

By-alarm Plus barrier kit consisting of TX/RX active infrared pair (AIR) with outdoor range of 60 metres, with 4 selectable channels to create a column barrier comprising several stacked detectors, IP65, 1 NO/NC 28 VDC 0.2A relay output for alarm, 1 NC 28 VDC 0.2A relay output to prevent false alarms due to adverse weather conditions (fog, rain, snow), 10.5-28 VDC power supply with 48 mA 12V surface, pole, column mounting, for outdoor use.

The barrier is equipped with a compact photoelectric detector with "high durability IP65" and sealed enclosure and "stable detection performance levels" which drastically reduce false alarms caused by sudden changes in the outdoor environment and allow for a wide range of uses. The barriers come with a roof to prevent the formation of dew on the lower beams and also allow easy maintenance thanks to the flat surface of the cover. The adjustment is made simply yet precisely with the horizontal alignment knob and the vertical adjustment screw; the 4-level alarm LED indicates the alignment condition via 4 different processes to achieve easy and accurate alignment before the final adjustment. The barrier is equipped with an A.G.C. circuit (automatic gain control) which constantly controls gradual variations in the signal caused by atmospheric conditions; it adjusts sensitivity to maintain the signal level at optimum environmental conditions even with 99% obstruction of the beam caused by heavy rain, fog or snow. The beam interruption time (necessary to release an alarm) can be adjusted and adapted to any situation such as protecting a wall or fence, for instance. The beam frequencies can be selected and are used to avoid undesired interference which could occur when using multiple beams over long distances or barriers installed in a column. The false alarm due to adverse weather conditions circuit allows a fault signal to be sent when the intensity of the beam is below the threshold level due to thick fog, mist, rain or other adverse conditions; the fault signal output remains for the whole time the beam intensity remains below the threshold level.

CHARACTERISTICS

- Power supply: 10.5-28 VDC
- Absorption: 48 mA max (transmitter 10 mA, receiver 38 mA)
- Range: 60 m
- Max transmission/reception distance in an open field: 600 m
- Alignment angle of the internal optics: $\pm 90^\circ$ horizontal, $\pm 5^\circ$ vertical
- Detection mode: infrared beam interruption
- Selectable beam frequency: 4 channels
- Interruption time: selectable between 50, 100, 250 and 500 ms (4 positions)
- Alarm output: NO or NC 28 VDC 0.2 A max.
- Alarm period: 2 sec (± 1) rated
- False alarm due to adverse weather conditions output: NC 28 VDC 0.2 A max.
- Tamper output: NC 28 VDC 0.1 A (max), open when the front cover is removed
- Operating temperature: from -35°C to $+60^\circ\text{C}$ (use heater 01743.H in the event of temperatures below -25°C).
- Ambient humidity: 95%
- Protection degree: IP65

CHARACTERISTICS OF HEATER 01743.H

- Power supply: 24 VAC/DC
- Absorption: 420 mA max
- Thermostat: 60°C
- Operating temperature: from -35°C to $+60^\circ\text{C}$

LED SIGNALLING

Transmitter

- on green -> Power on

Receiver

- on red -> Alarm
- flashing red or off -> Beam reception

Alarm memory: on red or flashing (for full details please refer to the section entitled "Alarm memory")



INSTALLATION RULES

- Installation must be carried out by qualified persons in compliance with the current regulations regarding the installation of electrical equipment in the country where the products are installed.
- Do not use the device for purposes other than to detect moving objects such as people or vehicles.
- Do not use the device to activate roller shutters, shutters, etc. which could damage property and/or harm people.
- Do not touch the base of the device or the power supply terminals with wet hands and do not touch the product when it has been rained on.
- Do not disassemble the product for repair reasons; this could cause a fire or damage the device.
- Do not exceed the voltage or current values indicated in each terminal.
- Do not pour water onto the device; it could penetrate the inside and damage it.
- Clean and check the device is working properly on a regular basis.

REACH (EU) Regulation no. 1907/2006 – Art.33. The product may contain traces of lead.



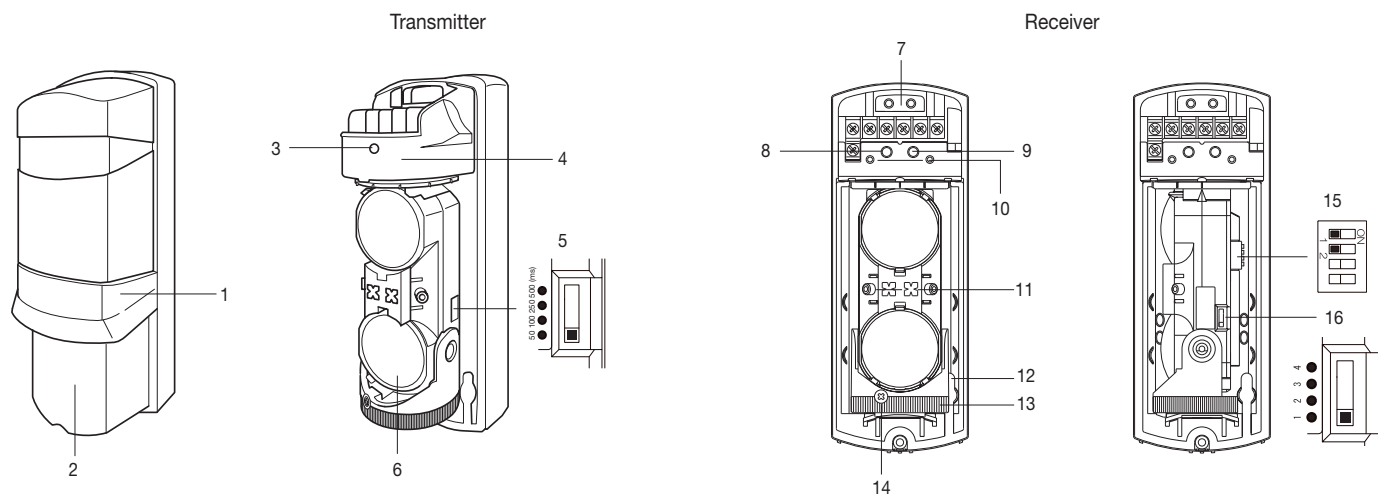
WEEE - User information

The crossed out bin symbol indicates that the product must be sent to separate collection facilities for recovery and recycling, in compliance with the national laws of EU Countries that implement the WEEE Directive. The objective is to prevent any harmful effects on the environment and on human health by ensuring that products are disposed of correctly, avoiding illegal disposal sanctioned by law.

To dispose of the product correctly, please check local dispositions in your country.

THE IR BARRIER

- Comprising a TRANSMITTER and a RECEIVER
- 2 IR beams configurable on 4 different frequencies
- High performance waterproof structure
- Horizontal pairing facilitated by LED indicator
- Programmable beam interruption period
- Tamper and false alarm due to adverse weather conditions output

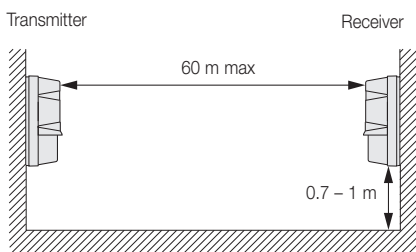


1. Roof
2. Front cover
3. transmission condition LED
4. Base
5. Beam selection time 1-way switch
6. Optical unit
7. Cable through holes
8. Alarm memory LED

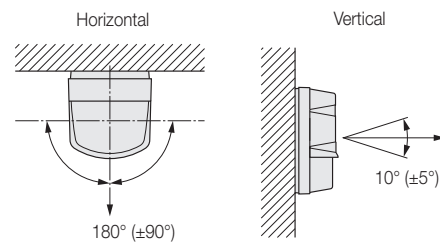
9. Alarm indicator LED
10. Control socket outlet
11. Alignment viewfinder
12. Waterproof pin
13. Horizontal alignment knob
14. Vertical alignment screw
15. Settings selection dip switches
16. Beam frequency selection 1-way switch

INSTALLATION SUGGESTIONS

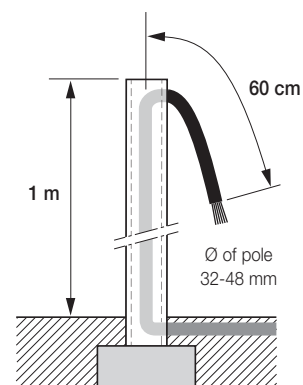
Detection range and installation



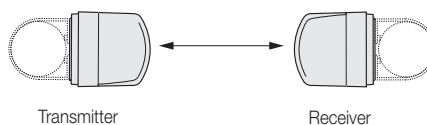
Alignment angle



Pole fixing



CAUTION: The transmitter and receiver must be aligned. Misaligned installation leads to a reduced barrier detection range.



We recommend you set aside 60 cm of cable at the top pole outlet to allow for connections with devices

Wiring distance between power supply unit and detector

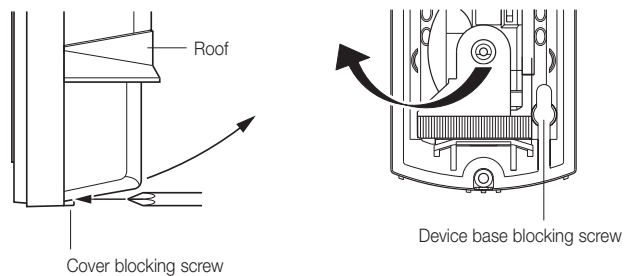
Make sure the wiring distance from the power supply unit falls within the distance indicated. When using two or more devices on one conductor, the maximum length is obtained by dividing the maximum conductor length indicated below by the number of devices used

Power supply cable

Section	Max. length
0.5 mm ²	700 m

INSTALLATION

1 Remove the cover and the screw

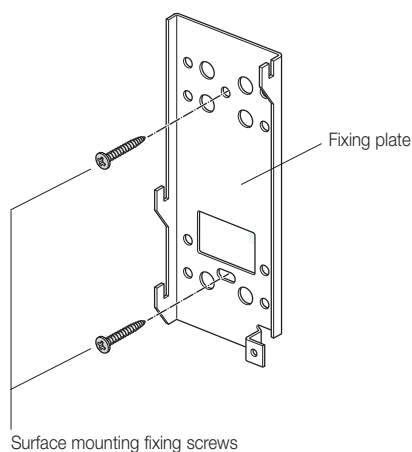


When removing the cover, do not place your fingers on the roof, as this could damage it.

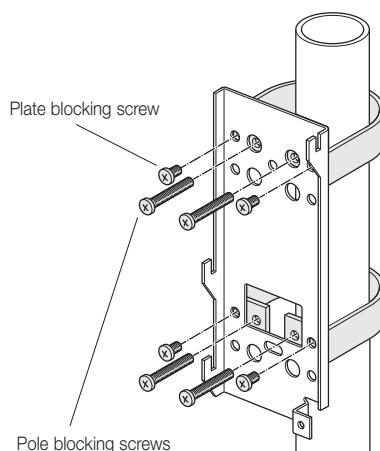
- 1) Loosen the cover blocking screw to remove the cover.
- 2) Turn the optical unit and open the waterproof pin.
- 3) Loosen the device base blocking screw and slide the fixing plate down to detach the base of the device.

2 Plate fixing

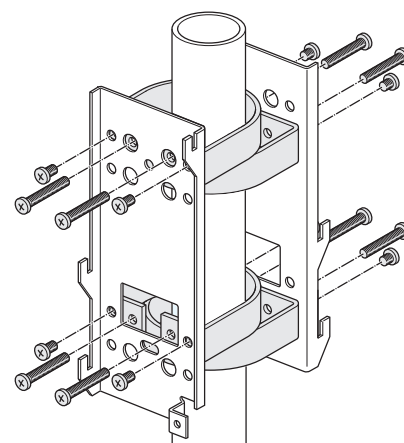
Surface mounting



Pole fixing (1 plate)



Pole fixing (2 plates)



3 Wiring

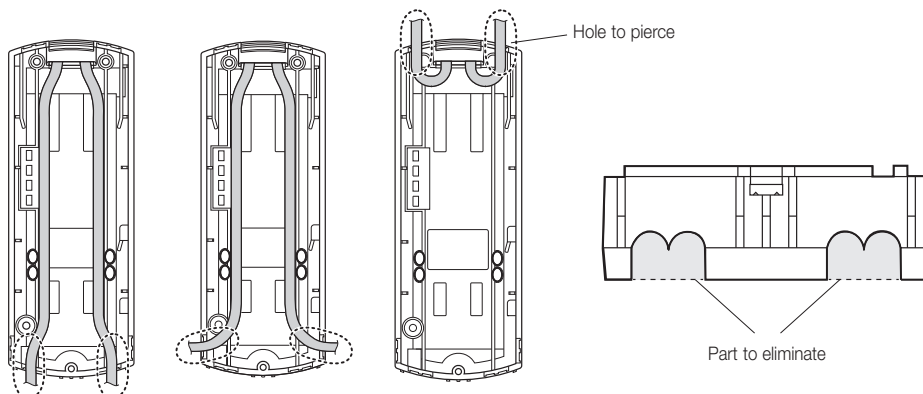
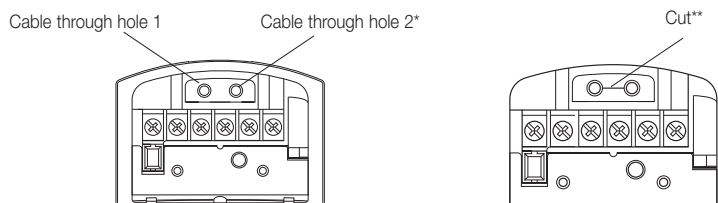
Use cables compliant with the following:

- 1) Cable diameter: \varnothing 4 – 7 mm
- 2) When using cables that differ from those indicated above, seal the cable through hole with a waterproof sealant (silicone, etc.) to prevent water seeping in through the slit.
- 3) Number of cables: max 3

Up to 3 cables can be housed in the device. The cable must be inserted as follows:

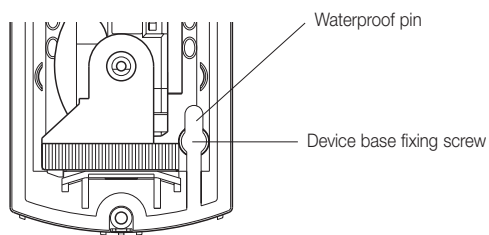
* The through hole 2 must be pierced with a screwdriver, etc.

** To make the through hole 3, you will need to cut the cable through door with a cutter, etc. Once you have inserted the cable, seal the cable through door with a waterproof sealant (silicone, etc.) to prevent water seeping in.



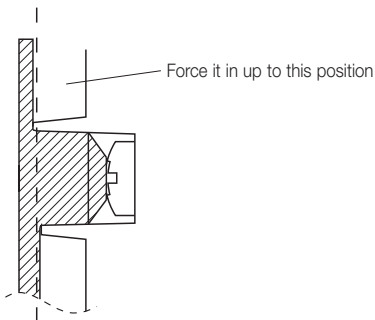
4 Fixing the base of the device

Connect the terminal block and slide the base of the device into the fixing plate from above, then tighten the fixing screws on the base to secure it



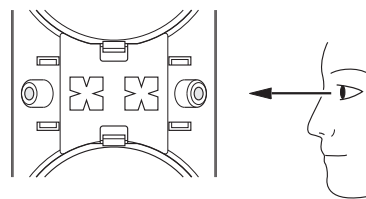
Side view of the waterproof pin

Push the waterproof pin until it reaches the indicated dashed line.

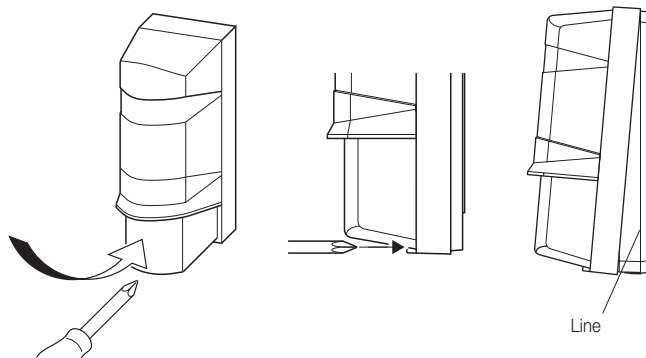


5 Alignment and motion test

Align the optical axis to the maximum receiver level and then check its operation.



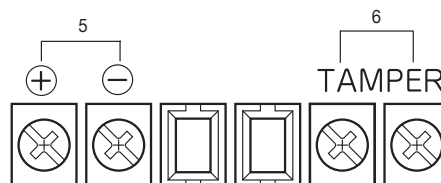
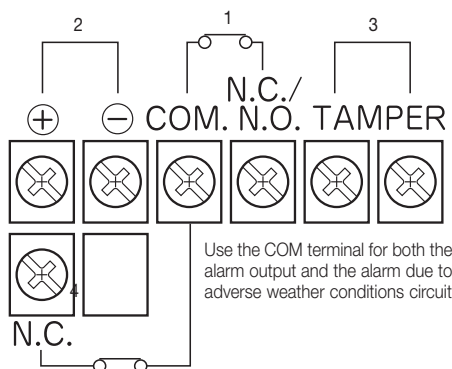
Reposition the cover and tighten the blocking screw. Make sure the edge of the cover can reach the line prepared on the side of the base.



TERMINALS

Receiver

Transmitter



1. Alarm output; 1-way switch (NC/NO). When using NO, the contact is not inverted when the power supply is switched off. Contact output not powered. Capacity of contact: 28 V DC, 0.2 A (max)
- 2, 5. Power supply input from 10.5 to 28 VDC 0.2 A (max)
- 3, 6. Tamper output (it opens when the cover is removed). Contact output not powered. Capacity of contact: 28 VDC 0.1 A (max)
4. False alarm due to adverse weather conditions (NC). Contact output not powered. Capacity of contact: 28 VDC, 0.2 A (max)

ALIGNMENT

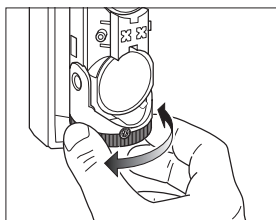
Optical alignment

The optical alignment is an important adjustment to increase reliability. According to the procedures indicated in points 1. and 2. of this chapter, make sure you achieve the maximum voltage level from the control socket outlet, measured with a voltmeter.

1 Rough alignment from the viewfinder

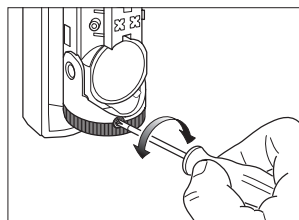
- As you look through the viewfinder, turn the knob to perform alignment so that the other detector is in the centre of the frame.

Horizontal alignment



Turn the horizontal alignment dial with your fingers to perform alignment.

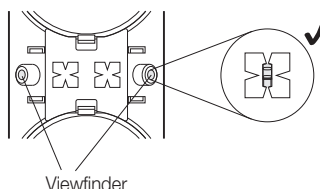
Vertical alignment



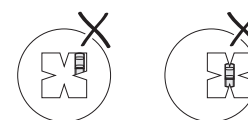
Turn the vertical alignment dial with a screwdriver to perform alignment.

- See the following illustration for horizontal/vertical alignment.

Alignment can be completed.



Realignment (example)

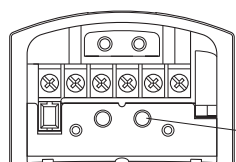


The beam is not correctly pointing at the centre of the frame.

2 Lighting check and fine adjustment

Alarm indicator lighting check

After roughly aligning with the viewfinder, check the status of reception of the light with the alarm indicator.



Receiver

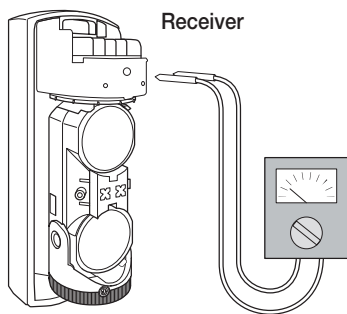
Indicator from the alarm

The relationship between the instrument's output and the reception level of the optical axis.

Alarm indicator	Light interruption		Light reception		
	ON (red)	Fast flashing	Slow flashing	Switched off (OFF)	
Output instrument	Realign less than 1.0 V		Weak more than 1.0 V	Good more than 2.5 V	Excellent more than 2.9 V

Fine adjustment with instrument pin

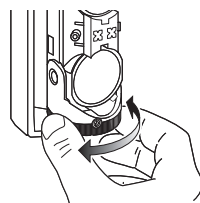
After checking the level of reception of the optical axis using the alarm indicator, make sure you perform the fine adjustment of both the transmitter and the receiver using a voltmeter until you achieve the maximum instrument output above the "good" level.



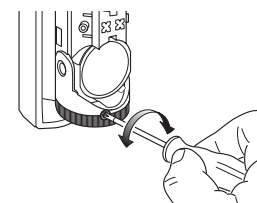
Receiver

Adjust the voltmeter scale from 5 to 10 VDC and connect the voltmeter \oplus and \ominus tips to the \oplus and \ominus of the pin respectively.

Receiver / Transmitter



Horizontal/vertical alignment



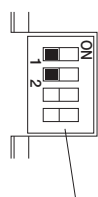
Note: When making adjustments on the control pin, take care not to cover the optical unit with your hand, with tester cables, etc.

Beam interruption time

The initial adjustment is 50 ms for standard operation.

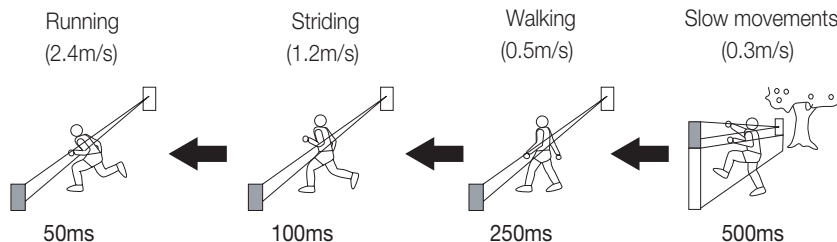
Depending on the speed of the presumed intruder, select a specific adjustment from the 4 available.

Adjust the beam interruption time dip switches on the receiver depending on the speed of the intruder you wish to detect.

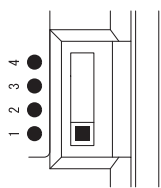


Selection dip switch

Time for interruption	Contacts
50 ms	1:OFF, 2:OFF
100 ms	1:OFF, 2:ON
250 ms	1:ON, 2:OFF
500 ms	1:ON, 2:ON



Four selectable beam frequencies



Selection 1-way switch

The selectable beam frequencies can be used to avoid undesired interference which could occur when using multiple photoelectric beams over long distances or when multiple detectors are placed in a column.

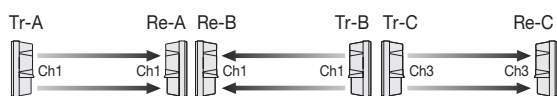
- Use the dip switch to select the 4 separate beam frequencies.
- Make sure the receiver and transmitter opposite one another are set to the same channel.
- No more than two overlapping applications are possible.

Note:

Always prepare the frequencies TWO channels apart when placing the barriers on top of one another (see the following example). The upper barrier is on channel 1, whereas the lower barrier is on channel 3. Channels 2 and 4 can also be used.

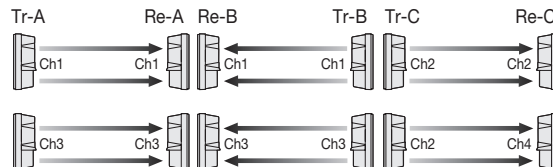
EXAMPLE

1. Long distance protection



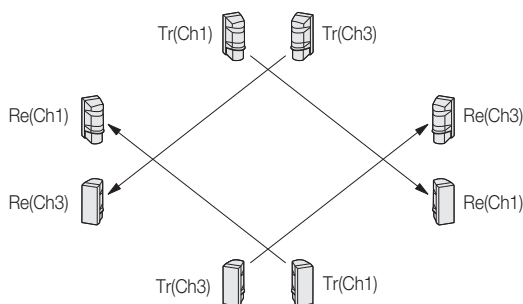
Tr-A = Transmitter "A"
Re-A = Receiver "A"

2. Long distance protection with double barrier

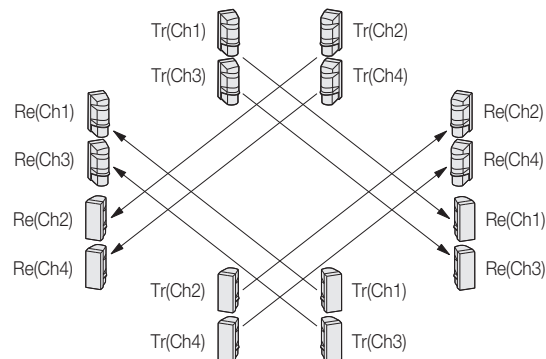


NOTE: No more than two barriers can be used in a column.

3. Perimeter protection



4. Protection of a long perimeter with double barrier

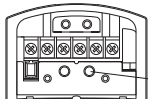


WALK TEST

Make sure you check operation after completing installation.

1 Check via the alarm indicator

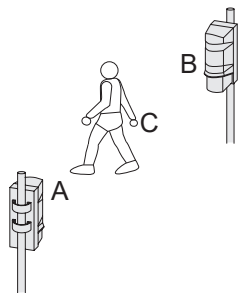
Receiver



Indicator from the alarm

Make sure the alarm indicator is switched off (OFF). If it is switched on when the beams are not interrupted, perform the optical alignment again.

2 Motion test



Make sure you perform a motion check (to interrupt the infrared beam) at the following three points:

- In front of the transmitter
- In front of the receiver
- At the mid-point between the transmitter and the receiver

If there are reflective elements such as a fence, stop again in position C and make sure the detector is working properly.

Note:

If the alarm indicator is not on after the beam is interrupted, check operation with reference to "TROUBLESHOOTING".

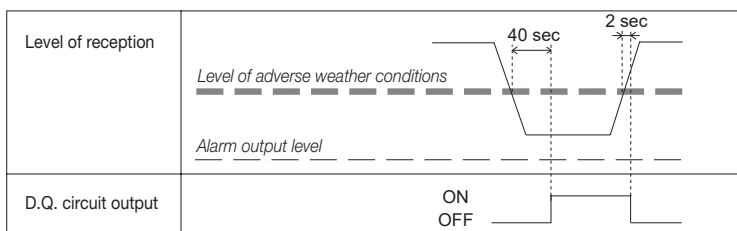
SPECIAL FUNCTIONS

False alarm due to adverse weather conditions

Operating graph

The D.Q. circuit will send a fault signal indicating the adverse weather condition when the power of the beam is maintained for more than 40 seconds.

Level of adverse weather conditions > intensity of the beam
> alarm output level

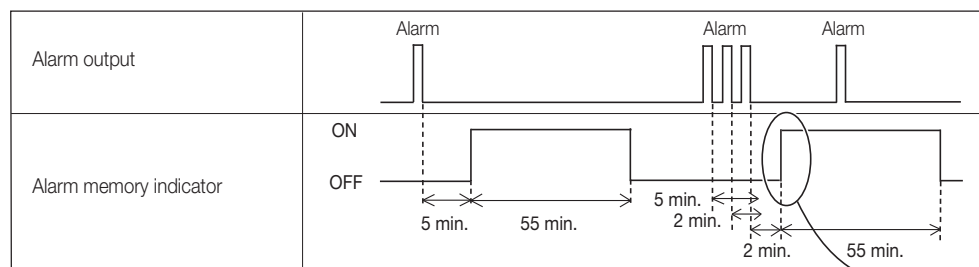
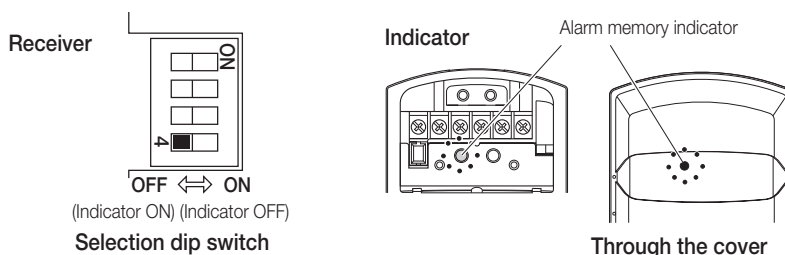


Alarm memory

This function is used to indicate which detector has been activated with the alarm memory LED, when several detectors are installed in a site.

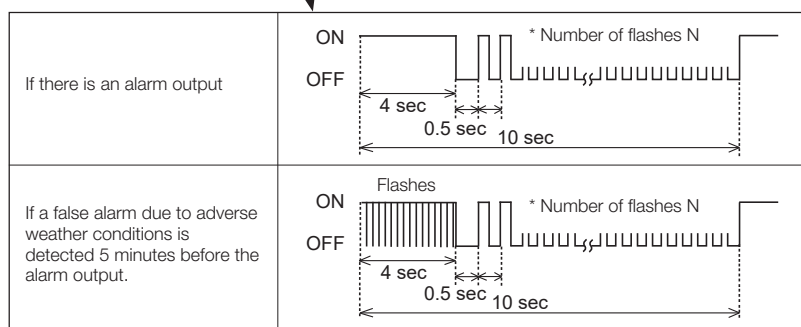
For the first 5 minutes after the alarm output, the alarm memory indicator does not switch on. Then the alarm memory indicator continues to switch on for 55 minutes.

The alarm memory is deleted after the alarm memory indicator switches off.



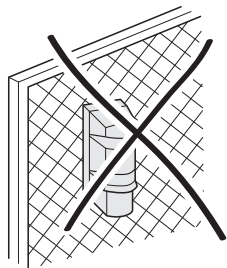
Alarm memory indicator

* The number of flashes N (times) indicates how much time has passed since the alarm output.
"N" is added once every 5 minutes.
(N=1 ~ 11).



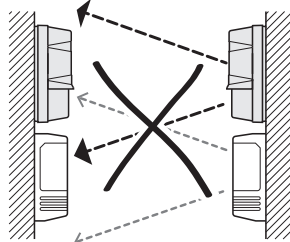
WARNINGS

Fix the device to a solid surface only.



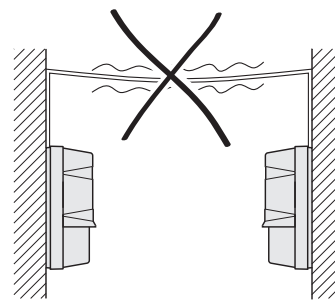
Avoid a different type of beam reaching the receiver

Transmitter 01743



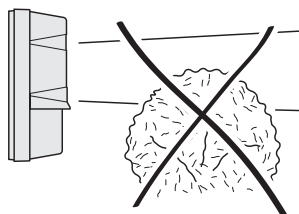
Other type of transmitter

Avoid exposed electrical connections.

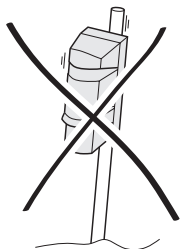


✗ NO
✓ OK

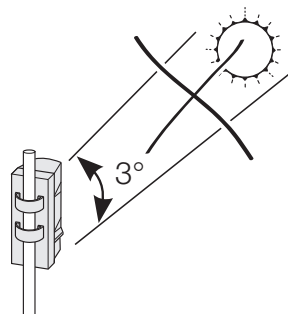
Do not install the device where objects swayed by the wind such as plants or laundry could block the beam.



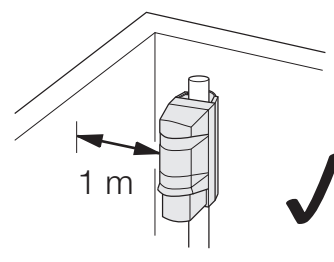
The fixing pole must have a stable base and only slight oscillations at the top.



Avoid direct sun light penetrating the receiver.



Secure the devices at a distance of more than 1 m from the wall or fence.



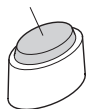
INSTALLATION OF HEATER 01743.H

The device should be powered at 24 VAC or DC.

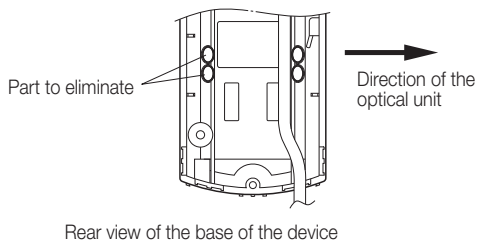
NOTES: If the same power supply is being used for the detectors, the connection distance required is indicated in the table in the INSTALLATION SUGGESTIONS paragraph.

1 Cutting out the part to eliminate

Cut the dark area

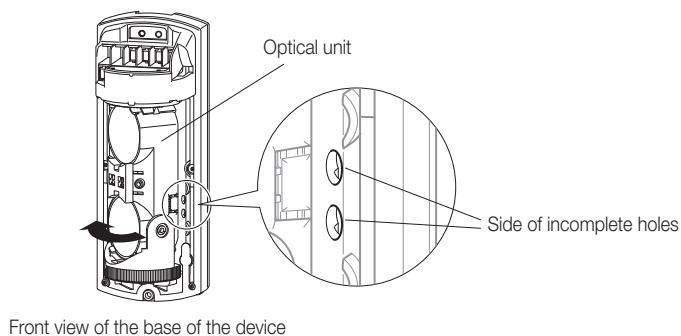


Cutting section of the part to eliminate



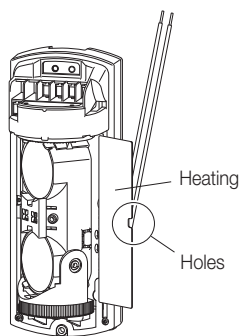
Cut the part to eliminate of the cable through holes in the device base located on the side where the optical units of the transmitter and receiver are facing one another and on the opposite side using pliers, etc. If on the front side, cut the part to eliminate which is only on the left or right side.

2 Optical unit orientation

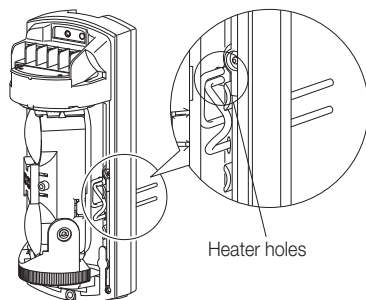


Turn the optical unit by approximately 45° with respect to the area of incomplete holes excluded from step 1.

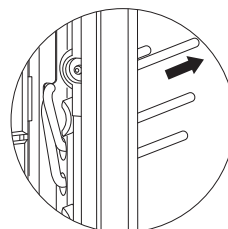
3 Mounting and wiring of heating unit



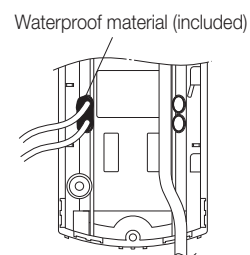
Orient the heating unit as indicated in the figure and slide it into place behind the product optical unit.



Thread the heater cables through the holes in the unit and out from the wiring holes prepared in step 1.



Lay the heater cables through the wiring holes until there is no free space left.

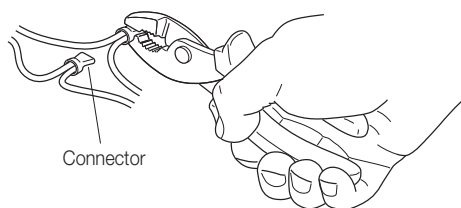


Seal the wiring holes with waterproof material (supplied), without leaving gaps between the cables and the plastic surrounding them. Repeat the operation for both holes.

Make sure the connection distance from the power supply unit falls within the values indicated in the table below. When using two or more devices on the same cable, the maximum length is obtained by dividing the length of the cable indicated by the number of devices used.

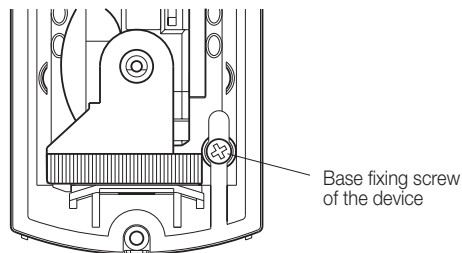
Section	Connection distance
0.83 mm ²	300 m
1.31 mm ²	500 m
2.09 mm ²	800 m

4 Connection using the connector



When the cables are connected, make the connections using the connector supplied or by welding. Thread the cables in the connector and tighten the connections with pliers.

5 Fixing the base of the device and optical alignment



TROUBLESHOOTING

Problem	Possible cause	Corrective measure
The LEDs on the transmitter do not light up.	Incorrect supply voltage	Check the supply voltage and make sure it is included between 10.5 and 28VDC.
	Interruption in the power supply line	Check the connection
	Wiring distance or cable diameter incorrect.	See "Connection distance between power supply unit and detector" and check the connection distance.
The "Alarm" indicator does not light up even though the beam is interrupted in front of the receiver	Incorrect supply voltage.	Check the supply voltage and make sure it is included between 10.5 and 28VDC.
	Wiring distance or cable diameter incorrect.	See "Connection distance between power supply unit and detector" and check the connection distance.
	The beams are reflected by the floor and wall of a building and enter the receiver.	Align the optical axis again. If the "Alarm" indicator still doesn't light up, remove the reflective objects or change installation position.
	The upper and lower beams are not interrupted simultaneously.	Interrupt the upper and lower beams simultaneously.
	Other beams from other transmitters are being received.	Move the receiver to another position where no other beams from other transmitters are received.
When the beam is interrupted in front of the receiver, the "Alarm" indicator lights up but the alarm is not activated.	Short-circuited signal line.	Check the connection.
	Alarm contacts stuck.	Repair the fault. Contact the supplier
The "Alarm" indicator on the receiver does not switch off.	The optical axis between the transmitter and the receiver is not aligned.	See "Optical alignment" and perform realignment.
	An object is blocking the beam between the transmitter and the receiver	Remove the object or move the device to a position where no objects can interrupt the beam.
Dew, snow or heavy rain are causing false alarms.	Optical alignment not optimised.	See "Optical alignment" and perform realignment.
Alarm activated even though the beam is not interrupted.	An object is blocking the beam between the transmitter and the receiver.	See "Beam interruption time" and set the correct interruption time.
	A vehicle or a plant are blocking the beam between the transmitter and the receiver.	Remove all objects blocking the beam.
	The surface of the transmitter/receiver cover is dirty.	Clean the cover (wipe the cover with a soft cloth dampened with water or diluted neutral detergent).
	Imprecise optical alignment.	See "Optical alignment" and perform realignment.
	Incorrect device location.	Change the position of the device