

## Technical data sheet

### Stationary bar code reader

Part no.: 50132828

BCL 604i SF 102 H



Figure can vary

#### Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Diagrams
- Operation and display
- Part number code
- Accessories



## Technical data

### Basic data

|        |          |
|--------|----------|
| Series | BCL 600i |
|--------|----------|

### Functions

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

### Characteristic parameters

|      |            |
|------|------------|
| MTTF | 42.4 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                  | 800 scans/s                 |
| Bar codes per reading gate, max. number | 64 Piece(s)                 |

### Optical data

|                                              |                            |
|----------------------------------------------|----------------------------|
| Reading distance                             | 450 ... 1,450 mm           |
| Light source                                 | Laser, Blue                |
| Laser light wavelength                       | 405 nm                     |
| Laser class                                  | 2, IEC/EN 60825-1:2007     |
| Transmitted-signal shape                     | Continuous                 |
| Usable opening angle (reading field opening) | 60 °                       |
| Bar code contrast (PCS)                      | 60 %                       |
| Modulus size                                 | 0.3 ... 0.5 mm             |
| Reading method                               | Line scanner               |
| 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. | 14 W                         |

### Inputs/outputs selectable

|                                     |                  |
|-------------------------------------|------------------|
| Output current, max.                | 60 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         |
|                       | 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            |
| Connection 3          |                    |
| 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            |

## Technical data

### Connection 4

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

### Mechanical data

|                       |                              |
|-----------------------|------------------------------|
| Design                | Cubic                        |
| Dimension (W x H x L) | 123.5 mm x 63 mm x 104.2 mm  |
| Housing material      | Metal, Diecast aluminum      |
| Lens cover material   | Glass                        |
| Net weight            | 1,400 g                      |
| Housing color         | Red, RAL 3000                |
|                       | 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)                                                               |
|                       | Via service interface                                                   |

### Environmental data

|                                                  |               |
|--------------------------------------------------|---------------|
| Ambient temperature, operation                   | -35 ... 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

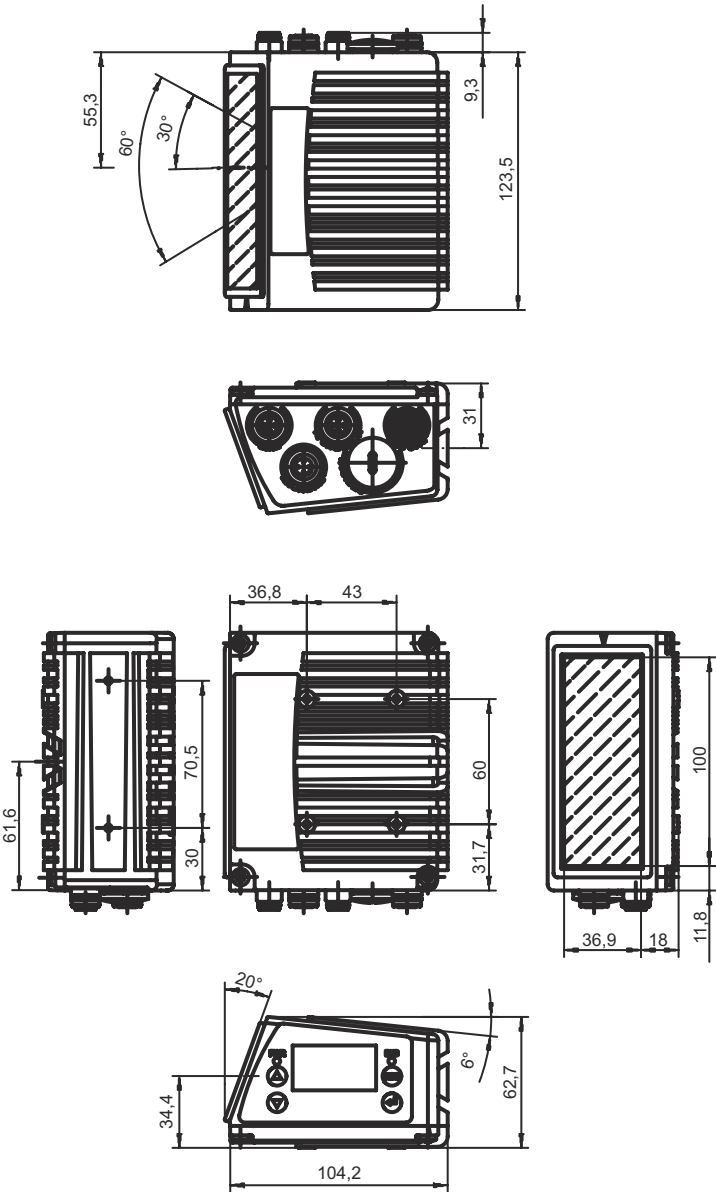
|                                                                 |                          |
|-----------------------------------------------------------------|--------------------------|
| Degree of protection                                            | IP 65                    |
| Protection class                                                | III                      |
| Certifications                                                  | c UL US                  |
| Test procedure for EMC in accordance with standard              | EN 55022                 |
|                                                                 | EN 61000-4-2, -3, -4, -6 |
|                                                                 | EN 61000-6-2             |
| 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   |
| US patents                                                      | US 6,854,649 B           |

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 84719000 |
| eCl@ss 8.0            | 27280102 |
| eCl@ss 9.0            | 27280102 |
| ETIM 5.0              | EC002550 |
| ETIM 6.0              | EC002550 |

Dimensioned drawings

All dimensions in millimeters



Electrical connection

Connection 1

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

SERVICE

Pin Pin assignment

|   |         |
|---|---------|
| 1 | +5 V DC |
| 2 | DATA-   |
| 3 | DATA+   |
| 4 | GND     |

## Electrical connection

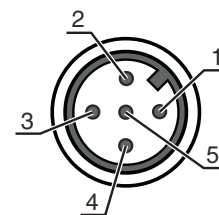
## Connection 2

## 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     |



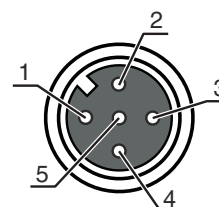
## Connection 3

## 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     |



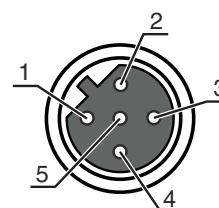
## Connection 4

## HOST / BUS IN

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

## Pin Pin assignment

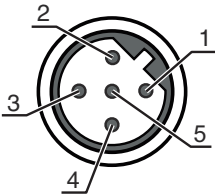
|   |       |
|---|-------|
| 1 | Res.  |
| 2 | A (N) |
| 3 | Res.  |
| 4 | B (P) |
| 5 | FE    |



Electrical connection

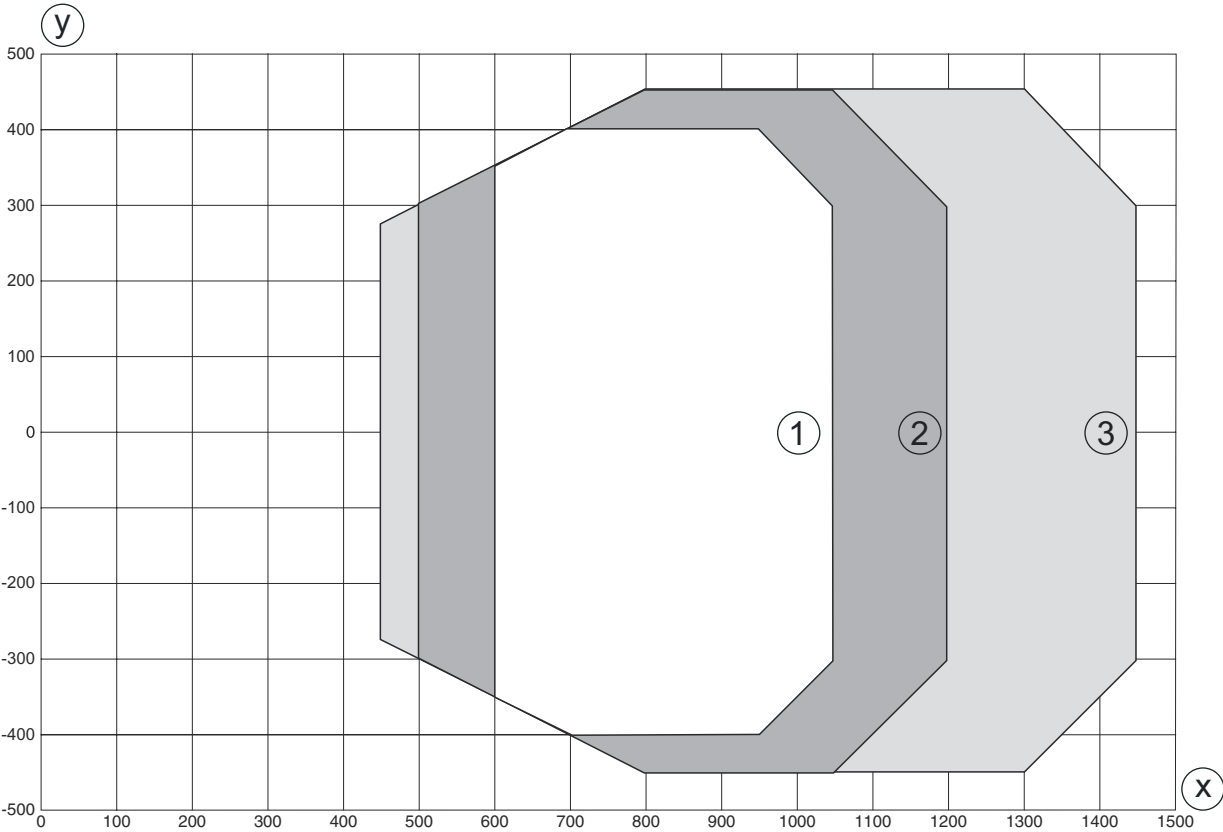
| Connection 5       |  | BUS OUT   |
|--------------------|--|-----------|
| Function           |  | BUS OUT   |
| Type of connection |  | Connector |
| Thread size        |  | M12       |
| Type               |  | Male      |
| Material           |  | Metal     |
| No. of pins        |  | 5 -pin  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

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



Diagrams

Reading field curve - Low Density



y Reading field width [mm]  
x Reading field distance [mm]

- 1 Module = 0.3 mm: 600 mm - 1050 mm (450 mm depth of field)
- 2 Module = 0.35 mm: 500 mm - 1200 mm (700 mm depth of field)
- 3 Module = 0.5 mm: 450 mm - 1450 mm (1000 mm depth of field)

## Operation and display

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

## Part number code

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

|             |                                                                                                                                                                                                     |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BCL</b>  | <b>Operating principle</b><br>BCL: bar code reader                                                                                                                                                  |
| <b>XXXX</b> | <b>Series/interface (integrated fieldbus technology)</b><br>600i: RS 232/RS 422/ RS 485 (multiNet master)<br>601i: RS 485 (multiNet slave)<br>604i: PROFIBUS DP<br>608i: Ethernet<br>648i: PROFINET |
| <b>YY</b>   | <b>Scanning principle</b><br>S: line scanner (single line)<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)                                                  |
| <b>AAA</b>  | <b>Beam exit</b><br>100: lateral<br>102: front                                                                                                                                                      |
| <b>BB</b>   | <b>Special equipment</b><br>H: with heating                                                                                                                                                         |

### Note



A list with all available device types can be found on the Leuze website at [www.leuze.com](http://www.leuze.com).

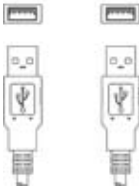
## Accessories

### Connection technology - Connection cables

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

## Accessories

### Connection technology - Interconnection cables

|                                                                                  | Part no. | Designation                 | Article               | Description                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------|----------|-----------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50107726 | KB USB A - USB A            | Interconnection cable | Suitable for interface: USB<br>Connection 1: USB<br>Connection 2: USB<br>Shielded: Yes<br>Cable length: 1,800 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, 2 -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 |

### Connection technology - Terminating resistors

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

### Mounting technology - Other

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

## Services

|                                                                                    | Part no. | Designation | Article                         | Description                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------------|----------|-------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | S981020  | CS30-E-212  | Hourly rate for "Configuration" | 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.<br>Restrictions: Travel and accommodation charged separately and according to expenditure.                                                        |
|  | S981014  | CS30-S-110  | Start-up support                | 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.<br>Restrictions: No mechanical (mounting) and electrical (wiring) work performed, no changes (attachments, wiring, programming) to third-party components in the nearby environment. |

## Accessories

|                                                                                  | Part no. | Designation | Article                                  | Description                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------|----------|-------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | S981019  | CS30-T-110  | Product training                         | Details: Location and content to be agreed upon, duration: max. 10 hours.<br>Conditions: Price not including travel costs and, if applicable, accommodation expenses.<br>Restrictions: Travel costs and accommodation expenses charged separately and according to expenditure. |
|  | S981021  | CS30-V-212  | Hourly rate for "Bar code qualification" | 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.