

Linear Position Sensing

Comprehensive systems expertise. Technological variety. Optimal solutions.

Displacement sensing – exactly what you need!

You work efficiently and need optimal solutions. When it comes to linear position sensing Balluff gives you exactly what you need. A variety of operating principles are available: For distances from 1...48000 mm and resolutions from 1...100 µm. The choice is yours. Simply pick the system that's right for you and use Balluff's linear displacement sensing technology to increase your throughput.

Balluff measurement sensors: Rugged and designed for precise, reliable, non-contact usage.

- Greater flexibility through full range of sensing principles
- More efficiency through optimal solutions
- Increased productivity through well-engineered displacement sensing technology



BML Magnetic Linear Encoder System – Highly precise with long lengths



BTL Micropulse Transducer/BIW Inductive Linear Position Sensor – Extremely rugged and reliable



BOD Photoelectric Distance Sensors – For any material or object color



BIL Magneto-inductive Position Sensors – Compact and absolute



BAW Inductive Distance Sensors – For short strokes



Photoelectric Distance Sensors

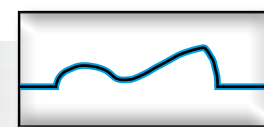
Sense any material or color, intelligent and flexible.

Positioning with precision, ensuring maximum quality and efficiently controlling material flow means distance measurement using Balluff photoelectric distance sensors. The versatile BOD 21M in its compact, rugged metal housing expands your application options in a product family which includes through-beam, contrast, and luminescence sensors.

Wide-ranging functionality, the most modern sensor technology and innovative manufacturing technology leave nothing to be desired: The BOD 21M is suitable for robotics, automation, assembly, handling, and packaging applications.

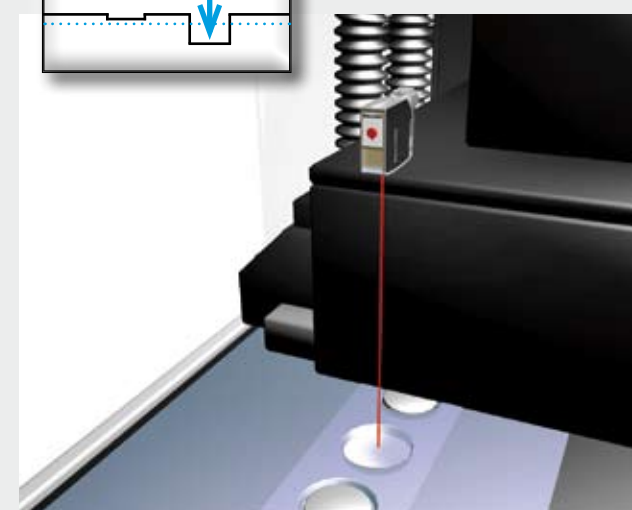
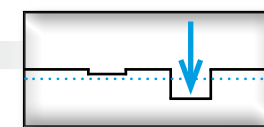
- Variety of functions in a standard housing
- Rugged metal construction
- Adaptable installation

Rapid startup and ease of operation with a rotary switch for teach-in mean added cost-effectiveness. And installation couldn't be easier. A variety of mounting brackets, dovetail clamps and a comprehensive mounting system means the BOD 21M can be conveniently attached and oriented in any position.



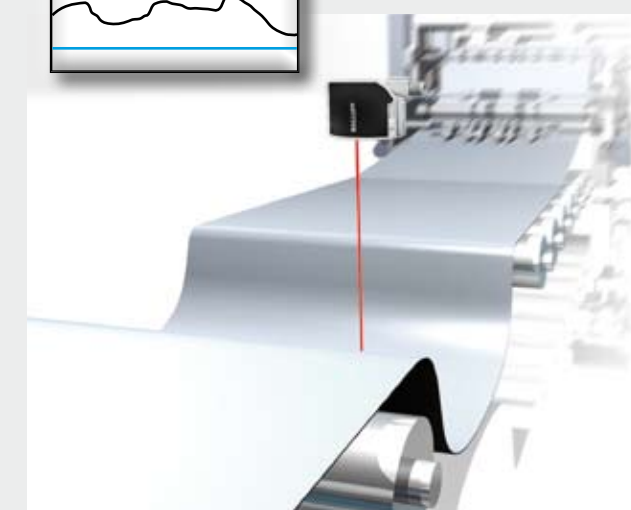
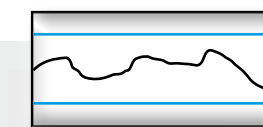
Contour checking

Photoelectric distance sensors continuously detect dimensions or contours on tongue and groove boards. Analog sensing detects individual defects and gradual deviations directly for permanent monitoring of the production process.



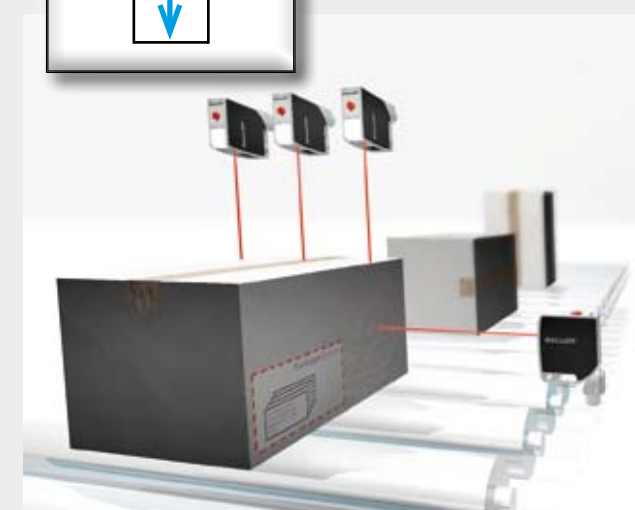
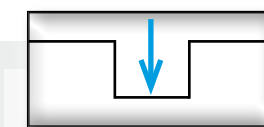
Blister packaging

Measurement sensors monitor the packaging process, optimize product filling and increase system productivity. Before foil packaging is closed up, a BOD 21M checks the individual compartments and detects missing or extra items.



Sag monitoring

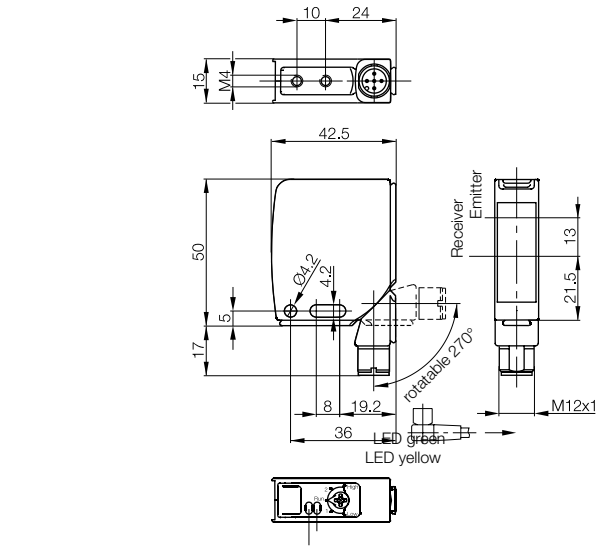
Precise processing of films or sheet material requires that it be uniformly conveyed. Tension-free material transport succeeds using the BOD 21M, which dynamically detects the height of the sag section.



Adaptive feed

Multiple distance sensors measure components, assembled units and packages on a conveying line. BOD 21M sensors evaluate the outer dimension and contour so that these various parts can be transported to the next appropriate process steps. The rugged metal housing guarantees long service life of the installation.

Photoelectric Distance Sensors
Series BOD 21M



The BOD 21M provides a continuous voltage or current signal proportional to the object distance. The measuring range of 20...500 mm is scalable and can be set for your application using the convenient rotary switch.

Two independent switching outputs with push-pull logic allow you to use the new BOD 21M as either PNP normally open or NPN normally closed. Using the switching points – easy to select using a rotary switch – you can employ background suppression and reliable zone monitoring.

Features

- Measuring range selectable between 20 and 500 mm
- Analog voltage or current signal
- Two digital switching outputs, individually configurable
- Central rotary switch for ease of setting
- Rugged metal housing
- M12 connector, rotatable 270°



The BOD 21M is connected using a 5-pin M12 plug. The connector orientation can be set over a range of 270°, allowing the BOD 21M to be attached in any position.

The measuring range and switching points are easily set using the rotary switch.

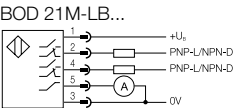
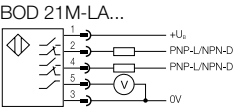
Photoelectric Distance Sensors
Series BOD 21M



Series	BOD 21M	BOD 21M	BOD 21M
Working range	25...45 mm	20...200 mm	20...500 mm
Measuring range	20 mm	180 mm	480
Voltage output	BOD 21M-LA01-S92	BOD 21M-LA02-S92	BOD 21M-LA04-S92
Current output	BOD 21M-LB01-S92	BOD 21M-LB02-S92	BOD 21M-LB04-S92
Supply voltage U _B	18...30 V DC	18...30 V DC	18...30 V DC
Ripple	≤ 15 %	≤ 15 %	≤ 15 %
No-load supply current I ₀ max.	≤ 50 mA	≤ 50 mA	≤ 50 mA
Analog output	1...10 V	1...10 V	1...10 V
	4...20 mA	4...20 mA	4...20 mA
Settings	Teach-in (rotary switch)	Teach-in (rotary switch)	Teach-in (rotary switch)
Emitter, light type	Laser, pulsed red light	Laser, pulsed red light	Laser, pulsed red light
Wavelength	630 nm	630 nm	630 nm
Laser Class	2	2	2
Light spot diameter	Ø1 mm at 45 mm	Ø1 mm at 200 mm	1×6 mm at 500 mm
Temperature drift	≤ 0.2 %/°K	≤ 0.2 %/°K	≤ 0.2 %/°K
Resolution	30 µm	100...200 µm	100...500 µm
Linearity	~0.5 %	± 1 %	± 1 % (up to 200 mm) ± 3 % (200...500 mm)
Ready delay	≤ 300 ms	≤ 300 ms	≤ 300 ms
On-/off-delay	≤ 7 ms	≤ 7 ms	≤ 7 ms
Switching frequency f	≤ 70 Hz	≤ 70 Hz	≤ 70 Hz
Power-on indicator	LED green	LED green	LED green
Output function indicator	LED yellow	LED yellow	LED yellow
Connection	M12 connector, 5-pin	M12 connector, 5-pin	M12 connector, 5-pin
Housing material	Gd-Zn	Gd-Zn	Gd-Zn
Optical surface	Glass	Glass	Glass
Weight	80 g	80 g	80 g
Degree of protection per IEC 60529	IP 67	IP 67	IP 67
Polarity reversal protected	yes	yes	yes
Short circuit protected	yes	yes	yes
Permissible ambient light	5 kLux	5 kLux	5 kLux
Ambient temperature range T _a	-10...+50 °C	-10...+50 °C	-10...+50 °C

Measured values referenced to Kodak gray card 90% reflective.

Wiring diagrams



Connector diagram



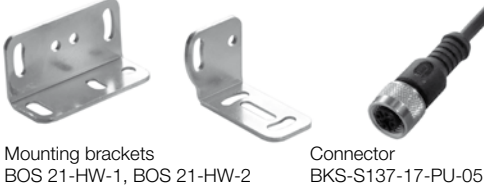
Laser class

The emitter conforms to Laser Class 2 in accordance with EN 60825-1:2001-11. This means no additional safety measures are necessary.

Install the device so that the laser warning label is easily visible.

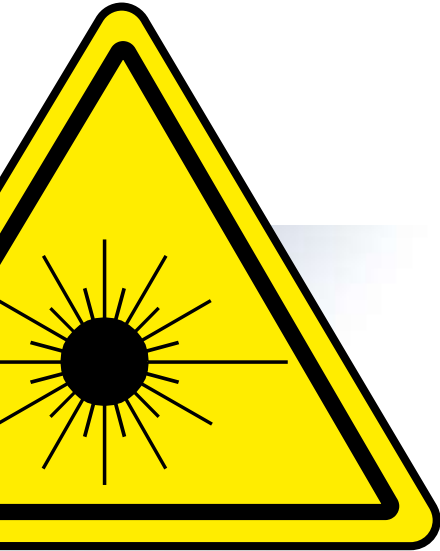


Recommended accessories



Gordy's Sensors

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Website: www.gordyssensors.com or Email: sales@gordyssensors.com



BOD 21M Distance Sensors

Effortless performance – High efficiency

