

S FIRE

# PHOTOELECTRIC BEAM DETECTOR

## Photoelectric Quad Beam Detector SF50H SF150H SF250H

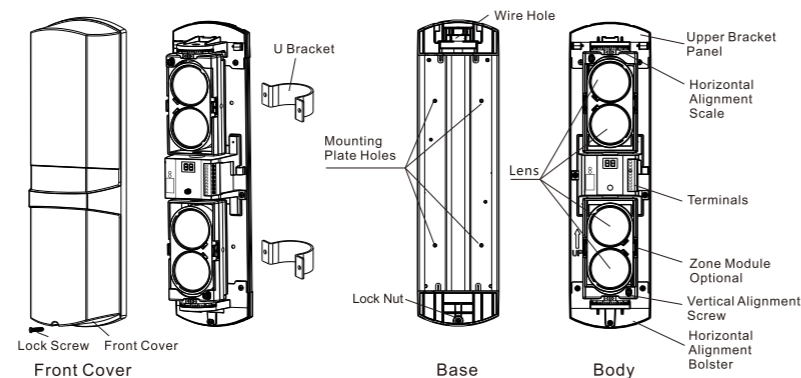
◆ Thanks for purchasing photoelectric quad beam detector, please read this user manual carefully before installation.

<b>WARNING</b>	Do not use the product for purposes other than the detection of moving objects such as people and vehicles. Do not use the product to activate a shutter etc. which may cause an accident.
	Do not touch the unit base or power terminals of the product with a wet hand (do not touch when the product is wet with rain etc.) It may cause electric shock.
	Never attempt to disassemble or repair the product. It may cause fire or damage to the devices.
<b>CAUTION</b>	Do not exceed the voltage or current rating specified for any of the terminals during installation, doing so may cause damage to the devices.
	Do not pour water over the product with a bucket, hose etc. The water may enter which may cause damage to the devices.
	Clean and check the product periodically for safe use. If any problem is found, do not attempt to use the product as it is and have the product repaired by a professional engineer or electrician.

### 1.Features

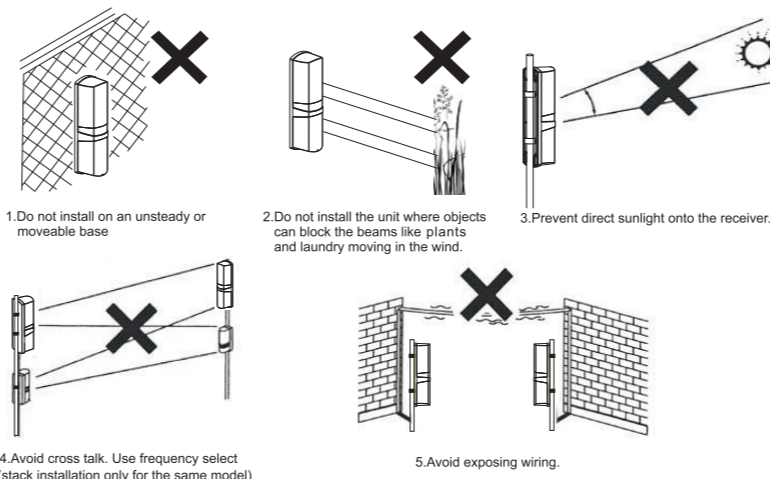
- Interruption time or walkspeed adjustable
- NO / NC relay outputs
- Integrated tamper switch, turns on when cover is moved.
- Frequencies selectable for long distance and stacking installations
- LED display signal grading for easy alignment
- Wide voltage power input: DC/AC 12-24V
- "And" "Or" technology
- DIP switch for easy programming
- Waterproof grade: IP65
- Alignment angle horizontally  $\pm 90^\circ$ , vertically  $\pm 10^\circ$
- Digital filtering, high environment adaptability to eliminate false alarms
- Integrated heating function, reliable in cold/frost/fog weather.

### 2.Part Description



### 3.Installation Notes

(1).Please avoid below situations to assure performance

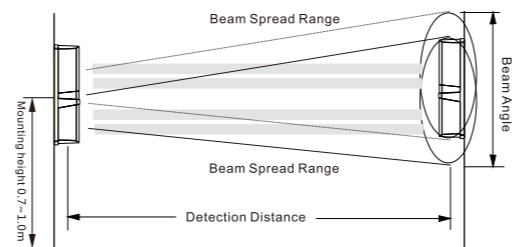


(2).Normal installation

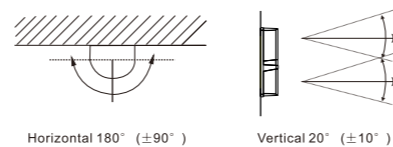
◆ Detection distance

Model	Detection Distance	Beam Angle
SF50H	50m	1.6m
SF150H	150m	2.6m
SF250H	250m	4.4m

◆ Mounting height



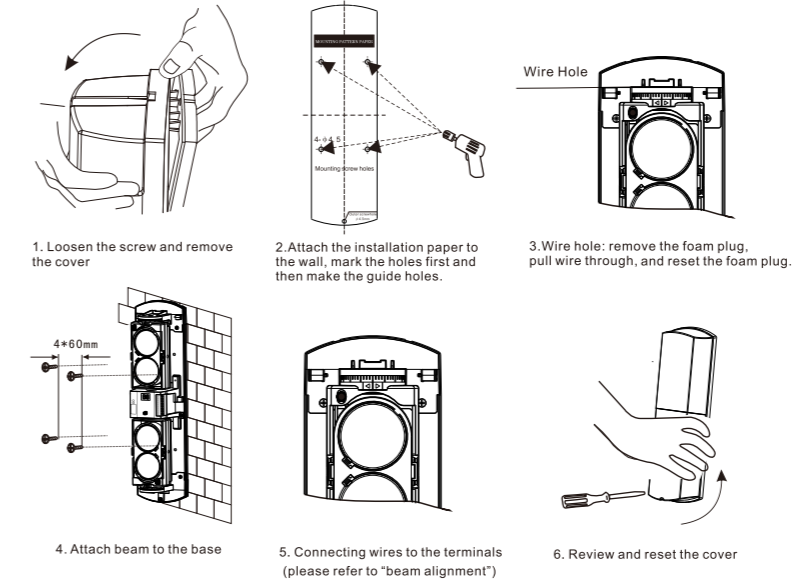
◆ Adjusting angle



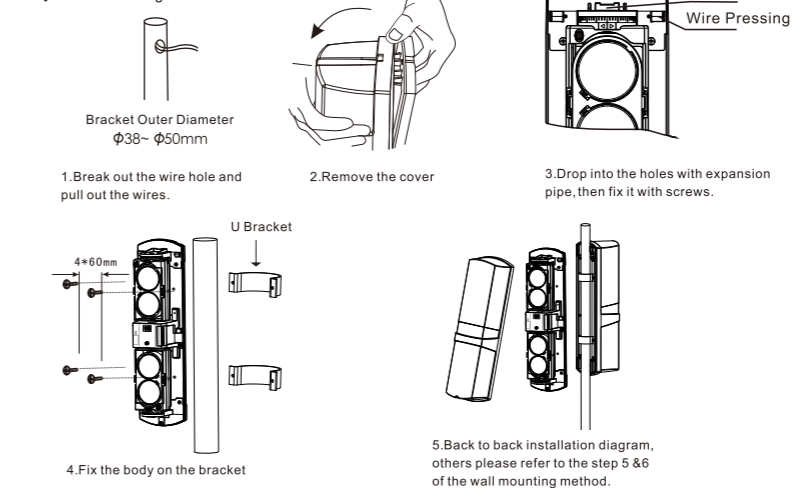
Notice: For best testing results, please avoid testing in  $45^\circ$

### 4.Setting Method

◆ Wall mounting



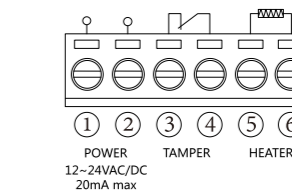
◆ Pole mounting



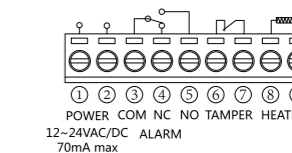
### 5.Connectors

Warning Do not exceed the voltage or current rating specified for any of the terminals during installation.

Transmitter:



Receiver:

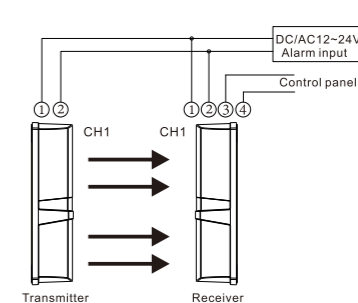


1. Power input: DC/AC12-24V.
2. No heater in the package, please order if required.
3. Tamper switch (NC) is independent of the circuit, anti-tamper trigger when cover is removed.

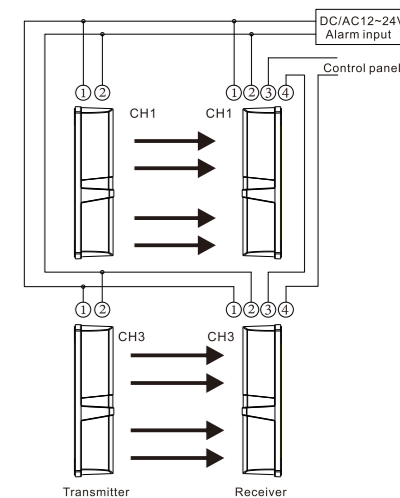
1. Power input: DC/AC12-24V
2. No heater in the package, please order if require
3. Tamper switch (NC) is independent of the circuit, anti-tamper trigger when cover is removed.
4. C relay (30VDC 1.0A max).

### 6.Connecting Wires

(1).Single connect: Control panel operating voltage DC12V, NC alarm output. Connecting to power supply parallel



(2).Stacked connect: Control panel operating voltage DC12V,NC alarm output series connect





EL PASO, TX.  
1630 Paisano DR.  
(915) 533-5119  
EL PASO TX.79901 U.S.A

◆ Wiring distance between the power supply and the detector should not exceed the following table length.

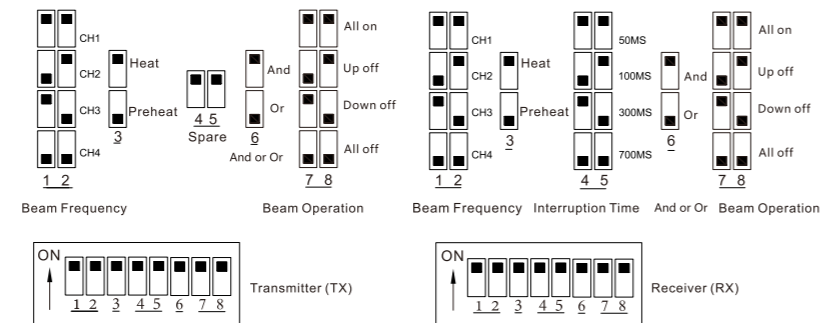
Wire diameter	Length	DC12V	DC24V
0.5mm <sup>2</sup> (Φ0.8)		100m	500m
0.75mm <sup>2</sup> (Φ1.0)		150m	750m
1.0mm <sup>2</sup> (Φ1.2)		200m	1000m
1.5mm <sup>2</sup> (Φ1.4)		250m	1250m



**Warning**  
1. The power wire can't exceed the listed length.  
2. When connecting multiple detectors, the required cable length is divided by the corresponding number of units listed.  
3. Don't connect the port with the voltage or current which is over the normal specification.

## 7. DIP Switch Explanations

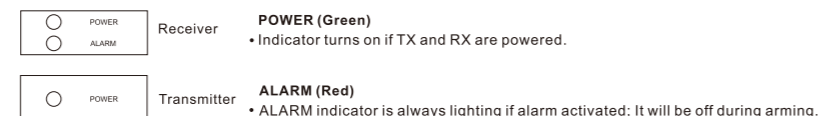
1. DIP switch show on the left side of the main PCB, as shown in following figure.



- DIP switches 1&2: Set beam frequency. TX and RX must be the same.
- DIP switch 3: Set heater. PREHEAT is for test. Must set HEAT when it's used.
- DIP witches 4&5: Set interruption time.
- DIP switch 6: Set "AND" or "OR" mode. "AND" means alarm activated if all 4 beams are blocked; "OR" means alarm activated if either upper/down 2 beams are blocked.
- DIP switches 7&8: Set Beam's working mode.  
ALL ON: 4 beams on.  
UP OFF DOWN ON: disable upper 2 beams.  
UP ON DOWN OFF: disable down 2 beams.  
ALL OFF: disable all beams.

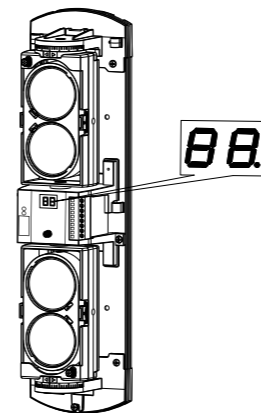
**Notes:** All set must be the same on both TX and RX except 4&5 (4&5 on TX is spare)

### 2. Indicators



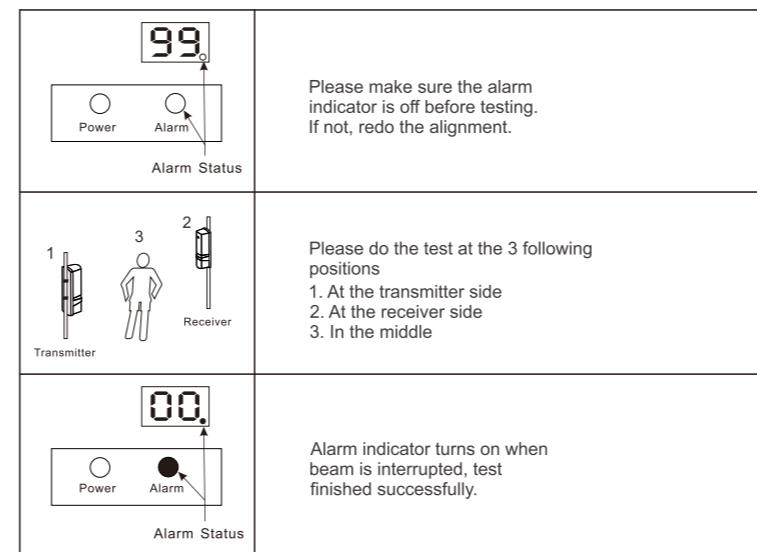
## 8. Optic Axis Adjustment

1. Set TX and RX same frequency by DIP switches 1&2.
  2. Set "AND" and "UP ON DOWN OFF" mode, adjust up 2 beams horizontally and vertically, it's ok when LED is "99".
  3. Then at "UP OFF DOWN ON" mode, same set for down 2 beams
  4. Then set "ALL ON" and alignment finished
  5. Then do "walk test" to ensure it'll activate alarm normally.
- If failed, please re-do alignment. If alignment keeps failing, please refer to troubleshooting.



Signal strength	00~40 Realign 41~70 Fair 71~90 Good 91~99 Best
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## 9. Walk Test



Note: If the alarm LED indicator is OFF even though the beams are completely blocked, refer to the "Trouble Shooting".

## 10. Troubleshooting

Symptom	Possible cause	Remedy
Power on, but power LED off	1. No voltage on power cable; 2. Broken circuit or short circuit; 3. Beyond specified voltage; 4. Power cable exceeds the specified length	1. Check PSU, voltage, cables and connectors
When beam is blocked, the alarm LED does not indicate, nor does the alarm relay switch	1. There is reflection or cross-talk from other transmitters 2. Walk speed set too long 3. Alarm output cable is shorted or damaged	1. Change beam path or change TX/RX frequency channel 2. Ensure 4 beams all blocked 3. Change walk-speed setting 4. Check receiver terminal and output cable
When beam is not blocked, alarm LED indicates activation	1. Beam is out of alignment; optical axis does not overlap 2. There are objects between TX and RX 3. Frequency is incorrect 4. The cover is dirty or capped by snow, frost and ice 5. TX is faulty or OFF	1. Adjust optical axis 2. Check objects between TX and RX 3. Ensure the frequency of TX and RX is the same 4. Clean cover or user heater 5. Check the voltage or wiring of the TX
False alarm	1. Bad wiring and fluctuant power voltage 2. Randomly blocked, like birds, paper or leaves 3. The beams base is unstable 4. Out of alignment	1. Check power, current and wiring voltage 2. Change installation location 3. Strengthen installation base 4. Re-align

## 11. Specifications

Model	SF50H	SF150H	SF250H
Detection distance	50m	150m	250m
Detection distance (max)	150m	450m	750m
Detection method	3 options ( interruption of all 4 beams or upper 2 beams or below 2 beams )		
Interruption time	50ms, 100ms, 300ms, 700ms (adjustable)		
Frequencies	4 different frequencies (selectable)		
Power and voltage	12V-24V DC/AC		
Current consumption	70mA max	80mA max	90mA max
Alarm cycle	≥1.5s		
Alarm output	1C. relay output (AC/DC30V, 1.0A max)		
Tamper	NC. works when cover is removed		
IP rating	IP65		
Operating temperature	-25°C ~ 55°C		
Humidity	95% max		
Correction angle	Horizontal 180°(±90°), Vertical 20°(±10°)		
Install location	Indoor/Outdoor, Wall/Pole		
Weight	3000g		
Attachment	U bracket	4pcs, 70.4*37.5*21.5mm, δ=1.5mm, stainless steel	
	Pole mounting srew	8pcs, PM4*30mm	
	Wall mounting screw	8pcs, PM4*25mm	
	Expansion pipe	8pcs, Φ7*27mm, green	
	Installation paper	2pcs, W85*H220mm	
Heaters (additional purchase)	Voltage	12V-24V DC/AC	
	Current	200mA max	
	Temperature	+60°C	
Working condition	Auto heating when it's ≤5°C and stop heating when it's ≥7°C		

Note: When environment temperature lower than -20°C, please use heaters to ensure normal working. Heater is non-polarized.

## 12. Dimensions

