

Catalog 2011



Identification Systems
Data Transmission Systems
Distance Measurement

How to find the product you're looking for

The series/product group overview pages ...

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OVERVIEW

Identification of documents Identification of components Identification of circuit boards

Dimensioned drawing

Beam exit at front Beam exit at side

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Leuze electronic

STATIONARY BARCODE READERS BCL 8

Barcode reader Series 8	Module size	Page
with M-optics	67.5 mm	20
with N-optics	67.5 mm	22

Common technical data

Electrical data	Operating voltage U_0	4.75 ... 5.5 VDC
	Current consumption	≤ 250 mA
	Interface type	RS 232
	Code types	2/5 Interleaved, Code 39, Code 128, EAN 128, EAN-UCC, EAN, Addendum, Codabar, Pharma Code, Code 33
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
Laser	Protection class	IP 67
		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 402 onwards

www.leuze.com/barcode readers/

+49 (0) 7021 573 0 info@leuze.com

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The product selection tables ...

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BARCODE READER WITH RS 232 INTERFACE

Part description	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode readers with beam exit at the front, M-optics				
BCL 8 S M 102 50038949	Single-line scanner, M-optics, M 12 connector	160	600	RS 232
BCL 8 S M 502 50038948	Single-line scanner, M-optics, 2m connection cable	160	600	RS 232
Barcode readers with lateral beam exit, M-optics				
BCL 8 S M 100 50040229	Single-line scanner, M-optics, M 12 connector	145	600	RS 232
BCL 8 S M 500 50040230	Single-line scanner, M-optics, 2m connection cable	145	600	RS 232
Barcode 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 + 20-pin 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 402 onwards

Part No.	Designation	Features
see P. 378	MA 8 ...	Connector units for BCL 8 with M12 plug
see P. 394	MA 2x01	Connector unit/Gateway for many automation technology network types
see P. 406	KB - 008 ...	Connection cable for BCL 8, see page 406
see P. 402	BT 8 ... UMS 8 ...	Mounting systems, see page 402

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BCL 8
M-optics

Features

- Constant scanning rate 400 scans/s
- M-optics
- Module size 0.15 ... 0.5 mm
- Automatic detection of code type and code quality
- Parameters are stored fail-safe
- Reference code comparison function
- autoRefAct - integrated photoelectric sensor
- RS 232 interface is freely configurable
- Switching input or switching output
- M12 turning connector or cable connection (2m)
- Simple mounting and fastening
- MA 8.1 for 24 VDC supply and simultaneous use of switching input and switching output

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Electrical connection

Reading curves

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

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- 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 almost 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 and in conveyor and storage technology as well as in printing machines and in packing material and analysis technologies.

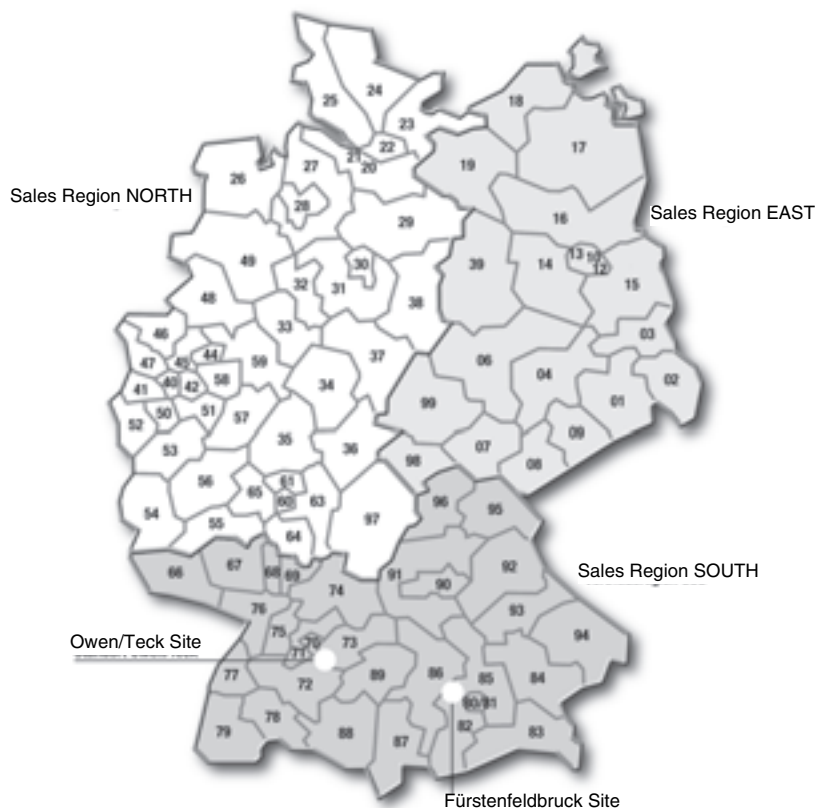
Our dedicated employees are characterized, above all, by their customer focus. There's one thing Leuze electronic customers can count on – on us.

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 custom, 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 Support 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.

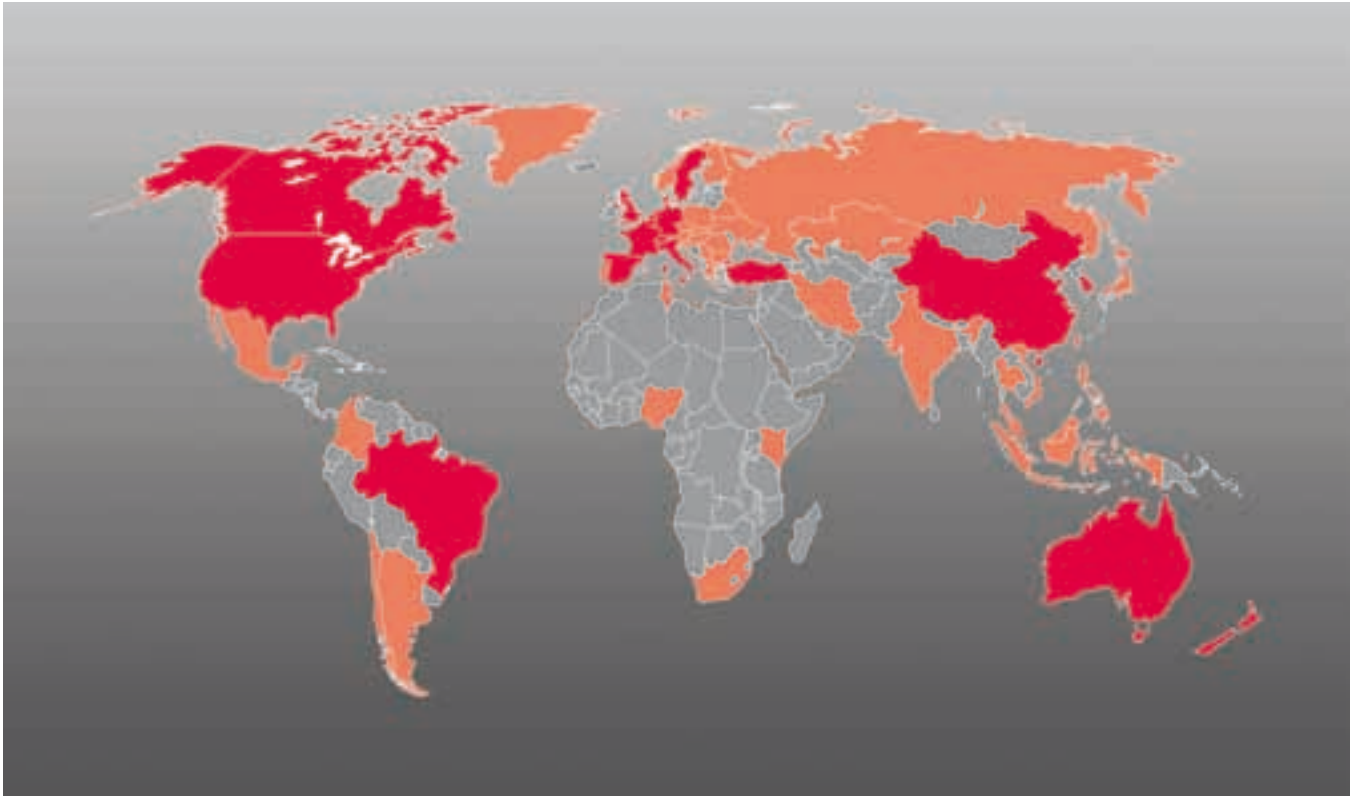
Customer Support Center Sales / Germany

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Technical Hotline

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Logistics Division	Tel.	+49 7021 / 573-123
Workplace Safety Division	Tel.	+49 8141 / 5350-111

GLOBAL SALES



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

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.

Distance meas.
Positioning

Subsidiaries		Sales Partners	
AUSTRALIA	Balluff-Leuze Pty. Ltd. BAYSWATER	ARGENTINA	MALAYSIA
BELGIUM	Leuze electronic nv/sa MACHELEN	AUSTRIA	MEXICO
BRAZIL	Leuze electronic Ltda. SAO PAULO	BELORUSSIA	NIGERIA
CHINA	Leuze electronic Trading Co. Ltd. SHENZHEN	BULGARIA	NORWAY
DENMARK	Leuze electronic Scandinavia ApS ALLEROED	CHILE	PHILIPPINES
FRANCE	Leuze electronic sarl. MARNE LA VALLÉE	COLUMBIA	POLAND
GREAT BRITAIN	Leuze electronic Ltd. ST. NEOTS, CAMBRIDGESHIRE	CROATIA	PORTUGAL
HONG KONG	Leuze electronic Ltd. HONG KONG	CZECH REPUBLIC	ROMANIA
ITALY	Leuze electronic S.r.l. MILAN	FINLAND	RUSSIA
NEW-ZEALAND	Balluff-Leuze Pty. Ltd. AUCKLAND	GREECE	SERBIA
THE NETHERLANDS	Leuze electronic B.V. CM WAARDENBURG	HUNGARY	SINGAPORE
SWEDEN	Leuze electronic Scandinavia ApS ALLEROED	INDIA	SLOVAKIA
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TURKEY	Leuze electronic San.ve.Tic.Ltd.Sti. ATAŞEHİR-İSTANBUL	JAPAN	THAILAND
USA, CANADA	Leuze electronic, Inc. NEW HUDSON, MI	KAZAKHSTAN	TUNISIA
		KENYA	UKRAINE
		MACEDONIA	VIETNAM

Optical
data transmission

Networking
Connector units

Accessories

Services

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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) barcodes 	<ul style="list-style-type: none"> ● 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, barcode information can be made legible for people ● Economical labels and printers 	<ul style="list-style-type: none"> ● 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 	<ul style="list-style-type: none"> ● Size: from a few hundred to up to 2000 characters ● Variable code lengths (as with barcodes, as opposed to 2D Codes) ● Various data sets (numerical, alphanumeric) ● Adjustable security levels 	<ul style="list-style-type: none"> ● 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 	<ul style="list-style-type: none"> ● Size: currently greater than 3000 characters ● More information ● Higher information density ● Lower space requirements for labels ● Omnidirectional reading ● Increased reading reliability 	<ul style="list-style-type: none"> ● Optical technology, i.e. sensitive to environmental influences such as soiling, wetness or even extraneous light ● 2D code readers are usually more expensive than barcode 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 	<ul style="list-style-type: none"> ● 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 	<ul style="list-style-type: none"> ● Operating range dependent on antenna diameter ● Conveying speed Read: approx. 6m/s Write: approx. 3m/s ● Some incompatibilities between different manufacturers or countries (frequency dependent) ● Relatively high transponder costs in comparison to printed or directly marked codes

BARCODE 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.

Barcode 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 barcodes 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 barcode type, we will be glad to provide you with advice.

Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

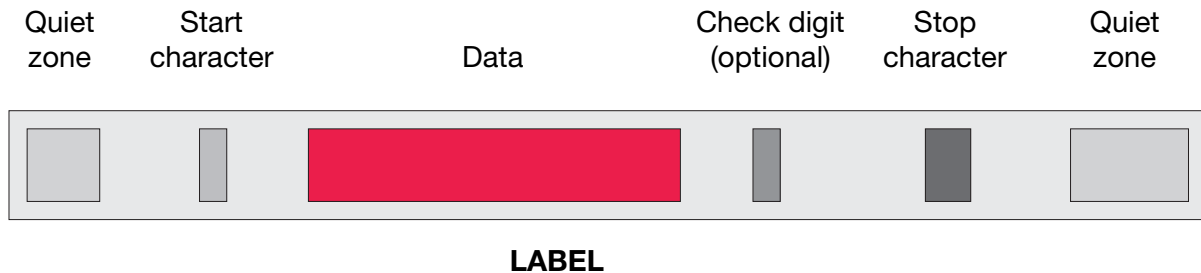
Networking Connector units

Accessories

Services

STRUCTURE OF A ONE-DIMENSIONAL BARCODE

A barcode is always structured as shown in the following diagram:



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 barcode 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 barcode type is located at the end. Based on the order of start and stop character, the barcode 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 barcode.

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 barcode. The quiet zone (min. 10 x module) is necessary for indicating the start of a barcode to the scanner.

L = Length of the barcode:

The length of the barcode 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).

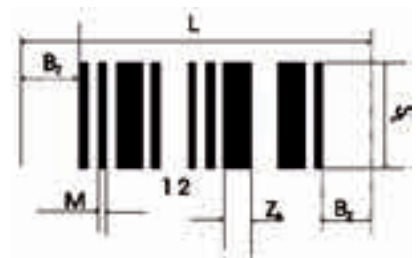
In most cases, the barcode type and, due to the printing method, the resulting barcode sizes are specified.

In addition to its geometric dimensions, the barcode 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.

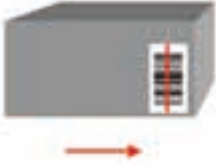



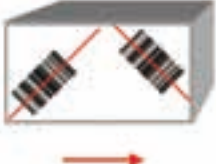
Through additional optical functionality, this area can also be used spatially: rastered polygon mirror wheel or oscillating mirror (oscillating or specified value). Very high-quality barcode readers also offer a focus adjustment (manually by means of specified value or autofocus) for further spatially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

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



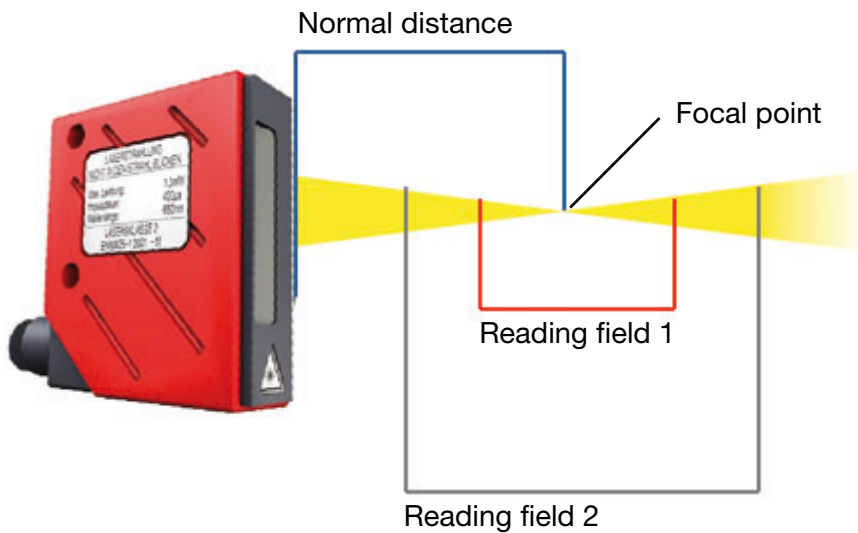
READING METHODS

The laser barcode 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 barcode 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 barcode readers thus offer high reading reliability even for fast events, such as are encountered in packaging machinery and similar systems.

<p>Line scanner</p> 	<ul style="list-style-type: none"> ● The bars of the barcode are parallel to the direction of transport. ● Through the movement, the entire barcode is automatically transported through the scanning beam. Thus, even codes with localized errors are read. ● The max. transport speed is directly dependent on the barcode 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.
<p>Raster</p> 	<ul style="list-style-type: none"> ● The bars of the barcode are vertical with respect to the direction of transport. ● With the raster configuration, it is possible to read the barcode 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 barcode readers.
<p>Oscillating mirror</p> 	<ul style="list-style-type: none"> ● 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.
<p>Line scanner with T-Code</p> 	<ul style="list-style-type: none"> ● With an oversquare T-barcode, it is not necessary to align the code. ● The entire barcode is automatically moved through the scanning beam. ● With the oversquare T-barcode, the barcode can be read omnidirectionally with only one barcode reader.
<p>Omnidirectional</p> 	<ul style="list-style-type: none"> ● Single beam X, or V reading. ● With an oversquare barcode and 2 read heads in a V-configuration, alignment of the barcode is not necessary. ● If the barcode is not oversquare, more scanners are to be used depending on the possible positions of the unaligned code. ● The use of barcode scanners with code fragmentation technology is ideal in this case and can reduce the number of required barcode readers.

READING FIELD

The reading field of a barcode 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 barcode 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 barcodes with a more narrow bar thickness

Reading field 2:
For barcodes 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:

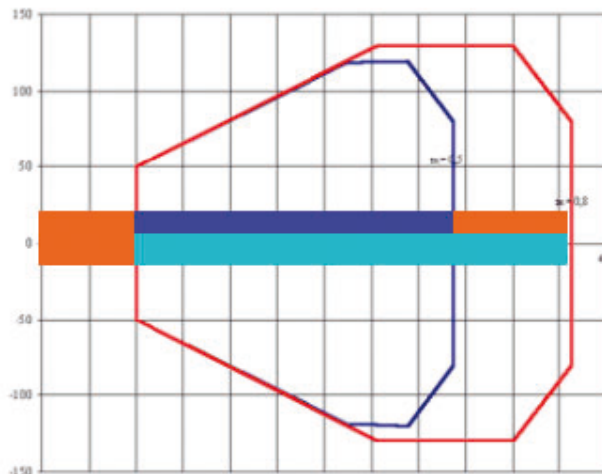
 Maximum read distance

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 barcode 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 barcode 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 barcode reader. Thus, the depth of field area also increases with module size.

READING IN MOTION

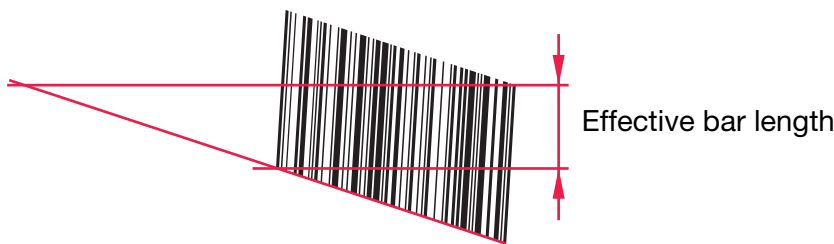
The transport speed must be taken into consideration for all automated code reading tasks:

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.

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

where

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



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

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

where

- A = Number of scans
- L = Barcode 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 barcode on the object (-> single line / raster scanner)
 - Transport speed (high or medium reading speed)
 - Read distance between object and barcode reader (constant or variable -> depth of field)
3. Decide on a barcode reader type based on the module size(s) and depth of field.
4. Select the interface.
 - Is the barcode 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 barcode 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 barcodes to be read in a reading gate are detected and stored in a fail-safe way in the device.

AutoReflAct (reflector polling)

A stationary barcode reader with this function facilitates control of the reading gate without an external, triggering photoelectric sensor. The barcode reader is activated and deactivated with the aid of a reflector which is mounted in the scanning area of the barcode reader. The barcode reader itself detects a reflector in the laser line. As soon as this is covered by an object, the barcode 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 barcode 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 barcode 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 barcode is used within the reading field instead of a reflector depending on the barcode reader family.

EXPLANATION OF TERMS

LEUZE NETWORK multiNet plus

Up to 31 barcode 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 barcode reader. The complete system behaves as a SINGLE barcode reader.

If one of the barcode 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 barcode reader can be appropriately configured if more than one code is expected for reading. The barcode 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 barcode 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.

Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning







Optical
data transmission

Networking
Connector units

Accessories

Services

SELECTION TABLE

Series	Dimensions in mm (WxHxD)	Housing material		Read distance in mm (module dependent)				
		Plastic	Metal	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			
 BCL 31	90 x 120 x 43		●		10 750			
 BCL 32	90 x 120 x 43		●		10 750			
 BCL 34	90 x 120 x 43		●		10 750			

We reserve the right to make changes • Auswahltabelle_BCL_1_EN.fm

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.

STATIONARY BARCODE READERS



Stationary barcode identification

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	18	
●	●	●	●			D										D	24	
●	●	●	●		D			G	G	G	G	G	G	G	G	G	24	
●	●					D										D	50	
●	●				D			G	G	G	G	G	G	G	G	G	50	
●	●							D				D					50	

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning







Optical data transmission

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Services

SELECTION TABLE

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

We reserve the right to make changes • Auswahltablelle_BCL_2_EN.fm

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.

STATIONARY BARCODE READERS



Stationary barcode identification

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	G	D	68
●		●		●		D											D	68
●		●		●				D										68
●		●		●							D							68
●		●		●					D									68
●		●		●						D								68
●				●	D	D	D	G	G	G	G	G	G	G	G	G	D	102

Mobile barcode identification

2D-code identification

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Identification of documents



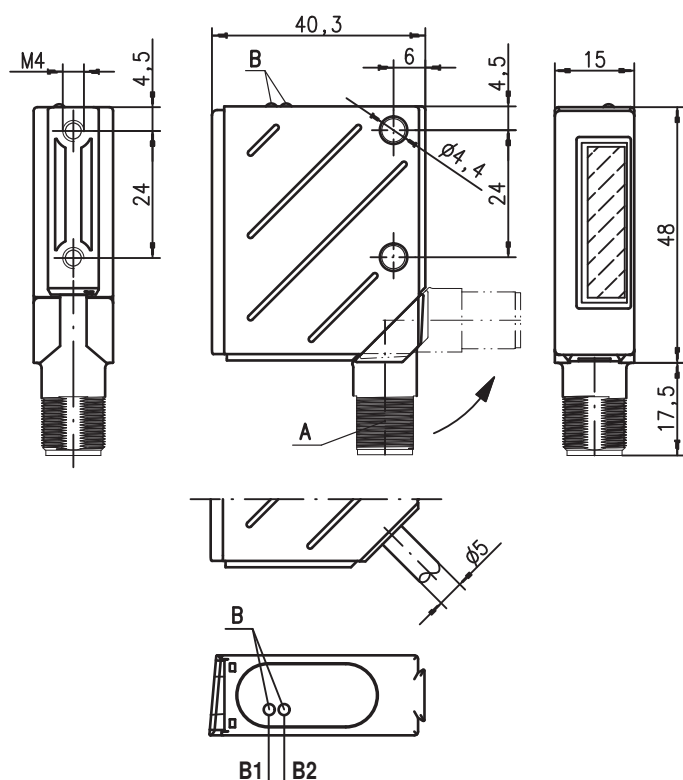
Identification of components



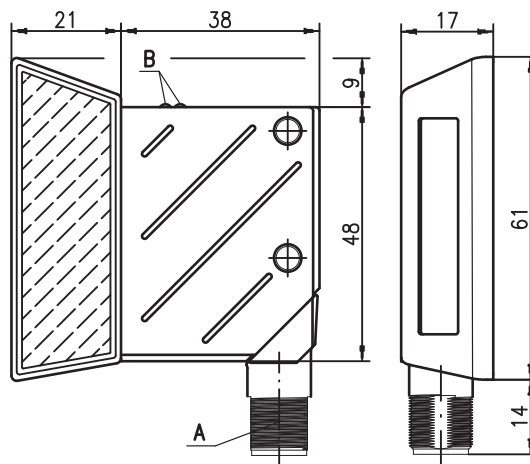
Identification of circuit boards

Dimensioned drawing

Beam exit at front



Beam exit at side



- A 90° turning connector
- B Indicator LEDs

We reserve the right to make changes • BCL8_Overview_EN.fm



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STATIONARY BARCODE READERS BCL 8

Barcode reader Series 8	Module size	Page
 with M-optics	0.15 0.5 mm	20
 with N-optics	0.125 0.4 mm	22



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 402 onwards		

Features

- Automatic detection of code type and code quality
- Parameters are stored fail-safe
- Reference code comparison function
- autoRefIAct - 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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning


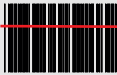




Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READER WITH RS 232 INTERFACE

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode 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
Barcode 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
Barcode 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 402** onwards

Part No.	Designation	Features
see P. 378	MA 8 ...	Connector units for BCL 8 with M12 plug
see P. 394	MA 2xxi	Connector unit/Gateway for many automation technology network types
see P. 406	KB - 008 ...	Connection cable for BCL 8, see page 406
see P. 402	BT 8 ..., UMS 8 ...	Mounting systems, see page 402

We reserve the right to make changes • BCL8_1_EN.fm

						
BCL 8 Page 18	BCL 2x Page 24	BCL 3x Page 50	BCL 50x Page 68	MSPi Page 98	BCL 90 Page 102	MSP Page 114

BCL 8
M-optics



Stationary barcode identification

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



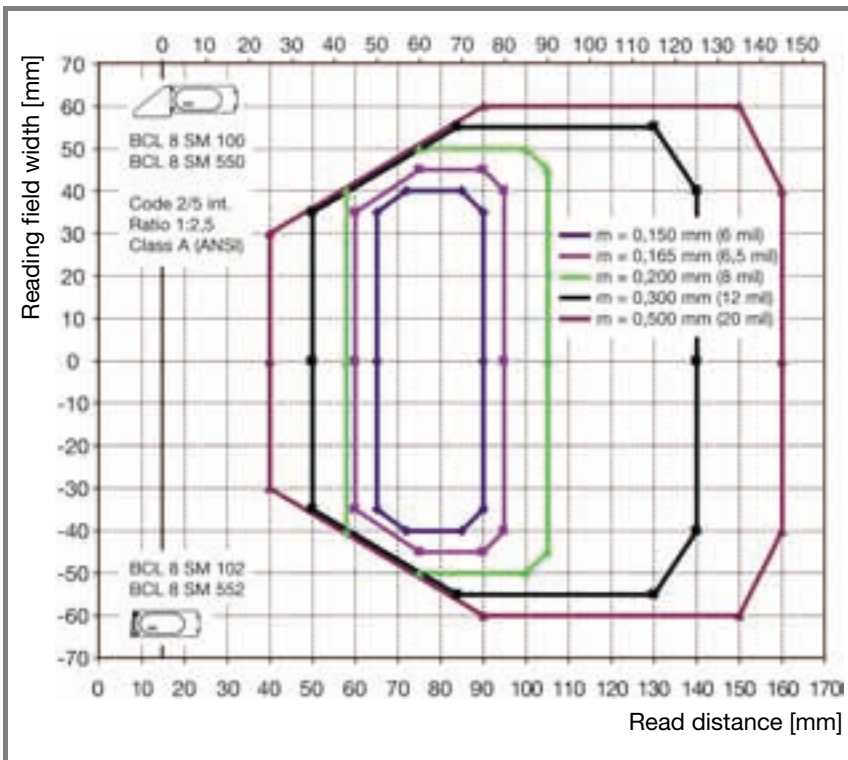
Mobile barcode identification

2D-code identification

RF identification

Reading curves

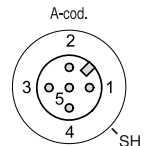
BCL 8 S M ... with 600 scans/s



Electrical connection

BCL 8

5V DC+	1	br/BN
RS232 TxD	2	ws/WH
GND	3	bl/BU
RS232 RxD	4	sw/BK
SW IN/OUT	5	gr/GY
FE/Shield	SH	ge/YE



Industrial image processing

Distance meas. Positioning





Optical data transmission

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BARCODE READER WITH RS 232 INTERFACE

Part description Part No.	Description		Op. range [mm]	Scan rate [scans/s]	Interface
Barcode 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
Barcode 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 402** onwards

Part No.	Designation	Features
see P. 378	MA 8 ...	Connector units for BCL 8 with M12 plug
see P. 394	MA 2xxi	Connector unit / gateway for many automation technology network types
see P. 406	KB - 008 ...	Connection cable for BCL 8, see page 406
see P. 402	BT 8 ..., UMS 8 ...	Mounting systems, see page 402



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BCL 8
N-optics



Stationary barcode identification

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



Mobile barcode identification

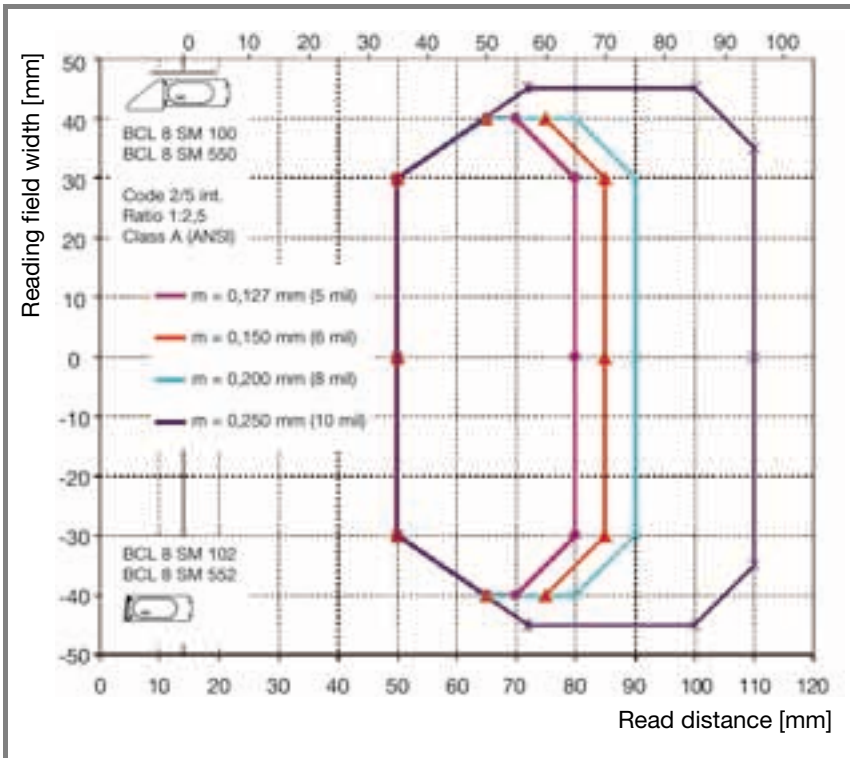
2D-code identification

RF identification



Reading curves

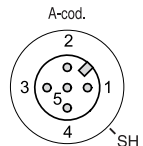
BCL 8 S N ... with 500 scans/s



Electrical connection

BCL 8

5V DC+	1	br/BN
RS232 TxD	2	ws/WH
GND	3	bl/BU
RS232 RxD	4	sw/BK
SW IN/OUT	5	gr/GY
FE/Shield	SH	ge/YE



Industrial image processing

Distance meas. Positioning

Optical data transmission

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Packaging technology

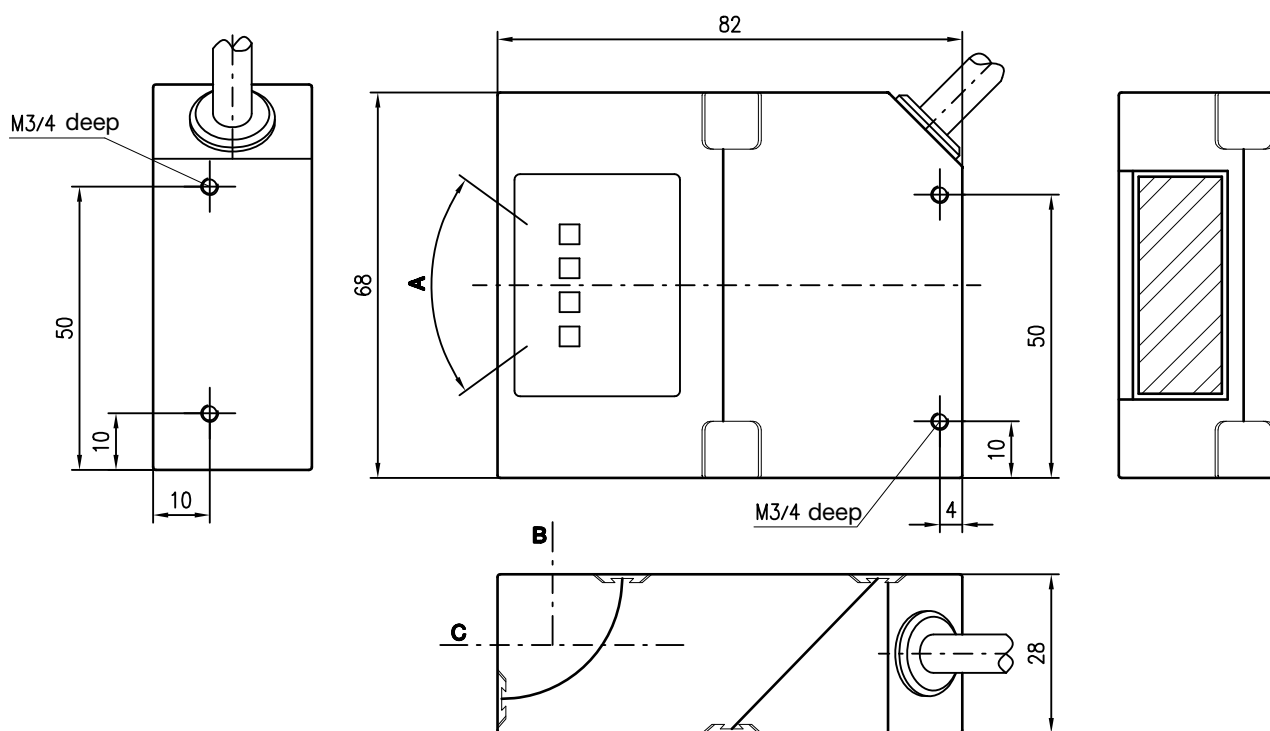


Target control - identification of containers



Document identification

Dimensioned drawing



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

We reserve the right to make changes • BCL2x_Overview_EN.fm



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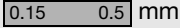






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STATIONARY BARCODE READERS BCL 21/22

Barcode reader Series 21/22	Module size	Page
 with N-optics	 mm	26
 with M-optics	 mm	34
 with F-optics	 mm	42



Common technical data

Electrical data	Operating voltage U_B	10 ... 30VDC
	Power consumption	3.2W
	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)	operating voltage/state
	LED ERR/Error (red)	device error/state
	LED DEC/Decode (red)	read state
Mechanical data	Housing / Optical window	ABS/glass
	Weight	180g/260g 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 650nm 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 403 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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning


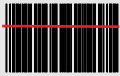
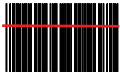





Optical data transmission

Networking Connector units

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Services

BARCODE READER WITH RS 485 INTERFACE

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode readers with N-optics				
BCL 21 S N 200 50030986	Single-line scanner, perp. beam exit, 0.8m connection cable, system connector	 95	800	RS 485
BCL 21 S N 202 50030987	Single-line scanner, front beam exit, 0.8m connection cable, system connector	 95	800	RS 485
BCL 21 S N 300 50031070	Single-line scanner, perp. beam exit, 0.8m connection cable, Sub-D connector	 95	800	RS 485
BCL 21 S N 302 50031072	Single-line scanner, front beam exit, 0.8m connection cable, Sub-D connector	 95	800	RS 485
BCL 21 S N 210 50032028	Single-line scanner, perp. beam exit, 3.0m connection cable, system connector	 95	800	RS 485
BCL 21 S N 212 50032030	Single-line scanner, front beam exit, 3.0m connection cable, system connector	 95	800	RS 485
BCL 21 S N 310 50032032	Single-line scanner, perp. beam exit, 3.0m connection cable, Sub-D connector	 95	800	RS 485
BCL 21 S N 312 50032034	Single-line scanner, front beam exit, 3.0m 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 403** 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. 390	MA 31 1...	Connector unit, multiNet master, parameter memory, various interfaces



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BCL 21
N-optics, Single-Line



Stationary barcode identification

Features

- Single-line scanner
- N-optics
- For module sizes $m = 0.15 \dots 0.5\text{mm}$
- 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

Mobile barcode identification

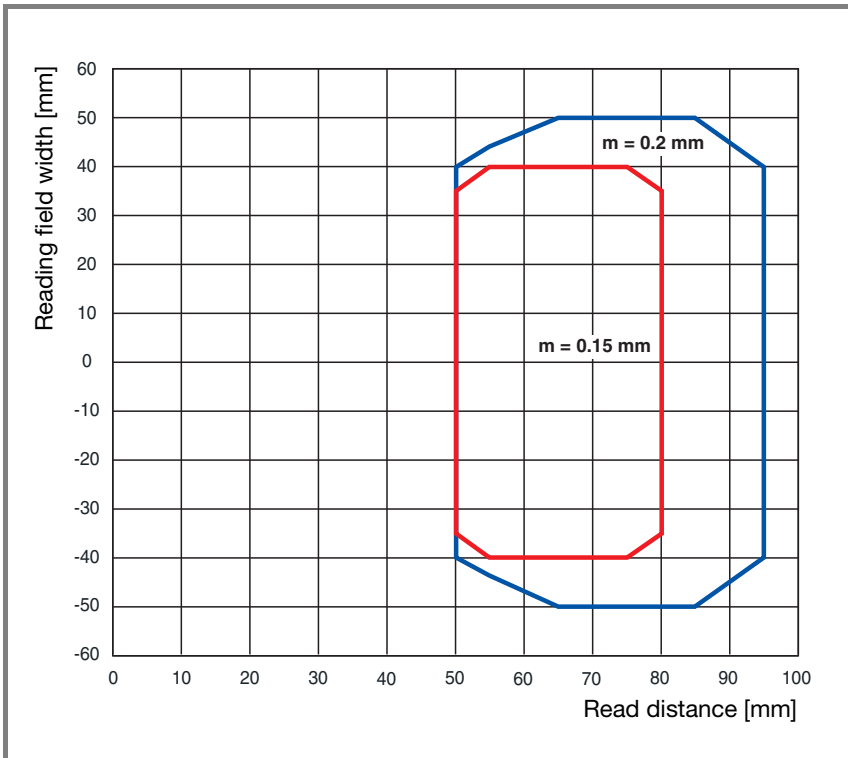
2D-code identification

RF identification



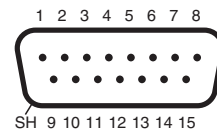
Reading curves

BCL 21 with N-optics



Electrical connection

Cable with Sub-D connector - male



SH 9 10 11 12 13 14 15

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

Industrial image processing

Distance meas. Positioning

Optical data transmission

Cable with 2 system connectors - female

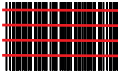
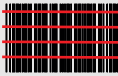
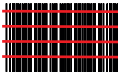
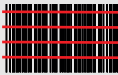
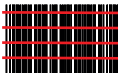
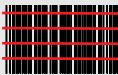


10-pole (ZHR10)			6-pole (ZHR6)		
PIN	Colour	Signal	PIN	Colour	Signal
1	br/BN	GND	1	ws-br/WH-BN	/MNA0
2	rt/RD	CTS_RSA	2	ws-rt/WH-RD	SO2_MNA1
3	or/OG	RTS_RSB	3	ws-or/WH-OG	/MNA2
4	ge/YE	RS 232 RxD	4	ws-ge/WH-YE	/MNA3
5	gn/GN	RS 232 TxD	5	ws-gn/WH-GN	SI2_MNA4
6	bl/BU	/Serv	6	ws-sw/WH-BK	SWOUT1
7	vi/VI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

Networking Connector units

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BARCODE READER WITH RS 485 INTERFACE

Part description Part No.	Description		Op. range [mm]	Scan rate [scans/s]	Interface
Barcode readers with N-optics					
BCL 21 R1 N 200 50061281	Raster scanner, perp. beam exit, 0.8m connection cable, system connector		95	800	RS 485
BCL 21 R1 N 202 50061283	Raster scanner, front beam exit, 0.8m connection cable, system connector		95	800	RS 485
BCL 21 R1 N 300 50061285	Raster scanner, perp. beam exit, 0.8m connection cable, Sub-D connector		95	800	RS 485
BCL 21 R1 N 302 50061287	Raster scanner, front beam exit, 0.8m connection cable, Sub-D connector		95	800	RS 485
BCL 21 R1 N 210 50032036	Raster scanner, perp. beam exit, 3.0m connection cable, system connector		95	800	RS 485
BCL 21 R1 N 212 50032038	Raster scanner, front beam exit, 3.0m connection cable, system connector		95	800	RS 485
BCL 21 R1 N 310 50032040	Raster scanner, perp. beam exit, 3.0m connection cable, Sub-D connector		95	800	RS 485
BCL 21 R1 N 312 50032042	Raster scanner, front beam exit, 3.0m 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 403** 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. 390	MA 31 1...	Connector unit, multiNet master, parameter memory, various interfaces



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BCL 21
N-optics, Raster



Stationary barcode identification

Features

- Raster scanner (10 lines)
- N-optics
- For module sizes $m = 0.15 \dots 0.5\text{mm}$
- 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



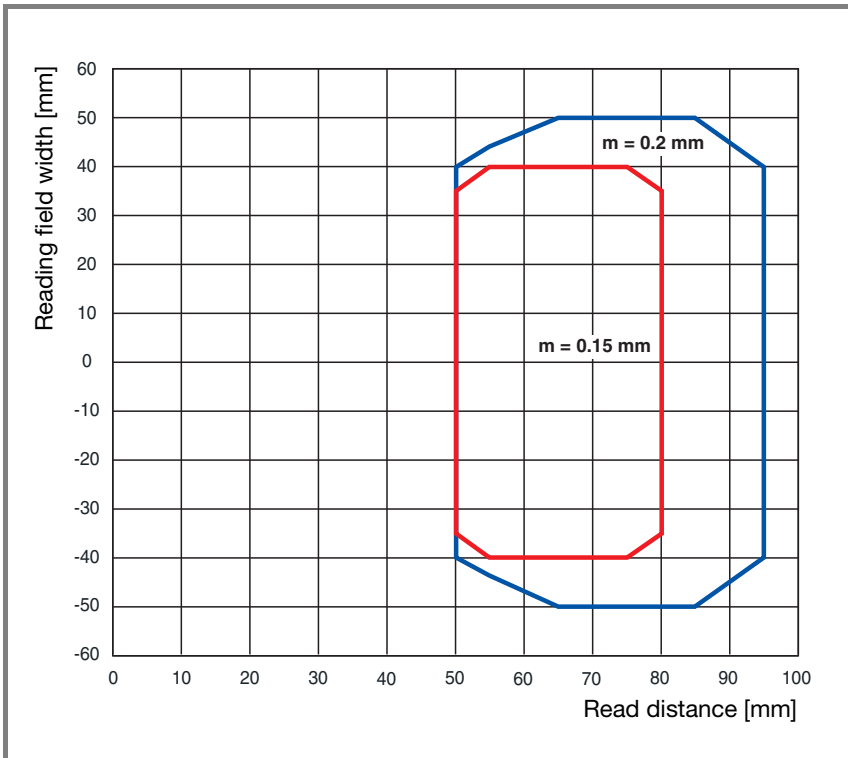
Mobile barcode identification

2D-code identification

RF identification

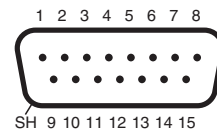
Reading curves

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			

Industrial image processing

Distance meas. Positioning


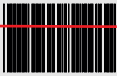

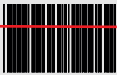




Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READER WITH RS 232 INTERFACE

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode readers with N-optics				
BCL 22 S N 200 50031088	Single-line scanner, perp. beam exit, 0.8m connection cable, system connector	 95	800	RS 232
BCL 22 S N 202 50031090	Single-line scanner, front beam exit, 0.8m connection cable, system connector	 95	800	RS 232
BCL 22 S N 300 50030990	Single-line scanner, perp. beam exit, 0.8m connection cable, Sub-D connector	 95	800	RS 232
BCL 22 S N 302 50030991	Single-line scanner, front beam exit, 0.8m connection cable, Sub-D connector	 95	800	RS 232
BCL 22 S N 210 50032075	Single-line scanner, perp. beam exit, 3.0m connection cable, system connector	 95	800	RS 232
BCL 22 S N 212 50061451	Single-line scanner, front beam exit, 3.0m connection cable, system connector	 95	800	RS 232
BCL 22 S N 310 50032078	Single-line scanner, perp. beam exit, 3.0m connection cable, Sub-D connector	 95	800	RS 232
BCL 22 S N 312 50032080	Single-line scanner, front beam exit, 3.0m 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 403** 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. 390	MA 31 1...	Connector unit, multiNet master, parameter memory, various interfaces
see P. 394	MA 2xxi	Connector unit / gateway for many automation technology network types



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BCL 22
N-optics, Single-Line



Stationary barcode identification

Features

- Single-line scanner
- N-optics
- For module sizes $m = 0.15 \dots 0.5\text{mm}$
- 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

Mobile barcode identification

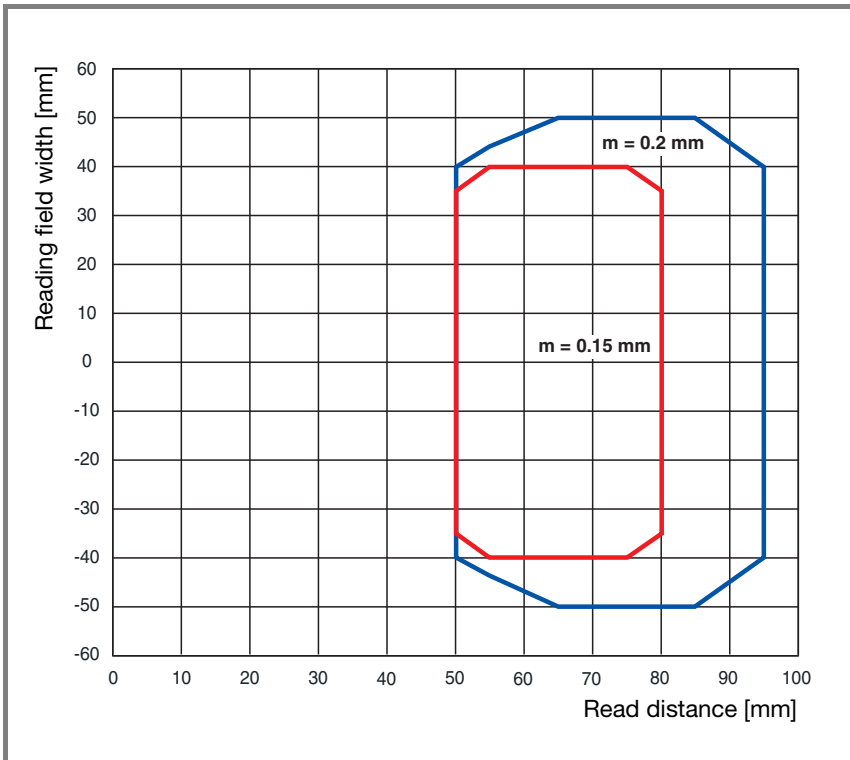
2D-code identification

RF identification



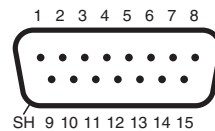
Reading curves

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

Industrial image processing

Distance meas. Positioning

Optical data transmission

Cable with 2 system connectors - female

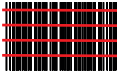
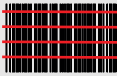
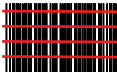
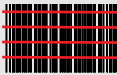
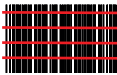
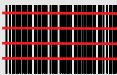
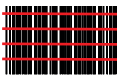
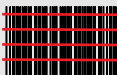
10-pole (ZHR10)			6-pole (ZHR6)		
PIN	Colour	Signal	PIN	Colour	Signal
1	br/BN	GND	1	ws-br/WH-BN	/MNA0
2	rt/RD	CTS_RSA	2	ws-rt/WH-RD	SO2_MNA1
3	or/OG	RTS_RSB	3	ws-or/WH-OG	/MNA2
4	ge/YE	RS 232 RxD	4	ws-ge/WH-YE	/MNA3
5	gn/GN	RS 232 TxD	5	ws-gn/WH-GN	SI2_MNA4
6	bl/BU	/Serv	6	ws-sw/WH-BK	SWOUT1
7	vi/VI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

Networking Connector units

Accessories

Services

BARCODE READER WITH RS 232 INTERFACE

Part description Part No.	Description		Op. range [mm]	Scan rate [scans/s]	Interface
Barcode readers with N-optics					
BCL 22 R1 N 200 50061305	Raster scanner, perp. beam exit, 0.8m connection cable, system connector		95	800	RS 232
BCL 22 R1 N 202 50061307	Raster scanner, front beam exit, 0.8m connection cable, system connector		95	800	RS 232
BCL 22 R1 N 300 50061309	Raster scanner, perp. beam exit, 0.8m connection cable, Sub-D connector		95	800	RS 232
BCL 22 R1 N 302 50061311	Raster scanner, front beam exit, 0.8m connection cable, Sub-D connector		95	800	RS 232
BCL 22 R1 N 210 50032082	Raster scanner, perp. beam exit, 3.0m connection cable, system connector		95	800	RS 232
BCL 22 R1 N 212 50032084	Raster scanner, front beam exit, 3.0m connection cable, system connector		95	800	RS 232
BCL 22 R1 N 310 50032087	Raster scanner, perp. beam exit, 3.0m connection cable, Sub-D connector		95	800	RS 232
BCL 22 R1 N 312 50032089	Raster scanner, front beam exit, 3.0m 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 403** 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. 390	MA 31 1...	Connector unit, multiNet master, parameter memory, various interfaces
see P. 394	MA 2xxi	Connector unit / gateway for many automation technology network types

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BCL 22
N-optics, Raster



Stationary barcode identification

Features

- Raster scanner (10 lines)
- N-optics
- For module sizes $m = 0.15 \dots 0.5\text{mm}$
- 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



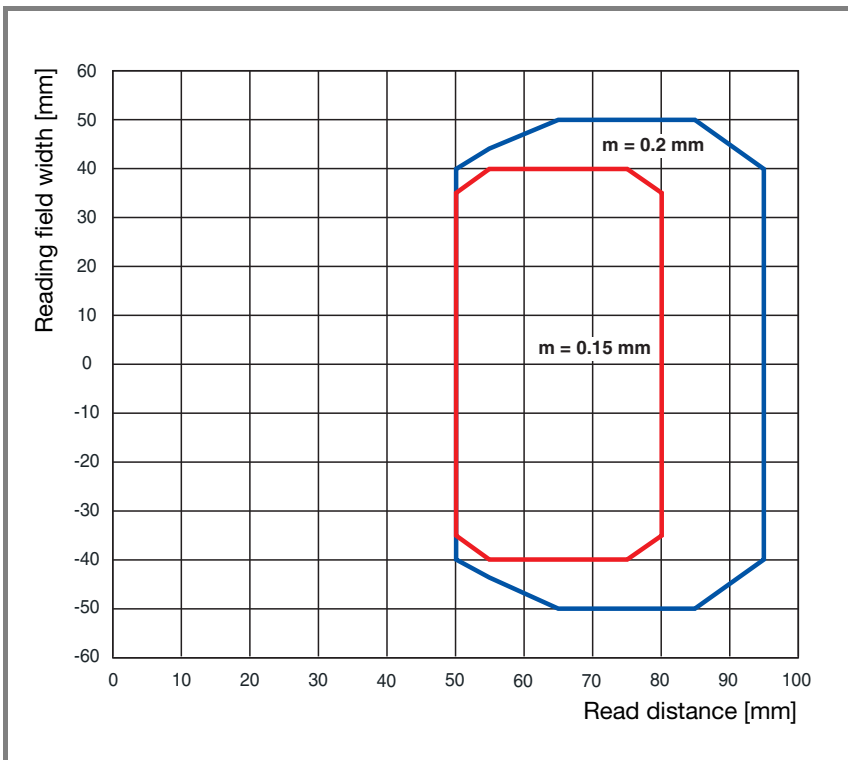
Mobile barcode identification

2D-code identification

RF identification

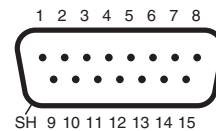
Reading curves

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			

Industrial image processing

Distance meas. Positioning


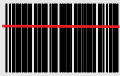
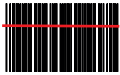


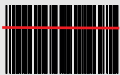


Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READER WITH RS 485 INTERFACE

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



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

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Accessories / connection cables

More accessories can be found from **page 403** 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. 390	MA 31 1...	Connector unit, multiNet master, parameter memory, various interfaces



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BCL 21
M-optics, Single-Line



Stationary barcode identification

Features

- Single-line scanner
- M-optics
- For module sizes $m = 0.2 \dots 0.8\text{mm}$
- 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

Mobile barcode identification

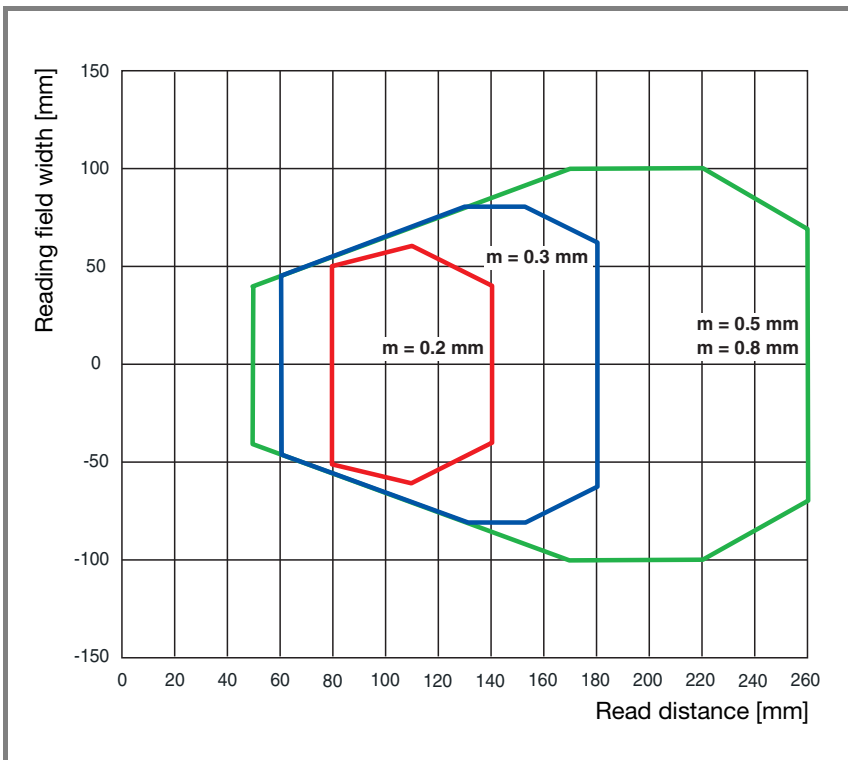
2D-code identification

RF identification



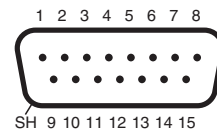
Reading curves

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

Industrial image processing

Distance meas. Positioning

Optical data transmission

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			

Networking Connector units

Accessories

Services

BARCODE READER WITH RS 485 INTERFACE

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



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

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Accessories / connection cables			More accessories can be found from page 403 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. 390	MA 31 1...	Connector unit, multiNet master, parameter memory, various interfaces	

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BCL 21
M-optics, Raster



Stationary barcode identification

Features

- Raster scanner (10 lines)
- M-optics
- For module sizes $m = 0.2 \dots 0.8\text{mm}$
- 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



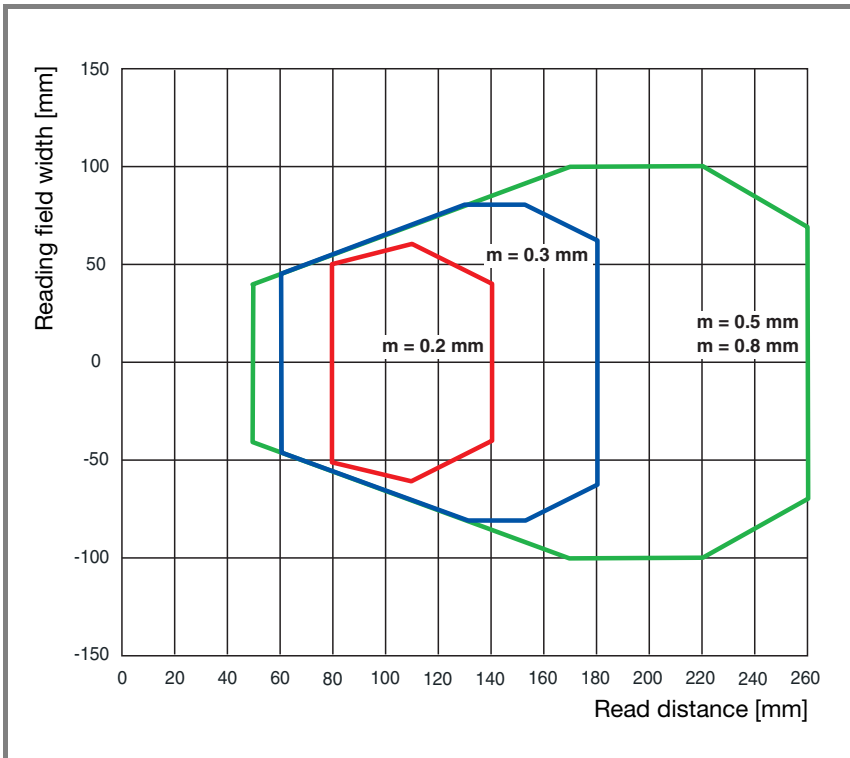
Mobile barcode identification

2D-code identification

RF identification

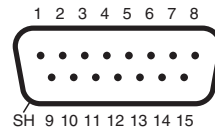
Reading curves

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)			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			

Industrial image processing

Distance meas. Positioning


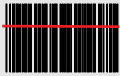
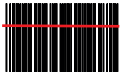


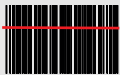


Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READER WITH RS 232 INTERFACE

Part description Part No.	Description		Op. range [mm]	Scan rate [scans/s]	Interface
Barcode readers with M-optics					
BCL 22 S M 200 50031094	Single-line scanner, perp. beam exit, 0.8m connection cable, system connector		260	1000	RS 232
BCL 22 S M 202 50031096	Single-line scanner, front beam exit, 0.8m connection cable, system connector		260	1000	RS 232
BCL 22 S M 300 50030992	Single-line scanner, perp. beam exit, 0.8m connection cable, Sub-D connector		260	1000	RS 232
BCL 22 S M 302 50030993	Single-line scanner, front beam exit, 0.8m connection cable, Sub-D connector		260	1000	RS 232
BCL 22 S M 210 50032091	Single-line scanner, perp. beam exit, 3.0m connection cable, system connector		260	1000	RS 232
BCL 22 S M 212 50032093	Single-line scanner, front beam exit, 3.0m connection cable, system connector		260	1000	RS 232
BCL 22 S M 310 50032095	Single-line scanner, perp. beam exit, 3.0m connection cable, Sub-D connector		260	1000	RS 232
BCL 22 S M 312 50032097	Single-line scanner, front beam exit, 3.0m 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 403** 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. 390	MA 31 1...	Connector unit, multiNet master, parameter memory, various interfaces
see P. 394	MA 2xxi	Connector unit / gateway for many automation technology network types

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BCL 22
M-optics, Single-Line



Stationary barcode identification

Features

- Single-line scanner
- M-optics
- For module sizes $m = 0.2 \dots 0.8\text{mm}$
- 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



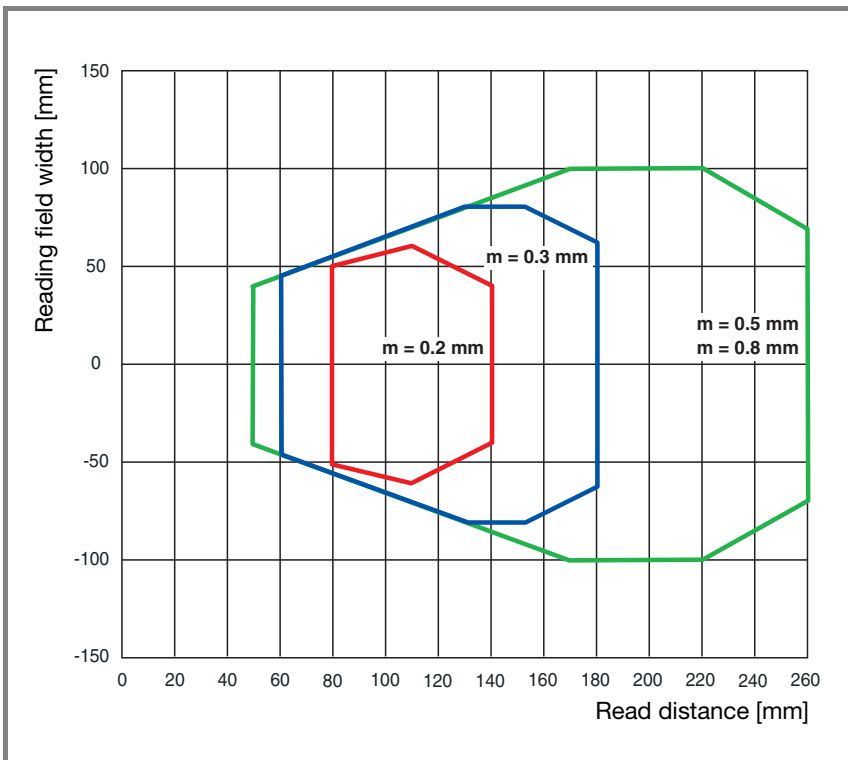
Mobile barcode identification

2D-code identification

RF identification

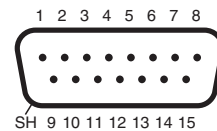
Reading curves

BCL 22 with M-optics



Electrical connection

Cable with Sub-D connector - male



SH 9 10 11 12 13 14 15

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			

Industrial image processing

Distance meas. Positioning

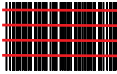
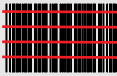
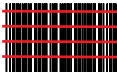
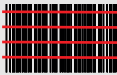
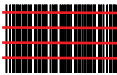
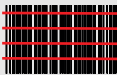
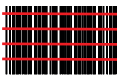
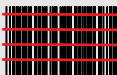
Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READER WITH RS 232 INTERFACE

Part description Part No.	Description		Op. range [mm]	Scan rate [scans/s]	Interface
Barcode readers with M-optics					
BCL 22 R1 M 200 50061313	Raster scanner, perp. beam exit, 0.8m connection cable, system connector		260	1000	RS 232
BCL 22 R1 M 202 50061315	Raster scanner, front beam exit, 0.8m connection cable, system connector		260	1000	RS 232
BCL 22 R1 M 300 50061317	Raster scanner, perp. beam exit, 0.8m connection cable, Sub-D connector		260	1000	RS 232
BCL 22 R1 M 302 50061319	Raster scanner, front beam exit, 0.8m connection cable, Sub-D connector		260	1000	RS 232
BCL 22 R1 M 210 50032099	Raster scanner, perp. beam exit, 3.0m connection cable, system connector		260	1000	RS 232
BCL 22 R1 M 212 50032101	Raster scanner, front beam exit, 3.0m connection cable, system connector		260	1000	RS 232
BCL 22 R1 M 310 50031704	Raster scanner, perp. beam exit, 3.0m connection cable, Sub-D connector		260	1000	RS 232
BCL 22 R1 M 312 50032104	Raster scanner, front beam exit, 3.0m 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 403** 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. 390	MA 31 1...	Connector unit, multiNet master, parameter memory, various interfaces
see P. 394	MA 2xxi	Connector unit / gateway for many automation technology network types

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BCL 22
M-optics, Raster



Stationary barcode identification

Features

- Raster scanner (10 lines)
- M-optics
- For module sizes $m = 0.2 \dots 0.8\text{mm}$
- 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



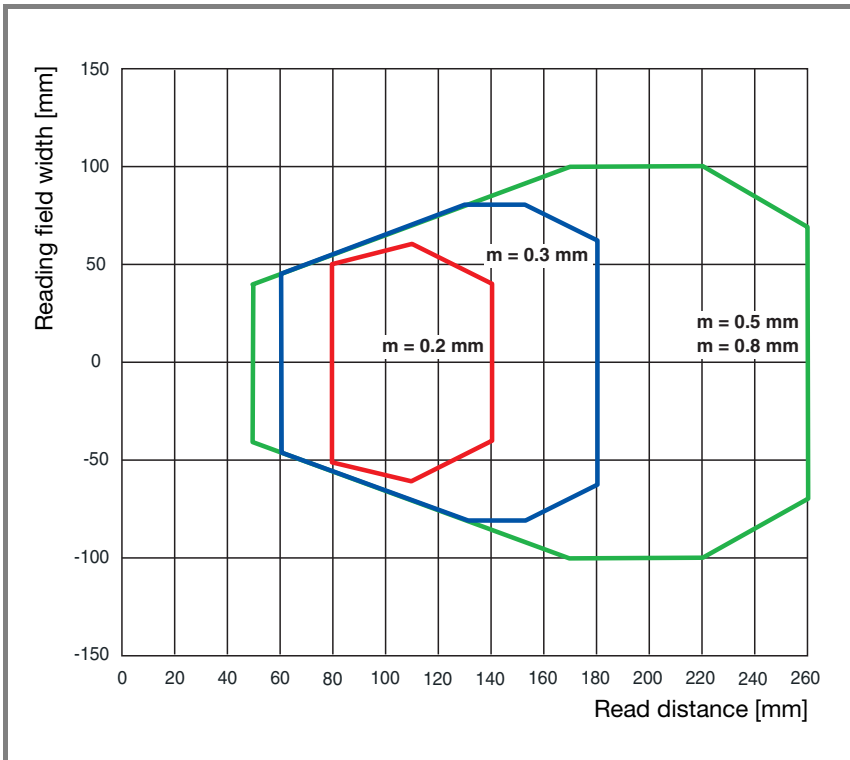
Mobile barcode identification

2D-code identification

RF identification

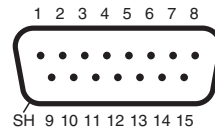
Reading curves

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)			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			

Industrial image processing

Distance meas. Positioning


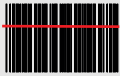
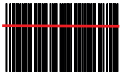





Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READER WITH RS 485 INTERFACE

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode readers with F-optics				
BCL 21 S F 200 50031080	Single-line scanner, perp. beam exit, 0.8m connection cable, system connector	 450	800	RS 485
BCL 21 S F 202 50031082	Single-line scanner, front beam exit, 0.8m connection cable, system connector	 450	800	RS 485
BCL 21 S F 300 50031084	Single-line scanner, perp. beam exit, 0.8m connection cable, Sub-D connector	 450	800	RS 485
BCL 21 S F 302 50031086	Single-line scanner, front beam exit, 0.8m connection cable, Sub-D connector	 450	800	RS 485
BCL 21 S F 210 50032059	Single-line scanner, perp. beam exit, 3.0m connection cable, system connector	 450	800	RS 485
BCL 21 S F 212 50032061	Single-line scanner, front beam exit, 3.0m connection cable, system connector	 450	800	RS 485
BCL 21 S F 310 50032063	Single-line scanner, perp. beam exit, 3.0m connection cable, Sub-D connector	 450	800	RS 485
BCL 21 S F 312 50032065	Single-line scanner, front beam exit, 3.0m 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 403** 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. 390	MA 31 1...	Connector unit, multiNet master, parameter memory, various interfaces



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BCL 21
F-optics, Single-Line



Stationary barcode identification

Features

- Single-line scanner
- F-optics
- For module sizes $m = 0.5 \dots 1.0 \text{ mm}$
- Large reading field for large barcodes
- RS 485 interface
- 1 switching output and 1 switching input
- System circuit-board connector or 15-pin Sub-D connector

Mobile barcode identification

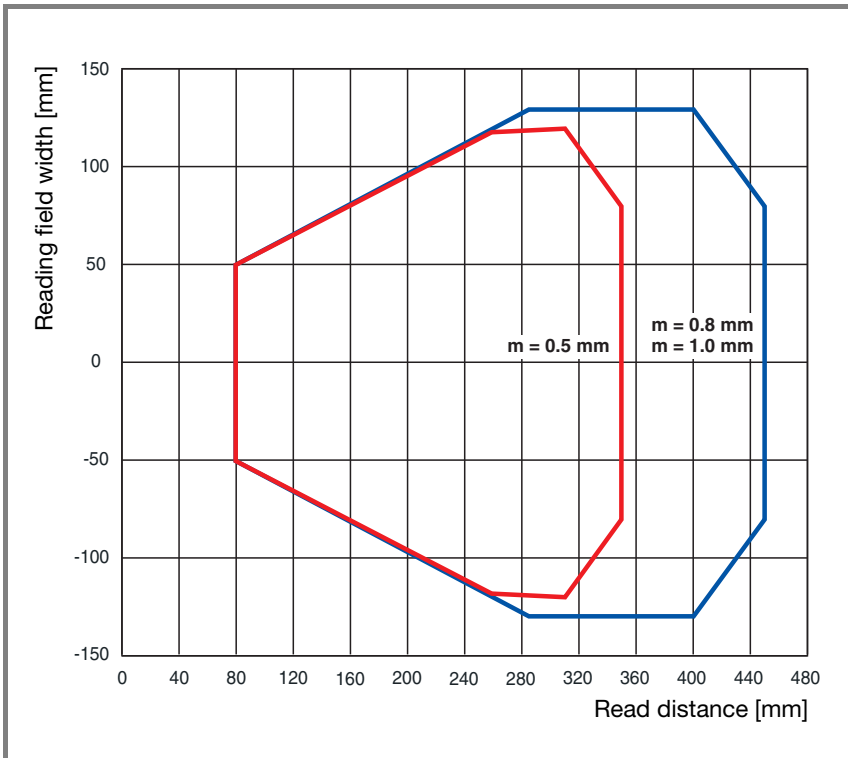
2D-code identification

RF identification



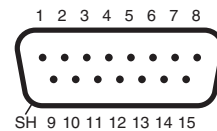
Reading curves

BCL 21 with F-optics



Electrical connection

Cable with Sub-D connector - male



SH 9 10 11 12 13 14 15

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

Industrial image processing

Distance meas. Positioning

Optical data transmission

Cable with 2 system connectors - female

10-pole (ZHR10)

6-pole (ZHR6)

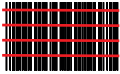
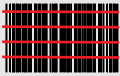
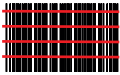
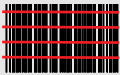
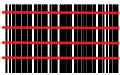
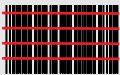
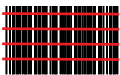

PIN	Colour	Signal	PIN	Colour	Signal
1	br/BN	GND	1	ws-br/WH-BN	/MNA0
2	rt/RD	CTS_RSA	2	ws-rt/WH-RD	SO2_MNA1
3	or/OG	RTS_RSB	3	ws-or/WH-OG	/MNA2
4	ge/YE	RS 232 RxD	4	ws-ge/WH-YE	/MNA3
5	gn/GN	RS 232 TxD	5	ws-gn/WH-GN	SI2_MNA4
6	bl/BU	/Serv	6	ws-sw/WH-BK	SWOUT1
7	vi/VI	SWIN1			
8	gr/GY	VIN			
9	ws/WH	GNDIN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

Networking Connector units

Accessories

Services

BARCODE READER WITH RS 485 INTERFACE

Part description Part No.	Description		Op. range [mm]	Scan rate [scans/s]	Interface
Barcode readers with F-optics					
BCL 21 R1 F 200 50061297	Raster scanner, perp. beam exit, 0.8m connection cable, system connector		450	800	RS 485
BCL 21 R1 F 202 50061299	Raster scanner, front beam exit, 0.8m connection cable, system connector		450	800	RS 485
BCL 21 R1 F 300 50061301	Raster scanner, perp. beam exit, 0.8m connection cable, Sub-D connector		450	800	RS 485
BCL 21 R1 F 302 50061303	Raster scanner, front beam exit, 0.8m connection cable, Sub-D connector		450	800	RS 485
BCL 21 R1 F 210 50032067	Raster scanner, perp. beam exit, 3.0m connection cable, system connector		450	800	RS 485
BCL 21 R1 F 212 50032069	Raster scanner, front beam exit, 3.0m connection cable, system connector		450	800	RS 485
BCL 21 R1 F 310 50032071	Raster scanner, perp. beam exit, 3.0m connection cable, Sub-D connector		450	800	RS 485
BCL 21 R1 F 312 50032073	Raster scanner, front beam exit, 3.0m 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 403** 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. 390	MA 31 1...	Connector unit, multiNet master, parameter memory, various interfaces



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BCL 21
F-optics, Raster



Stationary barcode identification

Features

- Raster scanner (10 lines)
- F-optics
- For module sizes $m = 0.5 \dots 1.0\text{mm}$
- Large reading field for large barcodes
- 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

Mobile barcode identification

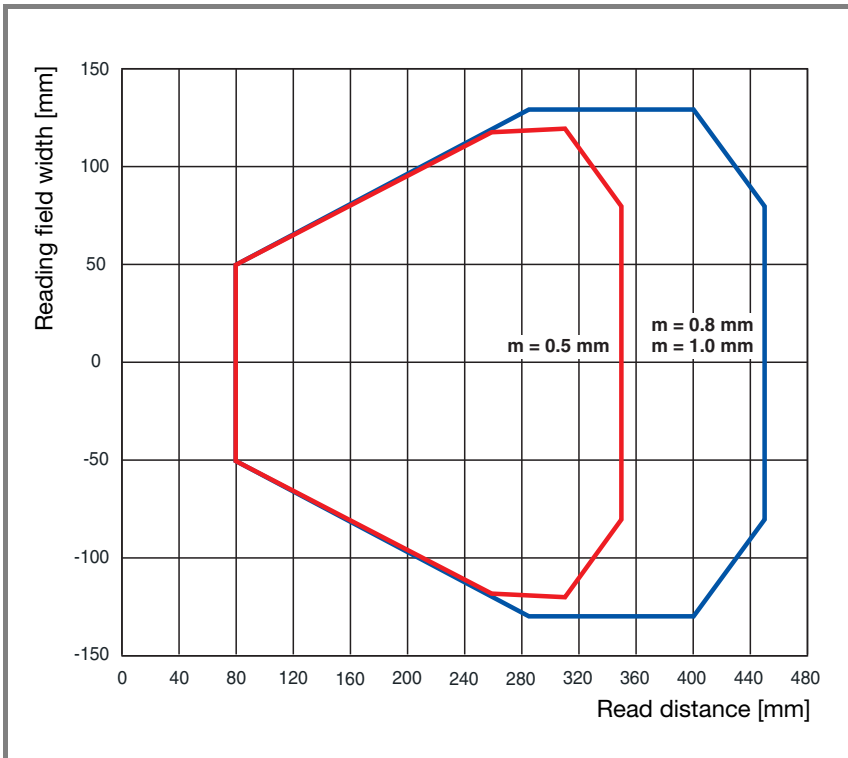
2D-code identification

RF identification



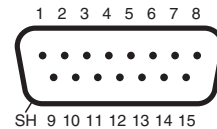
Reading curves

BCL 21 with F-optics



Electrical connection

Cable with Sub-D connector - male



SH 9 10 11 12 13 14 15

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

Industrial image processing

Distance meas. Positioning

Optical data transmission

Cable with 2 system connectors - female


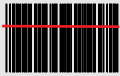
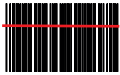


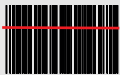


10-pole (ZHR10)			6-pole (ZHR6)		
PIN	Colour	Signal	PIN	Colour	Signal
1	br/BN	GND	1	ws-br/WH-BN	/MNA0
2	rt/RD	CTS_RSA	2	ws-rt/WH-RD	SO2_MNA1
3	or/OG	RTS_RSB	3	ws-or/WH-OG	/MNA2
4	ge/YE	RS 232 RxD	4	ws-ge/WH-YE	/MNA3
5	gn/GN	RS 232 TxD	5	ws-gn/WH-GN	SI2_MNA4
6	bl/BU	/Serv	6	ws-sw/WH-BK	SWOUT1
7	vi/VI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

Networking Connector units

Accessories

Services

BARCODE READER WITH RS 232 INTERFACE

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode readers with F-optics				
BCL 22 S F 200 50031100	Single-line scanner, perp. beam exit, 0.8m connection cable, system connector	 450	800	RS 232
BCL 22 S F 202 50031102	Single-line scanner, front beam exit, 0.8m connection cable, system connector	 450	800	RS 232
BCL 22 S F 300 50031104	Single-line scanner, perp. beam exit, 0.8m connection cable, Sub-D connector	 450	800	RS 232
BCL 22 S F 302 50031106	Single-line scanner, front beam exit, 0.8m connection cable, Sub-D connector	 450	800	RS 232
BCL 22 S F 210 50032106	Single-line scanner, perp. beam exit, 3.0m connection cable, system connector	 450	800	RS 232
BCL 22 S F 212 50032108	Single-line scanner, front beam exit, 3.0m connection cable, system connector	 450	800	RS 232
BCL 22 S F 310 50032110	Single-line scanner, perp. beam exit, 3.0m connection cable, Sub-D connector	 450	800	RS 232
BCL 22 S F 312 50032112	Single-line scanner, front beam exit, 3.0m 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 403** 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. 390	MA 31 1...	Connector unit, multiNet master, parameter memory, various interfaces
see P. 394	MA 2xxi	Connector unit / gateway for many automation technology network types

We reserve the right to make changes • BCL22_5_EN.fm



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BCL 22
F-optics, Single-Line



Stationary barcode identification

Features

- Single-line scanner
- F-optics
- For module sizes $m = 0.5 \dots 1.0\text{mm}$
- Large reading field for large barcodes
- RS 232 interface
- 2 switching outputs and 2 switching inputs
- System circuit-board connector or 15-pin Sub-D connector

Mobile barcode identification

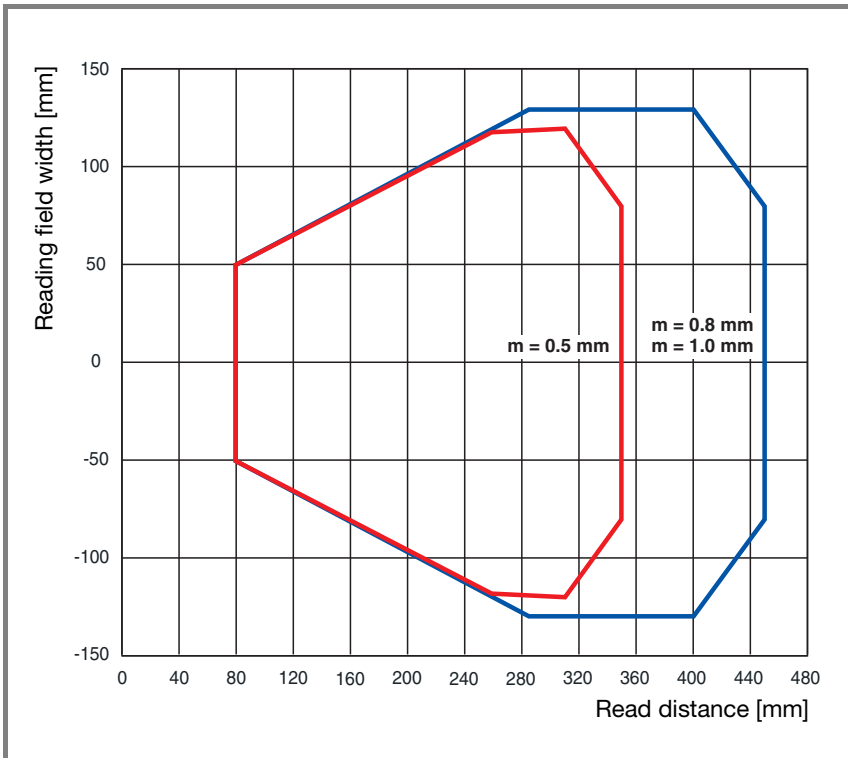
2D-code identification

RF identification



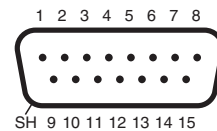
Reading curves

BCL 22 with F-optics



Electrical connection

Cable with Sub-D connector - male



SH 9 10 11 12 13 14 15

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

Industrial image processing

Distance meas. Positioning

Optical data transmission

Cable with 2 system connectors - female

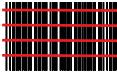
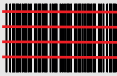
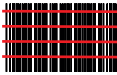
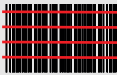
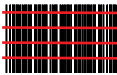
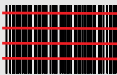
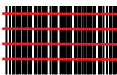
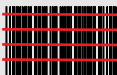
10-pole (ZHR10)			6-pole (ZHR6)		
PIN	Colour	Signal	PIN	Colour	Signal
1	br/BN	GND	1	ws-br/WH-BN	/MNA0
2	rt/RD	CTS_RSA	2	ws-rt/WH-RD	SO2_MNA1
3	or/OG	RTS_RSB	3	ws-or/WH-OG	/MNA2
4	ge/YE	RS 232 RxD	4	ws-ge/WH-YE	/MNA3
5	gn/GN	RS 232 TxD	5	ws-gn/WH-GN	SI2_MNA4
6	bl/BU	/Serv	6	ws-sw/WH-BK	SWOUT1
7	vi/VI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

Networking Connector units

Accessories

Services

BARCODE READER WITH RS 232 INTERFACE

Part description Part No.	Description		Op. range [mm]	Scan rate [scans/s]	Interface
Barcode readers with F-optics					
BCL 22 R1 F 200 50061321	Raster scanner, perp. beam exit, 0.8m connection cable, system connector		450	800	RS 232
BCL 22 R1 F 202 50061323	Raster scanner, front beam exit, 0.8m connection cable, system connector		450	800	RS 232
BCL 22 R1 F 300 50061325	Raster scanner, perp. beam exit, 0.8m connection cable, Sub-D connector		450	800	RS 232
BCL 22 R1 F 302 50061327	Raster scanner, front beam exit, 0.8m connection cable, Sub-D connector		450	800	RS 232
BCL 22 R1 F 210 50032114	Raster scanner, perp. beam exit, 3.0m connection cable, system connector		450	800	RS 232
BCL 22 R1 F 212 50032116	Raster scanner, front beam exit, 3.0m connection cable, system connector		450	800	RS 232
BCL 22 R1 F 310 50032118	Raster scanner, perp. beam exit, 3.0m connection cable, Sub-D connector		450	800	RS 232
BCL 22 R1 F 312 50032120	Raster scanner, front beam exit, 3.0m 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 403** 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. 390	MA 31 1...	Connector unit, multiNet master, parameter memory, various interfaces
see P. 394	MA 2xxi	Connector unit / gateway for many automation technology network types

We reserve the right to make changes • BCL22_6_EN.fm



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BCL 2x
Page 24



BCL 3x
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BCL 50x
Page 68



MSPi
Page 98



BCL 90
Page 102



MSP
Page 114

BCL 22
F-optics, Raster



Stationary barcode identification

Features

- Raster scanner (10 lines)
- F-optics
- For module sizes $m = 0.5 \dots 1.0\text{mm}$
- Large reading field for large barcodes
- 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



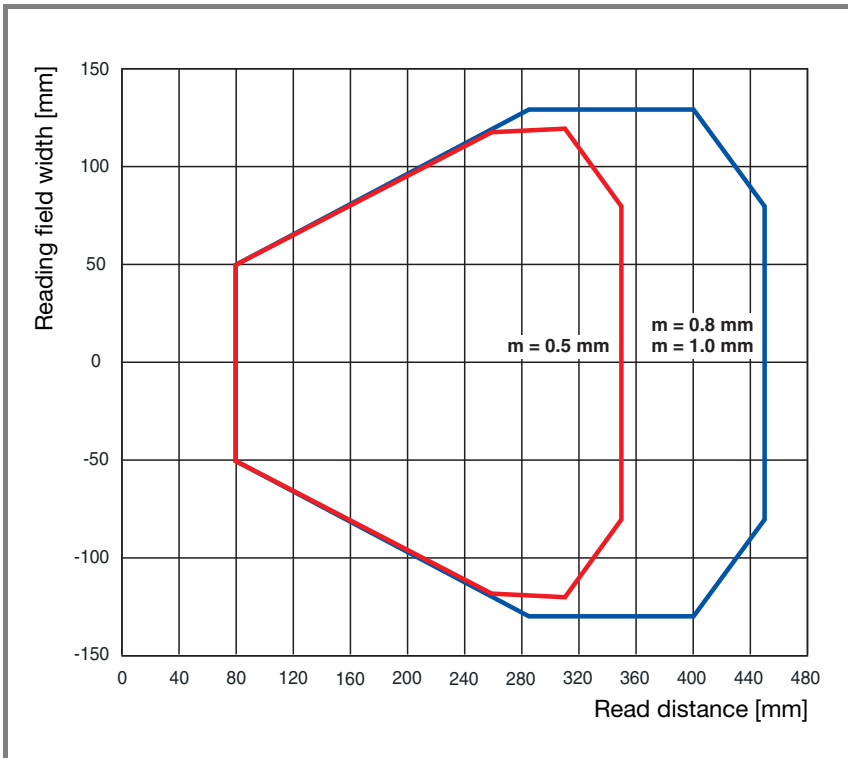
Mobile barcode identification

2D-code identification

RF identification

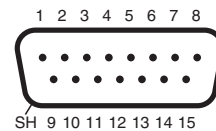
Reading curves

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			

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

OVERVIEW



Packet identification



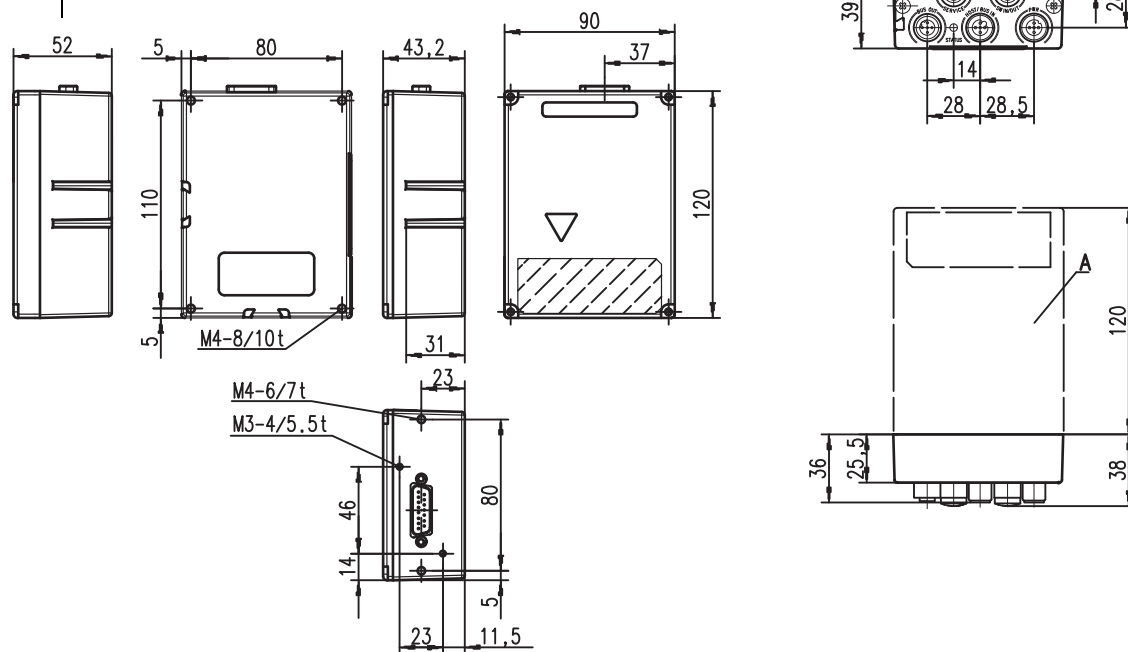
Container identification



Tray identification

Dimensioned drawing

Heating variant







A Barcode reader BCL 3...

We reserve the right to make changes • BCL3x_Overview_EN.fm

						
BCL 8 Page 18	BCL 2x Page 24	BCL 3x Page 50	BCL 50x Page 68	MSPi Page 98	BCL 90 Page 102	MSP Page 114

STATIONARY BARCODE READERS BCL 31/32/34

Stationary barcode identification

Barcode reader Series 3x	Module size	Page
 with M-optics	0.2 – 0.5 mm	52
 with F-optics	0.3 – 0.8 mm	56
 with L-optics	0.35 – 0.8 mm	60
 with J-optics	0.5 – 0.8 mm	64



Mobile barcode identification

2D-code identification

RF identification

Common technical data

Electrical data	Operating voltage U_B	w/o heating: 10 ... 30VDC w. heating: 22 ... 26VDC
	Power consumption	w/o heating: max. 3.2W (PROFIBUS max. 5W) w. heating: max. 30W
	Interface type	BCL 31: RS 485 BCL 32: RS 232 BCL 34: PROFIBUS DP Service: RS 232
	Code types	all common code types
	Sw. inputs/outputs	BCL 31: 1 each BCL 32: 2 each BCL 34: 1 each
Indicators	Green LED	operating voltage
Mechanical data	Housing / Optical window	diecast aluminium / glass
	Weight	approx. 400/480g w. heating
Environmental data	Ambient temperature operation (storage)	w/o heating: 0 ... +40°C w. heating: -35 ... +30°C (-20°C ... +60°C)
	Protection class	IP 65
Laser	Laser diode, red, wavelength 650 ... 690nm 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 403 onwards

Features

- High scanning rate, up to 1000 scans/s
- J-optics especially for ink-jet applications
- Devices with integrated heating available
- "autoRefIAct" - self-activation by means of reflector detection

BCL 31/32

- Networking via multiNet plus
- Stand-alone operation
- Configuration via BCLconfig

BCL 34

- 12 Mbit/s max. transmission rate
- Direct configuration via the PROFIBUS project
- Plug and Play by configuring with the PROFIBUS master
- GSD file - download at www.leuze.com



Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READERS

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
Barcode readers without heating					
BCL 31 S M 100 50036276	Single-line scanner, Sub-D connector		10 ... 220	1000	RS 485
BCL 31 R1 M 100 50036275	Raster scanner, Sub-D connector		10 ... 220	1000	RS 485
BCL 32 S M 100 50036272	Single-line scanner, Sub-D connector		10 ... 220	1000	RS 232
BCL 32 R1 M 100 50036271	Raster scanner, Sub-D connector		10 ... 220	1000	RS 232
BCL 34 S M 100 50037229	Single-line scanner, Sub-D connector		10 ... 220	1000	PROFIBUS
BCL 34 R1 M 100 50037227	Raster scanner, Sub-D connector		10 ... 220	1000	PROFIBUS



With the BCL 34, an MS 34 103 or MS 34 105 modular hood with integrated connectors for connecting to the PROFIBUS DP must also be ordered (use of the MSD 1 101 modular service display in combination with the MS 34 105 optional). **BCLconfig configuration software** - free download at www.leuze.com.

Accessories / connection cables

More accessories can be found from **page 403** onwards

Part No.	Designation	Features
see P. 427	MS 3...	Modular connector hood
see P. 409	KB - Service - 3000	Service cable for MS 31
50037232	MSD 1 101	Modular service display for BCL 34 (MS 34 105 required)
50037543	KB 034 - 2000	M12 connection cable for MS 34 105 to MSD 1 101
50038539	TS 02-4-SA	M12 connector, integrated PROFIBUS terminating resistor
see P. 417	KB PB - ...	PROFIBUS connection cables, see page 417
see P. 425	KD 02 - 5 ...	M12 connector for connection of the BCL 34
50020501	KD 095 - 5 - A	M12 connector for supply voltage
see P. 364	MA 2 / MA 2 L / ...	Connector unit BCL 31/32, stand-alone/multiNet slave
see P. 368	MA 4 / MA 4 D / ...	Connector unit BCL 31/32, stand-alone/multiNet slave, parameter memory
see P. 409	KB 031... / KB 040...	Connection cable between BCL 3x and MA ... connector unit
50027375	BT 56	Mounting device for BCL 3x

We reserve the right to make changes • BCL3x_1_EN.fm

						
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BCL 3x ...
M-optics, Single/Raster



Stationary barcode identification

Features

- 1000 scans/s
- M-optics
- For module sizes $m = 0.2 \dots 0.5 \text{ mm}$
- Zero-distance reading for applications within transport systems with read distance 10 ... 220mm
- BCL 31 with RS 485 interface for connection to multiNet plus
- BCL 32 with RS 232 interface
- BCL 34 with integrated PROFIBUS (accessory MS 34 is mandatory)



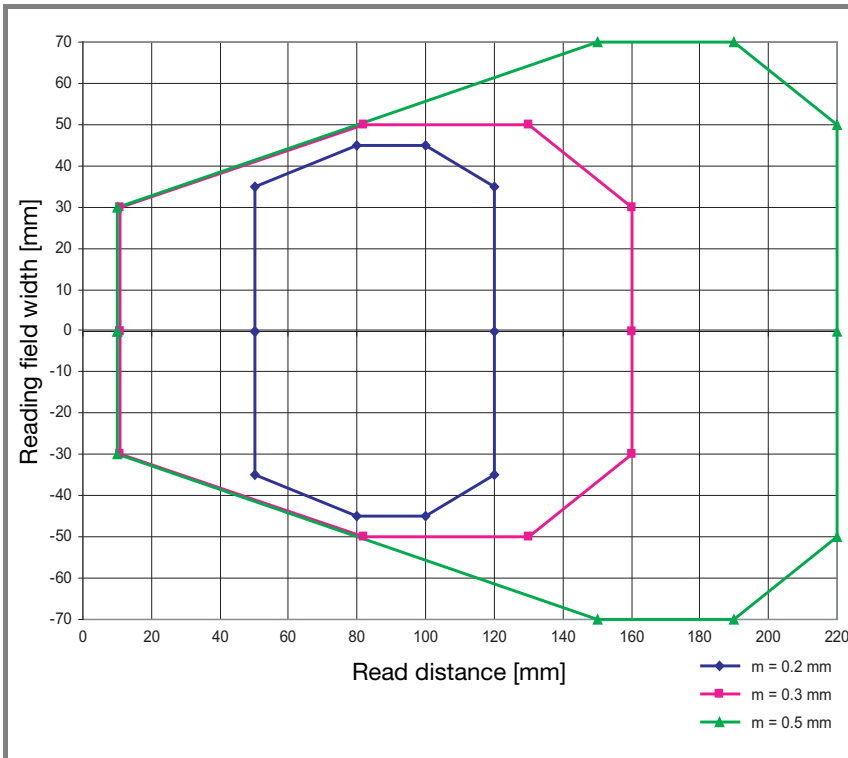
Mobile barcode identification

2D-code identification

RF identification

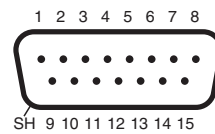
Reading curves

BCL 3x ..., M-optics, without heating



Electrical connection

Sub-D connector - male



BCL 31 ...

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

BCL 32 ...

PIN	Signal
1	RS 232 GND
2	SWIN1
3	RS 232 CTS
4	RS 232 RTS
5	Daisy Chain
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

BCL 34 ... / MS 34 ...

See electrical connection of BPS 34 ... with MS 34 ... on page 307.

Industrial image processing

Distance meas. Positioning

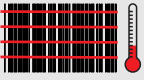
Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READERS WITH HEATING

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode readers with heating				
BCL 31 S M 100 H 50101891	Single-line scanner, Sub-D plug, heating, -35 ... +30°C	 10 ... 210	1000	RS 485
BCL 31 R1 M 100 H 50101887	Raster scanner, Sub-D plug, heating, -35 ... +30°C	 10 ... 210	1000	RS 485
BCL 32 S M 100 H 50101898	Single-line scanner, Sub-D plug, heating, -35 ... +30°C	 10 ... 210	1000	RS 232
BCL 32 R1 M 100 H 50101894	Raster scanner, Sub-D plug, heating, -35 ... +30°C	 10 ... 210	1000	RS 232
BCL 34 S M 100 H 50039129	Single-line scanner, Sub-D plug, heating, -35 ... +30°C	 10 ... 210	1000	PROFIBUS
BCL 34 R1 M 100 H 50039130	Raster scanner, Sub-D plug, heating, -35 ... +30°C	 10 ... 210	1000	PROFIBUS



With the BCL 34, an MS 34 103 or MS 34 105 modular hood with integrated connectors for connecting to the PROFIBUS DP must also be ordered (use of the MSD 1 101 modular service display in combination with the MS 34 105 optional). **BCLconfig configuration software** - free download at www.leuze.com.

Accessories / connection cables

More accessories can be found from **page 403** onwards

Part No.	Designation	Features
see P. 427	MS 3...	Modular connector hood
see P. 409	KB - Service - 3000	Service cable for MS 31
50037232	MSD 1 101	Modular service display for BCL 34 (MS 34 105 required)
50037543	KB 034 - 2000	M12 connection cable for MS 34 105 to MSD 1 101
50038539	TS 02-4-SA	M12 connector, integrated PROFIBUS terminating resistor
see P. 417	KB PB - ...	PROFIBUS connection cables, see page 417
see P. 425	KD 02 - 5 ...	M12 connector for connection of the BCL 34
50020501	KD 095 - 5 - A	M12 connector for supply voltage
see P. 364	MA 2 / MA 2 L / ...	Connector unit BCL 31/32, stand-alone/multiNet slave
see P. 368	MA 4 / MA 4 D / ...	Connector unit BCL 31/32, stand-alone/multiNet slave, parameter memory
see P. 409	KB 031... / KB 040...	Connection cable between BCL 3x and MA ... connector unit
50027375	BT 56	Mounting device for BCL 3x

We reserve the right to make changes • BCL3x_2_EN.fm

						
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BCL 3x ...
M-optics, Single/Raster



Stationary barcode identification

Features

- 1000 scans/s
- M-optics
- For module sizes $m = 0.2 \dots 0.5 \text{ mm}$
- Zero-distance reading for applications within transport systems with read distance 10 ... 210mm
- Integrated heating for operation at temperatures as low as -35°C
- BCL 31 with RS 485 interface for connection to multiNet plus
- BCL 32 with RS 232 interface
- BCL 34 with integrated PROFIBUS (accessory MS 34 is mandatory)



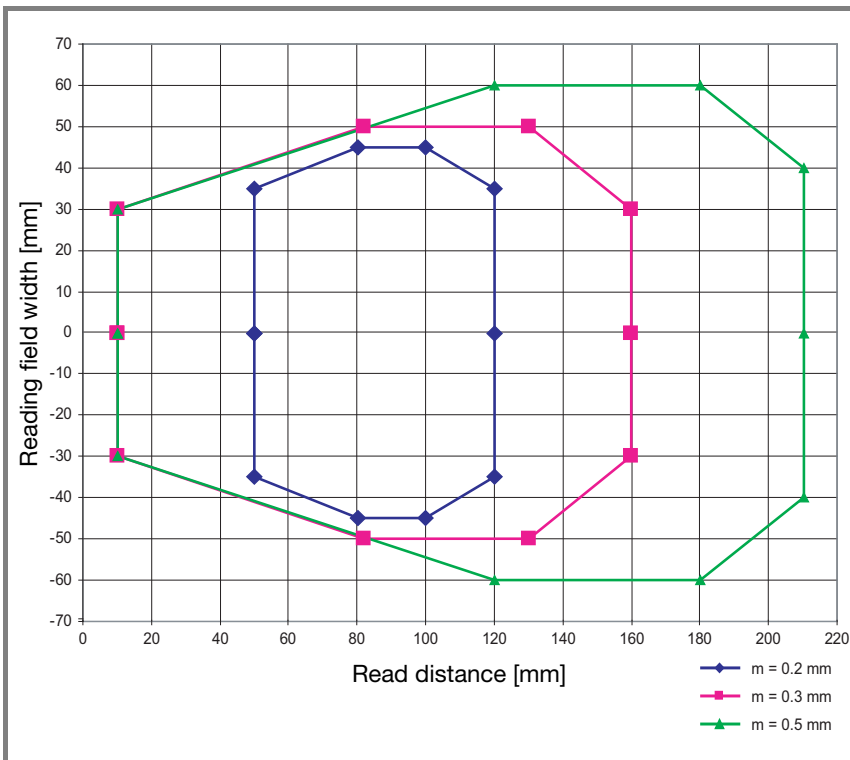
Mobile barcode identification

2D-code identification

RF identification

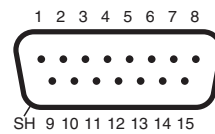
Reading curves

BCL 3x ..., M-optics, with heating



Electrical connection

Sub-D connector - male



BCL 31 ...

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

BCL 32 ...

PIN	Signal
1	RS 232 GND
2	SWIN1
3	RS 232 CTS
4	RS 232 RTS
5	Daisy Chain
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

BCL 34 ... / MS 34 ...

See electrical connection of BPS 34 ... with MS 34 ... on page 307.

Industrial image processing

Distance meas. Positioning


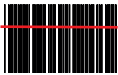
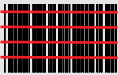
Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READERS

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
Barcode readers without heating					
BCL 31 S F 100 50036278	Single-line scanner, Sub-D connector		50 ... 550	800	RS 485
BCL 31 R1 F 100 50036277	Raster scanner, Sub-D connector		50 ... 550	800	RS 485
BCL 32 S F 100 50036274	Single-line scanner, Sub-D connector		50 ... 550	800	RS 232
BCL 32 R1 F 100 50036273	Raster scanner, Sub-D connector		50 ... 550	800	RS 232
BCL 34 S F 100 50037228	Single-line scanner, Sub-D connector		50 ... 550	800	PROFIBUS
BCL 34 R1 F 100 50037226	Raster scanner, Sub-D connector		50 ... 550	800	PROFIBUS



With the BCL 34, an MS 34 103 or MS 34 105 modular hood with integrated connectors for connecting to the PROFIBUS DP must also be ordered (use of the MSD 1 101 modular service display in combination with the MS 34 105 optional). **BCLconfig configuration software** - free download at www.leuze.com.

Accessories / connection cables

More accessories can be found from **page 403** onwards

Part No.	Designation	Features
see P. 427	MS 3...	Modular connector hood
see P. 409	KB - Service - 3000	Service cable for MS 31
50037232	MSD 1 101	Modular service display for BCL 34 (MS 34 105 required)
50037543	KB 034 - 2000	M12 connection cable for MS 34 105 to MSD 1 101
50038539	TS 02-4-SA	M12 connector, integrated PROFIBUS terminating resistor
see P. 417	KB PB - ...	PROFIBUS connection cables, see page 417
see P. 425	KD 02 - 5 ...	M12 connector for connection of the BCL 34
50020501	KD 095 - 5 - A	M12 connector for supply voltage
see P. 364	MA 2 / MA 2 L / ...	Connector unit BCL 31/32, stand-alone/multiNet slave
see P. 368	MA 4 / MA 4 D / ...	Connector unit BCL 31/32, stand-alone/multiNet slave, parameter memory
see P. 409	KB 031... / KB 040...	Connection cable between BCL 3x and MA ... connector unit
50027375	BT 56	Mounting device for BCL 3x

We reserve the right to make changes • BCL3x_3_EN.fm

						
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BCL 3x ...
F-optics, Single/Raster



Stationary barcode identification

Features

- 800 scans/s
- F-optics
- For module sizes $m = 0.3 \dots 0.8\text{mm}$
- Reading at medium distance, from 50 ... 550mm
- BCL 31 with RS 485 interface for connection to multiNet plus
- BCL 32 with RS 232 interface
- BCL 34 with integrated PROFIBUS (accessory MS 34 is mandatory)



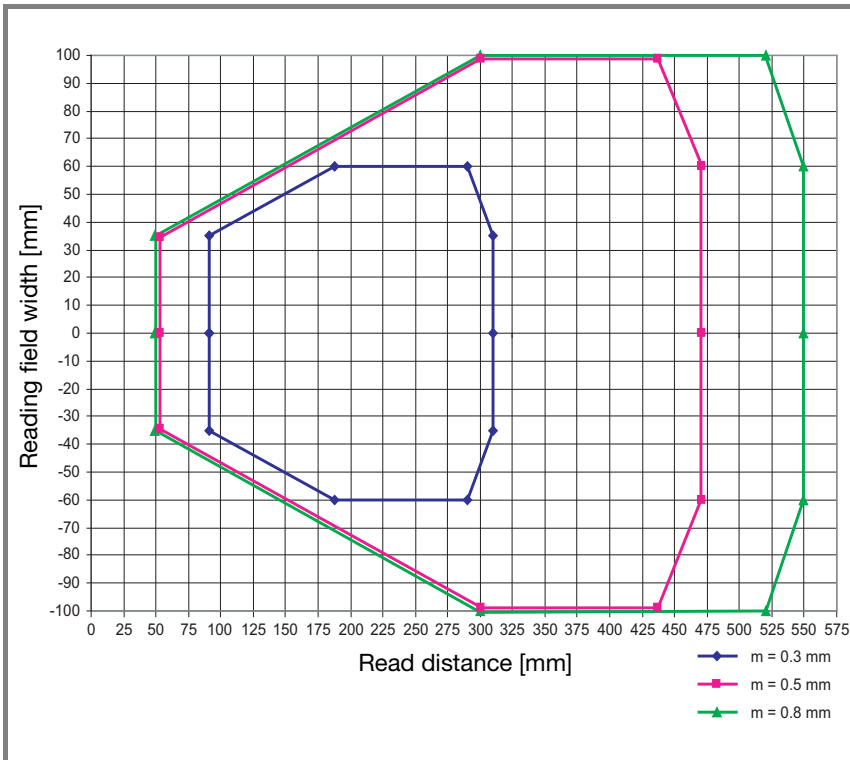
Mobile barcode identification

2D-code identification

RF identification

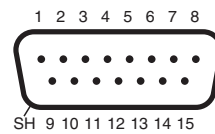
Reading curves

BCL 3x ..., F-optics, without heating



Electrical connection

Sub-D connector - male



BCL 31 ...

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

BCL 32 ...

PIN	Signal
1	RS 232 GND
2	SWIN1
3	RS 232 CTS
4	RS 232 RTS
5	Daisy Chain
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

BCL 34 ... / MS 34 ...

See electrical connection of BPS 34 ... with MS 34 ... on page 307.

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READERS WITH HEATING

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode readers with heating				
BCL 31 S F 100 H 50101892	Single-line scanner, Sub-D plug, heating, -35 ... +30°C	 50 ... 550	800	RS 485
BCL 31 R1 F 100 H 50101888	Raster scanner, Sub-D plug, heating, -35 ... +30°C	 50 ... 550	800	RS 485
BCL 32 S F 100 H 50101899	Single-line scanner, Sub-D plug, heating, -35 ... +30°C	 50 ... 550	800	RS 232
BCL 32 R1 F 100 H 50101895	Raster scanner, Sub-D plug, heating, -35 ... +30°C	 50 ... 550	800	RS 232
BCL 34 S F 100 H 50039128	Single-line scanner, Sub-D plug, heating, -35 ... +30°C	 50 ... 550	800	PROFIBUS
BCL 34 R1 F 100 H 50039127	Raster scanner, Sub-D plug, heating, -35 ... +30°C	 50 ... 550	800	PROFIBUS



With the BCL 34, an MS 34 103 or MS 34 105 modular hood with integrated connectors for connecting to the PROFIBUS DP must also be ordered (use of the MSD 1 101 modular service display in combination with the MS 34 105 optional). **BCLconfig configuration software** - free download at www.leuze.com.

Accessories / connection cables

More accessories can be found from **page 403** onwards

Part No.	Designation	Features
see P. 427	MS 3...	Modular connector hood
see P. 409	KB - Service - 3000	Service cable for MS 31
50037232	MSD 1 101	Modular service display for BCL 34 (MS 34 105 required)
50037543	KB 034 - 2000	M12 connection cable for MS 34 105 to MSD 1 101
50038539	TS 02-4-SA	M12 connector, integrated PROFIBUS terminating resistor
see P. 417	KB PB - ...	PROFIBUS connection cables, see page 417
see P. 425	KD 02 - 5 ...	M12 connector for connection of the BCL 34
50020501	KD 095 - 5 - A	M12 connector for supply voltage
see P. 364	MA 2 / MA 2 L / ...	Connector unit BCL 31/32, stand-alone/multiNet slave
see P. 368	MA 4 / MA 4 D / ...	Connector unit BCL 31/32, stand-alone/multiNet slave, parameter memory
see P. 409	KB 031... / KB 040...	Connection cable between BCL 3x and MA ... connector unit
50027375	BT 56	Mounting device for BCL 3x

We reserve the right to make changes • BCL3x_4_EN.fm



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Page 18



BCL 2x
Page 24



BCL 3x
Page 50



BCL 50x
Page 68



MSPi
Page 98



BCL 90
Page 102



MSP
Page 114

BCL 3x ...
F-optics, Single/Raster



Stationary barcode identification

Features

- 800 scans/s
- F-optics
- For module sizes $m = 0.3 \dots 0.8\text{mm}$
- Reading at medium distance, from 50 ... 550mm
- Integrated heating for operation at temperatures as low as -35°C
- BCL 31 with RS 485 interface for connection to multiNet plus
- BCL 32 with RS 232 interface
- BCL 34 with integrated PROFIBUS (accessory MS 34 is mandatory)



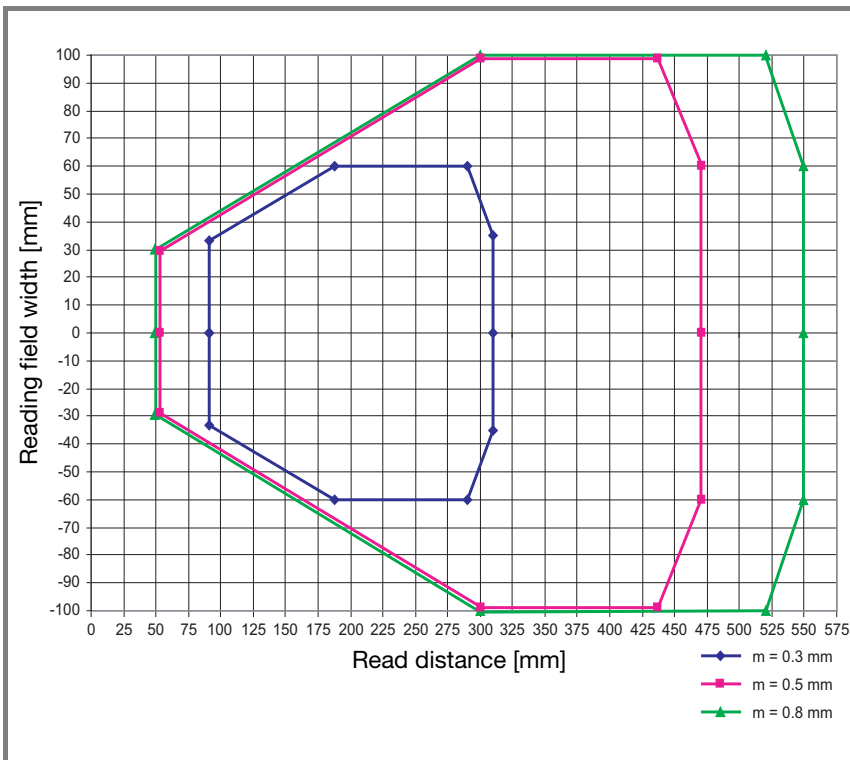
Mobile barcode identification

2D-code identification

RF identification

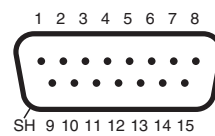
Reading curves

BCL 3x ..., F-optics, with heating



Electrical connection

Sub-D connector - male



BCL 31 ...

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

BCL 32 ...

PIN	Signal
1	RS 232 GND
2	SWIN1
3	RS 232 CTS
4	RS 232 RTS
5	Daisy Chain
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

BCL 34 ... / MS 34 ...

See electrical connection of BPS 34 ... with MS 34 ... on page 307.

Industrial image processing

Distance meas. Positioning


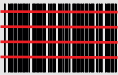
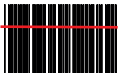
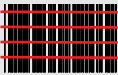
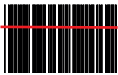

Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READERS

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
Barcode readers without heating					
BCL 31 S L 100 50041379	Single-line scanner, Sub-D connector		150 ... 750	800	RS 485
BCL 31 R1 L 100 50041380	Raster scanner, Sub-D connector		150 ... 750	800	RS 485
BCL 32 S L 100 50041384	Single-line scanner, Sub-D connector		150 ... 750	800	RS 232
BCL 32 R1 L 100 50041383	Raster scanner, Sub-D connector		150 ... 750	800	RS 232
BCL 34 S L 100 50041381	Single-line scanner, Sub-D connector		150 ... 750	800	PROFIBUS
BCL 34 R1 L 100 50041382	Raster scanner, Sub-D connector		150 ... 750	800	PROFIBUS



With the BCL 34, an MS 34 103 or MS 34 105 modular hood with integrated connectors for connecting to the PROFIBUS DP must also be ordered (use of the MSD 1 101 modular service display in combination with the MS 34 105 optional). **BCLconfig configuration software** - free download at www.leuze.com.

Accessories / connection cables

More accessories can be found from **page 403** onwards

Part No.	Designation	Features
see P. 427	MS 3...	Modular connector hood
see P. 409	KB - Service - 3000	Service cable for MS 31
50037232	MSD 1 101	Modular service display for BCL 34 (MS 34 105 required)
50037543	KB 034 - 2000	M12 connection cable for MS 34 105 to MSD 1 101
50038539	TS 02-4-SA	M12 connector, integrated PROFIBUS terminating resistor
see P. 417	KB PB - ...	PROFIBUS connection cables, see page 417
see P. 425	KD 02 - 5 ...	M12 connector for connection of the BCL 34
50020501	KD 095 - 5 - A	M12 connector for supply voltage
see P. 364	MA 2 / MA 2 L / ...	Connector unit BCL 31/32, stand-alone/multiNet slave
see P. 368	MA 4 / MA 4 D / ...	Connector unit BCL 31/32, stand-alone/multiNet slave, parameter memory
see P. 409	KB 031... / KB 040...	Connection cable between BCL 3x and MA ... connector unit
50027375	BT 56	Mounting device for BCL 3x

We reserve the right to make changes • BCL3x_5_EN.fm

						
BCL 8 Page 18	BCL 2x Page 24	BCL 3x Page 50	BCL 50x Page 68	MSPi Page 98	BCL 90 Page 102	MSP Page 114

BCL 3x ...
L-optics, Single/Raster



Stationary barcode identification

Features

- 800 scans/s
- L-optics
- For module sizes $m = 0.35 \dots 0.8\text{mm}$
- Reading at far distance, from 150 ... 750mm
- BCL 31 with RS 485 interface for connection to multiNet plus
- BCL 32 with RS 232 interface
- BCL 34 with integrated PROFIBUS (accessory MS 34 is mandatory)



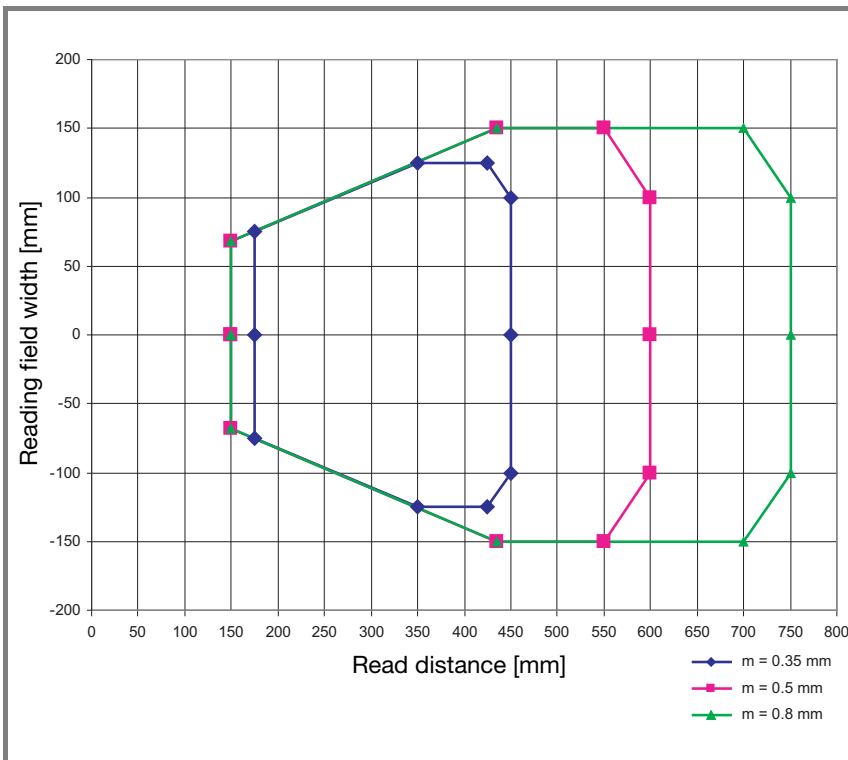
Mobile barcode identification

2D-code identification

RF identification

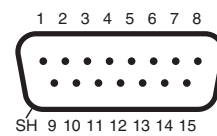
Reading curves

BCL 3x ..., L-optics, without heating



Electrical connection

Sub-D connector - male



BCL 31 ...

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

BCL 32 ...

PIN	Signal
1	RS 232 GND
2	SWIN1
3	RS 232 CTS
4	RS 232 RTS
5	Daisy Chain
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

BCL 34 ... / MS 34 ...

See electrical connection of BPS 34 ... with MS 34 ... on page 307.

Industrial image processing

Distance meas. Positioning


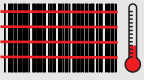

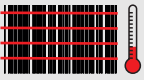

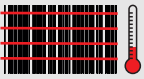
Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READERS WITH HEATING

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
Barcode readers with heating					
BCL 31 S L 100 H 50101893	Single-line scanner, Sub-D plug, heating, -35 ... +30°C		150 ... 650	800	RS 485
BCL 31 R1 L 100 H 50101889	Raster scanner, Sub-D plug, heating, -35 ... +30°C		150 ... 650	800	RS 485
BCL 32 S L 100 H 50101900	Single-line scanner, Sub-D plug, heating, -35 ... +30°C		150 ... 650	800	RS 232
BCL 32 R1 L 100 H 50101896	Raster scanner, Sub-D plug, heating, -35 ... +30°C		150 ... 650	800	RS 232
BCL 34 S L 100 H 50101903	Single-line scanner, Sub-D plug, heating, -35 ... +30°C		150 ... 650	800	PROFIBUS
BCL 34 R1 L 100 H 50101901	Raster scanner, Sub-D plug, heating, -35 ... +30°C		150 ... 650	800	PROFIBUS



With the BCL 34, an MS 34 103 or MS 34 105 modular hood with integrated connectors for connecting to the PROFIBUS DP must also be ordered (use of the MSD 1 101 modular service display in combination with the MS 34 105 optional). **BCLconfig configuration software** - free download at www.leuze.com.

Accessories / connection cables

More accessories can be found from **page 403** onwards

Part No.	Designation	Features
see P. 427	MS 3...	Modular connector hood
see P. 409	KB - Service - 3000	Service cable for MS 31
50037232	MSD 1 101	Modular service display for BCL 34 (MS 34 105 required)
50037543	KB 034 - 2000	M12 connection cable for MS 34 105 to MSD 1 101
50038539	TS 02-4-SA	M12 connector, integrated PROFIBUS terminating resistor
see P. 417	KB PB - ...	PROFIBUS connection cables, see page 417
see P. 425	KD 02 - 5 ...	M12 connector for connection of the BCL 34
50020501	KD 095 - 5 - A	M12 connector for supply voltage
see P. 364	MA 2 / MA 2 L / ...	Connector unit BCL 31/32, stand-alone/multiNet slave
see P. 368	MA 4 / MA 4 D / ...	Connector unit BCL 31/32, stand-alone/multiNet slave, parameter memory
see P. 409	KB 031... / KB 040...	Connection cable between BCL 3x and MA ... connector unit
50027375	BT 56	Mounting device for BCL 3x

We reserve the right to make changes • BCL3x_6_EN_fm



BCL 8
Page 18



BCL 2x
Page 24



BCL 3x
Page 50



BCL 50x
Page 68



MSPi
Page 98



BCL 90
Page 102



MSP
Page 114

BCL 3x ...
L-optics, Single/Raster



Stationary barcode identification

Features

- 800 scans/s
- L-optics
- For module sizes $m = 0.35 \dots 0.8\text{mm}$
- Reading at far distance, from 150 ... 650mm
- Integrated heating for operation at temperatures as low as -35°C
- BCL 31 with RS 485 interface for connection to multiNet plus
- BCL 32 with RS 232 interface
- BCL 34 with integrated PROFIBUS (accessory MS 34 is mandatory)



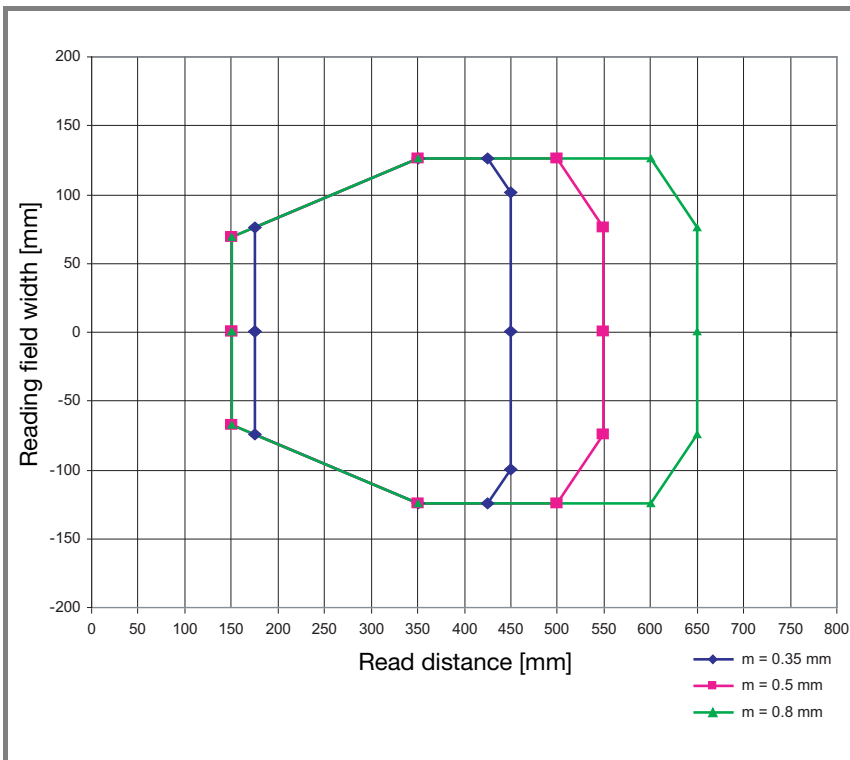
Mobile barcode identification

2D-code identification

RF identification

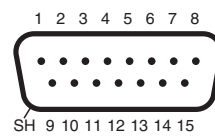
Reading curves

BCL 3x ..., L-optics, with heating



Electrical connection

Sub-D connector - male



BCL 31 ...

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

BCL 32 ...

PIN	Signal
1	RS 232 GND
2	SWIN1
3	RS 232 CTS
4	RS 232 RTS
5	Daisy Chain
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

BCL 34 ... / MS 34 ...

See electrical connection of BPS 34 ... with MS 34 ... on page 307.

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READERS FOR INK-JET APPLICATIONS

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode readers without heating				
BCL 31 S J 100 50104019	Single-line scanner, Sub-D connector 	100 ... 575	1000	RS 485
BCL 31 R1 J 100 50041798	Raster scanner, Sub-D connector 	100 ... 575	1000	RS 485
BCL 32 S J 100 50104020	Single-line scanner, Sub-D connector 	100 ... 575	1000	RS 232
BCL 32 R1 J 100 50041800	Raster scanner, Sub-D connector 	100 ... 575	1000	RS 232
BCL 34 S J 100 50104023	Single-line scanner, Sub-D connector 	100 ... 575	1000	PROFIBUS
BCL 34 R1 J 100 50041801	Raster scanner, Sub-D connector 	100 ... 575	1000	PROFIBUS



With the BCL 34, an MS 34 103 or MS 34 105 modular hood with integrated connectors for connecting to the PROFIBUS DP must also be ordered (use of the MSD 1 101 modular service display in combination with the MS 34 105 optional). **BCLconfig configuration software** - free download at www.leuze.com.

Accessories / connection cables

More accessories can be found from **page 403** onwards

Part No.	Designation	Features
see P. 427	MS 3...	Modular connector hood
see P. 409	KB - Service - 3000	Service cable for MS 31
50037232	MSD 1 101	Modular service display for BCL 34 (MS 34 105 required)
50037543	KB 034 - 2000	M12 connection cable for MS 34 105 to MSD 1 101
50038539	TS 02-4-SA	M12 connector, integrated PROFIBUS terminating resistor
see P. 417	KB PB - ...	PROFIBUS connection cables, see page 417
see P. 425	KD 02 - 5 ...	M12 connector for connection of the BCL 34
50020501	KD 095 - 5 - A	M12 connector for supply voltage
see P. 364	MA 2 / MA 2 L / ...	Connector unit BCL 31/32, stand-alone/multiNet slave
see P. 368	MA 4 / MA 4 D / ...	Connector unit BCL 31/32, stand-alone/multiNet slave, parameter memory
see P. 409	KB 031... / KB 040...	Connection cable between BCL 3x and MA ... connector unit
50027375	BT 56	Mounting device for BCL 3x

We reserve the right to make changes • BCL3x_7_EN.fm

						
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BCL 3x ...
J-optics, Single/Raster



Stationary barcode identification

Features

- 1000 scans/s
- J-optics especially for ink-jet barcodes
- Application-dependent reading field, typically from 100 ... 575 mm
- The reading field must be determined for the specific application - talk to us!
- BCL 31 with RS 485 interface for connection to multiNet plus
- BCL 32 with RS 232 interface
- BCL 34 with integrated PROFIBUS (accessory MS 34 is mandatory)

Mobile barcode identification

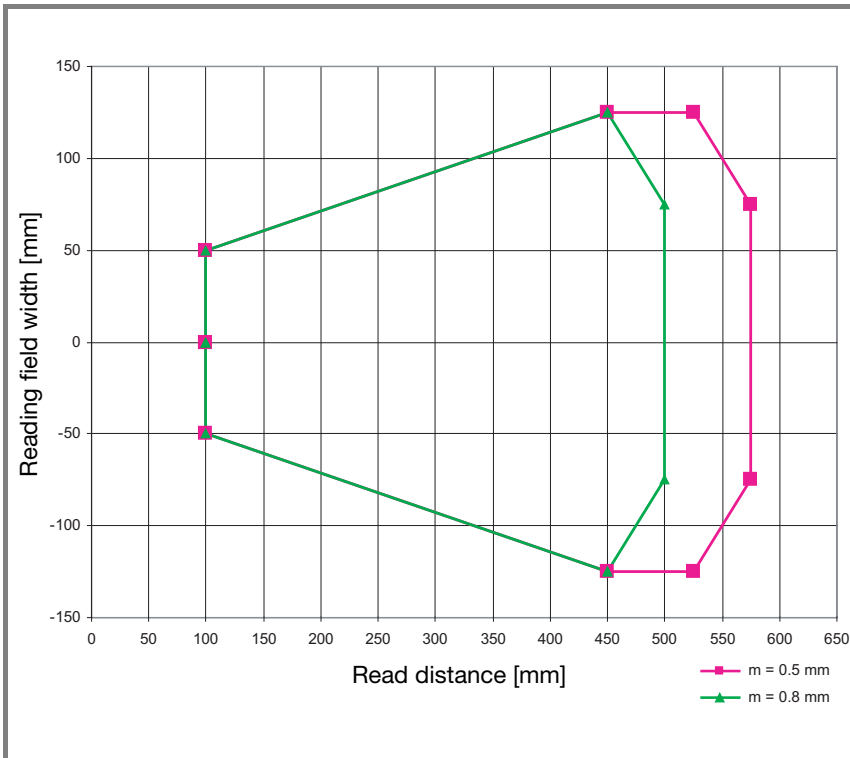
2D-code identification

RF identification



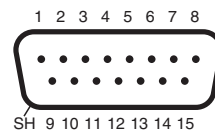
Reading curves

BCL 3x ..., J-optics, without heating



Electrical connection

Sub-D connector - male



BCL 31 ...

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

BCL 32 ...

PIN	Signal
1	RS 232 GND
2	SWIN1
3	RS 232 CTS
4	RS 232 RTS
5	Daisy Chain
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

BCL 34 ... / MS 34 ...

See electrical connection of BPS 34 ... with MS 34 ... on page 307.

Industrial image processing

Distance meas. Positioning

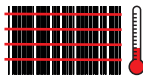


Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READERS FOR INK-JET APPLIC., HEATING

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode readers with heating				
BCL 31 R1 J 100 H 50101890	Raster scanner, Sub-D plug, heating, -35 ... +30°C	 100 ... 550	1000	RS 485
BCL 32 R1 J 100 H 50101897	Raster scanner, Sub-D plug, heating, -35 ... +30°C	 100 ... 550	1000	RS 232
BCL 34 R1 J 100 H 50101902	Raster scanner, Sub-D plug, heating, -35 ... +30°C	 100 ... 550	1000	PROFIBUS



With the BCL 34, an MS 34 103 or MS 34 105 modular hood with integrated connectors for connecting to the PROFIBUS DP must also be ordered (use of the MSD 1 101 modular service display in combination with the MS 34 105 optional). **BCLconfig configuration software** - free download at www.leuze.com.

Accessories / connection cables

More accessories can be found from **page 403** onwards

Part No.	Designation	Features
see P. 427	MS 3...	Modular connector hood
see P. 409	KB - Service - 3000	Service cable for MS 31
50037232	MSD 1 101	Modular service display for BCL 34 (MS 34 105 required)
50037543	KB 034 - 2000	M12 connection cable for MS 34 105 to MSD 1 101
50038539	TS 02-4-SA	M12 connector, integrated PROFIBUS terminating resistor
see P. 417	KB PB - ...	PROFIBUS connection cables, see page 417
see P. 425	KD 02 - 5 ...	M12 connector for connection of the BCL 34
50020501	KD 095 - 5 - A	M12 connector for supply voltage
see P. 364	MA 2 / MA 2 L / ...	Connector unit BCL 31/32, stand-alone/multiNet slave
see P. 368	MA 4 / MA 4 D / ...	Connector unit BCL 31/32, stand-alone/multiNet slave, parameter memory
see P. 409	KB 031... / KB 040...	Connection cable between BCL 3x and MA ... connector unit
50027375	BT 56	Mounting device for BCL 3x

We reserve the right to make changes • BCL3x_8_EN.fm

						
BCL 8 Page 18	BCL 2x Page 24	BCL 3x Page 50	BCL 50x Page 68	MSPi Page 98	BCL 90 Page 102	MSP Page 114

BCL 3x ...
J-optics, Raster



Stationary barcode identification

Features

- 1000 scans/s
- J-optics especially for ink-jet barcodes
- Application-dependent reading field, typically from 100 ... 550 mm
- The reading field must be determined for the specific application - talk to us!
- Integrated heating for operation at temperatures as low as -35°C
- BCL 31 with RS 485 interface for connection to multiNet plus
- BCL 32 with RS 232 interface
- BCL 34 with integrated PROFIBUS (accessory MS 34 is mandatory)



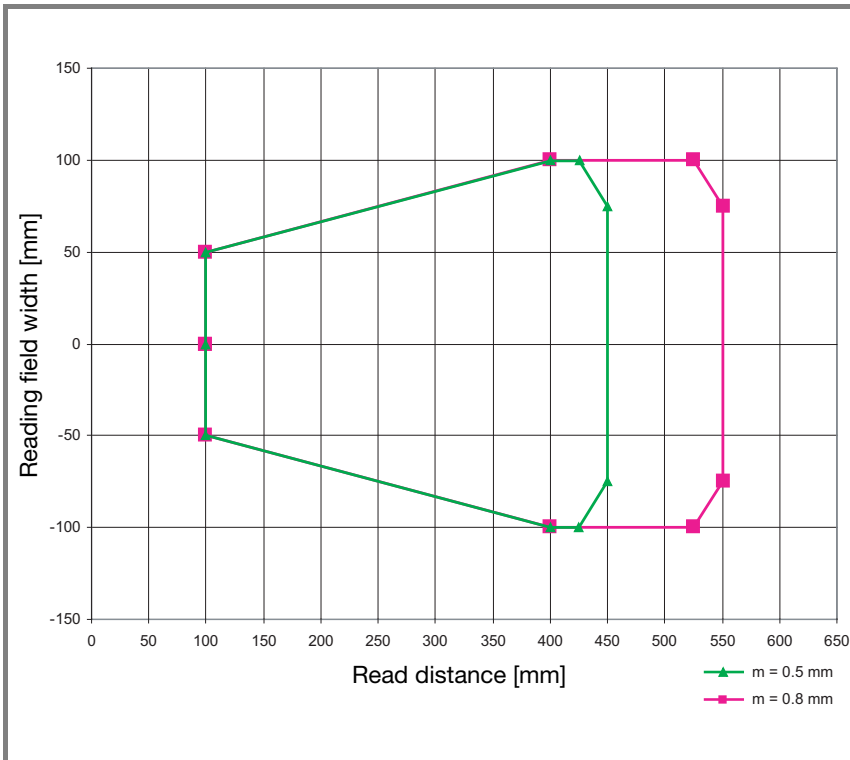
Mobile barcode identification

2D-code identification

RF identification

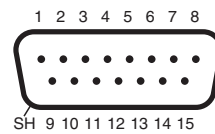
Reading curves

BCL 3x ..., J-optics, with heating



Electrical connection

Sub-D connector - male



BCL 31 ...

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

BCL 32 ...

PIN	Signal
1	RS 232 GND
2	SWIN1
3	RS 232 CTS
4	RS 232 RTS
5	Daisy Chain
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

BCL 34 ... / MS 34 ...

See electrical connection of BPS 34 ... with MS 34 ... on page 307.

Industrial image processing

Distance meas. Positioning

Optical data transmission

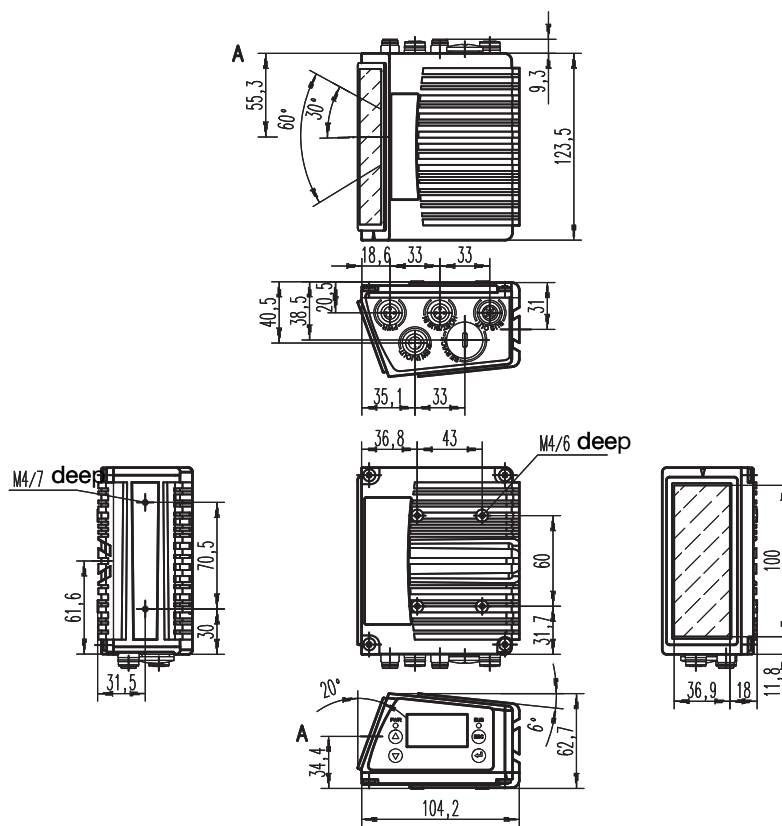
Networking Connector units

Accessories

Services

OVERVIEW

Dimensioned drawing



A Optical axis

We reserve the right to make changes • BCL50x_S_102 Overview_EN.fm



BCL 8
Page 18



BCL 2x
Page 24



BCL 3x
Page 50



BCL 50x
Page 68



MSPi
Page 98







BCL 90
Page 102



MSP
Page 114

STATIONARY BARCODE READERS BCL 50xi

Stationary barcode identification

Barcode reader Series 500i	Module size	Page
 with N-optics	0.25 0.5 mm	70
 with M-optics	0.35 1.0 mm	72
 with F-optics	0.5 1.0 mm	74
 with L-optics	0.7 1.0 mm	76



Mobile barcode identification

2D-code identification

RF identification

Common technical data

Electrical data	Operating voltage U_B	w/o heating: 10 ... 30VDC w. heating: 24VDC $\pm 20\%$
	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, 3964(R) RK512, TCP/IP, UDP, PROFIBUS DP, PROFINET RT
	Code types	all common barcodes
	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 aluminium / 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



Industrial image processing

Distance meas. Positioning










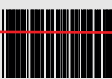
Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READERS

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode 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

We reserve the right to make changes • BCL50x_SN_102_1_EN.fm



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 5xxi on page 97.

Accessories / connection cables

More accessories can be found from page 403 onwards



An extensive range of accessories for the BCL 5xxi stationary barcode readers can be found on page 96.

						
BCL 8 Page 18	BCL 2x Page 24	BCL 3x Page 50	BCL 50x Page 68	MSPi Page 98	BCL 90 Page 102	MSP Page 114

BCL 50xi ...
N-optics, Single-Line



Stationary barcode identification

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 $m = 0.25 \dots 0.5 \text{ mm}$
- 'I' - integrated fieldbus connectivity
- Stand-alone operation possible
- multiNet master (...500i), multiNet slave (...501i), PROFIBUS DP (...504i), Ethernet (...508i) and PROFINET RT (...548i) device variants
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting and fastening



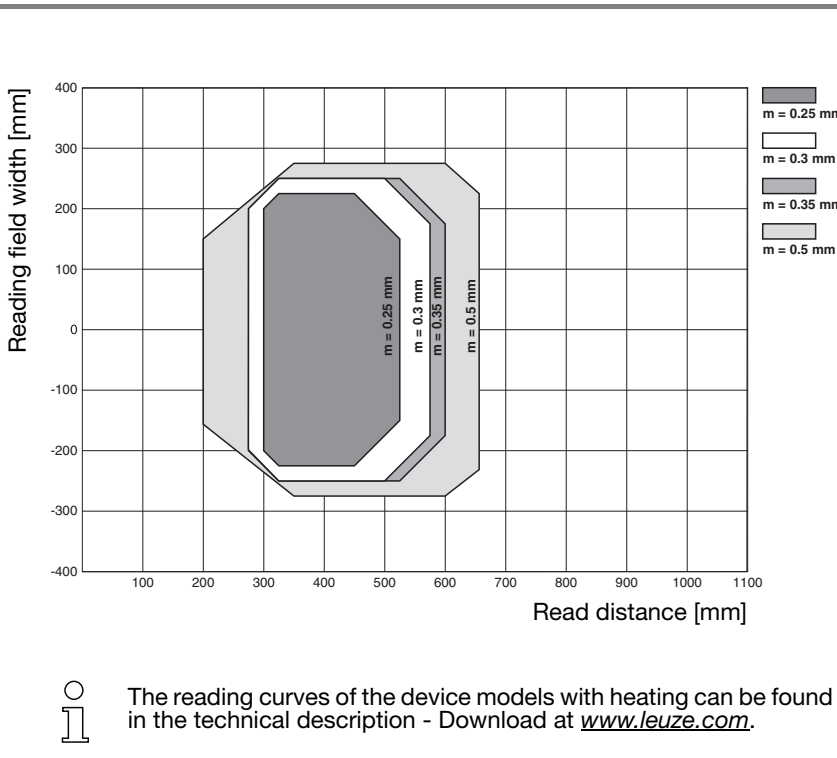
Mobile barcode identification

2D-code identification

RF identification

Reading curves

BCL 50xi S N 102 with N-optics, without heating



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.			Signal
		PIN	500/ RS232/422
		1	CTS/RX+
		2	TxD/TX-
		3	GND_H
		4	RTS/TX+
		5	RxD/RX-
			501/ RS485
		res.	RS485 B
		res.	GND 485
		res.	RS485 A
		res.	FE
			504/ PROFIBUS
		res.	A (N)
		res.	B (P)
		res.	Shield/FE
BUS OUT female, B-cod.			Signal
		PIN	500/ RS485
		1	V CC485
		2	RS485 B
		3	GND 485
		4	RS485 A
		5	FE
			501/ RS485
			V CC485
			RS485 B
			GND 485
			RS485 A
			FE
			504/ PROFIBUS
			VCC
			A (N)
			GND
			B (P)
			Shield/FE
HOST/BUS IN female, D-cod.			Signal
			508i / 548i RS485
		PIN	
		1	TD+
		2	RD+
		3	TD-
		4	RD-
		SH	Shield
BUS OUT female, D-cod.			Signal
			508i / 548i RS485
		PIN	
		1	TD+
		2	RD+
		3	TD-
		4	RD-
		SH	Shield

Industrial image processing











Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

BARCODE READERS

Part description Part No.	Description		Op. range [mm]	Scan rate [scans/s]	Interface
Barcode 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

We reserve the right to make changes • BCL50x_SM_102_1_EN.fm



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 5xxi on page 97.

Accessories / connection cables

More accessories can be found from page 403 onwards



An extensive range of accessories for the BCL 5xxi stationary barcode readers can be found on page 96.

						
BCL 8 Page 18	BCL 2x Page 24	BCL 3x Page 50	BCL 50x Page 68	MSPi Page 98	BCL 90 Page 102	MSP Page 114

BCL 50xi ...
M-optics, Single-Line



Stationary barcode identification

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 $m = 0.35 \dots 1.0\text{mm}$
- 'i' - integrated fieldbus connectivity
- Stand-alone operation possible
- multiNet master (...500i), multiNet slave (...501i), PROFIBUS DP (...504i), Ethernet (...508i) and PROFINET RT (...548i) device variants
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting and fastening



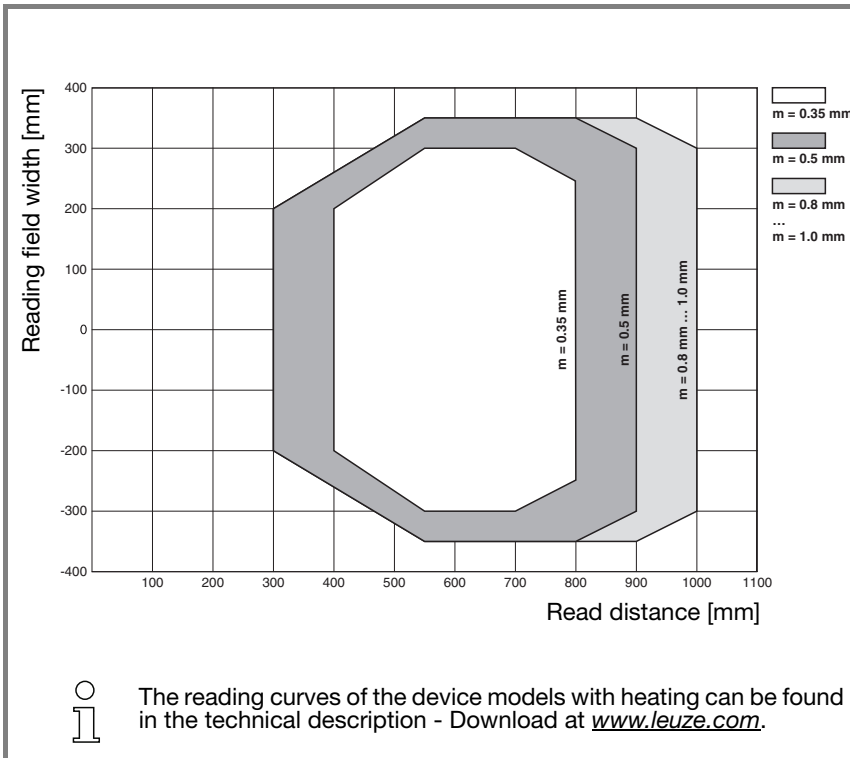
Mobile barcode identification

2D-code identification

RF identification

Reading curves

BCL 50xi S M 102 with M-optics



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		
	500i RS232/422	501i RS485	504i 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		
	500i RS485	501i RS485	504i 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.



PIN	Signal	
	BUS OUT female, D-cod.	508i / 548i RS485
1	TD+	
2	RD+	
3	TD-	
4	RD-	
SH	Shield	

Industrial image processing

Distance meas. Positioning










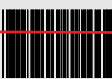
Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READERS

Part description Part No.	Description		Op. range [mm]	Scan rate [scans/s]	Interface
Barcode 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

We reserve the right to make changes • BCL50x_SF_102_1_EN.fm



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 5xxi on page 97.

Accessories / connection cables

More accessories can be found from page 403 onwards



An extensive range of accessories for the BCL 5xxi stationary barcode readers can be found on page 96.

						
BCL 8 Page 18	BCL 2x Page 24	BCL 3x Page 50	BCL 50x Page 68	MSPi Page 98	BCL 90 Page 102	MSP Page 114

BCL 50xi ...
F-optics, Single-Line



Stationary barcode identification

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 $m = 0.5 \dots 1.0\text{mm}$
- 'i' - integrated fieldbus connectivity
- Stand-alone operation possible
- multiNet master (...500i), multiNet slave (...501i), PROFIBUS DP (...504i), Ethernet (...508i) and PROFINET RT (...548i) device variants
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting and fastening



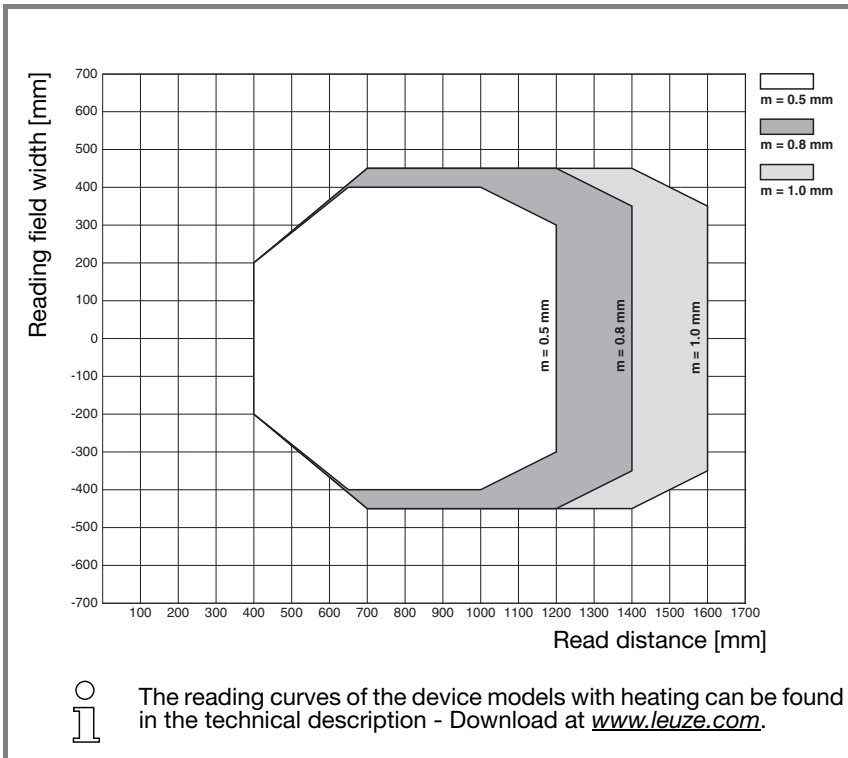
Mobile barcode identification

2D-code identification

RF identification

Reading curves

BCL 50xi S F 102 with F-optics



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

BUS OUT female, B-cod.



PIN	500i	Signal	501i	504i
	RS485		RS485	PROFIBUS
1	VCC485	VCC485	VCC485	VCC
2	RS485 B	RS485 B	RS485 B	A (N)
3	GND 485	GND 485	GND 485	GND
4	RS485 A	RS485 A	RS485 A	B (P)
5	FE	FE	FE	Shield/FE

HOST/BUS IN female, D-cod.



PIN	BUS OUT female, D-cod.	Signal
		508i / 548i RS485
1		TD+
2		RD+
3		TD-
4		RD-
SH		Shield

Industrial image processing

Distance meas. Positioning











Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READERS

Part description Part No.	Description		Op. range [mm]	Scan rate [scans/s]	Interface
Barcode 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

We reserve the right to make changes • BCL50x_SL_102_1_EN.fm



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 5xxi on page 97.

Accessories / connection cables

More accessories can be found from page 403 onwards



An extensive range of accessories for the BCL 5xxi stationary barcode readers can be found on page 96.

						
BCL 8 Page 18	BCL 2x Page 24	BCL 3x Page 50	BCL 50x Page 68	MSPi Page 98	BCL 90 Page 102	MSP Page 114

BCL 50xi ...
L-optics, Single-Line



Stationary barcode identification

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 $m = 0.7 \dots 1.0\text{mm}$
- 'i' - integrated fieldbus connectivity
- Stand-alone operation possible
- multiNet master (...500i), multiNet slave (...501i), PROFIBUS DP (...504i), Ethernet (...508i) and PROFINET RT (...548i) device variants
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting and fastening



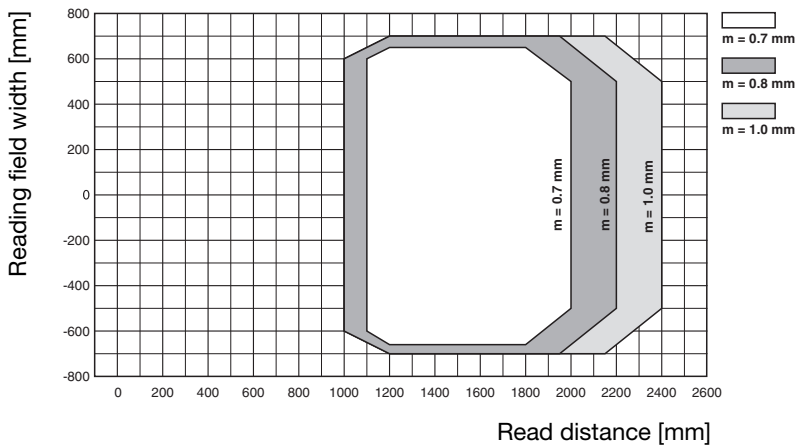
Mobile barcode identification

2D-code identification

RF identification

Reading curves

BCL 50xi 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.



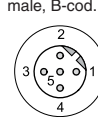
PIN	Signal
1	VOUT
2	SWIO_1
3	GND
4	SWIO_2
5	FE

SERVICE - USB Standard A



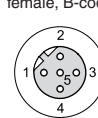
PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

HOST/BUS IN - male, B-cod.



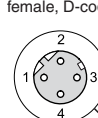
PIN	Signal		
	500i RS232/422	501i RS485	504i PROFIBUS
1	CTS/RX+	res.	res.
2	TxD/TX-	RS485 B	A (N)
3	GND_H	GND 485	res.
4	RTS/TX+	RS485 A	B (P)
5	RxD/RX-	FE	Shield/FE

BUS OUT female, B-cod.



PIN	Signal		
	500i RS485	501i RS485	504i 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.



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

Industrial image processing

Distance meas. Positioning

Optical data transmission

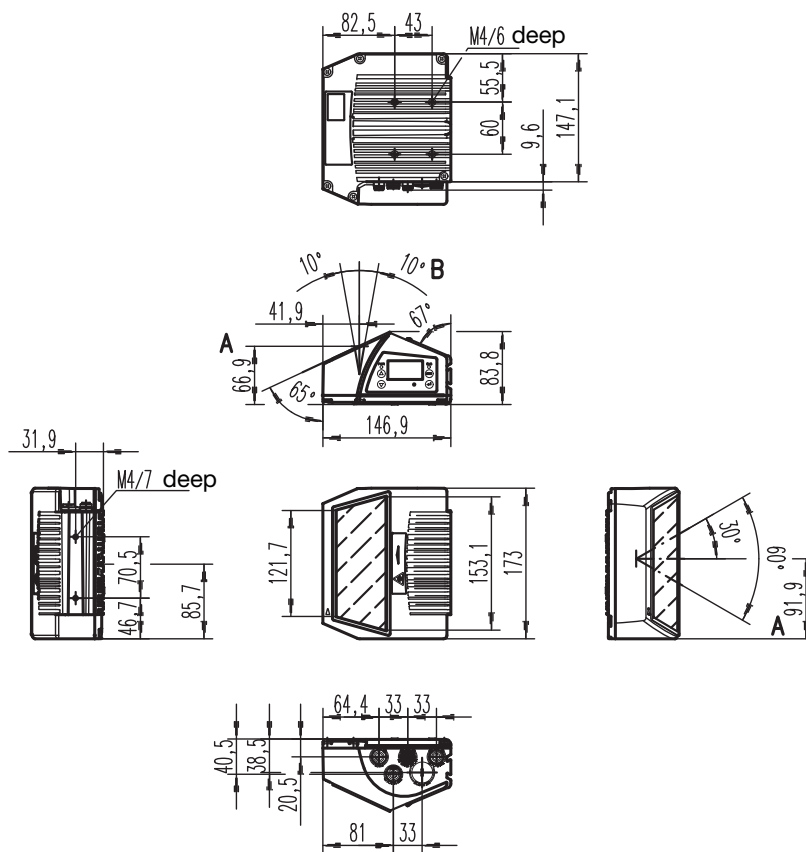
Networking Connector units

Accessories

Services

OVERVIEW

Dimensioned drawing









A Optical axis
B Optical swivel range

We reserve the right to make changes • BCL50x_S_100 Overview_EN.fm

						
BCL 8 Page 18	BCL 2x Page 24	BCL 3x Page 50	BCL 50x Page 68	MSPi Page 98	BCL 90 Page 102	MSP Page 114

STATIONARY BARCODE READERS BCL 50xi

Barcode reader Series 500i	Module size	Page
 with N-optics	 mm	80
 with M-optics	 mm	82
 with F-optics	 mm	84



Common technical data

Electrical data	Operating voltage U_B	w/o heating: 10 ... 30VDC w. heating: 24VDC $\pm 20\%$
	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, 3964(R) RK512, TCP/IP, UDP, PROFIBUS DP, PROFINET RT
	Code types	all common barcodes
	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 aluminium / 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: $\pm 10^\circ$, 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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning










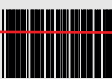
Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READERS

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode 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

We reserve the right to make changes • BCL50x_SN_100_1_EN.fm



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 5xxi on page 97.

Accessories / connection cables

More accessories can be found from page 403 onwards



An extensive range of accessories for the BCL 5xxi stationary barcode readers can be found on page 96.

						
BCL 8 Page 18	BCL 2x Page 24	BCL 3x Page 50	BCL 50x Page 68	MSPi Page 98	BCL 90 Page 102	MSP Page 114

BCL 50xi ...
N-optics, Deflect. Mirror



Stationary barcode identification

Features

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



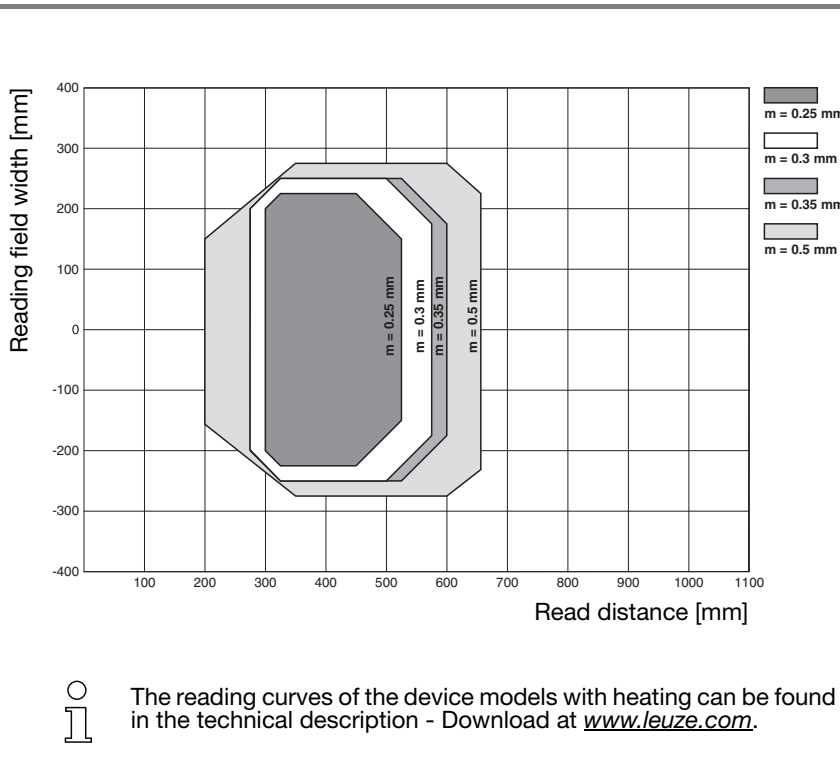
Mobile barcode identification

2D-code identification

RF identification

Reading curves

BCL 50xi S N 100 with N-optics



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
			500i / RS232/422
		1	CTS/RX+
		2	TxD/TX-
		3	GND_H
		4	RTS/TX+
		5	RxD/RX-
			501i / RS485
		res.	RS485 B
		GND	485
		res.	RS485 A
		FE	FE
			504i / PROFIBUS
		res.	A (N)
		res.	B (P)
		Shield/FE	Shield/FE
BUS OUT female, B-cod.		PIN	Signal
			500i / RS485
		1	VCC485
		2	RS485 B
		3	GND 485
		4	RS485 A
		5	FE
			501i / RS485
		VCC485	VCC485
		RS485 B	RS485 B
		GND 485	GND 485
		RS485 A	RS485 A
		FE	FE
			504i / PROFIBUS
		VCC	VCC
		A (N)	A (N)
		GND	GND
		B (P)	B (P)
		Shield/FE	Shield/FE
HOST/BUS IN female, D-cod.		PIN	Signal
			508i / 548i / RS485
		1	TD+
		2	RD+
		3	TD-
		4	RD-
		SH	Shield
BUS OUT female, D-cod.		PIN	Signal
			508i / 548i / RS485
		1	TD+
		2	RD+
		3	TD-
		4	RD-
		SH	Shield

Industrial image processing


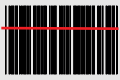








Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

BARCODE READERS

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode 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

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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 5xxi on page 97.

Accessories / connection cables










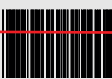
More accessories can be found from page 403 onwards



An extensive range of accessories for the BCL 5xxi stationary barcode readers can be found on page 96.

						
BCL 8 Page 18	BCL 2x Page 24	BCL 3x Page 50	BCL 50x Page 68	MSPi Page 98	BCL 90 Page 102	MSP Page 114

BARCODE READERS

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode 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

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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 5xxi on page 97.

Accessories / connection cables

More accessories can be found from page 403 onwards



An extensive range of accessories for the BCL 5xxi stationary barcode readers can be found on page 96.

						
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BCL 50xi ...
F-optics, Deflect. Mirror



Stationary barcode identification

Features

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



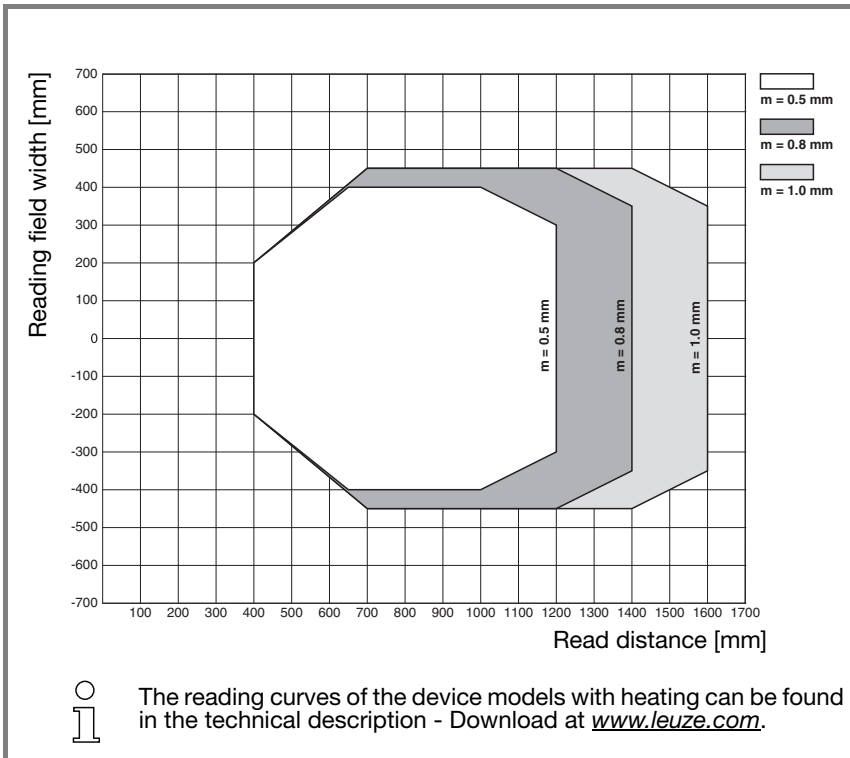
Mobile barcode identification

2D-code identification

RF identification

Reading curves

BCL 50xi S F 100 with F-optics



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		
	500i RS232/422	501i RS485	504i 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		
	500i RS485	501i RS485	504i PROFIBUS
1	VCC485	VCC485	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.



PIN	Signal	
	BUS OUT female, D-cod.	508i / 548i RS485
1	TD+	
2	RD+	
3	TD-	
4	RD-	
SH	Shield	

Industrial image processing

Distance meas. Positioning

Optical data transmission

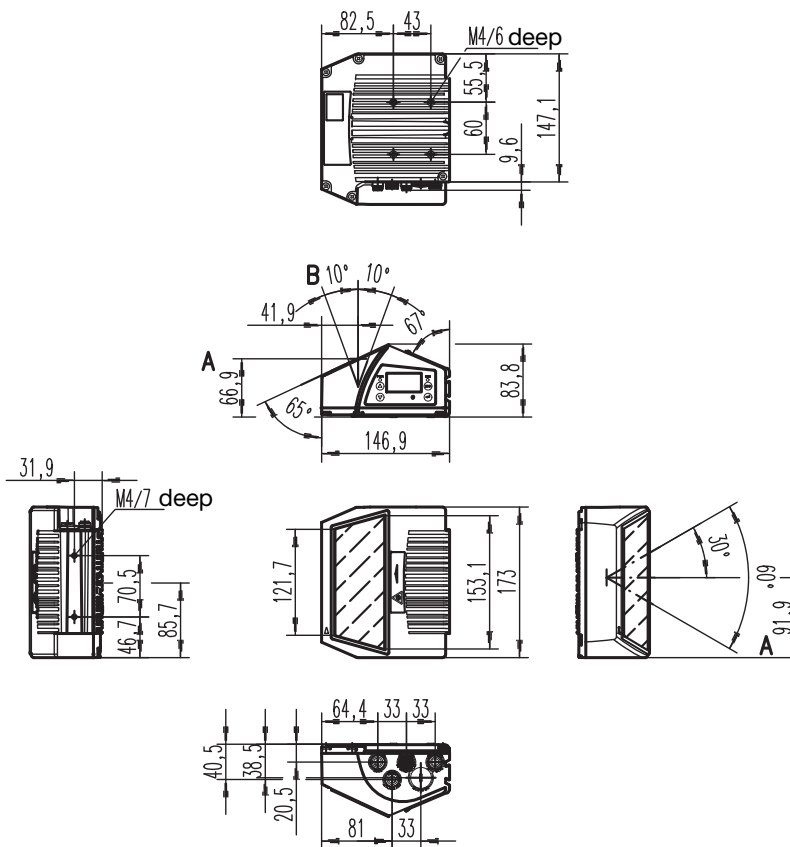
Networking Connector units

Accessories

Services

OVERVIEW

Dimensioned drawing







A Optical axis
B Optical swivel range

We reserve the right to make changes • BCL50x_O_100 Overview_EN.fm

						
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STATIONARY BARCODE READERS BCL 50xi

Stationary barcode identification

Barcode reader Series 500i	Module size	Page
 with N-optics	0.25 0.5 mm	88
 with M-optics	0.35 1.0 mm	90
 with F-optics	0.5 1.0 mm	92
 with L-optics	0.7 1.0 mm	94



Mobile barcode identification

2D-code identification

RF identification

Common technical data

Electrical data	Operating voltage U_B	w/o heating: 10 ... 30VDC w. heating: 24VDC \pm 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, 3964(R) RK512, TCP/IP, UDP, PROFIBUS DP, PROFINET RT
	Code types	all common barcodes
	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 aluminium / 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
- Swivelling 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



Industrial image processing

Distance meas. Positioning

Optical data transmission

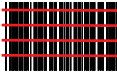
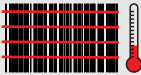

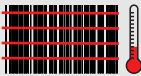

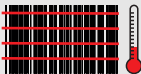




Networking Connector units

Accessories

Services

www.leuze.com/barcodereaders/

BARCODE READERS

Part description Part No.	Description		Op. range [mm]	Scan rate [scans/s]	Interface
Barcode 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

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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 5xxi on page 97.

Accessories / connection cables

More accessories can be found from page 403 onwards



An extensive range of accessories for the BCL 5xxi stationary barcode readers can be found on page 96.

						
BCL 8 Page 18	BCL 2x Page 24	BCL 3x Page 50	BCL 50x Page 68	MSPi Page 98	BCL 90 Page 102	MSP Page 114

BCL 50xi ...
N-optics, Oscill. Mirror



Stationary barcode identification

Features

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



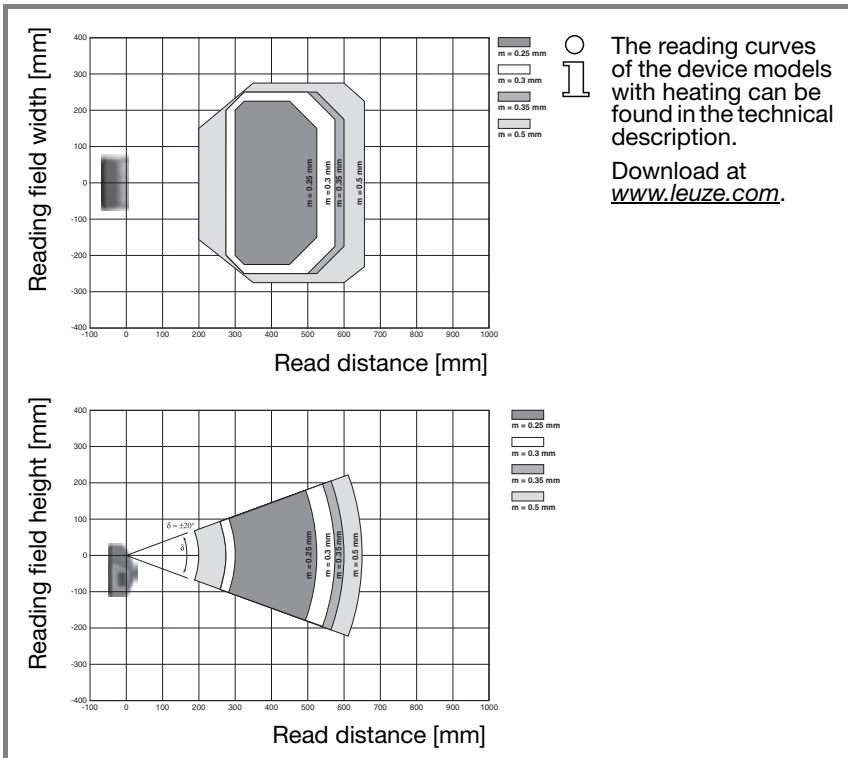
Mobile barcode identification

2D-code identification

RF identification

Reading curves

BCL 50xi O N 100 with N-optics



Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

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		
	500i RS232/422	501i RS485	504i 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.



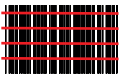
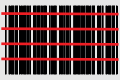
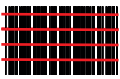
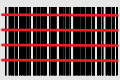
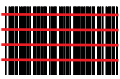
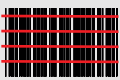
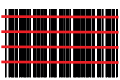
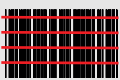


PIN	Signal		
	500i RS485	501i RS485	504i PROFIBUS
1	V CC485	V CC485	VCC
2	RS485 B	RS485 B	A (N)
3	GND 485	GND 485	GND
4	RS485 A	RS485 A	B (P)
5	FE	FE	Shield/FE

HOST/BUS IN female, D-cod.



PIN	Signal	
	BUS OUT female, D-cod.	508i / 548i RS485
1	TD+	
2	RD+	
3	TD-	
4	RD-	
SH	Shield	

BARCODE READERS

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode 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

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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 5xxi on page 97.

Accessories / connection cables

More accessories can be found from page 403 onwards



An extensive range of accessories for the BCL 5xxi stationary barcode readers can be found on page 96.

						
BCL 8 Page 18	BCL 2x Page 24	BCL 3x Page 50	BCL 50x Page 68	MSPi Page 98	BCL 90 Page 102	MSP Page 114

BCL 50xi ...
M-optics, Oscill. Mirror



Stationary barcode identification

Features

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



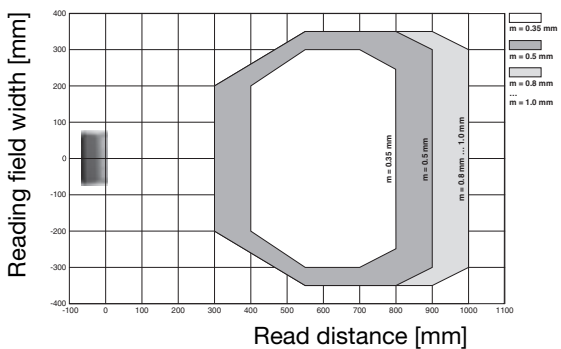
Mobile barcode identification

2D-code identification

RF identification

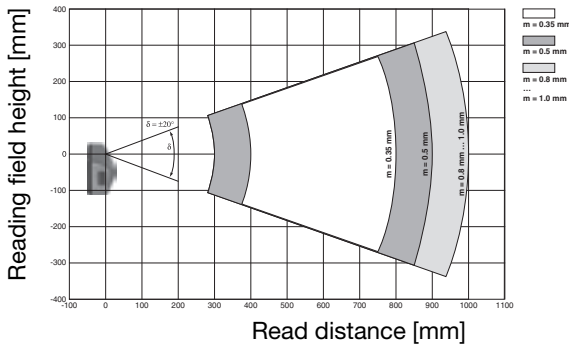
Reading curves

BCL 50xi O M 100 with M-optics



i 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		
	500i RS232/422	501i RS485	504i 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		
	500i RS485	501i RS485	504i 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.



PIN	Signal	
	BUS OUT female, D-cod.	508i / 548i RS485
1	TD+	
2	RD+	
3	TD-	
4	RD-	
SH	Shield	

Industrial image processing

Distance meas. Positioning

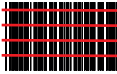
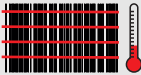

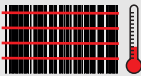

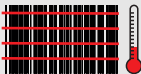




Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READERS

Part description Part No.	Description		Op. range [mm]	Scan rate [scans/s]	Interface	
Barcode 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	

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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 5xxi on page 97.

Accessories / connection cables

More accessories can be found from page 403 onwards



An extensive range of accessories for the BCL 5xxi stationary barcode readers can be found on page 96.

						
BCL 8 Page 18	BCL 2x Page 24	BCL 3x Page 50	BCL 50x Page 68	MSPi Page 98	BCL 90 Page 102	MSP Page 114

BCL 50xi ...
F-optics, Oscill. Mirror



Stationary barcode identification

Features

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



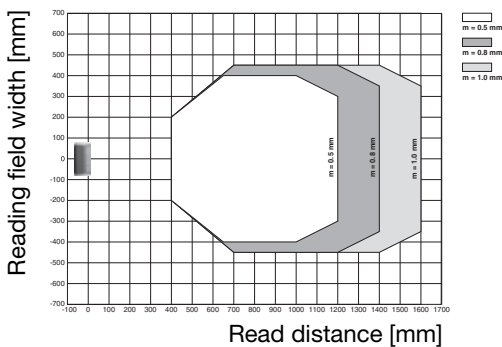
Mobile barcode identification

2D-code identification

RF identification

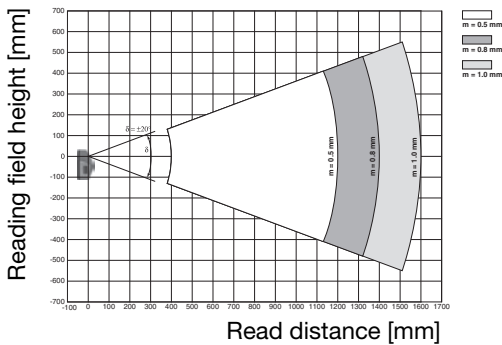
Reading curves

BCL 50xi O F 100 with F-optics



i 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		
	500i RS232/422	501i RS485	504i 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		
	500i RS485	501i RS485	504i 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.



PIN	Signal	
	BUS OUT female, D-cod.	508i / 548i RS485
1		TD+
2		RD+
3		TD-
4		RD-
SH		Shield

Industrial image processing

Distance meas. Positioning

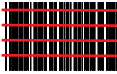
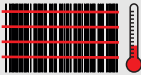

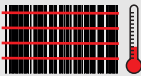

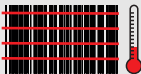




Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READERS

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode 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

We reserve the right to make changes • BCL50x_OL_100_1_EN.fm



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 5xxi on page 97.

Accessories / connection cables

More accessories can be found from page 403 onwards



An extensive range of accessories for the BCL 5xxi stationary barcode readers can be found on page 96.

						
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BARCODE READERS - ACCESSORIES

Accessories / connection cables

More accessories can be found from **page 403** onwards

Part No.	Designation	Features
50107726	KB USB - Service	USB service cable
50108833	USB Memory Set	External USB parameter memory
50038539	TS 02-4-SA	M12 connector, integrated PROFIBUS terminating resistor
see P. 417	KB PB - ...	PROFIBUS connection cables, see page 417
see P. 412	KB ET - ...	Ethernet-/PROFINET connection cables, see page 412
see P. 425	KD 02 - 5 ...	M12 connector for connection of the BCL 50 <i>x</i>
50020501	KD 095 - 5 - A	M12 connector for supply voltage
50027375	BT 56	Mounting device for BCL 50 <i>x</i>
50111224	BT 59	Mounting device for BCL 50 <i>x</i>



BCL 8
Page 18



BCL 2x
Page 24



BCL 3x
Page 50



BCL 50x
Page 68



MSPi
Page 98



BCL 90
Page 102



MSP
Page 114

BCL 50xi ...

Accessories/part no. code



Stationary barcode identification

Barcode reader

B C L 5 0 0 i S N 1 0 0 H

Type

BCL Barcode reader

Interface (integrated fieldbus technology)

500i RS 232 / RS 422 / RS 485 (multiNet master)

501i RS 485 (multiNet slave)

504i PROFIBUS DP

508i Ethernet TCP/IP, UDP

548i 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



Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

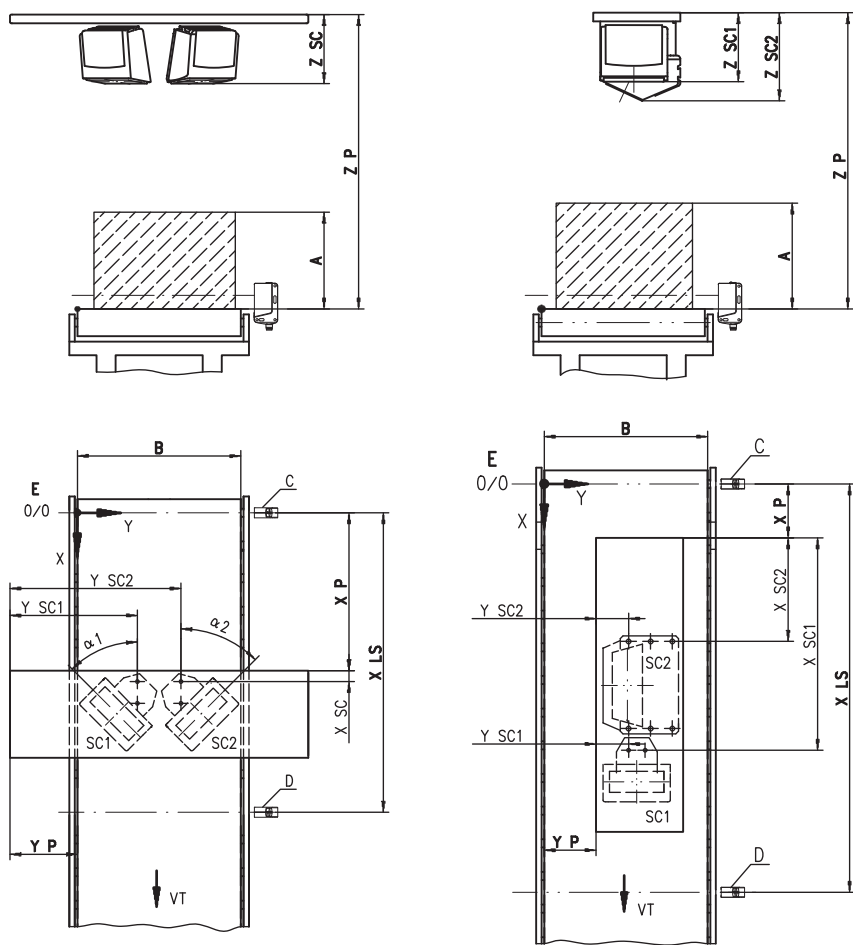
Accessories

Services

www.leuze.com/barcodereaders/

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

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MODULAR SCANNER PORTALS – MSPi SYSTEMS

Stationary barcode identification

Modular Scanner Portals	Module size	Page
 MSPi ...	0.25  1.0 mm ¹⁾	100

1) Dependent on the used devices



Mobile barcode identification

2D-code identification

RF identification

Common technical data

Electrical data	Operating voltage U_B	w/o heating: 10 ... 30VDC w. heating: 24VDC $\pm 20\%$
	Power consumption (depend. 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, 3964(R) RK512, TCP/ IP, UDP, PROFINET RT
	Code types	all common barcodes
	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 500i/BCL 501i**
- **Code fragment technology**
- **Series BCL 500i barcode 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**



Industrial image processing

Distance meas. Positioning









Optical data transmission

Networking Connector units

Accessories

Services

MODULAR SCANNER PORTALS – MSPi 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 barcode read system (2x BCL 500i S N 102) ¹⁾		760	800 ... 1200	RS 232 RS 422/485
MSP 290i - 511 N 00 50112417	Omnidirectional barcode 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 barcode read system (2x BCL 500i S M 102) ¹⁾		1090	800 ... 1200	RS 232 RS 422/485
MSP 290i - 511 M 00 50112416	Omnidirectional barcode 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 barcode read system (2x BCL 500i S F 102) ¹⁾		1320	800 ... 1200	RS 232 RS 422/485
MSP 290i - 511 F 00 50111412	Omnidirectional barcode 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 barcode read system (2x BCL 500i S L 102) ¹⁾		2190	800 ... 1200	RS 232 RS 422/485
MSP 290i - 511 L 00 50112415	Omnidirectional barcode 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 (MSPi systems) available on request!

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MSPi ...
Modular Scanner Portals



Stationary barcode identification

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 (...500i) and multiNet slave (...501i) device models
- M12 Connection technology
- Parameters are stored fail-safe
- Easy mounting and fastening
- Display



Mobile barcode identification

2D-code identification

RF identification

Reading curves

MSPi systems.



The reading curves of the scanner portal systems are dependent on the given application. Our product specialists will be happy to advise you!

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	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	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

Industrial image processing

Distance meas. Positioning







Optical data transmission

Networking Connector units

Accessories

Services

STATIONARY BARCODE READERS BCL 90

Barcode reader Series 90	Module size	Page
 with N-optics	 mm	104
 with M-optics	 mm	106
 with F-optics	 mm	108



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 aluminium / 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 404 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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning


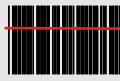
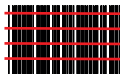
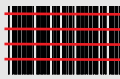
Optical data transmission

Networking Connector units

Accessories

Services

BARCODE READER WITH RS 232/422/485 INTERFACE

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode 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 404** 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. 390	MA 31 ...	Connector unit, multiNet master, parameter memory, various interfaces
see P. 394	MA 2xxi	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.



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

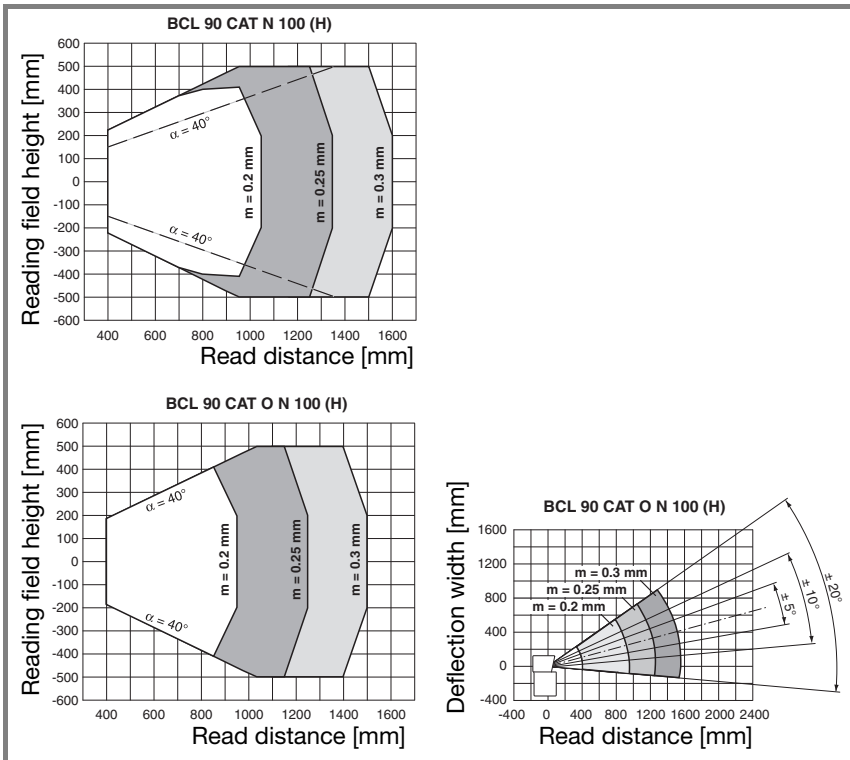
Features

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



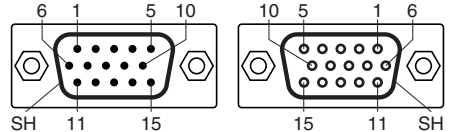
Reading curves

BCL 90 with N-optics





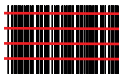
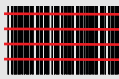
Electrical connection

Host/Term: Sub-HD connector - male
I/O: Sub-HD connector - female



PIN	Signal	PIN	Signal
1	Vs	1	Vs
2	RXD Service	2	SE 3
3	TXD Service	3	SE 1
4	Term	4	SWO 1
5	GND	5	GND
6	RD+ Host	6	SE 2
7	RD-/RXD Host	7	SE 4
8	TD+ Host	8	SWO 2
9	TD-/TXD Host	9	IN GND
10	CAN H	10	SWO 3
11	Bus RT_485-	11	SE 5
12	Bus RT_485+	12	SE 6
13	Bus R_485-	13	IC2 SDA
14	Bus R_485+	14	IC2 SCL
15	CAN L	15	SWO 4
SH	Shield	SH	Shield

BARCODE READER WITH RS 232/422/485 INTERFACE

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode 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 404** 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. 390	MA 31 ...	Connector unit, multiNet master, parameter memory, various interfaces
see P. 394	MA 2xxi	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.



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

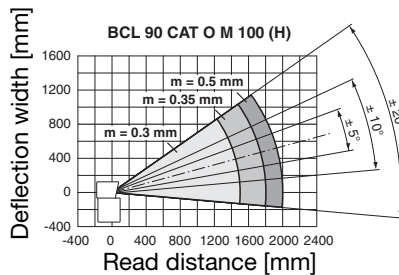
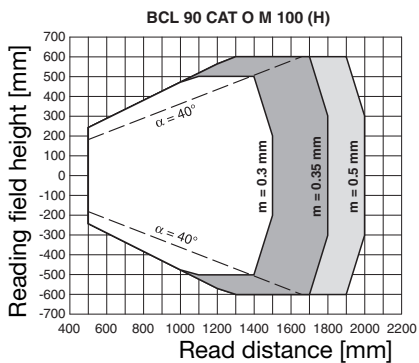
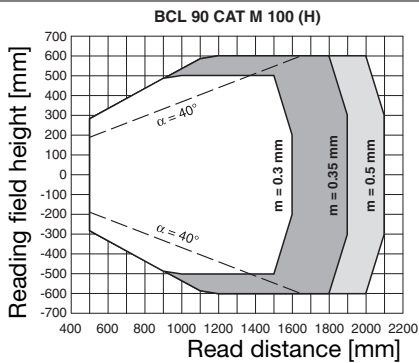
Features

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



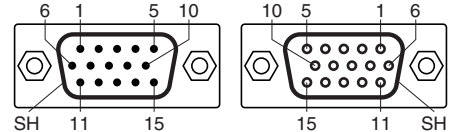
Reading curves

BCL 90 with M-optics







Electrical connection

Host/Term: Sub-HD connector - male
I/O: Sub-HD connector - female



PIN	Signal	PIN	Signal
1	Vs	1	Vs
2	RXD Service	2	SE 3
3	TXD Service	3	SE 1
4	Term	4	SWO 1
5	GND	5	GND
6	RD+ Host	6	SE 2
7	RD-/RXD Host	7	SE 4
8	TD+ Host	8	SWO 2
9	TD-/TXD Host	9	IN GND
10	CAN H	10	SWO 3
11	Bus RT_485-	11	SE 5
12	Bus RT_485+	12	SE 6
13	Bus R_485-	13	IC2 SDA
14	Bus R_485+	14	IC2 SCL
15	CAN L	15	SWO 4
SH	Shield	SH	Shield

BARCODE READER WITH RS 232/422/485 INTERFACE

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode 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 404** 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. 390	MA 31 ...	Connector unit, multiNet master, parameter memory, various interfaces
see P. 394	MA 2xxi	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

We reserve the right to make changes • BCL90_3_EN.fm

						
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BCL 90

F-optics, Single/Osc. m.



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

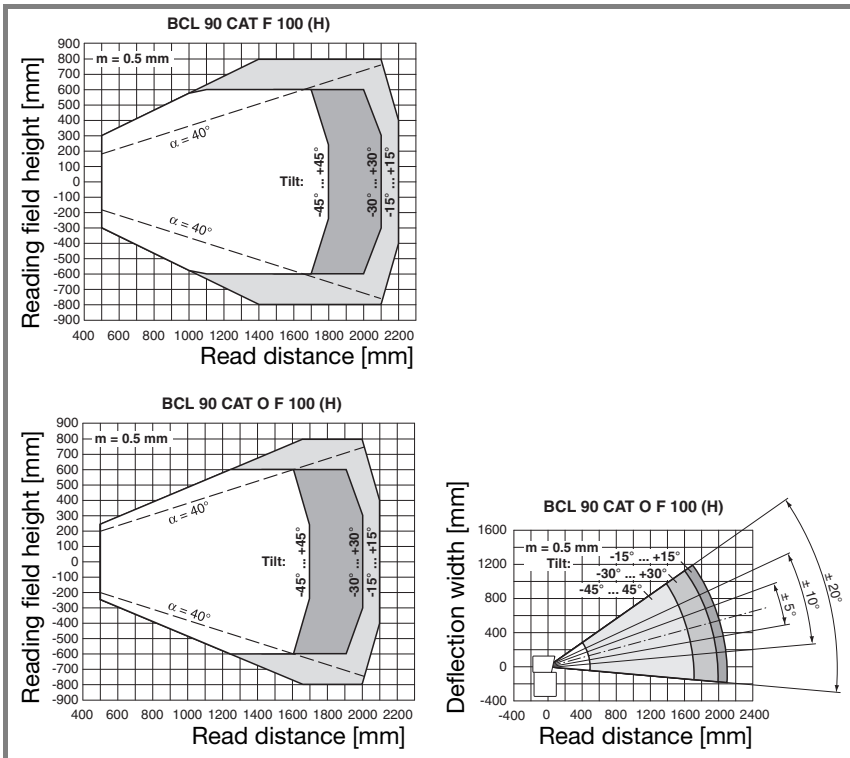
Features

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



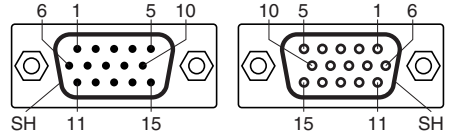
Reading curves

BCL 90 with F-optics



Electrical connection

Host/Term: Sub-HD connector - male
 I/O: Sub-HD connector - female

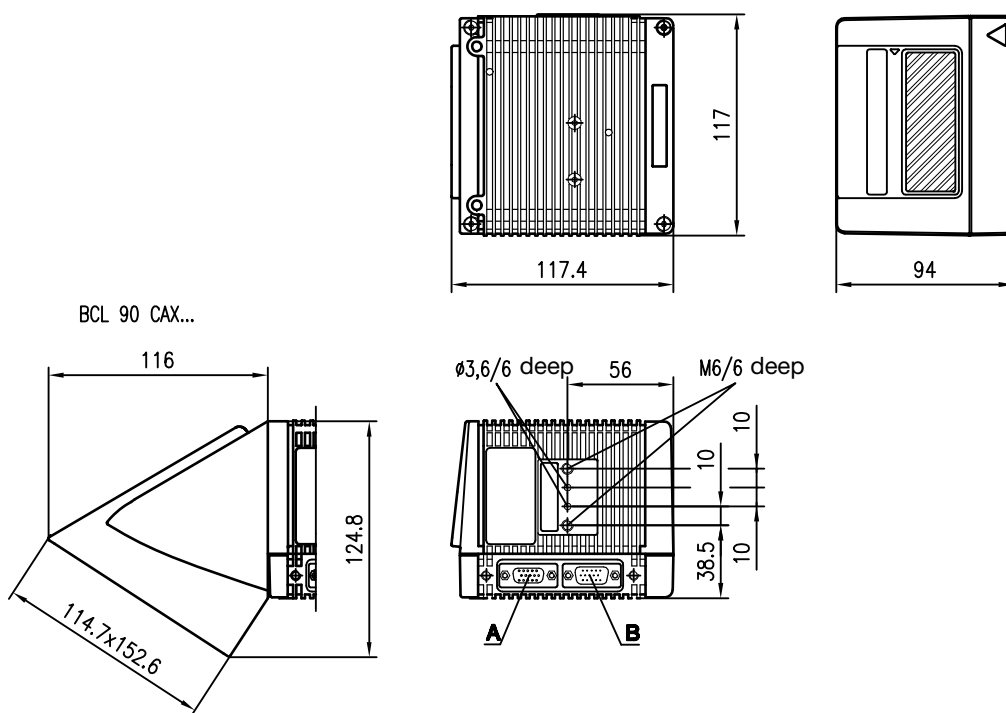


PIN	Signal	PIN	Signal
1	Vs	1	Vs
2	RXD Service	2	SE 3
3	TXD Service	3	SE 1
4	Term	4	SWO 1
5	GND	5	GND
6	RD+ Host	6	SE 2
7	RD-/RXD Host	7	SE 4
8	TD+ Host	8	SWO 2
9	TD-/TXD Host	9	IN GND
10	CAN H	10	SWO 3
11	Bus RT_485-	11	SE 5
12	Bus RT_485+	12	SE 6
13	Bus R_485-	13	IC2 SDA
14	Bus R_485+	14	IC2 SCL
15	CAN L	15	SWO 4
SH	Shield	SH	Shield

www.leuze.com/barcodereaders/

OVERVIEW

Dimensioned drawing



- A** Socket I/O
- B** HOST/TERM connector

We reserve the right to make changes • BCL90CAX_Overview_EN.fm



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Page 114

OMNIDIRECTIONAL BARCODE READER BCL 90

Stationary
barcode
identification

Barcode reader Series 90	Module size	Page
 BCL 90 CAX	 mm	112



Mobile
barcode
identification

2D-code
identification

RF
identification

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 aluminium / 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 404 onwards

Features

- Compact omnidirectional barcode 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



Industrial
image processing

Distance meas.
Positioning



Optical
data transmission

Networking
Connector units

Accessories

Services

BARCODE READER WITH RS 232/422/485 INTERFACE

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Barcode readers with omnidirectional optics				
BCL 90 CAX M 100 50036660	Compact omni-barcode 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-barcode 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 404** 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. 390	MA 31 ...	Connector unit, multiNet master, parameter memory, various interfaces
see P. 394	MA 2xxi	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



Stationary barcode identification

Features

- Code fragment technology
- "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
- Integrated autofocus function in real time
- Operating range up to 1750mm
- M-optics
- For module sizes $m = 0.3 \dots 1.0\text{mm}$

Mobile barcode identification

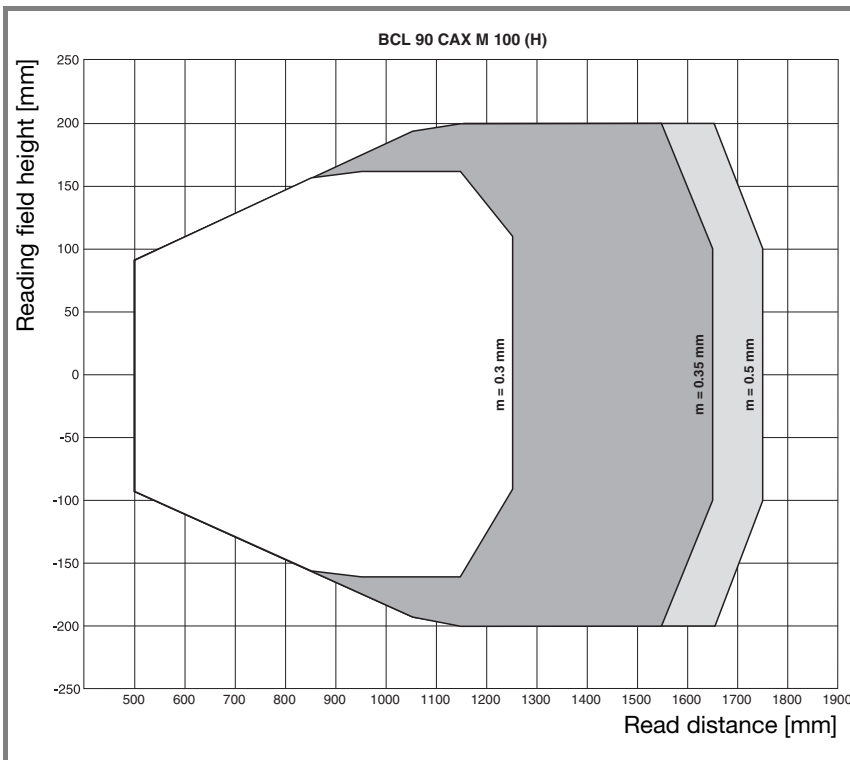
2D-code identification

RF identification



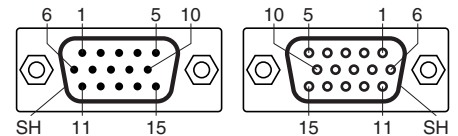
Reading curves

BCL 90 CAX with omnidirectional optics



Electrical connection

Host/Term: Sub-HD connector - male
I/O: Sub-HD connector - female



PIN	Signal	PIN	Signal
1	Vs	1	Vs
2	RXD Service	2	SE 3
3	TXD Service	3	SE 1
4	Term	4	SWO 1
5	GND	5	GND
6	RD+ Host	6	SE 2
7	RD-/RXD Host	7	SE 4
8	TD+ Host	8	SWO 2
9	TD-/TXD Host	9	IN GND
10	CAN H	10	SWO 3
11	Bus RT_485-	11	SE 5
12	Bus RT_485+	12	SE 6
13	Bus R_485-	13	IC2 SDA
14	Bus R_485+	14	IC2 SCL
15	CAN L	15	SWO 4
SH	Shield	SH	Shield

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

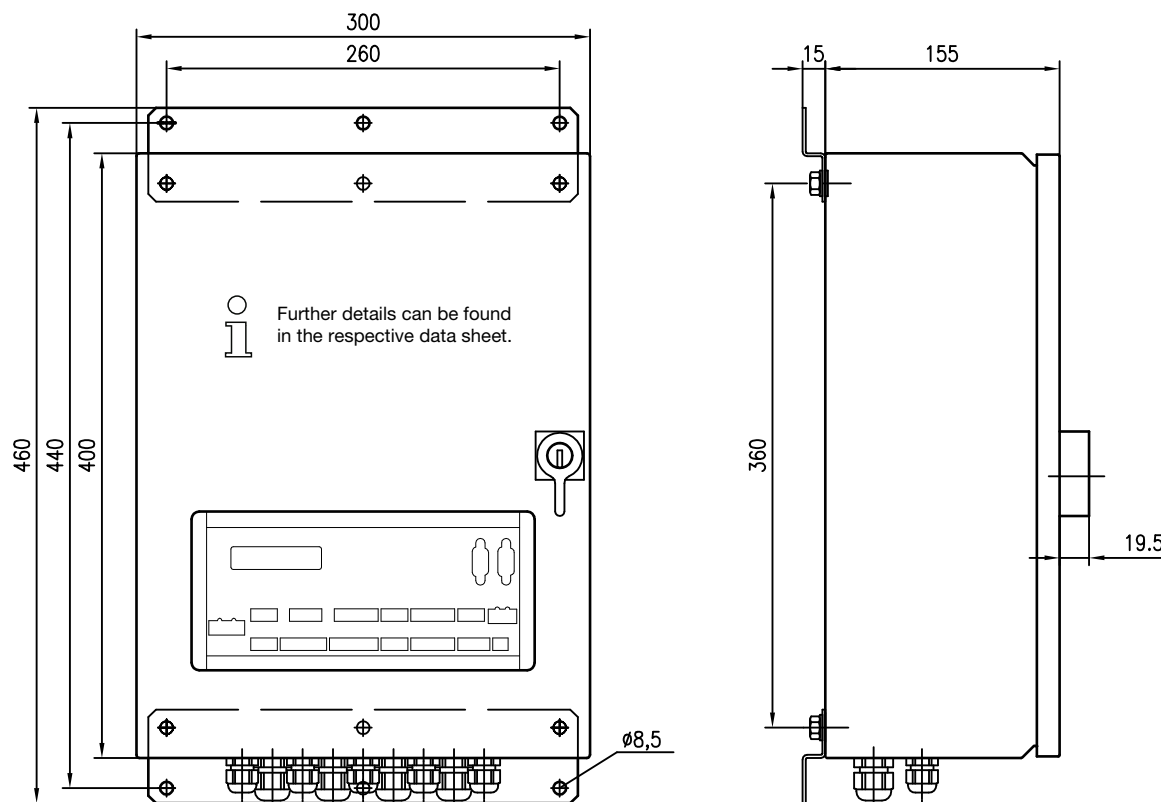
Accessories

Services

OVERVIEW

Dimensioned drawing

MCU 400 control device - for dimensioned drawing of the **BCL 90 ... scanner**, see **page 102**



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Page 114

MODULAR SCANNER PORTALS MSP SYSTEMS

Stationary barcode identification

Modular Scanner Portals	Module size	Page
 MSP ...	0.2 1.2 mm ¹⁾	116

1) Dependent on the used devices



Mobile barcode identification

2D-code identification

RF identification

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 barcode readers	

Features

- **Modular Scanner Portal for integrating up to 24 scanners of type BCL 90**
- **Code fragment technology**
- **Series BCL 90 barcode 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**



Industrial image processing

Distance meas. Positioning





Optical data transmission

Networking Connector units

Accessories

Services

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 barcode read system (2x BCL 90 CAT M 100) ¹⁾	 2100	600 ... 1200	RS 232 RS 422/485
MSP 360 50035518	Omnidirectional barcode read system (3x BCL 90 CAT M 100)	 2100	600 ... 1200	RS 232 RS 422/485
MSP 490 50035519	Omnidirectional barcode read system (4x BCL 90 CAT M 100)	 2100	600 ... 1200	RS 232 RS 422/485
MSP 560 50035520	Omnidirectional barcode 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 404** 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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BCL 90
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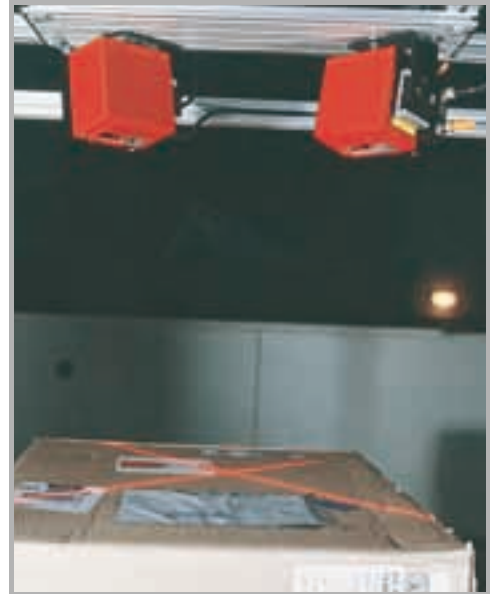
MSP ...
Modular Scanner Portals



Stationary
barcode
identification

Features

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



Mobile
barcode
identification

2D-code
identification

RF
identification

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!

Electrical connection

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

For details, see



Industrial
image processing

Distance meas.
Positioning






Optical
data transmission

Networking
Connector units

Accessories

Services

SELECTION TABLE

Series	Dimensions in mm (WxHxD)	Housing material		Read distance in mm (module dependent)				
		Plastic	Metal	10	50	100	500	2500
 Z-3010	91 x 171 x 63	●		0	20			
 IT 3800g	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	

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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.

MOBILE BARCODE READERS



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

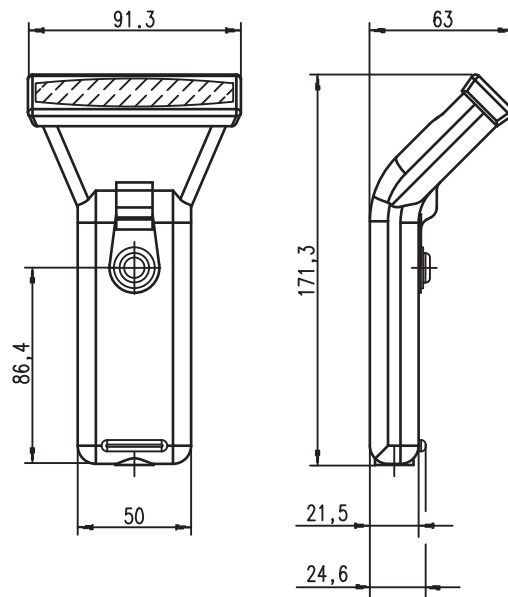
Accessories

Services

	Reading method			Operating voltage				Interfaces G = via Gateway													Page
	Laser	Line imager	Surface imager	5VDC	4.5 ... 12VDC	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	120
		●			●			●	●	●		G	G	G	G	G	G	G	G	G	124
		●				●		●	●	●		G	G	G	G	G	G	G	G	G	128
		●					●	●	●	●	●	G	G	G	G	G	G	G	G	G	132
		●					●	●	●	●	●	G	G	G	G	G	G	G	G	G	136

OVERVIEW


Dimensioned drawing



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MOBILE BARCODE READER Z-3010

Mobile barcode reader	Module size	Page
 Scanning width 80mm	0.127mm	122



Common technical data		
Electrical data	Operating voltage U_B	5VDC \pm 5%
	Current consumption	\leq 70mA
	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	100g without cable
Environmental data	Ambient temperature (operation)	0°C ... +50°C
	Air humidity	5 ... 95% rel. humidity
	Protection class	-
	Drop height	1m

Features

- Scanning rate 100 scans/s
- Scanning upon reaching or touching the barcode (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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning


Optical data transmission

Networking Connector units

Accessories

Services

MOBILE BARCODE READERS

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface	
Mobile barcode reader					
Z-3010 50108576	2088 pixel CCD touch reader, incl. USB cable	 CCD	20	100	RS 232, USB, PS/2 AT

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Accessories / connection cables			More accessories can be found from page 405 onwards
Part No.	Designation	Features	
50108575	KB PS/2	PS/2 cable for Z-3010	
50108574	KB RS232	RS 232 cable for Z-3010 with 9-pin Sub-D socket	
50034617	ZCH - 91095 - HL	Bracket for Z-3010	
50109333	NT 5V DC/1A Z-3010	Power supply unit 5VDC for Z-3010	

				
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Z-3010

Mobile barcode reader



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

Features

- Scanning rate 100 scans/s
- Scanning upon reaching or touching the barcode
- 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

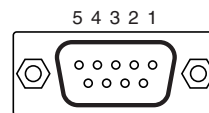


Ergonomically shaped mobile barcode reader with integrated decoder. Data transmission via configurable RS 232 interface or keyboard-wedge operation via PS/2 or USB interface.

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

Electrical connection

RS 232 - female



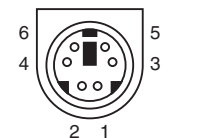
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC

PWR



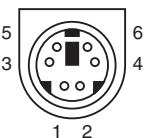
PIN	Signal
A	+ 9 V DC
B	GND

PS/2 - female



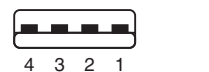
PIN	Signal
1	KB Data
2	NC
3	GND
4	+ 5 V DC
5	KB Clock
6	NC

PS/2 - male



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

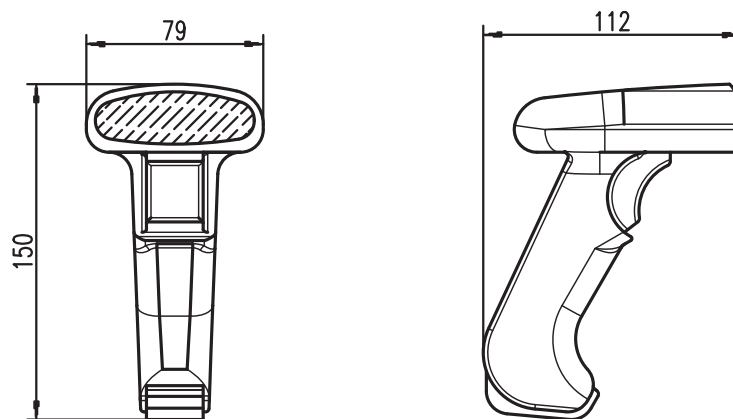
USB Standard A



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

OVERVIEW

Dimensioned drawing



We reserve the right to make changes • IT3800g_Overview_EN.fim



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MOBILE BARCODE READER IT 3800g

Mobile barcode reader	Module size	Page
 IT 3800g 15E	0.127 0.508 mm	126



Common technical data		
Electrical data	Operating voltage U_B	4.5 ... 12VDC
	Power consumption	$\leq 1.8W$
	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	159g 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 barcodes
- 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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning


Optical data transmission

Networking Connector units

Accessories

Services

MOBILE BARCODE READERS

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
Mobile barcode reader				
IT 3800 g 15E 50107041	Mobile barcode reader  CCD	660	max. 270	TTL-RS 232, USB, PS/2

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Accessories / connection cables

More accessories can be found from **page 405** onwards

Part No.	Designation	Features
50104442	TTL-RS 232 cable/ext	TTL-RS 232 cable for IT 3800g 15E, supply via ext. power supply unit
50104586	TTL-RS 232 cable/PIN9	TTL-RS 232 cable for IT 3800g 15E, supply via PIN 9/RS 232
50103409	PS2 cable for IT4xxx	PS/2 cable for IT 3800 15Eg
50103404	USB cable for IT4xxx	USB cable for IT 3800g 15E
50107039	Support for IT3800g	Bracket for IT 3800g 15E
50103403	Power supply unit for IT4x0x	Power supply unit 5VDC for IT 3800g 15E

				
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Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

Features

- Hand-held scanner for barcodes
- 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

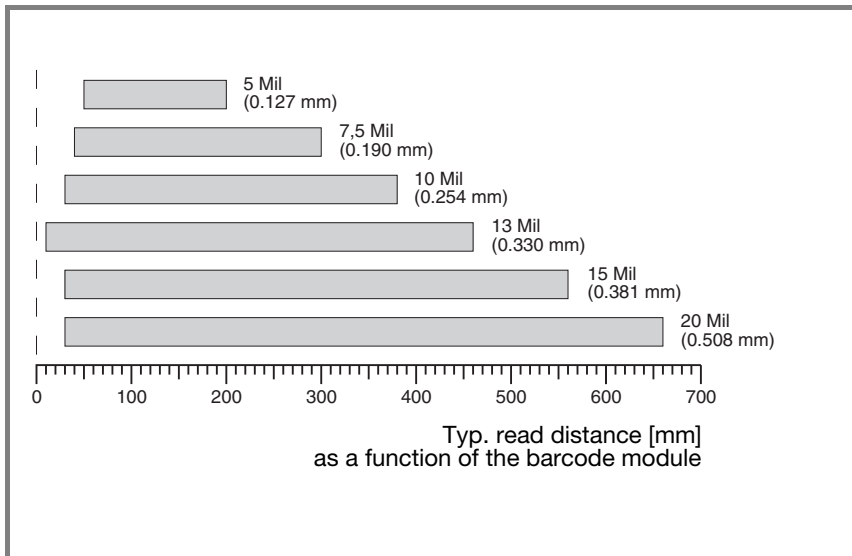


Ergonomically shaped hand-held scanner with integrated decoder. Data transmission via configurable RS 232 interface or keyboard-wedge operation via PS/2 or USB interface.

Please order the corresponding connection cables separately!

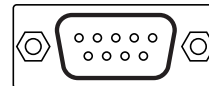
Reading field

IT 3800g 15E



Electrical connection

RS 232 - female
5 4 3 2 1



9 8 7 6

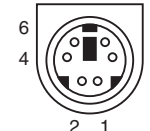
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC or NC
SH	Shield

PWR - female



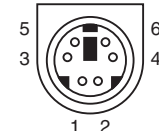
PIN	Signal
1	GND
2	+ 5 V DC
SH	Shield

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

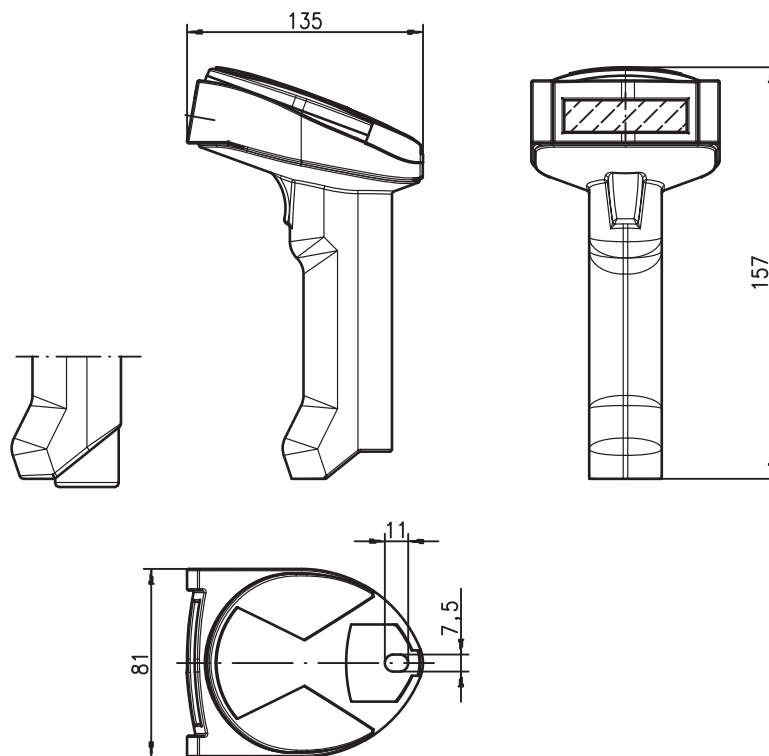
USB Standard A



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

OVERVIEW

Dimensioned drawing



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MOBILE BARCODE READER IT 3800i

Mobile barcode reader	Module size	Page
 Reading field width max. 750mm	 0.19 1.4 mm	130



Common technical data		
Electrical data	Operating voltage U_B	4.5 ... 14VDC
	Power consumption	$\leq 1.8W$
	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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission



Networking Connector units

Accessories

Services

www.leuze.com/barcodereaders/

MOBILE BARCODE READERS


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

Accessories / connection cables

More accessories can be found from **page 405** 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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Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

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

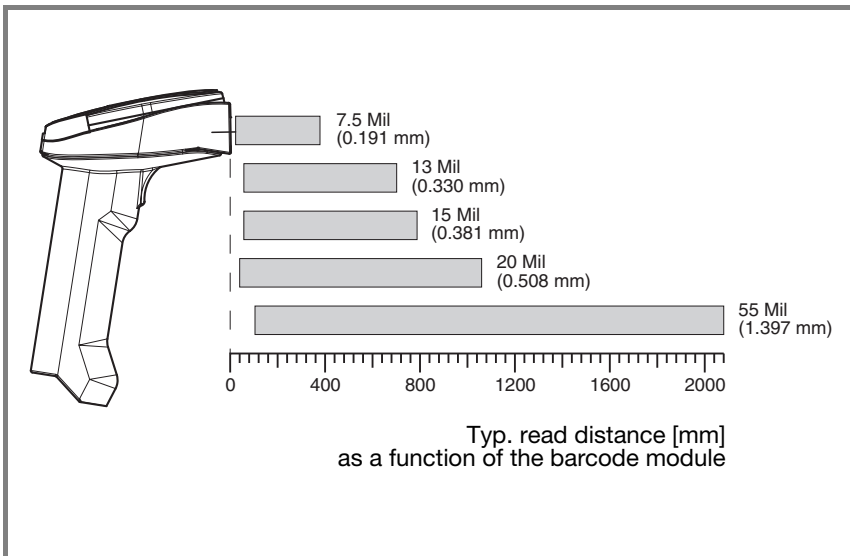


Ergonomically shaped mobile barcode reader with integrated decoder. Data transmission via configurable RS 232 interface or keyboard-wedge operation via PS/2 or USB interface.

Please order the corresponding connection cables separately!

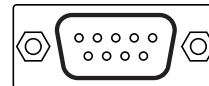
Reading field

IT 3800i with up to 270 scans/s



Electrical connection

RS 232 - female
5 4 3 2 1



9 8 7 6

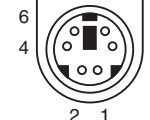
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC or NC
SH	Shield

PWR - female



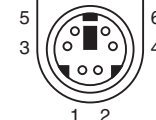
PIN	Signal
1	GND
2	+ 5 V DC
SH	Shield

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

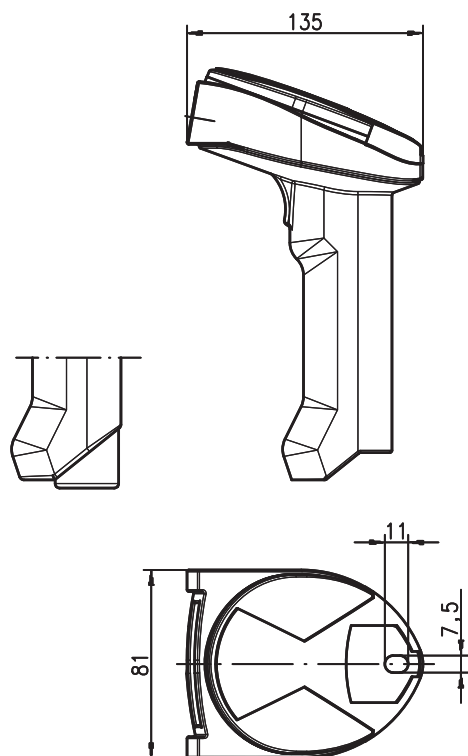


PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

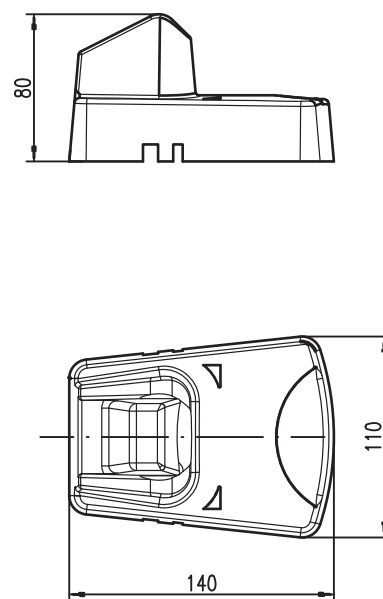
OVERVIEW

Dimensioned drawing

**Mobile barcode reader
IT 3820**





**Base station
ST 2020 - 5BE**



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MOBILE BARCODE READER IT 3820

Mobile barcode reader with Bluetooth	Module size	Page
 Reading field width max. 750mm	 0.19 1.4 mm	134



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	261 g
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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Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning


Optical data transmission

Networking Connector units

Accessories

Services

MOBILE BARCODE READERS WITH BLUETOOTH

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

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Accessories / connection cables		More accessories can be found from page 420 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 9VDC for IT 3820/ST 2020

				
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IT 3820

Mobile barcode reader



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

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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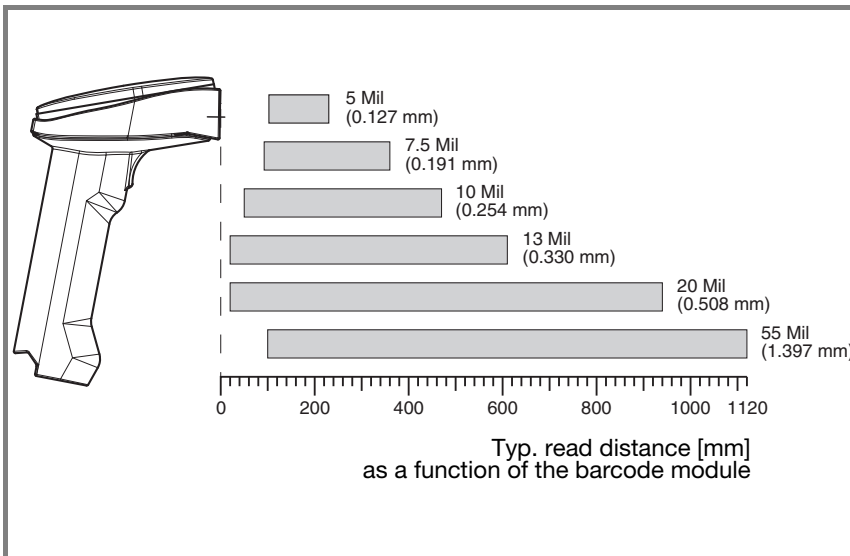


Ergonomically shaped hand-held scanner with integrated decoder. Data transmission via configurable RS 232 interface or keyboard-wedge operation via PS/2 or USB interface.

Please order the corresponding connection cables separately!

Reading field

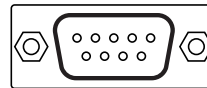
IT 3820 with up to 270 scans/s



Electrical connection

RS 232 - female

5 4 3 2 1



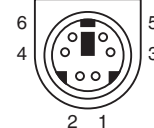
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC
SH	Shield

PWR (ST 2020)



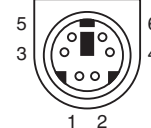
PIN	Signal
A	+ 9 V DC
B	GND

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

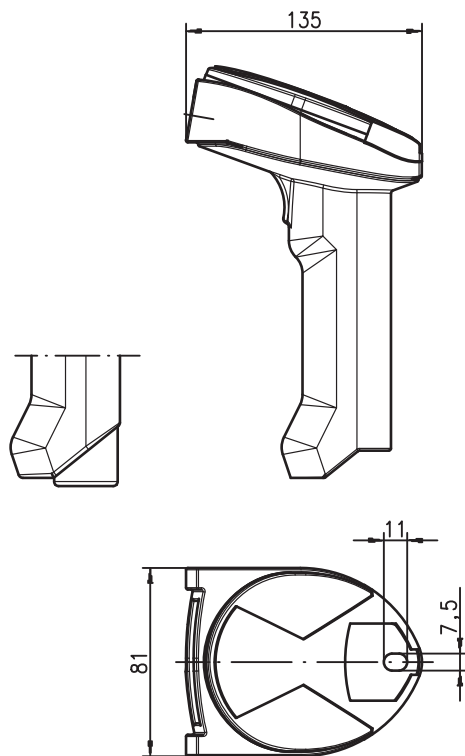


PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

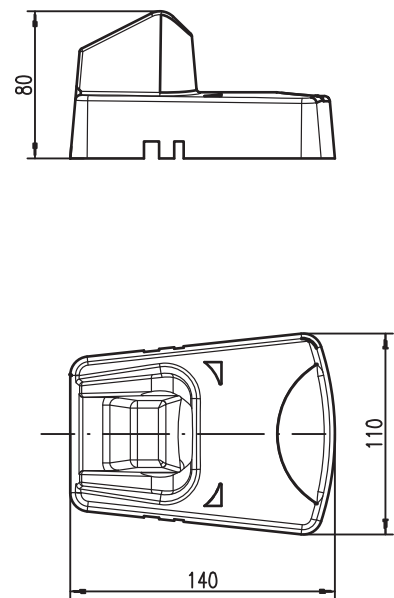
OVERVIEW

Dimensioned drawing

**Mobile barcode reader
IT 3820i**





**Base station
ST 2020 - 5BE**



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MOBILE BARCODE READER IT 3820i

Mobile barcode reader with Bluetooth	Module size	Page
 Reading field width max. 750mm	 0.19 1.4 mm	138



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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Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

MOBILE BARCODE READERS WITH BLUETOOTH

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

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Accessories / connection cables		More accessories can be found from page 420 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 9VDC for IT 3820/ST 2020i

				
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IT 3820i
Mobile barcode reader



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

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



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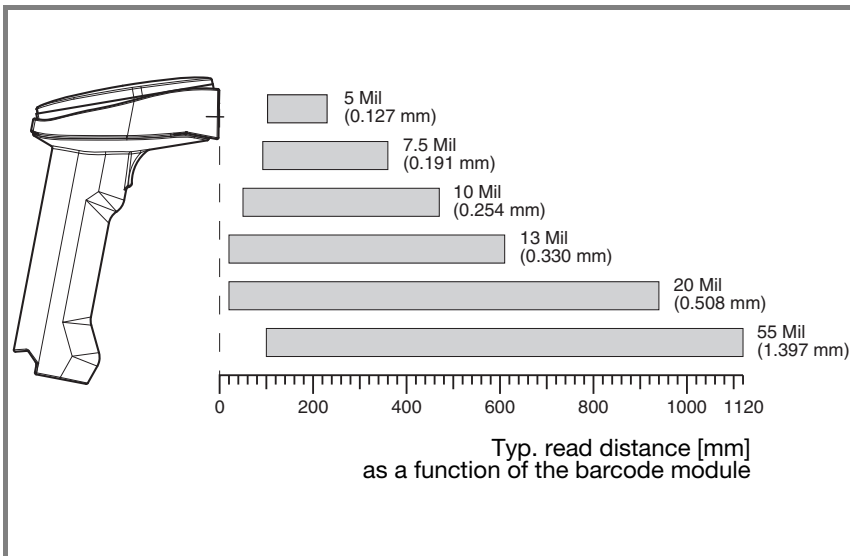


Ergonomically shaped hand-held scanner with integrated decoder. Data transmission via configurable RS 232 interface or keyboard-wedge operation via PS/2 or USB interface.

Please order the corresponding connection cables separately!

Reading field

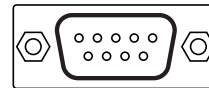
IT 3820i with up to 270 scans/s



Electrical connection

RS 232 - female

5 4 3 2 1



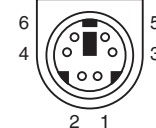
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC
SH	Shield

PWR (ST 2020)



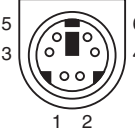
PIN	Signal
A	+ 9 V DC
B	GND

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		Read distance in mm (module dependent)					
		Plastic	Metal	10	50	100	500	2500	
 LSIS 120	40 x 31.8 x 47		●		25	310			
 LSIS 422i	75 x 113 x 55		●				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.

STATIONARY 2D CODE READERS



Reading method	Operating voltage			Interfaces D = direct, G = via Gateway													Page
	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	
Surface imager	●	●	●	D	D	G	G	G	G	G	G	G	G	G	G	G	142
	●		●	D		G	G	G	G	G	D	G	G	G	G	G	146

Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

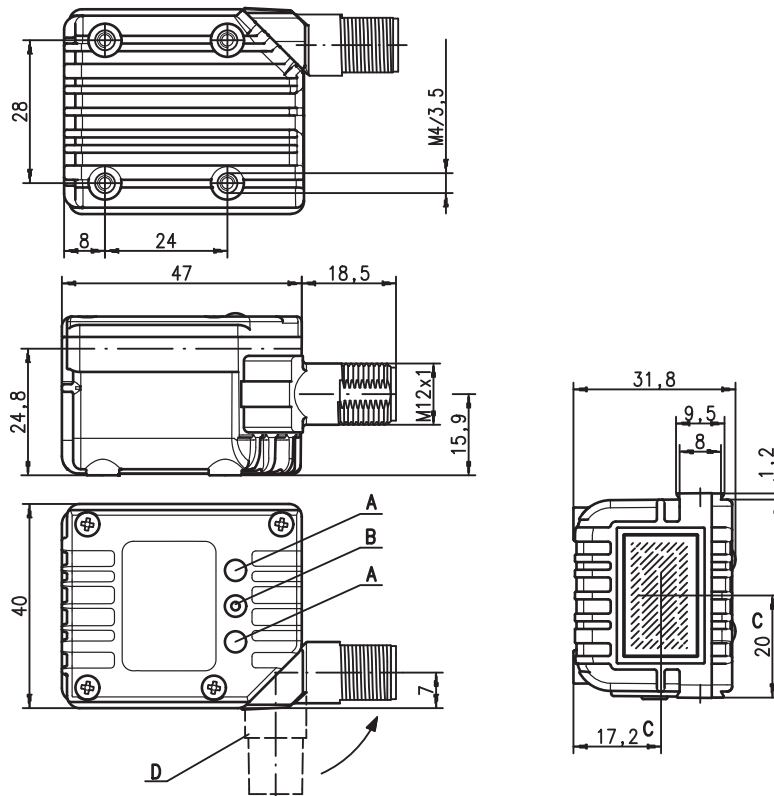
Networking Connector units

Accessories

Services









OVERVIEW

Dimensioned drawing





- A** LEDs
- B** Trigger button
- C** Optical axis
- D** M12 connector, can be turned 90°

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LSIS 120 Page 142	LSIS 422i Page 146	IT 1900 Page 152	IT 1902 Page 156	IT 4800 Page 160	IT 4820i Page 164	IT 6300 Page 168	IT 6320 Page 172

STATIONARY 2D-CODE READER LSIS 120

2D-code reader	Resolution	Page
  LSIS 12x ...	0.127 0.5 mm	144



Common technical data		
Electrical data	Operating voltage U_B	10 ... 30VDC (LSIS 122) 4.75 ... 5.5VDC (LSIS 123)
	Current consumption	150mA
	Interface type	USB, RS 232
	Code types Barcode	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	127g
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 slowly 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**



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning



Optical data transmission

Networking Connector units

Accessories

Services

STATIONARY 2D CODE READER

Part description Part No.:	Description	Op. range [mm]	Scan rate [scans/s]	Interface
2D-code/barcode scanner				
LSIS 122 M6M - R1 50110307	2D-code/barcode scanner, standard optics 	310		RS 232
LSIS 123 M6M - R1 50110306	2D-code/barcode scanner, standard optics 	310		USB



Very small and compact 2D-code/barcode 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!

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Accessories / connection cables

More accessories can be found from **page 402** 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. 408	KB M12/8 - ... - BA	Connection cable POWER-IO-DATA, M12 axial socket, 8-pin, A-coded, see p. 408

							
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LSIS 122 /123
2D-code reader



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

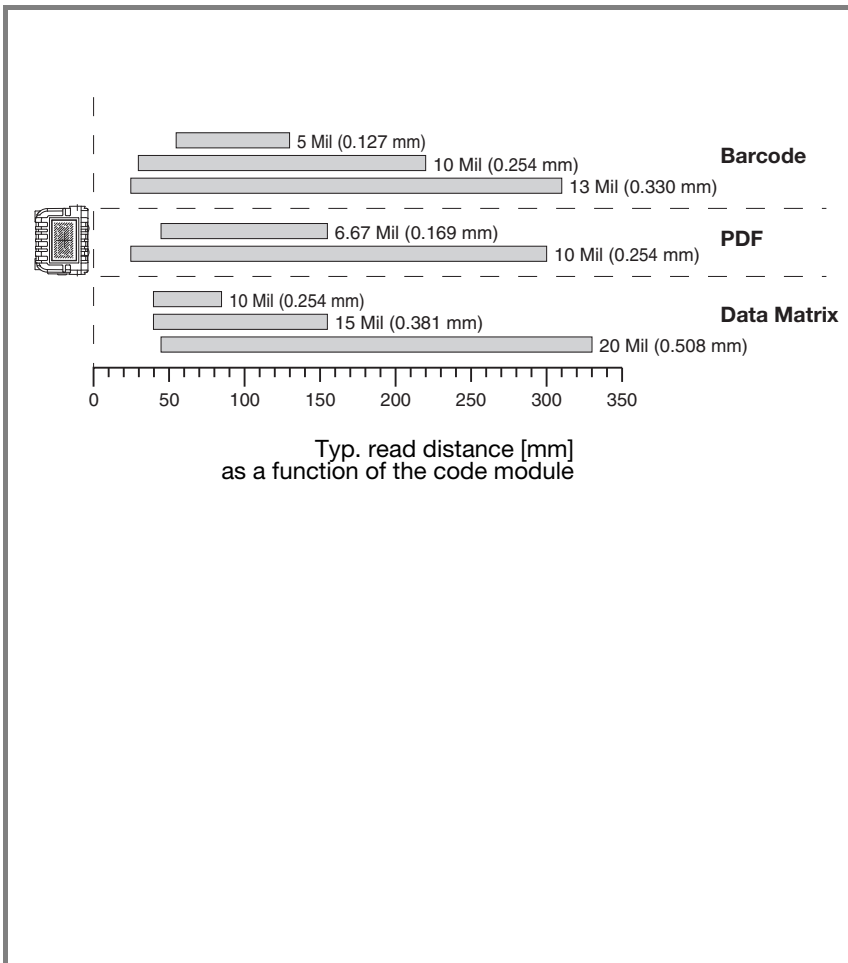
Features

- Very small and compact reader for 2D codes, bar-codes and batch codes
- High resolution
- For reading on static or slowly 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



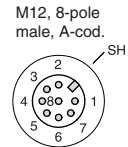
Reading field

LSIS 122 / LSIS 123



Electrical connection

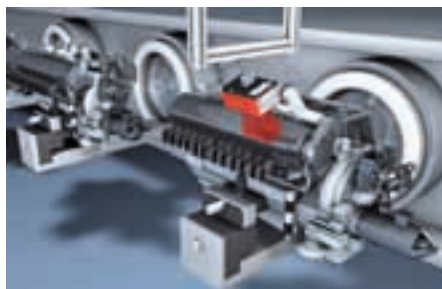
PIN	Signal	
	LSIS 122 RS232	LSIS 123 USB
1	VIN 10 ... 30 V DC	VIN 4,75 ... 5,5 V DC
2	SWIN	SWIN
3	GNDIN	GNDIN
4	SWOUT	SWOUT
5	not connected	not connected
6	RXD - Data	D+ - Data
7	TXD - Data	D- - Data
8	FE - Shield	FE - Shield
SH	FE - Shield	not connected



OVERVIEW



Code verification

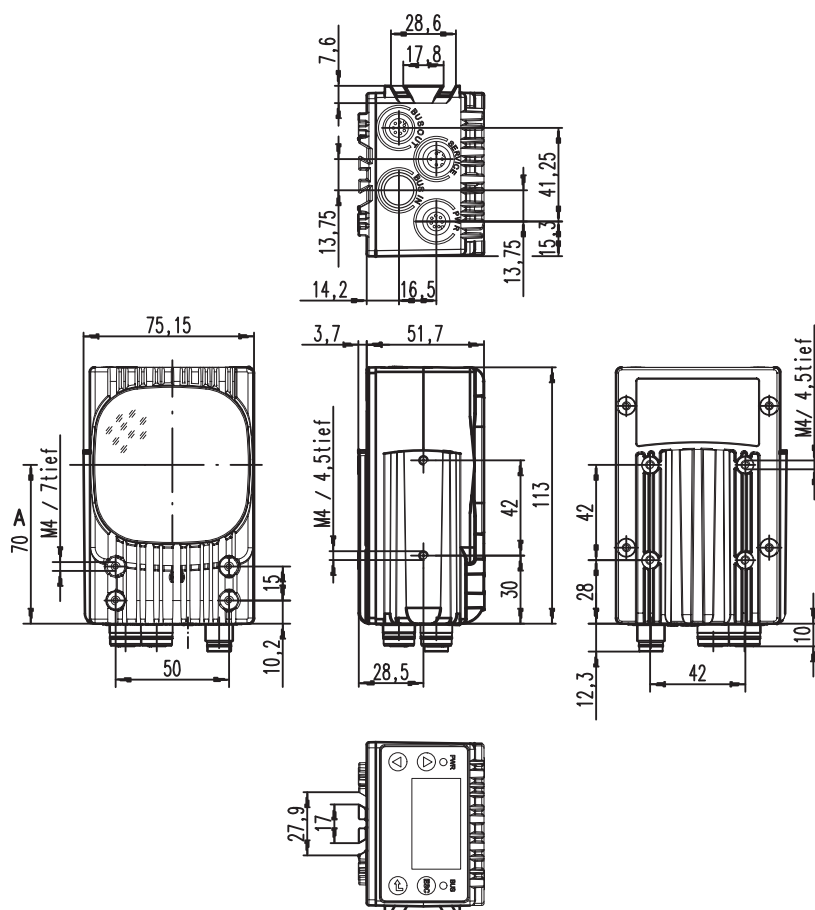


Dot-peened Data Matrix code



Laser-etched Data Matrix code

Dimensioned drawing





A Optical axis

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LSIS 120 Page 142	LSIS 422i Page 146	IT 1900 Page 152	IT 1902 Page 156	IT 4800 Page 160	IT 4820i Page 164	IT 6300 Page 168	IT 6320 Page 172

STATIONARY 2D-CODE READER LSIS 422i

2D-code reader	Focal length	Page
 LSIS 422i M43 - W1	8mm	148
 LSIS 422i M45 - W1	16mm	148



Common technical data		
Electrical data	Operating voltage U_B	18 ... 30VDC
	Power consumption	max. 10W
	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	54 μ s ... 20ms
	Focal length	8mm / 16mm
	Object distance	50mm ... ∞ /75mm ... ∞
Mechanical data	Housing	diecast aluminum
	Weight	500g
Environmental data	Ambient temp. (operation/storage)	0°C ... +45°C / -20°C ... +70°C
	VDE safety class	III
	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 barcodes (2/5 Interleaved, Code 39, Code 128, EAN 8/13, UPC A/E, Codabar)
- High resolution for direct part marking and labels
- Built-in decoder, also for inverse or reflected codes
- Omnidirectional reading, also on quickly moving objects
- External triggering possible
- Read-display
- Multiple code reading and reference code comparison
- Assessment of the code quality
- Motorized adjustment of focus position
- RS 232 and Ethernet interface
- Operating temperature 0°C ... 45°C



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning





Optical data transmission

Networking Connector units

Accessories

Services

STATIONARY 2D CODE READER

Part description Part No.	Description	Focal length [mm]	Housing window	Interface
2D-code reader				
LSIS 422i M43 - W1 50108178	2D-code / barcode reader with motor-driven focus adjustment 	8	glass	RS 232 / Ethernet
LSIS 422i M43 - W1 - 01 50113055	2D-code / barcode reader with motor-driven focus adjustment 	8	plastic	RS 232 / Ethernet
LSIS 422i M45 - W1 50109829	2D-code / barcode reader with motor-driven focus adjustment 	16	glass	RS 232 / Ethernet
LSIS 422i M45 - W1 - 01 50113054	2D-code / barcode reader with motor-driven focus adjustment 	16	plastic	RS 232 / Ethernet



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

Accessories / connection cables

More accessories can be found from **page 403** onwards

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Part No.	Designation	Features
see P.	KB M12/8-...-BA	Connection cable POWER-IO-DATA, M12 axial socket, for PWR, see p. 408
see P.	KB M12/8-...-SA	Connection cable POWER-IO-DATA, M12 axial plug, for BUS OUT, see p. 409
see P.	KB ET - ... - SA	Connection cable IND. ETHERNET, M12 axial plug, for SERVICE, see p. 412
see P.	KB ET-...-SSA	Connection cable IND. ETHERNET, M12 axial plug, for SERVICE, see p. 413
see P.	KB ET-...-SA-RJ45	Connection cable IND. ETHERNET, M12 plug/RJ45, for SERVICE, see p. 413
50108991	D - ET1	User-configurable RJ45 plug
50109832	KDS ET-M12/ RJ45 W-4P	ETHERNET adapter M12 - RJ45
50027375	BT 56	Mounting device with dovetail for rod D = 16 ... 20mm
50111224	BT 59	Mounting device with dovetail for ITEM aluminum profile



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Page 172

LSIS 422i ... 2D-code reader

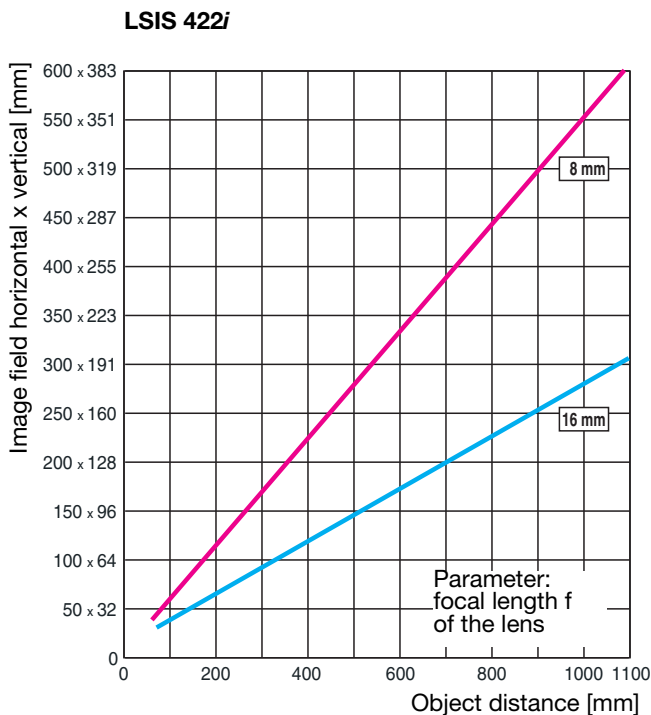


Software features

- Code reader for Data Matrix codes and barcodes
- 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
- Assessment of the code quality
- Motorized adjustment of focus position
- RS 232 and Ethernet interface

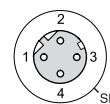


Size of the image field as a function of the object distance



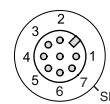
Electrical connection

SERVICE - female, D-cod.



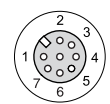
PIN	Signal	Colour
1	TD+	ge / YE
2	RD+	ws / WH
3	TD-	or / OG
4	RD-	bl / BU
SH	FE	

PWR - male, A-cod.



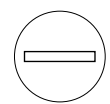
PIN	Signal	Colour
1	VIN	br / BN
2	IO1	ws / WH
3	GND	bl / BU
4	IO2	sw / BK
5	IO3	gr / GY
6	IO4	rs / PK
7	NC	vi / VT
8	FE	or / OG
SH	FE	

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 barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning







Optical data transmission

Networking Connector units

Accessories

Services

SELECTION TABLE

Series	Dimensions in mm (WxHxD)	Housing material		Read distance in mm (module dependent)				
		Plastic	Metal	10	50	100	500	2500
 IT 1900	71 x 160 x 104	●		53 ————— 561				
 IT 1902	71 x 160 x 104	●		53 ————— 561				
 IT 4800	81 x 163 x 135	●		53 ————— 333				
 IT 4820i	81 x 163 x 135	●		53 ————— 333				
 IT 6300	81 x 175 x 134	●		0 ————— 160				
 IT 6320	81 x 175 x 134	●		0 ————— 160				

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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.

MOBILE 2D CODE READERS



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

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	152
			●	●			●	●	●	●	G	G	G	G	G	G	G	G	G	156
			●		●		●	●	●		G	G	G	G	G	G	G	G	G	160
			●			●	●	●	●	●	G	G	G	G	G	G	G	G	G	164
			●		●		●	●	●		G	G	G	G	G	G	G	G	G	168
			●			●	●	●	●	●	G	G	G	G	G	G	G	G	G	172

OVERVIEW

Dimensioned drawing



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IT 6300
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IT 6320
Page 172

MOBILE 2D CODE READER IT 1900

Mobile 2D code reader	Resolution	Page
 IT 1900 g ...		154



Common technical data		
Electrical data	Operating voltage U_B	4 ... 5.5VDC
	Power consumption	$\leq 2.3W$
	Interface types	Keyboard-Wedge USB RS 232
	Code types Barcode	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 barcodes
- 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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning




Optical data transmission

Networking Connector units

Accessories

Services

MOBILE 2D-CODE READERS









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



Ergonomically shaped hand-held 2D-code/barcode 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!

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Accessories / connection cables		More accessories can be found from page 405 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 stand 8 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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

Features

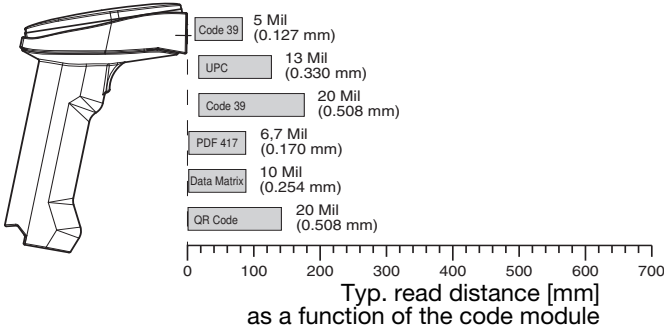
- Mobile reader for 2D-codes, stacked codes and barcodes
- Large reading field for the detection of high-contrast codes
- Various optics models available
- Stable housing and trigger button
- Built-in decoder
- Read-display
- RS 232, USB and PS/2 interface



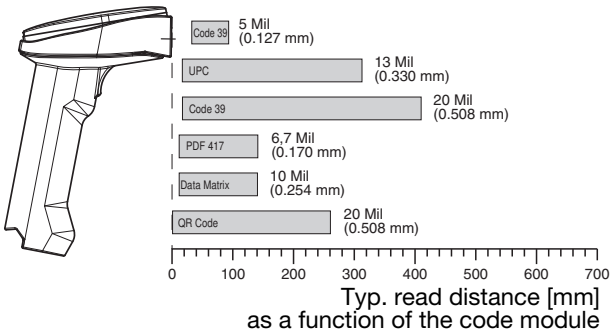
Reading field

IT 1900 G ...

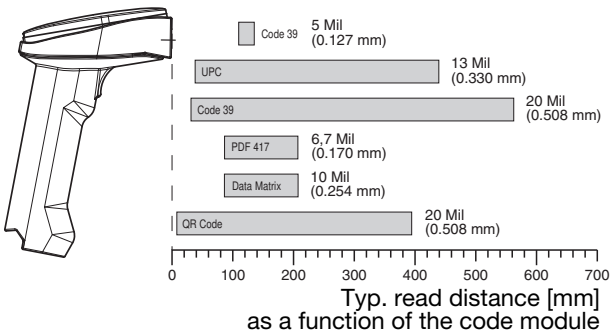
IT 1900 G HD...



IT 1900 G SR...

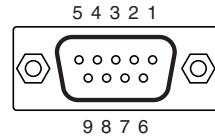


IT 1900 G ER...



Electrical connection

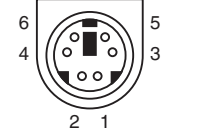
RS 232 - female



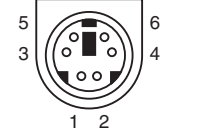
PWR



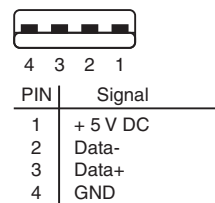
PS/2 - female



PS/2 - male



USB Standard A



OVERVIEW

Dimensioned drawing

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IT 6320
Page 172

MOBILE 2D CODE READER IT 1902

Mobile 2D code reader	Resolution	Page
 IT 1902 g ...	 0.127 1.0 mm	158



Common technical data		
Electrical data	Operating voltage U_B	4 ... 5.5VDC
	Power consumption	$\leq 2.3W$
	Interface types	Keyboard-Wedge USB RS 232
	Code types Barcode	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 barcodes
- 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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Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning




Optical data transmission

Networking Connector units

Accessories

Services

MOBILE 2D-CODE READERS

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



Ergonomically shaped hand-held 2D-code/barcode 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 405** 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 stand 8 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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

Features

- Mobile reader for 2D-codes, stacked codes and barcodes
- 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



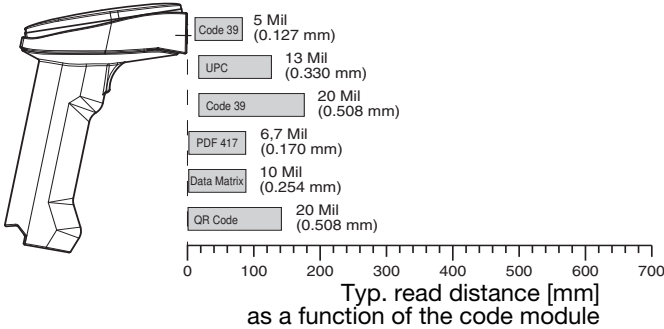
Bluetooth is a trademark owned by Bluetooth SIG, Inc., U.S.A. and licensed to Honeywell International Inc.



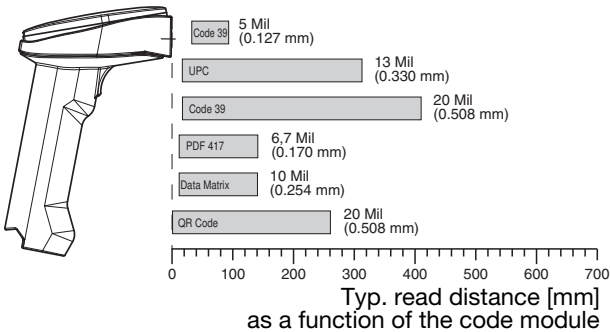
Reading field

IT 1902 G ...

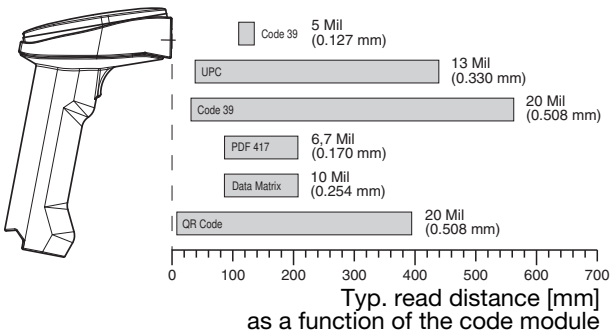
IT 1902 G HD...



IT 1902 G SR...

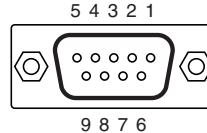


IT 1902 G ER...



Electrical connection

RS 232 - female



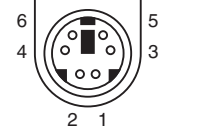
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC or NC
SH	Shield

PWR (Base)



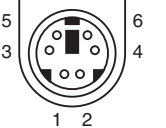
PIN	Signal
A	GND
B	+ 5 V DC

PS/2 - female



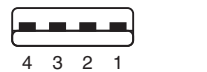
PIN	Signal
1	KB Data
2	NC
3	GND
4	+ 5 V DC
5	KB Clock
6	NC

PS/2 - male



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

USB Standard A



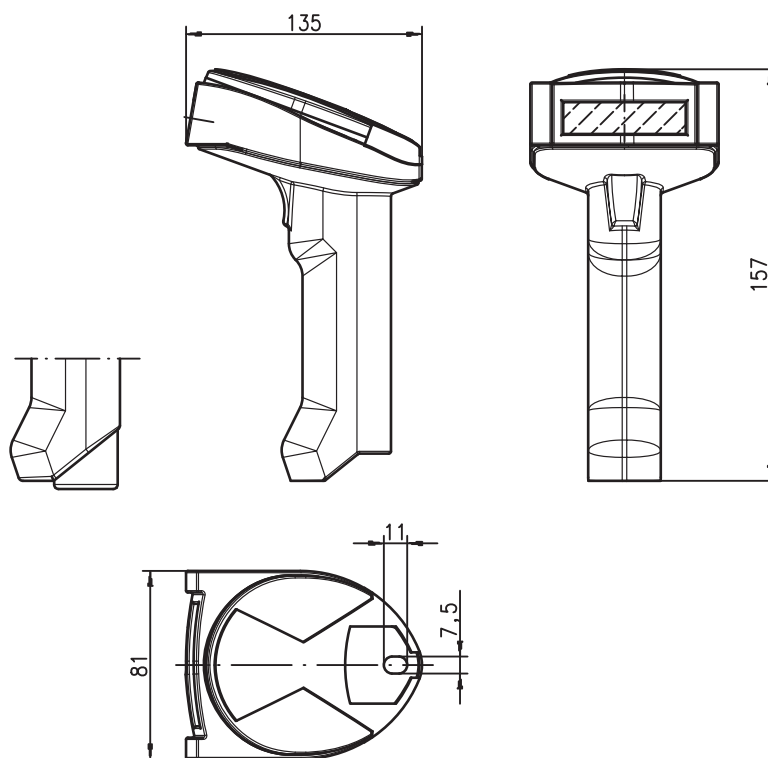
PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

OVERVIEW



Container identification with omnidirectional barcode reading


Dimensioned drawing



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MOBILE 2D CODE READER IT 4800

Mobile 2D code reader	Resolution	Page
 Reading field width max. 140mm	0.17 0.89 mm	162



Common technical data		
Electrical data	Operating voltage U_B	4 ... 14VDC
	Power consumption	≤ 1.8W
	Interface types	Keyboard-Wedge USB RS 232
	Code types Barcode	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	213g without cable
Environmental data	Ambient temperature	0°C ... +50°C (op.)
	Air humidity	0 ... 95% rel. humidity
	Protection class	IP 54
	Drop height	2m

Features

- Mobile reader for Data Matrix codes and barcodes
- Industrial version with protection class IP 54
- Large reading field for the detection of high-contrast codes
- Robust trigger button
- Built-in decoder
- Read-display
- With RS 232, USB and PS/2 AT interface



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning





Optical data transmission

Networking Connector units

Accessories

Services

MOBILE 2D-CODE READERS

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
2D-code/barcode reader, industrial version, standard optics				
IT 4800 SR031C 50103405	2D-code/barcode industrial hand-held scanner, standard optics	 Barcode/2D-Code	333	RS 232
IT 4800 SR051C 50103416	2D-code/barcode industrial hand-held scanner, standard optics	 Barcode/2D-Code	333	USB, PS/2 AT, RS 232 (TTL)
2D-code/barcode reader, industrial version, special optics for small codes				
IT 4800 SF031C 50103415	2D-code/barcode industrial hand-held scanner, optics for small codes	 Barcode/2D-Code	224	RS 232
IT 4800 SF051C 50103414	2D-code/barcode industrial hand-held scanner, optics for small codes	 Barcode/2D-Code	224	USB, PS/2 AT, RS 232 (TTL)



Ergonomically shaped hand-held 2D-code/barcode 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 405** onwards

Part No.	Designation	Features
50104442	TTL-RS 232 cable/ext	RS 232 cable for IT 4600, TTL-level, supply via ext. power supply unit
50104586	TTL-RS 232 cable/PIN9	RS 232 cable for IT 4600, TTL-level, supply via PIN 9/RS 232
50103413	RS 232 cable / ext IT4xxx	RS 232 cable for IT 4800, supply via ext. power supply unit
50103412	RS 232 cable / PIN9	RS 232 cable for IT 4800, supply via PIN 9/RS 232
50103409	PS2 cable for IT4xxx	PS/2 cable for IT 4800
50103404	USB cable for IT4xxx	USB cable for IT 4800
50103402	Support for IT4xxx	Bracket for IT 4800
50103403	Power supply for IT4x0x	Power supply unit 5VDC for IT 4800

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IT 4800
2D-code reader



Features

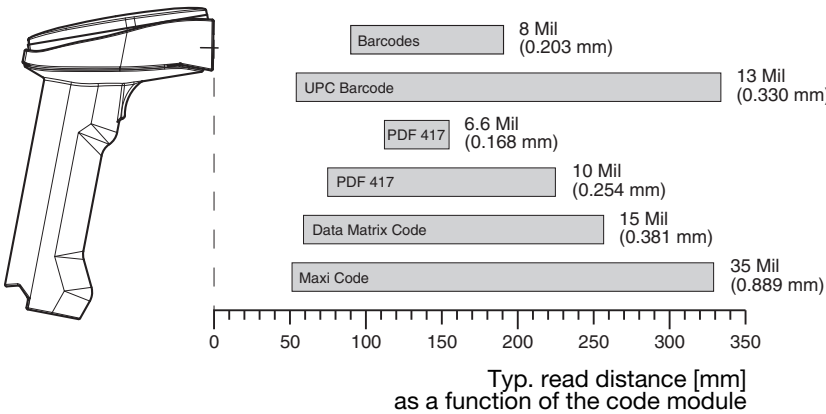
- Mobile reader for Data Matrix codes and barcodes
- Large reading field for the detection of high-contrast codes
- Protection class IP 54
- Robust trigger button
- Built-in decoder
- Read-display
- With RS 232, USB and PS/2 AT interface



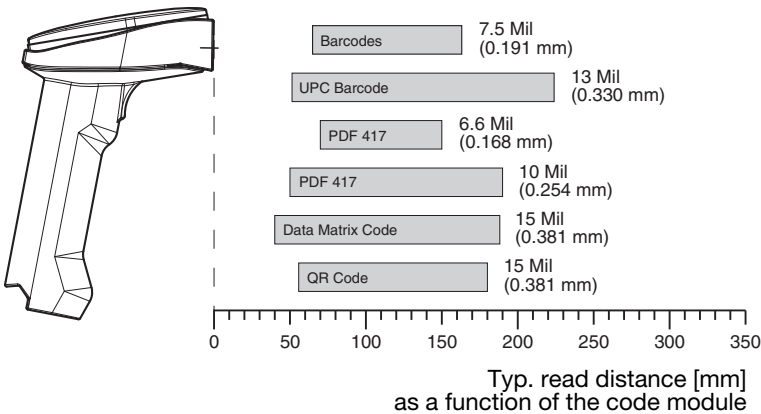
Reading field

IT 4800

IT 4800 SR...

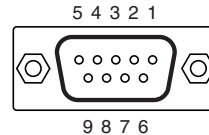


IT 4800 SF...



Electrical connection

RS 232 - female



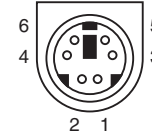
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC or NC
SH	Shield

PWR - female



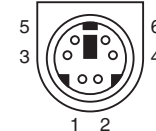
PIN	Signal
1	GND
2	+ 5 V DC
SH	Shield

PS/2 - female



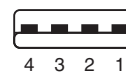
PIN	Signal
1	KB Data
2	NC
3	GND
4	+ 5 V DC
5	KB Clock
6	NC

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

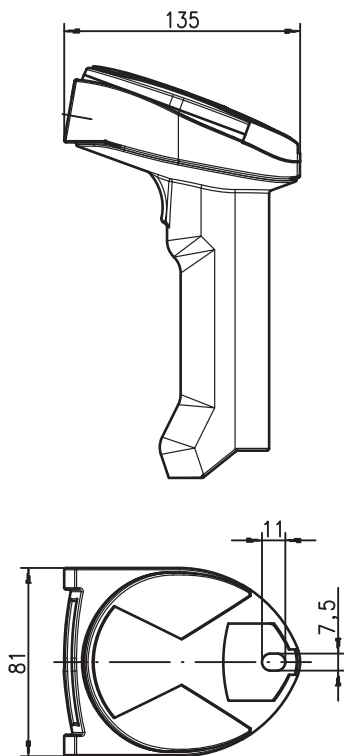
OVERVIEW



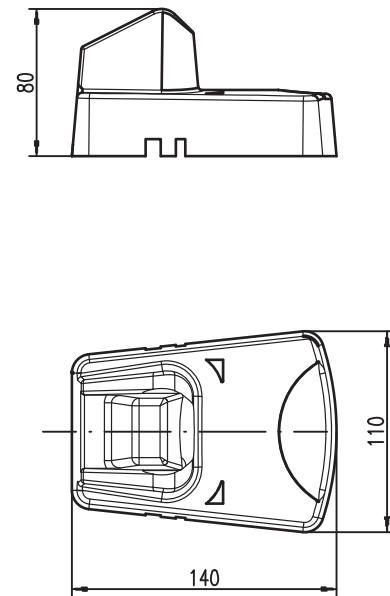
Data Matrix code reading on packet

Dimensioned drawing









**Mobile 2D code reader
IT 4820i**




**Base station
ST 2020 - 5BE**



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MOBILE 2D CODE READER IT 4820i

Mobile 2D code reader	Resolution	Page
 Reading field width max. 140mm	0.17 0.89 mm	166



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
	Code types Barcode	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	255g without cable
Environmental data	Ambient temperature	-10°C ... +50°C (op.)
	Air humidity	0 ... 95% rel. humidity
	Protection class	IP 54
	Drop height	2m

Features



- **Mobile reader for Data Matrix codes and barcodes**
- **Industrial version with protection class IP 54**
- **Transmission to ST 2020 base station via Bluetooth standard V1.2, class 2**
- **Typical signal range 10m**
- **Large reading field for the detection of high-contrast codes**
- **Robust trigger button**
- **Built-in decoder**
- **Read-display**
- **With RS 232, USB and PS/2 AT interface**



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www.leuze.com/2d-codereaders/

MOBILE 2D-CODE READERS WITH BLUETOOTH

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
2D-code/barcode reader with Bluetooth, industrial version, standard optics				
IT 4820i SRE 50109474	2D-code/barcode reader with Bluetooth, standard optics 	333		RS 232, USB, PS/2 AT
2D-code/barcode reader with Bluetooth, industrial version, special optics for small codes				
IT 4820i SFE 50109476	2D-code/barcode reader, Bluetooth, optics for small codes 	224		RS 232, USB, PS/2 AT











Ergonomically shaped hand-held 2D-code/barcode 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 IT 4820i hand-held scanner and a ST 2020 base station as well as a power supply unit and corresponding connection cable must be ordered. Please order these items separately!

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Accessories / connection cables		More accessories can be found from page 420 onwards
Part No.	Designation	Features
50104586	TTL-RS 232 cable	TTL-RS 232 cable for IT 4820/ST 2020, supply via PIN 9/RS 232
50103409	PS2 cable for IT4xxx	PS/2 cable for IT 4820/ST 2020
50103404	USB cable for IT4xxx	USB cable for IT 4820/ST 2020
50110663	ST 2020 - 5BE	Bluetooth base station for IT 4820
50103989	Power supply unit for IT4x2x/ST2020	Power supply 9VDC for IT 4820/ST 2020

							
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IT 4820i
2D-code reader



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

Features

- Mobile reader for Data Matrix codes and barcodes
- Industrial version with IP 54
- Transmission to ST 2020 base station via Bluetooth standard V1.2, class 2
- Robust trigger button
- Large reading field for the detection of high-contrast codes
- Built-in decoder
- Read-display
- With RS 232, USB and PS/2 AT interface



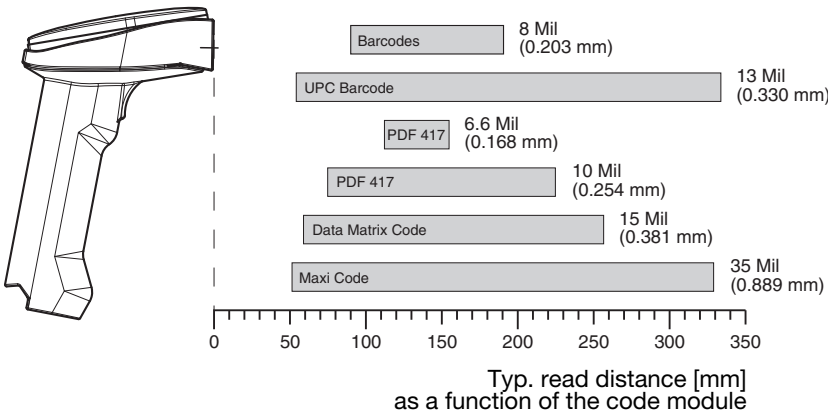
Bluetooth is a trademark owned by Bluetooth SIG, Inc., U.S.A. and licensed to Honeywell International Inc.



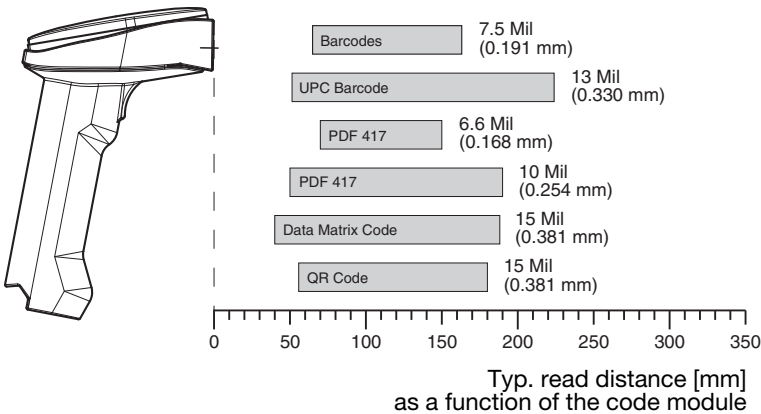
Reading field

IT 4820i

IT 4820i SR...

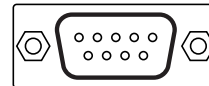


IT 4820i SF...



Electrical connection

RS 232 - female
5 4 3 2 1



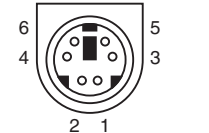
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC
SH	Shield

PWR (ST 2020)



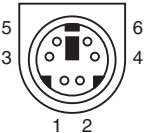
PIN	Signal
A	+ 9 V DC
B	GND

PS/2 - female



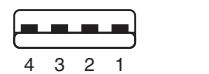
PIN	Signal
1	KB Data
2	NC
3	GND
4	+ 5 V DC
5	KB Clock
6	NC

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



Part tracking for directly marked parts

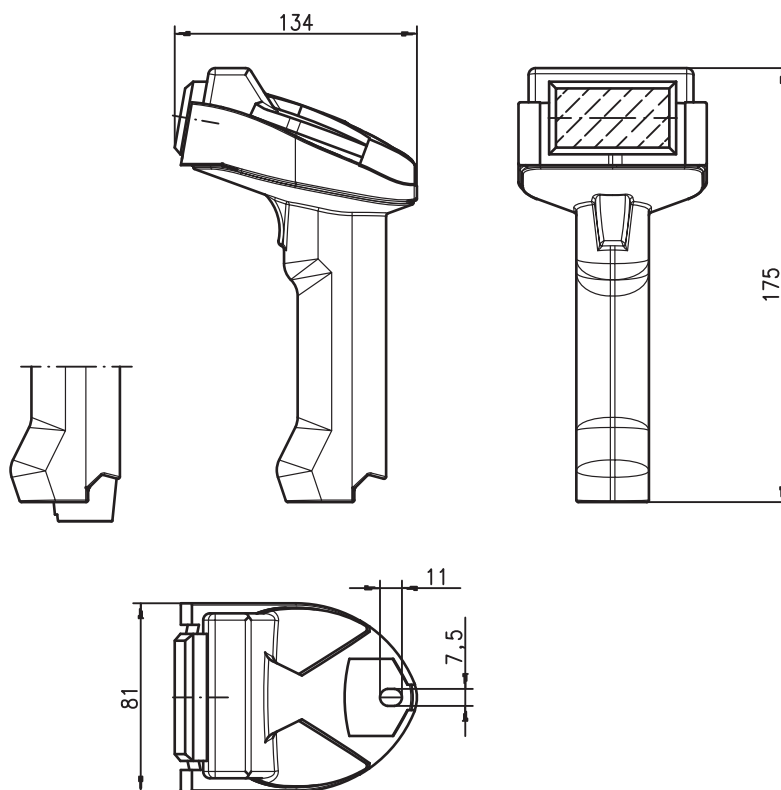


Part tracking for directly marked parts











Circuit board identification



Dimensioned drawing



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LSIS 120 Page 142	LSIS 422i Page 146	IT 1900 Page 152	IT 1902 Page 156	IT 4800 Page 160	IT 4820i Page 164	IT 6300 Page 168	IT 6320 Page 172

MOBILE 2D CODE READER IT 6300

2D-code reader	Resolution	Page
 IT 6300	 0.127 0.508 mm	170



Common technical data		
Electrical data	Operating voltage U_B	5VDC
	Power consumption	approx. 5W
	Interface types	TTL-RS 232, USB, PS/2
	Code types Barcode	2/5 Interleaved, Code 39, Code 128, EAN 8/13, UPC A/E, Code 93
	Code types 2D-code	Data Matrix ECC 200, QR Code
Indicators	LED	read state
	Acoustic signaler	read state
Mechanical data	Housing	PC / ABS
	Weight	270g
Environmental data	Ambient temp. (operation/storage)	-10°C ... +50°C / -40°C ... +70°C
	Air humidity	0 ... 95% non-cond.
	Protection class	IP 54
	Drop height	2m

Features

- Mobile reader for Data Matrix codes ECC 200 and barcodes
- High resolution for direct part marking and labels
- Robust trigger button
- Built-in decoder
- Read-display
- RS 232, USB and PS/2 interface
- Operating temp. from -10°C ... 50°C



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning



Optical data transmission

Networking Connector units

Accessories

Services

MOBILE 2D-CODE READERS

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
2D-code/barcode reader				
IT 6300 DPM 50105380	2D-code reader for direct part marking  Barcode/2D-Code	85		RS 232, USB, PS/2
IT 6300 ILR 50107464	2D-code reader for direct part marking  Barcode/2D-Code	160		RS 232, USB, PS/2



Ergonomically shaped hand-held 2D-code/barcode scanner with integrated decoder for direct part marking (DPM). Data transmission via configurable RS 232 interface or keyboard-wedge operation via PS/2 AT or USB interface.

Please order the corresponding connection cables as well as the power supply unit separately!

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Accessories / connection cables

More accessories can be found from **page 420** onwards

Part No.	Designation	Features
50105422	TTL-RS 232-cable/ext IT 6300	TTL-RS 232 cable for IT 6300, supply via ext. power supply unit
50105424	PS/2 cable for IT 6300	PS/2 cable for IT 6300
50105426	USB cable for IT 6300	USB cable for IT 6300
50103403	Power supply for IT4x0x	Power supply unit 5VDC for IT 6300



LSIS 120
Page 142



LSIS 422i
Page 146



IT 1900
Page 152



IT 1902
Page 156



IT 4800
Page 160



IT 4820i
Page 164



IT 6300
Page 168



IT 6320
Page 172

IT 6300

2D-code reader



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

Features

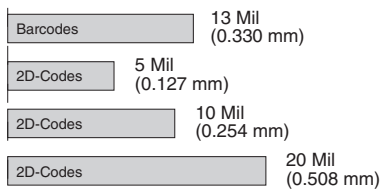
- Mobile reader for Data Matrix codes ECC 200 and barcodes
- High resolution for direct part marking and labels
- Robust trigger button
- Built-in decoder
- Read-display
- RS 232, USB and PS/2 interface
- Operating temp. from -10°C ... 50°C



Reading field

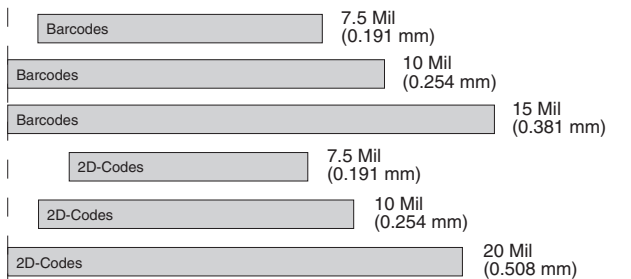
IT 6300

IT 6300 DPM



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

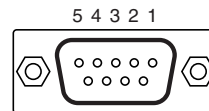
IT 6300 ILR



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

Electrical connection

RS 232 - female



5 4 3 2 1

PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
SH	Shield

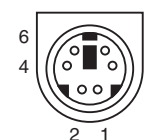
PWR - female



4 3 2 1

PIN	Signal
1	GND
2	+ 5 V DC
SH	Shield

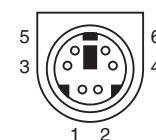
PS/2 - female



6 5 4 3 2 1

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

PS/2 - male



6 5 4 3 2 1

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

USB Standard A



4 3 2 1

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

OVERVIEW



Part tracking for directly marked parts

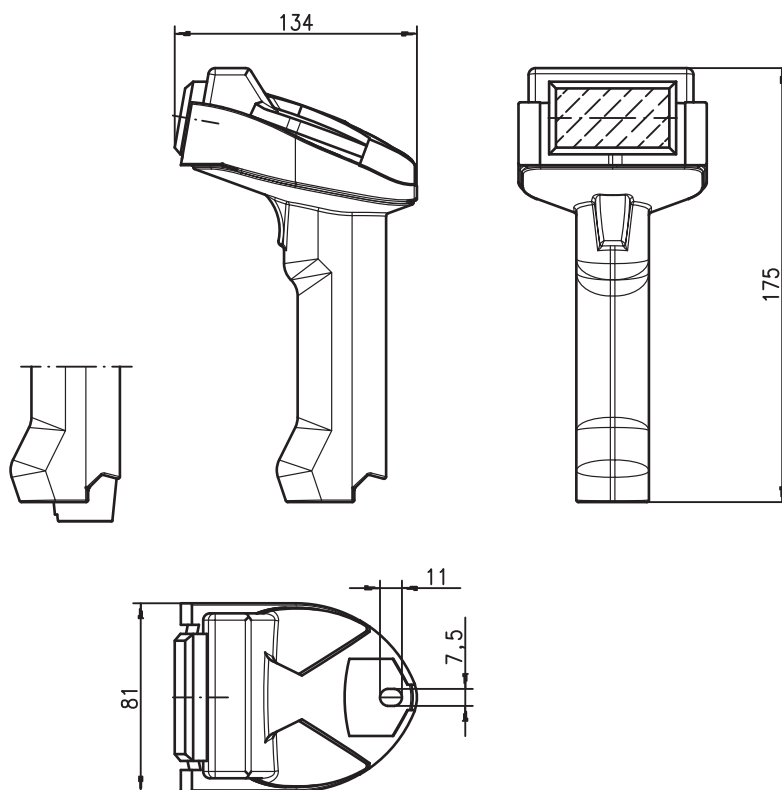


Part tracking for directly marked parts











Circuit board identification



Dimensioned drawing



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MOBILE 2D CODE READER IT 6320

2D-code reader	Resolution	Page
 IT 6320	 0.127 0.508 mm	174



Common technical data		
Electrical data	Operating voltage U_B	3.7VDC (int. battery) 9VDC (base station ST 2020)
	Power consumption	approx. 18W
	Interface types	TTL-RS 232, USB, PS/2
	Code types Barcode	2/5 Interleaved, Code 39, Code 128, EAN 8/13, UPC A/E, Code 93
	Code types 2D-code	Data Matrix ECC 200, QR Code
Indicators	LED	read state
	Acoustic signaler	read state
Mechanical data	Housing	PC / ABS
	Weight	330g
Environmental data	Ambient temp. (operation/storage)	0°C ... +50°C / -40°C ... +60°C
	Air humidity	0 ... 95% non-cond.
	Protection class	IP 54
	Drop height	2m

Features

- Mobile reader for Data Matrix codes ECC 200 and barcodes
- High resolution for direct part marking and labels
- Transmission to ST 2020 base station via Bluetooth® standard V1.2, class 2
- Robust trigger button
- Built-in decoder
- Read-display
- RS 232, USB and PS/2 interface
- Operating temp. from 0°C ... 50°C



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Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning



Optical data transmission

Networking Connector units

Accessories

Services

MOBILE 2D-CODE READERS WITH BLUETOOTH

Part description Part No.	Description	Op. range [mm]	Scan rate [scans/s]	Interface
2D-code/barcode reader with Bluetooth				
IT 6320 DPM 50105382	2D-code reader for direct part marking, Bluetooth	 Barcode/2D-Code	85	RS 232, USB, PS/2
IT 6320 ILR 50107465	2D-code reader for direct part marking, Bluetooth	 Barcode/2D-Code	160	RS 232, USB, PS/2











Ergonomically shaped hand-held 2D-code/barcode reader with integrated decoder for direct part marking (DPM). 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 6320 ... code reader and a ST 2020 base station as well as a power supply unit and corresponding connection cable must be ordered. Please order these items separately!

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Accessories / connection cables		More accessories can be found from page 420 onwards
Part No.	Designation	Features
50104586	TTL-RS 232 cable	TTL-RS 232 cable for IT 6320/ST 2020, supply via PIN 9/RS 232
50103409	PS2 cable for IT4xxx	PS/2 cable for IT 6320/ST 2020
50103404	USB cable for IT4xxx	USB cable for IT 6320/ST 2020
50103990	ST 2020 - 5B - DPME	Bluetooth base station for IT 6320
50103989	Power supply unit for IT4x2x/ST2020	Power supply 9VDC for IT 6320/ST 2020

							
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IT 6320

2D-code reader



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

Features

- Mobile reader for Data Matrix codes ECC 200 and barcodes
- High resolution for direct part marking and labels
- Transmission to ST 2020 base station via Bluetooth® standard V1.2, class 2
- Robust trigger button
- Built-in decoder
- Read-display
- RS 232, USB and PS/2 interface
- Operating temp. from 0°C ... 50°C



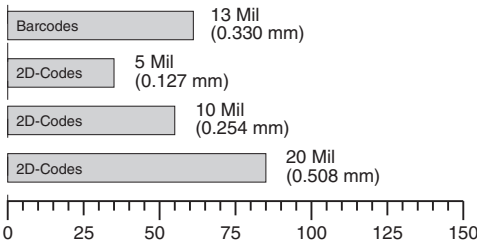
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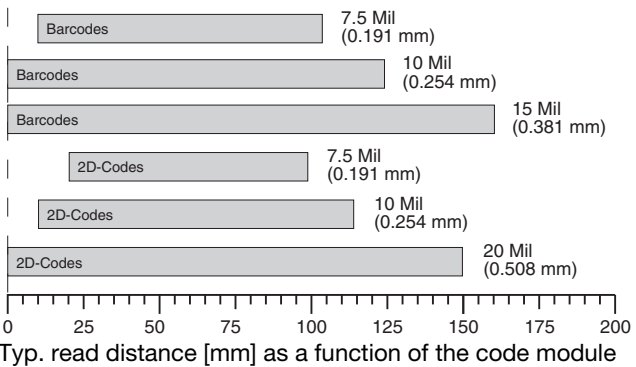
Reading field

IT 6320

IT 6320 DPM

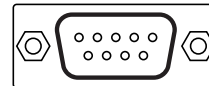


IT 6320 ILR



Electrical connection

RS 232 - female
5 4 3 2 1



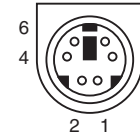
PWR (ST 2020)



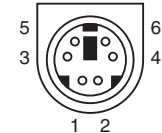
PIN	Signal
2	TXD
3	RXD
5	GND
7	CTS
8	RTS
9	+ 5 V DC
SH	Shield

PIN	Signal
A	+ 9 V DC
B	GND

PS/2 - female



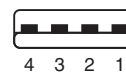
PS/2 - male



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

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

USB Standard A

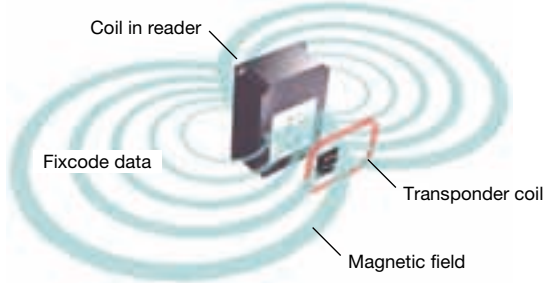


PIN	Signal
1	+ 5 V DC
2	Data-
3	Data+
4	GND

SELECTION GUIDE



Radio-frequency identification systems (RFID) with working frequency of 125kHz

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

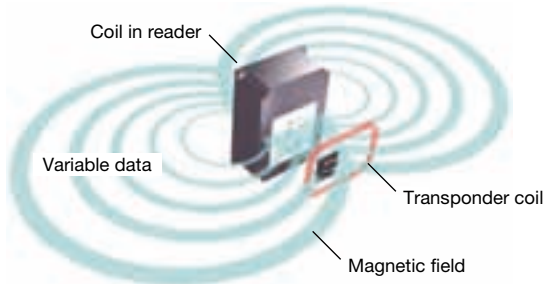
	RFI 32 80 mm	from page 180
	Transponder TFI Disc transponder and high-temperature disc transponder	from page 226

Features

- Permanent coding of the transponder data
- Read-only access
- Transponder movement speed up to 0.6m/s
- Insensitive to wetness, heat, cold, soiling
- Economical solution for pure identification tasks






Radio-frequency identification systems (RFID) with working frequency of 868MHz (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 2000 mm	from page 200
	RFU 81 6000 mm	from page 204
	HFU 4500D 50 mm + barcode reading at 50 ... 450mm	from page 218
	HFU 4520D 50 mm + barcode reading at 50 ... 450mm	from page 222
	Transponder TFU On-metal-disk and label transponders	from page 238

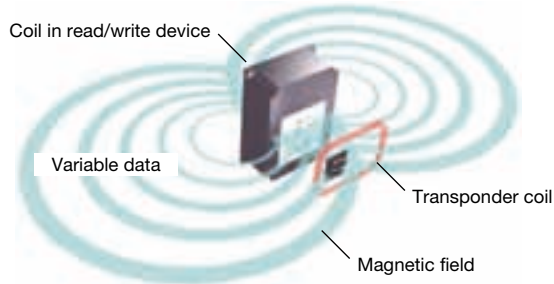
Features

- 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 10m/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 13.56MHz

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 45 mm	from page 184
	RFM 32 110 mm	from page 188
	RFM 62 400 mm	from page 196
	HFM 3500D 50 mm + barcode reading at 50 ... 450 mm	from page 210
	HFM 3520D 50 mm + barcode reading at 50 ... 450 mm	from page 214
	Transponder TFM Disc-, HT-, self-adhesive, card transponders	from page 230

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 6m/s
- Insensitive to wetness, heat, cold, soiling
- Large selection of transponder versions

SELECTION TABLE

Series	Dimensions in mm (WxHxD)	Housing material		Read distance in mm (dependent on used transponder)				
		Plastic	Metal	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	6000			

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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.

STATIONARY RFID READ/WRITE SYSTEMS



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units



Accessories

Services

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	180	
	●		D	G	G	G	G	G	G	G	G	G	G	G	184	
	●		D	G	G	G	G	G	G	G	G	G	G	G	188	
	●		D	G	G	G	G	G	G	G	G	G	G	G	196	
		●	D ¹⁾	G	G	G	G	G	G	G	G	G	G	G	200	
		●	D ¹⁾	G	G	G	G	G	G	G	G	G	G	G	204	

1) with connector unit IMRFU...

STATIONARY RFID READ SYSTEM RFI 32

RF reader	Reading range	Page
 RFI 32 L 120	 mm	182



Common technical data		
Electrical data	Operating voltage U_B	12 ... 30VDC
	Power consumption	approx. 0.5W
	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 PROG (red)	activation (trigger)
Mechanical data	Housing	ABS, black
	Weight	280g
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 90mm
- Working frequency 125kHz
- Fixcode (protocol EM4002)
- Suitable for industrial usage
- High protection
- RS 232 interface
- Prepared for connection to MA 2 / MA 21 100.2 / MA 42



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

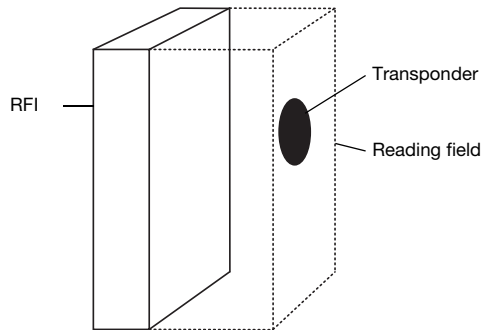
STATIONARY RFID READ SYSTEM

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 $\pm 10^\circ$ 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. 50mm 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 402** onwards

Part No.	Designation	Features
50032396	TFI 03 1101.120	Disc transponder, $\varnothing 30 \times 2.1$ mm, 32 bit fixcode
50032395	TFI 05 1101.120	Disc transponder, $\varnothing 50 \times 2.1$ mm, 32 bit fixcode
50039070	TFI 03 1601.120	High-temperature disc transponder, $\varnothing 30 \times 2$ mm, 32 bit fixcode
50039069	TFI 05 1601.120	High-temperature disc transponder, $\varnothing 50 \times 2$ mm, 32 bit fixcode
50107102	Spacer 30 HT	Spacer for disc transponder, $\varnothing 36 \times 12$ mm
50107103	Spacer 50 HT	Spacer for disc transponder, $\varnothing 56 \times 12$ mm
50110631	BT TFM x26	Mounting kit 60mm, 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
50035298	MA 42 DP-K	Connector unit, connection to PROFIBUS DP

We reserve the right to make changes • RFI32_1_EN.fm



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 42
- Switching input and switching output



Stationary barcode identification

Mobile barcode identification

2D-code identification

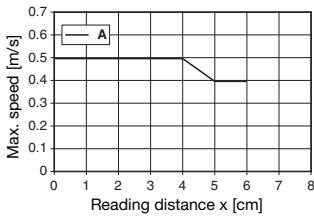
RF identification

Reading behavior

RFI 32 L 120... with Transponder TFI

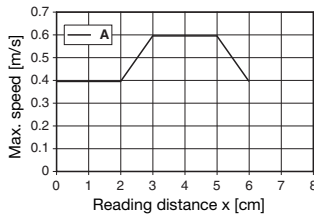
TFI 03 1101.120

Typ. reading behavior



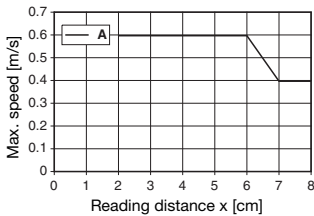
TFI 03 1601.120

Typ. reading behavior



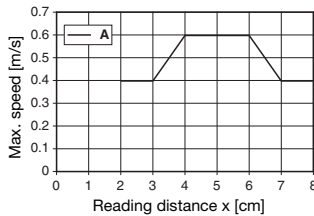
TFI 05 1101.120

Typ. reading behavior



TFI 05 1601.120

Typ. reading behavior



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.

Electrical connection

Cable with system connector

Colour	Signal
gr/GY	+12 ... 30 V DC
ws/WH	0 V DC
gn/GN	RS 232 TxD
ge/YE	RS 232 RxD
br/BN	RS 232 GND
vi/VI	Trigger IN
ws-sw/WH-BK	SW OUT

Industrial image processing

Distance meas. Positioning

Optical data transmission

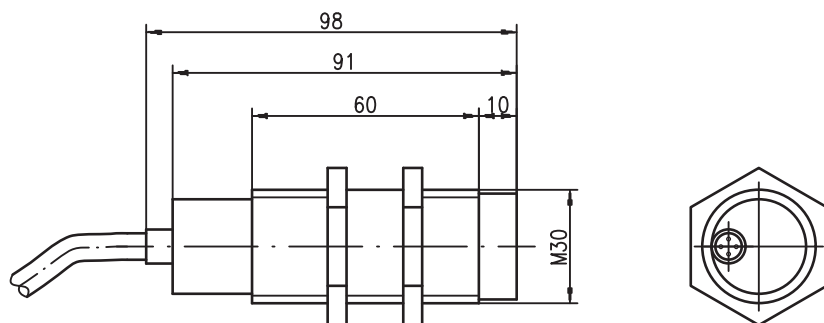
Networking Connector units

Accessories

Services

OVERVIEW


Dimensioned drawing



We reserve the right to make changes • RFM12_Overview_EN.fm

												
RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

STATIONARY RFID READ/WRITE SYSTEM RFM 12

RFID read/write system	Reading range	Page
 RFM 12 SL 200	0 45 mm	186



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 2xxi



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

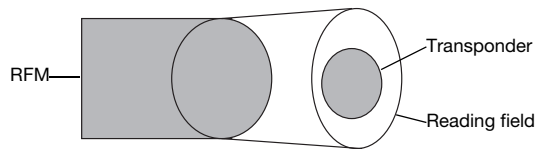
Services

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 $\pm 10^\circ$ 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. 50mm 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 402** onwards

Part No.	Designation	Features
50111503	MG 030 K	M30 mounting clamp
50102917	TFM 03 1110.210	Disc transponder, \varnothing 30 x 2.5mm, 112 byte memory
50102916	TFM 05 1110.210	Disc transponder, \varnothing 50 x 2.5mm, 112 byte memory
50102913	TFM 06 2225.220	Self-adhesive transponder, 55 x 55mm, 256 byte memory
50107102	Spacer 30 HT	Spacer for disc transponder, \varnothing 36 x 12mm
50107103	Spacer 50 HT	Spacer for disc transponder, \varnothing 56 x 12mm
50031256	MA 2	Connector unit, installation box for stand-alone operation
50103125	MA 21 100.2	Connector unit, multiNet network
50112893	MA 204i	Connector unit, PROFIBUS-DP
50112892	MA 208i	Connector unit, Ethernet TCP/IP

We reserve the right to make changes • RFM12_1_EN.fm



RFM 12 ...
RFID read/write system



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

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 2xxi

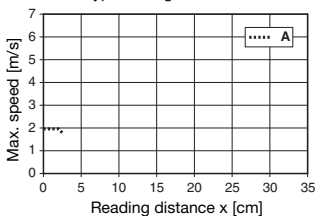


Reading behavior

RFM 12 SL 200 with Transponder TFM

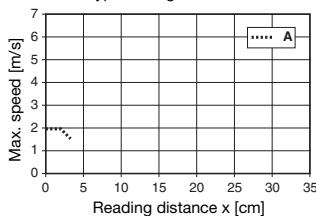
TFM 02...

Typ. reading behavior



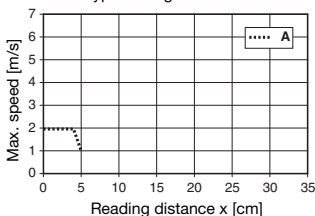
TFM 03...

Typ. reading behavior



TFM 05...

Typ. reading behavior



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

Electrical connection

Cable with system connector

Colour	Signal
gr/GY	+12 ... 30 V DC
ws/WH	0 V DC
gn/GN	RS 232 TxD
ge/YE	RS 232 RxD
br/BN	RS 232 GND
vi/VI	Trigger IN
ws-sw/WH-BK	SW OUT

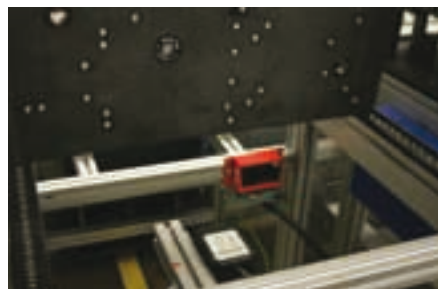
OVERVIEW



Container identification in intralogistics and order picking

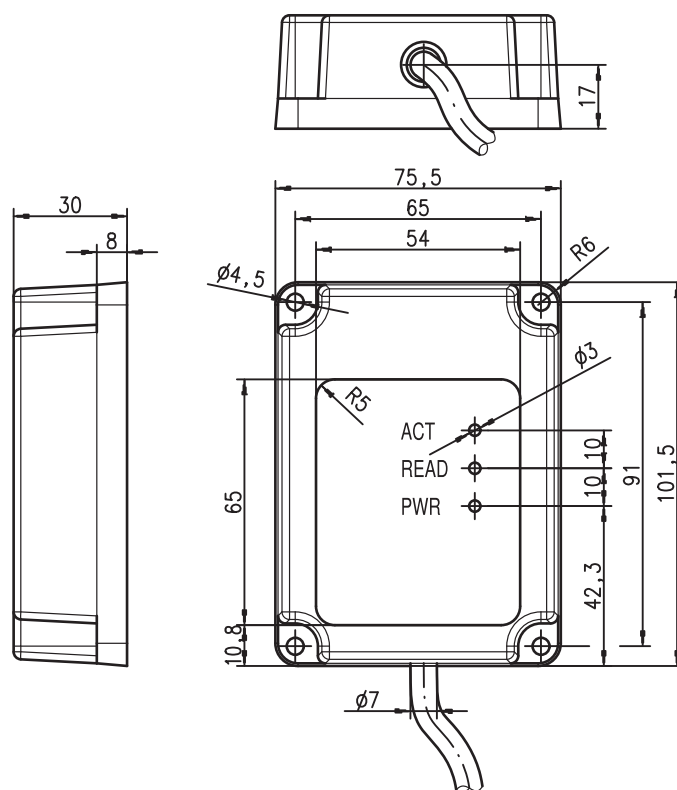


Container identification in intralogistics and order picking



Workpiece-holder identification in rough environments


Dimensioned drawing



We reserve the right to make changes • RFM32_Overview_EN.fm

RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

STATIONARY RFID READ/WRITE SYSTEM RFM 32

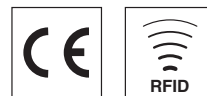
RFID read/write system	Op. range	Page
 RFM 32 SL 200	<input type="text" value="0"/> <input type="text" value="110"/> mm	190



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 PROG (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 2xxi



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

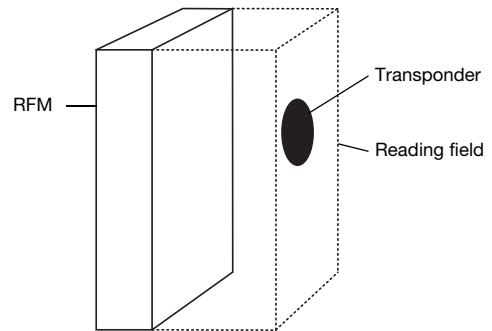
Services

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 $\pm 10^\circ$ 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. 100mm 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 402** onwards

Part No.	Designation	Features
50102917	TFM 03 1110.210	Disc transponder, \varnothing 30 x 2.5mm, 112 byte memory
50102916	TFM 05 1110.210	Disc transponder, \varnothing 50 x 2.5mm, 112 byte memory
50102913	TFM 06 2225.220	Self-adhesive transponder, 55 x 55mm, 256 byte memory
50107102	Spacer 30 HT	Spacer for disc transponder, \varnothing 36 x 12mm
50107103	Spacer 50 HT	Spacer for disc transponder, \varnothing 56 x 12mm
50031256	MA 2	Connector unit, installation box for stand-alone operation
50103125	MA 21 100.2	Connector unit, multiNet network
50112893	MA 204i	Connector unit, PROFIBUS-DP
50112892	MA 208i	Connector unit, Ethernet TCP/IP

We reserve the right to make changes • RFM32_1_EN.fm

RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

RFM 32 ...
RFID read/write system



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

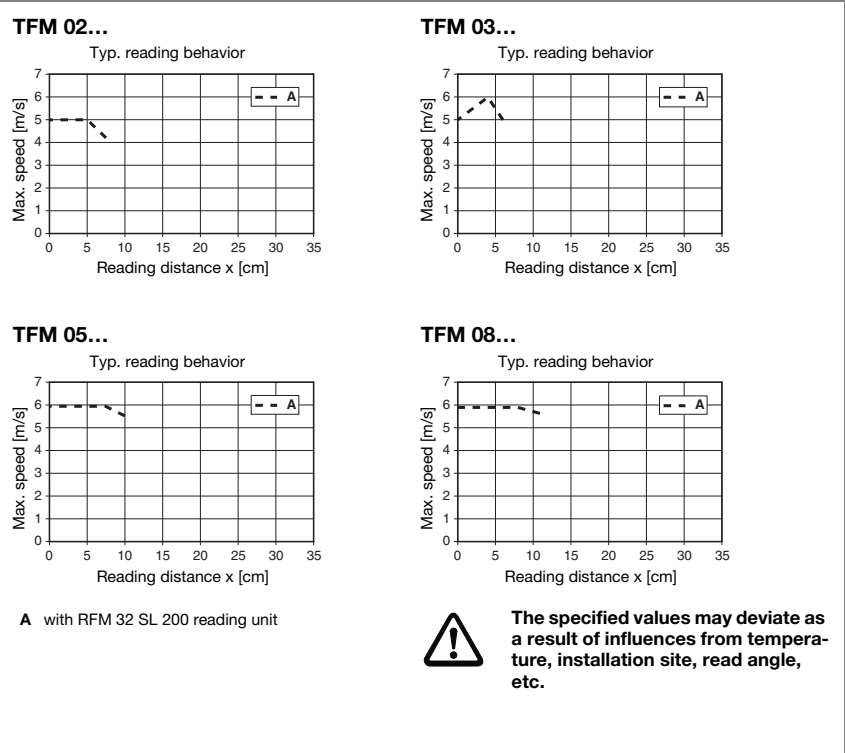
Features

- 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 2xxi



Reading behavior

RFM 32 SL 200 with Transponder TFM





Electrical connection

Cable with system connector

Colour	Signal
gr/GY	+12 ... 30 V DC
ws/WH	0 V DC
gn/GN	RS 232 TxD
ge/YE	RS 232 RxD
br/BN	RS 232 GND
vi/VI	Trigger IN
ws-sw/WH-BK	SW OUT

STATIONARY RFID READ/WRITE SYSTEM RFM 32 Ex n

RFID read/write system	Op. range	Page
 RFM 32 SL 200 Ex n	 mm	194



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
- 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 2xxi
- 10m connection cable



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

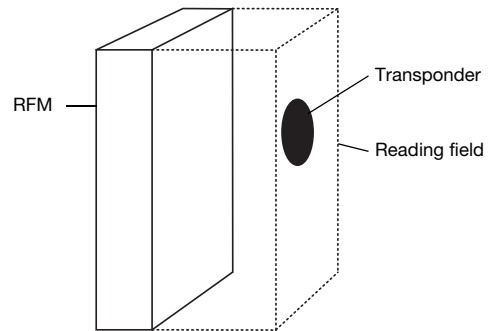
Services

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 suitable read/write device for transponder (ISO 15693), 10m 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 $\pm 10^\circ$ 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. 100mm 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 402**

Part No.	Designation	Features
50108071	TFM 03 1110.Ex	Disc transponder, Ø 34 x 8mm, 112 byte, with ATEX 2 approval, up to 85°C
50108070	TFM 05 1110.Ex	Disc transponder, Ø 54 x 15mm, 112 byte, with ATEX 2 approval, up to 85°C
50110026	TFM 05 1510.Ex	Disc transponder, Ø 54 x 15mm, 112 byte, with ATEX 2 approval, up to 120°C

Accessories without Ex approval (selection)

Part No.	Designation	Features
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
50102913	TFM 06 2225.220	Self-adhesive transponder, 55 x 55mm, 256 byte memory
50107102	Spacer 30 HT	Spacer for disc transponder, Ø 36 x 12mm (not for Ex transp.)
50107103	Spacer 50 HT	Spacer for disc transponder, Ø 56 x 12mm (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. 394	MA 2xxi	Connector unit / gateway for many automation technology network types

We reserve the right to make changes • RFM32_2_Ex_EN.fm





Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

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 2xxi

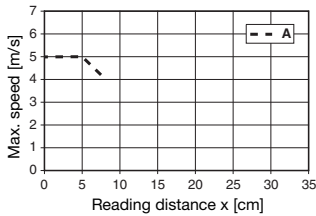


Reading behavior

RFM 32 SL 200 Ex n with Transponder TFM

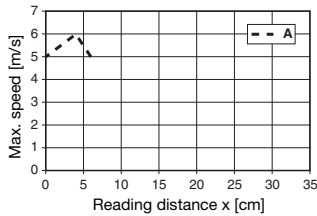
TFM 02...

Typ. reading behavior



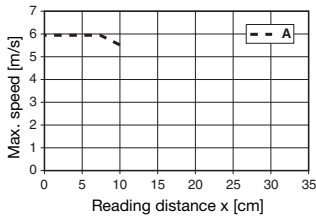
TFM 03...

Typ. reading behavior



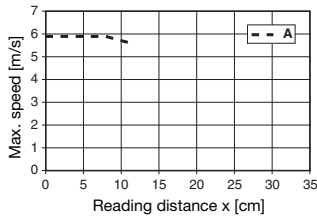
TFM 05...

Typ. reading behavior



TFM 08...

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.

Electrical connection

Cable with system connector

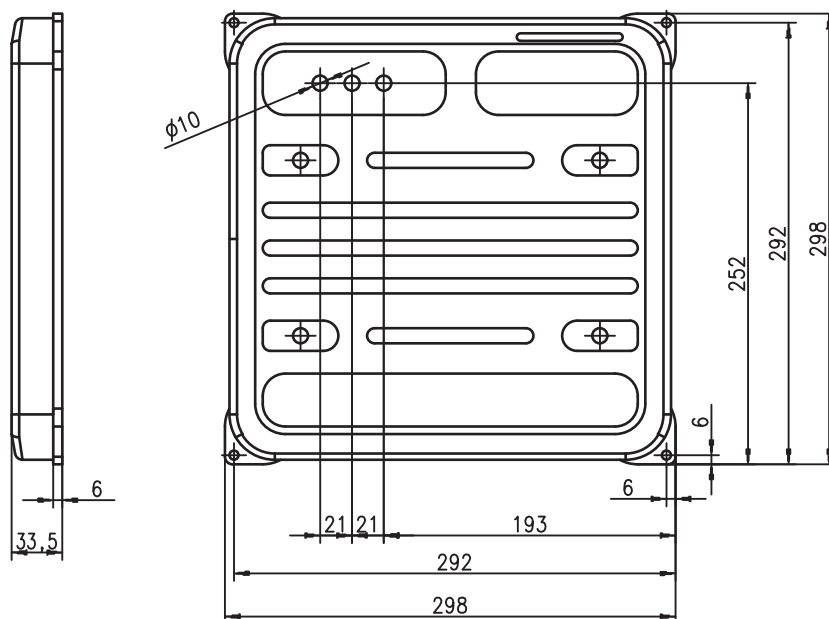
Colour	Signal
gr/GY	+12 ... 30 V DC
ws/WH	0 V DC
gn/GN	RS 232 TxD
ge/YE	RS 232 RxD
br/BN	RS 232 GND
vi/VI	Trigger IN
ws-sw/WH-BK	SW OUT

OVERVIEW



Container identification with large detection range


Dimensioned drawing



We reserve the right to make changes • RFM62_Overview_EN.fm

												
RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

STATIONARY RFID READ/WRITE SYSTEM RFM 62

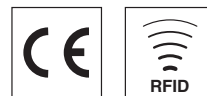
RFID read/write system	Op. range	Page
 RFM 62 SL 200	0 400 mm	198



Common technical data		
Electrical data	Operating voltage U_B	12 ... 30VDC
	Power consumption	approx. 2.0W
	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 PROG (red)	activation (trigger)
Mechanical data	Housing	ABS, black
	Weight	approx. 500g
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 400mm (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 2xxi



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

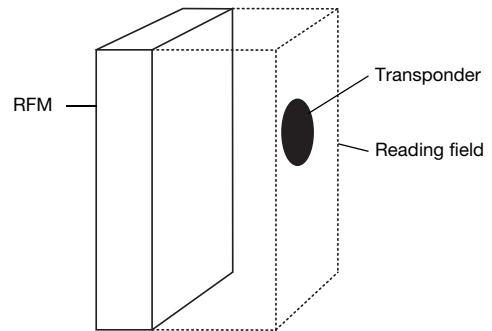
Services

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. 400	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 $\pm 10^\circ$ 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. 400mm 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 402** onwards

Part No.	Designation	Features
50102917	TFM 03 1110.210	Disc transponder, \varnothing 30 x 2.5mm, 112 byte memory
50102916	TFM 05 1110.210	Disc transponder, \varnothing 50 x 2.5mm, 112 byte memory
50102913	TFM 06 2225.220	Self-adhesive transponder, 55 x 55mm, 256 byte memory
50107102	Spacer 30 HT	Spacer for disc transponder, \varnothing 36 x 12mm
50107103	Spacer 50 HT	Spacer for disc transponder, \varnothing 56 x 12mm
50031256	MA 2	Connector unit, installation box for stand-alone operation
50103125	MA 21 100.2	Connector unit, multiNet network
50112893	MA 204i	Connector unit, PROFIBUS-DP
50112892	MA 208i	Connector unit, Ethernet TCP/IP

We reserve the right to make changes • RFM62_1_EN.fm

RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

RFM 62 ...
RFID read/write system



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

Features

- Compact writing and reading unit for operating ranges up to 400mm (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 2xxi

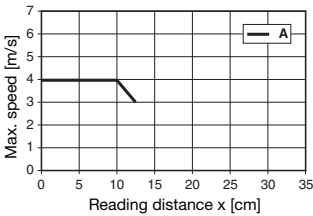


Reading behavior

RFM 62 SL 200 with Transponder TFM

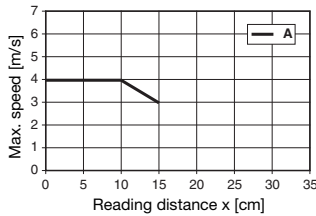
TFM 02...

Typ. reading behavior



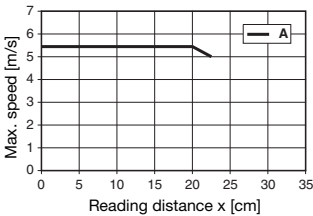
TFM 03...

Typ. reading behavior



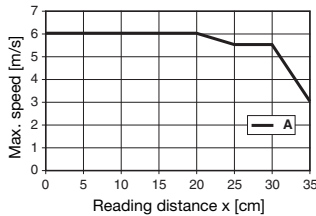
TFM 05...

Typ. reading behavior



TFM 08...

Typ. reading behavior



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.

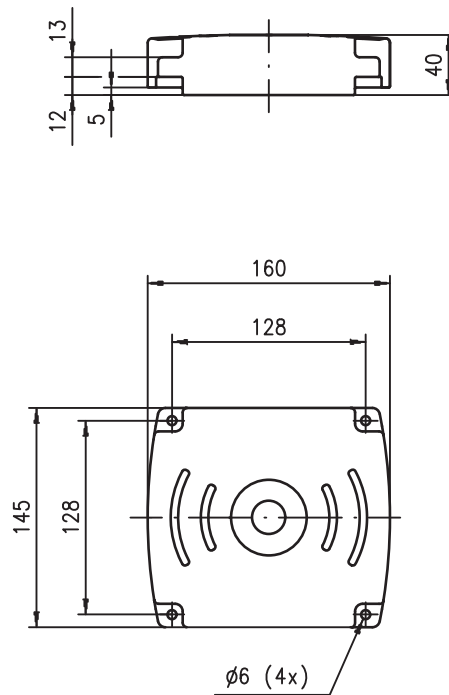
Electrical connection

Cable with system connector

Colour	Signal
gr/GY	+12 ... 30 V DC
ws/WH	0 V DC
gn/GN	RS 232 TxD
ge/YE	RS 232 RxD
br/BN	RS 232 GND
vi/VI	Trigger IN
ws-sw/WH-BK	SW OUT

OVERVIEW


Dimensioned drawing



We reserve the right to make changes • RFU61_Overview_EN.fm

												
RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

STATIONARY RFID READ/WRITE SYSTEM RFU 61

RFID read/write system	Op. range	Page
 RFU 61 SL 100 - EU	<input type="text" value="0"/> <input type="text" value="2000"/> mm	202



Common technical data		
Electrical data	Operating voltage U_B	12 ... 30VDC
	Power consumption	approx. 7W / 2.5W
	Switching output	8 ... 30VDC
	Trigger input	via IMRFU...
Data interface	Type	RS 232 (to IMRFU...), internal interface between RFU 61... and IMRFU...
	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
Mechanical data	Housing	ABS, black
	Weight	approx. 800g
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 2000mm (depends on transponder)**
- **Working frequency 868MHz (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 barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

STATIONARY UHF RFID READ/WRITE SYSTEM

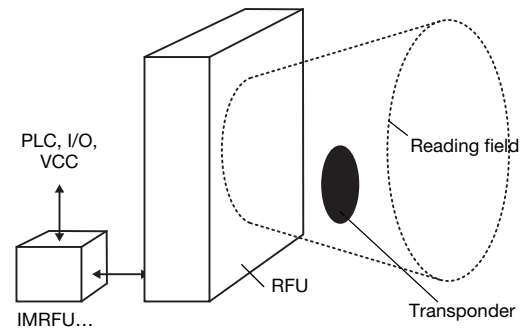
Part description Part No.	Description	Op. range [mm]	Transponder speed [m/s]	Interface
UHF RFID read/write system				
RFU 61 SL 100 - EU 50112441	Read/write device for UHF transponder (EPC 1 Gen 2), M8 connector 4-pin	max. 2000	max. 6.0	internal to IMRFU...



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 $\pm 40^\circ$ relative to the parallel surface at distance and speed. Because the field is not completely homogenous 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... .



We reserve the right to make changes • RFU61_1_EN.fm

Accessories (selection)			More accessories can be found from page 402 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 2000mm, M8 axial/open cable end, 4-pin, PVC	
50104526	K-D M8A-4P-5m-PVC	Connection cable 5000mm, M8 axial/open cable end, 4-pin, PVC	
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 1 mm, 60 bytes user data	



RFU 61 ...
RFID read/write system



Features

- Compact writing and reading unit for operating ranges up to 2000mm (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...



Stationary barcode identification

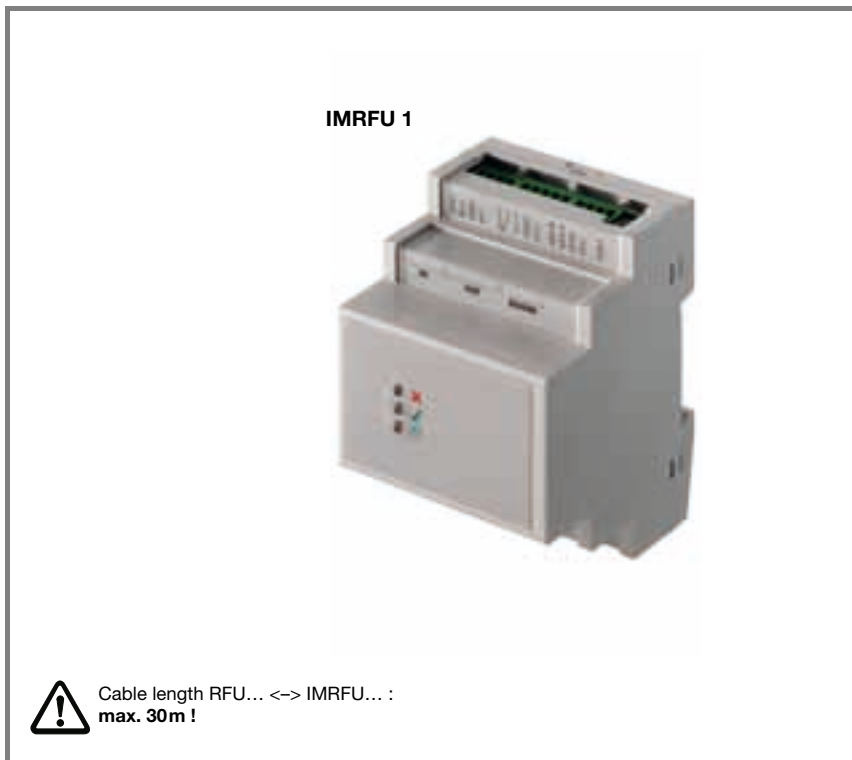
Mobile barcode identification

2D-code identification

RF identification

Connector unit

IMRFU 1



IMRFU 1

Cable length RFU... <-> IMRFU... : max. 30m !

Electrical connection

RFU 61 - M8 male 4-pole

	PIN	Color	Signal
1	1	br/BN	VCC
2	2	ws/WH	RS485 A
3	3	bl/BU	GND
4	4	sw/BK	RS486 B

IMRFU 1

Connector IN	PIN	Signal	Connector READER	PIN	Signal
1	1	IN1	1	1	VCC
2	2	GND	2	2	GND
3	3	n.c.	3	3	RS485 A
4	4	n.c.	4	4	RS485 B

Connector OUT	PIN	Signal	Connector CONTROLLER	PIN	Signal
1	1	VCC	1	1	n.c.
2	2	GND	2	2	GND
3	3	NO	3	3	VCC
4	4	NC	4	4	n.c.
4	4	NC	5	5	n.c.
			6	6	n.c.
			7	7	n.c.
			8	8	n.c.
			9	9	n.c.
			10	10	n.c.

Connector RS232	PIN	Signal
1	1	TX
2	2	RX

Industrial image processing

Distance meas. Positioning

Optical data transmission

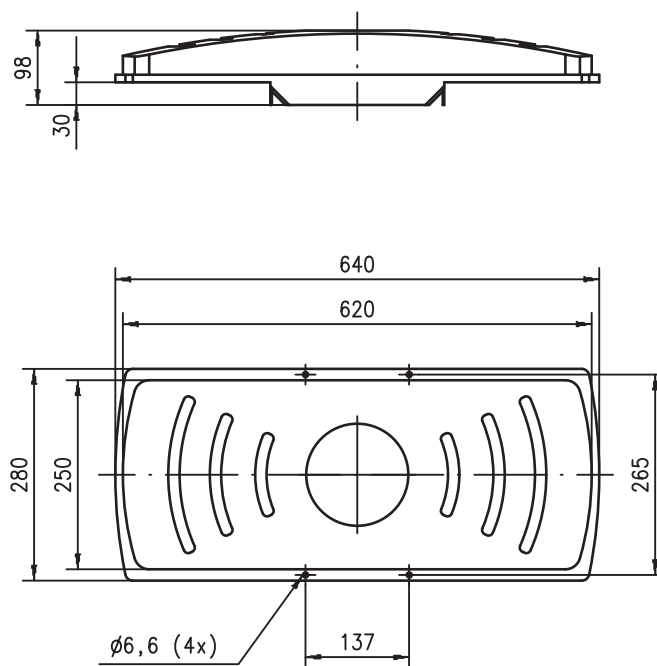
Networking Connector units

Accessories


Services

OVERVIEW



Dimensioned drawing



We reserve the right to make changes • RFU81_Overview_EN.fm

												
RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

STATIONARY RFID READ/WRITE SYSTEM RFU 81

RFID read/write system	Op. range	Page
 RFU 81 SL 100 - EU	 0 5000 mm	206



Common technical data		
Electrical data	Operating voltage U_B	12 ... 30VDC
	Power consumption	approx. 10W / 2.5W
	Switching output	8 ... 30VDC via IMRFU...
	Trigger input	
Data interface	Type	RS 232 (to IMRFU...), internal interface between RFU 81... and IMRFU...
	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
Mechanical data	Housing	ABS, black
	Weight	approx. 1500g
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 5000mm (depends on transponder)**
- **Working frequency 868MHz (UHF)**
- **Standardized protocols EPC 1 Gen 2**
- **Suitable for industrial usage**
- **High data transfer rate**
- **Configurable functions**
- **Connection via IMRFU... required**



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

STATIONARY UHF RFID READ/WRITE SYSTEM

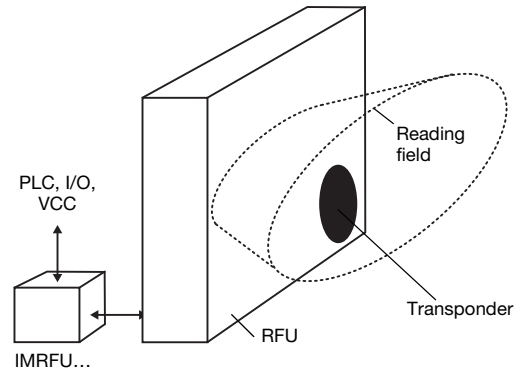
Part description Part No.	Description	Op. range [mm]	Transponder speed [m/s]	Interface
RFID read/write system				
RFU 81 SL 100 - EU 50112442	Read/write device for UHF transponder (EPC 1 Gen 2), terminals	max. 5000	max. 10.0	internal to IMRFU...



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 $\pm 30^\circ$ relative to the parallel surface at distance and speed. Because the field is not completely homogenous 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... .



We reserve the right to make changes • RFU81_1_EN.fm

Accessories (selection)		More accessories can be found from page 402 onwards
Part No.	Designation	Features
50112439	IMRFU 1	Connector unit for 1 RFU 61/RFU 81 (stand-alone), RS 232, IP 54
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 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

RFU 81 ...
RFID read/write system



Features

- Compact writing and reading unit for operating ranges up to 6000mm (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...



Stationary barcode identification

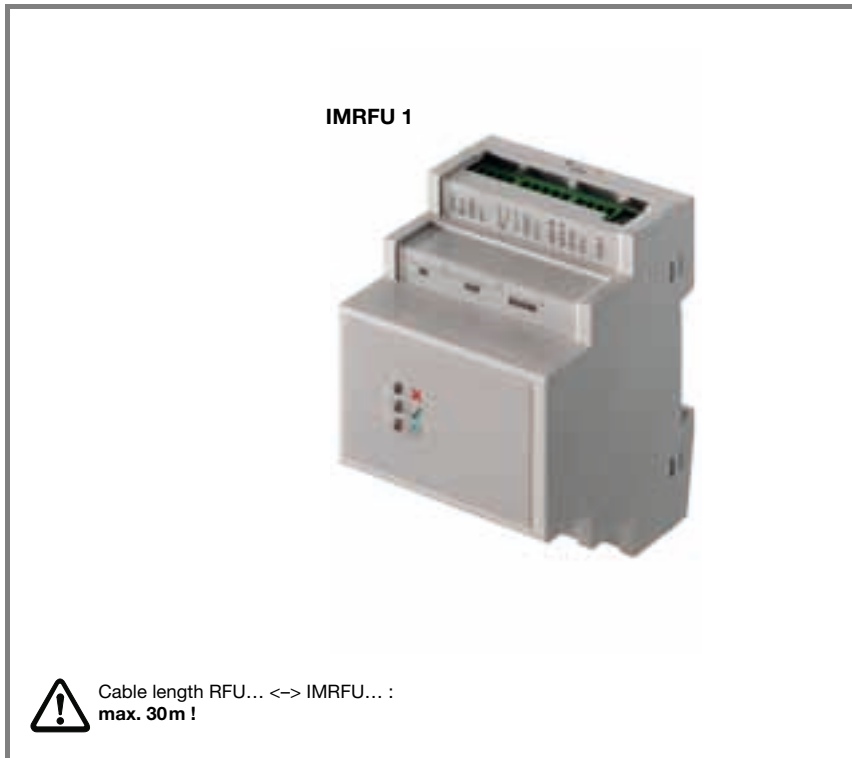
Mobile barcode identification

2D-code identification

RF identification

Connector unit

IMRFU 1



IMRFU 1

Cable length RFU... <-> IMRFU... : max. 30m !

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	Connector READER	PIN	Signal
	1	IN1		1	VCC
	2	GND		2	GND
	3	n.c.		3	RS485 A
	4	n.c.		4	RS485 B
Connector OUT	PIN	Signal	Connector CONTROLLER	PIN	Signal
	1	VCC		1	n.c.
	2	GND		2	GND
	3	NO		3	VCC
	4	NC		4	n.c.
	4	NC		5	n.c.
	4	NC		6	n.c.
Connector RS232	PIN	Signal		7	n.c.
	1	TX		8	n.c.
	2	RX		9	n.c.
				10	n.c.

Industrial image processing

Distance meas. Positioning





Optical data transmission

Networking Connector units

Accessories

Services

SELECTION TABLE

Series	Dimensions in mm (WxHxD)	Housing material		Read distance in mm (dependent on used transponder), ☐ = also reads barcodes							
		Plastic	Metal	10	25	100	400	1200			
 HFM 3500D	138 x 56 x 120	●		0	25	40	1D-code reading	450			
 HFM 3520D	138 x 56 x 120	●		0	25	40	1D-code reading	450			
 HFU 4500D	138 x 134 x 150	●		0	10	2D-code reading	150	30	1D-code reading	350	450
 HFU 4520D	138 x 134 x 150	●		0	10	2D-code reading	150	30	1D-code reading	350	450

We reserve the right to make changes • Auswahltabelle_RFID_mobil_EN.fm



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

MOBILE RFID READ/WRITE SYSTEMS



Reading method	Operating voltage		Interfaces G = via Gateway														Page									
			RFID: 13.56MHz, ISO 15693, read and write	RFID: 868MHz, 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	G	G	G	210
			●		●			●		●	●			G	G	G	G	G	G	G	G	G	G	G	G	214
				●		●		●	●		●			G	G	G	G	G	G	G	G	G	G	G	G	218
				●		●	●		●		●	●		G	G	G	G	G	G	G	G	G	G	G	G	222

Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

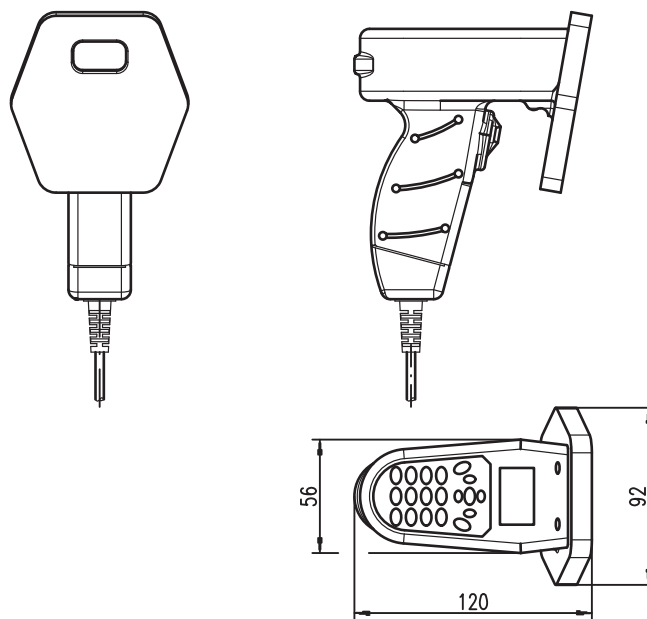
Networking Connector units

Accessories

Services

OVERVIEW


Dimensioned drawing



We reserve the right to make changes • HFM3500D_Overview_EN.fm

												
RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM3520 Page 214	HFU4500 Page 218	HFU4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

MOBILE RFID READ/WRITE SYSTEM HFM 3500D

RFID read/write system with integrated barcode reader	Reading range □ = RFID, □ = barcodes	Page						
 HFM 3500D	<table border="1"> <tr> <td>0</td> <td>25</td> <td>mm</td> </tr> <tr> <td>40</td> <td>450</td> <td>mm</td> </tr> </table>	0	25	mm	40	450	mm	212
0	25	mm						
40	450	mm						



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	4 lines, 16 characters each
Operational controls	Key pad	19 buttons
Mechanical data	Housing	ABS, black/grey
	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 barcodes
- 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 barcode content to transponder
- Selectable display and data output (hex/ASCII)
- Simple feedback from the PLC on the display
- Function selection via keyboard or PLC



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

MOBILE RFID READ/WRITE SYSTEM + BARCODE READER

Part description Part No.	Description	Op. range [mm]	Transponder speed [m/s]	Interface
RFID read/write system with barcode reader				
HFM 3500D 50110552	Combi read/write system for transponders (I-Code SLI, Tag-It HFI) and barcodes, 2m connection cable with helix cable	max. 25 (RFID), 40 ... 450 (barcodes)	max. 0.1	RS 232



Ergonomically shaped RFID/barcode 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 402** 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 2.5mm, 112 byte memory
50102916	TFM 05 1110.210	Disc transponder, Ø 50 x 2.5mm, 112 byte memory
50102913	TFM 06 2225.220	Self-adhesive transponder, 55 x 55mm, 256 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

												
RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM3520 Page 214	HFU4500 Page 218	HFU4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

HFM 3500D
RFID read/write system



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

Features

- Mobile read/write device with pistol handle for short operating ranges combined with barcodes
- 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 barcode content to transponder
- Selectable display and data output (hex/ASCII)
- Simple feedback from the PLC on the display
- Function selection via keyboard or PLC



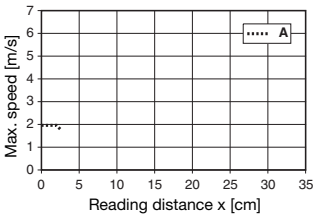
Reading field

HFM 3500D

RFID

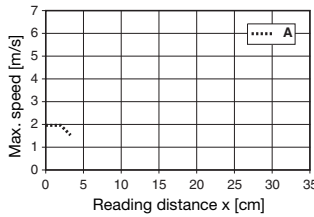
TFM 02...

Typ. reading behavior



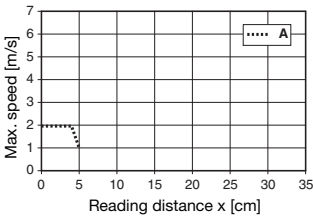
TFM 03...

Typ. reading behavior



TFM 05...

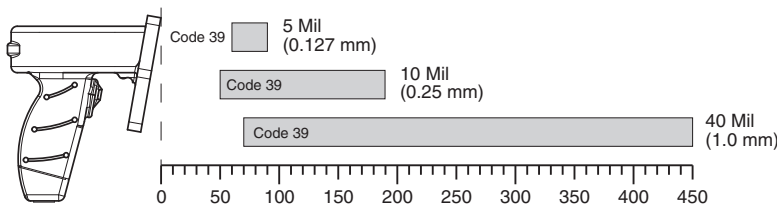
Typ. reading behavior



The specified values may deviate as a result of influences from temperature, installation site, read angle, etc.

A With HFM 3500D reading unit

Barcodes (scanning rate: 80 ... 120 scans/s)

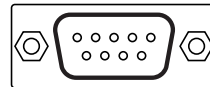


Electrical connection

HFM

RS 232 - female

5 4 3 2 1



9 8 7 6

PIN	Signal
2	TXD
3	RXD
5	GND
9	+ 5 V DC ext.
SH	Shield

USB Converter

USB Standard A



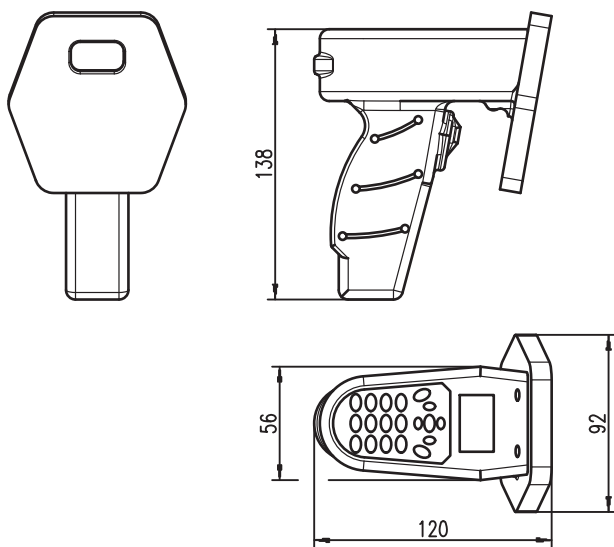
4 3 2 1

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

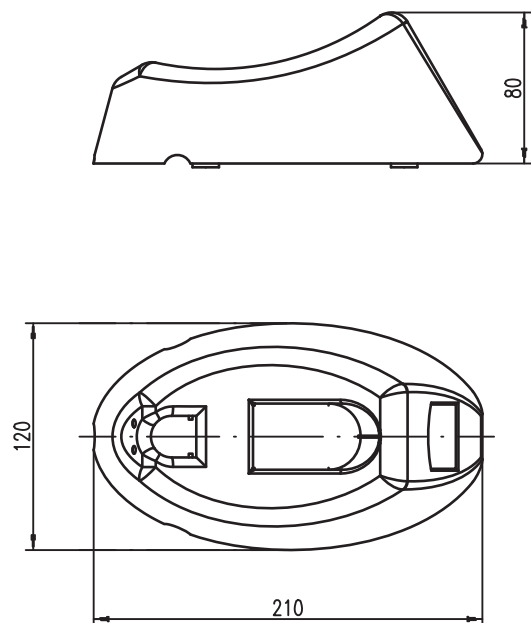
OVERVIEW

Dimensioned drawing

HFM 3520D





Base HX520




Further details can be found in the respective data sheet.

We reserve the right to make changes • HFM3520D_Overview_EN.fm

												
RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

MOBILE RFID READ/WRITE SYSTEM HFM 3520D

RFID read/write system with integrated barcode reader	Reading range □ = RFID, □ = barcodes	Page						
 HFM 3520D	<table border="1"> <tr> <td>0</td> <td>25</td> <td>mm</td> </tr> <tr> <td>40</td> <td></td> <td>450</td> </tr> </table>	0	25	mm	40		450	216
0	25	mm						
40		450						



Common technical data		
Electrical data	Operating voltage U_B	6.0VDC (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	4 lines, 16 characters each
Operational controls	Key pad	19 buttons
Mechanical data	Housing	HFM: ABS, black/grey Base: ABS, black/grey
	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 barcodes
- 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 barcode 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

Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

MOBILE RFID READ/WRITE SYSTEM + BARCODE READER

Part description Part No.	Description	Op. range [mm]	Transponder speed [m/s]	Interface
RFID read/write system with barcode reader				
HFM 3520D 50110551	Combi read/write system for transponders (I-Code SLI, Tag-It HFI) and barcodes, with Bluetooth® class 1, V 1.2	max. 25 (RFID), 40 ... 450 (barcodes)	max. 0.1	Bluetooth®



Ergonomically shaped RFID/barcode 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 402** 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
50102913	TFM 06 2225.220	Self-adhesive transponder, 55 x 55mm, 256 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 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

HFM 3520D
RFID read/write system



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

Features

- Mobile read/write device with pistol handle for short operating ranges combined with barcodes
- 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 barcode content to transponder
- Selectable display and data output (hex/ASCII)
- Simple feedback from the PLC on the display
- Function selection via keyboard or PLC



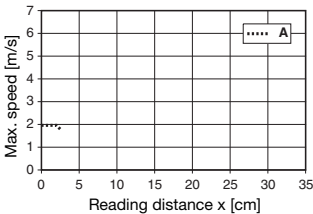
Reading field

HFM 3520D

RFID

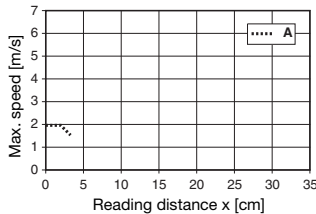
TFM 02...

Typ. reading behavior



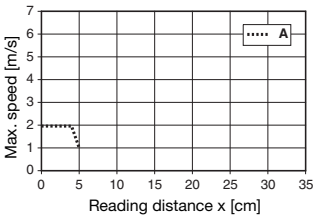
TFM 03...

Typ. reading behavior



TFM 05...

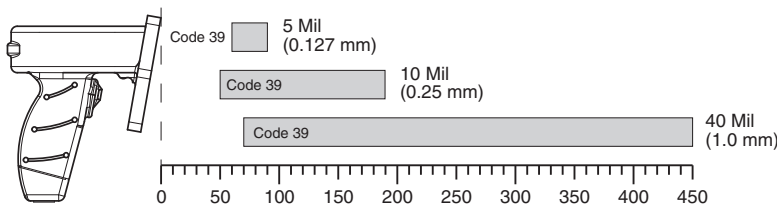
Typ. reading behavior



The specified values may deviate as a result of influences from temperature, installation site, read angle, etc.

A With HFM 3520D reading unit

Barcodes (scanning rate: 80 ... 120 scans/s)

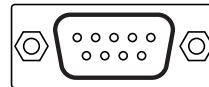


Electrical connection

HFM

RS 232 - female

5 4 3 2 1



9 8 7 6

PIN	Signal
2	TXD
3	RXD
5	GND
9	+ 5 V DC ext.
SH	Shield

USB Converter

USB Standard A

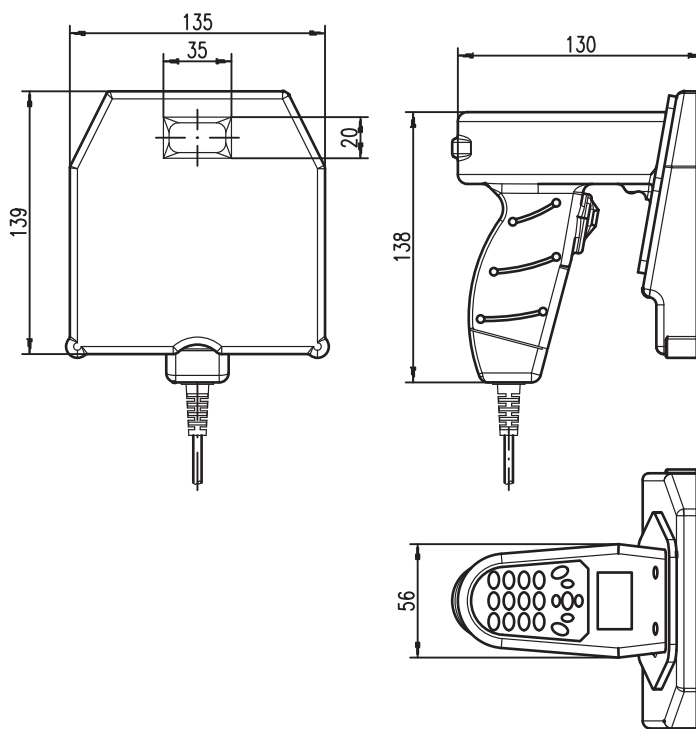


4 3 2 1

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

OVERVIEW




Dimensioned drawing



We reserve the right to make changes • HFU4500D_Overview_EN.fm

												
RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

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	<table border="1"> <tr> <td>0</td> <td>450</td> <td>mm</td> </tr> <tr> <td>30</td> <td>1D</td> <td>350</td> </tr> <tr> <td>10</td> <td>2D</td> <td>150</td> </tr> <tr> <td colspan="3">mm</td> </tr> </table>	0	450	mm	30	1D	350	10	2D	150	mm			220
0	450	mm												
30	1D	350												
10	2D	150												
mm														



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	4 lines, 16 characters each
Operational controls	Key pad	19 buttons
Mechanical data	Housing	ABS, black/grey
	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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

www.leuze.com/rfid-devices/

MOBILE RFID READ/WRITE SYSTEM + BARCODE READER

Part description Part No.	Description	Op. range [mm]	Transponder speed [m/s]	Interface
RFID read/write system with barcode reader				
HFU 4500D 50113280	Combi read/write system for transponders (EPC1 Gen 2) and 1D-/2D-codes, 2m 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!

We reserve the right to make changes • HFU4500D_1_EN.fm

Accessories (selection)			More accessories can be found from page 402 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 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 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

HFU 4500D
RFID read/write system



Features

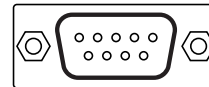
- Mobile read/write device with pistol handle for short operating ranges combined with 1D-/2D-codes
- Working frequency 868/915MHz
- Robust trigger button
- Easy to read and write data on transponders
- Suitable for industrial usage
- RS 232 interface or USB COM port emulation
- Functionality includes 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



Electrical connection

HFU RS 232 - female
5 4 3 2 1

USB Converter USB Standard A
4 3 2 1



9 8 7 6

PIN	Signal
2	TXD
3	RXD
5	GND
9	+ 5 V DC ext.
SH	Shield

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

Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

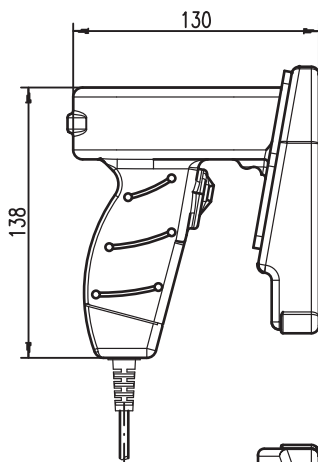
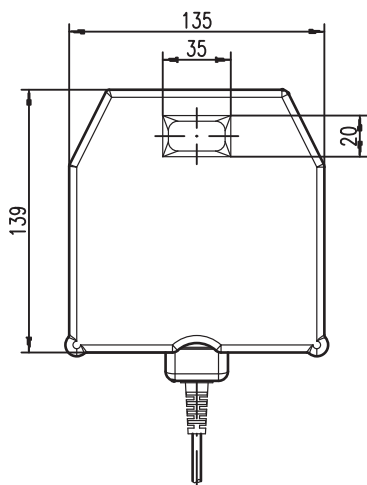
Accessories

Services

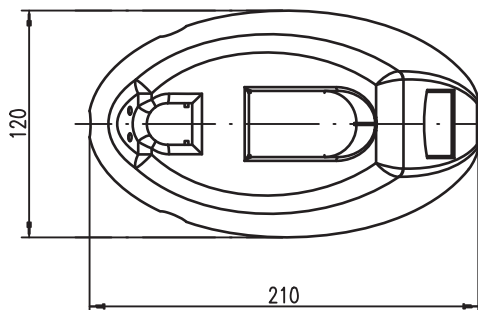
OVERVIEW

Dimensioned drawing

HFU 4520D



Base HX520






Further details can be found in the respective data sheet.

We reserve the right to make changes • HFU4520D_Overview_EN.fm

												
RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

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	<table border="1"> <tr> <td>0</td> <td>450</td> <td>mm</td> </tr> <tr> <td>30</td> <td>1D</td> <td>350</td> </tr> <tr> <td>10</td> <td>2D</td> <td>150</td> </tr> <tr> <td></td> <td></td> <td>mm</td> </tr> </table>	0	450	mm	30	1D	350	10	2D	150			mm	224
0	450	mm												
30	1D	350												
10	2D	150												
		mm												



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	4 lines, 16 characters each
Operational controls	Key pad	19 buttons
Mechanical data	Housing	HFU: ABS, black/grey Base: ABS, black/grey
	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

Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

www.leuze.com/rfid-devices/

MOBILE RFID READ/WRITE SYSTEM + BARCODE READER

Part description Part No.	Description	Op. range [mm]	Transponder speed [m/s]	Interface
RFID read/write system with barcode reader				
HFU 4520D 50114138	Combi read/write system for transponders (EPC1 Gen 2) and 1D-/2D-codes, with Bluetooth® class 1, V 1.2	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 402** 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 1 mm, 60 bytes user data

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RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

HFU 4520D
RFID read/write system



Features

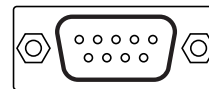
- Mobile read/write device with pistol handle for short operating ranges combined with 1D-/2D-codes
- Working frequency 868/915MHz
- Robust trigger button
- Easy to read and write data on transponders
- Suitable for industrial usage
- Transmission to HX520 base station via Bluetooth® standard V1.2, class 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



Electrical connection

HFU RS 232 - female
5 4 3 2 1

USB Converter USB Standard A
4 3 2 1



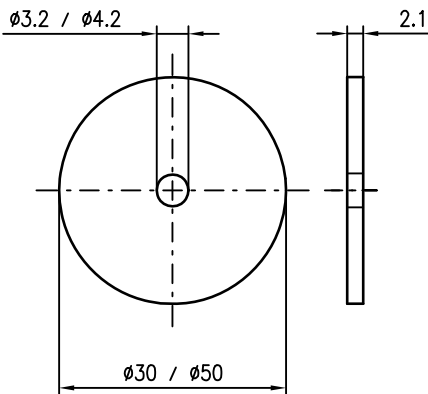
PIN	Signal
2	TXD
3	RXD
5	GND
9	+ 5 V DC ext.
SH	Shield

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

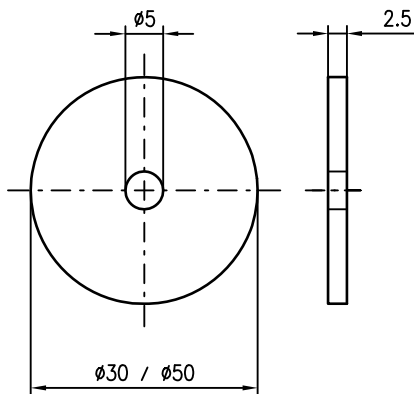
OVERVIEW

Dimensioned drawing

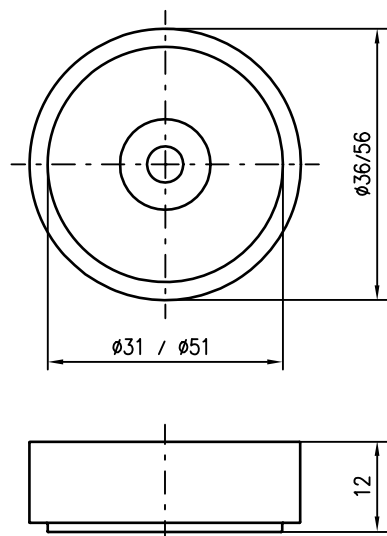
TFI 03 1101.120 / TFI 05 1101.120



TFI 03 1601.120 / TFI 05 1601.120





Spacer 30 HT / Spacer 50 HT

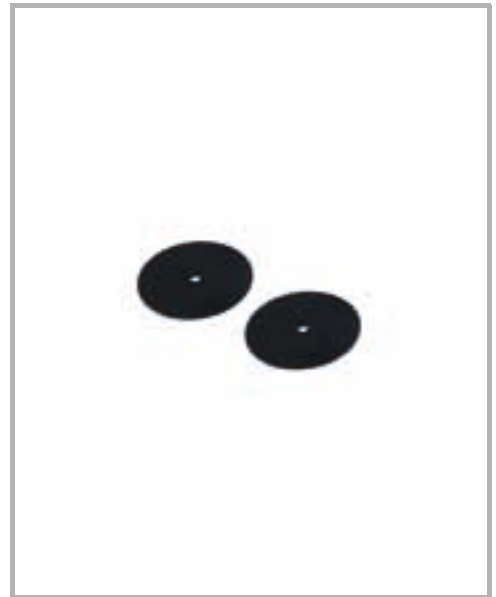


We reserve the right to make changes • TFI_Overview_EN.fm

												
RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

RFID FIXCODE-TRANSPONDER TFI, 125kHz

RFID fixcode transponder	Typ. read distance	Page
 TFI 03 ...	0 50 mm	228
 TFI 05 ...	0 80 mm	228



Common technical data		
Electrical data	Working frequency	125kHz
	Data protocol	EM4002
	User data	32bit
	Memory structure	1 block
	Memory access	read only
Mechanical data	Material	PC, black, partially printed
	Weight	2.8g ... 4.5g
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 ... +200 °C / -40 °C ... +200 °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 30mm and Ø 50mm



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

RFID TRANSPONDER, 125kHz WORKING FREQUENCY

Part description Part No.	Description (Ambient temp. operation/storage [°C])	Protection class	Weight [g]	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	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	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	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	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 ... +200)	-	3.0	-
Spacer 50 HT 50107103	Spacer for disc transponder, Ø 56 x 12 mm ¹⁾ (- / -25 ... +200)	-	4.0	-
BT TFM x26 50110631	Mounting kit 60 mm, aluminum, for high- temperature disk transponder	-	50	-

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.

We reserve the right to make changes • TFI_1_EN.fm

RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

TFI ...

RFID fixcode transponder



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

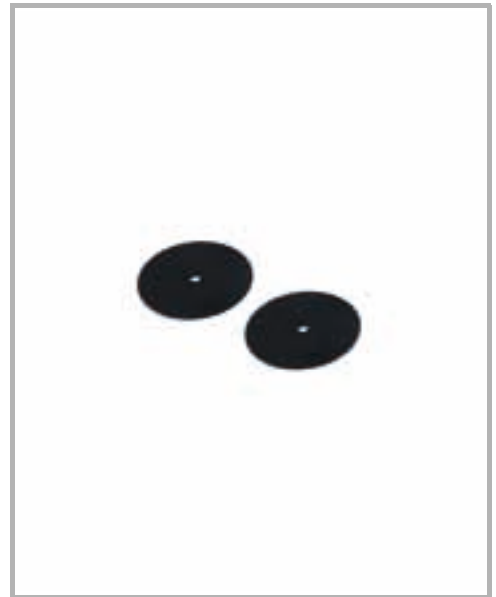
Networking Connector units

Accessories

Services

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

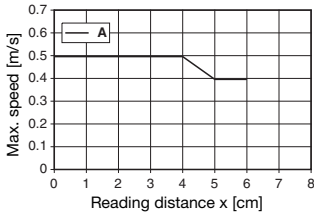


Reading behavior

With RFI 32 L 120

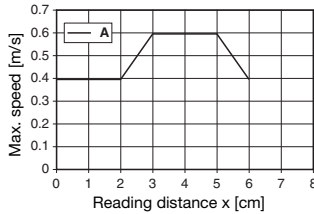
TFI 03 1101.120

Typ. reading behavior



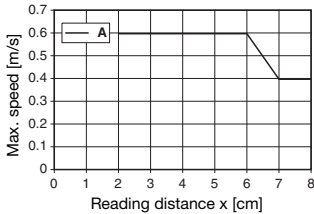
TFI 03 1601.120

Typ. reading behavior



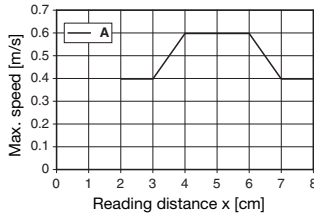
TFI 05 1101.120

Typ. reading behavior



TFI 05 1601.120

Typ. reading behavior



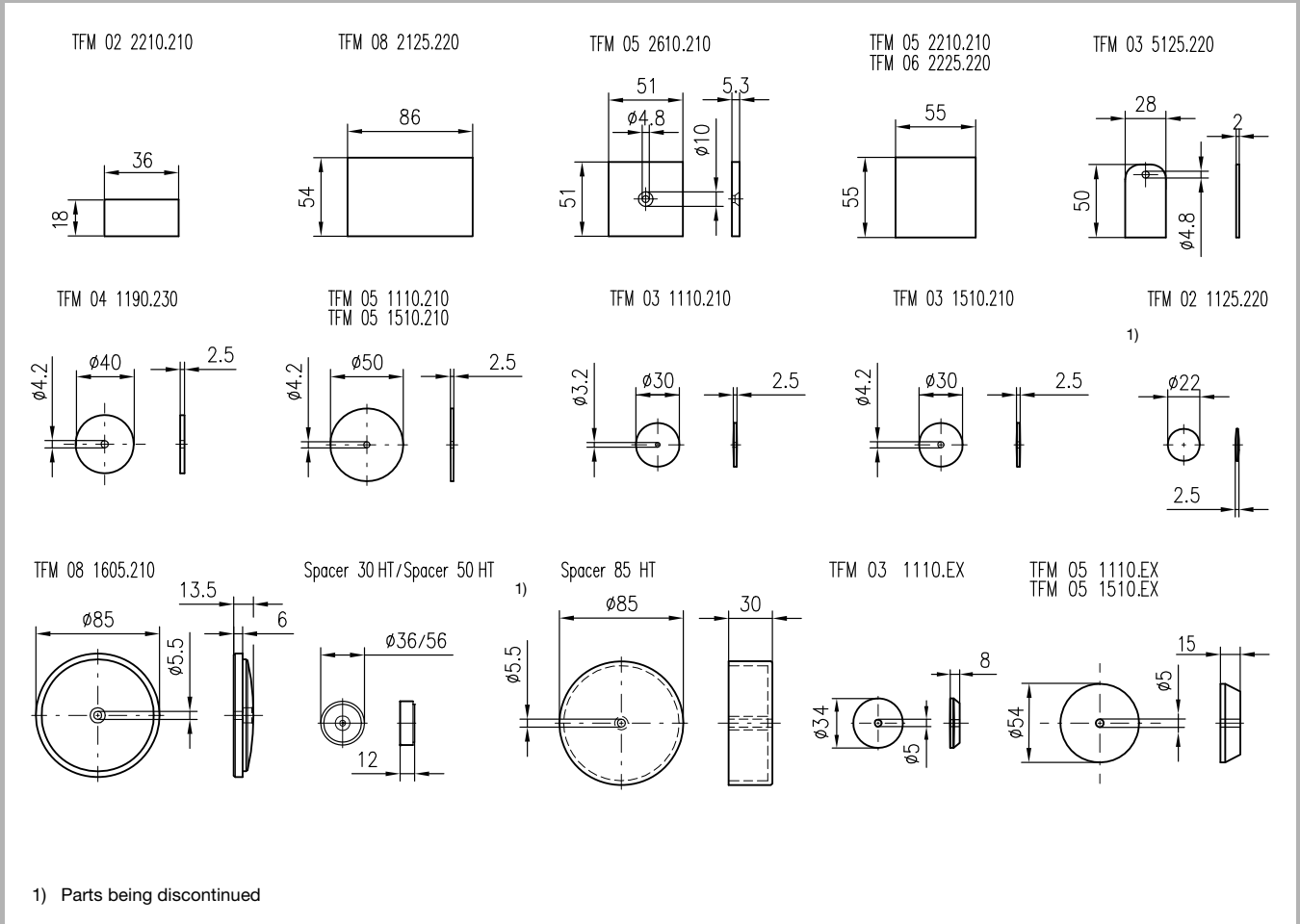
A With reading unit RFI 32 L 120



The specified values may deviate as a result of influences from temperature, installation site, read angle, etc.

OVERVIEW





Dimensioned drawing



We reserve the right to make changes • TFM_Overview_EN.fm

RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

RFID READ/WRITE-TRANSPONDER TFM, 13.56MHz

RFID transponder	Typ. scanning area	Page
 TFM 02...	10 50 mm ¹⁾	232
 TFM 03...	10 150 mm ¹⁾	232
 TFM 05...	20 350 mm ¹⁾	232
 TFM 08...	50 800 mm ¹⁾	234

1) Dependent on reader

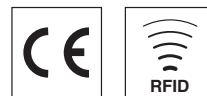


Common technical data		
Electrical data	Working frequency	13.56 MHz
	Memory size	44/112/256/1024 Byte ²⁾
	Block size	4 / 8 Byte
	Memory access	read/write, typ. 50ms/block, min. 10 ⁵ write processes
Mechanical data	Material	various, partially printed
	Weight	2g ... 50g
Environmental data	Ambient temp. (operation/storage)	see page 232/234/236
	Protection class	see page 232/234/236

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 210°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 210°C
- 30mm thick spacer for high-temperature disc transponder Ø 85mm
- Special transponders on request



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

RFID TRANSPONDER, 13.56MHz 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 2.5mm ¹⁾ (-25 ... +85 / -40 ... +85/+120 ²⁾)	IP 68	2g / PPS	256 Byte (Tag-IT HFI)
TFM 03 1110.210 50102917	Disc transponder, Ø 30 x 2.5mm ¹⁾ (-25 ... +85 / -40 ... +120)	IP 66	15g / Epoxy	112 Byte (I-Code 2 SLI)
TFM 03 1510.210 50106412	Disc transponder, Ø 30 x 2.5mm ¹⁾ (-25 ... +85 / -40 ... +85/+140 ²⁾)	IP 68	3g / PA	112 Byte (I-Code 2 SLI)
TFM 04 1190.230 50108290	Disc transponder, Ø 40 x 2.5mm ¹⁾ (-25 ... +85 / -40 ... +120)	IP 67	3g / Epoxy	1024 Byte (Infineon 10P)
TFM 05 1110.210 50102916	Disc transponder, Ø 50 x 2.5mm ¹⁾ (-25 ... +85 / -40 ... +120)	IP 66	15g / Epoxy	112 Byte (I-Code 2 SLI)
TFM 05 1510.210 50106413	Disc transponder, Ø 50 x 2.5mm ¹⁾ (-25 ... +85 / -40 ... +85/+140 ²⁾)	IP 68	3g / PA	112 Byte (I-Code 2 SLI)
RF self-adhesive transponder				
TFM 02 2210.210 50107790	Self-adhesive transponder, 18 x 36mm (-20 ... +50 / -20 ... +70)	IP 54	2g / PET	112 Byte (I-Code 2 SLI)
TFM 05 2210.210 50109232	Self-adhesive transponder, 55 x 55mm (-20 ... +50 / -20 ... +70)	IP 54	2g / PET	112 Byte (I-Code 2 SLI)
TFM 06 2225.220 50102913	Self-adhesive transponder, 55 x 55mm (-20 ... +50 / -20 ... +70)	IP 54	2g / PET	256 Byte (Tag-IT HFI)

1) Dimensions (subject to tolerances (± 0.5mm))

2) Time limited



The read/write transponders of series TFM are robust disk data carriers with 1024bytes 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 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

TFM ...
Read/write transponder



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

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

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

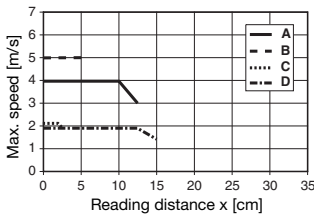
Accessories

Reading behavior

TFM 02 / 03 / 05 / 08

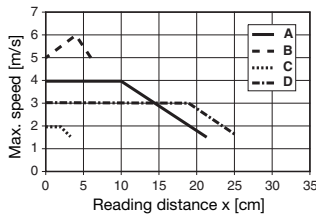
TFM 02...

Typ. reading behavior



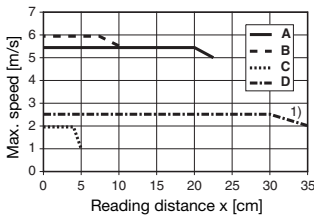
TFM 03...

Typ. reading behavior



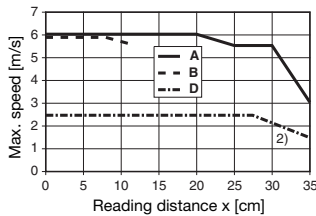
TFM 05...

Typ. reading behavior



TFM 08...

Typ. reading behavior



- 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, 13.56MHz 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 1605.210 50106414	High temperature transponder, Ø 85 x 13.5mm (-25 ... +100 / -25 ... +120/+210 ¹⁾)	IP 68	50g / PPS	44 Byte (I-Code 1)	
TFM 05 2610.210 50109317	High temperature transponder, 51 x 51 x 5.3mm (-40 ... +85 / -40 ... +85/+210 ¹⁾)	IP 68	50g / PPS	44 Byte (I-Code 1)	
RFID keyring transponder					
TFM 03 5125.220 50102956	Keyring transponder, 50 x 28 x 2.0mm (0 ... +50 / -20 ... +50)	IP 54	4g / PVC	256 Byte (Tag-IT HFI)	
RFID card transponder					
TFM 08 2125.220 50109233	Card transponder, 54 x 86 x 0.8mm (-20 ... +70 / -20 ... +85)	IP 68	5g / 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 12mm ¹⁾ (- / -25 ... +210)	-	3g / Ultramid	-	
Spacer 50 HT 50107103	Spacer for disc transponder TFM 05 1..., Ø 56 x 12mm ¹⁾ (- / -25 ... +210)	-	4g / Ultramid	-	
Spacer 85 HT 50106411	Spacer for HT-transponder TFM 08 16..., Ø 85 x 30mm (- / -25 ... +210)	-	20g / PPS	-	
BT TFM x26 50110631	Mounting kit 60 mm, for high-temperature disk transponder	-	50g / aluminum	-	

1) Time limited



The read/write transponders of series TFM are robust disk data carriers with 256bytes 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 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

TFM ...
Read/write transponder



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Features

- Suitable for read-write units of the RFM.../HFM... series
- Universal robust disk transponders for industrial environments
- High temperature-proof transponders up to 210°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 210°C
- 30mm thick spacer for high-temperature disc transponder Ø 85mm
- Special transponders on request



Reading behavior

TFM 02 / 03 / 05 / 08

Electrical connection

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

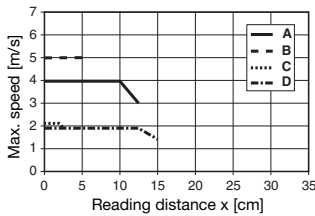
Networking
Connector units

Accessories

Services

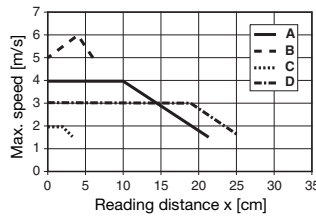
TFM 02...

Typ. reading behavior



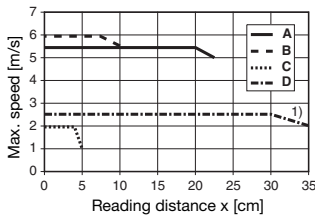
TFM 03...

Typ. reading behavior



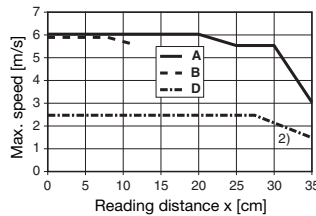
TFM 05...

Typ. reading behavior



TFM 08...

Typ. reading behavior



- 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, 13.56MHz 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				
TFM 03 1110.Ex 50108071	Disc transponder with ATEX 2 approval, Ø 34 x 8mm (-25 ... +60 / -40 ... +85)	IP 67	10g / PU	112 Byte (I-Code 2 SLI)
TFM 05 1110.Ex 50108070	Disc transponder with ATEX 2 approval, Ø 54 x 15mm (-25 ... +60 / -40 ... +85)	IP 67	50g / PU	112 Byte (I-Code 2 SLI)
TFM 05 1510.Ex 50110026	Disc transponder with ATEX 2 approval, Ø 54 x 15mm (-25 ... +60 / -40 ... +120)	IP 67	50g / PU	112 Byte (I-Code 2 SLI)



The read/write transponders of series TFM are robust disk data carriers with 256bytes 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.



TFM ... Ex
Read/write transponder



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Features

- Approved for use in Ex Zone 2
- Suitable for RFM 32 SL 200 Ex n read/write device
- Universal robust disk transponders for industrial environments
- Other transponders on request



Electrical connection

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

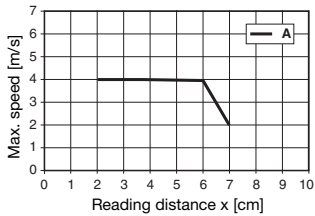
Accessories

Reading behavior

TFM 03 / 05 ... Ex

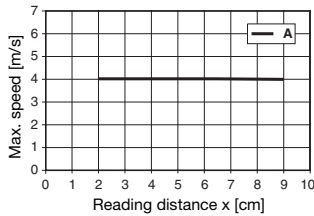
TFM 03 ... Ex

Typ. reading behavior



TFM 05 ... Ex

Typ. reading behavior



A with RFM 32 SL 200 Ex n reading unit

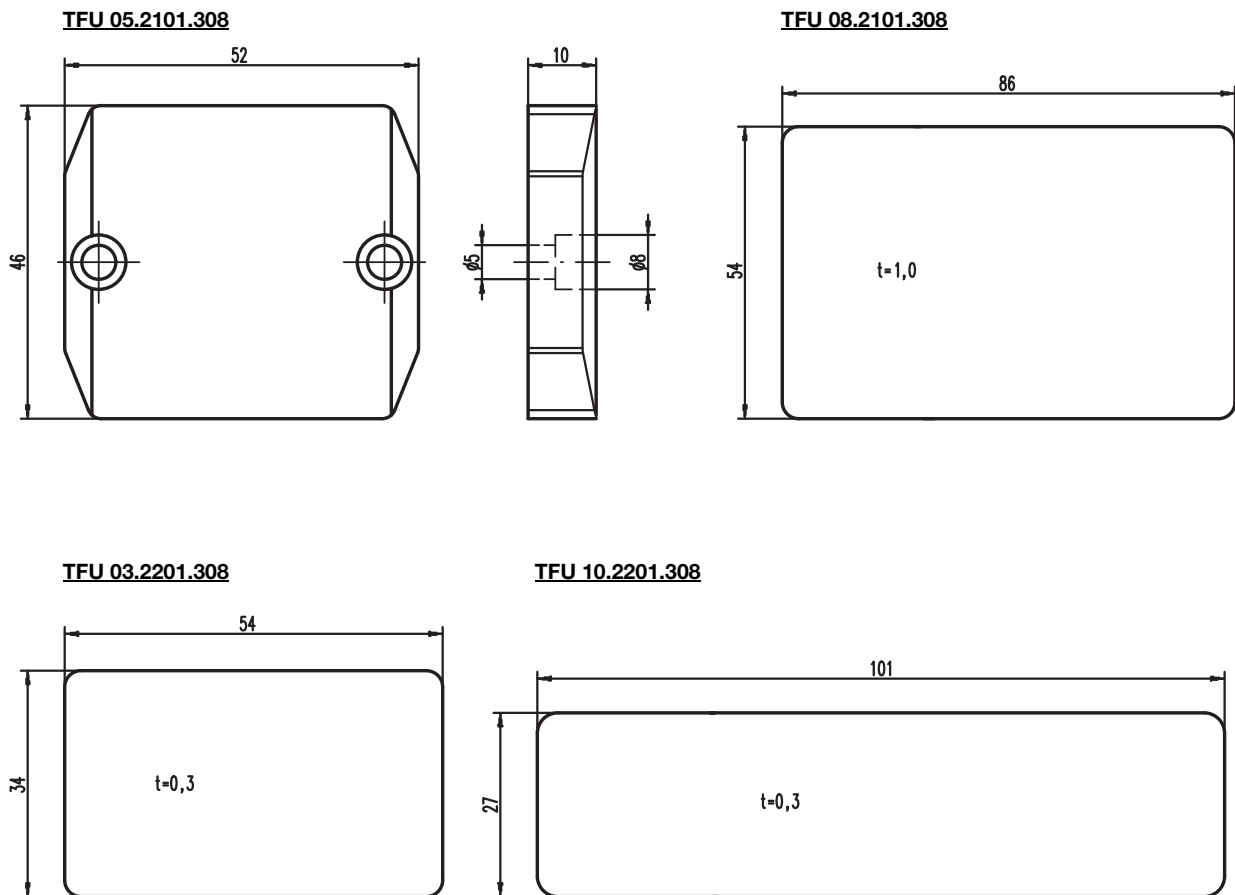


The specified values may deviate as a result of influences from temperature, installation site, read angle, etc.

Services

OVERVIEW





Dimensioned drawing



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RFID READ/WRITE-TRANSPONDER TFU, 868MHz

RFID UHF transponder	Typ. scanning area	Page
 TFU 03 ...	0 1000/4000 mm ¹⁾	240
 TFU 05 ...	0 1500/3000 mm ¹⁾	240
 TFU 08 ...	0 600/1700 mm ¹⁾	240
 TFU 10 ...	0 1500/5000 mm ¹⁾	240

1) Dependent on reader



Common technical data

Electrical data	Working frequency	868MHz
	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 (PPS) TFU 03/10: Paper/foil TFU 08: Plastic (PPS)
	Weight	5g ... 30g
Environmental data	Ambient temp. (operation/storage)	Transponder TFU 05: -25°C ... +65°C / -40°C ... +85°C ¹⁾
		Transponder TFU 03/10: -20°C ... +50°C / -20°C ... +70°C
		Transponder TFU 08: -20°C ... +50°C / -20°C ... +85°C
	Protection class	TFU 05/08: IP 68 TFU 03/10: IP 54

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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

UHF RFID TRANSPONDER, 868 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	3g / paper/foil	60 bytes (480 bits)
TFU 05 2101.308 50112257	On-Metal transponder, 47 x 52 x 9 mm ¹⁾ (-25 ... +65 / -40 ... +125 ²⁾)	IP 68	30g / 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	20g / 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	3g / paper/foil	12 bytes (96 bits)

1) Dimensions (subject to tolerances (± 0.5 mm))
2) Time limited

												
RFI 32 Page 180	RFM 12 Page 184	RFM 32 Page 188	RFM 62 Page 196	RFU 61 Page 200	RFU 81 Page 204	HFM 3500 Page 210	HFM 3520 Page 214	HFU 4500 Page 218	HFU 4520 Page 222	TFI Page 226	TFM Page 230	TFU Page 238

TFU ...
Read/write transponder



Features

- Suitable for read-write units of the RFU.../HFU... series
- Industry transponder for temperatures up to +125°C
- Economical label transponder



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 / 0.5W	RFU 81 / 1.0W	RFU 81 / 1.5W
TFU 03 2201.308	50114086	380mm max. 550mm	850mm max. 1000mm	1500mm max. 2200mm	3000mm max. 4000mm	4000mm max. 4500mm
TFU 05 2101.308	50112257	180mm max. 200mm	350mm max. 400mm	600mm max. 700mm	1000mm max. 1200mm	1600mm max. 2000mm
TFU 05 2101.308 on metal		550mm max. 700mm	1300mm max. 1500mm	1700mm max. 2000mm	2000mm max. 2500mm	3000mm max. 4000mm
TFU 08 2101.308	50112913	180mm max. 200mm	500mm max. 600mm	750mm max. 1200mm	1200mm max. 1700mm	1700mm max. 2200mm
TFU 10 2201.308	50112443	680mm max. 750mm	1500mm max. 1600mm	1500mm max. 2200mm	3000mm max. 4000mm	4000mm max. 5000mm



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.

www.leuze.com/rfid-devices/

Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

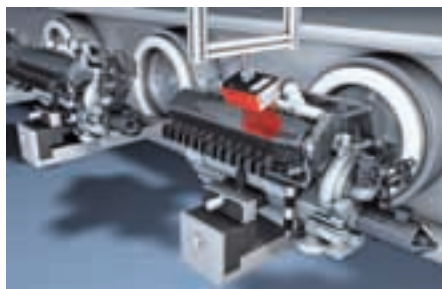
Accessories

Services

OVERVIEW



Completeness inspection

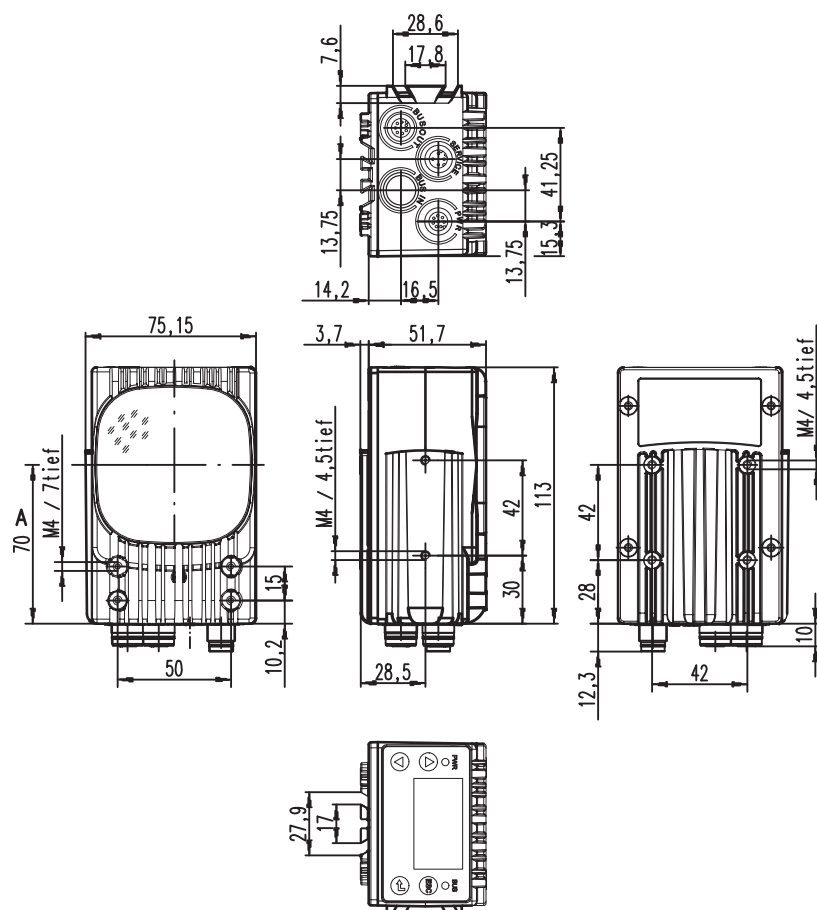


Reading dot-peened Data Matrix codes



Components completeness and traceability

Dimensioned drawing



A Optical axis

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Smart camera LSIS 400i

LSIS 400i 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 (white), digitally controlled, motor-driven focus adjustment and much more.

Camera type	Software	Lens	Page
LSIS 412i M43 - W1	Blob analysis	Focal length 8 mm	244
LSIS 412i M45 - W1	Blob analysis	Focal length 16 mm	244
LSIS 422i M43 - W1	Code reading	Focal length 8 mm	146
LSIS 422i M45 - W1	Code reading	Focal length 16 mm	146
LSIS 462i M43 - W1	General purpose	Focal length 8 mm	246
LSIS 462i M45 - W1	General purpose	Focal length 16 mm	246



Common technical data

Electrical data	Operating voltage U_B	18 ... 30VDC
	Power consumption	max. 10W
	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	54 μ s ... 20ms
	Focal length	8mm / 16mm
	Object distance	50mm ... ∞ /75mm ... ∞
Mechanical data	Housing	diecast aluminum
	Weight	500g
Environmental data	Ambient temp. (operation/storage)	0°C ... +45°C / -20°C ... +70°C
	VDE safety class	III
	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 integrated webConfig tool
- Homogeneous illumination of the entire image field for considerably better results
- 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
- Simple diagnostics through multi-lingual display (5 languages) with buttons and LED status displays



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

SMART CAMERA

Part description Part No.	Description	Software	Focal length of the lens	Front cover
Smart camera				
LSIS 412i M43 - W1 50108177	Smart camera	Blob analysis	8mm	glass
LSIS 412i M43 - W1 - 01 50112928	Smart camera	Blob analysis	8mm	plastic
LSIS 412i M45 - W1 50108990	Smart camera	Blob analysis	16mm	glass
LSIS 412i M45 - W1 - 01 50112929	Smart camera	Blob analysis	16mm	plastic



Fast configuration directly via the webConfig tool integrated in the smart camera.

Accessories / connection cables

More accessories can be found from **page 403** onwards

Part No.	Designation	Features
see P.	KB M12/8-...-BA	Connection cable POWER-IO-DATA, M12 axial socket, for PWR, see p. 408
see P.	KB M12/8-...-SA	Connection cable POWER-IO-DATA, M12 axial plug, for BUS OUT, see p. 409
see P.	KB ET - ... - SA	Connection cable IND. ETHERNET, M12 axial plug, for SERVICE, see p. 412
see P.	KB ET-...-SSA	Connection cable IND. ETHERNET, M12 axial plug, for SERVICE, see p. 413
see P.	KB ET-...-SA-RJ45	Connection cable IND. ETHERNET, M12 plug/RJ45, for SERVICE, see p. 413
50108991	D - ET1	User-configurable RJ45 plug
50109832	KDS ET-M12/ RJ45 W-4P	ETHERNET adapter M12 - RJ45
50027375	BT 56	Mounting device with dovetail for rod D = 16 ... 20mm
50111224	BT 59	Mounting device with dovetail for ITEM aluminum profile

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LSIS 412i
Smart camera



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

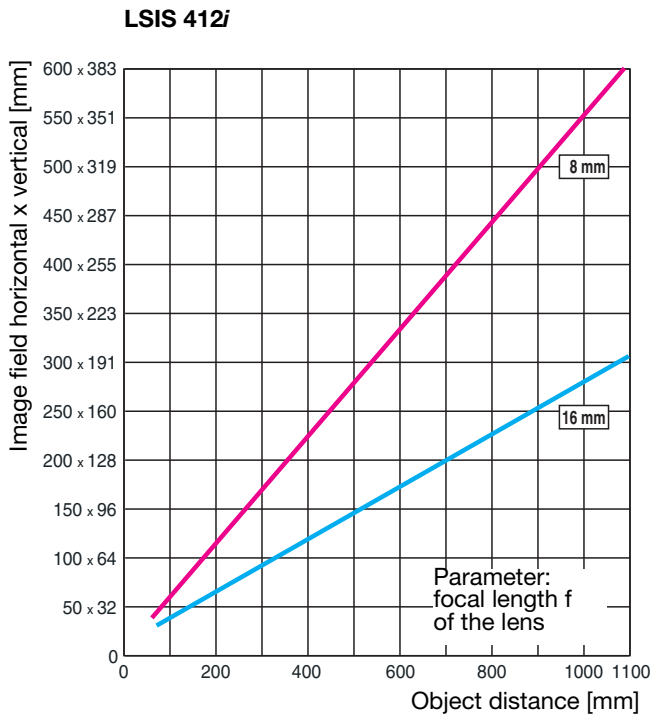
Services

LSIS 412i software features (blob analysis)

- Simple operation: fast setup of tests by means of configurable software via standard Web browser (Ethernet)
- Store camera and illumination settings in the program (incl. motorized adjustment of focus position)
- Image preprocessing functions, such as smoothing and filtering
- Working ranges: rectangle, ellipse or polygon
- Any number of inspection windows
- Test for presence, completeness, type, position and angle
- Position and rotational compensation (360°)
- Graphical adjustment of process interfaces (Ethernet, serial interface, display, configurable digital I/Os and log file)
- Statistical data
- Manual program selection via Ethernet, serial interface, digital inputs or display
- Image memory for process-, error- and reference images
- Real-time clock for date and time stamp
- User management with password protection
- Device diagnostics

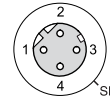


Size of the image field as a function of the object distance



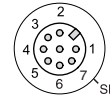
Electrical connection

SERVICE - female, D-cod.



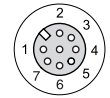
PIN	Signal	Colour
1	TD+	ge / YE
2	RD+	ws / WH
3	TD-	or / OG
4	RD-	bl / BU
SH	FE	

PWR - male, A-cod.



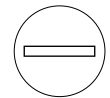
PIN	Signal	Colour
1	VIN	br / BN
2	IO1	ws / WH
3	GND	bl / BU
4	IO2	sw / BK
5	IO3	gr / GY
6	IO4	rs / PK
7	NC	vi / VT
SH	FE	or / OG

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
SH	FE	rt / RD

BUS IN



SMART CAMERA

Part description Part No.	Description	Software	Focal length of the lens	Front cover
Smart camera				
LSIS 462i M43 - W1 50113053	Smart camera (General Purpose System)	Blob analysis and code reading	8mm	glass
LSIS 462i M43 - W1 - 01 50113052	Smart camera (General Purpose System)	Blob analysis and code reading	8mm	plastic
LSIS 462i M45 - W1 50113051	Smart camera (General Purpose System)	Blob analysis and code reading	16mm	glass
LSIS 462i M45 - W1 - 01 50113037	Smart camera (General Purpose System)	Blob analysis and code reading	16mm	plastic



Fast configuration directly via the webConfig tool integrated in the smart camera.

Accessories / connection cables

More accessories can be found from **page 403** onwards

Part No.	Designation	Features
see P.	KB M12/8-...-BA	Connection cable POWER-IO-DATA, M12 axial socket, for PWR, see p. 408
see P.	KB M12/8-...-SA	Connection cable POWER-IO-DATA, M12 axial plug, for BUS OUT, see p. 409
see P.	KB ET - ... - SA	Connection cable IND. ETHERNET, M12 axial plug, for SERVICE, see p. 412
see P.	KB ET-...-SSA	Connection cable IND. ETHERNET, M12 axial plug, for SERVICE, see p. 413
see P.	KB ET-...-SA-RJ45	Connection cable IND. ETHERNET, M12 plug/RJ45, for SERVICE, see p. 413
50108991	D - ET1	User-configurable RJ45 plug
50109832	KDS ET-M12/ RJ45 W-4P	ETHERNET adapter M12 - RJ45
50027375	BT 56	Mounting device with dovetail for rod D = 16 ... 20mm
50111224	BT 59	Mounting device with dovetail for ITEM aluminum profile

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LSIS 462i
Smart camera



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

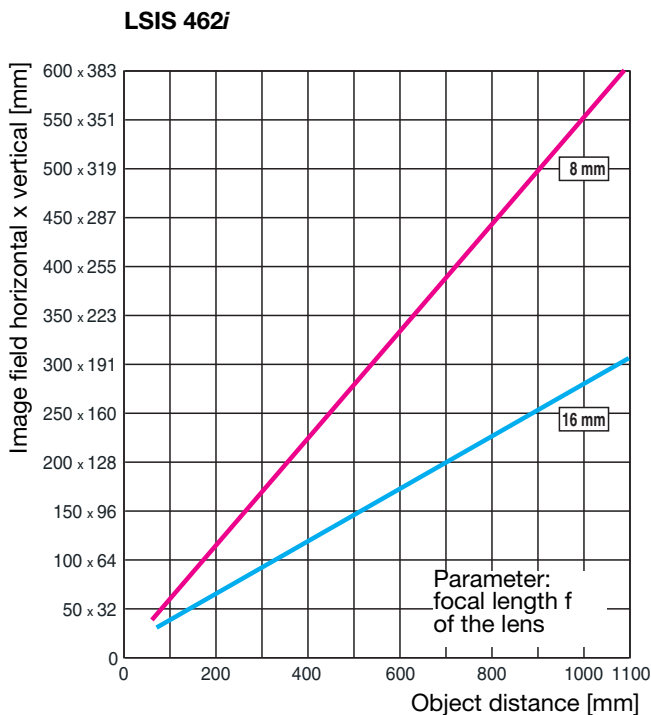
LSIS 462i software features (general purpose system)

Same features as LSIS 412i (see page 245), but also:

- Reads the most important 1D- and 2D-codes (Code 39, Code 128, EAN/UPC, 2/5 Interleaved, Codabar, Data Matrix code ECC 200)
- Omnidirectional reading of printed, laser-etched or dot-peened codes
- Multiple codes can be read – up to 99 codes on each image
- Reference code comparison function
- Evaluation of the code quality through quality parameters for 1D and 2D codes (ISO/IEC 15416, 15415 and 16022), with warning output
- Display of the code content
- Configurable data output

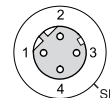


Size of the image field as a function of the object distance



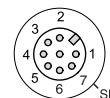
Electrical connection

SERVICE - female, D-cod.



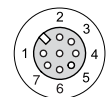
PIN	Signal	Colour
1	TD+	ge / YE
2	RD+	ws / WH
3	TD-	or / OG
4	RD-	bl / BU
SH	FE	

PWR - male, A-cod.



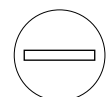
PIN	Signal	Colour
1	VIN	br / BN
2	IO1	ws / WH
3	GND	bl / BU
4	IO2	sw / BK
5	IO3	gr / GY
6	IO4	rs / PK
7	NC	vi / VT
SH	FE	or / OG

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
SH	FE	rt / RD

BUS IN



Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

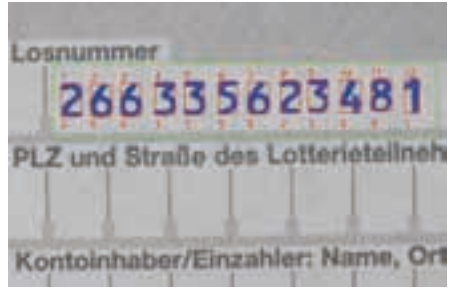
OVERVIEW



Pattern detection



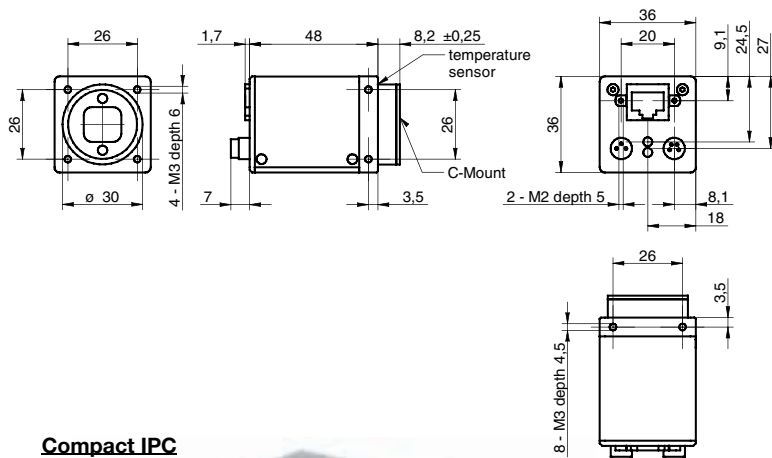
Completeness inspection



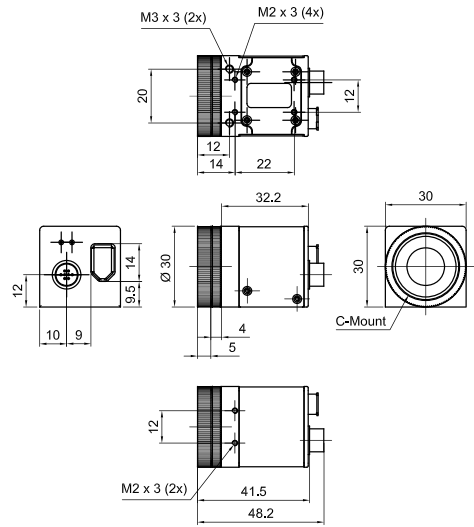
Character reading

Dimensioned drawing

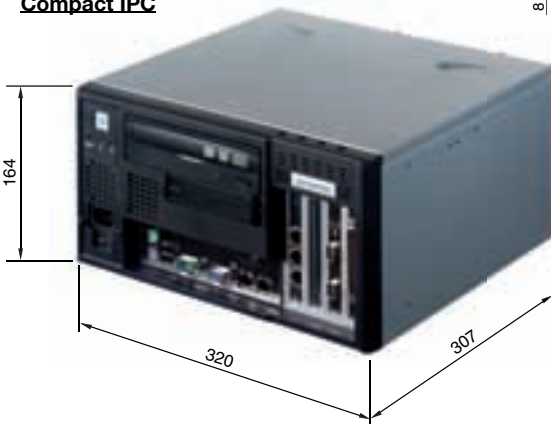
GigE camera ... - M2/... - C2



FireWire camera ... - M1/... - C1



Compact IPC



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INDUSTRIAL IMAGE PROCESSING visionPOWERBOX

Camera type	Data	Page
FireWire / GigE camera ...LR - M... (monochromatic) ...LR - C... (color)	656x494 pixels, sensor size 1/3", max. 58/90 images/s	250
FireWire / GigE camera ...HR - M... (monochromatic) ...HR - C... (color)	1,392x1,040 pixels, sensor size 1/2", max. 17/20 images/s	250



Common technical data		
PC	Basic device	Compact IPC
	Processor	Intel dual core
	Storage media	Hard disk, DVD drive
	Operating system	Windows XP
Interfaces	Serial	6 x USB, 1x RS 232, 2x PCI-E, keyboard, mouse
	Parallel	2 x PCI
	LAN	2 x Ethernet (10/100/1000MBit/s)
	Video output	VGA (max. 1,600x1,200)
Mechanical	Housing	aluminium
Electrical data	Operating voltage U_B	230VAC
	Power consumption	300W (w/o options)
Environmental data	Operating temperature	0°C ... +60°C
	Air humidity	< 90% (non-cond.)

Features

- **Compact-IPC-based image processing system for digital cameras (FireWire and Gigabit Ethernet)**
- **Extensive image processing software**
- **Graphical configuration of inspection tasks**
- **Documentation of inspection results; saving of reference images and error images**
- **Multi-camera operation possible (synchronous or sequential)**
- **Cameras with progressive scan, square pixels and partial scan**
- **Optional remote maintenance**



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

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Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

IMAGE PROCESSING WITH DIGITAL CAMERAS

Part description Part No.	Description	Optional camera interfaces
Image processing system		
V-SYST-POWERBOX-I-K-01 50114488	Compact industrial-PC-based image processing system (incl. software)	FireWire, Gigabit-Ethernet



Image-processing solutions are complex systems which usually require an in-depth analysis of the given problem. Please contact our specialists.

Our product spectrum in the service area includes feasibility studies, delivery of complete solutions, mounting and commissioning, training of the operating personnel, service and maintenance, hotline and technical support.

Part description Part No.	Description	Camera type	Resolution [Pixels]	Image capture rate [fps]
FireWire cameras, dimensions [mm]: 30 x 30 x 48 (W x H x D)				
V-CAM-MON-L-1-1/3-F033B 50106927	FireWire camera LR-M1 with 1/3"-Chip	Monochrome	656 x 494	max. 58
V-CAM-COL-L-1-1/3-F033C 50107150	FireWire camera LR-C1 with 1/3"-Chip	Color	656 x 494	max. 58
V-CAM-MON-M-1-1/2-F146B 50108697	FireWire camera HR-M1 with 1/2"-Chip	Monochrome	1,392 x 1,040	max. 17
V-CAM-COL-M-1-1/2-F146C 50108696	FireWire camera HR-C1 with 1/2"-Chip	Color	1,392 x 1,040	max. 17
Gigabit Ethernet (GigE) cameras, dimensions [mm]: 36 x 36 x 48 (W x H x D)				
V-CAM-MON-L-2-1/3-TXG03 50114560	GigE camera LR-M2 with 1/3"-Chip	Monochrome	656 x 494	max. 90
V-CAM-COL-L-2-1/3-TXG03 50114558	GigE camera LR-C2 with 1/3"-Chip	Color	656 x 494	max. 90
V-CAM-MON-M-2-1/2-TXG13 50114561	GigE camera HR-M2 with 1/2"-Chip	Monochrome	1,392 x 1,040	max. 20
V-CAM-COL-M-2-1/2-TXG13 50114559	GigE camera HR-C2 with 1/2"-Chip	Color	1,392 x 1,040	max. 20

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Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

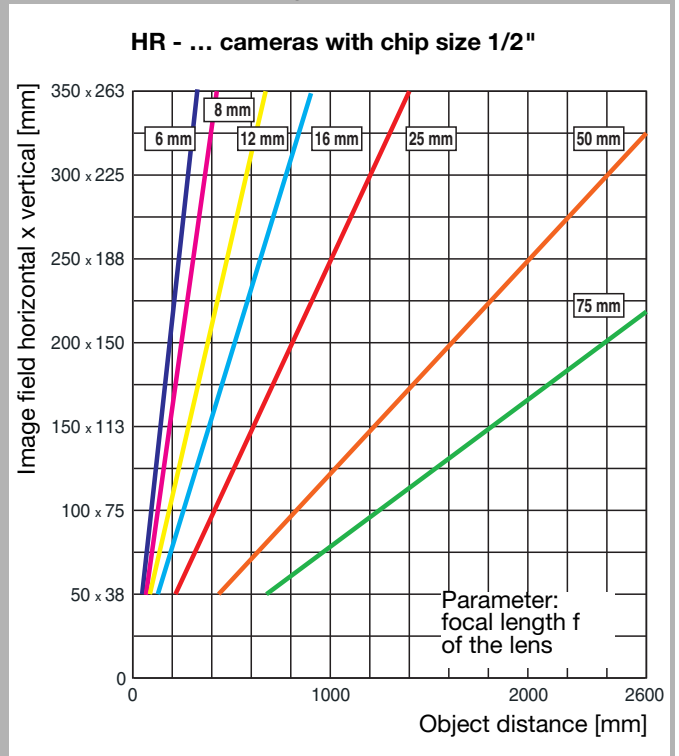
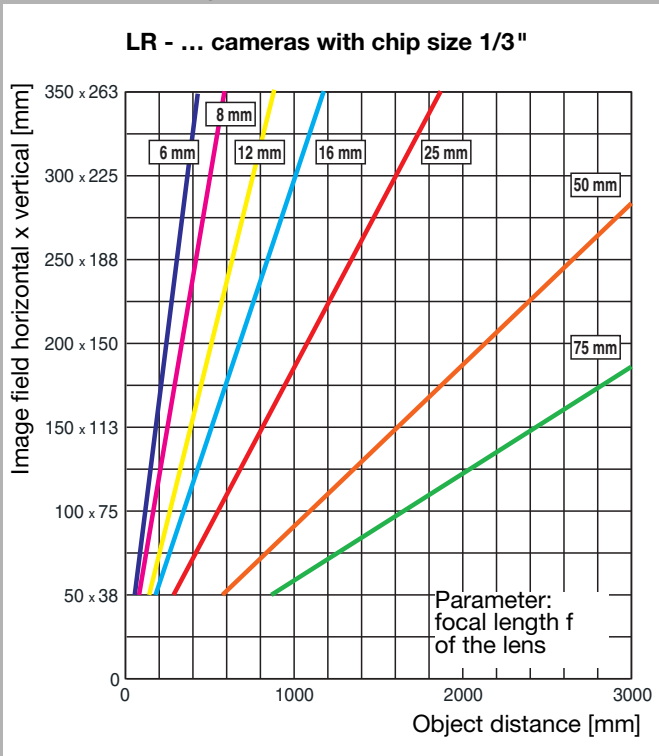
Software features

- Image pre-processing, such as filtering, normalizing, rotating and smoothing
- Inspection for presence and completeness, measurement, pattern detection, color inspection, 2D-code reading, character reading
- Working ranges: rectangle, circle or polygon
- Position and rotational compensation
- Any number of inspection windows and insp. tasks
- Program selection: manual, serial, via Ethernet or digital inputs
- Save camera parameters (shutter time, gain, ...) in the program
- Camera calibration



Industrial
image processing

Size of the image field dependent on object distance - Parameter: focal length f of the lens



Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

www.leuze.com/imageprocessing/

Services

IMAGE PROCESSING WITH DIGITAL CAMERAS

Part description Part No.	Description	Socket	Ports
PC plug-in cards			
V-PC-ZUB-EK-I/O-16-03 50108054	Controller card for digital inputs/outputs	1 x PCI	16 I/O each
V-PC-ZUB-EK-FIWI-02 50107152	FireWire controller	1 x PCI-E	2 x FireWire
V-PC-ZUB-EK-GIGE-2-PCIE-01 50114573	GigE card (2 ports)	1 x PCI-E	2 x GigE
V-PC-ZUB-EK-GIGE-4-PCIE-01 50114572	GigE card (4 ports)	1 x PCI-E	4 x GigE

Part description Part No.	Description	Connection 1	Connection 2	Length [m]
Connection set for I/O controller card				
V-SET-I/O-PCI6518-1 50108058	I/O connection set for V-PC-ZUB-EK-I/O-16-03			1



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Part description Part No.	Description
PC accessories	
V-KEYB-STND-DE 50081602	Standard-keyboard DE (PS/2)
V-KEYB-STND-EU 50109613	Standard-keyboard EN (PS/2)
V-KEYB-STND-F 50109755	Standard-keyboard FR (PS/2)
V-ZUBE-MAUS-1 50042037	Mouse for PS/2 connection
V-MONI-SVGA-17IN-2 50105615	TFT monitor (17")



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

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Accessories

Services

Part description Part No.	Description	Connection 1	Connection 2	Length [m]
Protective camera housing				
V-PROT-FIWI-0004-1 50107187	Protective camera housing for FireWire cameras ... - M1/C1, protection class IP 60			
V-PROT-CAM-M-G-04 50114620	Protective camera housing for GigE cameras ... - M2/C2, protection class IP 60			

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IMAGE PROCESSING WITH DIGITAL CAMERAS

Part description Part No.	Description	Connection 1	Connection 2	Length [m]	
Connection cables					
V-CABL-FIWI-0100-1 50041284	Cable for FireWire camera	FireWire, 6-pin	FireWire, 6-pin	10	
V-CABL-FIWI-V100-1 50103901	Cable for FireWire camera	FireWire, 6-pin	FireWire, 6-pin	10 (with MG screw fitting)	
V-CABL-FIWI-TRIG-LR1-10 50107185	Triggering of FireWire camera and control of external flash	open	Hirose socket, 12-pin	10	
V-KB-CAT6-10m-4P-LS0-02 50114579	Cable for GigE camera	RJ45	RJ45	10	
V-KB-CAT6-20m-4P-LS0-02 50114611	Cable for GigE camera	RJ45	RJ45	20	
V-KB-CAT6-30m-4P-LS0-02 50114612	Cable for GigE camera	RJ45	RJ45	30	
V-KB-CAT6-40m-4P-LS0-02 50114613	Cable for GigE camera	RJ45	RJ45	40	
V-KB-CAT6-50m-4P-LS0-02 50114614	Cable for GigE camera	RJ45	RJ45	50	
V-KB-CAT6-60m-4P-LS0-02 50114615	Cable for GigE camera	RJ45	RJ45	60	
V-KB-CAT6-70m-4P-LS0-02 50114616	Cable for GigE camera	RJ45	RJ45	70	

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Part description Part No.	Description	Connection 1	Connection 2	Length [m]	
Voltage supply connection cables for GigE cameras					
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	
Trigger/flash control connection cables for GigE cameras					
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	

 Stationary
barcode
identification

 Mobile
barcode
identification

 2D-code
identification

 RF
identification

**Industrial
image processing**

 Distance meas.
Positioning

 Optical
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 Networking
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Accessories

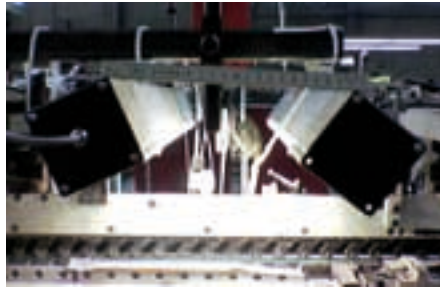
Services

www.leuze.com/imageprocessing/

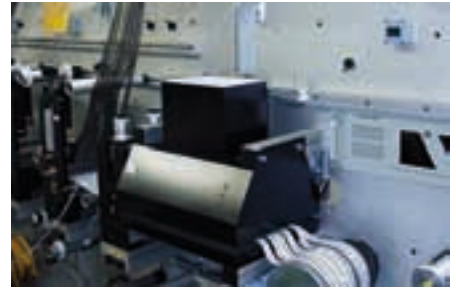
OVERVIEW



Beverage industry
(character verification)



Printing industry
(printout inspections)



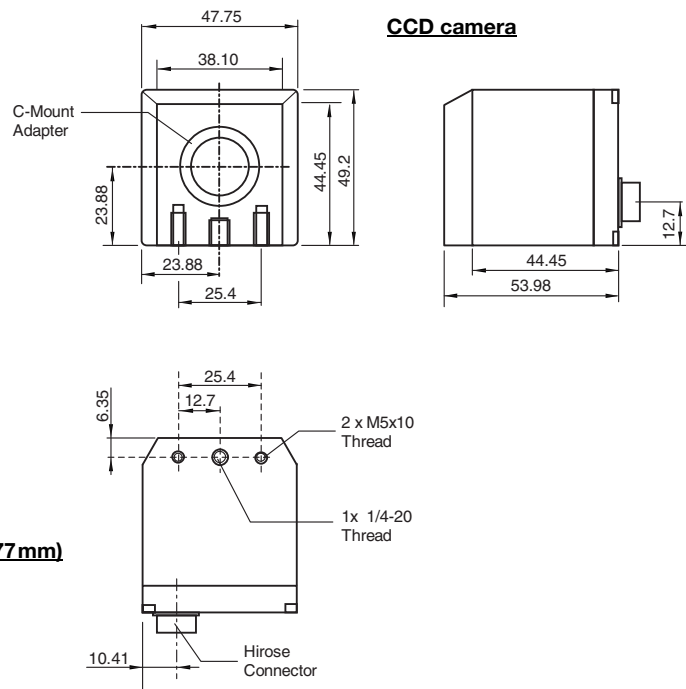
Plastic processing
(foil measurement/foil inspection)

Dimensioned drawing

Industrial PC



**19" housing
(4 HU = approx. 177mm)**



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proCHECK INDUSTRIAL IMAGE PROCESSING

Camera type	Resolution, type, image frequency	Page
 <ul style="list-style-type: none"> Camera CCD-610-HR Camera CCD-620-HR Camera CCD-615-HR Camera CCD-640-HR Camera CCD-645-HR 	652x494, Monochrome, 30Hz	258
	652x494, Monochrome, 60Hz	
	648x490, Color, 30Hz	
	1,296x1,016, Monochrome, 8Hz	
	1,288x1,012, Color, 8Hz	



Common technical data		
PC	Basic device	Industrial PC, 19" rack
	Processor	Intel Pentium
	Storage media	Hard disk, DVD drive
	Operating system	Windows XP
Interfaces	Cameras	analog
	Frame grabber	1/2/4 cameras, asynchr.
	Serial	2 x USB, 1 x serial, keyboard, mouse
	Digital outputs	24, optional 48 (24VDC, optical coupler)
	LAN	Fast Ethernet (10/100MBit/s)
	Video output	XVGA
Mechanical	Housing	metal
Electrical data	Operating voltage U_B	110 ... 240VAC
	Power consumption	300W (w/o options)
Environmental data	Operating temperature	0°C ... +40°C
	Air humidity	10 ... 90% (non-cond.)

Features

- **Fast, industrial-PC-based image processing system for analog cameras**
- **High-performance image-processing software**
- **Very simple operation (configuration of inspection tasks)**
- **Documentation of inspection results**
- **Saving of error images**
- **Optional multi-camera operation (up to 4 cameras per frame grabber, independent triggering and evaluation)**
- **Cameras with progressive scan, square pixels and partial scan**
- **Optional remote maintenance**



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

HIGH-SPEED IMAGE PROCESSING

Part description Part No.	Description	Number of cameras (max.)	
Image processing system with industrial PC			
V-proCHECK-IPC-FG1 50111445	Compact industrial-PC-based image processing system incl. software	1	
V-proCHECK-IPC-FG2 50111446	Compact industrial-PC-based image processing system incl. software	2	
V-proCHECK-IPC-FG4 50111447	Compact industrial-PC-based image processing system incl. software	4	



Image-processing solutions are complex systems which usually require an in-depth analysis of the given problem. Please contact our specialists.

Our product spectrum in the service area includes feasibility studies, delivery of complete solutions, mounting and commissioning, training of the operating personnel, service and maintenance, hotline and technical support.

Part description Part No.	Description	Camera type	Resolution	Dimensions [mm]	
Cameras					
V-CAM-MON-L-3-1/3-610 50036784	Analog camera CCD-610-HR with standard resolution	Monochrome Standard	652 x 494	54 x 48 x 49	
V-CAM-MON-L-3-1/3-620 50036785	Analog camera CCD-620-HR with standard resolution, for high-speed applications	Monochrome High-speed	652 x 494	54 x 48 x 49	
V-CAM-MON-L-3-1/3-620 50036783	Analog camera CCD-615-HR with standard resolution	Color Standard	648 x 490	54 x 48 x 49	
V-CAM-MON-M-3-2/3-640 50040388	Analog camera CCD-640-HR with high resolution	Monochrome High-res.	1.296 x 1.016	54 x 48 x 49	
V-CAM-COL-M-3-2/3-645 50107155	Analog camera CCD-645-HR with high resolution	Color High-res.	1.288 x 1.012	54 x 48 x 49	

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Software features

- Filter functions for image pre-processing
- Check for presence/completeness, simple pattern recognition and measurements, high color resolution, code reading (1D, stacked codes, 2D), character reading and character verification, printout inspections
- Any number of inspection windows and insp. tasks
- Position compensation
- Very short evaluation times
- Online adjustment of tolerances
- Save camera parameters (shutter time, gain, ...) in the program
- Statistical counters
- Manual program selection (optionally via serial or Ethernet connection)
- Additional tools as option



Stationary barcode identification

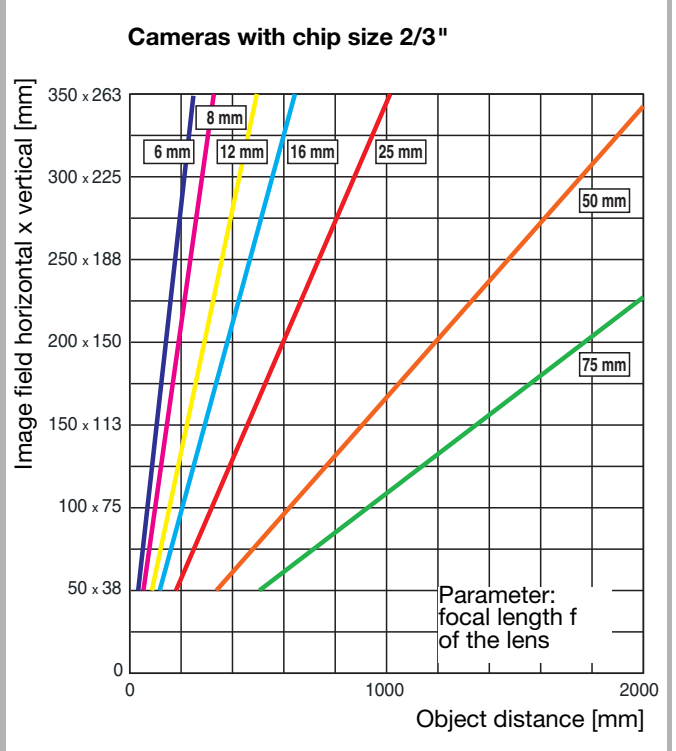
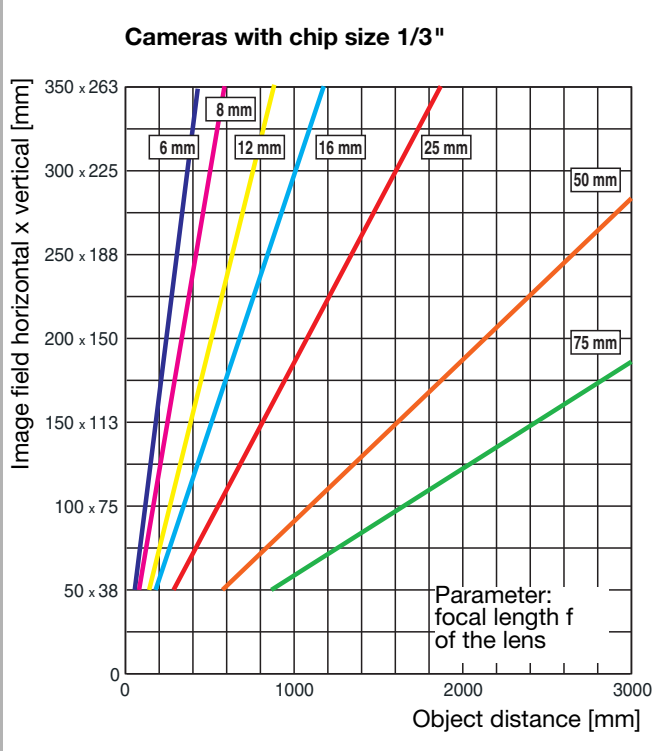
Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Size of the image field dependent on object distance - Parameter: focal length f of the lens



Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

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HIGH-SPEED IMAGE PROCESSING

Part description Part No.	Description	Connection 1	Connection 2	Length [m]	
Connection cables					
V-CABL-HIRO-1210-1 50033001	Camera cable HIR-12S/P	Hirose plug, 12-pin	Hirose socket, 12-pin	10	
V-CABL-HIRO-1215-1 50032987	Camera cable HIR-12S/P	Hirose plug, 12-pin	Hirose socket, 12-pin	15	
V-CABL-HIRO-1220-1 50081818	Camera cable HIR-12S/P	Hirose plug, 12-pin	Hirose socket, 12-pin	20	
V-CABL-HIRO-1230-1 50081817	Camera cable HIR-12S/P	Hirose plug, 12-pin	Hirose socket, 12-pin	30	
V-CABL-HIRO-1210-2 50034520	Camera cable HIR-12S/P MG	Hirose plug, 12-pin	Hirose socket, 12-pin	10 (with MG screw fitting)	
V-CABL-HIRO-1215-2 50032986	Camera cable HIR-12S/P MG	Hirose plug, 12-pin	Hirose socket, 12-pin	15 (with MG screw fitting)	
V-CABL-HIRO-1220-2 5034165	Camera cable HIR-12S/P MG	Hirose plug, 12-pin	Hirose socket, 12-pin	20 (with MG screw fitting)	
V-CABL-HIRO-1230-2 50034164	Camera cable HIR-12S/P MG	Hirose plug, 12-pin	Hirose socket, 12-pin	30 (with MG screw fitting)	
V-ADAP-FLAT-68PI-1 50102712	Mounting clamp (digital outputs)				
V-CABL-FLAT-68PI-1 50102713	Mounting clamp cable (digital outputs)				
V-ADAP-SYST-VIK-2 50036782	Vision interface kit 4-HR				
V-I/O-OPTO-01PI-3 50102698	DEK 5V DC optical coupler				
Protective camera housing					
V-PROT-SYST-0000-1 50038662	proCHECK protective camera housing, protection class IP 60				

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Part description Part No.	Description
PC accessories	
V-KEYB-STND-DE 50081602	Standard-keyboard DE (PS/2)
V-KEYB-STND-EU 50109613	Standard-keyboard EN (PS/2)
V-KEYB-STND-F 50109755	Standard-keyboard FR (PS/2)
V-ZUBE-MAUS-1 50042037	Mouse for PS/2 connection
V-MONI-SVGA-17IN-2 50105615	TFT monitor (17")



Part description Part No.	Description	Socket	Ports
PC plug-in cards			
V-FRGR-ITI4-CCIR-1 50041996	Frame grabber for 4 cameras	1 x PCI	4 x cameras
V-I/O-DIGI-24PI-2 50102798	Card for 24 dig. outputs	1 x PCI	24 x outputs

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Stationary
barcode
identification

Mobile
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identification

2D-code
identification

RF
identification

Industrial
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Distance meas.
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IMAGE PROCESSING - GENERAL ACCESSORIES

Part description Part No.	Description	Focus f [mm]	Aperture	Max. chip size
Objective for visionPOWERBOX and proCHECK digital cameras				
V-LENS-U-C-6-F1,2-1/2-01 50081731	Standard lens CP 6-F for digital cameras	6	1.2	up to 1/2"
V-LENS-U-C-8,5-F1,5-2/3-01 50081732	Standard lens CP 8.5-F for digital cameras	8.5	1.5	up to 2/3"
V-LENS-K-C-12-F1,2-1/2-01 50033512	Compact lens CP 12-1 for digital cameras	12	1.2	up to 1/2"
V-LENS-K-C-16-F1,4-2/3-01 50032999	Compact lens CP 16 for digital cameras	16	1.4	up to 2/3"
V-LENS-K-C-25-F1,4-1/1-01 50033513	Compact lens CP 25 for digital cameras	25	1.4	up to 1"
V-LENS-K-C-35-F1,6-2/3-01 50104978	Compact lens CP 35 for digital cameras	35	1.6	up to 2/3"
V-LENS-U-C-50-F1,4-1/1-01 50081736	Standard lens CP 50-F for digital cameras	50	1.4	up to 1"
V-LENS-U-C-75-F1,4-1/1-01 50081737	Standard lens CP 75-F for digital cameras	75	1.4	up to 1"

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Part description Part No.	Description	Active surface [mm]	Light color	Illumination	Voltage U _B	Type	Con- nection
Panel lights, front illumination							
V-ILLU-AL-HF-WS-500x500-01 50113868	Bright-field front illumination 500x500	500 x 500	white	diffuse	230VAC	HF	C13
V-ILLU-AL-HF-WS-800x500-01 50114812	Bright-field front illumination 800x500	800 x 500	white	diffuse	230VAC	HF	C13
V-ILLU-AL-HF-WS-1100x800-01 50114813	Bright-field front illumination 1100x800	1100 x 800	white	diffuse	230VAC	HF	C13



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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-IHWC-0201-1 50034070	Bright-field illumination 11 W	170 x 80	white	diffuse	24VDC	HF	Cable
V-ILLU-SRHC-75x50-1 50107769	LED lights FLR 75x50	75 x 50	red	directed	24VDC	LED	M8, 3-pin
V-ILLU-SWHC-75x50-1 50107770	LED lights FLW 75x50	75 x 50	white	directed	24VDC	LED	M8, 3-pin
V-ILLU-SRHC-150x50-1 50107771	LED lights FLR 150x50	160 x 50	red	directed	24VDC	LED	M8, 3-pin
V-ILLU-SWHC-150x50-1 50106713	LED lights FLW 150x50	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

Part description Part No.	Description	Light color	Inner dia. [mm]	Outer dia. [mm]	Voltage U _B	Type	Connection
Ring lights, front illumination							
V-ILLU-SRRL-4580-1 50107772	LED ring lights RLR 80	red	45	85	24VDC	LED	M8, 3-pin
V-ILLU-SWRL-4580-1 50107773	LED ring lights RLW 80	white	45	85	24VDC	LED	M8, 3-pin
V-ILLU-SRRL-4595-1 50107774	LED ring lights RLR 95	red	45	100	24VDC	LED	M8, 3-pin
V-ILLU-SWRL-4595-1 50107775	LED ring lights RLW 95	white	45	100	24VDC	LED	M8, 3-pin
V-ILLU-CCS-LDR-90B-30 50104119	LED ring lights LDR2	red	30	90	12VDC	LED	Cable

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-KRHC-2525-1 50040068	LED light source VOL-C-R-25	25 x 25	red	directed	24VDC	LED	M12, 5-pin
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-VREC-7575-1 50102792	LED light source VOL-C-R-75	75 x 75	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-KWHC-2525-1 50039106	LED light source VOL-C-W-25	25 x 25	white	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-VWEC-7575-1 50035477	LED light source VOL-C-W-75	75 x 75	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-0350-1 50102793	LED light source VOL-A-R-35	25 x 25	red	diffuse	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-KREC-7575-1 50102678	LED light source VOL-A-R-75	75 x 75	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-0350-1 50036633	LED light source VOL-A-W-35	35 x 35	white	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

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Part description Part No.	Description	Active surface [mm]	Light color	Illumination	Voltage U _B	Type	Connection
Coaxial LED light sources, front illumination							
V-ILLU-KWHC-7575-2 50041385	LED light source VOL-A-W-75	75 x 75	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

Part description Part No.	Description	Active surface [mm]	Light color	Illumination	Voltage U _B	Type	Connection
Panel lights, rear illumination							
V-ILLU-DL-LED-WS-100x50-01 50113964	LED rear illumination 100x50	100 x 50	white	diffuse	24VDC	LED	M5, 4-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-PWHC-5841-1 50104967	Bright-field rear illumination 580x410	580 x 410	white	diffuse	230VAC	HF	Cable
V-ILLU-PWHC-8358-1 50104968	Bright-field rear illumination 830x510	830 x 580	white	diffuse	230VAC	HF	Cable

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	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	

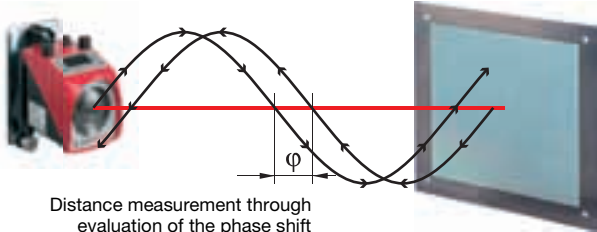
Part description Part No.	Description	Min. output voltage	Max. output voltage	Voltage U _B	
Power supply unit for pulsed LED operation					
V-NETZ-FLEX-0001-1 50038410	Power supply unit 3-52 DC	3VDC	52VDC	230VAC	

www.leuze.com/imageprocessing/

SELECTION GUIDE

Absolute laser distance measurement system

Measurement principle



Distance measurement through evaluation of the phase shift

The AMS 200/300*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 200/300*i*. The AMS 200/300*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 200

on page 272



AMS 200 / 40 ...

from page 274

0,2 40 m



AMS 200 / 120 ...

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0,2 120 m



AMS 200 / 200 ...

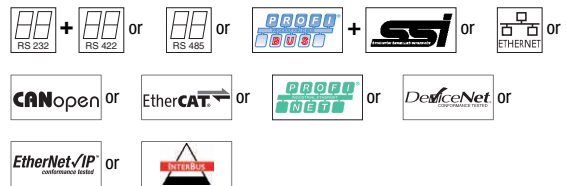
from page 274

0,2 200 m



Overview AMS 300*i*

on page 278



AMS 300*i* / 40 ...

from page 280

0,2 40 m



AMS 300*i* / 120 ...

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0,2 120 m



AMS 300*i* / 200 ...

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0,2 200 m



AMS 300*i* / 300 ...

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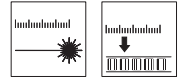
0,2 300 m

Features

- Absolute measurement system with very high accuracy, tested by the PTB (German Metrology Institute)
- AMS 200: PROFIBUS, SSI and RS 232 Interface or INTERBUS and RS 232 Interface on board
- AMS 300*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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DISTANCE MEASUREMENT / POSITIONING



Stationary barcode identification

Barcode positioning systems

Measurement principle



The barcode positioning system uses visible red laser light to determine its position relative to a barcode tape. This essentially takes place in 3 steps:

1. Reading a code on the barcode 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



Interface

from page 300



BPS 34



Interface

from page 304



BPS 37



Interface

from page 308

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 ± 1 mm
- Very easy mounting

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning






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SELECTION TABLE

Series	Dimensions in mm (WxHxD)	Housing material		Operating range in m		
		Plastic	Metal	0.2	200	10000
 AMS 200	84 x 167 x 159		●	0.2	200	
 AMS 300i	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

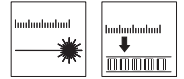
2) Devices with integrated heating

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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.

DISTANCE MEASUREMENT / POSITIONING



Measurement principle	Requirement	Interfaces D = direct, G = via Gateway															Page		
		PROFIBUS DP	PROFINET	SSI	Interbus-S FOC	RS 232	RS 485	RS 422	Interbus-S	Ethernet	EtherNet/IP	DeviceNet	CANopen	EtherCAT					
Laser on reflector		D	D			D				G	G	D							272
Barcode tape		D	D	D		D	D	D	D	D	D	D	D	D	D	D	D	D	278
Straight-lined										D	G			G	G	G	G	G	300
Curve-going																			304
																			308

Stationary barcode identification

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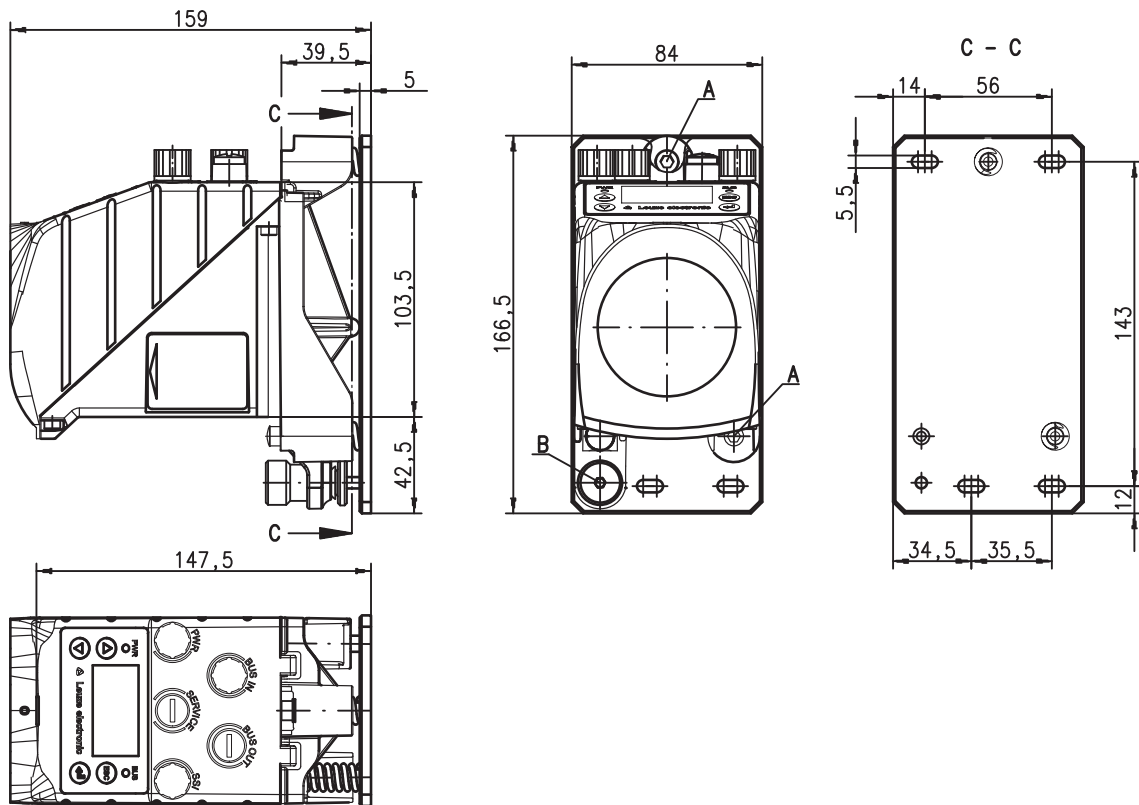
Networking Connector units

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OVERVIEW

Dimensioned drawing



- A** M5 screw for alignment
- B** Knurled nut and M5 nut for securing

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BPS 8
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BCB 8
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BCB 3x
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OPTICAL LASER DISTANCE MEAS. SYSTEM AMS 200

Distance measurement system	Interface	Page
 AMS 200 / ... - 11 (- H)	PROFIBUS / SSI / RS 232	274
 AMS 200 / ... - 20 (- H)	Interbus / RS 232	276



Common technical data		
Electrical data	Operating voltage U_B	18 ... 30VDC
	Current consumption	w/o heating: $\leq 250\text{mA}$ with heating: $\leq 500\text{mA}$ (at 24VDC)
	Accuracy	$\pm 2 \dots \pm 3\text{mm}$
	Consistency	0.3 ... 0.7mm 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 / glass
	Weight	approx. 2800g
Environmental data	Ambient temperature operation (storage)	w/o heating: $-5 \dots +50^\circ\text{C}$ with heating: $-30 \dots +50^\circ\text{C}$ ($-30 \dots +70^\circ\text{C}$)
	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

- **Absolute measurement system with very high accuracy, tested by the Physikalisch Technische Bundesanstalt (German Metrology Institute)**
- **PROFIBUS/SSI/RS 232 or Interbus/RS 232 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 extensive GSD file**
- **Standard M12 connections, simple and convenient**
- **Compact construction size and modern design**
- **Display**



Stationary barcode identification

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OPTICAL LASER DISTANCE MEASUREMENT SYSTEM

Part description Part No.	Description	Meas. range [m]	Accuracy / Consistency	Interface
Optical Laser Distance Measurement System				
AMS 200 / 40 - 11 50103156	Optical Laser Distance Measurement System w/o device heating	0.2 ... 40	± 2mm / 0.3mm ¹⁾	PROFIBUS, SSI, RS 232
AMS 200 / 120 - 11 50103157	Optical Laser Distance Measurement System w/o device heating	0.2 ... 120	± 2mm / 0.5mm ¹⁾	PROFIBUS, SSI, RS 232
AMS 200 / 200 - 11 50103158	Optical Laser Distance Measurement System w/o device heating	0.2 ... 200	± 3mm / 0.7mm ¹⁾	PROFIBUS, SSI, RS 232
AMS 200 / 40 - 11 - H 50103159	Optical Laser Distance Measurement System with device heating	0.2 ... 40	± 2mm / 0.3mm ¹⁾	PROFIBUS, SSI, RS 232
AMS 200 / 120 - 11 - H 50103160	Optical Laser Distance Measurement System with device heating	0.2 ... 120	± 2mm / 0.5mm ¹⁾	PROFIBUS, SSI, RS 232
AMS 200 / 200 - 11 - H 50103161	Optical Laser Distance Measurement System with device heating	0.2 ... 200	± 3mm / 0.7mm ¹⁾	PROFIBUS, SSI, RS 232

1) At 1 sigma

Accessories / connection cables

More accessories can be found from **page 411** onwards

Part No.	Designation	Features
see P. 431	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
see P. 418	K - D M12...	Connection cables with M12 connector (A-coded) for PWR
see P. 417	KB PB-...	Connection cables with M12 connector (B-coded) for BUS IN/OUT
see P. 425	KD 01-5-...	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 425	KD 02-5-...	FIELDBUS connector, M12, 5-pin, B-coded
50038539	TS 02-4-SA	M12 connector, integrated terminating resistor for BUS OUT
50110155	KB - Service - 3000	Service cable for AMS 200

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AMS 200
Distance meas. system



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Features

The AMS 200...-11 is designed as a PROFIBUS DP device. The functionality of the laser is defined using GSD parameter sets.

The max. baud rate of the data to be transferred is 12Mbit/s.

PROFIBUS, SSI, and RS 232 interface can be used simultaneously as full-fledged interfaces.

Simultaneous use of the PROFIBUS, SSI, and RS 232 interface:

The PROFIBUS, SSI and RS 232 interface are configured by the PROFIBUS.

If parameters other than those specified in the default settings are used, they must be configured via the SSI module or RS 232 module, respectively.

Use of the SSI or RS 232 interface without PROFIBUS:

For this operating mode, deactivate the PROFIBUS via the display (PROFIBUS = OFF). Default settings are stored in the AMS 200 for using the SSI or RS 232 interface alone. These settings can be changed at any time via the display.



A reflector is necessary for operating the AMS 200 ... laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 200 ... - 11 (H)

	40m
	120m
	200m
	PROFIBUS: 12 Mbit/s SSI Clock: 50...800 kHz RS 232: 19.2...115,2 kbit/s
	PROFIBUS DP SSI RS 232

Electrical connection

PWR - male, A-cod.	PIN	Signal
	1	VIN
	2	I/O 1
	3	GND
	4	I/O 2
	5	FE

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

SSI - male, B-cod.	PIN	Signal
	1	DATA+
	2	DATA-
	3	CLK+
	4	CLK-
	5	FE

SERVICE / RS 232 female, A-cod.	PIN	Signal
	1	+3.3 V
	2	RS232-TX
	3	SRV-GND
	4	RS232-RX
	5	NC

OPTICAL LASER DISTANCE MEASUREMENT SYSTEM

Part description Part No.	Description	Meas. range [m]	Accuracy / Consistency ¹⁾	Interface
Optical Laser Distance Measurement System			1) At 1 sigma	
AMS 200 / 40 - 20 50108137	Optical Laser Distance Measurement System w/o device heating	0.2 ... 40	± 2mm / 0.3mm	Interbus, RS 232
AMS 200 / 120 - 20 50108136	Optical Laser Distance Measurement System w/o device heating	0.2 ... 120	± 2mm / 0.5mm	Interbus, RS 232
AMS 200 / 200 - 20 50108135	Optical Laser Distance Measurement System w/o device heating	0.2 ... 200	± 3mm / 0.7mm	Interbus, RS 232
AMS 200 / 40 - 20 - H 50108134	Optical Laser Distance Measurement System with device heating	0.2 ... 40	± 2mm / 0.3mm	Interbus, RS 232
AMS 200 / 120 - 20 - H 50108133	Optical Laser Distance Measurement System with device heating	0.2 ... 120	± 2mm / 0.5mm	Interbus, RS 232
AMS 200 / 200 - 20 - H 50108131	Optical Laser Distance Measurement System with device heating	0.2 ... 200	± 3mm / 0.7mm	Interbus, RS 232

Accessories / connection cables

More accessories can be found from **page 411** onwards

Part No.	Designation	Features
see P. 431	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	US OMS	Deflection mirror for 90° deflection of the laser beam
see P. 418	K - D M12...	Connection cables with M12 connector (A-coded) for PWR
see P. 411	KB SSI/IBS-...	Connection cables with M12 connector (B-coded) for SSI/Interbus
see P. 425	KD 01-5-...	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 425	KD 02-5-...	FIELDBUS connector, M12, 5-pin, B-coded
see P. 368	MA 4 1...	Connector unit for converting to RS 485/RS 422
50106978	KB AMS 1000 SA	Connection cable between AMS 200 and MA 4 1...
50110155	KB - Service - 3000	Service cable for AMS 200

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Features

The AMS 200...-20 is designed as an Interbus-S device with additional RS 232 interface. The baud rate of the Interbus data to be transmitted is 500kbit/s.

The Interbus-S and RS 232 interface can be used simultaneously as full-fledged interfaces.

The Interbus-S and RS 232 interface operate with default settings. If parameters other than those specified in the default settings are used, the parameters must be changed via the display.

The SSI interface cannot be activated.



A reflector is necessary for operating the AMS 200 ... laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 200 ... - 20 (H)

	40m
	120m
	200m
	Interbus-S: 500 kbit/s RS 232: 19.2...115.2 kbit/s
	Interbus-S RS 232

Electrical connection

PWR - male, A-cod.	PIN	Signal
	1	VIN
	2	I/O 1
	3	GND
	4	I/O 2
	5	FE

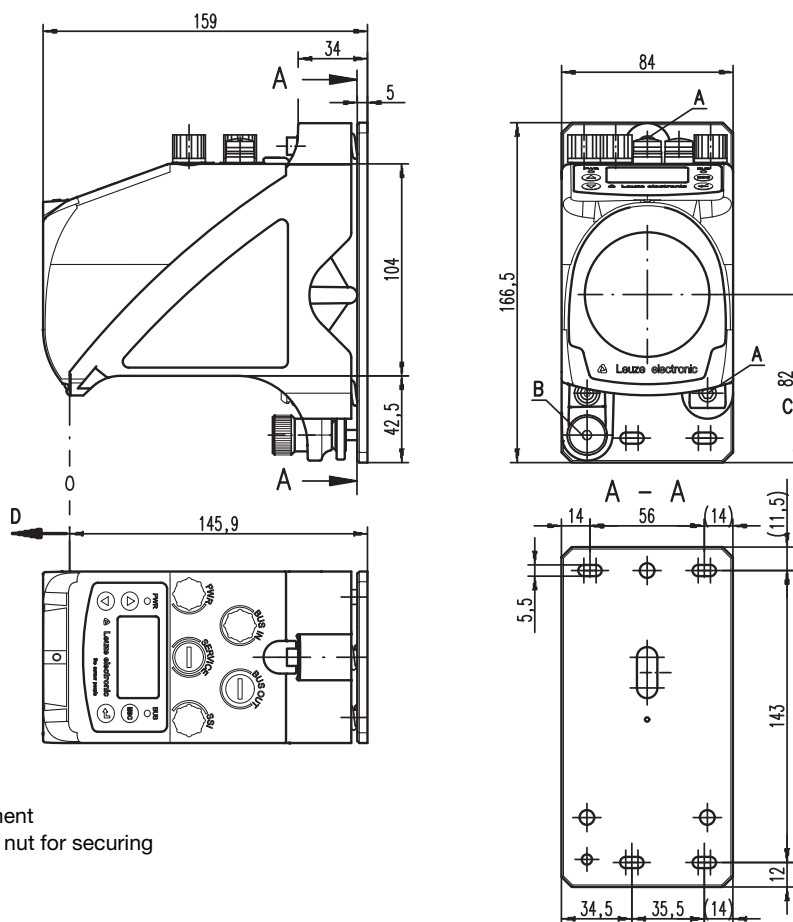
BUS IN - male, B-cod.	PIN	Signal
	1	DO
	2	/DO
	3	DI
	4	/DI
	5	Data GND

BUS OUT - female, B-cod.	PIN	Signal
	1	DO
	2	/DO
	3	DI
	4	/DI
	5	Data GND

SERVICE / RS 232 female, A-cod.	PIN	Signal
	1	+3.3 V
	2	RS232-TX
	3	SRV-GND
	4	RS232-RX
	5	NC

OVERVIEW

Dimensioned drawing



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OPTICAL LASER DISTANCE MEAS. SYSTEM AMS 300i

Distance measurement system	Interface	Page
 AMS 300i ... (H)	RS 232 / RS 422	280
 AMS 301i ... (H)	RS 485	282
 AMS 304i ... (H)	PROFIBUS / SSI	284
 AMS 308i ... (H)	Ethernet TCP/IP	286
 AMS 335i ... (H)	CANopen	288
 AMS 338i ... (H)	EtherCAT	290
 AMS 348i ... (H)	PROFINET	292
 AMS 355i ... (H)	DeviceNet	294
 AMS 358i ... (H)	EtherNet/IP	296
 AMS 384i ... (H)	INTERBUS	298



Common technical data

Electrical data	Operating voltage U_B	18 ... 30VDC
	Current consumption	w/o heating: $\leq 250\text{mA}$ with heating: $\leq 500\text{mA}$ (at 24VDC)
	Accuracy	$\pm 2 \dots \pm 5\text{mm}$
	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: $-5 \dots +50^\circ\text{C}$ with heating: $-30 \dots +50^\circ\text{C}$
	Storage temperature	$-30 \dots +70^\circ\text{C}$
	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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

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 411** onwards

Part No.	Designation	Features
see P. 431	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
see P. 418	K - D M12...	Connection cables with M12 connector (A-coded) for PWR
see P. 411	KB SSI/IBS-...	Connection cables with M12 connector (B-coded) for BUS IN/OUT
see P. 425	KD 01-5-...	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 425	KD 02-5-...	FIELDBUS connector, M12, 5-pin, B-coded
50110155	KB - Service - 3000	Service cable for AMS 300i

We reserve the right to make changes • AMS300i_1_EN.fm



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AMS 300i
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BPS 8
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BPS 34
Page 304



BPS 37
Page 308



BCB 8
Page 312



BCB 3x
Page 316

AMS 300i
Distance meas. system



Stationary
barcode
identification

Features

The AMS 300i 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 300i 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 300i 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 300i ... H) is available. If necessary, a heatable reflector can be used.



Mobile
barcode
identification


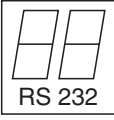
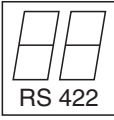
2D-code
identification

RF
identification



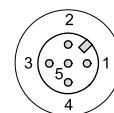
A reflector is necessary for operating the AMS 300i ... laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 300i

	<p>40m</p> <p>120m</p> <p>200m</p> <p>300m</p>
	<p>Baud rate RS 232: max. 115.2 kBit/s Protocol: Leuze Type 1</p>
	<p>Baud rate RS 422: max. 500 kBit/s Protocol: Leuze Type 1</p>

Electrical connection

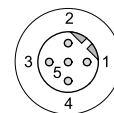
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

RS 422

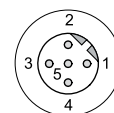
BUS IN - male, B-cod.



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

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

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 411** onwards

Part No.	Designation	Features
see P. 431	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
see P. 418	K - D M12...	Connection cables with M12 connector (A-coded) for PWR
see P. 417	KB PB - ...	Connection cables with M12 connector (B-coded) for BUS IN/OUT
see P. 425	KD 01-5-...	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 425	KD 02-5-...	FIELDBUS connector, M12, 5-pin, B-coded
50038539	TS 02-4-SA	M12 connector, integrated terminating resistor for BUS OUT
50110155	KB - Service - 3000	Service cable for AMS 300i

We reserve the right to make changes • AMS300i_2_EN.fm



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BPS 8
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BPS 34
Page 304



BPS 37
Page 308



BCB 8
Page 312



BCB 3x
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AMS 301i
Distance meas. system



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

Features

The AMS 301i is equipped with an RS 485 interface for transferring the measured distances, speeds as well as various status messages.

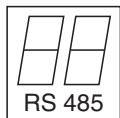
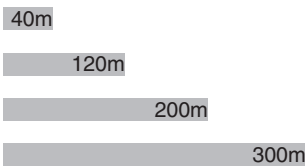
The data transmission rate can be set in a range from 9.6kBit/s to 115.2kBit/s. All AMS 301i device parameters are preset to default values. These can be changed quickly and easily via the control panel / display.

For outdoor or low-temperature applications, a model with integrated heating (AMS 301i ... H) is available. If necessary, a heatable reflector can be used.



A reflector is necessary for operating the AMS 301i ... laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 301i

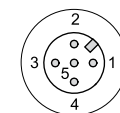


Baud rates RS 485:
9.6 kBit/s
19.2 kBit/s
38.4 kBit/s
57.6 kBit/s
93.75 kBit/s
115.2 kBit/s

Protocol:
Leuze Type 1

Electrical connection

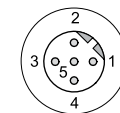
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

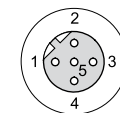
RS 485

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 411** onwards

Part No.	Designation	Features
see P. 431	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
see P. 418	K - D M12...	Connection cables with M12 connector (A-coded) for PWR
see P. 417	KB PB - ...	Connection cables with M12 connector (B-coded) for BUS IN/OUT
see P. 425	KD 01-5-...	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 425	KD 02-5-...	FIELDBUS connector, M12, 5-pin, B-coded
50038539	TS 02-4-SA	M12 connector, integrated terminating resistor for BUS OUT
50110155	KB - Service - 3000	Service cable for AMS 300i

We reserve the right to make changes • AMS300i_3_EN.fm



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AMS 300i
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BPS 8
Page 300



BPS 34
Page 304



BPS 37
Page 308



BCB 8
Page 312



BCB 3x
Page 316

AMS 304i
Distance meas. system



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

Features

The AMS 304i 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 304i. These can be changed at any time via the control panel / display.

For outdoor or low-temperature applications, a model with integrated heating (AMS 304i ... H) is available. If necessary, a heatable reflector can be used.



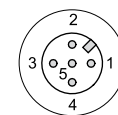
A reflector is necessary for operating the AMS 304i ... laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 304i

	<p>40m</p> <p>120m</p> <p>200m</p> <p>300m</p>
	 <p>Baud rate PROFIBUS: max. 12 MBit/s</p>
	<p>SSI Clock: 50 ... 800 kHz</p>

Electrical connection

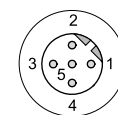
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

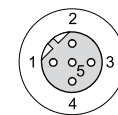
PROFIBUS

BUS IN - male, B-cod.



PIN	Signal
1	NC
2	A (N)
3	NC
4	B (P)
5	FE

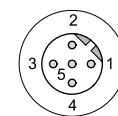
BUS OUT - female, B-cod.



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 411** onwards

Part No.	Designation	Features
see P. 431	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
see P. 418	K - D M12...	Connection cables with M12 connector (A-coded) for PWR
see P. 414	KB ET - ...	Connection cables with M12 connector (D-coded) for BUS IN/OUT
see P. 425	KD 01-5-...	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 425	S - M12A - ET	Ethernet connector, M12, 4-pin, D-coded
50110155	KB - Service - 3000	Service cable for AMS 300i

We reserve the right to make changes • AMS300i_4_EN.fm

						
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AMS 308i
Distance meas. system



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

Features

The AMS 308i 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 308i ... H) is available. If necessary, a heatable reflector can be used.



A reflector is necessary for operating the AMS 308i ... laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 308i

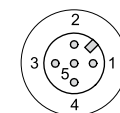


40m
120m
200m
300m

Baud rate Ethernet TCP/IP:
100 MBit/s max.

Electrical connection

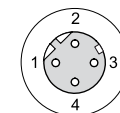
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

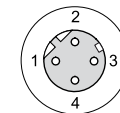
Ethernet TCP/IP

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 411** onwards

Part No.	Designation	Features
see P. 431	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
see P. 418	K - D M12...	Connection cables with M12 connector (A-coded) for PWR
see P. 415	KB DN/CAN-...	Connection cables with M12 connector (A-coded) for BUS IN/OUT
see P. 425	KD 01-5-...	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 425	KD 01-5-...	FIELDBUS connector, M12, 5-pin, A-coded
50110155	KB - Service - 3000	Service cable for AMS 300i

We reserve the right to make changes • AMS300i_5_EN.fm

						
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AMS 335i
Distance meas. system



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

Features

The AMS 335i is equipped with a CANopen interface for transferring the measured distances, speeds as well as various status messages.

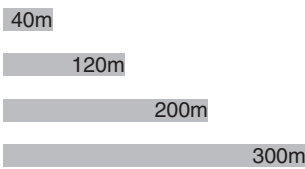
All device-specific settings can be changed using an EDS file (Electronic Data Sheet).

For outdoor or low-temperature applications, a model with integrated heating (AMS 335i ... H) is available. If necessary, a heatable reflector can be used.



A reflector is necessary for operating the AMS 335i ... laser distance measurement system. Please order the reflector together with the distance measurement system!

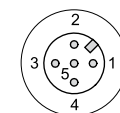
AMS 335i



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

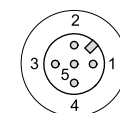
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

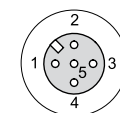
CANopen

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 411** onwards

Part No.	Designation	Features
see P. 431	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
see P. 418	K - D M12...	Connection cables with M12 connector (A-coded) for PWR
see P. 414	KB ET - ...	Connection cables with M12 connector (D-coded) for BUS IN/OUT
see P. 425	KD 01-5-...	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 425	S - M12A - ET	Ethernet connector, M12, 4-pin, D-coded
50110155	KB - Service - 3000	Service cable for AMS 300i

We reserve the right to make changes • AMS300i_6_EN.fm



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BPS 8
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BPS 34
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BPS 37
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BCB 8
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BCB 3x
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AMS 338i
Distance meas. system



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

Features

The AMS 338i is equipped with an EtherCAT interface for transferring the measured distances, speeds as well as various status messages.

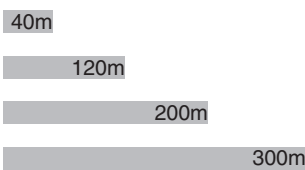
An XML description/file is available for all AMS 338i settings. The XML file defines all device-specific parameters.

For outdoor or low-temperature applications, a model with integrated heating (AMS 338i ... H) is available. If necessary, a heatable reflector can be used.



A reflector is necessary for operating the AMS 338i ... laser distance measurement system. Please order the reflector together with the distance measurement system!

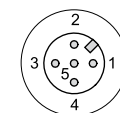
AMS 338i



Baud rate EtherCAT:
100 MBit/s max.

Electrical connection

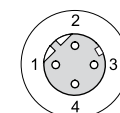
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

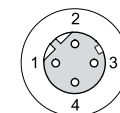
EtherCAT

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 411** onwards

Part No.	Designation	Features
see P. 431	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
see P. 418	K - D M12...	Connection cables with M12 connector (A-coded) for PWR
see P. 414	KB ET - ...	Connection cables with M12 connector (D-coded) for BUS IN/OUT
see P. 425	KD 01-5-...	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 425	S - M12A - ET	Ethernet connector, M12, 4-pin, D-coded
50110155	KB - Service - 3000	Service cable for AMS 300i

We reserve the right to make changes • AMS300i_7_EN.fm



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BPS 8
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BPS 34
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BPS 37
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BCB 8
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BCB 3x
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AMS 348i
Distance meas. system



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

Features

The AMS 348i 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 348i ... H) is available. If necessary, a heatable reflector can be used.




A reflector is necessary for operating the AMS 348i ... laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 348i



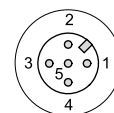
40m
120m
200m
300m



Baud rate PROFINET:
100 MBit/s max.

Electrical connection

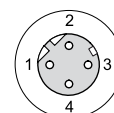
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

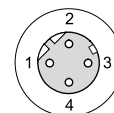
PROFINET

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 411** onwards

Part No.	Designation	Features
see P. 431	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
see P. 418	K - D M12...	Connection cables with M12 connector (A-coded) for PWR
see P. 415	KB DN/CAN-...	Connection cables with M12 connector (A-coded) for BUS IN/OUT
see P. 425	KD 01-5-...	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 425	KD 01-5-...	FIELDBUS connector, M12, 5-pin, A-coded
50110155	KB - Service - 3000	Service cable for AMS 300i

We reserve the right to make changes • AMS300i_8_EN.fm



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BPS 8
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BPS 34
Page 304



BPS 37
Page 308



BCB 8
Page 312



BCB 3x
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AMS 355i
Distance meas. system



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

Features

The AMS 355i is equipped with a DeviceNet interface for transferring the measured distances, speeds as well as various status messages.

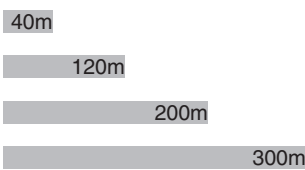
All device-specific settings can be changed using an EDS file (Electronic Data Sheet).

For outdoor or low-temperature applications, a model with integrated heating (AMS 355i ... H) is available. If necessary, a heatable reflector can be used.



A reflector is necessary for operating the AMS 355i ... laser distance measurement system. Please order the reflector together with the distance measurement system!

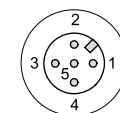
AMS 355i



Baud rates DeviceNet:
125 kBit/s
250 kBit/s
500 kBit/s

Electrical connection

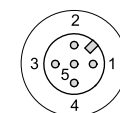
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

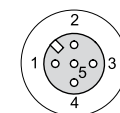
DeviceNet

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 411** onwards

Part No.	Designation	Features
see P. 431	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
see P. 418	K - D M12...	Connection cables with M12 connector (A-coded) for PWR
see P. 414	KB ET - ...	Connection cables with M12 connector (D-coded) for BUS IN/OUT
see P. 425	KD 01-5-...	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 425	S - M12A - ET	Ethernet connector, M12, 4-pin, D-coded
50110155	KB - Service - 3000	Service cable for AMS 300i

We reserve the right to make changes • AMS300i_9_EN.fm



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AMS 300i
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BPS 8
Page 300



BPS 34
Page 304



BPS 37
Page 308



BCB 8
Page 312



BCB 3x
Page 316

AMS 358i
Distance meas. system



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

Features

The AMS 358i is equipped with an EtherNet/IP interface for transferring the measured distances, speeds as well as various status messages.

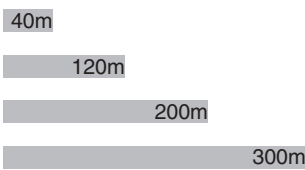
All device-specific settings can be changed using an EDS file (Electronic Data Sheet).

For outdoor or low-temperature applications, a model with integrated heating (AMS 358i ... H) is available. If necessary, a heatable reflector can be used.



A reflector is necessary for operating the AMS 358i ... laser distance measurement system. Please order the reflector together with the distance measurement system!

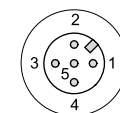
AMS 358i



Baud rate EtherNet/IP:
100 MBit/s max.

Electrical connection

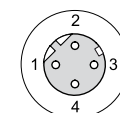
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

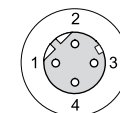
EtherNet/IP

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 411** onwards

Part No.	Designation	Features
see P. 431	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
see P. 418	K - D M12...	Connection cables with M12 connector (A-coded) for PWR
see P. 411	KB SSI/IBS-...	Connection cables with M12 connector (B-coded) for BUS IN/OUT
see P. 425	KD 01-5-...	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 425	KD 02-5-...	FIELDBUS connector, M12, 5-pin, B-coded
50110155	KB - Service - 3000	Service cable for AMS 300i

We reserve the right to make changes • AMS300i_10_EN.fm

						
AMS 200 Page 272	AMS 300i Page 278	BPS 8 Page 300	BPS 34 Page 304	BPS 37 Page 308	BCB 8 Page 312	BCB 3x Page 316

AMS 384i
Distance meas. system



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

Features

The AMS 384i is equipped with an INTERBUS interface for transferring the measured distances, speeds as well as various status messages.


All AMS 384i 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 384i ... H) is available. If necessary, a heatable reflector can be used.




A reflector is necessary for operating the AMS 384i ... laser distance measurement system. Please order the reflector together with the distance measurement system!

AMS 384i



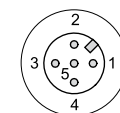
40m
120m
200m
300m

Baud rate:
500kBit/s or 2Mbit/s



Electrical connection

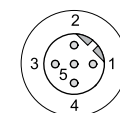
PWR - male, A-cod.



PIN	Signal
1	VIN
2	I/O 1
3	GND
4	I/O 2
5	FE

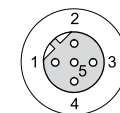
INTERBUS

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



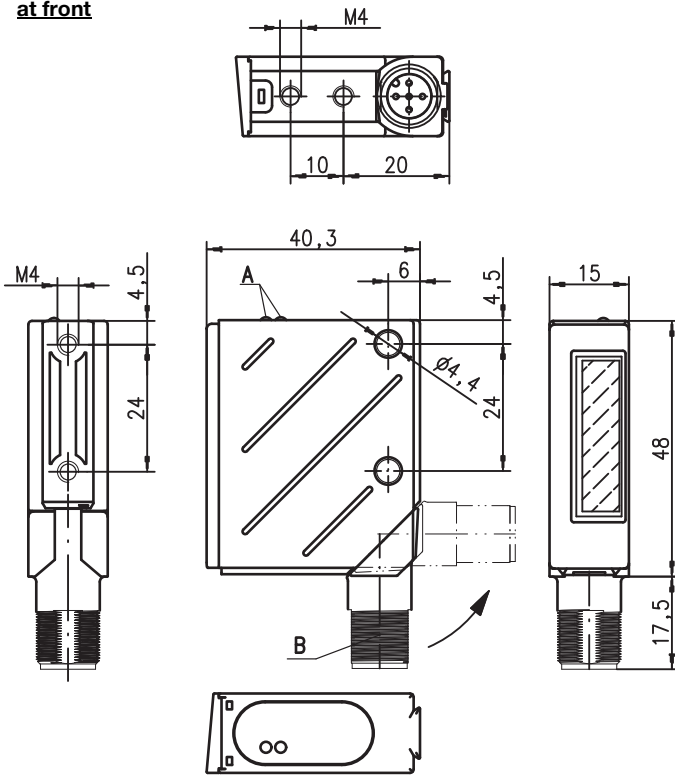
Telpher line positioning in the automobile industry



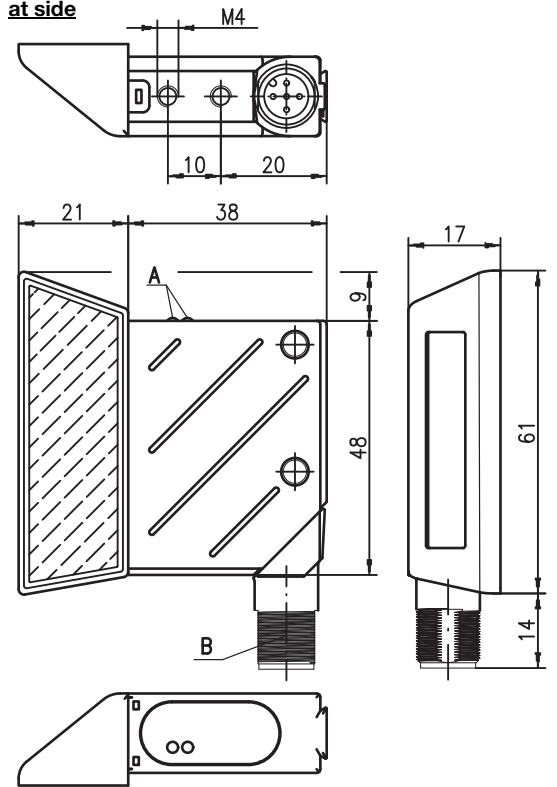
Telpher line positioning in the automobile industry

Dimensioned drawing

Beam exit at front



Beam exit at side







A Indicator LEDs
B 90° turning connector

We reserve the right to make changes • BPS8_Overview_EN.fm

AMS 200 Page 272	AMS 300i Page 278	BPS 8 Page 300	BPS 34 Page 304	BPS 37 Page 308	BCB 8 Page 312	BCB 3x Page 316

BARCODE POSITIONING SYSTEM BPS 8

Barcode positioning system	Working range	Page
 BPS 8 S M 100 - 01	 mm	302
 BPS 8 S M 102 - 01	 mm	302



Common technical data		
Electrical data	Operating voltage U_B	4.9 ... 5.4VDC
	Power consumption	$\leq 1.5W$
	Interface type	RS 232, RS 485 with MA 8-01
	Reprod. accuracy	$\pm 1(2)mm$
	Meas. value output	300 values/s
	Traverse rate	$\leq 4m/s$
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 402 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 ± 1 mm on taught-in points
- 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 2xxi for operating the most common fieldbus interfaces.



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

www.leuze.com/barcodepositioning/

BARCODE POSITIONING SYSTEM

Part description Part No.	Description	Meas. range [m]	Reproducible accuracy [mm] ¹⁾	Interface
BARCODE POSITIONING SYSTEM				
BPS 8 S M 100 - 01 50104784	Barcode positioning system, lateral beam exit, M12 connector	0 ... 10,000	± 1(2)	RS 232
BPS 8 S M 102 - 01 50104783	Barcode positioning system, front beam exit, M12 connector	0 ... 10,000	± 1(2)	RS 232

1) On taught-in points



A barcode tape of type BCB 8 ... (see page 312) is absolutely necessary for operating the BPS 8 ... barcode positioning system. Please include a tape of the desired length with your order.

BPSconfig configuration software - free download at www.leuze.com.

We reserve the right to make changes • BPS8_1_EN.fm

Accessories / connection cables		More accessories can be found from page 402 onwards
Part No.	Designation	Features
see P. 312	BCB 8 ...	BCB 8 barcode tapes in various lengths, see page 312
see P. 406	KB 008 - ...	M12 connection cables for BPS 8/MA 8-01, see page 406
50040097	KD 01-5-BA	POWER-IO-DATA connector, M12 axial, socket, 5-pin, A-coded
see P. 378	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. 394	MA 2xxi	Connector unit/Gateway for many automation technology network types
see P. 402	BT 8 - 01	Mounting device for BPS 8

						
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BPS 8
Barcode pos. system



Features

- 300 measurement values/s
- Resolution of 1/100mm up to 1m
- M12 standard connection via ready-made connection cables
- RS 232 or RS 485 interface
- Customer-specific configuration
- Measurement accuracy up to 10,000m at $\pm 1 \text{ mm}^1$
- 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 2xxi for operating the most common fieldbus interfaces.

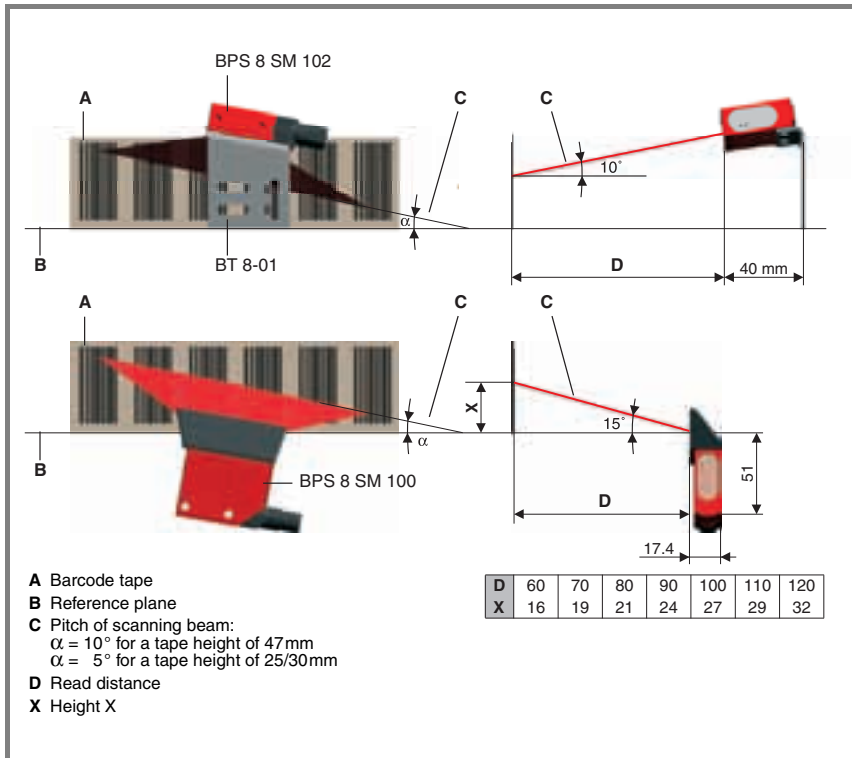


1) On taught-in points



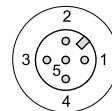
System arrangement

BPS 8



Electrical connection

PWR IN - male, A-cod.



PIN	Signal
1	VIN
2	RS232 TxD
3	GND
4	RS232 RxD
5	SWIN/SWOUT

Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

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OVERVIEW



Positioning of high-bay storage devices in conveyor and storage technology

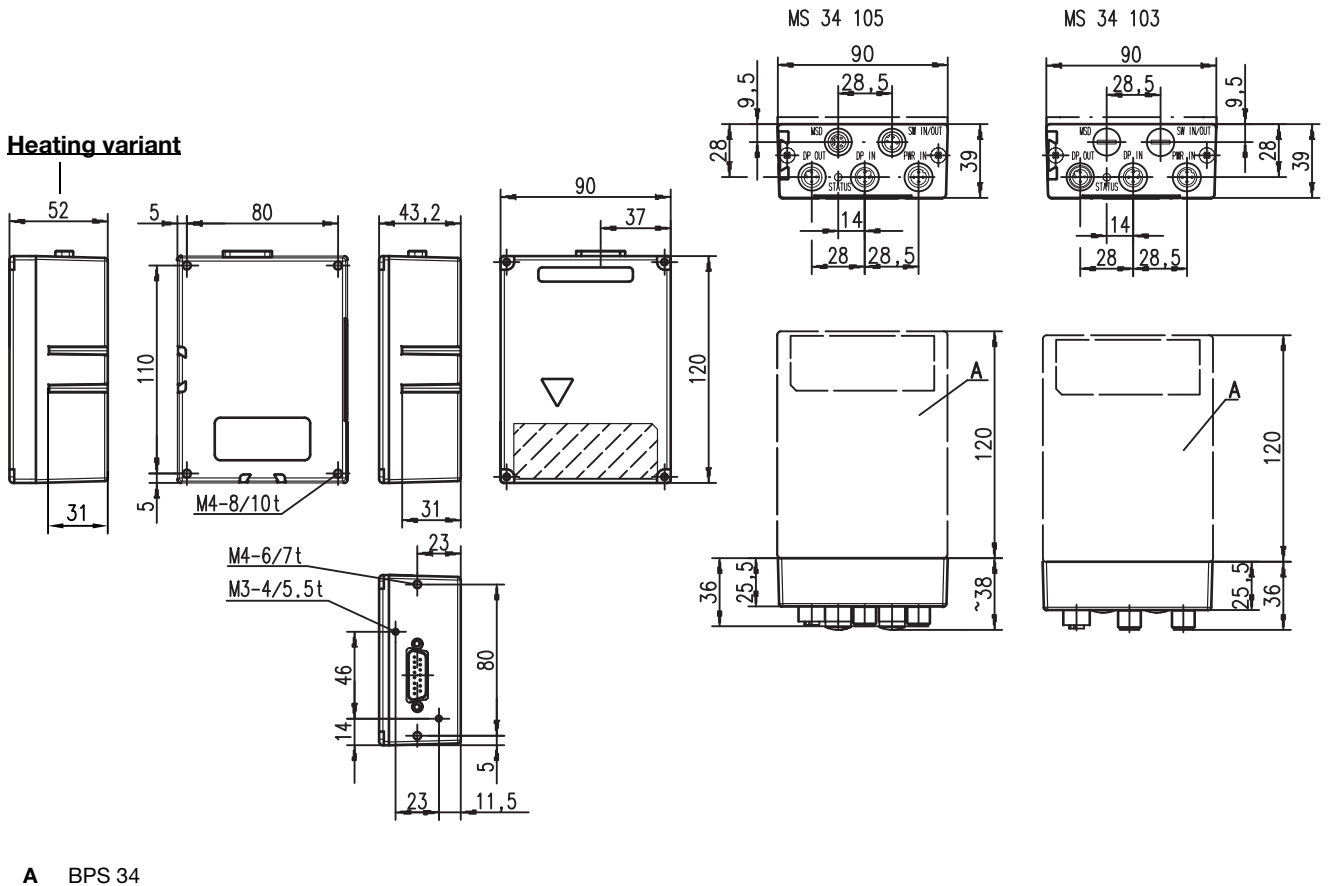


Positioning of teleroller lines in the automobile industry



Positioning of side-tracking skates



Dimensioned drawing



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BARCODE POSITIONING SYSTEM BPS 34

Barcode positioning system	Working range	Page
 BPS 34 S M 100 ...	 mm	306



Common technical data		
Electrical data	Operating voltage U_B	w/o heating: 10 ... 30VDC w. heating: 22 ... 26VDC
	Power consumption	w/o heating: $\leq 5W$ w. heating: $\leq 30W$
	Interface type	PROFIBUS DP
	Reprod. accuracy	$\pm 1(2)mm$
	Meas. value output	500 values/s
	Traverse rate	$\leq 10m/s$
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 403 onwards		

Features

- **M12 standard connection via ready-made connection cables**
- **PROFIBUS DP interface**
- **Integrated velocity measurement**
- **Measurement accuracy up to 10,000m at ± 1 mm on taught-in points**
- **Very easy mounting**



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

BARCODE POSITIONING SYSTEM WITH PROFIBUS DP

Part description Part No.	Description	Meas. range [m]	Reproducible accuracy [mm] ¹⁾	Interface
Barcode positioning system				
BPS 34 S M 100 50038007	Barcode positioning system	0 ... 10,000	± 1(2)	PROFIBUS DP
BPS 34 S M 100 H 50038008	Barcode positioning system, with heating	0 ... 10,000	± 1(2)	PROFIBUS DP
BPS 34 S M 100 HT 50103179	Barcode positioning system, for temperatures up to 50°C	0 ... 10,000	± 1(2)	PROFIBUS DP

1) On taught-in points



A barcode tape of type BCB 3x (see page 316) is absolutely necessary for operating the BPS 34 ... barcode 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 403** onwards

Part No.	Designation	Features
see P. 316	BCB 3x ...	BCB 3x barcode tapes in various lengths, see page 316
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. 418	K - D M12...	Connection cables with M12 connector (A-coded) for PWR
see P. 417	KB PB-...	Connection cables with M12 connector (B-coded) for BUS IN/OUT
see P. 425	KD 01-5-...	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 425	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. 403	BT 56	Mounting device for BPS 34
see P. 403	UMS 96	Dovetail rod mounting set, for BPS 3x

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BPS 37
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BCB 8
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BCB 3x
Page 316

BPS 34
Barcode pos. system



Features

- 500 measurement values/s
- Resolution of 1/100mm up to 1m
- M12 standard connection via ready-made connection cables
- PROFIBUS DP interface
- Integrated velocity measurement
- Measurement accuracy up to 10,000m at $\pm 1\text{ mm}^1$
- Very easy mounting

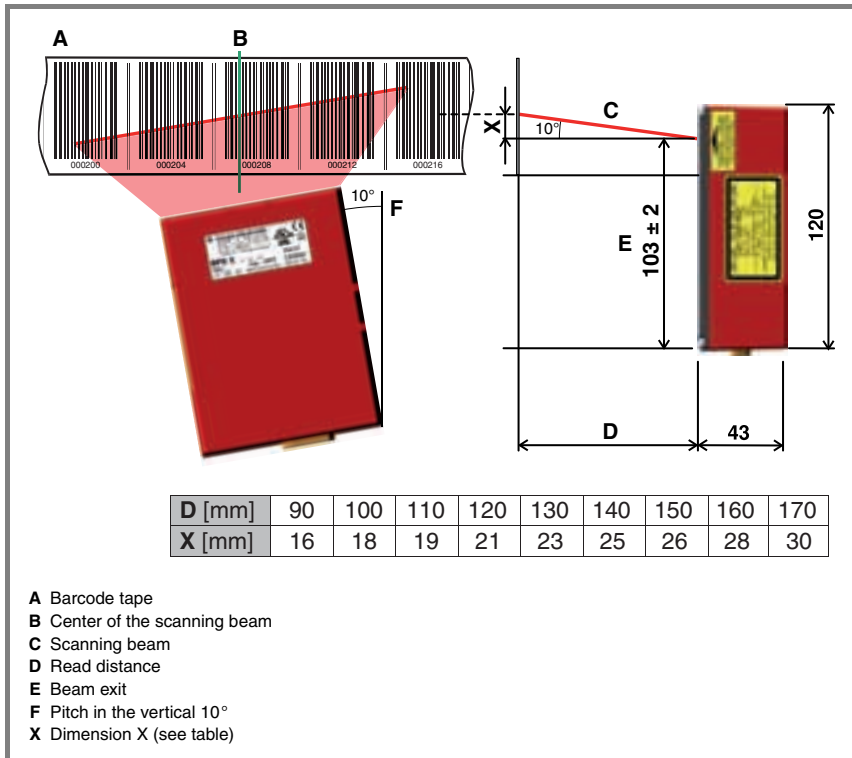


1) On taught-in points



System arrangement

BPS 34



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

Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

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OVERVIEW



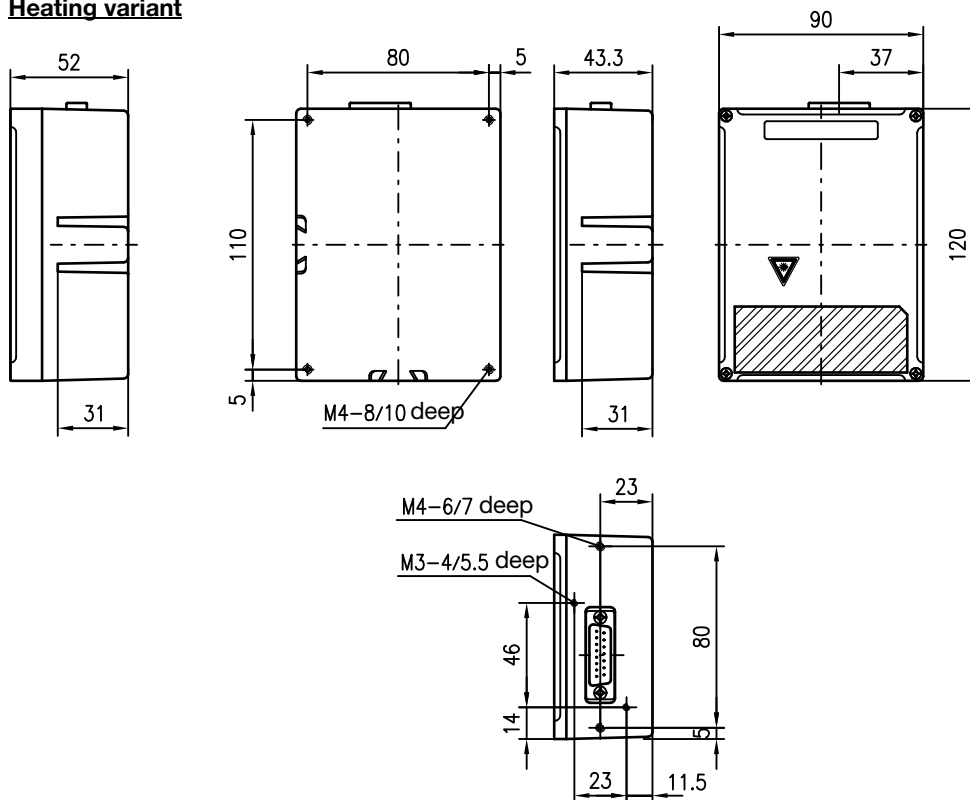
Positioning of transverse side-tracking skates



Positioning of transverse side-tracking skates

Dimensioned drawing

Heating variant



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BCB 3x
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BARCODE POSITIONING SYSTEM BPS 37





Barcode positioning system	Working range	Page
 BPS 37 S M 100 ...	 mm	310



Common technical data		
Electrical data	Operating voltage U_B	w/o heating: 10 ... 30VDC w. heating: 22 ... 26VDC
	Power consumption	w/o heating: $\leq 5W$ w. heating: $\leq 30W$
	Interface type	SSI, 50 ... 800kHz
	Reprod. accuracy	$\pm 1(2)mm$
	Meas. value output	500 values/s
	Traverse rate	$\leq 10m/s$
Mechanical data	Housing	diecast aluminium
	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 403 onwards		

Features

- SSI interface
- Integrated velocity measurement
- Measurement accuracy up to 10,000m at $\pm 1mm$ on taught-in points
- Very easy mounting


Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

www.leuze.com/barcodepositioning/

BARCODE POSITIONING SYSTEM WITH SSI INTERFACE

Part description Part No.	Description	Meas. range [m]	Reproducible accuracy [mm] ¹⁾	Interface
Barcode positioning system				
BPS 37 S M 100 50037188	Barcode positioning system, 15-pin Sub-D connector	0 ... 10,000	± 1(2)	SSI
BPS 37 S M 100 H 50038009	Barcode positioning system, with heating, 15-pin Sub-D connector	0 ... 10,000	± 1(2)	SSI
BPS 37 S M 100 HT 50103180	Barcode 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 barcode tape of type BCB 3x ... (see page 316) is absolutely necessary for operating the BPS 37 ... barcode 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 403** onwards

Part No.	Designation	Features
see P. 316	BCB 3x ...	BCB 3x barcode tapes in various lengths, see page 316
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. 409	KB 031 - 1000	Connection cable for BPS 37 to MA 4.7 (D), length 1 m
see P. 409	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. 411	KB SSI ... - BA	Connection cable for connecting MS 37 to SSI
see P. 418	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. 425	KD 01-5-...	POWER-IO-DATA connector, M12, 5-pin, A-coded
see P. 425	KD 02-5-...	FIELDBUS connector, M12, 5-pin, B-coded
see P. 403	BT 56	Mounting device for BPS 37
see P. 403	UMS 96	Dovetail rod mounting set, for BPS 3x

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BPS 37
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BCB 8
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BCB 3x
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BPS 37
Barcode pos. 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 $\pm 1\text{ mm}^1$
- Very easy mounting

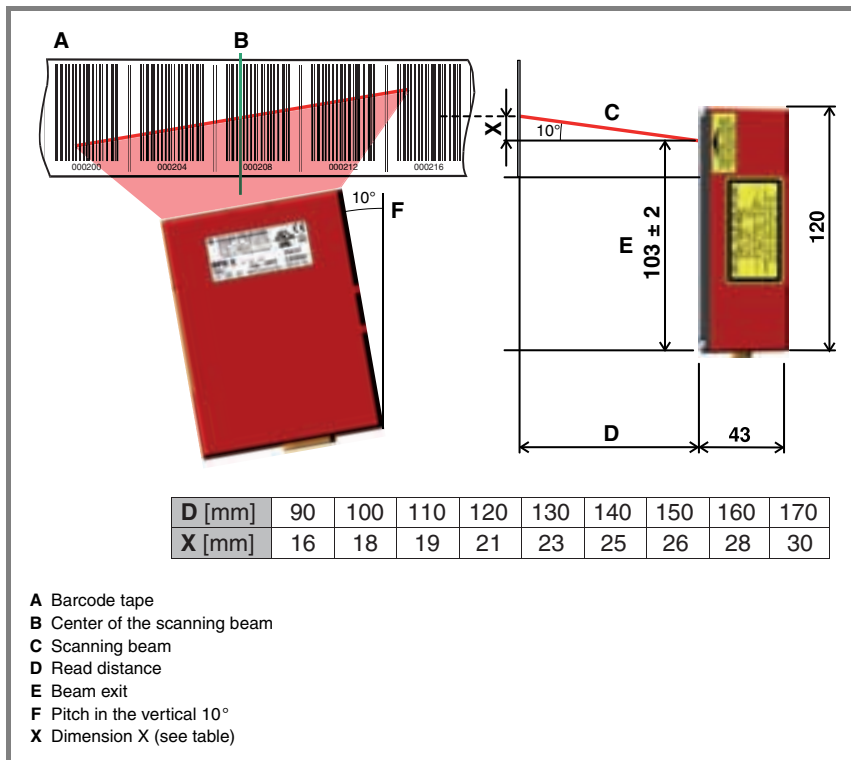


1) On taught-in points



System arrangement

BPS 37



Electrical connection

Sub-D - male

1 2 3 4 5 6 7 8



9 10 11 12 13 14 15

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

Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

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BCB 8
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BCB 3x
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BARCODE TAPE BCB 8

Barcode tape	Max. length	Page
 BCB 8	 0 10.000 m	314



The BCB 8 barcode tape is only suitable for use in combination with a BPS 8 read head!



Common technical data

Dimensions	Standard height	47 mm, 30/25 mm optionally
	Lengths	see page 314
	Length deviation	± 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)	aluminium: 25N/25 mm steel: 25N/25 mm polycarb.: 22N/25 mm polyprop.: 20N/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 (150h/5 %)
	Chem. resistance (at 23°C for 24h)	transformer oil, diesel oil, white spirit, heptane, ethylene glycol (1:1)
	Behavior in fire	self-extinguishing after 15s

Features

- Robust and durable polyester adhesive tape
- High dimensional stability
- Max. length 10.000 m
- Self-adhesive with high adhesive strength
- Barcode grid 30mm



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

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BARCODE TAPE FOR BPS 8

Part description Part No.	Description	Length [m]	Value range [m]	Height [mm]	
Barcode tape					
BCB 8 005 50106467	Barcode tape for barcode positioning system BPS 8	5	0 ... 5	47	
BCB 8 010 50104792	Barcode tape for barcode positioning system BPS 8	10	0 ... 10	47	
BCB 8 020 50104793	Barcode tape for barcode positioning system BPS 8	20	0 ... 20	47	
BCB 8 030 50104794	Barcode tape for barcode positioning system BPS 8	30	0 ... 30	47	
BCB 8 040 50104795	Barcode tape for barcode positioning system BPS 8	40	0 ... 40	47	
BCB 8 050 50104796	Barcode tape for barcode positioning system BPS 8	50	0 ... 50	47	
BCB 8 060 50104797	Barcode tape for barcode positioning system BPS 8	60	0 ... 60	47	
BCB 8 070 50104798	Barcode tape for barcode positioning system BPS 8	70	0 ... 70	47	
BCB 8 080 50104799	Barcode tape for barcode positioning system BPS 8	80	0 ... 80	47	
BCB 8 090 50104800	Barcode tape for barcode positioning system BPS 8	90	0 ... 90	47	
BCB 8 100 50104801	Barcode tape for barcode positioning system BPS 8	100	0 ... 100	47	
BCB 8 110 50104802	Barcode tape for barcode positioning system BPS 8	110	0 ... 110	47	
BCB 8 120 50104803	Barcode tape for barcode positioning system BPS 8	120	0 ... 120	47	
BCB 8 130 50104804	Barcode tape for barcode positioning system BPS 8	130	0 ... 130	47	

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BPS 37
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BCB 8
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BCB 3x
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BCB 8

Barcode tape



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

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Positioning

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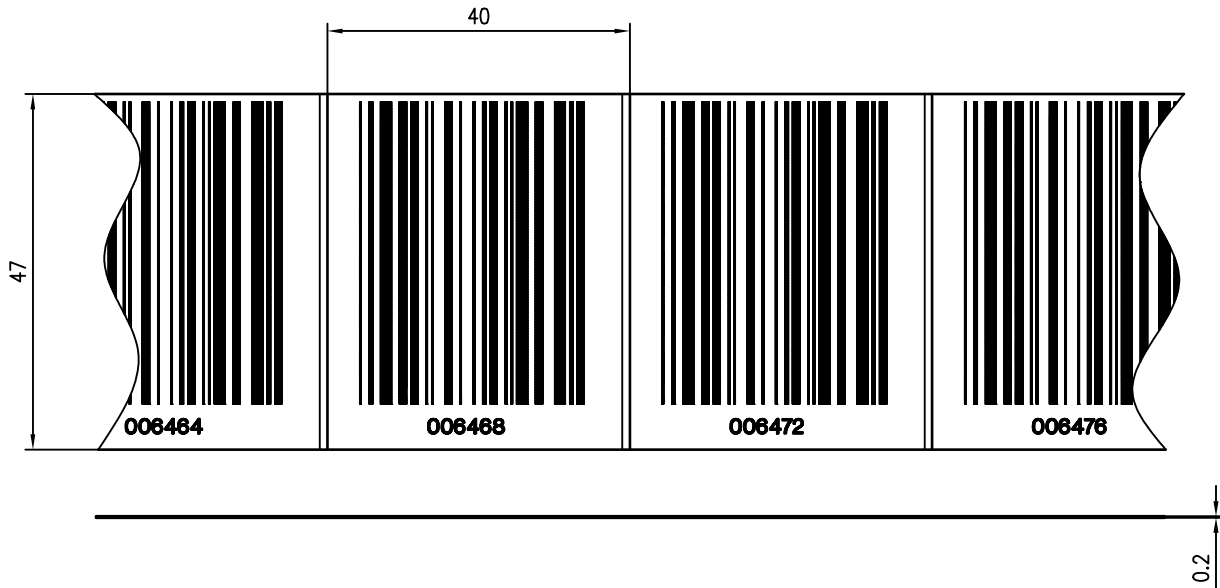
Part description Part No.	Description	Length [m]	Value range [m]	Height [mm]	
Barcode tape					
BCB 8 140 50104805	Barcode tape for barcode positioning system BPS 8	140	0 ... 140	47	
BCB 8 150 50104806	Barcode tape for barcode positioning system BPS 8	150	0 ... 150	47	
BCB 8 200 50106468	Barcode tape for barcode positioning system BPS 8	200	0 ... 200	47	
BCB 8 special length, 47 mm high 50104807 ¹⁾	Barcode tape for BPS 8 with special lengths from 150m	from 150	as specified	47	
BCB 8 special length, 30 mm high 50104808 ¹⁾	Barcode tape for BPS 8 with special lengths from 150m	from 150	as specified	30	
BCB 8 special length, 25 mm high 50104809 ¹⁾	Barcode tape for BPS 8 with special lengths from 150m	from 150	as specified	25	
BCB 8 special length/height 50106980 ¹⁾	Barcode tape for BPS 8 with special lengths from 150m	from 150	as specified	as specified	
LOG set-up costs - barcode tape < 150m K50000161 ¹⁾	Set-up costs when ordering barcode tape in special lengths < 150m	up to 150	–	–	
Control/marker barcode 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 barcode tape for BPS 8, length 1 m	1	as specified	47	
LOG set-up costs K50000160 ²⁾	Set-up costs per order for repair kit barcode tape	–	–	–	

1) Barcode 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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BCB 3x
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BARCODE TAPE BCB 3x

Barcode tape	Max. length	Page
 BCB 3x	 0 10.000 m	318



The BCB 3x barcode tape is only suitable for use in combination with a BPS 34 or BPS 37 read head!



Common technical data		
Dimensions	Standard height	47 mm, 25 mm optionally
	Lengths	see page 318
	Length deviation	± 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)	aluminium: 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 (150h/5 %)
	Chem. resistance (at 23 °C for 24h)	transformer oil, diesel oil, white spirit, heptane, ethylene glycol (1:1)
	Behavior in fire	self-extinguishing after 15s

Features

- Robust and durable polyester adhesive tape
- High dimensional stability
- Max. length 10.000 m
- Self-adhesive with high adhesive strength
- Barcode grid 40mm



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

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BARCODE TAPE FOR BPS 34 AND BPS 37

Part description Part No.	Description	Length [m]	Value range [m]	Height [mm]	
Barcode tape					
BCB 005 50038895	Barcode tape for barcode positioning system BPS 3x	5	0 ... 5	47	
BCB 010 50040041	Barcode tape for barcode positioning system BPS 3x	10	0 ... 10	47	
BCB 020 50037489	Barcode tape for barcode positioning system BPS 3x	20	0 ... 20	47	
BCB 030 50037491	Barcode tape for barcode positioning system BPS 3x	30	0 ... 30	47	
BCB 040 50037492	Barcode tape for barcode positioning system BPS 3x	40	0 ... 40	47	
BCB 050 50038894	Barcode tape for barcode positioning system BPS 3x	50	0 ... 50	47	
BCB 060 50038893	Barcode tape for barcode positioning system BPS 3x	60	0 ... 60	47	
BCB 070 50038892	Barcode tape for barcode positioning system BPS 3x	70	0 ... 70	47	
BCB 080 50038891	Barcode tape for barcode positioning system BPS 3x	80	0 ... 80	47	
BCB 090 50038890	Barcode tape for barcode positioning system BPS 3x	90	0 ... 90	47	
BCB 100 50037493	Barcode tape for barcode positioning system BPS 3x	100	0 ... 100	47	
BCB 110 50040042	Barcode tape for barcode positioning system BPS 3x	110	0 ... 110	47	
BCB 120 50040043	Barcode tape for barcode positioning system BPS 3x	120	0 ... 120	47	
BCB 130 50040044	Barcode tape for barcode positioning system BPS 3x	130	0 ... 130	47	

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BCB 3x
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BCB 3x

Barcode tape



Stationary
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Mobile
barcode
identification

2D-code
identification

RF
identification

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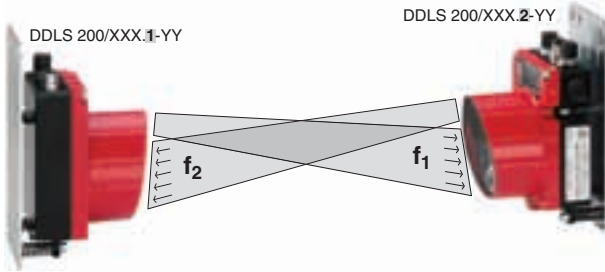
Part description Part No.	Description	Length [m]	Value range [m]	Height [mm]	
Barcode tape					
BCB 140 50040045	Barcode tape for barcode positioning system BPS 3x	140	0 ... 140	47	
BCB 150 50040046	Barcode tape for barcode positioning system BPS 3x	150	0 ... 150	47	
BCB 200 50037494	Barcode tape for barcode positioning system BPS 3x	200	0 ... 200	47	
BCB special length 47 mm high 50037495 ¹⁾	Barcode tape for BPS 3x with special lengths from 150 m	from 150	as specified	47	
BCB special length 25mm high 50102600 ¹⁾	Barcode tape for BPS 3x with special lengths from 150 m	from 150	as specified	25	
BCB special length/height 50106979 ¹⁾	Barcode tape for BPS 3x with special lengths from 150 m	from 150	as specified	as specified	
LOG set-up costs - barcode tape < 150m K50000161 ¹⁾	Set-up costs when ordering barcode tape in special lengths < 150m	up to 150	–	–	
Control and marker barcode 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 barcode 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 barcode tape	–	–	–	

1) Barcode 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.

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 designations1 and2 as well as by the labels **frequency f₁** and **frequency f₂** 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 328
	PROFIBUS interface Terminals/M 12	
	DDLS 200 ... - 2x - ...	from page 332
	Interbus interface FOC/copper wires	
	DDLS 200 ... - 40 - ...	from page 336
	DataHighway+ / Remote I/O Interface	
	DDLS 200 ... - 50 - ...	from page 338
	CANopen / DeviceNet Interface	
	DDLS 200 ... - 60 - ...	from page 340
	Ethernet Interface 10/100Mbit/s	
	DDLS 78	from page 352
	RS 232 Interface	
	DDLS 78	from page 346
	RS 485 Interface	
	DDLS 78	from page 350
	RS 422 Interface	
	DDLS 78	from page 348
	TTY Interface	

Features

- Operating ranges up to 500m possible
- Transmission rates up to 2Mbit/s
- Network interfaces with integrated repeater function
- Low ambient light sensitivity through special FSK method

We reserve the right to make changes • Auswahlhilfe_Datenuebertragung_EN.fm

OPTICAL DATA TRANSMISSION SYSTEMS



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

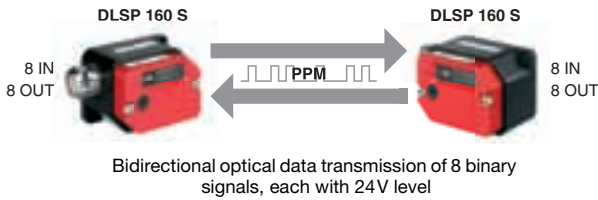
Networking
Connector units

Accessories

Services

Parallel optical data transmission systems

Operating principle



The DLSP 160 S is a parallel optical data transceiver. Binary signals with a level of 24VDC can be connected to the 8 inputs of the DLSP 160 S. These are transmitted optically and are again available at the outputs on the opposing side with a level of 24V.

Products / Interfaces





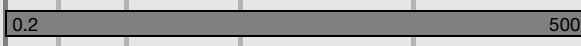





from page 354

Features

- Operating ranges up to 2.8m possible
- Data communication within 400µs
- Insensitive to interference through 24V technology
- Low ambient light sensitivity through the pulse-pause modulation method

SELECTION TABLE

Series	Dimensions in mm (WxHxD)	Housing material		Operating range in m				
		Plastic	Metal	10	50	100	300	500
 DDLS 200... -10...	90 x 190 x 120							
 DDLS 200... -20...	90 x 190 x 120							
 DDLS 200... -21...	90 x 190 x 120							
 DDLS 200... -40...	90 x 190 x 120							
 DDLS 200... -50...	90 x 190 x 120							
 DDLS 200... -60...	90 x 190 x 120							

We reserve the right to make changes • Auswahltabelle_Datenuebertragung_1_EN.fm



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

OPTICAL DATA TRANSMISSION SYSTEMS



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission
















Networking Connector units

Accessories

Services

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	●						●					328
	●		500			●						●				332
	●			2.0			●									334
	●		230.4					●								336
	●			1.0					●							338
	●			10/100						●						340

SELECTION TABLE

Series	Dimensions in mm (WxHxD)	Housing material		Operating range in m				
		Plastic	Metal	10	50	100	300	500
 DDLS 78.5	104 x 185 x 36							
 DDLS 78.6	104 x 185 x 36							
 DDLS 78.7	104 x 185 x 36							
 DDLS 78.6.1	104 x 185 x 36							
 DLSP 160 S	75 x 55 x 45							

We reserve the right to make changes • Auswahltabelle_Datenuebertragung_2_EN.fm



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

OPTICAL DATA TRANSMISSION SYSTEMS



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

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)
	●		9.6		●							●	●	●		346
	●		19.2		●							●	●	●		346
	●		38.4		●							●	●	●		346
●			19.2		●							●	●	●		346
	●													●		356

OVERVIEW



Data transmission to high-bay storage device in conveyor and storage technology

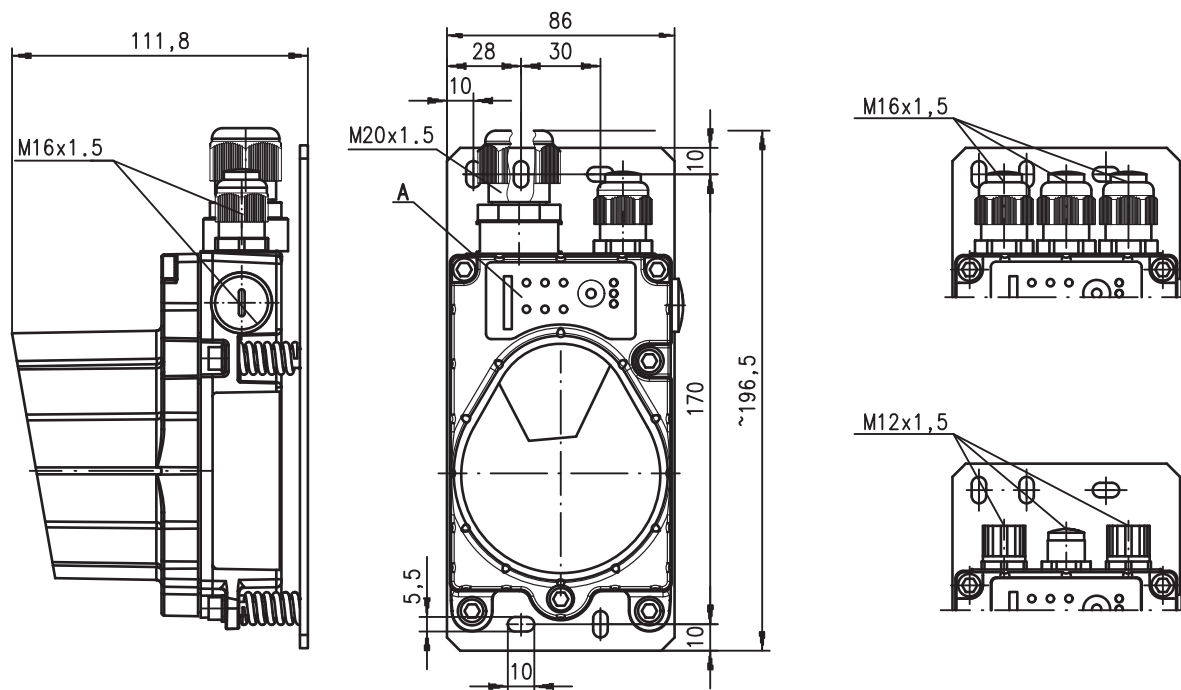


Data transmission to transverse side-tracking skate in the automobile industry



Data transmission to moving system components in conveyor and storage technology

Dimensioned drawing



A Control panel

We reserve the right to make changes • DDLS200_Overview_EN.fm



DDLS 200
Page 326




DDLS 78
Page 344



DLSP 160 S
Page 354

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⁾	328
	Interbus / RS 422	
	Interbus fibre-optic cable	
	Rockwell Automation DH+ / RIO	
	DeviceNet / CANopen	
	Ethernet TCP/IP (10/100 Mbit/s)	

1) on request



Common technical data		
Electrical data	Operating voltage U_B	18 ... 30VDC
	Current consumption (at 24VDC)	w/o heating: $\leq 200\text{mA}$ w. heating: $\leq 800\text{mA}$
	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 aluminium
	Optics	glass
	Weight	approx. 1200g
Environmental data	Ambient temperature operation (storage)	w/o heating: $-5 \dots +50^\circ\text{C}$ w. heating: $-30 \dots +50^\circ\text{C}$ ($-30 \dots +70^\circ\text{C}$)
	Protection class	IP 65
	Air humidity	<... 90% (non-cond.)
Optical data	Infrared LED, wavelength 880nm Class 1 acc. to EN 60825-1:1994+A1+A2	
	Extraneous light	> 10,000Lux

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**



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

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 1.5Mbit/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 1.5Mbit/s	Terminals
DDLS 200 / 120.1 - 10 DDLS 200 / 120.2 - 10 50036282 / 50036283	Opt. data transmission, -5 ... +50°C	120	± 0.5	PROFIBUS 1.5Mbit/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 1.5Mbit/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 1.5Mbit/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 1.5Mbit/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 1.5Mbit/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 1.5Mbit/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 93.75kbit/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 417** 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. 417	KB PB-...	PROFIBUS connection cables, see page 417
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
Page 326



DDLS 78
Page 344



DLSP 160 S
Page 354

DDLS 200
Data transmission system



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories


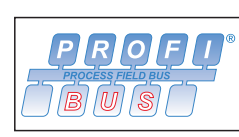

Services

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



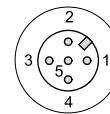
DDLS 200 / ... - 10 ...

	Oper. range from 0.2m	<ul style="list-style-type: none"> 30m 80m 120m 200m 300m 500m
	Baud rate	9.6 kbit/s ... 1.5 Mbit/s
	Protocols	FMS DP MPI RS 485
	Approvals	

Electrical connection

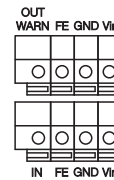
Power

M12 - male, A-cod.



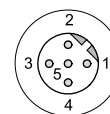
PIN	Signal
1	Vin
2	OUT WARN
3	GND
4	IN/Trans./Rec. off
5	FE

Terminals



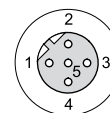
PROFIBUS

BUS IN - male, B-cod.



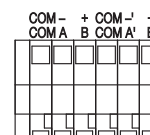
PIN	Signal
1	NC
2	A (N)
3	NC
4	B (P)
5	Shield / FE

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!

We reserve the right to make changes • DDLS200_2_EN.fm

Accessories / connection cables

More accessories can be found from **page 417** 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. 417	KB PB-...	PROFIBUS connection cables, see page 417
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
Page 326



DDLS 78
Page 344



DLSP 160 S
Page 354

DDL S 200
Data transmission system



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories


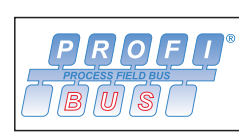

Services

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 DDL S 200 units
- Adjustable baud rates
- RS 485 on consultation with Leuze electronic



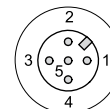
DDL S 200 / ... - 10 - H ...

	Oper. range from 0.2m	<ul style="list-style-type: none"> 30m 80m 120m 200m 300m 500m
	Baud rate	9.6 kbit/s ... 1.5 Mbit/s
	Protocols	FMS DP MPI RS 485
	Approvals	

Electrical connection

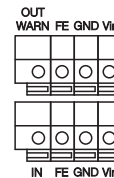
Power

M12 - male, A-cod.



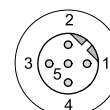
PIN	Signal
1	Vin
2	OUT WARN
3	GND
4	IN/Trans./Rec. off
5	FE

Terminals



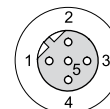
PROFIBUS

BUS IN - male, B-cod.



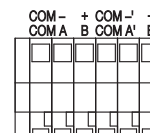
PIN	Signal
1	NC
2	A (N)
3	NC
4	B (P)
5	Shield / FE

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 500kbit/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 500kbit/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 500kbit/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 500kbit/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 500kbit/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 100kbit/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 500kbit/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 500kbit/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 500kbit/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 100kbit/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
Page 326

DDLS 78
Page 344

DLSP 160 S
Page 354

DDLS 200
Data transmission system



Stationary
barcode
identification

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






Mobile
barcode
identification

2D-code
identification

RF
identification

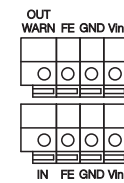
DDLS 200 / ... - 20 ...

	Oper. range from 0.2m	<ul style="list-style-type: none"> 30m 80m 120m 200m 300m 500m
	Baud rate	<ul style="list-style-type: none"> 100 kbit/s 500 kbit/s
	Protocols	<ul style="list-style-type: none"> Interbus 500 kbit/s RS 422 500 kbit/s
	Approvals	

Electrical connection

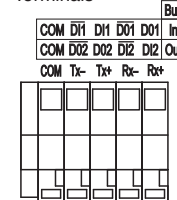
Power

Terminals



Interbus / RS 422

Terminals



Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

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 fibre-optic cable 2Mbit/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 fibre-optic cable 2Mbit/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 fibre-optic cable 2Mbit/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 fibre-optic cable 2Mbit/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!



DDLS 200
Page 326



DDLS 78
Page 344



DLSP 160 S
Page 354

DDL S 200
Data transmission system



Stationary
barcode
identification

Features

- Operating ranges of 200m and 300m for Interbus with fibre-optic cable connection
- Transmission protected against interference through the use of fibre-optic cables
- Bus connection by means of polymer-fibre cables with FSMA connector
- The DDL S 200 is an INTER-BUS 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 DDL S 200 units






Mobile
barcode
identification

2D-code
identification

RF
identification

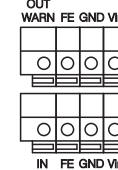
DDL S 200 / ... - 21 ...

	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	

Electrical connection

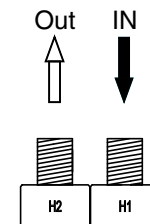
Power

Terminals



Interbus FOC

FSMA connectors



Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

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!



DDLS 200
Page 326



DDLS 78
Page 344



DLSP 160 S
Page 354

DDL S 200
Data transmission system



Stationary
barcode
identification

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 DDL S 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 DDL S 200 units





Mobile
barcode
identification

2D-code
identification

RF
identification

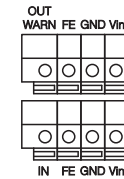
DDL S 200 / ... - 40 ...

	Oper. range from 0.2m	<ul style="list-style-type: none"> 30m on request 80m on request 120m 200m 300m
Rockwell Automation	Baud rate	<ul style="list-style-type: none"> 57,6 kbit/s 115,2 kbit/s 230,4 kbit/s
	Protocols	Data Highway + Remote I/O
	Approvals	

Electrical connection

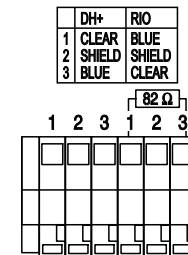
Power

Terminals



DH+ / RIO

Terminals



Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

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 / 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!

We reserve the right to make changes • DDLS200_6_EN.fm

Accessories / connection cables

More accessories can be found from **page 418** 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
Page 326



DDLS 78
Page 344



DLSP 160 S
Page 354

DDLS 200
Data transmission system



Stationary
barcode
identification

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, 1 MBit/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



Mobile
barcode
identification

2D-code
identification

RF
identification

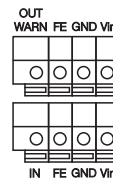
DDLS 200 / ... - 50 ...

	Oper. range from 0.2m	<ul style="list-style-type: none"> 30m on request 80m on request 120m 200m 300m
CANopen	Baud rate	125 kbit/s 1 Mbit/s
DeviceNet	Protocols	CANopen DeviceNet
	Approvals	

Electrical connection

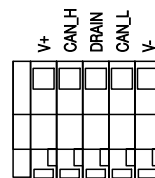
Power

Terminals



DeviceNet/CANopen

Terminals



Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

DATA TRANSMISSION SYSTEMS, ETHERNET

Part description Part No.1 -... /2 -...	Description	Op. range [m]	Opening angle [°]	Interface	Connection
Optical data transmission systems					
DDLS 200 / 120.1 - 60 DDLS 200 / 120.2 - 60 50040929 / 50040930	Opt. data transmission, -5 ... +50°C	120	± 0.5	Ethernet 10/100Mbit/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 10/100Mbit/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 10/100Mbit/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 10/100Mbit/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 10/100Mbit/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 10/100Mbit/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 418** 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. 412	KB ET - ... - SA	M12 data lines: Industrial Ethernet (D-coded)



DDLS 200
Page 326



DDLS 78
Page 344



DLSP 160 S
Page 354

DDLS 200
Data transmission system



Stationary
barcode
identification

Features

- Operating ranges of 120 m, 200 m, 300 m
- 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



Mobile
barcode
identification

2D-code
identification

RF
identification



DDLS 200 / ... - 60 ...

	Oper. range from 0.2m	<ul style="list-style-type: none"> 30m on request 80m on request 120m 200m 300m
	Baud rate	<ul style="list-style-type: none"> 10 Mbit/s 100 Mbit/s
	Protocols	All protocols are based on TCP/IP and UDP
	Approvals	

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

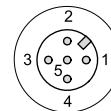
Accessories

Services

Electrical connection

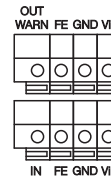
Power

M12 - male, A-cod.



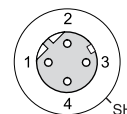
PIN	Signal
1	Vin
2	OUT WARN
3	GND
4	IN
5	FE

Terminals



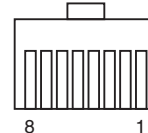
Industrial Ethernet

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

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 10/100Mbit/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 10/100Mbit/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 10/100Mbit/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 10/100Mbit/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 10/100Mbit/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 10/100Mbit/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 418** 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. 412	KB ET - ... - SA	M12 data lines: Industrial Ethernet (D-coded)



DDLS 200
Page 326



DDLS 78
Page 344



DLSP 160 S
Page 354

DDLS 200
Data transmission system



Stationary
barcode
identification

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



Mobile
barcode
identification

2D-code
identification

RF
identification



DDLS 200 / ... - 60 ...

	Oper. range from 0.2m	<ul style="list-style-type: none"> 30m on request 80m on request 120m 200m 300m
	Baud rate	<ul style="list-style-type: none"> 10 Mbit/s 100 Mbit/s
	Protocols	All protocols are based on TCP/IP and UDP
	Approvals	

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

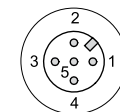
Accessories

Services

Electrical connection

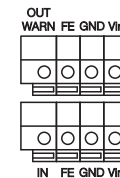
Power

M12 - male, A-cod.



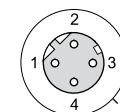
PIN	Signal
1	Vin
2	OUT WARN
3	GND
4	IN
5	FE

Terminals



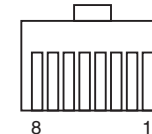
Industrial Ethernet

M12 - female, D-cod.



PIN	Signal
1	TD+
2	RD+
3	TD-
4	RD-
SH	Shield

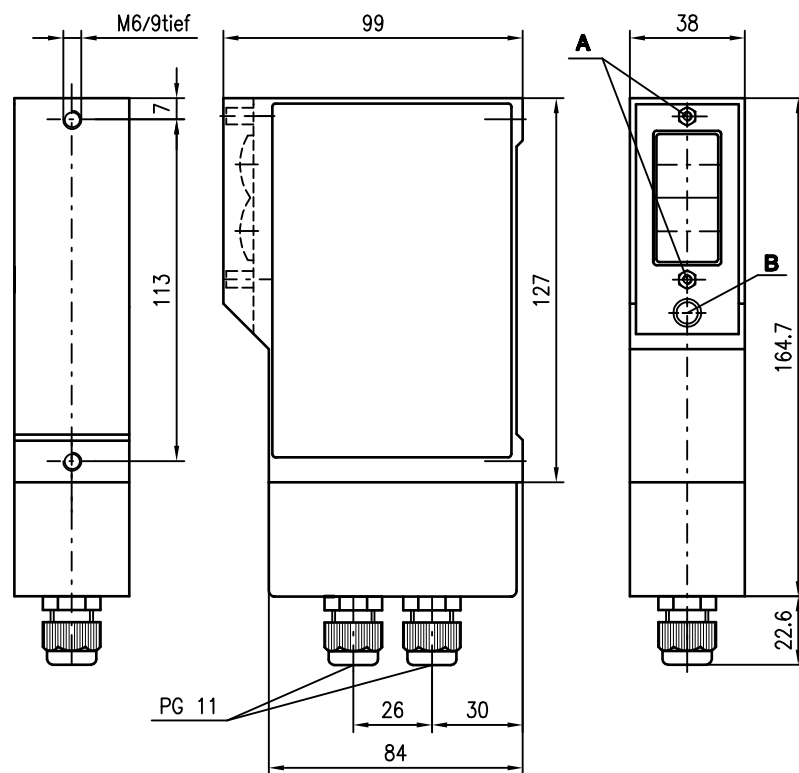
RJ45



PIN	Signal
1	TD+
2	TD-
3	RD+
4	NC
5	NC
6	RD-
7	NC
8	NC

OVERVIEW

Dimensioned drawing



- A** Bolts for fastening the laser-alignment aid
- B** Multifunction display diode

We reserve the right to make changes • DDL578_Overview_EN.fm



DDL5 200
Page 326




DDL5 78
Page 344



DLSP 160 S
Page 354

OPTICAL DATA TRANSMISSION SYSTEMS DDLS 78

Optical data transmission systems	Interface ¹⁾	Page
 DDLS 78... DDLS 78... + IM 04-RS485 DDLS 78... + IM 01-RS422 DDLS 78... + IM 01-RS232	TTY (20mA) PROFIBUS / RS 485 RS 422 RS 232	346

1) Depending on selected IM... interface module



Common technical data		
Electrical data	Operating voltage U_B	12 ... 30VDC
	Current consumption	≤ 300mA
	Interface	TTY (20mA), optional RS 232, RS 422 or RS 485 via interface modules
	Inputs	activation input, carrier frequency changeover
	Outputs	warning output, error output, message output (alignment)
Indicators	LED (multicolor)	alignment
Mechanical data	Housing	diecast aluminium
	Optics	glass
	Weight	approx. 340g
Environmental data	Ambient temperature operation (storage)	w/o heating: -20 ... +60°C w. heating: -35 ... +60°C (-30 ... +70°C)
	Protection class	IP 65
	Air humidity	< 90% (non-cond.)
Optical data	Light source	DDLS 78.6.1: LED, red light others: LED, infrared light
	LED class	1 (EN 60825-1:1994+A1+A2)

Features

- Full-duplex transmission in one housing
- A transmission path consists of 2 identical devices
- Electrically insulated interfaces
- Insensitive to extraneous light through FSK modulation
- Fast and simple alignment with multifunction LED
- With optics heating for operation at temperatures as low as -35°C



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

SERIAL DATA TRANSMISSION SYSTEMS, PROFIBUS

Part description Part No.	Description	Op. range [m]	Opening angle [°]	Baud rate [kbit/s]	Connection
Serial optical data transmission systems					
DDLS 78.5 50017928	Opt. data transmission, infrared light, -20 ... +60°C	120	± 1.5	9.6	see connection unit AT 78 ...
DDLS 78.6 50018692	Opt. data transmission, infrared light, -35 ... +60°C, optics heating	200	± 1.5	19.2	see connection unit AT 78 ...
DDLS 78.6.1 50021128	Opt. data transmission, red light, -35 ... +60°C, optics heating	120	± 1.5	19.2	see connection unit AT 78 ...
DDLS 78.7 50020024	Opt. data transmission, infrared light, -35 ... +60°C, optics heating	200	± 1.5	38.4	see connection unit AT 78 ...
Interface module					
IM 04 - RS485 50025583	PROFIBUS Interface module				
Connection unit					
AT 78 - 01 50021454	Connection unit for DDLS 78, solder connection				
AT 78 - 02 50021455	Connection unit for DDLS 78, terminal connection				



An optical data transmission path always consists of two identical DDLS 78.
For this reason, please always order 2 devices with the appropriate interface modules and connection units!

Accessories / connection cables

More accessories can be found from **page 402** onwards

Part No.	Designation	Features
50006902	BT 16	Fastening/alignment system with wobble plate for DDLS 78
50023547	ARH 2	Laser alignment aid with battery operation for DDLS 78



DDLS 200
Page 326



DDLS 78
Page 344



DLSP 160 S
Page 354

DDLS 78

Data transmission system



Stationary
barcode
identification

Features

- Full-duplex transmission in one housing
- A transmission path consists of 2 identical devices
- Electrically insulated interfaces
- Insensitive to extraneous light through FSK transmission technology
- Fast and simple alignment with multifunction LED
- With optics heating for operation at temperatures as low as -35°C



Mobile
barcode
identification

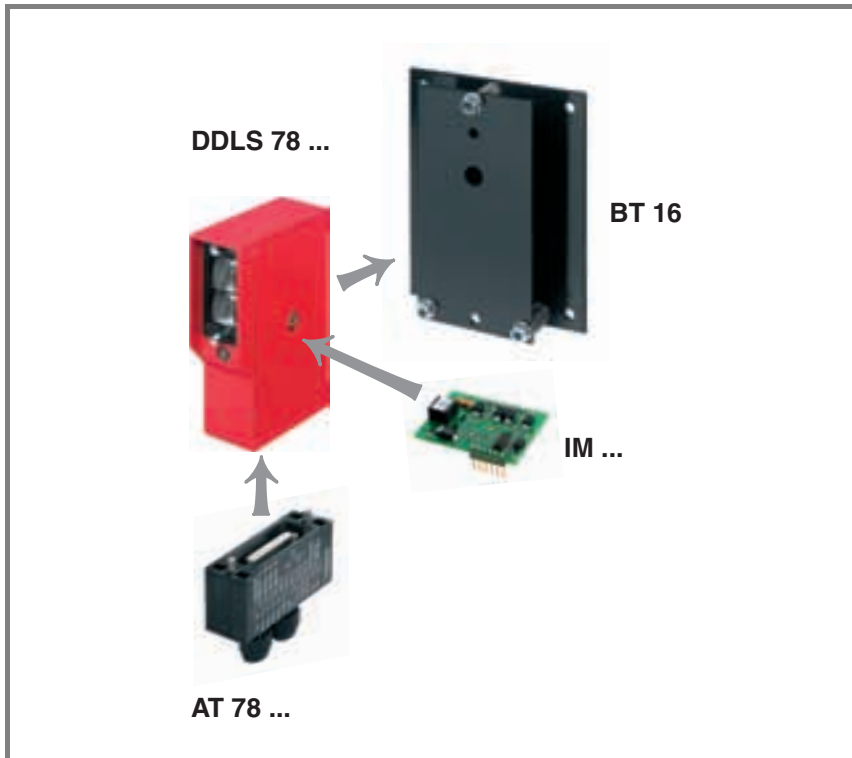
2D-code
identification

RF
identification



Modular construction

DDLS 78



Electrical connection

PROFIBUS / RS 485

Sub-D - male, 25-PIN

1 2 3 4 5 6 7 8 9 10 11 12 13



14 15 16 17 18 19 20 21 22 23 24 25

PIN	Signal
1	FE
2	-T/R
3	PULL-UP 2.2 kΩ
4	res.
5	res.
6	res.
7	res.
8	IN f SELECT
9	VIN
10	GND
11	IN ACTIVATE
12	OUT FAULT
13	OUT WARN
14	+T/R
15	SHIELD
16	PULL-DOWN 2.2 kΩ
17	res.
18	res.
19	res.
20	res.
21	res.
22	res.
23	res.
24	OUT MEAS
25	GND OUT

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

SERIAL DATA TRANSMISSION SYSTEMS, TTY (20mA)

Part description Part No.	Description	Op. range [m]	Opening angle [°]	Baud rate [kbit/s]	Connection
Serial optical data transmission systems					
DDLS 78.5 50017928	Opt. data transmission, infrared light, -20 ... +60°C	120	± 1.5	9.6	see connection unit AT 78 ...
DDLS 78.6 50018692	Opt. data transmission, infrared light, -35 ... +60°C, optics heating	200	± 1.5	19.2	see connection unit AT 78 ...
DDLS 78.6.1 50021128	Opt. data transmission, red light, -35 ... +60°C, optics heating	120	± 1.5	19.2	see connection unit AT 78 ...
DDLS 78.7 50020024	Opt. data transmission, infrared light, -35 ... +60°C, optics heating	200	± 1.5	38.4	see connection unit AT 78 ...
Interface module					
IM 01 - TTY	TTY (20mA) interface module, integrated as standard feature in all DDLS 78 models				
Connection unit					
AT 78 - 01 50021454	Connection unit for DDLS 78, solder connection				
AT 78 - 02 50021455	Connection unit for DDLS 78, terminal connection				



An optical data transmission path always consists of two identical DDLS 78.
For this reason, please always order 2 devices with the appropriate connection units!

Accessories / connection cables

More accessories can be found from **page 402** onwards

Part No.	Designation	Features
50006902	BT 16	Fastening/alignment system with wobble plate for DDLS 78
50023547	ARH 2	Laser alignment aid with battery operation for DDLS 78



DDLS 200
Page 326



DDLS 78
Page 344



DLSP 160 S
Page 354

DDLS 78

Data transmission system



Stationary
barcode
identification

Features

- Full-duplex transmission in one housing
- A transmission path consists of 2 identical devices
- Electrically insulated interfaces
- Insensitive to extraneous light through FSK transmission technology
- Fast and simple alignment with multifunction LED
- With optics heating for operation at temperatures as low as -35°C



Mobile
barcode
identification

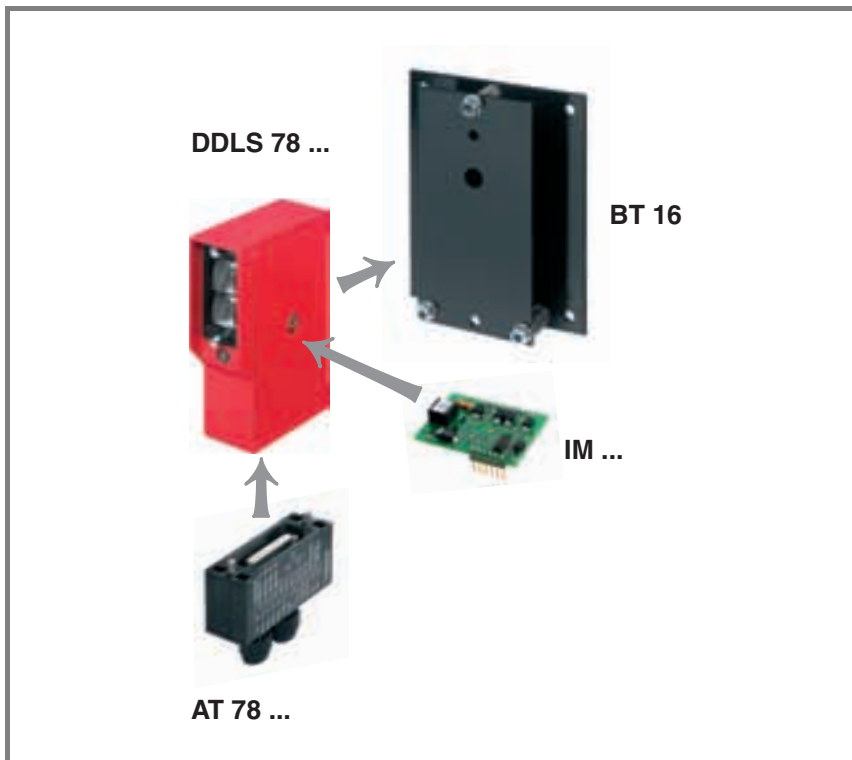
2D-code
identification

RF
identification



Modular construction

DDLS 78



Electrical connection

TTY (20 mA)

Sub-D - male, 25-PIN

1 2 3 4 5 6 7 8 9 10 11 12 13



14 15 16 17 18 19 20 21 22 23 24 25

PIN	Signal
1	FE
2	res.
3	res.
4	res.
5	res.
6	res.
7	res.
8	IN f SELECT
9	VIN
10	GND
11	IN ACTIVATE
12	OUT FAULT
13	OUT WARN
14	res.
15	res.
16	res.
17	res.
18	REF Tx
19	Tx+
20	Tx-
21	Rx+
22	Rx-
23	REF Rx
24	OUT MEAS
25	GND OUT

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

SERIAL DATA TRANSMISSION SYSTEMS, RS 422

Part description Part No.	Description	Op. range [m]	Opening angle [°]	Baud rate [kbit/s]	Connection
Serial optical data transmission systems					
DDLS 78.5 50017928	Opt. data transmission, infrared light, -20 ... +60°C	120	± 1.5	9.6	see connection unit AT 78 ...
DDLS 78.6 50018692	Opt. data transmission, infrared light, -35 ... +60°C, optics heating	200	± 1.5	19.2	see connection unit AT 78 ...
DDLS 78.6.1 50021128	Opt. data transmission, red light, -35 ... +60°C, optics heating	120	± 1.5	19.2	see connection unit AT 78 ...
DDLS 78.7 50020024	Opt. data transmission, infrared light, -35 ... +60°C, optics heating	200	± 1.5	38.4	see connection unit AT 78 ...
Interface module					
IM 01 - RS422 50021537	RS 422 interface module				
Connection unit					
AT 78 - 01 50021454	Connection unit for DDLS 78, solder connection				
AT 78 - 02 50021455	Connection unit for DDLS 78, terminal connection				



An optical data transmission path always consists of two identical DDLS 78.
For this reason, please always order 2 devices with the appropriate interface modules and connection units!

Accessories / connection cables

More accessories can be found from **page 402** onwards

Part No.	Designation	Features
50006902	BT 16	Fastening/alignment system with wobble plate for DDLS 78
50023547	ARH 2	Laser alignment aid with battery operation for DDLS 78



DDLS 200
Page 326



DDLS 78
Page 344



DLSP 160 S
Page 354

DDLS 78

Data transmission system



Stationary
barcode
identification

Features

- Full-duplex transmission in one housing
- A transmission path consists of 2 identical devices
- Electrically insulated interfaces
- Insensitive to extraneous light through FSK transmission technology
- Fast and simple alignment with multifunction LED
- With optics heating for operation at temperatures as low as -35°C

Mobile
barcode
identification

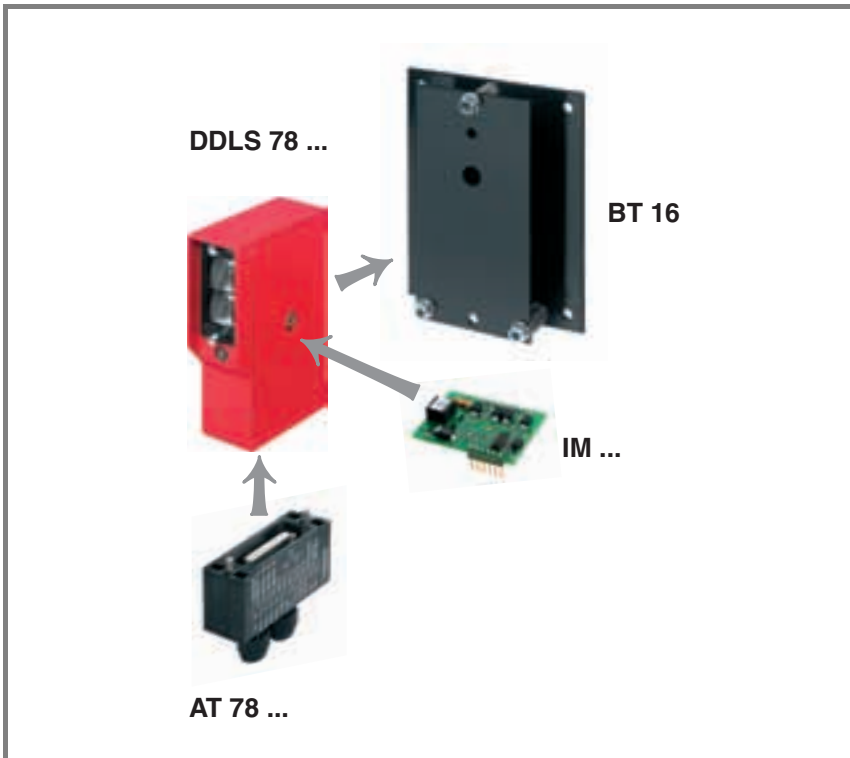
2D-code
identification

RF
identification



Modular construction

DDLS 78



Electrical connection

RS 422

Sub-D - male, 25-PIN

1 2 3 4 5 6 7 8 9 10 11 12 13



14 15 16 17 18 19 20 21 22 23 24 25

PIN	Signal
1	FE
2	TxD+
3	RxD+
4	RTS+
5	CTS+
6	SHIELD
7	GND RS422
8	IN f SELECT
9	VIN
10	GND
11	IN ACTIVATE
12	OUT FAULT
13	OUT WARN
14	TxD-
15	RxD-
16	RTS-
17	CTS-
18	res.
19	res.
20	res.
21	res.
22	res.
23	res.
24	OUT MEAS
25	GND OUT

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

SERIAL DATA TRANSMISSION SYSTEMS, RS 232

Part description Part No.	Description	Op. range [m]	Opening angle [°]	Baud rate [kbit/s]	Connection
Serial optical data transmission systems					
DDLS 78.5 50017928	Opt. data transmission, infrared light, -20 ... +60°C	120	± 1.5	9.6	see connection unit AT 78 ...
DDLS 78.6 50018692	Opt. data transmission, infrared light, -35 ... +60°C, optics heating	200	± 1.5	19.2	see connection unit AT 78 ...
DDLS 78.6.1 50021128	Opt. data transmission, red light, -35 ... +60°C, optics heating	120	± 1.5	19.2	see connection unit AT 78 ...
DDLS 78.7 50020024	Opt. data transmission, infrared light, -35 ... +60°C, optics heating	200	± 1.5	38.4	see connection unit AT 78 ...
Interface module					
IM 01 - RS232 50021536	RS 232 interface module				
Connection unit					
AT 78 - 01 50021454	Connection unit for DDLS 78, solder connection				
AT 78 - 02 50021455	Connection unit for DDLS 78, terminal connection				



An optical data transmission path always consists of two identical DDLS 78.
For this reason, please always order 2 devices with the appropriate interface modules and connection units!

Accessories / connection cables

More accessories can be found from **page 402** onwards

Part No.	Designation	Features
50006902	BT 16	Fastening/alignment system with wobble plate for DDLS 78
50023547	ARH 2	Laser alignment aid with battery operation for DDLS 78



DDLS 200
Page 326



DDLS 78
Page 344



DLSP 160 S
Page 354

DDLS 78

Data transmission system



Stationary barcode identification

Features

- Full-duplex transmission in one housing
- A transmission path consists of 2 identical devices
- Electrically insulated interfaces
- Insensitive to extraneous light through FSK transmission technology
- Fast and simple alignment with multifunction LED
- With optics heating for operation at temperatures as low as -35°C



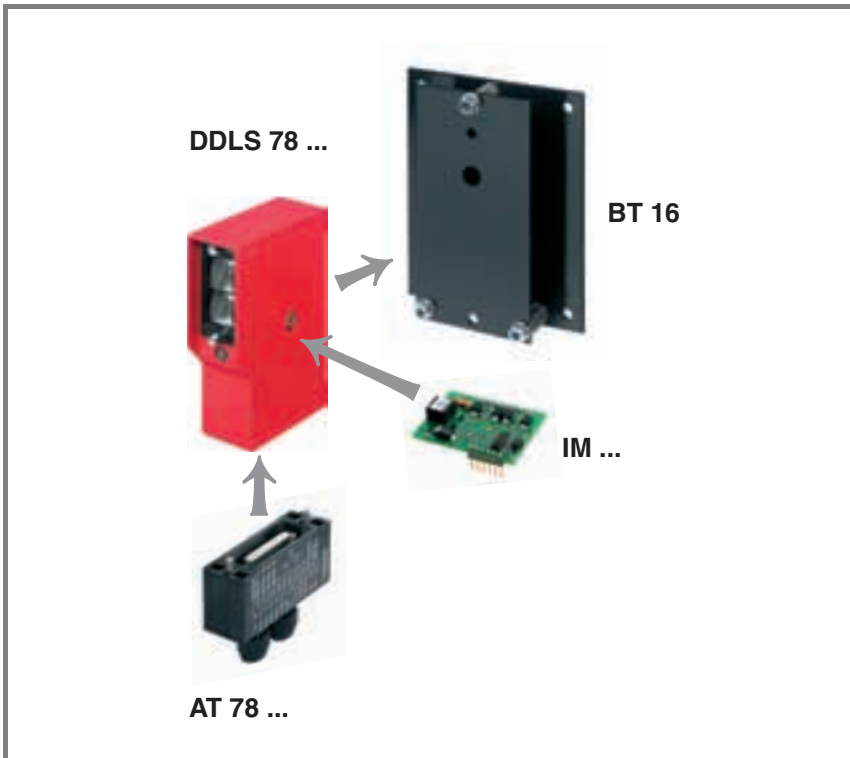
Mobile barcode identification

2D-code identification

RF identification

Modular construction

DDLS 78



Electrical connection

RS 232

Sub-D - male, 25-PIN

1 2 3 4 5 6 7 8 9 10 11 12 13



14 15 16 17 18 19 20 21 22 23 24 25

PIN	Signal
1	FE
2	TxD+
3	RxD+
4	RTS+
5	CTS+
6	SHIELD
7	SHIELD
8	IN f SELECT
9	VIN
10	GND
11	IN ACTIVATE
12	OUT FAULT
13	OUT WARN
14	GND RS232
15	GND RS232
16	GND RS232
17	GND RS232
18	res.
19	res.
20	res.
21	res.
22	res.
23	res.
24	OUT MEAS
25	GND OUT

Industrial image processing

Distance meas. Positioning

Optical data transmission

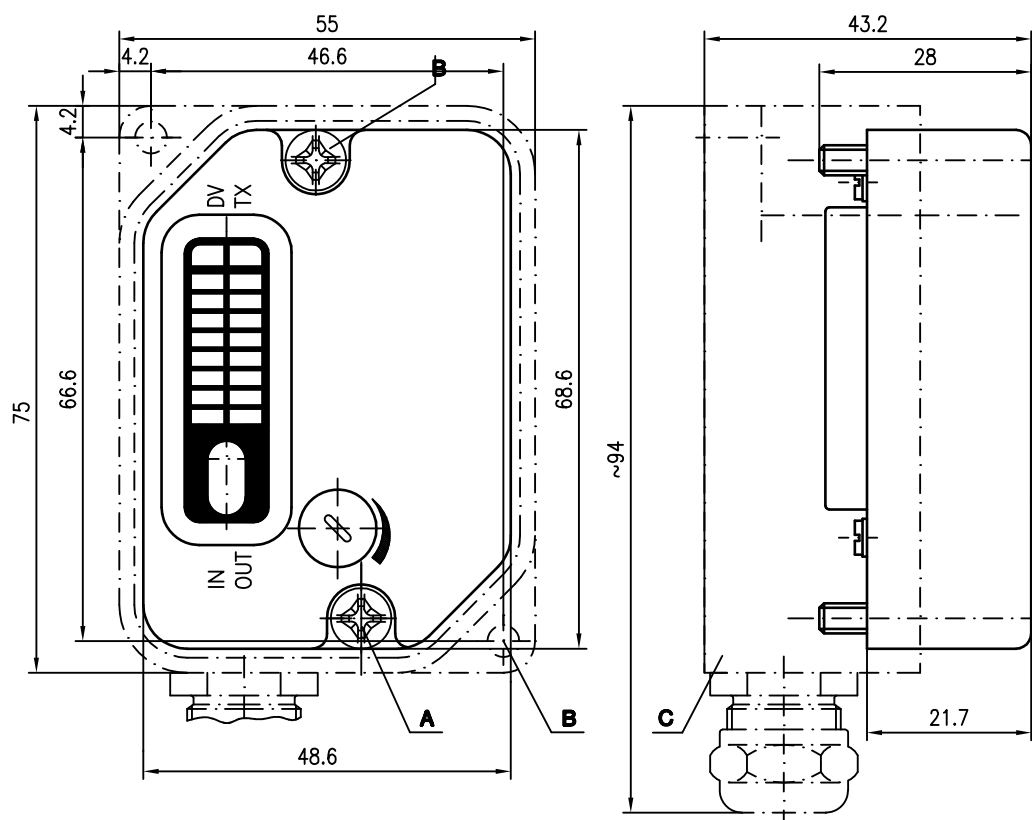
Networking Connector units

Accessories

Services

OVERVIEW

Dimensioned drawing



- A** Fastening screws M4 x 25
- B** Attachment holes \varnothing 4.2
- C** AT 160 - 01 / AT 160 - 02

We reserve the right to make changes • DL-SP160S_Overview_EN.fm



DDLS 200
Page 326




DDLS 78
Page 344



DLSP 160 S
Page 354

OPTICAL DATA TRANSMISSION SYSTEMS DLSP 160 S


Optical data transmission systems	Page
 <p>The DLSP 160 S data transmission system transmits 24VDC signals contact-free. Each device is equipped with both 8 inputs and 8 outputs. The transmitter converts the input signals into a serial telegram. An invisible light beam transmits this telegram to the receiver where the telegram is output at the outputs as electrical signals. Data transmission occurs simultaneously in both directions.</p>	356



Common technical data		
Electrical data	Operating voltage U_B	16 ... 35VDC
	Current consumption	approx. 130mA
	Interface	8 bit parallel
	Inputs	8
	Outputs	8
Indicators	16 LEDs	state and diagnostics
Mechanical data	Housing	aluminium, anodised
	Optics	glass
	Weight	approx. 200g
Environmental data	Ambient temp. (operation/storage)	-20 ... +60°C / -30 ... +70°C
	Protection class	IP 65
	Air humidity	< 90% (non-cond.)
Optical data	Light source	LED, infrared light
	LED class	1 (EN 60825-1:1994+A1+A2)
	Modulation	PPM (pulse pause module.)
	Opening angle	$\pm 20^\circ$
	Data exchange time	< 400 μ s
	Extraneous light protection	> 30,000Lux

Features

- **Low space requirements**
- **Fast mounting with 2-part device: 1 connection plate for mounting and 1 plug-on electronic unit**
- **Fast installation through efficient connection system (soldering, ribbon cable, spring terminals)**
- **Transmitter and receiver in one housing (same device)**
- **Simple and fast alignment thanks to large opening angle**
- **Problem-free commissioning through display of the inputs and outputs**
- **No adjustment of the transmission parameters necessary**



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

PARALLEL DATA TRANSMISSION SYSTEMS

Part description Part No.	Description	Op. range [m]	Opening angle [°]	Interface	Connection
Parallel optical data transmission systems					
DLSP 160 S 50021432	Opt. data transmission, infrared light	2.8	± 20	8 bit parallel, 24VDC	see connection unit AT 160 ...
Connection unit					
AT 160 - 01 50022008	Connection unit for DLSP 160 S, solder connection				
AT 160 - 02 50022009	Connection unit for DLSP 160 S, ribbon cable				
AT 160 - 03 50024059	Connection unit for DLSP 160 S, spring terminals				



An optical data transmission path always consists of two identical DLSP 160 S.
For this reason, please always order 2 devices with the appropriate connection units!



DDLS 200
Page 326



DDLS 78
Page 344



DLSP 160 S
Page 354

DLSP 160 S
Data transmission system



Stationary
barcode
identification

Features

- Low space requirements
- Fast mounting with 2-part device: 1 connection plate for mounting and 1 plug-on electronic unit
- Fast installation through efficient connection system (soldering, ribbon cable, spring terminals)
- Transmitter and receiver in one housing (same device)
- Simple and fast alignment thanks to large opening angle
- Problem-free commissioning through display of the inputs and outputs
- No adjustment of the transmission parameters necessary



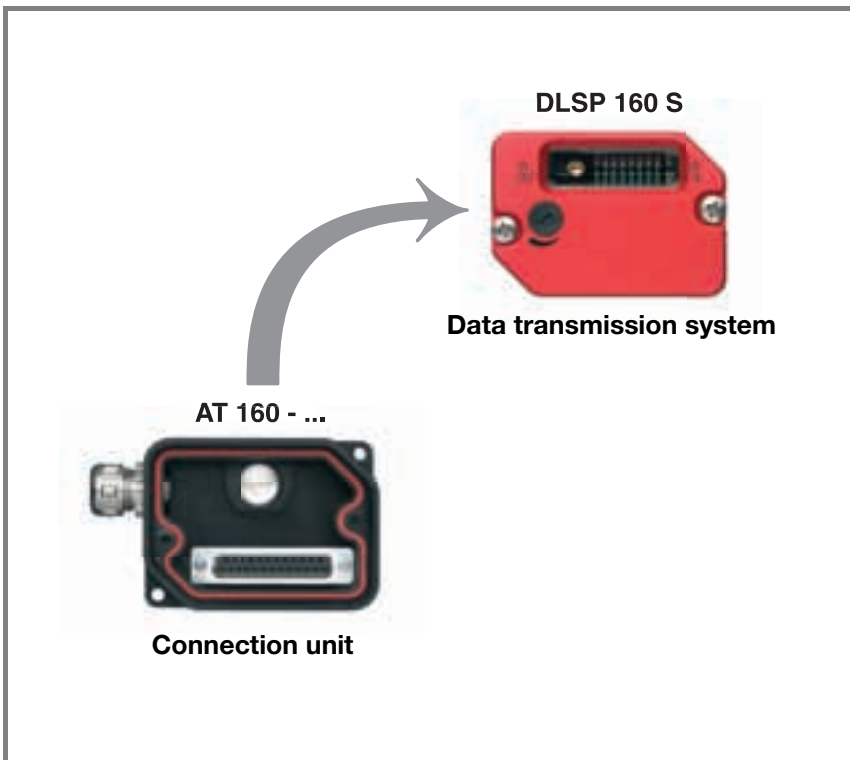
Mobile
barcode
identification

2D-code
identification

RF
identification

Modular construction

DLSP 160 S



Electrical connection

AT 160-01 AT 160-02 PIN	AT 160-03 PIN	Signal
1	1	FE
2	2	VIN
3	3	GND
4	4	DI8
5	5	DI7
6	6	DI6
7	7	DI5
8	8	DI4
9	9	DI3
10	10	DI2
11	11	DI1
12	12	res.
15	13	DATA VALID
16	14	DO8
17	15	DO7
18	16	DO6
19	17	DO5
20	18	DO4
21	19	DO3
22	20	DO2
23	21	DO1
24	22	OUTPUT ENABLE
25	23	TRANSMIT DATA
13	24	res.
14	25	res.

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

SELECTION TABLE

Connector unit / Interface	Series										
	Features	BCL 8	BCL 21	BCL 22	BCL 31	BCL 32	BCL 34	BCL 50xi	BCL 90	Hand-held	LSIS 12x
MA 8.1 MA 8-01	Point-to-point	KB 008									
MA 2 MA 2 L	Point-to-point, multiNet slave		direct (multiNet compatible)	direct	KB 031, KB 040 direct (multiNet compatible)	KB 031, KB 040 direct				KB M12A-8P-MA-3000, direct	
MA 4 MA 4 D	Point-to-point, multiNet slave, automatic parameter memory		direct (multiNet compatible)	direct	KB 031, (multiNet compatible)	KB 031					
MA 4 1x0 MA 4 D 1x0 MA 4 1x0 L	Point-to-point, multiNet slave, automatic parameter memory			direct (multiNet compatible)		KB 031, KB 040 direct (multiNet compatible)					
MA 90	Point-to-point, multiNet slave							KB 090, (multiNet compatible)			
MA 31	multiNet master										

Integrated connectivity

We reserve the right to make changes • Auswahl-tabelle_Vernetzung_1_EN.fm

SELECTION TABLE

Connector unit / Interface	Series	Series							BCL 50xi	BCL 90	Hand-held	LSIS 12x
		BCL 8	BCL 21	BCL 22	BCL 31	BCL 32	BCL 34					
MA 21	multiNet slave, protocol converter	KB 008, (multiNet compatible)								RS 232 cable and KB 021 Z (multiNet compatible)		
MA 21 100.2	multiNet slave, protocol converter									KB M12A-8P-MA-3000, direct		
MA 22 DC	Daisy Chain networking			direct								
MA 2xxi	MA 204i MA 208i MA 248i MA 235i MA 238i MA 255i MA 258i	KB JST-M12A-5P-3000		direct		KB 031 1000 KB 031 3000				via MA 90 and adapter cable RS 232 cable and KB JST-HS-300 KB M12A-8P-MA-3000, direct		

Integrated connectivity

We reserve the right to make changes • Auswahltablelle_Vernetzung_2_EN.fm



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

SELECTION TABLE

Connector unit / Interface	Series	Series												
		BCL 8	BCL 21	BCL 22	BCL 31	BCL 32	BCL 34	BCL 50xi	BCL 90	Hand-held	LSIS 12x			
MS 31 105	Modular connector hood, multiNet slave, parameter memory				direct									
MS 32 104	Modular connector hood, parameter memory					direct								
MS 34 103 MS 34 105	Modular connector hood PROFIBUS DP							direct						
MS 37 103	Modular connector hood SSI, parameter memory													

Integrated connectivity

We reserve the right to make changes • Auswahltablelle_Vernetzung_3_EN.fm



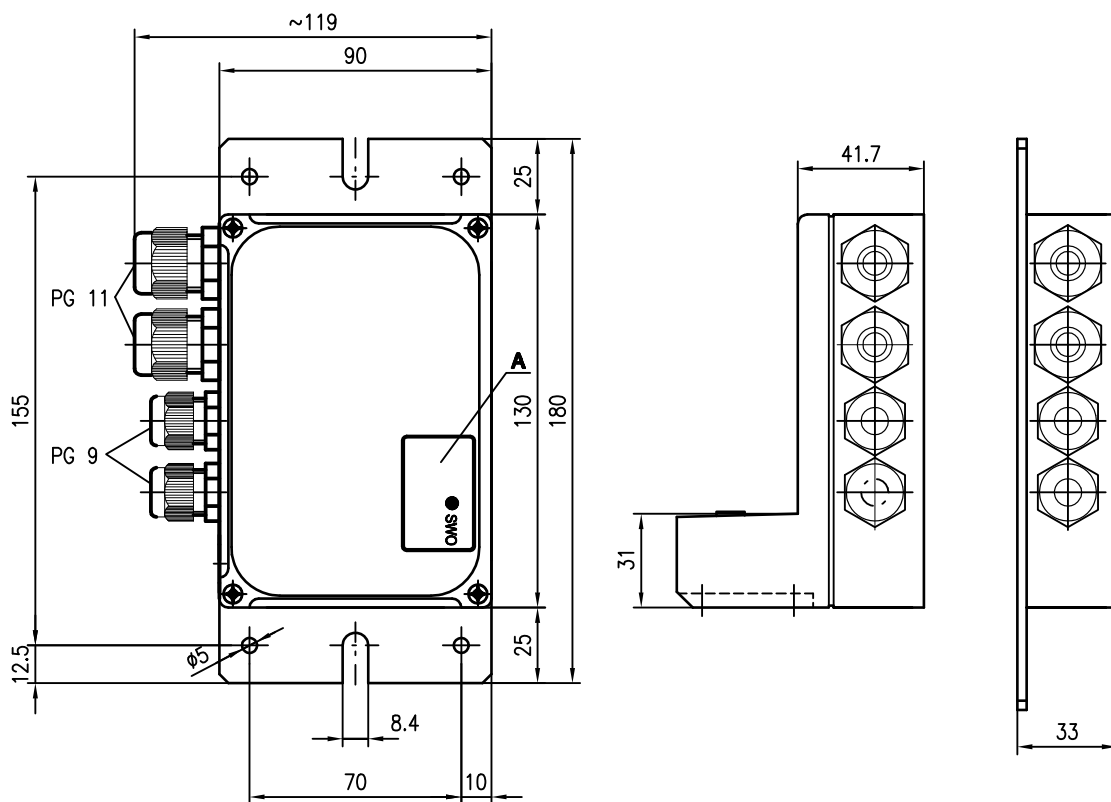
The MS 3... modular hoods with integrated connectors can be found in section Accessories on page 427. Data sheets available for download under www.leuze.com.



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

OVERVIEW

Dimensioned drawing





A LED indicator

We reserve the right to make changes • MA2_Overview_EN.fm

						
MA 2 Page 364	MA 4 Page 368	MA 8 Page 378	MA 2x Page 382	MA 31 Page 390	MA 2xxi Page 394	MA 90 Page 398

MODULAR CONNECTOR UNIT MA 2

Modular connector unit	Interface	Page
 MA 2	RS 232 / RS 485 ¹⁾	366
 MA 2 L	RS 232 / RS 485 ¹⁾	366

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. 100mA ($U_{OUT} = U_B$)
Indicators	Green LED	sw. output 1
Mechanical data	Housing	diecast aluminium
	Housing cover	diecast alum. or steel
	Weight	MA 2: 575g MA 2 L: 660g
	Connection type	spring terminals / connection cables with connectors
Environmental data	Ambient temp. (operation/storage)	-10°C ... +50°C / -20°C ... +60°C
	Protection class	MA 2 L: IP 65 MA 2: IP 54
	Air humidity	< 90% (non-cond.)

Features

- The BCL 31/32 may be plugged directly onto the MA 2 L
- Networking of several BCL 21 or BCL 31 devices via RS 485 interface, hardware addressing in Leuze multiNetplus
- 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/BCL 31)



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

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, BCL 31/BCL 32, VR 2300 and RFI/RFM	RS 232, RS 485 ¹⁾	
MA 2 L 50036186	Connector unit for BCL 31/BCL 32 and VR 2300	RS 232, RS 485 ¹⁾	

1) Depending on connected device

We reserve the right to make changes • MA2_1_EN.fm

Accessories / connection cables

More accessories can be found from **page 403** onwards

Part No.	Designation	Features
see P. 409	KB 031 ...	Connection cable BCL 31/32 / VR 2300 to MA 2
see P. 410	KB 040 ...	Connection cable BCL 31/32 / VR 2300 to MA 2 L
50027375	BT 56	Mounting device for MA 2 L

						
MA 2 Page 364	MA 4 Page 368	MA 8 Page 378	MA 2x Page 382	MA 31 Page 390	MA 2xxi Page 394	MA 90 Page 398

MA 2 / MA 2 L

Connector units



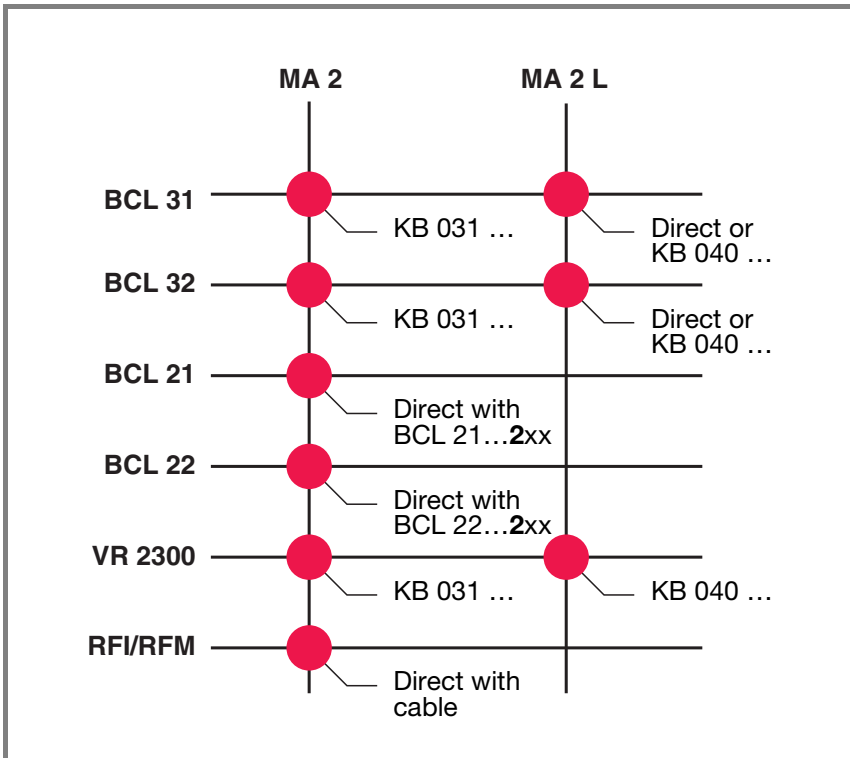
Features

- Connection of BCL, VR 2300, RF-Ident devices to the MA 2 via circuit board connectors
- Connection of BCL 31/ BCL 32 by plugging directly into the MA 2 L via 15-pin Sub-D connector
- Networking of multiple BCL 21 or BCL 31 devices via RS 485 interface, hardware addressing in Leuze multiNetplus
- Additional RS 232 service interface (9-pin Sub-D plug)
- Operating mode switch service/standard operation
- Rotary switch for address setting



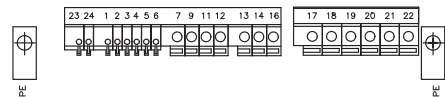
Possible device combinations

MA 2 / MA 2 L



Electrical connection

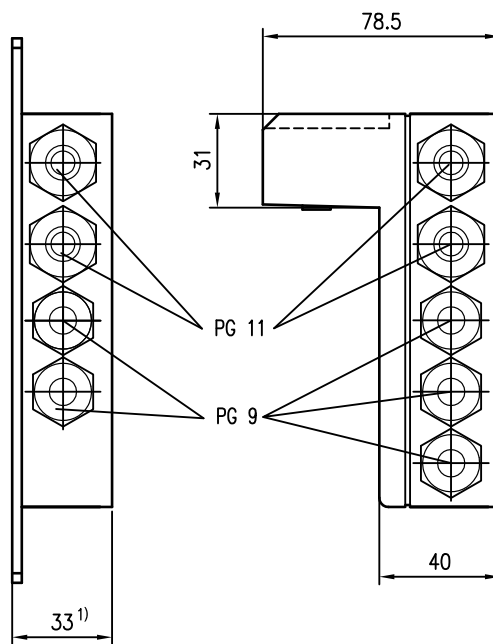
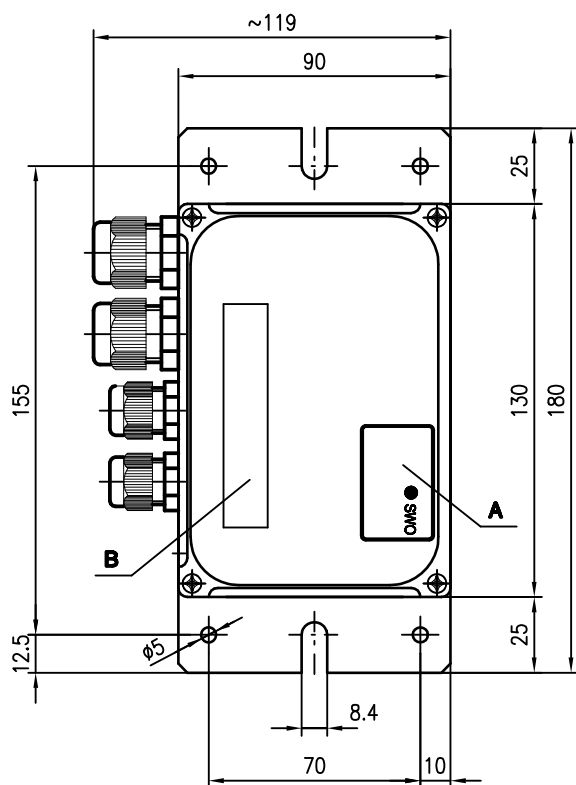
Terminals



PIN	BCL 21/BCL 31 Signal	BCL 22/BCL 32 VR 2300 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



1) 41 mm for MA 4D 1...

- A** LED indicator
- B** LCD indicator

We reserve the right to make changes • MA4_Overview_EN.fm



MA 2
Page 364



MA 4
Page 368



MA 8
Page 378



MA 2x
Page 382



MA 31
Page 390



MA 2xxi
Page 394



MA 90
Page 398

MODULAR CONNECTOR UNIT MA 4

Modular connector unit	Interface	Page
MA 4 / MA 4D	RS 232 / RS 485 ¹⁾	370
MA 4.7 / MA 4D.7	SSI (for BPS 37... only)	372
MA 4 100 / MA 4D 100 / MA 4 100 L	RS 485	374
MA 4 110 / MA 4D 110 / MA 4 110 L	RS 232	374
MA 4 120 / MA 4D 120 / MA 4 120 L	TTY	376
MA 4 130 / MA 4D 130 / MA 4 130 L	RS 422	376

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 indicator	2 lines, 16 characters each
Mechanical data	Housing	diecast aluminium
	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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

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 and BCL 31/BCL 32, without display	RS 232, RS 485 ¹⁾	
MA 4D 50031536	Connector unit for BCL 21/BCL 22 and BCL 31/BCL 32, with display	RS 232, RS 485 ¹⁾	

1) Depending on connected device

We reserve the right to make changes • MA4_1_EN.fm

Accessories / connection cables

More accessories can be found from **page 409** onwards

Part No.	Designation	Features
see P. 409	KB 031 ...	Connection cable BCL 31/BCL 32 to MA 4/MA 4D

						
MA 2 Page 364	MA 4 Page 368	MA 8 Page 378	MA 2x Page 382	MA 31 Page 390	MA 2xxi Page 394	MA 90 Page 398

MA 4, MA 4D

Connector units



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

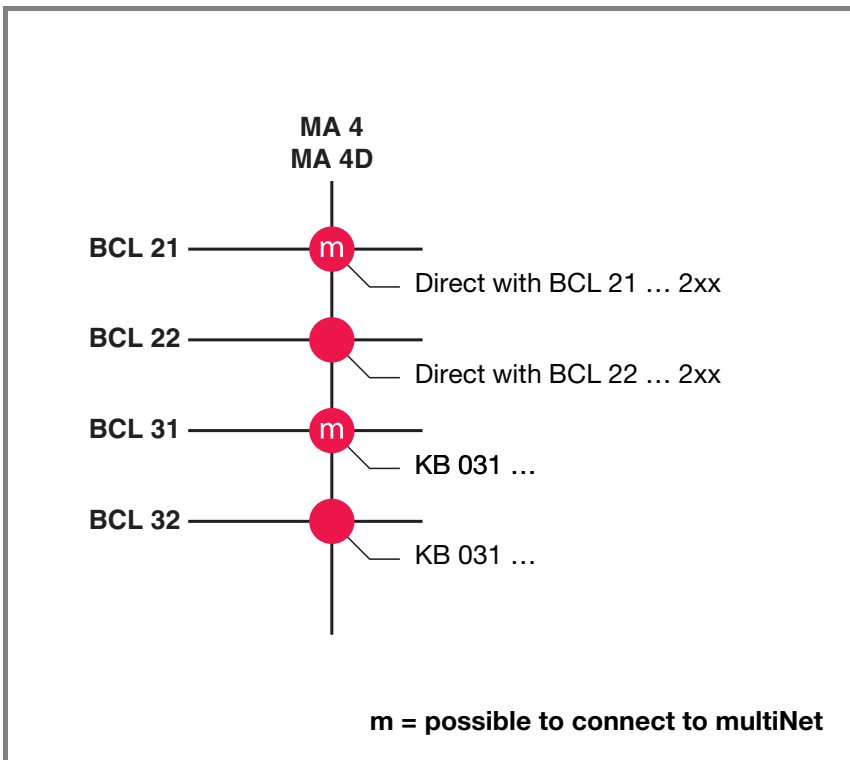
Features

- Parameters of the BCL 31/32 and BCL 21/22 are saved in a fail-safe manner on an EEPROM
- Connection of the BCL 31/32 and BCL 21/22 to the MA 4 / MA 4D via circuit board connectors
- Networking of multiple BCL 21 or BCL 31 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



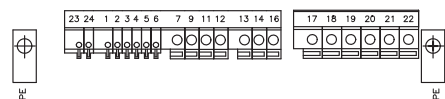
Possible device combinations

MA 4 / MA 4 D



Electrical connection

Terminals



PIN	BCL 21/BCL 31 Signal	BCL 22/BCL 32 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	

We reserve the right to make changes • MA4_2_EN.fm

Accessories / connection cables

More accessories can be found from **page 409** onwards

Part No.	Designation	Features
see P. 409	KB 031 ...	Connection cable BPS 37 to MA 4.7/MA 4D.7

						
MA 2 Page 364	MA 4 Page 368	MA 8 Page 378	MA 2x Page 382	MA 31 Page 390	MA 2xxi Page 394	MA 90 Page 398

MA 4.7, MA 4D.7

Connector units



Stationary
barcode
identification

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



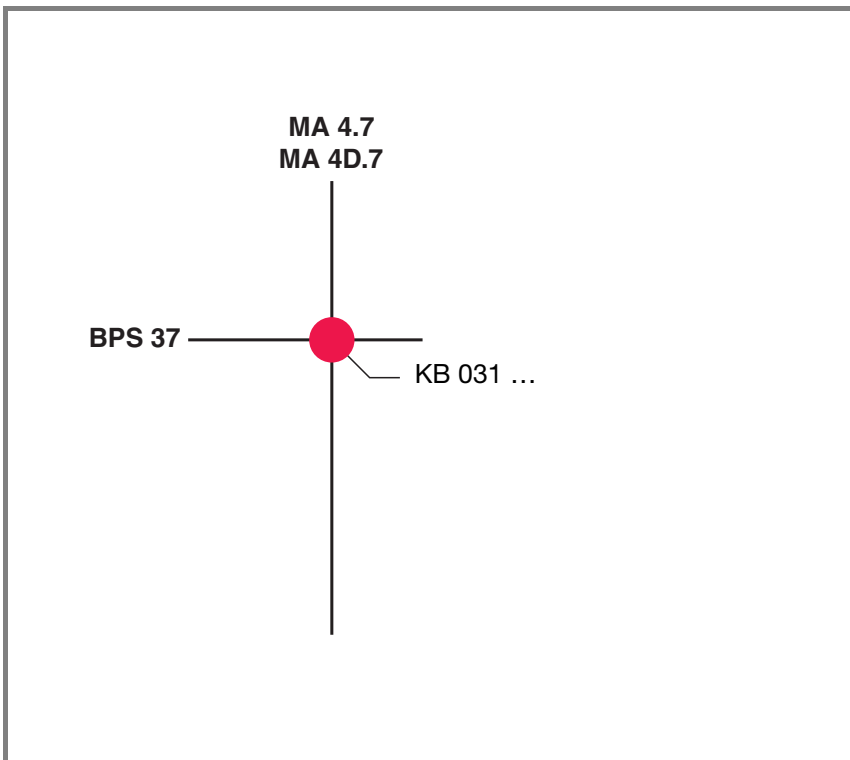
Mobile
barcode
identification

2D-code
identification

RF
identification

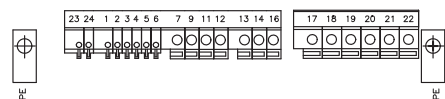
Possible device combinations

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.

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

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 and BCL 32 without display	RS 485	
MA 4 100 L 50039655	Connector unit for BCL 22 and BCL 32, for direct plug-in of the BCL, without display	RS 485	
MA 4D 100 50102023	Connector unit for BCL 22 and BCL 32 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 and BCL 32 without display	RS 232	
MA 4 110 L 50039656	Connector unit for BCL 22 and BCL 32, for direct plug-in of the BCL, without display	RS 232	
MA 4D 110 50039662	Connector unit for BCL 22 and BCL 32 with display	RS 232	
IM 110 - RS232 50031030	Replacement interface module (included in MA 4x 110...)	RS 232	

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Accessories / connection cables

More accessories can be found from **page 403** onwards

Part No.	Designation	Features
see P. 409	KB 031 ...	Connection cable BCL 32/BCL 22 to MA 4 100/MA 4D 100
see P. 410	KB 040 ...	Connection cable BCL 32 to MA 4 ... L
50027375	BT 56	Dovetail rod mounting set



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MA 4
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MA 8
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MA 2x
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MA 31
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MA 2xxi
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MA 90
Page 398

MA 4(D) 1xx (L)

Connector units



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

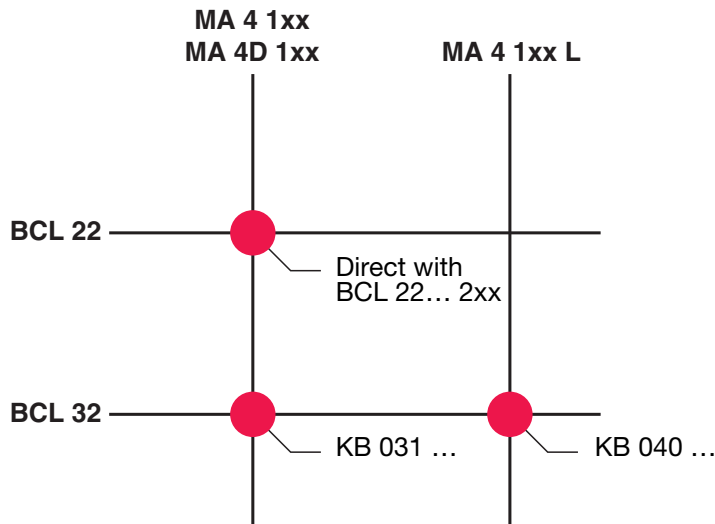
Features

- Parameters of the BCL 32 and BCL 22 are saved in a fail-safe manner on an EEPROM
- Connection of the BCL 32 either by plugging in directly or by means of KB 040 ... on the MA 4 1xx L via 15-pin Sub-D connector
- Connection of the BCL 32 and 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



Possible device combinations

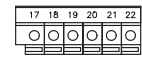
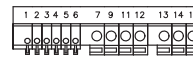
MA 4 1xx / MA 4D 1xx / MA 4 1xx L



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			

CONNECTOR UNIT FOR RS 485 / RS 232 / TTY / RS 422

Part description Part No.	Description	Interface	
Connector unit			
MA 4 120 50039660	Connector unit for BCL 22 and BCL 32 without display	TTY	
MA 4 120 L 50039657	Connector unit for BCL 22 and BCL 32, for direct plug-in of the BCL, without display	TTY	
MA 4D 120 500 39663	Connector unit for BCL 22 and BCL 32 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 and BCL 32 without display	RS 422	
MA 4 130 L 50039658	Connector unit for BCL 22 and BCL 32, for direct plug-in of the BCL, without display	RS 422	
MA 4D 130 50039664	Connector unit for BCL 22 and BCL 32 with display	RS 422	
IM 130 - RS422 50031032	Replacement interface module (included in MA 4x 130...)	RS 422	

We reserve the right to make changes • MA4_4_EN.fm

Accessories / connection cables

 More accessories can be found from **page 403** onwards

Part No.	Designation	Features
see P. 409	KB 031 ...	Connection cable BCL 32/BCL 22 to MA 4 100/MA 4D 100
see P. 410	KB 040 ...	Connection cable BCL 32 to MA 4 ... L
50027375	BT 56	Dovetail rod mounting set

						
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MA 4(D) 1xx (L)

Connector units



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

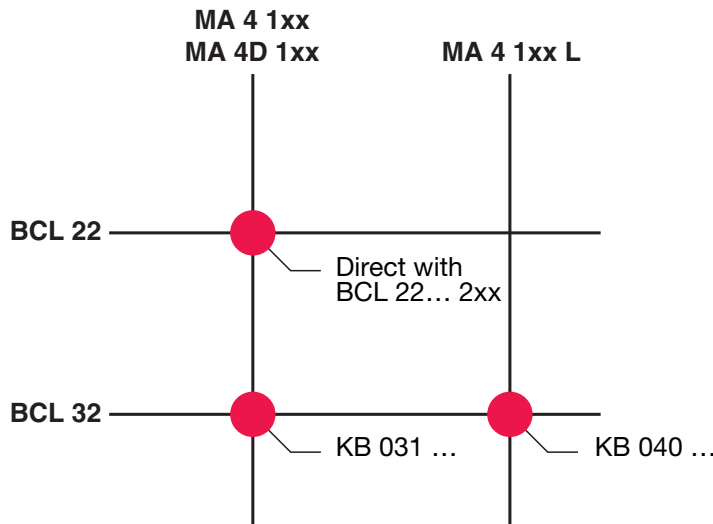
Features

- Parameters of the BCL 32 and BCL 22 are saved in a fail-safe manner on an EEPROM
- Connection of the BCL 32 either by plugging in directly or by means of KB 040 ... on the MA 4 1xx L via 15-pin Sub-D connector
- Connection of the BCL 32 and 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



Possible device combinations

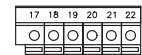
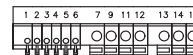
MA 4 1xx / MA 4D 1xx / MA 4 1xx L



Possible to network multiple BCL devices via RS 485 interface in Leuze multiNet plus

Electrical connection

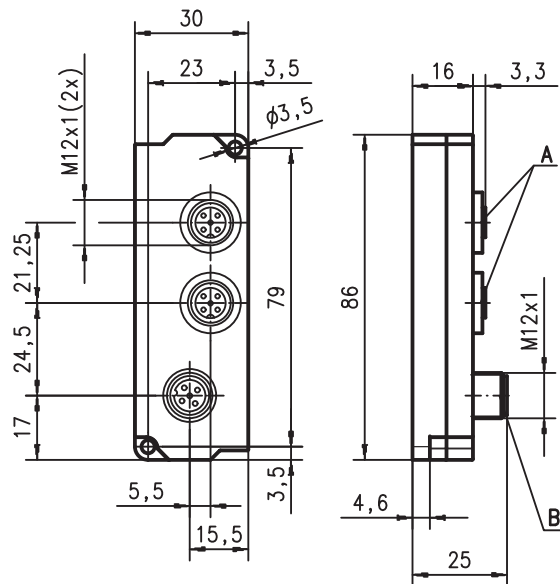
Terminals



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



- A M12 socket 5-pin
- B M12 plug 5-pin

We reserve the right to make changes • MA8_Overview_EN.fm



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MA 4
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MA 8
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Page 394



MA 90
Page 398

MODULAR CONNECTOR UNIT MA 8

Modular connector unit	Interface	Page
 MA 8.1	RS 232	380
 MA 8 - 01	RS 485	380



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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

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	

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Accessories / connection cables

More accessories can be found from **page 406** onwards

Part No.	Designation	Features	
see P. 406	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



Stationary
barcode
identification

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

Mobile
barcode
identification

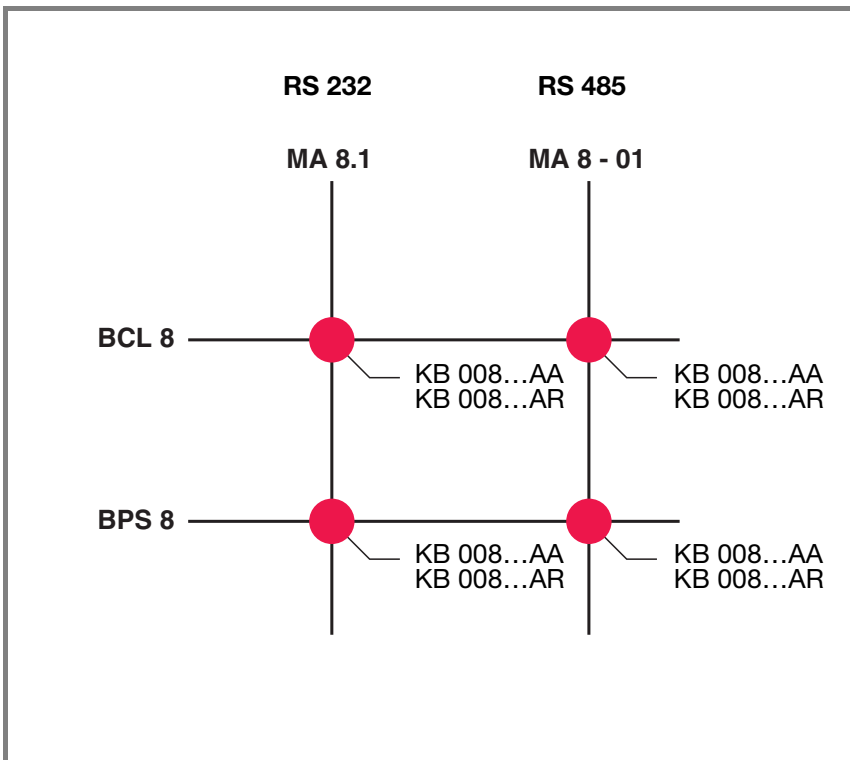
2D-code
identification

RF
identification



Possible device combinations

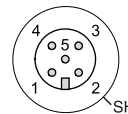
MA 8.1 / MA 8-01



Electrical connection

MA 8.1

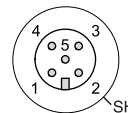
PWR IN
HOST/RS232 - male, A-cod.



PIN	Signal
1	VIN
2	TXD
3	GND
4	RXD
5	FE
SH	FE

MA 8 - 01

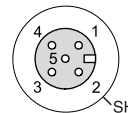
PWR IN
HOST/RS485 - male, A-cod.



PIN	Signal
1	VIN
2	B (N)
3	GND
4	A (P)
5	FE
SH	FE

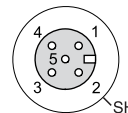
MA 8.1 / MA 8 - 01

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

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

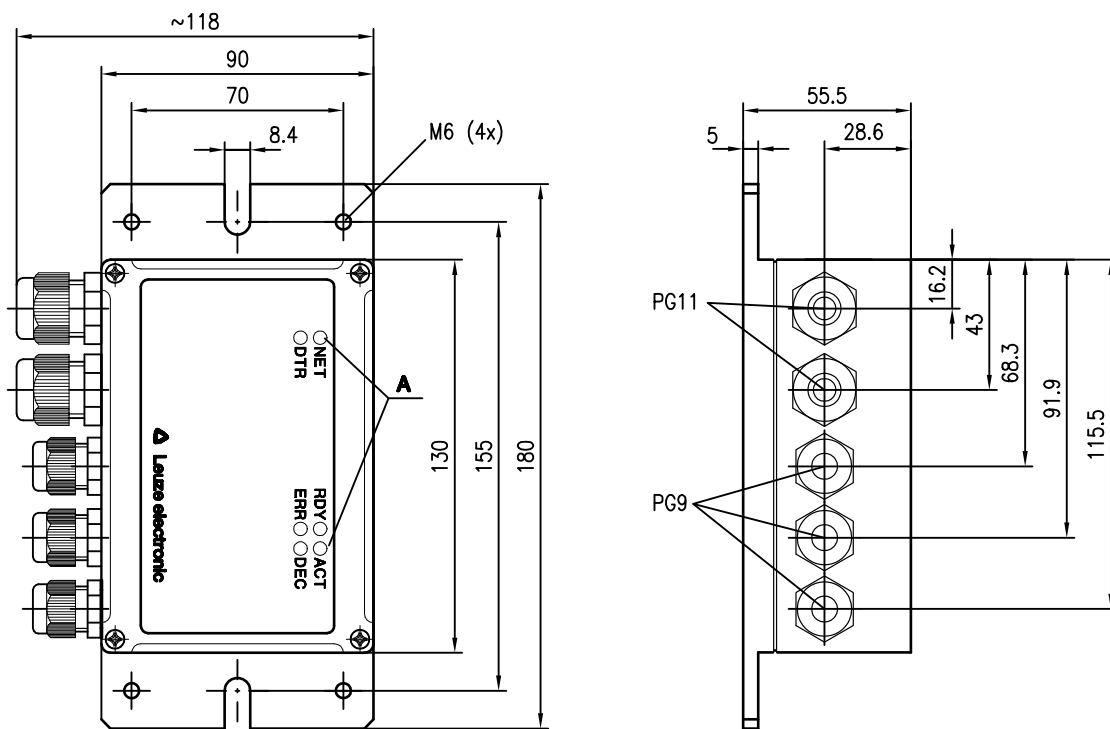
Networking
Connector units

Accessories

Services

OVERVIEW

Dimensioned drawing



A LED indicators

We reserve the right to make changes • MA21_Overview_EN.fm



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MA 4
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MA 8
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MA 2x
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Page 390



MA 2xxi
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MA 90
Page 398

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	384
MA 21 100.2	RS 232 to RS 485 multiNet	384
MA 21 110	RS 232 to RS 232 electrically insulated	384
MA 21 120	RS 232 to TTY	384
MA 21 130	RS 232 to RS 422	384



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 aluminium
	Housing cover	diecast aluminium
	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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

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 485, RS 485 multiNet	
MA 21 100.2 50103125	Connector unit especially for RFI/RFM devices and VR 2300 (with KB 031 ...), with separate service interface, without display	RS 485 multiNet	
MA 21 110 50030482	Connector unit for RS 232 devices (BCL 8, hand-held scanners, VR ...), with separate service interface, without display	RS 232	
MA 21 120 50030483	Connector unit for RS 232 devices (BCL 8, hand-held scanners, VR ...), with separate service interface, without display	TTY	
MA 21 130 50030484	Connector unit for RS 232 devices (BCL 8, hand-held scanners, VR ...), with separate service interface, without display	RS 422	

Accessories / connection cables

 More accessories can be found from **page 406** onwards

Part No.	Designation	Features
see P. 426	M - 12 set MA ...	M12 connection sets POWER and FIELDBUS
see P. 409	KB 031 ...	Connection cable BCL 32/VR 2300 to MA 21 100.2
see P. 410	KB 040 ... B	BCL 32/80, VR ... connection cable with open cable end at MA 21
see P. 420	KB 021 Z	9-pin Sub-D RS 232 connection cable with open cable end at MA 21
see P. 406	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



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

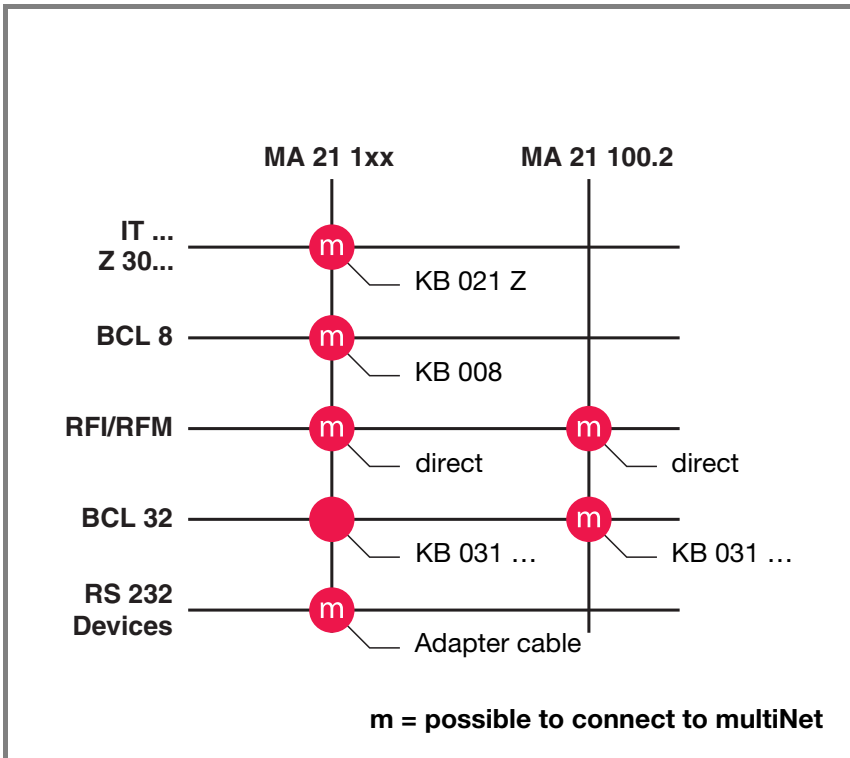
Features

- Protocol and interface converter with electrically insulated 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

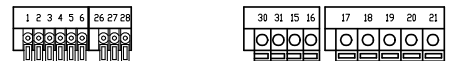
MA 21 1xx / MA 21 1xx.2



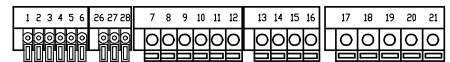
Electrical connection

Terminals

MA 21 1xx



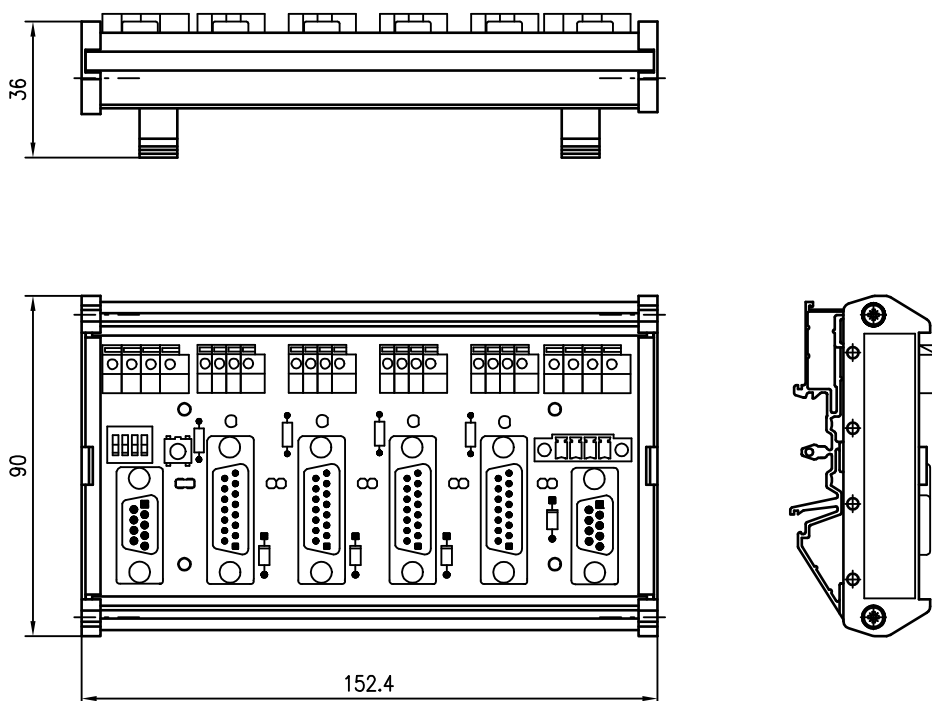
MA 21 100.2



PIN	MA 21 100.2		MA 21 1xx			
	RS 485	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	-	-	-	

OVERVIEW

Dimensioned drawing



We reserve the right to make changes • MA22_Overview_EN.fm



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MA 2xxi
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MA 90
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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	388



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 barcode 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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

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	

We reserve the right to make changes • MA22_1_EN.fm



MA 22 DC
Connector units



Features

- Easy wiring of up to 4 BCL 22 barcode 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



Stationary barcode identification

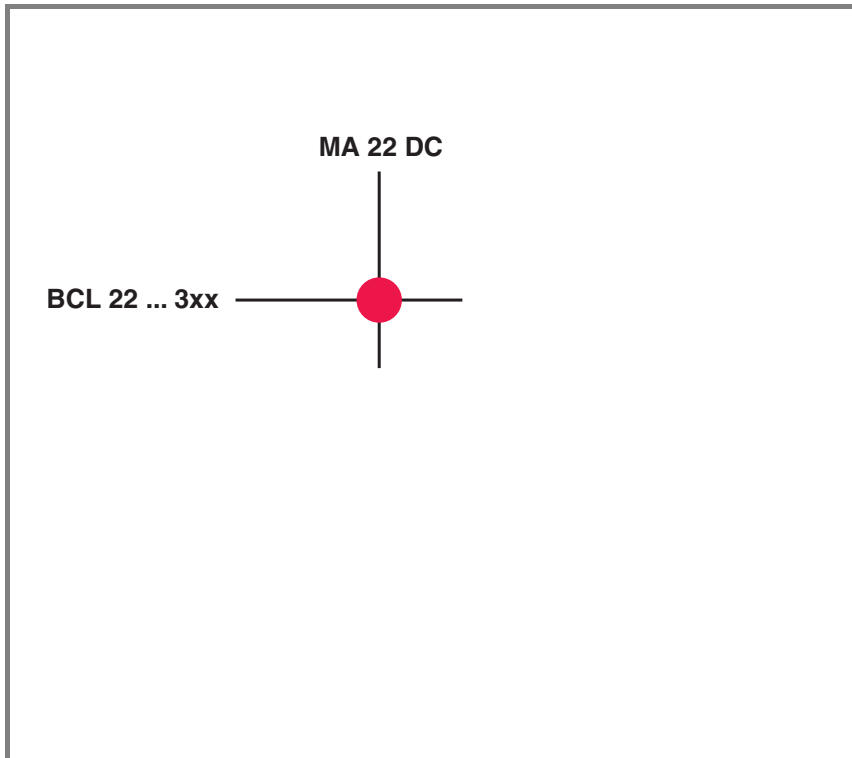
Mobile barcode identification

2D-code identification

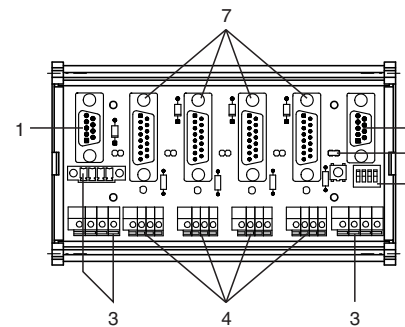
RF identification

Possible device combinations

MA 22 DC



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

Industrial image processing

Distance meas. Positioning

Optical data transmission

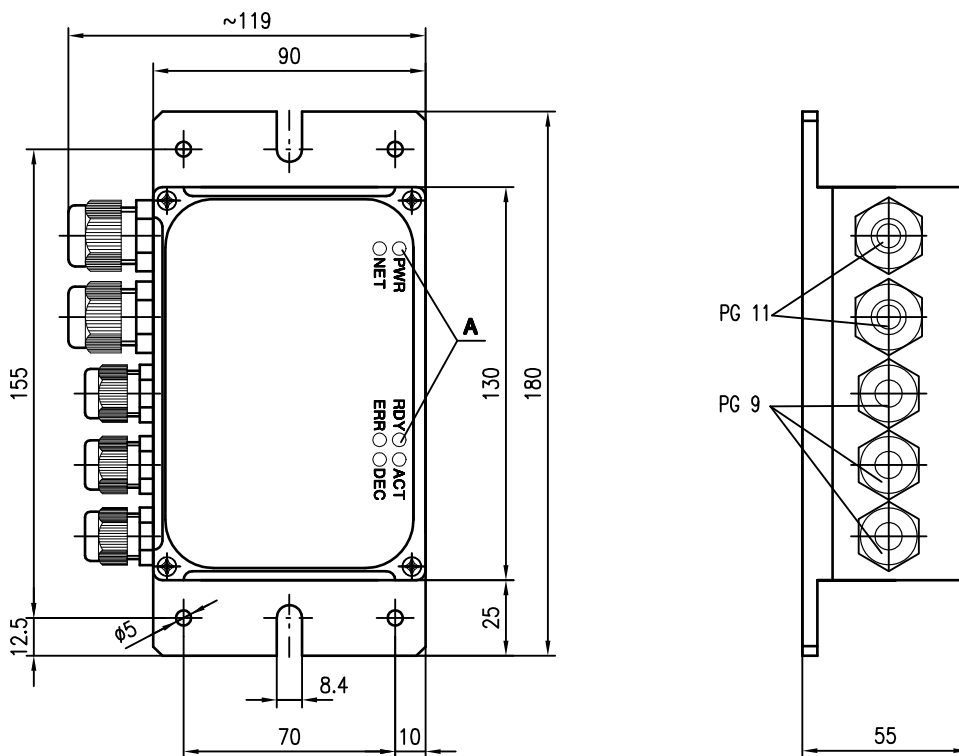
Networking Connector units

Accessories

Services

OVERVIEW

Dimensioned drawing



A LED indicators

We reserve the right to make changes • MA3x_Overview_EN.fim



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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	392
MA 31 110	multiNet master or protocol / interface converter with electrical isolation, RS 232 or RS 485multiNet to RS 232	392
MA 31 120	multiNet master or protocol / interface converter with electrical isolation, RS 232 or RS 485multiNet to TTY	392
MA 31 130	multiNet master or protocol / interface converter with electrical isolation, RS 232 or RS 485multiNet to RS 422	392



Common technical data

Electrical data	Operating voltage U_B	18 ... 36VDC
	Power consumption	max. 4VA (10VA with BCL 80)
	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 aluminium
	Housing cover	diecast aluminium
	Weight	750g/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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

Accessories

Services

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	

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Accessories / connection cables

 More accessories can be found from **page 403** onwards

Part No.	Designation	Features	
see P. 426	M - 12 set MA ...	M12 connection sets POWER and FIELDBUS	
see P. 410	KB 040 ...	Connection cable between BCL 80 and MA 30	
50027375	BT 56	Mounting device for MA 30	

						
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MA 31
Connector units



Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

Services

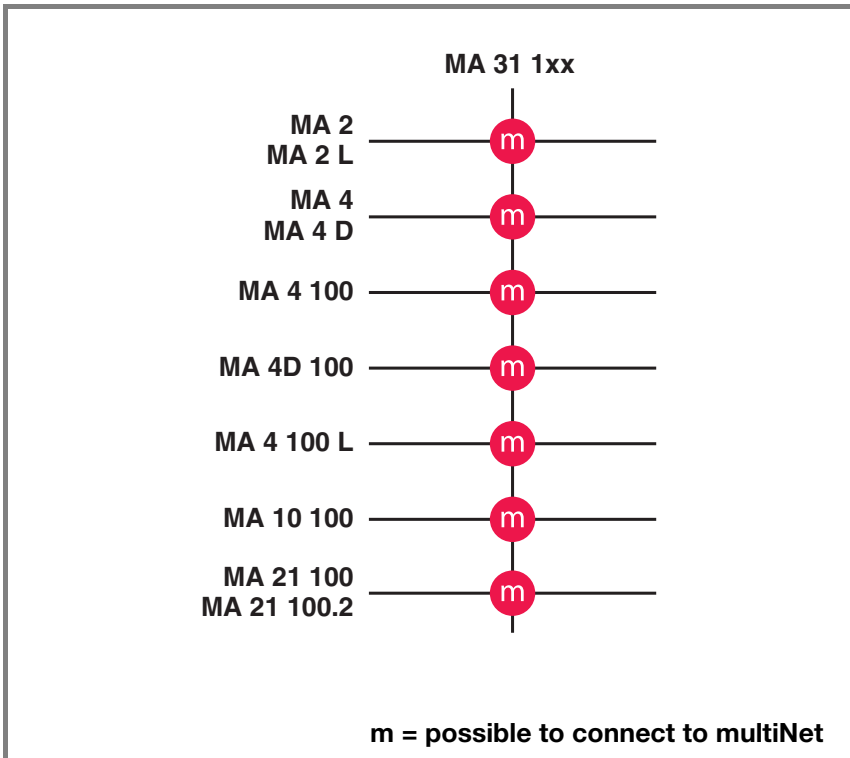
Features

- 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



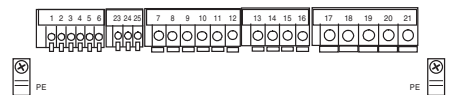
Possible device combinations

MA 30 100 / MA 31 100



Electrical connection

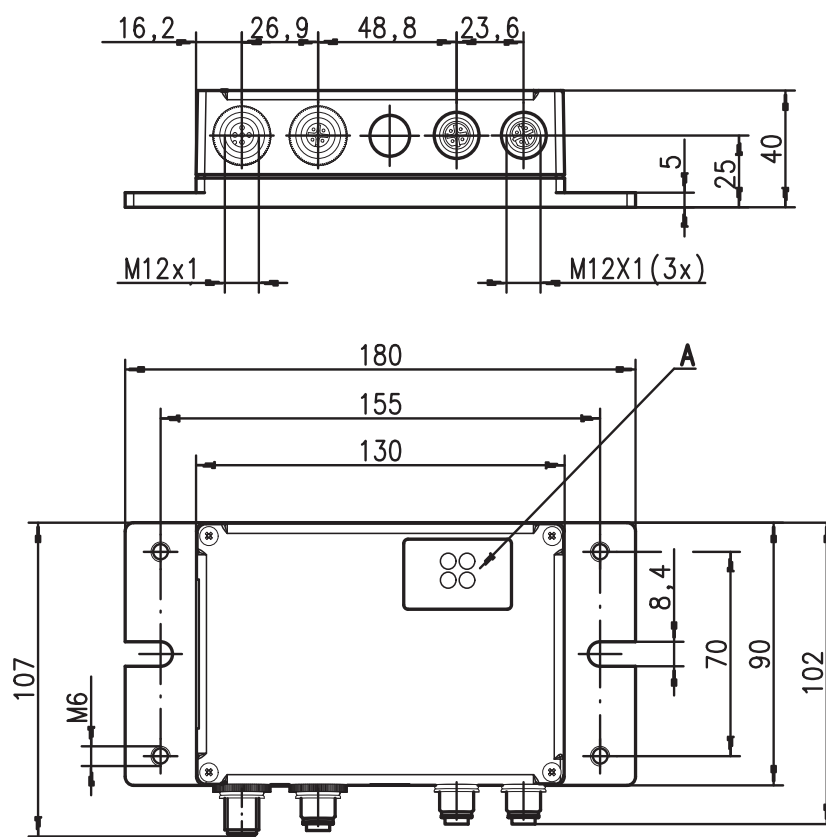
Terminals



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				} multiNet plus
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				
24	RS485 B				
25	RS485 GND				

OVERVIEW

Dimensioned drawing



A LED indicators

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MA 2xxi
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MA 90
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MODULAR CONNECTOR UNIT MA 2xxi

Modular connector unit	Interface	Page
MA 204i	PROFIBUS Gateway	396
MA 208i	Ethernet TCP/IP Gateway	396
MA 235i	CANopen Gateway	396
MA 238i	EtherCAT Gateway	396
MA 248i	PROFINET Gateway	396
MA 255i	DeviceNet Gateway	396
MA 258i	EtherNet/IP Gateway	396



Common technical data

Electrical data	Operating voltage U_B	18 ... 36VDC
	Power consumption	max. 9VA
	Switching input	12 ... 36VDC ¹⁾
	Switching output	500mA ($U_{OUT} = U_B$) ¹⁾
Indicators	max. 4 LEDs	ready, error, data transmission, network initialization, state
Mechanical data	Housing	diecast aluminium
	Housing cover	diecast aluminium
	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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

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Networking Connector units

Accessories

Services

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	RS 232, PROFIBUS	
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 403** onwards

Part No.	Designation	Features
50113397	KB JST - HS - 300	Connection cable for hand-held scanner to the MA 2xxi
50113467	KB JST-M12A-5P-3000	Connection cable for BCL 8/BPS 8 to the MA 2xxi
50111225	K-D M12A-8P-MA-3000	Connection cable for LSIS 122 to the MA 2xxi
50113468	KB JST-M12A-8P-Y-3000	Connection cable for LSIS 4xxi to the MA 2xxi
50110240	KB 500-3000-Y	Connection cable for BCL500i to the MA 2xxi
50106978	KB AMS 1000 SA	Connection cable for AMS 200 to the MA 2xxi
see P. 410	KB 090...	Connection cable for BCL 90/MA 90 to the MA 2xxi
see P. 409	KB 031...	Connection cable for BCL 32 to the MA 2xxi

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MA 2xxi
Connector units



Stationary
barcode
identification

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



Mobile
barcode
identification

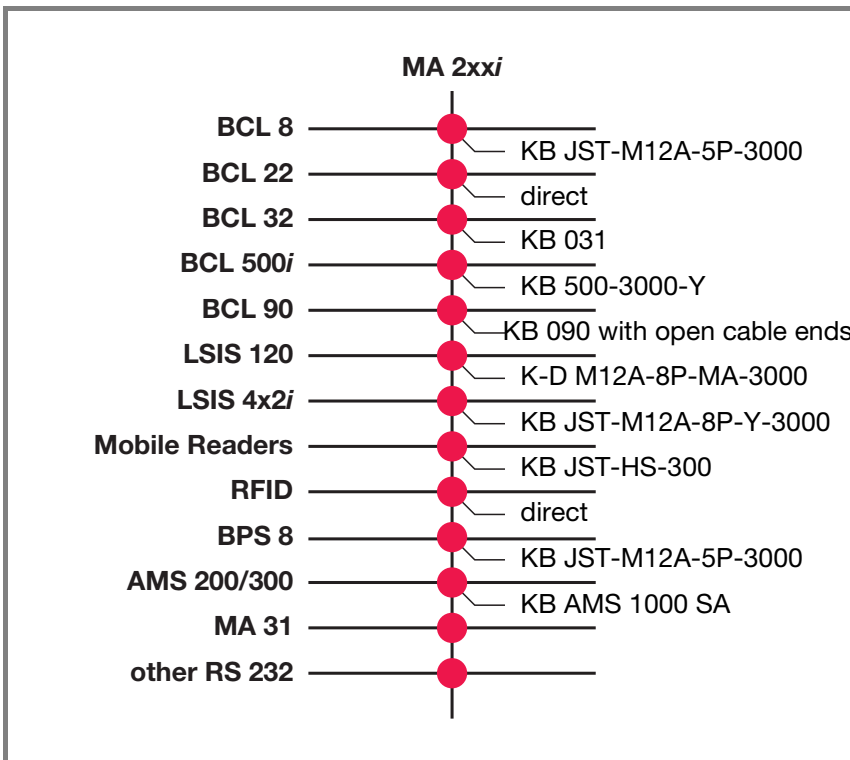
2D-code
identification

RF
identification



Possible device combinations

MA 2xxi



Electrical connection



Electrical connection via M12 connector - see operating instructions

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

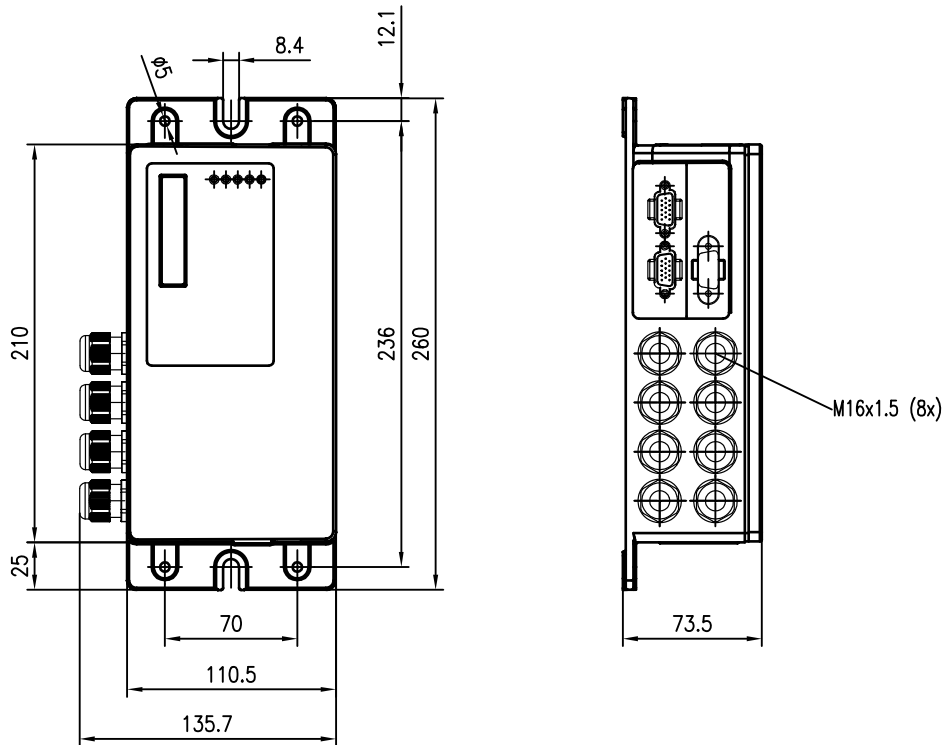
Networking
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Accessories

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OVERVIEW

Dimensioned drawing



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MA 2xxi
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MA 90
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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	400



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 aluminium
	Housing cover	impact-resistant plastic
	Weight (MA 30/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
- 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



Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission

Networking Connector units

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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	

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Accessories / connection cables

More accessories can be found from **page 410** 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 2xxi
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MA 90
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MA 90
Connector unit



Stationary
barcode
identification

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



Mobile
barcode
identification

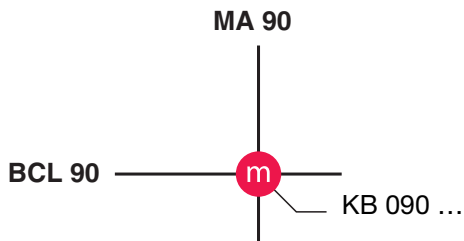
2D-code
identification

RF
identification



Possible device combinations

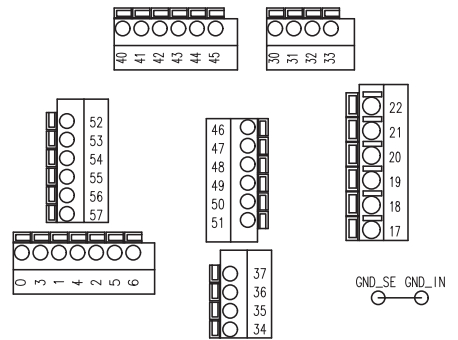
MA 90



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		

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ACCESSORIES / MOUNTING SYSTEMS

Dimensioned drawing	Part description Part No.	Feature
	<p>BT 8 - 0 50036196</p>	<p>Mounting clamp for dovetail, BCL 8/BPS 8/ LSIS 12x</p>
	<p>BT 8 - 01 50104791</p>	<p>Mounting bracket for BPS 8</p>
	<p>BT 8 - D10 50035017</p>	<p>Through-hole mount for rod D = 10mm or cheek, for BCL 8/BPS 8</p>
	<p>BT 8 - D12 50035018</p>	<p>Through-hole mount for rod D = 12mm or cheek, for BCL 8/BPS 8</p>
	<p>BT 8 - D14 50035019</p>	<p>Through-hole mount for rod D = 14mm or cheek, for BCL 8/BPS 8</p>
	<p>BT 16 50006902</p>	<p>Mounting device for DDLS 78</p>

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Mounting systems
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ACCESSORIES / MOUNTING SYSTEMS

Stationary barcode identification

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Accessories

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Dimensioned drawing	Part description Part No.	Feature
Mounting systems		
<p>A Slit for clamping sheet metal, sheet metal thickness 1.5 to 3mm B M4 screw DIN 912 C BCL 21/22 D see column 'Feature'</p>	<p>BT 20 - D12 50060503</p>	<p>Mounting device for rod and sheet metal clamp installation, BCL 21/22, D = 12mm</p>
	<p>BT 20 - D10 50111391</p>	<p>Mounting device for rod and sheet metal clamp installation, BCL 21/22, D = 10mm</p>
	<p>BT 21 50037473</p>	<p>Mounting device for inserting the BCL 21/22, stainless steel (image shows BT 21 with scanner)</p>
<p>A BCL/BPS</p>	<p>UMS 96 50026204</p>	<p>Universal mounting system with dovetail, for BCL 3x among others</p>
<p>A Rod holder, turnable 360° B Rod dia. from 16 ... 20mm</p>	<p>BT 56 50027375</p>	<p>Mounting device with dovetail for rod, for BCL 5xxi, among others</p>

www.leuze.com/accessories/

ACCESSORIES / MOUNTING SYSTEMS

Dimensioned drawing	Part description Part No.	Feature
Mounting systems		
<p>A M8 x 18 screw with lock washer and hex nut B ITEM joint C M4 x 8 oval-head screw with lock washer</p>	BT 57 50027167	Mounting device for ITEM MB system for MA ...
	BT 59 50111224	Mounting device for ITEM MB system for BCL 50xi
	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 2 M6 x 10 screws, for BCL 90 CAT ...
	BT 90 X 50037598	Bracket, single, with 2 M6x10 screws, for BCL 90 CAX ...

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ACCESSORIES / MOUNTING SYSTEMS

Dimensioned drawing	Part description Part No.	Feature
Accessories for mobile code readers		
	BT stand 8 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 3800g 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 3800g Cover 50109534	Protection hood for IT 3800g
	ZCH - 91095 - HL 50034617	Bracket for Z-3010

Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

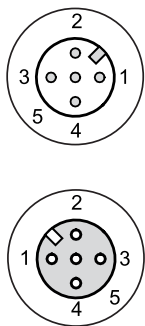
Optical data transmission

Networking Connector units

Accessories

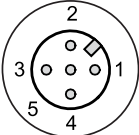
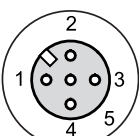
Services

ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature
M12 connection cables, 5-pin, for BCL 8/BPS 8		
	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



ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature												
M12 connection cables, 5-pin, for BCL 8/BPS 8														
 <table border="1"> <thead> <tr> <th>PIN</th> <th>Colour</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>br / BN</td> </tr> <tr> <td>2</td> <td>ws / WH</td> </tr> <tr> <td>3</td> <td>bl / BU</td> </tr> <tr> <td>4</td> <td>sw / BK</td> </tr> <tr> <td>5</td> <td>gr / GY</td> </tr> </tbody> </table> 	PIN	Colour	1	br / BN	2	ws / WH	3	bl / BU	4	sw / BK	5	gr / GY	KB 008 - 3000 A 50040757	3m connection cable POWER-IO-DATA, M12 axial socket, 5-pin, A-coded, shielded, UL, open cable end
	PIN	Colour												
	1	br / BN												
	2	ws / WH												
	3	bl / BU												
	4	sw / BK												
	5	gr / GY												
	KB 008 - 3000 R 50040756	3m connection cable POWER-IO-DATA, M12 angled socket, 5-pin, A-coded, shielded, UL, open cable end												
	KB 008 - 3000 A - S 50101941	3m connection cable POWER-IO-DATA, M12 axial plug, 5-pin, A-coded, shielded, UL, open cable end												
	KB 008 - 3000 R - S 50101942	3m connection cable POWER-IO-DATA, M12 angled plug, 5-pin, A-coded, shielded, UL, open cable end												
	KB 008 - 3000 YB 50040579	3m Y-connection cable - POWER-IO-DATA, M12 axial plug, 5-pin, A-coded, 2 x open cable end, each has 3-wires												
	KB 008 - 5000 A 50102973	5m connection cable POWER-IO-DATA, M12 axial socket, 5-pin, A-coded, shielded, UL, open cable end												
	KB 008 - 5000 R 50102974	5m connection cable POWER-IO-DATA, M12 angled socket, 5-pin, A-coded, shielded, UL, open cable end												
	KB 008 - 5000 A - S 50102969	5m connection cable POWER-IO-DATA, M12 axial plug, 5-pin, A-coded, shielded, UL, open cable end												
KB 008 - 5000 R - S 50102970	5m connection cable POWER-IO-DATA, M12 angled plug, 5-pin, A-coded, shielded, UL, open cable end													
KB 008 - 10000 A 50102975	10m connection cable POWER-IO-DATA, M12 axial socket, 5-pin, A-coded, shielded, UL, open cable end													
KB 008 - 10000 R 50102976	10m connection cable POWER-IO-DATA, M12 angled socket, 5-pin, A-coded, shielded, UL, open cable end													
KB 008 - 10000 A - S 50102971	10m connection cable POWER-IO-DATA, M12 axial plug, 5-pin, A-coded, shielded, UL, open cable end													
KB 008 - 10000 R - S 50102972	10m connection cable POWER-IO-DATA, M12 angled plug, 5-pin, A-coded, shielded, UL, open cable end													

Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

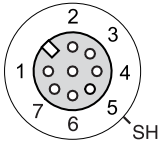
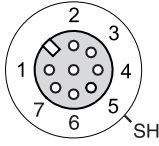
Optical data transmission

Networking Connector units

Accessories

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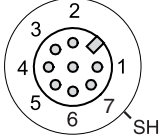
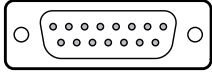
ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature																				
M12 connection cables, 8-pin, for LSIS 12x																						
 <table border="1"> <thead> <tr> <th>PIN</th> <th>Colour</th> </tr> </thead> <tbody> <tr><td>1</td><td>br / BN</td></tr> <tr><td>2</td><td>ws / WH</td></tr> <tr><td>3</td><td>bl / BU</td></tr> <tr><td>4</td><td>sw / BK</td></tr> <tr><td>5</td><td>gr / GY</td></tr> <tr><td>6</td><td>rs / PK</td></tr> <tr><td>7</td><td>vi / VT</td></tr> <tr><td>8</td><td>or / OG</td></tr> <tr><td>SH</td><td></td></tr> </tbody> </table>	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		<p>KB M12A - 8P - MA - 3000 50111225</p> <p>KB M12A - 8P - PC - IO - 3000 50111226</p> <p>KB M12A - 8P - USB - 3000 50111227</p> <p>KB M12A - 8P - USB - IO - 3000 50111228</p> <p>KB 034 - 2000 50037543</p>	<p>3m connection cable LSIS 122, M12 axial socket, 8-pin, A-coded, shielded JST 10/6</p> <p>3m connection cable LSIS 122 M12 axial socket, 8-pin, A-coded, shielded M12 axial plug, 4-pin, Sub-D 9-pin socket</p> <p>3m connection cable LSIS 123, M12 axial socket, 8-pin, A-coded, shielded USB type A plug</p> <p>3m connection cable LSIS 123 M12 axial socket, 8-pin, A-coded, shielded M12 axial plug, 4-pin, USB type A plug</p> <p>2m connection cable LSIS 122, M12 axial socket, 8-pin, A-coded, shielded M12 axial plug</p>
	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																						
M12 connection cables, 8-pin, for LSIS 12x, LSIS 4xx (PWR-IO)																						
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	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																						

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ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature																		
M12 connection cables, 8-pin, for LSIS 4xx (IO-DATA)																				
 <table border="1"> <thead> <tr> <th>PIN</th> <th>Colour</th> </tr> </thead> <tbody> <tr><td>1</td><td>ws / WH</td></tr> <tr><td>2</td><td>br / BN</td></tr> <tr><td>3</td><td>gn / GN</td></tr> <tr><td>4</td><td>ge / YE</td></tr> <tr><td>5</td><td>gr / GY</td></tr> <tr><td>6</td><td>rs / PK</td></tr> <tr><td>7</td><td>bl / BU</td></tr> <tr><td>8</td><td>rt / RD</td></tr> </tbody> </table>	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	KB M12/8 - 1000 - SA 50110178	1 m connection cable IO-DATA, M12 axial plug, 8-pin, A-coded, shielded open cable end
	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																			
KB M12/8 - 2000 - SA 50110179	2 m connection cable IO-DATA, M12 axial plug, 8-pin, A-coded, shielded open cable end																			
KB M12/8 - 5000 - SA 50110180	5 m connection cable IO-DATA, M12 axial plug, 8-pin, A-coded, shielded open cable end																			
KB M12/8 - 10000 - SA 50110181	10 m connection cable IO-DATA, M12 axial plug, 8-pin, A-coded, shielded open cable end																			
KB M12/8 - 15000 - SA 50110186	15 m connection cable POWER-IO-DATA, M12 axial plug, 8-pin, A-coded open cable end																			
KB M12/8 - 20000 - SA 50110187	20 m connection cable POWER-IO-DATA, M12 axial plug, 8-pin, A-coded open cable end																			
KB M12/8 - 25000 - SA 50110188	25 m connection cable POWER-IO-DATA, M12 axial plug, 8-pin, A-coded open cable end																			
KB M12/8 - 30000 - SA 50110189	30 m connection cable POWER-IO-DATA, M12 axial plug, 8-pin, A-coded open cable end																			
Connection cables for BCL 31/32 barcode readers																				
	KB 031 - 1000 50103621	BCL 31/32 - MA connection cable with flat cover, 15-pin Sub-D socket to JST plug, 1 m																		
	KB 031 - 3000 50035355	BCL 31/32 - MA connection cable with flat cover, 15-pin Sub-D socket to JST plug, 3 m																		
	KB 040 - 6000 50029381	BCL 31/32 - MA connection cable with L-cover, 15-pin Sub-D plug/socket on both ends, 6 m																		
	KB 034 - 2000 50037543	Connection cable, M12 connector/M12 socket, A-coded, 2 m (e.g. MS 34 to MSD)																		

 Stationary
barcode
identification

 Mobile
barcode
identification

 2D-code
identification

 RF
identification

 Industrial
image processing

 Distance meas.
Positioning

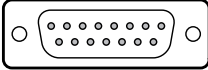
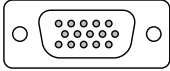
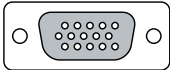
 Optical
data transmission

 Networking
Connector units

Accessories

Services

ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature
Connection cables for BCL 31 / 32 / 90 / 5xx/i barcode readers		
	KB 040 - 10000 50029382	Connection cable BCL 31/32 - MA with L-cover, 15-pin Sub-D plug/socket on both sides, 10 m
	KB 040 - 3000 B 50029316	Connection cable BCL 31/32 - MA, 15-pin Sub-D socket to open cable end, 3 m
	KB 040 - 6000 B 50029317	Connection cable BCL 31/32 - MA, 15-pin Sub-D socket to open cable end, 6 m
	KB 040 - 10000 B 50029318	Connection cable BCL 31/32 - MA, 15-pin Sub-D socket to open cable end, 10 m
	KB 500 - 3000 - Y 50110240	Connection cable BCL 500/BCL 501 <i>i</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>i</i> / LSIS 400 <i>i</i>
KDS BUS OUT - M12 - T - 5P 50109834	Distribution cable for BCL 50x <i>i</i>	

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identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission

Networking
Connector units

Accessories

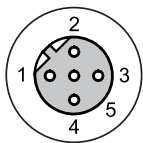
Services

Contact assignment	Part description Part No.	Feature
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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, 1x Lumberg connector, for MSP systems 1x open end
KB 090 - 10000 S MSP 50035523	MCU return cable, 10 m, 1x Lumberg connector, for MSP systems 1x open end

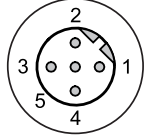
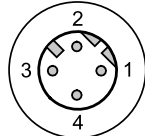
M12 Interface connection cables acc. to SSI / Interbus-S specification



PIN	Colour
1	ge / YE
2	gn / GN
3	gr / GY
4	rs / PK
5	br / BN

KB SSI/IBS - 2000 - BA 50104172	2m connection cable INTERFACE, M12 axial socket, 5-pin, B-coded open cable end
KB SSI/IBS - 5000 - BA 50104171	5m connection cable INTERFACE, M12 axial socket, 5-pin, B-coded open cable end
KB SSI/IBS - 10000 - BA 50104170	10m connection cable INTERFACE, M12 axial socket, 5-pin, B-coded open cable end
KB SSI/IBS - 15000 - BA 50104169	15m connection cable INTERFACE, M12 axial socket, 5-pin, B-coded open cable end
KB SSI/IBS - 20000 - BA 50104168	20m connection cable INTERFACE, M12 axial socket, 5-pin, B-coded open cable end
KB SSI/IBS - 25000 - BA 50108447	25m connection cable INTERFACE, M12 axial socket, 5-pin, B-coded open cable end
KB SSI/IBS - 30000 - BA 50108446	30m connection cable INTERFACE, M12 axial socket, 5-pin, B-coded open cable end

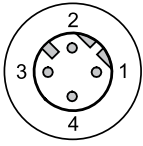
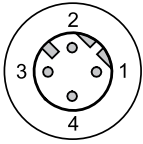
ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature												
M12 Interface connection cables acc. to SSI / Interbus-S specification														
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	PIN	Colour												
	1	ge / YE												
	2	gn / GN												
	3	gr / GY												
	4	rs / PK												
	5	br / BN												
KB SSI/IBS - 5000 - SA 50108596	5m connection cable INTERFACE, M12 axial plug, 5-pin, B-coded open cable end													
KB SSI/IBS - 10000 - SA 50108597	10m connection cable INTERFACE, M12 axial plug, 5-pin, B-coded open cable end													
KB SSI/IBS - 15000 - SA 50108598	15m connection cable INTERFACE, M12 axial plug, 5-pin, B-coded open cable end													
KB SSI/IBS - 20000 - SA 50108599	20m connection cable INTERFACE, M12 axial plug, 5-pin, B-coded open cable end													
KB SSI/IBS - 25000 - SA 50108600	25m connection cable INTERFACE, M12 axial plug, 5-pin, B-coded open cable end													
KB SSI/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 5x8i, AMS 3x8i, DDLS 200/xxx-60-M12, LSIS 4xxi, MA 2x8i														
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	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													

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ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature										
M12 Industrial Ethernet connection cables, for BCL 5x8i, AMS 3x8i, DDLS 200/xxx-60-M12, LSIS 4xxi, MA 2x8i												
 <table border="1"> <thead> <tr> <th>PIN</th> <th>Colour</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ge / YE</td> </tr> <tr> <td>2</td> <td>ws / WH</td> </tr> <tr> <td>3</td> <td>or / OG</td> </tr> <tr> <td>4</td> <td>bl / BU</td> </tr> </tbody> </table>	PIN	Colour	1	ge / YE	2	ws / WH	3	or / OG	4	bl / BU	KB ET - 15000 - SA 50106742	15 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded open cable end
	PIN	Colour										
	1	ge / YE										
	2	ws / WH										
3	or / OG											
4	bl / BU											
KB ET - 20000 - SA 50106743	20 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded open cable end											
KB ET - 25000 - SA 50106745	25 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded open cable end											
KB ET - 30000 - SA 50106746	30 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded open cable end											
M12 Industrial Ethernet connection cables, for BCL 5x8i, AMS 3x8i, DDLS 200/xxx-60-M12, LSIS 4xxi, MA 2x8i												
 <table border="1"> <thead> <tr> <th>PIN</th> <th>Colour</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ge / YE</td> </tr> <tr> <td>2</td> <td>ws / WH</td> </tr> <tr> <td>3</td> <td>or / OG</td> </tr> <tr> <td>4</td> <td>bl / BU</td> </tr> </tbody> </table>	PIN	Colour	1	ge / YE	2	ws / WH	3	or / OG	4	bl / BU	KB ET - 1000 - SSA 50106898	1 m 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 - 2000 - SSA 50106899	2 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded M12 axial plug										
KB ET - 5000 - SSA 50106900	5 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded M12 axial plug											
KB ET - 10000 - SSA 50106901	10 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded M12 axial plug											
KB ET - 15000 - SSA 50106902	15 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded M12 axial plug											
KB ET - 20000 - SSA 50106903	20 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded M12 axial plug											
KB ET - 25000 - SSA 50106904	25 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded M12 axial plug											
KB ET - 30000 - SSA 50106905	30 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded M12 axial plug											

 Stationary
barcode
identification

 Mobile
barcode
identification

 2D-code
identification

 RF
identification

 Industrial
image processing

 Distance meas.
Positioning

 Optical
data transmission

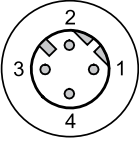
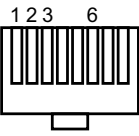
 Networking
Connector units

Accessories

Services

www.leuze.com/accessories/

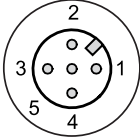
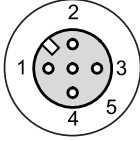
ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature															
M12 Industrial Ethernet connection cables, for BCL 5x8i, AMS 3x8i, DDLS 200/xxx-60-M12, LSIS 4xxi, MA 2x8i																	
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	PIN M12	Colour	PIN RJ45														
	1	ge / YE	1														
	2	ws / WH	3														
	3	or / OG	2														
	4	bl / BU	6														
	KB ET - 2000 - SA - RJ45 50109880	2 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded RJ45 axial plug															
KB ET - 5000 - SA - RJ45 50109881	5 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded RJ45 axial plug																
KB ET - 10000 - SA - RJ45 50109882	10 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded RJ45 axial plug																
KB ET - 15000 - SA - RJ45 50109883	15 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded RJ45 axial plug																
KB ET - 20000 - SA - RJ45 50109884	20 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded RJ45 axial plug																
KB ET - 25000 - SA - RJ45 50109885	25 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded RJ45 axial plug																
KB ET - 30000 - SA - RJ45 50109886	30 m connection cable INDUSTRIAL ETHERNET, M12 axial plug, 4-pin, D-coded RJ45 axial plug																

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ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature												
M12 connection cables DeviceNet / CANopen, for AMS 3x5i, MA 2x5i														
 <table border="1"> <thead> <tr> <th>PIN</th> <th>Colour</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>SHIELD</td> </tr> <tr> <td>2</td> <td>rt / RD</td> </tr> <tr> <td>3</td> <td>sw / BK</td> </tr> <tr> <td>4</td> <td>ws / WH</td> </tr> <tr> <td>5</td> <td>bl / BU</td> </tr> </tbody> </table>	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
	PIN	Colour												
	1	SHIELD												
	2	rt / RD												
3	sw / BK													
4	ws / WH													
5	bl / BU													
	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												
 <table border="1"> <thead> <tr> <th>PIN</th> <th>Colour</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>SHIELD</td> </tr> <tr> <td>2</td> <td>rt / RD</td> </tr> <tr> <td>3</td> <td>sw / BK</td> </tr> <tr> <td>4</td> <td>ws / WH</td> </tr> <tr> <td>5</td> <td>bl / BU</td> </tr> </tbody> </table>	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
	PIN	Colour												
	1	SHIELD												
	2	rt / RD												
3	sw / BK													
4	ws / WH													
5	bl / BU													
	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												

Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

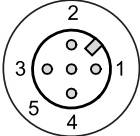
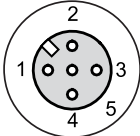
Optical data transmission

Networking Connector units

Accessories

Services

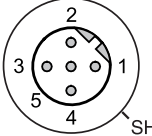
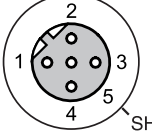
ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature												
M12 connection cables DeviceNet / CANopen, for AMS 3x5i, MA 2x5i														
 <table border="1"> <thead> <tr> <th>PIN</th> <th>Colour</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>SHIELD</td> </tr> <tr> <td>2</td> <td>rt / RD</td> </tr> <tr> <td>3</td> <td>sw / BK</td> </tr> <tr> <td>4</td> <td>ws / WH</td> </tr> <tr> <td>5</td> <td>bl / BU</td> </tr> </tbody> </table>	PIN	Colour	1	SHIELD	2	rt / RD	3	sw / BK	4	ws / WH	5	bl / BU	KB DN/CAN - 1000 - SBA 50114691	1 m connection cable DeviceNet / CANopen, M12 axial plug, 5-pin, A-coded M12 axial socket
	PIN	Colour												
	1	SHIELD												
2	rt / RD													
3	sw / BK													
4	ws / WH													
5	bl / BU													
	KB DN/CAN - 2000 - SBA 50114694	2 m connection cable DeviceNet / CANopen, M12 axial plug, 5-pin, A-coded M12 axial socket												
	KB DN/CAN - 5000 - SBA 50114698	5 m connection cable DeviceNet / CANopen, M12 axial plug, 5-pin, A-coded M12 axial socket												
														

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ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature														
M12 Profibus/multiNet connection cables, e.g. for BCL 504i, AMS 200, AMS 301i, AMS 304i, MA 204i																
 <table border="1"> <thead> <tr> <th>PIN</th> <th>Colour</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>n.c.</td> </tr> <tr> <td>2</td> <td>gn / GN</td> </tr> <tr> <td>3</td> <td>n.c.</td> </tr> <tr> <td>4</td> <td>rt / RD</td> </tr> <tr> <td>5</td> <td>n.c.</td> </tr> <tr> <td>SH</td> <td>blank</td> </tr> </tbody> </table>	PIN	Colour	1	n.c.	2	gn / GN	3	n.c.	4	rt / RD	5	n.c.	SH	blank	<p>KB PB - 2000 - SA 50104188</p> <p>2m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded open cable end (PB OUT)</p>	
	PIN	Colour														
	1	n.c.														
	2	gn / GN														
	3	n.c.														
	4	rt / RD														
	5	n.c.														
	SH	blank														
		<p>KB PB - 5000 - SA 50104187</p> <p>5m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded open cable end (PB OUT)</p>														
		<p>KB PB - 10000 - SA 50104186</p> <p>10m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded open cable end (PB OUT)</p>														
	<p>KB PB - 15000 - SA 50104185</p> <p>15m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded open cable end (PB OUT)</p>															
	<p>KB PB - 20000 - SA 50104184</p> <p>20m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded open cable end (PB OUT)</p>															
	<p>KB PB - 25000 - SA 50104183</p> <p>25m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded open cable end (PB OUT)</p>															
	<p>KB PB - 30000 - SA 50104182</p> <p>30m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded open cable end (PB OUT)</p>															
 <table border="1"> <thead> <tr> <th>PIN</th> <th>Colour</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>n.c.</td> </tr> <tr> <td>2</td> <td>gn / GN</td> </tr> <tr> <td>3</td> <td>n.c.</td> </tr> <tr> <td>4</td> <td>rt / RD</td> </tr> <tr> <td>5</td> <td>n.c.</td> </tr> <tr> <td>SH</td> <td>blank</td> </tr> </tbody> </table>	PIN	Colour	1	n.c.	2	gn / GN	3	n.c.	4	rt / RD	5	n.c.	SH	blank	<p>KB PB - 2000 - BA 50104181</p> <p>2m connection cable FIELDBUS, M12 axial socket, 5-pin, B-coded open cable end (PB IN)</p>	
	PIN	Colour														
	1	n.c.														
	2	gn / GN														
	3	n.c.														
	4	rt / RD														
5	n.c.															
SH	blank															
	<p>KB PB - 5000 - BA 50104180</p> <p>5m connection cable FIELDBUS, M12 axial socket, 5-pin, B-coded open cable end (PB IN)</p>															
	<p>KB PB - 10000 - BA 50104179</p> <p>10m connection cable FIELDBUS, M12 axial socket, 5-pin, B-coded open cable end (PB IN)</p>															
	<p>KB PB - 15000 - BA 50104178</p> <p>15m connection cable FIELDBUS, M12 axial socket, 5-pin, B-coded open cable end (PB IN)</p>															
	<p>KB PB - 20000 - BA 50104177</p> <p>20m connection cable FIELDBUS, M12 axial socket, 5-pin, B-coded open cable end (PB IN)</p>															
	<p>KB PB - 25000 - BA 50104176</p> <p>25m connection cable FIELDBUS, M12 axial socket, 5-pin, B-coded open cable end (PB IN)</p>															
	<p>KB PB - 30000 - BA 50104175</p> <p>30m connection cable FIELDBUS, M12 axial socket, 5-pin, B-coded open cable end (PB IN)</p>															

Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

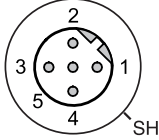
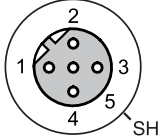
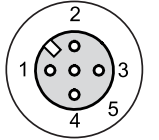
Optical data transmission

Networking Connector units

Accessories

Services

ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature																									
M12 Profibus/multiNet connection cables, e.g. for BCL 504i, AMS 200, AMS 301i, AMS 304i, MA 204i																											
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	PIN	Colour																									
	1	n.c.																									
	2	gn / GN																									
	3	n.c.																									
	4	rt / RD																									
	5	n.c.																									
	SH	blank																									
	PIN	Colour																									
	1	br / BN																									
2	ws / WH																										
3	bl / BU																										
4	sw / BK																										
5	gr / GY																										
<p>KB PB - 1000 - SBA 50104096</p> <p>1m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded M12 axial socket</p>																											
<p>KB PB - 2000 - SBA 50104097</p> <p>2m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded M12 axial socket</p>																											
<p>KB PB - 5000 - SBA 50104098</p> <p>5m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded M12 axial socket</p>																											
<p>KB PB - 10000 - SBA 50104099</p> <p>10m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded M12 axial socket</p>																											
<p>KB PB - 15000 - SBA 50104100</p> <p>15m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded M12 axial socket</p>																											
<p>KB PB - 20000 - SBA 50104101</p> <p>20m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded M12 axial socket</p>																											
<p>KB PB - 25000 - SBA 50104174</p> <p>25m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded M12 axial socket</p>																											
<p>KB PB - 30000 - SBA 50104173</p> <p>30m connection cable FIELDBUS, M12 axial plug, 5-pin, B-coded M12 axial socket</p>																											
Other connection cables																											
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	PIN	Colour																									
1	br / BN																										
2	ws / WH																										
3	bl / BU																										
4	sw / BK																										
5	gr / GY																										
<p>K - D M12A - 5P - 10m - PVC 50104559</p> <p>Connection cable for voltage supply, 10m, M12 axial socket, 5-pin, A-coded, PVC</p>																											

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ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature
Service cables		
	KB USB - Service 50107726	USB service cable for BCL 5xx <i>i</i>
	KB - Service - 3000 50110155	Service cable for BPS 37/BCL 31/BCL 32 via MS 37/MS 31/MS 32, 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 412!	Service cable for LSIS 4xx <i>i</i>
MA 2xx<i>i</i> connection cables for BCL 8, BCL 22, BCL 32, BCL 500<i>i</i>, LSIS 12x, LSIS 4x2<i>i</i>, hand-held scanners, RFID, BPS 8, AMS 200		
	KB JST - HS - 300 50113397	Connection cable for hand-held scanner to the MA 2xx <i>i</i>
	KB JST - M12A - 5P - 3000 50113467	Connection cable for BCL 8/BPS 8 to the MA 2xx <i>i</i>
	K - D M12A - 8P - MA - 3000 50111225	Connection cable for LSIS 12x to the MA 2xx <i>i</i>
	KB JST - M12A - 8P - Y - 3000 50113468	Connection cable for LSIS 4xx <i>i</i> to the MA 2xx <i>i</i>
	KB 500 - 3000 - Y 50110240	Connection cable for BCL 500 <i>i</i> to the MA 2xx <i>i</i>
	KB AMS 1000 SA 50106978	Connection cable for AMS 200 to the MA 2xx <i>i</i>

 Stationary
barcode
identification

 Mobile
barcode
identification

 2D-code
identification

 RF
identification

 Industrial
image processing

 Distance meas.
Positioning

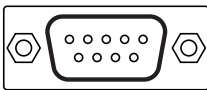
 Optical
data transmission

 Networking
Connector units

Accessories

Services



ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature
RS 232 interface cables for mobile code readers (1D, 2D, RFID)		
	KB RS232 50108574	RS 232 helix interface cable for Z-3010, 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
 <p>RS 232</p>	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 2.3m
	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 4.5m
	TTL-RS 232 cable / ext IT4xxx 50104442	TTL-RS 232 cable / external connector for power supply unit, for IT 4xxx
	TTL-RS 232 cable / ext IT6300 50105422	TTL-RS 232 cable / external connector for power supply unit, for IT 6300
	KB - RS232 - Base Hx520 50110675	Connection cable for RS232 - HX520 base station (RFID), length 2m
	KB 021 Z 50035421	Connection cable for the RS 232 devices with 9-pin Sub-D socket

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ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature
USB interface cables for mobile code readers (1D, 2D, RFID)		
 <p>USB Standard A</p>	KB USB 50108573	USB interface cable for Z-3010
	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
	USB cable / ext IT6300 50105426	USB cable / external connector for power supply unit, for IT 6300
	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)		
 <p>PS/2</p>	KB PS2 50108575	PS/2 AT interface cable for Z-3010, 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
	PS2 cable / ext for IT6300 50105424	PS/2 AT interface cable, keyboard wedge operation, external connector for power supply unit, for IT 6300

Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
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Industrial
image processing

Distance meas.
Positioning






Optical
data transmission

Networking
Connector units

Accessories

Services

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 - 5B - DPME 50103990	Base station for IT 6320, 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 and IT 6320, 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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ACCESSORIES / CONNECTION TECHNOLOGY

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

Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission





Networking
Connector units

Accessories

Services

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ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature
Trigger-cable/set for visionPOWERBOX FireWire cameras		
	Trigger cable for FireWire cameras 50107185	Trigger cable for FireWire cameras ...-M1/C1, 10m in length
	Trigger set for FireWire cameras 50107185	Trigger set for FireWire cameras ...-M1/C1 consisting of 10m cable and terminal block
Connection cable for visionPOWERBOX FireWire cameras		
	Cable for FireWire camera 50041284	Connection cable between FireWire camera and PC, 10m in length
	Cable for FireWire camera, MG screw fitting 50103901	Connection cable between FireWire camera and PC with MG screw fitting, 10m in length
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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ACCESSORIES / CONNECTION TECHNOLOGY

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

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identification

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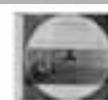
 Networking
Connector units

Accessories

Services

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, MA 41
	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, MA 41
	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, MA 41



ACCESSORIES / CONNECTION TECHNOLOGY

Contact assignment	Part description Part No.	Feature
Hoods with integrated connectors		
	MS 31 105 50107685	Modular hood with integrated connectors for BCL 31 with 5 x M12 plug/socket, FCC approval
	MS 32 104 50107686	Modular hood with integrated connectors for BCL 32 with 4 x M12 plug/socket, FCC approval
	MS 34 103 50037230	Modular hood with integrated connectors for BCL 34/BPS 34 with 3 x M12 plug/socket, FCC approval
	MS 34 105 50037231	Modular hood with integrated connectors for BCL 34/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 BCL 34/BPS 34
	MSP - EP 50035525	Hood with integrated connectors with external parameter memory for MSP systems

Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning

Optical
data transmission


Networking
Connector units

Accessories

Services

www.leuze.com/accessories/






ACCESSORIES / POWER SUPPLIES

Dimensioned drawing or photo	Part description Part No.	Feature
Power supplies		
	NTEV 30 50033472	Power supply unit 24VDC, 800 mA
	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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ACCESSORIES / POWER SUPPLIES

Dimensioned drawing or photo	Part description Part No.	Feature
Power supply unit for mobile code readers		
	NT 5V DC/1A Z-3010 50109333	Power supply unit for Z-3010
	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 HX520 base station or HFM 3500D

Stationary barcode identification

Mobile barcode identification

2D-code identification

RF identification

Industrial image processing

Distance meas. Positioning

Optical data transmission




Networking Connector units

Accessories

Services

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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 TCP 400 - 0000, integrated decoder
External illumination for VR 2300		
	VL 2000 50041147	External LED illumination (IP 65) for VR 2300; necessary accessory: KB ../BT 56
Deflection mirror for AMS 200		
	US AMS 01 50104479	Deflection mirror for AMS 200 with integrated AMS fastening
	US1 OMS 50035630	Deflection mirror for AMS 200 without integrated AMS fastening

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OTHER ACCESSORIES

Dimensioned drawing or photo	Part description Part No.	Feature
Mounting bracket for AMS 200		
	MW OMS / AMS 01 50107255	Mounting bracket for converting from OMS to AMS 200
Reflective tapes/Reflectors for AMS 200		
	Refl. tape 200 x 200 mm - S 50104361	Reflective tape 200 x 200 mm, self-adhesive, for AMS 200/40
	Refl. tape 200 x 200 mm - M 50104364	Reflective tape 200 x 200 mm, on aluminum plate 250 x 250 mm, for AMS 200/40
	Refl. tape 500 x 500 mm - S 50104362	Reflective tape 500 x 500 mm, self-adhesive, for AMS 200/120
	Refl. tape 500 x 500 mm - M 50104365	Reflective tape 500 x 500 mm, on aluminum plate 550 x 550 mm, for AMS 200/120
	Refl. tape 749 x 914 mm - S 50104363	Reflective tape 749 x 914 mm, self-adhesive, for AMS 200/200
	Refl. tape 914 x 914 mm - S 50108988	Reflective tape 914 x 914 mm, self-adhesive, for AMS 200/200
	Refl. tape 914 x 914 mm - M 50104366	Reflective tape 914 x 914 mm, on aluminum plate 964 x 964 mm, for AMS 200/200

Stationary
barcode
identification

Mobile
barcode
identification

2D-code
identification

RF
identification

Industrial
image processing

Distance meas.
Positioning


Optical
data transmission

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Connector units

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ACCESSORIES / SOFTWARE

Photo	Part description Part No.	Feature
Configuration software		
	BCL / BPS / RF / VR Config 50102333	CD with BCLconfig, BPSconfig, RFconfig and VRconfig configuration software, incl. data sheets/technical descriptions Free download at www.leuze.com !

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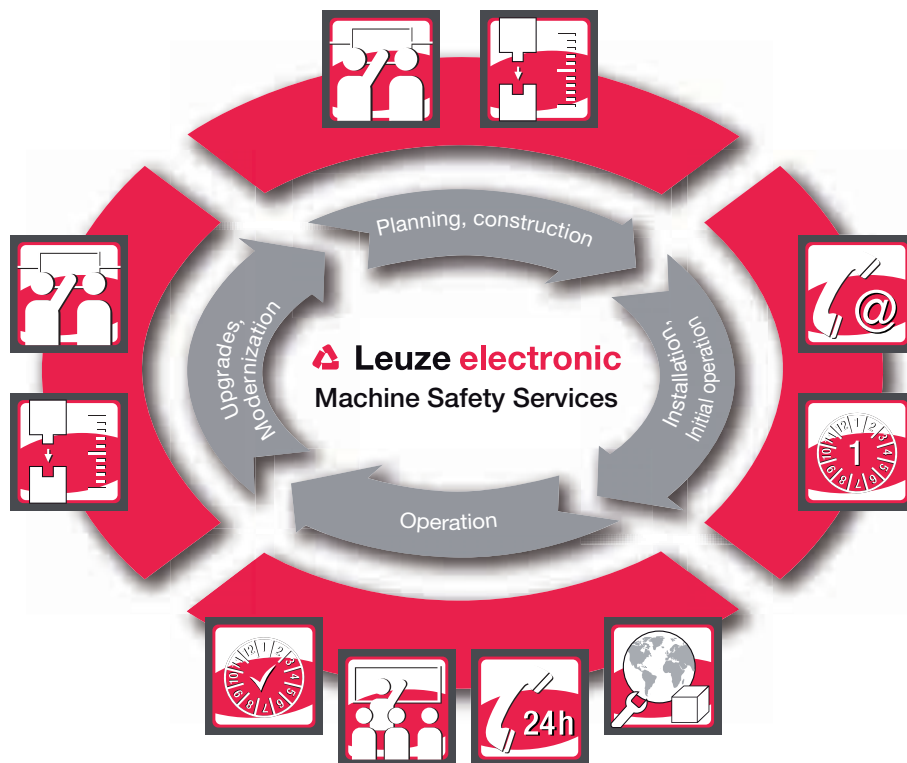
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SERVICES

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.



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Services
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Part description Part No.	Feature
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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