

Technical data sheet Stationary bar code reader

Part no.: 50105496

BCL 504i SM 102

Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Diagrams
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For illustration purposes only



CDRH



UK
CA

Technical data

Basic data

| | |
|--------|----------|
| Series | BCL 500i |
|--------|----------|

Functions

| | |
|-----------|---------------------------|
| Functions | Alignment mode |
| | AutoConfig |
| | AutoControl |
| | AutoReflAct |
| | Code fragment technology |
| | LED indicator |
| | Reference code comparison |

Characteristic parameters

| | |
|------|----------|
| MTTF | 93 years |
|------|----------|

Read data

| | |
|---|-----------------------------|
| Code types, readable | 2/5 Interleaved |
| | Codabar |
| | Code 128 |
| | Code 39 |
| | Code 93 |
| | EAN 128 |
| | EAN 8/13 |
| | EAN Addendum |
| | GS1 Databar Expanded |
| | GS1 Databar Limited |
| | GS1 Databar Omnidirectional |
| | UPC |
| Scanning rate, typical | 1,000 scans/s |
| Bar codes per reading gate, max. number | 64 Piece(s) |

Optical data

| | |
|--|----------------------------|
| Reading distance | 300 ... 1,000 mm |
| Light source | Laser, Red |
| Wavelength | 650 nm |
| Laser class | 1, IEC/EN 60825-1:2014 |
| Transmitted-signal shape | Continuous |
| Usable opening angle (reading field opening) | 60 ° |
| Bar code contrast (PCS) | 60 % |
| Modulus size | 0.35 ... 1 mm |
| Reading method | Line scanner |
| Scanning rate | 800 ... 1,200 scans/s |
| Beam deflection | Via rotating polygon wheel |
| Light beam exit | Front |

Electrical data

| | |
|--------------------|------------------------------|
| Protective circuit | Polarity reversal protection |
|--------------------|------------------------------|

Performance data

| | |
|-------------------------|-----------------|
| Supply voltage U_B | 10 ... 30 V, DC |
| Power consumption, max. | 10 W |

Inputs/outputs selectable

| | |
|-------------------------------------|------------------|
| Output current, max. | 100 mA |
| Number of inputs/outputs selectable | 4 Piece(s) |
| Voltage type, outputs | DC |
| Switching voltage, outputs | Typ. $U_B / 0$ V |
| Voltage type, inputs | DC |
| Switching voltage, inputs | Typ. $U_B / 0$ V |
| Input current, max. | 8 mA |

Interface

| | |
|------|-------------|
| Type | PROFIBUS DP |
|------|-------------|

PROFIBUS DP

| | |
|--------------------|-----------------------------|
| Function | Process |
| Classification | V1 |
| Transmission speed | 9,600 ... 12,000,000 Mbit/s |

Service interface

| | |
|------|-----|
| Type | USB |
|------|-----|

USB

| | |
|----------|----------------------------|
| Function | Configuration via software |
| | Service |

Connection

| | |
|-----------------------|------------|
| Number of connections | 5 Piece(s) |
|-----------------------|------------|

Connection 1

| | |
|-----------------------|--------------------|
| Function | Service interface |
| Type of connection | USB |
| Designation on device | SERVICE |
| Connector type | USB 2.0 Standard-A |

Connection 2

| | |
|-----------------------|------------|
| Function | Signal IN |
| | Signal OUT |
| Type of connection | Connector |
| Designation on device | SW IN/OUT |
| Thread size | M12 |
| Type | Female |
| Material | Metal |
| No. of pins | 5 -pin |
| Encoding | A-coded |

Connection 3

| | |
|-----------------------|----------------|
| Function | Signal IN |
| | Signal OUT |
| | Voltage supply |
| Type of connection | Connector |
| Designation on device | PWR |
| Thread size | M12 |
| Type | Male |
| Material | Metal |
| No. of pins | 5 -pin |
| Encoding | A-coded |

Technical data

Connection 4

| | |
|-----------------------|---------------|
| Function | BUS IN |
| Type of connection | Connector |
| Designation on device | HOST / BUS IN |
| Thread size | M12 |
| Type | Male |
| Material | Metal |
| No. of pins | 5 -pin |
| Encoding | B-coded |

Connection 5

| | |
|-----------------------|-----------|
| Function | BUS OUT |
| Type of connection | Connector |
| Designation on device | BUS OUT |
| Thread size | M12 |
| Type | Female |
| No. of pins | 5 -pin |

Mechanical data

| | |
|-----------------------|------------------------------|
| Design | Cubic |
| Dimension (W x H x L) | 123.5 mm x 63 mm x 106.5 mm |
| Housing material | Metal |
| Metal housing | Aluminum |
| Lens cover material | Glass |
| Net weight | 1,100 g |
| Housing color | Red |
| | Silver |
| Type of fastening | Dovetail grooves |
| | Mounting thread |
| | Via optional mounting device |

Operation and display

| | |
|-----------------------|---|
| Type of display | LED |
| | Monochromatic graphical display, 128x64 pixel, with background lighting |
| Number of LEDs | 2 Piece(s) |
| Type of configuration | Via web browser |
| Operational controls | Button(s) |

Environmental data

| | |
|--|----------------|
| Ambient temperature, operation | 0 ... 40 °C |
| Ambient temperature, storage | -20 ... +70 °C |
| Relative humidity (non-condensing) | 90 % |
| Extraneous light tolerance on the bar code, max. | 2,000 lx |

Certifications

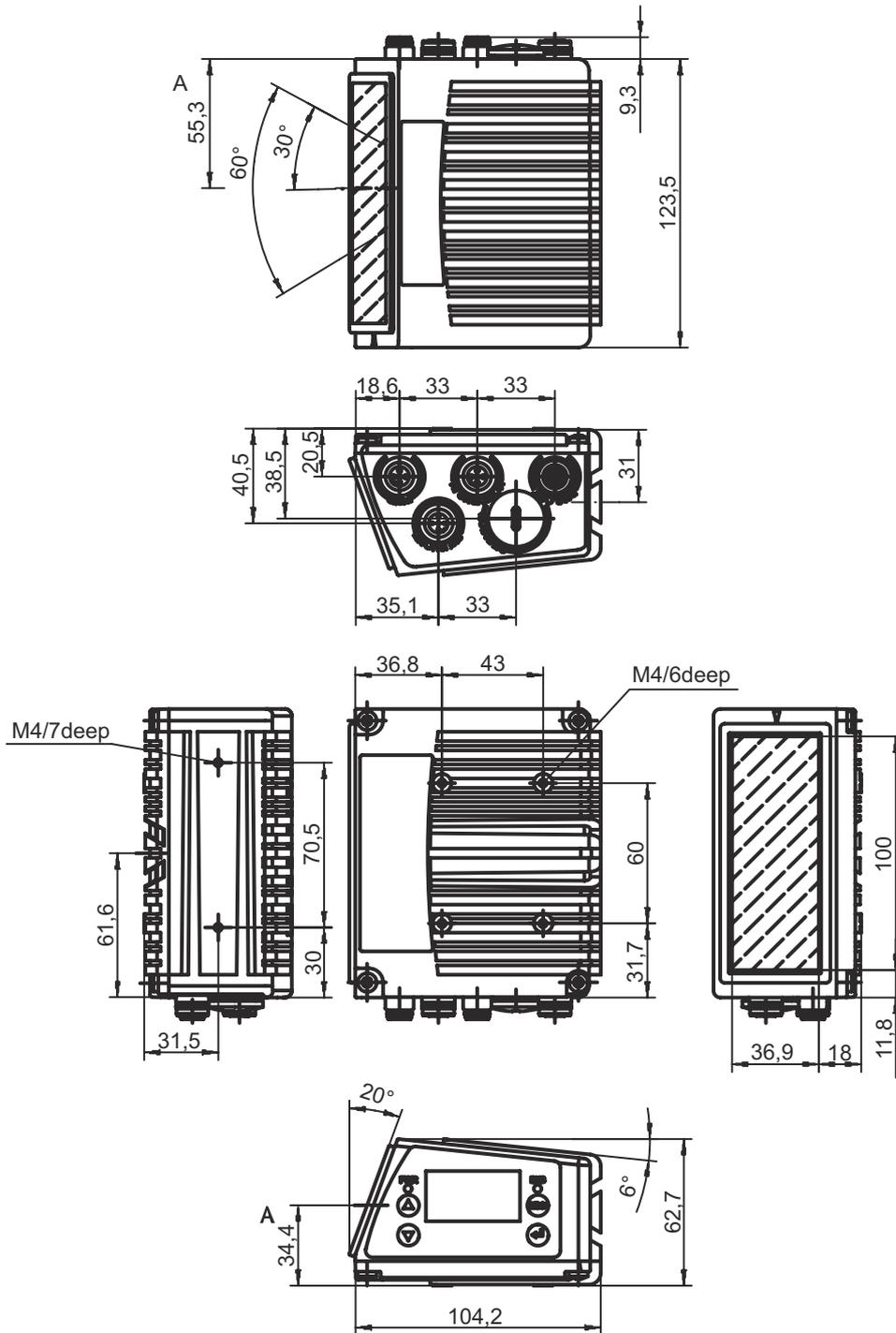
| | |
|---|--------------------------|
| Degree of protection | IP 65 |
| Protection class | III |
| Approvals | c UL US |
| Test procedure for EMC in accordance with standard | EN 55022 |
| | EN 61000-4-2, -3, -4, -6 |
| Test procedure for shock in accordance with standard | IEC 60068-2-27, test Ea |
| Test procedure for continuous shock in accordance with standard | IEC 60068-2-29, test Eb |
| Test procedure for vibration in accordance with standard | IEC 60068-2-6, test Fc |

Classification

| | |
|-----------------------|----------|
| Customs tariff number | 84719000 |
| ECLASS 5.1.4 | 27280102 |
| ECLASS 8.0 | 27280102 |
| ECLASS 9.0 | 27280102 |
| ECLASS 10.0 | 27280102 |
| ECLASS 11.0 | 27280102 |
| ECLASS 12.0 | 27280102 |
| ECLASS 13.0 | 27280102 |
| ECLASS 14.0 | 27280102 |
| ECLASS 15.0 | 27280102 |
| ECLASS 16.0 | 27280102 |
| ETIM 5.0 | EC002550 |
| ETIM 6.0 | EC002550 |
| ETIM 7.0 | EC002550 |
| ETIM 8.0 | EC002550 |
| ETIM 9.0 | EC002550 |
| ETIM 10.0 | EC002550 |

Dimensioned drawings

All dimensions in millimeters



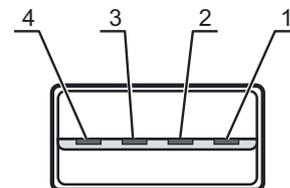
Electrical connection

Connection 1

SERVICE

| | |
|--------------------|--------------------|
| Function | Service interface |
| Type of connection | USB |
| Connector type | USB 2.0 Standard-A |

| Pin | Pin assignment |
|-----|----------------|
| 1 | +5 V DC |
| 2 | D- - Data |
| 3 | D+ - Data |
| 4 | GND |

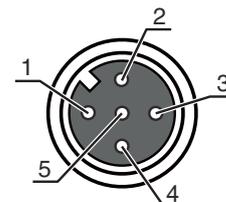


Connection 2

SW IN/OUT

| | |
|--------------------|-------------------------|
| Function | Signal IN Signal OUT |
| Type of connection | Connector |
| Thread size | M12 |
| Type | Female |
| Material | Metal |
| No. of pins | 5 -pin |
| Encoding | A-coded |

| Pin | Pin assignment |
|-----|----------------|
| 1 | VOUT |
| 2 | SWIO 1 |
| 3 | GND |
| 4 | SWIO 2 |
| 5 | FE |

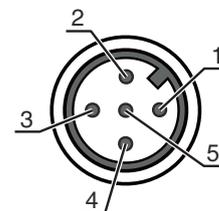


Connection 3

PWR

| | |
|--------------------|---|
| Function | Signal IN Signal OUT Voltage supply |
| Type of connection | Connector |
| Thread size | M12 |
| Type | Male |
| Material | Metal |
| No. of pins | 5 -pin |
| Encoding | A-coded |

| Pin | Pin assignment |
|-----|----------------|
| 1 | VIN |
| 2 | SWIO 3 |
| 3 | GND |
| 4 | SWIO 4 |
| 5 | FE |



Electrical connection

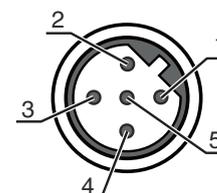
Connection 4

HOST / BUS IN

| | |
|--------------------|-----------|
| Function | BUS IN |
| Type of connection | Connector |
| Thread size | M12 |
| Type | Male |
| Material | Metal |
| No. of pins | 5 -pin |
| Encoding | B-coded |

| Pin | Pin assignment |
|-----|----------------|
|-----|----------------|

| | |
|---|-------|
| 1 | n.c. |
| 2 | A (N) |
| 3 | n.c. |
| 4 | B (P) |
| 5 | FE |



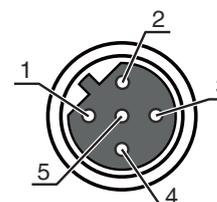
Connection 5

BUS OUT

| | |
|--------------------|-----------|
| Function | BUS OUT |
| Type of connection | Connector |
| Thread size | M12 |
| Type | Female |
| Material | Metal |
| No. of pins | 5 -pin |
| Encoding | B-coded |

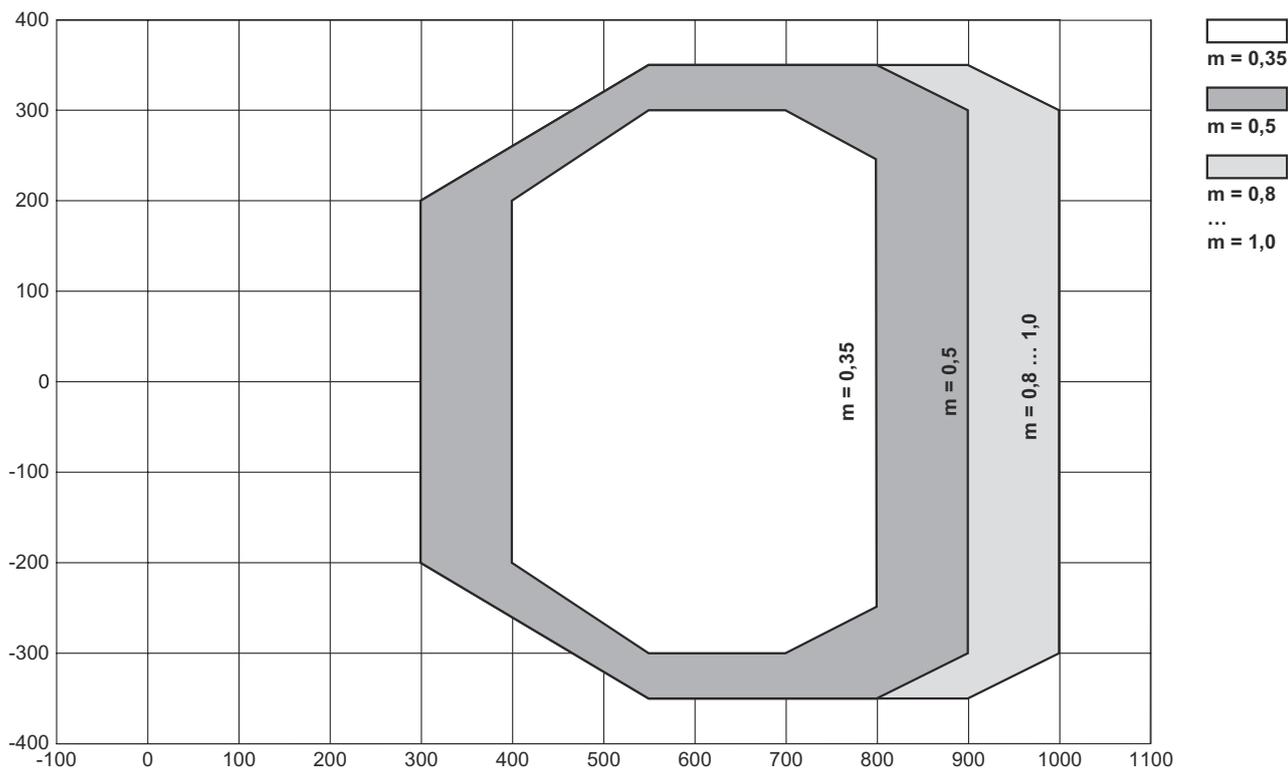
| Pin | Pin assignment |
|-----|----------------|
|-----|----------------|

| | |
|---|---------|
| 1 | VP |
| 2 | A (N) |
| 3 | GND 485 |
| 4 | B (P) |
| 5 | FE |



Diagrams

Reading field curve



x Reading field distance [mm]

y Reading field width [mm]

Operation and display

| LED | Display | Meaning |
|-------|--------------------------|---------------------------------|
| 1 PWR | Off | Device switched off |
| | Green, flashing | Device ok, initialization phase |
| | Green, continuous light | Device OK |
| | Orange, continuous light | Service operation |
| | Red, flashing | Device OK, warning set |
| | Red, continuous light | Device error |
| 2 BUS | Off | No supply voltage |
| | Green, flashing | Initialization |
| | Green, continuous light | Bus operation ok |
| | Red, flashing | Communication error |
| | Red, continuous light | Network error |

Part number code

Part designation: **BCL XXXX YYZ AAA B**

| | |
|-------------|--|
| BCL | Operating principle BCL: bar code reader |
| XXXX | Series/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 558i: EtherNet/IP |
| YY | Scanning principle S: line scanner (single line) O: oscillating-mirror scanner (oscillating mirror) |
| Z | Optics N: High Density (close) M: Medium Density (medium distance) F: Low Density (remote) L: Long Range (very large distances) |
| AAA | Beam exit 100: lateral 102: front |
| B | Special equipment H: with heating |

Note



A list with all available device types can be found on the Leuze website at www.leuze.com.

Notes

 **Observe intended use!**



- ⌘ This product is not a safety sensor and is not intended as personnel protection.
- ⌘ The product may only be put into operation by competent persons.
- ⌘ Only use the product in accordance with its intended use.

 **ATTENTION! LASER RADIATION – CLASS 1 LASER PRODUCT**



Do not stare into beam!
The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of **laser class 2** as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to Laser Notice No. 50 from June 24, 2007.

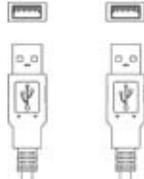
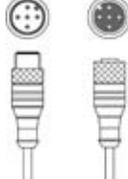
- ⌘ Never look directly into the laser beam or in the direction of reflected laser beams! If you look into the beam path over a longer time period, there is a risk of injury to the retina.
- ⌘ Do not point the laser beam of the device at persons!

Accessories

Connection technology - Connection cables

| | Part no. | Designation | Article | Description |
|---|----------|--------------------|------------------|--|
|  | 50132079 | KD U-M12-5A-V1-050 | Connection cable | Application: Chemical resistant Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC |

Connection technology - Interconnection cables

| | Part no. | Designation | Article | Description |
|---|----------|-----------------------------|-----------------------|---|
|  | 50107726 | KB USB A - USB A | Interconnection cable | Suitable for interface: USB Connection 1: USB Connection 2: USB Shielded: Yes Cable length: 1,800 mm Sheathing material: PVC |
|  | 50135254 | KDS PB-M12-4A-M12-4A-P3-050 | Interconnection cable | Application: Oil and lubricant resistant Suitable for interface: PROFIBUS DP Connection 1: Connector, M12, Axial, Female, B-coded, 5 -pin Connection 2: Connector, M12, Axial, Male, B-coded, 4 -pin Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR |

Connection technology - Terminating resistors

| | Part no. | Designation | Article | Description |
|--|----------|-------------|-----------------|---|
|  | 50038539 | TS 02-4-SA | Terminator plug | Suitable for: MultiNet Plus, PROFIBUS DP Function: Bus termination Connection 1: Connector, M12, Axial, Male, B-coded, 4 -pin |

Mounting technology - Other

| | Part no. | Designation | Article | Description |
|---|----------|-------------|------------------|--|
|  | 50111224 | BT 59 | Mounting bracket | Fastening, at system: Groove mounting Mounting bracket, at device: Clampable Material: Metal Shock absorber: No |

Accessories

Services

| | Part no. | Designation | Article | Description |
|---|----------|-------------|------------------|---|
|  | S981020 | CS30-E-212 | Hourly rate | Details: Compilation of the application data, selection and suggestion of suitable sensor system, drawing prepared as assembly sketch. Conditions: Completed questionnaire or project specifications with a description of the application have been provided. |
|  | S981014 | CS30-S-110 | Start-up support | Details: Performed at location of customer's choosing, duration: max. 10 hours. Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses. |
|  | S981019 | CS30-T-110 | Product training | Details: Location and content to be agreed upon, duration: max. 10 hours. Conditions: Price not including travel costs and, if applicable, accommodation expenses. |
|  | S981021 | CS30-V-212 | Hourly rate | Details: REA evaluation with creation of a test report, evaluation of the code quality. Conditions: Original bar codes to be provided by the client. |

Note



A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.