TAKEX

# Instruction Manual

## Explosion-proof Photoelectric Beam Sensor

**Type : PB-100EX**

**Type : PB-200EX**

**Type : PB-400EX**

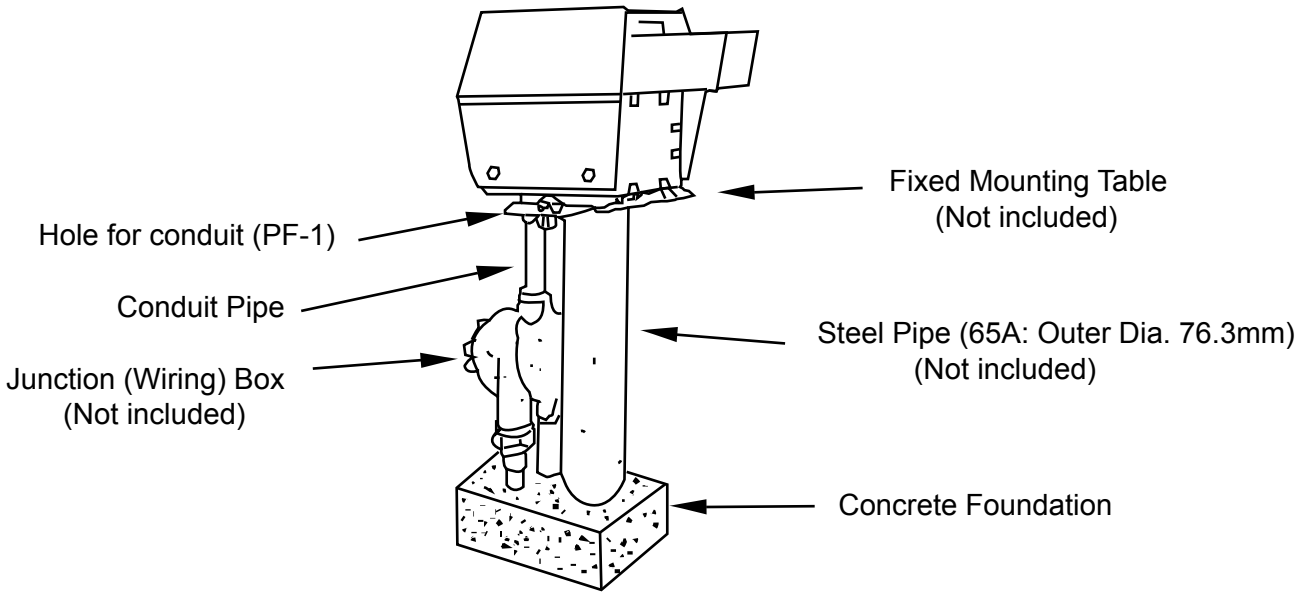
TAKENAKA ENGINEERING CO., LTD.

The TAKEX Explosion-proof Sensor consists of a transmitter which emits the infrared pulsed beam and a receiver which receives the beam. The units are manufactured in accordance with Technical Recommendations by Ministry of Labour. The Research Institute of Industrial Safety Japan. Please read this manual carefully for correct and effective use.

1) INSTALLATION

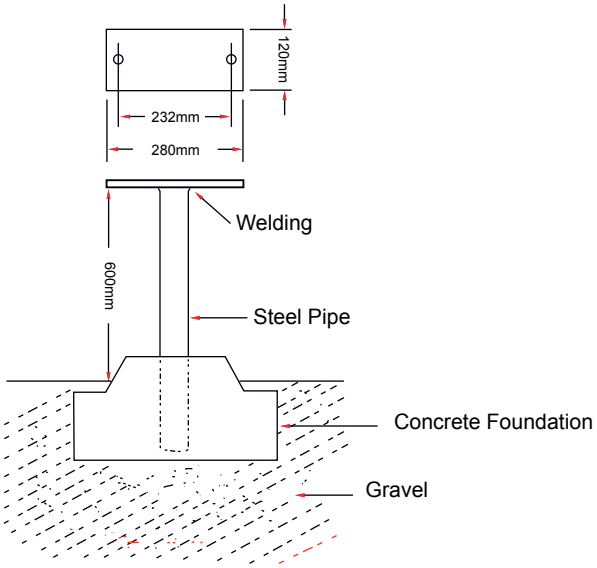
Mount both transmitter and receiver on their respective tables which are fixed at 80cm (31.5”) to 100cm (39.31”) from the ground.t

Transmitter & Receiver

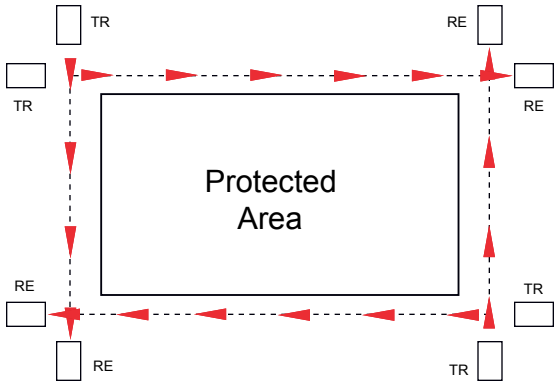



* To be constructed in accordance with the rule for explosion-proof apparatus.

~ Example ~




~ Example ~




As shown above, infrared beams should cross at each corner.

2) WIRING

2-1 Wire Materials

(1) Use insulated wires enclosed in rubber, vinyl, polyethylene or fluorocarbon resin.

I.E. a) 600V grade polyvinyl chloride insulated wires (IV).....JIS C 3307
b) 600V grade heat-resistant polyvinyl chloride insulated wires (HIV).....JIS C 3317
c) 600V grade aluminum conductor polyvinyl chloride insulated wires (AI-IV).....JIS C 3372
d) 600V grade natural rubber insulated wires (SBR).....JIS C 3304
e) 600V grade silicon rubber insulated glass fiber braided wires (KGB).....JIS C 3323
f) 600V grade polyethylene insulated wires (IE).....JIS C 3326
g) Other wires similar in composition to the above.

(2) Conduit

Use rigid steel conduit (JIS C 8305)

(3) Accessories for conduit (Iron and steel pipe fittings)

Use junction boxes, couplings, sealing fittings and flexible fittings having pressure and explosion proof construction. Use lock nuts for rigid metal conduit.

2-2 Conduit Arrangement

(1) Screw threads

Conduit is connected to fittings or terminal boxes with parallel pipe threads. Tighten with lock nuts after threading 5 threads or more.

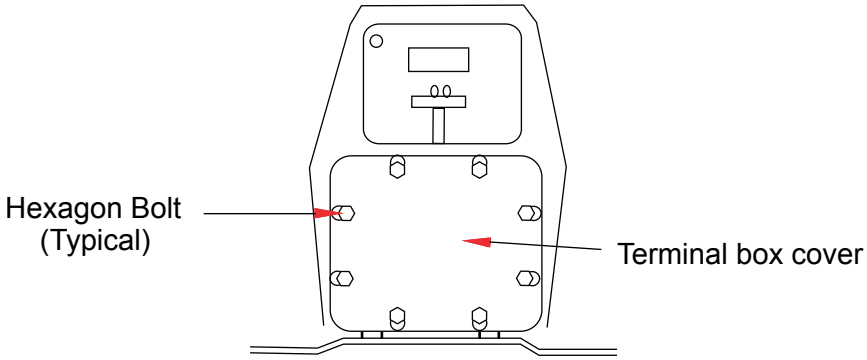
(2) Flexible fitting (couplings)
Use flexible fittings or couplings where flexibility is required.
The inner radius when bending a curve must be 5 times or more the outer diameter of the fitting tube.

(3) Sealings
Mount the sealing fittings on the conduit as describe below.
Fill the inside of the fittings with compounds to shut off the conduit pipe.

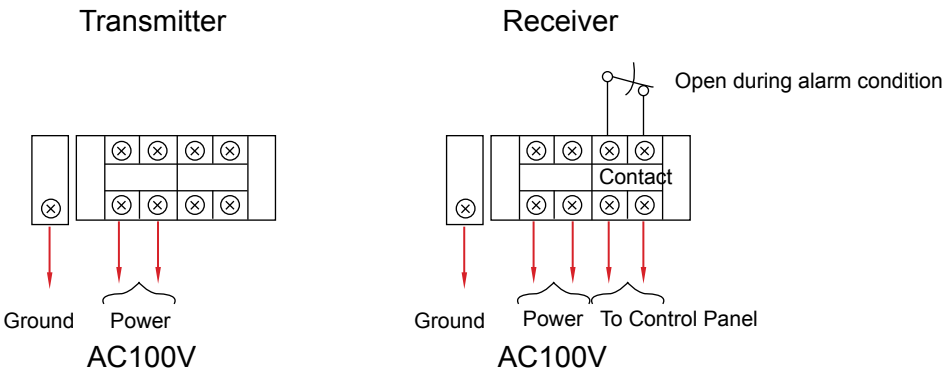
a) On one side of the conduit which passes through the wall between a class 1 hazardous location and the other except on the conduit between the sealing fittings and wall.
b) If you use JIS N.o. 54 or bigger number conduit pipe, fill the fittings with compounds close to and within 45cm from the terminal box or the like which includes wire junction in. (The closer the better.)
c) Within 45m from the box and as close to it as possible on the conduit which is feeding in or out of the terminal box or junction box in a distributor panel.

2-3 Drip-proof
When it is apparent that water may collect in conduit boxes and sealing fittings, prevent water from staying in by providing drainage.

2-4 Wiring
(1) Detach the back cover of transmitter and receiver with the hexagon wrench provided.

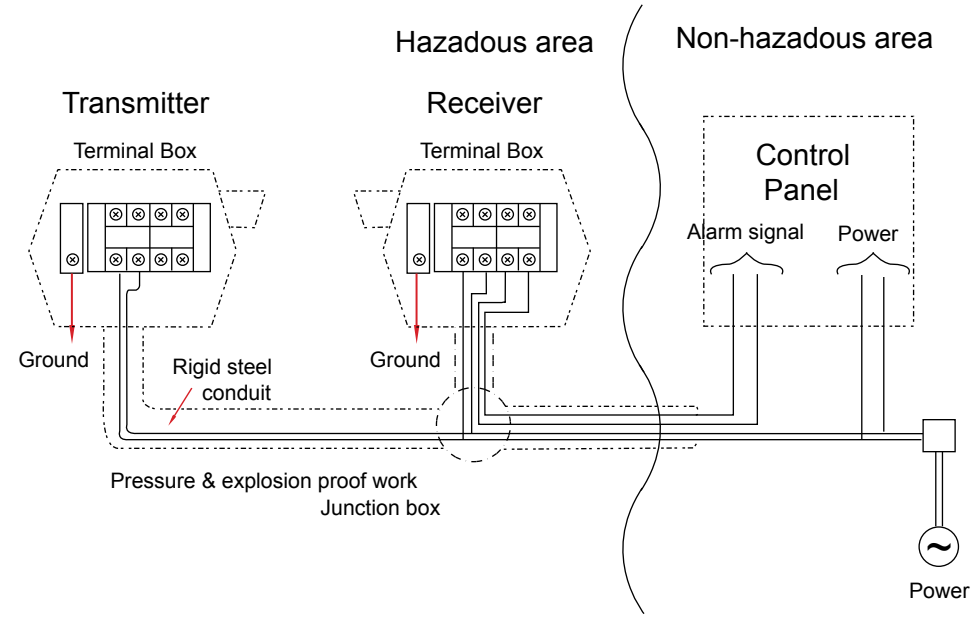



(2) The following figures show terminal arrangements.
Connect 100V power source with 100V terminals on transmitter and receiver. Connect the wires from control panel with contact terminals on receiver.



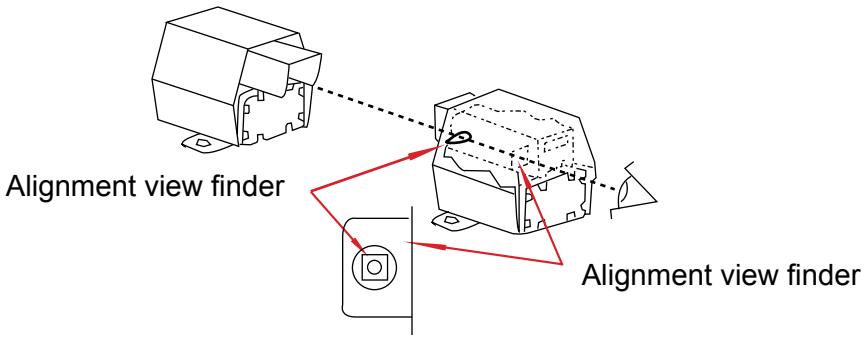

(3) After wiring, re-attach the terminal cover.
(4) Refer to Explosion-proof standards for other wiring work.

~ Example ~



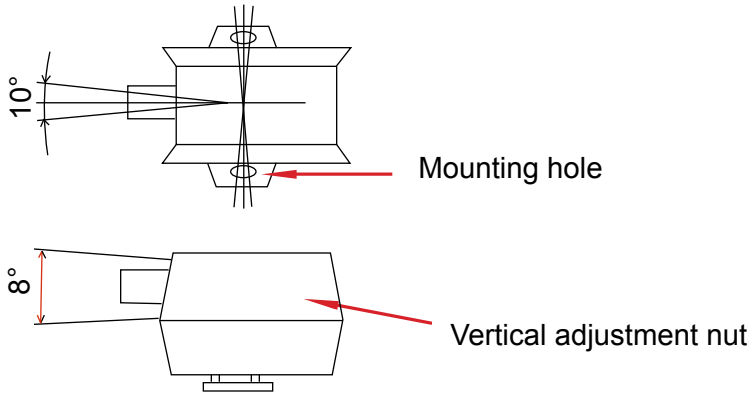
3) Alignment

(1) Look through the view finder on the transmitter and receiver.
Adjust with the mounting hole and the vertical adjustment nut until the opposite unit is centered in the finder.



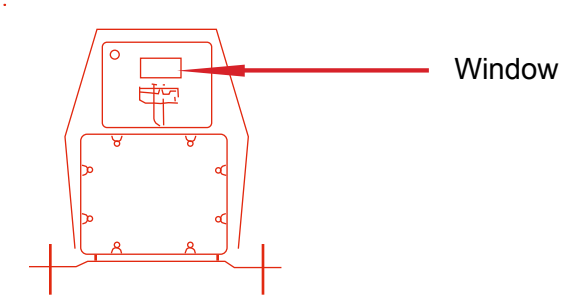

* Horizontal Adjustment
Accessible through the mounting hole. Adjustable range is 10° (+5°)

* Vertical Adjustment
Use the vertical adjustment screw on the back. Adjustable range is 8°



4) Operation

The LEDs in the window on the back of the transmitter and receiver will light when ower is supplied. Then the units are in the protected condition and the receiver LED goes out when the beam is interrupted.




5) Maintenance

| Model | PB-100EX | PB-200EX | PB-400EX |
|---|---|---|---|
| Protected distance | 100m (330ft.) | 200m (660ft.) | 400m (1320ft.) |
| | or less | or less | or less |
| Max. Arrival distance | 800m (2400ft.) | 1600m (4800ft.) | 32000m (9600ft.) |
| | (x8) | | |
| Infrared rays | Pulsed beam by infrared LED | | |
| | Wave length : 9400A | | |
| | Double modulated frequency : 500Hz to 20KHz | | |
| Response time | 50 to 100msec | | |
| Alarm signal | Relay output S.P.S.T. (N/C) | | |
| | Reset time : approx. 1sec | | |
| | Contact rating : 100V • 0.5A • Max10VA | | |
| Supply voltage | AC100V • 50/60Hz | | |
| Power consumption | 5.5VA | | |
| Ambient temp. range | -35°C to +60°C (-30°F to +140°F) | | |
| Mounting position | Class I & II hazardous location | | |
| Weight | Transmitter & Receiver 20kg each | | |
| Appearance | Epoxy resin baked coating stainless steel plate | | |

**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, 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.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