



100M/150M TWIN PHOTOELECTRIC BEAM SENSOR

Manual Instruction

2PH- 100BS/BQ Outdoor 300ft. (100m) / Indoor 600ft. (200m)

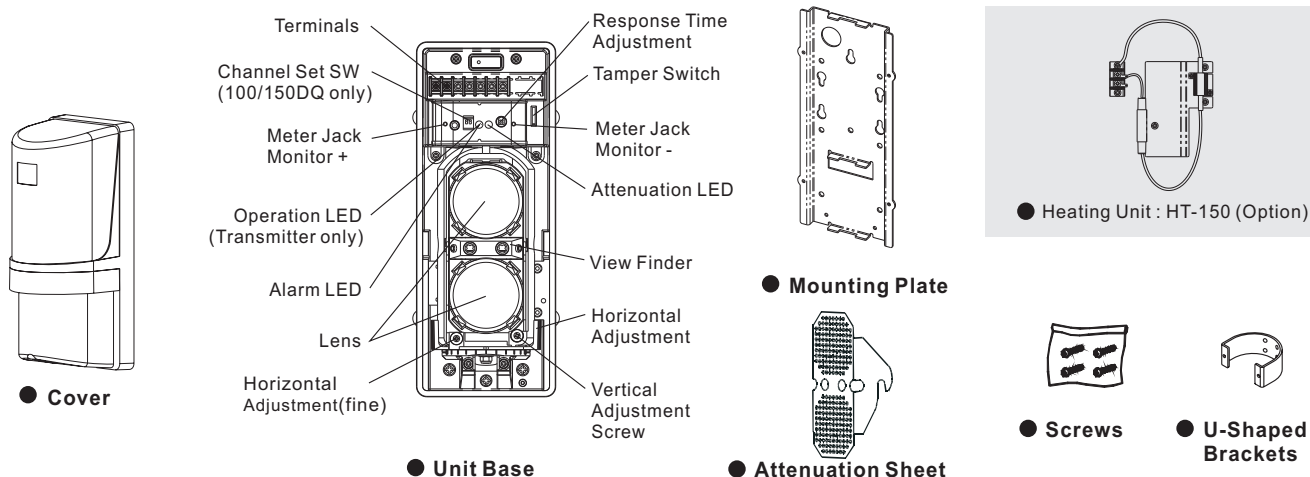
2PH- 150BS/BQ Outdoor 450ft. (150m) / Indoor 900ft. (300m)

Please read this instruction Manual carefully for correct and effective use. If you do not understand these instructions, contact your supplier for further information.

NOTE

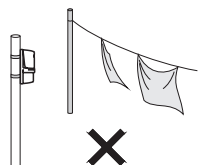
This sensor is designed to detect intrusion and to activate an alarm. It only provides an alarm sign output, and is not an independent burglar-preventing device. If it's used abnormally, faulty installation, improper maintenance or Acts of God, it will cause damage.

1. PARTS DESCRIPTION

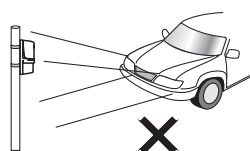


2. CAUTIONS ON INSTALLATION

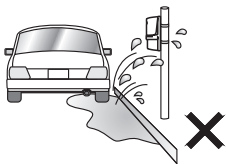
Wrong place



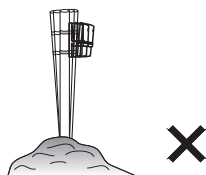
● Remove all obstructions (trees, clothes lines, etc.) Between Transmitter and Receiver.



● Avoid strong light from the sun, headlights, and direct shining on the Transmitter / Receiver. When strong light stays in optical axis for a long time, it will hurt the product's lift.



● Do not install the unit on places where it may be splashed by dirty water or direct sea spray.



● Do not install the unit on the unsteady place.

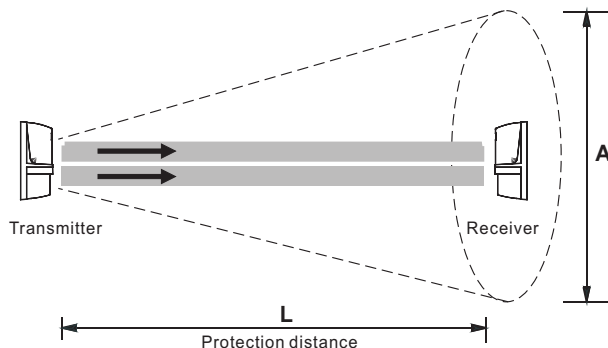
Detection Range

Please make the Transmitter and Receiver within the required range as belows:
 2PH-100BS/BQ Outdoor 300ft. (100m) / Indoor 600ft. (200m)
 2PH-150BS/BQ Outdoor 450ft. (150m) / Indoor 900ft. (300m)

Detection Width

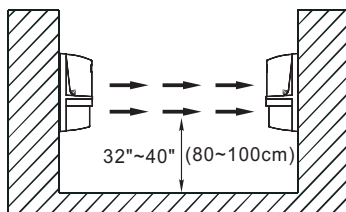
The detection width can be calculated with following formula:
 Width A = 0.025 x Length (L)

L	A
180' (60m)	4.5' (1.5m)
300' (100m)	7.5' (2.5m)
450' (150m)	11.4' (3.8m)



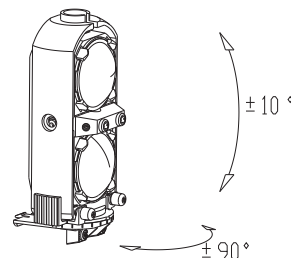
Installation Height

To detect the intruder efficiently, the sensors should be installed within 32"~40" (80~100cm) height.



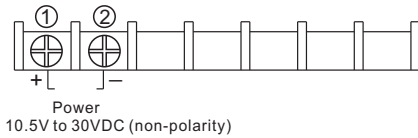
Alignment Angle

The sensors can be adjusted with Horizontal $\pm 90^\circ$ and Vertical $\pm 10^\circ$ to fit big detection range.

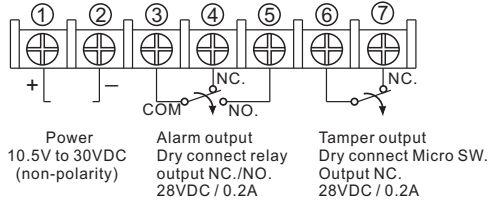


3. WIRING

Transmitter



Receiver



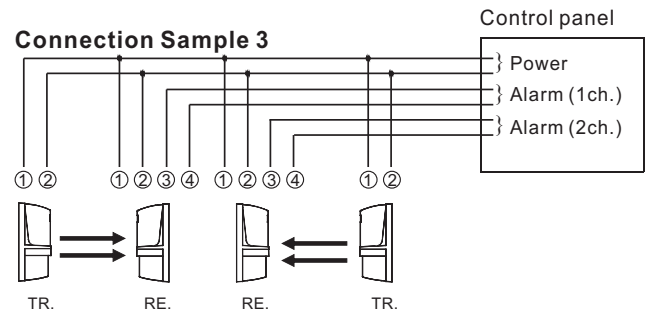
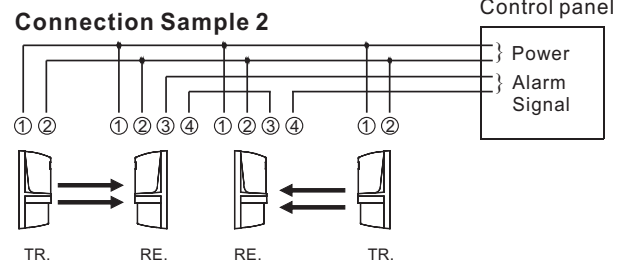
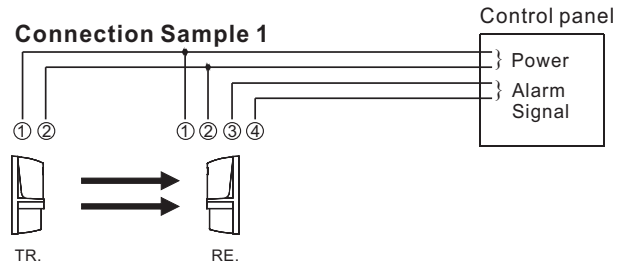
Wiring Distance

Model	2PH-100BS/BQ		2PH-150BS/BQ	
	12VDC	24VDC	12VDC	24VDC
Wire size				
AWG22 (0.65mm)	630' (190m)	5600' (1700m)	490' (150m)	4200' (1280m)
AWG20 (0.8mm)	1000' (300m)	9300' (2800m)	830' (250m)	7200' (2200m)
AWG18 (1.0mm)	1600' (480m)	14600' (4400m)	1200' (360m)	10500' (3200m)
AWG17 (1.1mm)	2000' (600m)	18300' (5500m)	1450' (440m)	13500' (4000m)

NOTE:

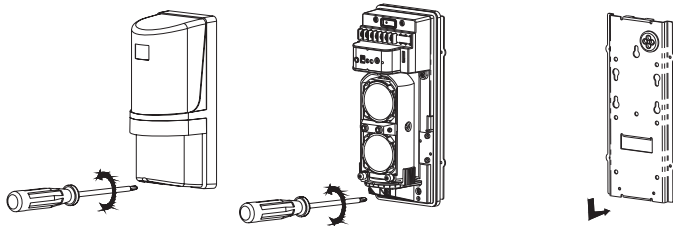
1. When two or more connections is required, maximum wiring distance is the value above divided by the number of sets.
2. The power wires could not exceed the above mentioned lengths.

Connection



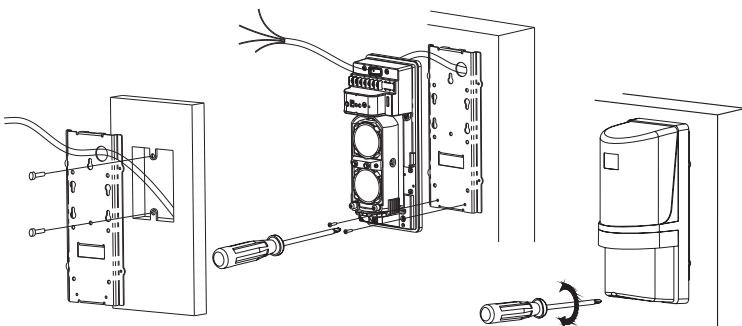
4. INSTALLATIONS

The units can be mounted easily on a pole or flat surface. Remove cover via screw at base of cover. And loosen the unit base mounting screw and remove mounting plate by sliding it down against the unit base.



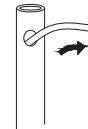
A. Wall Mounting

- A-1. Pull out the wire through the wiring hole on the mounting plate and attach the plate to the wall with the screw (1/6" x 3/4")
- A-2. Connect wire to the terminals.
- A-3. After checking optical alignment and operation check, (please see 7.ALIGNMENT AND OPERATION) replace the cover, and fasten the cover lock screw tightly.

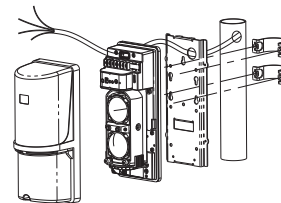


B. Pole Mounting

- B-1. Unit mounts to a 1.66"-1.75" O.D. Pole.
- B-2. Drill a 1/4" hole through pole where the beam will be mounted for wiring.

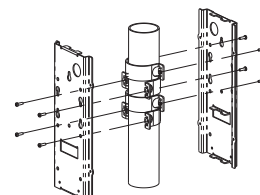


- B-3. Place U-Shape brackets at the pole.
- B-4. Pull out the wire through the wire through the wiring hole of the mounting plate, attached the mounting plate to the U-Shape bracket with screw.
- B-5. Connect the wire to the terminals.
- B-6. Checking optical alignment and operation check. (Please see 7.ALIGNMENT AND OPERATION)
- B-7. Replace the cover, and fasten the cover lock screw tightly.



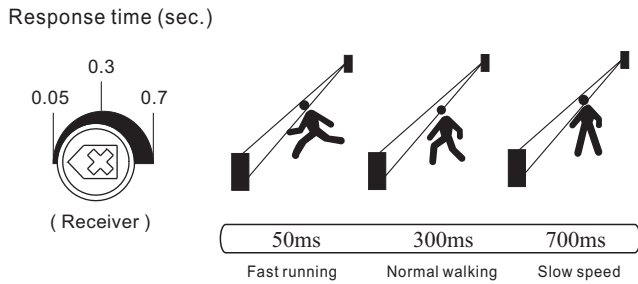
C. Two units installation (back to back)

Fix two U-Shape brackets in layers on a pole, two units can be installed back to back on a pole at the same height.



5. RESPONSE TIME ADJUSTMENT

- The beam interruption time adjustment is on Receiver unit. Speeds shown below are the maximum detectable speeds for each setting.



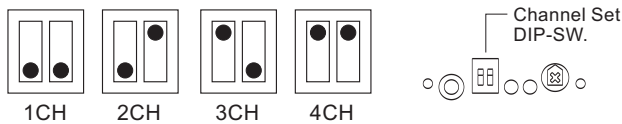
NOTE:

After installation, response time testing is required. This function allows you to match the units sensitivity to its surroundings.

6. BEAM FREQUENCY CHANGE

Note : Only for 2PH-100BQ/150BQ

- Set Transmitter and Receiver at the same channel.

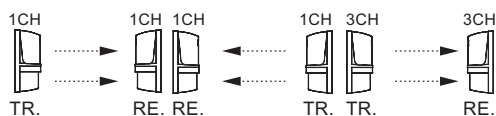


- Refer to the figures and set the beam channel when two or more units are installed in stacked protection or in line protection.
- When stacked protection is set up, both the upper and lower sensors should be the same model number types.

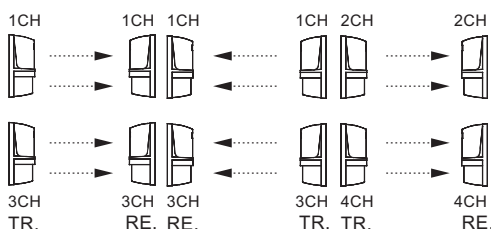
2-stacked protection



Line protection

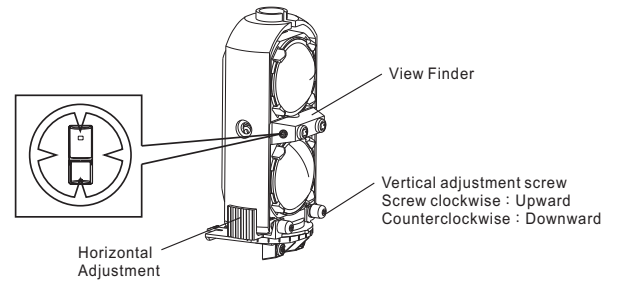


Line & 2-stacked protection



7. ALIGNMENT AND OPERATION

- Apply power to both Transmitter and Receiver.
- Looking through the view finder, locate the other detector in the center of the sights by adjusting vertically and horizontally.



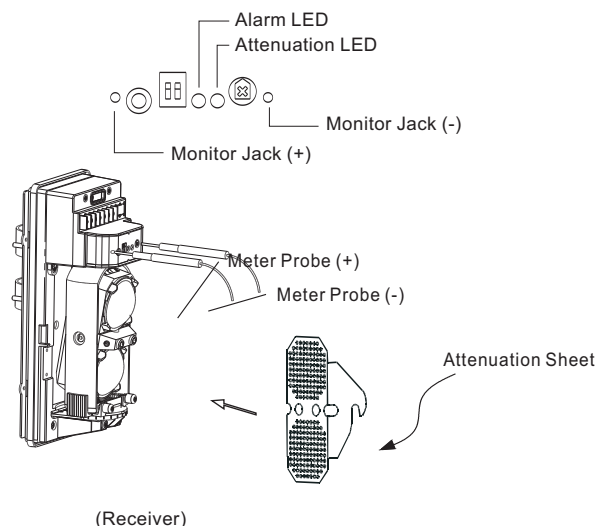
- Connect the volt-meter (DC10V) to monitor jack input on Receiver's (+) and (-).
- Fine adjust the optical alignment for Transmitter to obtain maximum voltage from the volt-meter.
- Fine adjust the optical alignment for Receiver to obtain maximum voltage from the volt-meter.
- Place attenuation sheet on Receiver lens repeating 7-4 & 7-5 to obtain the maximum voltage from the volt-meter.
- Taking off attenuation sheet, meter probe.

SENSITIVITY CHART

Monitor Jack Output	Alignment Level
900mV Over	Best
600mV to 900mV	Good
600mV Under	Poor, Realign

NOTE:

- Above readings is under attenuation sheet operation.
- Carefully remove the attenuation sheet, and check the voltage from the monitor jack again.



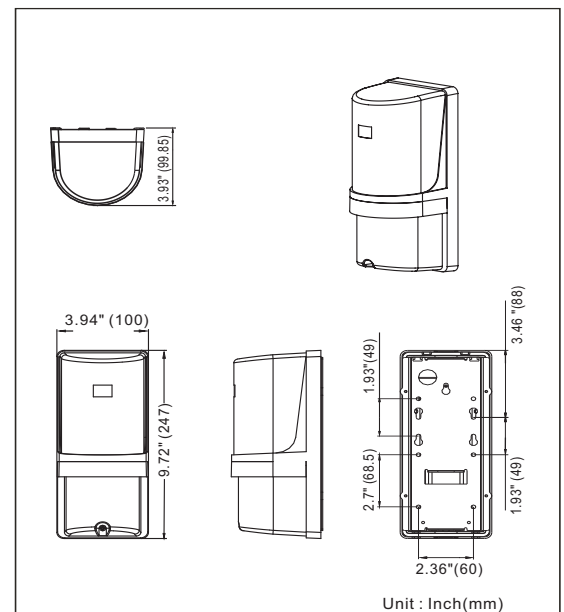
8. TROUBLE SHOOTING

Trouble	Check	Corrective Action
Operation LED does not light. (Transmitter Unit)	<ol style="list-style-type: none"> 1. No power supply. 2. Bad wiring connection or broken wire, short. 	<ol style="list-style-type: none"> 1. Turn on the power. 2. Checking wiring.
Alarm LED does not light when the beam is broken. (Receiver Unit)	<ol style="list-style-type: none"> 1. No power supply 2. Bad wiring connection or broken wire, short. 3. Beam is reflected on another object and sent into the receiver. 4. Two beams are not broken simultaneously. 5. The beam interruption time is shorter than the set response time. 6. Inline or stacked beam sensors set up with improper frequency channel. 	<ol style="list-style-type: none"> 1. Turn on the power supply. 2. Check wiring. 3. Remove the reflecting object or change beam direction. 4. Break two beams simultaneously. 5. Set the response time shorter. 6. According to the manual instruction and readjust the channel.
Alarm LED continues to light (Receiver Unit)	<ol style="list-style-type: none"> 1. Beam alignment is out. 2. Shading object between Transmitter and Receiver. 3. Optics of units are soiled. 4. Wrong beam frequency channel set up. 	<ol style="list-style-type: none"> 1. Check and adjust again. 2. Remove the shading object. 3. Clean the optics with a soft cloth. 4. Readjust the DIP-SW for the right channel.
Intermittent alarms	<ol style="list-style-type: none"> 1. Bad wiring connection. 2. Change of supply voltage. 3. Shading object between Transmitter and Receiver. 4. A large electric noise source, such as power machine, is located nearby Transmitter and Receiver. 5. Unstable installation of Transmitter and Receiver. 6. Soiled optics of Transmitter and Receiver. 7. Improper alignment. 8. Small animals may pass through the 2 beams. 	<ol style="list-style-type: none"> 1. Check again. 2. Stabilize supply voltage. 3. Remove the shading object. 4. Change the place for installation. 5. Stabilize. 6. Clean the optics with a soft cloth. 7. Check and adjust again. 8. Set the response time longer. (Impossible in a site where an intruder can run at full speed.)

9. SPECIFICATIONS

MODEL	2PH-100BS	2PH-150BS	2PH-100BQ	2PH-150BQ
Detection Distance	Outdoor	300 ft. (100m)	450 ft. (150m)	300 ft. (100m)
	Indoor	600 ft. (200m)	900 ft. (300m)	600 ft. (200m)
Max. Arrival Distance	3000 ft.(1000m)	4500 ft.(1500m)	3000 ft.(1000m)	4500 ft.(1500m)
Current Consumption	67mA (max)	85mA (max)	67mA (max)	85mA (max)
Selectable Beam Frequency	4 channel			
Power Supply	10.5V ~ 30VDC (Non_Polarity)			
Infrared Photoelectric	LED pulsed beam, Double modulation			
Detection System	Simultaneous breaking of 2 beams			
Response Time	50msec ~ 700msec (Adjustable)			
Alarm Output	Dry connect relay NC./ NO. 0.2A / 28VDC Contact action: 1 To 3 sec .			
Tamper Output	Dry connect relay NC. 0.2A / 28VDC Action : cover is detached.			
Alarm LED	Red LED (Receiver) lights when an alarm is initiated.			
Attenuation LED	Yellow LED (Receiver) lights when beam is attenuated			
Functions	RF-Monitor Jack, Meter Monitor Jack output A.G.C. circuit, Frost proof cover.			
Alignment Angle	Horizontal $\pm 90^\circ$, Vertical $\pm 10^\circ$			
Operating Temperature	-13°F to +131°F (-25°C to +55°C)			
Mounting Positions	Indoor / Outdoor			
Wiring	Terminals			
Weight	63.7oz(1805g)Transmitter & Receiver			
Dimensions	W 100x H 247 x D 100 mm			
Standard Accessories	U-Shaped brackets x 4 Attenuation Sheet x 1 Screws (4x30 Self tapping) x 8 Screws (M4 x 20) x 8			
Option	Heating Unit (HT-150)			

10. DIMENSIONS



NOTE:

1. This unit is designed to detect an intruder and activate an alarm control panel. Being only a part of complete system, we cannot assume responsibility for theft or damages, should it occur.
2. Specifications and design are subject to change without prior notice.



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