Standard BGS type
BGS series

Highly balanced BGS standard

- **Spot light can be clearly seen thanks to the high brightness emitting LED**
- **Effective against workpiece tilting**
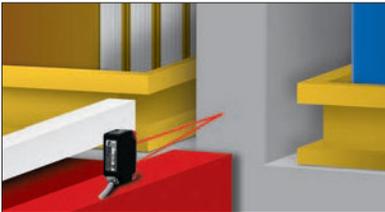- **M8 connector types are also available**

CE

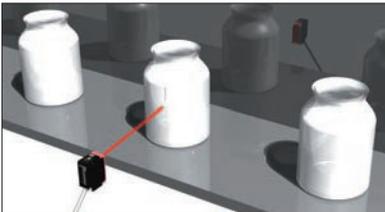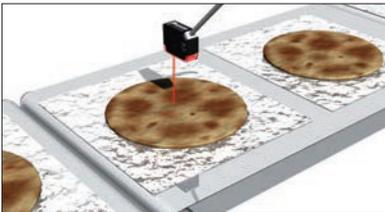| Related products	C-MOS laser **BGS-HL, BGS-HDL** ● P.310	Laser type **BGS-ZL** ● P.326	Universal voltage **BGS-2V** ● P.384

Detection of racks in automatic libraries

Detection of items on stainless steel lines

Detection of pizza crust passage

Selection table

Type	Shape	Sensing distance (Adjustable distance range shown in parentheses)	Model (Models in parentheses are connector types)	
			NPN type	PNP type
BGS		0 to 100 mm (40 to 100 mm)	**BGS-10N** (BGS-10CN)	**BGS-10P** (BGS-10CP)
		0 to 180 mm (50 to 180 mm)	**BGS-20N**	**BGS-20P**
		0 to 300 mm (100 to 300 mm)	**BGS-30N** (BGS-30CN)	**BGS-30P** (BGS-30CP)

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

Stable detection without being affected by workpiece color

BGS Function (Background Suppression)

The sensor does not turn ON/OFF based on the receiving light quantity, but detects based on the distance to the workpiece.

It can also be used safely with both brightly and darkly colored workpieces.
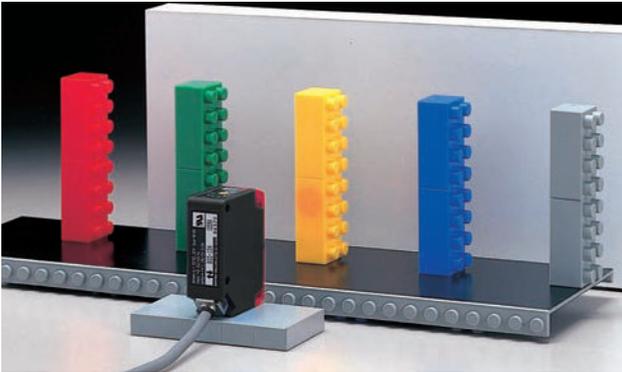
Effective against workpiece tilting

Type with good angular deviation

With a large spot size of ø10 mm/100 mm, stable detection is possible even if workpieces are tilted.

It is also highly visible and is extremely convenient for positioning.
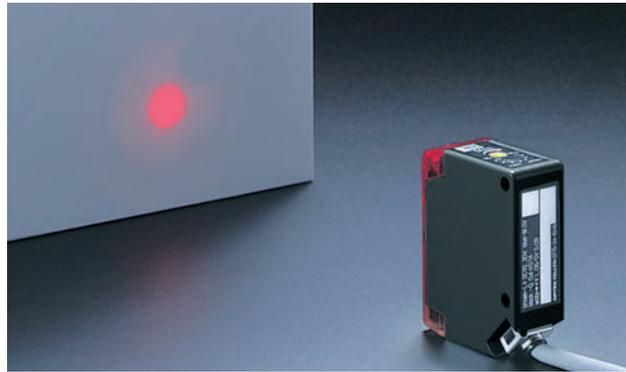
Easy adjusting

Finely adjustable 2-turn potentiometer

Features a wide distance adjustment range to enable fine distance determinations to be made.

Since these models also come with indicators, the adjustment position can be confirmed at a glance.

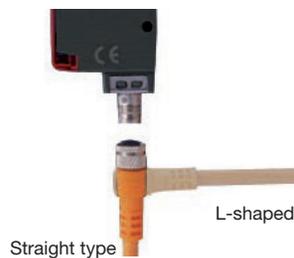## Water resistant structure

Degree of protection on IP67

All models in the BGS series conform to IP67 (protective resistance standard) and feature excellent dust and water resistance. It also conforms to CE and UL standards and can be used in a wide range of locations.

For improved maintenance

Connector type also available

A connector type convenient for replacing sensors or only cables during maintenance is also available. Ideal for use in cleanrooms where the usage of items such as tools is undesirable.

L-shaped

Straight type

Standard BGS type **BGS** series

Specifications

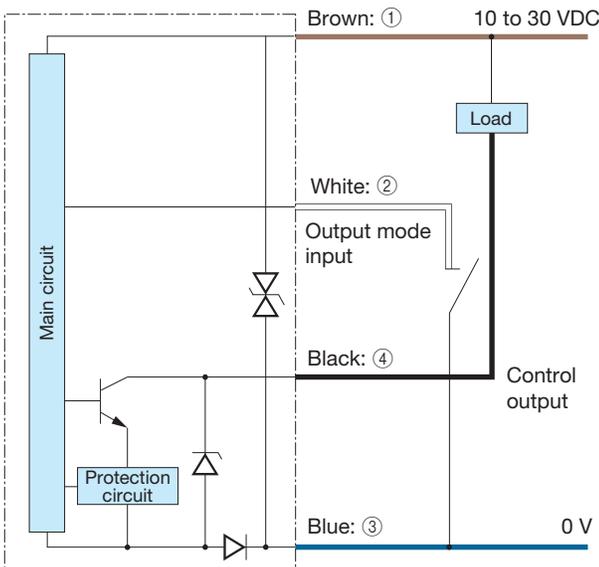| Type		Short-range	Mid-range	
Model	Cable type	**BGS-10N**	**BGS-20N**	**BGS-30N**
	Connector type	**BGS-10CN**	**—**	**BGS-30CN**
Sensing distance	White paper	0 to 100 mm	0 to 180 mm	0 to 300 mm
	Gray paper	10 to 100 mm	10 to 150 mm	20 to 300 mm
	Black paper	15 to 80 mm	15 to 100 mm	30 to 250 mm
Light source		Red LED		
Response time		2 ms or less		
Repeat accuracy		Light axis direction: 0.3 mm Vertical direction: 0.3 mm	Light axis direction: 1.5 mm Vertical direction: 0.5 mm	Light axis direction: 1.5 mm Vertical direction: 0.5 mm
Hysteresis		5% or less		
Distance adjustment		2-turn potentiometer		
Indicators		Light receiving indicator (red)		
Control output		NPN/PNP type open collector Max. 100 mA/30 VDC		
Output mode		Light ON / Dark ON switched by wiring		
Connection type		Cable type: Cable length: 2 m ø3.8 mm / Connector type: M8, 4-pin		
Insulation resistance		20 MΩ or more (with 500 VDC)		
Rating	Supply voltage	10 to 30 VDC, including 10% ripple (p-p)		
	Current consumption	25 mA or less		
Applicable regulations		EMC directive (2004/108/EC)		
Applicable standards		EN 60947-5-2		
Company standards		Noise resistance: Feilen Level 4 cleared		
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		
	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^2), 3 times in each of the X, Y, and Z directions		
	Degree of protection	IEC standard, IP67		
Material		Housing: ABS (glass fiber filled, fire resistant), Front cover: Polycarbonate		
Weight without cable		Approx. 20 g		
Included accessories		Mounting bracket: BEF-W190		

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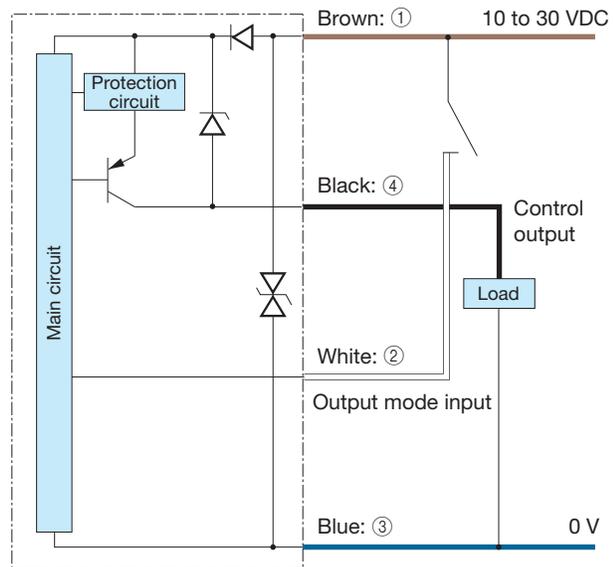
Distance adjustment

	Order	Diagram	Potentiometer	Light receiving indicator	Adjustment procedure
BGS	1		SENS. MIN MAX A	ON	Set the object in the detection position and gradually raise the distance adjustment potentiometer from the minimum to position A where the light receiving indicator will light up.
	2		SENS. MIN MAX B	OFF	Remove the object and gradually lower the potentiometer from the maximum to position B where the indicator will turn on.
	3		SENS. MIN MAX B A C	ON	**Position C between positions A and B** is the optimal position for threshold. Positions A and B may be reversed depending on the model and the detection conditions. Place the workpiece in a fixed position and perform an operational check.

I/O circuit diagram

■ **NPN output type**

Brown: ①   10 to 30 VDC

Load

White: ②

Output mode input

Black: ④

Control output

Main circuit

Protection circuit

Blue: ③   0 V

■ **PNP output type**

Brown: ①   10 to 30 VDC

Protection circuit

Black: ④

Control output

Load

Main circuit

White: ②

Output mode input

Blue: ③   0 V

■ **Connector type**

(Pin configuration)

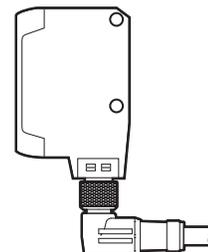Sensor side   Connector cable side

② ④   ④ ②
① ③   ③ ①

① 10 to 30 VDC
② Not connected/
   +V: Light ON (NPN)
   0 V: Dark ON
③ 0 V
④ Control output

Connecting

■ Turns to Light ON mode when the white wire is connected to +V or not connected and to Dark ON mode when connected to 0 V (for NPN). To use without connecting, disconnect and wrap individually with insulating tape, etc. Do not connect it to any other terminal.
■ 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 to the right when you use L-shaped connector cable. Be aware that rotation is not possible.
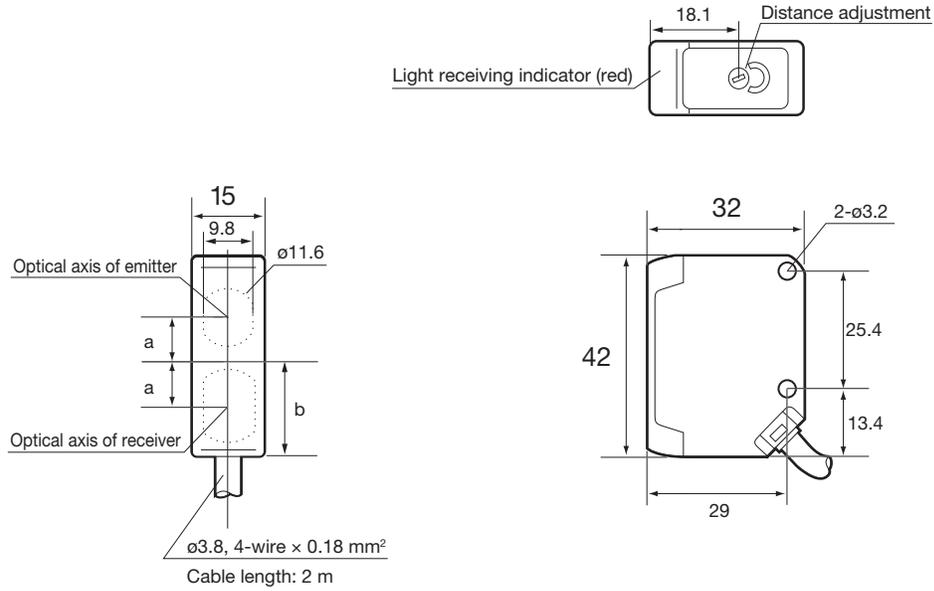
Photoelectric
Sensors

Specialized
Photoelectric
Sensors

Laser
Displacement
Sensors

BGS Sensors

BGS-HL,
BGS-HDL
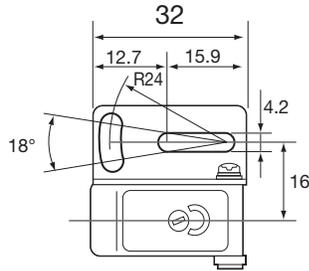
BGS-DL

BGS-ZL,
BGS-Z

BGS-ZM
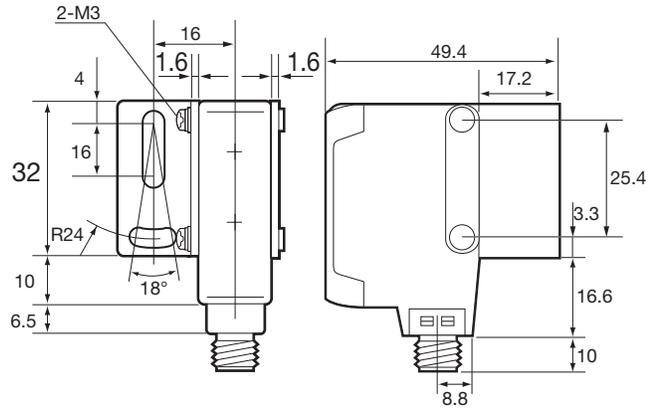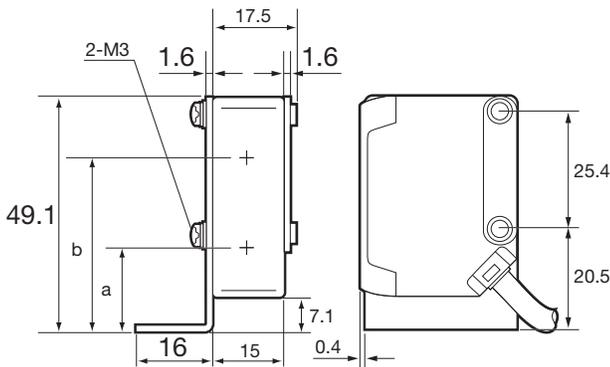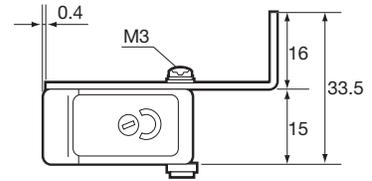
BGS-S,
BGS-2S

BGS

BGS-DL
(potentiometer type)

Standard BGS type BGS series

Dimensions

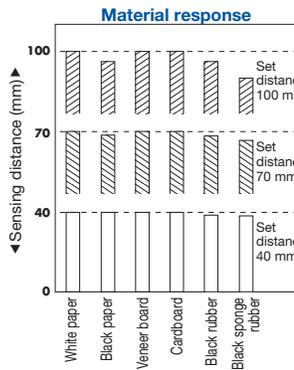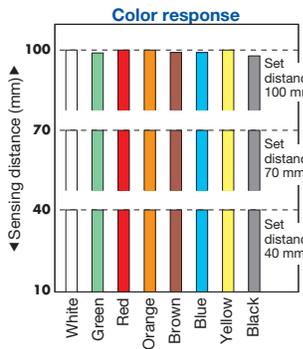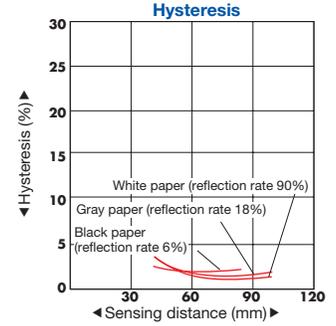**Sensor**   (Unit: mm)

■ **Cable type**

18.1 Distance adjustment

Light receiving indicator (red)

15
9.8
ø11.6

Optical axis of emitter

a

a

b

Optical axis of receiver

ø3.8, 4-wire × 0.18 mm²
Cable length: 2 m

32   2-ø3.2

42

25.4

13.4

29

■ **Connector type (excluding BGS-20□)**

18.1 Distance adjustment

Light receiving indicator (red)

15
9.8
ø11.6

Optical axis of emitter

a

a

b

6.5
10

Optical axis of receiver

M8, 4-pin connector

32   2-ø3.2

42

25.4

13.4

6.5

28.95

M8, 4-pin connector
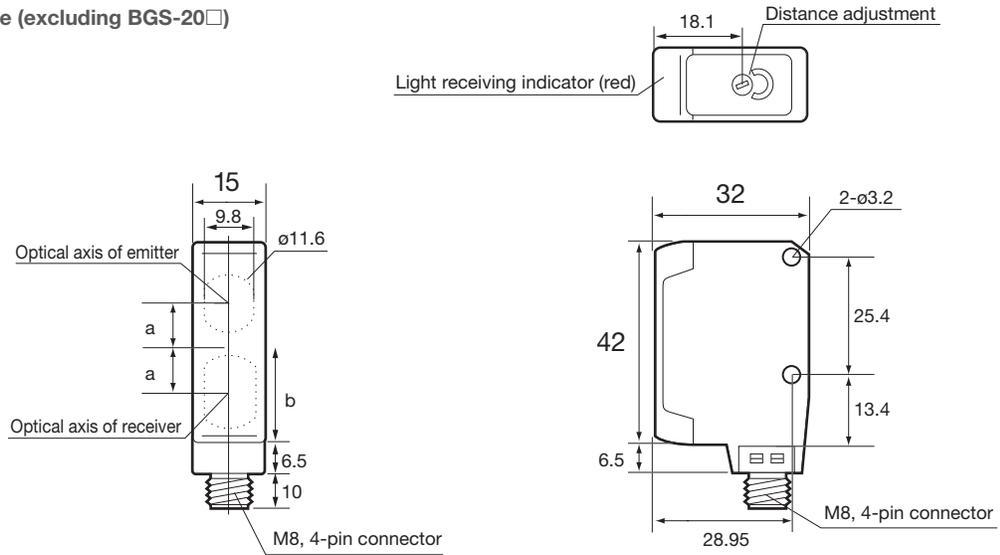
	BGS-10□	BGS-20□	BGS-30□
a	8.5	8.5	9.6
b	19.3	19.3	20.2

Mounting bracket

(Unit: mm)

■ Cable type

32
12.7 / 15.9
R24
18°
4.2
16

17.5
2-M3
1.6 / 1.6
49.1
b
a
25.4
20.5
7.1
16 / 15 / 0.4

	BGS-10□	BGS-20□	BGS-30□
a	17.9	17.9	17.7
b	34.9	34.9	36.9

■ Connector type (excluding BGS-20□)

0.4
M3
16
33.5
15

2-M3
16
1.6 / 1.6
4
32
16
R24
18°
10
6.5
49.4
17.2
25.4
3.3
16.6
10
8.8

Connector cable (optional)

■ JCN-S, JCN-5S, JCN-10S
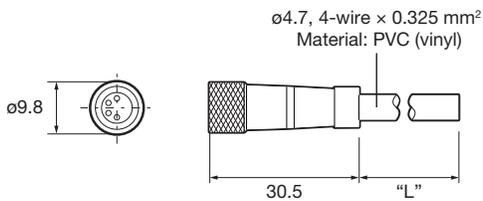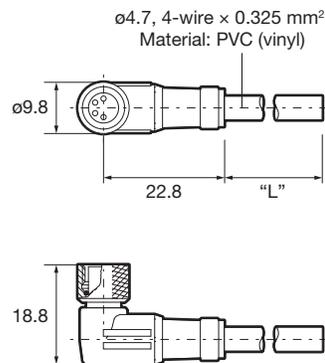
ø9.8
ø4.7, 4-wire × 0.325 mm²
Material: PVC (vinyl)
30.5 / "L"

■ JCN-L, JCN-5L, JCN-10L

ø9.8
ø4.7, 4-wire × 0.325 mm²
Material: PVC (vinyl)
22.8 / "L"
18.8

Photoelectric
Sensors

Specialized
Photoelectric
Sensors

Laser
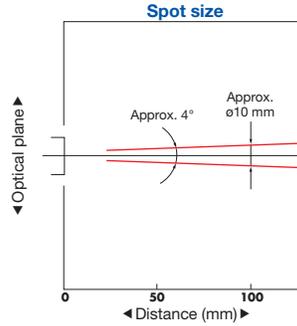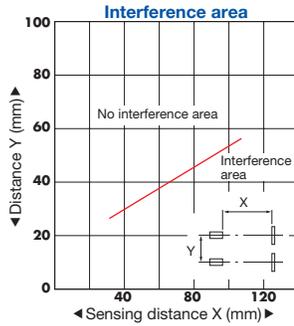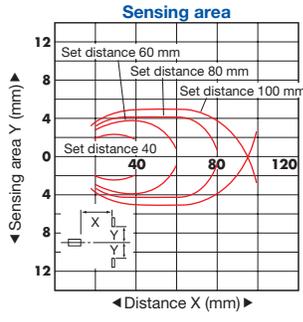Displacement
Sensors

BGS Sensors

BGS-HL,
BGS-HDL

BGS-DL

BGS-ZL,
BGS-Z

BGS-ZM

BGS-S,
BGS-2S

BGS

BGS-DL
(potentiometer type)

Standard BGS type BGS series

Typical characteristic data

BGS-10□

Sensing area

Set distance 60 mm
Set distance 80 mm
Set distance 100 mm
Set distance 40

Interference area

No interference area
Interference area

Spot size

Approx. 4°
Approx. ø10 mm
Optical plane

Hysteresis

White paper (reflection rate 90%)
Gray paper (reflection rate 18%)
Black paper (reflection rate 6%)

Color response

Set distance 100 mm
Set distance 70 mm
Set distance 40 mm

White, Green, Red, Orange, Brown, Blue, Yellow, Black

Material response

Set distance 100 mm
Set distance 70 mm
Set distance 40 mm

White paper, Black paper, Veneer board, Cardboard, Black rubber, Black sponge rubber

BGS-20□

Sensing area

Set distance 100 mm
Set distance 50 mm
Set distance 180 mm

Interference area

No interference area
Interference area

Spot size

Approx. 4.3°
Approx. ø24 mm
Optical plane

Hysteresis

Black paper (reflection rate 6%)
Gray paper (reflection rate 18%)
White paper (reflection rate 90%)

Color response

Set distance 150 mm
Set distance 100 mm
Set distance 50 mm

White, Green, Red, Orange, Brown, Blue, Yellow, Black

Material response

Set distance 150 mm
Set distance 100 mm
Set distance 50 mm

White paper, Black paper, Veneer board, Cardboard, Black rubber, Black sponge rubber

BGS-30□

Sensing area

Interference area

Spot size

Hysteresis

Color response

Material response

Photoelectric
Sensors

Specialized
Photoelectric
Sensors

Laser
Displacement
Sensors

BGS Sensors

BGS-HL,
BGS-HDL

BGS-DL

BGS-ZL,
BGS-Z

BGS-ZM
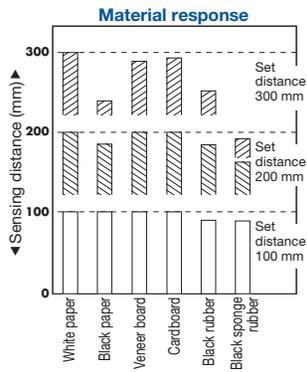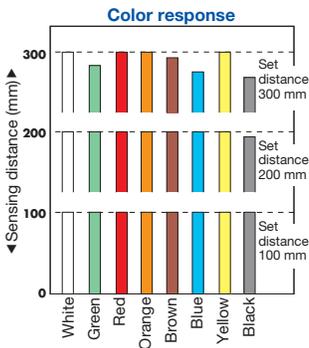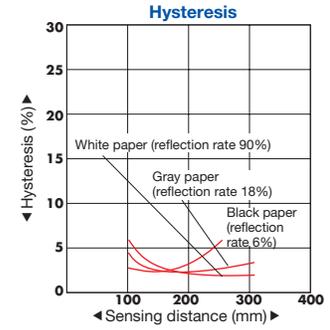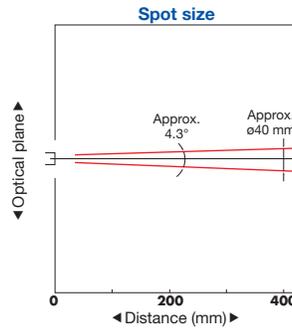
BGS-S,
BGS-2S

BGS

BGS-DL
(potentiometer type)