



Can be installed anywhere

Small photoelectric sensor

- | Features a high speed response time of 0.5 ms, enabling its use on high speed production lines
- | Small in size with noise resistance that conforms to CE standards
- | Shock resistance up to 100 G

Related products

Transparent object detection

SR-Q
● P.412

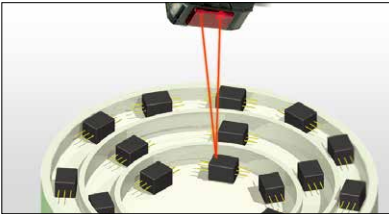
BGS type

BGS-S
● P.342

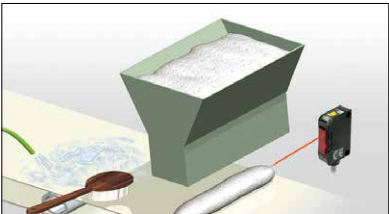
Overlap detection of empty ice cream cups



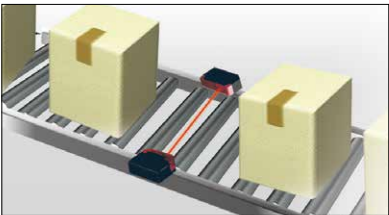
Detection of parts on parts feeder



Detection of rice dropped from automatic sushi wrap rolling machine



Detection of items transported on a rolling conveyor



Selection table

Type	Shape	Sensing distance	Model (Models in parentheses are connector types)	
			NPN type	PNP type
Through-beam		4 m	ST-400N (ST-400CN)	ST-400P (ST-400CP)
Retro-reflective		0.02 to 1.5 m	SR-150N (SR-150CN)	SR-150P (SR-150CP)
Diffuse-reflective		200 mm	SD-20N (SD-20CN)	SD-20P (SD-20CP)
Transparent object detection		10 to 300 mm	SR-Q50NW (SR-Q50CNW) ● P.412	SR-Q50PW (SR-Q50CPW) ● P.412
BGS		10 to 50 mm (10 to 30 mm)	BGS-S03N ● P.342	BGS-S03P ● P.342
		10 to 80 mm (10 to 80 mm)	BGS-S08N (BGS-S08CN) ● P.342	BGS-S08P (BGS-S08CP) ● P.342

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

Features a high speed response time of 0.5 ms, enabling its use on high speed production lines

With a response time of 0.5 ms, this photoelectric sensor with built-in amplifier features a top level response time. This feature makes its use on high speed production lines possible.

**Small in size with noise resistance that conforms to CE standards**

In addition to being small in size, it has cleared strict CE inspection standards for EU noise resistance performance. It can be used for a wide range of machine equipment.

**Small sensor with built-in amplifier**

The main unit features a compact design of 10 × 17 × 28 mm. This compact size was realized without sacrificing any specifications, such as those regarding sensing distance.

**Can be used globally as it conforms to the strict standard of each country.**

S series is conforms to CE, UL and VDE standards and has cleared severe testing standards of various countries worldwide. This series can be used in any region of the world.

Shock resistance of 100 G with robust structure

Features a shock resistance of 100 G (approx. twice that of conventional products) for protection in the event that workpieces come in contact or impact with sensors. It can be used without having to worry about performance deterioration.

**Applicable to VDE safety standards**

Features a safe design in which the main unit will not catch fire even if sensor troubles (short-circuits/ overvoltage/etc.) occur. S series models conform to VDE standards.



Specifications

Type			Through-beam type	Retro-reflective type	Diffuse-reflective type
Model	NPN	Cable type	ST-400N	SR-150N	SD-20N
		Connector type	ST-400CN	SR-150CN	SD-20CN
	PNP	Cable type	ST-400P	SR-150P	SD-20P
		Connector type	ST-400CP	SR-150CP	SD-20CP
Sensing distance			4 m	0.02 to 1.5 m ⁻¹	200 mm ⁻²
Light source			Red LED		
Smallest detectable object			ø6 mm	□ 45 mm	—
Response time			0.5 ms or less		
Hysteresis			—	—	20% or less
Distance adjustment			1-turn potentiometer		
Indicators			Output indicator (orange LED), Stability indicator (green LED)		
Control output			NPN/PNP type Open co-llector Max. 100 mA/30 VDC		
Output mode			Light ON / Dark ON Switched by wiring		
Connection type			Cable type: Cable length: 2 m / 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		30 mA or less	20 mA or less	
Applicable regulations			EMC directive (2004/108/EC)		
Applicable standards			EN 60947-5-2		
Company standards			Noise resistance: Feilen Level 3 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. 100 G (1000 m/s ²); 3 times in each of the X, Y, and Z directions		
	Degree of protection		IEC standard, IP67		
Material			Housing: PSF + PBT (glass fiber filled), Front cover: Polycarbonate (retro-reflective type is PMMA)		
Weight without cable			Approx. 5 g		
Included accessories			Mounting bracket: BEF-W150-B	Mounting bracket: BEF-W150-B Reflector: V-61	Mounting bracket: BEF-W150-B

*1. With V-61 reflector, *2. With 100 mm × 100 mm white paper

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

Options/Accessories

Reflector

Standard (included)
Included with
retro-reflective type
V-61
Sensing distance:
1.5 m
60.9 × 50.9 mm



Small type
V-42
Sensing distance:
800 mm
42 × 35 mm



Vertical type
P45A
Sensing distance:
500 mm
54 × 12.4 mm



Reflective sheet

Diamond grade sheet
Sensing distance:
50 to 600 mm
100 × 100 mm (adhesive type)



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 screw

LS series

LS-S01

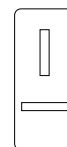


LS-S02



Slit mask

Slit mask for
through-beam type
BL-150-10
Slit width 1 mm
(2 included)



Sensor stand

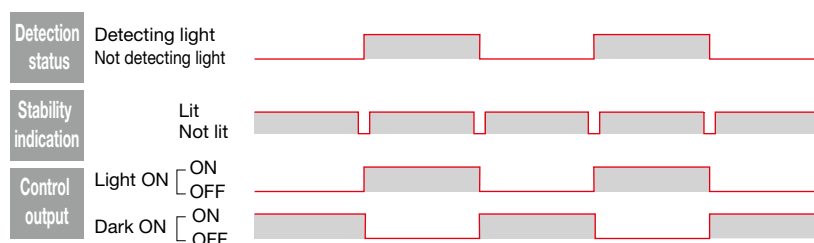
Sensor stand
(Image is for flat surface mounting)
PLN-1
For PLN-1
Reflector mounting bracket
PLN-1M
PLN description
● **P.242**



Distance adjustment

Diffuse type	Order	Diagram	Potentiometer	Output indicator (orange)	Adjustment procedure
	1			Lit 	Set the object for detection in the detection position and gradually raise the sensitivity adjustment potentiometer from the minimum to position A where the indicator will light up.
	2			Not lit 	Remove the object for detection and gradually lower the sensitivity adjustment potentiometer from the maximum to position B where the indicator will go out.
	3			Lit 	Position C between positions A and B is the optimal position for sensitivity. 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.

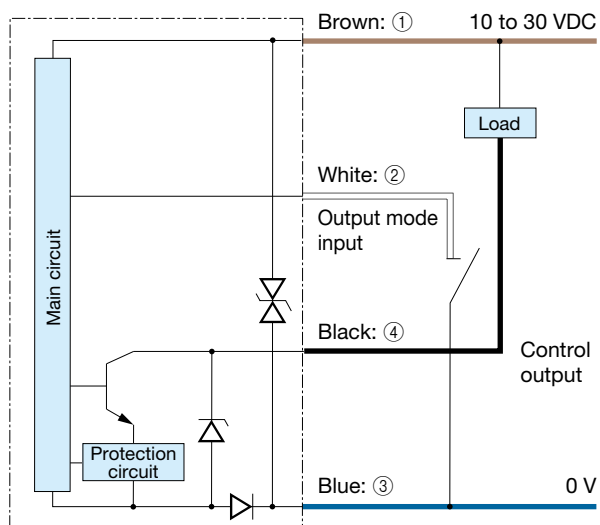
Operation mode



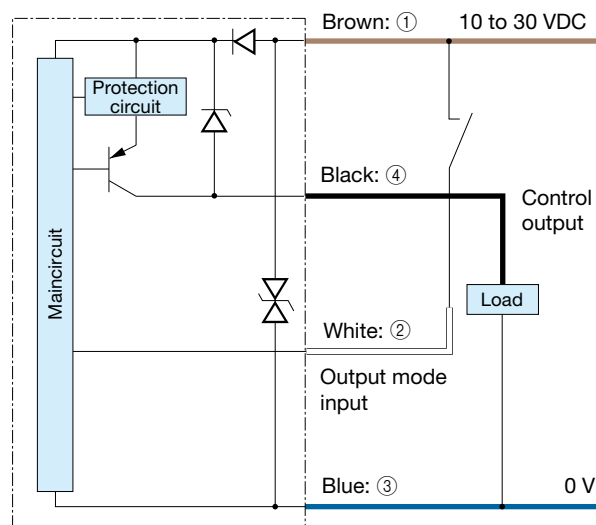
*The operation mode is the same for NPN output and PNP output.

I/O circuit diagram

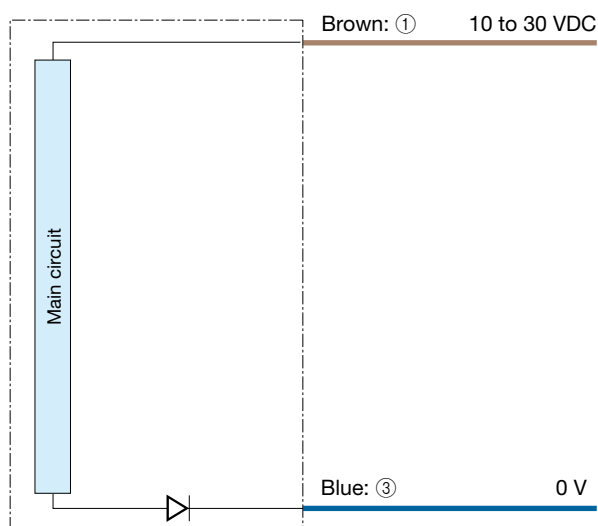
■ NPN output type



■ PNP output type



■ Through-beam type emitter



■ Connector type

(Pin configuration)

Sensor side Connector cable side



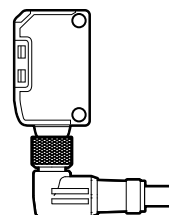
- ① 10 to 30 VDC
- ② Not connected/+V: Light ON (NPN)
0 V: Dark ON
- ③ 0 V
- ④ Control output

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, and 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 the drawing below when you use L-shaped connector cable. Be aware that rotation is not possible.



Z3

Z-M

Z2

E

J

K

S

S2

C-R

C2

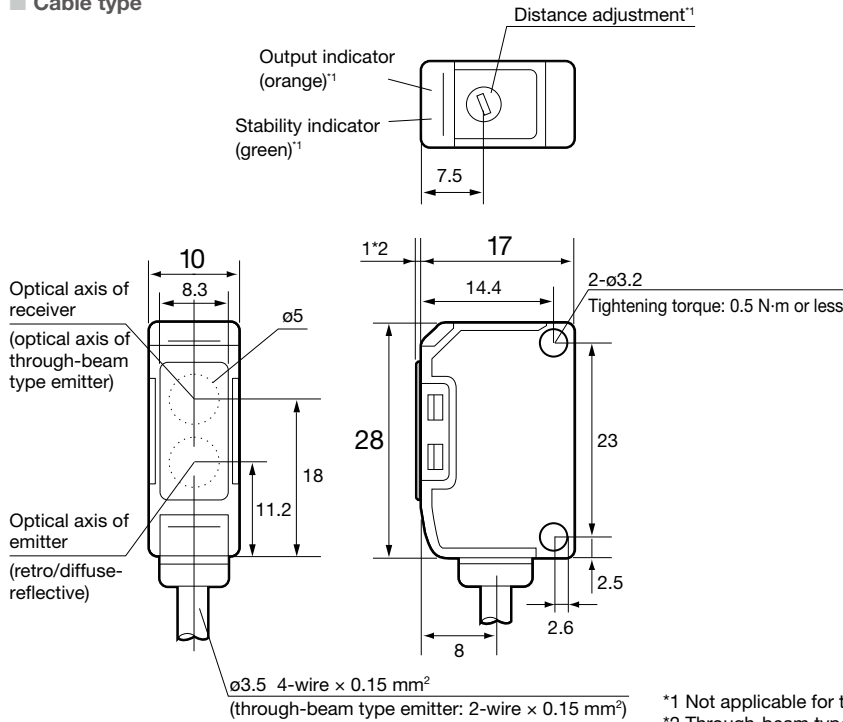
PLN

Dimensions

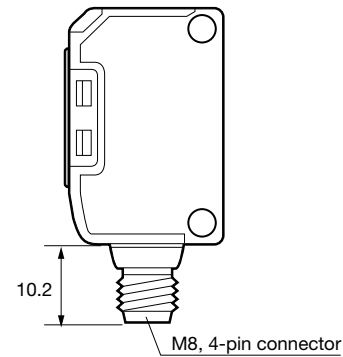
Sensor

(Unit: mm)

■ Cable type



■ Connector type

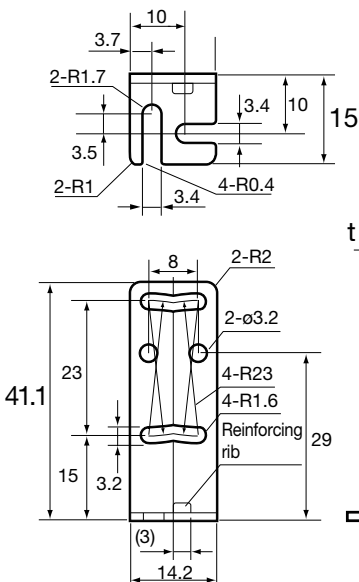


*1 Not applicable for through-beam type emitter

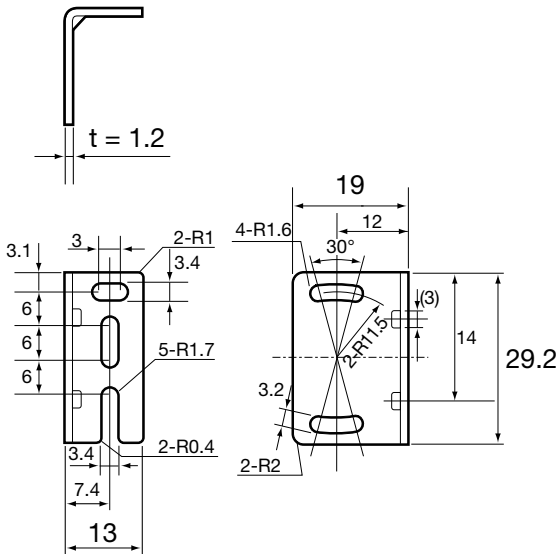
*2 Through-beam type emitter only

Mounting bracket

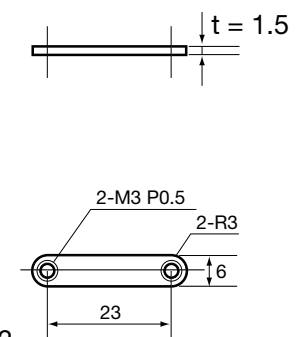
■ BEF-W150-B (included with sensor)



■ BEF-W150-A (optional)



■ Nut plate (included)



Z3

Z-M

Z2

E

J

K

S

S2

C-R

C2

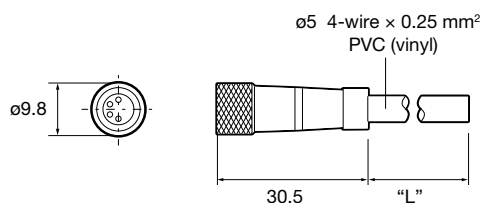
PLN

Dimensions

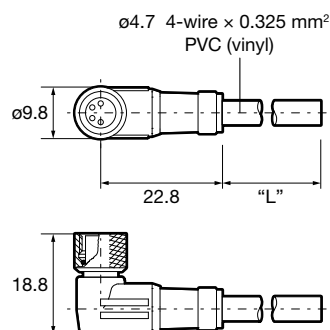
Connector cable (optional)

(Unit: mm)

■ JCN-S, JCN-5S, JCN-10S

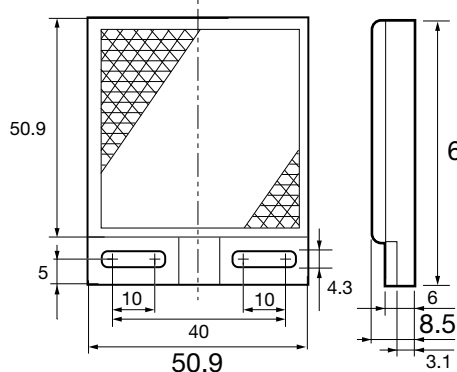


■ JCN-L, JCN-5L, JCN-10L

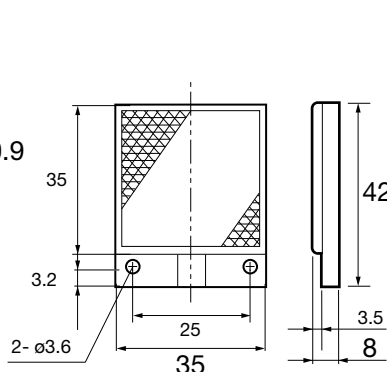


Reflector

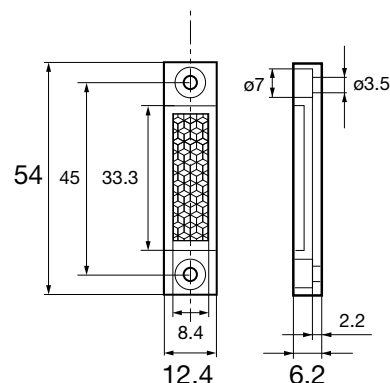
■ V-61: Standard type reflector (included with retro-reflective type)



■ V-42: Small reflector (optional)

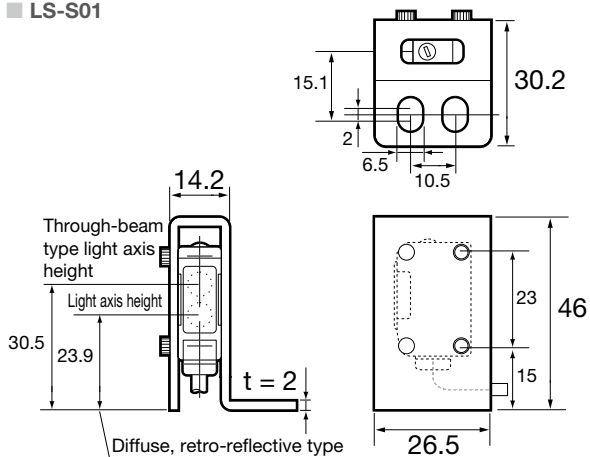


■ P45A: Vertical type reflector (optional)

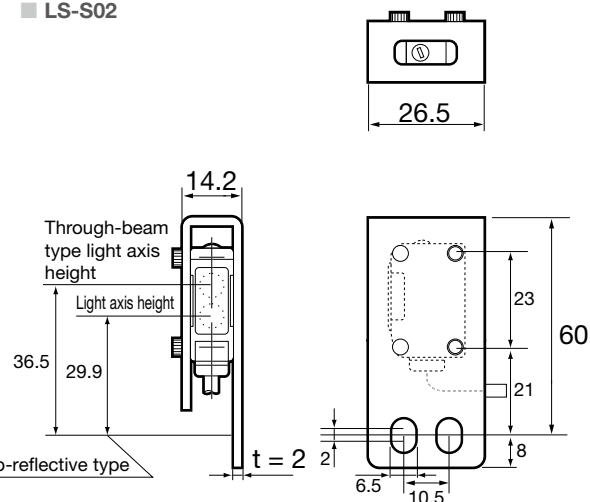


Protective mounting bracket

■ LS-S01



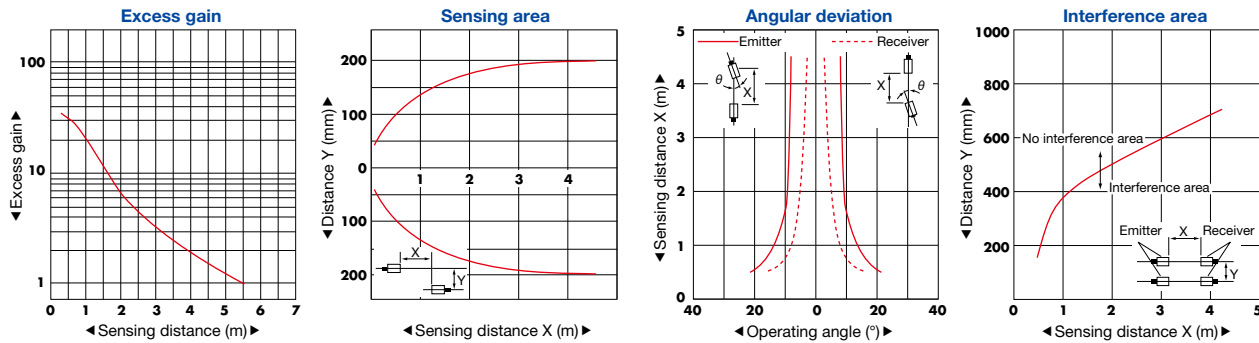
■ LS-S02



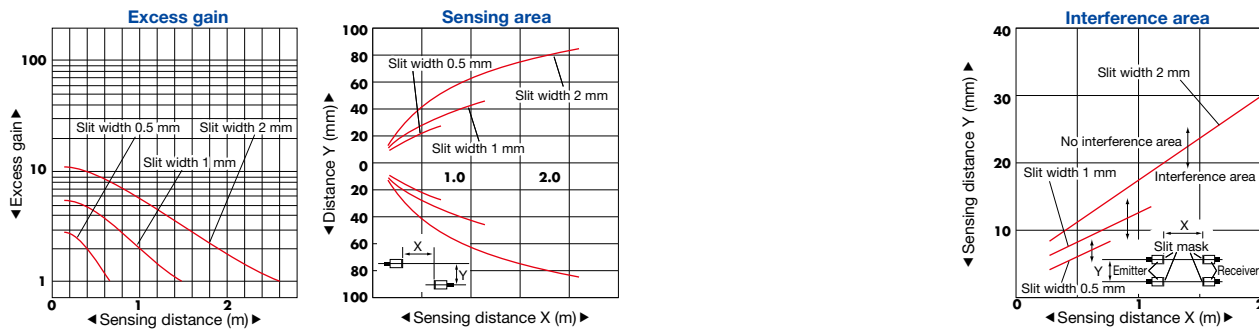
Typical characteristic data

*Contact us for any other characteristic data that may be required.

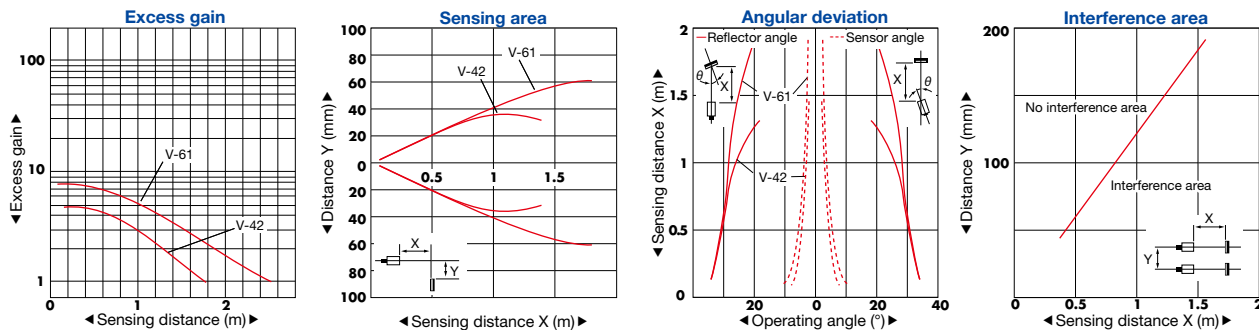
ST-400□



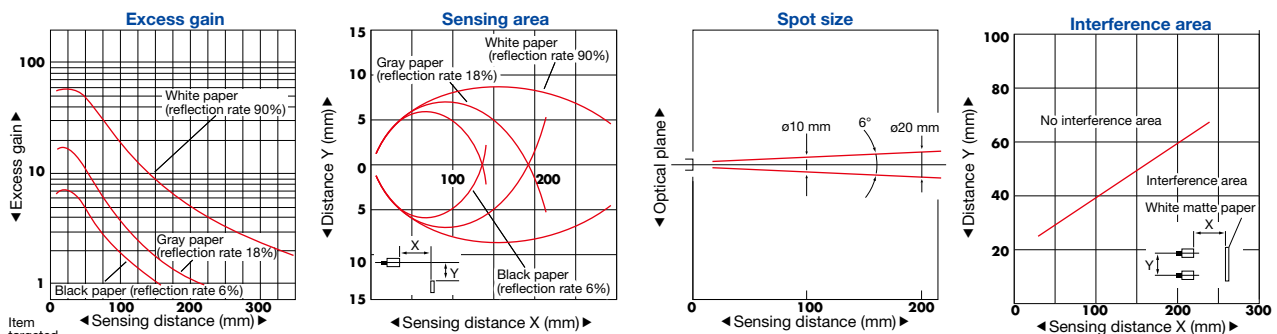
When slit mask (BL-150-10) is attached ST-400□



SR-150□



SD-20□



Item targeted for detection 100 × 100 mm