



**Part no.: 50131498**  
**BCL 648i OF 100 H**  
**Stationary bar code reader**



Figure can vary

## Contents

- Technical data
- Dimensioned drawings
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## Technical data

<b>Basic data</b>	
Series	BCL 600i
<b>Special design</b>	
Special design	Heating
<b>Functions</b>	
Functions	Alignment mode AutoConfig AutoControl AutoReflAct Code fragment technology Heating LED indicator Reference code comparison
<b>Characteristic parameters</b>	
MTTF	42.4 years
<b>Read data</b>	
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)
<b>Optical data</b>	
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
Bar code contrast (PCS)	60 %
Modulus size	0.3 ... 0.5 mm
Reading method	Oscillating-mirror scanner
Beam deflection	Via rotating polygon wheel + stepping motor with mirror
Light beam exit	Zero position at side at angle less than 90°
Oscillating mirror frequency	10 Hz
Max. swivel angle	40 °
<b>Electrical data</b>	
Protective circuit	Short circuit protected
<b>Performance data</b>	
Supply voltage U <sub>B</sub>	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. $U_B / 0\text{ V}$
Voltage type, inputs	DC
Switching voltage, inputs	Typ. $U_B / 0\text{ V}$
Input current, max.	8 mA

**Interface**

Type	PROFINET
<b>Profinet</b>	
Function	Process
Conformance class	B
Protocol	PROFINET RT
Switch functionality	Integrated
Transmission speed	100 Mbit/s

**Service interface**

Type	USB
<b>USB</b>	
Function	Configuration via software Service

**Connection**

Number of connections	5 Piece(s)
<b>Connection 1</b>	
Type of connection	USB
Function	Service interface
Connector type	USB 2.0 Standard-A
<b>Connection 2</b>	
Type of connection	Connector
Function	Signal IN Signal OUT
Thread size	M12
Type	Female
Material	Metal
No. of pins	5 -pin
Encoding	A-coded
<b>Connection 3</b>	
Type of connection	Connector
Function	PWR / SW IN/OUT
Thread size	M12
Type	Male
Material	Metal
No. of pins	5 -pin
Encoding	A-coded

**Connection 4**

Type of connection	Connector
Function	BUS IN
Thread size	M12
Type	Female
Material	Metal
No. of pins	4 -pin
Encoding	D-coded

**Connection 5**

Type of connection	Connector
Function	BUS OUT
Thread size	M12
Type	Female
No. of pins	4 -pin

**Mechanical data**

Design	Cubic
Dimension (W x H x L)	173 mm x 84 mm x 147 mm
Housing material	Metal , Diecast aluminum
Lens cover material	Glass
Net weight	1,500 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

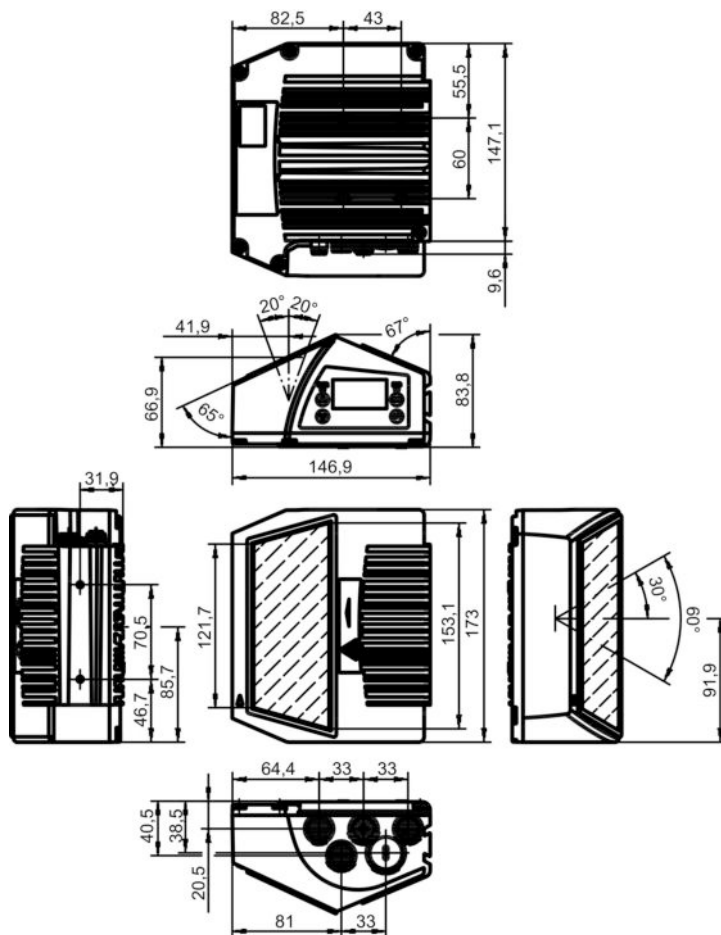
US 6,854,649 B

#### 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



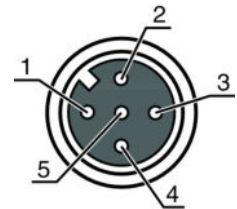
## Electrical connection

<b>Connection 1</b>	
Type of connection	USB
Function	Service interface
Connector type	USB 2.0 Standard-A

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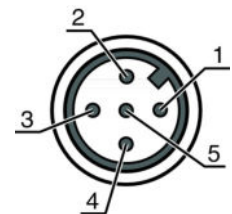
Connection 2	
Type of connection	Connector
Function	Signal IN Signal OUT
Thread size	M12
Type	Female
Material	Metal
No. of pins	5 -pin
Encoding	A-coded

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



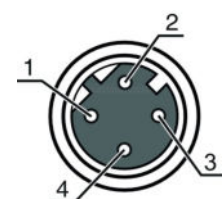
Connection 3	
Type of connection	Connector
Function	PWR / SW IN/OUT
Thread size	M12
Type	Male
Material	Metal
No. of pins	5 -pin
Encoding	A-coded

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



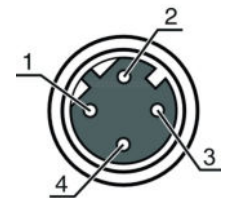
Connection 4	
Type of connection	Connector
Function	BUS IN
Thread size	M12
Type	Female
Material	Metal
No. of pins	4 -pin
Encoding	D-coded

Pin	Pin assignment
1	TD+
2	RD+
3	TD-
4	RD-



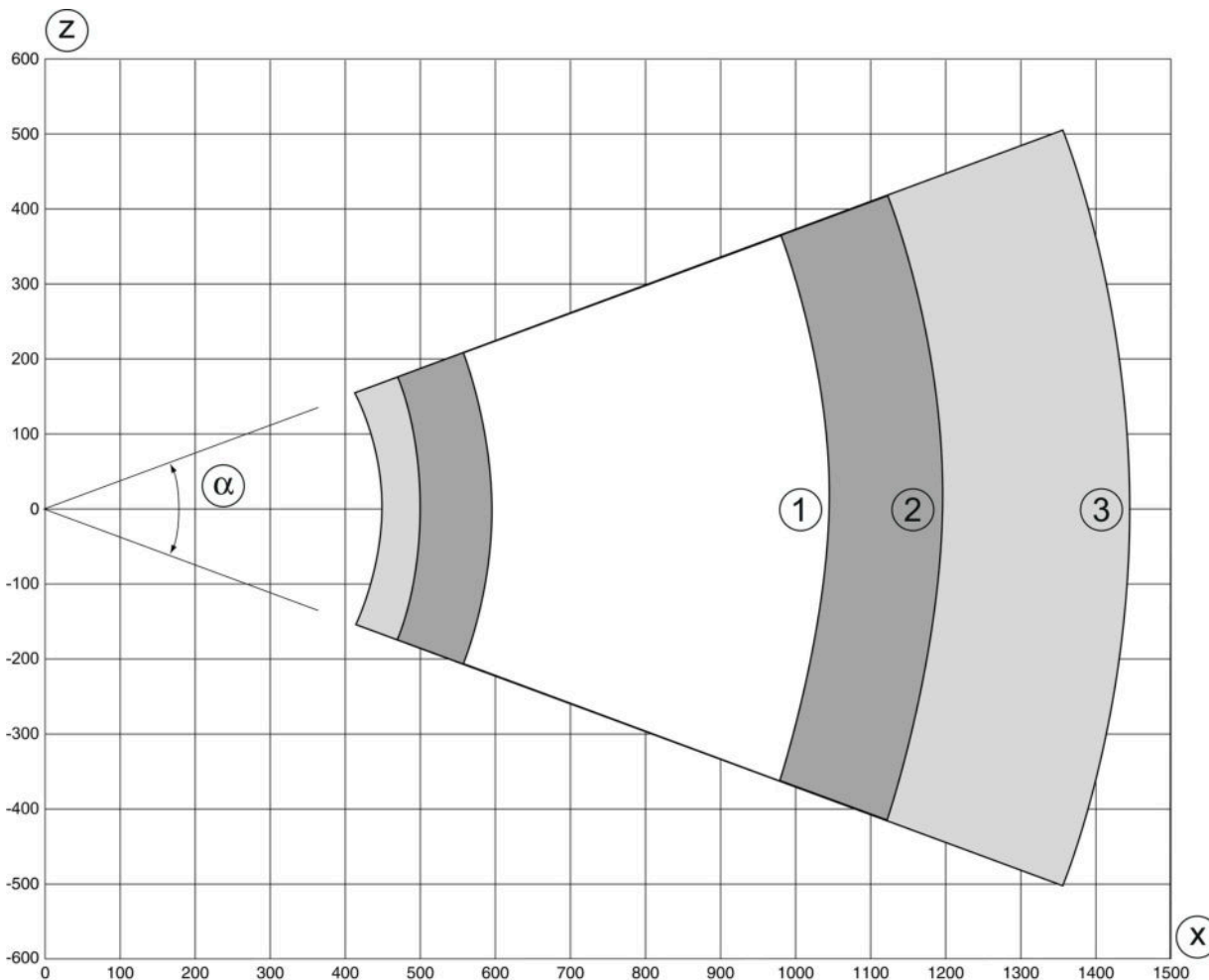
Connection 5	
Type of connection	Connector
Function	BUS OUT
Thread size	M12
Type	Female
Material	Metal
No. of pins	4 -pin
Encoding	D-coded

Pin	Pin assignment
1	TD+
2	RD+
3	TD-
4	RD-



### Diagrams

#### Reading field curve - Low Density



- z Reading field height [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

### LEDs

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**

BCL	<b>Operating principle:</b> BCL: bar code reader
XXXX	<b>Series/interface (integrated fieldbus technology):</b> 600i: RS 232/RS 422/ RS 485 (multiNet master) 601i: RS 485 (multiNet slave) 604i: PROFIBUS DP 608i: Ethernet 648i: PROFINET
YY	<b>Scanning principle:</b> S: line scanner (single line) O: oscillating-mirror scanner (oscillating mirror)
Z	<b>Optics:</b> N: High Density (close) M: Medium Density (medium distance) F: Low Density (remote) L: Long Range (very large distances)
AAA	<b>Beam exit:</b> 100: lateral 102: front
BB	<b>Special equipment:</b> H: with heating


### Note

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

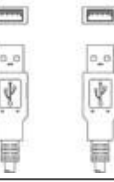
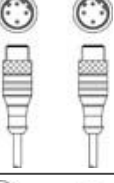
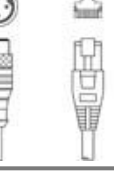


## Accessories


### 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 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
	50137078	KSS ET-M12-4A-M12-4A-P7-050	Interconnection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: Connector, M12, Axial, Male, D-coded, 4 -pin Shielded: Yes Cable length: 1,000 mm Sheathing material: PUR
	50135081	KSS ET-M12-4A-RJ45-A-P7-050	Interconnection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: RJ45 Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR




### 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

## 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. Conditions: Completed questionnaire or project specifications with a description of the application have been provided. Restrictions: Travel and accommodation charged separately and according to expenditure.

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	Part no.	Designation	Article	Description
	S981014	CS30-S-110	Start-up support	<p>Details: Performed at location of customer's choosing, duration: max. 10 hours.</p> <p>Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses.</p> <p>Restrictions: No mechanical (mounting) and electrical (wiring) work performed, no changes (attachments, wiring, programming) to third-party components in the nearby environment.</p>
	S981019	CS30-T-110	Product training	<p>Details: Location and content to be agreed upon, duration: max. 10 hours.</p> <p>Conditions: Price not including travel costs and, if applicable, accommodation expenses.</p> <p>Restrictions: Travel costs and accommodation expenses charged separately and according to expenditure.</p>
	S981021	CS30-V-212	Hourly rate for "Bar code qualification"	<p>Details: REA evaluation with creation of a test report, evaluation of the code quality.</p> <p>Conditions: Original bar codes to be provided by the client.</p>

**Note**

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