Cable type

V2 series

Renewed V2 series with high-level specifications

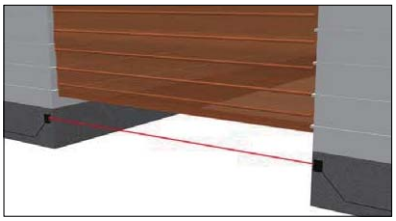
- **Longest in class** 70 m sensing distance (through-beam type)
- Uses a red LED for the light source. Easy adjustment of light axis even over a long distance
- Universal voltage type and DC power type

Related products

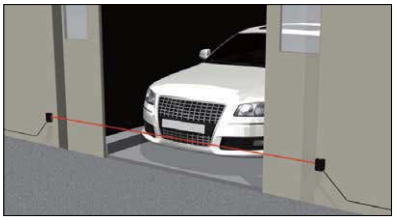
BGS
BGS-2V
P.384

Terminal block type
V4
P.256

Object detection when opening and closing roller shutters

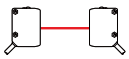
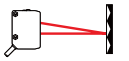
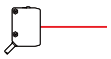


Detection of vehicle protrusion in parking structures



Detection of tire passage

Selection table

Type	Shape	Sensing distance (Adjustable distance range shown in parentheses)	Supply voltage	Model (Models in parentheses are connector types) NPN type	PNP type
Through-beam		70 m	24 to 240 VAC 24 to 240 VDC	**V2T-7000**	**V2T-7000**
			10 to 30 VDC	**V2T-7000DN** (V2T-7000CDN)	**V2T-7000DP** (V2T-7000CDP)
Retro-reflective		0.01 to 12m	24 to 240 VAC 24 to 240 VDC	**V2R-1200**	**V2R-1200**
			10 to 30 VDC	**V2R-1200DN** (V2R-1200CDN)	**V2R-1200DP** (V2R-1200CDP)
BGS		10 to 300 mm (100 to 300 mm)	24 to 240 VAC 24 to 240 VDC	**BGS-2V30** P.384	**BGS-2V30** P.384
			10 to 30 VDC	**BGS-2V30N** (BGS-2V30CN) P.384	**BGS-2V30P** (BGS-2V30CP) P.384
		20 to 500 mm (150 to 500 mm)	24 to 240 VAC 24 to 240 VDC	**BGS-2V50** P.384	**BGS-2V50** P.384
			10 to 30 VDC	**BGS-2V50N** (BGS-2V50CN) P.384	**BGS-2V50P** (BGS-2V50CP) P.384
		20 to 1000 mm (250 to 1000 mm)	24 to 240 VAC 24 to 240 VDC	**BGS-2V100** P.384	**BGS-2V100** P.384
			10 to 30 VDC	**BGS-2V100N** (BGS-2V100CN) P.384	**BGS-2V100P** (BGS-2V100CP) P.384

● For the connector type, please purchase an optional DOL-1204-G02M connector cable.

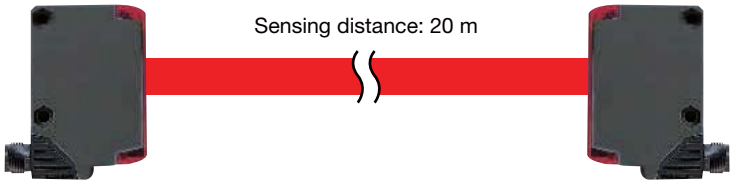
Features

Renewed V2 series with high-level specifications

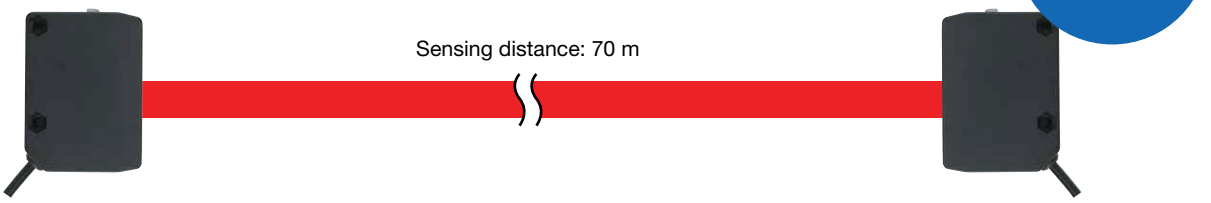
Longest in class 70 m sensing distance (through-beam type)

A through-beam type that achieves a 70 m sensing distance; 3.5 longer than the conventional model. Support has been increased for long distance detection applications.

Conventional models

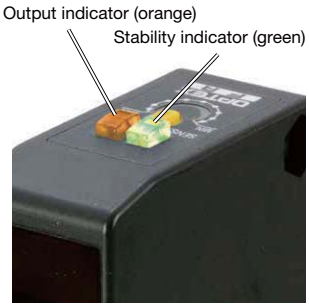


V2T-7000□



Easy-to-see dual indicators

In place of the (red) light receiving indicators of the conventional model, the new type has both output indicators (orange) and stability indicators (green). Now it's possible to confirm not only the sensor output but also the detection stability.



All models equipped with a sensitivity adjustment potentiometer

All models feature a 2-turn potentiometer with a wide sensitivity adjustment range that enables fine adjustments to be made easily. Since these models also come with indicators, the adjustment position can be confirmed at a glance.

New easy-to-use

M12 pivot type connector

Uses a pivot type connector where the connector can be turned downward or to the rear. Offers drastic improvements in mounting flexibility.

Relay for universal voltage type

An IP67 relay with VDE standard certification is equipped.
The relay has double layer structure for dust and water resistance (IP67) and contact capacity has been increased to 3A (250 VAC).

Cable type **V2** series

Specifications

Type		Universal voltage type	
		Through-beam type	Retro-reflective type
Model	Cable type	**V2T-7000**	**V2R-1200**
	Connector type	—	—
Sensing distance		70 m	0.01 to 12 m*1
Light source		Red LED	
Smallest detectable object		ø15 mm	□40 mm
Response time		15 ms or less	
Distance adjustment		2-turn endless potentiometer (with indicator)	
Indicators		Output indicator: orange LED, Stability indicator: green LED (no indicator equipped on through-beam type emitter)	
Control output		Relay × 1C*2 250 VAC 3 A or less / 30 VDC 2 A or less (load resistance)	
Output mode		Light ON (on during light detection)	
Connection type		Cable type: Cable length: 2 m, ø6.4 mm	
Insulation resistance		20 MΩ or more (with 500 VDC)	
Rating	Supply voltage	24 to 240 VAC ±10% 50/60 Hz, 24 to 240 VDC ±10%	
	Power consumption	3 VA or less	2 VA or less
Applicable regulations		EMC directive (2004/108/EC), Low voltage directive (2006/95/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	
	Voltage resistance	2700 VAC / minute	
	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/s²); 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 (retro-reflective type is PMMA)	
Weight without cable		Through-beam type emitter: Approx. 35 g Other: Approx. 50 g	
Included accessories		Mounting bracket: BEF-W250	Mounting bracket: BEF-W250 reflector: V-61

*1. With the V-61 reflector

*2. When driving the inductive load (with an induction valve, electromagnetic contactor, etc.) through the relay connection point, please use a noise absorption device (surge absorber).

- Specifications are subject to change without prior notice for product improvement purposes.
- Products certified for the Chinese CCC compulsory certification system also available. Contact us for details.

Options/Accessories

Reflector

Standard (included)

V-61
Sensing distance:
0.01 to 12 m
60.9 × 50.9 mm

Small type

V-42
Sensing distance:
0.01 to 7 m
42 × 35 mm

Protective mounting bracket

- Ultra-durable 3 mm thick type
- Rust-resistant stainless steel
- Sensor is firmly secured using M4 Hex socket head cap screws
- The bracket is also firmly secured using M6 screw

LV2 series

LV2-S01

LV2-S02

Type			DC power type	
			Through-beam type	Retro-reflective type
Model	NPN	Cable type	**V2T-7000DN**	**V2R-1200DN**
		Connector type	**V2T-7000CDN**	**V2R-1200CDN**
	PNP	Cable type	**V2T-7000DP**	**V2R-1200DP**
		Connector type	**V2T-7000CDP**	**V2R-1200CDP**
Sensing distance			70 m	0.01 to 12 m*
Light source			Red LED	
Smallest detectable object			ø15 mm	□40 mm
Response time			0.5 ms or less	
Distance adjustment			2-turn endless potentiometer (with indicator)	
Indicators			Output indicator: orange LED, Stability indicator: green LED (no indicator equipped on through-beam type emitter)	
Control output			NPN/PNP type Open collector Max. 100 mA/30 VDC	
Output mode			Light ON / Dark ON wiring switching	
Connection type			Cable type: Cable length: 2 m ø3.8 mm / Connector type: M12, 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)	
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	
	Voltage resistance		1000 VAC / minute	
	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 (retro-reflective type is PMMA)	
Weight without cable			Through-beam type emitter: Approx. 35 g Other: Approx. 50 g	
Included accessories			Mounting bracket: BEF-W250	Mounting bracket: BEF-W250 reflector: V-61

*With the V-61 reflector

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

Connector cable

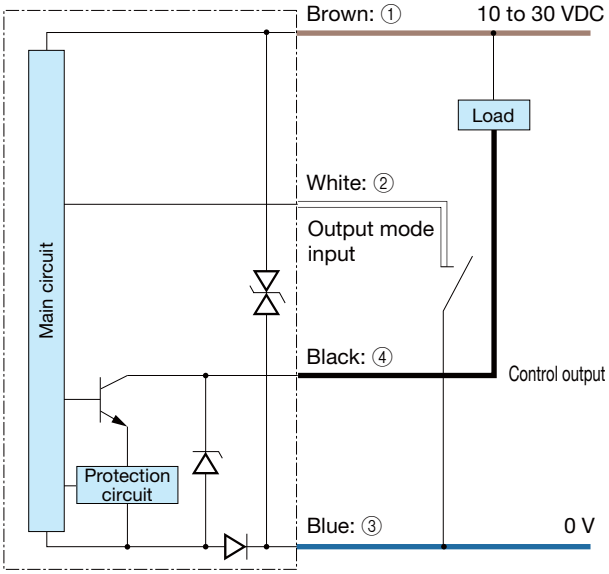
Straight

DOL-1204-G02M
M12, 4-pin connector cable
Cable length: 2 m
*5 m and 10 m cables are separately available.

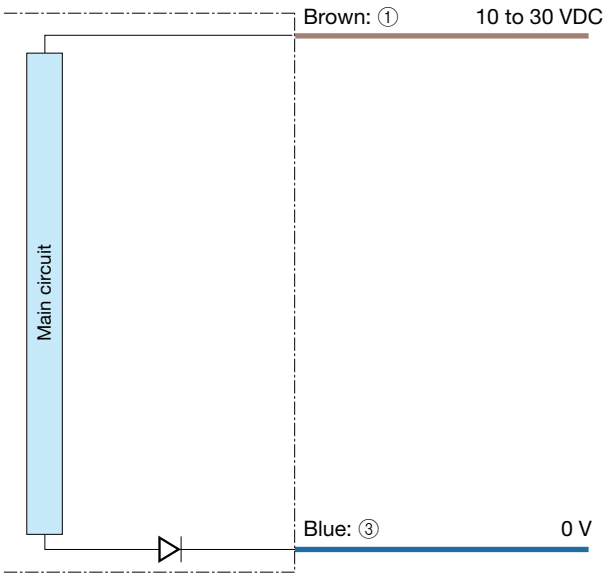
Cable type **V2** series

I/O circuit diagram

NPN output type (DC power type)

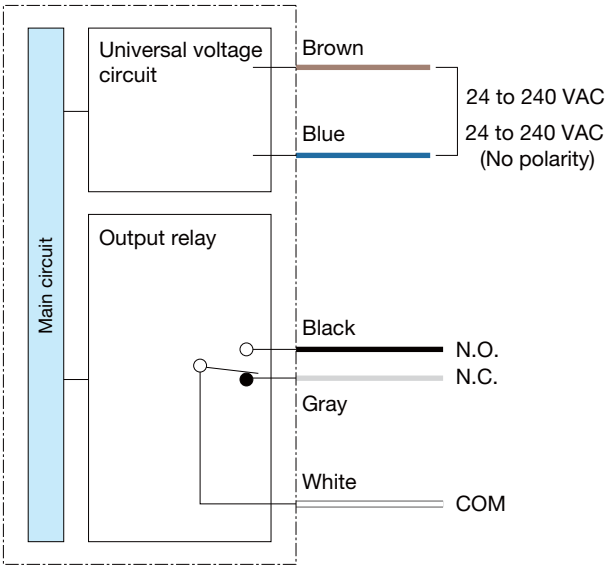


Through-beam type emitter

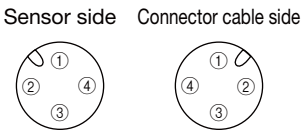


*For the universal voltage type, add 24 to 240 VAC / 24 to 240 VDC to the brown wire and blue wire. (No polarity)

Universal voltage type



Connector type (DC power type)



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.
- Avoid wiring in parallel with or in the same piping as high-voltage wires or power lines. Doing so may lead to malfunctions caused by noise. Also, shorten the power supply and signal wires as much as possible.
- Avoid using the transient state while the power is on (approx. 150 ms).

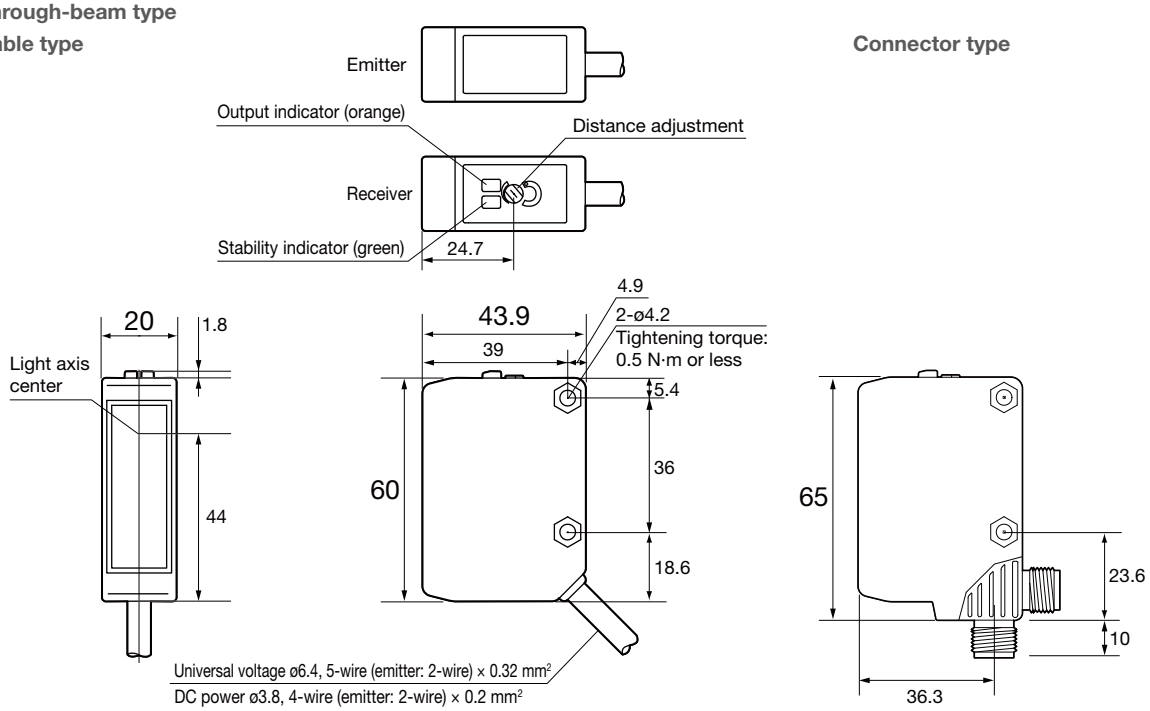
Dimensions

Sensor

(Unit: mm)

Through-beam type

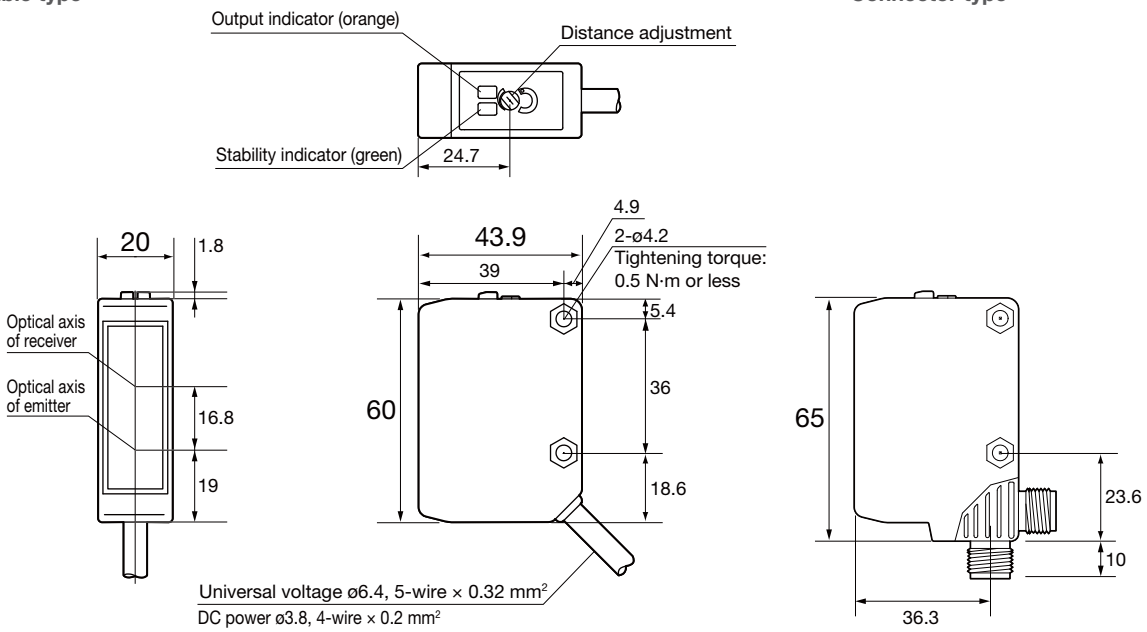
Cable type



Connector type

Retro-reflective type

Cable type



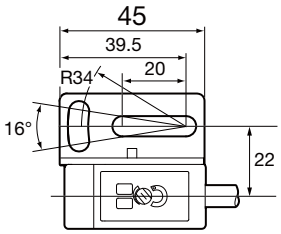
Connector type

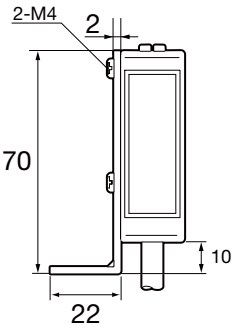
Dimensions

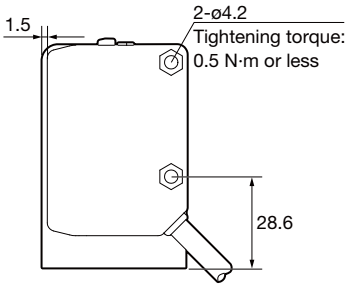
Mounting bracket

(Unit: mm)

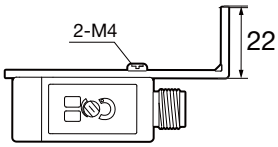
Cable type

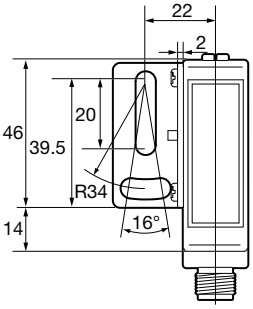


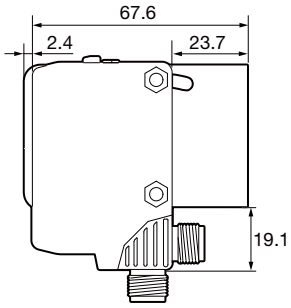




Connector type

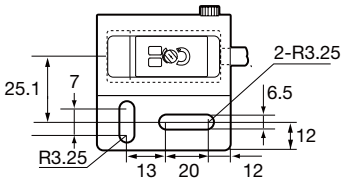


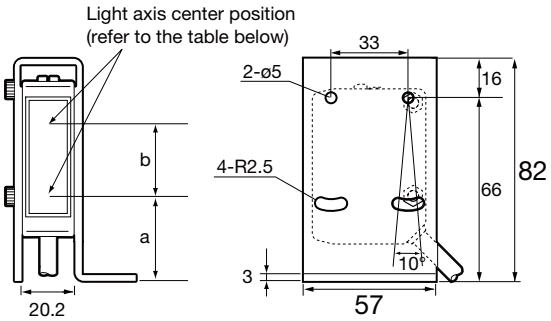




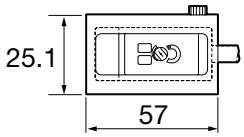
Protective mounting bracket (optional)

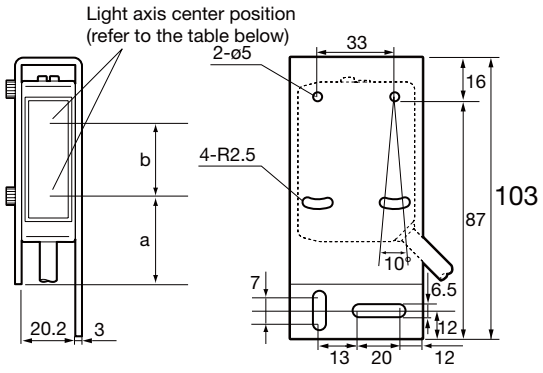
LV2-S01





LV2-S02



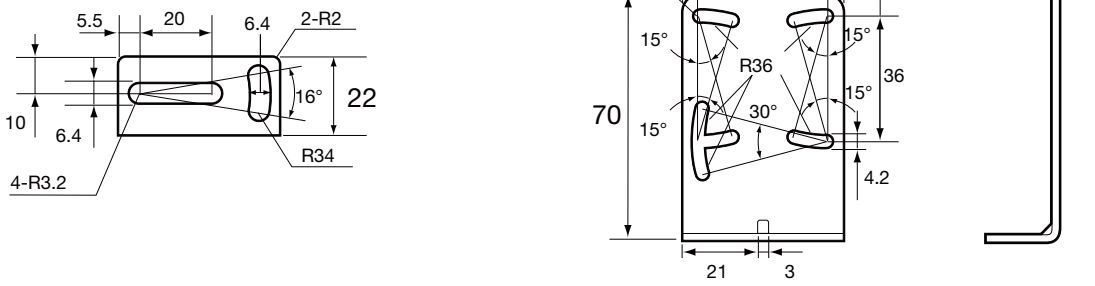


	V2T-7000	V2R-1200
a	- (30.4 mm)	30.4 mm
b	16.8 mm	16.8 mm

Mounting bracket

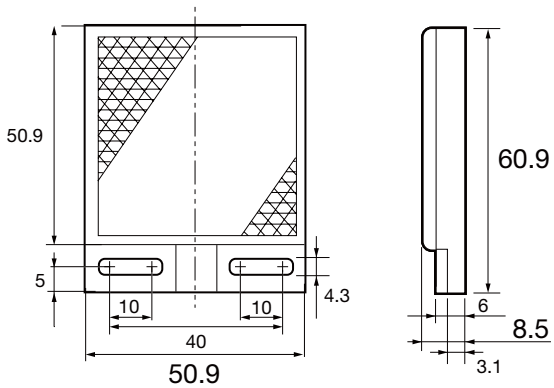
(Unit: mm)

■ **BEF-W250 (included with product)**

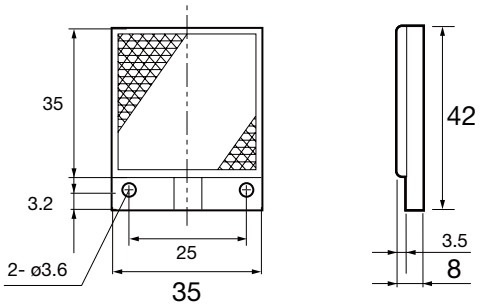


Reflector

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

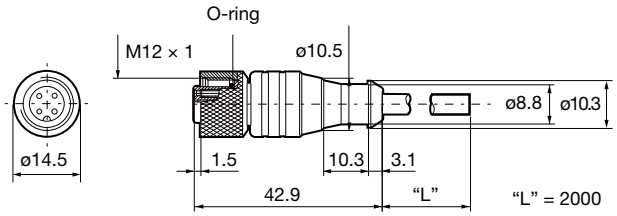


■ **V-42: Small reflector (optional)**



Connector cable (optional)

■ **DOL-1204-G02M**



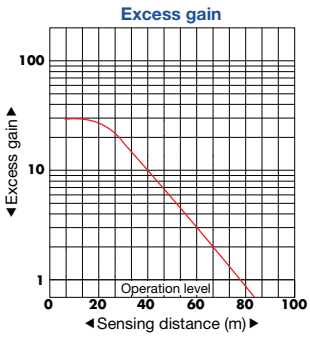
Cable section material: PVC, Conductor cross-section: 4-wire × 0.25 mm²

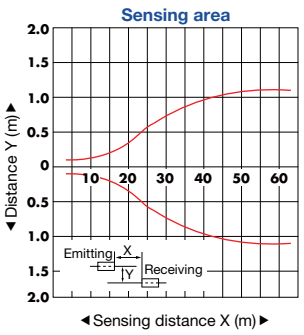
Cable type **V2** series

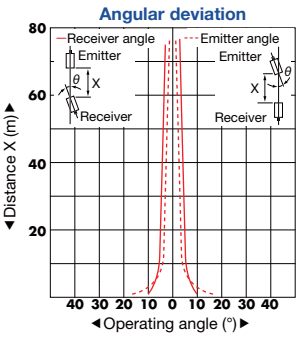
Typical characteristic data

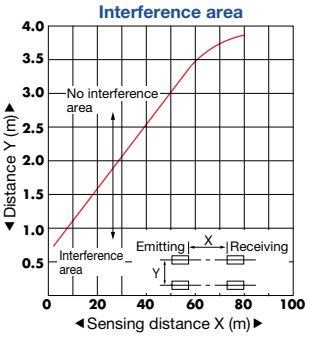
*Contact us for any other characteristic data that may be required.

V2T-7000/V2T-7000D□

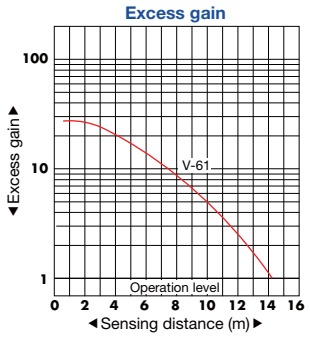


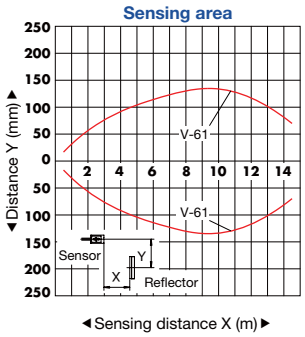


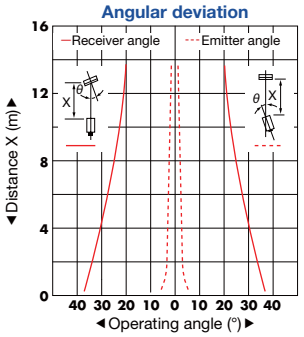


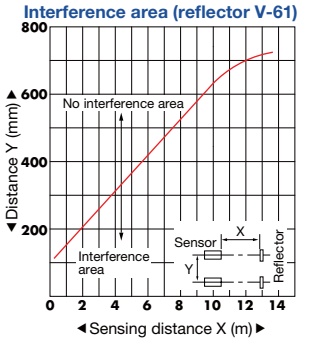


V2R-1200/V2R-1200D□





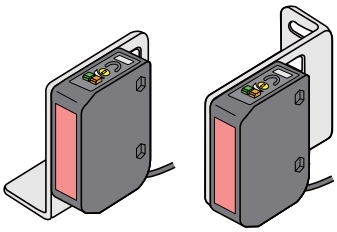




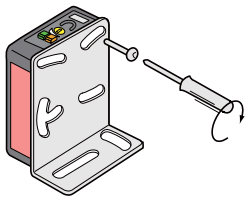
Notes for sensor usage

Sensor mounting

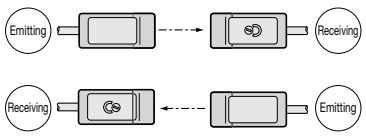
Please mount the sensor using a dedicated mounting bracket.
2 types of mounting possible with 1 type of bracket depending on the installation location.



Tighten the sensor mounting screws with a tightening torque of no more than 0.5 N·m.



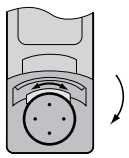
When installing and moving multiple through-beam types towards each other, alternating the placement of emitters and receivers will shorten the interference distance and stabilize detection.



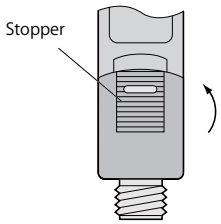
For diffuse-reflective types (BGS types), it is difficult for interference to arise because of the narrow light axis, but please mount with an awareness of the characteristics of the interference area or the characteristics of the sensing area.

Connector handling

The DC power connector can be changed between horizontal and vertical orientations. The connector will be fixed in place when you push up the stopper. Please note that since the connector can only be moved in fixed directions, turning it too forcefully in the wrong direction may damage it.



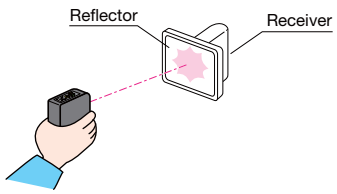
Horizontal (H) → Vertical (V)



Vertical (V) → Horizontal (H)

Light axis adjustment method for through-beam type

Long range light axis adjustments can be achieved relatively easily by placing retro-reflective type reflector in front of the receiver.
Because all the emitters in the V2 series use red LEDs, please secure the emitter to a spot where the reflector shines in red and remove the reflector from in front of the receiver.



Other notes

- Installing in the following locations may result in malfunction:
  - Dusty or steamy locations.
  - Locations where corrosive gas is generated.
  - Locations with direct exposure to water or oil splashes.
  - Locations where heavy vibrations or impacts may occur.
- When using a switching regulator for the power supply, be sure to ground the frame ground terminal.
- Avoid wiring in parallel with or in the same piping as high-voltage wires or power lines. Doing so may lead to malfunctions caused by noise. Also, shorten the power supply and signal wires as much as possible.
- Avoid using the transient state while the power is on (approx. 150 ms).
- Please do not use for applications that will affect the safety of the worker's hands or other body parts.