Can be installed anywhere Small photoelectric sensor

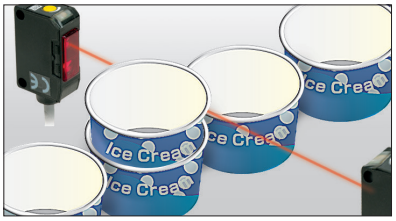
- Features a high speed response time of 0.5 ms, enabling its use on high speed production lines
- Small in size with noise resistance that conforms to CE standards
- Shock resistance up to 100 G

Related products

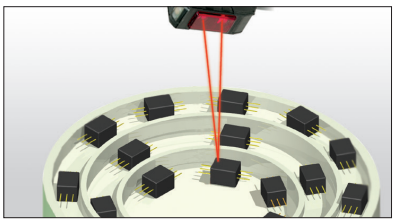
Transparent object detection
SR-Q
P.412

BGS type
BGS-S
P.342

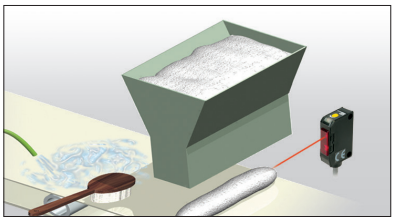
Overlap detection of empty ice cream cups



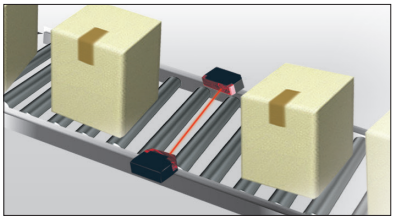
Detection of parts on parts feeder



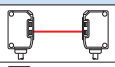
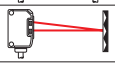
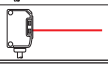
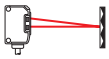
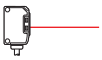
Detection of rice dropped from automatic sushi wrap rolling machine



Detection of items transported on a rolling conveyor



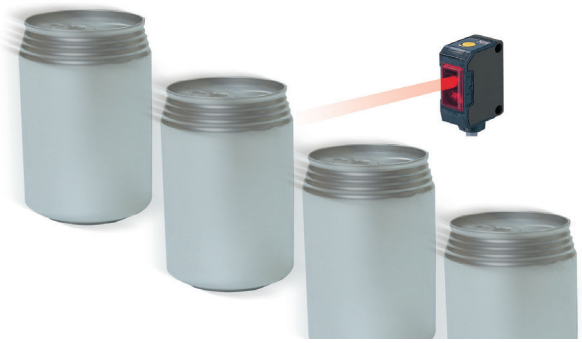
Selection table

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.

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.

Small sensor with built-in amplifier

The main unit features a compact design of 10 × 17.4 × 28 mm. This compact size was realized without sacrificing any specifications, such as those regarding sensing distance.

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.

Conforms to EU EN standards

Conforms to German VDE standards

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.

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), Stability indicator (green)		
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 ø3.5 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		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 or less 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		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 × 100 mm white paper

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

Options/Accessories

Reflector

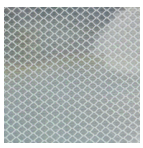
Standard (included)
Included with retro-reflective type
V-61
Sensing distance: 1.5 m
60.9 × 50.9 mm

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

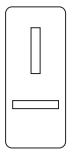
LS series

LS-S01

LS-S02

Slit mask

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



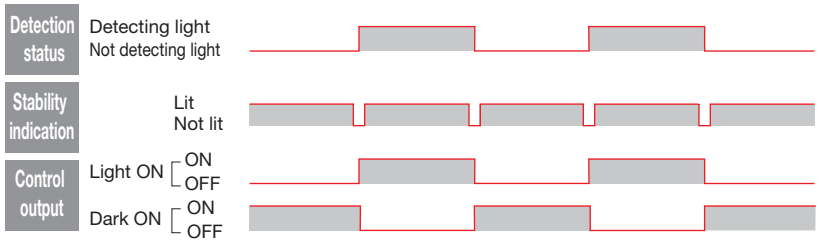
Sensor stand

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

Distance adjustment

	Order	Diagram	Potentiometer	Output indicator (orange)	Adjustment procedure
Diffuse type	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.

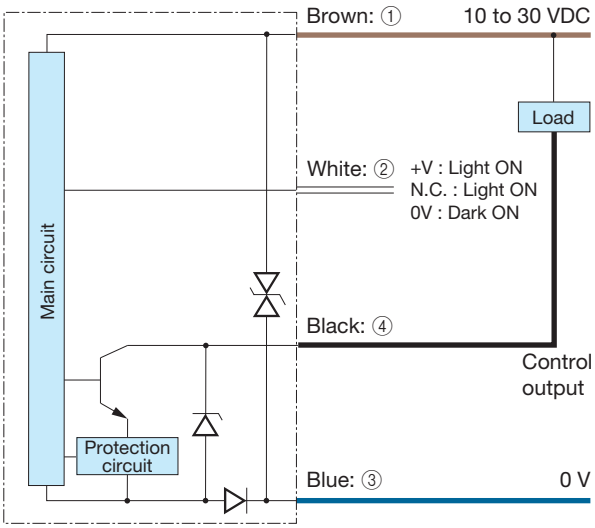
Operation mode



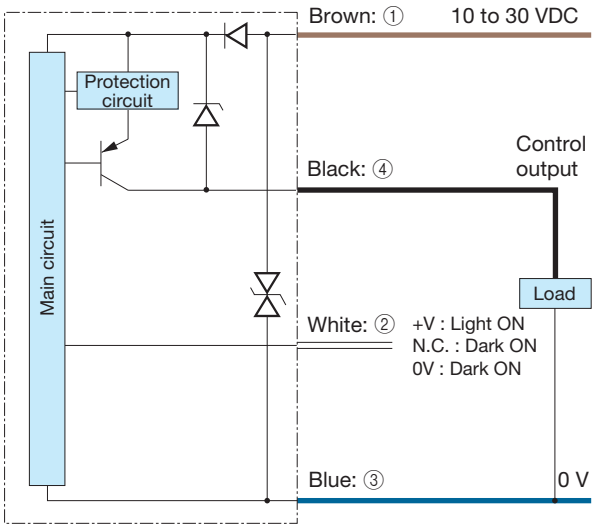
*The operation mode is the same for NPN output and PNP output.

I/O circuit diagram

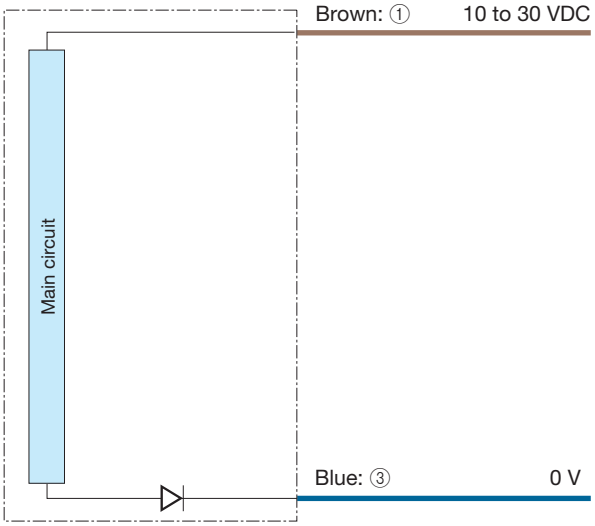
NPN output type



PNP output type



Through-beam type emitter



Connector type

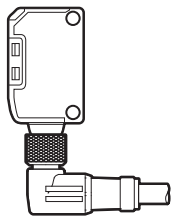
(Pin configuration)

Sensor side Connector cable side

① 10 to 30 VDC
② +V: Light ON
N.C: (NPN)Light ON
(PNP)Dark ON
0 V: Dark ON
③ 0 V
④ Control output

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.

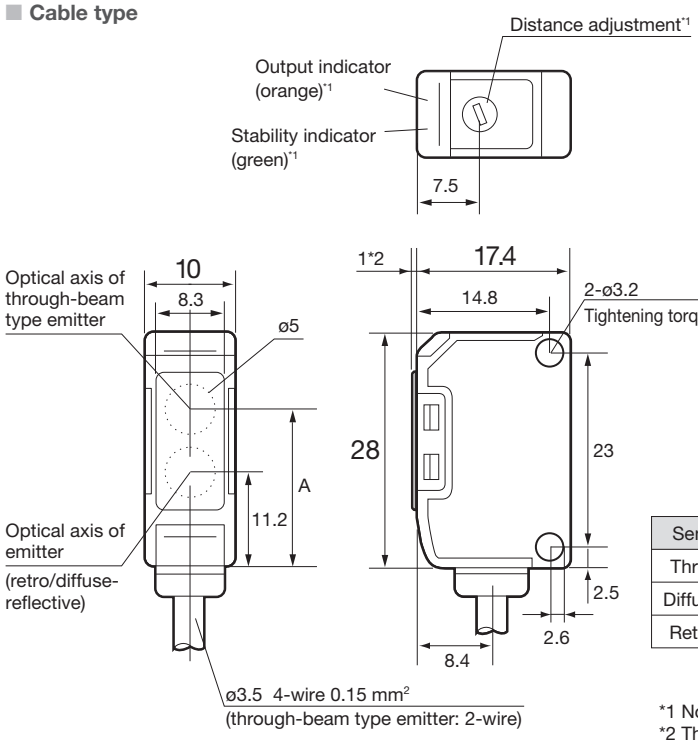


Dimensions

Sensor

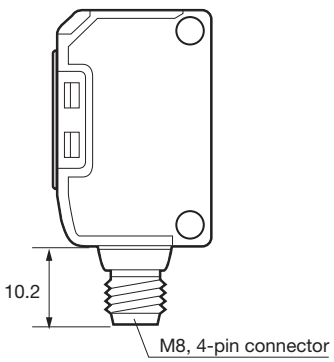
(Unit: mm)

Cable type



Sensing mode	A
Through-beam	18
Diffuse reflective	17.8
Retro reflective	17.8

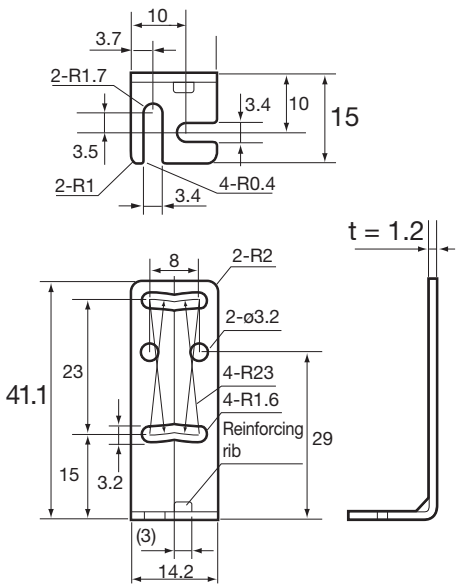
Connector type



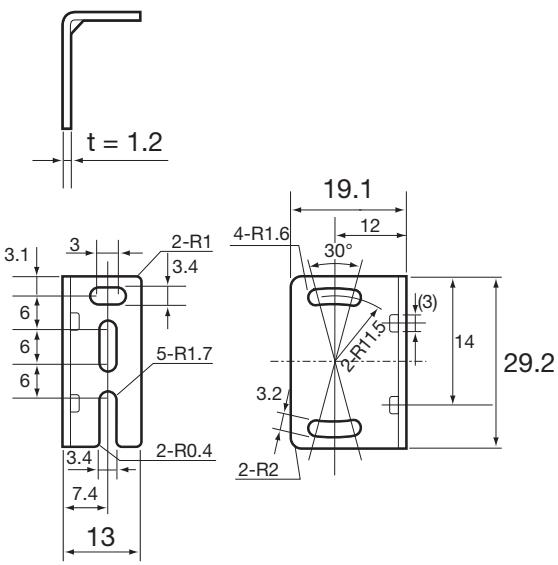
*1 Not applicable for through-beam type emitter
*2 Through-beam type emitter only

Mounting bracket

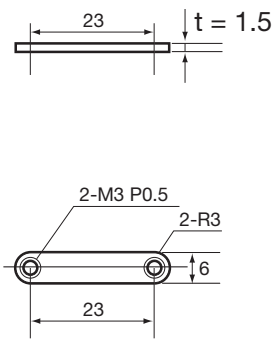
BEF-W150-B (included with sensor)



BEF-W150-A (optional)



Nut plate (included)

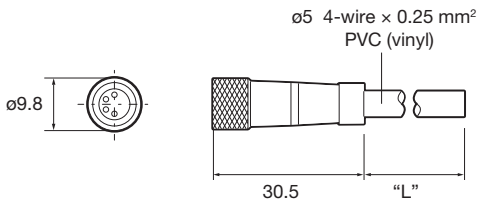


Dimensions

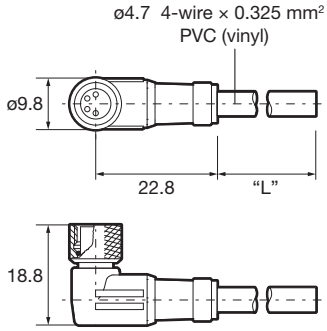
Connector cable (optional)

(Unit: mm)

JCN-S, JCN-5S, JCN-10S

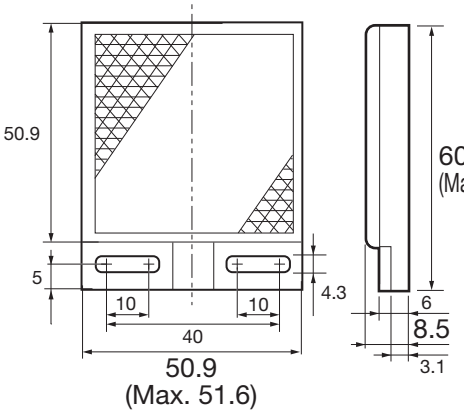


JCN-L, JCN-5L, JCN-10L

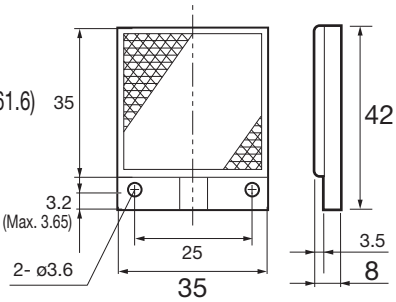


Reflector

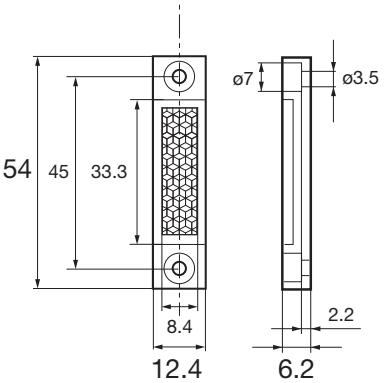
V-61: Standard type reflector (included with retro-reflective type)



V-42: Small reflector (optional)

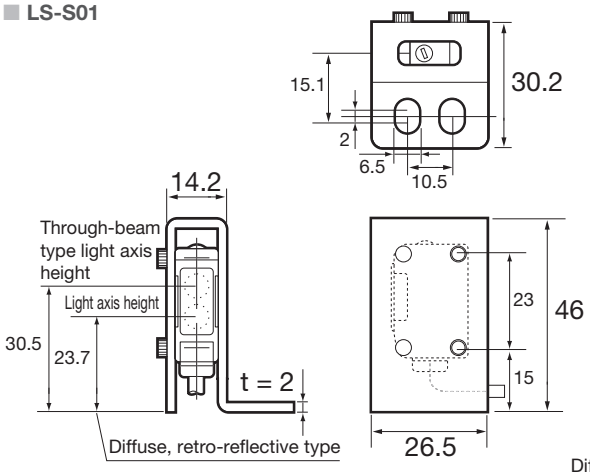


P45A: Vertical type reflector (optional)

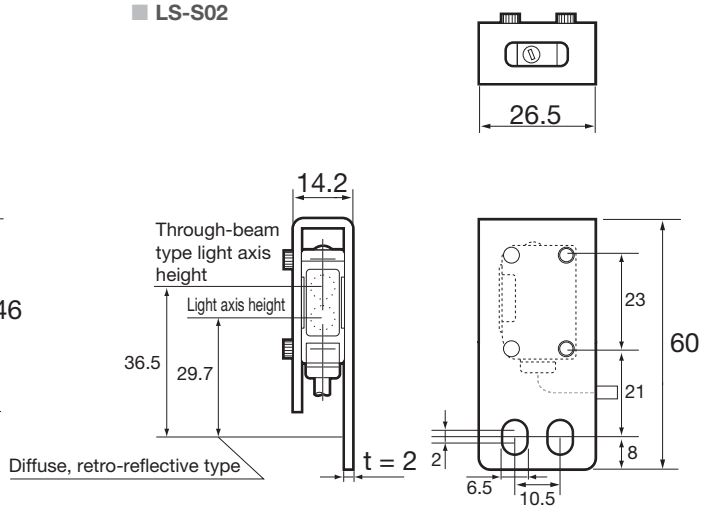


Protective mounting bracket

LS-S01



LS-S02

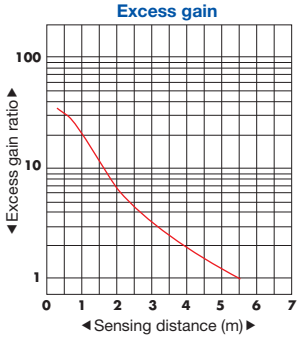


Typical characteristic data

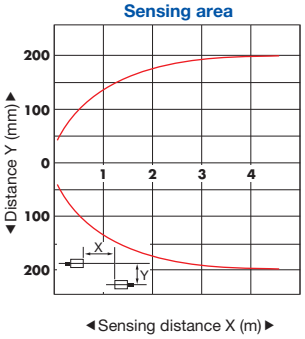
*Contact us for any other characteristic data that may be required.

ST-400□

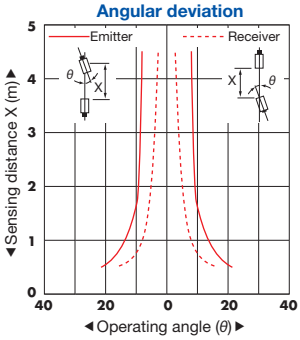
Excess gain



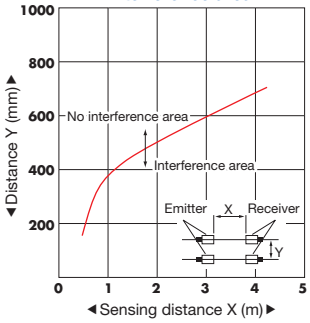
Sensing area



Angular deviation

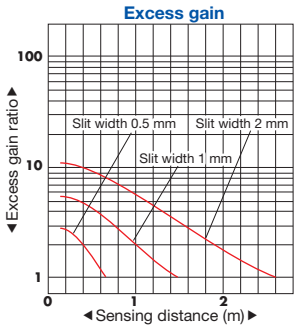


Interference area

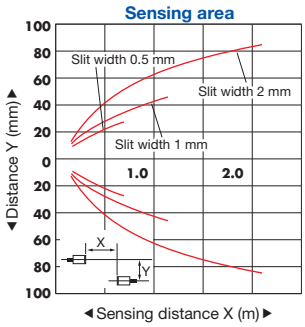


When slit mask (BL-150-10) is attached ST-400□

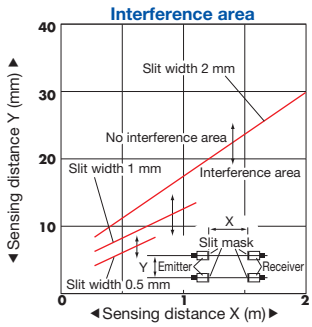
Excess gain



Sensing area

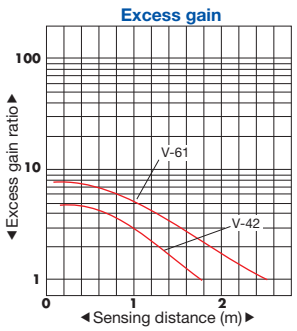


Interference area

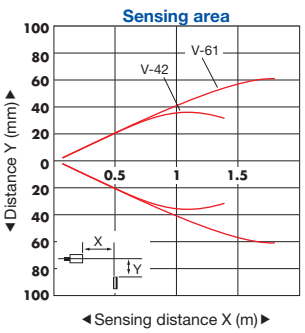


SR-150□

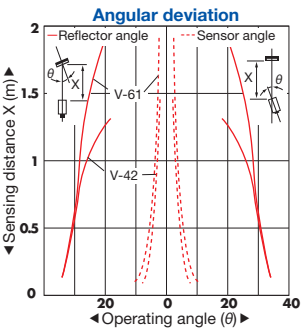
Excess gain



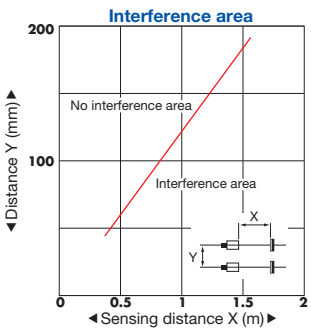
Sensing area



Angular deviation

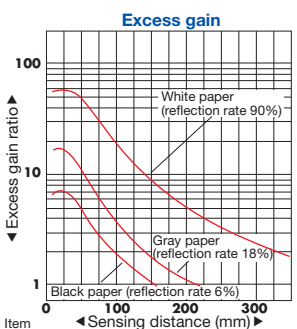


Interference area



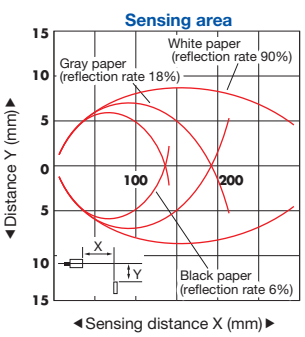
SD-20□

Excess gain

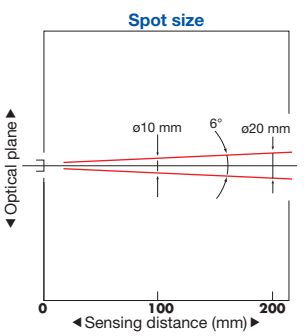


Item targeted for detection
100 × 100 mm

Sensing area



Spot size



Interference area