Stainless steel housing type

BGS-ZM series

Excellent water resistance/ oil resistance! Suitable for automobiles, machine tools and food industry

- Equipped with a distance adjustment to enable distance setting
- Employs a low deterioration 4 element red LED for the Light source
- Degree of protection: IP69K (cable type), Equivalent to IP69g (connector type)

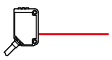
Related products

Through-beam/ diffuse reflective type **Z-M** ● P.158

Laser type **BGS-ZL** ● P.326

General-purpose type **Z3** ● P.148

Selection table

Type	Shape	Sensing distance (Adjustable distance range shown in parentheses)	Degree of protection	Model	
				NPN type	PNP type
Cable type		10 to 100 mm (20 to 100 mm)	IP67 IP69K	**BGS-ZM10N**	**BGS-ZM10P**
		10 to 300 mm (20 to 300 mm)		**BGS-ZM30N**	**BGS-ZM30P**
Connector type		10 to 100 mm (20 to 100 mm)	IP67 Equivalent to IP69g	**BGS-ZM10CN4**	**BGS-ZM10CP4**
		10 to 300 mm (20 to 300 mm)		**BGS-ZM30CN4**	**BGS-ZM30CP4**

● For the connector type, please purchase an optional oil resistant connector cable.

Options/Accessories

Oil resistant connector cables

Straight

DOL-0804-G02MC
Cable length: 2 m
DOL-0804-G05MC
Cable length: 5 m
DOL-0804-G10MC
Cable length: 10 m

L-shaped

DOL-0804-W02MC
Cable length: 2 m
DOL-0804-W05MC
Cable length: 5 m
DOL-0804-W10MC
Cable length: 10 m

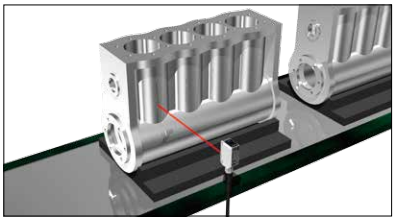
Protective mounting bracket

● Durable 2 mm thick stainless steel type
LK series

LK-S01

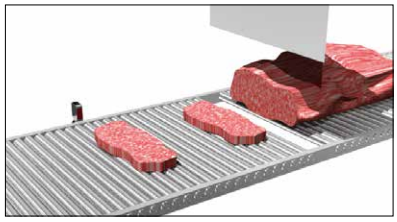
LK-S02

Engine block detection



Drill breakage on NC machine

For meat/fresh food lines (cable type)



Features

Tough against oil and coolant!
Cost effective sensor with excellent oil resistance

Connector type features oil resistance of equivalent to IP69g

Only in industry

PPSU is used for the front window!

*Excluding the retro-reflective type

The through-beam type and diffuse-reflective type are the only in the industry in which a PPSU (polyphenylsulfone resin) material is used. This material has superior oil resistant properties to the PMMA (acrylic resin) materials often used in the industry.

Connector cable: PUR (polyurethane)

A PUR (polyurethane) material with excellent oil resistance is used for the connector type cable. A PVC (polyvinyl chloride) material with excellent chemical resistance is used for the cable type cable.

Top cover: PES (polyether sulfone)

Excellent resistance against oil and cleaning solutions.

Switch & potentiometer: PEEK (polyether ether ketone)

Features excellent shock resistance, wear resistance, and chemical resistance and is ideal for cutting, etc.

Housing: SUS316L

Excellent resistance to corrosion caused by chemicals.

Equipped with distance adjustment

Long-distance measurement is possible

Equipped with a distance adjustment, unusual for an oil-resistant/IP69K compliant BGS sensor. Because distance adjustments are performed using a potentiometer and not the sensor mounting position, time can be saved and designs can be made more flexible.

Equipped with 8-turn endless potentiometer to enable detailed distance settings

Employs a newly developed high-brightness 4 element LED

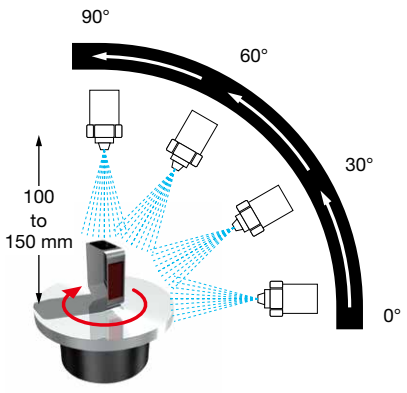
High detection stability

Equipped with a newly developed 4 element red LED Light source. In addition to minimizing the decreases in emitted light that occur over time, it is also tolerant against dust and fine particles.

■ High brightness 4 element red LED

Cable type features a degree of protection on IP69K

Achieved an IP69K degree of protection that is tough against humidity, water, steam cleaning, etc. Sensor features a tough design that doesn't break even when exposed to high-pressure washing on food processing machinery or when used in severe environments. Of course, it has also cleared IP67.



What is IP69K?
IP69K is a protection rating stipulated by German standard DIN40050 Part 9.

Test details:
Sensors are placed on a turntable and rotated 5 times per minute while being sprayed with water under the following conditions.

Water pressure:	80 to 100 bar
Flow rate:	14 to 16 l/m
Water temperature:	+80°C / -5°C
Distance from spray nozzle:	100 to 150 mm
Spray angle:	0°, 30°, 60°, 90°
Spray time:	30 seconds at each angle

*IP69K does not guarantee operation under the above conditions. Water or oil that adhere to the optical surface could cause light to refract and prevent detection from being performed correctly.
*Excluding connector type and reflector.

Specifications

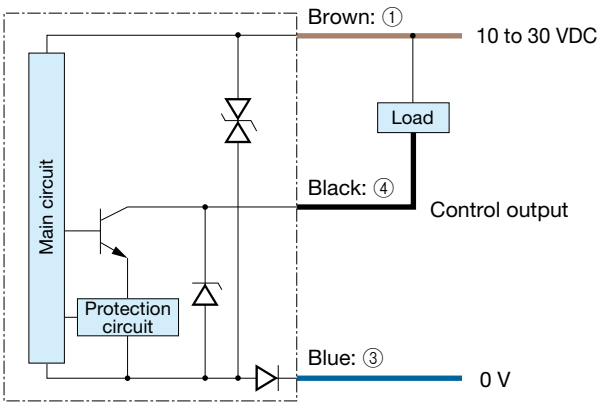
Type		BGS sensor			
		Cable type		Connector type	
Model	NPN type	BGS-ZM10N	BGS-ZM30N	BGS-ZM10CN4	BGS-ZM30CN4
	PNP type	BGS-ZM10P	BGS-ZM30P	BGS-ZM10CP4	BGS-ZM30CP4
Sensing distance*		10 to 100 mm	10 to 300 mm	10 to 100 mm	10 to 300 mm
Adjustable distance range*		20 to 100 mm	20 to 300 mm	20 to 100 mm	20 to 300 mm
Light source		4 element red LED			
Spot size (typical value)		Approx. ø6 mm (at a distance of 80 mm)	Approx. ø19 mm (at a distance of 250 mm)	Approx. ø6 mm (at a distance of 80 mm)	Approx. ø19 mm (at a distance of 250 mm)
Response time		500 µs or less			
Hysteresis (typical value)		3% or less	5% or less	3% or less	5% or less
Distance adjustment		8-turn endless potentiometer			
Indicators		Output indicator: orange LED, Stability indicator: green LED			
Control output		NPN/PNP type open collector Max. 100 mA/30 VDC			
Output mode		Light ON / Dark ON selectable			
Connection type		Cable type: Cable length: 2 m (ø4)		Connector type: M8, 4-pin	
Rating	Supply voltage	10 to 30 VDC, including 10% ripple (p-p)			
	Current consumption	28 mA or less			
Applicable regulations		EMC directive (2004/108/EC)			
Applicable standards		EN 60947-5-2			
Environmental resistance	Ambient temperature/humidity	-25 to +55°C (no freezing) / 35 to 85% RH (no condensation)			
	Ambient illuminance	Sunlight: 10,000 lx Incandescent lamp: 3,000 lx or less			
	Vibration resistance	10 to 55 Hz; double amplitude 1.5 mm; 2 hours in each of the X, Y, and Z directions			
	Shock resistance	Approx. 100 G (1000 m/s²); 3 times in each of the X, Y, and Z directions			
	Degree of protection	IP67 DIN standard: IP69K		IP67 Company standards: Oil resistance (JEM standard: Equivalent to IP67g)	
Material		Housing: SUS316L Top cover: PES Front window: PPSU Switch, potentiometer: PEEK Cable: PVC Gasket: FKM		Housing: SUS316L Top cover: PES Front window: PPSU Switch, potentiometer: PEEK Gasket: FKM	
Weight without cable		Approx. 20 g			
Included accessories		Mounting bracket: BEF-W100-B		Mounting bracket: BEF-W100-A	

*Using a 100 mm × 100 mm white sheet of paper.

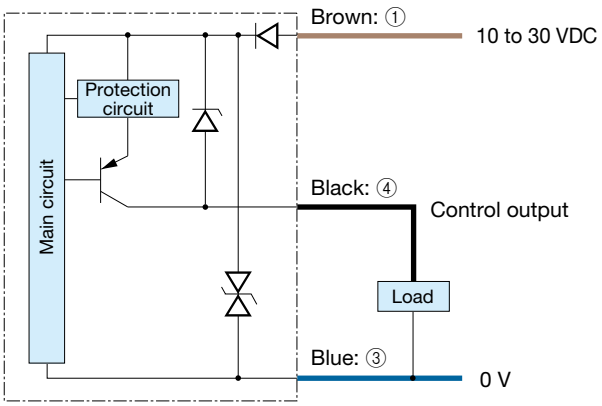
● Specifications are subject to change without prior notice for product improvement purposes.

Output circuit diagram

NPN output type

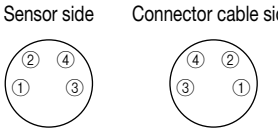


PNP output type



Connector type

(Pin configuration)



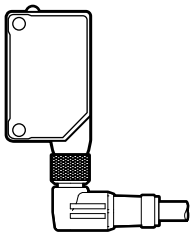
① 10 to 30 VDC
② —
③ 0 V
④ Control output

Connecting

■ ① to ④ are connector pin No.

Notes

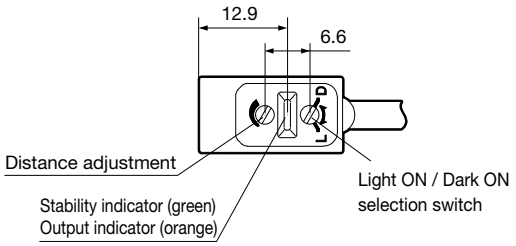
■ When using a switching regulator for the power supply, be sure to ground the frame ground terminal.
■ Because wiring sensor wires with high-voltage wires or power supply wires can result in malfunctions due to noise, which can cause damage, make sure to wire separately.
■ Avoid using the transient state while the power is on (approx. 100 ms).
■ The connector direction is fixed as in the drawing below when you use L-shaped connector cable. Be aware that rotation is not possible.

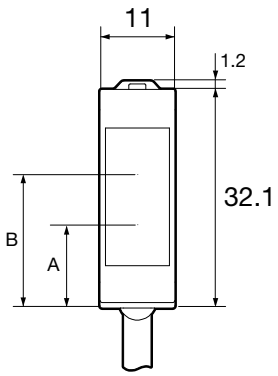


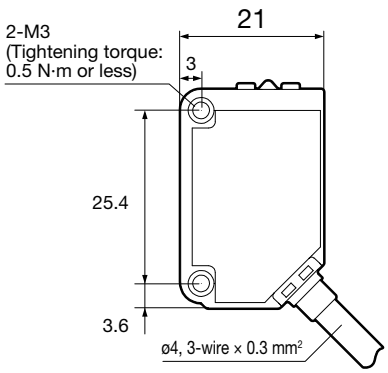
Dimensions

Cable type

(Unit: mm)

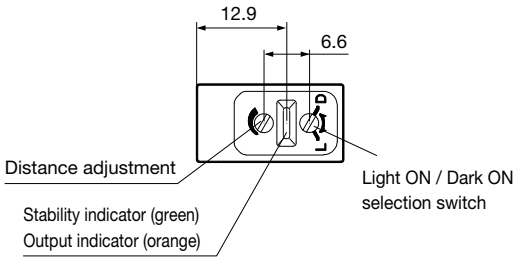


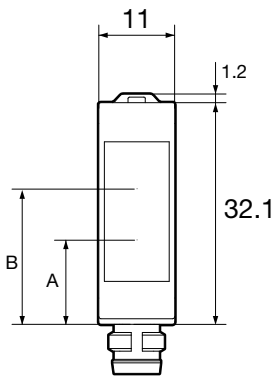


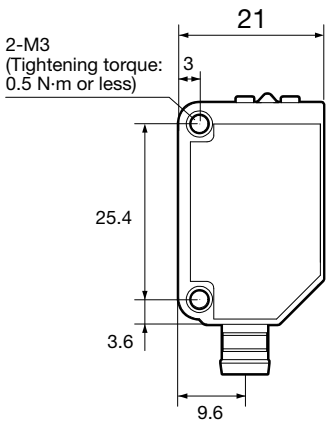


Model	A: optical axis of emitter	B: optical axis of receiver
BGS-ZM10	10.7	18.5 to 20.2
BGS-ZM30		18.5 to 20.5

Connector type







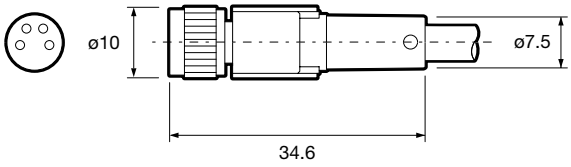
Model	A: optical axis of emitter	B: optical axis of receiver
BGS-ZM10	10.7	18.5 to 20.2
BGS-ZM30		18.5 to 20.5

Dimensions

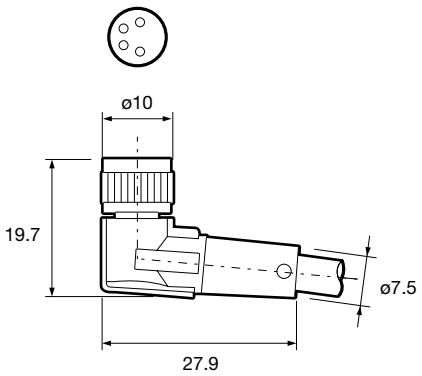
Connector cables

(Unit: mm)

■ DOL-0804-G02MC
DOL-0804-G05MC
DOL-0804-G10MC

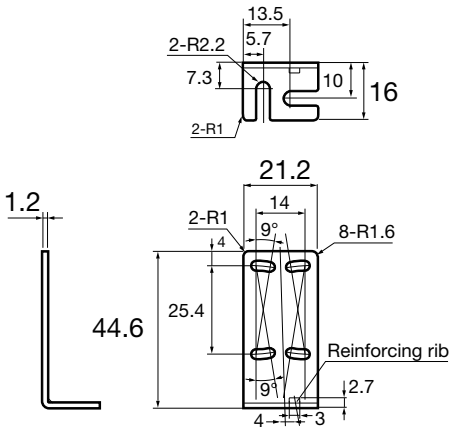


■ DOL-0804-W02MC
DOL-0804-W05MC
DOL-0804-W10MC

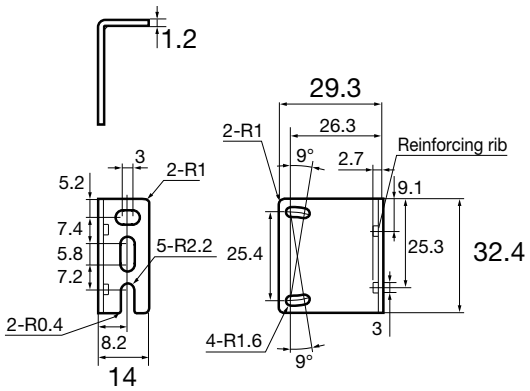


Mounting bracket

■ BEF-W100-B (included with cable type)

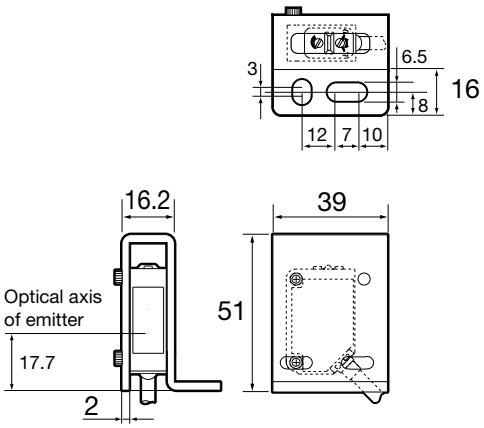


■ BEF-W100-A (included with connector type)

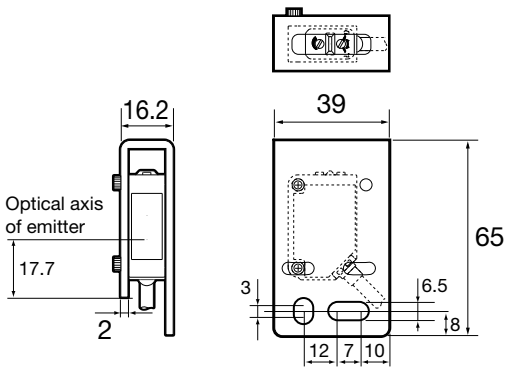


Protective mounting bracket

■ LK-S01



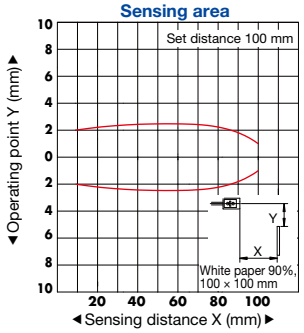
■ LK-S02



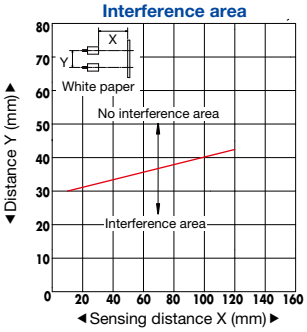
Typical characteristic data

BGS-ZM10□

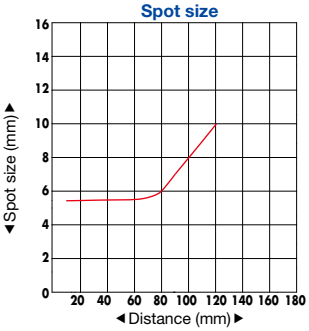
Sensing area



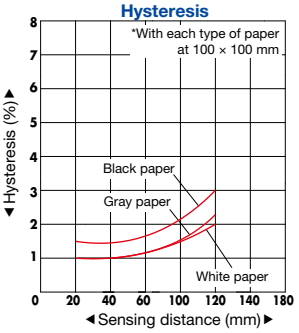
Interference area



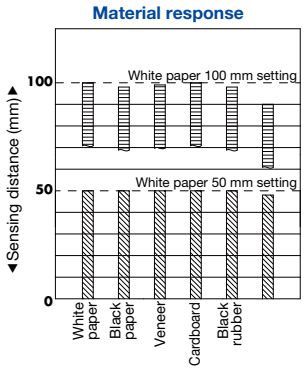
Spot size



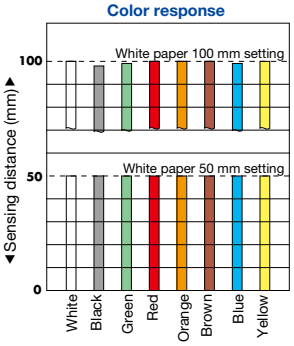
Hysteresis



Material response

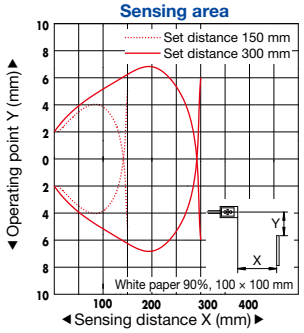


Color response

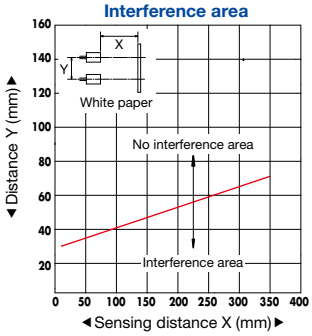


BGS-ZM30□

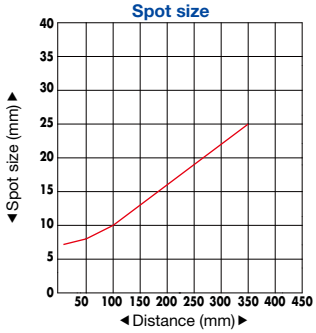
Sensing area



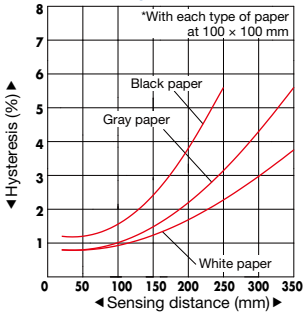
Interference area



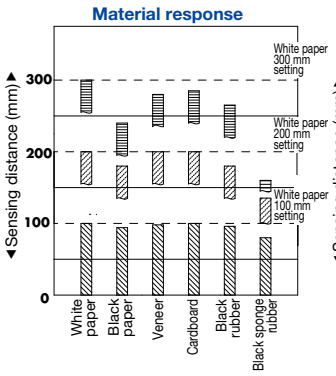
Spot size



Hysteresis



Material response



Color response