TAKEX

Photosensor
with built-in amplifier

F2R SERIES Instruction Manual

TAKENAKA ELECTRONIC INDUSTRIAL CO.,LTD.

Head office, factory : 20-1 Narano-cho, Shinomiya, Yamashina-ku, Kyoto 607-8032, Japan
Telephone : +81-75-581-7111
FAX : +81-75-581-7118

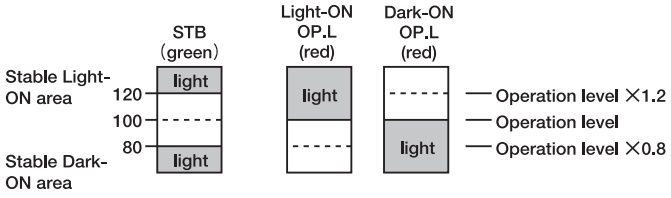
- Thank you for using **TAKEX** products.
- Please read this manual carefully prior to use the sensor.

SPECIFICATIONS CE

		NPN OUTPUT TYPE		PNP OUTPUT TYPE	
Models		F2R	F2R-J	F2RPN	F2RPN-J
Detection		Throughbeam or Reflection type			
Range		It depends on Fiber unit.			
Power supply		12–24V DC ±10%, Ripple 10% (Max)			
Current consumption		25 mA (Max)		30 mA (Max)	
Output mode		NPN open collector		PNP open collector	
	Rating	Sink current : 100mA (30VDC) Max		Source current : 100mA (30VDC) Max	
Operating mode		LIGHT-ON/DARK-ON Selectable		L : LIGHT-ON D : DARK-ON	
Response time		500 μs (Max)			
Hysteresis		10% (Max)			
Light source		Red LED, Wavelength : 660nm			
LED indicator		OP.L : Operation (Red), STB : Stable (Green)			
Sensitivity adjustment		SENS : Built-in Potentiometer			
Material		Case : PBT Stuffing : Styrene resin			
Connection		Flying-lead	Connector ※1	Flying-lead	Connector ※1
		φ3.5, 2m	3P	φ3.5, 2m	3P
		0.2mm² × 3 core	——	0.2mm² × 3 core	——
Weight (Max)		40 g	15 g	40 g	15 g
Accessories		1pc. screwdriver for adjustment 1pc. Bracket for DIN rail (35mm width)			
Notes		※1 Receptacle cable (F2-C3) is an optional.			

INDICATOR

- The operation indicator (red LED) and stability indicator (green LED) each show different received light intensity levels as described in the figure.
- After aligning the optical axis and adjusting the sensitivity, make sure the light received and the light blocked is within the stable ranges by blocking and unblocking the lights with a detection object repeatedly.
- Setting within the stable range increases reliability against differences in the environment after installation.

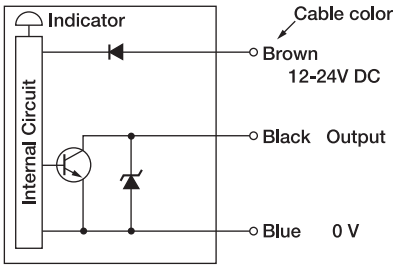


USABLE AMBIENT CONDITIONS

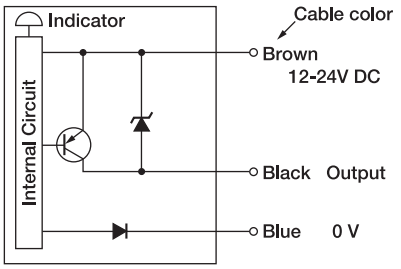
Ambient light
3,000 l x (Max)
Operating temperature
−25 to +55℃
Humidity
35 to 85%RH
Case protection
I P65
Vibration
10 to 55Hz, 1.5㎜ Amplitude
2h., 3 Directions

INPUT/OUTPUT CIRCUIT & WIRING

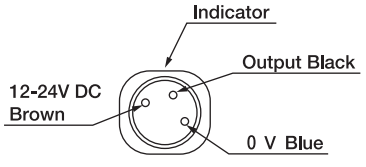
● NPN OUTPUT



● PNP OUTPUT

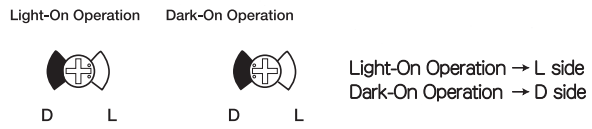


● PIN ARRANGEMENT
(F2R-J/F2RPN-J)



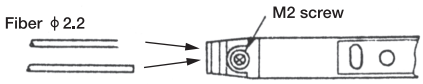
The color means a cord.

OPERATING MODE

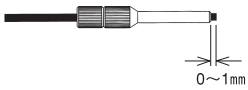


FITTING

Loose the upper screw of sensor and insert fibers deeply therein till they come to stop. Then tighten the screw. (Torque 0.25N·m or less)



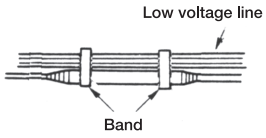
(For thin fiber optic cable, use the adaptor.)



Insert the fibers as sticking out from the top of adapter.

INSTALLATION

Allows mounting with zip-tie bands.
A 35㎜ DIN rail mounting bracket is attached.
(Refer to the Fig. below.)



ADJUSTMENT

■ Reflection Type (Light-On Condition)

◇ In case of reflective background

① Set a target object and then increase the sensitivity adjustment gradually from the minimum position until the indicator LED is on (Point A).

② Remove the target object and gradually decrease the sensitivity adjustment from the maximum position until the LED is off (point B). If the LED is still off even though the potentiometer is at the maximum position, this maximum position should be the point B.

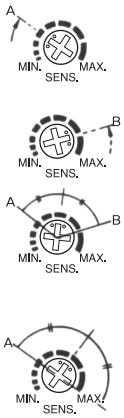
③ Set the potentiometer at the midpoint between Point A and B.

◇ In case of no-reflective background

① Point A is the same point mentioned above.

② Set the potentiometer at the midpoint between Point A and MAX.

● Confirm that both of red LED and green LED light.

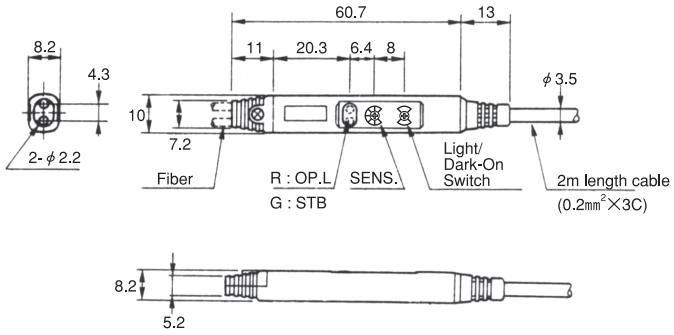


NOTES

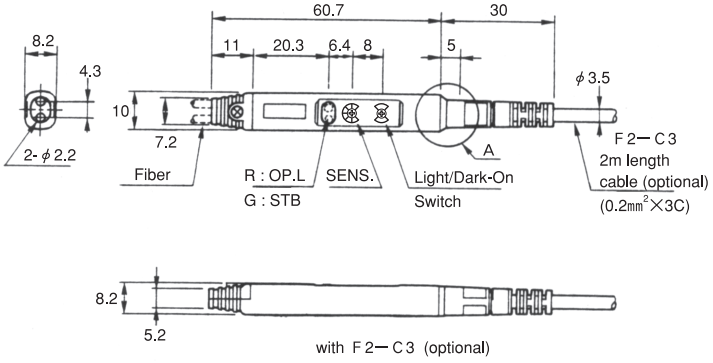
- Silicon grease is applied in the fiber inlets of the sensor. Avoid adhering of small refuses in the inlet or the edge of fiber cables, which may deteriorate the detection range.
- Limit the current of the power supply to 2A in accordance with the size of the sensor cable.
- Use UL class 2 power supply when using this product as UL approved equipment.
- Use power supply within the rated voltage and current in the specification.
- Avoid to turn on and off the power consecutively.
- Use a metal conduit to avoid possible malfunction or damage caused by induction when the wiring should be laid close to high-voltage cables or power lines.
- When using a DC power unit with an insulated transformer or a switching regulator, be sure to ground the frame ground (FG) terminal.
- Though this sensor has IP 65 rated housing, do not use the sensor where water is splashing constantly or under the water.

DIMENSIONS (unit : ㎜)

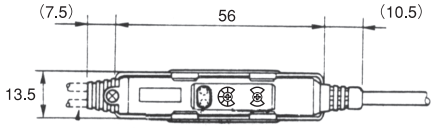
F 2 R, F 2 R P N (Flying-lead Type)

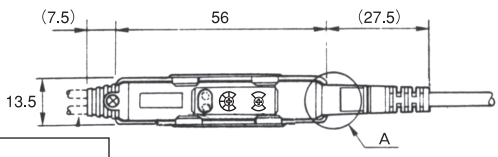


F 2 R－J, F 2 R P N－J (Connector Type)



When attaching to DIN rail





(Common Dimensions)

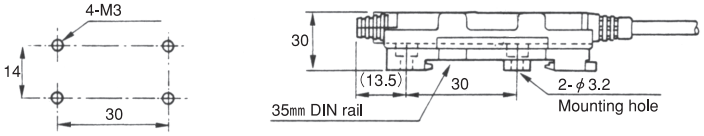
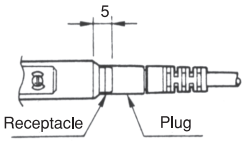


Figure A



- This sensor is designed to detect a specific object. It is not provided with control functions for prevention of injuries or accidents in itself.
- Takex will not held responsible for any damage or loss incurred due to accidents, faulty installation, abuse, misuse, improper maintenance or acts of God including lightning surge.
- Specifications and dimensions may be subject to change without notice.