

# Technical data sheet

## Stationary bar code reader

Part no.: 50138081

BCL 301i R1 J 100 D H

### Contents

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



**RS485**



**UK  
CA**

## Technical data

### Basic data

|        |          |
|--------|----------|
| Series | BCL 300i |
|--------|----------|

### Special version

|                 |         |
|-----------------|---------|
| Special version | Heating |
|-----------------|---------|

### Functions

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

### Characteristic parameters

|      |           |
|------|-----------|
| MTTF | 110 years |
|------|-----------|

### Read data

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

### Optical data

|  |   |
|--|---|
| Reading distance                             | 100 ... 600 mm  |
| Light source                                 | Laser, Red  |
| Wavelength                                   | 655 nm  |
| Laser class                                  | 1, IEC/EN 60825-1:2014  |
| Transmitted-signal shape                     | Continuous  |
| Usable opening angle (reading field opening) | 60 °  |
| Modulus size                                 | 0.5 ... 0.8 mm  |
| Reading method                               | Raster scanner with deflecting mirror                         |
| Beam deflection                              | By means of rotating polygon mirror wheel + deflecting mirror |
| Light beam exit                              | Lateral with deflecting mirror                                |
| Raster (number of lines)                     | 8 Piece(s)  |
| Scanning field at scanner distance of 100 mm | 17 mm   |
| Scanning field at scanner distance of 200 mm | 27 mm   |
| Scanning field at scanner distance of 300 mm | 38 mm   |
| Scanning field at scanner distance of 400 mm | 48 mm   |

### Electrical data

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

### Performance data

|                         |                 |
|-------------------------|-----------------|
| Supply voltage $U_B$    | 18 ... 30 V, DC |
| Power consumption, max. | 27 W            |

### Inputs/outputs selectable

|                                     |            |
|-------------------------------------|------------|
| Output current, max.                | 60 mA      |
| Number of inputs/outputs selectable | 2 Piece(s) |
| Input current, max.                 | 8 mA       |

### Interface

|      |                       |
|------|-----------------------|
| Type | MultiNet Plus, RS 485 |
|------|-----------------------|

### RS 485

|                       |                      |
|-----------------------|----------------------|
| Function              | Process              |
| Transmission speed    | 4,800 ... 115,200 Bd |
| Data format           | Adjustable           |
| Start bit             | 1                    |
| Data bit              | 7, 8, 9 data bits    |
| Stop bit              | 1, 2 stop bits       |
| Parity                | Adjustable           |
| Transmission protocol | Adjustable           |
| Data encoding         | ASCII                |

### Service interface

|      |         |
|------|---------|
| Type | USB 2.0 |
|------|---------|

### USB

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

### Connection

|                       |            |
|-----------------------|------------|
| Number of connections | 1 Piece(s) |
|-----------------------|------------|

### Connection 1

|                    |   |
|--------------------|---|
| Function           | BUS IN<br>BUS OUT<br>Connection to device<br>Data interface<br>PWR / SW IN / OUT<br>Service interface |
| Type of connection | Plug connector, It is essential to use a connection unit when commissioning the device.               |
| No. of pins        | 32 -pin   |
| Type               | Male  |

### Mechanical data

|                       |   |
|-----------------------|---|
| Design                | Cubic   |
| Dimension (W x H x L) | 103 mm x 44 mm x 96 mm  |
| Housing material      | Metal   |
| Metal housing         | Diecast aluminum  |
| Lens cover material   | Glass   |
| Net weight            | 350 g   |
| Housing color         | Red<br>Silver   |
| Type of fastening     | Dovetail grooves<br>Fastening on back<br>Via optional mounting device |

## Technical data

### Operation and display

|                 |  |
|-----------------|--|
| Type of display | LED  |
|                 | Monochromatic graphic display, 128 x 32 pixels |
| Number of LEDs  | 2 Piece(s)                                     |

### Environmental data

|                                    |               |
|------------------------------------|---------------|
| Ambient temperature, operation     | -35 ... 40 °C |
| Ambient temperature, storage       | -20 ... 70 °C |
| Relative humidity (non-condensing) | 0 ... 90 %    |

### Certifications

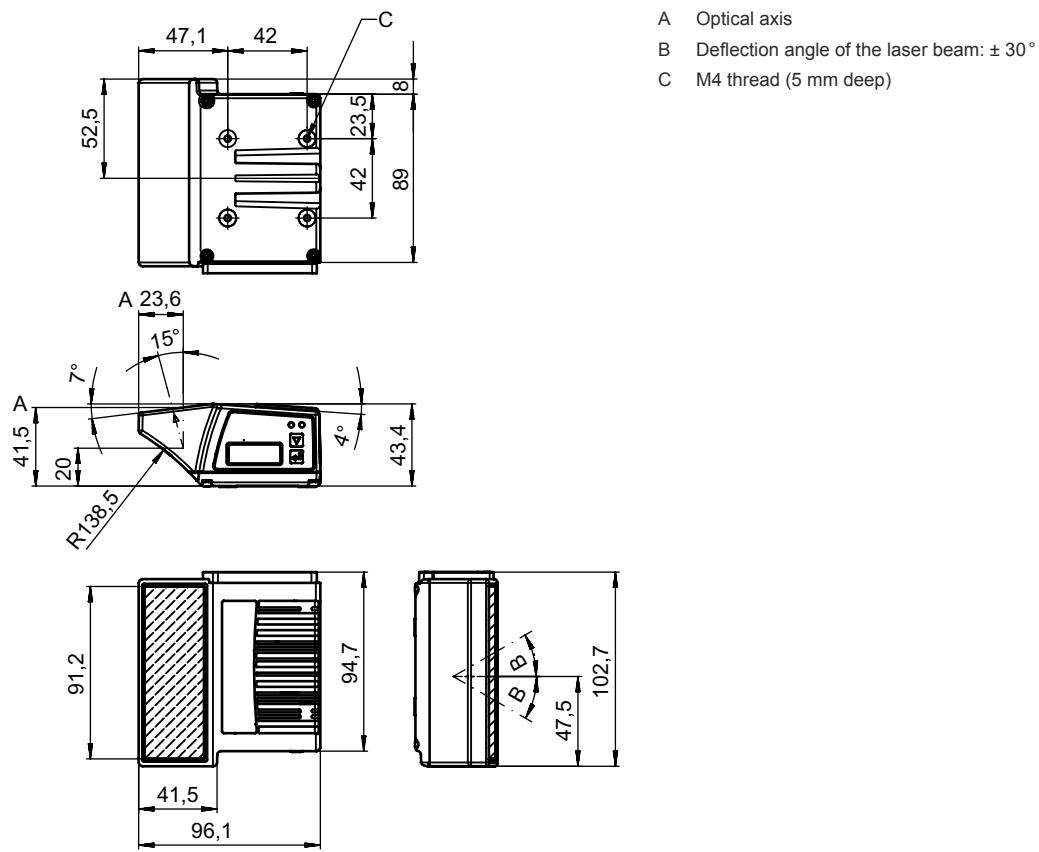
|   |                          |
|---|--------------------------|
| Degree of protection  | IP 65                    |
| Protection class  | III                      |
| Approvals   | c UL US                  |
| Test procedure for EMC in accordance with standard              | EN 55022                 |
|   | 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 |
| 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



A Optical axis

B Deflection angle of the laser beam:  $\pm 30^\circ$

C M4 thread (5 mm deep)

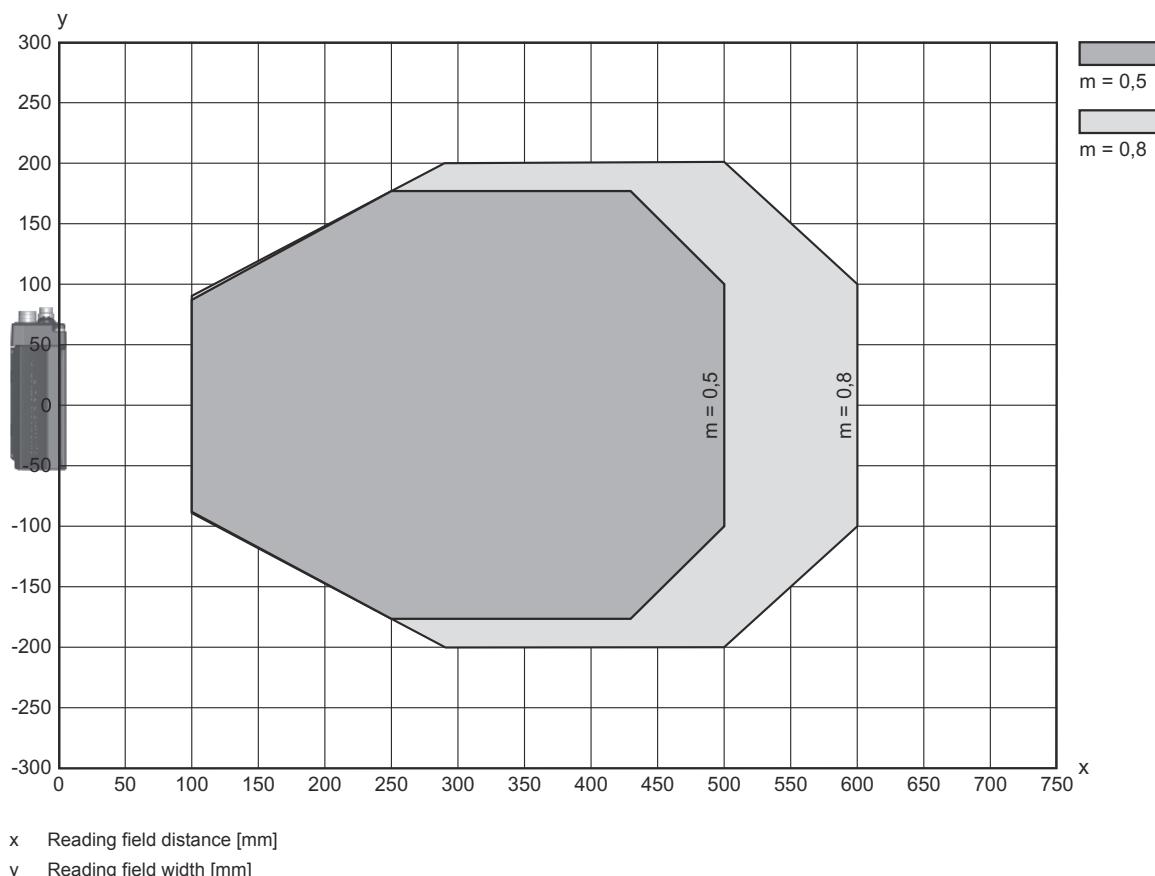
## Electrical connection

### Connection 1

|                    |   |
|--------------------|---|
| Function           | BUS IN<br>BUS OUT<br>Connection to device<br>Data interface<br>PWR / SW IN / OUT<br>Service interface |
| Type of connection | Plug connector  |
| Type of connection | It is essential to use a connection unit when commissioning the device.                               |
| No. of pins        | 32 -pin   |
| Type               | Male  |

## Diagrams

### Reading field curve



## Operation and display

| LED   | Display                               | Meaning                         |
|-------|---------------------------------------|---------------------------------|
| 1 PWR | Green, flashing                       | Device ok, initialization phase |
|       | Green, continuous light               | Device OK                       |
|       | Green, briefly off - on               | Reading successful              |
|       | Green, briefly off - briefly red - on | Reading not successful          |
|       | Orange, continuous light              | Service mode                    |

## Operation and display

| LED   | Display  | Meaning  |
|-------|--|--|
| 1 PWR | Red, flashing<br>Red, continuous light   | Device OK, warning set<br>Error, device error                          |
| 2 NET | Green, flashing<br>Green, continuous light<br>Red, flashing<br>Red, continuous light | Initialization<br>Bus operation ok<br>Communication error<br>Bus error |

## Part number code

Part designation: BCL XXXX YYZ AAA BB CCCC

|  |   |
|--|---|
| <b>BCL</b>   | <b>Operating principle</b><br>BCL: bar code reader  |
| <b>XXXX</b>  | <b>Series/interface (integrated fieldbus technology)</b><br>300i: RS 232 / RS 422 (stand-alone)<br>301i: RS 485 (multiNet slave)<br>304i: PROFIBUS DP<br>308i: EtherNet TCP/IP, UDP<br>338i: EtherCAT<br>348i: PROFINET RT<br>358i: EtherNet/IP |
| <b>YY</b>  | <b>Scanning principle</b><br>S: line scanner (single line)<br>R1: line scanner (raster)<br>O: oscillating-mirror scanner (oscillating mirror)   |
| <b>Z</b>   | <b>Optics</b><br>N: High Density (close)<br>M: Medium Density (medium distance)<br>F: Low Density (remote)<br>L: Long Range (very large distances)<br>J: ink-jet (depending on the application)   |
| <b>AAA</b>   | <b>Beam exit</b><br>100: lateral<br>102: front  |
| <b>BB</b>  | <b>Special equipment</b><br>D: With display<br>H: with heating<br>DH: optionally with display and heating<br>P: plastic exit window   |
| <b>CCCC</b>  | <b>Functions</b><br>F007: optimized process data structure<br>F099: OPC-UA function   |
| <b>Note</b> <p>↳ A list with all available device types can be found on the Leuze website at <a href="http://www.leuze.com">www.leuze.com</a>.</p> |   |

## Notes

|   |  |
|---|--|
|  | <b>Observe intended use!</b>   |
|   | <p>↳ This product is not a safety sensor and is not intended as personnel protection.</p> <p>↳ The product may only be put into operation by competent persons.</p> <p>↳ Only use the product in accordance with its intended use.</p> |

## Notes

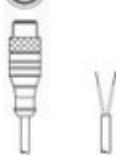
| ATTENTION! LASER RADIATION – CLASS 1 LASER PRODUCT                                |  |
|---|--|
|  | <p>The device satisfies the requirements of IEC/EN 60825-1:2014 safety regulations for a product of <b>laser class 1</b> and complies with 21 CFR 1040.10 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.</p> <p>⚠ Observe the applicable statutory and local laser protection regulations.</p> <p>⚠ The device must not be tampered with and must not be changed in any way.<br/>There are no user-serviceable parts inside the device.<br/>Repairs must only be performed by Leuze electronic GmbH + Co. KG.</p> |

## Accessories

## Connection technology - Connection unit

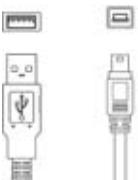
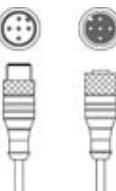
| Part no.   | Designation | Article | Description   |
|--|-------------|---------|---|
|  | 50114369    | MA 100  | Modular connection unit<br>Supply voltage: 18 ... 30 V<br>Interface: RS 232, RS 485<br>Connections: 1 Piece(s)<br>Degree of protection: IP 54 |

## Connection technology - Connection cables

| Part no.  | Designation | Article             | Description   |
|---|-------------|---------------------|---|
|  | 50135243    | KD PB-M12-4A-P3-050 | Connection cable<br>Suitable for interface: PROFIBUS DP<br>Connection 1: Connector, M12, Axial, Female, B-coded, 5 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 5.000 mm<br>Sheathing material: PUR |
|  | 50132079    | KD U-M12-5A-V1-050  | Connection cable<br>Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5.000 mm<br>Sheathing material: PVC   |
|  | 50135248    | KS PB-M12-4A-P3-050 | Connection cable<br>Suitable for interface: PROFIBUS DP<br>Connection 1: Connector, M12, Axial, Male, B-coded, 5 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: Yes<br>Cable length: 5.000 mm<br>Sheathing material: PUR   |

## Accessories

### Connection technology - Interconnection cables

| Part no.  | Designation                          | Article               | Description   |
|---|--------------------------------------|-----------------------|---|
|  | 50114571 * KB 301-3000               | Interconnection cable | Suitable for interface: RS 232, RS 422, RS 485<br>Connection 1: Socket connector<br>Connection 2: JST ZHR connector, 10 -pin, 6 -pin<br>Shielded: Yes<br>Cable length: 3,000 mm<br>Sheathing material: PVC                              |
|   | 50117011 KB USB A - USB miniB        | Service line          | Suitable for interface: USB<br>Connection 1: USB<br>Connection 2: USB<br>Shielded: Yes<br>Cable length: 1,500 mm<br>Sheathing material: PVC   |
|  | 50135254 KDS PB-M12-4A-M12-4A-P3-050 | Interconnection cable | Suitable for interface: PROFIBUS DP<br>Connection 1: Connector, M12, Axial, Female, B-coded, 5 -pin<br>Connection 2: Connector, M12, Axial, Male, B-coded, 4 -pin<br>Shielded: Yes<br>Cable length: 5,000 mm<br>Sheathing material: PUR |

\* Necessary accessories, please order separately

### Connection technology - Terminating resistors

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

### Connection technology - Connection boxes

| Part no.  | Designation       | Article         | Description   |
|---|-------------------|-----------------|---|
|   | 50116464 * MK 301 | Connection unit | Suitable for: BCL 301i, BPS 301i<br>Interface: MultiNet Plus<br>Number of connections: 4 Piece(s)<br>Connection: Terminal       |
|  | 50116469 * MS 301 | Connection unit | Suitable for: BCL 301i, BPS 301i<br>Interface: MultiNet Plus<br>Number of connections: 5 Piece(s)<br>Connection: Connector, M12 |

\* Necessary accessories, please order separately

## Accessories

### Mounting technology - Mounting brackets

| Part no.  | Designation       | Article         | Description   |
|---|-------------------|-----------------|---|
|  | 50121433 BT 300 W | Mounting device | Design of mounting device: Angle, L-shape<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Adjustable<br>Material: Metal |

### Mounting technology - Rod mounts

| Part no.  | Designation        | Article         | Description   |
|---|--------------------|-----------------|---|
|  | 50121435 BT 56 - 1 | Mounting device | Functions: Static applications<br>Design of mounting device: Mounting system<br>Fastening, at system: For 12 mm rod, For 14 mm rod, For 16 mm rod<br>Mounting bracket, at device: Clampable<br>Material: Metal<br>Tightening torque of the clamping jaws: 8 N·m |

### Mounting technology - Other

| Part no.  | Designation          | Article         | Description   |
|---|----------------------|-----------------|---|
|  | 50124941 BTU 0300M-W | Mounting device | Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Clampable, Groove mounting, Suited for M4 screws<br>Material: Metal<br>Shock absorber: No |

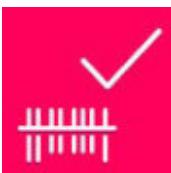
### Reflective tapes for standard applications

| Part no.  | Designation              | Article         | Description   |
|---|--------------------------|-----------------|---|
|  | 50106119 REF 4-A-100x100 | Reflective tape | Design: Rectangular<br>Reflective surface: 100 mm x 100 mm<br>Material: Plastic<br>Chemical designation of the material: PMMA<br>Fastening: Self-adhesive |

## 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.<br>Conditions: Completed questionnaire or project specifications with a description of the application have been provided. |

## Accessories

| Part no.   | Designation | Article    | Description  |
|--|-------------|------------|--|
|  | S981014     | CS30-S-110 | Start-up support<br><br>Details: Performed at location of customer's choosing, duration: max. 10 hours.<br>Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses. |
|  | S981019     | CS30-T-110 | Product training<br><br>Details: Location and content to be agreed upon, duration: max. 10 hours.<br>Conditions: Price not including travel costs and, if applicable, accommodation expenses.  |
|  | S981021     | CS30-V-212 | Hourly rate<br><br>Details: REA evaluation with creation of a test report, evaluation of the code quality.<br>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.