75M/150M/250M QUAD PHOTOELECTRIC BEAM SENSOR

INSTRUCTION MANUAL

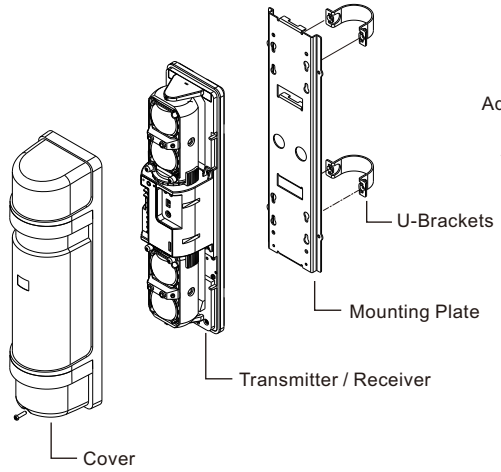
4PH- 75BQE Outdoor 225ft. (75m) / Indoor 450ft. (150m)
4PH- 150BQE Outdoor 450ft. (150m) / Indoor 900ft. (300m)
4PH- 250BQE Outdoor 750ft. (250m) / Indoor 1500ft. (500m)

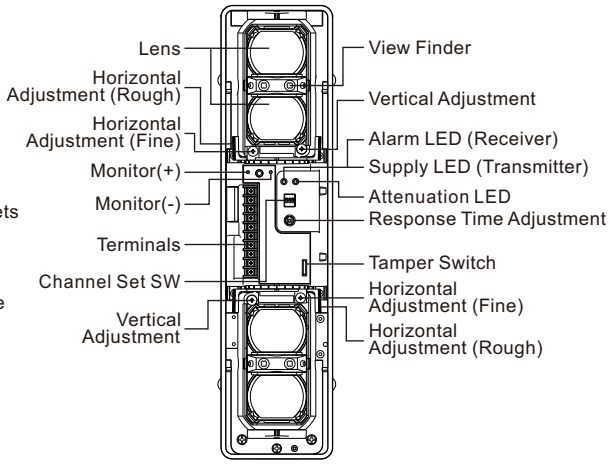
Please read this instruction Manual carefully for correct and effective use. If you do not understand these instructions, contact your supplier for further information.

NOTE

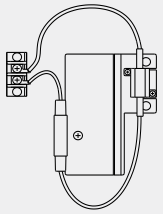
This sensor is designed to detect intrusion and to activate an alarm. It only provides an alarm sign output, and is not an independent burglar-preventing device. If it's used abnormally, faulty installation, improper maintenance or Acts of God, it will cause damage.

1.PARTS DESCRIPTION





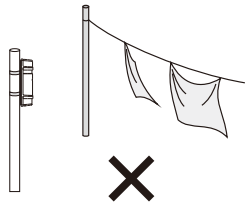
● **Heating Unit : HT-200 (Option)**



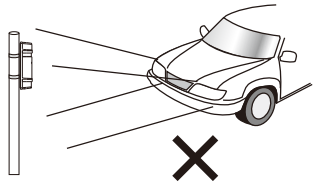
Accessories	Q'ty
Screws 4x20	x8
Screws M4x30	x8
U-Brackets	x4
Attenuation	x2

2.CAUTIONS ON INSTALLATION

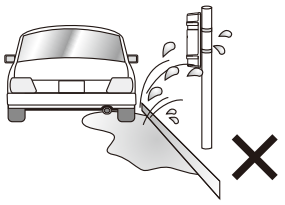
Wrong place



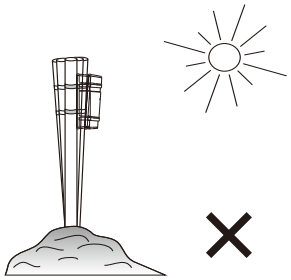
● Remove all obstructions (trees, cloth ropes...etc.) between. Transmitter and Receiver.



● 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 life.



● 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

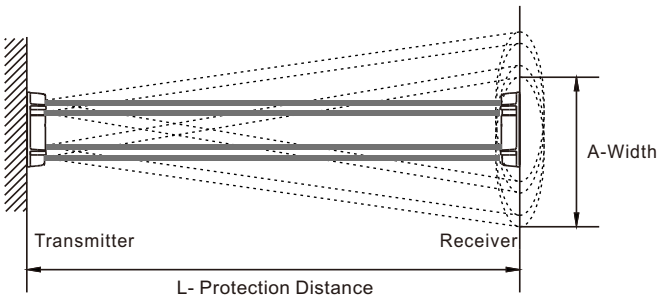
Please make the Transmitter and Receiver within the required range as belows :

4PH-75BQE Outdoor 225ft. (75m) / Indoor 450ft. (150m)
4PH-150BQE Outdoor 450ft. (150m) / Indoor 900ft. (300m)
4PH-250BQE Outdoor 750ft. (250m) / Indoor 1500ft. (500m)

Detection Width

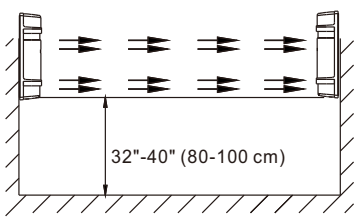
The detection width can be calculated with following formula :
Width A = 0.025 x Length (L)

L	A
180' (60m)	4.5' (1.5m)
300' (100m)	7.5' (2.5m)
600' (200m)	15.0' (5.0m)



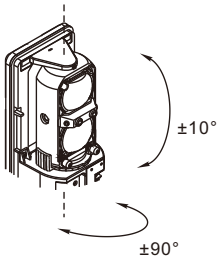
Installation Height

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



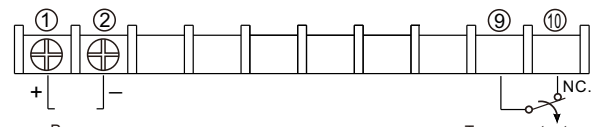
Alignment Angle

The sensors can be adjusted with Horizontal ±90° and Vertical ±10° to fit big detection range.



3.WIRING

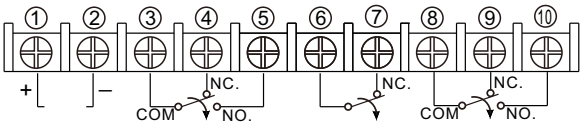
Transmitter



Power
12V to 30VDC (non-polarity)

Tamper output
Dry connect Micro SW.
Output NC.
28VDC / 0.2A

Receiver



Power
12V to 30VDC
(non-polarity)

Alarm output
Dry connect relay
output NC./NO.
28VDC / 0.2A

Tamper output
Dry connect Micro SW.
Output NC.
28VDC / 0.2A

Environmental output
Dry connect relay
output NC./NO.
28VDC / 0.2A

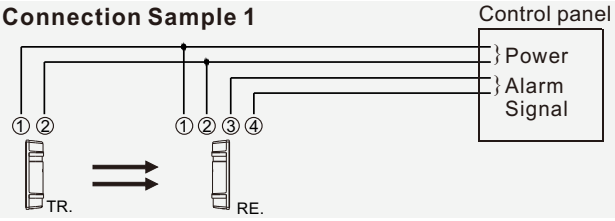
Wiring Distance

Model / Voltage / Wire size	4PH-75BQE		4PH-150BQE		4PH-250BQE	
	12VDC	24VDC	12VDC	24VDC	12VDC	24VDC
AWG22 (0.65mm)	400' (120m)	3600' (1100m)	360' (110m)	3300' (1000m)	330' (100m)	2950' (890m)
AWG20 (0.8mm)	690' (210m)	6200' (1890m)	620' (189m)	5600' (1710m)	530' (160m)	4900' (1500m)
AWG18 (1.0mm)	1000' (300m)	9200' (2800m)	920' (280m)	8300' (2500m)	830' (250m)	7200' (2200m)
AWG17 (1.1mm)	1250' (380m)	11000' (3350m)	1100' (335m)	10000' (3000m)	1000' (300m)	8900' (2700m)
AWG16 (1.25mm)	1650' (500m)	14500' (4420m)	1450' (440m)	13500' (4000m)	1350' (400m)	11500' (3500m)
AWG15 (1.4mm)	2200' (670m)	20000' (6000m)	2000' (600m)	18000' (5490m)	1750' (530m)	15500' (4730m)

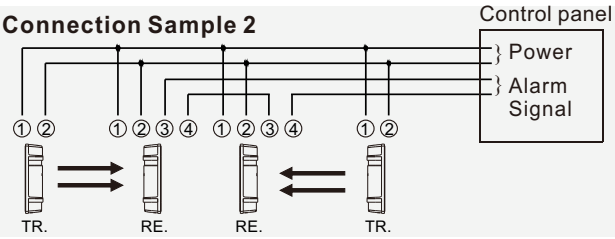
NOTE:
1. When two or more connections is required, maximum wiring distance is the value above divided by the number of sets.
2. The power wires could not exceed the above mentioned lengths.

Connection

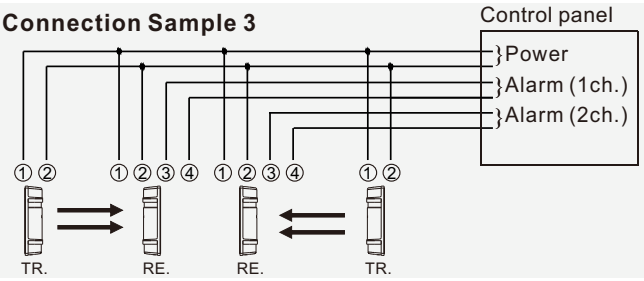
Connection Sample 1



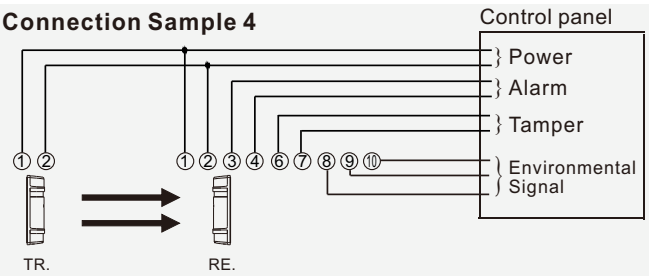
Connection Sample 2



Connection Sample 3

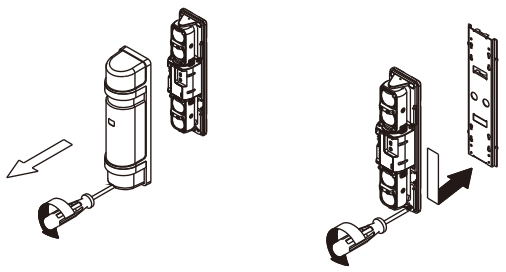


Connection Sample 4



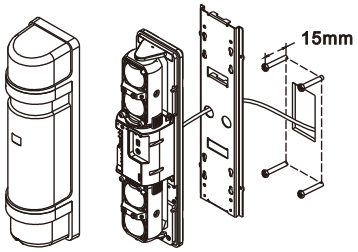
4.INSTALLATION

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.

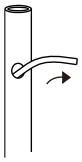


■ A.WallMounting

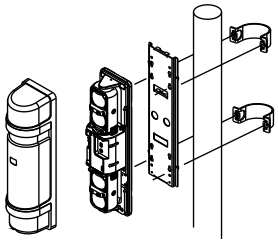
A-1. Pull out the wire through the wiring hole on the mounting plate and attach the plate to the wall with the screw(1/6" x 3/4")
A-2. Connect wire to the terminals.
A-3. After checking optical alignment and operation check, (please see 7.ALGNMENT AND OPERATION) replace the cover, and fasten the cover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



■ B.PoleMounting

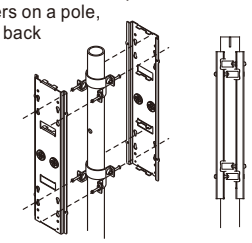


B-1. Unit mounts to a 1.66"-1.75" O.D. Pole.
B-2. Drill a 1/4" hole through pole where the beam will be mounted for wiring.
B-3. Place U-Shape brackets at the pole.
B-4. Pull out the wire through the wire through the wiring hole of the mounting plate, attached the mounting plate to the U-Shape bracket 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.



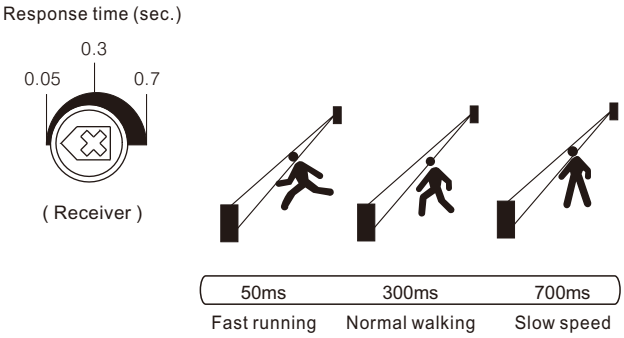
■ C.Two units installation(back to back)

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



5.RESPONSE TIME ADJUSTMENT

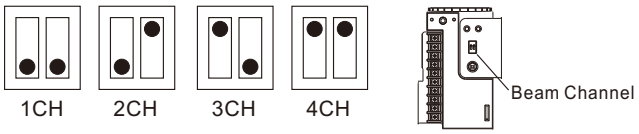
■ The beam interruption time adjustment is on Receiver unit. Speeds shown below are the maximum detectable speeds for each setting.



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

6.BEAM FREQUENCY CHANGE

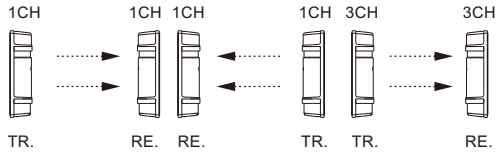
■ Set Transmitter and Receiver at the same channel.



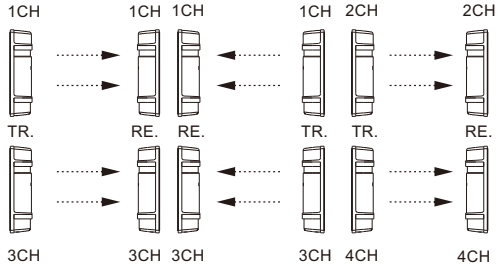
■ Refer to the figures and set the beam channel when two or more units are installed in stacked protection or in line protection.
■ When stacked protection is set up, both the upper and lower sensors should be the same model number types.

2-stacked protection

Line protection

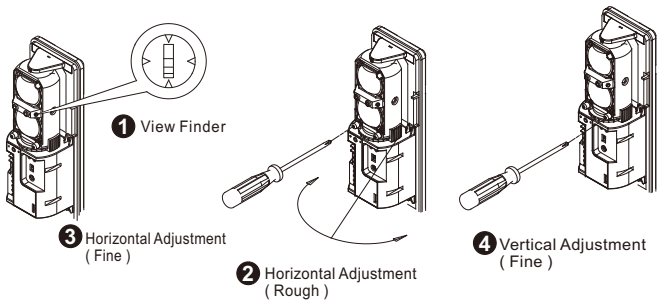


Line & 2-stacked protection



7.ALIGNMENT AND OPERATION

7-1. Apply power to both Transmitter and Receiver.
7-2. Looking through the view finder, locate the other detector in the center of the sights by adjusting vertically and horizontally.



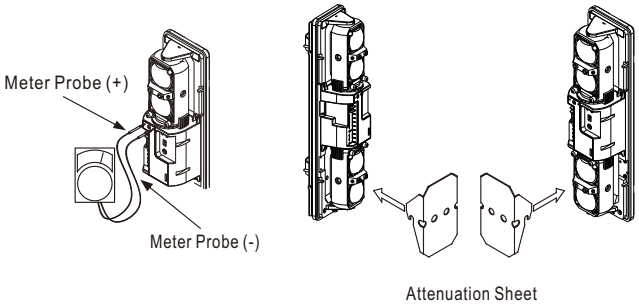
7-3. Connect the volt-meter (DC10V) to monitor jack input on Receiver's (+) and (-), then fine turn optical alignment.
7-4. Place attenuation sheet on both Transmitter and Receiver (lower lens).
7-5. Respectively adjust the optical alignment horizontally & vertically on both Transmitter and Receiver (upper side) to obtain the maximum voltage (700mV over) from the monitor jack.
7-6. Place attenuation sheet on both Transmitter and Receiver (upper lens).
7-7. Respectively adjust the optical alignment horizontally & vertically on both Transmitter and Receiver (upper side) to obtain the maximum voltage (700mV over) from the monitor jack.
7-8. Taking off attenuation sheet, meter probe.

SENSITIVITY CHART

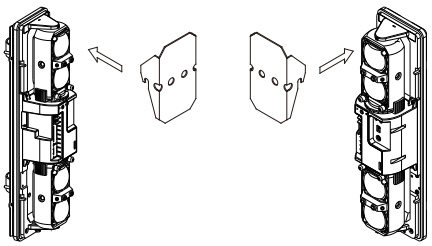
Monitor Jack Output	Alignment Level
700mV Over	Best
250mV to 700mV	Good
250mV Under	Poor, Realign

NOTE:
(1) Above readings is under attenuation sheet operation.
(2) Carefully remove the attenuation sheet, and check the voltage from the monitor jack again.

1 ADJUST THE UPPER LENS



2 ADJUST THE LOWER LENS



8.FUNCTIONS DESCRIPTION

The environmental signal is initiated if the beam reception level is reduced under certain situation.

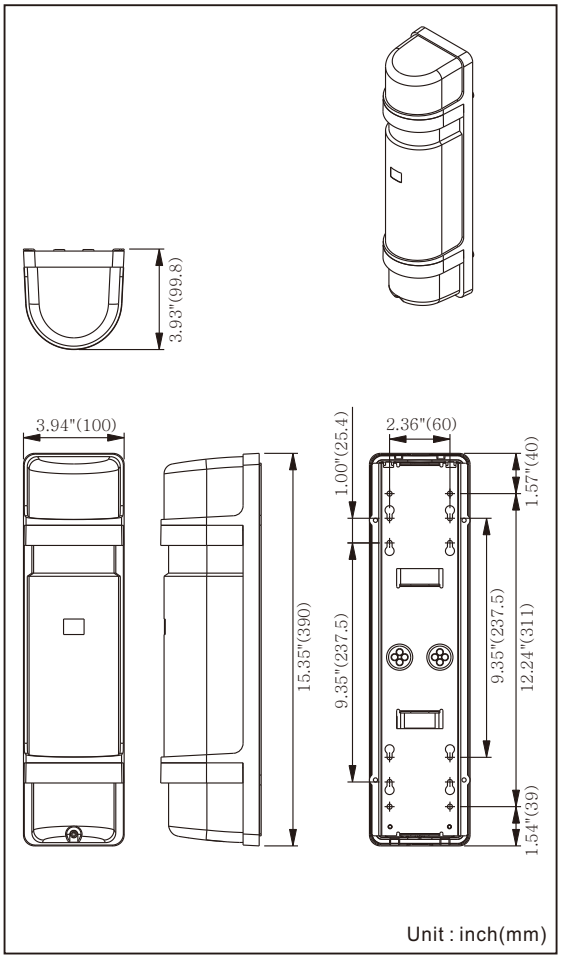
9.TROUBLE SHOOTING

Trouble	Check	Corrective Action
Operation LED does not light. (Transmitter Unit)	1. No power supply. 2. Bad wiring connection or broken wire, short.	1. Turn on the power. 2. Checking wiring.
Alarm LED does not light when the beam is broken. (Receiver Unit)	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.	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)	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.	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	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.	1. Check again. 2. Stabilize supply voltage. 3. Remove the shading object. 4. Change the place for installation. 5. Stablize. 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.)

10. SPECIFICATIONS

MODEL		4PH-75BQE	4PH-150BQE	4PH-250BQE
Detection Distance	Outdoor	225 ft. (75m)	450 ft. (150m)	750 ft. (250m)
	Indoor	450 ft. (150m)	900 ft. (300m)	1500 ft. (500m)
Max. Arrival Distance		2250 ft. (750m)	4500 ft. (1500m)	7500 ft. (2500m)
Current Consumption		73mA (max.)	83mA (max.)	97mA (max.)
Selectable Beam Frequency		4 channel		
Power Supply		12V ~ 30VDC (Non_Polarity)		
Infrared Photoelectric		LED pulsed beam, Double modulation		
Detection System		Simultaneous breaking of 4 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.		
Environmental Output		Dry connect relay NC. / NO. 0.2A / 28VDC Contact action: Weather condition gets worse.		
Alarm LED		Red LED (Receiver) lights when an alarm is initiated.		
Attenuation LED		Yellow LED (Receiver) lights when beam is attenuated.		
Functions		Monitor Jack output, A.G.C. circuit, Frost proof cover.		
Alignment Angle		Horizontal ±90°, Vertical ±10°		
Operating Temperature		-13°F to + 131°F (-25°C to +55°C)		
Mounting Positions		Indoor / Outdoor		
Wiring		Terminals		
Weight		Transmitter - 1400grams. Receiver - 1470grams		
Dimensions		W3.94" x H15.35" x D3.93" (W100 x H390 x D99.8)		
Standard Accessories		U-Shaped brackets x4 , Attenuation Sheet x 2 Screws (4x20 Self tapping) x 8 , Screws (M4 x 30) x8		
Option		Heating Unit (HT-200)		

11. DIMENSIONS



Unit : inch(mm)

NOTE :

1. This unit is designed to detect intruder and activate 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 subjected to change without prior notice.
3. No take apart the product improperly, which possibly cause the damage.

No:A028B01-02

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