

QUADRUPLE BEAM PHOTOELECTRIC DETECTOR

INSTRUCTION MANUAL

- DS-PI-Q75
- DS-PI-Q100
- DS-PI-Q150
- DS-PI-Q200
- DS-PI-Q250



2 SUGGESTIONS FOR INSTALLATION 1



Ensure the sensors line of sight is free from any false alarm sources such as bushes, trees, etc. (Pay attention to these as they may change seasonally.)

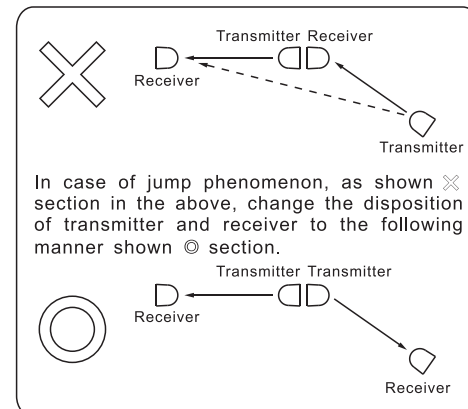
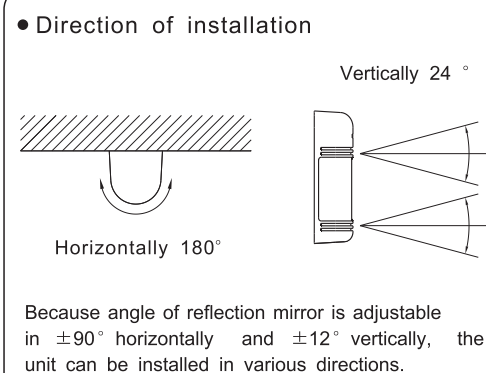
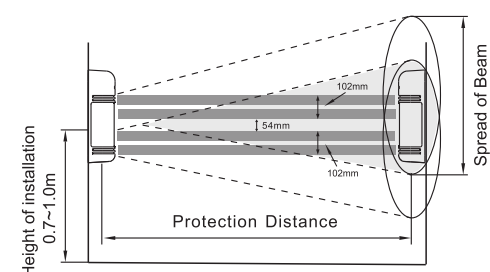
Ensure the sensors are mounted on a stable and firm fixing.

Ensure strong sunlight or car headlights do not shine directly on to the receiver. (Within $\pm 2^\circ$ from the optical axis is not recommended.)

3 SUGGESTIONS FOR INSTALLATION 2

- Note that here the protection distances refers to the sheet below.
- Height of installation and protection distance
- Direction of installation

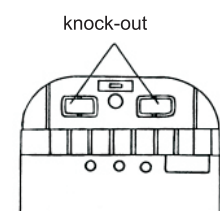
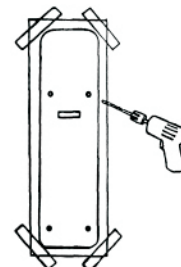
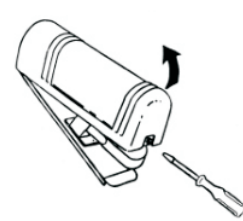
Model	Protection Distance	Spread of Beam
DS-PI-Q75	75m	2.0m
DS-PI-Q100	100m	3.0m
DS-PI-Q150	150m	4.5m
DS-PI-Q200	200m	6.0m
DS-PI-Q250	250m	7.5m



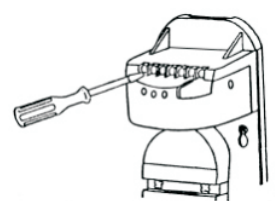
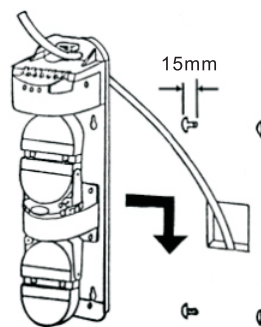
4 INSTALLATION

WALL MOUNT

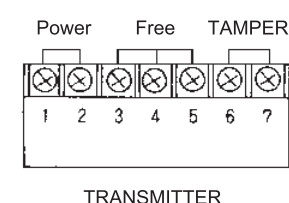
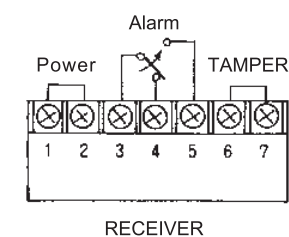
- Loosen screw holding cover and remove the cover.
- Attach the mounting pattern paper to the wall, mark the installation holes, and make guide holes.
- Break knock-out and pull wire through.



- Attach the unit to the wall.
- Connect wires to the terminal.



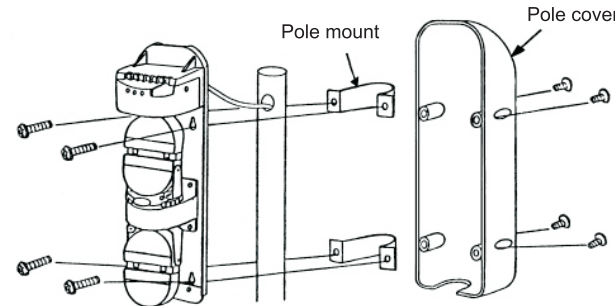
TERMINAL CONFIGURATION



POLE MOUNT

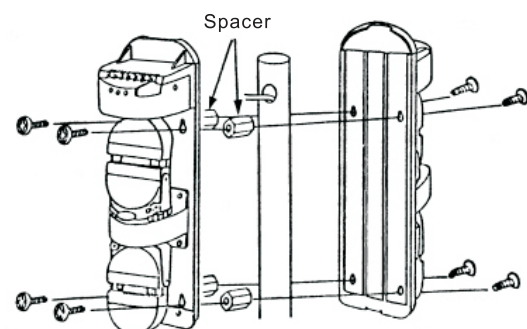
- Pull the wire through the wire hole of the pole.
- Remove the cover in the same manner as done for wall mounting. Attach the unit with pole mount (option) to the pole and the pole-cover (option).

$\phi 38\text{mm} \sim \phi 50\text{mm}$



Pole mount back-to-back

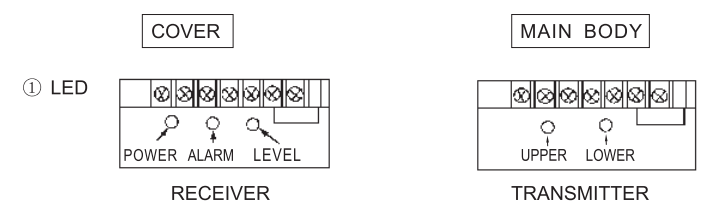
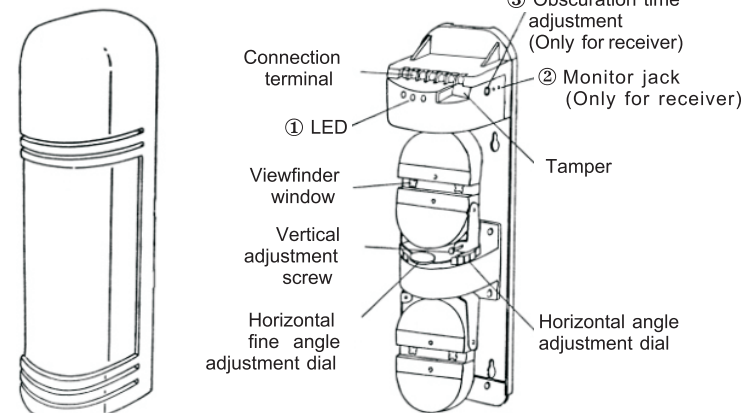
- Attach 4 spaces (option) to one unit.
- Attaching temporary and then unit to spacer with screws, put the screws through the pole and fasten the screws.



Wiring distance

Model	DS-PI-Q75/ DS-PI-Q100		DS-PI-Q150		DS-PI-Q200/ DS-PI-Q250	
	12V	24V	12V	24V	12V	24V
Wire diameter						
0.3mm($\phi 0.6$)	110m	950m	105m	900m	100m	850m
0.5mm($\phi 0.8$)	190m	1700m	180m	1600m	170m	1500m
0.75mm($\phi 1.0$)	300m	2700m	280m	2500m	260m	2300m
1.25mm($\phi 1.2$)	430m	3900m	410m	3700m	390m	3500m

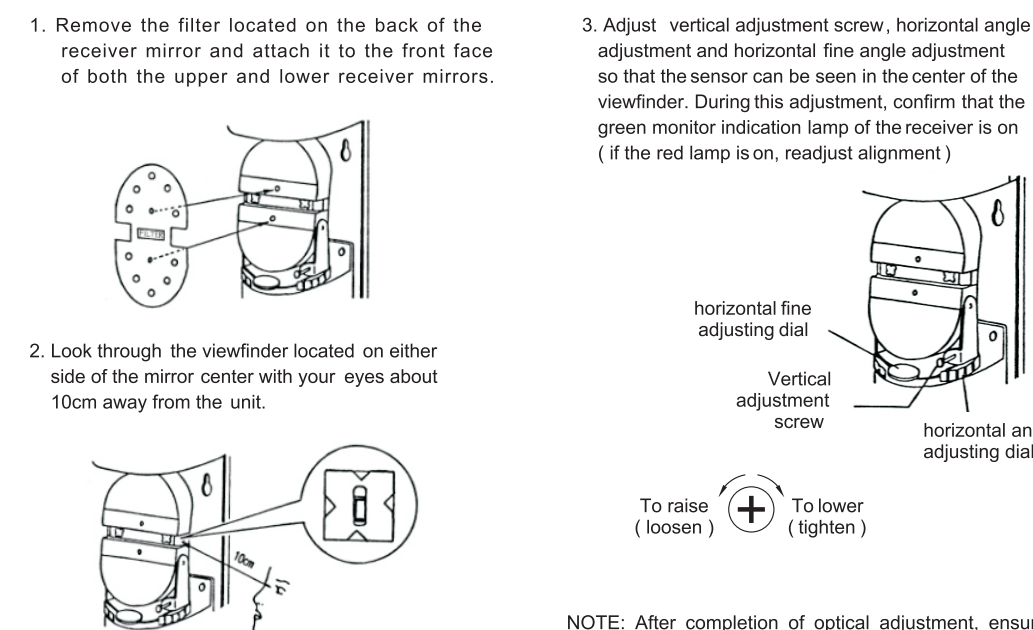
1 PARTS DESCRIPTION



- POWER**: on when the power is supplied
 - ALARM**: on when the alarm is operated
 - LEVEL**: on in green when optical axis is aligned, on in red when optical axis is not aligned
 - UPPER**: on when upper beam is transmitted
 - LOWER**: on when lower beam is transmitted
- ② Monitor jack: Should be used for making the optimum optical axis adjustment (Refer to 'how to use the monitor jack')
- ③ Obscuration time adjustment: To be used for setting the obscuration time (Refer to 'adjustment of obscuration time')

5 ADJUSTMENT OF OPTICAL AXIS

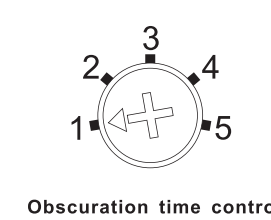
- It is important to ensure correct optical alignment between the transmitter and receiver for proper operation.



NOTE: After completion of optical adjustment, ensure that both filters on the receiver are replaced to their original position behind the mirrors.

6 ADJUSTMENT OF OBSCURATION

Set the obscuration time of the receiver by adjusting the obscuration time control to the required setting according to the sketch beside. The obscuration time should be set lower to detect faster moving targets, however care should be taken to note the environmental conditions as the obscuration time should be set higher to ignore conditions where there are a lot of birds or wind blown material.



Scale 1	Scale 2	Scale 3	Scale 4
fast running at full speed (6.9m/s)	walking with quick steps (1.2m/s)	normal walking (0.7m/s)	slow action (0.3~0.5m/s)

7 CONFIRMATION OF OPERATION

After completion of the installation, confirm correct operation by suitable walk test. Refer to the following LED indications during the walk test. Confirm tamper operation prior to replacing covers. Confirm system operation with covers replaced.

	Conditions	Indication
Transmitter	Transmitting	Green LED is on
	Watching	Green level is on
Receiver	Alarm	Alarm indicator is on

NOTE: Conduct a Walk Test at least once a year

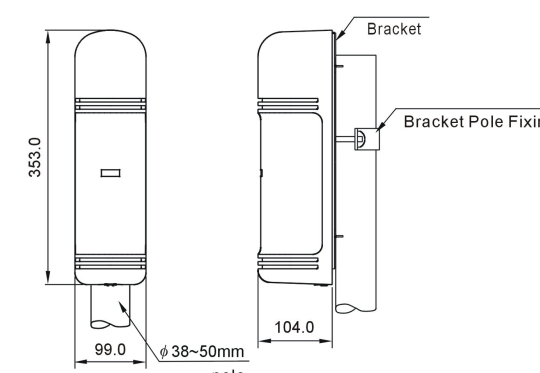
8 TROUBLE SHOOTING GUIDE

Q Symptom	Possible cause	A Remedy
Indication lamp of Transmitter does not light.	Improper voltage of power supply	Check power supply and wiring
Power supply indication Lamp of Receiver does not light.	Improper voltage of power supply	Check power supply and wiring
Alarm indication lamp does not light even when the beams are intercepted.	① Infrared beam from Transmitter is reflected on another object and sent into the Receiver. ② Four beams are not intercepted at the same time. ③ Shorter obscuration time than that set on the obscuration control.	① Remove the reflecting object or change the place for installation and the optical axis direction. ② Check four beams to intercept at the same time. ③ Adjust obscuration time setting to be shorter.
Although alarm LED lights when the beams are intercepted, alarm does not ring.	① Broken wires or short on the signal wires. ② Melted bridge on the signal connection (Wrong current on the signal wires)	① Check the wiring. ② It needs to be repaired.
Alarm LED on the Receiver does not turn off.	① Inadequate optical axis. ② Shading objects between the Transmitter and the Receiver. ③ Dirty cover or dirty reflection mirror of the Transmitter and/or Receiver.	① Readjust the optical axis. ② Remove the shading objects. ③ Clean optics with soft cloth.
Intermittent alarm.	① Bad wiring connection. ② Change of supply voltage. ③ Shading objects moving by wind between the Transmitter and the Receiver. ④ Unstable installation of the sensor unit. ⑤ Incomplete optical axis adjustment. ⑥ Birds and other large flying objects intercept the beam.	① Check the wiring connection. ② Check the voltage (for stabilized supply voltage.) ③ Remove the shading objects or change the place for installation. ④ Fix steadily. ⑤ Readjust the optical axis. ⑥ Readjust the obscuration time to be longer or reposition.

9 SPECIFICATION

Model	DS-PI-Q75	DS-PI-Q100	DS-PI-Q150	DS-PI-Q200	DS-PI-Q250
Alarm Distance	75m	100m	150m	200m	250m
Max reaching distance	750m	1000m	1500m	2000m	2500m
Beams NO.	4 beams				
Detecting Way	4 beams intercepted simultaneously				
Light Source	IR LED				
Response Time	35~700ms				
Alarm Output & DQ Output	FORM C (NO/NC changeable), Contact ratings DC 30V 0.5A max.				
Supply Voltage	DC 12V or 24V (non-polarity)				
Recommend supply Voltage	DC 12V or 24V (non-polarity)				
Supply Current	65mA	70mA	90mA	95mA	100mA
Operation Temperature Range	-25°C~+55°C				
Tamper Output	Contact Output 1b DC 30V 0.05A max				
Optic axis adjust angle (Horizontal)	180°(±90°)				
Optic axis adjust angle (Vertical)	24°(±12°)				
Sight	Peep window				
Strategy to dew/frost	Slit type mask, optional heater				
Other additional functions	Sensitivity to monitor output terminals, OK indicator				
Material	PC front cover, ABS Back Cover				
Attachment	Self-tapping screw: eight, filter: 2 slices				
Dimensions (H×W×D)	353mm×99mm×104mm				
Weight	Around 1970g (Transmitter and Receiver)				

10 OUTLINE DIMENSION



四光束主动红外对射 使用说明书

DS-PI-Q75
DS-PI-Q100
DS-PI-Q150
DS-PI-Q200
DS-PI-Q250



2 安装上的注意事项1

- 请避免在以下场合设置本探测器



确保在探测器的视线上没有任何误报源，例如灌木丛、树木等。
(注意这些物体可能随季节而改变)

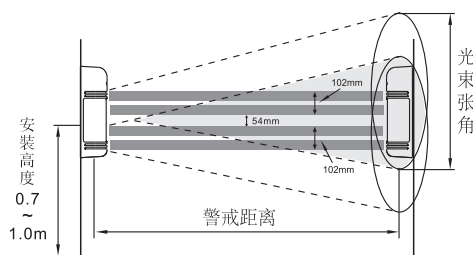
确保在探测器被安装在一个稳定和坚固的装置物上面。

确保强力阳光或者汽车的车灯不直接照射到受光器上。
(不建议在离光轴±2°内)

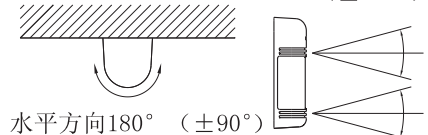
3 安装上的注意事项2

- 安装高度及警戒距离

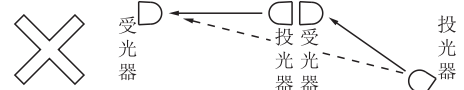
型号	警戒距离	光束张角
DS-PI-Q75	75m	2.0m
DS-PI-Q100	100m	3.0m
DS-PI-Q150	150m	4.5m
DS-PI-Q200	200m	6.0m
DS-PI-Q250	250m	7.5m



- 光轴调整范围 上下方向24° (±12°)



可在水平方向±90°，垂直方向±12°的范围内进行光轴调整，请在安装时，不要超出此限



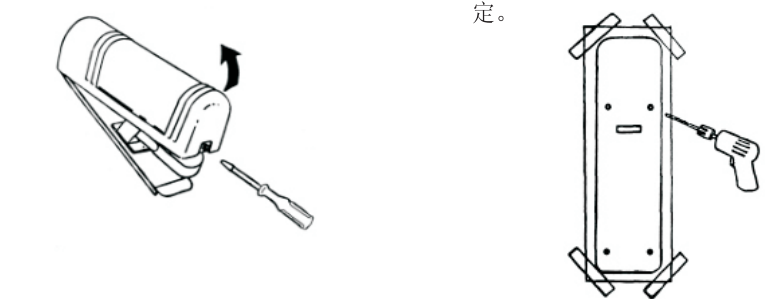
长距离警戒时可使用多组探测器，请按下图方式安装，以避免相互间光束干扰。



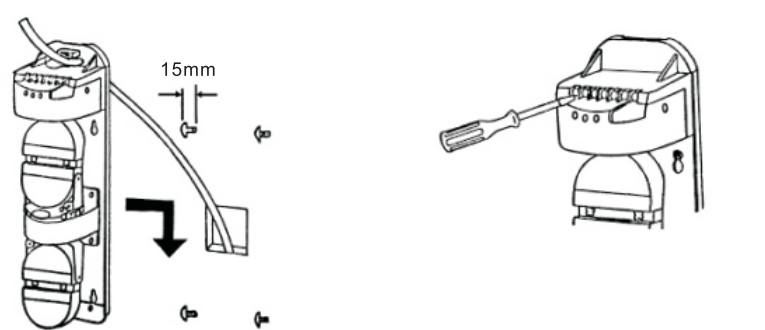
4 安装方法

- 墙壁安装方式

- 拆下固定螺丝取下外罩。
- 将安装的对位图粘于墙壁上，依对位图上的“对位螺丝孔”的指示位置钻孔，并上螺丝固定。
- 将电缆穿过配线孔进行配线。



- 将本体固定在墙上。
- 将电缆接入配线端子。

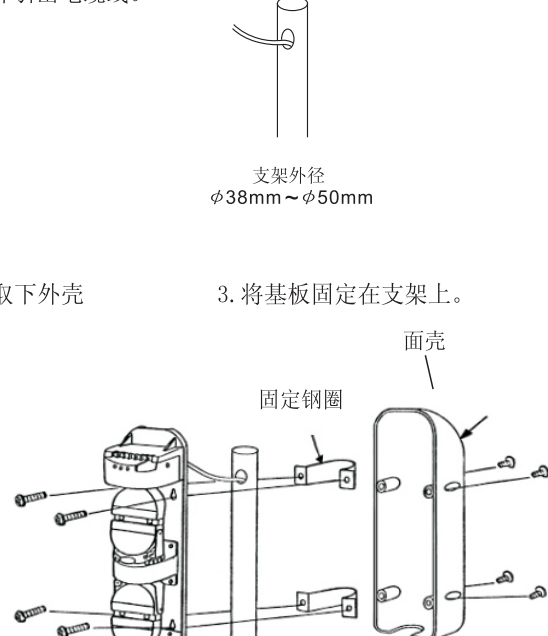


- 配线距离

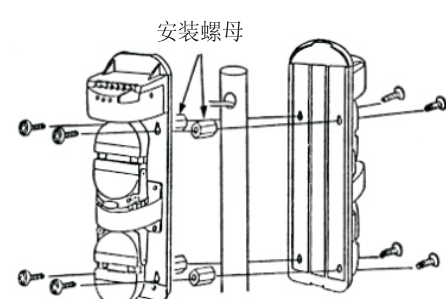
型号	DS-PI-Q75/ DS-PI-Q100		DS-PI-Q150		DS-PI-Q200/ DS-PI-Q250	
	12V	24V	12V	24V	12V	24V
线径						
0.3mm(φ0.6)	110m	950m	105m	900m	100m	850m
0.5mm(φ0.8)	190m	1700m	180m	1600m	170m	1500m
0.75mm(φ1.0)	300m	2700m	280m	2500m	260m	2300m
1.25mm(φ1.2)	430m	3900m	410m	3700m	390m	3500m

- 固定安装方式

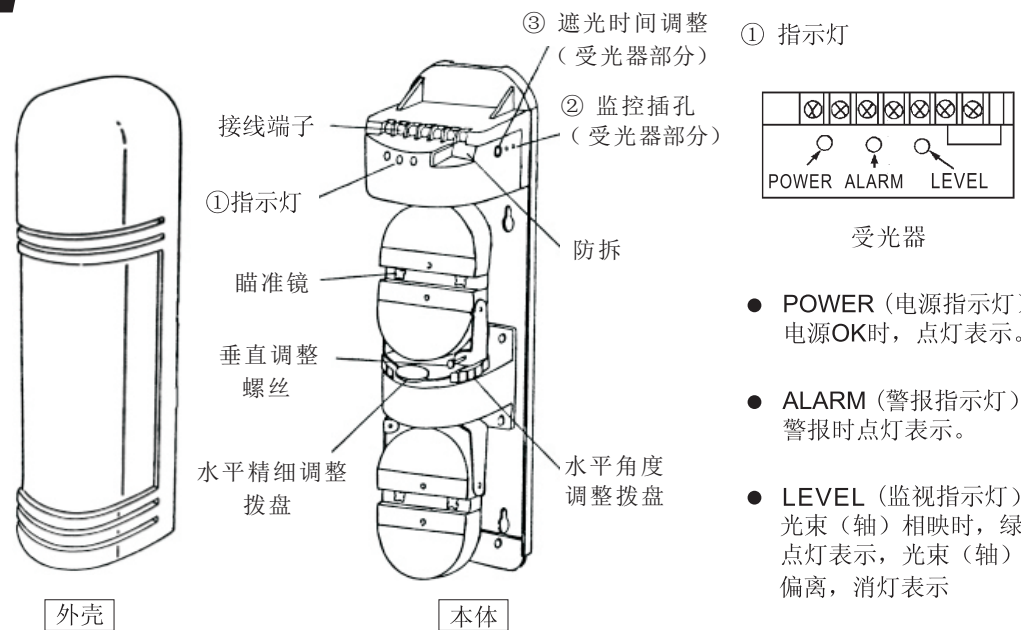
- 在支架上开好引线孔，并引出电缆线。
- 取下外壳
- 将基板固定在支架上。



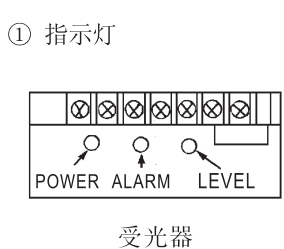
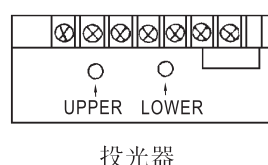
- 背对背安装时参考下图



1 部件名称



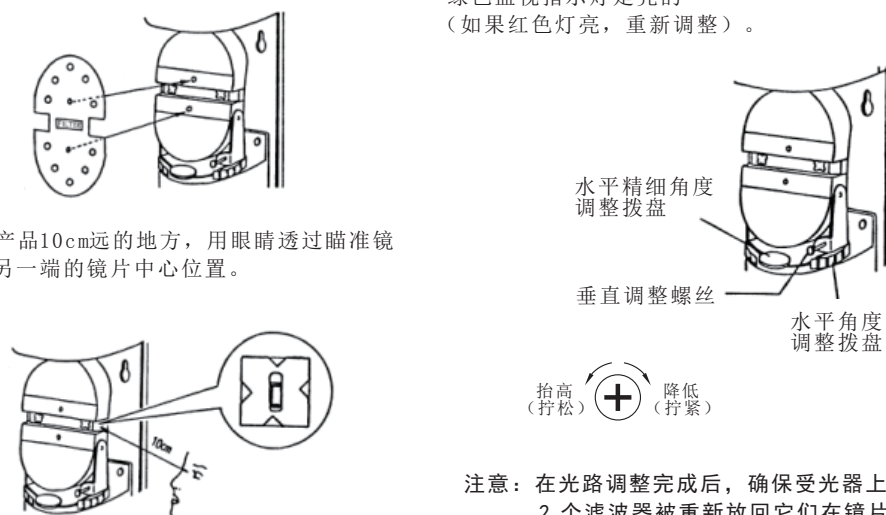
- ① 指示灯
- ② 监控插孔 (受光器部分)
- ③ 遮光时间调整 (受光器部分)
- 接线端子
- 瞄准镜
- 垂直调整螺丝
- 水平精细调整拨盘
- 防拆
- 水平角度调整拨盘
- UPPER (上光轴投光指示灯) 上段光束 (轴) 投光时点灯表示。
- LOWER (下光轴投光指示灯) 上段光束 (轴) 投光时点灯表示。
- 监控插孔: 用于最适宜的光轴调整 (参考怎样使用监控插孔)
- 遮光时间: 用于设置遮光时间 (参考调整遮光时间)



5 光轴调整

- 在投光器和受光器之间确保正确的光路调整对正常使用来说非常重要

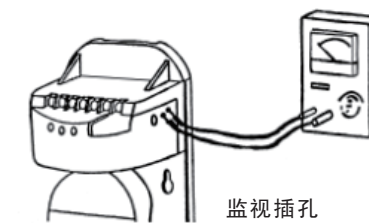
- 取下位于受光器镜片后面的滤波器，将它固定在受光器上下镜片的前面。
- 在离产品10cm远的地方，用眼睛透过瞄准镜定位另一端的镜片中心位置。
- 调节垂直调整螺丝、水平角度调整拨盘和水平精细角度调整拨盘，这样就能在瞄准器的中央看到投光器。在调整过程中，确认受光器上的绿色监视指示灯是亮的 (如果红色灯亮，重新调整)。



注意：在光路调整完成后，确保受光器上的2个滤波器被重新放回它们在镜片后的原来位置。

- 怎样使用监视插孔

光轴最佳的调整可以通过读监视插孔的输出电压来进行



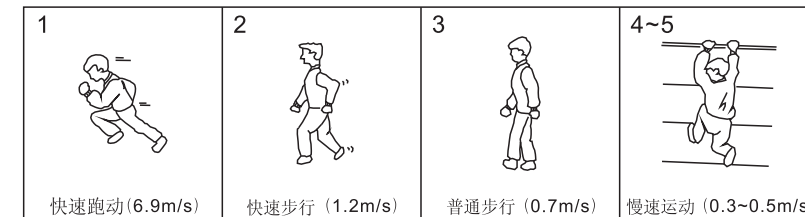
- 固定滤波器，将之从受光器的镜片之后移到受光器上下镜片的前面
- 将电压表的探针插入监视插孔 (因为是直流电压，要注意极性)
- a) 调节水平调整，直至输出电压最大。
b) 调节垂直调整螺丝来获得最佳信号 (在调节过程中不要用手阻断光束)。
- 必须获得下面的最小电压，来确保最佳性能(≥1.30V) 对所有系列
如果不能达到，那么投光器和受光器需要重新调整
- 在光路调整完成后，确保受光器上的滤波器重新放回它们在镜片后的原来位置。

当滤波器固定在受光器的前面时，如果绿色灯亮，表示收到了足够好的信号，即使监视插孔的输出不是最大。

注意：如果传感器靠得太近，信号电平会饱和并且红外光束可能会被关闭。这是正常的，只有在台架试验时才会出现。在正常工作距离的情况下信号将会恢复。

6 遮光时间的调整

通过旁边的草图得到要求的设置值，调节“遮光时间的调整”来设置受光器的遮光时间。遮光时间必须设置成较小值以便检测较快的移动目标。然而应该考虑各种环境情况，比如当有鸟或者被风吹动的物体时，遮光时间应该设置为较大值来忽略这些情况。



7 动作确认

在完成安装后，通过恰当的步行测试来确认运行正常。在步行测试时参考下列指示灯。安装面罩前确认防拆功能运作正常。盖面罩后确认系统运作正常。

	状态	表示
投光器	投光时	绿色LED指示灯亮
受光器	警戒时	LEVEL亮绿灯
	警报时	警报指示灯亮

注意：步行测试至少每年进行一次

8 异常时的检查

故障现象	可能原因	维修对策
投光器指示灯不亮	电源电压不合适	检查电源和连线
受光器指示灯不亮	电源电压不合适	检查电源和连线
光线被遮断时报警指示灯不亮	① 来自于投光器的红外光束被另一个物体反射进入受光器 ② 四个光束没有同时被遮断 ③ 遮断时间小于遮断控制设定的时间	① 移开反射物体或者改变安装位置和光轴方向 ② 检查四个光束被同时遮断。 ③ 将遮断时间设置调整到较短值
光线被遮断时虽然报警指示灯亮，但报警铃不响	① 信号线开路或者短路 ② 在信号连接端有桥接 (信号线上有不正常的电流)	① 检查连线 ② 需要返修
在受光器上的报警灯常亮不熄灭	① 光轴调整不恰当 ② 在投光器和受光器之间有障碍物。 ③ 投光器和受光器的外罩或者反射镜上有污物	① 重新调整光轴 ② 移开障碍物 ③ 用软布清洁光学部分
断断续续报警	① 不良配线连接 ② 供电电压变化 ③ 在投光器和受光器有被风吹动的障碍物 ④ 安装不稳固 ⑤ 未完成光轴调整 ⑥ 鸟或者其他大的飞行物遮断光束	① 检查配线连接 ② 检查供电电压 (稳定的供电电压) ③ 移开障碍物或者改变安装位置 ④ 安装牢固 ⑤ 重新调整光轴 ⑥ 重新调整遮断时间，把时间调长或重新选置

9 技术参数

型号	DS-PI-Q75	DS-PI-Q100	DS-PI-Q150	DS-PI-Q200	DS-PI-Q250
警戒距离	75m	100m	150m	200m	250m
最大到达距离	750m	1000m	1500m	2000m	2500m
光束数	4束				
探测方式	4光束同时遮断检知式				
光源	红外LED				
感应速度	35~700ms				
报警输出&DQ输出	FORM C(NO/NC可转换)，接点容量DC 30V 0.5Amax.				
电源电压	DC10.5~28V(无极性)				
推荐工作电压	DC 12V或者24V(无极性)				
消耗电流(DC 12V)	65mA	70mA	90mA	95mA	100mA
使用温度范围	-25°C~+55°C				
防拆输出	接点输出1b DC 30V 0.05A max				
光轴调整角度 (水平)	180°(±90°)				
光轴调整角度 (垂直)	24°(±12°)				
瞄准器	窥视窗				
结露、霜对策	SIIt类型面罩，可选加热器				
其他附加功能	灵敏度监视输出端子，OK指示				
材质	面罩PC树脂；底壳ABS树脂				
附件	4×30自攻螺丝8颗，滤波器2片				
外形尺寸	353mm×99mm×104mm				
重量	约1970g (受光器+投光器)				

10 外形尺寸图

