

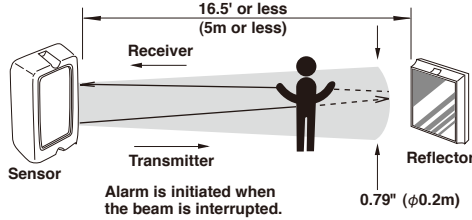
# TAKEX PHOTOELECTRIC BEAM SENSOR PR-5B

## Instruction Manual

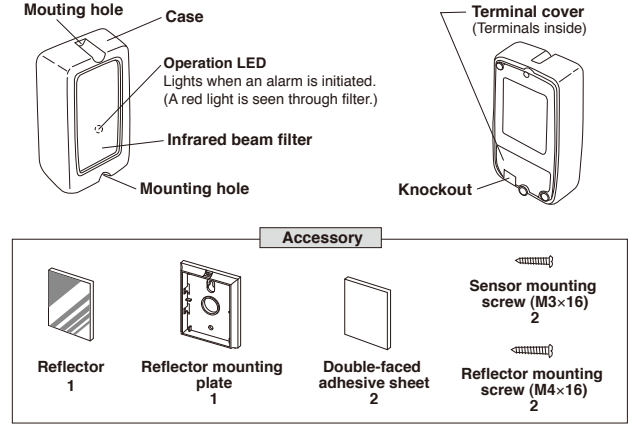
Thank you for purchasing the TAKEX product.  
This sensor will provide long and dependable service when properly installed.  
Please read this Instruction Manual carefully for correct and effective use.  
Please note: This sensor is designed to detect intrusion and to initiate an alarm; it is not a burglary-preventing device.

### 1 PRODUCT DESCRIPTION

This sensor is only suitable for indoor application. This sensor consists of a transmitter that emits infrared beam and a receiver that receives it. As illustrated below, the infrared beam emitted from the transmitter is reflected in the direction of incidence and then enters the receiver. A protection loop is formed in the route of the transmitter → reflector → infrared beam → receiver. Whenever this loop is interrupted (if any object should interrupt the infrared beam), it is detected and an alarm is initiated.

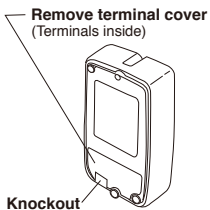


### 2 PARTS DESCRIPTION

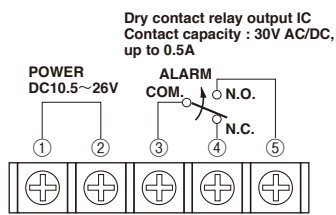


### 3 WIRING

#### ① Remove



#### ② Terminal arrangement



#### ③ Wiring distance between sensor and control panel

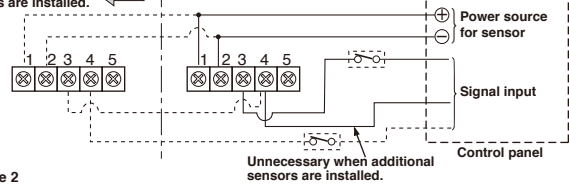
Size of wire used	Input voltage	
	DC 12V	DC 24V
AWG 22 (Dia. 0.65mm)	up to 1000' (300m)	up to 5000' (1500m)
AWG 20 (Dia. 0.8mm)	up to 1800' (550m)	up to 9000' (2750m)
AWG 18 (Dia. 1.0mm)	up to 2800' (850m)	up to 13500' (4250m)

- Note 1. To obtain the maximum length of wiring when two or more sensors are connected, divide the above figures by the number of units used.  
2. Signal line can be wired up to 3,300ft (1,000m) using AWG 22 telephone wire.

#### ④ Examples of connections

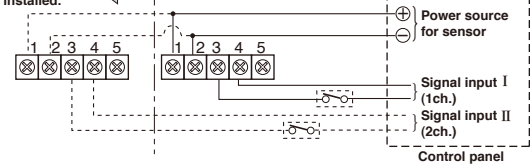
##### ● Example 1

When 1 input to plural sensors are installed.



##### ● Example 2

When plural inputs to plural sensors are installed.



- Note 1. When a magnetic switch or the like is used in the circuit, insert it in the section . For more details, refer to instruction manual for control panel.  
2. The dotted lines indicate connections for additional sensors installed.

#### ⑤ Wiring connections

Remove the terminal cover. Connect the wires with the corresponding terminals correctly as instructed on the back side of the sensor. Break the knockout if necessary.

### 4 INSTALLATION

#### 4-1 Installation of sensor unit

The following instructions will ensure a successful set up.

- Select appropriate installation position and determine the best mounting height for application. (PR-5B shall face the direction to be protected.)
- Measure the distance from the floor to where the center of the PR-5B main unit will be located. Mark a small "X" on the wall at that point. (Measure and mark the same distance from the floor on the opposite wall where the reflector will be mounted. Ensure that both walls are reasonably parallel to each other.)
- Connect the 10.5-26VDC power input and alarm output wires to the appropriate terminal connectors at the rear of the PR-5B.
- Fix the PR-5B securely to the wall using the "X" mark already made as the center reference on the wall.

#### 4-2 Installation of reflector

Detection activation of this sensor is off-delay (detection time + approx. 1.5 sec.).

For that reason, check protection coverage as the following procedure.

- Hold the reflector against the wall over the "X" mark previously made and check the operation LED on the PR-5B.
- If the operation LED lights up, check the position where it goes off while moving reflector slowly vertically and horizontally by sliding for positioning tentative center of coverage. \* (Fig 1.) Move the reflector as slowly as possible because it takes approx. 1.5 sec at least till operation LED goes off though the reflector comes in coverage. If moving is too fast, the PR-5B will not have time to rest and operation LED will not go off.
- Check 4 positions (in every directions) where operation LED lights up while moving reflector slowly outward from the center.

The center of these 4 positions is an actual coverage center where reflector should be installed. \* (Fig 2.) LED lights up at real time when reflector moves out of coverage (When an alarm triggers.)

Important: A common mistake is made by holding the reflector in the hand in the air, when trying to make the PR-5B set up. This is extremely difficult to achieve. PLEASE DO NOT ATTEMPT TO DO THIS.

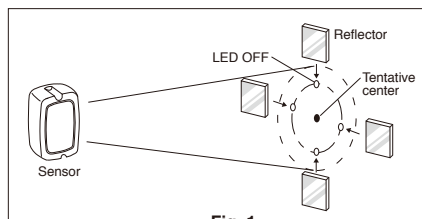


Fig. 1

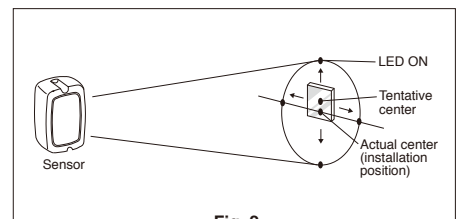


Fig. 2

## 4-3 Mounting

Mount the sensor unit as show in Fig 3.

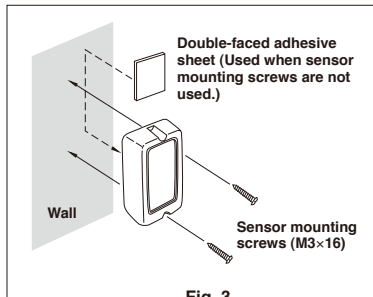


Fig. 3

Note : Where the sensor is installed on a rough or irregular surface like concrete, use a steel plate of about 2mm in thickness as foundation to prevent misalignment of the optical system.

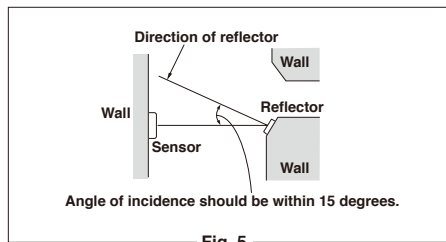


Fig. 5

Mount the reflector as show in Fig 4.

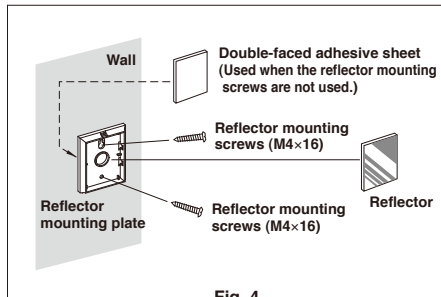


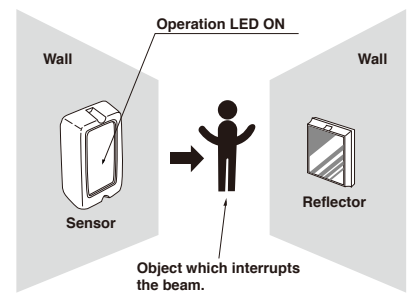
Fig. 4

Note : Install the reflector within the range of 2' (0.6m) to 15' (5m) from the sensor. Note that the installation angle as well as the position of the reflector. (Fig. 5)

The reflector has the function of reflecting infrared beam in the direction of incidence within + / -15 degree of the incidence angle.

When the reflector is tilted, be sure to use it within the above range.

## 5 OPERATION

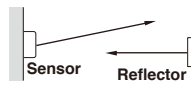



Supply power to the sensor. If the sensor faces the reflector properly, the operation LED does not light up. If the LED lights up, refer to "4. INSTALLATION" and re-adjust.

Next, interrupt the path of infrared beam between the sensor and the reflector with beam shielding objects (human body or the other objects which interrupts infrared beam), and confirm that an alarm is given and the operation LED lights up. If the alarm stops when this object is removed (LED off), the system is working correctly.

Regular maintenance and inspection by installer and frequent testing by user are vital to continuous satisfactory operation of any alarm system.

## 6 TROUBLESHOOTING

Symptom	Possible cause	Remedy
No alarm condition	①Breaker of control panel is cut off. (No voltage on power terminals for sensor)	Recover the breaker. (Search the cause of cut-off of breaker)
Continuous alarm	②Either sensor or reflector is not set in a correct direction. 	Correct the direction of the sensor or reflector with reference to 4. Installation of reflector. 
	③Disconnection or separation of wiring between sensor and control panel.	Repair the disconnection or separation.
Frequent alarm with no intrusion.	Infrared beam filter of the sensor or the reflector is stained with water drops, dust, or the like. (Alarm may be given continuously in severe cases.)	Clean the filter or the reflector with soft cloth.
	Moving objects in the protected area. (like curtain, animal, etc.)	Remove the moving objects from the protected area.

Analyze possible problems according to the above table. If normal operation cannot be restored by the means, contact either the dealer from whom you bought the unit or TAKEX.

### Limited Warranty

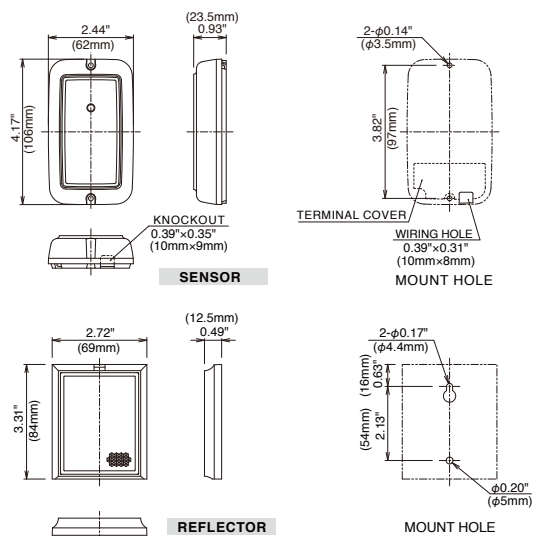
TAKEX products are warranted to be free from defects in material and workmanship for 12 months from original date of shipment. Our warranty does not cover damage or failure caused by Acts of God (including inductive surge by lightning), abuse, misuse, abnormal usage, faulty installation, improper maintenance or any repairs other than those provided by TAKEX. All implied warranties with respect to TAKEX, including implied warranties for merchantability and implied warranties for fitness, are limited in duration to 12 months from original date of shipment. During the Warranty Period, TAKEX will repair or replace, at its sole option, free of charge, any defective parts returned prepaid. Please provide the model number of the products, original date of shipment and nature of difficulty being experienced. There will be charges rendered for product repairs made after our Warranty period has expired.

## 7 SPECIFICATIONS

Model	PR-5B
Protected distance	16.5' (5m) or less
Light source	Infrared light emitting diode
Response time	50msec. or more
Alarm signal	Dry contact relay output S.P.D.T. form C. Contact capacity : 30V (AC/DC) up to 0.5A
Supply voltage	10.5-26V DC (Non-polarity)
Power consumption	37mA (at 12V DC)
Ambient temperature range	-20°C to +50°C (-4°F to +122°F)
Mounting positions	Indoor-entrance, exit, window, passageway
Weight (excluding accessories)	Sensor : 90g (3.2 oz) Reflector : 50g (1.8 oz)
Appearance	ABS resin (white)

The specifications are subject to change without notice.

## 8 DIMENSIONS



## TAKEX TAKENAKA ENGINEERING CO., LTD.

In Japan

**Takekaka Engineering Co., Ltd.**  
83-1, Gojo-sotokan,  
Higashino, Yamashina-ku,  
Kyoto 607-8156, Japan  
Tel : 81-75-501-6651  
Fax : 81-75-593-3816  
<http://www.takekaka-eng.co.jp/>

In the U.S.

**Takekaka America Inc.**  
151 San Zeno Way  
Sunnyvale,  
CA 94086, U.S.A  
Tel : 408-747-0100  
Fax : 408-734-1100  
<http://www.takekaka.com>

In Australia

**Takekaka America Inc.**  
4/15 Howleys Road, Notting Hill,  
VIC, 3168  
Tel : +61 (03) 9544-2477  
Fax : +61 (03) 9543-2342

In the U.K.

**Takekaka Europe Ltd.**  
Aviary Court, Wade Road,  
Basingstoke, Hampshire. RG24 8PE, U.K.  
Tel : (+44) 01256-475555  
Fax : (+44) 01256-466268  
<http://www.takekaka.com>