Weight	130 g
Environmental data	Ambient temp. (operation/storage)	0 °C … +40 °C / -20 °C … +70 °C
	Protection class	IP 65
	Air humidity	0 … 95 % non-cond.

Features

- **Very small and compact reader for 2D codes, bar codes and batch codes**
- **High resolution**
- **For reading on static or moving objects**
- **Trigger via serial command or switching input**
- **Integrated switching output**
- **Built-in decoder**
- **RS 232 or USB interface**
- **Operating temp. from 0 … +40 °C**

CE

STATIONARY 2D CODE READER

Part description Part no.:	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
2D-code/bar code scanner					
LSIS 222 M5M - R1 50117536	2D-code/bar code scanner, standard optics Barcode/2D-Code	330		RS 232	
LSIS 223 M5M - R1 50117534	2D-code/bar code scanner, standard optics Barcode/2D-Code	330		USB	

Very small and compact 2D-code/bar code scanner with integrated decoder. Data transmission via configurable RS 232 interface or USB interface with keyboard emulation or COM port emulation.

Please order the corresponding connection cables separately!

Accessories / connection cables More accessories can be found from **page 422** onwards

Part no.	Designation	Features
50036196	BT 8 - 0	Mounting clamp for dovetail
50035017	BT 8 - D10	Through-hole mount for rod D = 10mm or cheek
50035026	UMS 8.2 - D10	Dovetail mount for rod D = 10mm, double jointed
see P. 427	KB M12/8 - … - BA	Connection cable POWER-IO-DATA, M12 axial socket, 8-pin, A-coded, see p. 427

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HS 6578 DPM Page 222

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LSIS 222 /223

2D-code reader

2D-CODE

Features

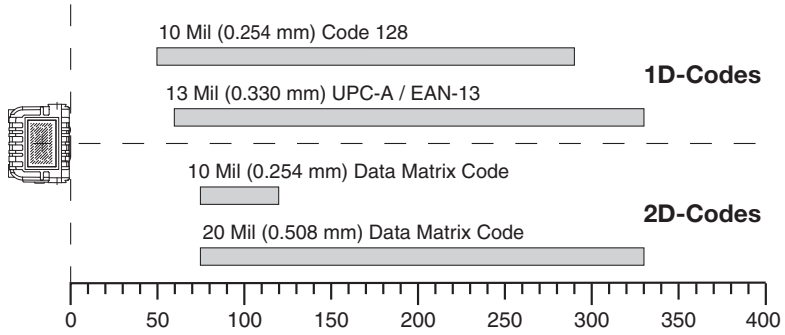
- Very small and compact reader for 2D codes, bar codes and batch codes
- High resolution
- For reading on static or moving objects
- Trigger via serial command or switching input
- Built-in decoder
- Integrated switching output
- RS 232 or USB interface
- Operating temp. from 0 ... 40 °C

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Reading field

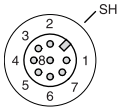
LSIS 222 / LSIS 223



Typ. reading distance [mm] as a function of the code type/module

Electrical connection

M12, 8-pole male, A-cod.

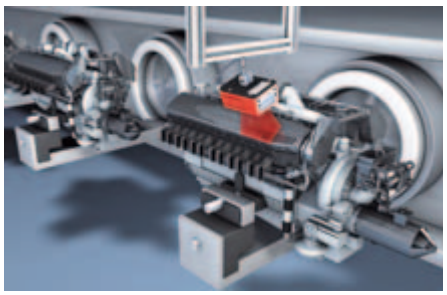


	Signal	
PIN	**LSIS 222** RS232	**LSIS 223** USB
1	Vin 10 ... 30 V DC	VB 4,75 ... 5,25 V DC
2	SWI	SWI
3	GNDIN	GND
4	SWO	SWO
5	not connected	not connected
6	RXD - Data	D+ - Data
7	TXD - Data	D- - Data
8	FE - Shield	FE - Shield
SH	FE - Shield	FE - Shield

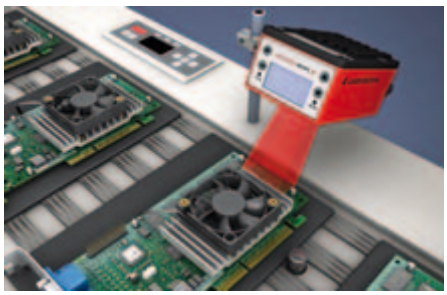
OVERVIEW



Code verification



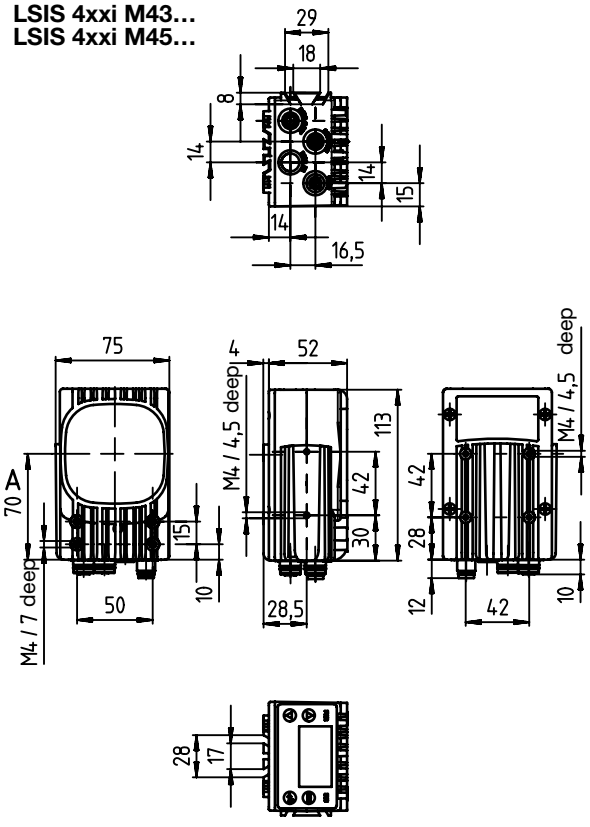
Dot-peened Data Matrix code



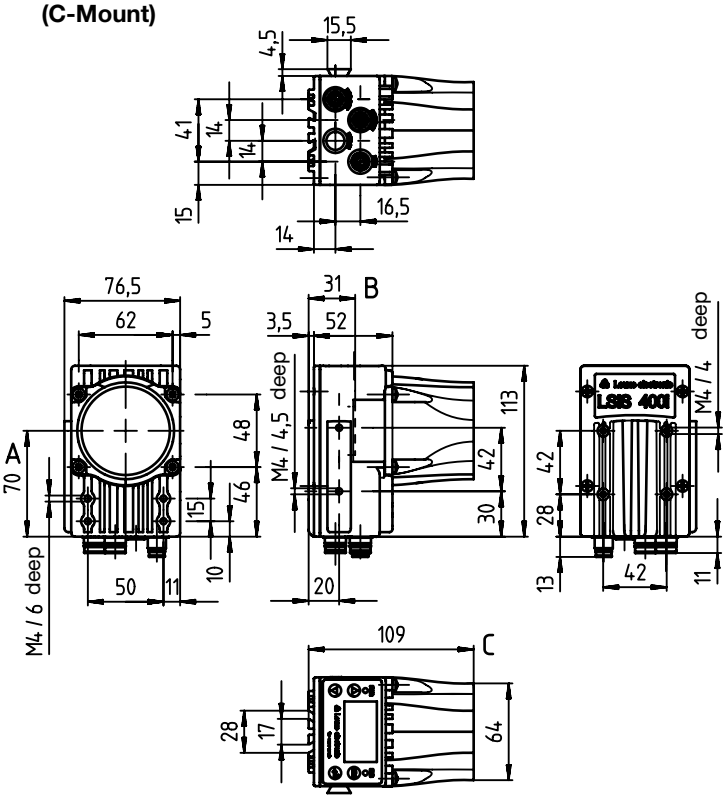
Laser-etched Data Matrix code

Dimensioned drawing

LSIS 4xxi M43...
LSIS 4xxi M45...



LSIS 4xxi M49...
(C-Mount)



A Optical axis
B C-Mount level
C Front edge of camera

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STATIONARY 2D-CODE READER LSIS 422*i*

2D-code reader	Focal length	Page
LSIS 422*i* M43…	8mm	200
LSIS 422*i* M45…	16mm	200
LSIS 422*i* M49…	C-Mount lens	200



Common technical data

Electrical data	Operating voltage U_B	18 … 30VDC
	Power consumption	≤ 10W (C-Mount: ≤ 8W)
	Process interface	RS 232 + Ethernet
	Service interface	Ethernet 10/100Mbit/s
	Sw. inputs/outputs	8, configurable
Optical data	Image sensor	Global shutter CMOS
	Number of pixels	752 x 480
	Electronic shutter speeds	54µs … 20ms
	Focal length	8mm / 16mm / C-Mount
	Object distance	50mm…∞ / 75mm…∞ / dependent on lens
Mechanical data	Housing	diecast aluminum
	Weight	500g
Environmental data	Ambient temp. (operation/storage)	0°C … +45°C / -20°C … +70°C
	Protection class	IP 65 / IP 67
	Air humidity	0 … 90% non-cond.
	LED illumination	Risk group 1 acc. to EN 62471

Features

- **Code reader for Data Matrix codes (ECC 200) and bar codes (2/5 Interleaved, Code 39, Code 128, EAN 8/13, UPC A/E, Codabar, Pharmacode)**
- **High resolution for direct part marking and labels**
- **Built-in decoder, also for inverse or reflected codes**
- **Omnidirectional reading, even on quickly moving objects**
- **External triggering possible**
- **Read-display**
- **Multiple code reading and reference code comparison**
- **Evaluation of the code quality of printed codes**
- **Motorized adjustment of focus position** 1)
- **RS 232 and Ethernet interface**
- **Operating temperature 0°C … 45°C**

1) Not for the C-Mount model

STATIONARY 2D CODE READER

Part description Part no.	Description	Focal length [mm]	Housing window	LED illumination	Interface	
2D-code reader	**Reading of 1D-/2D-codes with integrated focus adjustment and illumination**					
LSIS 422i M43 - W1 50108178	Barcode/2D-Code	8	glass	white	Ethernet / RS 232	
LSIS 422i M43 - W1 - 01 50113055	Barcode/2D-Code	8	plastic	white	Ethernet / RS 232	
LSIS 422i M43 - I1 50116978	Barcode/2D-Code	8	glass	infrared	Ethernet / RS 232	
LSIS 422i M43 - I1 - 01 50116977	Barcode/2D-Code	8	plastic	infrared	Ethernet / RS 232	
LSIS 422i M43 - M1 50116980	Barcode/2D-Code	8	glass	RGBW	Ethernet / RS 232	
LSIS 422i M43 - M1 - 01 50116979	Barcode/2D-Code	8	plastic	RGBW	Ethernet / RS 232	
LSIS 422i M45 - W1 50109829	Barcode/2D-Code	16	glass	white	Ethernet / RS 232	
LSIS 422i M45 - W1 - 01 50113054	Barcode/2D-Code	16	plastic	white	Ethernet / RS 232	
LSIS 422i M45 - I1 50116982	Barcode/2D-Code	16	glass	infrared	Ethernet / RS 232	
LSIS 422i M45 - I1 - 01 50116981	Barcode/2D-Code	16	plastic	infrared	Ethernet / RS 232	
LSIS 422i M45 - M1 50116984	Barcode/2D-Code	16	glass	RGBW	Ethernet / RS 232	
LSIS 422i M45 - M1 - 01 50116983	Barcode/2D-Code	16	plastic	RGBW	Ethernet / RS 232	
2D-code reader	**C-Mount model for reading 1D-/2D-codes**					
LSIS 422i M49 - X9 50117093	Barcode/2D-Code	dependent on lens	glass	–	Ethernet / RS 232	

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LSIS 422*i* ...

2D-code reader

2D-CODE

Software features

- Code reader for Data Matrix codes and bar codes
- High resolution for direct part marking and labels
- Built-in decoder, also for inverse or reflected codes
- Omnidirectional reading, even on quickly moving objects
- External triggering possible
- Read-display
- Multiple code reading and reference code comparison
- Evaluation of the code quality of printed codes
- Motorized adjustment of focus position [1)]
- RS 232 and Ethernet interface
- Display of the code content
- Configurable data output

1) Not for the C-Mount model

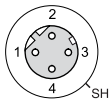


Fast configuration directly via the webConfig tool integrated in the code reader.

For accessories, see page 202.
Size of the image field as a function of the object distance, see page 203.

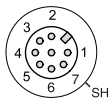
Electrical connection

SERVICE - female, D-cod.



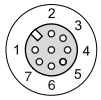
PIN	Signal	Colour
1	TD+	ge / YE
2	RD+	ws / WH
3	TD-	or / OG
4	RD-	bl / BU
SH	FE	

PWR - male, A-cod.



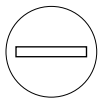
PIN	Signal	Colour
1	VIN	br / BN
2	IO1	ws / WH
3	GND	bl / BU
4	IO2	sw / BK
5	IO3	gr / GY
6	IO4	rs / PK
7	NC	vi / VT
8	FE	or / OG
SH	FE	

BUS OUT - female, A-cod.



PIN	Signal	Colour
1	IO5	ws / WH
2	IO6	br / BN
3	GND	gn / GN
4	IO7	ge / YE
5	IO8	gr / GY
6	Rx	rs / PK
7	Tx	bl / BU
8	FE	rt / RD
SH	FE	

BUS IN



STATIONARY 2D CODE READER - ACCESSORIES

Accessories / connection cables More accessories can be found from **page 423** onwards

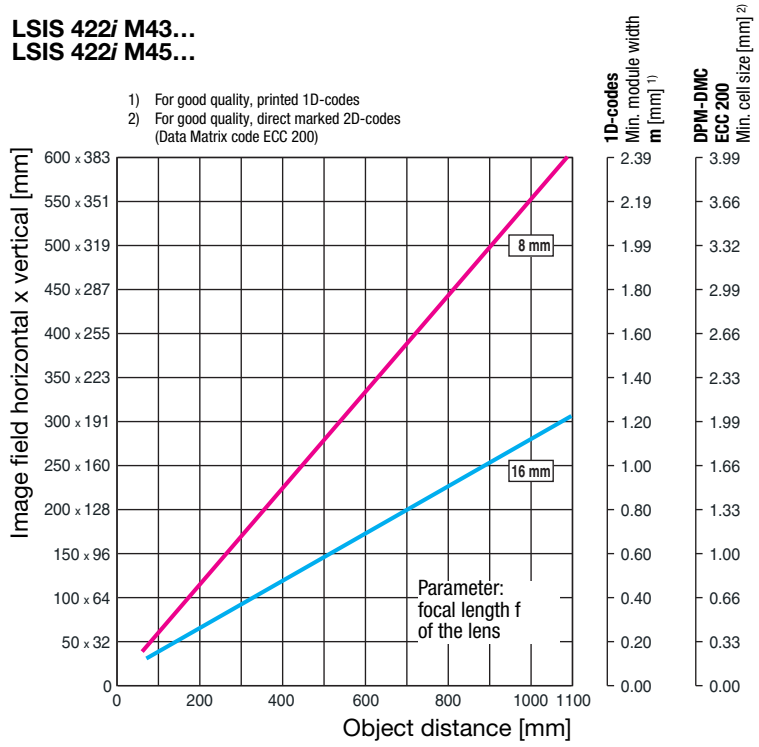
Part no.	Designation	Features
see P.	KB M12/8-…-BA	Connection cable POWER-IO-DATA, M12 axial socket, for PWR, see p. 427
see P.	KB M12/8-…-SA	Connection cable POWER-IO-DATA, M12 axial plug, for BUS OUT, see p. 428
see P.	KB ET - … - SA	Connection cable IND. ETHERNET, M12 axial plug, for SERVICE, see p. 431
see P.	KB ET-…-SSA	Connection cable IND. ETHERNET, M12 axial plug, for SERVICE, see p. 432
see P.	KB ET-…-SA-RJ45	Connection cable IND. ETHERNET, M12 plug/RJ45, for SERVICE, see p. 432
50108991	D - ET1	User-configurable RJ45 plug
50109832	KDS ET-M12/ RJ45 W-4P	ETHERNET adapter M12 - RJ45
50113468	KB JST-M12A-8P-Y-3000	Connection cable for LSIS 4xx*i* to the MA 2xx*i*
50027375	BT 56	Mounting device with dovetail for rod D = 16 … 20mm
50111224	BT 59	Mounting device with dovetail for ITEM aluminum profile
50113242	LSIS-ZUB-FIL-01	Polarization filter (incl. 4 fastening screws), not for C-Mount devices
50117985	LSIS-ZUB-FIL-02	Daylight blocking filter, for C-Mount devices
50118394	LSIS-ZUB-FIL-03	Plastic diffuser plate - not for C-Mount devices
see P. 302	V-LENS-K-C-…	Lenses for C-Mount devices
see P. 302	V-LENS-ZUB-PF-…	Polarization filter for C-Mount lenses
see P. 303	V-ILLU-…	External illumination
see P. 306	REF 7A…	Adhesive reflective tape
see P. 306	K…	Connection cables for external illumination
see P. 307	V-…	Coupling module / flash module / power supply unit

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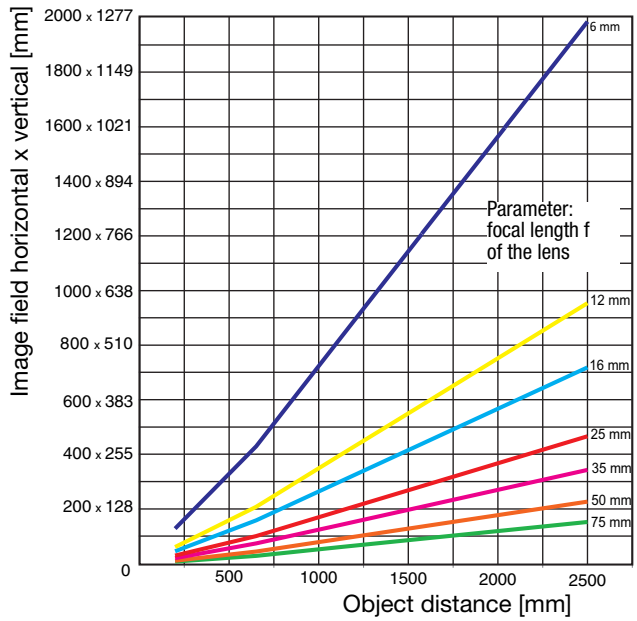
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Size of the image field as a function of the object distance

LSIS 422*i* M43...
LSIS 422*i* M45...



LSIS 422*i* M49...
(C-Mount)





SELECTION TABLE

Series	Dimensions in mm (WxHxD)	Housing material: Plastic	Housing material: Metal	Read distance in mm (module dependent)
				10 / 50 / 100 / 500 / 2500
 IT 1900	71 x 160 x 104	●		53 – 561
 IT 1902	71 x 160 x 104	●		53 – 561
 FIS 6170	63 x 180 x 114	●		0 – 51
 HS 6508 DPM	74 x 187 x 123	●		0 – 234
 HS 6578 DPM	74 x 187 x 123	●		0 – 234

We reserve the right to make changes • Auswahltabelle_2Dcode_Handscanner_EN.fm

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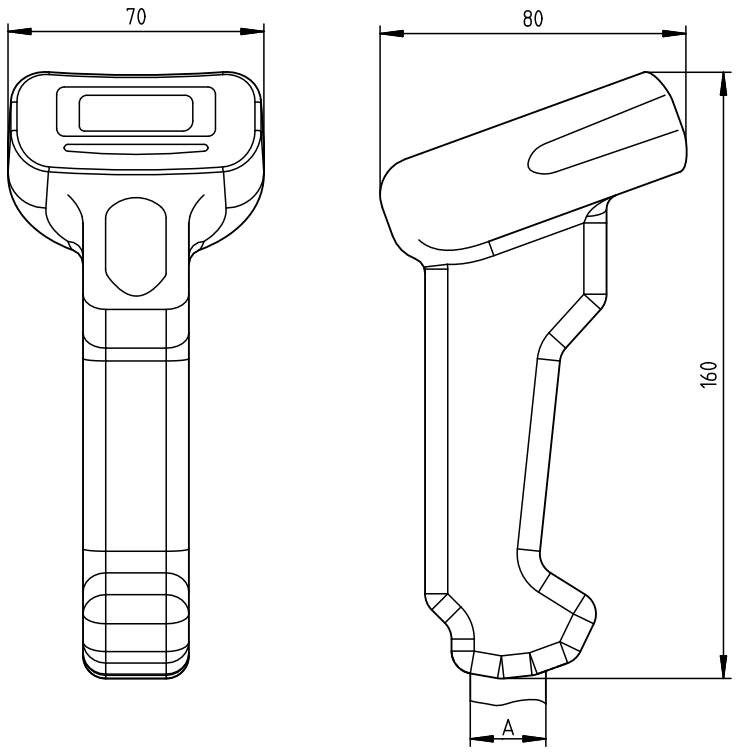
MOBILE 2D CODE READERS

2D-CODE

	Reading method			Operating voltage			Interfaces G = via Gateway													Page
	Laser	Line imager	Surface imager	5VDC	4.5 ... 14VDC	9VDC	RS 232	PS/2	USB	Wireless (Bluetooth)	PROFIBUS DP	PROFINET	Interbus-S	Ethernet	EtherNet/IP	DeviceNet	CANopen	EtherCAT	multiNet plus	
			●	●			●	●	●		G	G	G	G	G	G	G	G	G	206
			●	●			●	●	●	●	G	G	G	G	G	G	G	G	G	210
			●	●			●	●	●		G	G	G	G	G	G	G	G	G	214
			●	●			●	●	●		G	G	G	G	G	G	G	G	G	218
			●		●		●	●	●	●	G	G	G	G	G	G	G	G	G	222

OVERVIEW

Dimensioned drawing



A Cable inlet: depending on cable, max. Ø 20 mm, cable Ø 5 mm


LSIS 22x
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LSIS 422i
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MOBILE 2D CODE READER IT 1900

Mobile 2D code reader	Resolution	Page
2D-CODE BARCODE IT 1900 g …	0.127 1.0 mm	208



Common technical data

Electrical data	Operating voltage U_B	4 … 5.5VDC
	Power consumption	≤ 2.3W
	Interface types	Keyboard-Wedge USB RS 232
	Code types Bar code	2/5 Interleaved, Code 39, Code 128, EAN 8/13, UPC A/E, RSS, Codabar, Code 93, Codablock
	Code types 2D-code	Data Matrix ECC 200, MaxiCode, PDF417, MicroPDF, QR Code, Aztec, Aztec Mesas, Code 49, EAN/UCC Composite
Indicators	LED	read state
	Acoustic signaler	read state
Mechanical data	Housing	UL94V0 grade
	Weight	147g without cable
Environmental data	Ambient temperature	0°C … +50°C (op.)
	Air humidity	0 … 95% rel. humidity
	Protection class	IP 41
	Drop height	1.8m

Features

- **Mobile reader for 2D-codes, stacked codes and bar codes**
- **Large reading field for the detection of high-contrast codes**
- **Various optics models available**
- **Stable housing and trigger button**
- **Built-in decoder**
- **Read-display**
- **RS 232, USB and PS/2 interface**

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MOBILE 2D-CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
2D-code/bar code reader (special optics for very small codes)					
IT 1900 g HD - 2 50114507	2D-code/bar code reader (optics for very small codes) Barcode/2D-Code	173		USB, PS/2 AT, RS 232 (TTL)	
2D-code/bar code reader (standard optics)					
IT 1900 g SR - 2 50114509	2D-code/bar code reader (standard optics) Barcode/2D-Code	411		USB, PS/2 AT, RS 232 (TTL)	
2D-code/bar code reader (special optics with large operating range)					
IT 1900 g ER - 2 50114504	2D-code/bar code reader Extended Range optics Barcode/2D-Code	561		USB, PS/2 AT, RS 232 (TTL)	

Ergonomically shaped hand-held 2D-code/bar code reader with integrated decoder. Data transmission via configurable RS 232 interface or keyboard-wedge operation via PS/2 AT or USB interface.
Please order the corresponding connection cables separately!

Accessories / connection cables More accessories can be found from **page 425** onwards

Part no.	Designation	Features
50114517	KB 232 - 1 IT190x	RS 232 cable for IT 1900, TTL-level, supply via PIN 9/ext. power supply unit
50114519	KB PS2 - 1 IT190x	PS/2 cable for IT 1900
50114521	KB USB - 1 IT190x	USB-cable for IT 1900, straight cable, 2.5m length, type A plug
50114523	KB USB - 2 IT190x	USB-cable for IT 1900, helix cable, 4.5m length, type A plug
50114498	BT holder IT 190x	Support for IT 1900
50114501	BT holder IT 190x	Foot stand for IT 1900
50114525	Power supply unit for IT1900	5VDC power supply unit for IT 1900, 1.5m connection cable


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IT 1900

2D-code reader

2D-CODE

Features

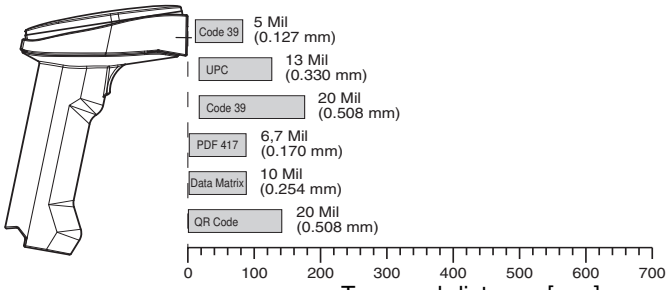
- Mobile reader for 2D-codes, stacked codes and bar codes
- Large reading field for the detection of high-contrast codes
- Various optics models available
- Stable housing and trigger button
- Built-in decoder
- Read-display
- RS 232, USB and PS/2 interface



Reading field

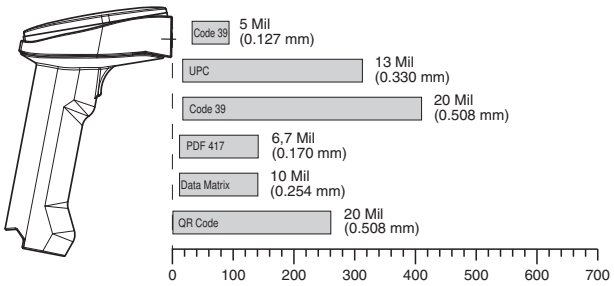
IT 1900 G ...

IT 1900 G HD...



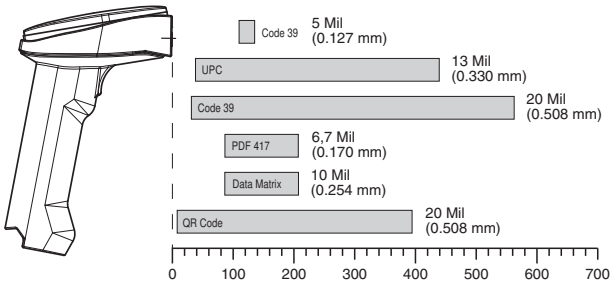
Typ. read distance [mm] as a function of the code module

IT 1900 G SR...



Typ. read distance [mm] as a function of the code module

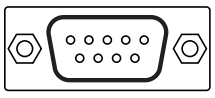
IT 1900 G ER...



Typ. read distance [mm] as a function of the code module

Electrical connection

RS 232 - female



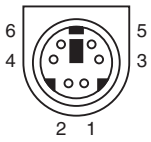
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC or NC
SH	Shield

PWR



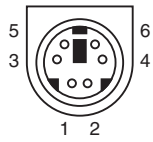
PIN	Signal
A	GND
B	+ 5 V DC

PS/2 - female



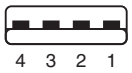
PIN	Signal
1	KB Data
2	NC
3	GND
4	+ 5 V DC
5	KB Clock
6	NC

PS/2 - male



PIN	Signal
1	PC Data
2	NC
3	GND
4	+ 5 V DC
5	PC Clock
6	NC

USB Standard A

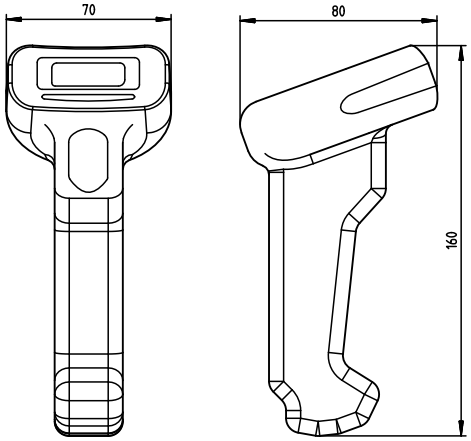


PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

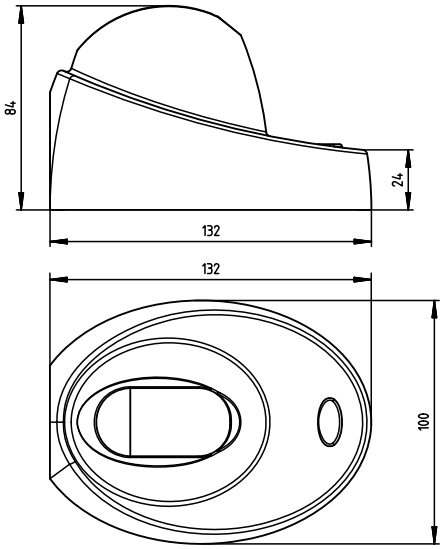
OVERVIEW

Dimensioned drawing

Mobile 2D code reader IT 1902



Bluetooth base station Base f. IT 1902



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MOBILE 2D CODE READER IT 1902

Mobile 2D code reader	Resolution	Page
2D-CODE BARCODE IT 1902 g …	0.127 1.0 mm	212



Common technical data

Electrical data	Operating voltage U_B	4 … 5.5VDC
	Power consumption	≤ 2.3W
	Interface types	Keyboard-Wedge USB RS 232
	Code types Bar code	2/5 Interleaved, Code 39, Code 128, EAN 8/13, UPC A/E, RSS, Codabar, Code 93, Codablock
	Code types 2D-code	Data Matrix ECC 200, MaxiCode, PDF417, MicroPDF, QR Code, Aztec, Aztec Mesas, Code 49, EAN/UCC Composite
Indicators	LED	read state
	Acoustic signaler	read state
Mechanical data	Housing	UL94V0 grade
	Weight	147g without cable
Environmental data	Ambient temperature	0°C … +50°C (op.)
	Air humidity	0 … 95% rel. humidity
	Protection class	IP 41
	Drop height	1.8m

Features

- **Mobile reader for 2D-codes, stacked codes and bar codes**
- **Transmission to base station via Bluetooth standard V2.1, class 2**
- **Typical signal range 10m**
- **Large reading field for the detection of high-contrast codes**
- **Various optics models available**
- **Stable housing and trigger button**
- **Built-in decoder**
- **Read-display**
- **RS 232, USB and PS/2 interface**

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MOBILE 2D-CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
2D-code/bar code reader (special optics for very small codes)					
IT 1902 g HD - 2 50114513	2D-code/bar code reader (optics for very small codes) Barcode/2D-Code	173		USB, PS/2 AT, RS 232 (TTL)	
2D-code/bar code reader (standard optics)					
IT 1902 g SR - 2 50114515	2D-code/bar code reader (standard optics) Barcode/2D-Code	411		USB, PS/2 AT, RS 232 (TTL)	
2D-code/bar code reader (special optics with large operating range)					
IT 1902 g ER - 2 50114511	2D-code/bar code reader Extended Range optics Barcode/2D-Code	561		USB, PS/2 AT, RS 232 (TTL)	

Ergonomically shaped hand-held 2D-code/bar code reader with integrated decoder. Data transmission via configurable RS 232 interface or keyboard-wedge operation via PS/2 AT or USB interface.

For a functional unit, a mobile IT 1902 … code reader and a Base for IT 1902 base station as well as a power supply unit and corresponding connection cable must be ordered. Please order these items separately!

Accessories / connection cables

More accessories can be found from **page 425** onwards

Part no.	Designation	Features
50114492	Base for IT 1902	Bluetooth base station for IT 1902
50114494	BAT - Charger - 4 Desk - EU	Desktop charging station for up to 4 batteries (50105384)
50114517	KB 232 - 1 IT190x	RS 232 cable for Base, TTL-level, supply via PIN 9/ext. power supply unit
50114519	KB PS2 - 1 IT190x	PS/2 cable for Base for IT 1902
50114521	KB USB - 1 IT190x	USB cable for base, straight cable, 2.5m length, type A plug
50114523	KB USB - 2 IT190x	USB cable for base, helix cable, 4.5m length, type A plug
50114498	BT holder IT 190x	Support for IT 1902
50114501	BT holder IT 190x	Foot stand for IT 1902
50114525	Power supply unit for IT1900	5VDC power supply unit for base for IT 1902, 1.5m connection cable


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IT 1902

2D-code reader

2D-CODE

Features

- Mobile reader for 2D-codes, stacked codes and bar codes
- Transmission to base station via Bluetooth standard V2.1, class 2
- Large reading field for the detection of high-contrast codes
- Various optics models available
- Stable housing and trigger button
- Built-in decoder
- Read-display
- RS 232, USB and PS/2 interface

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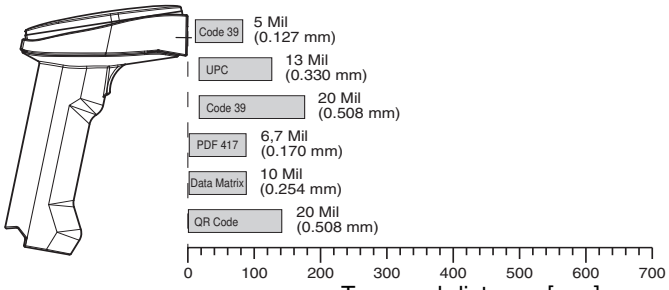
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Reading field

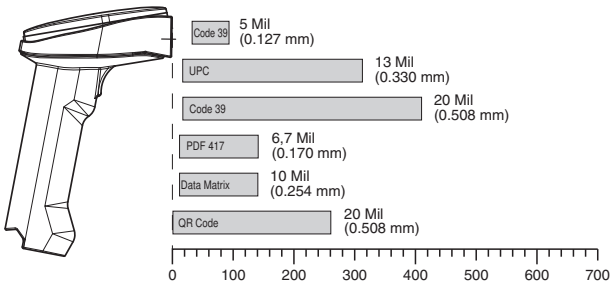
IT 1902 G ...

IT 1902 G HD...



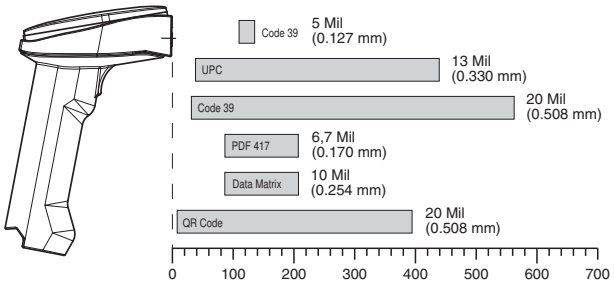
Typ. read distance [mm] as a function of the code module

IT 1902 G SR...



Typ. read distance [mm] as a function of the code module

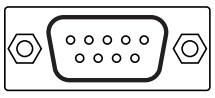
IT 1902 G ER...



Typ. read distance [mm] as a function of the code module

Electrical connection

RS 232 - female



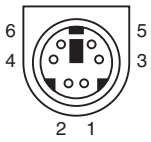
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC or NC
SH	Shield

PWR (Base)



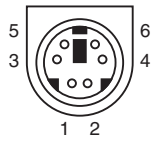
PIN	Signal
A	GND
B	+ 5 V DC

PS/2 - female



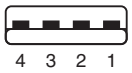
PIN	Signal
1	KB Data
2	NC
3	GND
4	+ 5 V DC
5	KB Clock
6	NC

PS/2 - male



PIN	Signal
1	PC Data
2	NC
3	GND
4	+ 5 V DC
5	PC Clock
6	NC

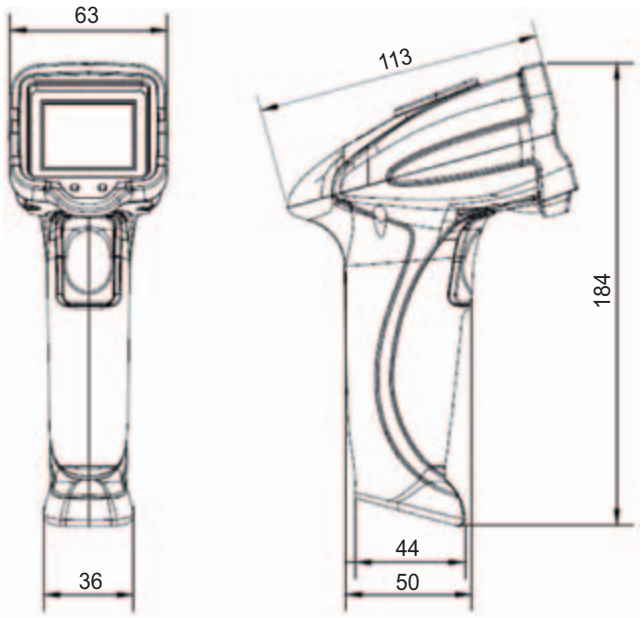
USB Standard A



PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

OVERVIEW

Dimensioned drawing



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MOBILE 2D CODE READER FIS 6170

2D-code reader	Resolution	Page
FIS 6170	0.127 0.508 mm	216



Common technical data

Electrical data	Operating voltage U_B	5VDC
	Power consumption	approx. 2.5W
	Interface types	RS 232, USB
	Code types Bar code	2/5 Interleaved, Code 39, Code 128, EAN 8/13, UPC A/E, Code 93, Pharmacode
	Code types 2D-code	Data Matrix ECC 200, QR Code, Aztec, PDF 417
Indicators	LED	read state
	Acoustic signaler	read state
	Vibration alarm	read state
Mechanical data	Housing	PC / ABS
	Weight	204g
Environmental data	Ambient temp. (operation/storage)	0°C ... +50°C / -20°C ... +65°C
	Air humidity	0 ... 95% non-cond.
	Drop height	1.8m

Features

- **Mobile reader for Data Matrix codes ECC 200 and bar codes**
- **High resolution for decoding directly-marked parts, even with glossy or round surfaces**
- **Robust trigger button**
- **Read-display**
- **RS 232 and USB interface**
- **Operating temp. from 0°C ... 50°C**

CE

MOBILE 2D-CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
2D-code/bar code reader					
FIS 6170 50115068	2D-code reader for direct part marking, incl. USB-connection cable  Barcode/2D-Code	51		RS 232, USB	

Ergonomically shaped hand-held 2D-code/bar code scanner with integrated decoder for direct part marking (DPM). Data transmission via configurable RS 232 interface or keyboard-wedge operation via USB interface.

A USB connection cable is included in the delivery contents. Please order the corresponding RS 232 connection cables separately if required!

Accessories / connection cables More accessories can be found from **page 438** onwards

Part no.	Designation	Features
50115069	KB232-1 f. FIS 6170	RS232 cable for FIS 6170, supply via PIN 9
50115070	KB232-2 KIT f. FIS 6170	RS232 cable for FIS 6170, including power supply unit


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FIS 6170

2D-code reader

2D-CODE

Features

- Mobile reader for Data Matrix codes ECC 200 and bar codes
- High resolution for decoding directly-marked parts, even with glossy or round surfaces
- Robust trigger button
- Read-display
- RS 232 and USB interface
- Operating temp. from 0 °C ... 50 °C

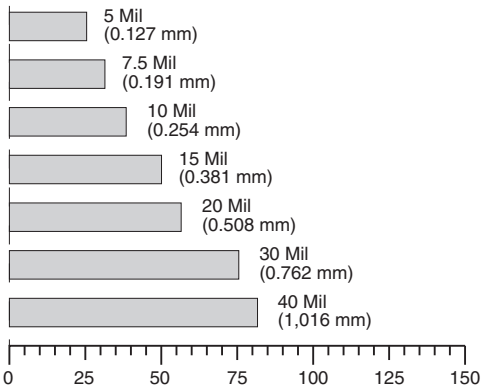
www.leuze.com



Reading field

FIS 6170

FIS 6170

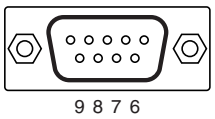


Typ. read distance [mm] as a function of the code module

Electrical connection

KB232-1 f. FIS 6170 (50115069):

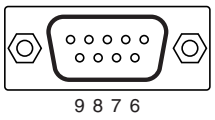
RS 232 - female



PIN	Signal
2	TXD
3	RXD
5	GND
9	+ 5 V DC
SH	Shield

KB232-2 KIT f. FIS 6170 (50115070):

RS 232 - female



PIN	Signal
2	TXD
3	RXD
5	GND
SH	Shield

PWR



PIN	Signal
A	+ 5 V DC
B	GND

USB Standard A



PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

OVERVIEW

Dimensioned drawing

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HS 6508 DPM MOBILE 2D CODE READER

Mobile 2D code reader	Resolution	Page
for directly-marked codes	0.08 0.5 mm	220



Common technical data

Electrical data	Operating voltage U_B	5VDC ± 10%
	Power consumption	≤ 1.8W
	Interface types	Keyboard wedge PS/2 USB RS 232
	Code types Bar code	2/5 Interleaved, Code 39, Code 128, UPC/EAN, Code 93, Codabar, GS1 Databar
	Code types 2D-code	Data Matrix ECC 200, PDF417, MicroPDF, QR Code, Aztec
Indicators	LED Acoustic signaler Vibration alarm	read state
Mechanical data	Housing	plastic
	Weight	336g without cable
Environmental data	Ambient temperature	-20°C … +50°C (op.)
	Air humidity	5 … 95% rel. humidity
	Protection class	IP 65
	Drop height	2m (multiple times onto cement)

Features

- **Hand-held scanner for directly-marked codes (needle print or laser marking on flat surfaces)**
- **Very sturdy, ergonomic housing**
- **Robust trigger button**
- **Built-in decoder**
- **Display for successful reading with LED, signal tone and vibration**
- **RS 232, PS/2 or USB interface**
- **Operating temp. from -20°C … 50°C**
- **Protection class IP 65**

MOBILE 2D-CODE READERS

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
2D-code/bar code reader, industrial version, for directly-marked codes (DPM)					
HS 6508 DPM 50120442	2D-code/bar code industrial hand-held scanner, DPM version  Barcode/2D-Code	234		USB, PS/2 AT, RS 232	

Ergonomically shaped hand-held 2D-code/bar code scanner with integrated decoder. Data transmission via configurable RS 232 interface or keyboard-wedge operation via PS/2 AT or USB interface.

Please order the corresponding connection cables separately!

Accessories / connection cables More accessories can be found from **page 425** onwards

Part no.	Designation	Features
50120434	KB RS232-2 HS65x8	RS 232 cable for HS 6508 DPM, supply via ext. power supply unit
50120436	KB RS232-1 HS65x8	RS 232 cable for HS 6508 DPM, supply via PIN 9
50120438	KB PS2-1 HS65x8	PS/2 cable for HS 6508 DPM
50120432	KB USB-1 HS65x8	USB cable for HS 6508 DPM
50120444	BT wall mount	Wall mount for HS 6508 DPM
50120428	NT HS 6508	Power supply unit 5VDC for HS 6508 DPM with KB RS232-2


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HS 6508 DPM

2D-code reader

2D-CODE

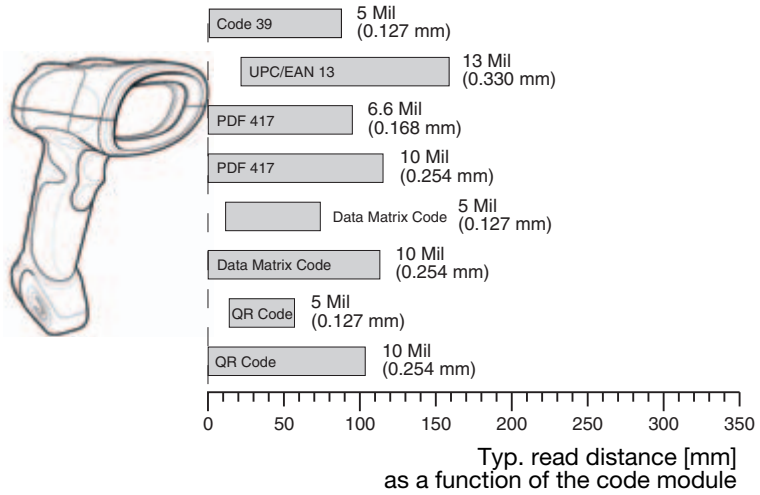
Features

- Hand-held scanner for directly-marked codes (needle print or laser marking on flat surfaces)
- Very sturdy, ergonomic housing
- Robust trigger button
- Built-in decoder
- Display for successful reading with LED, signal tone and vibration
- RS 232, PS/2 or USB interface
- Operating temp. from -20°C ... 50°C
- Protection class IP 65



Reading field

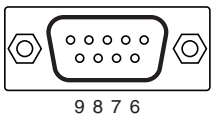
HS 6508 DPM



Typ. read distance [mm]
as a function of the code module

Electrical connection

RS 232 - female



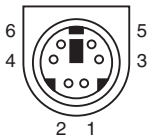
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC or NC
SH	Shield

PWR



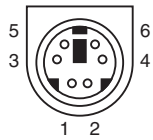
PIN	Signal
A	+ 5 V DC
B	GND

PS/2 - female



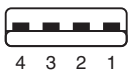
PIN	Signal
1	KB Data
2	NC
3	GND
4	+ 5 V DC
5	KB Clock
6	NC

PS/2 - male



PIN	Signal
1	PC Data
2	NC
3	GND
4	+ 5 V DC
5	PC Clock
6	NC

USB Standard A



PIN	Signal
1	+ 5 V DC
2	D-
3	D+
4	GND

OVERVIEW

Dimensioned drawing

We reserve the right to make changes • HS6578DPM_Overview_EN.fm


LSIS 22x
Page 194


LSIS 422i
Page 198


IT 1900
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FIS 6170
Page 214


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HS 6578 DPM
Page 222

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HS 6578 DPM MOBILE 2D CODE READER

Mobile 2D code reader	Resolution	Page
2D-CODE BARCODE for directly-marked codes	0.08 0.5 mm	224



Common technical data

Electrical data	Operating voltage U_B	3.6VDC (int. battery) 4.75 … 14VDC (base)
	Interface types	Keyboard wedge PS/2 USB RS 232
	Code types Bar code	2/5 Interleaved, Code 39, Code 128, UPC/EAN, Code 93, Codabar, GS1 Databar
	Code types 2D-code	Data Matrix ECC 200, PDF417, MicroPDF, QR Code, Aztec
Indicators	LED Acoustic signaler Vibration alarm	read state
Mechanical data	Housing	plastic
	Weight	414g without cable
Environmental data	Ambient temperature	-20°C … +50°C (op.)
	Air humidity	5 … 95% rel. humidity
	Protection class	IP 65
	Drop height	2m (multiple times onto cement)

Features

- **Hand-held scanner for directly-marked codes (needle print or laser marking on flat surfaces)**
- **Radio transmission**
- **Very sturdy, ergonomic housing**
- **Robust trigger button**
- **Built-in decoder**
- **Display for successful reading with LED, signal tone and vibration**
- **RS 232, PS/2 or USB interface**
- **Operating temp. from -20°C … 50°C**
- **Protection class IP 65**

Bluetooth is a trademark owned by Bluetooth SIG, Inc., U.S.A. and licensed to Motorola, Inc.

MOBILE 2D-CODE READERS WITH BLUETOOTH

Part description Part no.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
2D-code/bar code reader with bluetooth, industrial version, for directly-marked codes (DPM)					
HS 6578 DPM 50120440	2D-code/bar code reader with Bluetooth, DPM version Barcode/2D-Code	234		RS 232, PS/2 AT, USB	

Ergonomically shaped hand-held 2D-code/bar code scanner with integrated decoder. Data transmission via configurable RS 232 interface or keyboard-wedge operation via PS/2 AT or USB interface.

For a functional unit, an HS 6578 DPM hand-held scanner and a ST base station as well as a power supply unit and corresponding connection cable must be ordered. Please order these items separately!

Accessories / connection cables

More accessories can be found from **page 438** onwards

Part no.	Designation	Features
50120436	KB RS 232-1 HS65x8	RS 232 cable for base for HS 6578
50120438	KB PS2-1 HS65x8	PS/2 cable for base for HS 6578
50120432	KB USB-1 HS65x8	USB cable for base for HS 6578
50120446	Base for HS 6578	Bluetooth base station for HS 6578 DPM
50120430	Power supply unit for base	9VDC power supply unit for base for HS 6578 (mains: 100 … 240VAC)
50120448	Replacement battery	Replacement battery for HS 6578 (Li-Ion 2200mAh / 3.6V)


LSIS 22x
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LSIS 422i
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HS 6578 DPM

2D-code reader

2D-CODE

Features

- Hand-held scanner for directly-marked codes (needle print or laser marking on flat surfaces)
- Radio transmission
- Very sturdy, ergonomic housing
- Robust trigger button
- Built-in decoder
- Display for successful reading with LED, signal tone and vibration
- RS 232, PS/2 or USB interface
- Operating temp. from -20°C ... 50°C
- Protection class IP 65

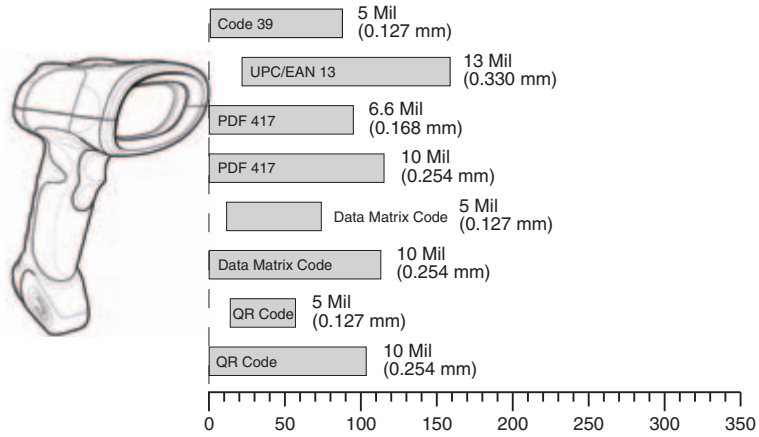
Bluetooth is a trademark owned by Bluetooth SIG, Inc., U.S.A. and licensed to Motorola, Inc.

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Reading field

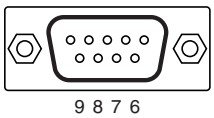
HS 6578 DPM



Typ. read distance [mm] as a function of the code module

Electrical connection

RS 232 - female



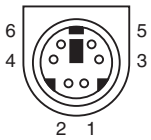
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC or NC
SH	Shield

PWR



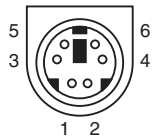
PIN	Signal
A	+ 5 V DC
B	GND

PS/2 - female



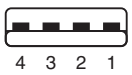
PIN	Signal
1	KB Data
2	NC
3	GND
4	+ 5 V DC
5	KB Clock
6	NC

PS/2 - male



PIN	Signal
1	PC Data
2	NC
3	GND
4	+ 5 V DC
5	PC Clock
6	NC

USB Standard A

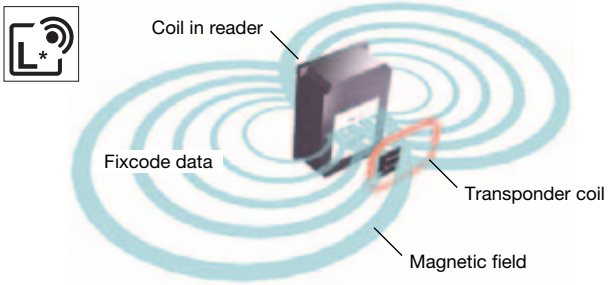


PIN	Signal
1	+ 5 V DC
2	D-
3	D+
4	GND

SELECTION GUIDE

Radio-frequency identification systems (RFID) with working frequency of 125 kHz

Operating principle



The parallel arrangement of the coils relative to one another is decisive for the magnetic coupling between reader and data carrier. Nearby metal pulls the field lines and destroys the effective signal. The operating range is considerably reduced if the magnetic field is partially blocked by metal. Placing spacers between transponder and metal can serve as a remedy.

Products and operating ranges



RFI 32 from **page 230**
80 mm



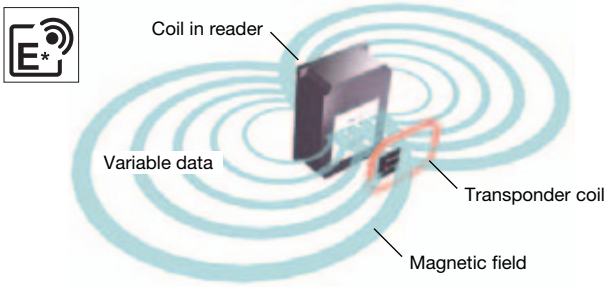
Transponder TFI from **page 276**
Disc transponder and high-temperature disc transponder

Features

- Permanent coding of the transponder data
- Read-only access
- Transponder movement speed up to 0.6 m/s
- Insensitive to wetness, heat, cold, soiling
- Economical solution for pure identification tasks

Radio-frequency identification systems (RFID) with working frequency of 868 MHz (UHF)

Operating principle



The parallel arrangement of the coils relative to one another is decisive for the magnetic coupling between reader and data carrier. Nearby metal pulls the field lines and destroys the effective signal. The operating range is considerably reduced if the magnetic field is partially blocked by metal. Placing spacers between transponder and metal can serve as a remedy.

Products and operating ranges



RFU 61 from **page 250**
1500 mm



RFU 81 from **page 254**
5000 mm



HFU 4500D from **page 268**
450 mm + bar code reading at 50 … 450 mm



HFU 4520D from **page 272**
450 mm + bar code reading at 50 … 450 mm



Transponder TFU from **page 288**
On-metal-disk and label transponders

Features

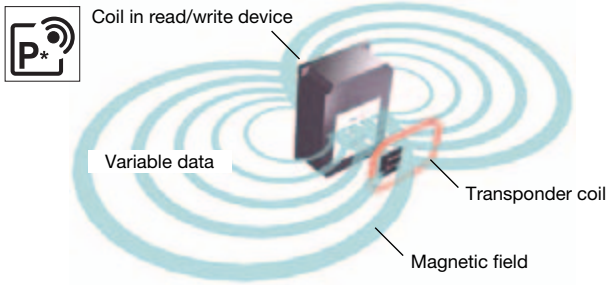
- 12/60 bytes of user data storage in the transponder (type dependent)
- Standardized transmission protocol acc. to EPC 1 Gen 2
- High transponder movement speed up to 10 m/s
- Insensitive to wetness, heat, cold, soiling
- Other transponder models in preparation

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Radio-frequency identification systems (RFID) with working frequency of 13.56 MHz

Operating principle



The parallel arrangement of the coils relative to one another is decisive for the magnetic coupling between reader and data carrier. Nearby metal pulls the field lines and destroys the effective signal. The operating range is considerably reduced if the magnetic field is partially blocked by metal. Placing spacers between transponder and metal can serve as a remedy.

Products and operating ranges



RFM 12 from **page 234**
45 mm



RFM 32 from **page 238**
110 mm



RFM 62 from **page 246**
500 mm



HFM 3500D from **page 260**
50 mm + bar code reading at 50 … 450 mm



HFM 3520D from **page 264**
50 mm + bar code reading at 50 … 450 mm



Transponder TFM from **page 280**
Disc-, HT-, self-adhesive, card transponders

Features

- Up to 1024 bytes of user data storage in the transponder (type dependent)
- Read/write access acc. to ISO 15693
- Transponder movement speed up to 6 m/s
- Insensitive to wetness, heat, cold, soiling
- Large selection of transponder versions

SELECTION TABLE

Series	Dimensions in mm (WxHxD)	Housing material: Plastic	Housing material: Metal	Read distance in mm (dependent on used transponder)
				20 / 100 / 400 / 1500 / 6000
 RFI 32	102 x 76 x 30	●		0 – 80
 RFM 12	M30 x 98		●	0 – 45
 RFM 32	102 x 76 x 30	●		0 – 110
 RFM 62	298 x 298 x 34	●		0 – 400
 RFU 61	160 x 145 x 40	●		0 – 1500
 RFU 81	640 x 280 x 98	●		0 – 5000

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Detailed information on the dimensioned drawings or the specifications can be found in the respective data sheet or in the technical description.

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STATIONARY RFID READ/WRITE SYSTEMS

Reading method			Interfaces D = direct, G = via Gateway												Page
Fixcode - read only	ISO 15693 - read and write	EPC1 Gen2 - read and write	RS 232	RS 485	RS 422	PROFIBUS DP	PROFINET	Interbus-S	Ethernet	EtherNet/IP	DeviceNet	CANopen	EtherCAT	multiNet plus	
●			D	G	G	G	G	G	G	G	G	G	G	G	230
	●		D	G	G	G	G	G	G	G	G	G	G	G	234
	●		D	G	G	G	G	G	G	G	G	G	G	G	238
	●		D	G	G	G	G	G	G	G	G	G	G	G	246
		●	D[1)]	G	G	G	G	G	G	G	G	G	G	G	250
		●	D[1)]	G	G	G	G	G	G	G	G	G	G	G	254

1) With connector unit IMRFU…

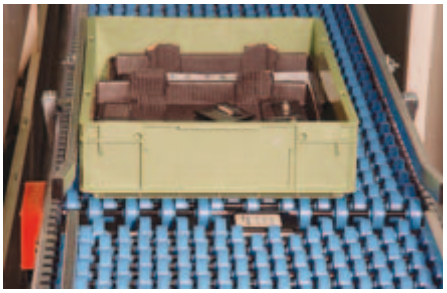
OVERVIEW



Container identification in order picking and flow of goods

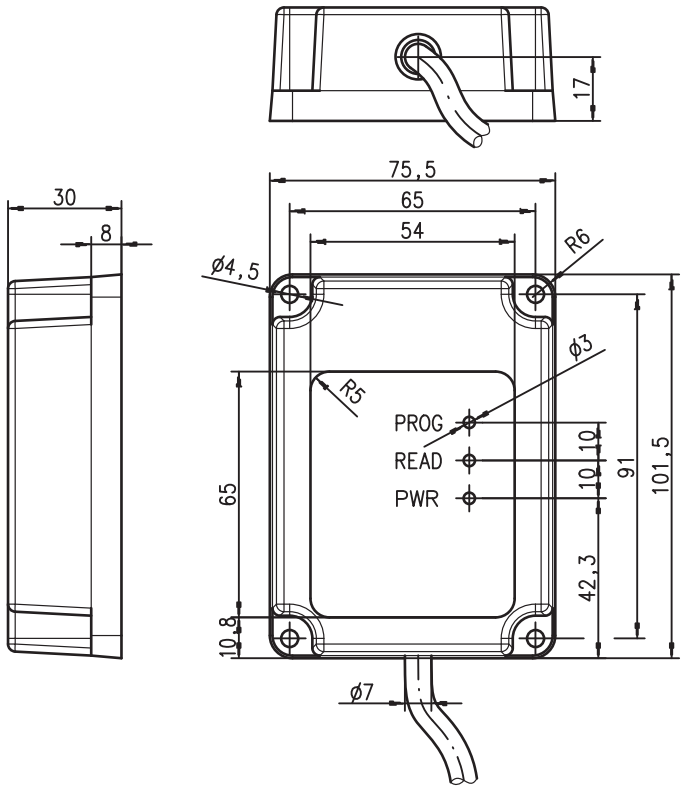


Container identification in order picking and flow of goods



Traceability in intralogistics

Dimensioned drawing



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RFM 12 Page 234


RFM 32 Page 238


RFM 62 Page 246


RFU 61 Page 250


RFU 81 Page 254


HFM 3500 Page 260


HFM 3520 Page 264


HFU 4500 Page 268


HFU 4520 Page 272


TFI Page 276


TFM Page 280


TFU Page 288

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STATIONARY RFID READ SYSTEM RFI 32

RF reader	Reading range	Page
RFI 32 L 120	0 90 mm	232



Common technical data

Electrical data	Operating voltage U_B	12 … 30 VDC
	Power consumption	approx. 0.5 W
	Switching output	1 x PNP, adjustable switching behavior
	Trigger input	12 … 30 VDC
Data interface	Type	RS 232
	Transmission parameters	9600 Baud, 8 data bits, 1 start bit, 1 stop bit, no parity
	Transmission format	<STX> <**DATA**> <CR> <LF>
Indicators	LED PWR (yellow)	operating voltage
	LED READ (green)	read process
	LED PROG (red)	activation (trigger)
Mechanical data	Housing	ABS, black
	Weight	280 g
Environmental data	Ambient temp. (operation/storage)	-25 °C … +70 °C / -40 °C … +80 °C
	Protection class	IP 65
	Relative air humidity	5 … 90 % (non-cond.)

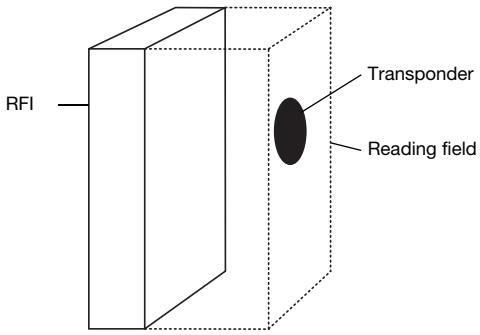
Features

- **Compact reading unit for operating ranges up to 90 mm**
- **Working frequency 125 kHz**
- **Fixcode (protocol EM4002)**
- **Suitable for industrial usage**
- **High protection**
- **RS 232 interface**
- **Prepared for connection to MA 2/MA 21 100.2/MA 2xx*i***

STATIONARY RFID READ SYSTEM

Part description Part no.	Description	Op. range [mm]	Transponder speed [m/s]	Interface	
RFID Fixcode Read System					
RFI 32 L 120 50040500	Reader for fixcode transponder (EM4002), 1 m connection cable with system plug	max. 90	max. 0.6	RS 232	
RFI 32 L 120 - L10 50108915	Reader for fixcode transponder (EM4002), 10 m connection cable with system plug	max. 90	max. 0.6	RS 232	

The detection range (reading field) of the reader is similar to a cuboid positioned above the reader. Particularly good values for operating range and speed are obtained in the geometric center of the reading field's upper margin. Usually, there is hardly any reduction in the operating range up to an angle of ±10° to the parallel surface. At higher angles, the range is considerably reduced - although there is no fixed rule. One must take into consideration that metal surfaces in the immediate environment may further influence the properties of the device. The entire front side of the device (black) is active and must not be in close range of metal (metal-free area: min. 50 mm in front of device).
To simplify the installation, the connection cable of the RFI 32 is fitted with connectors that match the MA … connector units. Apart from a simplified connection, the MA … connector units also offer an additional service interface for the configuration of the reader via a null modem cable.



Accessories

More accessories can be found from **page 422** onwards

Part no.	Designation	Features
50032396	TFI 03 1101.120	Disc transponder, Ø 30 x 2.1 mm, 32 bit fixcode
50032395	TFI 05 1101.120	Disc transponder, Ø 50 x 2.1 mm, 32 bit fixcode
50039070	TFI 03 1601.120	High-temperature disc transponder, Ø 30 x 2 mm, 32 bit fixcode
50039069	TFI 05 1601.120	High-temperature disc transponder, Ø 50 x 2 mm, 32 bit fixcode
50107102	Spacer 30 HT	Spacer for disc transponder, Ø 36 x 12 mm
50107103	Spacer 50 HT	Spacer for disc transponder, Ø 56 x 12 mm
50110631	BT TFM x26	Mounting kit 60 mm, aluminum, for high-temperature transponder
50031256	MA 2	Connector unit, installation box for stand-alone operation
50103125	MA 21 100.2	Connector unit, multiNet network
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types

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RFI 32 Page 230

RFM 12 Page 234

RFM 32 Page 238

RFM 62 Page 246

RFU 61 Page 250

RFU 81 Page 254

HFM 3500 Page 260

HFM 3520 Page 264

HFU 4500 Page 268

HFU 4520 Page 272

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TFM Page 280

TFU Page 288

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RFI 32 ...

RFID read system

Features

- Compact reading unit for operating ranges up to 90mm
- Fixcode (protocol EM4002)
- Suitable for industrial usage
- High protection
- RS 232 interface
- Prepared for connection to MA 2/MA 21 100.2/MA 2xx*i*
- Switching input and switching output



Electrical connection

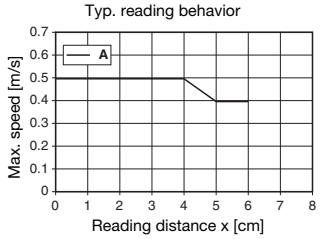
Cable with 2 system connectors

Colour	Signal	Connector Pin 10-pole	6-pole
gr/GY	+12 ... 30 V DC	8	
ws/WH	0 V DC	9	
gn/GN	RS 232 TxD	5	
ge/YE	RS 232 RxD	4	
br/BN	RS 232 GND	1	
vi/VI	Trigger IN	7	
ws-sw/WH-BK	SW OUT		6

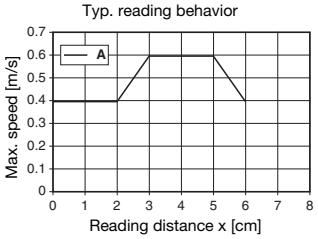
Reading behavior

RFI 32 L 120... with Transponder TFI

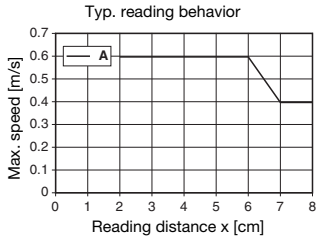
TFI 03 1101.120



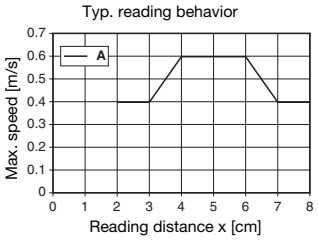
TFI 03 1601.120



TFI 05 1101.120



TFI 05 1601.120

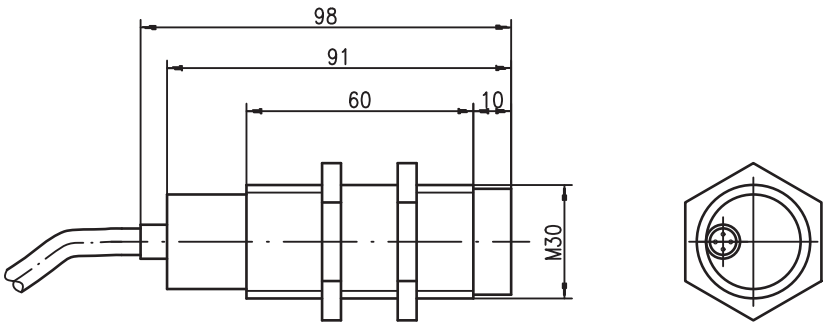


A With reading unit RFI 32 L 120

The specified values may deviate as a result of influences from temperature, installation site, read angle, etc.

OVERVIEW

Dimensioned drawing



RFI 32 Page 230 | RFM 12 Page 234 | RFM 32 Page 238 | RFM 62 Page 246 | RFU 61 Page 250 | RFU 81 Page 254 | HFM 3500 Page 260 | HFM 3520 Page 264 | HFU 4500 Page 268 | HFU 4520 Page 272 | TFI Page 276 | TFM Page 280 | TFU Page 288

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STATIONARY RFID READ/WRITE SYSTEM RFM 12

RFID read/write system	Reading range	Page
RFM 12 SL 200	0 45 mm	236



Common technical data

Electrical data	Operating voltage U_B	12 … 30VDC
	Power consumption	approx. 0.9W
	Switching output	1 x PNP, adjustable switching behavior
	Trigger input	12 … 30VDC
Data interface	Type	RS 232
	Transmission parameters	9600Baud, 8 data bits, 1 start bit, 1 stop bit, no parity
	Transmission format	<STX> <**DATA**> <CR> <LF>
Indicators	Green LED	switching output active
Mechanical data	Housing	metal with ABS front
	Weight	210g
Environmental data	Ambient temp. (operation/storage)	-25°C … +65°C / -40°C … +70°C
	Protection class	IP 67
	Relative air humidity	5 … 90% (non-cond.)

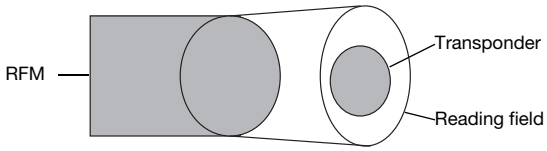
Features

- **Writing and reading unit in M30 case for operating ranges up to 45mm (depends on transponder)**
- **Working frequency 13.56MHz**
- **Standardized protocols**
- **Suitable for industrial usage**
- **High data transfer rate**
- **Configurable functions**
- **RS 232 interface**
- **Prepared for connection to MA 2/MA 21 100.2/MA 2xx*i***

STATIONARY RFID READ/WRITE SYSTEM

Part description Part no.	Description	Op. range [mm]	Transponder speed [m/s]	Interface	
RFID read/write system					
RFM 12 SL 200 50040497	Read/write system for ISO15693, I-Code, Tag-It, 1 m connection cable with system plug	max. 45	max. 2.0	RS 232	

The detection range (reading field) of the reader is similar to a cylinder positioned above the reader. Particularly good values for operating range and speed are obtained in the geometric center of the reading field's upper margin and when the transponder and the reading device are positioned parallel to each other. Usually, there is hardly any reduction in the operating range up to an angle of ±10° to the parallel surface. At higher angles, the range is considerably reduced - although there is no fixed rule. One must take into consideration that metal surfaces in the immediate environment may further influence the properties of the device. The entire front side of the device (black) is active and must not be in close range of metal (metal-free area: min. 50 mm in front of device).



To simplify the installation, the connection cable of the RFM 12 is fitted with connectors that match the MA … connector units. Apart from a simplified connection, the MA … connector units also offer an additional service interface for the configuration of the device via a null modem cable.

Accessories (selection)

More accessories can be found from **page 422** onwards

Part no.	Designation	Features
50111503	MC 030K	M30 mounting clamp
see P. 280	TFM …	Suitable transponder: TFM 02… to TFM 05…
50107102	Spacer 30 HT	Spacer for disc transponder, Ø 36 x 12 mm
50107103	Spacer 50 HT	Spacer for disc transponder, Ø 56 x 12 mm
50031256	MA 2	Connector unit, installation box for stand-alone operation
50103125	MA 21 100.2	Connector unit, multiNet network
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types


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TFM Page 280


TFU Page 288

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RFM 12 ...

RFID read/write system

Features

- Writing and reading unit in M30 case for operating ranges up to 45mm (depends on transponder)
- Standardized protocols according to ISO 15693
- Suitable for industrial usage
- High data transfer rate
- Configurable functions
- RS 232 interface
- Switching input and switching output
- Output active LED
- Prepared for connection to MA 2/MA 21 100.2/MA 2xx*i*

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Electrical connection

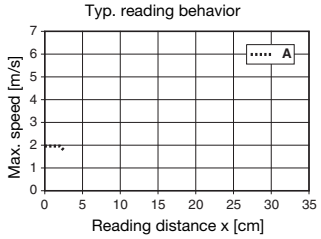
Cable with 2 system connectors

Colour	Signal	Connector Pin 10-pole	Connector Pin 6-pole
gr/GY	+12 ... 30 V DC	8	
ws/WH	0 V DC	9	
gn/GN	RS 232 TxD	5	
ge/YE	RS 232 RxD	4	
br/BN	RS 232 GND	1	
vi/VI	Trigger IN	7	
ws-sw/WH-BK	SW OUT		6

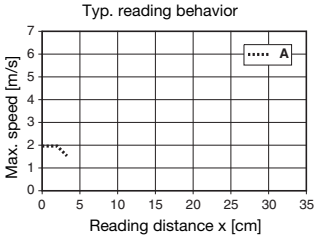
Reading behavior

RFM 12 SL 200 with Transponder TFM

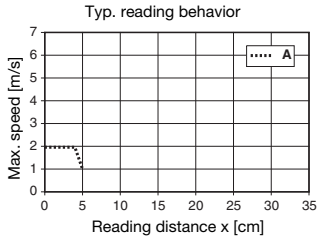
TFM 02...



TFM 03...



TFM 05...



The specified values may deviate as a result of influences from temperature, installation site, read angle, etc.

A With RFM 12 SL 200 reading unit

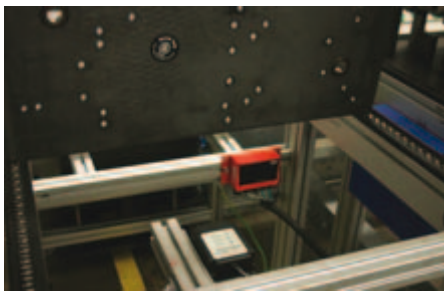
OVERVIEW



Container identification in intralogistics and order picking

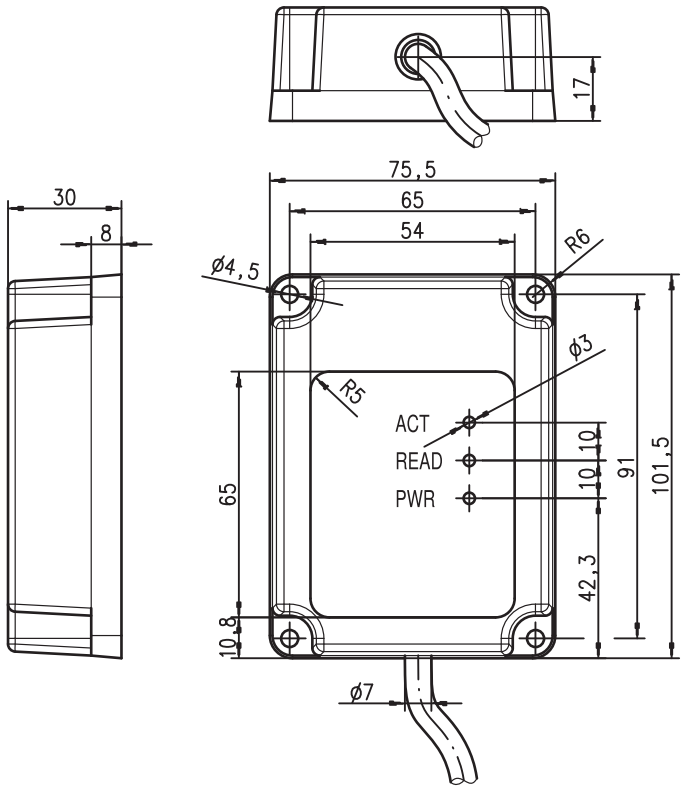


Container identification in intralogistics and order picking



Workpiece-holder identification in rough environments

Dimensioned drawing



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STATIONARY RFID READ/WRITE SYSTEM RFM 32

RFID read/write system	Op. range	Page
RFM 32 SL 200	0 110 mm	240



Common technical data

Electrical data	Operating voltage U_B	12 … 30VDC
	Power consumption	approx. 1.0W
	Switching output	1 x PNP, adjustable switching behavior
	Trigger input	12 … 30VDC
Data interface	Type	RS 232
	Transmission parameters	9600Baud, 8 data bits, 1 start bit, 1 stop bit, no parity
	Transmission format	<STX> <**DATA**> <CR> <LF>
Indicators	LED PWR (yellow)	operating voltage
	LED READ (green)	read process
	LED ACT (red)	activation (trigger)
Mechanical data	Housing	ABS, black
	Weight	280g
Environmental data	Ambient temp. (operation/storage)	-25°C … +65°C / -40°C … +70°C
	Protection class	IP 67
	Relative air humidity	5 … 90% (non-cond.)

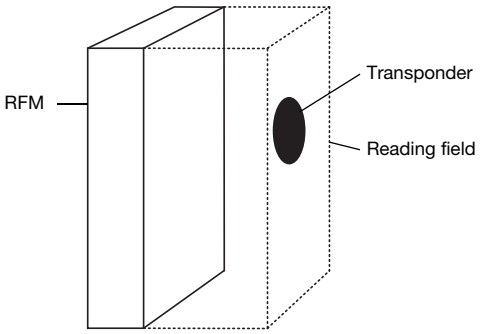
Features

- **Compact writing and reading unit for operating ranges up to 110mm (depends on transponder)**
- **Working frequency 13.56MHz**
- **Standardized protocols**
- **Suitable for industrial usage**
- **High data transfer rate**
- **Configurable functions**
- **RS 232 interface**
- **Prepared for connection to MA 2/MA 21 100.2/MA 2xx*i***

STATIONARY RFID READ/WRITE SYSTEM

Part description Part no.	Description	Op. range [mm]	Transponder speed [m/s]	Interface	
RFID read/write system					
RFM 32 SL 200 50040498	Read/write device for transponder (ISO 15693), 1 m connection cable with system plug	max. 110	max. 6.0	RS 232	

The detection range (reading field) of the read/write device is similar to a cuboid positioned above the device. Particularly good values for operating range and speed are obtained in the geometric center of the reading field's upper margin and when the transponder and the reading device are positioned parallel to each other. Usually, there is hardly any reduction in the operating range up to an angle of ±10° to the parallel surface. At higher angles, the range is considerably reduced - although there is no fixed rule. One must take into consideration that metal surfaces in the immediate environment may further influence the properties of the device. The entire front side of the device (black) is active and must not be in close range of metal (metal-free area: min. 100 mm in front of device).



To simplify the installation, the connection cable of the RFM 32 is fitted with connectors that match the MA … connector units. Apart from a simplified connection, the MA … connector units also offer an additional service interface for the configuration of the reader via a null modem cable.

Accessories (selection)

More accessories can be found from **page 422** onwards

Part no.	Designation	Features
see P. 280	TFM …	Suitable transponder: TFM 02… to TFM 08…
50107102	Spacer 30 HT	Spacer for disc transponder, Ø 36 x 12 mm
50107103	Spacer 50 HT	Spacer for disc transponder, Ø 56 x 12 mm
50031256	MA 2	Connector unit, installation box for stand-alone operation
50103125	MA 21 100.2	Connector unit, multiNet network
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types

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RFM 32 ...

RFID read/write system

Features

- Compact writing and reading unit for operating ranges up to 110mm (depends on transponder)
- Working frequency 13.56MHz
- Standardized protocols according to ISO 15693
- Suitable for industrial usage
- Mountable on metal
- High data transfer rate
- Configurable functions
- RS 232 interface
- Switching input and switching output
- Prepared for connection to MA 2/MA 21 100.2/MA 2xx*i*

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Electrical connection

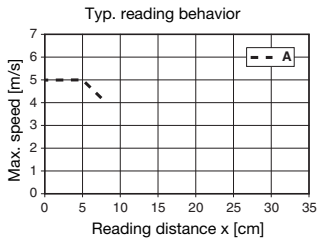
Cable with 2 system connectors

Colour	Signal	Connector Pin 10-pole	Connector Pin 6-pole
gr/GY	+12 ... 30 V DC	8	
ws/WH	0 V DC	9	
gn/GN	RS 232 TxD	5	
ge/YE	RS 232 RxD	4	
br/BN	RS 232 GND	1	
vi/VI	Trigger IN	7	
ws-sw/WH-BK	SW OUT		6

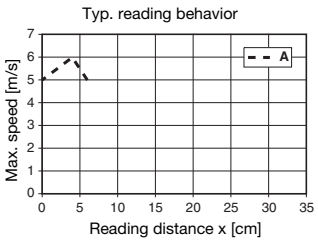
Reading behavior

RFM 32 SL 200 with Transponder TFM

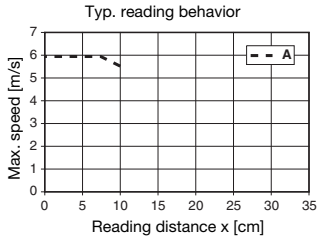
TFM 02...



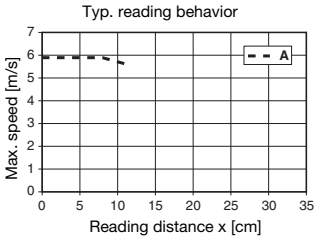
TFM 03...



TFM 05...



TFM 08...



A With RFM 32 SL 200 reading unit

The specified values may deviate as a result of influences from temperature, installation site, read angle, etc.

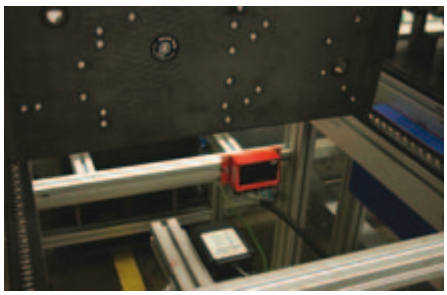
OVERVIEW



Container identification in intralogistics and order picking

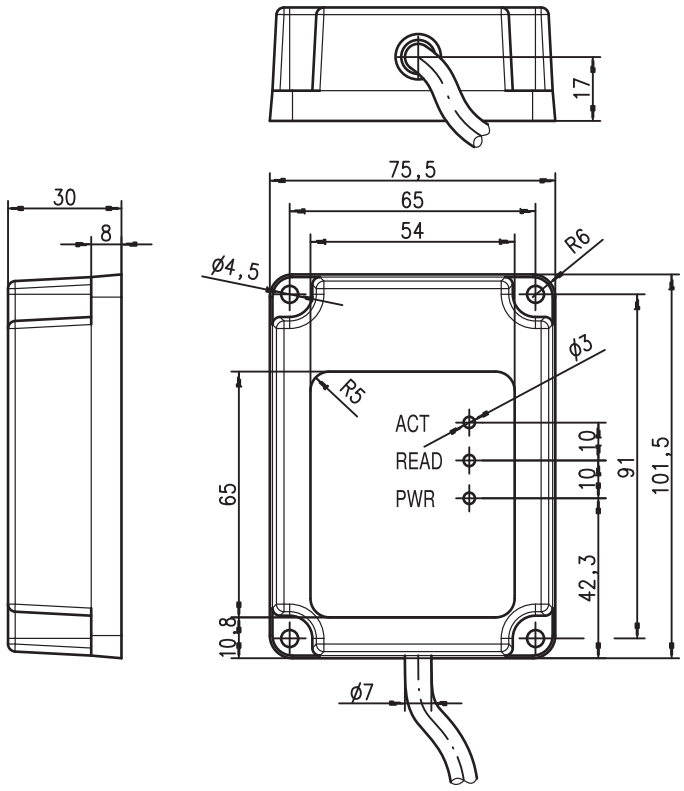


Container identification in intralogistics and order picking



Workpiece-holder identification in rough environments

Dimensioned drawing




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RFM 32 Page 238


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STATIONARY RFID READ/WRITE SYSTEM RFM 32 Ex n

RFID read/write system	Op. range	Page
RFM 32 SL 200 Ex n	0 110 mm	244



Common technical data

Electrical data	Operating voltage U_B	12 … 30VDC
	Power consumption	approx. 1.0W
	Switching output	1 x PNP, configurable
	Trigger input	12 … 30VDC
Data interface	Type	RS 232
	Transmission parameters	9600Baud, 8 data bits, 1 start bit, 1 stop bit, no parity
	Transmission format	<STX> <**DATA**> <CR> <LF>
Indicators	LED PWR (yellow)	operating voltage
	LED READ (green)	read process
	LED ACT (red)	activation (trigger)
Mechanical data	Housing	ABS, black
	Weight	500g
Environmental data	Ambient temp. (operation/storage)	-25°C … +60°C / -40°C … +70°C
	Protection class	IP 67
	Relative air humidity	5 … 90% (non-cond.)
Approval	Ex zone 2 gas: II 3G Ex nA IIB T4	
	Ex zone 22 dust: II 3D Ex tD A22 IP67 T80	

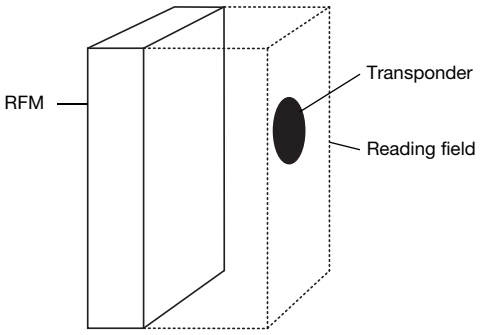
Features

- **Compact writing and reading unit for operating ranges up to 110mm (depends on transponder)**
- **Suitable for use in Ex Zone 2/ Zone 22**
- **Working frequency 13.56MHz**
- **Standardized protocols**
- **Suitable for industrial usage**
- **High data transfer rate**
- **Configurable functions**
- **RS 232 interface**
- **Prepared for connection to MA 2/MA 21 100.2/MA 2xx*i***
- **10m connection cable**

STATIONARY RFID READ/WRITE SYSTEM

Part description Part no.	Description	Op. range [mm]	Transponder speed [m/s]	Interface	
RFID read/write system					
RFM 32 SL 200 Ex n 50103087	Ex Zone 2/22 suitable read/write device for transponder (ISO 15693), 10 m connection cable with system plug	max. 110	max. 6.0	RS 232	

The detection range (reading field) of the read/write device is similar to a cuboid positioned above the device. Particularly good values for operating range and speed are obtained in the geometric center of the reading field's upper margin and when the transponder and the reading device are positioned parallel to each other. Usually, there is hardly any reduction in the operating range up to an angle of ±10° to the parallel surface. At higher angles, the range is considerably reduced - although there is no fixed rule. One must take into consideration that metal surfaces in the immediate environment may further influence the properties of the device. The entire front side of the device (black) is active and must not be in close range of metal (metal-free area: min. 100 mm in front of device).



To simplify the installation, the connection cable of the RFM 32 is fitted with connectors that match the MA … connector units. Apart from a simplified connection, the MA … connector units also offer an additional service interface for the configuration of the reader via a null modem cable.

Accessories with Ex approval (selection) Additional accessories can be found beginning on **page 422**

Part no.	Designation	Features
see P. 286	TFM …Ex	for more details on the Ex-transponders
50108071	TFM 03 1110.Ex	Disc transponder, Ø 34 x 8 mm, 112 byte, with ATEX 2 approval, up to 85 °C
50108070	TFM 05 1110.Ex	Disc transponder, Ø 54 x 15 mm, 112 byte, with ATEX 2 approval, up to 85 °C
50110026	TFM 05 1510.Ex	Disc transponder, Ø 54 x 15 mm, 112 byte, with ATEX 2 approval, up to 120 °C

Accessories without Ex approval (selection)

Part no.	Designation	Features
see P. 280	TFM …	Suitable transponder: TFM 02… to TFM 08…
50107102	Spacer 30 HT	Spacer for disc transponder, Ø 36 x 12 mm (not for Ex transp.)
50107103	Spacer 50 HT	Spacer for disc transponder, Ø 56 x 12 mm (not for Ex transp.)
50031256	MA 2	Connector unit, installation box for stand-alone operation
50103125	MA 21 100.2	Connector unit, multiNet network
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types

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RFM 32 ... Ex n

RFID read/write system

Features

- Suitable for use in Ex Zone 2
- Compact writing and reading unit for operating ranges up to 110mm (depends on transponder)
- Working frequency 13.56MHz
- Standardized protocols according to ISO 15693
- Suitable for industrial usage
- Mountable on metal
- High data transfer rate
- Configurable functions
- RS 232 interface
- Switching input and switching output
- Prepared for connection to MA 2/MA 21 100.2/MA 2xx*i*

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Electrical connection

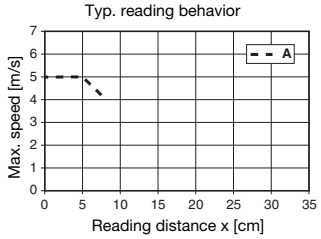
Cable with 2 system connectors

Colour	Signal	Connector Pin 10-pole	6-pole
gr/GY	+12 ... 30 V DC	8	
ws/WH	0 V DC	9	
gn/GN	RS 232 TxD	5	
ge/YE	RS 232 RxD	4	
br/BN	RS 232 GND	1	
vi/VI	Trigger IN	7	
ws-sw/WH-BK	SW OUT		6

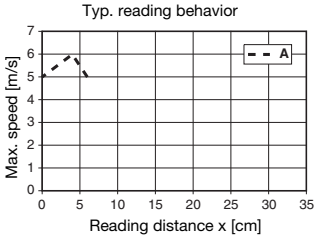
Reading behavior

RFM 32 SL 200 Ex n with Transponder TFM

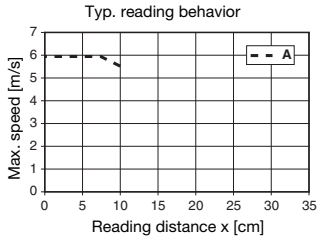
TFM 02...



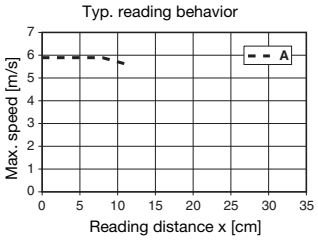
TFM 03...



TFM 05...



TFM 08...



A With RFM 32 SL 200 Ex n reading unit

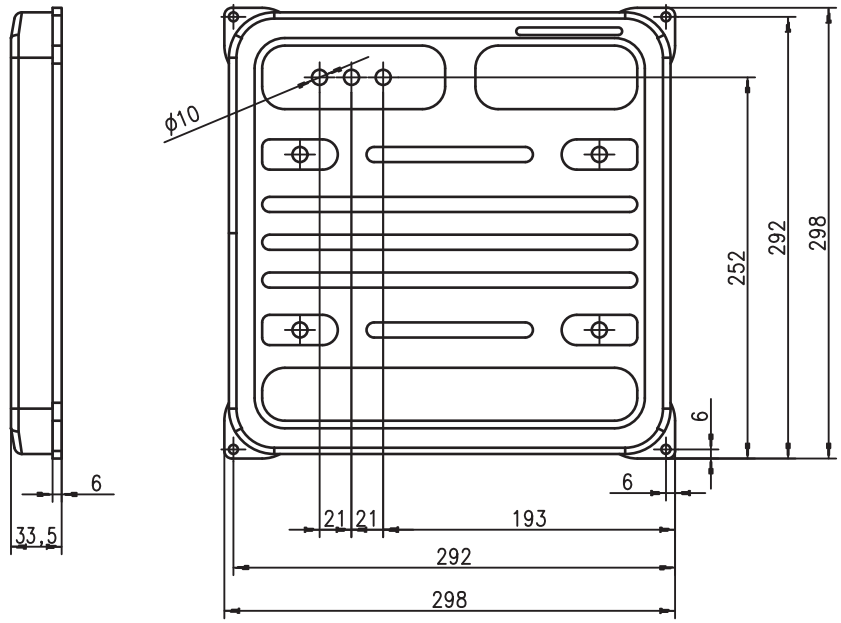
The specified values may deviate as a result of influences from temperature, installation site, read angle, etc.

OVERVIEW



Container identification with large detection range

Dimensioned drawing



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STATIONARY RFID READ/WRITE SYSTEM RFM 62

RFID read/write system	Op. range	Page
RFM 62 SL 200	0 … 500 mm	248



Common technical data

Electrical data	Operating voltage U_B	12 … 30 VDC
	Power consumption	approx. 2.0 W
	Switching output	1 x PNP, adjustable switching behavior
	Trigger input	12 … 30 VDC
Data interface	Type	RS 232
	Transmission parameters	9600 Baud, 8 data bits, 1 start bit, 1 stop bit, no parity
	Transmission format	<STX> <**DATA**> <CR> <LF>
Indicators	LED PWR (yellow)	operating voltage
	LED READ (green)	read process
	LED PROG (red)	activation (trigger)
Mechanical data	Housing	ABS, black
	Weight	approx. 500 g
Environmental data	Ambient temp. (operation/storage)	-25 °C … +65 °C / -40 °C … +70 °C
	Protection class	IP 65
	Relative air humidity	5 … 90 % (non-cond.)

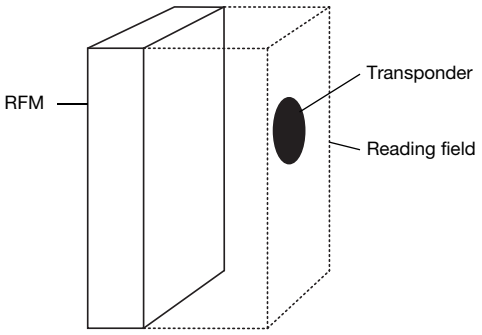
Features

- **Compact writing and reading unit for operating ranges up to 500 mm (depends on transponder)**
- **Working frequency 13.56 MHz**
- **Standardized protocols**
- **Suitable for industrial usage**
- **High data transfer rate**
- **Configurable functions**
- **RS 232 interface**
- **Prepared for connection to MA 2/MA 21 100.2/MA 2xx*i***

STATIONARY RFID READ/WRITE SYSTEM

Part description Part no.	Description	Op. range [mm]	Transponder speed [m/s]	Interface	
RFID read/write system					
RFM 62 SL 200 50040499	Read/write device for transponder (ISO 15693), 1 m connection cable with system plug	max. 500	max. 6.0	RS 232	

The detection range (reading field) of the read/write device is similar to a cuboid positioned above the device. Particularly good values for operating range and speed are obtained in the geometric center of the reading field's upper margin and when the transponder and the reading device are positioned parallel to each other. Usually, there is hardly any reduction in the operating range up to an angle of ±10° to the parallel surface. At higher angles, the range is considerably reduced - although there is no fixed rule. One must take into consideration that metal surfaces in the immediate environment may further influence the properties of the device. The entire front side of the device (black) is active and must not be in close range of metal (metal-free area: min. 400 mm in front of device).



To simplify the installation, the connection cable of the RFM 62 is fitted with connectors that match the MA … connector units. Apart from a simplified connection, the MA … connector units also offer an additional service interface for the configuration of the reader via a null modem cable.

Accessories (selection)

More accessories can be found from **page 422** onwards

Part no.	Designation	Features
see P. 280	TFM …	Suitable transponder: TFM 04… to TFM 08…
50107103	Spacer 50 HT	Spacer for disc transponder, Ø 56 x 12 mm
50106411	Spacer 85 HT	Spacer for disc transponder, Ø 85 x 30 mm
50031256	MA 2	Connector unit, installation box for stand-alone operation
50103125	MA 21 100.2	Connector unit, multiNet network
see P. 414	MA 2xx*i*	Connector unit / gateway for many automation technology network types


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HFM 3500 Page 260


HFM 3520 Page 264


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RFM 62 ...

RFID read/write system

Features

- Compact writing and reading unit for operating ranges up to 500mm (depends on transponder)
- Working frequency 13.56MHz
- Standardized protocols according to ISO 15693
- Suitable for industrial usage
- Semi-automatic calibration
- High data transfer rate
- Configurable functions
- RS 232 interface
- Switching input and switching output
- Prepared for connection to MA 2/MA 21 100.2/MA 2x*xi*

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Electrical connection

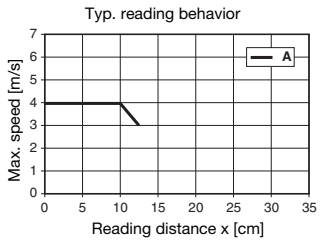
Cable with 2 system connectors

Colour	Signal	Connector Pin 10-pole	6-pole
gr/GY	+12 ... 30 V DC	8	
ws/WH	0 V DC	9	
gn/GN	RS 232 TxD	5	
ge/YE	RS 232 RxD	4	
br/BN	RS 232 GND	1	
vi/VI	Trigger IN	7	
ws-sw/WH-BK	SW OUT		6

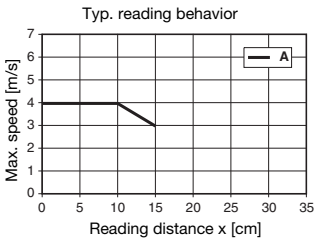
Reading behavior

RFM 62 SL 200 with Transponder TFM

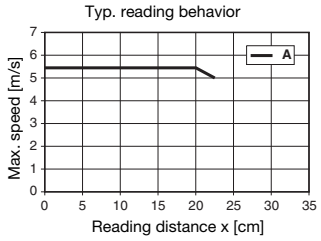
TFM 02...



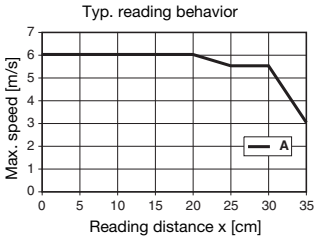
TFM 03...



TFM 05...



TFM 08...

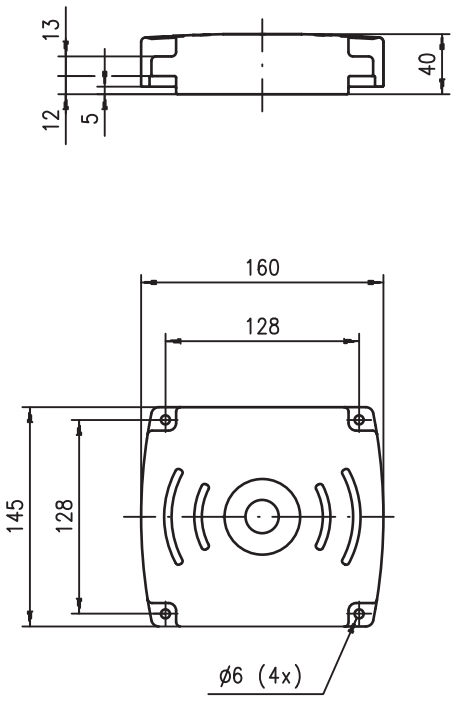


A With RFM 62 SL 200 reading unit

The specified values may deviate as a result of influences from temperature, installation site, read angle, etc.

OVERVIEW

Dimensioned drawing



We reserve the right to make changes • RFU61_Overview_EN.fm


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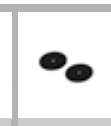

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HFM 3520 Page 264


HFU 4500 Page 268


HFU 4520 Page 272


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STATIONARY RFID READ/WRITE SYSTEM RFU 61

RFID read/write system	Op. range	Page
RFU 61 SL 100 - EU	0 1500 mm	252



Common technical data

Electrical data	Operating voltage U_B	12 … 30 VDC
	Power consumption	approx. 7 W / 2.5 W
	Switching output	8 … 30 VDC via IMRFU…
	Trigger input	
Data interface	Type	RS 232 (to IMRFU…), internal interface between RFU 61… and IMRFU…
	Transmission parameters	9600 Baud, 8 data bits, 1 start bit, 1 stop bit, no parity
	Transmission format	<STX> <**DATA**> <CR> <LF>
Indicators	LED PWR (yellow)	operating voltage
	LED READ (green)	read process
Mechanical data	Housing	ABS, black
	Weight	approx. 800 g
Environmental data	Ambient temp. (operation/storage)	-25 °C … +60 °C / -40 °C … +70 °C
	Protection class	IP 65
	Relative air humidity	5 … 90 % (non-cond.)

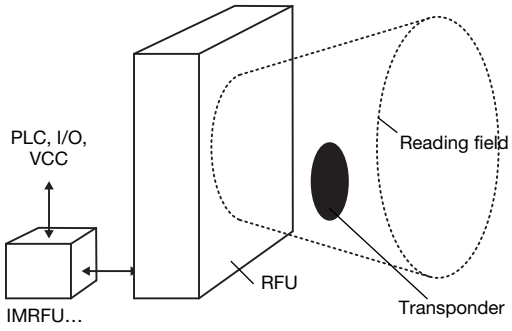
Features

- **Compact writing and reading unit for operating ranges up to 1500 mm (depends on transponder)**
- **Working frequency 868 MHz (UHF)**
- **Standardized protocols EPC 1 Gen 2**
- **Suitable for industrial usage**
- **High data transfer rate**
- **Configurable functions**
- **Connection via IMRFU… required**
- **M8 ready-made cables, 4-pin**

STATIONARY UHF RFID READ/WRITE SYSTEM

Part description Part no.	Description	Op. range [mm]	Transponder speed [m/s]	Interface	
UHF RFID read/write system					
RFU 61 SL 100 - EU 50112441	Read/write device for UHF transponder (EPC 1 Gen 2), M8 connector 4-pin	max. 1500	max. 6.0	internal to IMRFU…	

The detection range (read field) of the read/write device is comparable to a truncated cone (opening angle 90°), whose top side lies at the read device. Within this range, very good values can be achieved, even with large angles of rotation ± 40° relative to the parallel surface at distance and speed. Because the field is not completely homogeneous in this frequency range above the device, the transponders should be read while moving.
Note that metal surfaces and very smooth surfaces in the immediate vicinity can cause reflections and affect the properties of the device. The entire front side of the device (black) is active and must not be surrounded by metal or emit its signal directly at metal.
The connection to the IMRFU… is to be made via M8 cable (accessory). All connections to the voltage supply, trigger and host interface, as well as configuration, are made on the IMRFU… .



Accessories (selection)

More accessories can be found from **page 422** onwards

Part no.	Designation	Features
50112439	IMRFU 1	Connector unit for 1 RFU 61/RFU 81 (stand-alone), RS 232, IP 54
50104524	K-D M8A-4P-2m-PVC	Connection cable 2000 mm, M8 axial/open cable end, 4-pin, PVC
50104526	K-D M8A-4P-5m-PVC	Connection cable 5000 mm, M8 axial/open cable end, 4-pin, PVC
see P. 288	TFU …	Suitable transponder: TFM 03… to TFM 08…
50114995	TFU 05 1101.308	Disc transponder, Ø 47 x 10 mm, 12 byte user data
50112913	TFU 08 2101.308	Card transponder, 86 x 54 x 1 mm, 60 bytes user data

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RFU 61 ...

RFID read/write system

Features

- Compact writing and reading unit for operating ranges up to 1500mm (depends on transponder)
- Working frequency 868MHz
- Standardized protocols according to EPC 1 Gen 2
- Suitable for industrial usage
- High data transfer rate
- Configurable functions
- Connection to IMRFU 1 (stand-alone) via M8 cable
- Connection of interface, I/O and power via terminals on the IMRFU 1



Connector unit

IMRFU 1

IMRFU 1



Cable length RFU... <–> IMRFU... : **max. 30m !**

Electrical connection

RFU 61 - M8 male 4-pole



PIN	Color	Signal
1	br/BN	VCC
2	ws/WH	RS485 A
3	bl/BU	GND
4	sw/BK	RS486 B

IMRFU 1

Connector IN

PIN	Signal
1	IN1
2	GND
3	n.c.
4	n.c.

Connector OUT

PIN	Signal
1	VCC
2	GND
3	NO
4	NC
4	NC

Connector RS232

PIN	Signal
1	TX
2	RX

Connector READER

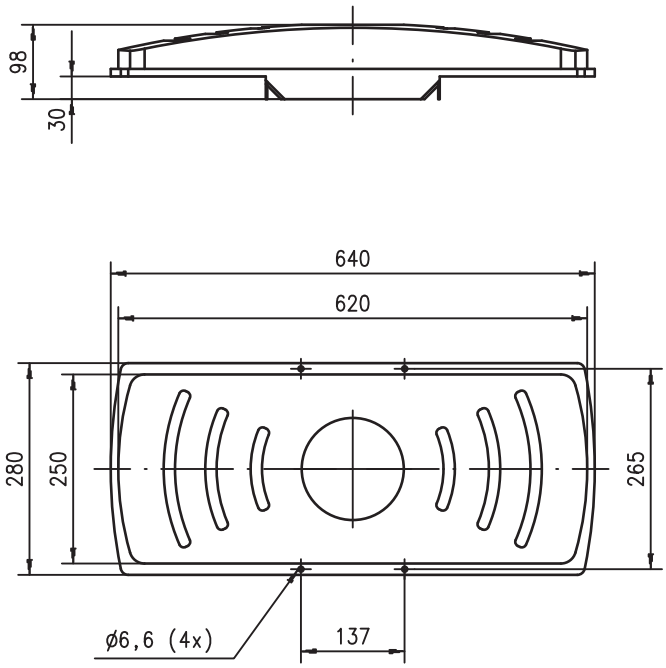
PIN	Signal
1	VCC
2	GND
3	RS485 A
4	RS485 B

Connector CONTROLLER

PIN	Signal
1	n.c.
2	GND
3	VCC
4	n.c.
5	n.c.
6	n.c.
7	n.c.
8	n.c.
9	n.c.
10	n.c.

OVERVIEW

Dimensioned drawing



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STATIONARY RFID READ/WRITE SYSTEM RFU 81

RFID read/write system	Op. range	Page
RFU 81 SL 100 - EU	0 … 5000 mm	256



Common technical data

Electrical data	Operating voltage U_B	12 … 30 VDC
	Power consumption	approx. 10 W / 2.5 W
	Switching output	8 … 30 VDC via IMRFU…
	Trigger input	
Data interface	Type	RS 232 (to IMRFU…), internal interface between RFU 81… and IMRFU…
	Transmission parameters	9600 Baud, 8 data bits, 1 start bit, 1 stop bit, no parity
	Transmission format	<STX> <**DATA**> <CR> <LF>
Indicators	LED PWR (yellow)	operating voltage
	LED READ (green)	read process
Mechanical data	Housing	ABS, black
	Weight	approx. 1500 g
Environmental data	Ambient temp. (operation/storage)	-25 °C … +60 °C / -40 °C … +70 °C
	Protection class	IP 65
	Relative air humidity	5 … 90 % (non-cond.)

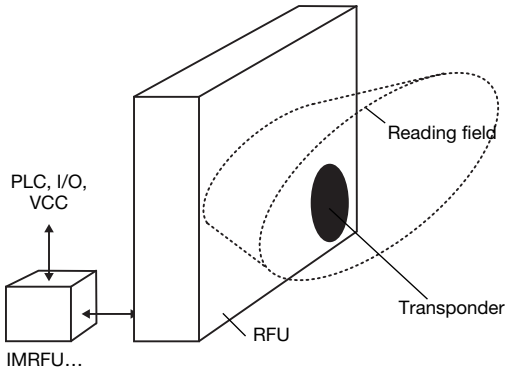
Features

- **Compact writing and reading unit for operating ranges up to 5000 mm (depends on transponder)**
- **Working frequency 868 MHz (UHF)**
- **Standardized protocols EPC 1 Gen 2**
- **Suitable for industrial usage**
- **High data transfer rate**
- **Configurable functions**
- **Connection via IMRFU… required**

STATIONARY UHF RFID READ/WRITE SYSTEM

Part description Part no.	Description	Op. range [mm]	Transponder speed [m/s]	Interface	
RFID read/write system					
RFU 81 SL 100 - EU 50112442	Read/write device for UHF transponder (EPC 1 Gen 2), terminals	max. 5000	max. 10.0	internal to IMRFU…	

The detection range (read field) of the read/write device is comparable to an elliptical, truncated cone (opening angle 100°/65°), whose top side lies at the read device. Within this range, very good values can be achieved, even with large angles of rotation ± 30° relative to the parallel surface at distance and speed.
Because the field is not completely homogeneous in this frequency range above the device, the transponders should be read while moving.
Note that metal surfaces and very smooth surfaces in the immediate vicinity can cause reflections and affect the properties of the device. The entire front side of the device (black) is active and must not be surrounded by metal or emit its signal directly at metal.
The connection to the IMRFU… is to be made via terminals. All connections to the voltage supply, trigger and host interface, as well as configuration, are made on the IMRFU… .



Accessories (selection)

More accessories can be found from **page 422** onwards

Part no.	Designation	Features
50112439	IMRFU 1	Connector unit for 1 RFU 61/RFU 81 (stand-alone), RS 232, IP 54
see P. 288	TFU …	Suitable transponder: TFM 03… to TFM 08…
50114995	TFU 05 1101.308	Disc transponder, Ø 47 x 10 mm, 12 byte user data
50112913	TFU 08 2101.308	Card transponder, 86 x 54 x 1 mm, 60 bytes user data

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RFU 81 ...

RFID read/write system

Features

- Compact writing and reading unit for operating ranges up to 5000 mm (depends on transponder)
- Working frequency 868 MHz
- Standardized protocols according to EPC 1 Gen 2
- Suitable for industrial usage
- High data transfer rate
- Configurable functions
- Connection to IMRFU 1 (standalone) via a cable that is to be provided by the customer
- Connection of interface, I/O and power via terminals on the IMRFU 1



Connector unit

IMRFU 1

IMRFU 1



Cable length RFU... <–> IMRFU... : **max. 30 m !**

Electrical connection

RFU 81

PIN	Signal	PIN	Signal	PIN	Signal
1	n.c.	5	n.c.	9	RS485 A
2	GND	6	n.c.	10	RS485 B
3	VCC	7	n.c.	11	n.c.
4	n.c.	8	n.c.	12	n.c.

IMRFU 1

Connector IN

PIN	Signal
1	IN1
2	GND
3	n.c.
4	n.c.

Connector OUT

PIN	Signal
1	VCC
2	GND
3	NO
4	NC
4	NC

Connector RS232

PIN	Signal
1	TX
2	RX

Connector READER

PIN	Signal
1	VCC
2	GND
3	RS485 A
4	RS485 B

Connector CONTROLLER

PIN	Signal
1	n.c.
2	GND
3	VCC
4	n.c.
5	n.c.
6	n.c.
7	n.c.
8	n.c.
9	n.c.
10	n.c.

SELECTION TABLE

Series		Dimensions in mm (WxHxD)	Housing material: Plastic	Housing material: Metal	Read distance in mm (dependent on used transponder), ☐ = also reads bar codes: 10 / 25 / 100 / 400 / 1200
HFM 3500D		103 x 145 x 133	●		0 – 25; 40 – 1D-code reading – 450
HFM 3520D		103 x 145 x 133	●		0 – 25; 40 – 1D-code reading – 450
HFU 4500D		103 x 145 x 133	●		30 – 1D-code reading – 350; 10 – 2D-code reading – 150; 0 – 450
HFU 4520D		103 x 145 x 133	●		30 – 1D-code reading – 350; 10 – 2D-code reading – 150; 0 – 450

Detailed information on the dimensioned drawings or the specifications can be found in the respective data sheet or in the technical description.

We reserve the right to make changes • Auswahltabelle_RFID_mobil_EN.fm

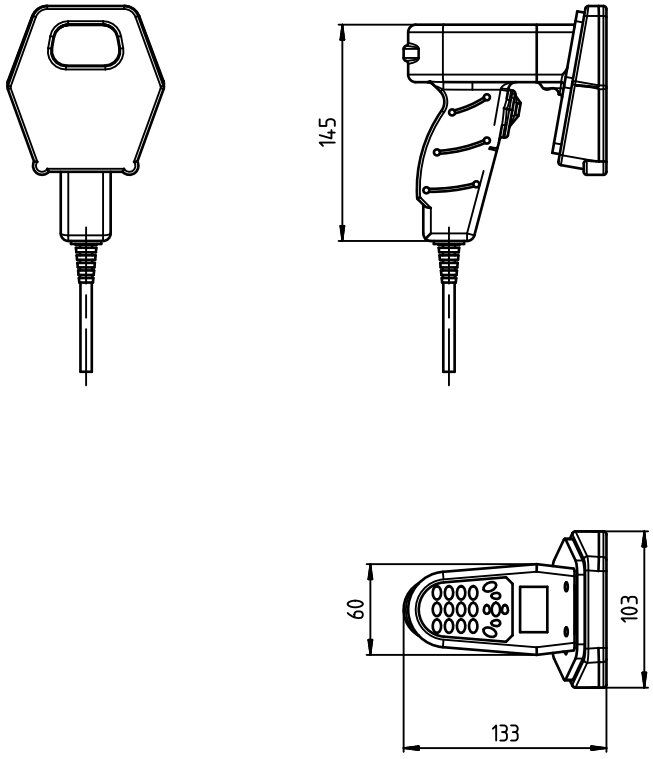
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MOBILE RFID READ/WRITE SYSTEMS

	Reading method				Operating voltage		Interfaces G = via Gateway													Page
	RFID: 13.56 MHz, ISO 15693,	RFID: 868 MHz, EPC 1 Gen 2, read and write	Laser (1D-code)	Surface imager	3.7V battery	6VDC	RS 232	PS/2	USB	Wireless (Bluetooth)	PROFIBUS DP	PROFINET	Interbus-S	Ethernet	EtherNet/IP	DeviceNet	CANopen	EtherCAT	multiNet plus	
	●		●			●	●		●		G	G	G	G	G	G	G	G	G	260
	●		●		●		●		●	●	G	G	G	G	G	G	G	G	G	264
		●		●		●	●		●		G	G	G	G	G	G	G	G	G	268
		●		●	●		●		●	●	G	G	G	G	G	G	G	G	G	272

OVERVIEW

Dimensioned drawing



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MOBILE RFID READ/WRITE SYSTEM HFM 3500D

RFID read/write system with integrated bar code reader	Reading range ☐ = RFID, ☐ = bar codes	Page
HFM 3500D	0 25 mm 40 450 mm	262



Common technical data

Electrical data	Operating voltage U_B	6.0VDC
	Power consumption	max. 0.5W
Data interface	Type	RS 232, USB COM port emulation
Indicators	OLED	10 lines, 16 characters each
Operational controls	Key pad	19 buttons
Mechanical data	Housing	ABS, black/gray
	Weight	approx. 180g without cable
Environmental data	Ambient temp. (operation/storage)	0°C … +50°C / 0°C … +50°C
	Protection class	IP 54
	Relative air humidity	5 … 90% (non-cond.)
	Drop height	1.5m

Features

- **Mobile read/write device with pistol handle for short operating ranges combined with bar codes**
- **Working frequency 13.56MHz**
- **Robust trigger button**
- **Easy to read and write data on transponders**
- **Suitable for industrial usage**
- **RS 232 interface or USB COM port emulation**
- **Functionality includes writing read bar code content to transponder**
- **Selectable display and data output (hex/ASCII)**
- **Simple feedback from the PLC on the display**
- **Function selection via keyboard or PLC**

MOBILE RFID READ/WRITE SYSTEM + BAR CODE READER

Part description Part no.	Description	Op. range [mm]	Transponder speed [m/s]	Interface	
RFID read/write system with bar code reader					
HFM 3500D 50110552	Combi read/write system for transponders (I-Code SLI, Tag-It HFI) and bar codes, 4 m connection cable with helix cable	max. 25 (RFID), 40 … 450 (bar codes)	max. 0.1	RS 232	

Ergonomically shaped RFID/bar code read/write system with integrated decoder. Data transmission via configurable RS 232 interface or by means of converter cable via USB interface.
Reliable transmission is only ensured with a clear field of view!

Accessories (selection) More accessories can be found from **page 422** onwards

Part no.	Designation	Features
50110677	KB - RS232 - USB	RS232 - USB converter cable, length 1 m
50110676	NT Hx5x0	Power supply unit for HFM 3500D
50102917	TFM 03 1110.210	Disc transponder, Ø 30 x 2.5 mm, 112 byte memory
50102916	TFM 05 1110.210	Disc transponder, Ø 50 x 2.5 mm, 112 byte memory
50107102	Spacer 30 HT	Spacer for disc transponder, Ø 36 x 12 mm
50107103	Spacer 50 HT	Spacer for disc transponder, Ø 56 x 12 mm

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HFM 3500D

RFID read/write system

Features

- Mobile read/write device with pistol handle for short operating ranges combined with bar codes
- Working frequency 13.56 MHz
- Robust trigger button
- Easy to read and write data on transponders
- Suitable for industrial usage
- RS 232 interface or USB COM port emulation
- Functionality includes writing read bar code content to transponder
- Selectable display and data output (hex/ASCII)
- Simple feedback from the PLC on the display
- Function selection via keyboard or PLC



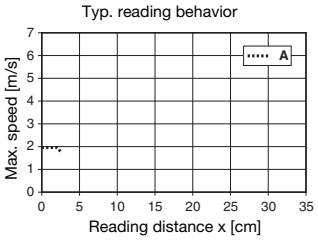


Reading field

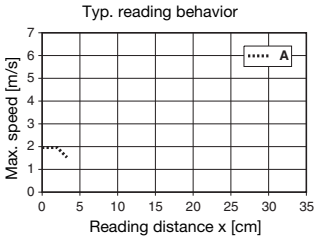
HFM 3500D

RFID

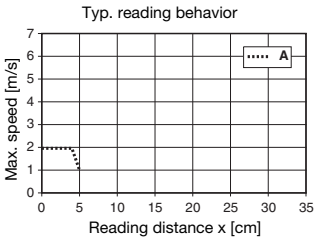
TFM 02...



TFM 03...



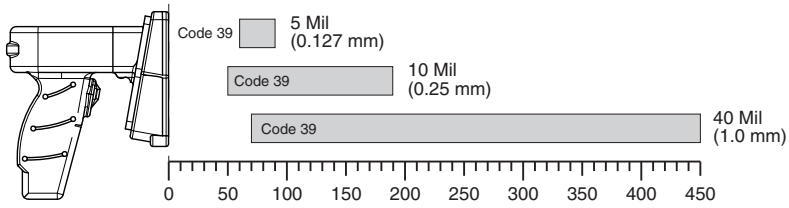
TFM 05...



The specified values may deviate as a result of influences from temperature, installation site, read angle, etc.

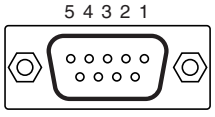
A With HFM 3500D reading unit

Bar codes (scanning rate: 80 … 120 scans/s)



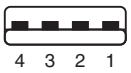
Electrical connection

HFM
RS 232 - female



PIN	Signal
2	TXD
3	RXD
5	GND
9	+ 5 V DC ext.
SH	Shield

USB Converter
USB Standard A

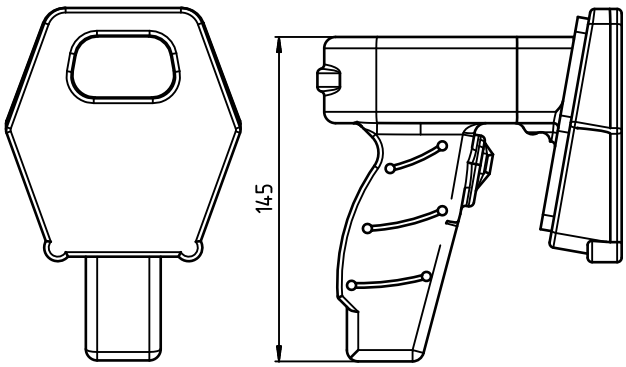


PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

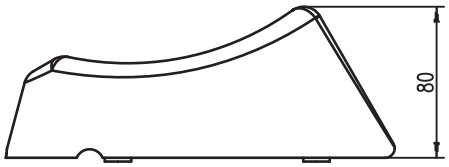
OVERVIEW

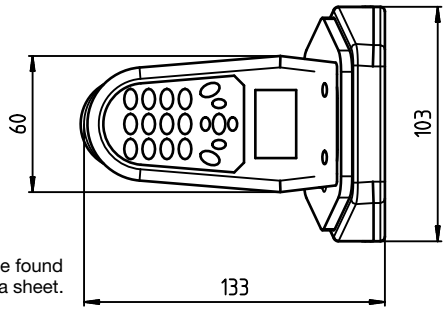
Dimensioned drawing

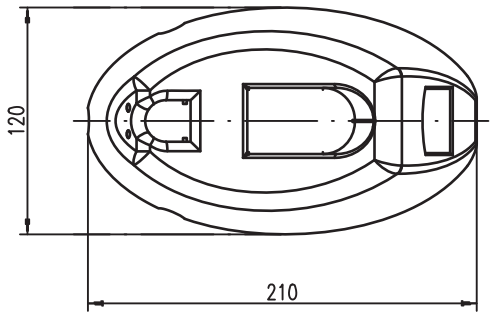
HFM 3520D



Base HX520







Further details can be found in the respective data sheet.



RFI 32	RFM 12	RFM 32	RFM 62	RFU 61	RFU 81	HFM 3500	HFM 3520	HFU 4500	HFU 4520	TFI	TFM	TFU
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MOBILE RFID READ/WRITE SYSTEM HFM 3520D

RFID read/write system with integrated bar code reader	Reading range ☐ = RFID, ☐ = bar codes	Page
HFM 3520D	0 25 mm 40 450 mm	266



Common technical data

Electrical data	Operating voltage U_B	3.7VDC (battery 1500mAh)
	Power consumption	max. 0.5W
Data interface	Type	RS 232, USB COM port emulation via HX520 Bluetooth® base station
	Range Bluetooth®	approx. 10m
Indicators	OLED	10 lines, 16 characters each
Operational controls	Key pad	19 buttons
Mechanical data	Housing	HFM: ABS, black/gray Base: ABS, black/gray
	Weight	HFM: approx. 225g
Environmental data	Ambient temp. (operation/storage)	0°C ... +50°C / 0°C ... +50°C
	Protection class	HFM + Base: IP 54
	Relative air humidity	5 ... 90% (non-cond.)
	Drop height	1.5m

Features

- **Mobile read/write device with pistol handle for short operating ranges combined with bar codes**
- **Working frequency 13.56MHz**
- **Robust trigger button**
- **Easy to read and write data on transponders**
- **Suitable for industrial usage**
- **Transmission to HX520 base station via Bluetooth® standard V1.2, class 1**
- **Functionality includes writing read bar code content to transponder**
- **Selectable display and data output (hex/ASCII)**
- **Simple feedback from the PLC on the display**
- **Function selection via keyboard or PLC**

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MOBILE RFID READ/WRITE SYSTEM + BAR CODE READER

Part description Part no.	Description	Op. range [mm]	Transponder speed [m/s]	Interface	
RFID read/write system with bar code reader					
HFM 3520D 50110551	Combi read/write system for transponders (I-Code SLI, Tag-It HFI) and bar codes, with Bluetooth®, incl. 1 Battery	max. 25 (RFID), 40 … 450 (bar codes)	max. 0.1	Bluetooth®	

Ergonomically shaped RFID/bar code read/write system with integrated decoder. Data transmission via configurable RS 232 interface or by means of converter cable via USB interface.
Reliable transmission is only ensured with a clear field of view!

For a functional unit, an HFM 3520D read/write system and a Base HX520 base station as well as a power supply unit and corresponding connection cable must be ordered. Please order these items separately!

Accessories (selection)

More accessories can be found from **page 422** onwards

Part no.	Designation	Features
50110672	Base HX520	Base station with Bluetooth for HFM 3520D
50110676	NT Hx5x0	Power supply unit for HFM 3500D/Base HX520
50111928	Battery HX520	3.7V battery, 1500mAh, for HFM 3520D
50110675	KB - RS232 - Base Hx520	Connection cable for RS232 - HX520 base station, length 2m
50110677	KB - RS232 - USB	RS232 - USB converter cable, length 1m
50102917	TFM 03 1110.210	Disc transponder, Ø 30 x 2.5mm, 112 byte memory
50102916	TFM 05 1110.210	Disc transponder, Ø 50 x 2.5mm, 112 byte memory
50107102	Spacer 30 HT	Spacer for disc transponder, Ø 36 x 12mm
50107103	Spacer 50 HT	Spacer for disc transponder, Ø 56 x 12mm

We reserve the right to make changes • HFM3520D_1_EN.fm


RFI 32 Page 230

RFM 12 Page 234

RFM 32 Page 238

RFM 62 Page 246

RFU 61 Page 250

RFU 81 Page 254

HFM 3500 Page 260

HFM 3520 Page 264

HFU 4500 Page 268

HFU 4520 Page 272

TFI Page 276

TFM Page 280

TFU Page 288

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HFM 3520D

RFID read/write system

Features

- Mobile read/write device with pistol handle for short operating ranges combined with bar codes
- Working frequency 13.56 MHz
- Robust trigger button
- Easy to read and write data on transponders
- Suitable for industrial usage
- Transmission to HX520 base station via Bluetooth® standard V1.2, class 1
- Functionality includes writing read bar code content to transponder
- Selectable display and data output (hex/ASCII)
- Simple feedback from the PLC on the display
- Function selection via keyboard or PLC

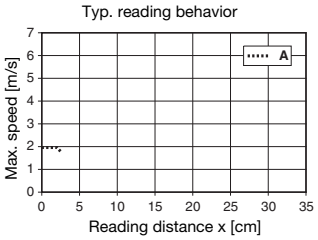


Reading field

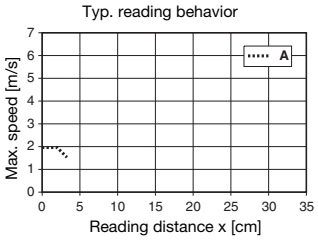
HFM 3520D

RFID

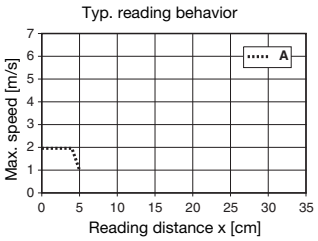
TFM 02...



TFM 03...



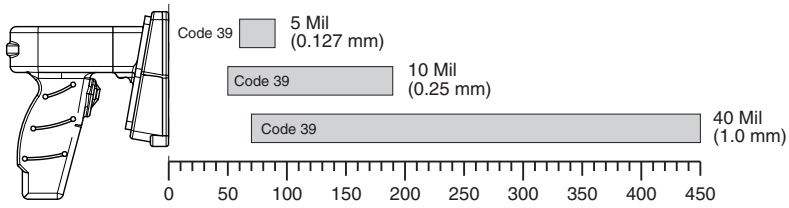
TFM 05...



The specified values may deviate as a result of influences from temperature, installation site, read angle, etc.

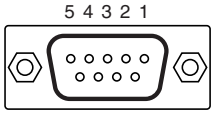
A With HFM 3520D reading unit

Bar codes (scanning rate: 80 … 120 scans/s)



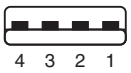
Electrical connection

HFM — RS 232 - female



PIN	Signal
2	TXD
3	RXD
5	GND
9	+ 5 V DC ext.
SH	Shield

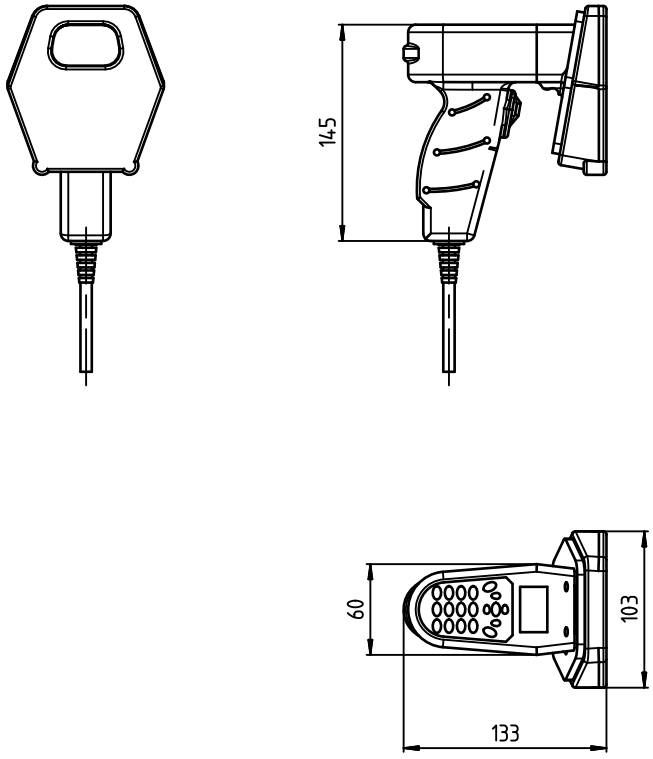
USB Converter — USB Standard A



PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

OVERVIEW

Dimensioned drawing



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MOBILE RFID READ/WRITE SYSTEM HFU 4500D

RFID read/write system with integrated 1D-/2D-code reader	Reading range ☐ = RFID, ☐ = 1D-/2D-codes	Page
HFU 4500D	0 … 450 mm 30 **1D** 350 mm 10 **2D** 150 mm	270



Common technical data

Electrical data	Operating voltage U_B	6.0VDC
	Power consumption	max. 0.5W
Data interface	Type	RS 232, USB COM port emulation
Indicators	OLED	10 lines, 16 characters each
Operational controls	Key pad	19 buttons
Mechanical data	Housing	ABS, black/gray
	Weight	approx. 180g without cable
Environmental data	Ambient temp. (operation/storage)	0°C … +50°C / 0°C … +50°C
	Protection class	IP 54
	Relative air humidity	5 … 90% (non-cond.)
	Drop height	1.5m

Features

- **Mobile read/write device with pistol handle for short operating ranges combined with 1D-/2D-codes**
- **Working frequency 868/915MHz**
- **Robust trigger button**
- **Easy to read and write data on transponders**
- **Suitable for industrial usage**
- **RS 232 interface or USB COM port emulation**
- **Functionality includes writing read 1D-/2D-code content to transponder**
- **Selectable display and data output (hex/ASCII)**
- **Simple feedback from the PLC on the display**
- **Function selection via keyboard or PLC**

MOBILE RFID READ/WRITE SYSTEM + BAR CODE READER

Part description Part no.	Description	Op. range [mm]	Transponder speed [m/s]	Interface	
RFID read/write system with bar code reader					
HFU 4500D 50113280	Combi read/write system for transponders (EPC1 Gen 2) and 1D-/2D-codes, 4 m connection cable with helix cable	max. 450 (RFID), 30 … 350 (1D), 10 … 150 (2D)	max. 0.1	RS 232	

Ergonomically shaped RFID/1D-/2D-code read/write system with integrated decoder. Data transmission via configurable RS 232 interface or by means of converter cable via USB interface.
Reliable transmission is only ensured with a clear field of view!

For a functional unit, an HFU 4500D read/write system as well as a power supply unit and corresponding connection cable must be ordered. Please order these items separately!

Accessories (selection)

More accessories can be found from **page 422** onwards

Part no.	Designation	Features
50110677	KB - RS232 - USB	RS232 - USB converter cable, length 1 m
50110676	NT Hx5x0	Power supply unit for HFU 4500D
50112257	TFU 05 2101.308	Industry transponder, 52 x 47 x 9 mm, 60 bytes user data
50114086	TFU 03 2201.308	Self-adhesive transponder, 34 x 54 mm, 60 bytes user data
50112443	TFU 10 2201.308	Self-adhesive transponder, 97 x 25 mm, 12 byte user data
50112913	TFU 08 2101.308	Card transponder, 86 x 54 x 1 mm, 60 bytes user data


RFI 32 Page 230 | RFM 12 Page 234 | RFM 32 Page 238 | RFM 62 Page 246 | RFU 61 Page 250 | RFU 81 Page 254 | HFM 3500 Page 260 | HFM 3520 Page 264 | HFU 4500 Page 268 | HFU 4520 Page 272 | TFI Page 276 | TFM Page 280 | TFU Page 288

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HFU 4500D

RFID read/write system

Features

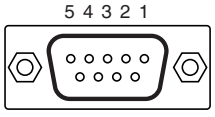
- Mobile read/write device with pistol handle for short operating ranges combined with 1D-/2D-codes
- Working frequency 868/915 MHz
- Robust trigger button
- Easy to read and write data on transponders
- Suitable for industrial usage
- RS 232 interface or USB COM port emulation
- Functionality includes writing read 1D-/2D-code content to transponder
- Selectable display and data output (hex/ASCII)
- Simple feedback from the PLC on the display
- Function selection via keyboard or PLC

CE | www.leuze.com | BARCODE | 2D-CODE



Electrical connection

HFU
RS 232 - female



PIN	Signal
2	TXD
3	RXD
5	GND
9	+ 5 V DC ext.
SH	Shield

USB Converter
USB Standard A

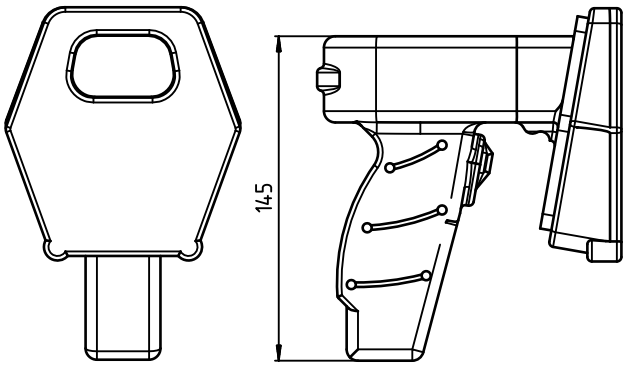


PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

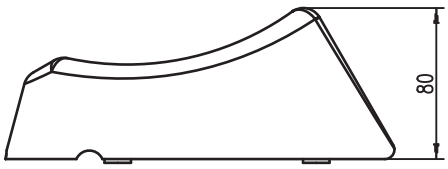
OVERVIEW

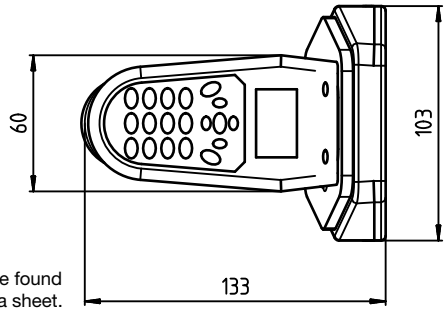
Dimensioned drawing

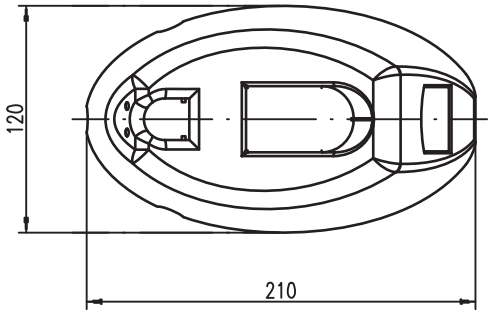
HFU 4520D



Base HX520







Further details can be found in the respective data sheet.

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RFM 32 Page 238


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RFU 61 Page 250


RFU 81 Page 254


HFM 3500 Page 260


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TFU Page 288

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MOBILE RFID READ/WRITE SYSTEM HFU 4520D

RFID read/write system with integrated 1D-/2D-code reader	Reading range ☐ = RFID, ☐ = 1D-/2D-codes	Page
HFU 4520D	0 … 450 mm 30 **1D** 350 mm 10 **2D** 150 mm	274



Common technical data

Electrical data	Operating voltage U_B	3.7VDC (3.7V batt., 1500mAh)
	Power consumption	max. 0.5W
Data interface	Type	RS 232, USB COM port emulation via HX520 Bluetooth® base station
	Range Bluetooth®	approx. 10m
Indicators	OLED	10 lines, 16 characters each
Operational controls	Key pad	19 buttons
Mechanical data	Housing	HFU: ABS, black/gray Base: ABS, black/gray
	Weight	HFU: approx. 225g
Environmental data	Ambient temp. (operation/storage)	0°C … +50°C / 0°C … +50°C
	Protection class	HFU + Base: IP 54
	Relative air humidity	5 … 90% (non-cond.)
	Drop height	1.5m

Features

- **Mobile read/write device with pistol handle for short operating ranges combined with 1D-/2D-codes**
- **Working frequency 868/915MHz**
- **Robust trigger button**
- **Easy to read and write data on transponders**
- **Suitable for industrial usage**
- **Transmission to HX520 base station via Bluetooth® standard V1.2, class 1**
- **Functionality includes writing read 1D-/2D-code content to transponder**
- **Selectable display and data output (hex/ASCII)**
- **Simple feedback from the PLC on the display**
- **Function selection via keyboard or PLC**

Bluetooth is a trademark owned by Bluetooth SIG, Inc., U.S.A. and licensed to the manufacturer

MOBILE RFID READ/WRITE SYSTEM + BAR CODE READER

Part description Part no.	Description	Op. range [mm]	Transponder speed [m/s]	Interface	
RFID read/write system with bar code reader					
HFU 4520D 50114138	Combi read/write system for transponders (EPC1 Gen 2) and 1D-/2D-codes, with Bluetooth®, incl. 1 Battery	max. 450 (RFID), 30 … 350 (1D), 10 … 150 (2D)	max. 0.1	Bluetooth®	

Ergonomically shaped RFID/1D-/2D-code read/write system with integrated decoder. Data transmission via configurable RS 232 interface or by means of converter cable via USB interface.
Reliable transmission is only ensured with a clear field of view!

For a functional unit, an HFU 4520D read/write system and a Base HX520 base station as well as a power supply unit and corresponding connection cable must be ordered. Please order these items separately!

Accessories (selection)

More accessories can be found from **page 422** onwards

Part no.	Designation	Features
50110672	Base HX520	Base station with Bluetooth for HFU 4520D
50110676	NT Hx5x0	Power supply unit for HFU 4500D/Base HX520
50111928	Battery HX520	3.7V battery, 1500mAh, for HFU 4520D
50110675	KB - RS232 - Base Hx520	Connection cable for RS232 - HX520 base station, length 2m
50110677	KB - RS232 - USB	RS232 - USB converter cable, length 1m
50112257	TFU 05 2101.308	Industry transponder, 52 x 47 x 9mm, 60 bytes user data
50114086	TFU 03 2201.308	Self-adhesive transponder, 34 x 54mm, 60 bytes user data
50112443	TFU 10 2201.308	Self-adhesive transponder, 97 x 25mm, 12 byte user data
50112913	TFU 08 2101.308	Card transponder, 86 x 54 x 1mm, 60 bytes user data


RFI 32 Page 230 | RFM 12 Page 234 | RFM 32 Page 238 | RFM 62 Page 246 | RFU 61 Page 250 | RFU 81 Page 254 | HFM 3500 Page 260 | HFM 3520 Page 264 | HFU 4500 Page 268 | HFU 4520 Page 272 | TFI Page 276 | TFM Page 280 | TFU Page 288

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HFU 4520D

RFID read/write system

Features

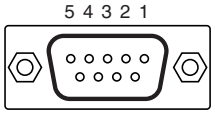
- Mobile read/write device with pistol handle for short operating ranges combined with 1D-/2D-codes
- Working frequency 868/915 MHz
- Robust trigger button
- Easy to read and write data on transponders
- Suitable for industrial usage
- Transmission to HX520 base station via Bluetooth® standard V1.2, class 1
- Functionality includes writing read 1D-/2D-code content to transponder
- Selectable display and data output (hex/ASCII)
- Simple feedback from the PLC on the display
- Function selection via keyboard or PLC

CE www.leuze.com BARCODE 2D-CODE



Electrical connection

HFU
RS 232 - female



PIN	Signal
2	TXD
3	RXD
5	GND
9	+ 5 V DC ext.
SH	Shield

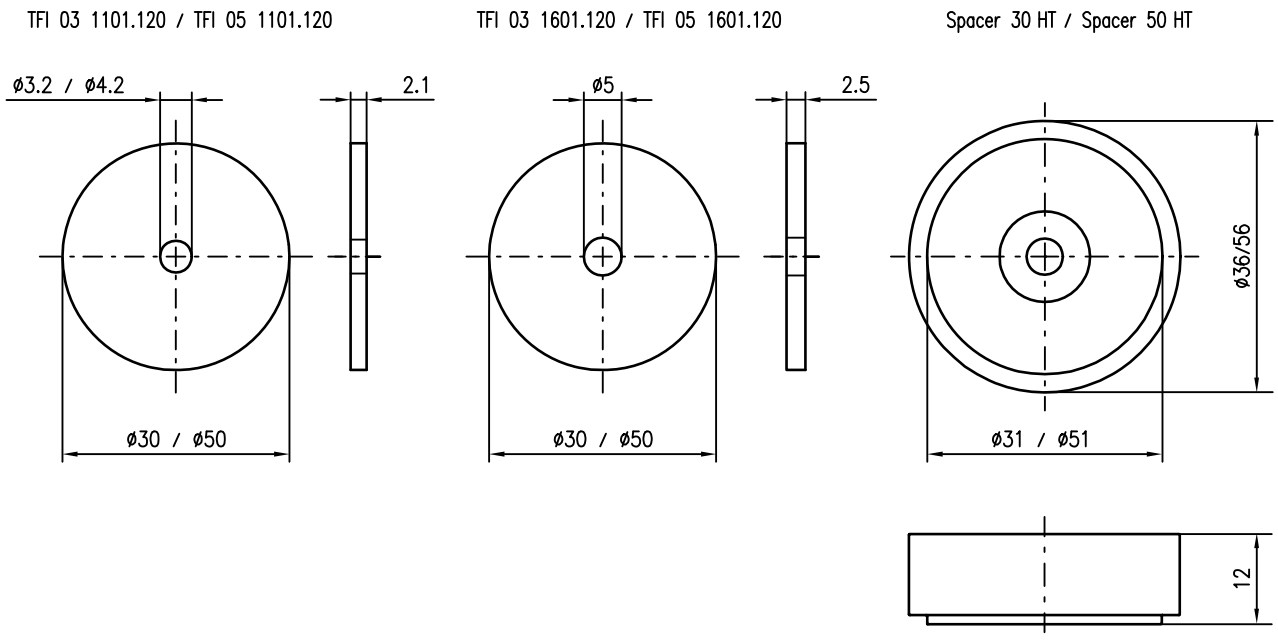
USB Converter
USB Standard A



PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

OVERVIEW

Dimensioned drawing



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RFID FIXCODE-TRANSPONDER TFI, 125 kHz

RFID fixcode transponder	Typ. read distance	Page
TFI 03 …	0 50 mm	278
TFI 05 …	0 80 mm	278



Common technical data

Electrical data	Working frequency	125 kHz
	Data protocol	EM4002
	User data	32 bit
	Memory structure	1 block
	Memory access	read only
Mechanical data	Material	PC, black, partially printed
	Weight	2.8 g … 4.5 g
Environmental data	Ambient temp. (operation/storage)	disc transponder: -20 °C … +70 °C / -40 °C … +90 °C HT disc transponder: -20 °C … +85 °C / -20 °C … +200 °C spacer: -40 °C … +220 °C / -40 °C … +220 °C
	Protection class	IP 67

Features

- **Suitable for read-write units of the RFI … L120 series**
- **Low-price disc transponder with fixcode (World TAG)**
- **High-temperature disc transponder with fixcode for temperatures up to 200 °C**
- **12 mm thick spacer for disc transponder Ø 30 mm and Ø 50 mm**

RFID TRANSPONDER, 125 kHz WORKING FREQUENCY

Part description Part no.	Description (Ambient temp. operation/storage [°C])	Protection class	Weight/ Material	Memory size/ User data	
RFID fixcode disc transponder, up to 90 °C					
TFI 03 1101.120 50032396	Disc transponder, Ø 30 x 2.1 mm [1], 32 bit fixcode, (-20 … +70 / -40 … +90)	IP 67	2.8 g / PC	64 bit / 32 bit	
TFI 05 1101.120 50032395	Disc transponder, Ø 50 x 2.1 mm [1], 32 bit fixcode, (-20 … +70 / -40 … +90)	IP 67	4.0 g / PC	64 bit / 32 bit	
RFID fixcode high-temperature disc transponder, up to 200 °C					
TFI 03 1601.120 50039070	High-temperature disc transponder, Ø 30 x 2 mm [1], 32 bit fixcode, (-20 … +85 / -10 … +125/+200 [2])	IP 67	3.5 g / PPS	64 bit / 32 bit	
TFI 05 1601.120 50039069	High-temperature disc transponder, Ø 50 x 2 mm [1], 32 bit fixcode, (-20 … +85 / -10 … +125/+200 [2])	IP 67	4.5 g / PPS	64 bit / 32 bit	
Spacer for RFID disc transponder up to 200 °C					
Spacer 30 HT 50107102	Spacer for disc transponder, Ø 36 x 12 mm [1] (– / -25 … +220)	–	3 g / Ultramid	–	
Spacer 50 HT 50107103	Spacer for disc transponder, Ø 56 x 12 mm [1] (– / -25 … +220)	–	4 g / Ultramid	–	
BT TFM x26 50110631	Mounting kit 60 mm, aluminum, for high-temperature disk transponder	–	50 g / Aluminum	–	

1) Dimensions (subject to tolerances (± 0.5 mm))
2) Time limited

The read-only transponders TFI 03 1101.120 and TFI 05 1101.120 are low-price data carriers with fixcode for identification applications in industrial environments.
The high temperature transponders TFI 03 1601.120 and TFI 05 1601.120 are data carriers with fixcode for high temperatures up to 200 °C.

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TFI ...

RFID fixcode transponder

Features

- Suitable for read-write units of the RFI ... L120 series
- Low-price disc transponder with fixcode (World TAG)
- High-temperature disc transponder with fixcode for temperatures up to 200 °C
- 12 mm thick spacer for disc transponder Ø 30mm and Ø 50mm

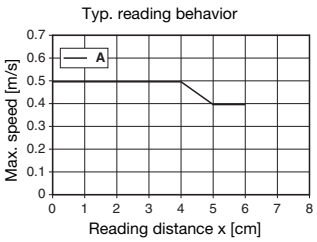


Electrical connection

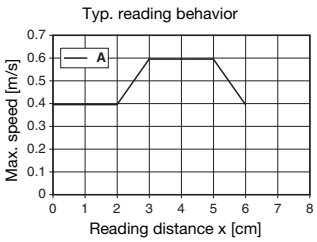
Reading behavior

With RFI 32 L 120

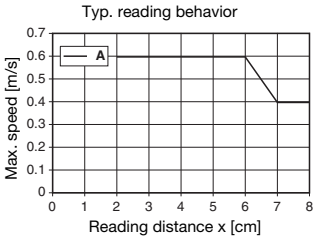
TFI 03 1101.120



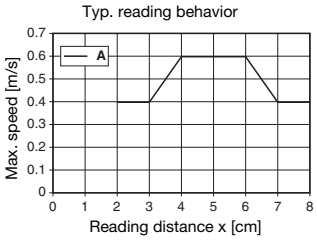
TFI 03 1601.120



TFI 05 1101.120



TFI 05 1601.120



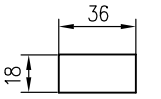
A With reading unit RFI 32 L 120

The specified values may deviate as a result of influences from temperature, installation site, read angle, etc.

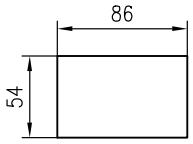
OVERVIEW

Dimensioned drawing

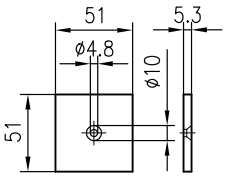
TFM 02 2210.210



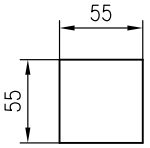
TFM 08 2125.220



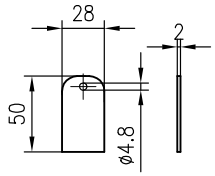
TFM 05 2610.210



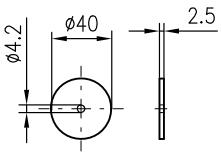
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TFM 06 2225.220



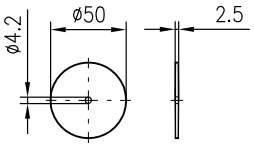
TFM 03 5125.220



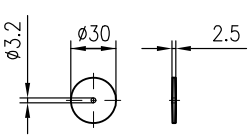
TFM 04 1190.230



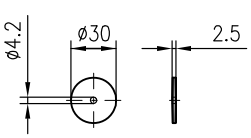
TFM 05 1110.210
TFM 05 1510.210



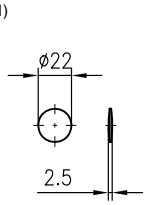
TFM 03 1110.210



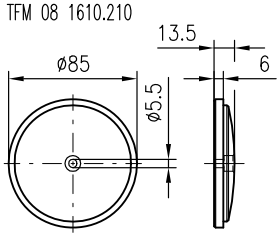
TFM 03 1510.210



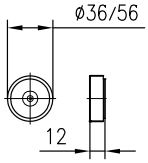
TFM 02 1125.220 1)



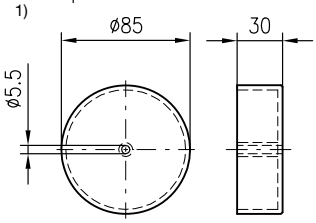
TFM 08 1610.210



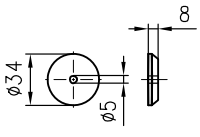
Spacer 30 HT / Spacer 50 HT



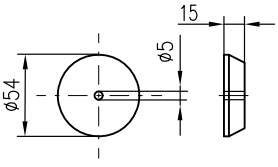
Spacer 85 HT 1)



TFM 03 1110.EX



TFM 05 1110.EX
TFM 05 1510.EX



1) Parts being discontinued

RFI 32 Page 230 | RFM 12 Page 234 | RFM 32 Page 238 | RFM 62 Page 246 | RFU 61 Page 250 | RFU 81 Page 254 | HFM 3500 Page 260 | HFM 3520 Page 264 | HFU 4500 Page 268 | HFU 4520 Page 272 | TFI Page 276 | TFM Page 280 | TFU Page 288

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RFID READ/WRITE-TRANSPONDER TFM, 13.56 MHz

RFID transponder	Typ. scanning area	Page
TFM 02…	10 50 mm [1]	282
TFM 03…	10 150 mm [1]	282
TFM 05…	20 300 mm [1]	282
TFM 08…	50 500 mm [1]	284

1) Dependent on reader



Common technical data

Electrical data	Working frequency	13.56 MHz
	Memory size	112/256/1024 Byte [2]
	Block size	4 / 8 Byte
	Memory access	read/write, typ. 50 ms/block, min. 10^5 write processes
Mechanical data	Material	various, partially printed
	Weight	2 g … 50 g
Environmental data	Ambient temp. (operation/storage)	see page 282/284/286
	Protection class	see page 282/284/286

2) Other memory sizes on request

Features

- **Suitable for read-write units of the RFM…/HFM… series**
- **Universal robust disk transponders for industrial environments (ISO 15693)**
- **Self-adhesive smart-label transponder - economical and easy to use**
- **High temperature-proof transponders up to 220 °C**
- **Practical keyring transponder for use as a tag or for personal access control**
- **12 mm thick spacer for disc transponder Ø 30 mm and Ø 50 mm up to 220 °C**
- **30 mm thick spacer for high-temperature disc transponder Ø 85 mm**
- **Special transponders on request**

RFID TRANSPONDER, 13.56 MHz WORKING FREQUENCY

Part description Part no.	Description (Ambient temp. operation/storage [°C])	Protection class	Weight / Material	Memory size (Chip)
RF disc transponder				
TFM 02 1125.220 50102915	Disc transponder, Ø 22 x 2.5 mm [1] (-25 … +85 / -40 … +85/+120 [2])	IP 68	2 g / PPS	256 Byte (Tag-IT HFI)
TFM 03 1110.210 50102917	Disc transponder, Ø 30 x 2.5 mm [1] (-25 … +85 / -40 … +120)	IP 66	15 g / Epoxy	112 Byte (I-Code 2 SLI)
TFM 03 1510.210 50106412	Disc transponder, Ø 30 x 2.5 mm [1] (-25 … +85 / -40 … +85/+140 [2])	IP 68	3 g / PA	112 Byte (I-Code 2 SLI)
TFM 03 1910.219 50114960	Laminated disc transponder, Ø 30 x 1.5 mm [1] (-25 … +70 / -25 … +70)	IP 54	2 g / PET	112 Byte (I-Code 2 SLI)
TFM 04 1190.230 50108290	Disc transponder, Ø 40 x 2.5 mm [1] (-25 … +85 / -40 … +120)	IP 67	3 g / Epoxy	1024 Byte (Infineon 10P)
TFM 05 1110.210 50102916	Disc transponder, Ø 50 x 2.5 mm [1] (-25 … +85 / -40 … +120)	IP 66	15 g / Epoxy	112 Byte (I-Code 2 SLI)
TFM 05 1510.210 50106413	Disc transponder, Ø 50 x 2.5 mm [1] (-25 … +85 / -40 … +85/+140 [2])	IP 68	3 g / PA	112 Byte (I-Code 2 SLI)
TFM 05 1910.219 50114961	Laminated disc transponder, Ø 50 x 1.5 mm [1] (-25 … +70 / -25 … +70)	IP 54	3 g / PET	112 Byte (I-Code 2 SLI)
TFM 08 1110.210 50117412	Disc transponder, Ø 85 x 3 mm [1] (-25 … +85 / -40 … +120)	IP 66	15 g / Epoxy	112 Byte (I-Code 2 SLI)
RF self-adhesive transponder				
TFM 02 2210.210 50107790	Self-adhesive transponder, 18 x 36 mm (-20 … +50 / -20 … +70)	IP 54	2 g / PET	112 Byte (I-Code 2 SLI)
TFM 05 2210.210 50109232	Self-adhesive transponder, 55 x 55 mm (-20 … +50 / -20 … +70)	IP 54	2 g / PET	112 Byte (I-Code 2 SLI)

1) Dimensions (subject to tolerances (± 0.5 mm))
2) Time limited

The read/write transponders of series TFM are robust disk data carriers with 1024 bytes of memory for a large range of applications in industry. The specified operating ranges may vary depending on the type of read-write unit selected. If a larger operating range is required, a read/write device with a larger antenna or larger dimensions must be selected.


RFI 32 Page 230

RFM 12 Page 234

RFM 32 Page 238

RFM 62 Page 246

RFU 61 Page 250

RFU 81 Page 254

HFM 3500 Page 260

HFM 3520 Page 264

HFU 4500 Page 268

HFU 4520 Page 272

TFI Page 276

TFM Page 280

TFU Page 288

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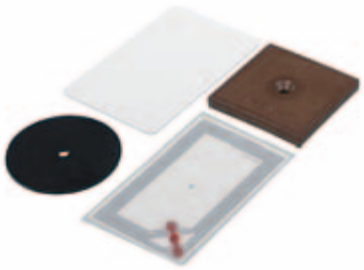
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TFM ...

Read/write transponder

Features

- Suitable for read-write units of the RFM.../HFM... series
- Universal robust disk transponders for industrial environments
- Self-adhesive smart-label transponder - economical and easy to use
- 12 mm thick spacer for disc transponder Ø 30mm and Ø 50mm (see following pages)

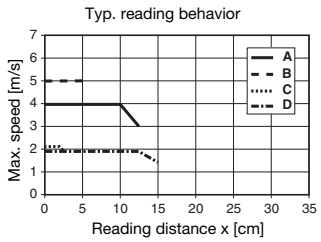


Electrical connection

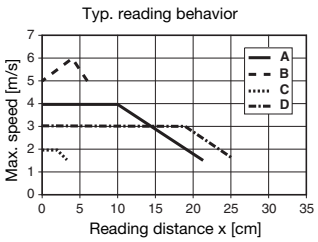
Reading behavior

TFM 02 / 03 / 05 / 08

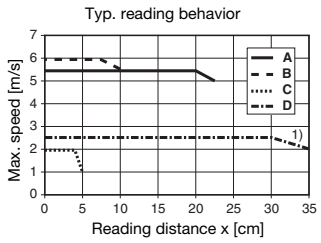
TFM 02...



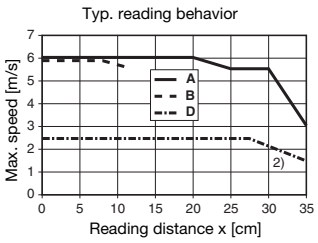
TFM 03...



TFM 05...



TFM 08...



A With RFM 62 read/write unit
B With RFM 32 read/write unit
C With RFM 12 read/write unit
D With RFM 82/AFM read/write unit

The specified values may deviate as a result of influences from temperature, installation site, read angle, etc.

RFID TRANSPONDER, 13.56 MHz WORKING FREQUENCY

Part description Part no.	Description (Ambient temp. operation/storage [°C])	Protection class	Weight / Material	Memory size (Chip)	
RFID high temperature transponder					
TFM 08 1610.210 50114962	High temperature transponder, Ø 85 x 13.5 mm (-25 … +100 / -25 … +140/+220 [1])	IP 68	50 g / PPS	112 Byte (I-Code 2 SLI)	
RFID keyring transponder					
TFM 03 5125.220 50102956	Keyring transponder, 50 x 28 x 2.0 mm (0 … +50 / -20 … +50)	IP 54	4 g / PVC	256 Byte (Tag-IT HFI)	
RFID card transponder					
TFM 08 2125.220 50109233	Card transponder, 54 x 86 x 0.8 mm (-20 … +70 / -20 … +85)	IP 68	5 g / PVC	256 Byte (Tag-IT HFI)	
Spacer for RFID disc transponder up to 210 °C					
Spacer 30 HT 50107102	Spacer for disc transponder TFM 03 1…, Ø 36 x 12 mm (– / -25 … +220)	–	3 g / Ultramid	–	
Spacer 50 HT 50107103	Spacer for disc transponder TFM 05 1…, Ø 56 x 12 mm (– / -25 … +220)	–	4 g / Ultramid	–	
Spacer 85 HT 50106411	Spacer for HT-transponder TFM 08 1…, Ø 85 x 30 mm (– / -25 … +210)	–	20 g / PPS	–	
BT TFM x26 50110631	Mounting kit 60 mm, for high-temperature disk transponder	–	50 g / Aluminum	–	

1) Time limited

The read/write transponders of series TFM are robust disk data carriers with 256 bytes of memory for a large range of applications in industry. The specified operating ranges may vary depending on the type of read-write unit selected. If a larger operating range is required, a read/write device with a larger antenna or larger dimensions must be selected.

We reserve the right to make changes • TFM_2_EN.fm


RFI 32 Page 230


RFM 12 Page 234


RFM 32 Page 238


RFM 62 Page 246


RFU 61 Page 250


RFU 81 Page 254


HFM 3500 Page 260


HFM 3520 Page 264


HFU 4500 Page 268


HFU 4520 Page 272


TFI Page 276


TFM Page 280


TFU Page 288

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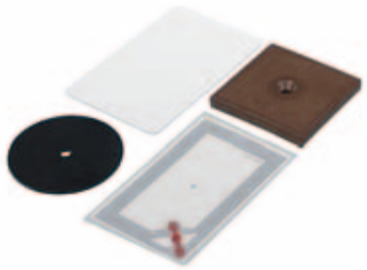
TFM ...

Read/write transponder

Features

- Suitable for read-write units of the RFM.../HFM... series
- Universal robust disk transponders for industrial environments
- High temperature-proof transponders up to 220 °C
- Practical keyring transponder for use as a tag or for personal access control
- 12 mm thick spacer for disc transponder Ø 30 mm and Ø 50 mm up to 220 °C
- 30 mm thick spacer for high-temperature disc transponder Ø 85 mm
- Special transponders on request

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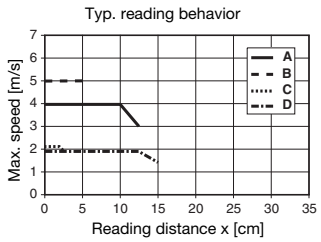


Electrical connection

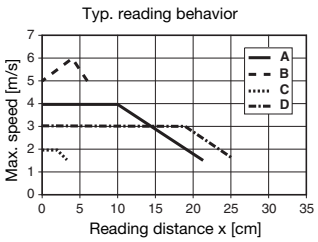
Reading behavior

TFM 02 / 03 / 05 / 08

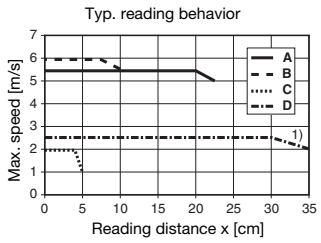
TFM 02...



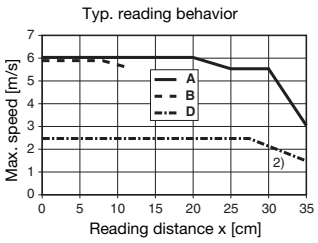
TFM 03...



TFM 05...



TFM 08...



A With RFM 62 read/write unit
B With RFM 32 read/write unit
C With RFM 12 read/write unit
D With RFM 82/AFM read/write unit

The specified values may deviate as a result of influences from temperature, installation site, read angle, etc.

RFID Ex-TRANSPONDER, 13.56 MHz WORKING FREQ.

Part description Part no.	Description (Ambient temp. operation/storage [°C])	Protection class	Weight / Material	Memory size (Chip)	
RFID disc transponder for Ex Zone 2/Zone 22					
TFM 03 1110.Ex 50108071	Disc transponder with ATEX 2 approval, Ø 34 x 8 mm (-25 … +60 / -40 … +85)	IP 67	10 g / PU	112 Byte (I-Code 2 SLI)	
TFM 05 1110.Ex 50108070	Disc transponder with ATEX 2 approval, Ø 54 x 15 mm (-25 … +60 / -40 … +85)	IP 67	50 g / PU	112 Byte (I-Code 2 SLI)	
TFM 05 1510.Ex 50110026	Disc transponder with ATEX 2 approval, Ø 54 x 15 mm (-25 … +60 / -40 … +120)	IP 67	50 g / PU	112 Byte (I-Code 2 SLI)	

The read/write transponders of series TFM are robust disk data carriers with 256 bytes of memory for a large range of applications in industry. The specified operating ranges may vary depending on the type of read-write unit selected. If a larger operating range is required, a read/write device with a larger antenna or larger dimensions must be selected.

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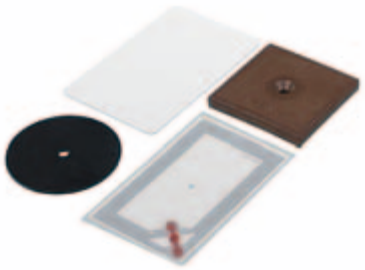
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TFM ... Ex

Read/write transponder

Features

- Approved for use in Ex Zone 2/Zone 22
- Suitable for RFM 32 SL 200 Ex n read/write device
- Universal robust disk transponders for industrial environments
- Other transponders on request



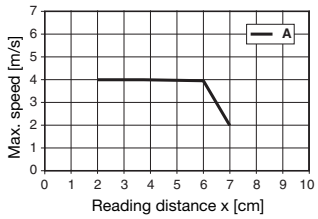
Electrical connection

Reading behavior

TFM 03 / 05 ... Ex

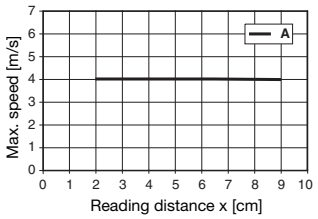
TFM 03 ... Ex

Typ. reading behavior



TFM 05 ... Ex

Typ. reading behavior



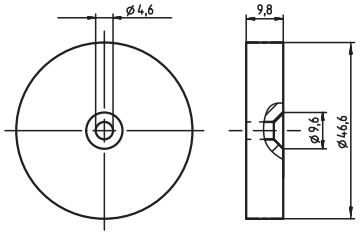
A With RFM 32 SL 200 Ex n reading unit

The specified values may deviate as a result of influences from temperature, installation site, read angle, etc.

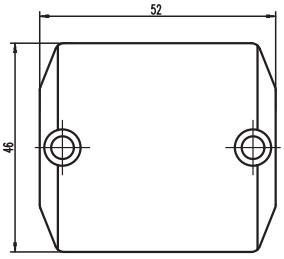
OVERVIEW

Dimensioned drawing

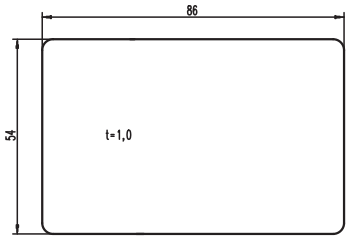
TFU 05 1101.308



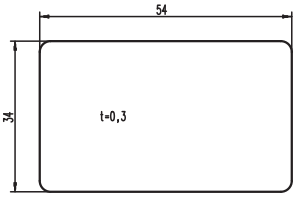
TFU 05 2101.308



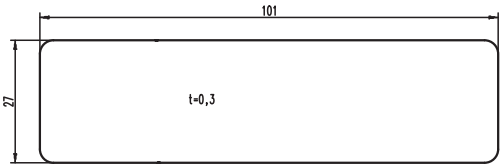
TFU 08 2101.308



TFU 03 2201.308



TFU 10 2201.308



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RFID READ/WRITE-TRANSPONDER TFU, 868/915 MHz

RFID UHF transponder	Typ. scanning area	Page
TFU 03 ...	0 1000/4000 mm [1]	290
TFU 05 ...	0 1500/3000 mm [1]	290
TFU 08 ...	0 600/1700 mm [1]	290
TFU 10 ...	0 1500/5000 mm [1]	290

1) Dependent on reader



Common technical data

Electrical data	Working frequency	868/915 MHz
	Data protocol	EPC 1 Gen 2
	User data	12 bytes/60 bytes
	Memory structure	6 ... 12 blocks with 2 bytes each
	Memory access	write/read
Mechanical data	Material	TFU 05: Plastic (PU) TFU 03/10: Paper/foil TFU 08: Plastic (PPS)
	Weight	5 g ... 30 g

1) Time limited

Features

- **Suitable for read-write units of the RFU.../HFU... series**
- **Industry transponder for temperatures up to 125 °C**
- **Other transponders in preparation**
- **Special transponders on request**

UHF RFID TRANSPONDER, 868/915 MHz WORKING FREQUENCY

Part description Part no.	Description (Ambient temp. operation/storage [°C])	Protection class	Weight / Material	Memory size	
RF disc transponder					
TFU 03 2201.308 50114086	Label transponder, 54 x 34 x 0.3 mm [1] (-20 … +50 / -20 … +70)	IP 54	3 g / paper/foil	60 bytes (480 bits)	
TFU 05 1101.308 50114995	Disc transponder, Ø 47 x 10 mm [1] (-25 … +85 / -40 … +120)	IP 67	30 g / plastic	12 bytes (96 bits)	
TFU 05 2101.308 50112257	On-Metal transponder, 47 x 52 x 9 mm [1] (-25 … +65 / -40 … +125 [2])	IP 68	30 g / plastic	12 bytes (96 bits)	
TFU 08 2101.308 50112913	Card transponder, 86 x 54 x 1 mm [1] (-20 … +50 / -20 … +85)	IP 68	20 g / plastic	60 bytes (480 bits)	
TFU 10 2201.308 50112443	Label transponder, 97 x 27 x 0.3 mm [1] (-20 … +50 / -20 … +70)	IP 54	3 g / paper/foil	12 bytes (96 bits)	

1) Dimensions (subject to tolerances (± 0.5 mm))
2) Time limited

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TFU ...

Read/write transponder

Features

- Suitable for read-write units of the RFU.../HFU... series
- Economical label transponder
- Industry transponder for temperatures up to +125°C



Recommended maximum read/write distances

Transponder	Part no.	Read/write device ERP transmitting power (effective radiated power)			
		RFU 61 / 0.1W	RFU 61 / 0.3W	RFU 81 / 1.0W	RFU 81 / 2.0W
TFU 03 2201.308	50114086	**380mm** max. 550mm	**850mm** max. 1000mm	**850mm** max. 1000mm	– [1]
TFU 05 1101.308	50114995	**380mm** max. 550mm	**850mm** max. 1000mm	**850mm** max. 1000mm	– [1]
TFU 05 2101.308	50112257	**180mm** max. 200mm	**350mm** max. 400mm	**600mm** max. 700mm	**1000mm** max. 1200mm
TFU 05 2101.308 on metal		**350mm** max. 400mm	**550mm** max. 700mm	**1300mm** max. 1500mm	**1700mm** max. 2000mm
TFU 08 2101.308	50112913	**180mm** max. 200mm	**500mm** max. 600mm	**750mm** max. 1200mm	**1200mm** max. 1700mm
TFU 10 2201.308	50112443	**680mm** max. 750mm	**1500mm** max. 1600mm	**1500mm** max. 2200mm	**3000mm** max. 4000mm

1) No function

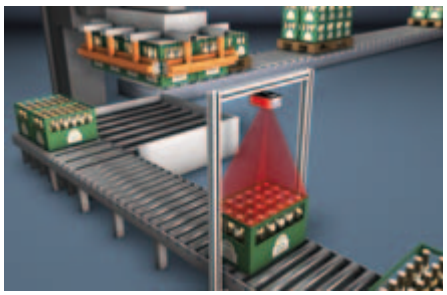
The specified values may deviate as a result of influences from temperature, installation site, read angle, etc.

The reading field of the UHF device is a cone with various opening angles between 65° ... 120° (cf. data sheet for the reader)

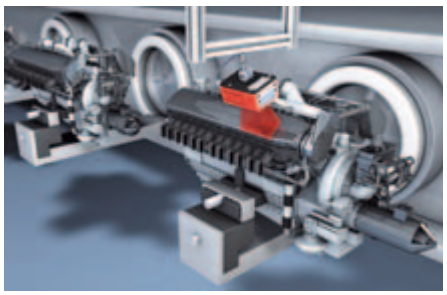
Reflections may result in overshooting. Align the reader so that the transponder is always moved in the cone of the reader. Multiple readings can only be excluded if the transponders are clearly separated from one another (sufficient spacing between the transponders).

UHF transponders do not have an unchangeable identifier.

OVERVIEW



Completeness inspection



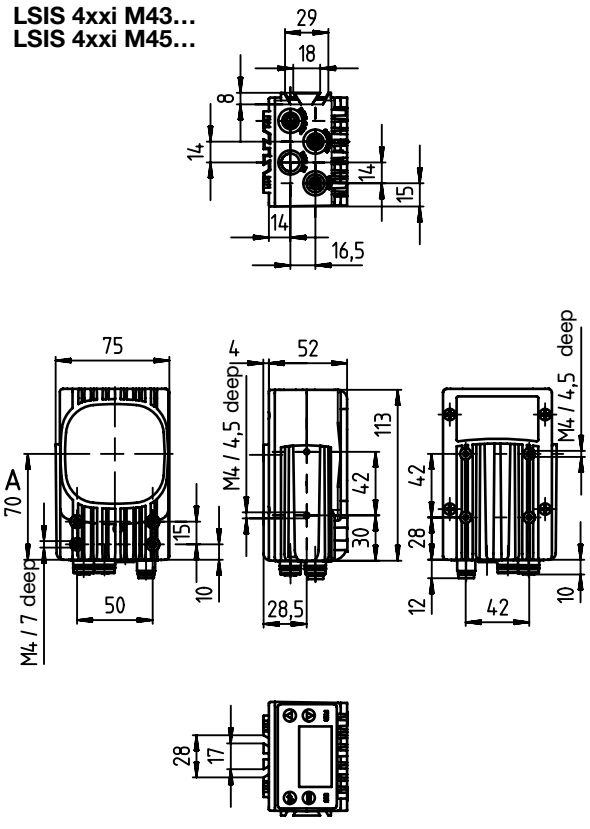
Reading dot-peened Data Matrix codes



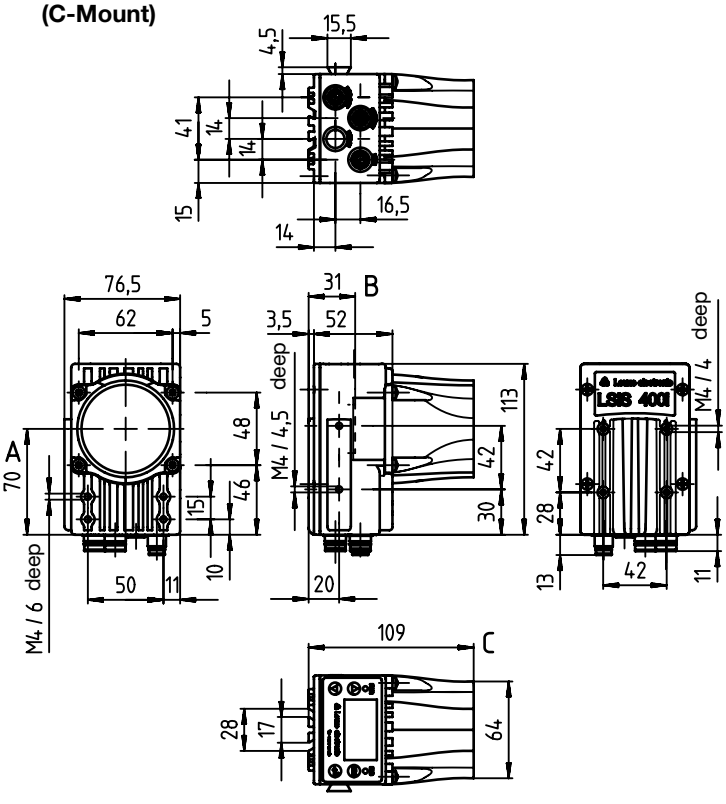
Measurement of radii and roundness

Dimensioned drawing

LSIS 4xxi M43…
LSIS 4xxi M45…



LSIS 4xxi M49…
(C-Mount)



A Optical axis
B C-Mount level
C Front edge of camera



LSIS 4xxi
Page 292

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Smart camera LSIS 4xx*i*

LSIS 4xx*i* smart camera - different models suitable for various applications, on both static as well as quickly moving objects.
Monochromatic camera chip with WVGA resolution (752 x 480 pixels), integrated LED illumination[1)] (white, infrared or RGBW), digitally controlled, motor-driven focus adjustment[1)], fast setup of tests by means of configurable, integrated **webConfig** software via standard web browser and much more.

Camera type	Software	Page
LSIS 412*i* ...	Blob analysis	294
LSIS 422*i* ...	Code reading	198
LSIS 462*i* ...	General purpose (incl. measuring tool)	298

1) Only for LSIS 4x2i M43 or M45 camera types. Camera type LSIS 4x2i M49 (C-Mount model) is delivered without motor-driven focus adjustment and without integrated illumination.



Common technical data

Electrical data	Operating voltage U_B	18 ... 30VDC
	Power consumption	≤ 10W (C-Mount: ≤ 8W)
	Process interface	RS 232 + Ethernet
	Service interface	Ethernet 10/100Mbit/s
	Sw. inputs/outputs	8, configurable
Optical data	Image sensor	Global shutter CMOS
	Number of pixels	752 x 480
	Electronic shutter speeds	54µs ... 20ms
	Focal length	8mm / 16mm / C-Mount
	Object distance	50mm...∞ / 75mm...∞ / dependent on lens
Mechanical data	Housing	diecast aluminum
	Weight	500g
Environmental data	Ambient temp. (operation/storage)	0°C ... +45°C / -20°C ... +70°C
	Protection class	IP 65 / IP 67
	Air humidity	0 ... 90% non-cond.
	LED illumination	Risk group 1 acc. to EN 62471

Features

- **Convenient configuration with standard web browser**
- **Homogeneous illumination of the entire image field for considerably better results [1)]**
- **Convenient commissioning and connection with M12 connection technology and intelligent fastening concept**
- **Integrated connectivity: Ethernet interface, process-data exchange via Ethernet, RS 232 interface and 8 digital, configurable inputs and outputs**
- **Suitable for industrial use: metal housing with glass window and protection class IP 65/IP 67**
- **Flexibility through motor-driven focus adjustment and storage of the lot-specific camera distance in the check program [1)]**
- **Simple diagnostics through multi-lingual display (5 languages) with buttons and LED status displays**

SMART CAMERA

Part description Part no.	Description	Focal length [mm]	Housing window	LED illumination	Interface	
Smart camera (Blob analysis)	**Test for presence, completeness, type, position and angle; with integrated focus adjustment and illumination**					
LSIS 412i M43 - W1 50108177		8	glass	white	Ethernet / RS 232	
LSIS 412i M43 - W1 - 01 50112928		8	plastic	white	Ethernet / RS 232	
LSIS 412i M43 - I1 50116970		8	glass	infrared	Ethernet / RS 232	
LSIS 412i M43 - I1 - 01 50116969		8	plastic	infrared	Ethernet / RS 232	
LSIS 412i M43 - M1 50116972		8	glass	RGBW	Ethernet / RS 232	
LSIS 412i M43 - M1 - 01 50116971		8	plastic	RGBW	Ethernet / RS 232	
LSIS 412i M45 - W1 50108990		16	glass	white	Ethernet / RS 232	
LSIS 412i M45 - W1 - 01 50112929		16	plastic	white	Ethernet / RS 232	
LSIS 412i M45 - I1 50116974		16	glass	infrared	Ethernet / RS 232	
LSIS 412i M45 - I1 - 01 50116973		16	plastic	infrared	Ethernet / RS 232	
LSIS 412i M45 - M1 50116976		16	glass	RGBW	Ethernet / RS 232	
LSIS 412i M45 - M1 - 01 50116975		16	plastic	RGBW	Ethernet / RS 232	



LSIS 4xx*i*
Page 292

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LSIS 412*i*

Smart camera

LSIS 412*i* software features (blob analysis)

- Test for presence, completeness, type, position and angle
- Teach button for teaching-in objects (software)
- Optional automatic tracking of the segmentation threshold in the case of changing light conditions[1)]
- Any number of inspection windows
- Position and rotational compensation (360°)
- Working ranges: rectangle, ellipse or polygon
- Image memory for process-, error- and reference images
- Image preprocessing functions, such as smoothing and filtering
- Manual program selection via Ethernet, serial interface, digital inputs or display
- Graphical adjustment of process interfaces (Ethernet, serial interface, configurable digital I/Os, process visualization, display, FTP transfer and log file)
- Statistical data real-time clock for date and time stamp
- User management with password protection
- Device diagnostics

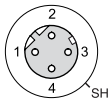
www.leuze.com

1) Only for LSIS 4x2i M43 or M45 camera types. Camera type LSIS 4x2i M49 (C-Mount model) is delivered without motor-driven focus adjustment and without integrated illumination.



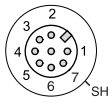
Electrical connection

SERVICE - female, D-cod.



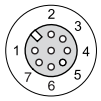
PIN	Signal	Colour
1	TD+	ge / YE
2	RD+	ws / WH
3	TD-	or / OG
4	RD-	bl / BU
SH	FE	

PWR - male, A-cod.



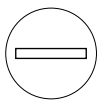
PIN	Signal	Colour
1	VIN	br / BN
2	IO1	ws / WH
3	GND	bl / BU
4	IO2	sw / BK
5	IO3	gr / GY
6	IO4	rs / PK
7	NC	vi / VT
8	FE	or / OG
SH	FE	

BUS OUT - female, A-cod.



PIN	Signal	Colour
1	IO5	ws / WH
2	IO6	br / BN
3	GND	gn / GN
4	IO7	ge / YE
5	IO8	gr / GY
6	Rx	rs / PK
7	Tx	bl / BU
8	FE	rt / RD
SH	FE	

BUS IN



Fast configuration directly via the webConfig tool integrated in the smart camera.

Accessories starting from page 300.
Size of the image field as a function of the object distance, see page 301.

SMART CAMERA

Part description Part no.	Description	Focal length [mm]	Housing window	LED illumination	Interface	
Smart camera (Blob analysis)	**C-Mount model; test for presence, completeness, type, position and angle; with integrated focus adjustment and without illumination**					
LSIS 412i M49 - X9 50117094		dependent on lens	glass	–	Ethernet / RS 232	
LSIS 412i M49 - X9 - 01 50121148		dependent on lens	plastic	–	Ethernet / RS 232	

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LSIS 4xx*i*
Page 292

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LSIS 412*i*

Smart camera

LSIS 412*i* software features (blob analysis)

- Test for presence, completeness, type, position and angle
- Teach button for teaching-in objects (software)
- Optional automatic tracking of the segmentation threshold in the case of changing light conditions[1)]
- Any number of inspection windows
- Position and rotational compensation (360°)
- Working ranges: rectangle, ellipse or polygon
- Image memory for process-, error- and reference images
- Image preprocessing functions, such as smoothing and filtering
- Manual program selection via Ethernet, serial interface, digital inputs or display
- Graphical adjustment of process interfaces (Ethernet, serial interface, configurable digital I/Os, process visualization, display, FTP transfer and log file)
- Statistical data real-time clock for date and time stamp
- User management with password protection
- Device diagnostics

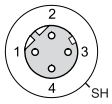
www.leuze.com

1) Only for LSIS 4x2i M43 or M45 camera types. Camera type LSIS 4x2i M49 (C-Mount model) is delivered without motor-driven focus adjustment and without integrated illumination.



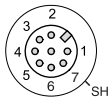
Electrical connection

SERVICE - female, D-cod.



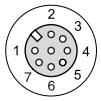
PIN	Signal	Colour
1	TD+	ge / YE
2	RD+	ws / WH
3	TD-	or / OG
4	RD-	bl / BU
SH	FE	

PWR - male, A-cod.



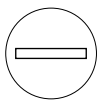
PIN	Signal	Colour
1	VIN	br / BN
2	IO1	ws / WH
3	GND	bl / BU
4	IO2	sw / BK
5	IO3	gr / GY
6	IO4	rs / PK
7	NC	vi / VT
8	FE	or / OG
SH	FE	

BUS OUT - female, A-cod.



PIN	Signal	Colour
1	IO5	ws / WH
2	IO6	br / BN
3	GND	gn / GN
4	IO7	ge / YE
5	IO8	gr / GY
6	Rx	rs / PK
7	Tx	bl / BU
8	FE	rt / RD
SH	FE	

BUS IN



Fast configuration directly via the webConfig tool integrated in the smart camera.

Accessories starting from page 300.
Size of the image field as a function of the object distance, see page 301.

SMART CAMERA

Part description Part no.	Description	Focal length [mm]	Housing window	LED illumination	Interface	
Smart camera (general purpose)	**Blob analysis, code reading and measuring tool; with integrated focus adjustment and illumination**					
LSIS 462i M43 - W1 50113053		8	glass	white	Ethernet / RS 232	
LSIS 462i M43 - W1 - 01 50113052		8	plastic	white	Ethernet / RS 232	
LSIS 462i M43 - I1 50116986		8	glass	infrared	Ethernet / RS 232	
LSIS 462i M43 - I1 - 01 50116985		8	plastic	infrared	Ethernet / RS 232	
LSIS 462i M43 - M1 50116988		8	glass	RGBW	Ethernet / RS 232	
LSIS 462i M43 - M1 - 01 50116987		8	plastic	RGBW	Ethernet / RS 232	
LSIS 462i M45 - W1 50113051		16	glass	white	Ethernet / RS 232	
LSIS 462i M45 - W1 - 01 50113037		16	plastic	white	Ethernet / RS 232	
LSIS 462i M45 - I1 50116990		16	glass	infrared	Ethernet / RS 232	
LSIS 462i M45 - I1 - 01 50116989		16	plastic	infrared	Ethernet / RS 232	
LSIS 462i M45 - M1 50116992		16	glass	RGBW	Ethernet / RS 232	
LSIS 462i M45 - M1 - 01 50116991		16	plastic	RGBW	Ethernet / RS 232	
Smart camera (general purpose)	**C-Mount model; blob analysis, code reading and measuring tool; with integrated focus adjustment and without integrated illumination**					
LSIS 462i M49 - X9 50117091		dependent on lens	glass	–	Ethernet / RS 232	



LSIS 4xx*i*
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LSIS 462*i*

Smart camera

LSIS 462*i* software features (general purpose system)

Features like with the LSIS 412*i* (see page 295) and the LSIS 422*i* (see page 201), but each also with the measuring tool:

- Sensing of point, line and circle; slide gauge function
- Various image filters
- Repositioning and calibration
- Determination of number and position of edges (X, Y)
- Measurement of X-/Y-coordinates and line angle
- Determination of radius (min., max.) and roundness
- Defect detection (line, circle)
- Distance measurement (minimum, maximum; vectoral; vertical)
- Detection of intersection point (X-/Y-coordinates) and intersection angle

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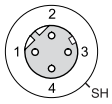


Fast configuration directly via the webConfig tool integrated in the smart camera.

Accessories starting from page 300.
Size of the image field as a function of the object distance, see page 301.

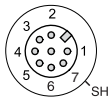
Electrical connection

SERVICE - female, D-cod.



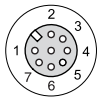
PIN	Signal	Colour
1	TD+	ge / YE
2	RD+	ws / WH
3	TD-	or / OG
4	RD-	bl / BU
SH	FE	

PWR - male, A-cod.



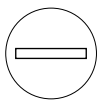
PIN	Signal	Colour
1	VIN	br / BN
2	IO1	ws / WH
3	GND	bl / BU
4	IO2	sw / BK
5	IO3	gr / GY
6	IO4	rs / PK
7	NC	vi / VT
8	FE	or / OG
SH	FE	

BUS OUT - female, A-cod.



PIN	Signal	Colour
1	IO5	ws / WH
2	IO6	br / BN
3	GND	gn / GN
4	IO7	ge / YE
5	IO8	gr / GY
6	Rx	rs / PK
7	Tx	bl / BU
8	FE	rt / RD
SH	FE	

BUS IN



SMART CAMERA - ACCESSORIES

Accessories / connection cables More accessories can be found from **page 423** onwards

Part no.	Designation	Features
see P.	KB M12/8-…-BA	Connection cable POWER-IO-DATA, M12 axial socket, for PWR, see p. 427
see P.	KB M12/8-…-SA	Connection cable POWER-IO-DATA, M12 axial plug, for BUS OUT, see p. 428
see P.	KB ET - … - SA	Connection cable IND. ETHERNET, M12 axial plug, for SERVICE, see p. 431
see P.	KB ET-…-SSA	Connection cable IND. ETHERNET, M12 axial plug, for SERVICE, see p. 432
see P.	KB ET-…-SA-RJ45	Connection cable IND. ETHERNET, M12 plug/RJ45, for SERVICE, see p. 432
50108991	D - ET1	User-configurable RJ45 plug
50109832	KDS ET-M12/ RJ45 W-4P	ETHERNET adapter M12 - RJ45
50113468	KB JST-M12A-8P-Y-3000	Connection cable for LSIS 4xx*i* to the MA 2xx*i*
50027375	BT 56	Mounting device with dovetail for rod D = 16 … 20mm
50111224	BT 59	Mounting device with dovetail for ITEM aluminum profile
50113242	LSIS-ZUB-FIL-01	Polarization filter (incl. 4 fastening screws), not for C-Mount devices
50117985	LSIS-ZUB-FIL-02	Daylight blocking filter, for C-Mount devices
50118394	LSIS-ZUB-FIL-03	Plastic diffuser plate - not for C-Mount devices
see P. 302	V-LENS-K-C-…	Lenses for C-Mount devices
see P. 302	V-LENS-ZUB-PF-…	Polarization filter for C-Mount lenses
see P. 303	V-ILLU-…	External illumination
see P. 306	REF 7A…	Adhesive reflective tape
see P. 306	K…	Connection cables for external illumination
see P. 307	V-…	Coupling module / flash module / power supply unit

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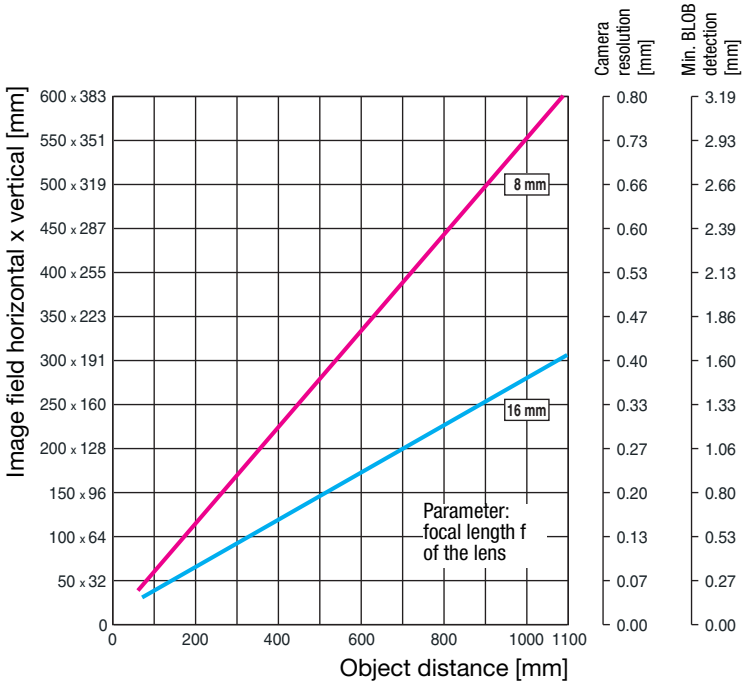


LSIS 4xx*i*
Page 292

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Size of the image field as a function of the object distance

LSIS 412*i*

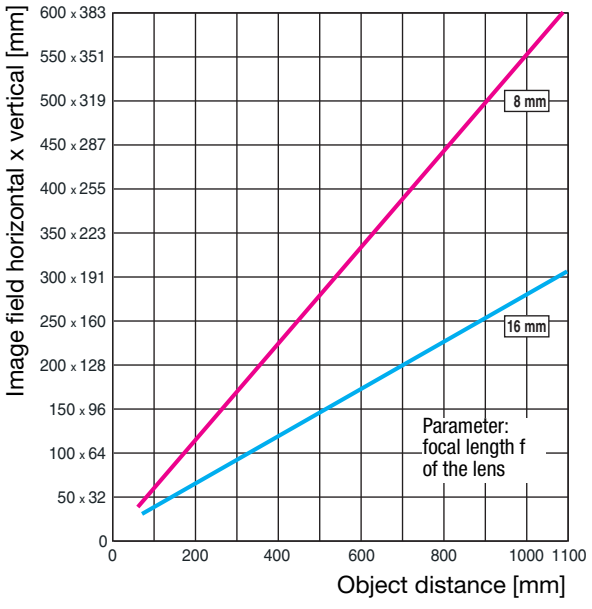




also see diagrams
LSIS 422*i* on page 203.

Size of the image field as a function of the object distance

LSIS 462*i*



LSIS 4xx*i* M49... (C-Mount)

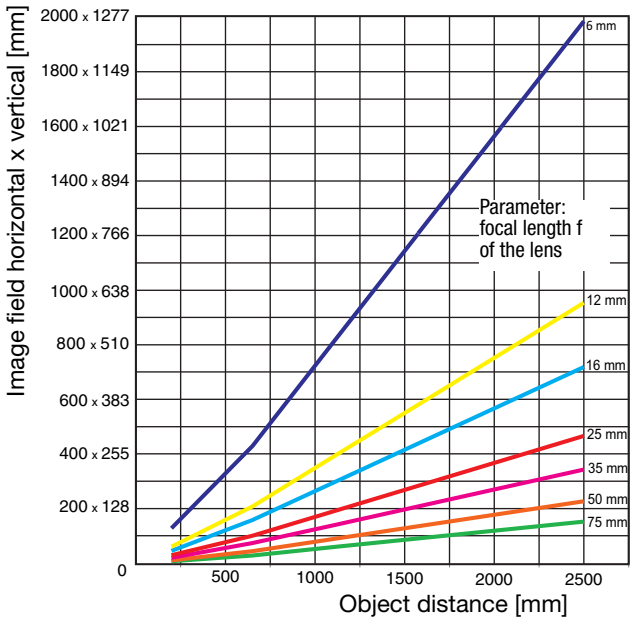


IMAGE PROCESSING - GENERAL ACCESSORIES

Part description Part no.	Description	Focus f [mm]	Aperture	Max. chip size	
Lenses for the LSIS 4x2i M49 smart camera (C-Mount model)					
V-LENS-K-C-6-F1.4-1/2-01 50117050	High-resolution compact lens CP 6-M for LSIS 4x2*i* M49-X9	6	1.4	up to 1/2"	
V-LENS-K-C-12-F1.4-1/2-01 50037055	High-resolution compact lens CP 12-M for LSIS 4x2*i* M49-X9	12	1.4	up to 1/2"	
V-LENS-K-C-16-F1.4-2/3-01 50117051	High-resolution compact lens CP 16-M for LSIS 4x2*i* M49-X9	16	1.4	up to 2/3"	
V-LENS-K-C-25-F1.4-2/3-01 50117052	High-resolution compact lens CP 25-M for LSIS 4x2*i* M49-X9	25	1.4	up to 2/3"	
V-LENS-K-C-35-F1.6-2/3-01 50104978	High-resolution compact lens CP 35-M for LSIS 4x2*i* M49-X9	35	1.6	up to 2/3"	
V-LENS-K-C-50-F2.8-2/3-01 50036468	High-resolution compact lens CP 50-M for LSIS 4x2*i* M49-X9	50	2.8	up to 2/3"	
V-LENS-K-C-75-F2.8-2/3-01 50117053	High-resolution compact lens CP 75-M for LSIS 4x2*i* M49-X9	75	2.8	up to 2/3"	

Part description Part no.	Description	Filter thread [mm]	Suitable for lenses with	
Polarization filter for C-Mount lenses				
V-LENS-ZUB-PF-D27-01 50102795	Linearly polarized filter P0.5	M27 x 0.5	Focal length f = 6 mm to f = 50 mm	
V-LENS-ZUB-PF-D30.5-01 50121440	Linearly polarized filter P0.5	M30.5 x 0.5	Focal length f = 75 mm	



LSIS 4xx*i*
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Part description Part no.	Description	Active surface [mm]	Light color	Illumination	Voltage U_B	Type	Connection
Panel lights, front illumination							
V-ILLU-AL-LED-WS-500x500-01 50117983	LED front illumination 500x500	500 x 500	white	diffuse	24VDC	LED	M8, 4-pin
V-ILLU-IHWC-0201-1 50034070	Bright-field illumination 11W	170 x 80	white	diffuse	24VDC	HF	Cable
V-ILLU-FL-LED-RT-075x050-01 50107769	LED lights FLR 75x50	75 x 50	red	directed	24VDC	LED	M8, 3-pin
V-ILLU-FL-LED-WS-075x050-01 50107770	LED lights FLW 75x50	75 x 50	white	directed	24VDC	LED	M8, 3-pin
V-ILLU-FL-LED-RT-075x050-02 50117047	LED lights FLR 75x50	75 x 50	red	strongly directional	24VDC	LED	M8, 3-pin
V-ILLU-FL-LED-WS-075x050-02 50117048	LED lights FLW 75x50	75 x 50	white	strongly directional	24VDC	LED	M8, 3-pin
V-ILLU-FL-LED-RT-160x050-01 50107771	LED lights FLR 160x50	160 x 50	red	directed	24VDC	LED	M8, 3-pin
V-ILLU-FL-LED-WS-160x050-01 50106713	LED lights FLW 160x50	160 x 50	white	directed	24VDC	LED	M8, 3-pin
V-ILLU-LWHP-0001-1 50102701	LED lights B-W (pulsed)	60 x 40	white	directed	24VDC	LED	KB 040

IMAGE PROCESSING - GENERAL ACCESSORIES

Part description Part no.	Description	Active surface [mm]	Light color	Illumination	Voltage U_B	Type	Connection	
Coaxial LED light sources, front illumination								
V-ILLU-VREC-0500-1 50041209	LED light source VOL-C-R-50	50 x 50	red	directed	24VDC	LED	M12, 5-pin	
V-ILLU-KREC-1000-1 50081789	LED light source VOL-C-R-100	100 x 100	red	directed	24VDC	LED	M12, 5-pin	
V-ILLU-VWEC-0500-1 50102791	LED light source VOL-C-W-50	50 x 50	white	directed	24VDC	LED	M12, 5-pin	
V-ILLU-KWEC-1000-2 50035273	LED light source VOL-C-W-100	100 x 100	white	directed	24VDC	LED	M12, 5-pin	
V-ILLU-KREC-0500-1 50081788	LED light source VOL-A-R-50	50 x 50	red	diffuse	24VDC	LED	M12, 5-pin	
V-ILLU-VREC-1000-1 50081784	LED light source VOL-A-R-100	100 x 100	red	diffuse	24VDC	LED	M12, 5-pin	
V-ILLU-KWHC-0500-1 50042091	LED light source VOL-A-W-50	50 x 50	white	diffuse	24VDC	LED	M12, 5-pin	
V-ILLU-KWHC-1000-1 50081790	LED light source VOL-A-W-100	100 x 100	white	diffuse	24VDC	LED	M12, 5-pin	

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LSIS 4xx*i*
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Part description Part no.	Description	Active surface [mm]	Light color	Illumination	Voltage U_B	Type	Connection	
Panel lights, rear illumination								
V-ILLU-FL-LED-WS-100x090-02 50113451	LED lights FLW 100x90, IP 65	100 x 90	white	diffuse	24VDC	LED	M8, 3-pin	
V-ILLU-FL-LED-IR-100x090-01 50114818	LED lights FLIR 100x90, IP 65	100 x 90	infrared	diffuse	24VDC	LED	M8, 3-pin	
V-ILLU-DL-LED-WS-150x150-01 50113965	LED rear illumination 150x150	150 x 150	white	diffuse	24VDC	LED	M8, 4-pin	
V-ILLU-DL-LED-WS-300x200-01 50113966	LED rear illumination 300x200	300 x 200	white	diffuse	24VDC	LED	M8, 4-pin	
V-ILLU-DL-LED-WS-500x500-01 50117850	LED rear illumination 500x500	500 x 500	white	diffuse	24VDC	LED	M8, 4-pin	

IMAGE PROCESSING - GENERAL ACCESSORIES

Part description Part no.	Description	Connection 1	Connection 2	Length [m]	
Camera and illumination connection cables					
K-D M8A-3P-5m-PVC 50104522	M8 connection cable (3-pin)	M8 socket, 3-pin	open	5	
K-D M8A-3P-10m-PVC 50110556	M8 connection cable (3-pin)	M8 socket, 3-pin	open	10	
K-D M8A-4P-5m-PVC 50104526	M8 connection cable (4-pin)	M8 socket, 4-pin	open	5	
K-D M8A-4P-10m-PVC 50104528	M8 connection cable (4-pin)	M8 socket, 4-pin	open	10	
Illumination connection cables					
K-D M12A-5P-5m-PVC 50104557	M12 connection cable (5-pin)	M12 socket, 5-pin	open	5	
K-D M12A-5P-10m-PVC 50104559	M12 connection cable (5-pin)	M12 socket, 5-pin	open	10	
KB-040-3000 B 50029316	Connection cable KB 040	Sub D, 15-pin	open	3	
KB-040-6000 B 50029317	Connection cable KB 040	Sub D, 15-pin	open	6	
KB-040-10000 B 50029318	Connection cable KB 040	Sub D, 15-pin	open	10	



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Part description Part no.	Description	
Coupling modules		
V-ILLU-ZUB-BM-UN-2A-01 50117049	Coupling module for switching external lighting modules (limiting continuous current 3A)	

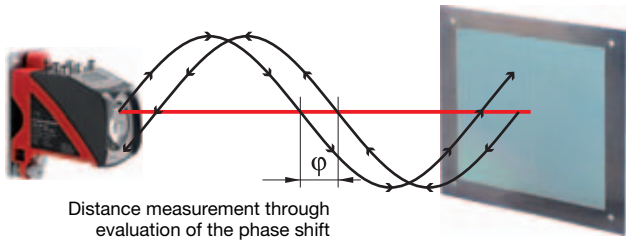
Part description Part no.	Description	Min. pulse duration [ms]	Max. pulse duration [ms]	
Light source accessories for pulsed LED operation				
V-ILAC-STRO-GARDA-1 50102794	Flash module for light sources	0.02	1.3	
V-ILAC-STRO-GARDAF-2 50108651	Flash module for light sources	0.001	10	

Part description Part no.	Description	Min. output voltage	Max. output voltage	Voltage U_B	
Power supply unit for pulsed LED operation					
V-NETZ-FLEX-0001-1 50038410	Power supply unit 3-52 DC	3VDC	52VDC	230VAC	

SELECTION GUIDE

Absolute laser distance measurement system

Measurement principle



Distance measurement through evaluation of the phase shift

The AMS 3xx*i* optical laser measurement system measures distances to stationary as well as moving system parts. The measurement principle is based on the measurement of the propagation time of the radiated light. The light emitted by the laser diode is reflected by a reflector onto the receiving element of the AMS 3xx*i*. The AMS 3xx*i* calculates the distance to the reflector based on the propagation time of the radiated light. The high absolute measurement accuracy of the laser measurement system as well as the short integration time are designed for position control applications.

Products / Measurement Ranges / Interfaces

Overview AMS 3xx*i* on **Page 312**

RS 232 + RS 422 or RS 485 or PROFIBUS + SSI or ETHERNET or CANopen or EtherCAT or PROFINET or DeviceNet or EtherNet/IP or

AMS 3xx*i* / 40 … from **page 314**

0,2 40 m

AMS 3xx*i* / 120 … from **page 314**

0,2 120 m

AMS 3xx*i* / 200 … from **page 314**

0,2 200 m

AMS 3xx*i* / 300 … from **page 314**

0,2 300 m

Features

- Absolute measurement system with very high accuracy, tested by the PTB (German Metrology Institute)
- AMS 3xx*i*: RS 232 / RS 422 or RS 485 or PROFIBUS / SSI or Ethernet TCP/IP or CANopen or EtherCAT or PROFINET or DeviceNet or EtherNet/IP or INTERBUS interface on board
- Additional speed output and speed monitoring
- Prefailure messages inform in good time and offer maximum device transparency
- Simple handling due to separate fastening and alignment elements
- Easy programming via GSD file or EDS files
- Standard M12 connections, simple and convenient
- Compact construction size and modern design
- Display informs about device status

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Bar code positioning systems

Measurement principle



The bar code positioning system uses visible red laser light to determine its position relative to a bar code tape. This essentially takes place in 3 steps:

1. Reading a code on the bar code tape.
2. Determining the position of the read code in the scanning area of the scanning beam.
3. Calculating the position to within a millimeter using the code information and the code position relative to the device center.

The position value is output via the interface.

Products / Measurement Ranges / Interfaces

Measurement range for all BPS systems:

0 — 10000 m





BPS 8 — from **page 334**

RS 232, RS 485 Interface



BPS 34 — from **page 338**

PROFIBUS Interface



BPS 37 — from **page 342**

Interface

Features

- M12 standard connection via ready-made connection cables
- RS 232/RS 485 or PROFIBUS DP or SSI interface
- Customer-specific configuration
- Integrated velocity measurement (BPS 3x)
- Measurement accuracy up to 10,000m at ± 1mm on taught-in positions
- Very easy mounting

SELECTION TABLE

Series	Dimensions in mm (WxHxD)	Housing material: Plastic	Housing material: Metal	Operating range in m: 0.2 – 200	Operating range in m: 200 – 10000
 AMS 3xx*i*	84 x 167 x 159		●	0.2 – 300	
 BPS 8	41 x 48 x 15 (58 x 48 x 18) [1]		●	0 – 10000	
 BPS 34	90 x 120 x 43 (90 x 120 x 53) [2]		●	0 – 10000	
 BPS 37	90 x 120 x 43 (90 x 120 x 53) [2]		●	0 – 10000	

1) Lateral beam exit
2) Devices with integrated heating

Detailed information on the dimensioned drawings or the specifications can be found in the respective data sheet or in the technical description.

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DISTANCE MEASUREMENT / POSITIONING

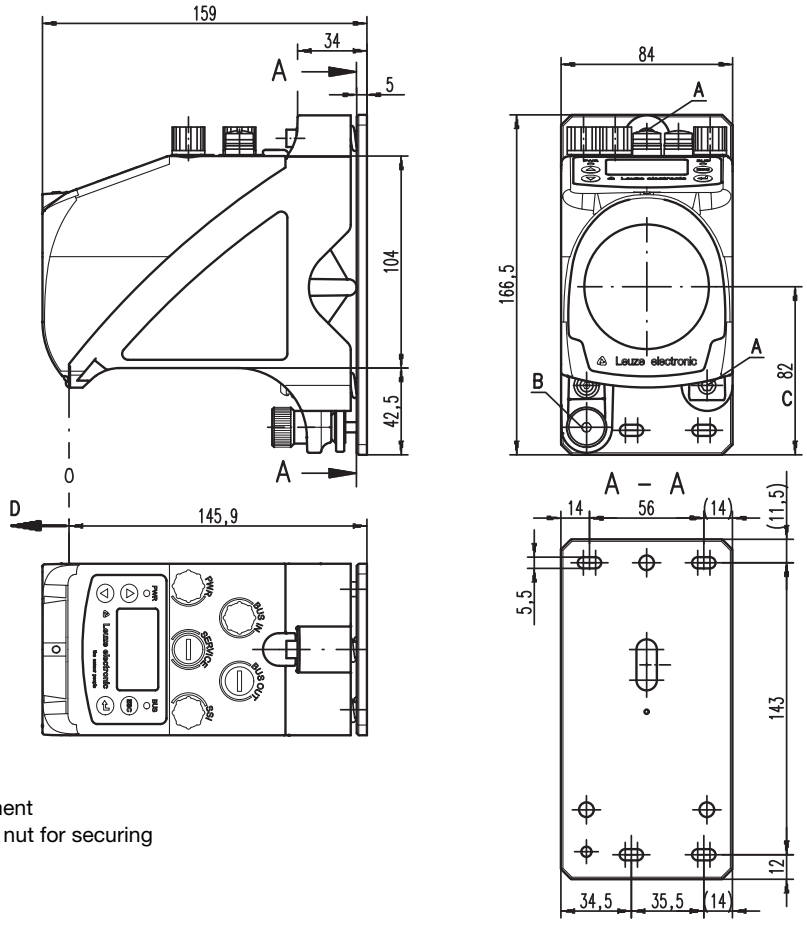




Measurement principle		Requirement		Interfaces D = direct, G = via Gateway													Page
Laser on reflector	Bar code tape	Straight-lined	Curve-going	PROFIBUS DP	PROFINET	SSI	Interbus-S FOC	RS 232	RS 485	RS 422	Interbus-S	Ethernet	EtherNet/IP	DeviceNet	CANopen	EtherCAT	
●		●		D	D	D		D	D	D	D	D	D	D	D	D	312
	●	●	●	G	G			D	G			G	G	G	G	G	334
	●	●	●	D													338
	●	●	●			D											342

OVERVIEW

Dimensioned drawing



A M5 screw for alignment
B Knurled nut and M5 nut for securing
C Optical axis
D Measured distance


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OPTICAL LASER DISTANCE MEAS. SYSTEM AMS 3xx*i*

Distance measurement system	Interface	Page
AMS 300*i* … (H)	RS 232 / RS 422	314
AMS 301*i* … (H)	RS 485	316
AMS 304*i* … (H)	PROFIBUS / SSI	318
AMS 308*i* … (H)	Ethernet TCP/IP	320
AMS 335*i* … (H)	CANopen	322
AMS 338*i* … (H)	EtherCAT	324
AMS 348*i* … (H)	PROFINET	326
AMS 355*i* … (H)	DeviceNet	328
AMS 358*i* … (H)	EtherNet/IP	330
AMS 384*i* … (H)	INTERBUS	332



Common technical data

Electrical data	Operating voltage U_B	18 … 30VDC
	Current consumption	w/o heating: ≤ 250mA with heating: ≤ 500mA (at 24VDC)
	Accuracy	± 2 … ± 5mm
	Consistency	0.3 … 1.5mm at 1 sigma
	Inputs/outputs	2, programmable
Operating and display elements	Keyboard	4 keypad buttons
	LEDs	2 (two-color)
	Display	128 x 64 pixels, monochrome
Mechanical data	Housing / Optics	diecast zinc/aluminum / glass
	Weight	approx. 2400g
Environmental data	Operating temperature	w/o heating: -5 … +50°C with heating: -30 … +50°C
	Storage temperature	-30 … +70°C
	Protection class	IP 65
	Air humidity	< 90% (non-cond.)
Laser	Class 2 acc. to EN 60825-1 and 21 CFR 1040.10 with Laser Notice No. 50	

Features

- **Available with all internationally relevant interfaces**
- **Absolute measurement system with very high accuracy, tested by the Physikalisch Technische Bundesanstalt (German Metrology Institute)**
- **Additional speed output and speed monitoring**
- **Prefailure messages inform in good time and offer maximum device transparency**
- **Simple handling due to separate fastening and alignment elements**
- **Easy programming via GSD or EDS files**
- **Standard M12 connections, simple and convenient**
- **Compact construction size and modern design**
- **Display provides information on the device status**

LASER DISTANCE MEAS. SYSTEM - RS 232 / RS 422

Part description Part no.	Description	Meas. range [m]	Accuracy / Consistency	Interface	
Optical Laser Distance Measurement System					
AMS 300i 40 50113661	Optical Laser Distance Measurement System w/o device heating	0.2 … 40	± 2mm / 0.3mm [1]	RS 232, RS 422	
AMS 300i 120 50113662	Optical Laser Distance Measurement System w/o device heating	0.2 … 120	± 2mm / 0.5mm [1]	RS 232, RS 422	
AMS 300i 200 50113663	Optical Laser Distance Measurement System w/o device heating	0.2 … 200	± 3mm / 0.7mm [1]	RS 232, RS 422	
AMS 300i 300 50113664	Optical Laser Distance Measurement System w/o device heating	0.2 … 300	± 5mm / 1.5mm [1]	RS 232, RS 422	
AMS 300i 40 H 50113665	Optical Laser Distance Measurement System with device heating	0.2 … 40	± 2mm / 0.3mm [1]	RS 232, RS 422	
AMS 300i 120 H 50113666	Optical Laser Distance Measurement System with device heating	0.2 … 120	± 2mm / 0.5mm [1]	RS 232, RS 422	
AMS 300i 200 H 50113667	Optical Laser Distance Measurement System with device heating	0.2 … 200	± 3mm / 0.7mm [1]	RS 232, RS 422	
AMS 300i 300 H 50113668	Optical Laser Distance Measurement System with device heating	0.2 … 300	± 5mm / 1.5mm [1]	RS 232, RS 422	

1) At 1 sigma

Accessories / connection cables

More accessories can be found from **page 430** onwards

Part no.	Designation	Features
see P. 452	Reflective tape …	Reflective tape, various sizes, self-adhesive or on aluminum plate
50104479	US AMS 01	Deflector unit for 90° deflection of the laser beam
50035630	US1 OMS	Deflection mirror for 90° deflection of the laser beam
50107255	MW OMS / AMS 01	Mounting bracket for converting from OMS to AMS
see P. 435	K - D M12…	Connection cables with M12 connector (A-coded) for PWR
see P. 430	KB SSI/IBS-…BA	Connection cables with M12 connector (B-coded) for BUS IN/OUT
see P. 443	KD 01-5-…BA	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 443	KD 02-5-…	FIELDBUS connector, M12, 5-pin, B-coded


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AMS 300*i*

Distance meas. system

Features

The AMS 300*i* is equipped with an RS 422 or an RS 232 interface for transferring the measured distances, speeds as well as various status messages.

The AMS 300*i* can be operated with either the RS 422 or with the RS 232 interface. The respective interface is activated via the control panel / display. All AMS 300*i* device parameters are preset to default values. These can be changed quickly and easily via the control panel / display.

For outdoor or low-temperature applications, a model with integrated heating (AMS 300*i* … H) is available. If necessary, a heatable reflector can be used.





A reflector is necessary for operating the AMS 300*i* … laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 300*i*



40m

120m

200m

300m

RS 232

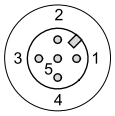
Baud rate RS 232:
max. 115.2 kBit/s
Protocol:
Leuze binary protocol

RS 422

Baud rate RS 422:
max. 500 kBit/s
Protocol:
Leuze binary protocol

Electrical connection

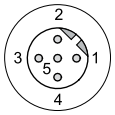
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

RS 422

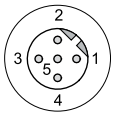
BUS IN - male, B-cod.



PIN	Signal
1	Rx+
2	Tx-
3	GND ISO
4	Tx+
5	Rx-

RS 232

BUS IN - male, B-cod.



PIN	Signal
1	NC
2	TxD
3	GND ISO
4	NC
5	RxD

LASER DISTANCE MEAS. SYSTEM - RS 485

Part description Part no.	Description	Meas. range [m]	Accuracy / Consistency	Interface	
Optical Laser Distance Measurement System					
AMS 301i 40 50113669	Optical Laser Distance Measurement System w/o device heating	0.2 … 40	± 2mm / 0.3mm [1]	RS 485	
AMS 301i 120 50113670	Optical Laser Distance Measurement System w/o device heating	0.2 … 120	± 2mm / 0.5mm [1]	RS 485	
AMS 301i 200 50113671	Optical Laser Distance Measurement System w/o device heating	0.2 … 200	± 3mm / 0.7mm [1]	RS 485	
AMS 301i 300 50113672	Optical Laser Distance Measurement System w/o device heating	0.2 … 300	± 5mm / 1.5mm [1]	RS 485	
AMS 301i 40 H 50113673	Optical Laser Distance Measurement System with device heating	0.2 … 40	± 2mm / 0.3mm [1]	RS 485	
AMS 301i 120 H 50113674	Optical Laser Distance Measurement System with device heating	0.2 … 120	± 2mm / 0.5mm [1]	RS 485	
AMS 301i 200 H 50113675	Optical Laser Distance Measurement System with device heating	0.2 … 200	± 3mm / 0.7mm [1]	RS 485	
AMS 301i 300 H 50113676	Optical Laser Distance Measurement System with device heating	0.2 … 300	± 5mm / 1.5mm [1]	RS 485	

1) At 1 sigma

Accessories / connection cables

More accessories can be found from **page 430** onwards

Part no.	Designation	Features
see P. 452	Reflective tape …	Reflective tape, various sizes, self-adhesive or on aluminum plate
50104479	US AMS 01	Deflector unit for 90° deflection of the laser beam
50035630	US1 OMS	Deflection mirror for 90° deflection of the laser beam
50107255	MW OMS / AMS 01	Mounting bracket for converting from OMS to AMS
see P. 435	K - D M12…	Connection cables with M12 connector (A-coded) for PWR
see P. 434/	KB PB - …	Connection cables with M12 connector (B-coded) for BUS IN/OUT
see P. 443	KD 01-5-…BA	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 443	KD 02-5-…	FIELDBUS connector, M12, 5-pin, B-coded
50038539	TS 02-4-SA	M12 connector, integrated terminating resistor for BUS OUT


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AMS 301*i*

Distance meas. system

Features

The AMS 301*i* is equipped with an RS 485 interface for transferring the measured distances, speeds as well as various status messages.

The data transmission rate can be set in a range from 9.6 kBit/s to 115.2 kBit/s. All AMS 301*i* device parameters are preset to default values. These can be changed quickly and easily via the control panel / display.

For outdoor or low-temperature applications, a model with integrated heating (AMS 301*i* … H) is available. If necessary, a heatable reflector can be used.

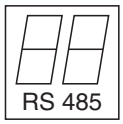


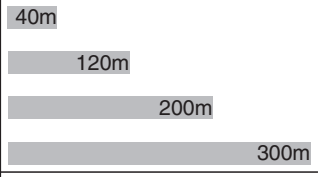


A reflector is necessary for operating the AMS 301*i* … laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 301*i*





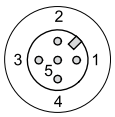


Baud rates RS 485:
9.6 kBit/s
19.2 kBit/s
38.4 kBit/s
57.6 kBit/s
93.75 kBit/s
115.2 kBit/s

Protocol:
Leuze binary protocol

Electrical connection

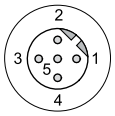
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

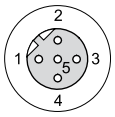
RS 485

BUS IN - male, B-cod.



PIN	Signal
1	NC
2	RS485(-)
3	NC
4	RS485(+)
5	FE

BUS OUT - female, B-cod.



PIN	Signal
1	VCC485
2	RS485(-)
3	GND485
4	RS485(+)
5	FE

LASER DISTANCE MEAS. SYSTEM - PROFIBUS / SSI

Part description Part no.	Description	Meas. range [m]	Accuracy / Consistency	Interface	
Optical Laser Distance Measurement System					
AMS 304i 40 50113677	Optical Laser Distance Measurement System w/o device heating	0.2 … 40	± 2mm / 0.3mm [1]	PROFIBUS / SSI	
AMS 304i 120 50113678	Optical Laser Distance Measurement System w/o device heating	0.2 … 120	± 2mm / 0.5mm [1]	PROFIBUS / SSI	
AMS 304i 200 50113679	Optical Laser Distance Measurement System w/o device heating	0.2 … 200	± 3mm / 0.7mm [1]	PROFIBUS / SSI	
AMS 304i 300 50113680	Optical Laser Distance Measurement System w/o device heating	0.2 … 300	± 5mm / 1.5mm [1]	PROFIBUS / SSI	
AMS 304i 40 H 50113681	Optical Laser Distance Measurement System with device heating	0.2 … 40	± 2mm / 0.3mm [1]	PROFIBUS / SSI	
AMS 304i 120 H 50113682	Optical Laser Distance Measurement System with device heating	0.2 … 120	± 2mm / 0.5mm [1]	PROFIBUS / SSI	
AMS 304i 200 H 50113683	Optical Laser Distance Measurement System with device heating	0.2 … 200	± 3mm / 0.7mm [1]	PROFIBUS / SSI	
AMS 304i 300 H 50113684	Optical Laser Distance Measurement System with device heating	0.2 … 300	± 5mm / 1.5mm [1]	PROFIBUS / SSI	

1) At 1 sigma

Accessories / connection cables

More accessories can be found from **page 430** onwards

Part no.	Designation	Features
see P. 452	Reflective tape …	Reflective tape, various sizes, self-adhesive or on aluminum plate
50104479	US AMS 01	Deflector unit for 90° deflection of the laser beam
50035630	US1 OMS	Deflection mirror for 90° deflection of the laser beam
50107255	MW OMS / AMS 01	Mounting bracket for converting from OMS to AMS
see P. 435	K - D M12…	Connection cables with M12 connector (A-coded) for PWR
see P. 434	KB PB - …	Connection cables with M12 connector (B-coded) for BUS IN/OUT
see P. 443	KD 01-5-…BA	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 443	KD 02-5-…	FIELDBUS connector, M12, 5-pin, B-coded
50038539	TS 02-4-SA	M12 connector, integrated terminating resistor for BUS OUT

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AMS 304*i*

Distance meas. system

Features

The AMS 304*i* is equipped with a PROFIBUS and SSI interface. Both interfaces can be used simultaneously or individually.

Using the PROFIBUS and SSI simultaneously:
The PROFIBUS and SSI device parameters are configured with the GSD file.
Using the SSI interface without PROFIBUS:
Default settings for using only the SSI interface are stored in the AMS 304*i*. These can be changed at any time via the control panel / display.

For outdoor or low-temperature applications, a model with integrated heating (AMS 304*i* … H) is available. If necessary, a heatable reflector can be used.



A reflector is necessary for operating the AMS 304*i* … laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 304*i*



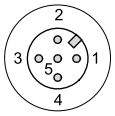
40m
120m
200m
300m

Baud rate PROFIBUS:
max. 12 MBit/s

SSI Clock:
50 … 800 kHz

Electrical connection

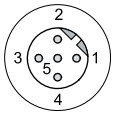
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

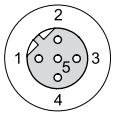
PROFIBUS

BUS IN - male, B-cod.



PIN	Signal
1	NC
2	A (N)
3	NC
4	B (P)
5	FE

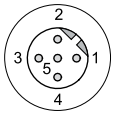
BUS OUT - female, B-cod.



PIN	Signal
1	VCC
2	A (N)
3	GND
4	B (P)
5	FE

SSI

SSI - male, B-cod.



PIN	Signal
1	DATA+
2	DATA-
3	CLK+
4	CLK-
5	FE

LASER DISTANCE MEAS. SYSTEM - ETHERNET TCP/IP

Part description Part no.	Description	Meas. range [m]	Accuracy / Consistency	Interface	
Optical Laser Distance Measurement System					
AMS 308i 40 50113685	Optical Laser Distance Measurement System w/o device heating	0.2 … 40	± 2mm / 0.3mm [1]	Ethernet TCP/IP	
AMS 308i 120 50113686	Optical Laser Distance Measurement System w/o device heating	0.2 … 120	± 2mm / 0.5mm [1]	Ethernet TCP/IP	
AMS 308i 200 50113687	Optical Laser Distance Measurement System w/o device heating	0.2 … 200	± 3mm / 0.7mm [1]	Ethernet TCP/IP	
AMS 308i 300 50113688	Optical Laser Distance Measurement System w/o device heating	0.2 … 300	± 5mm / 1.5mm [1]	Ethernet TCP/IP	
AMS 308i 40 H 50113689	Optical Laser Distance Measurement System with device heating	0.2 … 40	± 2mm / 0.3mm [1]	Ethernet TCP/IP	
AMS 308i 120 H 50113690	Optical Laser Distance Measurement System with device heating	0.2 … 120	± 2mm / 0.5mm [1]	Ethernet TCP/IP	
AMS 308i 200 H 50113691	Optical Laser Distance Measurement System with device heating	0.2 … 200	± 3mm / 0.7mm [1]	Ethernet TCP/IP	
AMS 308i 300 H 50113692	Optical Laser Distance Measurement System with device heating	0.2 … 300	± 5mm / 1.5mm [1]	Ethernet TCP/IP	

1) At 1 sigma

Accessories / connection cables

More accessories can be found from **page 430** onwards

Part no.	Designation	Features
see P. 452	Reflective tape …	Reflective tape, various sizes, self-adhesive or on aluminum plate
50104479	US AMS 01	Deflector unit for 90° deflection of the laser beam
50035630	US1 OMS	Deflection mirror for 90° deflection of the laser beam
50107255	MW OMS / AMS 01	Mounting bracket for converting from OMS to AMS
see P. 435	K - D M12…	Connection cables with M12 connector (A-coded) for PWR
see P. 431/	KB ET - …	Connection cables with M12 connector (D-coded) for BUS IN/OUT
see P. 443	KD 01-5-…BA	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 443	S - M12A - ET	Ethernet connector, M12, 4-pin, D-coded

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AMS 308*i*

Distance meas. system

Features

The AMS 308*i* is equipped with an Ethernet TCP/IP interface for transferring the measured distances, speeds as well as various status messages.

The Ethernet TCP/IP interface can be operated at up to 100 MBit/s.

For outdoor or low-temperature applications, a model with integrated heating (AMS 308*i* … H) is available. If necessary, a heatable reflector can be used.





A reflector is necessary for operating the AMS 308*i* … laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 308*i*



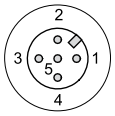
40m
120m
200m
300m

Ethernet

Baud rate Ethernet TCP/IP:
100 MBit/s max.

Electrical connection

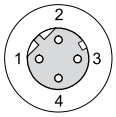
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

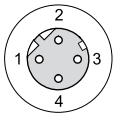
Ethernet TCP/IP

BUS IN - female, D-cod.



PIN	Signal
1	TD+
2	RD+
3	TD-
4	RD-

BUS OUT - female, D-cod.



PIN	Signal
1	TD+
2	RD+
3	TD-
4	RD-

LASER DISTANCE MEAS. SYSTEM - CANopen

Part description Part no.	Description	Meas. range [m]	Accuracy / Consistency	Interface	
Optical Laser Distance Measurement System					
AMS 335i 40 50113693	Optical Laser Distance Measurement System w/o device heating	0.2 … 40	± 2mm / 0.3mm [1]	CANopen	
AMS 335i 120 50113694	Optical Laser Distance Measurement System w/o device heating	0.2 … 120	± 2mm / 0.5mm [1]	CANopen	
AMS 335i 200 50113695	Optical Laser Distance Measurement System w/o device heating	0.2 … 200	± 3mm / 0.7mm [1]	CANopen	
AMS 335i 300 50113696	Optical Laser Distance Measurement System w/o device heating	0.2 … 300	± 5mm / 1.5mm [1]	CANopen	
AMS 335i 40 H 50113697	Optical Laser Distance Measurement System with device heating	0.2 … 40	± 2mm / 0.3mm [1]	CANopen	
AMS 335i 120 H 50113698	Optical Laser Distance Measurement System with device heating	0.2 … 120	± 2mm / 0.5mm [1]	CANopen	
AMS 335i 200 H 50113699	Optical Laser Distance Measurement System with device heating	0.2 … 200	± 3mm / 0.7mm [1]	CANopen	
AMS 335i 300 H 50113700	Optical Laser Distance Measurement System with device heating	0.2 … 300	± 5mm / 1.5mm [1]	CANopen	

1) At 1 sigma

Accessories / connection cables

More accessories can be found from **page 430** onwards

Part no.	Designation	Features
see P. 452	Reflective tape …	Reflective tape, various sizes, self-adhesive or on aluminum plate
50104479	US AMS 01	Deflector unit for 90° deflection of the laser beam
50035630	US1 OMS	Deflection mirror for 90° deflection of the laser beam
50107255	MW OMS / AMS 01	Mounting bracket for converting from OMS to AMS
see P. 435	K - D M12…	Connection cables with M12 connector (A-coded) for PWR
see P. 433	KB DN/CAN-…	Connection cables with M12 connector (A-coded) for BUS IN/OUT
see P. 443	KD 01-5-…	Connector for POWER, BUS IN, BUS OUT, M12, 5-pin, A-coded
50109832	TS 01-4-SA M12	120 ohm terminating resistor for CANopen BUS OUT


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AMS 335*i*

Distance meas. system

Features

The AMS 335*i* is equipped with a CANopen interface for transferring the measured distances, speeds as well as various status messages.

All device-specific settings can be changed using an EDS file (Electronic Data Sheet).

For outdoor or low-temperature applications, a model with integrated heating (AMS 335*i* … H) is available. If necessary, a heatable reflector can be used.



A reflector is necessary for operating the AMS 335*i* … laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 335*i*



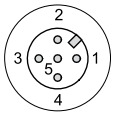
40m
120m
200m
300m

CANopen

Baud rates CANopen:
10 kBit/s
20 kBit/s
50 kBit/s
125 kBit/s
250 kBit/s
500 kBit/s
800 kBit/s
1000 kBit/s

Electrical connection

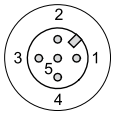
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

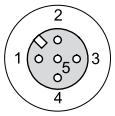
CANopen

BUS IN - male, A-cod.



PIN	Signal
1	Drain
2	V+
3	V-
4	CAN_H
5	CAN_L

BUS OUT - female, A-cod.



PIN	Signal
1	Drain
2	V+
3	V-
4	CAN_H
5	CAN_L

LASER DISTANCE MEAS. SYSTEM - EtherCAT

Part description Part no.	Description	Meas. range [m]	Accuracy / Consistency	Interface	
Optical Laser Distance Measurement System					
AMS 338i 40 50113701	Optical Laser Distance Measurement System w/o device heating	0.2 … 40	± 2mm / 0.3mm [1]	EtherCAT	
AMS 338i 120 50113702	Optical Laser Distance Measurement System w/o device heating	0.2 … 120	± 2mm / 0.5mm [1]	EtherCAT	
AMS 338i 200 50113703	Optical Laser Distance Measurement System w/o device heating	0.2 … 200	± 3mm / 0.7mm [1]	EtherCAT	
AMS 338i 300 50113704	Optical Laser Distance Measurement System w/o device heating	0.2 … 300	± 5mm / 1.5mm [1]	EtherCAT	
AMS 338i 40 H 50113705	Optical Laser Distance Measurement System with device heating	0.2 … 40	± 2mm / 0.3mm [1]	EtherCAT	
AMS 338i 120 H 50113706	Optical Laser Distance Measurement System with device heating	0.2 … 120	± 2mm / 0.5mm [1]	EtherCAT	
AMS 338i 200 H 50113707	Optical Laser Distance Measurement System with device heating	0.2 … 200	± 3mm / 0.7mm [1]	EtherCAT	
AMS 338i 300 H 50113708	Optical Laser Distance Measurement System with device heating	0.2 … 300	± 5mm / 1.5mm [1]	EtherCAT	

1) At 1 sigma

Accessories / connection cables

More accessories can be found from **page 430** onwards

Part no.	Designation	Features
see P. 452	Reflective tape …	Reflective tape, various sizes, self-adhesive or on aluminum plate
50104479	US AMS 01	Deflector unit for 90° deflection of the laser beam
50035630	US1 OMS	Deflection mirror for 90° deflection of the laser beam
50107255	MW OMS / AMS 01	Mounting bracket for converting from OMS to AMS
see P. 435	K - D M12…	Connection cables with M12 connector (A-coded) for PWR
see P. 431/432	KB ET - …	Connection cables with M12 connector (D-coded) for BUS IN/OUT
see P. 443	KD 01-5-…BA	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 443	S - M12A - ET	Ethernet connector, M12, 4-pin, D-coded


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AMS 338*i*

Distance meas. system

Features

The AMS 338*i* is equipped with an EtherCAT interface for transferring the measured distances, speeds as well as various status messages.

An XML description/file is available for all AMS 338*i* settings. The XML file defines all device-specific parameters.

For outdoor or low-temperature applications, a model with integrated heating (AMS 338*i* … H) is available. If necessary, a heatable reflector can be used.



A reflector is necessary for operating the AMS 338*i* … laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 338*i*



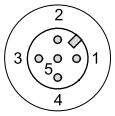
40m
120m
200m
300m

EtherCAT

Baud rate EtherCAT:
100 MBit/s max.

Electrical connection

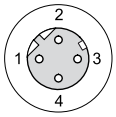
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

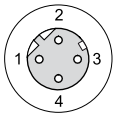
EtherCAT

BUS IN - female, D-cod.



PIN	Signal
1	TD+
2	RD+
3	TD-
4	RD-

BUS OUT - female, D-cod.



PIN	Signal
1	TD+
2	RD+
3	TD-
4	RD-

LASER DISTANCE MEAS. SYSTEM - PROFINET

Part description Part no.	Description	Meas. range [m]	Accuracy / Consistency	Interface	
Optical Laser Distance Measurement System					
AMS 348i 40 50113709	Optical Laser Distance Measurement System w/o device heating	0.2 … 40	± 2mm / 0.3mm [1]	PROFINET	
AMS 348i 120 50113710	Optical Laser Distance Measurement System w/o device heating	0.2 … 120	± 2mm / 0.5mm [1]	PROFINET	
AMS 348i 200 50113711	Optical Laser Distance Measurement System w/o device heating	0.2 … 200	± 3mm / 0.7mm [1]	PROFINET	
AMS 348i 300 50113712	Optical Laser Distance Measurement System w/o device heating	0.2 … 300	± 5mm / 1.5mm [1]	PROFINET	
AMS 348i 40 H 50113713	Optical Laser Distance Measurement System with device heating	0.2 … 40	± 2mm / 0.3mm [1]	PROFINET	
AMS 348i 120 H 50113714	Optical Laser Distance Measurement System with device heating	0.2 … 120	± 2mm / 0.5mm [1]	PROFINET	
AMS 348i 200 H 50113715	Optical Laser Distance Measurement System with device heating	0.2 … 200	± 3mm / 0.7mm [1]	PROFINET	
AMS 348i 300 H 50113716	Optical Laser Distance Measurement System with device heating	0.2 … 300	± 5mm / 1.5mm [1]	PROFINET	

1) At 1 sigma

Accessories / connection cables

More accessories can be found from **page 430** onwards

Part no.	Designation	Features
see P. 452	Reflective tape …	Reflective tape, various sizes, self-adhesive or on aluminum plate
50104479	US AMS 01	Deflector unit for 90° deflection of the laser beam
50035630	US1 OMS	Deflection mirror for 90° deflection of the laser beam
50107255	MW OMS / AMS 01	Mounting bracket for converting from OMS to AMS
see P. 435	K - D M12…	Connection cables with M12 connector (A-coded) for PWR
see P. 431/432	KB ET - …	Connection cables with M12 connector (D-coded) for BUS IN/OUT
see P. 443	KD 01-5-…BA	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 443	S - M12A - ET	Ethernet connector, M12, 4-pin, D-coded


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AMS 348*i*

Distance meas. system

Features

The AMS 348*i* is equipped with a PROFINET interface for transferring the measured distances, speeds as well as various status messages.

The PROFINET transfers data according to standard RT (real time).
All device-specific settings are made using a GSD file.

For outdoor or low-temperature applications, a model with integrated heating (AMS 348*i* … H) is available. If necessary, a heatable reflector can be used.



A reflector is necessary for operating the AMS 348*i* … laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 348*i*

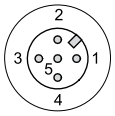


40m
120m
200m
300m

Baud rate PROFINET:
100 MBit/s max.

Electrical connection

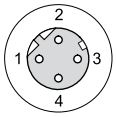
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

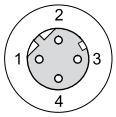
PROFINET

BUS IN - female, D-cod.



PIN	Signal
1	TD+
2	RD+
3	TD-
4	RD-

BUS OUT - female, D-cod.



PIN	Signal
1	TD+
2	RD+
3	TD-
4	RD-

LASER DISTANCE MEAS. SYSTEM - DeviceNet

Part description Part no.	Description	Meas. range [m]	Accuracy / Consistency	Interface	
Optical Laser Distance Measurement System					
AMS 355i 40 50113717	Optical Laser Distance Measurement System w/o device heating	0.2 … 40	± 2mm / 0.3mm [1]	DeviceNet	
AMS 355i 120 50113718	Optical Laser Distance Measurement System w/o device heating	0.2 … 120	± 2mm / 0.5mm [1]	DeviceNet	
AMS 355i 200 50113719	Optical Laser Distance Measurement System w/o device heating	0.2 … 200	± 3mm / 0.7mm [1]	DeviceNet	
AMS 355i 300 50113720	Optical Laser Distance Measurement System w/o device heating	0.2 … 300	± 5mm / 1.5mm [1]	DeviceNet	
AMS 355i 40 H 50113721	Optical Laser Distance Measurement System with device heating	0.2 … 40	± 2mm / 0.3mm [1]	DeviceNet	
AMS 355i 120 H 50113722	Optical Laser Distance Measurement System with device heating	0.2 … 120	± 2mm / 0.5mm [1]	DeviceNet	
AMS 355i 200 H 50113723	Optical Laser Distance Measurement System with device heating	0.2 … 200	± 3mm / 0.7mm [1]	DeviceNet	
AMS 355i 300 H 50113724	Optical Laser Distance Measurement System with device heating	0.2 … 300	± 5mm / 1.5mm [1]	DeviceNet	

1) At 1 sigma

Accessories / connection cables

More accessories can be found from **page 430** onwards

Part no.	Designation	Features
see P. 452	Reflective tape …	Reflective tape, various sizes, self-adhesive or on aluminum plate
50104479	US AMS 01	Deflector unit for 90° deflection of the laser beam
50035630	US1 OMS	Deflection mirror for 90° deflection of the laser beam
50107255	MW OMS / AMS 01	Mounting bracket for converting from OMS to AMS
see P. 435	K - D M12…	Connection cables with M12 connector (A-coded) for PWR
see P. 433	KB DN/CAN-…	Connection cables with M12 connector (A-coded) for BUS IN/OUT
see P. 443	KD 01-5-…	Connector for POWER, BUS IN, BUS OUT, M12, 5-pin, A-coded
50040099	TS 01-4-SA M12	120 ohm terminating resistor for DeviceNet BUS OUT


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AMS 355*i*

Distance meas. system

Features

The AMS 355*i* is equipped with a DeviceNet interface for transferring the measured distances, speeds as well as various status messages.

All device-specific settings can be changed using an EDS file (Electronic Data Sheet).

For outdoor or low-temperature applications, a model with integrated heating (AMS 355*i* … H) is available. If necessary, a heatable reflector can be used.



A reflector is necessary for operating the AMS 355*i* … laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 355*i*



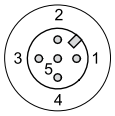
40m
120m
200m
300m

DeviceNet CONFORMANCE TESTED

Baud rates DeviceNet:
125 kBit/s
250 kBit/s
500 kBit/s

Electrical connection

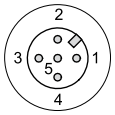
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

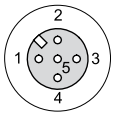
DeviceNet

BUS IN - male, A-cod.



PIN	Signal
1	Drain
2	V+
3	V-
4	CAN_H
5	CAN_L

BUS OUT - female, A-cod.



PIN	Signal
1	Drain
2	V+
3	V-
4	CAN_H
5	CAN_L

LASER DISTANCE MEAS. SYSTEM - EtherNet/IP

Part description Part no.	Description	Meas. range [m]	Accuracy / Consistency	Interface	
Optical Laser Distance Measurement System					
AMS 358i 40 50113725	Optical Laser Distance Measurement System w/o device heating	0.2 … 40	± 2mm / 0.3mm [1]	EtherNet/IP	
AMS 358i 120 50113726	Optical Laser Distance Measurement System w/o device heating	0.2 … 120	± 2mm / 0.5mm [1]	EtherNet/IP	
AMS 358i 200 50113727	Optical Laser Distance Measurement System w/o device heating	0.2 … 200	± 3mm / 0.7mm [1]	EtherNet/IP	
AMS 358i 300 50113728	Optical Laser Distance Measurement System w/o device heating	0.2 … 300	± 5mm / 1.5mm [1]	EtherNet/IP	
AMS 358i 40 H 50113729	Optical Laser Distance Measurement System with device heating	0.2 … 40	± 2mm / 0.3mm [1]	EtherNet/IP	
AMS 358i 120 H 50113730	Optical Laser Distance Measurement System with device heating	0.2 … 120	± 2mm / 0.5mm [1]	EtherNet/IP	
AMS 358i 200 H 50113731	Optical Laser Distance Measurement System with device heating	0.2 … 200	± 3mm / 0.7mm [1]	EtherNet/IP	
AMS 358i 300 H 50113732	Optical Laser Distance Measurement System with device heating	0.2 … 300	± 5mm / 1.5mm [1]	EtherNet/IP	

1) At 1 sigma

Accessories / connection cables

More accessories can be found from **page 430** onwards

Part no.	Designation	Features
see P. 452	Reflective tape …	Reflective tape, various sizes, self-adhesive or on aluminum plate
50104479	US AMS 01	Deflector unit for 90° deflection of the laser beam
50035630	US1 OMS	Deflection mirror for 90° deflection of the laser beam
50107255	MW OMS / AMS 01	Mounting bracket for converting from OMS to AMS
see P. 435	K - D M12…	Connection cables with M12 connector (A-coded) for PWR
see P. 431/	KB ET - …	Connection cables with M12 connector (D-coded) for BUS IN/OUT
see P. 443	KD 01-5-…BA	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 443	S - M12A - ET	Ethernet connector, M12, 4-pin, D-coded

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AMS 358*i*

Distance meas. system

Features

The AMS 358*i* is equipped with an EtherNet/IP interface for transferring the measured distances, speeds as well as various status messages.

All device-specific settings can be changed using an EDS file (Electronic Data Sheet).

For outdoor or low-temperature applications, a model with integrated heating (AMS 358*i* … H) is available. If necessary, a heatable reflector can be used.





A reflector is necessary for operating the AMS 358*i* … laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 358*i*



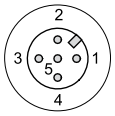
40m
120m
200m
300m

EtherNet/IP conformance tested

Baud rate EtherNet/IP:
100 MBit/s max.

Electrical connection

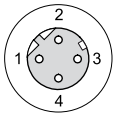
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

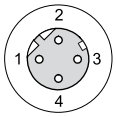
EtherNet/IP

BUS IN - female, D-cod.



PIN	Signal
1	TD+
2	RD+
3	TD-
4	RD-

BUS OUT - female, D-cod.



PIN	Signal
1	TD+
2	RD+
3	TD-
4	RD-

LASER DISTANCE MEASUREMENT SYSTEM - INTERBUS

Part description Part no.	Description	Meas. range [m]	Accuracy / Consistency	Interface	
Optical Laser Distance Measurement System					
AMS 384i 40 50113733	Optical Laser Distance Measurement System w/o device heating	0.2 … 40	± 2mm / 0.3mm [1]	INTERBUS	
AMS 384i 120 50113734	Optical Laser Distance Measurement System w/o device heating	0.2 … 120	± 2mm / 0.5mm [1]	INTERBUS	
AMS 384i 200 50113735	Optical Laser Distance Measurement System w/o device heating	0.2 … 200	± 3mm / 0.7mm [1]	INTERBUS	
AMS 384i 300 50113736	Optical Laser Distance Measurement System w/o device heating	0.2 … 300	± 5mm / 1.5mm [1]	INTERBUS	
AMS 384i 40 H 50113737	Optical Laser Distance Measurement System with device heating	0.2 … 40	± 2mm / 0.3mm [1]	INTERBUS	
AMS 384i 120 H 50113738	Optical Laser Distance Measurement System with device heating	0.2 … 120	± 2mm / 0.5mm [1]	INTERBUS	
AMS 384i 200 H 50113739	Optical Laser Distance Measurement System with device heating	0.2 … 200	± 3mm / 0.7mm [1]	INTERBUS	
AMS 384i 300 H 50113740	Optical Laser Distance Measurement System with device heating	0.2 … 300	± 5mm / 1.5mm [1]	INTERBUS	

1) At 1 sigma

Accessories / connection cables

More accessories can be found from **page 430** onwards

Part no.	Designation	Features
see P. 452	Reflective tape …	Reflective tape, various sizes, self-adhesive or on aluminum plate
50104479	US AMS 01	Deflector unit for 90° deflection of the laser beam
50035630	US1 OMS	Deflection mirror for 90° deflection of the laser beam
50107255	MW OMS / AMS 01	Mounting bracket for converting from OMS to AMS
see P. 435	K - D M12…	Connection cables with M12 connector (A-coded) for PWR
see P. 430	KB SSI/IBS-…	Connection cables with M12 connector (B-coded) for BUS IN
see P. 431	KB IBS-…SA	Connection cables with M12 connector (B-coded) for BUS OUT
see P. 443	KD 01-5-…BA	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 443	KD 02-5-…	FIELDBUS connector, M12, 5-pin, B-coded

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AMS 384*i*

Distance meas. system

Features

The AMS 384*i* is equipped with an INTERBUS interface for transferring the measured distances, speeds as well as various status messages.

All AMS 384*i* device parameters are preset to default values. These can be changed quickly and easily via the control panel / display.

For outdoor or low-temperature applications, a model with integrated heating (AMS 384*i* … H) is available. If necessary, a heatable reflector can be used.



A reflector is necessary for operating the AMS 384*i* … laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 384*i*



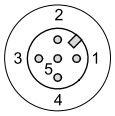
40m
120m
200m
300m

INTERBUS

Baud rate:
500 kBit/s or 2 Mbit/s

Electrical connection

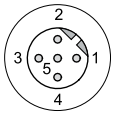
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

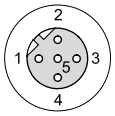
INTERBUS

BUS IN - male, B-cod.



PIN	Signal
1	DO
2	/DO
3	DI
4	/DI
5	COM

BUS OUT - female, B-cod.



PIN	Signal
1	DO
2	/DO
3	DI
4	/DI
5	COM

OVERVIEW



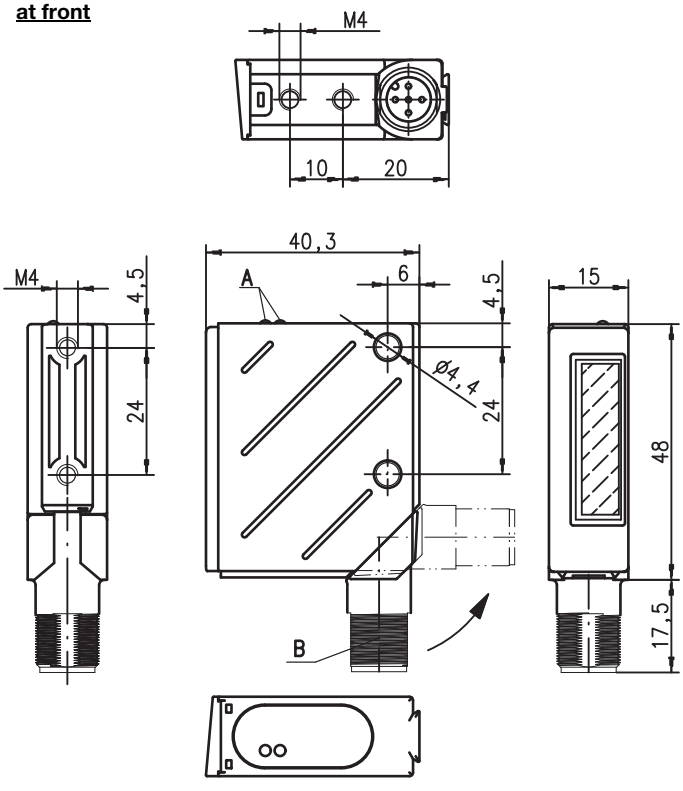
Telpher line positioning in the automobile industry



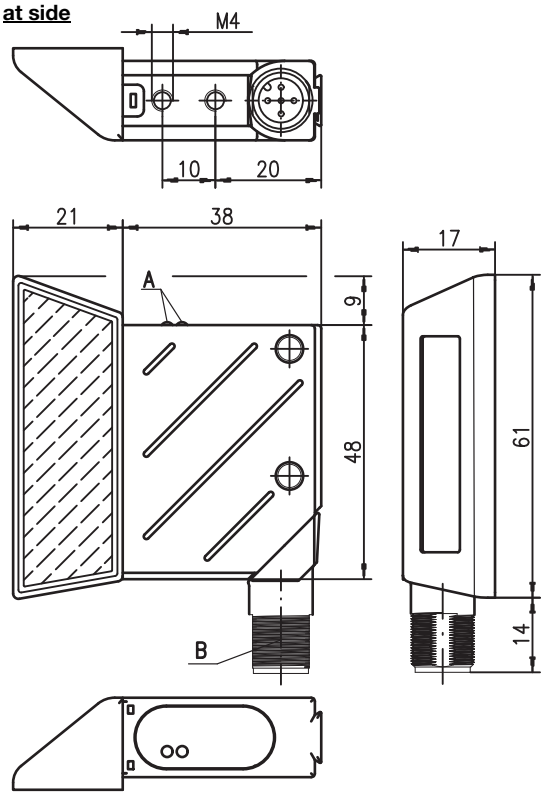
Telpher line positioning in the automobile industry

Dimensioned drawing

Beam exit at front



Beam exit at side



A Indicator LEDs
B 90° turning connector


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BAR CODE POSITIONING SYSTEM BPS 8

Bar code positioning system	Working range	Page
BPS 8 S M 100 - 01	60 120 mm	336
BPS 8 S M 102 - 01	80 140 mm	336



Common technical data

Electrical data	Operating voltage U_B	4.9 … 5.4VDC
	Power consumption	≤ 1.5W
	Interface type	RS 232, RS 485 with MA 8-01
	Reprod. accuracy	± 1(2)mm
	Meas. value output	300 values/s
	Traverse rate	≤ 4m/s
Indicators	Status LED (B1)	device state
	Decode LED (B2)	read state
Mechanical data	Housing	diecast zinc
	Optics cover	glass
	Weight	70g
Environmental data	Ambient temperature operation (storage)	0°C … +40°C (-20°C … +60°C)
	Protection class	IP 67
	Certificates	CE, FCC Class B, UL
Laser	Class 2 acc. to EN 60825-1 and 21 CFR 1040.10 with Laser Notice No. 50	

Mounting systems for this series can be found from **page 422** onwards

Features

- **M12 standard connection via ready-made connection cables**
- **RS 232 or RS 485 interface**
- **Customer-specific configuration**
- **Measurement accuracy up to 10,000m at ± 1mm on taught-in positions**
- **Very easy mounting**
- **MA 8-01 connector unit for 24VDC and RS 485 interface as well as simultaneous use of switching input and switching output**
- **Direct connection to the MA 2xx*i* for operating the most common fieldbus interfaces.**
- **Large depth of field range provides tolerance in the event of changes in distance between bar code tape and read head**

BAR CODE POSITIONING SYSTEM

Part description Part no.	Description	Meas. range [m]	Reproducible accuracy [mm] 1)	Interface	
Bar code positioning system					
BPS 8 S M 100 - 01 50104784	Bar code positioning system, lateral beam exit, M12 connector	0 … 10,000	± 1(2)	RS 232	
BPS 8 S M 102 - 01 50104783	Bar code positioning system, front beam exit, M12 connector	0 … 10,000	± 1(2)	RS 232	

1) On taught-in points

A bar code tape of type BCB 8 … (see page 346) is absolutely necessary for operating the BPS 8 … bar code positioning system. Please include a tape of the desired length with your order.

BPSconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables More accessories can be found from **page 422** onwards

Part no.	Designation	Features
see P. 346	BCB 8 …	BCB 8 bar code tapes in various lengths, see page 346
see P. 426	KB 008 - …	M12 connection cables for BPS 8/MA 8-01, see page 426
50040097	KD 01-5-BA	POWER-IO-DATA connector, M12 axial, socket, 5-pin, A-coded
see P. 398	MA 8 - 01	Connector unit for BPS 8, RS 485 interface, M12 connectors
50113467	KB JST M12A-5P-3000	Connection cable for BPS 8 to MA 200i
see P. 414	MA 2xxi	Connector unit / gateway for many automation technology network types
see P. 422	BT 8 - 01	Mounting device for BPS 8


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BPS 8

Bar code positioning system

Features

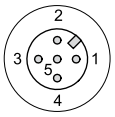
- 300 measurement values/s
- Resolution of 1/100 mm up to 1 m
- M12 standard connection via ready-made connection cables
- RS 232 or RS 485 interface
- Customer-specific configuration
- Measurement accuracy up to 10,000 m at ± 1 mm [1)]
- Very easy mounting
- MA 8-01 connector unit for 24 VDC and RS 485 interface as well as simultaneous use of switching input and switching output
- Direct connection to the MA 2*xxi* for operating the most common fieldbus interfaces.
- Large depth of field range provides tolerance in the event of changes in distance between bar code tape and read head

1) On taught-in positions



Electrical connection

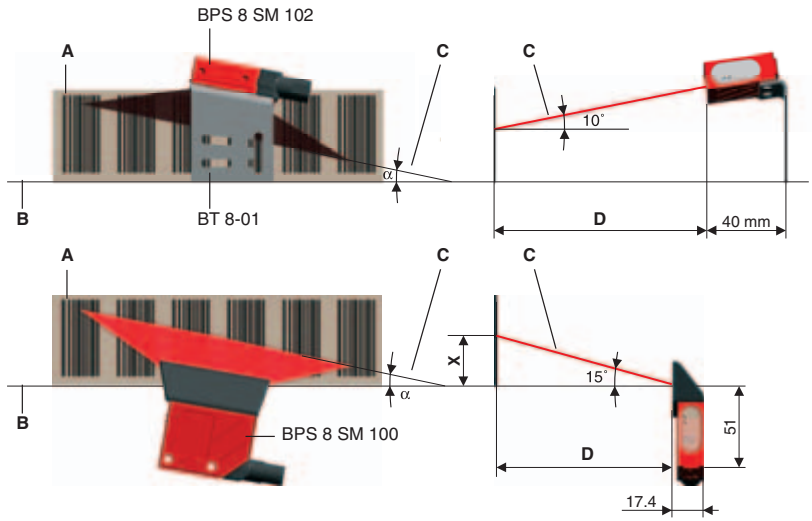
PWR IN - male, A-cod.



PIN	Signal
1	VIN
2	RS232 TxD
3	GND
4	RS232 RxD
5	SWIN/SWOUT

System arrangement

BPS 8



A Bar code tape
B Reference plane
C Pitch of scanning beam:
α = 10° for a tape height of 47 mm
α = 5° for a tape height of 25/30 mm
D Read distance
X Height X

D	60	70	80	90	100	110	120
X	16	19	21	24	27	29	32

OVERVIEW



Positioning of high-bay storage devices in conveyor and storage technology

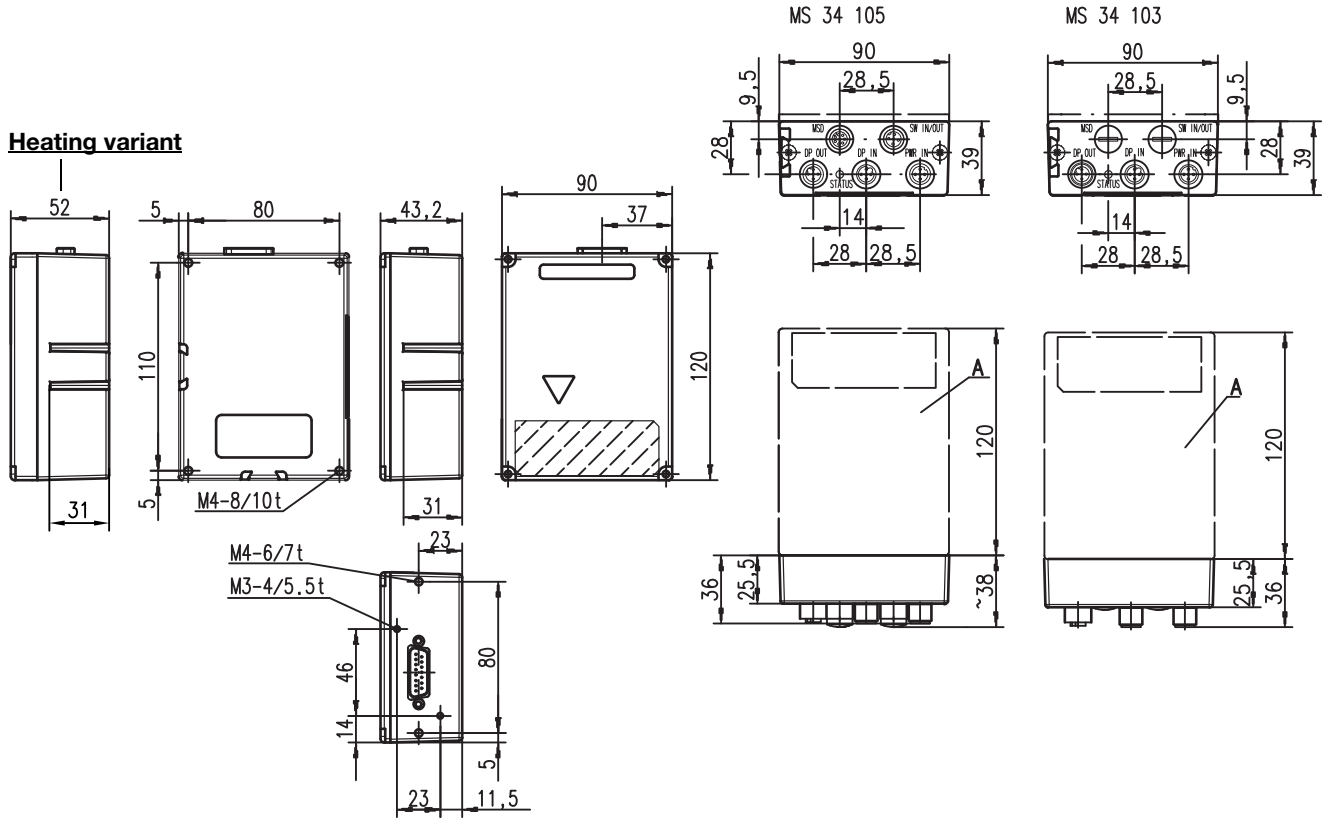


Positioning of telpher lines in the automobile industry



Positioning of side-tracking skates

Dimensioned drawing



A BPS 34



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BAR CODE POSITIONING SYSTEM BPS 34

Bar code positioning system	Working range	Page
BPS 34 S M 100 …	90 … 170 mm	340



Common technical data

Electrical data	Operating voltage U_B	w/o heating: 10 … 30VDC w. heating:
	Power consumption	w/o heating: ≤ 5W w. heating: ≤ 30W
	Interface type	PROFIBUS DP
	Reprod. accuracy	± 1(2)mm
	Meas. value output	500 values/s
	Traverse rate	≤ 10m/s
Indicators	Green LED	ready, bus OK
Mechanical data	Housing	diecast aluminum
	Optics cover	glass
	Weight	400g / 480g w. heating
Environmental data	Ambient temperature operation (storage)	w/o heating: 0 … +40°C w. heating: -30 … +40°C high temp.: 0 … +50°C (-30 … +60°C)
	Protection class	IP 65
Laser	Class 2 acc. to EN 60825-1 and 21 CFR 1040.10 with Laser Notice No. 50	

Mounting systems for this series can be found from **page 423** onwards

Features

- **M12 standard connection via ready-made connection cables**
- **PROFIBUS DP interface**
- **Integrated velocity measurement**
- **Measurement accuracy up to 10,000m at ± 1mm on taught-in positions**
- **Very easy mounting**
- **Large depth of field range provides tolerance in the event of changes in distance between bar code tape and read head**

BAR CODE POSITIONING SYSTEM WITH PROFIBUS DP

Part description Part no.	Description	Meas. range [m]	Reproducible accuracy [mm] 1)	Interface	
Bar code positioning system					
BPS 34 S M 100 50038007	Bar code positioning system	0 … 10,000	± 1(2)	PROFIBUS DP	
BPS 34 S M 100 H 50038008	Bar code positioning system, with heating	0 … 10,000	± 1(2)	PROFIBUS DP	
BPS 34 S M 100 HT 50103179	Bar code positioning system, for temperatures up to 50 °C	0 … 10,000	± 1(2)	PROFIBUS DP	

1) On taught-in points

A bar code tape of type BCB 3x (see page 350) is absolutely necessary for operating the BPS 34 … bar code positioning system. Please include a tape of the desired length with your order.
In addition, an MS 34 103 or MS 34 105 modular hood with integrated connectors for connecting to the PROFIBUS DP must also be ordered. The use of the MSD 1 101 modular service display in combination with the MS 34 105 is optional.
BPSconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables More accessories can be found from **page 423** onwards

Part no.	Designation	Features
see P. 350	BCB 3x …	BCB 3x bar code tapes in various lengths, see page 350
50037230	MS 34 103	Modular hood for BPS 34, 3 x M12 connectors
50037231	MS 34 105	Modular hood for BPS 34, 5 x M12 connectors
50037232	MSD 1 101	Modular service display for BPS 34 (MS 34 105 required)
50037543	KB 034 - 2000	M12 connection cable for MS 34 105 to MSD 1 101
see P. 435	K - D M12…	Connection cables with M12 connector (A-coded) for PWR
see P. 434	KB PB-…	Connection cables with M12 connector (B-coded) for BUS IN/OUT
see P. 443	KD 01-5-…	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 443	KD 02-5-…	FIELDBUS connector, M12, 5-pin, B-coded
50038539	TS 02-4-SA	M12 connector, integrated terminating resistor for BUS OUT
see P. 423	BT 56	Mounting device for BPS 34
see P. 423	UMS 96	Dovetail rod mounting set, for BPS 3x

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BPS 34

Bar code positioning system

Features

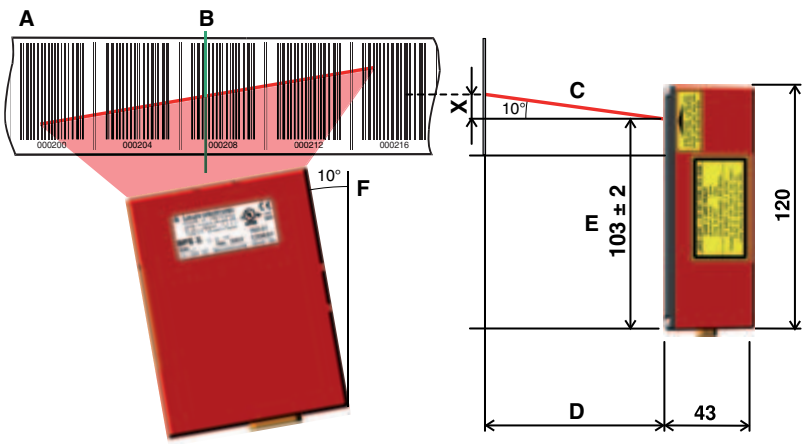
- 500 measurement values/s
- Resolution of 1/100 mm up to 1 m
- M12 standard connection via ready-made connection cables
- PROFIBUS DP interface
- Integrated velocity measurement
- Measurement accuracy up to 10,000 m at ± 1 mm [1)]
- Very easy mounting
- Large depth of field range provides tolerance in the event of changes in distance between bar code tape and read head



1) On taught-in positions

System arrangement

BPS 34



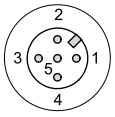
D [mm]	90	100	110	120	130	140	150	160	170
X [mm]	16	18	19	21	23	25	26	28	30

A Bar code tape
B Center of the scanning beam
C Scanning beam
D Read distance
E Beam exit
F Pitch in the vertical 10°
X Dimension X (see table)

Electrical connection

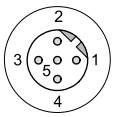
MS 34 103

PWR IN - male, A-cod.



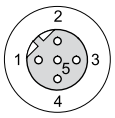
PIN	Signal
1	VIN
2	SWOUT
3	GND
4	SWIN
5	FE

DP IN - male, B-cod.



PIN	Signal
1	VCC
2	A (N)
3	GND
4	B (P)
5	Shield / FE

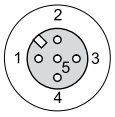
DP OUT - female, B-cod.



PIN	Signal
1	VCC
2	A (N)
3	GND
4	B (P)
5	Shield / FE

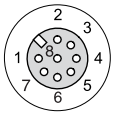
MS 34 105 (additional)

SW IN/OUT - female, A-cod.



PIN	Signal
1	VOUT
2	SWOUT
3	GND
4	SWIN
5	FE

MSD - female, A-cod.

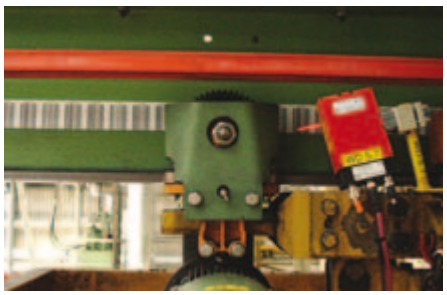


PIN	Signal
1	/SERV
2	VIN
3	TXD
4	RXD
5	SCL
6	SDA
7	GND
8	/INT

OVERVIEW



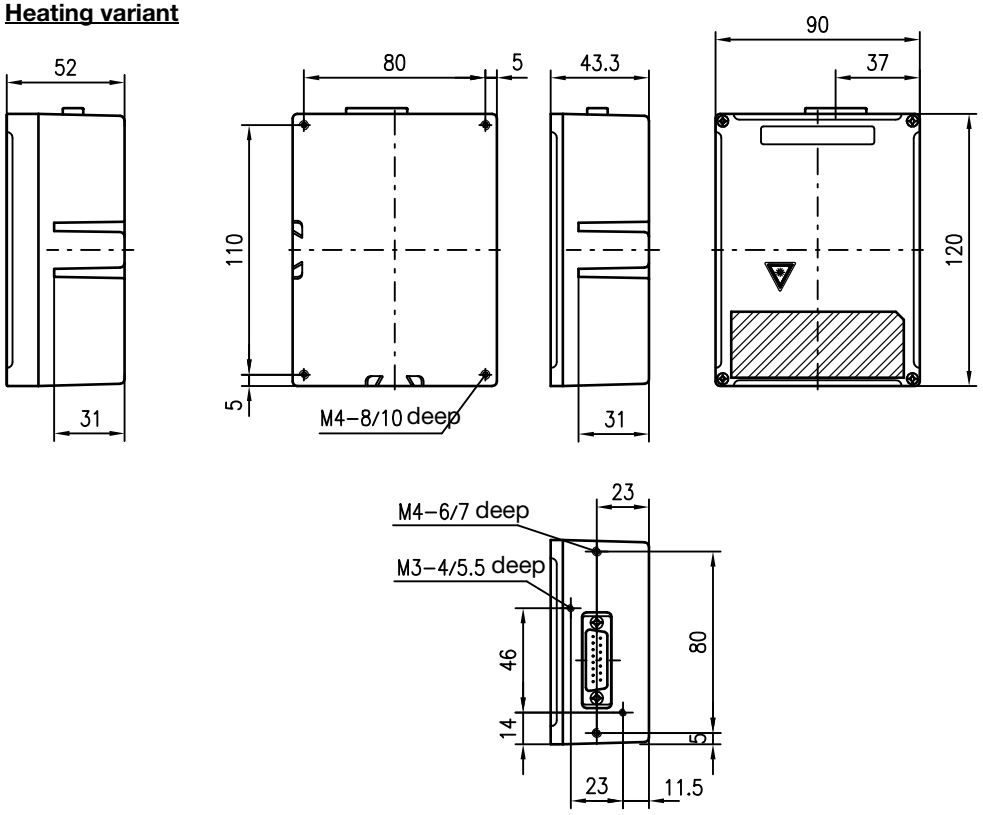
Positioning of transverse side-tracking skates



Positioning of transverse side-tracking skates

Dimensioned drawing

Heating variant



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BAR CODE POSITIONING SYSTEM BPS 37

Bar code positioning system	Working range	Page
BPS 37 S M 100 …	90 170 mm	344



Common technical data

Electrical data	Operating voltage U_B	w/o heating: 10 … 30VDC w. heating: 22 … 26VDC
	Power consumption	w/o heating: ≤ 5W w. heating: ≤ 30W
	Interface type	SSI, 50 … 800kHz
	Reprod. accuracy	± 1(2)mm
	Meas. value output	500 values/s
	Traverse rate	≤ 10m/s
Mechanical data	Housing	diecast aluminum
	Optics cover	glass
	Weight	400g / 480g w. heating
Environmental data	Ambient temperature operation (storage)	w/o heating: 0 … +40°C w. heating: -30 … +40°C high temp.: 0 … +50°C (-30 … +60°C)
	Protection class	IP 65
Laser	Class 2 acc. to EN 60825-1 and 21 CFR 1040.10 with Laser Notice No. 50	

Mounting systems for this series can be found from **page 423** onwards

Features

- **SSI interface**
- **Integrated velocity measurement**
- **Measurement accuracy up to 10,000m at ± 1mm on taught-in positions**
- **Very easy mounting**
- **Large depth of field range provides tolerance in the event of changes in distance between bar code tape and read head**

BAR CODE POSITIONING SYSTEM WITH SSI INTERFACE

Part description Part no.	Description	Meas. range [m]	Reproducible accuracy [mm] 1)	Interface	
Bar code positioning system					
BPS 37 S M 100 50037188	Bar code positioning system, 15-pin Sub-D connector	0 … 10,000	± 1(2)	SSI	
BPS 37 S M 100 H 50038009	Bar code positioning system, with heating, 15-pin Sub-D connector	0 … 10,000	± 1(2)	SSI	
BPS 37 S M 100 HT 50103180	Bar code positioning system, for temperatures up to 50 °C, 15-pin Sub-D connector	0 … 10,000	± 1(2)	SSI	

1) On taught-in points

A bar code tape of type BCB 3x … (see page 350) is absolutely necessary for operating the BPS 37 … bar code positioning system. Please include a tape of the desired length with your order.
In addition, an MS 37 modular connector hood or an MA 4.7 or MA 4.7 D modular connection unit can also be ordered for simplifying the electrical connection.

BPSconfig configuration software - free download at *www.leuze.com*.

Accessories / connection cables

More accessories can be found from **page 423** onwards

Part no.	Designation	Features
see P. 350	BCB 3x …	BCB 3x bar code tapes in various lengths, see page 350
50037324	MA 4.7	Modular connector unit for BPS 37
50037325	MA 4.7 D	Modular connector unit for BPS 37, with display
see P. 428	KB 031 - 1000	Connection cable for BPS 37 to MA 4.7 (D), length 1 m
see P. 428	KB 031 - 3000	Connection cable for BPS 37 to MA 4.7 (D), length 3 m
50107684	MS 37	Modular connector hood for BPS 37
see P. 430	KB SSI … - BA	Connection cable for connecting MS 37 to SSI
see P. 435	K-D M12A-5P-…	Connection cable for connecting MS 37 to voltage supply
50110155	KB - Service - 3000	Service cable for BPS 37 with MS 37, length 3 m
see P. 443	KD 01-5-…	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 443	KD 02-5-…	FIELDBUS connector, M12, 5-pin, B-coded
see P. 423	BT 56	Mounting device for BPS 37
see P. 423	UMS 96	Dovetail rod mounting set, for BPS 3x


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BPS 37

Bar code positioning system

Features

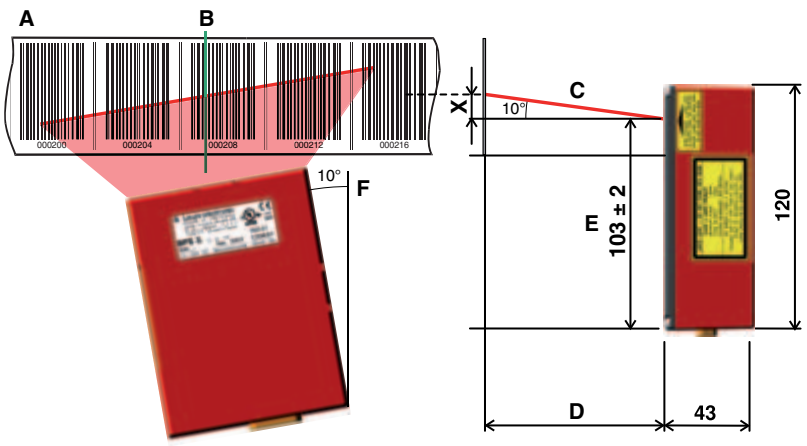
- 500 measurement values/s
- Resolution of 1/100mm up to 1m
- SSI interface
- Integrated velocity measurement
- Measurement accuracy up to 10,000m at ± 1mm [1)]
- Very easy mounting
- Large depth of field range provides tolerance in the event of changes in distance between bar code tape and read head



1) On taught-in positions

System arrangement

BPS 37

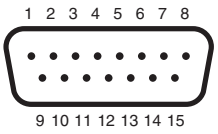


D [mm]	90	100	110	120	130	140	150	160	170
X [mm]	16	18	19	21	23	25	26	28	30

A Bar code tape
B Center of the scanning beam
C Scanning beam
D Read distance
E Beam exit
F Pitch in the vertical 10°
X Dimension X (see table)

Electrical connection

Sub-D - male



PIN	Signal
1	RS 232 GND
2	SWIN1
3	SSI DATA+
4	SSI DATA-
5	res.
6	SSI CLK+
7	/Serv
8	VIN
9	SSI CLK-
10	SWOUT1
11	RS 232 RxD
12	RS 232 TxD
13	res.
14	res.
15	GND

OVERVIEW

Dimensioned drawing




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BAR CODE TAPE BCB 8

Bar code tape	Max. length	Page
BCB 8	0 10,000 m	348



The BCB 8 bar code tape is only suitable for use in combination with a BPS 8 read head!

Common technical data

Dimensions	Standard height Lengths Length deviation	47 mm, 30/25 mm optionally see page 348 ± 1 mm per meter
Construction	Manufacturing process	filmsetting
	Base material	polyester
	Surface protection	polyester, matt
	Adhesive	acrylate adhesive, 0.1 mm thick
	Adhesive strength on (average values)	aluminum: 25 N/25 mm steel: 25 N/25 mm polycarb.: 22 N/25 mm polyprop.: 20 N/25 mm
Environmental data	Ambient temperature	during processing: 0 … +45 °C continuous: -40 … +120 °C
	Dimensional stability	no shrinkage, tested according to DIN 30646
	Tearing resist./extension	150 N / min. 80 %
	Weathering resistance	UV-light, humidity, salt spray (150 h/5 %)
	Chem. resistance (at 23 °C for 24 h)	transformer oil, diesel oil, white spirit, heptane, ethylene glycol (1:1)
	Behavior in fire	self-extinguishing after 15 s

Features

- **Robust and durable polyester adhesive tape**
- **High dimensional stability**
- **Max. length 10,000 m**
- **Self-adhesive with high adhesive strength**
- **Bar code grid 30 mm**

www.leuze.com

BAR CODE TAPE FOR BPS 8

Part description Part no.	Description	Length [m]	Value range [m]	Height [mm]
Bar code tape				
BCB 8 005 50106467	Bar code tape for bar code positioning system BPS 8	5	0 … 5	47
BCB 8 010 50104792	Bar code tape for bar code positioning system BPS 8	10	0 … 10	47
BCB 8 020 50104793	Bar code tape for bar code positioning system BPS 8	20	0 … 20	47
BCB 8 030 50104794	Bar code tape for bar code positioning system BPS 8	30	0 … 30	47
BCB 8 040 50104795	Bar code tape for bar code positioning system BPS 8	40	0 … 40	47
BCB 8 050 50104796	Bar code tape for bar code positioning system BPS 8	50	0 … 50	47
BCB 8 060 50104797	Bar code tape for bar code positioning system BPS 8	60	0 … 60	47
BCB 8 070 50104798	Bar code tape for bar code positioning system BPS 8	70	0 … 70	47
BCB 8 080 50104799	Bar code tape for bar code positioning system BPS 8	80	0 … 80	47
BCB 8 090 50104800	Bar code tape for bar code positioning system BPS 8	90	0 … 90	47
BCB 8 100 50104801	Bar code tape for bar code positioning system BPS 8	100	0 … 100	47
BCB 8 110 50104802	Bar code tape for bar code positioning system BPS 8	110	0 … 110	47
BCB 8 120 50104803	Bar code tape for bar code positioning system BPS 8	120	0 … 120	47
BCB 8 130 50104804	Bar code tape for bar code positioning system BPS 8	130	0 … 130	47

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BCB 8

Bar code tape

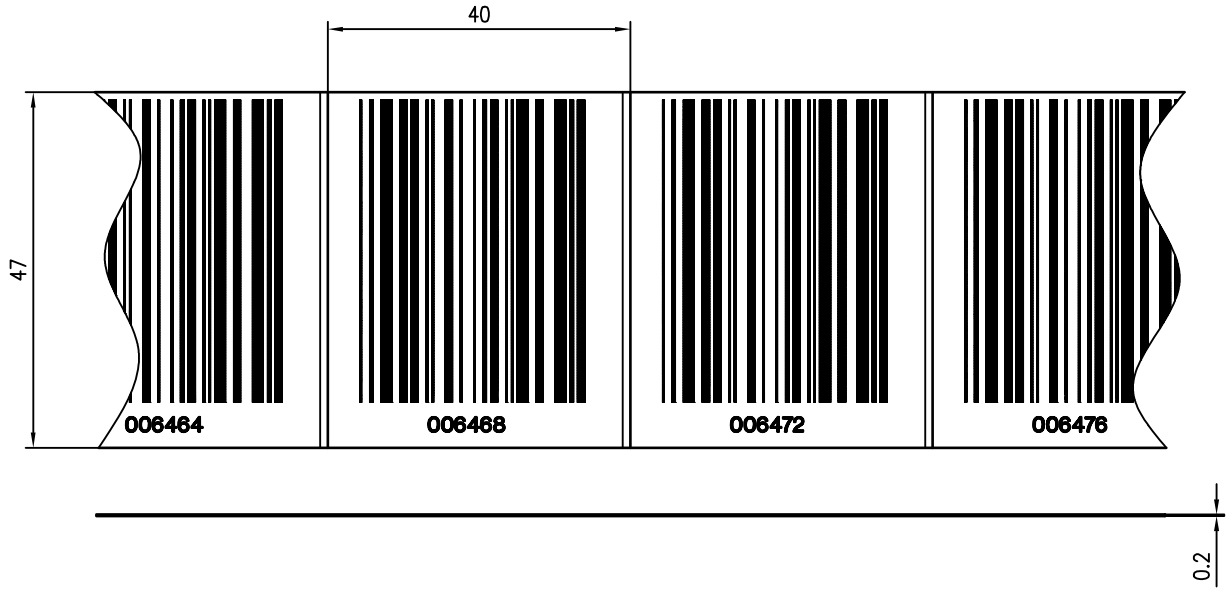


Part description Part no.	Description	Length [m]	Value range [m]	Height [mm]	
Bar code tape					
BCB 8 140 50104805	Bar code tape for bar code positioning system BPS 8	140	0 … 140	47	
BCB 8 150 50104806	Bar code tape for bar code positioning system BPS 8	150	0 … 150	47	
BCB 8 200 50106468	Bar code tape for bar code positioning system BPS 8	200	0 … 200	47	
BCB 8 special length, 47mm high 50104807 [1]	Bar code tape for BPS 8 with special lengths from 150m	from 150	as specified	47	
BCB 8 special length, 30mm high 50104808 [1]	Bar code tape for BPS 8 with special lengths from 150m	from 150	as specified	30	
BCB 8 special length, 25mm high 50104809 [1]	Bar code tape for BPS 8 with special lengths from 150m	from 150	as specified	25	
BCB 8 special length/height 50106980 [1]	Bar code tape for BPS 8 with special lengths from 150m	from 150	as specified	as specified	
LOG set-up costs for bar code tape < 150m K50000161 [1]	Set-up costs when ordering bar code tape in special lengths < 150m	up to 150	–	–	
Control/marker bar code labels and repair kit					
MVS label BPS 8 50106476	Label for measurement range switching for BPS 8 (PU = 10 pcs.)	0.03	MVS	47	
Marker label BPS 8 50106474	Marker label for BPS 8	0.03	as specified	47	
Repair - Kit BPS 8 50106472 [2]	Repair bar code tape for BPS 8, length 1m	1	as specified	47	
LOG set-up costs K50000160 [2]	Set-up costs per order for repair kit bar code tape	–	–	–	

1) Bar code tapes in special lengths can only be produced for total lengths from 150m! Additional set-up fees are charged when ordering shorter tapes. Please refer to the current price list for details.
2) There are one-time set-up costs associated with each order. Please refer to the current price list for details.

OVERVIEW

Dimensioned drawing



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BAR CODE TAPE BCB 3x

Bar code tape	Max. length	Page
BCB 3x	0 10,000 m	352



The BCB 3x bar code tape is only suitable for use in combination with a BPS 34 or BPS 37 read head!

Common technical data

Dimensions	Standard height Lengths Length deviation	47 mm, 25 mm optionally see page 352 ± 1 mm per meter
Construction	Manufacturing process	filmsetting
	Base material	polyester
	Surface protection	polyester, matt
	Adhesive	acrylate adhesive, 0.1 mm thick
	Adhesive strength on (average values)	aluminum: 25 N/25 mm steel: 25 N/25 mm polycarb.: 22 N/25 mm polyprop.: 20 N/25 mm
Environmental data	Ambient temperature	during processing: 0 … +45 °C continuous: -40 … +120 °C
	Dimensional stability	no shrinkage, tested according to DIN 30646
	Tearing resist./extension	150 N / min. 80 %
	Weathering resistance	UV-light, humidity, salt spray (150 h/5 %)
	Chem. resistance (at 23 °C for 24 h)	transformer oil, diesel oil, white spirit, heptane, ethylene glycol (1:1)
	Behavior in fire	self-extinguishing after 15 s

Features

- **Robust and durable polyester adhesive tape**
- **High dimensional stability**
- **Max. length 10,000 m**
- **Self-adhesive with high adhesive strength**
- **Bar code grid 40 mm**

www.leuze.com

BAR CODE TAPE FOR BPS 34 AND BPS 37

Part description Part no.	Description	Length [m]	Value range [m]	Height [mm]	
Bar code tape					
BCB 005 50038895	Bar code tape for bar code positioning system BPS 3x	5	0 … 5	47	
BCB 010 50040041	Bar code tape for bar code positioning system BPS 3x	10	0 … 10	47	
BCB 020 50037489	Bar code tape for bar code positioning system BPS 3x	20	0 … 20	47	
BCB 030 50037491	Bar code tape for bar code positioning system BPS 3x	30	0 … 30	47	
BCB 040 50037492	Bar code tape for bar code positioning system BPS 3x	40	0 … 40	47	
BCB 050 50038894	Bar code tape for bar code positioning system BPS 3x	50	0 … 50	47	
BCB 060 50038893	Bar code tape for bar code positioning system BPS 3x	60	0 … 60	47	
BCB 070 50038892	Bar code tape for bar code positioning system BPS 3x	70	0 … 70	47	
BCB 080 50038891	Bar code tape for bar code positioning system BPS 3x	80	0 … 80	47	
BCB 090 50038890	Bar code tape for bar code positioning system BPS 3x	90	0 … 90	47	
BCB 100 50037493	Bar code tape for bar code positioning system BPS 3x	100	0 … 100	47	
BCB 110 50040042	Bar code tape for bar code positioning system BPS 3x	110	0 … 110	47	
BCB 120 50040043	Bar code tape for bar code positioning system BPS 3x	120	0 … 120	47	
BCB 130 50040044	Bar code tape for bar code positioning system BPS 3x	130	0 … 130	47	

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BCB 3x

Bar code tape



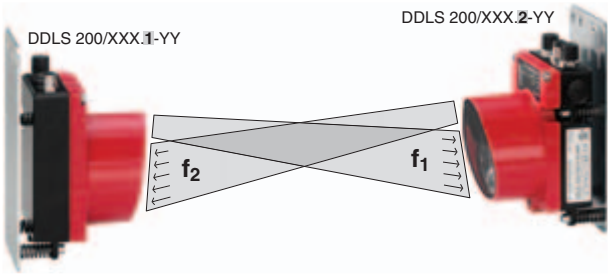
Part description Part no.	Description	Length [m]	Value range [m]	Height [mm]	
Bar code tape					
BCB 140 50040045	Bar code tape for bar code positioning system BPS 3x	140	0 … 140	47	
BCB 150 50040046	Bar code tape for bar code positioning system BPS 3x	150	0 … 150	47	
BCB 200 50037494	Bar code tape for bar code positioning system BPS 3x	200	0 … 200	47	
BCB special length 47 mm high 50037495 [1]	Bar code tape for BPS 3x with special lengths from 150 m	from 150	as specified	47	
BCB special length 25 mm high 50102600 [1]	Bar code tape for BPS 3x with special lengths from 150 m	from 150	as specified	25	
BCB special length/height 50106979 [1]	Bar code tape for BPS 3x with special lengths from 150 m	from 150	as specified	as specified	
LOG set-up costs for bar code tape < 150m K50000161 [1]	Set-up costs when ordering bar code tape in special lengths < 150m	up to 150	–	–	
Control and marker bar code labels					
MVS Label BPS 3x 50106478	Label for measurement range switching for BPS 3x (PU = 10 pcs.)	0.04	MVS	47	
Repair Kits					
Repair - Kit BPS 3x 50106473 [2]	Repair bar code tape for BPS 3x, length 1 m	1	as specified	47	
LOG set-up costs K50000160 [2]	Set-up costs per order for repair kit bar code tape	–	–	–	

1) Bar code tapes in special lengths can only be produced for total lengths from 150 m! Additional set-up fees are charged when ordering shorter tapes. Please refer to the current price list for details.
2) There are one-time set-up costs associated with each order. Please refer to the current price list for details.

SELECTION GUIDE

Serial optical data transmission systems

Operating principle



In applications where data must be transmitted to and from moving objects, optical data transmission systems provide an ideal solution. With the Series DDLS …, Leuze electronic offers high-performance optical data transmission systems. The optical data transceivers are robust and operate wear free.

To prevent the devices from mutually interfering with one another during data transmission in duplex operation, use 2 frequency pairs. These are identified by the type designations ….**1** and ….**2** as well as by the labels **frequency f_1** and **frequency f_2** on the control panel.

The received signal level is checked on both devices and can be read on an LED bar graph display. If the received signal level drops below a certain value, e.g. due to increasing soiling of the optics, a warning output is activated.

Products / Interfaces



DDLS 200 … - 10 - … from **page 360**
PROFIBUS interface Terminals/M12



DDLS 200 … - 2x - … from **page 364**
Interbus interface FOC/copper wires



DDLS 200 … - 40 - … from **page 368**
DataHighway+/Remote I/O Interface



DDLS 200 … - 50 - … from **page 370**
CANopen/DeviceNet Interface



DDLS 200 … - 60 - … from **page 372**
Ethernet Interface 10/100 Mbit/s

Features

- Operating ranges up to 500 m possible
- Transmission rates up to 2 Mbit/s
- Network interfaces with integrated repeater function
- Low ambient light sensitivity through special FSK method

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OPTICAL DATA TRANSMISSION SYSTEMS



SELECTION TABLE

Series	Dimensions in mm (W x H x D)	Housing material: Plastic	Housing material: Metal	Operating range in m: 10	50	100	300	500
 DDLS 200… -10…	90 x 190 x 120		●	0.2				500
 DDLS 200… -20…	90 x 190 x 120		●	0.2				500
 DDLS 200… -21…	90 x 190 x 120		●	0.2			300	
 DDLS 200… -40…	90 x 190 x 120		●	0.2			300	
 DDLS 200… -50…	90 x 190 x 120		●	0.2			300	
 DDLS 200… -60…	90 x 190 x 120		●	0.2			300	

Detailed information on the dimensioned drawings or the specifications can be found in the respective data sheet or in the technical description.

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OPTICAL DATA TRANSMISSION SYSTEMS

Light source		Max. baud rate		Interfaces											Page
Red light	Infrared light	kbit/s	Mbit/s	PROFIBUS DP/FMS/MPI	Interbus-S	Interbus-S FOC	DH+ / Remote I/O	CANopen / DeviceNet	Ethernet	RS 485	RS 422	RS 232	TTY	Parallel 8 I/O (24 VDC)	
	●		1.5	●						●					360
	●	500			●						●				364
	●		2.0			●									366
	●	230.4					●								368
	●		1.0					●							370
	●		10/ 100						●						372

OVERVIEW



Data transmission to high-bay storage device in conveyor and storage technology

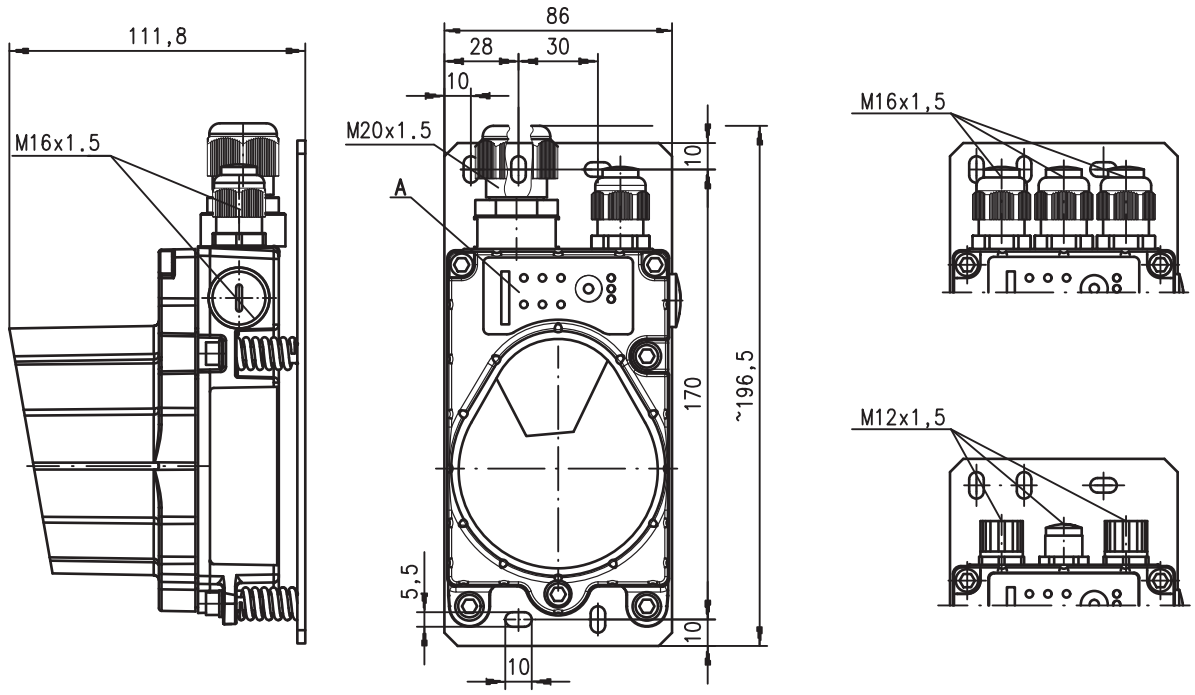


Data transmission to transverse side-tracking skate in the automobile industry



Data transmission to moving system components in conveyor and storage technology

Dimensioned drawing



A Control panel

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OPTICAL DATA TRANSMISSION SYSTEMS DDLS 200

Optical data transmission systems	Interface	Page
DDLS 200 / … - 10… DDLS 200 / … - 20… DDLS 200 / … - 21… DDLS 200 / … - 40… DDLS 200 / … - 50… DDLS 200 / … - 60…	PROFIBUS / RS 485 [1] Interbus / RS 422 Interbus fiber-optic cable Rockwell Automation DH+ / RIO DeviceNet / CANopen Ethernet TCP/IP (10/100 Mbit/s)	360

1) On request



Common technical data

Electrical data	Operating voltage U_B	18 … 30 VDC
	Current consumption (at 24 VDC)	w/o heating: ≤ 200 mA w. heating: ≤ 800 mA
	Switching input	activation input
	Switching output	1 x PNP, warning output
Indicators and operational controls	Individual LEDs	voltage supply, operating mode, state, diagnostics (type dependent)
	LED strip	receiving level bar graph
	Keypad button	change of operating mode
Mechanical data	Housing	diecast aluminum
	Optics	glass
	Weight	approx. 1200 g
Environmental data	Ambient temperature operation (storage)	w/o heating: -5 … +50 °C w. heating: -30 … +50 °C (-30 … +70 °C)
	Protection class	IP 65
	Air humidity	<… 90 % (non-cond.)
Optical data	Infrared LED, wavelength 880 nm Class 1 acc. to EN 60825-1:1994+A1+A2	
	Extraneous light	> 10,000 Lux

Features

- **Integrated mounting and alignment plate**
- **Patented alignment process**
- **Clamp connection or M12 connector**
- **Integrated repeater function**
- **Continuous display of the alignment quality**
- **Extensive bus-specific diagnostics**
- **Warning output for falling received signal level**
- **Contact- and wear-free transmission**
- **Not affected by extraneous light**
- **Not affected by lasers or reflective tape**

DATA TRANSMISSION SYSTEMS, PROFIBUS

Part description Part no. ….**1** -… / ….**2** -…	Description	Op. range [m]	Opening angle [°]	Interface	Connection	
Optical data transmission systems						
DDLS 200 / 30.1 - 10 - W **DDLS 200 / 30.2 - 10 - W** 50039704 / 50039705	Opt. data transmission, -5 … +50 °C, wide angle version	30	± 1.5	PROFIBUS 1.5 Mbit/s	Terminals	
DDLS 200 / 80.1 - 10 - W **DDLS 200 / 80.2 - 10 - W** 50102312 / 50102313	Opt. data transmission, -5 … +50 °C, wide angle version	80	± 1.0	PROFIBUS 1.5 Mbit/s	Terminals	
DDLS 200 / 120.1 - 10 **DDLS 200 / 120.2 - 10** 50036282 / 50036283	Opt. data transmission, -5 … +50 °C	120	± 0.5	PROFIBUS 1.5 Mbit/s	Terminals	
DDLS 200 / 120.1 - 10 - M12 **DDLS 200 / 120.2 - 10 - M12** 50106023 / 50106024	Opt. data transmission, -5 … +50 °C	120	± 0.5	PROFIBUS 1.5 Mbit/s	M12 connector	
DDLS 200 / 200.1 - 10 **DDLS 200 / 200.2 - 10** 50036280 / 50036281	Opt. data transmission, -5 … +50 °C	200	± 0.5	PROFIBUS 1.5 Mbit/s	Terminals	
DDLS 200 / 200.1 - 10 - M12 **DDLS 200 / 200.2 - 10 - M12** 50106025 / 50106026	Opt. data transmission, -5 … +50 °C	200	± 0.5	PROFIBUS 1.5 Mbit/s	M12 connector	
DDLS 200 / 300.1 - 10 **DDLS 200 / 300.2 - 10** 50038284 / 50038285	Opt. data transmission, -5 … +50 °C	300	± 0.5	PROFIBUS 1.5 Mbit/s	Terminals	
DDLS 200 / 300.1 - 10 - M12 **DDLS 200 / 300.2 - 10 - M12** 50106027 / 50106028	Opt. data transmission, -5 … +50 °C	300	± 0.5	PROFIBUS 1.5 Mbit/s	M12 connector	
DDLS 200 / 500.1 - 10 **DDLS 200 / 500.2 - 10** 50040131 / 50040132	Opt. data transmission, -5 … +50 °C	500	± 0.5	PROFIBUS 93.75 kbit/s	Terminals	

An optical data transmission path always consists of a device pair whose individual DDLS 200 units transmit at 2 different frequencies.
For this reason, please always order a DDLS 200/….**1** -… **and** DDLS 200/….**2** -… device pair!

Accessories / connection cables

More accessories can be found from **page 434** onwards

Part no.	Designation	Features
50104557	K - D M12A - 5P - 5m - PVC	M12 connection cable for PWR, socket axial on one end, 5 m
50104559	K - D M12A - 5P - 10m - PVC	M12 connection cable for PWR, socket axial on one end, 10 m
see P. 434	KB PB-…	PROFIBUS connection cables, see page 434
50038539	TS 02-4-SA	M12 connector, integrated terminating resistor for BUS OUT
50038937	M12 Cable set PB	M12 connector set for DDLS 200 with PROFIBUS



DDLS 200
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We reserve the right to make changes • DDLS200_1_EN.fm

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DDLS 200

Data transmission system

Features

- Operating ranges of 30m, 80m, 120m, 200m, 300m, 500m
- Protocol-independent transmission of PROFIBUS DP, FMS, MPI, FMS mixed operation
- Electrically insulated interface
- No PROFIBUS address necessary
- Integrated repeater function (can be switched off)
- With integrated heating operable to -30°C
- Available with either connection terminal or M12 connection
- Possible to cascade multiple DDLS 200 units
- Adjustable baud rates
- RS 485 on consultation with Leuze electronic



DDLS 200 / ... - 10 ...

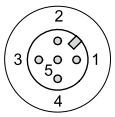


Oper. range from 0.2m	30m 80m 120m 200m 300m 500m
Baud rate	9.6 kbit/s ... 1.5 Mbit/s
Protocols	FMS DP MPI RS 485
Approvals	cULus LISTED

Electrical connection

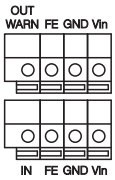
Power

M12 - male, A-cod.



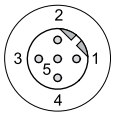
PIN	Signal
1	Vin
2	OUT WARN
3	GND
4	IN/Trans./Rec. off
5	FE

Terminals



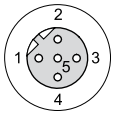
PROFIBUS

BUS IN - male, B-cod.



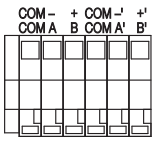
PIN	Signal
1	NC
2	A (N)
3	NC
4	B (P)
5	Shield / FE

BUS OUT - female, B-cod.



PIN	Signal
1	VCC
2	A (N)
3	GND
4	B (P)
5	Shield / FE

Terminals



DATA TRANSMISSION SYSTEMS, PROFIBUS, HEATING

Part description Part no. ….**1** -… / ….**2** -…	Description	Op. range [m]	Opening angle [°]	Interface	Connection	
Optical data transmission systems with integrated heating						
DDLS 200 / 80.1 - 10 - W - H **DDLS 200 / 80.2 - 10 - W - H** 50102494 / 50102495	Opt. data transmission, -30 … +50 °C, wide angle, heating	80	± 1.0	PROFIBUS 1.5 Mbit/s	Terminals	
DDLS 200 / 120.1 - 10 - H **DDLS 200 / 120.2 - 10 - H** 50036286 / 50036287	Opt. data transmission, -30 … +50 °C, heating	120	± 0.5	PROFIBUS 1.5 Mbit/s	Terminals	
DDLS 200 / 120.1 - 10 - H - M12 **DDLS 200 / 120.2 - 10 - H - M12** 50106029 / 50106030	Opt. data transmission, -30 … +50 °C, heating	120	± 0.5	PROFIBUS 1.5 Mbit/s	M12 connector	
DDLS 200 / 200.1 - 10 - H **DDLS 200 / 200.2 - 10 - H** 50036284 / 50036285	Opt. data transmission, -30 … +50 °C, heating	200	± 0.5	PROFIBUS 1.5 Mbit/s	Terminals	
DDLS 200 / 200.1 - 10 - H - M12 **DDLS 200 / 200.2 - 10 - H - M12** 50106031 / 50106032	Opt. data transmission, -30 … +50 °C, heating	200	± 0.5	PROFIBUS 1.5 Mbit/s	M12 connector	
DDLS 200 / 300.1 - 10 - H **DDLS 200 / 300.2 - 10 - H** 50038286 / 50038287	Opt. data transmission, -30 … +50 °C, heating	300	± 0.5	PROFIBUS 1.5 Mbit/s	Terminals	
DDLS 200 / 300.1 - 10 - H - M12 **DDLS 200 / 300.2 - 10 - H - M12** 50106033 / 50106034	Opt. data transmission, -30 … +50 °C, heating	300	± 0.5	PROFIBUS 1.5 Mbit/s	M12 connector	
DDLS 200 / 500.1 - 10 - H **DDLS 200 / 500.2 - 10 - H** 50040133 / 50040134	Opt. data transmission, -30 … +50 °C, heating	500	± 0.5	PROFIBUS 93.75 kbit/s	Terminals	

An optical data transmission path always consists of a device pair whose individual DDLS 200 units transmit at 2 different frequencies.
For this reason, please always order a DDLS 200/….**1** -… **and** DDLS 200/….**2** -… device pair!

Accessories / connection cables

More accessories can be found from **page 434** onwards

Part no.	Designation	Features
50104557	K - D M12A - 5P - 5m - PVC	M12 connection cable for PWR, socket axial on one end, 5 m
50104559	K - D M12A - 5P - 10m - PVC	M12 connection cable for PWR, socket axial on one end, 10 m
see P. 434	KB PB-…	PROFIBUS connection cables, see page 434
50038539	TS 02-4-SA	M12 connector, integrated terminating resistor for BUS OUT
50038937	M12 Cable set PB	M12 connector set for DDLS 200 with PROFIBUS



DDLS 200
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DDLS 200

Data transmission system

Features

- Operating ranges of 30m, 80m, 120m, 200m, 300m, 500m
- Protocol-independent transmission of PROFIBUS DP, FMS, MPI, FMS mixed operation
- Electrically insulated interface
- No PROFIBUS address necessary
- Integrated repeater function (can be switched off)
- With integrated heating operable to -30°C
- Available with either connection terminal or M12 connection
- Possible to cascade multiple DDLS 200 units
- Adjustable baud rates
- RS 485 on consultation with Leuze electronic



DDLS 200 / ... - 10 - H ...

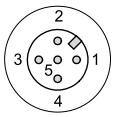


Oper. range from 0.2m	30m / 80m / 120m / 200m / 300m / 500m
Baud rate	9.6 kbit/s ... 1.5 Mbit/s
Protocols	FMS DP MPI RS 485
Approvals	cULus LISTED

Electrical connection

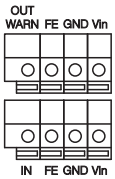
Power

M12 - male, A-cod.



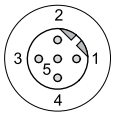
PIN	Signal
1	Vin
2	OUT WARN
3	GND
4	IN/Trans./Rec. off
5	FE

Terminals



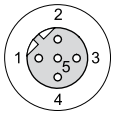
PROFIBUS

BUS IN - male, B-cod.



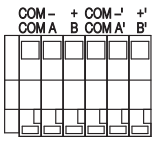
PIN	Signal
1	NC
2	A (N)
3	NC
4	B (P)
5	Shield / FE

BUS OUT - female, B-cod.



PIN	Signal
1	VCC
2	A (N)
3	GND
4	B (P)
5	Shield / FE

Terminals



DATA TRANSMISSION SYSTEMS, INTERBUS/RS 422

Part description Part no. ….**1** -… / ….**2** -…	Description	Op. range [m]	Opening angle [°]	Interface	Connection	
Optical data transmission systems						
DDLS 200 / 30.1 - 20 - W **DDLS 200 / 30.2 - 20 - W** 50041339 / 50041338	Opt. data transmission, -5 … +50 °C, wide angle version	30	± 1.5	Interbus/ RS 422 500 kbit/s	Terminals	
DDLS 200 / 80.1 - 20 - W **DDLS 200 / 80.2 - 20 - W** 50106252 / 50106253	Opt. data transmission, -5 … +50 °C, wide angle version	80	± 1.0	Interbus/ RS 422 500 kbit/s	Terminals	
DDLS 200 / 120.1 - 20 **DDLS 200 / 120.2 - 20** 50036290 / 50036291	Opt. data transmission, -5 … +50 °C	120	± 0.5	Interbus/ RS 422 500 kbit/s	Terminals	
DDLS 200 / 200.1 - 20 **DDLS 200 / 200.2 - 20** 50036288 / 50036289	Opt. data transmission, -5 … +50 °C	200	± 0.5	Interbus/ RS 422 500 kbit/s	Terminals	
DDLS 200 / 300.1 - 20 **DDLS 200 / 300.2 - 20** 50038288 / 50038289	Opt. data transmission, -5 … +50 °C	300	± 0.5	Interbus/ RS 422 500 kbit/s	Terminals	
DDLS 200 / 500.1 - 20 **DDLS 200 / 500.2 - 20** 50040135 / 50040136	Opt. data transmission, -5 … +50 °C	500	± 0.5	RS 422 100 kbit/s	Terminals	
Optical data transmission systems with integrated heating						
DDLS 200 / 120.1 - 20 - H **DDLS 200 / 120.2 - 20 - H** 50036294 / 50036295	Opt. data transmission, -30 … +50 °C, heating	120	± 0.5	Interbus/ RS 422 500 kbit/s	Terminals	
DDLS 200 / 200.1 - 20 - H **DDLS 200 / 200.2 - 20 - H** 50036292 / 50036293	Opt. data transmission, -30 … +50 °C, heating	200	± 0.5	Interbus/ RS 422 500 kbit/s	Terminals	
DDLS 200 / 300.1 - 20 - H **DDLS 200 / 300.2 - 20 - H** 50038290 / 50038291	Opt. data transmission, -30 … +50 °C, heating	300	± 0.5	Interbus/ RS 422 500 kbit/s	Terminals	
DDLS 200 / 500.1 - 20 - H **DDLS 200 / 500.2 - 20 - H** 50040137 / 50040138	Opt. data transmission, -30 … +50 °C, heating	500	± 0.5	RS 422 100 kbit/s	Terminals	

An optical data transmission path always consists of a device pair whose individual DDLS 200 units transmit at 2 different frequencies.
For this reason, please always order a DDLS 200/….**1** -… **and** DDLS 200/….**2** -… device pair!



DDLS 200
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DDLS 200

Data transmission system

Features

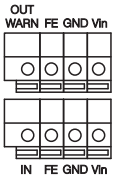
- Operating ranges of 30m, 80m, 120m, 200m, 300m for Interbus
- Operating range up to 500m for RS 422
- Protocol-independent RS 422 data transmission
- Electrically insulated interface
- The DDLS 200 is not an INTERBUS subscriber
- Baud rate for Interbus fixed at 500kbit/s
- With integrated heating operable to -30°C
- Possible to cascade multiple DDLS 200 units



Electrical connection

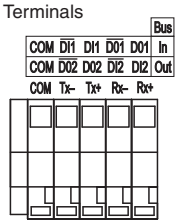
Power

Terminals



Interbus / RS 422

Terminals



DDLS 200 / ... - 20 ...



Oper. range from 0.2m	30m 80m 120m 200m 300m 500m
Baud rate	100 kbit/s 500 kbit/s
Protocols	Interbus 500 kbit/s RS 422 500 kbit/s
Approvals	c UL us LISTED

DATA TRANSMISSION SYSTEMS, INTERBUS, FOC

Part description Part no. ….**1** -… / ….**2** -…	Description	Op. range [m]	Opening angle [°]	Interface	Connection	
Optical data transmission systems						
DDLS 200 / 200.1 - 21 **DDLS 200 / 200.2 - 21** 50036296 / 50036297	Opt. data transmission, -5 … +50 °C	200	± 0.5	Interbus fiber-optic cable 2 Mbit/s	Terminals, FOC-plug	
DDLS 200 / 300.1 - 21 **DDLS 200 / 300.2 - 21** 50038292 / 50038293	Opt. data transmission, -5 … +50 °C	300	± 0.5	Interbus fiber-optic cable 2 Mbit/s	Terminals, FOC-plug	
Optical data transmission systems with integrated heating						
DDLS 200 / 200.1 - 21 - H **DDLS 200 / 200.2 - 21 - H** 50036298 / 50036299	Opt. data transmission, -30 … +50 °C, heating	200	± 0.5	Interbus fiber-optic cable 2 Mbit/s	Terminals, FOC-plug	
DDLS 200 / 300.1 - 21 - H **DDLS 200 / 300.2 - 21 - H** 50038294 / 50038295	Opt. data transmission, -30 … +50 °C, heating	300	± 0.5	Interbus fiber-optic cable 2 Mbit/s	Terminals, FOC-plug	

An optical data transmission path always consists of a device pair whose individual DDLS 200 units transmit at 2 different frequencies.
For this reason, please always order a DDLS 200/….**1** -… **and** DDLS 200/….**2** -… device pair!

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DDLS 200
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DDLS 200

Data transmission system

Features

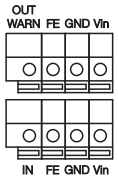
- Operating ranges of 200m and 300m for Interbus with fiber-optic cable connection
- Transmission protected against interference through the use of fiber-optic cables
- Bus connection by means of polymer-fiber cables with FSMA connector
- The DDLS 200 is an INTERBUS subscriber (Ident-Code: 0x0C = 12_{dec})
- Adjustable transmission rate of 500kBit/s or 2MBit/s
- With integrated heating operable to -30°C
- Possible to cascade multiple DDLS 200 units



Electrical connection

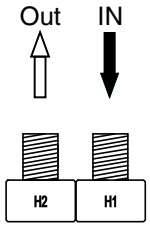
Power

Terminals



Interbus FOC

FSMA connectors



DDLS 200 / ... - 21 ...



Oper. range from 0.2m	200m 300m
Baud rate	500 kbit/s 2 Mbit/s
Protocols	Interbus 500 kbit/s Interbus 2 Mbit/s
Approvals	c UL us LISTED

DATA TRANSMISSION SYSTEMS, DH+/RIO

Part description Part no. ….**1** -… / ….**2** -…	Description	Op. range [m]	Opening angle [°]	Interface	Connection	
Optical data transmission systems						
DDLS 200 / 120.1 - 40 **DDLS 200 / 120.2 - 40** 50038300 / 50038301	Opt. data transmission, -5 … +50 °C	120	± 0.5	DH+ / RIO	Terminals	
DDLS 200 / 200.1 - 40 **DDLS 200 / 200.2 - 40** 50036300 / 50036301	Opt. data transmission, -5 … +50 °C	200	± 0.5	DH+ / RIO	Terminals	
DDLS 200 / 300.1 - 40 **DDLS 200 / 300.2 - 40** 50038296 / 50038297	Opt. data transmission, -5 … +50 °C	300	± 0.5	DH+ / RIO	Terminals	
Optical data transmission systems with integrated heating						
DDLS 200 / 120.1 - 40 - H **DDLS 200 / 120.2 - 40 - H** 50038302 / 50038303	Opt. data transmission, -30 … +50 °C, heating	120	± 0.5	DH+ / RIO	Terminals	
DDLS 200 / 200.1 - 40 - H **DDLS 200 / 200.2 - 40 - H** 50036302 / 50036303	Opt. data transmission, -30 … +50 °C, heating	200	± 0.5	DH+ / RIO	Terminals	
DDLS 200 / 300.1 - 40 - H **DDLS 200 / 300.2 - 40 - H** 50038298 / 50038299	Opt. data transmission, -30 … +50 °C, heating	300	± 0.5	DH+ / RIO	Terminals	

An optical data transmission path always consists of a device pair whose individual DDLS 200 units transmit at 2 different frequencies.
For this reason, please always order a DDLS 200/….**1** -… **and** DDLS 200/….**2** -… device pair!

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DDLS 200
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DDLS 200

Data transmission system

Features

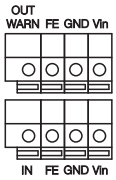
- Operating ranges of 120m, 200m, 300m
- Electrically insulated interface
- Direct connection to the Data Highway + or Remote I/O bus from Rockwell Automation
- The DDLS 200 is not a bus subscriber
- Adjustable transmission rate 57.6kbit/s, 115.2kbit/s or 230.4kbit/s
- With integrated heating operable to -30°C
- Possible to cascade multiple DDLS 200 units



Electrical connection

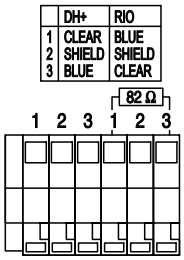
Power

Terminals



DH+ / RIO

Terminals



DDLS 200 / ... - 40 ...



Rockwell Automation

Oper. range from 0.2m	30m on request 80m on request 120m 200m 300m
Baud rate	57,6 kbit/s 115,2 kbit/s 230,4 kbit/s
Protocols	Data Highway + Remote I/O
Approvals	c UL us LISTED

DATA TRANSMISSION SYSTEMS, DeviceNet/CANopen

Part description Part no. ….**1** -… / ….**2** -…	Description	Op. range [m]	Opening angle [°]	Interface	Connection
Optical data transmission systems					
DDLS 200 / 120.1 - 50 **DDLS 200 / 120.2 - 50** 50039937 / 50039938	Opt. data transmission, -5 … +50 °C	120	± 0.5	DeviceNet / CANopen	Terminals
DDLS 200 / 120.1 - 50 - M12 **DDLS 200 / 120.2 - 50 - M12** 50113045 / 50113046	Opt. data transmission, -5 … +50 °C	120	± 0.5	DeviceNet / CANopen	M12 connector
DDLS 200 / 200.1 - 50 **DDLS 200 / 200.2 - 50** 50039939 / 50039940	Opt. data transmission, -5 … +50 °C	200	± 0.5	DeviceNet / CANopen	Terminals
DDLS 200 / 300.1 - 50 **DDLS 200 / 300.2 - 50** 50039941 / 50039942	Opt. data transmission, -5 … +50 °C	300	± 0.5	DeviceNet / CANopen	Terminals
Optical data transmission systems with integrated heating					
DDLS 200 / 120.1 - 50 - H **DDLS 200 / 120.2 - 50 - H** 50039943 / 50039944	Opt. data transmission, -30 … +50 °C, heating	120	± 0.5	DeviceNet / CANopen	Terminals
DDLS 200 / 200.1 - 50 - H **DDLS 200 / 200.2 - 50 - H** 50039945 / 50039946	Opt. data transmission, -30 … +50 °C, heating	200	± 0.5	DeviceNet / CANopen	Terminals
DDLS 200 / 300.1 - 50 - H **DDLS 200 / 300.2 - 50 - H** 50039947 / 50039948	Opt. data transmission, -30 … +50 °C, heating	300	± 0.5	DeviceNet / CANopen	Terminals

An optical data transmission path always consists of a device pair whose individual DDLS 200 units transmit at 2 different frequencies.
For this reason, please always order a DDLS 200/….**1** -… **and** DDLS 200/….**2** -… device pair!

Accessories / connection cables

More accessories can be found from **page 435** onwards

Part no.	Designation	Features
50039348	M12 Cable set DN/CAN	M12 connector set for DDLS 200 DeviceNet/CANopen
50104557	K - D M12A - 5P - 5m - PVC	M12 connection cable for PWR, socket axial on one end, 5m
50104559	K - D M12A - 5P - 10m - PVC	M12 connection cable for PWR, socket axial on one end, 10m



DDLS 200
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DDLS 200

Data transmission system

Features

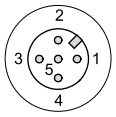
- Operating ranges of 120m, 200m, 300m
- The DDLS 200 can transmit both DeviceNet as well as CANopen protocols
- Electrically insulated interface
- The DDLS 200 does not occupy an address
- CAN controller acc. to 2.0B standard
- Can simultaneously process 11-bit and 29-bit identifiers
- Baud rates can be set (10, 20, 50, 125, 250, 500, 800kBit/s, 1MBit/s)
- Baud rate conversion possible
- With the DDLS 200 it is possible to extend the overall size of a CAN network
- With integrated heating operable to -30°C
- Possible to cascade multiple DDLS 200 units



Electrical connection

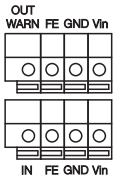
Power

M12 - male, A-cod.



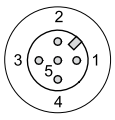
PIN	Signal
1	Vin
2	OUT WARN
3	GND
4	IN
5	FE

Terminals



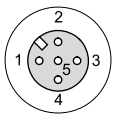
DeviceNet/CANopen

BUS IN - male, A-cod.



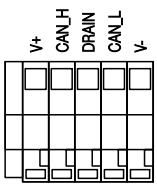
PIN	Signal
1	Drain
2	V+
3	V-
4	CAN_H
5	CAN_L

BUS OUT - female, A-cod.



PIN	Signal
1	Drain
2	V+
3	V-
4	CAN_H
5	CAN_L

Terminals



DDLS 200 / ... - 50 ...



Oper. range from 0.2m	30m on request 80m on request 120m 200m 300m
Baud rate	125 kbit/s 1 Mbit/s
Protocols	CANopen DeviceNet
Approvals	c UL us LISTED

DATA TRANSMISSION SYSTEMS, ETHERNET

Part description Part no. ….**1** -… / ….**2** -…	Description	Op. range [m]	Opening angle [°]	Interface	Connection
Optical data transmission systems					
DDLS 200 / 30.1 - 60 - W **DDLS 200 / 30.2 - 60 - W** 50117396 / 50112297	Opt. data transmission, -5 … +50 °C	30	± 1.5	Ethernet 10/100 Mbit/s	Terminals, RJ45
DDLS 200 / 80.1 - 60 - W **DDLS 200 / 80.2 - 60 - W** 50112207 / 50112208	Opt. data transmission, -5 … +50 °C	80	± 1.0	Ethernet 10/100 Mbit/s	Terminals, RJ45
DDLS 200 / 120.1 - 60 **DDLS 200 / 120.2 - 60** 50040929 / 50040930	Opt. data transmission, -5 … +50 °C	120	± 0.5	Ethernet 10/100 Mbit/s	Terminals, RJ45
DDLS 200 / 120.1 - 60 - M12 **DDLS 200 / 120.2 - 60 - M12** 50106035 / 50106036	Opt. data transmission, -5 … +50 °C	120	± 0.5	Ethernet 10/100 Mbit/s	M12 connector
DDLS 200 / 200.1 - 60 **DDLS 200 / 200.2 - 60** 50040933 / 50040934	Opt. data transmission, -5 … +50 °C	200	± 0.5	Ethernet 10/100 Mbit/s	Terminals, RJ45
DDLS 200 / 200.1 - 60 - M12 **DDLS 200 / 200.2 - 60 - M12** 50106037 / 50106038	Opt. data transmission, -5 … +50 °C	200	± 0.5	Ethernet 10/100 Mbit/s	M12 connector
DDLS 200 / 300.1 - 60 **DDLS 200 / 300.2 - 60** 50040937 / 50040938	Opt. data transmission, -5 … +50 °C	300	± 0.5	Ethernet 10/100 Mbit/s	Terminals, RJ45
DDLS 200 / 300.1 - 60 - M12 **DDLS 200 / 300.2 - 60 - M12** 50106039 / 50106040	Opt. data transmission, -5 … +50 °C	300	± 0.5	Ethernet 10/100 Mbit/s	M12 connector

An optical data transmission path always consists of a device pair whose individual DDLS 200 units transmit at 2 different frequencies.
For this reason, please always order a DDLS 200/….**1** -… **and** DDLS 200/….**2** -… device pair!

Accessories / connection cables More accessories can be found from **page 435** onwards

Part no.	Designation	Features
50104557	K - D M12A - 5P - 5m - PVC	M12 connection cable for PWR, socket axial on one end, 5 m
50104559	K - D M12A - 5P - 10m - PVC	M12 connection cable for PWR, socket axial on one end, 10 m
see P. 431	KB ET - … - SA	M12 data lines: Industrial Ethernet (D-coded)



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DDLS 200

Data transmission system

Features

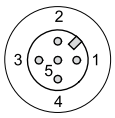
- Operating ranges of 30m, 80m, 120m, 200m, 300m
- Supports 10Base-T and 100Base-TX (half and full duplex)
- Supports autopolarity and autonegotiation
- Frames up to 1522 bytes in length
- The DDLS 200 does not occupy a MAC or IP address
- Transmission of all protocols that are based on TCP/IP and UDP
- RJ45 connector, screwed cable gland provides IP 65
- Optional M12 connector version (D-coded)
- Increased network expandability owing to optical data transmission
- With integrated heating operable to -30°C
- Possible to cascade multiple DDLS 200 units



Electrical connection

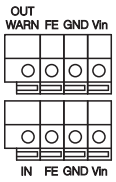
Power

M12 - male, A-cod.



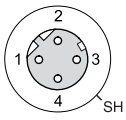
PIN	Signal
1	Vin
2	OUT WARN
3	GND
4	IN
5	FE

Terminals



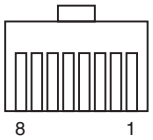
Industrial Ethernet

M12 - female, D-cod.



PIN	Signal
1	TD+
2	RD+
3	TD-
4	RD-
SH	Shield

RJ45



PIN	Signal
1	TD+
2	TD-
3	RD+
4	NC
5	NC
6	RD-
7	NC
8	NC

DDLS 200 / ... - 60 ...



Ethernet

Oper. range from 0.2m	30m on request 80m on request 120m 200m 300m
Baud rate	10 Mbit/s 100 Mbit/s
Protocols	All protocols are based on TCP/IP and UDP
Approvals	cULus LISTED

DATA TRANSMISSION SYSTEMS, ETHERNET, HEATING

Part description Part no. ….**1** -… / ….**2** -…	Description	Op. range [m]	Opening angle [°]	Interface	Connection	
Optical data transmission systems with integrated heating						
DDLS 200 / 120.1 - 60 - H **DDLS 200 / 120.2 - 60 - H** 50040931 / 50040932	Opt. data transmission, -30 … +50 °C, heating	120	± 0.5	Ethernet 10/100 Mbit/s	Terminals, RJ45	
DDLS 200 / 120.1 - 60 - H - M12 **DDLS 200 / 120.2 - 60 - H - M12** 50106041 / 50106042	Opt. data transmission, -30 … +50 °C, heating	120	± 0.5	Ethernet 10/100 Mbit/s	M12 connector	
DDLS 200 / 200.1 - 60 - H **DDLS 200 / 200.2 - 60 - H** 50040935 / 50040936	Opt. data transmission, -30 … +50 °C, heating	200	± 0.5	Ethernet 10/100 Mbit/s	Terminals, RJ45	
DDLS 200 / 200.1 - 60 - H - M12 **DDLS 200 / 200.2 - 60 - H - M12** 50106043 / 50106044	Opt. data transmission, -30 … +50 °C, heating	200	± 0.5	Ethernet 10/100 Mbit/s	M12 connector	
DDLS 200 / 300.1 - 60 - H **DDLS 200 / 300.2 - 60 - H** 50040939 / 50040940	Opt. data transmission, -30 … +50 °C, heating	300	± 0.5	Ethernet 10/100 Mbit/s	Terminals, RJ45	
DDLS 200 / 300.1 - 60 - H - M12 **DDLS 200 / 300.2 - 60 - H - M12** 50106045 / 50106046	Opt. data transmission, -30 … +50 °C, heating	300	± 0.5	Ethernet 10/100 Mbit/s	M12 connector	

An optical data transmission path always consists of a device pair whose individual DDLS 200 units transmit at 2 different frequencies.
For this reason, please always order a DDLS 200/….**1** -… **and** DDLS 200/….**2** -… device pair!

Accessories / connection cables More accessories can be found from **page 435** onwards

Part no.	Designation	Features
50104557	K - D M12A - 5P - 5m - PVC	M12 connection cable for PWR, socket axial on one end, 5m
50104559	K - D M12A - 5P - 10m - PVC	M12 connection cable for PWR, socket axial on one end, 10m
see P. 431	KB ET - … - SA	M12 data lines: Industrial Ethernet (D-coded)



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DDLS 200

Data transmission system

Features

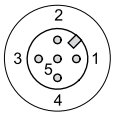
- Operating ranges of 120m, 200m, 300m
- Supports 10Base-T and 100Base-TX (half and full duplex)
- Supports autopolarity and autonegotiation
- Frames up to 1522 bytes in length
- The DDLS 200 does not occupy a MAC or IP address
- Transmission of all protocols that are based on TCP/IP and UDP
- RJ45 connector, screwed cable gland provides IP 65
- Optional M12 connector version (D-coded)
- Increased network expandability owing to optical data transmission
- With integrated heating operable to -30°C
- Possible to cascade multiple DDLS 200 units



Electrical connection

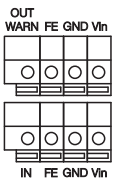
Power

M12 - male, A-cod.



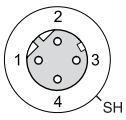
PIN	Signal
1	Vin
2	OUT WARN
3	GND
4	IN
5	FE

Terminals



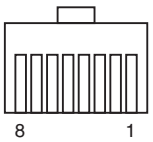
Industrial Ethernet

M12 - female, D-cod.



PIN	Signal
1	TD+
2	RD+
3	TD-
4	RD-
SH	Shield

RJ45



PIN	Signal
1	TD+
2	TD-
3	RD+
4	NC
5	NC
6	RD-
7	NC
8	NC

DDLS 200 / ... - 60 ...



Ethernet

Oper. range from 0.2m	30m on request 80m on request 120m 200m 300m
Baud rate	10 Mbit/s 100 Mbit/s
Protocols	All protocols are based on TCP/IP and UDP
Approvals	cULus LISTED

SELECTION TABLE

Connector unit / Interface	Features	Series BCL 8	BCL 21	BCL 22	BCL 300*i*/301*i*	BCL 5xx*i*	BCL 90	Hand-held	LSIS 222	LSIS 422*i*	
MA 8.1 MA 8-01	Point-to-point	KB 008				Integrated connectivity					
MA 2	Point-to-point, multiNet slave		direct (multiNet compatible)	direct					KB M12A-8P-MA-3000, direct	KB JST-M12A-8P-Y-3000	
MA 100	Point-to-point, multiNet slave				KB 301-3000, (multiNet compatible)	KB 500-3000-Y (BCL 501*i* only)					
MA 4 MA 4 D	Point-to-point, multiNet slave, automatic parameter memory		direct (multiNet compatible)	direct		Integrated connectivity					
MA 4 1x0 MA 4 D 1x0	Point-to-point, multiNet slave, automatic parameter memory			direct (multiNet compatible)							
MA 90	Point-to-point, multiNet slave						KB 090, (multiNet compatible)				
MA 31	multiNet master				KB PB, (multiNet compatible)						

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	RFI 32	RFM 12	RFM 32	RFM 62	RFU 61	RFU 81	HFx x5x0D	AMS 300*i*	BPS 8	BPS 34	BPS 37	Page
									KB 008			398
	direct	direct	direct	direct			direct					382
												386
												390
								KB AMS 1000 SA				390
												418
												410

SELECTION TABLE

Connector unit / Interface	Features	Series BCL 8	BCL 21	BCL 22	BCL 3xx*i*	BCL 5xx*i*	BCL 90	Hand-held	LSIS 222	LSIS 422*i*	
MA 21	multiNet slave, protocol converter	KB 008, (multiNet compatible)			Integrated connectivity	Integrated connectivity		RS 232 cable and KB 021 Z (multiNet compatible)			
MA 21 100.2	multiNet slave, protocol converter								KB JST-M12A-8P-3000, direct	KB JST-M12A-8P-Y-3000, direct	
MA 22 DC	Daisy Chain networking			direct							
MA 2xx*i*	MA 204*i* MA 208*i* MA 248*i* MA 235*i* MA 238*i* MA 255*i* MA 258*i*	KB JST-M12A-5P-3000		direct	KB 301-3000-MA200 (BCL 300*i* only)	KB-500-3000-Y (BCL 500*i* only)	via MA 90 and adapter cable	RS 232 cable and KB JST-HS-300	KB JST-M12A-8P-3000, direct	KB JST-M12A-8P-Y-3000, direct	

Detailed information on the dimensioned drawings or the specifications can be found in the respective data sheet or in the technical description.

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NETWORKING / CONNECTOR UNITS

	RFI 32	RFM 12	RFM 32	RFM 62	RFU 61	RFU 81	HFx x5x0D	AMS 300*i*	BPS 8	BPS 34	BPS 37	Page
					via IMRFU... and adapter cable	via IMRFU... and adapter cable						402
	direct (multiNet compatible)	direct (multiNet compatible)	direct (multiNet compatible)	direct (multiNet compatible)			KB 021 Z					402
												406
	direct	direct	direct	direct	via IMRFU... and adapter cable	via IMRFU... and adapter cable	KB JST-HS-300		KB JST-M12A-5P-3000			414

SELECTION TABLE

Connector unit / Interface	Features	Series: BCL 8	BCL 21	BCL 22	BCL 3xx*i*	BCL 5xx*i*	BCL 90	Hand-held	LSIS 222	LSIS 422*i*	
MS 34 103 MS 34 105	Modular connector hood PROFIBUS DP					Integrated connectivity					
MS 37 103	Modular connector hood SSI, parameter memory										
MS 3xx	Modular connector hood, parameter memory				direct						
MK 3xx	Modular terminal hood, parameter memory				direct						

Detailed information on the dimensioned drawings or the specifications can be found in the respective data sheet or in the technical description.

We reserve the right to make changes • Auswahltabelle_Vernetzung_3_EN.fm

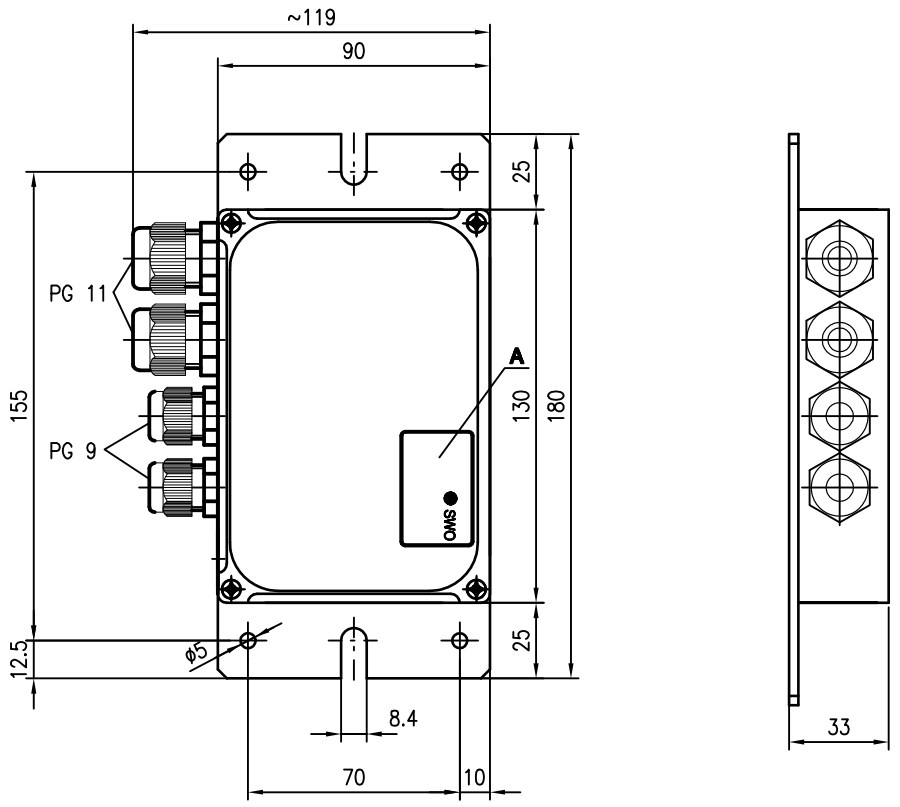
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	RFI 32	RFM 12	RFM 32	RFM 62	RFU 61	RFU 81	HFx x5x0D	AMS 300*i*	BPS 8	BPS 34	BPS 37	Page
										direct		445
											direct	445
												446
												447

The MS 3… modular connection hoods can be found in section Accessories from page 445 onwards.
Data sheets/technical description available for download under *www.leuze.com*.

OVERVIEW

Dimensioned drawing



A LED indicator


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MA 4
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MODULAR CONNECTOR UNIT MA 2

Modular connector unit	Interface	Page
MA 2	RS 232 / RS 485 [1]	384

1) Depending on connected device



Common technical data

Electrical data	Operating voltage U_B	see voltage details for the respective Leuze identification device
	Power consumption	max. 0.1 W
	Switching input	see voltage details for the respective Leuze identification device
	Switching output	max. 100 mA ($U_{OUT} = U_B$)
Indicators	Green LED	sw. output 1
Mechanical data	Housing	diecast aluminum
	Housing cover	diecast alum. or steel
	Weight	575 g
	Connection type	spring terminals / connection cables with connectors
Environmental data	Ambient temp. (operation/storage)	-10 °C ... +50 °C / -20 °C ... +60 °C
	Protection class	IP 54
	Air humidity	< 90 % (non-cond.)

Features

- **Networking of several BCL 21 devices via RS 485 interface, hardware addressing in Leuze multiNet plus**
- **Rotary switch for address setting**
- **Additional RS 232 service interface (9-pin Sub-D plug)**
- **Operating mode switch service/standard operation**
- **Terminals for switching inputs/ outputs including power supply and for looping through of the RS 485 line (BCL 21)**

CONNECTOR UNIT FOR RS 232 AND RS 485 DEVICES

Part description Part no.	Description	Interface	
Connector unit			
MA 2 50031256	Connector unit for BCL 21/BCL 22 and RFI/RFM	RS 232, RS 485 [1]	

1) Depending on connected device

We reserve the right to make changes • MA2_1_EN.fm


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MA 8
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MA 2x
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MA 2xx*i*
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MA 2

Connector units

RS 232
RS 485

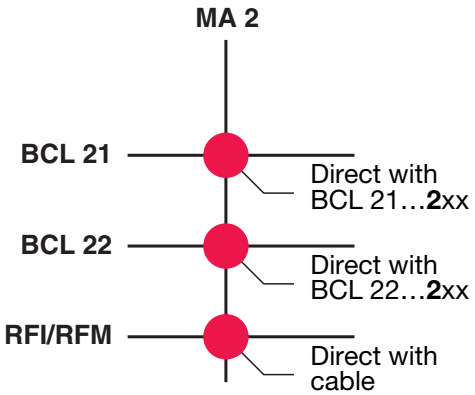
Features

- Connection of BCL 21/22, RF-Ident devices to the MA 2 via circuit board connectors
- Networking of several BCL 21 devices via RS 485 interface, hardware addressing in Leuze multiNet plus
- Additional RS 232 service interface (9-pin Sub-D plug)
- Operating mode switch service/standard operation
- Rotary switch for address setting



Possible device combinations

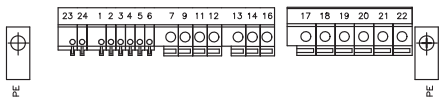
MA 2



m = possible to connect to multiNet

Electrical connection

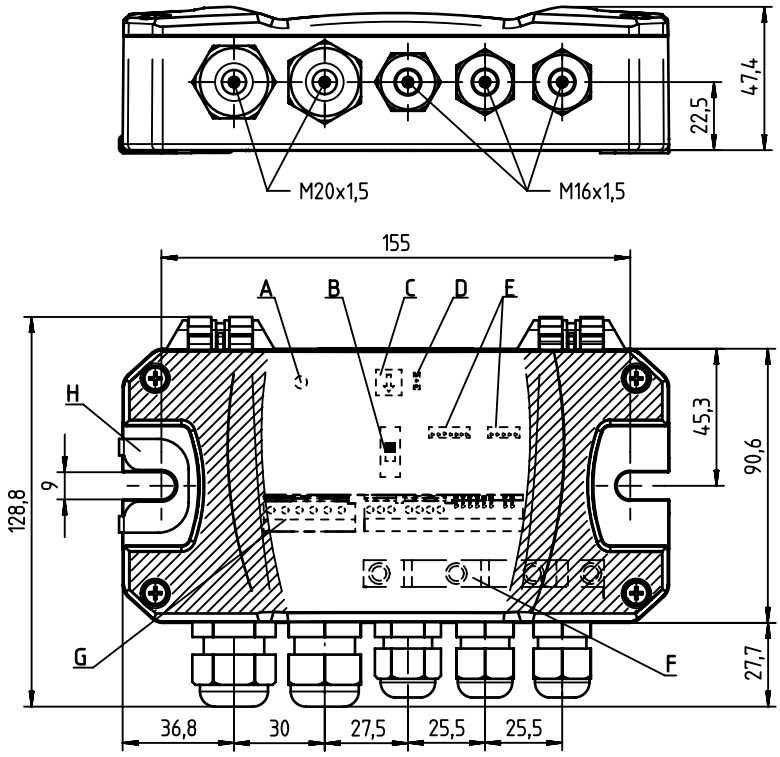
Terminals



PIN	BCL 21 Signal	BCL 22 Signal
1	RS 485 A	RS232 CTS
2	RS 485 A	RS232 CTS
3	RS 485 B	RS232 RTS
4	RS 485 B	RS232 RTS
5	RS 485 GND	RS232 GND
6	RS 485 GND	RS232 GND
7	res.	SE2
9	SE1	SE1
11	VDD_SE	VDD_SE
12	GND_SE	GND_SE
13	res.	SA2
14	SA1	SA1
16	GND_SA	GND_SA
17	V_IN	V_IN
18	V_IN	V_IN
19	GND_IN	GND_IN
20	GND_IN	GND_IN
21	PE	PE
22	PE	PE
23	RXD	RXD
24	TXD	TXD

OVERVIEW

Dimensioned drawing



A Green indicator diode (SWI/O)
B Switch S2, termination ON/OFF
C Switch S1, multiNet address setting
D Jumper JP8, address range 0…15/16…31
E BCL connection
F Shielding connection
G Terminal strip for electrical connection
H Contact surface for FE


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MODULAR CONNECTOR UNIT MA 100

Modular connector unit	Interface	Page
MA 100	RS 232 / RS 422 / RS 485 [1]	388

1) Depending on connected device



Common technical data

Electrical data	Operating voltage U_B	see voltage details for the respective Leuze identification device
	Switching input	see voltage details for the respective Leuze identification device
	Switching output	max. 100 mA ($U_{OUT} = U_B$)
Indicators	Green LED	switching input/output
Mechanical data	Housing	plastic
	Housing cover	transparent plastic
	Weight	380 g
	Connection type	spring terminals
Environmental data	Ambient temp. (operation/storage)	0 °C ... +40 °C / -35 °C ... +70 °C
	Protection class	IP 54
	Air humidity	< 90 % (non-cond.)

Features

- **The BCL 300*i*/BCL 301*i* with KB 301-3000 cable hood can be directly plugged into the MA 100**
- **Networking of several BCL 301*i* devices via RS 485 interface, hardware addressing in Leuze multiNet plus**
- **Rotary switch for address setting**
- **Integrated, switchable bus termination**
- **Terminals for switching inputs/ outputs including power supply and for looping through the RS 485 connection (BCL 301*i*/BCL 501*i*)**

CONNECTOR UNIT FOR RS 232/RS 422/RS 485 DEVICES

Part description Part no.	Description	Interface	
Connector unit			
MA 100 50114369	Connector unit for BCL 300*i*, BCL 301*i* and BCL 501*i*	RS 232, RS 422, RS 485 [1]	

1) Depending on connected device

Accessories / connection cables More accessories can be found from **page 423** onwards

Part no.	Designation	Features	
see P. 447	KB 301 - 3000	Cable hood for BCL 3xx*i*	
50110240	KB 500-3000-Y	Connection cable for BCL 501*i* to MA 100 connector unit	


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MA 100

Connector units

RS 232
RS 485

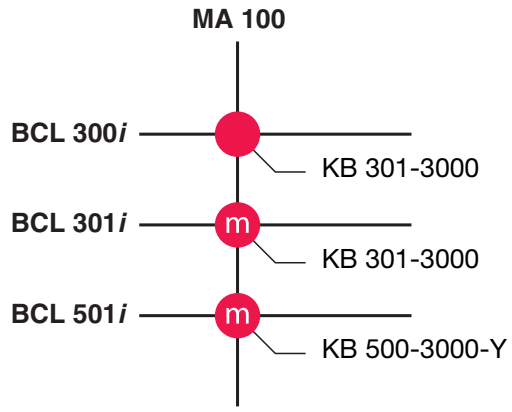
Features

- Connection of the BCL to the MA 100 via PCB plug connectors
- Networking of multiple BCL 301*i* or BCL 501*i* devices via RS 485 interface, hardware addressing in Leuze multiNet plus
- Integrated, switchable bus termination
- Rotary switch for address setting



Possible device combinations

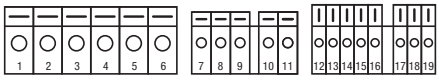
MA 100



m = possible to connect to multiNet

Electrical connection

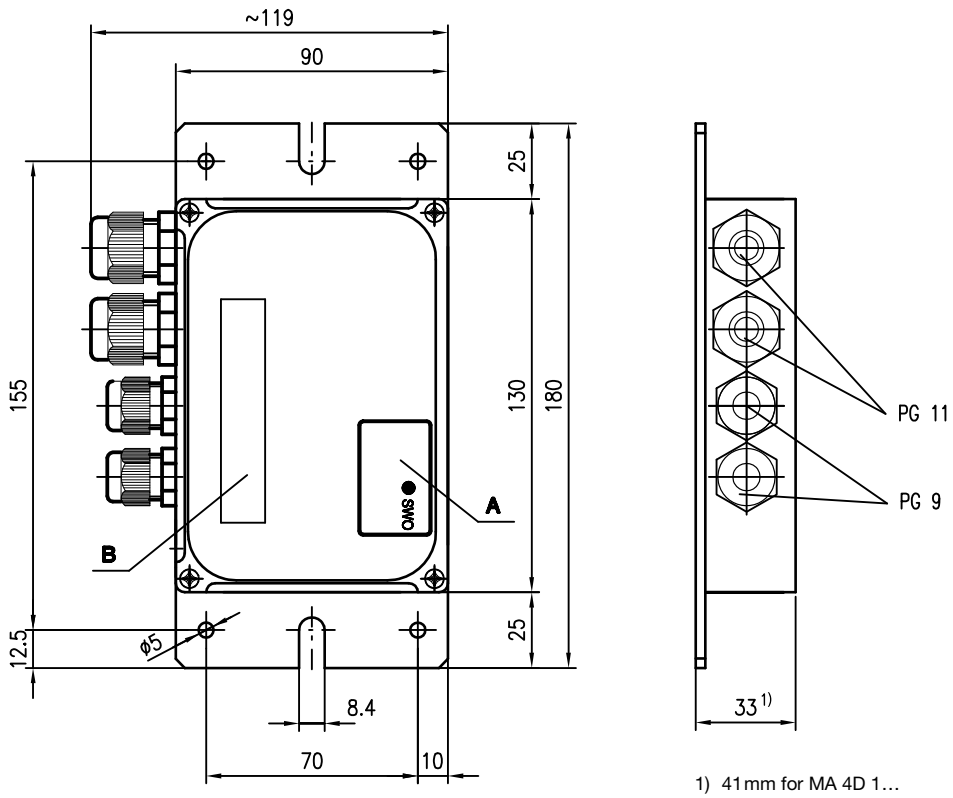
Terminals



PIN	BCL 300*i* Signal	BCL 301*i* BCL 501*i* Signal
1	FE	FE
2	FE	FE
3	GNDIN	GNDIN
4	GNDIN	GNDIN
5	VIN	VIN
6	VIN	VIN
7	GNDIN	GNDIN
8	SWIN	SWIN
9	VIN	VIN
10	GNDIN	GNDIN
11	SWOUT	SWOUT
12	CTS / RX+	-
13	RXD / RX-	-
14	GND_ISO	GND_ISO
15	TXD / TX-	RS485B
16	RTS / TX+	RS485A
17	-	GND_ISO
18	-	RS485B
19	-	RS485A

OVERVIEW

Dimensioned drawing



1) 41 mm for MA 4D 1…

A LED indicator
B LCD display


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MODULAR CONNECTOR UNIT MA 4

Modular connector unit	Interface	Page
MA 4 / MA 4D	RS 232 / RS 485 [1]	392
MA 4.7 / MA 4D.7	SSI (for BPS 37… only)	394
MA 4 100 / MA 4D 100	RS 485	396
MA 4 110 / MA 4D 110	RS 232	396
MA 4 120 / MA 4D 120	TTY	396
MA 4 130 / MA 4D 130	RS 422	396

1) Depending on connected device



Common technical data

Electrical data	Operating voltage U_B	10 … 30VDC
	Power consumption	0.2VA
	Switching input	12 … 30VDC
	Switching output	100mA (U_{OUT} = U_B)
Indicators	Green LED	sw. output 1
	LCD display	2 lines, 16 characters each
Mechanical data	Housing	diecast aluminum
	Housing cover	diecast alum. or steel
	Weight	480 … 675g
	Connection type	spring terminals / connection cables with connectors
Environmental data	Ambient temp. (operation/storage)	-10°C … +50°C / -20°C … +60°C
	Protection class	IP 54
	Air humidity	< 90% (non-cond.)

Features

- **Parameters of the connected device are saved in a fail-safe manner on an EEPROM**
- **Integrated two-line display with 16 characters each (MA 4D only)**
- **Additional RS 232 service interface (9-pin Sub-D plug)**
- **Operating mode switch service/standard operation**
- **Terminals for connecting the switching inputs/outputs, the voltage supply and the communication interface**

CE

CONNECTOR UNIT FOR RS 232 AND RS 485 DEVICES

Part description Part no.	Description	Interface	
Connector unit			
MA 4 50031537	Connector unit for BCL 21/BCL 22, without display	RS 232, RS 485 [1]	
MA 4D 50031536	Connector unit for BCL 21/BCL 22, with display	RS 232, RS 485 [1]	

1) Depending on connected device

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MA 4, MA 4D

Connector units

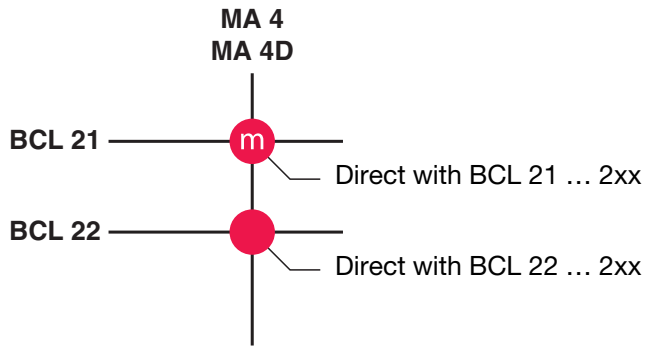
Features

- Parameters of the BCL 21/22 are saved in a fail-safe manner on an EEPROM
- Connection of the BCL 21/22 to the MA 4 / MA 4D via circuit board connectors
- Networking of multiple BCL 21 devices via RS 485 interface in Leuze multiNet plus
- Rotary switch for address setting
- Additional RS 232 service interface (9-pin Sub-D plug)
- Operating mode switch service/standard operation
- Integrated two-line display with 16 characters each (MA 4D only)
- Terminals for connecting the switching inputs/outputs, the voltage supply and the communication interface



Possible device combinations

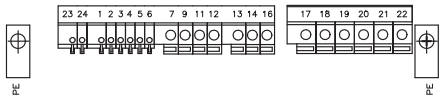
MA 4 / MA 4 D



m = possible to connect to multiNet

Electrical connection

Terminals



PIN	BCL 21 Signal	BCL 22 Signal
1	RS 485 A	RS232 CTS
2	RS 485 A	RS232 CTS
3	RS 485 B	RS232 RTS
4	RS 485 B	RS232 RTS
5	RS 485 GND	RS232 GND
6	RS 485 GND	RS232 GND
7	res.	SE2
9	SE1	SE1
11	VDD_SE	VDD_SE
12	GND_SE	GND_SE
13	res.	SA2
14	SA1	SA1
16	GND_SA	GND_SA
17	V_IN	V_IN
18	V_IN	V_IN
19	GND_IN	GND_IN
20	GND_IN	GND_IN
21	PE	PE
22	PE	PE
23	res.	RXD
24	res.	TXD

CONNECTOR UNIT FOR SSI DEVICES

Part description Part no.	Description	Interface	
Connector unit			
MA 4.7 50037324	Connector unit for BPS 37, without display	SSI	
MA 4D.7 50037325	Connector unit for BPS 37, with display	SSI	

Accessories / connection cables More accessories can be found from **page 428** onwards

Part no.	Designation	Features	
see P. 428	KB 031 ...	Connection cable BPS 37 to MA 4.7/MA 4D.7	


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MA 4.7, MA 4D.7

Connector units

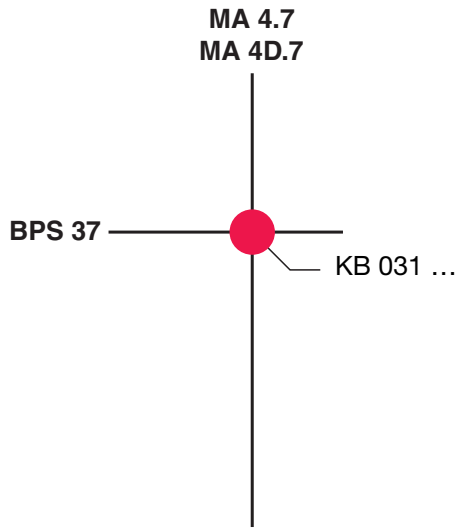
Features

- Parameters of the BPS 37 are saved in a fail-safe manner on an EEPROM
- Connection of the BPS 37 to the MA 4.7 / MA 4D.7 via circuit board connectors
- Rotary switch for adjusting the resolution / maximum speed
- Jumper for selecting between Gray/binary
- Additional RS 232 service interface (9-pin Sub-D plug)
- Operating mode switch service/standard operation
- Integrated two-line display with 16 characters each (MA 4D.7 only)
- Terminals for connecting the switching input/output, the voltage supply and the communication interface



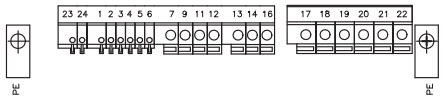
Possible device combinations

MA 4.7 / MA 4D.7



Electrical connection

Terminals



PIN	BPS 37 Signal
1	SSI Data+
2	SSI Data+
3	SSI Data-
4	SSI Data-
5	res.
6	res.
7	SSI Clock-
9	SE1
11	VDD_SE
12	GND_SE
13	SSI Clock+
14	SA1
16	GND_SA
17	V_IN
18	V_IN
19	GND_IN
20	GND_IN
21	PE
22	PE
23	res.
24	res.

CONNECTOR UNIT FOR RS 485 / RS 232 / TTY / RS 422

Part description Part no.	Description	Interface	
Connector unit			
MA 4 100 50102024	Connector unit for BCL 22, without display	RS 485	
MA 4D 100 50102023	Connector unit for BCL 22, with display	RS 485	
IM 100 - RS485 50031029	Replacement interface module (included in MA 4x 100…)	RS 485	
MA 4 110 50039659	Connector unit for BCL 22, without display	RS 232	
MA 4D 110 50039662	Connector unit for BCL 22, with display	RS 232	
IM 110 - RS232 50031030	Replacement interface module (included in MA 4x 110…)	RS 232	
MA 4 120 50039660	Connector unit for BCL 22, without display	TTY	
MA 4D 120 500 39663	Connector unit for BCL 22, with display	TTY	
IM 120 - TTY 50031031	Replacement interface module (included in MA 4x 120…)	TTY	
MA 4 130 50039661	Connector unit for BCL 22, without display	RS 422	
MA 4D 130 50039664	Connector unit for BCL 22, with display	RS 422	
IM 130 - RS422 50031032	Replacement interface module (included in MA 4x 130…)	RS 422	

Accessories / connection cables More accessories can be found from **page 423** onwards

Part no.	Designation	Features
see P. 428	KB 031 …	Connection cable BCL 22 to MA 4 100/MA 4D 100
50027375	BT 56	Dovetail rod mounting set


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MA 4(D) 1xx

Connector units

Features

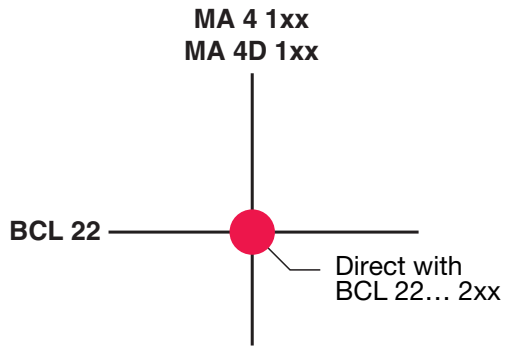
- Parameters of the BCL 22 are saved in a fail-safe manner on an EEPROM
- Connection of the BCL 22 to the MA 4 1xx/MA 4D 1xx by means of KB 031 ... and circuit board connector
- Electrically insulated interfaces
- Rotary switch for address setting
- Additional RS 232 service interface (9-pin Sub-D plug)
- Operating mode switch service/standard operation
- Terminals for connecting the switching inputs/outputs, the voltage supply and the communication interface

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Possible device combinations

MA 4 1xx / MA 4D 1xx



Possible to network multiple BCL devices via RS 485 interface in Leuze multiNet plus

Electrical connection

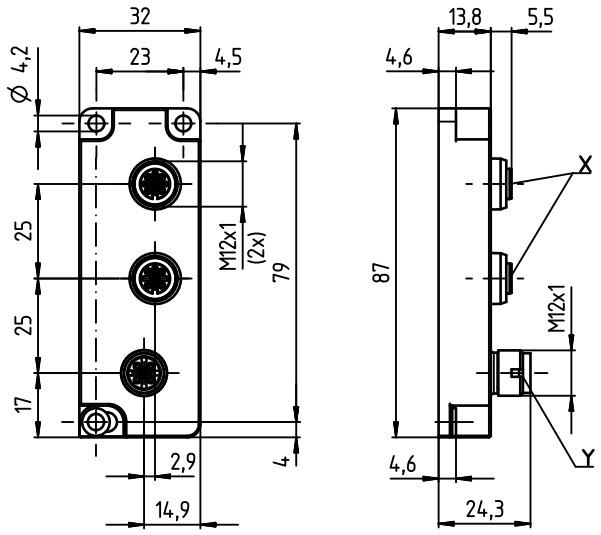
Terminals



PIN	RS 485	RS 232	TTY	RS 422
1	A	RxD	TX+	TX+
2	A	TxD	TX-	TX-
3	B	CTS	RX+	RX+
4	B	RTS	RX-	RX-
5	GND	res.	res.	res.
6	GND	GND	GND	GND
7	SE2			
9	SE1			
11	VDD_SE			
12	GND_SE			
13	SA2			
14	SA1			
16	GND_SA			
17	V_IN			
18	V_IN			
19	GND_IN			
20	GND_IN			
21	PE			
22	PE			

OVERVIEW

Dimensioned drawing



X M12 socket 5-pin
Y M12 plug 5-pin


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MODULAR CONNECTOR UNIT MA 8

Modular connector unit	Interface	Page
MA 8.1	RS 232	400
MA 8 - 01	RS 485	400



Common technical data

Electrical data	Operating voltage U_B	10 … 30VDC
	Power consumption	0.5W
	Interface type	RS 232 or RS 485
Switching input / output	1 switching input	10 … 30VDC
	1 switching output	500mA (U_{OUT} = U_B)
Mechanical data	Housing	plastic
	Weight	70g
	Connection type	M12 connector
Environmental data	Ambient temp. (operation/storage)	0°C … +50°C / -30°C … +80°C
	Protection class	IP 67
	Air humidity	< 90% (non-cond.)
	Standards	see connected BCL / BPS

Features

- **M12 standard connection via ready-made connection cables**
- **Very easy mounting**
- **MA 8.1 for 24VDC and RS 232 interface and simultaneous use of switching input and switching output**
- **MA 8 - 01 for 24VDC and RS 485 interface and simultaneous use of switching input and switching output**

CONNECTOR UNITS FOR BCL 8 and BPS 8

Part description Part no.	Description	Interface	
Connector unit			
MA 8.1 50101699	Connector unit for BCL 8 and BPS 8, M12 connector	RS 232	
MA 8 - 01 50104790	Connector unit for BCL 8 and BPS 8, M12 connector	RS 485	

Accessories / connection cables More accessories can be found from **page 426** onwards

Part no.	Designation	Features	
see P. 426	KB 008 ...	M12 connection cables for BCL 8/BPS 8 and MA 8.1/MA 8 - 01	

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MA 8...

Connector units

RS 232
RS 485

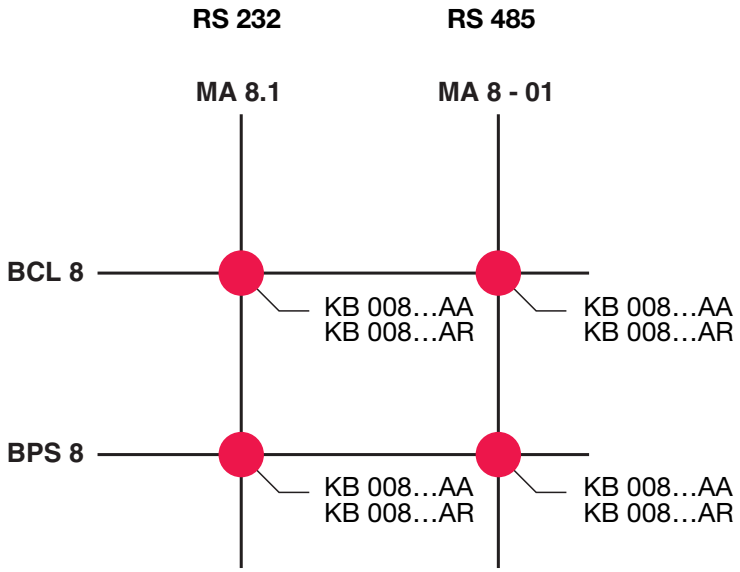
Features

- MA 8.1 for 24VDC and RS 232 interface and simultaneous use of switching input and switching output
- MA 8 - 01 for 24VDC and RS 485 interface and simultaneous use of switching input and switching output
- M12 standard connection via ready-made connection cables
- Very easy mounting



Possible device combinations

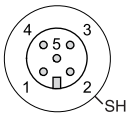
MA 8.1 / MA 8-01



Electrical connection

MA 8.1

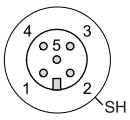
PWR IN
HOST/RS232 - male, A-cod.



PIN	Signal
1	VIN
2	TXD
3	GND
4	RXD
5	FE
SH	FE

MA 8 - 01

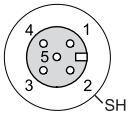
PWR IN
HOST/RS485 - male, A-cod.



PIN	Signal
1	VIN
2	B (N)
3	GND
4	A (P)
5	FE
SH	FE

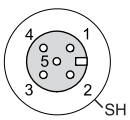
MA 8.1 / MA 8 - 01

SW IN/OUT - female, A-cod.



PIN	Signal
1	VOUT
2	SWOUT
3	GND
4	SWIN
5	FE
SH	FE

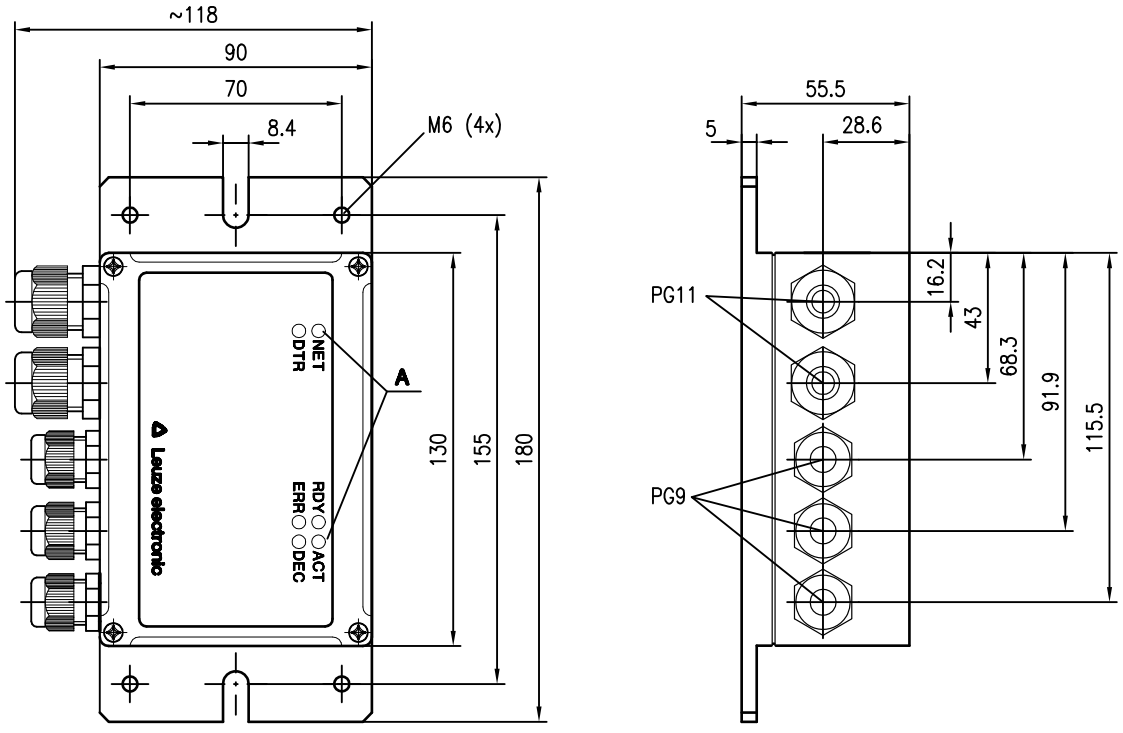
BCL/BPS - female, A-cod.



PIN	Signal
1	VIN
2	TXD
3	GND
4	RXD
5	SWIN/SWOUT
SH	FE

OVERVIEW

Dimensioned drawing



A LED indicators

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MODULAR CONNECTOR UNIT MA 21

Modular connector unit	Protocol/interface converter with electrical isolation	Page
MA 21 100	RS 232 to RS 485/RS 485 multiNet	404
MA 21 100.2	RS 232 to RS 485 multiNet	404
MA 21 110	RS 232 to RS 232 electrically isolated	404
MA 21 120	RS 232 to TTY	404
MA 21 130	RS 232 to RS 422	404



Common technical data

Electrical data	Operating voltage U_B	18 … 36VDC
	Power consumption	max. 4VA
	Sw. input (….**2** only)	12 … 30VDC
	Sw. output (….**2** only)	100mA (U_{OUT} = U_B)
Indicators	4 (5) LEDs	ready, error, data transmission, activation, reading
Mechanical data	Housing	diecast aluminum
	Housing cover	diecast aluminum
	Weight	640g
	Connection type	spring terminals / system connectors
Environmental data	Ambient temp. (operation/storage)	0°C … +50°C / -20°C … +60°C
	Protection class	IP 65
	Air humidity	< 90% (non-cond.)

Features

- **Protocol and interface conversion from RS 232 to RS 422/ RS 232/TTY/RS 485/multiNet**
- **Additional RS 232 service interface (9-pin Sub-D plug)**
- **Operating mode switch service/standard operation**
- **Terminals for connecting the voltage supply and the communication interface**
- **With MA 21 100.2 also terminals for connecting the switching input and switching output**
- **M12 connector sets**

CE

CONNECTOR UNIT FOR RS 485 / RS 232 / TTY / RS 422

Part description Part no.	Description	Interface	
Connector unit			
MA 21 100 50030481	Connector unit for RS 232 devices (BCL 8, hand-held scanners), with separate service interface, without display	RS 232 / RS 485, RS 485 multiNet	
MA 21 100.2 50103125	Connector unit specially for RFI/RFM devices, switching input/ output terminals, with separate service interface, without display	RS 232 / RS 485 multiNet	
MA 21 110 50030482	Connector unit for RS 232 devices (BCL 8, hand-held scanners), with separate service interface, without display	RS 232 / RS 232	
MA 21 120 50030483	Connector unit for RS 232 devices (BCL 8, hand-held scanners), with separate service interface, without display	RS 232 / TTY	
MA 21 130 50030484	Connector unit for RS 232 devices (BCL 8, hand-held scanners), with separate service interface, without display	RS 232 / RS 422	

Accessories / connection cables More accessories can be found from **page 426** onwards

Part no.	Designation	Features	
see P. 444	M - 12 set MA ...	M12 connection sets POWER and FIELDBUS	
see P. 438	KB 021 Z	9-pin Sub-D RS 232 connection cable with open cable end at MA 21	
see P. 426	KB 008 ... A, KB 008 ... R	BCL 8/BPS 8 connection cable with open cable end at MA 21	


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MA 21 1xx

Connector units

Features

- Protocol and interface converter with electrically isolated interfaces
- Networking of RS 232 devices via RS 485 interface in Leuze multiNet plus
- Rotary switch for address setting
- Additional RS 232 service interface (9-pin Sub-D plug)
- Operating mode switch service/standard operation
- Terminals for connecting the voltage supply and the communication interface
- Indicator LEDs for operational readiness, activation, errors

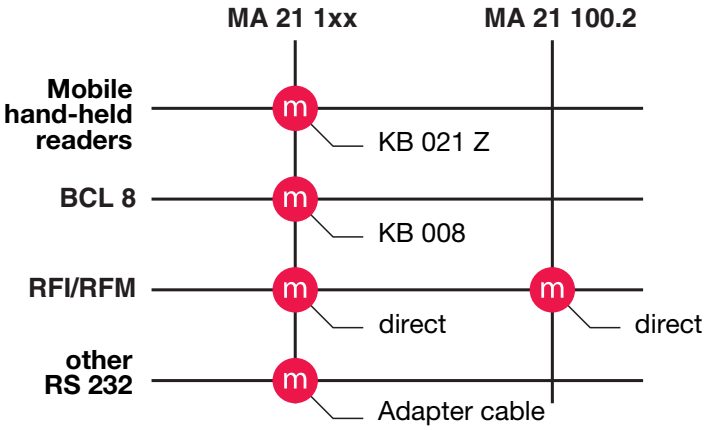
Also with MA 21 100.2:

- Socket for connector on connected device
- Connection terminals for switching input/output
- M12 connection sets



Possible device combinations

MA 21 1xx / MA 21 1xx.2

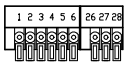
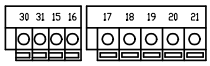


m = possible to connect to multiNet

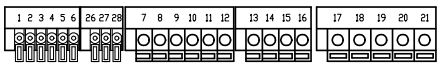
Electrical connection

Terminals

MA 21 1xx

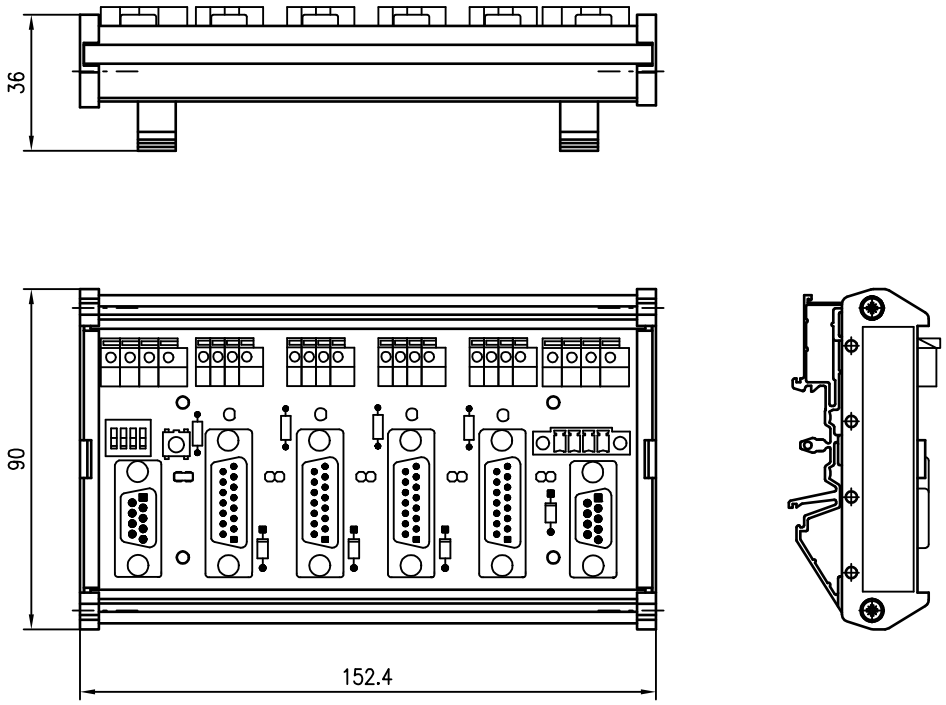
MA 21 100.2



PIN	MA 21 100.2 RS 485	MA 21 1xx RS 485	RS 232	TTY	RS 422
1	A	A	RxD	TX+	TX+
2	A	A	TxD	TX-	TX-
3	B	B	CTS	RX+	RX+
4	B	B	RTS	RX-	RX-
5	GND	GND	res.	res.	res.
6	GND	GND	GND	GND	GND
7	res.	–			
8	res.	–			
9	SE1	–			
10	res.	–			
11	VDD_SE	–			
12	GND_SE	–			
13	res.	–			
14	SA1	–			
15	VDD_SA	24V			
16	GND_SA	GND			
17	V_IN	V_IN			
18	V_IN	V_IN			
19	GND_IN	GND_IN			
20	GND_IN	GND_IN			
21	PE	PE			
26	res.	RXD CLIENT			
27	res.	TXD CLIENT			
28	res.	GND CLIENT			
30	–	SV_5V			
31	–	GND			

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MODULAR CONNECTOR UNIT MA 22 DC

Modular connector unit	Interface	Page
MA 22 DC	Connector unit for max. 4 BCL 22 in daisy-chain, RS 232 host interface	408



Common technical data

Electrical data	Operating voltage U_B	18 … 30VDC
	Power consumption	max. 15W
	Switching inputs	12 … 30VDC
	Switching outputs	100mA (U_{OUT} = U_B)
Mechanical data	Housing	plastic
	Weight	220g
	Mounting	on C-rails
	Connection type	Sub-D connector (9-pin / 15-pin), spring terminals
Environmental data	Ambient temp. (operation/storage)	0°C … +40°C / -20°C … +60°C
	Protection class	IP 20
	Air humidity	< 90% (non-cond.)

Features

- **Easy wiring of up to 4 BCL 22 bar code readers in a daisy chain (15-pin Sub-D connector for scanners)**
- **The scanners can be addressed individually or together**
- **Terminals for central voltage supply**
- **RS 232 interface to host (9-pin Sub-D)**
- **Switching input and switching output for each bar code reader**
- **Central switching input**
- **Separate service switch for each scanner**
- **Mounting on C-rails**

CE

CONNECTOR UNIT WITH RS 232 INTERFACE

Part description Part no.	Description	Interface	
Connector unit			
MA 22 DC 50031496	Connector unit for max. 4 BCL 22 in daisy-chain, RS 232 host interface	RS 232	

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MA 22 DC

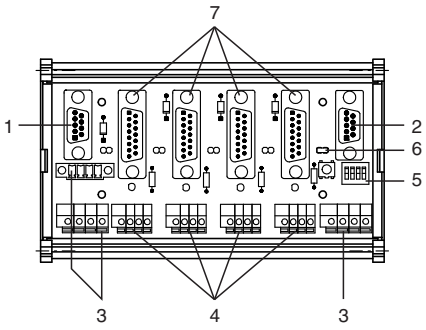
Connector units

Features

- Easy wiring of up to 4 BCL 22 bar code readers in a daisy chain (15-pin Sub-D connector for scanners)
- The scanners can be addressed individually or together
- Terminals for central voltage supply
- RS 232 interface to host (9-pin Sub-D)
- Switching input and switching output for each bar code reader
- Central switching input
- Separate service switch for each scanner
- Mounting on C-rails



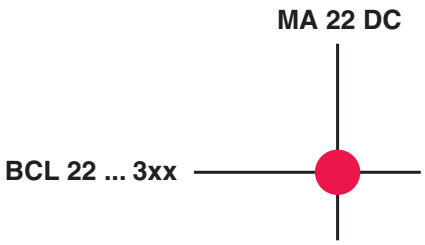
Electrical connection



Connector/ Terminal Block	Description
1	Host
2	Cascade (next MA 22 DC)
3	Common PWR_IN/SW_IN
4	SW_IN/OUT for each scanner
5	Service interface
6	Daisy Chain Termination
7	Scanner Sub-D connectors

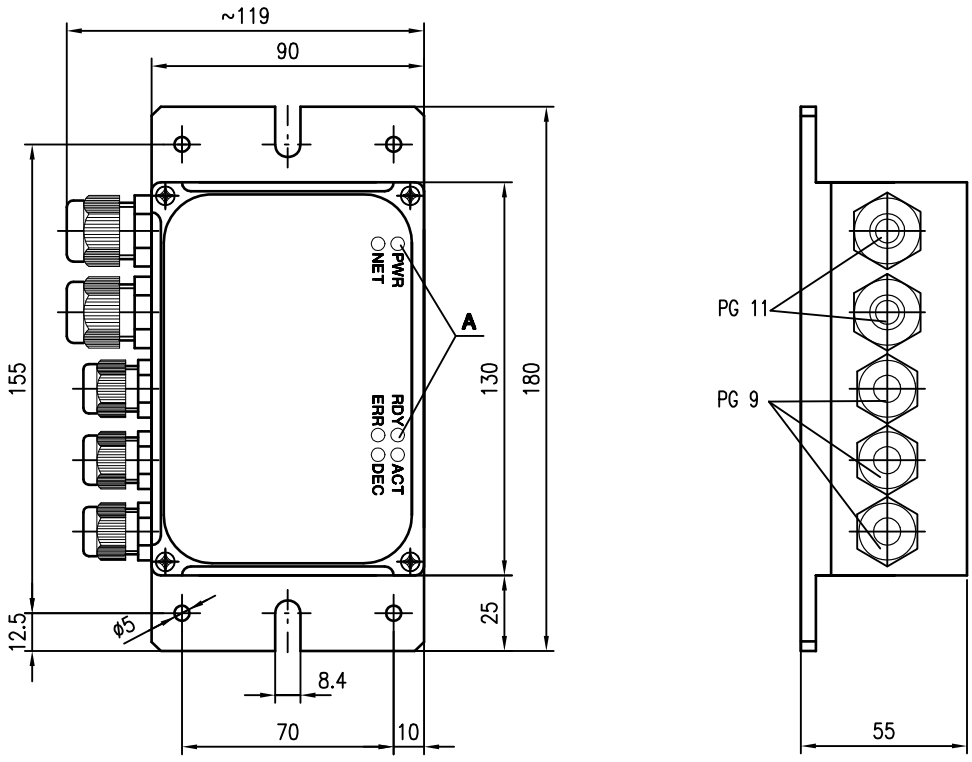
Possible device combinations

MA 22 DC

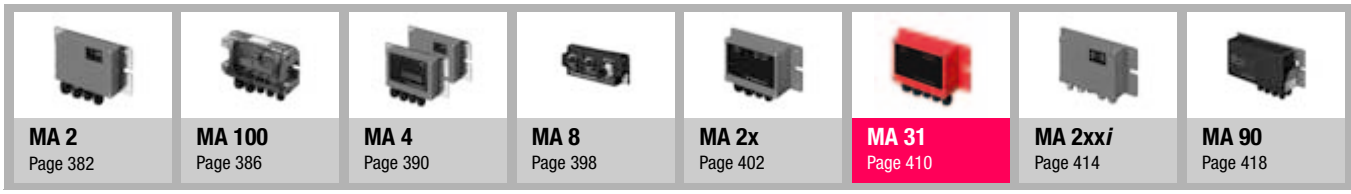


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A LED indicators


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MODULAR CONNECTOR UNIT MA 31

Modular connector unit	Interface	Page
MA 31 100	multiNet master or protocol / interface converter with electrical isolation, RS 232 or RS 485multiNet to RS 485	412
MA 31 110	multiNet master or protocol / interface converter with electrical isolation, RS 232 or RS 485multiNet to RS 232	412
MA 31 120	multiNet master or protocol / interface converter with electrical isolation, RS 232 or RS 485multiNet to TTY	412
MA 31 130	multiNet master or protocol / interface converter with electrical isolation, RS 232 or RS 485multiNet to RS 422	412



Common technical data

Electrical data	Operating voltage U_B	18 … 36VDC
	Power consumption	max. 4VA
	Switching input	12 … 36VDC
	Switching output	500mA (U_{OUT} = U_B)
Indicators	4 (6) LEDs	ready, error, data transmission, network init., (activation, reading)
Mechanical data	Housing	diecast aluminum
	Housing cover	diecast aluminum
	Weight	640g
	Connection type	spring terminals
Environmental data	Ambient temp. (operation/storage)	0°C … +50°C / -20°C … +60°C
	Protection class	IP 65
	Air humidity	< 90% (non-cond.)

Features

- **multiNet master or protocol / interface converter with electrical isolation from RS 232 or RS 485 multiNet to RS 485/ RS 232/TTY/RS 422**
- **Connection of up to 30 multiNet slave participants**
- **Additional RS 232 service interface (9-pin Sub-D plug)**
- **Operating mode switch service/standard operation**
- **Terminals for connecting the voltage supply and the communication interface**
- **Connection of max. 2 switching inputs/outputs using spring-loaded terminals**
- **M12 connection sets**

CE

CONNECTOR UNIT FOR RS 485 / RS 232 / TTY / RS 422

Part description Part no.	Description	Interface	
Connector unit			
MA 31 100 50030835	multiNet master or protocol / interface converter with electrical isolation from RS 485 multiNet to RS 485	RS 485, RS 485 multiNet	
MA 31 110 50030836	multiNet master or protocol / interface converter with electrical isolation from RS 485 multiNet to RS 232	RS 232, RS 485 multiNet	
MA 31 120 50030837	multiNet master or protocol / interface converter with electrical isolation from RS 485 multiNet to TTY	TTY, RS 485 multiNet	
MA 31 130 50030838	multiNet master or protocol / interface converter with electrical isolation from RS 485 multiNet to RS 422	RS 422, RS 485 multiNet	

Accessories / connection cables More accessories can be found from **page 423** onwards

Part no.	Designation	Features
see P. 444	M - 12 set MA ...	M12 connection sets POWER and FIELDBUS
50115044	KB JST-3000	MA31 connection to MA2xxi
50027375	BT 56	Mounting device for MA 30


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MA 31

Connector units

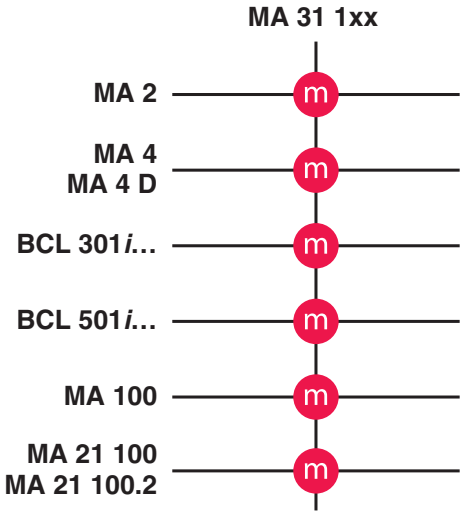
Features

- multiNet master or protocol / interface converter with electrical isolation from RS 232 or RS 485 multiNet to RS 485
- Networking of up to 30 slave participants in the multiNet plus network
- Rotary switch and jumpers for address setting
- M12 connection sets
- Additional RS 232 service interface (9-pin Sub-D plug)
- Operating mode switch service/standard operation
- Terminals for connecting the voltage supply, the switching inputs/outputs as well as the communication interface
- Indicator LEDs for operational readiness, activation, errors



Possible device combinations

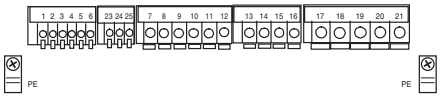
MA 31 1xx



m = possible to connect to multiNet

Electrical connection

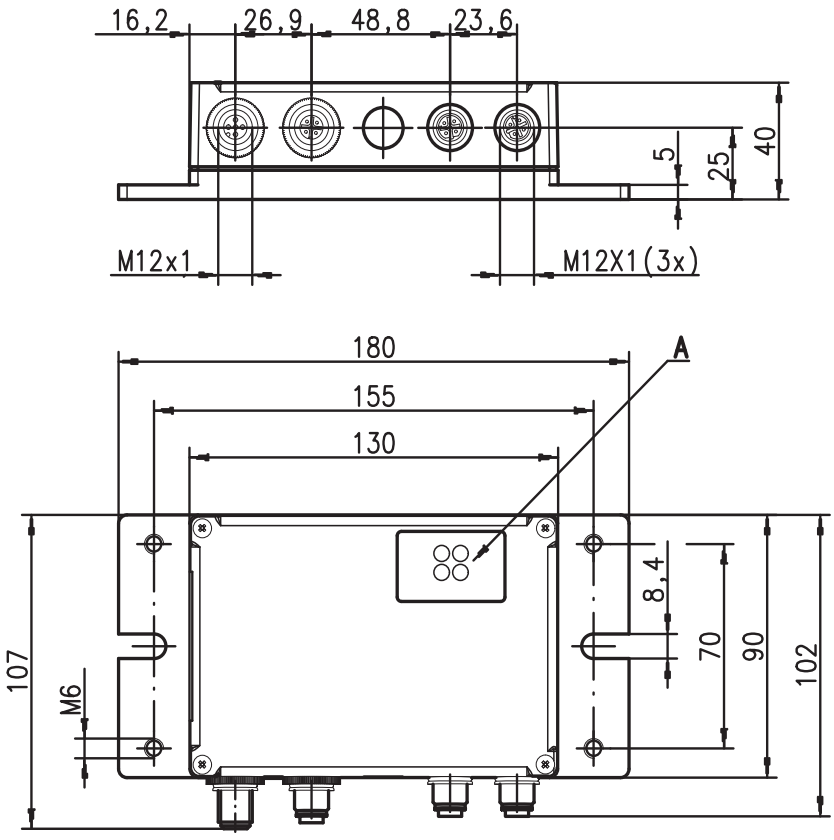
Terminals



PIN	RS 485	RS 232	TTY	RS 422	
1	A	RxD	TX+	TX+	Host
2	A	TxD	TX-	TX-	
3	B	CTS	RX+	RX+	
4	B	RTS	RX-	RX-	
5	GND	res.	res.	res.	
6	GND	GND	GND	GND	
7	SE2_A				
8	SE2_B				
9	SE1_A				
10	SE1_B				
11	VDD_SE				
12	GND_SE				
13	SA2				
14	SA1				
15	VDD_SA				
16	GND_SA				
17	V_IN				
18	V_IN				
19	GND_IN				
20	GND_IN				
21	PE				
23	RS485 A				multiNet plus
24	RS485 B				
25	RS485 GND				

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Dimensioned drawing



A LED indicators


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MODULAR CONNECTOR UNIT MA 2xx*i*

Modular connector unit	Interface	Page
MA 204*i*	PROFIBUS Gateway	416
MA 208*i*	Ethernet TCP/IP Gateway	416
MA 235*i*	CANopen Gateway	416
MA 238*i*	EtherCAT Gateway	416
MA 248*i*	PROFINET Gateway	416
MA 255*i*	DeviceNet Gateway	416
MA 258*i*	EtherNet/IP Gateway	416



Common technical data

Electrical data	Operating voltage U_B	18 … 30VDC
	Power consumption	max. 9VA
	Switching input	18 … 30VDC [1]
	Switching output	500mA (U_{OUT} = U_B) [1]
Indicators	max. 4 LEDs	ready, error, data transmission, network initialization, state
Mechanical data	Housing	diecast aluminum
	Housing cover	diecast aluminum
	Weight	700g
	Connection type	M12 connector
Environmental data	Ambient temp. (operation/storage)	0°C … +55°C / -20°C … +60°C
	Protection class	IP 65
	Air humidity	< 90% (non-cond.)

1) dependent on connected device

Features

- **Conversion of RS 232 data**
- **Protocol interface converter from RS 232 to PROFIBUS, PROFINET, Ethernet TCP/IP, EtherNet/IP, CANopen, DeviceNet, EtherCAT**
- **Additional RS 232 service interface (9-pin Sub-D plug)**
- **Operating mode switch service/standard operation**
- **M12 connectors for connecting the voltage supply and the communication interface**
- **Connection of max. 1 switching input and 1 switching output**
- **Extensive assortment of ready-made M12-cables for power and fieldbus available (accessory)**
- **Variety of connection cables for Leuze devices (accessory)**
- **Ethernet types: integrated switch for linear topology**
- **RS types: power and bus implemented twice for linear topology**

CE

CONNECTOR UNIT FOR RS 232 to FIELDBUS

Part description Part no.	Description	Interface	
Connector unit			
MA 204i 50112893	Modular connector unit for connecting devices with RS 232 interface to the PROFIBUS DP	RS 232, PROFIBUS DP	
MA 208i 50112892	Modular connector unit for connecting devices with RS 232 interface to Ethernet TCP/IP	RS 232, Ethernet TCP/IP	
MA 235i 50114154	Modular connector unit for connecting devices with RS 232 interface to CANopen	RS 232, CANopen	
MA 238i 50114155	Modular connector unit for connecting devices with RS 232 interface to EtherCAT	RS 232, EtherCAT	
MA 248i 50112891	Modular connector unit for connecting devices with RS 232 interface to PROFINET-IO (RT)	RS 232, PROFINET-IO (RT)	
MA 255i 50114156	Modular connector unit for connecting devices with RS 232 interface to DeviceNet	RS 232, DeviceNet	
MA 258i 50114157	Modular connector unit for connecting devices with RS 232 interface to Ethernet/IP	RS 232, EtherNet/IP	

Accessories / connection cables More accessories can be found from **page 423** onwards

Part no.	Designation	Features
50113397	KB JST - HS - 300	Connection cable for hand-held scanner to the MA 2xx*i*
50113467	KB JST-M12A-5P-3000	Connection cable for BCL 8/BPS 8 to the MA 2xx*i*
50111225	KB JST-M12A-8P-3000	Connection cable for LSIS 222 to the MA 2xx*i*
50113468	KB JST-M12A-8P-Y-3000	Connection cable for LSIS 4xx*i* to the MA 2xx*i*
50110240	KB 500-3000-Y	Connection cable for BCL500*i* to the MA 2xx*i*
50115044	KB JST 3000	Connection cable for MA2, MA21, MA31, IMRFU1 and BCL90 with MA90
50104557	K-D M12A-5P-5m-PVC	Voltage supply connection cable for MA 2xx*i*
see P. 429	KB 090…	Connection cable with open cable end, for BCL90 to the MA 2xx*i*
50115049	K-DS M12A-MA-5P-3m-S-PUR	Connection cable for ODSL 9/ODS… 96B with RS 232 to the MA 2xx*i*
50115050	K-DS M12A-MA-8P-3m-S-PUR	Connection cable for ODSL 30/D232-30M-S12 to the MA 2xx*i*
50116791	K-DS M12A-MA-5P-3m-1S-PUR	Connection cable for KONTURflex/QUATTRO-RSX/M12 to the MA 2xx*i*

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MA 2xx*i*

Connector units

Features

- Gateway for simple connection of a wide range of RS 232 devices to PROFIBUS, PROFINET, Ethernet TCP/IP, EtherNet/IP, CANopen, DeviceNet, EtherCAT
- Control of data exchange via control and status bits
- Consistent data transmission
- Rotary switch for address setting
- Additional RS 232 service interface (9-pin Sub-D plug)
- Operating mode switch service/standard operation
- M12 connector for connecting the voltage supply, the switching input/output as well as the fieldbus interface
- Indicator LEDs for operational readiness and bus state
- Ethernet types: integrated switch for linear topology
- RS types: power and bus implemented twice for line topology

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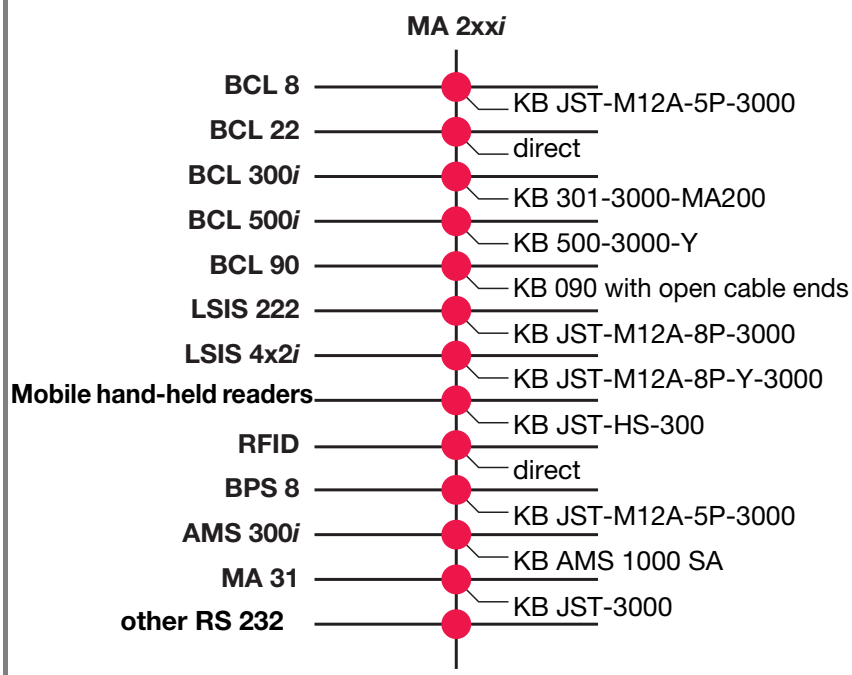
Electrical connection

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Electrical connection via M12 connector - see operating instructions

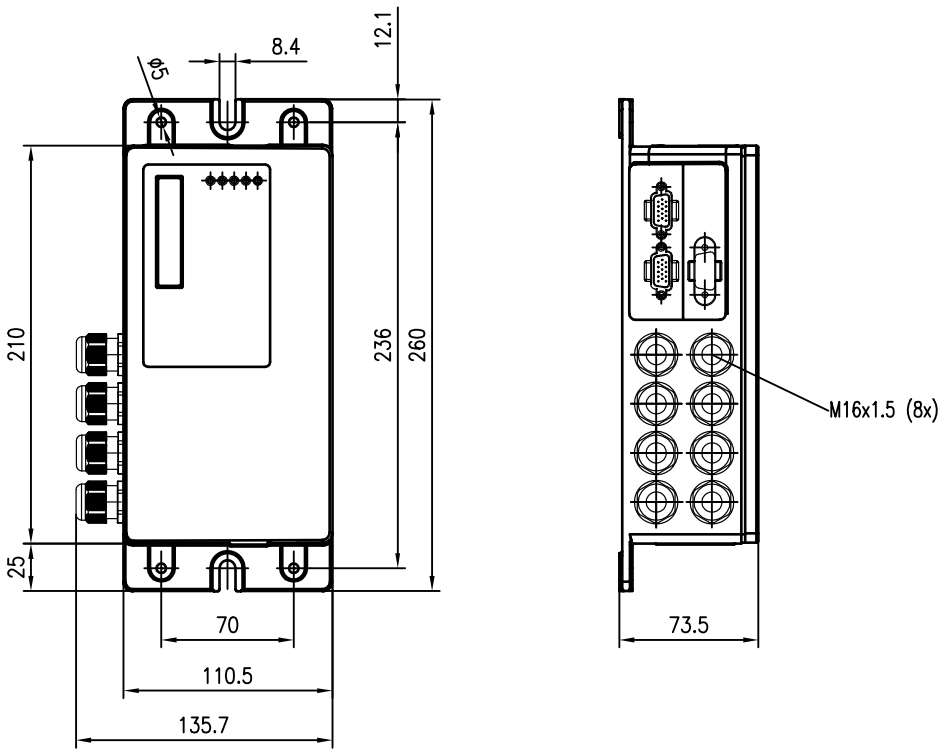
Possible device combinations

MA 2xx*i*



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MODULAR CONNECTOR UNIT MA 90

Modular connector unit	Interface	Page
MA 90	multiNet slave or connector unit for point-to-point applications. Available interfaces: RS 232/RS 485/RS 422	420



Common technical data

Electrical data	Operating voltage U_B	18 … 30VDC
	Power consumption	max. 1.2VA
	Switching input	18 … 30VDC
	Switching output	100mA (U_{OUT} = U_B)
Indicators	4 LEDs	power, ready, activation, switching outputs
Mechanical data	Housing	diecast aluminum
	Housing cover	impact-resistant plastic
	Weight (MA 31)	1080g
	Connection type	spring terminals, BCL 90 via connectors
Environmental data	Ambient temp. (operation/storage)	0°C … +40°C / -20°C … +70°C
	Protection class	IP 54
	Air humidity	< 90% (non-cond.)

Features

- **multiNet slave or connector unit for point-to-point applications of the BCL 90**
- **Hardware addressing in Leuze multiNet**
- **Additional RS 232 service interface (9-pin Sub-D plug)**
- **Terminals for connecting the voltage supply and the communication interface**
- **Connection of max. 6 switching inputs and 4 switching outputs using spring-loaded terminals**
- **Large wiring terminal compartment**
- **Hardware reset**
- **4 LEDs for device visualization**

CE

CONNECTOR UNIT WITH RS 232/485/422 INTERFACE

Part description Part no.	Description	Interface	
Connector unit			
MA 90 50035348	Connector unit for BCL 90, multiNet slave or connector unit for point-to-point applications	RS 232, RS 485, RS 422	

Accessories / connection cables More accessories can be found from **page 429** onwards

Part no.	Designation	Features
50035319	KB 090 - 3000	Connection cable between MA 90 and BCL 90
50035322	KB 090 - 3000 - P	Connection cable between MA 90 and BCL 90, ext. parameter memory
50035324	KB 090 - 3000 - H	Connection cable between MA 90 and BCL 90, for heating devices


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MA 90

Connector unit

RS 232
RS 485

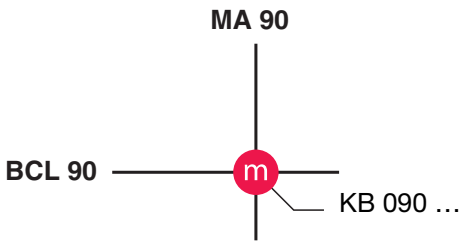
Features

- multiNet slave or connector unit for point-to-point applications
- Hardware addressing in Leuze multiNet
- Additional RS 232 service interface (9-pin Sub-D plug)
- Hardware reset
- Rotary switch and jumpers for address setting
- Terminals for connecting the voltage supply and the communication interface
- Connection of max. 6 switching inputs and 4 switching outputs using spring-loaded terminals
- Large wiring terminal compartment
- 4 LEDs for device visualization



Possible device combinations

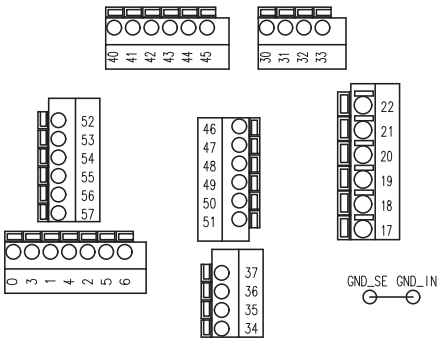
MA 90



m = possible to connect to multiNet

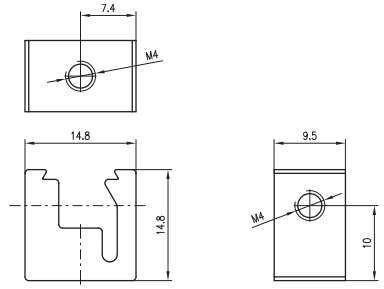
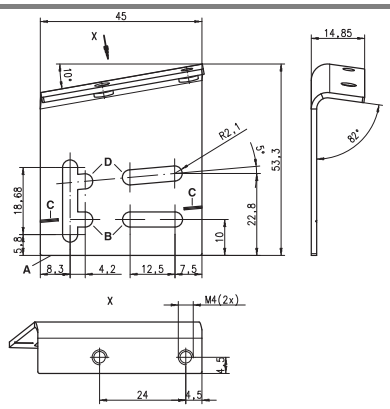
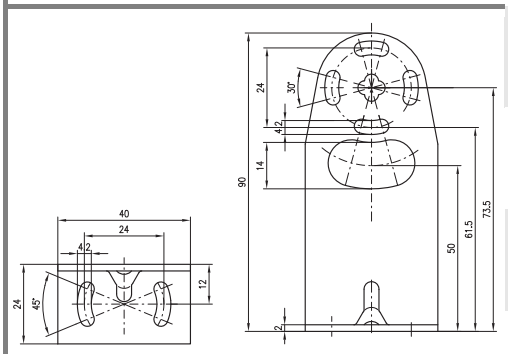
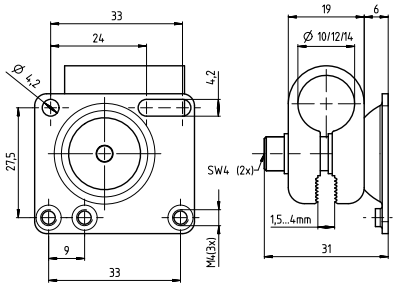
Electrical connection

Terminals



PIN	Signal	PIN	Signal
0	Term	40	SE_1
1	Rx-/RxD/485_A	41	SE_2
2	Tx-/TxD/485_A	42	SE_3
3	Rx+/—–/485_B	43	SE_4
4	Tx+/—–/485_B	44	SE_5
5	GND_RSxxx	45	SE_6
6	GND_RSxxx	46	GND_SE
17	V_IN	47	GND_SE
18	V_IN	48	GND_SE
19	GND_IN	49	GND_SE
20	GND_IN	50	GND_SE
21	PE	51	GND_SE
22	PE	52	VDD_SE
30	SWO_1	53	VDD_SE
31	SWO_2	54	VDD_SE
32	SWO_3	55	VDD_SE
33	SWO_4	56	VDD_SE
34	GND_SWO	57	VDD_SE
35	GND_SWO		
36	GND_SWO		
37	GND_SWO		

ACCESSORIES / MOUNTING SYSTEMS

Dimensioned drawing	Part description Part no.	Feature
Mounting systems		
	**BT 8 - 0** 50036196	Mounting clamp for dovetail, BCL 8/BPS 8/ LSIS 12x
	**BT 8 - 01** 50104791	Mounting bracket for BPS 8
	**BT 8** 50036195	Mounting bracket
	**BTU 300M - D10** 50117253	Through-hole mount for rod D = 10 mm or cheek, 1.5 … 4 mm
	BTU 300M - D12 50117252	Through-hole mount for rod D = 12 mm or cheek, 1.5 … 4 mm
	BTU 300M - D14 50117251	Through-hole mount for rod D = 14 mm or cheek, 1.5 … 4 mm


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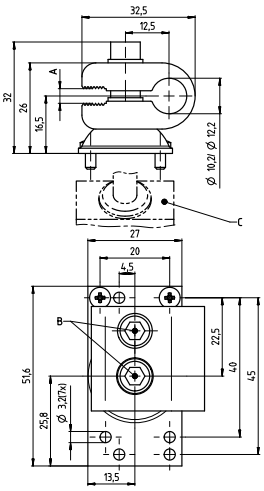
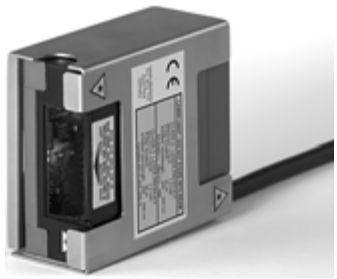
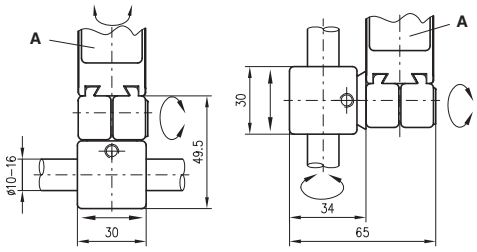
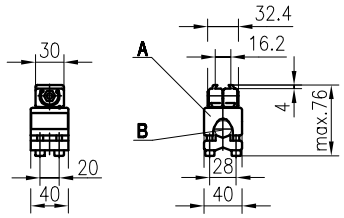

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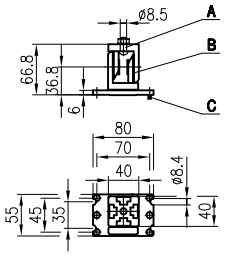
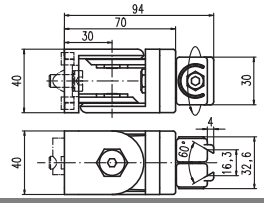
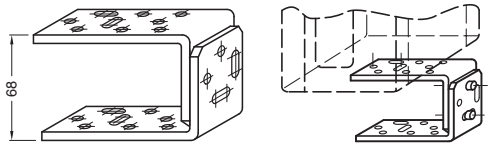
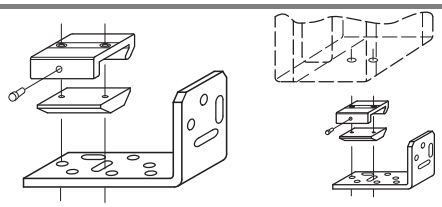
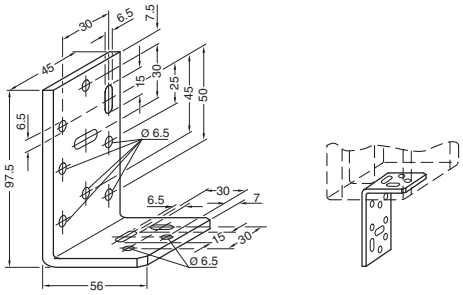
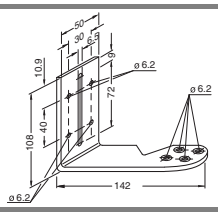

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Dimensioned drawing	Part description Part no.	Feature
Mounting systems		
 **A** Slit for clamping sheet metal, sheet metal thickness 1.5 to 3mm **B** M4 screw DIN 912 **C** BCL 21/22	**BT 20 - D12** 50060503	Mounting device for rod and sheet metal clamp installation, BCL 21/22, D = 12mm
	BT 20 - D10 50111391	Mounting device for rod and sheet metal clamp installation, BCL 21/22, D = 10mm
	**BT 21** 50037473	Mounting device for inserting the BCL 21/22, stainless steel (image shows BT 21 with scanner)
 **A** BCL/BPS	**UMS 96** 50026204	Universal mounting system with dovetail
 **A** Rod holder, turnable 360° **B** Rod dia. from 16 … 20mm	**BT 56** 50027375	Mounting device with dovetail for rod, for BCL 3xx*i*, BCL 5xx*i*, among others

ACCESSORIES / MOUNTING SYSTEMS

Dimensioned drawing	Part description Part no.	Feature
Mounting systems		
 **A** M8 x 18 screw with lock washer and hex nut **B** ITEM joint **C** M4 x 8 oval-head screw with lock washer	**BT 57** 50027167	Mounting device for ITEM MB system for MA …
	**BT 59** 50111224	Mounting device for ITEM MB system for BCL 3xx*i*, BCL 5xx*i*
	**BT 90 G** 50035516	Jointed bracket, bracket support, double, with 2 M6 x 10 screws, for BCL 90 CAT …
	**BT 90 S** 50035514	Quick-clamping device incl. material, for BCL 90 CAT …
	**BT 90 W** 50035515	Bracket support, single, with two M6x10 screws, for BCL 90 CAT …
	**BT 90 X** 50037598	Bracket, single, with two M6x10 screws, for BCL 90 CAX …

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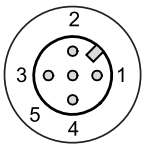
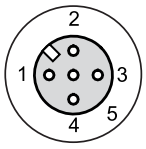
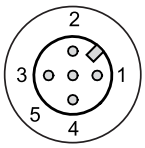
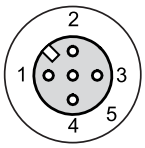

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ACCESSORIES / MOUNTING SYSTEMS

Dimensioned drawing	Part description Part no.	Feature
Accessories for mobile code readers		
	**BT holder IT 190x** 50114501	Rigid support, for IT 190x
	BT holder IT 190x 50114498	Flex Neck stand for IT 190x
	**Support for IT 4xxx** 50103402	Flex Neck stand
	Support for IT 1300g 50107039	Flex Neck stand
	**Wall mount for IT xxxx** 50106314	Wall mount for all IT … hand-held scanners
	**Rope for** **IT 3800i/4800/6300** 50107034	Rope for fastening to the ceiling
	**Protection hood IT …** 50106109	Cordura protection hood for IT 3820/4600/4820
	BT 1300g cover 50109534	Protection hood for IT 1300g
	**ZCH - 91095 - HL** 50034617	Bracket for Z-3110

ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part no.	Feature
M12 connection cables, 5-pin, for BCL 8/BPS 8 and power for all M12 devices		
	**KB 008 - 1000 AA** 50040763	1 m connection cable POWER-IO-DATA, M12 axial socket, 5-pin, A-coded, shielded, UL, M12 axial plug
	KB 008 - 1000 AR 50040760	1 m connection cable POWER-IO-DATA, M12 axial socket, 5-pin, A-coded, shielded, UL, M12 angled plug
	KB 008 - 2000 AA 50040762	2 m connection cable POWER-IO-DATA, M12 axial socket, 5-pin, A-coded, shielded, UL, M12 axial plug
	**KB 008 - 2000 AR** 50040759	2 m connection cable POWER-IO-DATA, M12 axial socket, 5-pin, A-coded, shielded, UL, M12 angled plug
	KB 008 - 3000 AA 50040761	3 m connection cable POWER-IO-DATA, M12 axial socket, 5-pin, A-coded, shielded, UL, M12 axial plug
	KB 008 - 3000 AR 50040758	3 m connection cable POWER-IO-DATA, M12 axial socket, 5-pin, A-coded, shielded, UL, M12 angled plug
M12 connection cables, 5-pin, for BCL 8/BPS 8 and power for all M12 devices		
 PIN | Colour 1 br / BN 2 ws / WH 3 bl / BU 4 sw / BK 5 gr / GY 	**KB 008 - 3000 A** 50040757	3 m connection cable POWER-IO-DATA, M12 axial socket, 5-pin, A-coded, shielded, UL, open cable end
	KB 008 - 3000 A - S 50101941	3 m connection cable IO, M12 axial plug, 5-pin, A-coded, shielded, UL, open cable end
	KB 008 - 3000 YB 50040579	3 m Y-connection cable POWER-IO-DATA, M12 axial socket, 5-pin, A-coded, 2 x open cable end, each has 3-wires
	KB 008 - 10000 A 50102975	10 m connection cable POWER-IO-DATA, M12 axial socket, 5-pin, A-coded, shielded, UL, open cable end
	KB 008 - 10000 A - S 50102971	10 m connection cable IO, M12 axial plug, 5-pin, A-coded, shielded, UL, open cable end

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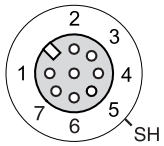
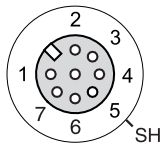

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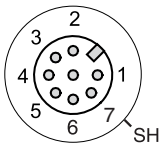
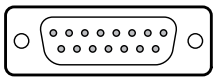

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Contact assignment	Part description Part no.	Feature
M12 connection cables, 8-pin, for LSIS 22x		
 PIN / Colour 1 br / BN 2 ws / WH 3 bl / BU 4 sw / BK 5 gr / GY 6 rs / PK 7 vi / VT 8 or / OG SH	**KB JST - M12A - 8P - 3000** 50111225	3m connection cable LSIS 222, M12 axial socket, 8-pin, A-coded, shielded, JST 10/6
	KB M12A - 8P - PC - IO - 3000 50111226	3m connection cable LSIS 222 M12 axial socket, 8-pin, A-coded, shielded M12 axial plug, 4-pin, Sub-D 9-pin socket
	KB M12A - 8P - USB - 3000 50111227	3m connection cable LSIS 223, M12 axial socket, 8-pin, A-coded, shielded, USB type A plug
	KB M12A - 8P - USB - IO - 3000 50111228	3m connection cable LSIS 223 M12 axial socket, 8-pin, A-coded, shielded M12 axial plug, 4-pin, USB type A plug
	KB 034 - 2000 50037543	2m connection cable LSIS 222, M12 axial socket, 8-pin, A-coded, shielded, M12 axial plug
M12 connection cables, 8-pin, for LSIS 22x, LSIS 4xx*i* (PWR-IO)		
 PIN / Colour 1 br / BN 2 ws / WH 3 bl / BU 4 sw / BK 5 gr / GY 6 rs / PK 7 vi / VT 8 or / OG SH	**KB M12/8 - 2000 - BA** 50110171	2m connection cable POWER-IO-DATA, M12 axial socket, 8-pin, A-coded open cable end
	KB M12/8 - 5000 - BA 50110172	5m connection cable POWER-IO-DATA, M12 axial socket, 8-pin, A-coded open cable end
	KB M12/8 - 10000 - BA 50110173	10m connection cable POWER-IO-DATA, M12 axial socket, 8-pin, A-coded open cable end
	KB M12/8 - 30000 - BA 50110177	30m connection cable POWER-IO-DATA, M12 axial socket, 8-pin, A-coded open cable end

ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part no.	Feature
M12 connection cables, 8-pin, for LSIS 4xx*i* (IO-DATA)		
 PIN / Colour 1 ws / WH 2 br / BN 3 gn / GN 4 ge / YE 5 gr / GY 6 rs / PK 7 bl / BU 8 rt / RD SH	**KB M12/8 - 2000 - SA** 50110179	2m connection cable IO-DATA, M12 axial plug, 8-pin, A-coded, shielded open cable end
	KB M12/8 - 5000 - SA 50110180	5m connection cable IO-DATA, M12 axial plug, 8-pin, A-coded, shielded open cable end
	KB M12/8 - 10000 - SA 50110181	10m connection cable IO-DATA, M12 axial plug, 8-pin, A-coded, shielded open cable end
	KB M12/8 - 30000 - SA 50110189	30m connection cable POWER-IO-DATA, M12 axial plug, 8-pin, A-coded open cable end
Connection cable for bar code positioning system BPS 34/37		
	**KB 031 - 1000** 50103621	BPS 37 - MA connection cable, 15-pin Sub-D socket to JST connector, 1m
	KB 031 - 3000 50035355	BPS 37 - MA connection cable, 15-pin Sub-D socket to JST connector, 3m
	KB 034 - 2000 50037543	BPS 34 connection cable, M12 connector/M12 socket, A-coded, 2m (e.g. MS 34 to MSD)

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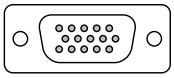
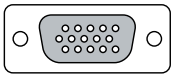

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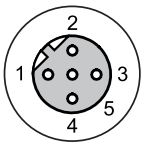

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Contact assignment	Part description Part no.	Feature
Connection cables for BCL 90 / 5xx*i* bar code readers		
	KB 500 - 3000 - Y 50110240	Connection cable BCL 500*i*/BCL 501*i* - MA2, 3 m
	**KB 090 - 3000** 50035319	8 mm connection cable, shielded, 3 m, for BCL 90 to MA 90, 1 x 15-pin SUB-HD plug, 1 x 15-pin SUB-HD socket
	KB 090 - 3000 B 50035320	8 mm connection cable, shielded, for BCL 90, 1 x 15-pin SUB-HD socket, 1 x open cable end (bared)
	KB 090 - 3000 H 50035324	2 x hood with integrated connectors, IP 65, for BCL 90 2 shielded connection cables, 3 m
	**KB 090 - 3000 HO** 50035325	Hood with integrated connectors, IP 65, for BCL 90 2 shielded connection cables, 2 open cable ends
	KB 090 - 3000 P 50035322	Ext. parameter memory (EEPROM), IP 65, with 2 x 3 m cables for BCL 90 to MA 90, 15-pin SUB-HD plug/socket
	KB 090 - 3000 PO 50035323	Ext. parameter memory (EEPROM), IP 65,for BCL 90 with 2 x 3 m cables with open ends
	KB 090 - 3000 S 50035321	8 mm connection cable, shielded, for BCL 90 1 x 15-pin SUB-HD plug, 1 x open cable end (bared)
	KDS ET - M12 / RJ45 W - 4P 50109832	Distribution cable for BCL 508*i* / LSIS 400*i* / AMS 3xx*i*
	KDS BUS OUT - M12 - T - 5P 50109834	Distribution cable for BCL 50x*i*

ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part no.	Feature
Connection cables for MSP systems with BCL 90		
	KB 090 - 0700 MSP 50035528	Connection cable, 0.7 m, with Lumberg connector, for MSP systems
	KB 090 - 3000 MSP 50035529	Connection cable, 3 m, with Lumberg connector, for MSP systems
	KB 090 - 5000 MSP 50035530	Connection cable, 5 m, with 2x Lumberg connector, for MSP systems
	KB 090 - 5000 B MSP 50035521	MCU supply cable, 5 m, with 2x Lumberg connector, for MSP systems
	KB 090 - 10000 B MSP 50035522	MCU supply cable, 10 m, 1 x Lumberg connector, for MSP systems 1 x open end
	KB 090 - 10000 S MSP 50035523	MCU return cable, 10 m, 1 x Lumberg connector, for MSP systems 1 x open end
M12 interface connection cables acc. to SSI / Interbus-S specification, for BCL 3xx*i*		
 PIN | Colour 1 ge / YE 2 gn / GN 3 gr / GY 4 rs / PK 5 br / BN	**KB SSI/IBS - 2000 - BA** 50104172	2 m connection cable INTERFACE, M12 axial socket, 5-pin, B-coded open cable end
	KB SSI/IBS - 5000 - BA 50104171	5 m connection cable INTERFACE, M12 axial socket, 5-pin, B-coded open cable end
	KB SSI/IBS - 10000 - BA 50104170	10 m connection cable INTERFACE, M12 axial socket, 5-pin, B-coded open cable end
	KB SSI/IBS - 15000 - BA 50104169	15 m connection cable INTERFACE, M12 axial socket, 5-pin, B-coded open cable end
	KB SSI/IBS - 30000 - BA 50108446	30 m connection cable INTERFACE, M12 axial socket, 5-pin, B-coded open cable end

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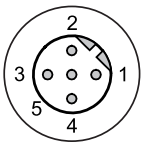
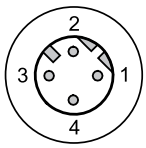

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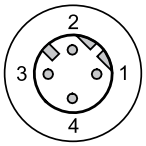
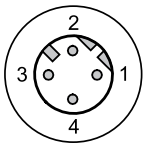
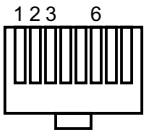

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Contact assignment	Part description Part no.	Feature
M12 Interface connection cables acc. to Interbus-S specification		
 PIN | Colour 1 | ge / YE 2 | gn / GN 3 | gr / GY 4 | rs / PK 5 | br / BN	**KB IBS - 2000 - SA** 50108595	2m connection cable INTERFACE, M12 axial plug, 5-pin, B-coded open cable end
	KB IBS - 5000 - SA 50108596	5m connection cable INTERFACE, M12 axial plug, 5-pin, B-coded open cable end
	KB IBS - 10000 - SA 50108597	10m connection cable INTERFACE, M12 axial plug, 5-pin, B-coded open cable end
	KB IBS - 15000 - SA 50108598	15m connection cable INTERFACE, M12 axial plug, 5-pin, B-coded open cable end
	KB IBS - 30000 - SA 50108601	30m connection cable INTERFACE, M12 axial plug, 5-pin, B-coded open cable end
M12 Industrial Ethernet connection cables, for BCL 3x8*i*, BCL 5x8*i*, AMS 3x8*i*, DDLS 200/xxx-60-M12, LSIS 4xx*i*, MA 2x8*i*		
 PIN | Colour 1 | ge / YE 2 | ws / WH 3 | or / OG 4 | bl / BU	**KB ET - 2000 - SA** 50106739	2m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded open cable end
	KB ET - 5000 - SA 50106740	5m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded open cable end
	KB ET - 10000 - SA 50106741	10m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded open cable end
	KB ET - 15000 - SA 50106742	15m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded open cable end
	KB ET - 30000 - SA 50106746	30m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded open cable end

ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part no.	Feature
M12 Industrial Ethernet connection cables, for BCL 3x8*i*, BCL 5x8*i*, AMS 3x8*i*, DDLS 200/xxx-60-M12, LSIS 4xx*i*, MA 2x8*i*		
	**KB ET - 2000 - SSA** 50106899	2m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded M12 axial plug
	KB ET - 5000 - SSA 50106900	5m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded M12 axial plug
	KB ET - 10000 - SSA 50106901	10m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded M12 axial plug
	KB ET - 15000 - SSA 50106902	15m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded M12 axial plug
PIN / Colour 1 ge / YE 2 ws / WH 3 or / OG 4 bl / BU	**KB ET- 30000 - SSA** 50106905	30m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded M12 axial plug
M12 Industrial Ethernet connection cables, for BCL 3x8*i*, BCL 5x8*i*, AMS 3x8*i*, DDLS 200/xxx-60-M12, LSIS 4xx*i*, MA 2x8*i*		
	**KB ET - 2000 - SA - RJ45** 50109880	2m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded RJ45 axial plug
	KB ET - 5000 - SA - RJ45 50109881	5m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded RJ45 axial plug
PIN M12 / Colour / PIN RJ45 1 ge / YE 1 2 ws / WH 3 3 or / OG 2 4 bl / BU 6	**KB ET - 10000 - SA - RJ45** 50109882	10m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded RJ45 axial plug
	KB ET - 15000 - SA - RJ45 50109883	15m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded RJ45 axial plug
	**KB ET- 30000 - SA - RJ45** 50109886	30m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded RJ45 axial plug

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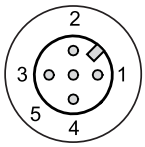
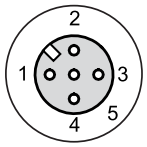
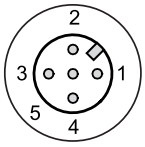
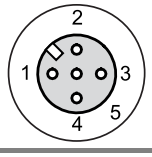

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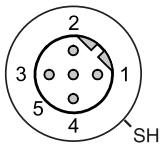
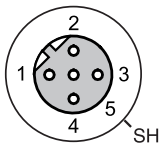

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Contact assignment	Part description Part no.	Feature
M12 connection cables DeviceNet / CANopen, for AMS 3x5*i*, MA 2x5*i*		
 PIN | Colour 1 SHIELD 2 rt / RD 3 sw / BK 4 ws / WH 5 bl / BU	**KB DN/CAN - 2000 - SA** 50114693	2m connection cable DeviceNet / CANopen, M12 axial plug, 5-pin, A-coded open cable end
	KB DN/CAN - 5000 - SA 50114697	5m connection cable DeviceNet / CANopen, M12 axial plug, 5-pin, A-coded open cable end
	KB DN/CAN - 10000 - SA 50114700	10m connection cable DeviceNet / CANopen, M12 axial plug, 5-pin, A-coded open cable end
	KB DN/CAN - 30000 - SA 50114702	30m connection cable DeviceNet / CANopen, M12 axial plug, 5-pin, A-coded open cable end
 PIN | Colour 1 SHIELD 2 rt / RD 3 sw / BK 4 ws / WH 5 bl / BU	**KB DN/CAN - 2000 - BA** 50114692	2m connection cable DeviceNet / CANopen, M12 axial socket, 5-pin, A-coded open cable end
	KB DN/CAN - 5000 - BA 50114696	5m connection cable DeviceNet / CANopen, M12 axial socket, 5-pin, A-coded open cable end
	KB DN/CAN - 10000 - BA 50114699	10m connection cable DeviceNet / CANopen, M12 axial socket, 5-pin, A-coded open cable end
	KB DN/CAN - 30000 - BA 50114701	30m connection cable DeviceNet / CANopen, M12 axial socket, 5-pin, A-coded open cable end
M12 connection cables DeviceNet / CANopen, for AMS 3x5*i*, MA 2x5*i*		
 PIN | Colour 1 SHIELD 2 rt / RD 3 sw / BK 4 ws / WH 5 bl / BU	**KB DN/CAN - 1000 - SBA** 50114691	1m connection cable DeviceNet / CANopen, M12 axial plug, 5-pin, A-coded M12 axial socket
	KB DN/CAN - 2000 - SBA 50114694	2m connection cable DeviceNet / CANopen, M12 axial plug, 5-pin, A-coded M12 axial socket
	KB DN/CAN - 5000 - SBA 50114698	5m connection cable DeviceNet / CANopen, M12 axial plug, 5-pin, A-coded M12 axial socket
		

ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part no.	Feature
M12 PROFIBUS/multiNet connection cables, e.g. for BCL 304*i*, BCL 504*i*, AMS 301*i*, AMS 304*i*, MA 204*i*		
 PIN | Colour 1 n.c. 2 gn / GN 3 n.c. 4 rt / RD 5 n.c. SH blank	**KB PB - 2000 - SA** 50104188	2m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded open cable end (PB OUT)
	KB PB - 5000 - SA 50104187	5m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded open cable end (PB OUT)
	KB PB - 10000 - SA 50104186	10m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded open cable end (PB OUT)
	KB PB - 15000 - SA 50104185	15m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded open cable end (PB OUT)
	KB PB - 30000 - SA 50104182	30m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded open cable end (PB OUT)
 PIN | Colour 1 n.c. 2 gn / GN 3 n.c. 4 rt / RD 5 n.c. SH blank	**KB PB - 2000 - BA** 50104181	2m connection cable FIELDBUS, M12 axial socket, 5-pin, B-coded open cable end (PB IN)
	KB PB - 5000 - BA 50104180	5m connection cable FIELDBUS, M12 axial socket, 5-pin, B-coded open cable end (PB IN)
	KB PB - 10000 - BA 50104179	10m connection cable FIELDBUS, M12 axial socket, 5-pin, B-coded open cable end (PB IN)
	KB PB - 15000 - BA 50104178	15m connection cable FIELDBUS, M12 axial socket, 5-pin, B-coded open cable end (PB IN)
	KB PB - 30000 - BA 50104175	30m connection cable FIELDBUS, M12 axial socket, 5-pin, B-coded open cable end (PB IN)

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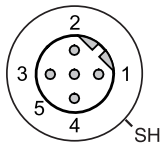
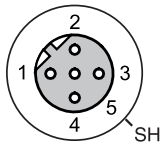
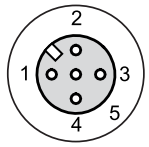

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Contact assignment	Part description Part no.	Feature
M12 PROFIBUS/multiNet connection cables, e.g. for BCL 304*i*, BCL 504*i*, AMS 301*i*, AMS 304*i*, MA 204*i*		
	**KB PB - 500 - YBSB** 50110856	0.5m Y-connection cable - FIELDBUS, M12 axial socket, 5-pin, B-coded M12 axial socket, M12 axial plug
	KB PB - 1000 - SBA 50104096	1m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded M12 axial socket
PIN | Colour 1 | n.c. 2 | gn / GN 3 | n.c. 4 | rt / RD 5 | n.c. SH | blank	**KB PB - 2000 - SBA** 50104097	2m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded M12 axial socket
	KB PB - 5000 - SBA 50104098	5m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded M12 axial socket
	**KB PB - 10000 - SBA** 50104099	10m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded M12 axial socket
	KB PB - 15000 - SBA 50104100	15m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded M12 axial socket
	KB PB - 30000 - SBA 50104173	30m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded M12 axial socket
Other connection cables, voltage supply for M12 devices		
	**K - D M12A - 5P - 2m - PVC** 50104555	Connection cable for voltage supply, 2m, M12 axial socket, 5-pin, A-coded, open cable end, PVC
	K - D M12A - 5P - 5m - PVC 50104557	Connection cable for voltage supply, 5m, M12 axial socket, 5-pin, A-coded, open cable end, PVC
PIN | Colour 1 | br / BN 2 | ws / WH 3 | bl / BU 4 | sw / BK 5 | gr / GY	**K - D M12A - 5P - 10m - PVC** 50104559	Connection cable for voltage supply, 10m, M12 axial socket, 5-pin, A-coded, open cable end, PVC
	K - D M12A - 5P - 30m - PVC 50120949	Connection cable for voltage supply, 30m, M12 axial socket, 5-pin, A-coded, open cable end, PVC

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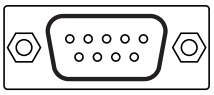
Contact assignment	Part description Part no.	Feature
Service cables		
	KB USBA - USBA 50107726	USB service cable for BCL 5xx*i*, length approx. 1.8 m
	KB USBA - USBminiB 50117011	USB service cable for BCL 3xx*i*, length approx. 1.8 m
	KB - Service - 3000 50110155	Service cable for BPS 37 via MS 37, length 3 m
	D - Sub - 9P - 3000 50113396	PC connection cable for Ident. series, 9-pin Sub-D socket on both ends
	KB ET - … see page 431!	Service cable for LSIS 4xx*i*

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Contact assignment	Part description Part no.	Feature
MA 2xx*i* connection cables for BCL 8, BCL 22, BCL 500*i*, LSIS 22x, LSIS 4x2*i*, hand-held scanners, RFID, BPS 8, ODS…, KONTURflex/Quattro-RSX/M12		
	KB JST - HS - 300 50113397	Connection cable for hand-held scanners to the MA 2xx*i*, 9-pin SubD to 12-pin JST, length 0.3 m
	KB JST - M12A - 5P - 3000 50113467	Connection cable for BCL 8/BPS 8 to the MA 2xx*i*, M12 5-pin socket, A-coded to JST 10+6, length 3 m
	KB M12A - 8P - MA - 3000 50111225	Connection cable for LSIS 22x to the MA 2xx*i*, M12 8-pin socket, A-coded to JST10+6, length 3 m
	KB JST - M12A - 8P - Y - 3000 50113468	Connection cable for LSIS 4xx*i* to the MA 2xx*i*, M12 8-pin socket and plug (Y-cable), A-coded to JST10+6, length 3 m
	KB 500 - 3000 - Y 50110240	Connection cable for BCL 500*i*/BCL 501*i* to the MA 2xx*i*
	KB JST-3000 50115044	Connection cable for MA 2, MA 21, MA 31, IMRFU-1 to the MA 2xx*i*, JST 10, open cable end, length 3 m
	K-DS M12A-MA-5P-3m-S-PUR 50115049	Connection cable for ODSL 9/ODS…96B with RS 232 to the MA 2xx*i*, length 3 m
	K-DS M12A-MA-8P-3m-S-PUR 50115050	Connection cable for ODSL 30/D232-30M-S12 to the MA 2xx*i*, length 3 m
	K-DS M12A-MA-5P-3m-1S-PUR 50116791	Connection cable for KONTURflex/QUATTRO-RSX/M12 to the MA 2xx*i*, length 3 m

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Contact assignment	Part description Part no.	Feature
RS 232 interface cables for mobile code readers (1D, 2D, RFID)		
RS 232 	**KB RS232** 50108574	RS 232 helix interface cable for Z-3110, voltage supply at PIN 9
	KB 232-1 IT190x 50114517	RS 232 interface cable for IT 1900 and base station Base for IT 1902
	RS 232-cable / PIN9 IT4xxx 50103412	RS 232 interface cable for IT 3800i, IT 4600 and IT 4800, voltage supply at PIN 9
	TTL-RS 232 cable 50104586	TTL-RS 232 interface cable for ST 2020, TTL signal level 0 … 5V at RxD/TxD
	RS 232-cable / ext IT4xxx 50103413	RS 232 interface cable for IT 3800i, IT 4600 and IT 4800, with connector for external power supply unit, no voltage supply at PIN 9, length 2.3 m
	RS 232 cable / ext IT4xxx - 4500 50106111	RS 232 interface cable for IT 3800i, IT 4600 and IT 4800, with connector for external power supply unit, no voltage supply at PIN 9, length 4.5 m
	TTL-RS 232 cable / ext IT4xxx 50104442	TTL-RS 232 cable / external connector for power supply unit, for IT 4xxx
	KB232-1 f. FIS 6170 50115069	RS 232 cable for FIS 6170, supply via PIN 9
	KB232-2 KIT f. FIS 6170 50115070	RS 232 cable for FIS 6170, including power supply unit
	KB - RS232 - Base Hx520 50110675	Connection cable for RS232 - HX520 base station (RFID), length 2 m
	KB 021 Z 50035421	Connection cable for the RS 232 devices with 9-pin Sub-D socket for connecting to the MA 21 xxx
	KB JST-HS-300 50113397	Connection cable for the RS 232 devices with 9-pin Sub-D socket for connecting to the MA 2xxi

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Contact assignment	Part description Part no.	Feature
USB interface cables for mobile code readers (1D, 2D, RFID)		
USB Standard A 	**KB USB-1 IT190x** 50114521	USB cable for IT 1900 and base station Base for IT 1902, straight cable, 2.5m length, type A plug
	KB USB-2 IT190x 50114523	USB cable for IT 1900 and base station Base for IT 1902, helix cable, 4.5m length, type A plug
	USB cable for IT4xxx 50103404	USB cable for IT 3800i, IT 4600, IT 4800 and ST 2020
	KB-RS 232-USB 50110677	RS 232 - USB converter cable for HFM 3500D/HFU 4500D RFID read/ write system and HX520 base station, length 1 m
PS/2 interface cables (keyboard wedge) for mobile code readers (1D, 2D)		
PS/2 	**KB PS2** 50108575	PS/2 AT interface cable for Z-3110, keyboard wedge operation
	KB PS2-1 IT190x 50114519	PS/2 AT interface cable for IT 1900 and base station Base for IT 1902
	PS2 cable for IT4xxx 50103409	PS/2 AT interface cable for IT 3800i, IT 4600, IT 4800 and ST 2020, keyboard wedge operation

ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part no.	Feature
Base station for IT … mobile code readers / HFx x520D mobile RFID read/write systems		
	**Base for IT 1902** 50114492	Base station for IT 1902, Bluetooth transmission to the mobile code reader
	**ST 2020 - 5BE** 50110663	Base station for IT 3820, IT 3820i, IT 4820 and IT 4820i, with charging function for Li-Ion batteries, Bluetooth transmission to the mobile code reader
	ST 2020 - CB - BE 50107036	Charging station for IT 3820, IT 4820, incl. power supply unit (100 … 240VAC), without Bluetooth transmission
	**Base HX520** 50110672	Base station for HFM 3520D/HFU 4520D, with charging function for batteries, Bluetooth transmission to the mobile read/write system

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Contact assignment	Part description Part no.	Feature
Batteries and charging stations for IT … mobile code readers / HFx x520D mobile RFID read/write systems		
	**Battery** 50105384	Battery for IT 1902, IT 3820, IT 4820 and IT 6320 (spare part or battery pack)
	Battery HX520 50111928	Battery for HFM 3520D/HFU 4520D (spare part or battery pack)
	**BT Battery Charge Sleeve** 50108316	Holder for charging the battery without mobile code reader in the ST 2020 charging station
	**BAT charger-4 Desk-EU** 50114495	Desktop charging station for simultaneously charging up to 4 batteries (50105384) for mobile code readers

ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part no.	Feature
Terminators / Bus termination		
	MSP Terminator 50035524	Terminating resistor for MSP systems
	TS 01 - 5 - SA 50040099	M12 terminating plug for DeviceNet/CANopen, with integrated terminating resistor
	TS 02 - 4 - SA 50038539	M12 terminating plug for PROFIBUS (BUS OUT), with integrated terminating resistor

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Contact assignment	Part description Part no.	Feature
Connectors, user-configurable		
	KD 01 - 5 - BA 50040097	M12 axial connector, socket, 5-pin, A-coded, terminals
	KD 01 - 5 - SA 50040098	M12 axial connector, plug, 5-pin, A-coded, terminals
	KD 01 - 5 - SR 50101943	M12 angular connector, plug, 5-pin, A-coded, terminals
	KD 02 - 5 - BA 50038538	M12 axial connector, socket, 5-pin, B-coded, terminals
	KD 02 - 5 - SA 50038537	M12 axial connector, plug, 5-pin, B-coded, terminals
	D - ET1 50108991	User-configurable RJ45 plug
	S - M12A - ET 50112155	M12 axial connector, plug, 4-pin, D-coded, terminals
	KD 01 - 8 - SA 50112156	M12 axial connector, plug, 8-pin, A-coded, terminals
	KD 01 - 8 - BA 50112157	M12 axial connector, socket, 8-pin, A-coded, terminals

ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part no.	Feature
M12 connection sets		
	M12 Cable set DN/CAN 50039348	M12 connector set for DDLS 200 with DeviceNet/CANopen Interface
	M12 Cable set PB 50038937	M12 connector set for DDLS 200 with PROFIBUS interface
	M-12 set MA Network 50111341	M12 set FIELDBUS, M12 connector and socket, 5-pin, B-coded, with PG 9 for MA 21, MA 31
	M-12 set MA Power male 50111340	M12 set POWER, M12 connector, bushing, 5-pin, A-coded, with PG9/11 for MA 21, MA 31
	M-12 set MA Power female 50111339	M12 set POWER, M12 socket, bushing, 5-pin, A-coded, with PG9/11 for MA 21, MA 31

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ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part no.	Feature
Hoods with integrated connectors		
	**MS 34 103** 50037230	Modular hood with integrated connectors for BPS 34 with 3 x M12 plug/socket, FCC approval
	**MS 34 105** 50037231	Modular hood with integrated connectors for BPS 34 with 5 x M12 plug/socket, FCC approval
	**MS 37 103** 50107684	Modular hood with integrated connectors for BPS 37 with 3 x M12 plug/socket, FCC approval
	**MSD 1 101** 50037232	Modular service display for BPS 34
	MSP - EP 50035525	Hood with integrated connectors with external parameter memory for MSP systems

ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part no.	Feature
M12 hoods with integrated connectors for BCL 3xx*i*		
	**MS 300** 50116468	Modular hood with integrated connectors for BCL 300*i* with 2 x M12 plugs/ sockets, USB service interface, parameter memory
	MS 301 50116469	Modular hood with integrated connectors for BCL 301*i* with 3 x M12 plugs/ sockets, integrated bus termination and address setting for multiNet, USB service interface, parameter memory
	MS 304 50116470	Modular hood with integrated connectors for BCL 304*i* with 3 x M12 plugs/ sockets, integrated bus termination and address setting for PROFIBUS DP, USB service interface
	MS 308 50114823	Modular hood with integrated connectors for BCL 308*i* with 3 x M12 plugs/ sockets, integrated LINK/ACT LEDs for Ethernet, USB service interface, parameter memory
	MS 348 50116471	Modular hood with integrated connectors for BCL 348*i* with 3 x M12 plugs/ sockets, integrated LINK/ACT LEDs for PROFINET RT, USB service interface, parameter memory
	MS 358 50120797	Modular hood with integrated connectors for BCL 358*i* with 3 x M12 plugs/ sockets, integrated LINK/ACT LEDs for EtherNet/IP, USB service interface, parameter memory

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Contact assignment	Part description Part no.	Feature
Terminal hoods for BCL 3xx*i*		
	**MK 300** 50116463	Modular terminal hood for BCL 300*i* with large terminal compartment, USB service interface, parameter memory
	MK 301 50116464	Modular terminal hood for BCL 301*i* with large terminal compartment, integrated bus termination and address setting for multiNet, USB service interface, parameter memory
	MK 304 50116465	Modular terminal hood for BCL 304*i* with large terminal compartment, integrated bus termination and address setting for PROFIBUS DP, USB service interface
	MK 308 50116466	Modular terminal hood for BCL 308*i* with large terminal compartment, integrated LINK/ACT LEDs for Ethernet, USB service interface, parameter memory
	MK 348 50116467	Modular terminal hood for BCL 348*i* with large terminal compartment, integrated LINK/ACT LEDs for PROFINET RT, USB service interface, parameter memory
	MK 358 50120796	Modular terminal hood for BCL 358*i* with large terminal compartment, integrated LINK/ACT LEDs for EtherNet/IP, USB service interface, parameter memory
Cable hood for BCL 3xx*i*		
	**KB 301 - 3000** 50114571	Modular cable hood for BCL 300*i*/BCL 301*i*, cable length 3 m, with JST system plug for connecting to MA 100, USB service interface
	KB 301 - 3000 - MA200 50120463	Modular cable hood for BCL i/BCL 300*i*, cable length 3 m, with JST system plug for connecting to MA 2xx*i*, USB service interface

ACCESSORIES / POWER SUPPLIES

Dimensioned drawing or photo	Part description Part no.	Feature
Power supplies		
	**NTEV 30** 50033472	Power supply unit 24VDC, 800mA
	**NTEV 70** 50031702	Power supply unit 24VDC, 2.5A
	**NT 24 - 24W** 50110748	Euro plug-in power supply 24VDC, 1A 100 … 240VAC, 50 … 60Hz
	**KD 01 - 5 - BA - PWR** 50110650	POWER adapter M12 axial plug, 5-pin, A-coded
	**KD 01 - 8 - BA - PWR** 50110649	POWER adapter M12 axial plug, 8-pin, A-coded


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Dimensioned drawing or photo	Part description Part no.	Feature
Power supply unit for mobile code readers		
	**NT 5V DC/1A Z-3110** 50109333	Power supply unit for Z-3110
	**Power supply unit for IT 1900 + Base-EU** 50114525	Power supply unit 5VDC, 1.0A, for IT 1900 and base station for IT 1902, connection cable 1.5m
	**Power supply unit for IT4x0x** 50103403	Power supply unit for IT 3800i and IT 4800
	**Power supply unit for IT4x2x/ST2020** 50103989	Power supply unit for IT 3820/IT 4820 with ST 2020
	**NT Hx5x0** 50110676	Power supply unit for base station base HX520 or HFM 3500D/HFU 4500D, voltage range 100…240VAC / 6VDC

OTHER ACCESSORIES

Dimensioned drawing or photo	Part description Part no.	Feature
Controller for Modular Scanner Portals		
	TCP 400 - 0000 50035527	Tracking Portal Controller, integrated Decoder
	MCU 400 - 0000 50035526	Switch cabinet with power supply unit and TPC 400 - 0000, integrated decoder

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OTHER ACCESSORIES

Dimensioned drawing or photo	Part description Part no.	Feature
Deflection mirror for AMS 3xx*i*		
	**US AMS 01** 50104479	Deflection mirror for AMS 3xx*i*, with integrated AMS fastening
	**US1 OMS** 50035630	Deflection mirror for AMS 3xx*i*, without integrated AMS fastening
Mounting bracket for AMS 3xx*i*		
	**MW OMS / AMS 01** 50107255	Mounting bracket for converting from OMS to AMS 3xx*i*

OTHER ACCESSORIES

Dimensioned drawing or photo	Part description Part no.	Feature
Reflective tapes/Reflectors for AMS 3xx*i*		
	**Refl. tape 200 x 200 mm - S** 50104361	Reflective tape 200 x 200 mm, self-adhesive, recommended for use with **AMS 3xx*i*/40**
	Refl. tape 200 x 200 mm - M 50104364	Reflective tape 200 x 200 mm, on aluminum plate 250 x 250 mm, recommended for use with **AMS 3xx*i*/40**
	Refl. tape 200 x 200 mm - H 50115020	Reflective tape 200 x 200 mm on Alucobond plate 250 x 250 mm, with integrated heating (230 VAC), recommended for use with **AMS 3xxi/40**
	Refl. tape 500 x 500 mm - S 50104362	Reflective tape 500 x 500 mm, self-adhesive, recommended for use with **AMS 3xx*i*/120**
	Refl. tape 500 x 500 mm - M 50104365	Reflective tape 500 x 500 mm, on aluminum plate 550 x 550 mm, recommended for use with **AMS 3xx*i*/120**
	Refl. tape 500 x 500 mm - H 50115021	Reflective tape 500 x 500 mm on Alucobond plate 550 x 550 mm, with integrated heating (230 VAC), recommended for use with **AMS 3xxi/120**
	Refl. tape 749 x 914 mm - S 50104363	Reflective tape 749 x 914 mm, self-adhesive, recommended for use with **AMS 3xx*i*/200**, **AMS 3xx*i*/300**
	Refl. tape 914 x 914 mm - S 50108988	Reflective tape 914 x 914 mm, self-adhesive, recommended for use with **AMS 3xx*i*/200**, **AMS 3xx*i*/300**
	Refl. tape 914 x 914 mm - M 50104366	Reflective tape 914 x 914 mm, on aluminum plate 964 x 964 mm, recommended for use with **AMS 3xx*i*/200**, **AMS 3xx*i*/300**
	Refl. tape 914 x 914 mm - H 50115022	Reflective tape 914 x 914 mm on Alucobond plate 964 x 964 mm, with integrated heating (230 VAC), recommended for use with **AMS 3xxi/200**, **AMS 3xx*i*/300**

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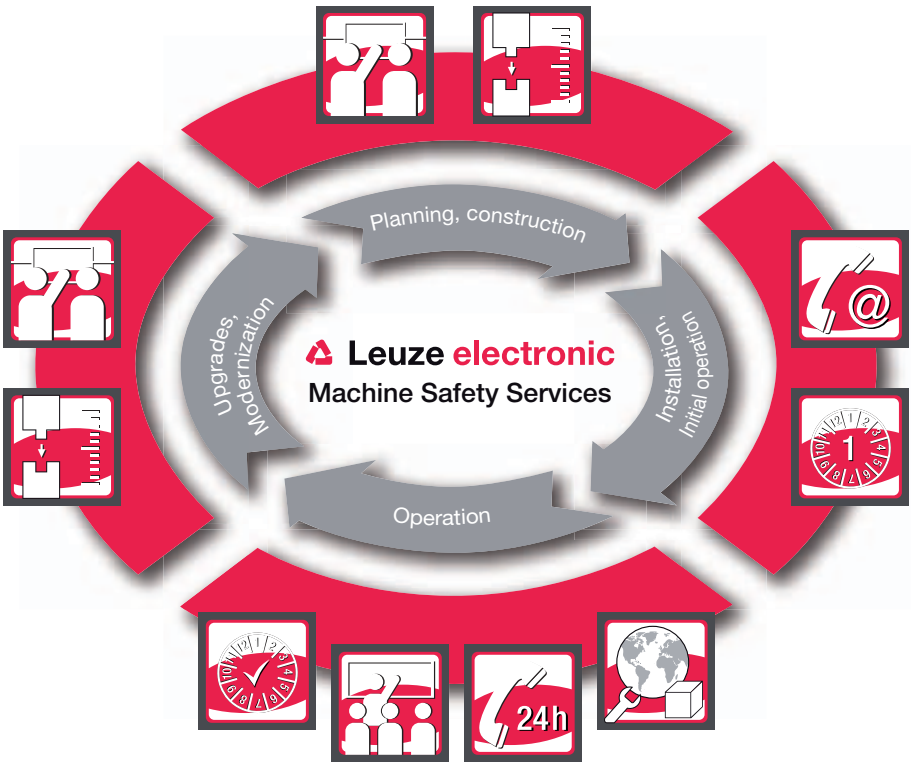
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Services

Overview

Our services – Your benefits, at a glance

Whether it's planning, engineering, commissioning or repair, the use of complex industrial automation technology requires a keen intellectual grasp and well-established expertise.



Services
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Services

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Services on-site in Germany and abroad	
LOG daily rate S50000200	Includes up to 10 hours, plus expenses/travel costs
LOG labor per hour S50000201	
LOG travel time per hour S50000202	
LOG price per km for travel by car S50000203	Plus toll charges, vignettes, etc.
LOG flight costs S50000204	Invoicing according to expenditure
LOG accommodation expenses S50000205	Invoicing according to expenditure

Service calls on Saturdays, Sundays and holidays will incur a surcharge of a factor of 1.5.

Service work, such as fault analysis, fault rectification, installation and fine adjustment, test installations etc. are invoiced on a time and material cost basis.

Software adjustments, creation of customer-specific software, log adjustments etc. are calculated according to time and effort. Prices on request.

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Optoelectronic Sensors

Cubic Series
Cylindrical Sensors, Mini Sensors, Fiber Optic Sensors
Measuring Sensors
Special Sensors
Light Curtains
Forked Sensors
Double Sheet Monitoring, Splice Detection
Inductive Switches
Accessories

Identification Systems
Data Transmission Systems
Distance Measurement

Bar Code Readers
RF-IDent-System
Modular Interfacing Units
Industrial Image Processing Systems
Optical Data Transmission Systems
Optical Distance Measurement/Positioning
Mobile Code Readers

Safety Sensors
Safety Systems
Safety Services

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

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