

SPECIFICATIONS I

Type	Free voltage type				Self-diagnosis type			PLC connection type		
	Through beam	Retro-reflection (With polarizing filter)	Diffused reflection		Through beam	Retro-reflection (With polarizing filter)	Diffused reflection	Through beam	Retro-reflection (with polarizing filter)	Diffused reflection
Item	VT-2000(T)	VR-500(T)	VD-80(T) VD-200(T)		VT-2000D(P)	VR-500D(P)	VD-80D(P)	VT-2000A	VR-500A	VD-80A
Detecting distance	20m	5m	80cm ※1 2m ※2		20m	5m	80cm ※	20m	5m	80cm ※
Supply voltage	DC 12~240V ±10% AC 24~240V ±10% 50/60 Hz				DC 10~30V			AC 22~240V ±10% 50/60 Hz		
Power Current consumption	3VA max.		2VA max.		55mA max.		35mA max.		10mA max. 5mA max.	
Response time	20ms max.				1.5ms max.		1ms max.		20ms max. 15ms max.	
Hysteresis			15% max. 20% max.				15% max. (at 80cm)			
Light Source	IR LED	Red LED			IR LED	Red LED		IR LED	Red LED	IR LED
Sensitivity adjustment	I rotation volume									
Indicator	With timer : LIGHT indicator (Red) + Operating Indicator (Red) With out timer : LIGHT indicator (Red) Power indicator for Emitter				LIGHT indicator (Red) Power indicator for Emitter When unstable incident, indicator comes to blink			LIGHT indicator (Red) Power indicator for Emitter		
Timer function	ON delay, OFF delay, One shot delay (0.1~5S adjustable)									
Operation mode	LIGHT ON, DARK ON selectable by switch									
Control output	Relay output Ia AC240V/DC30V 3A max (Resistive load)				NPN, PNP open collector When unstable incident output transistor ON. DC30V 200mA max.(total)			FET output AC240V 500mA max.		
Alarm output										
Connection	Terminal base (Diameter of applicable cable : φ 6 to φ 10 mm)									
Noise resistance	1000 Vp, pulse width 1 μs (Noise simulator)									
Insulation resistor Withstand voltage	20 MΩ min. (at DC 500 V) / AC 2000V one minute									
Ambient temperature humidity	-25~55°C (There should be no freezing) / 35~85% RH									
Environmental illuminance	Sun light : 10000 lx max. Incandescent light : 3000 lx max.									
Vibration Shock resistance	10~55 Hz		amplitude 1.5 mm		X. Y. Z, each 2 hrs. / 500 m/s ² (50 G)		X. Y. Z, each 3 times			
Protection category, material	IP 66 (IEC 144) / Case : Lid : PPE Lens : PMMA									

※1 □ 20cm white paper ※2 □ 40cm white paper

OPTEX FA

Photoelectric Sensor

V SERIES

Free voltage type
Self-diagnosis type
PLC connection type
Back ground suppression type

- VT-2000 □ □
- VR-500 □ □
- VD-80 □ □
- VD-200 (T)

INSTRUCTION MANUAL

- Confirm if the item meets your needs.
- Before the use, you should first thoroughly read this manual and operate correctly as mentioned.
- You should keep this manual at hand for proper use.

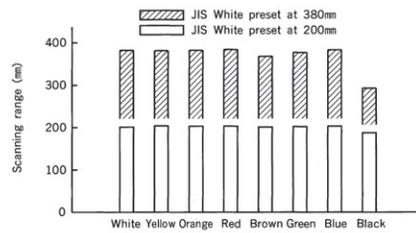
SPECIFICATIONS 2(BGS type)

T: with Timer function

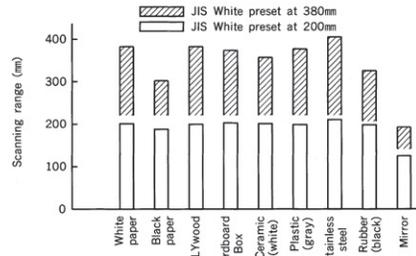
	Free voltage	Diagnosis
	BGS-V38(T)	BGS-V38(N,P)
Adjustable range	16~38cm ※	
Detectable range	0~38cm ※※	
Supply Voltage	DC12~240V ±10% AC24~240V ±10%	DC10~30V
Power(Current) consumption	2VA max.	35mA max.
Response time	20ms max.	2ms max.
Hysteresis	5% max.	
Light source	IR LED	
Emitter spot size	φ20 mm max.	

※ □ 10cm white paper
※※ white paper, maximum sensitivity
Other specifications are the same as SPECIFICATIONS 1.

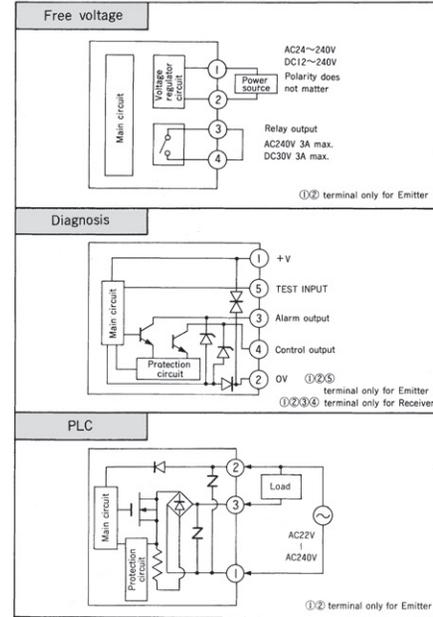
Color comparison



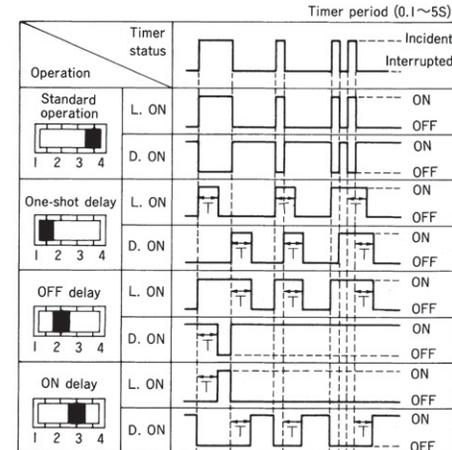
Material comparison



INPUT AND OUTPUT CIRCUIT DIAGRAMS



TIMER CHART



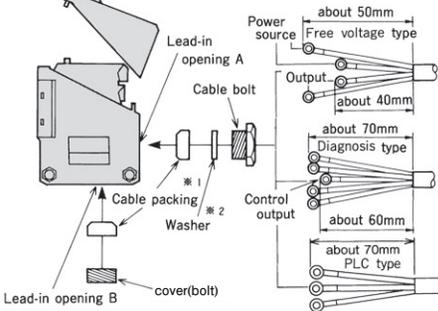
- A setting error in timing period may occur unless more than about 10 seconds pass as of power-on.
- Non-timer types are set at standard operation mode at factory.

HOW TO USE

● Connection

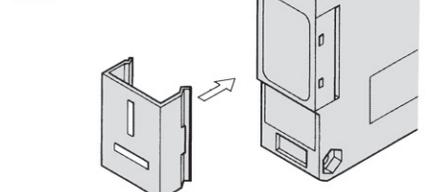
- Install the cables to match the connection terminal No. as shown below.
- Use either lead-in opening A or B according to the installation method involved.
- Install a cover(bolt) at the lead-in opening not to be used.

- The figure below shows how the cables are installed when lead-in opening A is used.
- ※1 Cable packing is selected separately either for cable or cover(bolt) according to cable diameter.
- ※2 Washer is to be used exclusively to the cable bolt.
Large : φ8~φ10 Small : φ6~φ8



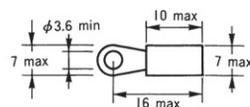
- Slit (Optional accessory for through-beam type)

Use the slit to detect small objects or to improve accuracy of detection point.
● Use of slit shortens the detection range as shown in the table below.



Slit type	Attach	Min. detection	Detecting distance
V-01	Both sides	1 × 10mm	1.5m
V-02	Both sides	2 × 10mm	3m
V-05	Both sides	5 × 10mm	5m

- Dimensions of applicable solderless terminals



- Use solderless terminals with insulating tube.
(Recommended terminal : Nominal size 1.25-3.5)
- Use 6 to 10 mm diameter cables circular in section to maintain watertightness.
- Wrong wiring may be a cause of burned or damaged sensor. Pay due attention to wiring.
- Be careful not to install the cables near power lines, for otherwise the sensor may malfunction.
- Using the mounting accessories supplied, the sensor can be installed on either floor or wall.

● ALARM OUTPUT function (Available only in Diagnosis types)

This function gives a warning when receiving light intensity is reduced less than 150% of detection level due to some dirt on the lens or wrong positioning of light axis. The photosensitive indicator blinks and alarm output signal comes out.

● TEST INPUT function (Only for Diagnosis type)

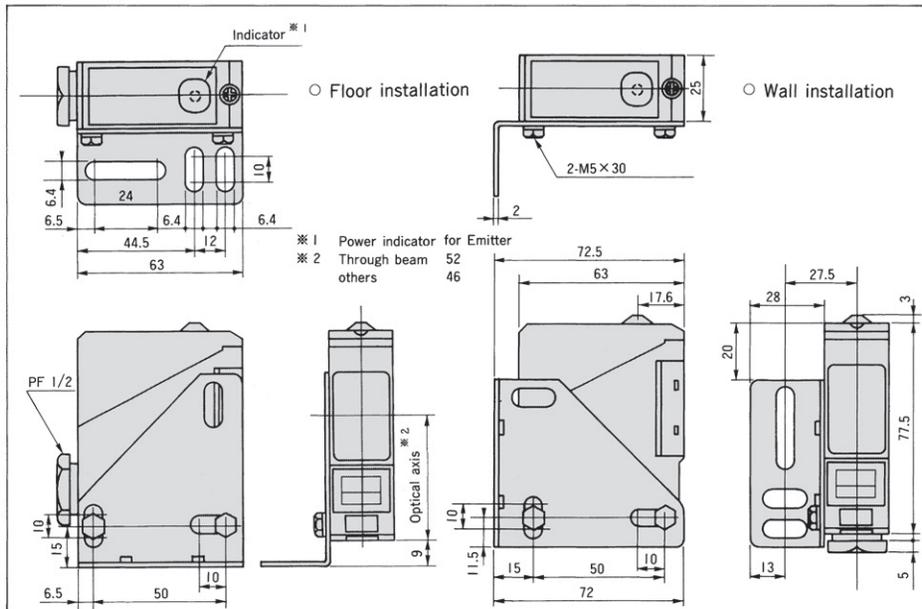
When the No. ⑤ terminal is connected to 0V (NPN type) or 10~30VDC (PNP type), an interrupted status is electrically invented by stoppage of emission. This function can be used as the operational check of the sensor by electric interrupted state without detectable object.

● Other precautions

- Be careful not to install the sensor at the following locations, for it may otherwise malfunction :
 - Where a lot of dust, vapor, or the like is present
 - Where corrosive gases are produced
 - Where water, oil or the like flies directly onto the sensor.
 - Where strong vibration or shock is caused to the sensor.
- Do not use organic solvent, such as thinner, to remove contaminants from the body case, lid, and lens which are all of plastics. Using a dry rag, just wipe clean.
- When a switching regulator is to be used with a power supply, be sure to ground the frame ground terminal.
- For Free voltage type, mode selector switch to be used either right or left end of position. Do not use it in the middle position due to malfunction.
- Do not use the sensor in a transient state at power on. (Free voltage type about 40ms, Diagnosis type about 150ms, PLC type about 100ms)
- Product specifications are subject to change for improvement without notice.

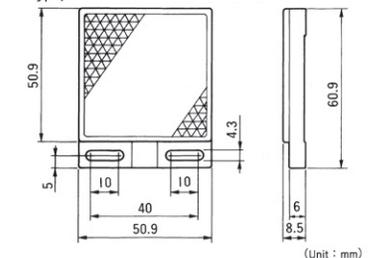
△ Must not use this item as safety equipment for the purpose of human body protection.

DIMENSIONS



● Accessories

- Reflection mirror (Standard accessory for Retro-reflection type)



- Specifications and equipment are subject to change without any obligations on the part of manufacture.
- For more information, questions and comments regarding products, please contact us below.

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