

# Photoelectric Sensor J2/J3 SERIES

· J3R-□100□□ · J2D-□10□□  
· J3M-G□01□□ · J2D-□70□□  
· BGS-3J□05□□ · J2D-□100□□  
· BGS-□15□□ · JR-□Q50□□

## 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.

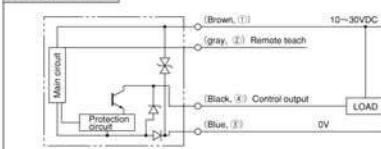
## 1 SPECIFICATIONS

	Narrow beam Retro ref.	Narrow beam Diffused ref.	Diffused reflection		Narrow beam BGS	BGS	Transparent model	Mark detection
Cable type	J3R-(S,H)100(P,N)	J2D-(S,H)10(P,N)	J2D-(S,H)70(P,N)	J2D-(S,H)100(P,N)	BGS-3J(S,H)05(P,N)	BGS-(S,H)15(P,N)	JR-(S,H)Q50(P,N)(-S)	J3M-G(S,H)01(P,N)
Connector type	J3R-(S,H)100CP	J2D-(S,H)10(CP,CN)	J2D-(S,H)70(CP,CN)	J2D-(S,H)100(CP,CN)	BGS-3J(S,H)05CP	BGS-(S,H)15(CP,CN)	JR-(S,H)Q50(CP,CN)	J3M-G(S,H)01CP
Detection distance	0.03～1m *1	5～100m *3	0～0.7m *2	0～1m *2	15～50mm *3	50～150mm *3	0.05～0.5m *1	10±2mm *3
Supply voltage	DC10～30V							
Current consumption	40mA max.					45mA max.	40mA max.	40mA max.
Response time	0.2ms max.	0.5ms max.			0.7ms max.	2.5ms max.	0.5ms, 2.5ms max.	0.2ms max.
Hysteresis	—	15% max.			5% max.	8% max(on 100mm)	—	—
Light Source	Red LED			IR LED		Red LED		Green LED
Sensitivity adjustment	Teaching button							
Indicator	Output indicator (orange LED), Stable incident indicator (Green LED)							
Control output	NPN/PNP Open collector DC30V 100mA max.							
Operation mode	Light ON Dark ON Selectable by switch							
Remote teach	NPN : connect to 0V PNP : connect to +V							
Ambient temp./humidity	-25～55℃/35～95%							
Ambient light	Ambient light Sunlight : 10,000 lx max. Incandescent lamp : 3,000 lx max.							
Protection category/Material	IP67 Case : PBT Lens : PC							

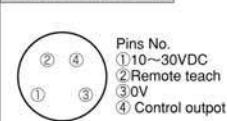
\*1 V-61 Reflector \*2 300×300mm white paper \*3 100×100mm white paper

## 2 INOUT AND OUTPUT CIRCUIT DIAGRAMS

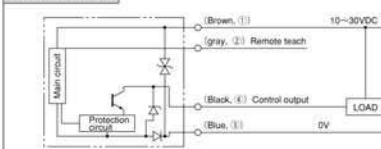
### NPN output



### Pins configuration



### PNP output



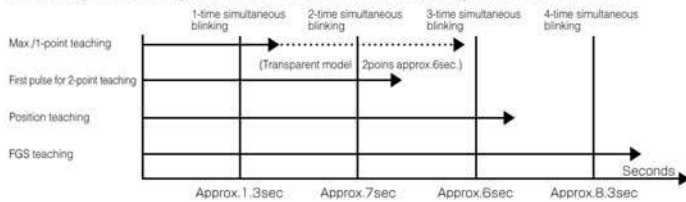
## 3 CAUTIONS

- Be careful not to install the sensor at the following locations, as it may otherwise malfunction.
  - Where a lot of dust, vapor, or the like is present.
  - Where corrosive gas is 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.
- Do not use the sensor in a transient state at power on (about 100ms)
- Do not run sensor cable near a high-voltage lines, or power lines or put them together in the same raceway. This warning should be strictly observed to prevent malfunctions caused by inductive interference.

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

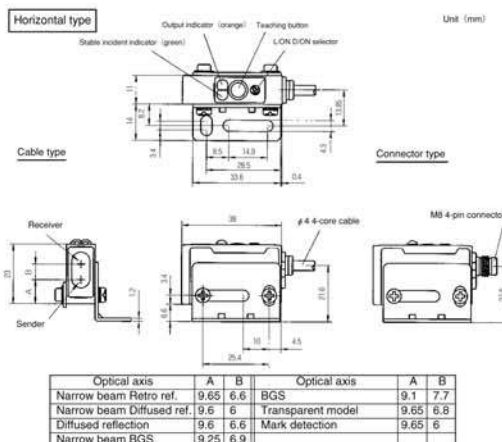
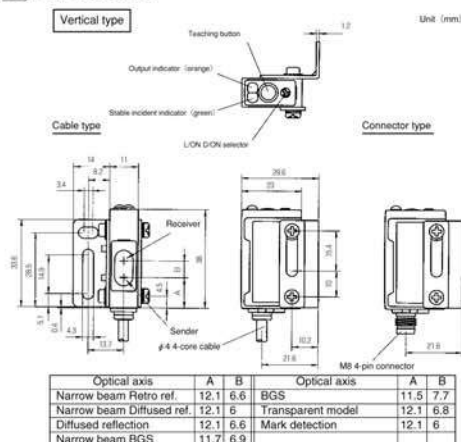
## 4 TEACHING PROCEDURE (SENSITIVITY ADJUSTMENT)

1) Depending on the pressing duration of TEACHING BUTTON, the teaching mode can be determined.



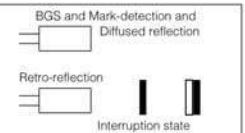
- Sensitivity is set at Max. in default state.
- FGS teaching is only BGS.
- Transparent model is only 1-point teaching.

## 5 DIMENSIONS



## MAX. TEACHING (Max. sensitivity adjustment)

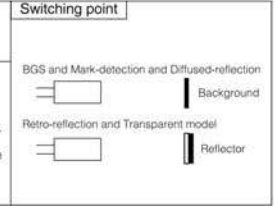
- Press the button without any objects/backgrounds for BGS modes and Mark-detection and Diffused reflection.
- Release the button after the indicators simultaneously blink 1 time.
- Teaching is complete.



## ONE-POINT TEACHING

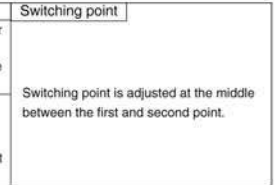
- Press the button onto the background (Without objects).
- Release the button after the indicators simultaneously blink 1 time.
- Teaching is complete.

**Switching point**  
BGS and Mark-detection and Diffused-reflection  
..... Adjusted not to detect the background.  
Retro-reflection and Transparent model  
..... adjusted at the smallest stability (Min. detectable sensitivity) to the reflector.  
Transparent model ..... Response time is selectable according to the pressing duration of TEACH BUTTON.  
1-time simultaneous blinking - 2.5ms  
2-times simultaneous blinking - 0.5ms



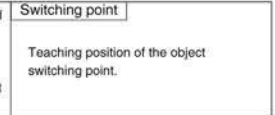
## TWO-POINT TEACHING

- First point**  
Press the button until indicators simultaneously blink, 2 times. After blinking 2 times, release it.  
The first point is stored, and then the sensor turns to the input state for the second point starting simultaneous blinking of the indicators.
- Second point**  
Press the button (Any duration).  
The indicators simultaneously blink 2 times→Complete.  
The indicators alternately blink 3 times→Teaching error. Restart from the step ①.



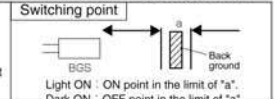
## POSITION TEACHING

- Place the object onto light spot where the sensor should be ON, and press the button.
- Release the button after the indicators simultaneously blink 3 times.
- Teaching is complete (No OK sign appears).  
The indicators alternately blink 3 times→Teaching error. Restart from the step ①.



## FGS TEACHING (FGS is a function that detecting range can be adjusted as desired, out of the range is suppressed.)

- Press the button onto the background (Without objects).
- Release the button after the indicators simultaneously blink 4 time.
- Teaching is complete.  
The indicators alternately blink 3 times→Teaching error. Restart from the step ①.



- Note :**
- Releasing the button the indicators simultaneously blink 1 time, the switching point is not stored (Exclude the second point teaching)
  - In case of teaching error, the sensor is automatically reset, and function with the previous state.
  - Depending on the object or distance, ONE-POINT/POSITION TEATING is not taught for Mark-detection type.

## 2/REMOTE TEACHING

Connecting the gray lead to 0V for NPN models (PNP to +V), remote teaching can be done without pressing the button. Same as the button operation, the teaching mode can be determined depending on the pulse duration.

- 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.