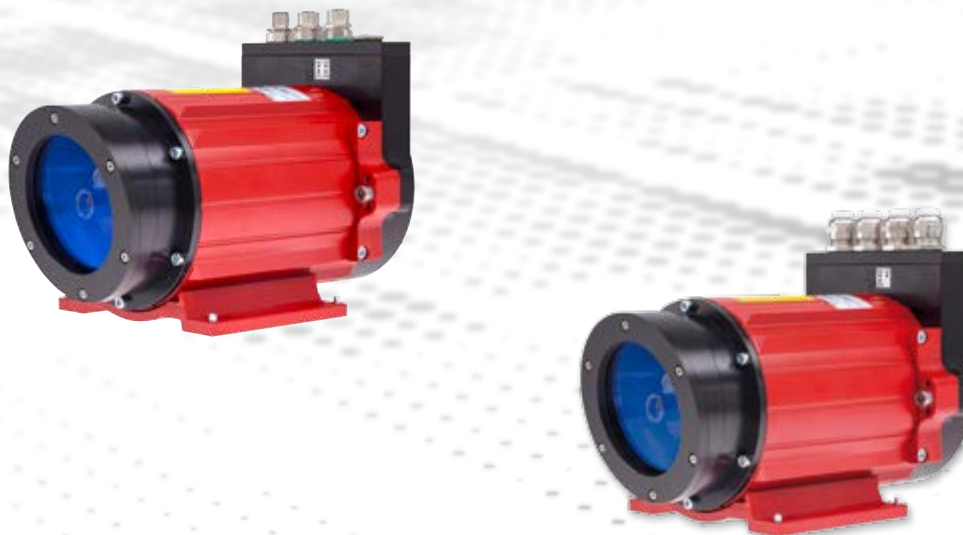


Laser distance measurement



Laser Distance Measuring Systems



Measurement over long distances without contact and fast enough for closed-loop control

Laser distance measuring systems from TR-Electronic are powerful optical sensors, which enable measurement of long distances without contact. The measuring system comprises a laser light source, light collector, electronic evaluation and data interface.

Our laser distance measuring systems enable absolute and wear-free measurement of long distances up to 240 m, which can then be output via SSI, field bus interface or industrial ethernet. Our barcode positioning systems even enable an absolute measuring distance of 10,000 meters. In addition: Using our in-house laser reference measuring

section we can compare our laser measuring systems of up to 240 m with a reference system and also linearize them accordingly. We can thus achieve an absolute repeatability of ± 1 mm at speeds which are commonplace in high-rack warehouses.



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BE90	18

Laser Distance Measuring Systems – LE200

























Measurement over long distances without contact and fast enough for closed-loop control

Particularly in the area of modern warehouse setups, such as shelf-stacking devices, transfer belts and crane systems, a powerful, decentralized measuring and control system for simple project processing and quick configuration makes all the difference. Movements up to 240 m are recorded with the LE-200 laser distance measuring device. The visible red light laser facilitates setup and adjustment of the measuring system. A continuous light beam is used during operation. With just 1 millisecond of measuring cycle time, the LE-200 can be directly used for position control.

- _ Robust design
- _ Records linear movement patterns
- _ Contact-free and wear-free distance measurement
- _ Distances up to 125 m, 170 m, 195 m, 240 m
- _ Flexible programming
- _ Option with Integrated heating
- _ Option with high-temperature Laser diode for 70°C ambient temperature
- _ Option with external cooling for 100°C ambient temperature
- _ Customized adaptations upon request

Position detection up to 240 m

Product	LE200	LE200 – long range
		
Supply voltage	18 ... 27 VDC	18 ... 27 VDC
_ Integrated heating	24 ... 30 VDC	24 ... 30 VDC
Current consumption, no load	< 350 mA	< 350 mA
_ Integrated heating	< 2,5 A	< 2,5 A
Measuring range	0,2 – 125 m	0,2 – 170 m, 195 m, 240 m
Linearity deviation (12 m, standard)	±3 mm	±3 mm
Reproducibility	±2 mm	±2 mm
Light source	Laser diode, red light	Laser diode, red light
Wave length λ	670 nm	670 nm
Radiant power	$P_{max} < 1 \text{ mW}$	$P_{max} < 1 \text{ mW}$
Laser protection class	2	2
Measurand output/refresh rate	1.000 values / s	1.000 values / s
Integration time	1 ms	1 ms
Working temperature	0 ... +50 °C	0 ... +50 °C
Working temperature (+ heating)	-30 ... +50 °C	-30 ... +50 °C
Storage temperature	-20 ... +75 °C (dry)	-20 ... +75 °C (dry)
Protection class	IP65	IP65
Vibration	<50m/s ² , sine 50 ... 2,000 Hz	<50m/s ² , sine 50 ... 2,000 Hz
Shock	<300m/s ² , half sine 11 ms Hz	<300m/s ² , half sine 11 ms Hz
Interface (others on request)	        	        
Weblink	www.tr-electronic.com/s/S007232	www.tr-electronic.com/s/S007232
QR-Code		

Can't find the right variant? Please contact us (info@tr-electronic.de)

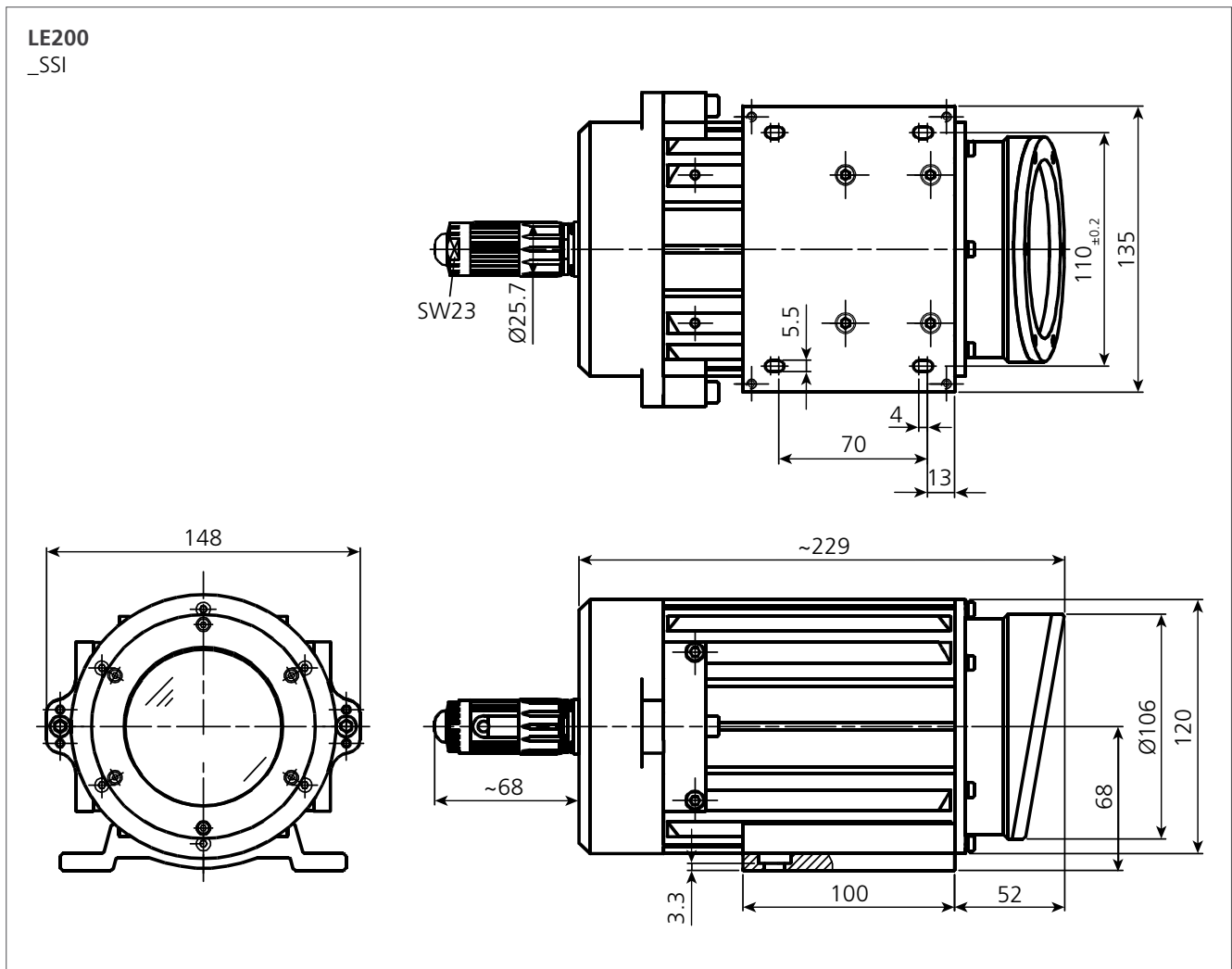
Suggested Products

Ordering code	Range	Delivery
LE200 SSI		
2200-00002	125 m	with reflector 200 × 200 mm
2200-01002	170 m	with reflector panel 554 × 480 mm
2200-02002	195 m	with reflector panel 554 × 480 mm
LE200 PROFIBUS+SSI		
2200-04102	50 m	with reflector 200 × 200 mm
2200-00102	125 m	with reflector 200 × 200 mm
2200-01102	170 m	with reflector panel 554 × 480 mm
2200-02102	195 m	with reflector panel 554 × 480 mm
LE200 CANopen		
2200-04302	50 m	with reflector 200 × 200 mm
2200-00302	125 m	with reflector 200 × 200 mm
2200-01302	170 m	with reflector panel 554 × 480 mm
2200-02302	195 m	with reflector panel 554 × 480 mm
LE200 DeviceNET		
2200-04402	50 m	with reflector 200 × 200 mm
2200-00402	125 m	with reflector 200 × 200 mm
2200-02402	195 m	with reflector panel 554 × 480 mm
LE200 Interbus S		
2200-00202	125 m	with reflector 200 × 200 mm
LE200 PROFINET		
2200-08002	50 m	with reflector 200 × 200 mm
2200-00802	125 m	with reflector 200 × 200 mm
2200-01802	170 m	with reflector panel 554 × 480 mm
2200-02802	195 m	with reflector panel 554 × 480 mm
LE200 Ethernet/IP		
2200-04702	50 m	with reflector 200 × 200 mm
2200-00702	125 m	with reflector 200 × 200 mm
2200-01702	170 m	with reflector panel 554 × 480 mm
2200-02752	195 m	with reflector panel 554 × 480 mm
LE200 EtherCAT		
2200-00902	125 m	with reflector 200 × 200 mm

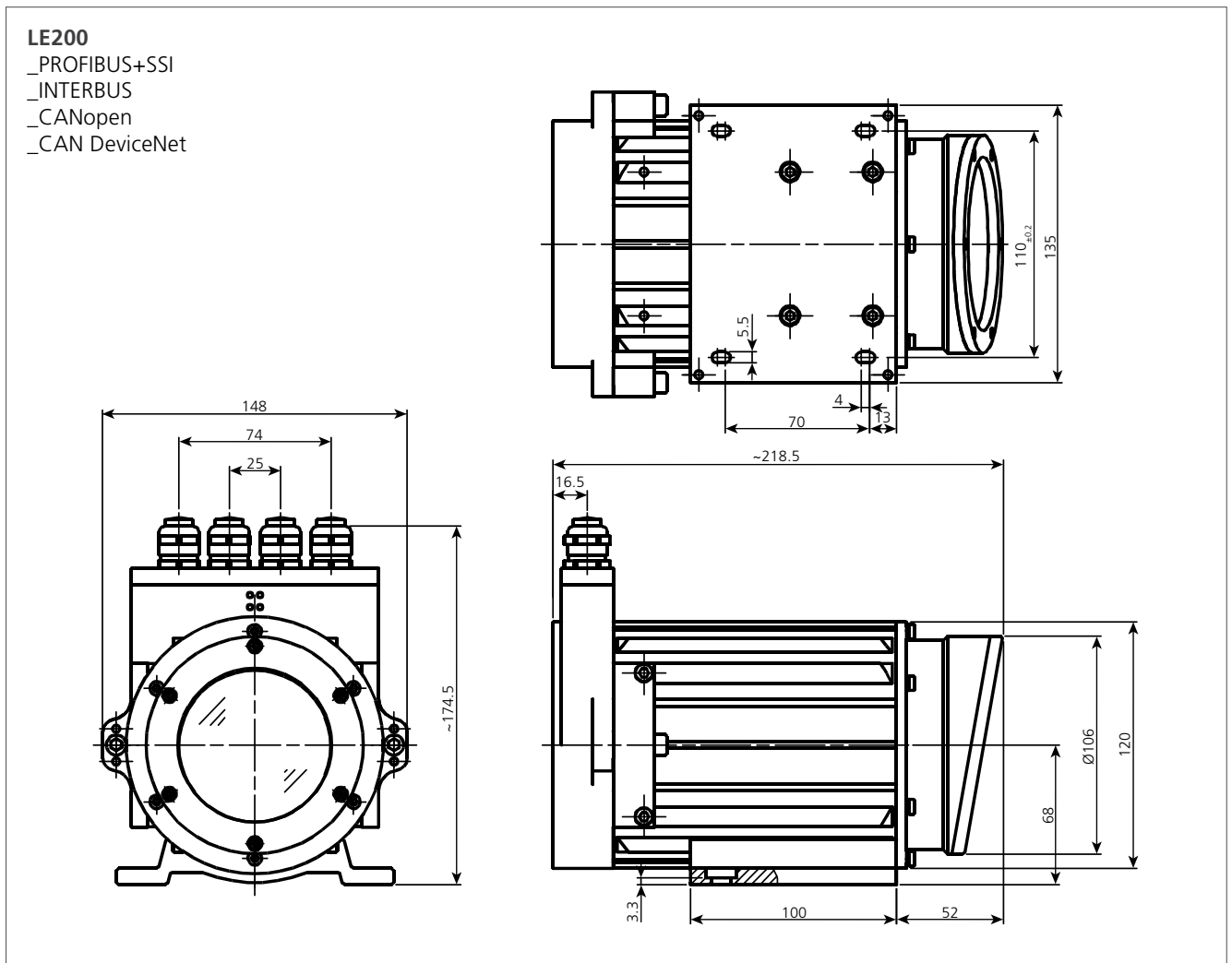
For further product information simply enter the order number in the search field at www.tr-electronic.de.

We will help you to select the most suitable products from the complete TR range. Please contact us (info@tr-electronic.de).

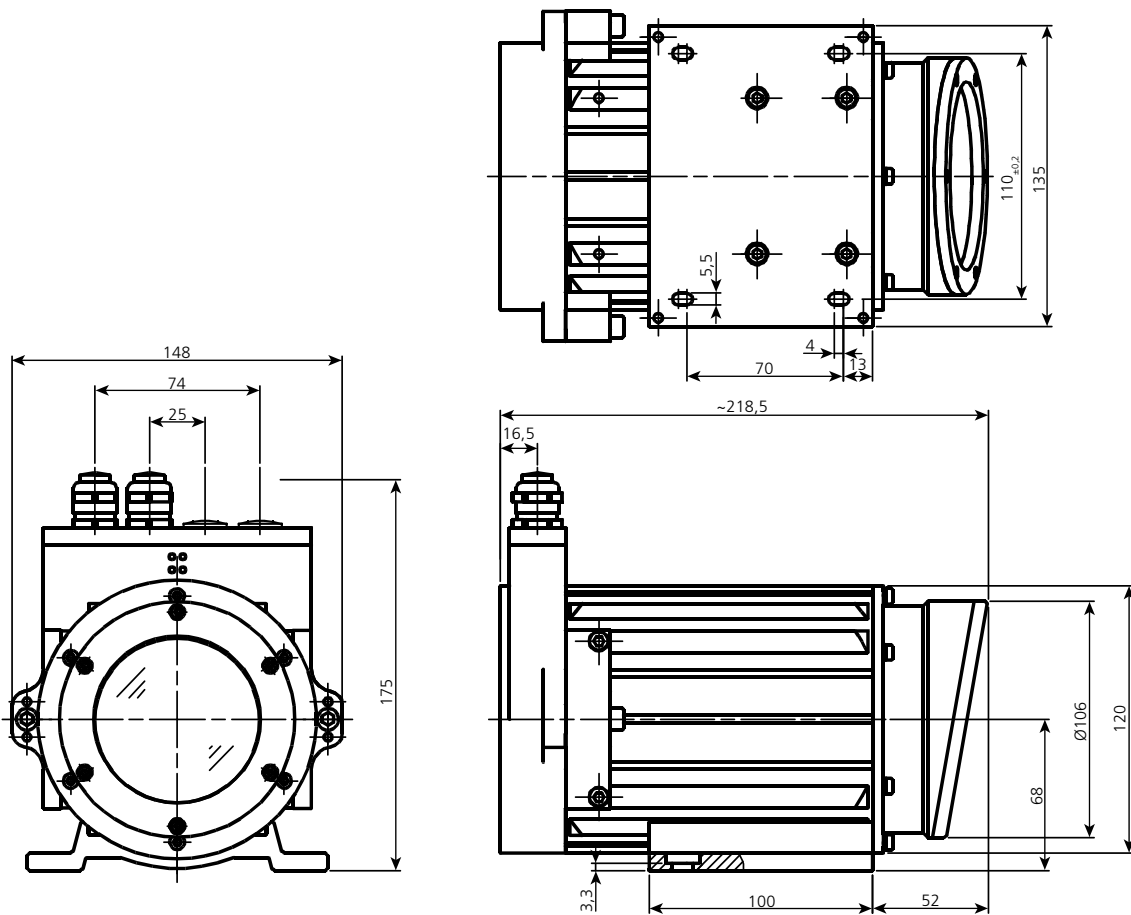
Dimensional Drawings



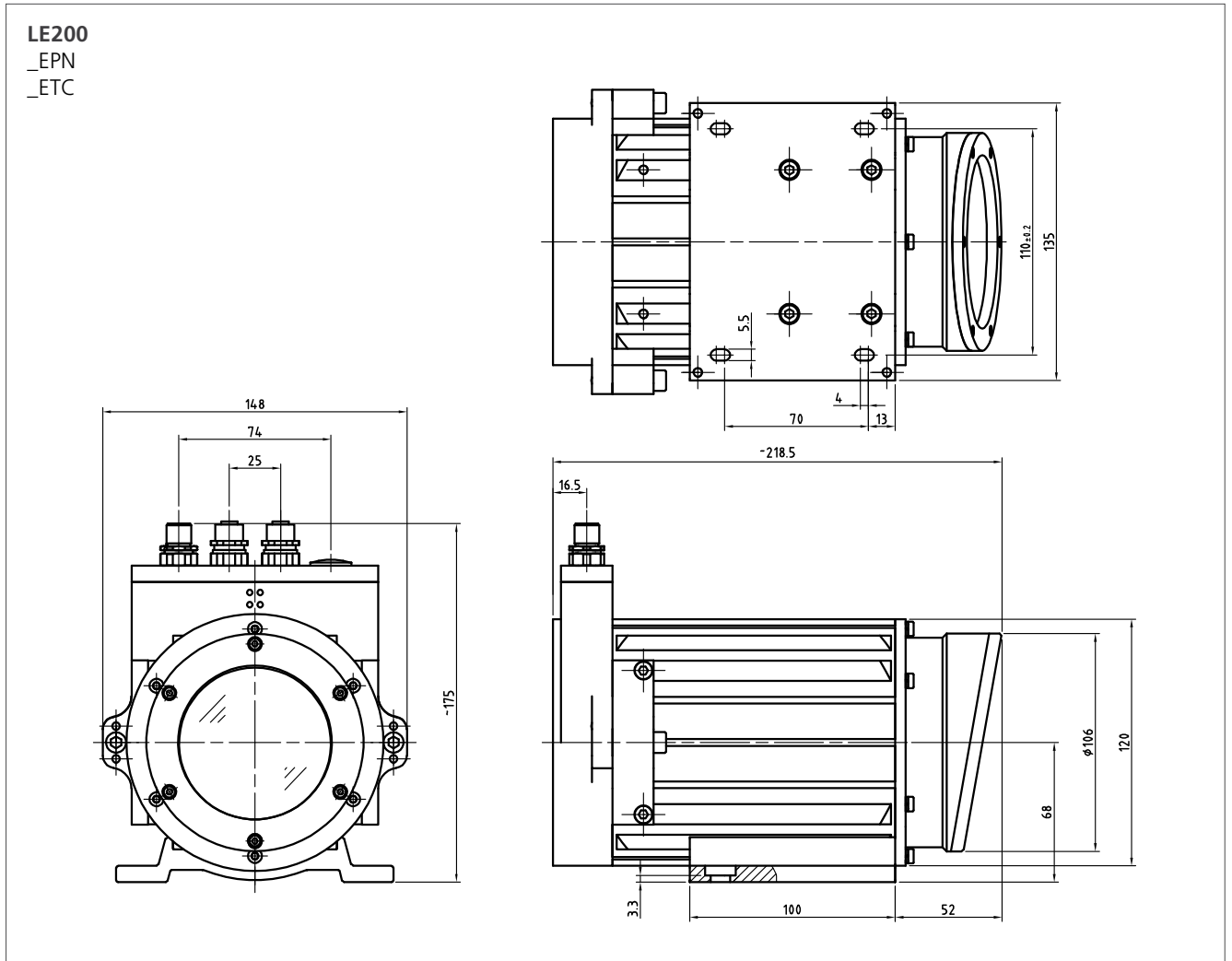
Dimensional Drawings



LE200
_EIP



Dimensional Drawings





Laser Distance Measuring Systems – LLB65 / LLB500










Non-contact measurement on natural surfaces

Laser distance measuring systems LLB65 and LLB500 can measure up to 65 m on natural surfaces without a special target plate. The measuring time and the maximum speed of the target depend on the surface. LLB500 can measure up to 500 m with a target plate. _ Analog, SSI and PROFIBUS-DP interface






- _ RS232-, RS422-interface
- _ Detection of positions
- _ Non-contact distance measurement

- _ Distance measurements on natural surfaces:
 - _ 0,05 m up to approx. 65 m
 - _ LLB500 with reflector panel up to 500 m
- _ Programmable
- _ Option with integrated heating

Position detection up to 65 m

Product	LLB65 (H) - A	LLB65 - PB	LLB500 (H)-A
			
Supply voltage	9 ... 30 VDC	13 ... 30 VDC	9 ... 30 VDC
_ Integrated heating	24 ... 30 VDC	–	24 ... 30 VDC
Current consumption, no load	< 0,6 A	< 0,6 A	< 0,6 A
_ Integrated heating	< 2,5 A	–	< 2,5 A
Measuring range	typically 0,05 m ... 65 m	typically 0,05 m ... 65 m	typically 0,05 m ... 500 m
Linearity deviation (12 m, standard)	0,1 mm	0,1 mm	0,1 mm
Reproducibility	±1,5 mm ... ±3 mm at 2 σ	±1,5 mm ... ±3 mm at 2 σ	±1,0 mm ... ±3 mm at 2 σ
Time for a measurement	typically 0,3 ... 4 s	typically 0,3 ... 4 s	typically 0,15 ... 4 s
Light source	Laser diode, red light	Laser diode, red light	Laser diode, red light
Wave length λ	620 ... 690 nm	620 ... 690 nm	620 ... 690 nm
Laser protection class	2	2	2
Mass	690 g, 720 g (with heating)	950 g	690 g, 720 g (with heating)
Working temperature	-10 ... +50 °C	-10 ... +50 °C	-10 ... +50 °C
Working temperature (+ heating)	-40 ... +50 °C	–	-40 ... +50 °C
Storage temperature	-40 ... +70 °C (dry)	-40 ... +70 °C (dry)	-40 ... +70 °C (dry)
Protection class	IP65	IP65	IP65
Vibration	<50m/s ² , sine 50 ... 2,000 Hz	<50m/s ² , sine 50 ... 2,000 Hz	<50m/s ² , sine 50 ... 2,000 Hz
Shock	<300m/s ² , half sine 11 ms Hz	<300m/s ² , half sine 11 ms Hz	<300m/s ² , half sine 11 ms Hz
Interface (others on request)	Analog		SSI Analog
Weblink	www.tr-electronic.com/f/LLB65-A-1-GB-1	www.tr-electronic.com/f/LLB65-PB-1-GB-1	www.tr-electronic.com/f/LLB500-A-1-GB-1
QR-Code			

Position detection up to 500 m

Product	LLB500-PB	LLB500F (H)-A
		
Supply voltage	13 ... 30 VDC	9 ... 30 VDC
_ Integrated heating	–	24 ... 30 VDC
Current consumption, no load	< 0,6 A	< 0,6 A
_ Integrated heating	–	< 2,5 A
Measuring range	typically 0,05 m ... 500 m	typically 0,05 m ... 500 m
Linearity deviation (12 m, standard)	0,1 mm	0,1 mm
Reproducibility	±1,5 mm ... ±3 mm at 2 σ	±1,0 mm ... ±3 mm at 2 σ
Time for a measurement	typically 0,3 ... 4 s	typically 0,004 ... 4 s
Light source	Laser diode, red light	Laser diode, red light
Wave length λ	620 ... 690 nm	620 ... 690 nm
Laser protection class	2	2
Mass	950 g	690 g, 720 g (with heating)
Working temperature	-10 ... +50 °C	-10 ... +50 °C
Working temperature (+ heating)	–	-40 ... +50 °C
Storage temperature	-40 ... +70 °C (dry)	-40 ... +70 °C (dry)
Protection class	IP65	IP65
Vibration	<50m/s ² , sine 50 ... 2,000 Hz	<50m/s ² , sine 50 ... 2,000 Hz
Shock	<300m/s ² , half sine 11 ms Hz	<300m/s ² , half sine 11 ms Hz
Interface (others on request)		SSI Analog
Weblink	www.tr-electronic.com/f/LLB500-PB-1-GB-1	www.tr-electronic.com/f/LLB500-A-1-GB-1
QR-Code		

Suggested Products

Ordering code	Interface
LLB65 - 65 m without target panel (Option up to 80m)	
LLB65-00100	PROFIBUS ($\pm 1,5$ mm)
LLB65-00101	PROFIBUS (± 3 mm)
LLB65-00600	Analog ($\pm 1,5$ mm)
LLB65-00601	Analog (± 3 mm)
LLB65-00610	Analog ($\pm 1,5$ mm) with heating
LLB65-00611	Analog (± 3 mm) with heating
LLB500 - 65 m without target panel (Option up to 80m), 500 m with target panel. Target panel not included	
LLB500-00100	PROFIBUS ($\pm 1,5$ mm)
LLB500-00101	PROFIBUS (± 3 mm)
LLB500-00600	SSI + Analog ($\pm 1,0$ mm)
LLB500-00601	SSI + Analog (± 3 mm)
Target panel for LLB 500	
49500040	210 x 297mm, aluminium, red

Further product information

1. Enter order code into ...



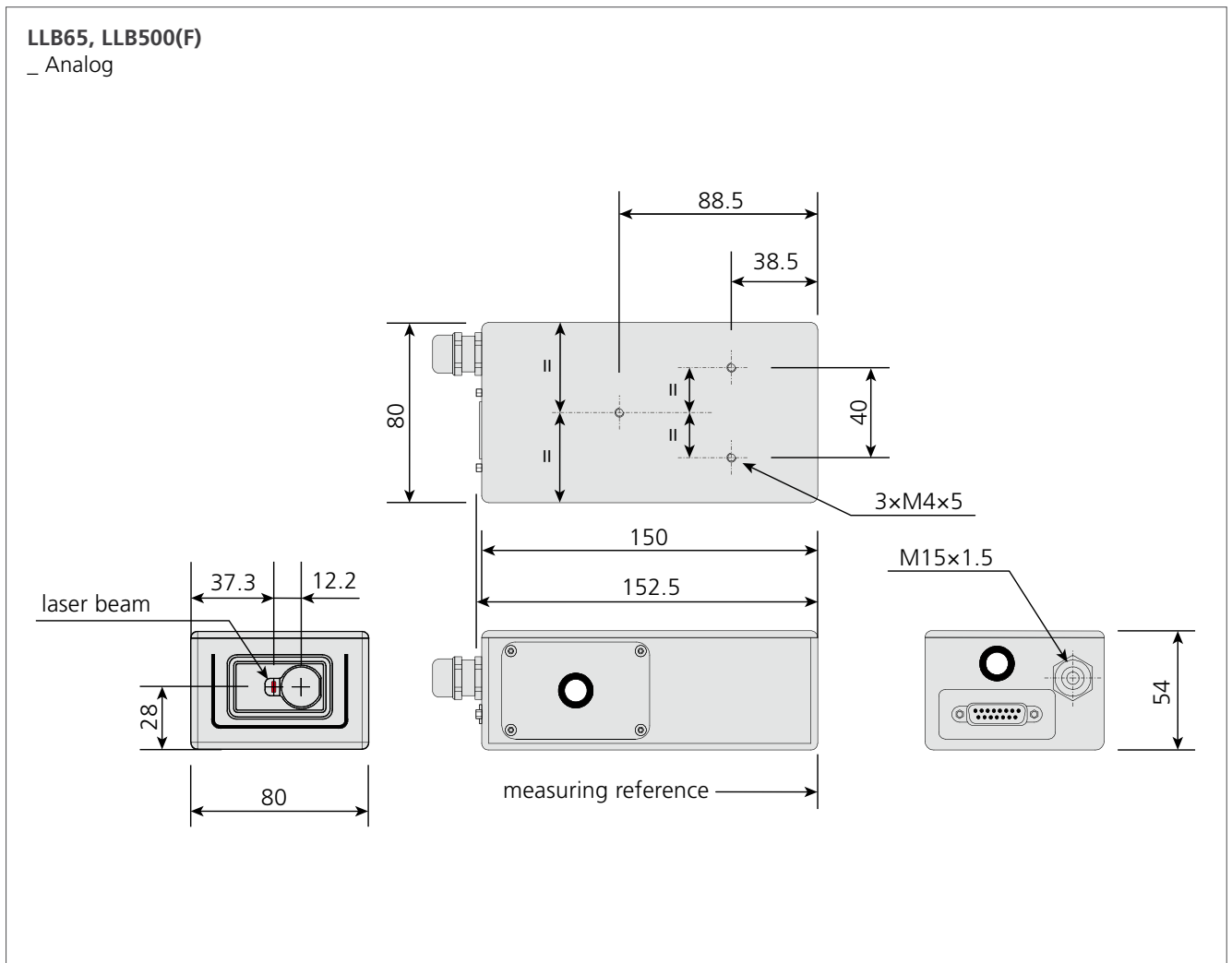
2. Searchfield (top right) on www.tr-electronic.com



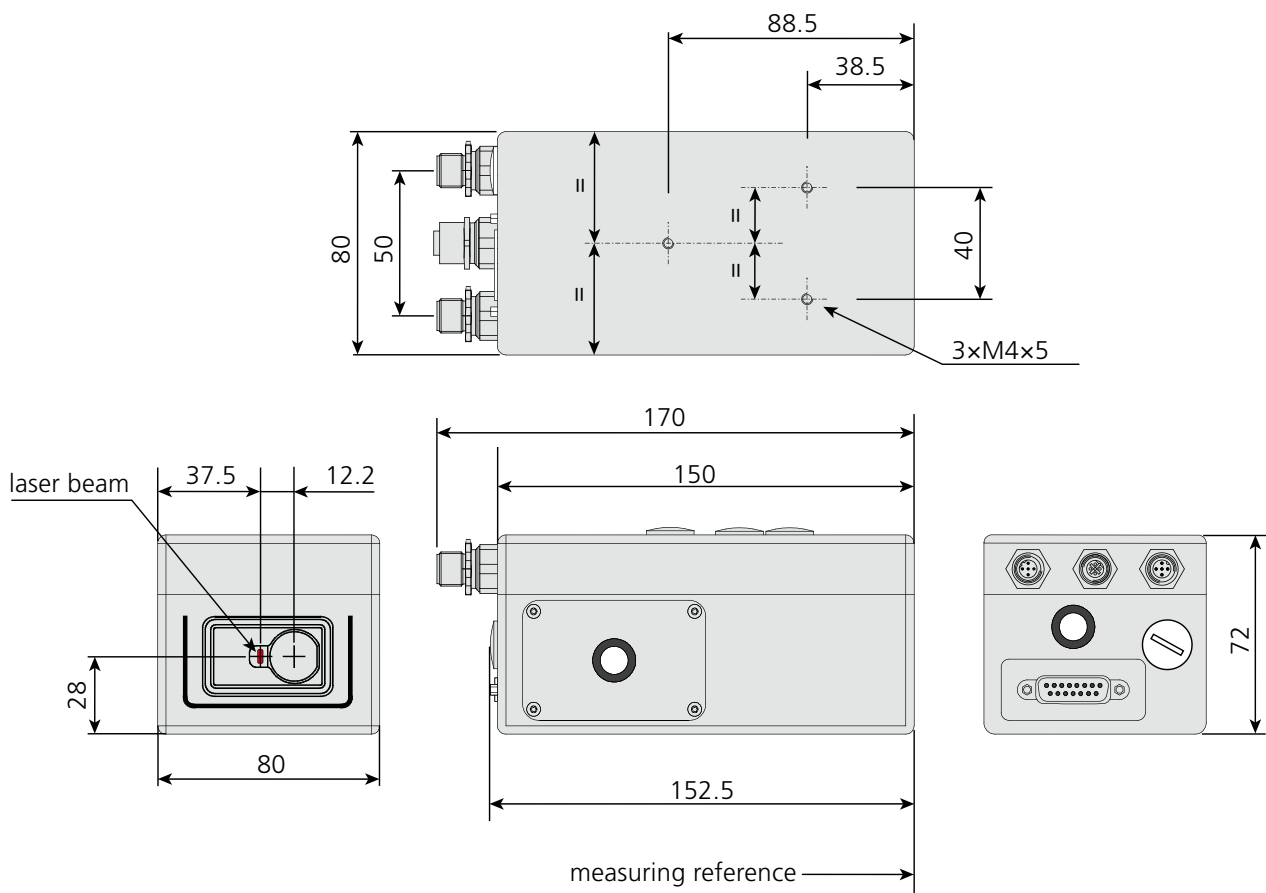
3. Choose desired information



Dimensional Drawings



LLB65, LLB500
_PROFIBUS



Barcode Positioning System – BE90








Non-contact measurement up to 10 km

Barcode positioning systems of type BE-90 are optical measuring systems which use visible red laser light to determine the position of the BE-90 relative to a permanently mounted barcode tape. Typically the BE-90 is mounted on a (rail-) guided vehicle, whose position is to be determined. The position information is determined to within a millimeter using the information of the fixed barcode tape and made available to the primary system.

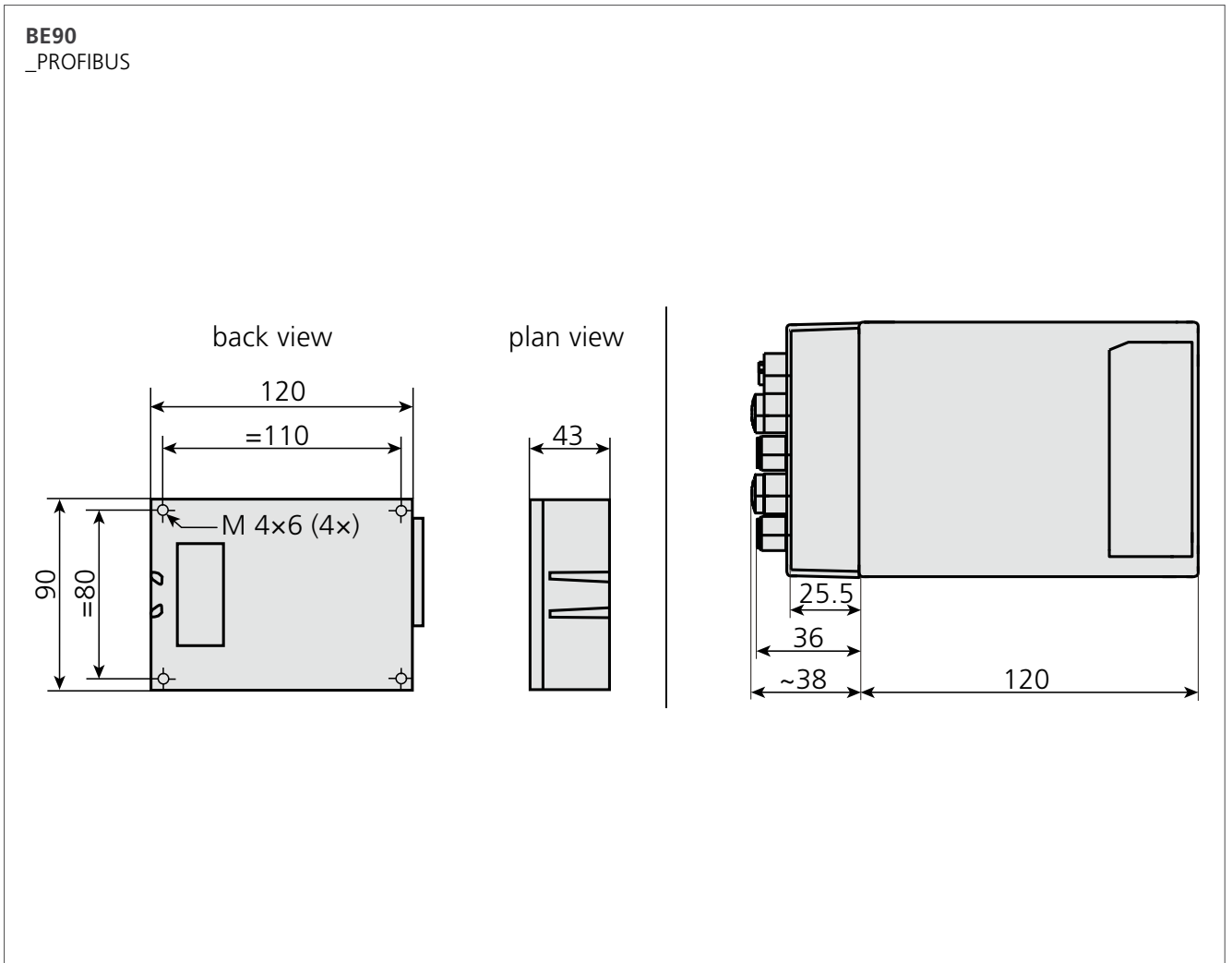
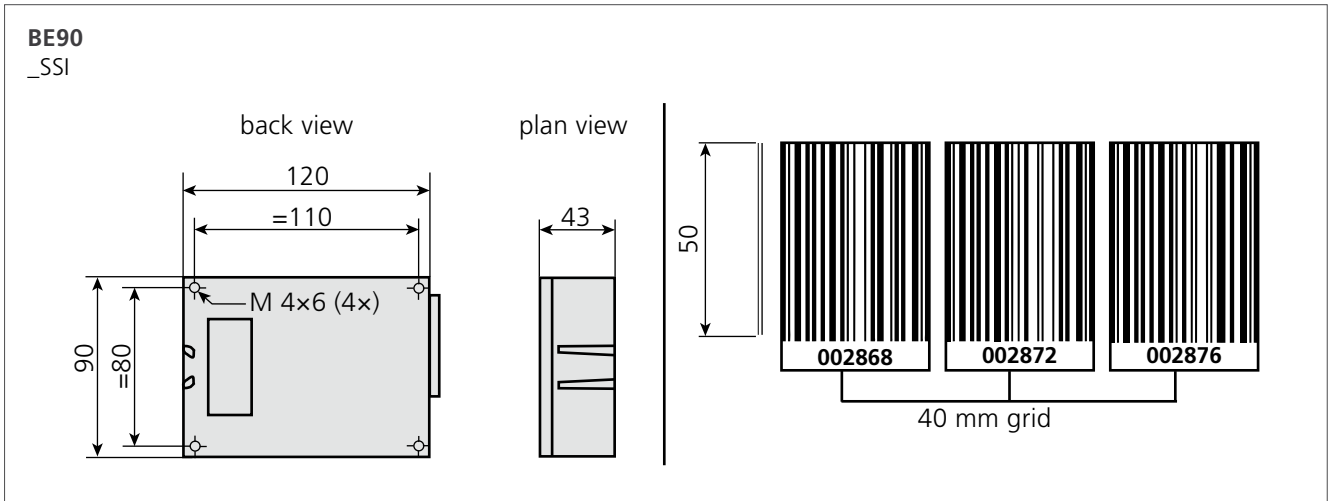
_ Interfaces: SSI und PROFIBUS

- _ Easy installation and activation
- _ Movements (curved systems)
- _ Non contact position measurement
- _ Position detection up to 10,000 m
- _ Parameterizable via the PROFIBUS DP

Barcode Positioning System

Product	BE90 - SSI	BE90 - PB
		
Supply voltage	10 ... 30 VDC	10 ... 30 VDC
Power consumption	3,2 W	5 W
Range	10.000 m	10.000 m
Scanning rate	1.000 values/sec.	1.000 values/sec.
Reproducible accuracy	±1 (2) mm	±1 (2) mm
Integration time	16 (8) ms	16 (8) ms
Measurement value output	500 values/sec.	500 values/sec.
Scanning depth	90 ... 170 mm	90 ... 170 mm
Light source	Laser diode, 650 nm	Laser diode, 650 nm
Housing	Die-cast aluminium	Die-cast aluminium
Mass	400 g	400 g
Working temperature	0 ... 40 °C	0 ... 40 °C
Working temperature (+ heating)	-30 ... +40 °C	-30 ... +40 °C
Air humidity	max. 90% rel. humidity	max. 90% rel. humidity
Protection class	IP65	IP65
Vibration	IEC 62.2.6 / 62.2.27 / 801	IEC 62.2.6 / 62.2.27 / 801
Service Interface	RS232 with fixed data format, 9,600 baud, 8 data bits, etc.	RS232 with fixed data format, 9,600 baud, 8 data bits, etc.
Interface (others on request)	SSI	
Weblink	http://www.tr-electronic.de/f/TR-VBE-TI-GB-0010	http://www.tr-electronic.de/f/TR-VBE-TI-GB-0020
QR-Code		

Dimensional Drawings



Illustrations are schematic diagrams. Binding dimension drawings and CAD data for specific order numbers at www.tr-electronic.com or on request.

Dimensional Drawings



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