BALLUFF

The 18K Laser Series

Laser Sensors for Any Application

A New Level of
Affordability and Safety

Technical Description

Safety and affordability are the two key ingredients of the 18K Laser family of optical sensors. For the first time, a complete family of laser products provides safe Class I operation with powerful optical performance to handle many day-to-day sensing requirements.

Laser based sensors are often considered only for the demanding applications where small parts and extended distances are part of the equation. By reducing the cost and utilizing a completely harmless Class I laser emitter, we can now open the advantages of laser based sensors to a broad range of applications.

Class I lasers provide maximum safety against eye damage even if exposed for prolonged periods of time. They can be used just like a typical visible red light beam. No additional precautions are required.

Freedom from excuses: 18K Laser

Models:

- Diffuse with 300mm range
- Polarized RetroReflective with 12m range
- Thru-Beam with 50m range

Features:

- Safe operation with Class I lasers
- Highly visible laser light
- Small light spot at any distance
- Consistent switching points, extremely repeatable
- Excellent small part detection capabilities
- Rugged tubular housing
- Fast switching rate of 1.5 kHz
- Sensitivity adjustment on all models
- Economically priced
- Precision mounts available

Applications:

- Small part detection
- Long range detection
- Part location
- Part counting
- Height verification
- Color mark

Class I laser device.

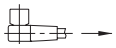
Housing	
Diffuse	Sensing Range
Polarized Retroreflective	Sensing Range
Thru-beam	Sensing Range

Diffuse			
PNP	○	10...300mm	Laser, Potentiometer
NPN	○	10...300 mm	Laser, Potentiometer
Polarized Retroreflective			
PNP	●	0.03...12 m	Laser, Potentiometer
NPN	●	0.03...12m	Laser, Potentiometer
Thru-Beam			
PNP	●	50 m	Receiver, Potentiometer
NPN	●	50 m	Receiver, Potentiometer
		50 m	Emitter, Laser

Supply voltage U_B
Voltage drop (output at max current)
Rated isolation voltage
No-load operating current
Output current
Short-circuit protection
Reverse polarity protection
Permissible capacitance
On/off delay
Switching frequency
Utilization category
Output type
Output function
Permissible ambient light
Sensitivity adjustment
Output function indication
Power/stability indication
Ambient operating temperature
Degree of protection (per IEC 529)
Emitter light source
Laser light classification (per EN 60825-1)
Housing material
Lens material
Weight
Resolution
Recommended connector
Dimensions

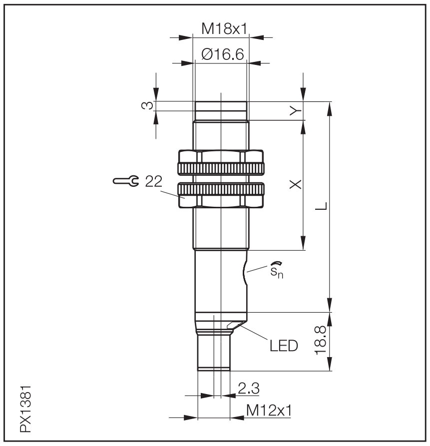
○ / ● = light/dark operate

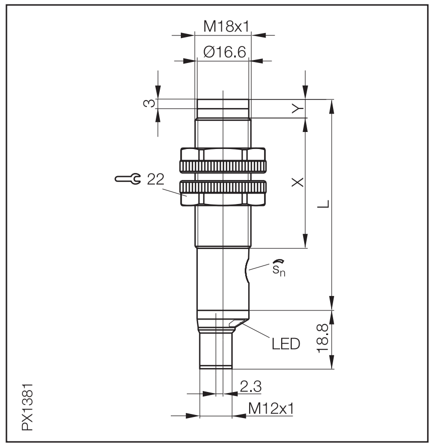
Note: Diffuse values referenced to Kodak white card 90% reflective. Retoreflective values based on R1 reflector.

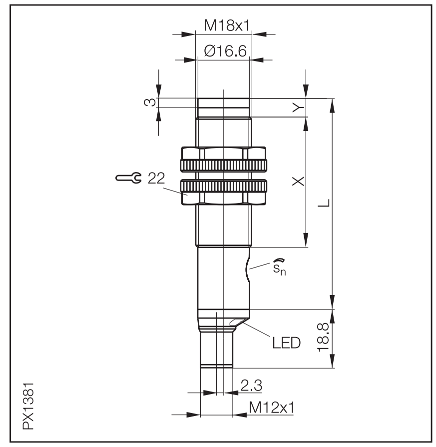


Connector orientation

	M18×1	M18×1	M18×1
	10...300 mm		
		0.03...12 m	
			50 m



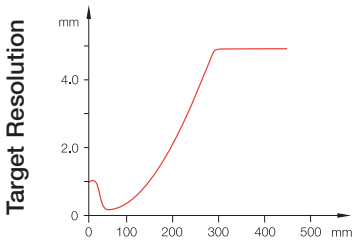


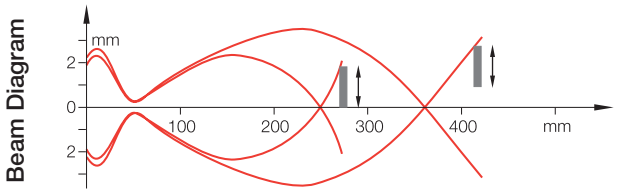


	BOS 18K-PS-1LOC-E 5-C-S 4		
	BOS 18K-NS-1LOC-E 5-C-S 4		
		BOS 18K-PS-1LQK-E 5-C-S 4	
		BOS 18K-NS-1LQK-E 5-C-S 4	
			BLE 18K-PS-1LT-E 5-C-S 4
			BLE 18K-NS-1LT-E 5-C-S 4
			BLS 18K-XX-1LT-E 5-C-S 4
	10...30 V DC	10...30 V DC	10...30 V DC
	≤ 2 V	≤ 2 V	≤ 2 V
	75 V DC	75 V DC	75 V DC
	≤ 100 mA	≤ 100 mA	≤ 100 mA
	≤ 35 mA	≤ 35 mA	≤ 35 mA
	Yes	Yes	Yes
	Yes	Yes	Yes
	1 µF	1 µF	1 µF
	≤ 0.33 ms	≤ 0.33 ms	≤ 0.33 ms
	1.5 kHz	1.5 kHz	1.5 kHz
	DC 13	DC 13	DC 13
	PNP or NPN	PNP or NPN	PNP or NPN
	○ (light operate)	● (dark operate)	● (dark operate)
	5000 Lux	5000 Lux	5000 Lux
	Potentiometer 0...270°	Potentiometer 0...270°	Potentiometer 0...270°
	LED yellow	LED yellow	LED yellow
	LED green	LED green	LED green
	–10...+50 °C	–10...+50 °C	–10...+50 °C
	IP 67	IP 67	IP 67
	Red laser 650nm	Red laser 650nm	Red laser 650nm
	I	I	I
	ABS plastic	ABS plastic	ABS plastic
	PMMA plastic	PMMA plastic	PMMA plastic
	50 g	50g	50g
	0.5 mm at s_n = 50 mm	1 mm at s_n = .1 - 1 m	2.5 mm at 5 m
	3-pin, M12 (micro) connector	3-pin, M12 (micro) connector	3-pin, M12 (micro) connector
	BKS-S 19/BKS-S 20	BKS-S 19/BKS-S 20	BKS-S 19/BKS-S 20
	X = 42 mm, Y = 6 mm, L = 86 mm	X = 42 mm, Y = 6 mm, L = 86 mm	BLE: X = 42 mm, Y = 3 mm, L = 84 mm
			BLS: X = 42 mm, Y = 6 mm, L = 86 mm

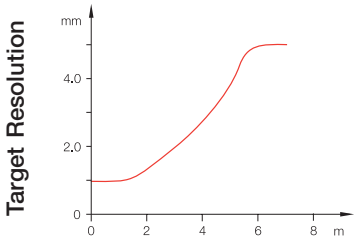
Sensing Data

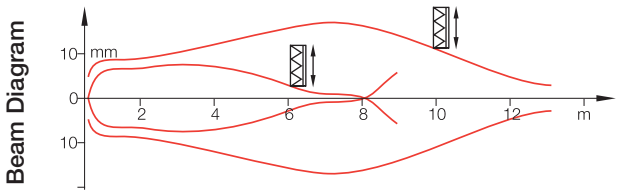
Diffuse BOS 18K ...1LOC...



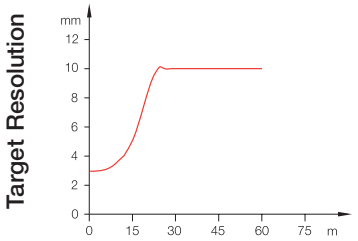


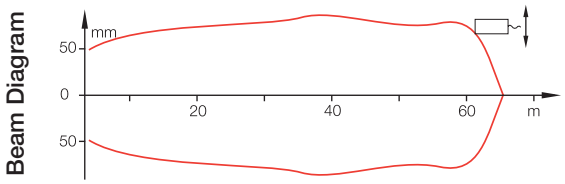
Retroreflective BOS 18K ...1LQK...



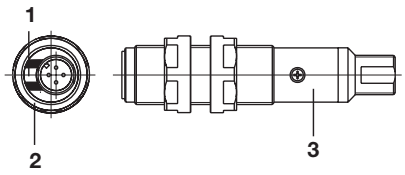


Thru-Beam BOS 18K ...1LT...



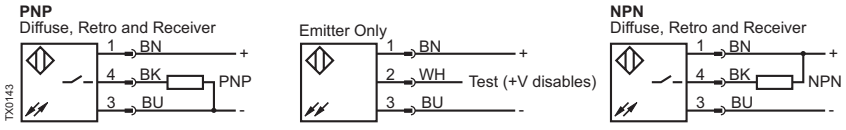


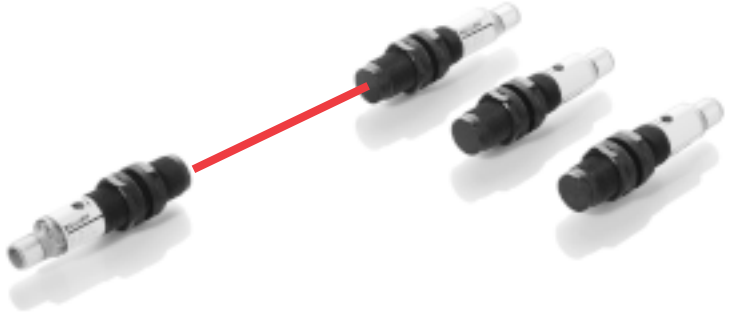
Output and Power LEDs



1 **Output** (yellow LED)
LED on when output is active.
2 **Power/stability** (green LED)
LED on when power is applied
LED off if weak light signal is received
3 **Potentiometer**
270° Potentiometer with clutch protection

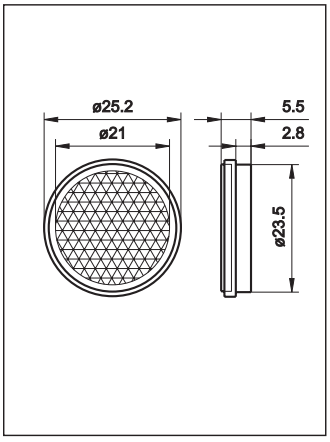
Connection Diagrams

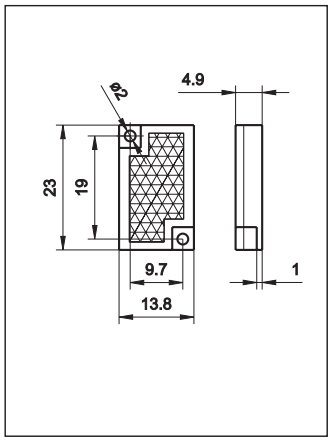


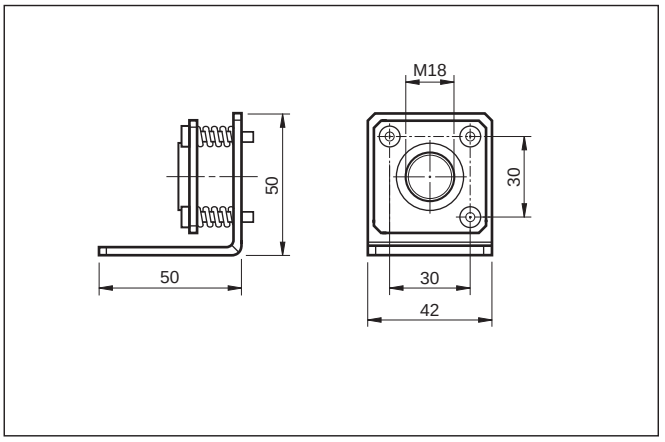


Accessories

Round, **Laser**	Rectangle, **Laser**	Mounting Bracket with Micro Adjustment
Ø25.2	19x10mm	M18



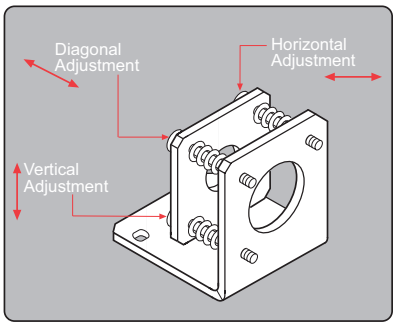




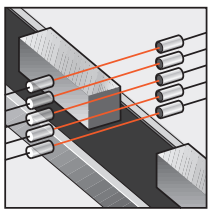
BOS R-13	BOS R-12	BOS MICRO-18-HW
Plastic	Plastic	
55°C (130°F) max	55°C (130°F) max	
IP67	IP67	

Laser specific reflectors incorporate micro-prisms. These are extremely small reflective surfaces, ideal for laser light beams.

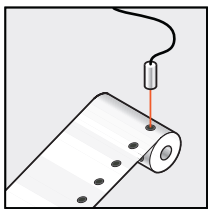
Micro adjustable brackets allow precision beam placement by simply turning a screw. Three individual screws allow for horizontal, vertical and diagonal adjustment. These precision mounts are ideal for long or short range targeting of small parts.



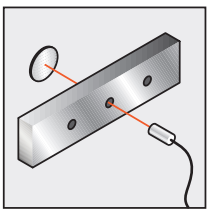
Applications



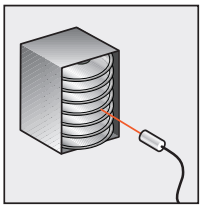
Grid arrays for height profile



Long range color mark detection



Long range hole detection



Small part detection

Quality Assurance

BALLUFF

Balluff is a world leader in sensor technology.

Our product range includes electronic and electromechanical proximity switches, linear transducers, and identification systems.

Balluff products are always found where high precision and reliability are demanded.

Our products are indispensible in the field of automation. Anywhere an automated process that requires object detection, material flow, component coding, or a definition of rotational motion or linear travel – Balluff is always the right partner.

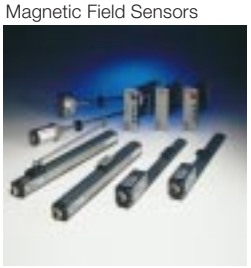
The quality system of the Balluff facility in Florence, KY is registered by NSF-ISR to ISO 9001quality systems. All of our production processes are governed by the stated standard requirements for quality assurance.

Statistical process control (SPC), state-of-the-art production and assembly equipment are standard at Balluff.


Identification Systems


Magnetic Field Sensors


Block Style Inductive Sensors


Micropulse™ Transducers


Capacitive Sensors


Optoelectronic Sensors


Tubular Inductive Sensors


Power Remote Sensors


Electromechanical Sensors


Safety Switches

NSF's Registration Program is accredited by the American National Standards Institute-Registrar Accredidation Board.

NSF's Registration Program is accredited by the Dutch Council for Accreditation.

http://www.balluff.com

Balluff Inc.
8125 Holton Drive
Florence, KY 41042, USA
Phone: 1-800-543-8390
Fax: (859) 727-4823
Email: balluff@balluff.com
Internet: http://www.balluff.com

No. IT3453 Edition 00-06; Subject to modification.