

Technical Description

The BOS 18M laser thru-beam sensors provides industry leading accuracy and distance in an 18 mm tubular housing. This sensor consists of two parts: an emitter and receiver. The emitter sends a beam of concentrated laser light up to 50 m (160 ft). The receiver is positioned in-line with the emitter to detect the presence of the laser beam. Any object passing through the beam will activate the output, signaling the presence of an object.

The use of solid-state laser technology produces a visible red spot of light ideal for alignment in long distance applications. Moveable optics on the emitter make it possible to focus the beam onto any

desired point between the emitter and receiver. Focusing is performed with the aid of a tool (supplied), used to turn the lens on the emitter. Optimum small parts detection is possible in a range of 20...80 cm. Here the beam diameter can be focused down to 0.03 mm. As the distance between emitter and receiver increases, beam diameter expands as shown in the diagrams.

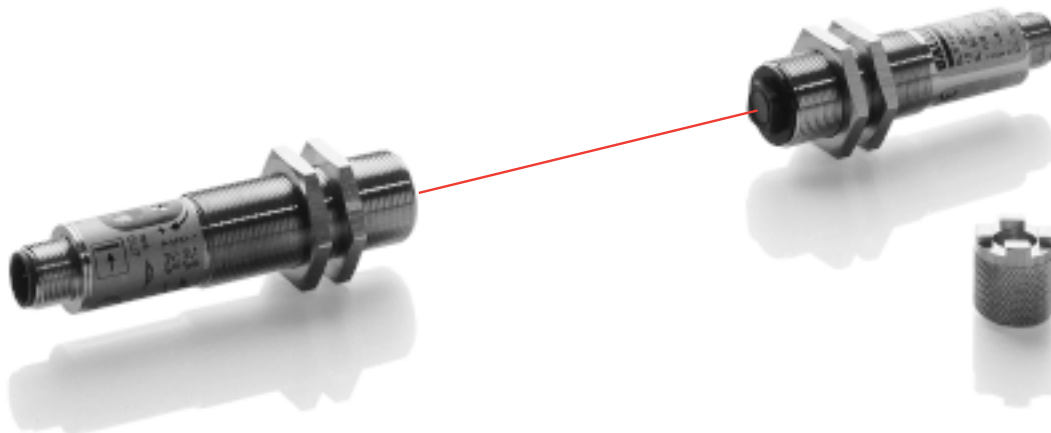
The BOS 18M Laser sensors operate on 10-30 Vdc with two PNP outputs for Normally Open and Normally Closed. They have an output switching rate up to 6kHz and is short circuit protected. Both emitter and receiver are available in straight or right angle 18mm tubular housings. All sensors have quick disconnect 12mm connectors and are sealed to IP65 standards.

Features

- Visible red laser light aids in alignment
- Detects parts as small as 0.03 mm
- Sensing range of up to 50m (160 ft)
- Extremely high switching rate, up to 6 kHz
- Laser light beam can be focused
- Sensitivity adjustment allows fine tuning of the sensing distance
- Housing available in straight or right angle
- Focusing tool included

Applications

- Drill breakage check
- Precise parts positioning
- Checking parts dimensions and features
- Fast object detection
- Penetrates containers and packaging
- Parts sorting
- Precise orientation of machine parts
- Motion detection



Operating Data

Wave-length $\lambda = 660 \text{ nm}$
 Beam divergence $\theta = 0,5 \text{ mrad}$
 Pulse power $P_p < 1,5 \text{ mW}$
 Pulse width $t = 7 \text{ } \mu\text{s}$
 Pulse repetition frequency $F = 30 \text{ kHz}$
 Time base $T = 250 \text{ ms}$

Laser Safety Regulation

The emitter corresponds to Laser Safety Class II per DIN EN 60825-1/94. Therefore, no additional safety measures are required.

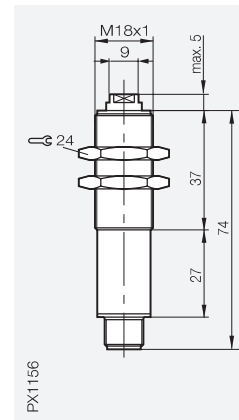
The sensor may not be used in applications where personal safety depends on proper device function (not a safety component per EU Machine Guideline).

Housing size

Thru-Beam Sensing range

M18×1 straight with focused beam

50 m

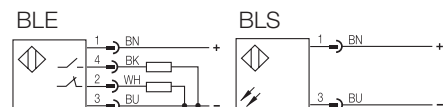


	PNP ○/●	receiver	
		emitter	
			BLS 18M-XX-1LT-S 4-C
	Supply voltage U_B		10...30 V DC
	Voltage drop U_d at I_o		
	Rated isolation voltage U_i		250 AC
	Rated operational current I_o		
	No-load supply current I_o		$\leq 10 \text{ mA}$
	Short-circuit protected		yes
	Permissible capacitance		
	On/Off delay		
	Frequency of operating cycles		
	Utilization category		DC 13
	Output		
	Output function		
	Permissible ambient light		
	Sensitivity adjustment		
	Output function indication		
	Operating/Stability indication		
	Ambient temperature range T_a		$-15...+55 \text{ } ^\circ\text{C}$
	Degree of protection per IEC 529		IP 65
	Laser protection class		II
	Housing material		nickel plated brass
	Material of sensing face		glass
	Connection		connector
	Recommended connector		BKS-S 19/BKS-S 20
	Emitter type		laser light 660 nm (Red)
	Max. resolution		0.03 mm
	○/● = Light-On/Dark-On		



The device must be mounted so that the laser warning label is easily visible.

Connection Diagrams



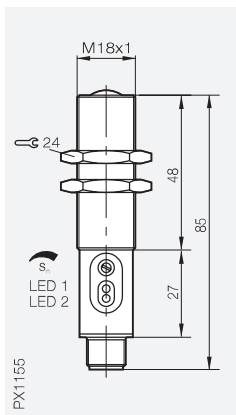


Tubular Optical Sensors

BOS 18M
Laser Thru-Beam

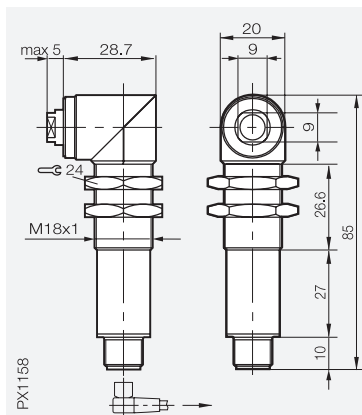
M18×1 straight

50 m



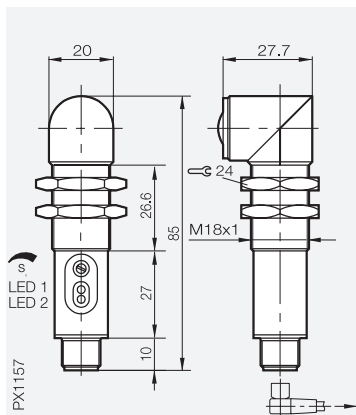
M18×1 right angle with focused beam

50 m



M18×1 right angle

50 m



BLE 18M-BA-1LT-S 4-C

10...30 V DC
≤ 2.5 V
250 AC
200 mA
≤ 15 mA
yes
≤ 1 μF
≤ 0.08 ms
6 kHz
DC 13
PNP
O/●
2000 Lux
potentiometer
yes
yes/yes
-15...+55 °C
IP 65
nickel plated brass
glass
connector
BKS-S 19/BKS-S 20
0.03 mm

BLS 18MR-XX-1LT-S 4-C

10...30 V DC
250 AC
≤ 10 mA
yes
DC 13
II
nickel plated brass
glass
connector
BKS-S 19/BKS-S 20
laser light 660 nm (Red)
0.03 mm

BLE 18MR-BA-1LT-S 4-C

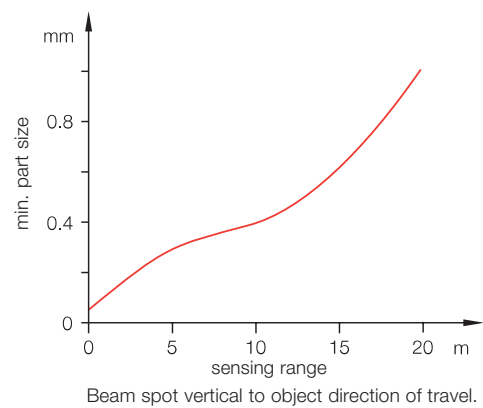
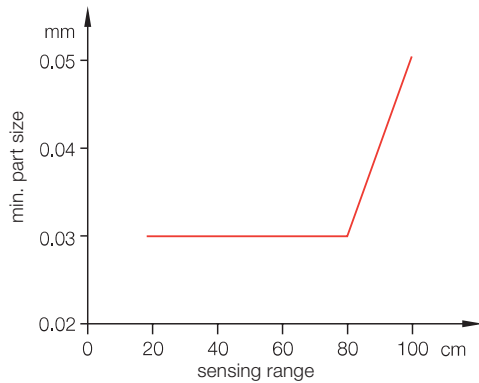
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BKS-S 19/BKS-S 20
0.03 mm



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Accuracy Curve

Smallest detectable part size
as a function of range.



With the included focusing tool for the emitter, the beam can be brought to a focal point. At this point you achieve the optimum small part detection. At an emitter-receiver distance of 20...80 cm, parts, as small as 0.03mm in diameter can be detected.