

# Laser type and high power narrow beam LED type BGS!

326

Laser, standard type

**BGS-ZL** (Laser) series,  
**BGS-Z** (LED) series



- Types with sensing distances of 100 mm and 300 mm
- Industry standard size
- Highly accurate height difference detection through low hysteresis

Got questions about how using background suppression sensors can elevate your sensing results AND boot productivity? Contact Ramco today!

Related products

Higher accuracy  
**BGS-HL**,  
**BGS-HDL**  
● P.310



Universal voltage type  
**BGS-2V**  
● P.384



Transparent object detection  
**Z3R-Q**  
● P.404



## Selection table

Ask us about the NEW 150mm range LED model!

Type	Shape	Sensing distance (Adjustable distance range shown in parentheses)	Model (Models in parentheses are connector types)	
			NPN type	PNP type
BGS	Class 1 laser	→ 5 to 100 mm (20 to 100 mm)	<b>BGS-ZL10N</b> (BGS-ZL10CN)	<b>BGS-ZL10P</b> (BGS-ZL10CP)
		→ 10 to 300 mm (50 to 300 mm)	<b>BGS-ZL30N</b> (BGS-ZL30CN)	<b>BGS-ZL30P</b> (BGS-ZL30CP)
	High power narrow beam LED	→ 5 to 100 mm (20 to 100 mm)	<b>BGS-Z10N</b> (BGS-Z10CN)	<b>BGS-Z10P</b> (BGS-Z10CP)
		→ 10 to 300 mm (50 to 300 mm)	<b>BGS-Z30N</b> (BGS-Z30CN)	<b>BGS-Z30P</b> (BGS-Z30CP)

● For the connector type, please purchase an optional JCN series connector cable.

## Options/Accessories

### Connector cables

Straight



**JCN-S**  
Cable length: 2 m  
**JCN-5S**  
Cable length: 5 m  
**JCN-10S**  
Cable length: 10 m

L-shaped



**JCN-L**  
Cable length: 2 m  
**JCN-5L**  
Cable length: 5 m  
**JCN-10L**  
Cable length: 10 m

### Protective mounting bracket

- Ultra-durable 2 mm thick type
- Rust-resistant stainless steel
- Sensor is firmly secured using M3 Hex socket head cap screws
- The bracket is also firmly secured using M6 screws



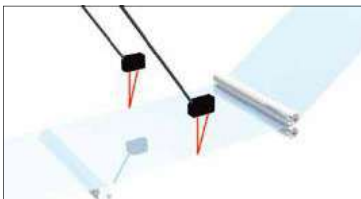
LK-S01



LK-S02

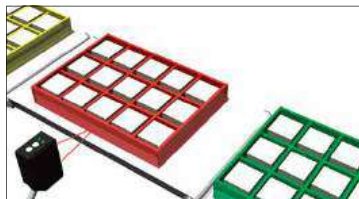
Laser type application 1

Meander detection of sheet materials



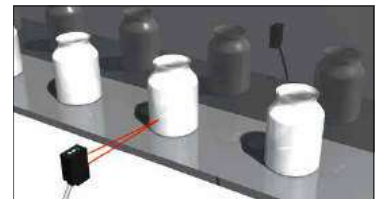
LED type application 1

Detection of multi-colored trays



LED type application 2

Detection of items on stainless steel lines



Photoelectric Sensors

Specialized Photoelectric Sensors

Laser Displacement Sensors

BGS Sensors

BGS-HL, BGS-HDL

BGS-DL

BGS-ZL, BGS-Z

BGS-ZM

BGS-S, BGS-2S

BGS

BGS-DL (potentiometer type)

**Laser types (Class 1) and high power narrow beam LED types are available**

**Laser type (equipped with laser OFF input)**

The spot size of the laser type is  $\phi 1$  mm at 100 mm (short-range type). Optimal for applications that in which **small object detection** and **high repeat accuracy** are required. It is also a Class 1 laser in which eye protection for workers is not necessary.

\*Classified as Class II in the US FDA standards.



**High power narrow beam LED light source type**

Features a **high power narrow beam LED light source**. Because the spot light can be seen clearly even in bright factories regardless of the LED light, confirmation of detection position is easier than for any other conventional model.

\*Compared to conventional models: Using LED light source.

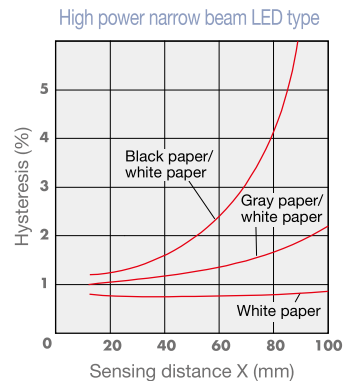
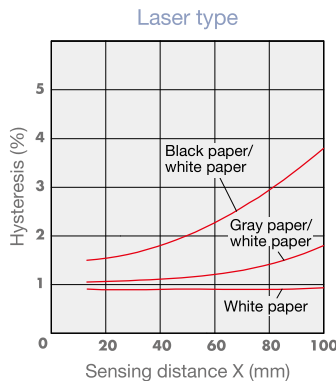


**Ideal for height difference detection using low hysteresis**

**Short-range type hysteresis  $\leq 3\%$  (typical value)**

A short-range type with a sensing distance of 100 mm that achieves a low hysteresis of  $\leq 3\%$ . Demonstrates its strength in small height difference detection.

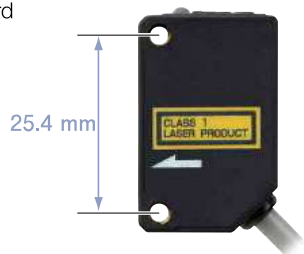
\*A mid-range type with a sensing distance of 300 mm that achieves a hysteresis of  $\leq 5\%$ .



**Industry standard size**

**Mounting hole pitch: 25.4 mm**

Features an industry standard pitch of 25.4 mm.



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Sensors

BGS Sensors

BGS-HL,  
BGS-HDL

BGS-DL

BGS-ZL,  
BGS-Z

BGS-ZM

BGS-S,  
BGS-2S

BGS

BGS-DL  
(potentiometer type)Laser, standard type **BGS-ZL, BGS-Z** series

## Specifications

Type		Short-range type (laser)	Mid-range type (laser)	Short-range type (LED)	Mid-range type (LED)	
Model	NPN	Cable type	<b>BGS-ZL10N</b>	<b>BGS-ZL30N</b>	<b>BGS-Z10N</b>	<b>BGS-Z30N</b>
		Connector type	<b>BGS-ZL10CN</b>	<b>BGS-ZL30CN</b>	<b>BGS-Z10CN</b>	<b>BGS-Z30CN</b>
	PNP	Cable type	<b>BGS-ZL10P</b>	<b>BGS-ZL30P</b>	<b>BGS-Z10P</b>	<b>BGS-Z30P</b>
		Connector type	<b>BGS-ZL10CP</b>	<b>BGS-ZL30CP</b>	<b>BGS-Z10CP</b>	<b>BGS-Z30CP</b>
Sensing distance		5 to 100 mm <sup>1</sup>	10 to 300 mm <sup>1</sup>	5 to 100 mm <sup>1</sup>	10 to 300 mm <sup>1</sup>	
Adjustable distance range		20 to 100 mm <sup>1</sup>	50 to 300 mm <sup>1</sup>	20 to 100 mm <sup>1</sup>	50 to 300 mm <sup>1</sup>	
Light source		Red semiconductor laser Class 1 (IEC/JIS) <sup>2</sup> Wavelength: 650 nm, Maximum output: 3.5 mW		Red LED		
Spot size (focal length)		Approx. $\phi$ 1 mm <sup>3</sup> Distance: 100 mm (at normal temperatures)	Approx. $\phi$ 1.5 mm <sup>3</sup> Distance: 300 mm (at normal temperatures)	Approx. $\phi$ 10 mm Distance: 100 mm	Approx. $\phi$ 30 mm Distance: 300 mm	
Response time		250 $\mu$ s or less		500 $\mu$ s or less		
Hysteresis		3%	5%	3%	5%	
Distance adjustment		4-turn endless potentiometer				
Indicators		Output indicator (orange) Laser emission indicator (green)		Output indicator (orange) Stability indicator (green)		
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 $\phi$ 3.8 mm / Connector type: M8, 4-pin				
Rating	Supply voltage	10 to 30 VDC, including 10% ripple (p-p)				
	Current consumption	30 mA or less				
Applicable regulations		EMC directive (2004/108/EC) / FDA regulations (21 CFR 1040.10)		EMC directive (2004/108/EC)		
Applicable standards		EN 60947-5-2				
Company standards		Noise resistance: Feilen Level 3 cleared				
Environmental resistance	Ambient temperature/ humidity	-10 to +50°C (no freezing) 35 to 85% RH (no condensation)		-25 to +55°C (no freezing) 35 to 85% RH (no condensation)		
	Ambient illuminance	Sunlight: 10,000 lx Incandescent lamp: 3,000 lx				
	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. 50 G (500 m/s <sup>2</sup> ); 3 times in each of the X, Y, and Z directions		Approx. 100 G (1000 m/s <sup>2</sup> ); 3 times in each of the X, Y, and Z directions		
	Degree of protection	IP67				
Material		Housing: ABS (glass fiber filled), Front cover: PMMA				
Weight without cable		Approx. 10 g				
Included accessories		Mounting bracket: BEF-W100-B <sup>4</sup>				

\*1. Using a 100 × 100 mm white sheet of paper.

\*2. Classified as Class II in the US FDA standards.

\*3. Defined with center strength 1/e<sup>2</sup> (13.5%). There may be light leakage outside of the specified spot size. The sensor may be affected when there is a highly reflective object close to the target area.

\*4. Mounting bracket BEF-W100-A is included with the connector type.

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

Photoelectric Sensors

Specialized Photoelectric Sensors

Laser Displacement Sensors

BGS Sensors

BGS-HL, BGS-HDL

BGS-DL

BGS-ZL, BGS-Z

BGS-ZM

BGS-S, BGS-ZS

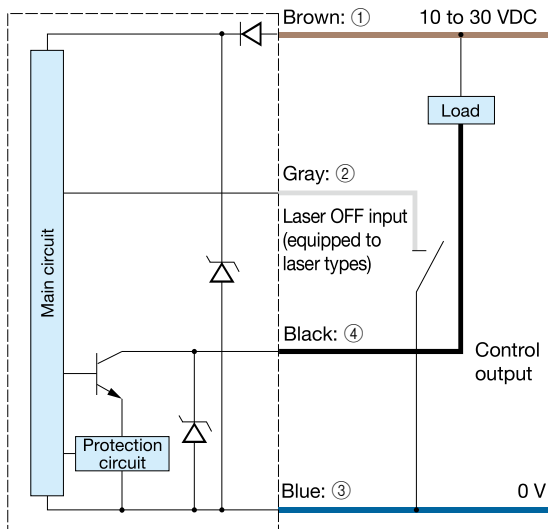
BGS

BGS-DL (potentiometer type)

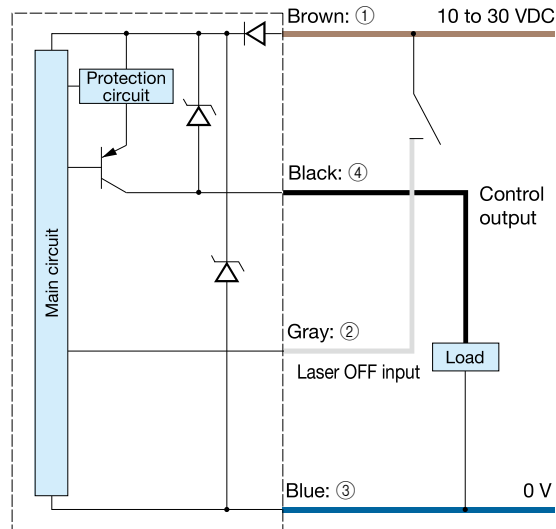
## I/O circuit diagram

Laser type: BGS-ZL10□/BGS-ZL30□

### NPN output type



### PNP output type



### Connector type

(Pin configuration) Sensor side Connector cable side



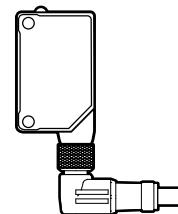
- ① 10 to 30 VDC
- ② Laser OFF input (laser type only)
- ③ 0 V
- ④ Control output

### Connecting

■ ① to ④ are connector pin No.

### Notes

- Connect frame ground to the earth when the switching regulator is used for power supply.
- 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 to the right when you use L-shaped connector cable. Be aware that rotation is not possible.



## Laser light precautions

This product emits a Class 1 (II) visible laser beam that is compliant with IEC/JIS, FDA laser safety standards.

Warning and explanation labels are affixed to the sides of the sensor.

**Warning** Do not look directly at the laser or intentionally shine the laser beam in another person's eyes.

**CLASS 1  
LASER PRODUCT**

330

Specialized Photoelectric Sensors

Photoelectric Sensors

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Laser Displacement Sensors

BGS Sensors

BGS-HL, BGS-HDL

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BGS-S, BGS-2S

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BGS-DL (potentiometer type)

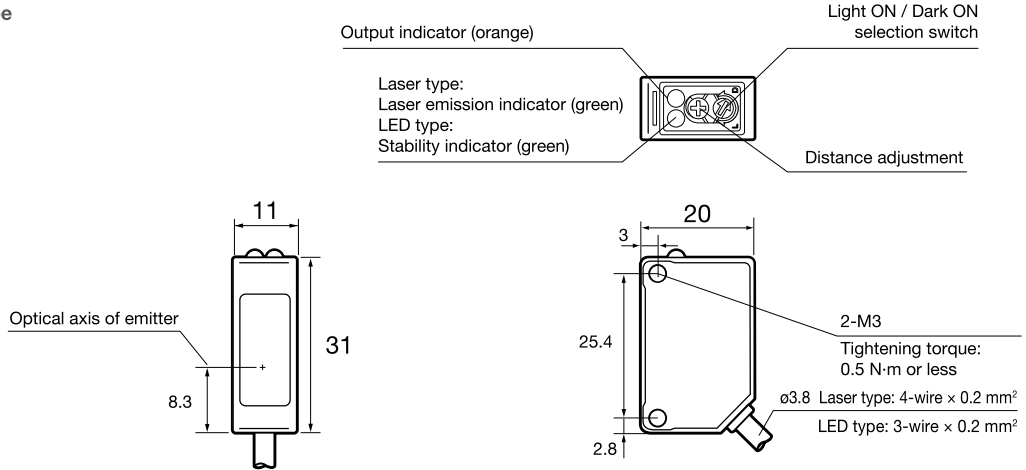
Laser, standard type BGS-ZL, BGS-Z series

Dimensions

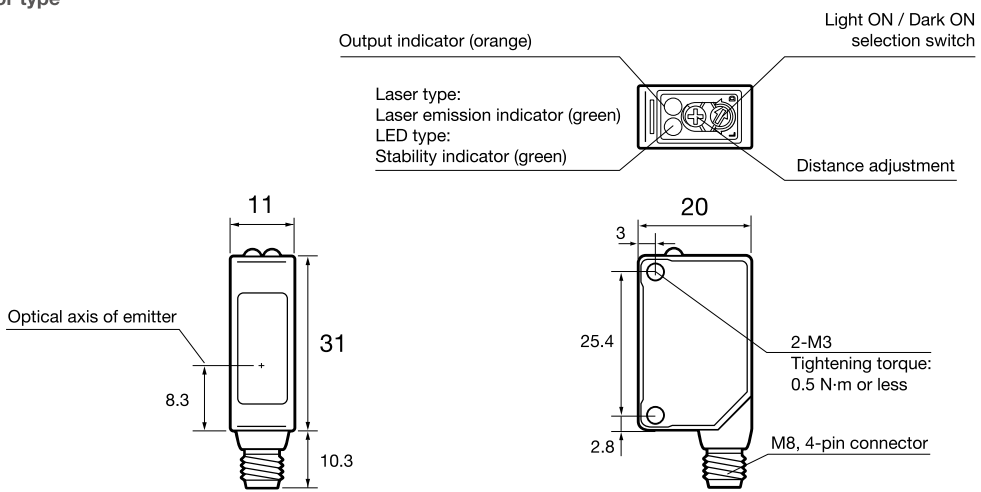
Sensor

■ Cable type

(Unit: mm)

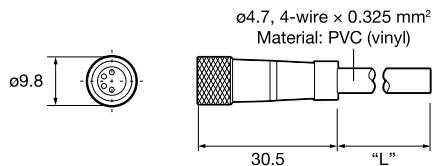


■ Connector type

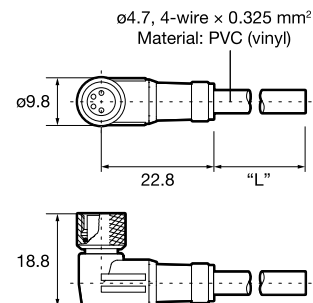


Connector cable (optional)

■ JCN-S, JCN-5S, JCN-10S



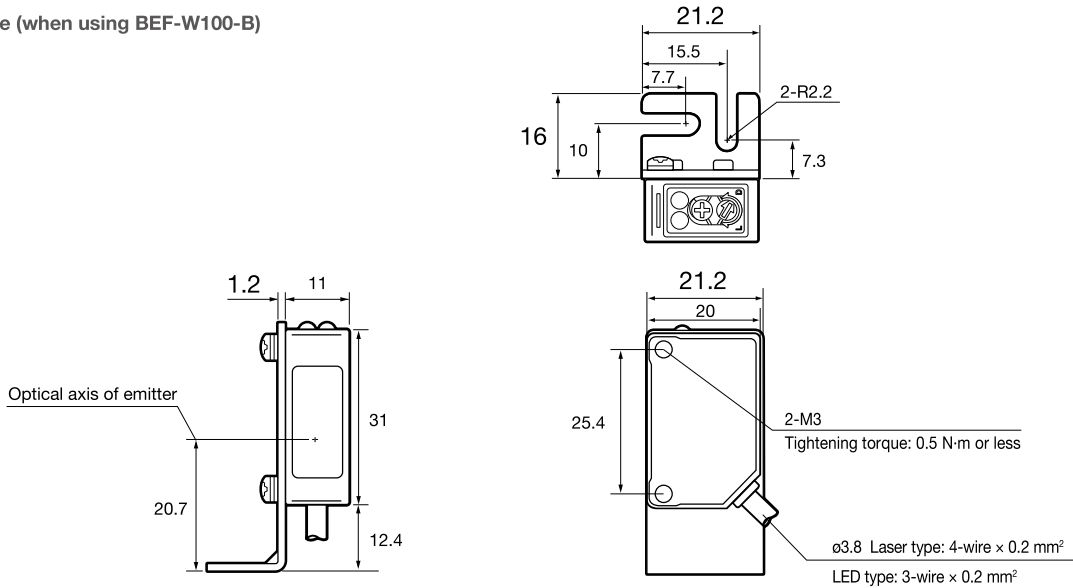
■ JCN-L, JCN-5L, JCN-10L



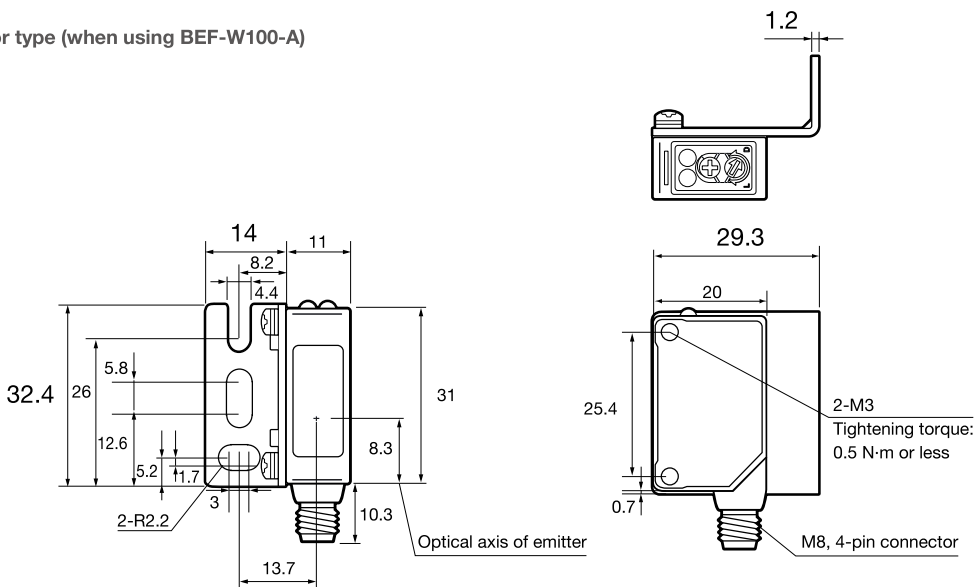
**Mounting bracket**

■ Cable type (when using BEF-W100-B)

(Unit: mm)



■ Connector type (when using BEF-W100-A)



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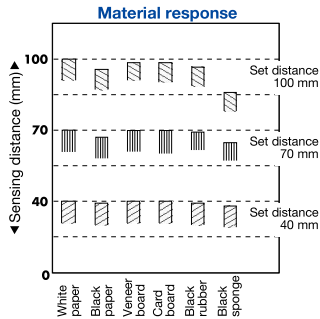
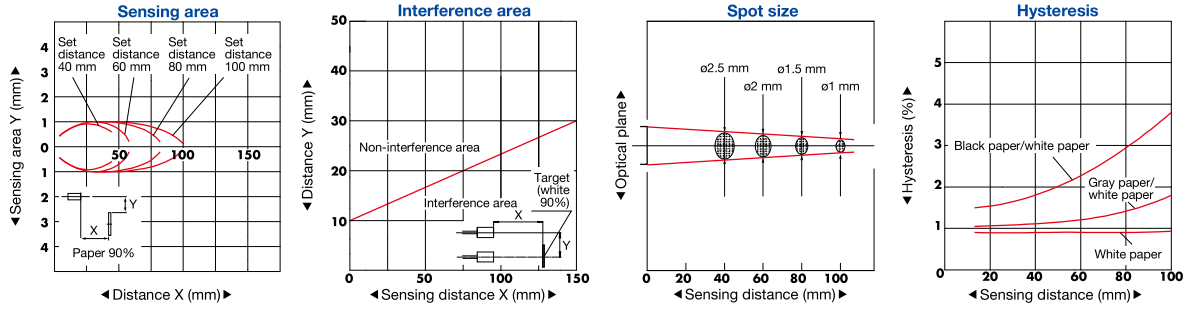
BGS

BGS-DL  
(potentiometer type)

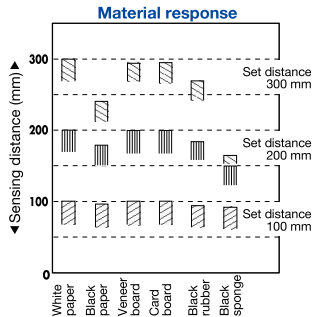
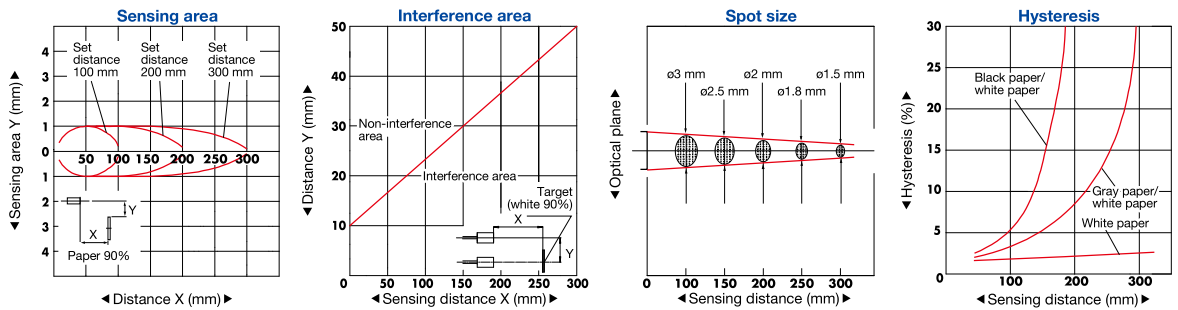
Laser, standard type **BGS-ZL, BGS-Z** series

Typical characteristic data

**BGS-ZL10** □ Laser type



**BGS-ZL30** □ Laser type



Photoelectric Sensors

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Laser Displacement Sensors

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BGS-DL

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BGS-ZM

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BGS

BGS-DL (potentiometer type)



Photoelectric Sensors

Specialized Photoelectric Sensors

Laser Displacement Sensors

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BGS-DL

BGS-ZL, BGS-Z

BGS-ZM

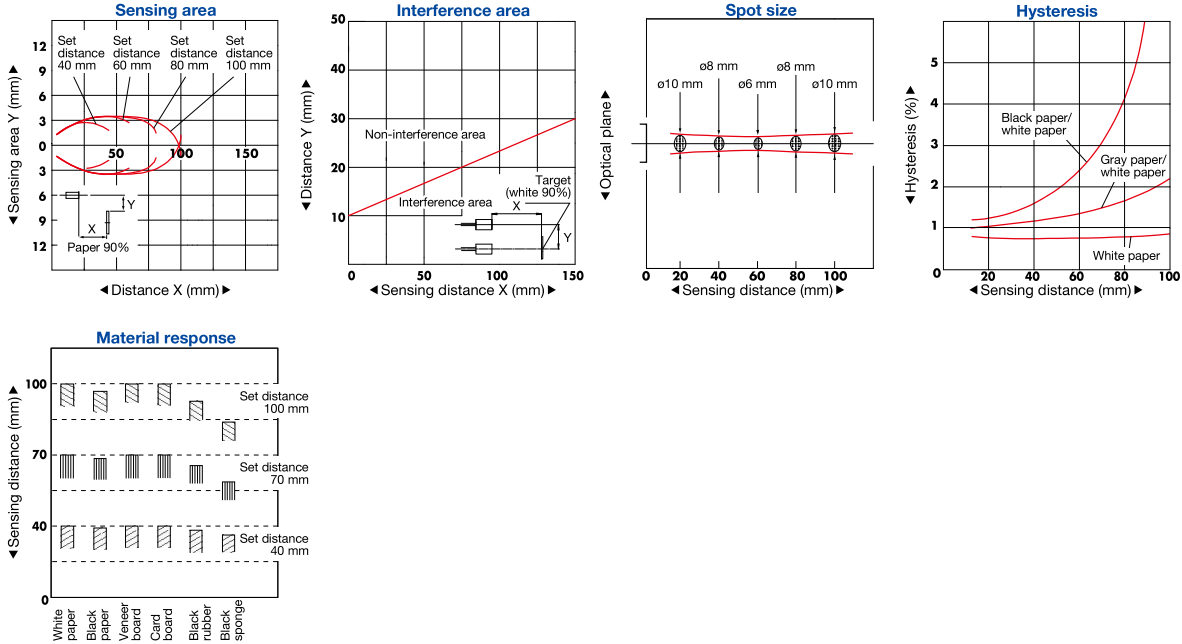
BGS-S, BGS-2S

BGS

BGS-DL (potentiometer type)



**BGS-Z10** LED type



**BGS-Z30** LED type

