OPTEX FA

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.

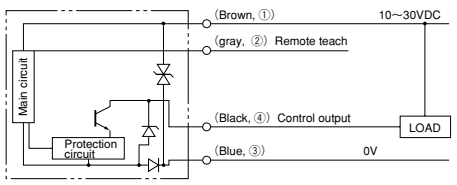
1 SPECIFICATIONS

	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)(-5)	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							

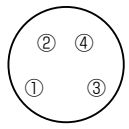
*1 V-61Reflector *2 300×300mm white paper *3 100×100mm white paper

2 INOUT AND OUTPUT CIRCUIT DIAGRAMS

NPN output

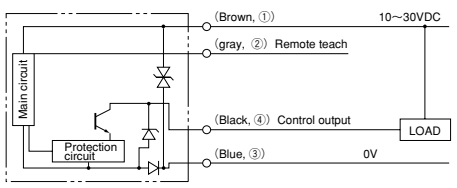


Pins configuration



Pins No.
①10～30VDC
②Remote teach
③0V
④ Control outpot

PNP output



3 CAUTIONS

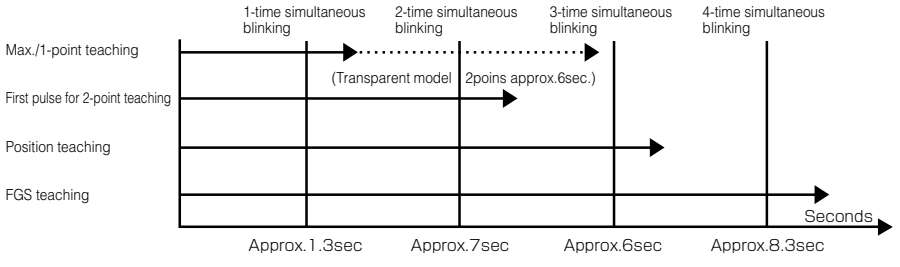
○ Be careful not to install the sensor at the following locations, as it may otherwise malfunction.
- Where a lot of dust, vapor, or the like is present.
- Where corrosive gas is produced.
- Where water, oil or the like flies directly onto the sensor.
- Where strong vibration or shock is caused to the sensor.

○ Do not use organic solvent, such as thinner, to remove contaminants from the body case, lid, and lens which are all of prastics. 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)

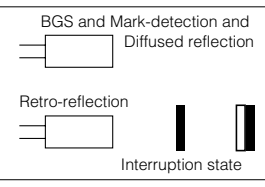
1) Depending on the pressing duration of TEACHING BUTTON, the teaching mode can be determined.



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

MAX. TEACHING (Max. sensitivity adjustment)

① Press the button without any objects/backgrounds for BGS modes and Mark-detection and Diffused reflection.
For retro-reflection models, press the button with interruption state.
② Release the button after the indicators simultaneously blink 1 time.
③ Teaching is complete.

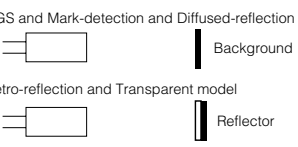


ONE-POINT TEACHING

① Press the button onto the background(Without objects).
② Release the button after the indicators simultaneously blink 1 time.
③ 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

① 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

② APress the button (Any duration).
The indicators simultaneous blink 2 times→Complete.
The indicators altermately blink 3 times→Teaching error. Restart from the step ①.

Switching point

Switching point is adjusted at the middle between the first and second point.

POSITION TEACHING

① Place the object onto light spot where the sensor should be ON, and press the button.
② Release the button after the indicators simultaneously blink 3 times.
③ Teaching is complete (No OK sign appears).
The indicators altermately blink 3 timesÅ®Teaching error. Restart from the step ①.

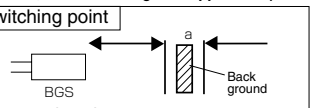
Switching point

Teaching position of the object switching point.

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

① Press the button onto the background(Without objects).
② Release the button after the indicators simultaneously blink 4 time.
③ Teaching is complete.
The indicators alternately blink 3 times→Teaching error. Restart from the step ①.

Switching point



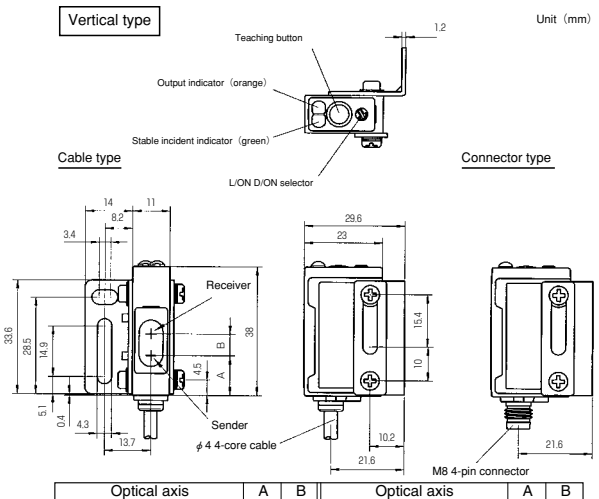
Light ON：ON point in the limit of "a".
Dark ON：OFF point in the limit of "a".

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

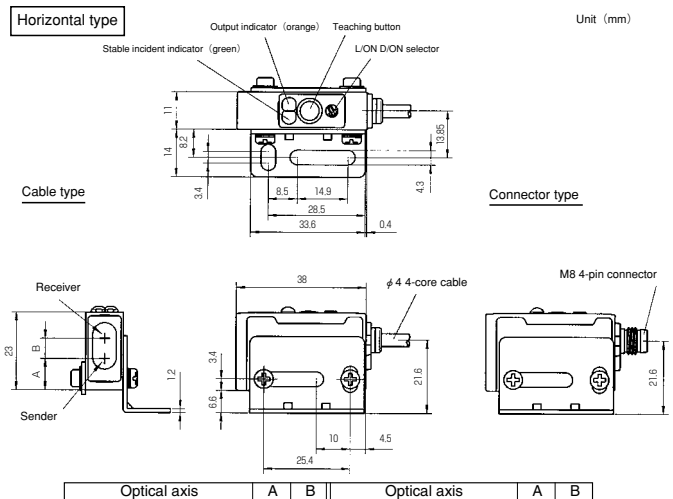
5 DIMENSIONS

Vertical type — Unit（mm）



Optical axis	A	B	Optical axis	A	B
Narrow beam Retro ref.	12.1	6.6	BGS	11.5	7.7
Narrow beam Diffused ref.	12.1	6	Transparent model	12.1	6.8
Diffused reflection	12.1	6.6	Mark detection	12.1	6
Narrow beam BGS	11.7	6.9			

Horizontal type — Unit（mm）



Optical axis	A	B	Optical axis	A	B
Narrow beam Retro ref.	9.65	6.6	BGS	9.1	7.7
Narrow beam Diffused ref.	9.6	6	Transparent model	9.65	6.8
Diffused reflection	9.6	6.6	Mark detection	9.65	6
Narrow beam BGS	9.25	6.9			

- 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.

Manufactured and sold by :

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