4 Specifications

4.1 Technical Data BCL 40 Standard Version

Optical Data	
Light source	Laser diode 650 nm
Scanning rate	BCL with N, M, F optics: 1200 scans/s BCL with L optics: 900 scans/s
Resolution	0.1 mm … 1.2 mm module width
Beam deflection	by means of rotating polygon mirror wheel
Reading distance	0 … 700 mm (depending on type of optics: N, M, F, L), see chapter 4.5.4 "Reading curves BCL 40 standard version"
Reading field opening	70 mm at a distance of approx. 10 mm (see chapter 4.5.4 "Reading curves BCL 40 standard version")
Grid (R1)	8 lines
Grid field	specified is the area from the first to the last laser beam as a function of distance to the scanner 22 mm at 100 mm scanner distance 33 mm at 200 mm scanner distance 45 mm at 300 mm scanner distance 65 mm at 500 mm scanner distance 95 mm at 800 mm scanner distance
Single line (S)	1 line
Optical window	glass with scratch-resistant Indium coating
Laser safety class	2
Code types	2/5 Interleaved; Code 39; Code 128; EAN 8; 13; EAN 128; UPC; Codabar; Add-On for EAN / UPC
Software features	selectable output format, autoConfig, autoControl, reference code comparison, multiple read, real time decoding, adjustment mode, diagnosis, reading gate control, control of switching inputs and switching outputs, etc.
Electrical data	
Interface type	can be switched between RS 232 and RS 485, additional service interface (RS 232) TTY / RS 422 optional with MA 10
Baud rate	110 … 57600 Bd (host interface only)
Data formats	data bits: 7, 8, 9 parity: None, Even, Odd Stop bit: 1, 2
Protocols	with/without frame protocol ACK/NAK, 3964 (R) RK 512, RTS/CTS X ON / X OFF, multiNet plus
Ports	1 switching input
LED green	device ready (Power On)

Switching input	12 … 36 V DC/AC voltage, selectable galvanic isolation or supplied operating voltage, max. insulation voltage: 250 V (with galvanic isolation)
Operating voltage	18 … 36 V
Power consumption	5 VA max.
Mechanical data	
Protection class	IP 65
Weight	approx. 430 g
Dimensions (WxHxD)	120 x 90 x 43 mm
Housing	diecast aluminium
Environmental data	
Ambient temperature (operation/storage)	0 °C … +40 °C / -20 °C … +60 °C
Air humidity	max. 90 % rel. humidity, non-condensing
Vibration	IEC 68.2.6
Shock	IEC 68.2.27
EMC	IEC 801

Table 4.1: General Specifications BCL 40 Standard Version

4.2 Technical Data BCL 40 with Heating

The following table is limited to the data which are different than those specified for the standard model.

Optical Data	
Light source	Laser diode 660 nm
Resolution	0.25 mm … 1.0 mm module width
Reading distance	0 … 630 mm (depending on type of optics: M, F, L) see chapter 4.5.5 "Reading curves BCL 40 with heating"
Reading field opening	Depending on the distance, the reading curve is typically approx. 20 … 70 mm narrower see chapter 4.5.5 "Reading curves BCL 40 with heating"
Electrical data	
Operating voltage	24 V DC ± 2 V
Power consumption	10 W max.
Mechanical data	
Weight	approx. 500 g
Dimensions (WxHxD)	120 x 90 x 52 mm
Environmental data	
Ambient temperature (operation/storage)	-40 °C … +30 °C/-20 °C … +60 °C

Table 4.2: General Specifications BCL 40 with Heater

4.4 Dimensioned drawings

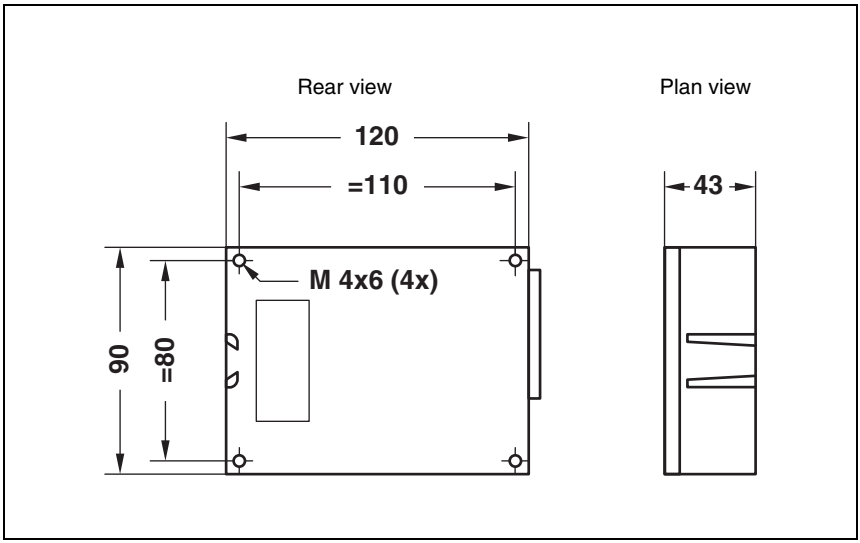


Figure 4.1: Dimensioned drawing BCL 40

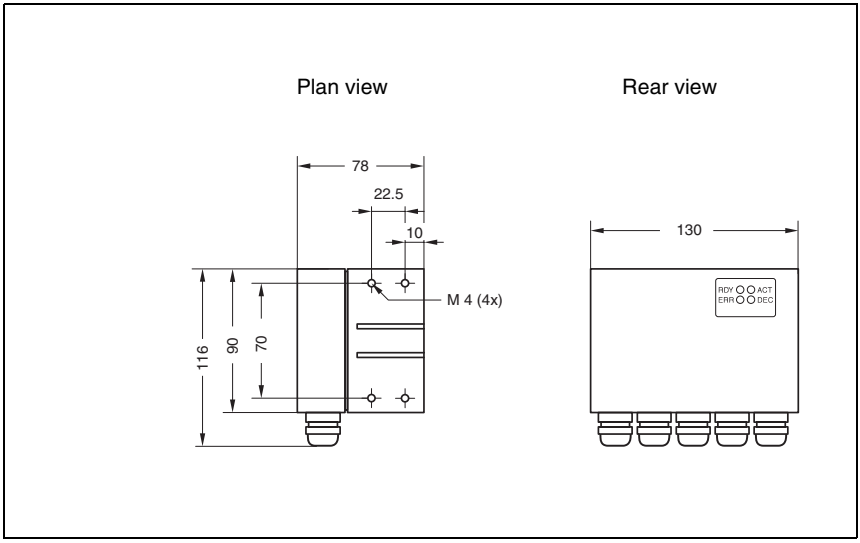


Figure 4.2: Dimensioned drawing MA 10

4.5.1 Type overview

Model	Range (mm)	Module/ resolution (mm)	Scanning rate (scan/s)	Scanner type (Sweep principle)	Part No.
BCL 40 R1 N 100	20 …80	0.1 … 0.5	1200	Raster	500 29678
BCL 40 S N 100				Single line	500 29679
BCL 40 R1 M 100	0 … 250	0.2 … 1.0	1200	Raster	500 26111
BCL 40 S M 100				Single line	500 28920
BCL 40 R1 F 100	50 …500	0.3 … 1.0	1200	Raster	500 28168
BCL 40 S F 100				Single line	500 28921
BCL 40 R1 L 100	250 … 700	0.5 … 1.2	900	Raster	500 28427
BCL 40 S L 100				Single line	500 28922

Table 4.4: Type overview

4.5.2 Sweep principle

Raster (R1)

8 parallel lines scan the label.

Areas of use:

- when the bar code is printed in the conveying direction ("picket fence arrangement")
- when reading through plastic sheeting or from reflecting surfaces
- when reading stationary objects

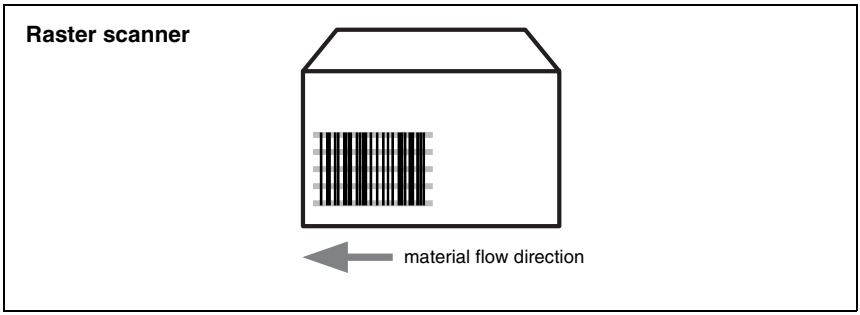


Figure 4.4: Sweep principle of the raster scanner

Notice!

The scanning rate is distributed over 8 lines per scan, i.e. the scanning rate per raster line is 1/8 the total scanning rate.

Single line (S)

1 line scans the label.

Areas of use:

- when the bar code is printed in the conveying direction ("ladder arrangement")
- with bar codes having very short bar lengths

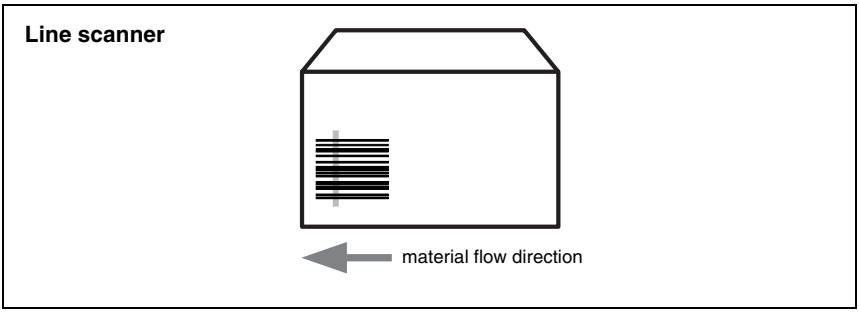


Figure 4.5: Sweep principle for the line scanner

4.5.3 Optics variants

The BCL 40 is available with four different types of optics (N, M, F, L) that differ in range and resolution (see chapter 4.5.1 "Type overview").

Optic N:

Zero to very short scanning ranges for very small modules.

Optic M:

Zero to short scanning ranges for small to middle-sized modules.

Optic F:

Zero to short scanning ranges for small to middle-sized modules.

Optic L:

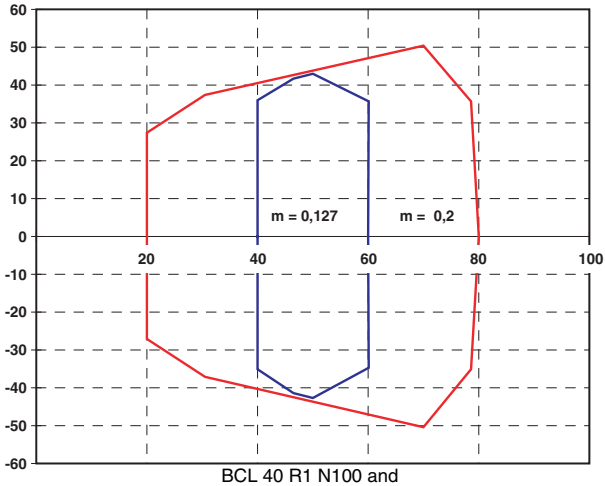
Middle to large scanning ranges with middle to large sized modules.

The following graphic displays the scanning curves of the various BCL models.

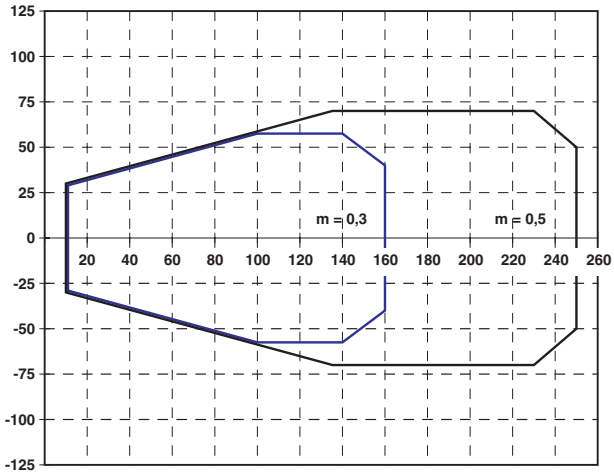
Notice!

Please note that the actual scanning curves can vary due to factors such as label material, print quality, reading angle, print contrast, etc.

4.5.4 Reading curves BCL 40 standard version



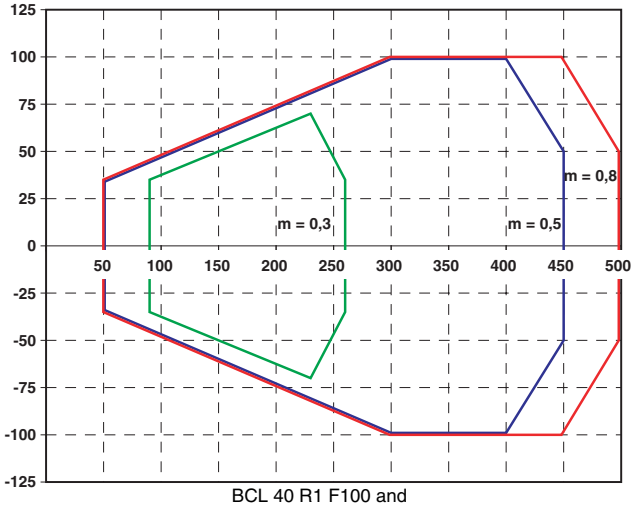
BCL 40 R1 N100 and
BCL 40 S N100



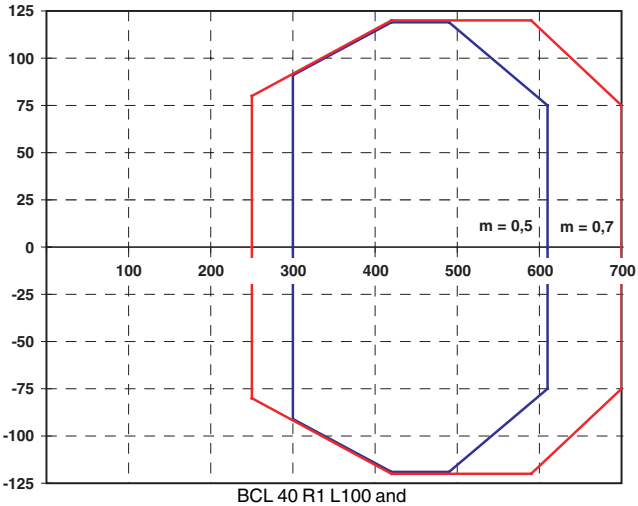
BCL 40 R1 M100 and
BCL 40 S M100

Notice:
All data in 'mm',
m = module width

Figure 4.6: Reading curves BCL 40 standard version, optic variants N and M



BCL 40 R1 F100 and
BCL 40 S F100

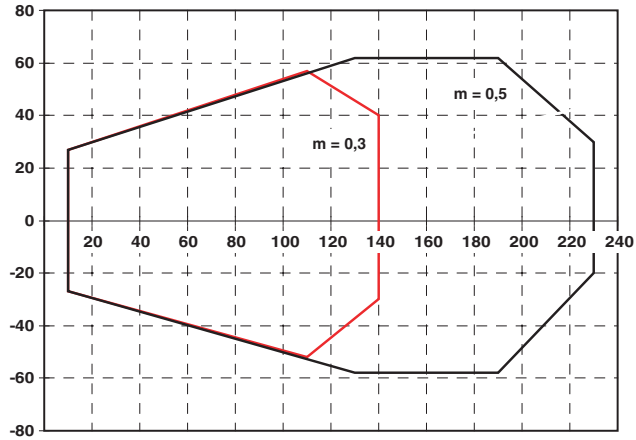


BCL 40 R1 L100 and
BCL 40 S L100

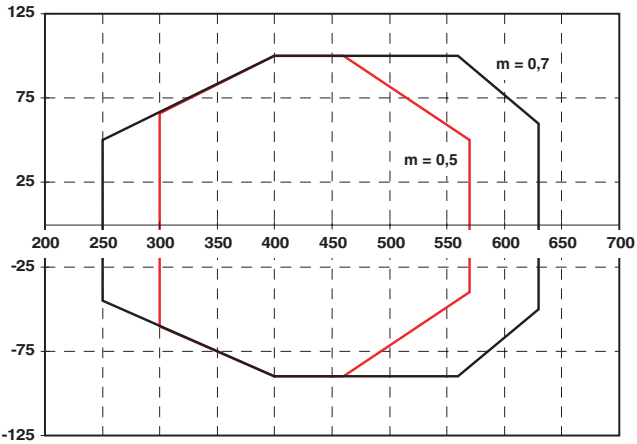
Notice:
All data in 'mm',
m = module width

Figure 4.7: Reading curves BCL 40 standard version, optic variants F and L

4.5.5 Reading curves BCL 40 with heating



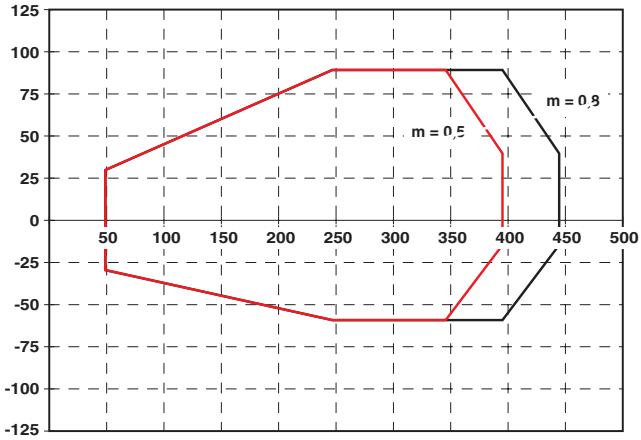
BCL 40 R1 M100 H and
BCL 40 S M100 H



BCL 40 R1 L100 H and
BCL 40 S L100 H

Notice:
All data in 'mm',
m = module width

Figure 4.8: Reading curves BCL 40 with heating, optic variants M and L



BCL 40 R1 F100 H and
BCL 40 S F100 H

Notice:
All data in 'mm',
m = module width

Figure 4.9: Reading curves BCL 40 with heating, optic variant F

5 Accessories / Order Designation

5.1 Accessories

Notice!

Products from Leuze electronic GmbH & Co. can be ordered from any of the sales and service offices listed on the back page of this operating manual.

5.1.1 Bar code reader BCL 40

Symbol	Order No.	Short Description
BCL 40 R1 N 100	500 29678	Raster scanner with N optics
BCL 40 S N 100	500 29679	Line scanner with N optics
BCL 40 R1 M 100	500 26111	Raster scanner with M optics
BCL 40 S M 100	500 28920	Line scanner with M optics
BCL 40 R1 F 100	500 28168	Raster scanner with F optics
BCL 40 S F 100	500 28921	Line scanner with F optics
BCL 40 R1 L 100	500 28427	Raster scanner with L optics
BCL 40 S L 100	500 28922	Line scanner with L optics

Table 5.1: Accessories/Order Designation BCL 40

5.1.2 Connector and interface unit MA 10

Symbol	Order No.	Short Description
MA 10 100	500 26110	standard model, multiNet Slave with host interface RS 485
MA 10 110	500 26109	standard, with host interface RS 232
MA 10 120	500 27186	standard, active and passive operation with host interface TTY
MA 10 130	500 27187	standard, with host interface RS 422

Table 5.2: Accessories/Order Designation MA 10

Notice!

All MA 10 units are supplied with an additional RS 232 service interface (9 pin Sub D).

5.1.3 Mounting accessories

A wide range of mounting accessories are available for mounting the BCL 40 and MA 10.

Mounting device BT 56

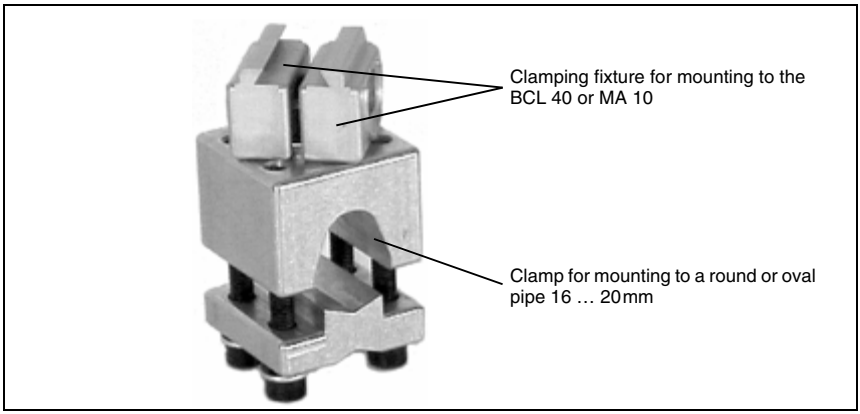


Figure 5.1: Mounting device BT 56

Mounting device BT 57

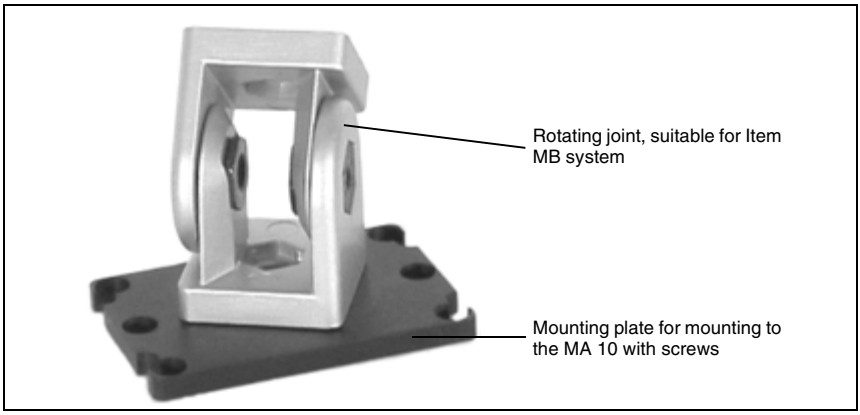


Figure 5.2: Mounting device BT 57

Symbol	Order No.	Short Description
BT 56	500 27375	Mounting kit with dovetail for mounting on round rods ∅ 16 … 20mm
BT 57	500 27167	Mounting kit suitable for ITEM MB system

5.1.4 Cable accessories

KB 040 xxxx
15-conductor connection cable BCL 40 / MA 10, Sub D plug and socket
xxxx = length in mm

Figure 5.3: Connection cable between the BCL 40 and MA 10

KB 040-xxxx-B
15-conductor connection cable, Sub D socket with open strand ends for connecting in switching cabinets or terminal boxes
xxxx = Length in mm

Figure 5.4: Connection cable between BCL 40 "stand alone"

Symbol	Order No.	Short Description
KB 040-3000	500 26658	5-conductor connection cable BCL 40 / MA 10, Sub D plug and socket, length: 3m
KB 040-6000	500 29381	as above, length: 6m
KB 040-10000	500 29382	as above, length: 10m
KB 040-3000-B	500 29316	15-conductor connection cable BCL 40 "stand alone", open strand ends, Sub D socket, length: 3m
KB 040-6000-B	500 29317	as above, length: 6m
KB 040-10000-B	500 29318	as above, length: 10m

Notice

The requirements for protection class IP 65 are fulfilled with this cable type only!

5.1.5 Software

The "BCL Configuration Tool" software included in the delivery contents is a convenient tool which can be used to simplify operation and parameterisation.