396

Digital laser type

DR-Q series

CE

Easy to set up, finely adjustable laser

- Sensing distance: Max. 4 m
- Digital adjustment function
- Built-in ASC (Automatic Sensitivity Correction) function

Related products

Low cost type
Z3R-Q
● P.404

Selection table

Type	Shape	Sensing distance	Model (Models in parentheses are connector types)	
			NPN type	PNP type
Laser type		0 to 1.5 m	**DR-Q150TN** (DR-Q150TCN)	**DR-Q150TP** (DR-Q150TCP)
		1 to 4 m	**DR-Q400TN** (DR-Q400TCN)	**DR-Q400TP** (DR-Q400TCP)

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

Options/Accessories

Reflector

Standard (included)

P250F
Sensing distance (refer to the table to the right)
61 × 51 mm

Small (optional)

PL20F
Sensing distance (refer to the table to the right)
60 × 20 mm

Ultra-small (optional)

PL10F
Sensing distance (refer to the table to the right)
32 × 20 mm

Sensing distance when each reflector is used

	P250F	PL20F	PL10F
DR-Q400	1 to 4 m	1 to 2.8 m	0.5 to 1 m
DR-Q150	0 to 1.5 m	0 to 1 m	0 to 0.5 m

Connector cables

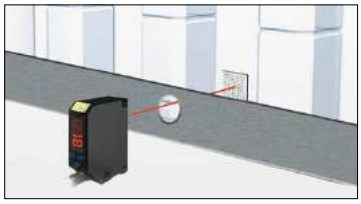
Straight

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

Detection of plastic bottles



Detection of glass bottles

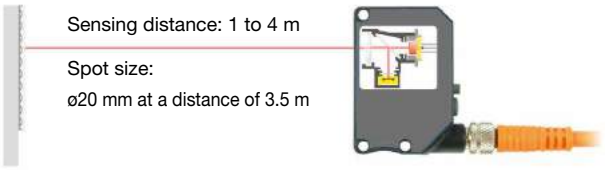
Detection of plastic bottles in large machines

Sensing distance: Max. 4 m

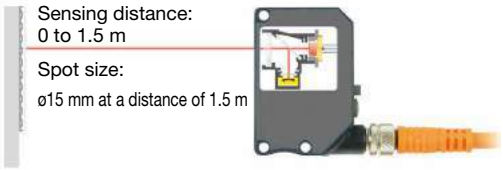
Achieves long range transparent object detection

A sensing distance of 4 m, the longest class in transparent object sensors, has been realized. Additionally, by employing a red laser (Class 2) for the light source as well as a coaxial reflection structure, high-accuracy position detection is possible.

DR-Q400T□



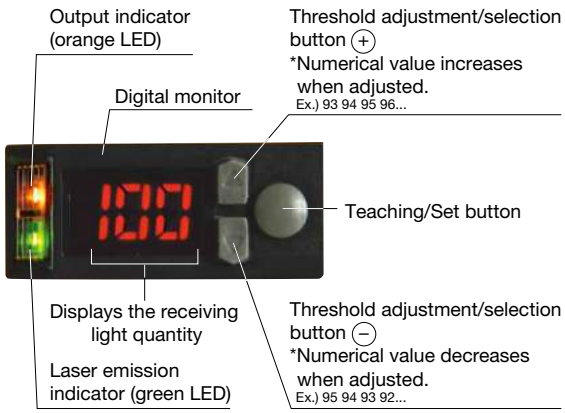
DR-Q150T□



Digital adjustment function

Adjustment while watching values possible

Simple settings and fine adjustments are possible. Thanks to the teaching method, setting is possible by simply pressing a button. There are also buttons for fine adjustments, making it possible to configure sensitivity settings to the desired level while viewing the digital display.

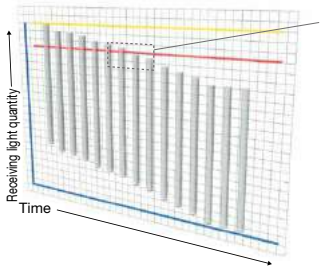


Built-in ASC (Automatic Sensitivity Correction) function

Contamination resistant

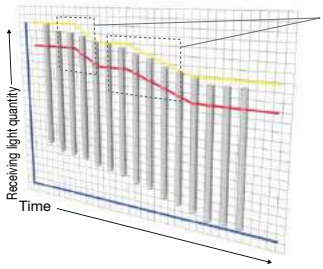
The ASC function automatically corrects threshold values to reduce the amount of light generated when dust, water, vapor, etc., on site adheres to the reflector or lens, thereby maintaining optimum sensitivity over long periods of time. (The diagram below shows a decrease in the amount of light received due to dust and steam in the atmosphere)

<Conventional models>



If the receiving light quantity decreases and its level goes lower than the threshold, it will not be possible to detect transparent objects.

<DR-Q>



Automatic sensitivity corrections are performed for decreases in rreceiving light quantity by way of a dedicated circuit

Periodically monitors the receiving light quantity and corrects the teaching level and threshold in accordance with changes in the receiving light quantity.

Teaching level by way of reflector
Receiving light quantity
Threshold (borderline of ON/OFF)

High utility

Convenient functions tailored to fit the application

- ○ External teaching is possible
- ○ Built-in ON / OFF / One-shot delay functions
- ○ Enables detection of transparent containers filled with transparent liquid causing a lens effect

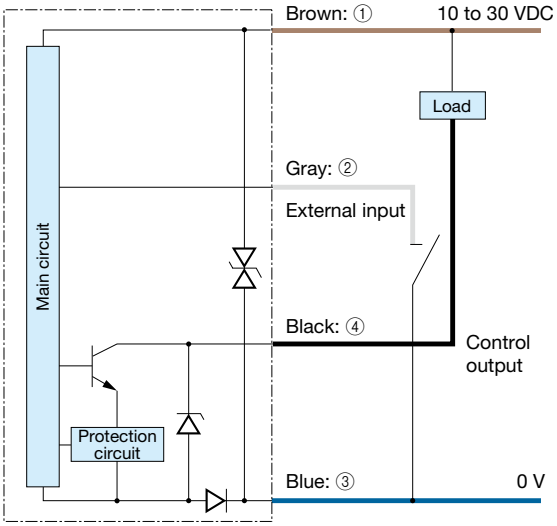
Specifications

Type			Sensor head for amplifier separate type	
Model	NPN	Cable type	**DR-Q150TN**	**DR-Q400TN**
		Connector type	**DR-Q150TCN**	**DR-Q400TCN**
	PNP	Cable type	**DR-Q150TP**	**DR-Q400TP**
		Connector type	**DR-Q150TCP**	**DR-Q400TCP**
Sensing distance			0 to 1.5 m*1	1 to 4 m*1
Light source			Red semiconductor laser Class 2 (IEC/JIS)*2 Wavelength: 650 nm Pulse width: 4 µs Maximum output: 2 mW	
Spot size			Approx. ø15 mm at a distance of 1.5 m	Approx. ø20 mm at a distance of 3.5 m
Response time			Can be switched to 0.35 ms, 0.7 ms, 2 ms, or 5 ms	
Distance adjustment			Teaching method	
Threshold adjustment			Manual adjustment is possible after teaching	
Indicators			Output indicator (orange LED), laser emission indicator (green LED)	
Digital display			7-segment, 3-digit display	
Control output			NPN/PNP open collector Max. 100 mA / 30 VDC	
External input			Laser OFF input or teaching input (selectable by setting)	
Timer function			ON delay / OFF delay / One-shot 0 to 999 ms (setting is possible in 1 ms increments), 1 to 10 s (setting is possible in 1 s increments)	
Output mode			Light ON / Dark ON selectable by setting	
Connection type			Cable type: Cable length: 2 m (ø4 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		35 mA or less	
Applicable regulations			EMC directive (2004/108/EC) / FDA regulations (21 CFR 1040.10)	
Applicable standards			EN 60947-5-2	
Company standards			Noise resistance: Feilen Level 3 cleared	
Environmental resistance	Ambient temperature/humidity		-10 to +40°C / 35 to 85% RH (no freezing or condensation)	
	Ambient illuminance		Sunlight: 10,000 lx or less Incandescent light: 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. 50 G (500 m/s^2), 3 times in each of the X, Y, and Z directions	
	Degree of protection		IP67	
Material			Housing: ABS Lens front cover: PMMA	
Weight without cable			Approx. 20 g (excluding cable)	
Included accessories			Mounting bracket: BEF-WK-190 Reflector: P250F	

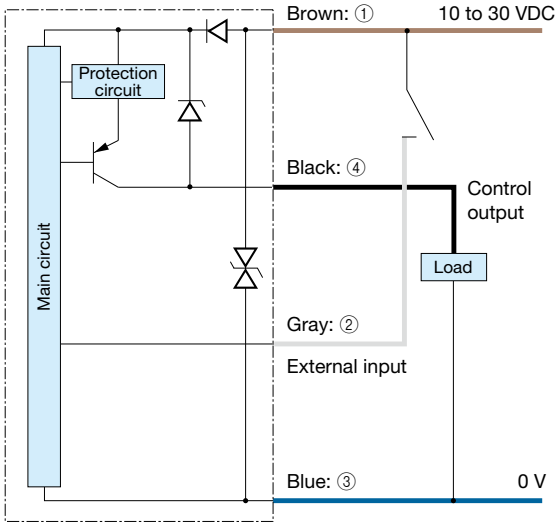
*1. With the P250F reflector
*2. Classified as Class II in the US FDA standards.
● Specifications are subject to change without prior notice for product improvement purposes.

I/O circuit diagram

NPN output type

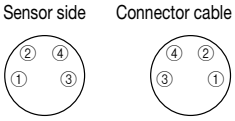


PNP output type



Connector type

(Pin configuration)



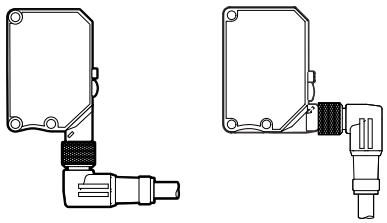
① 10 to 30 VDC
② External input
③ 0 V
④ Control output

Connecting

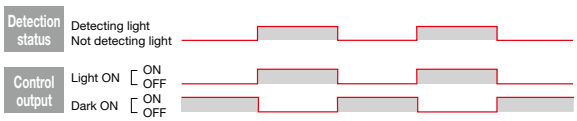
- When not used for external input, cut the lead wire and wrap it individually with insulating tape, and do not connect it to any other terminal.
- ① to ④ are connector pin No.

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



Operation mode



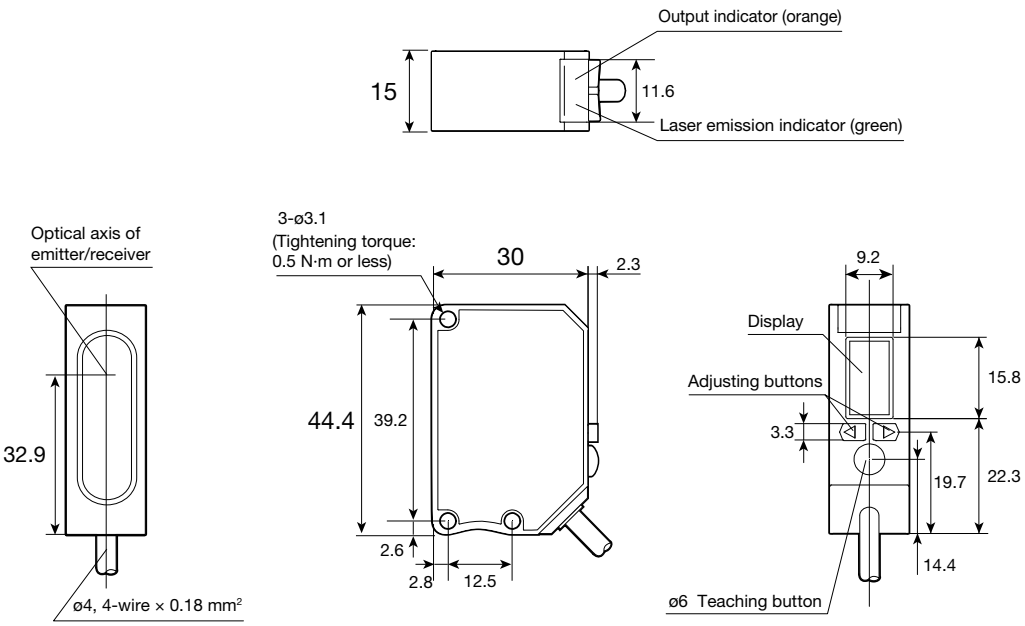
*The operation mode is the same for NPN output and PNP output.

Dimensions

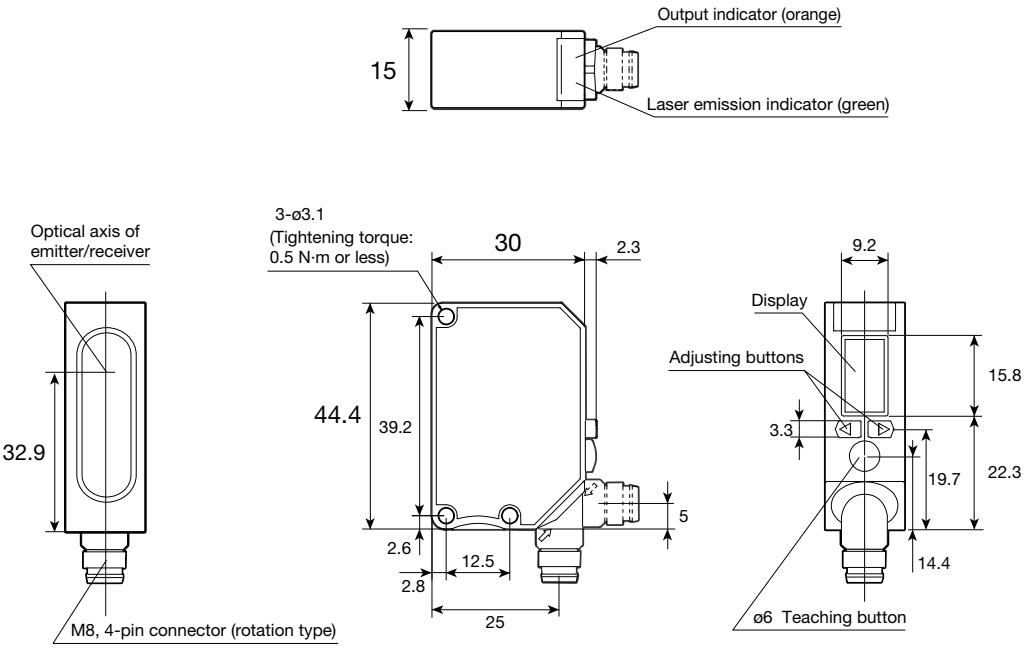
Sensor

(Unit: mm)

■ Cable type



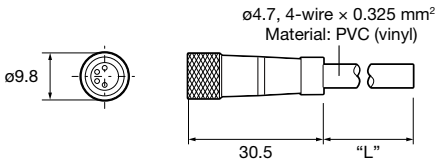
■ Connector type



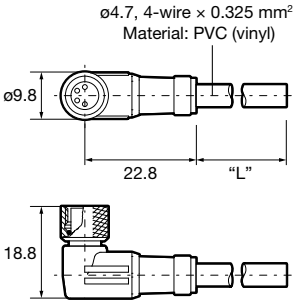
Connector cable (optional)

(Unit: mm)

■ **JCN-S, JCN-5S, JCN-10S**

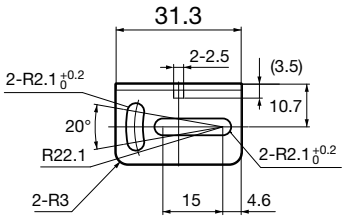


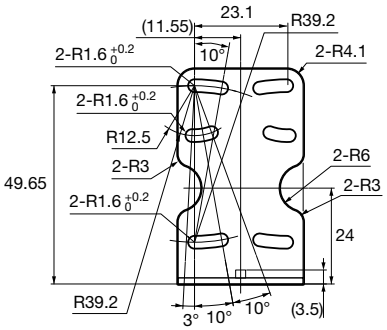
■ **JCN-L, JCN-5L, JCN-10L**

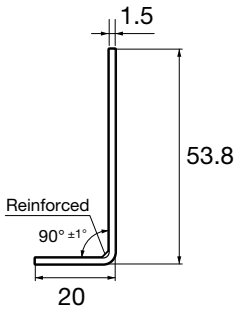


Mounting bracket

■ **BEF-WK-190 (included)**





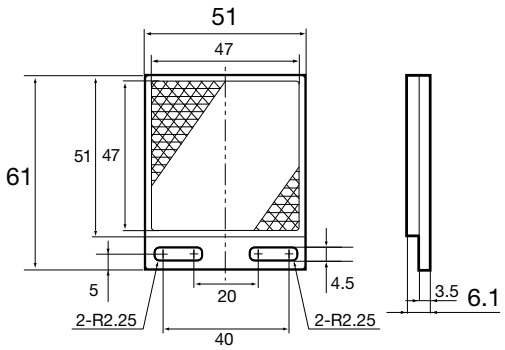


Dimensions

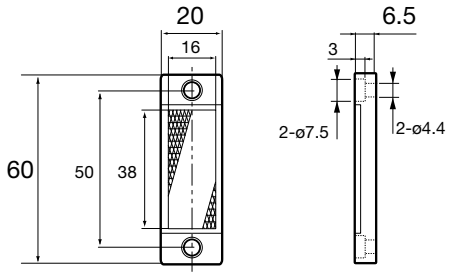
Reflector

(Unit: mm)

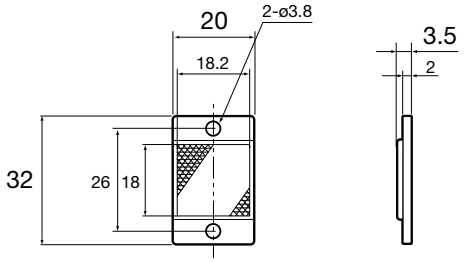
■ P250F (included)



■ PL20F (optional)



■ PL10F (optional)

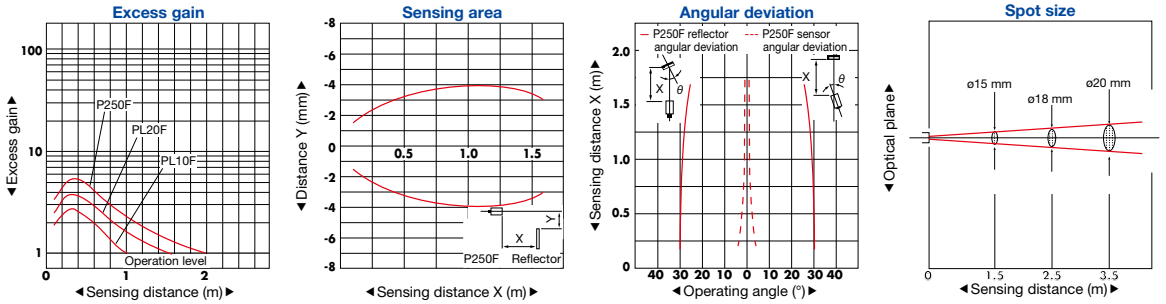


Sensing distance when each reflector is used

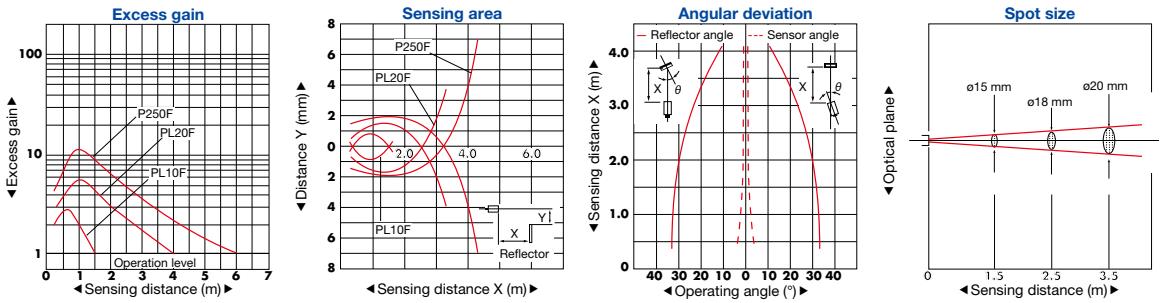
	P250F	PL20F	PL10F
DR-Q400	1 to 4 m	1 to 2.8 m	0.5 to 1 m
DR-Q150	0 to 1.5 m	0 to 1 m	0 to 0.5 m

Typical characteristic data

DR-Q150T□



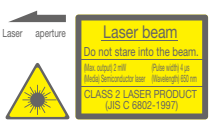
DR-Q400T□



Notes for sensor usage

This product emits a Class 2 (II) visible laser beam that is compliant with JIS C6802/IEC/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. Doing so may cause damage to the eyes or health.



DR-Q150T□□
DR-Q400T□□