

TAKEX

BATTERY OPERATED PHOTOELECTRIC BEAM SENSOR

TXF-20TDM : OUTDOOR 20m (66ft)

Instruction Manual

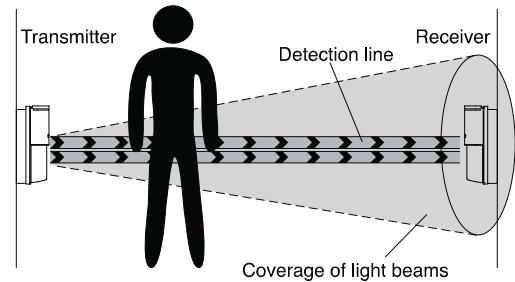
Thank you for purchasing this product. Before using the product, please read this instruction manual to ensure correct operation.

This unit is a battery operated photoelectric beam sensor consisting of a transmitter and a receiver.

The direct path between the transmitter and the receiver forms the detection line. When this detection line is interrupted (light is obstructed for 50ms or more), the receiver outputs a signal.

The battery operated design allows this unit to operate without an external power supply over a long period of time.

In order to ensure that the detection line has sufficient margin of sensitivity, adjust the direction of the light beams before putting the system into operation. Providing sufficient margin of sensitivity reduces the malfunction caused by dense fog, heavy rain, frost, snow, and other weather conditions.



Main Features

(1) DOUBLE MODULATION



Double modulated beams are designed to distinguish external lights. It increases the reliability in the outdoor security system.

(6) DRIP-PROOF HOUSING



Prevents rain and snow from streaming down the front side of housing, to avoid false alarm.

(2) COST REDUCTION



By combining a wireless transmitter, external wiring becomes unnecessary, which can substantially reduce wiring material costs and related work. In addition, this unit realizes longer battery life due to its low current consumption.

(7) DUAL RING SIGHT



Enables clear view for easy beam alignment.

(3) ECOLOGY



Environmentally friendly
RoHS compliant. (2011/65/EU + 2015/863/EU)

(8) TARGET COLOR



The vivid color of the internal structure can be recognized easily at distance during the beam alignment procedure. The color differs between transmitter and receiver for easy installation and checking.

(4) INSECT / WATER PROTECTION



The unit has been designed to achieve dust and water ingress protection equivalent to IP55, as well as a protection measure against insects.

(9) WIDER ANGLE ADJSUTMENT



The angle can be adjusted to $\pm 95^\circ$ in the horizontal direction, and the lock mechanism can reduce the optical axis shift due to vibration.

(5) ANTI-BIRD SPIKE (optional)



Keeps birds and small animals away from the sensor, to reduce false alarms.

(10) SOUND CHECK



By combining intermittent and continuous sounds, it is possible to judge if the amount of light received is good without a multimeter.

— TABLE OF CONTENTS —

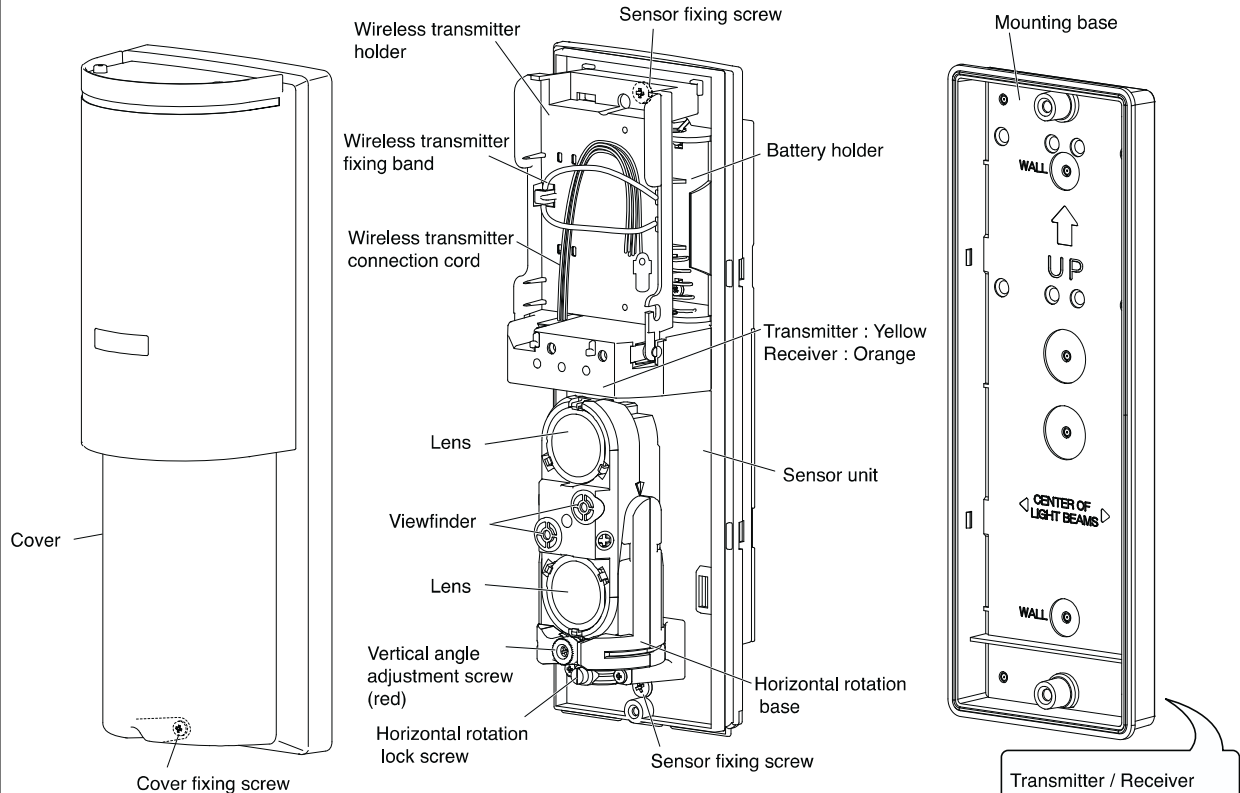
1 PARTS DESCRIPTION	2	6 OPTICAL AXIS ADJUSTMENT	10
(1) MAIN UNIT	2	(1) ADJUSTMENT METHOD	10
(2) ACCESSORIES	2	(2) ALIGNMENT MECHANISM	10
(3) NAMES OF OPERATION SECTION	3	(SOUND CHECK)	
2 PRECAUTIONS	3	(MONITOR OUTPUT VOLTAGE)	
3 BEFORE USE		7 OPERATION CHECK	11
(1) SPACE FOR WIRELESS TRANSMITTER	6	8 SENSOR FUNCTIONS	11
(2) WIRELESS TRANSMITTER CONNECTION CORD	7	9 TROUBLESHOOTING	13
(3) MOUNTING WIRELESS TRANSMITTER	7	10 SPECIFICATIONS	14
4 MOUNTING BATTERIES	7	11 EXTERNAL DIMENSIONS	15
5 INSTALLATION			
(1) WALL INSTALLATION	8		
(2) POLE INSTALLATION	9		

1 PARTS DESCRIPTION

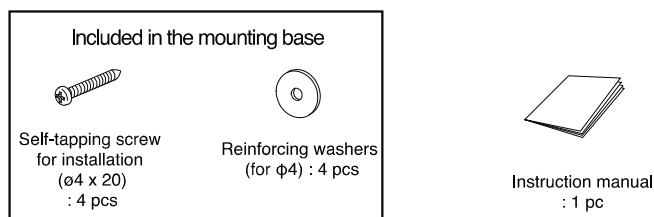
This section describes the contents of the product package and the names and functions of the parts that appear in this instruction manual.

Check that the following transmitter, receiver, and accessories are included in the box when you first unpack the product.

(1) MAIN UNIT

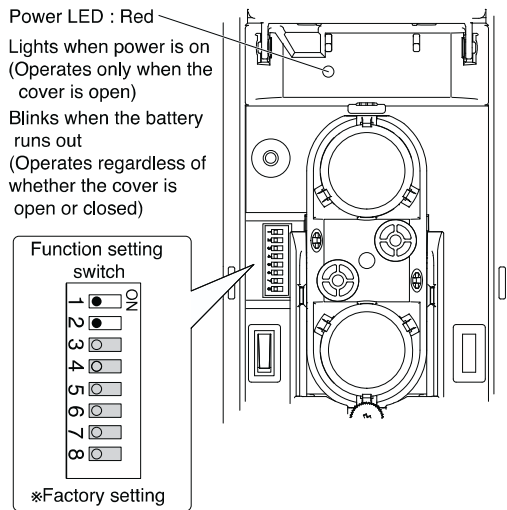


(2) ACCESSORIES



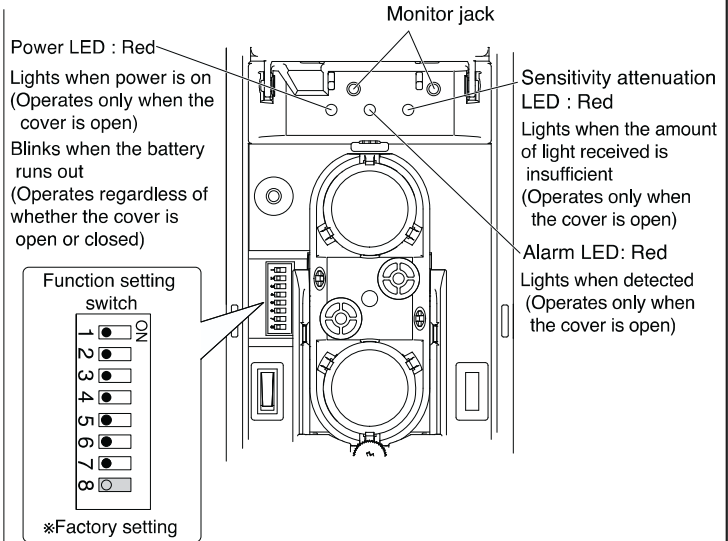
(3) NAMES OF OPERATION SECTION

[Transmitter]



- 1, 2 : Beam channel changeover switch
(Factory setting : 1CH)
3~8 : Not used (Do not change the setting)

[Receiver]



- 1, 2 : Beam channel changeover switch (Factory setting : 1CH)
3, 4 : Detection response time changeover switch (Factory setting : 0.05sec.)
5 : Battery saving function switch (Factory setting : OFF)
6 : Repeat output function switch (Factory setting : OFF)
7 : Sound check switch (Factory setting : OFF)
8 : Not used (Do not change the setting)

2 PRECAUTIONS

Be sure to observe

This manual describes precautions by classifying them based on degrees of danger and damage that would be generated when using the unit incorrectly.

Warning

This indicates the possibility of severe injury, and even death, if ignored or a user handles the unit incorrectly.

Caution

This indicates the possibility of minor injury and/or damage to properties, or of a notification delay in your system due to false operations and/or non-detection, if ignored or a user handles the unit incorrectly.

●These precautions are categorized throughout the manual using the following symbols.:



A prohibited action, you must not do.



An action you must do, and information you should keep in mind

Warning



Do not disassemble or modify this device. This may cause a fire, electrical shock, or malfunction of the device.



Use batteries correctly. Failure to follow this may result in burns, injury, fire, and/or pollution in the surroundings due to burst, heat generation, and/or liquid spill of batteries.

- Do not charge batteries.
- Do not heat, disassemble, and/or put them into fire or water.
- Do not use new and old batteries together.
- Do not contact metal on the positive and negative ends.
- Do not carry or store them with metal.
- Be sure to use the specified batteries, and check that the polarity is correct when connecting.



Do not install this device in a location that cannot support its weight. This may cause the device to fall and cause an injury or malfunction of the device.



If the following events occur, turn off the power of the unit immediately, and ask the place of purchase for repair. Failure to follow this may result in fire, electric shock, and/or malfunction.

- Smoke, abnormal odor, and/or sound are found
- Liquid, such as water, and/or foreign material has entered the unit
- The unit has deformed and/or damaged parts



Mount the unit on wall surfaces where reinforcement materials are used. If you mount the unit on non-wood materials such as plaster board or concrete, securely mount it using anchors and mounting screws that match the wall materials. Unstable mounting may result in injury and/or property damage if the unit falls.



Medical equipment may be subject to influence from the unit, if you use it nearby.
In such cases, avoid using the unit. Or, before using, perform a sufficient operation check and confirm there is no influence.

Caution



Do not apply impact to the unit.
Strong impact may result in performance deterioration and/or damage to the unit.



The unit may not operate properly near devices that generate a strong electric or magnetic field.
Also, devices near the unit may not operate properly due to the magnetic field and/or magnetism generated from the unit.
Make sure to confirm before operation.



Make sure to perform the installation work according to the instruction manual. Also, be sure to use the supplied accessories and specified parts. Failure to follow this may cause fire, electric shock, or fall of the device, resulting in injury or damage to the equipment.



Do not use the transmitter and receiver of different model numbers together.
Failure to follow this could result in false and/or non-detection.

⚠ Caution



Securely conduct installation work according to the instruction manual.
Also, make sure to use the supplied accessories and specified components.

Failure to follow this may result in injury and/or property damage in the event of fire, electric shock or fall of the unit.



Install the unit straight so that it does not look inclined from the front.



This unit has a rainproof structure, not a waterproof structure. Do not hose it directly.

Do not use the unit in places constantly subject to water and/or high humidity, such as a bathroom.

Failure to follow this could result in malfunction.



In order to ensure the rainproof structure, install the unit in the correct direction.

Installing it sideways or upside down may result in malfunction.



Do not use models other than this series (TXF-20TDM) on the extension of the same detection line.

Failure to follow this could result in false and/or non-detection due to interference between the sensors.



Do not use the transmitter and receiver of different model numbers together.

Failure to follow this could result in false and/or non-detection.



When branches, leaves of trees and weeds around the detection line blow in the wind, they may interrupt the detection line and result in false detection.

Periodically trim (cut) branches, leaves, and weeds.



Vine plants may entwine the unit when growing, which may result in false detection.

Periodically trim them.



Accumulation of the followings on the cover surface may result in false detection.

Periodically clean the cover.

- Yellow dust/sand, snow, and/or ice

- Insect droppings and/or nests

- Bird droppings

- Paint

- Objects caught in the wind such as trash and newspaper



Installing the unit in the following places may result in false and/or non-detection.

- Places shielded by trees

- Places where there are light reflecting objects on the ground on the optical axis

- Places where moving objects (such as laundry) shield the light in the optical axis

- Places that are unstable and prone to vibration

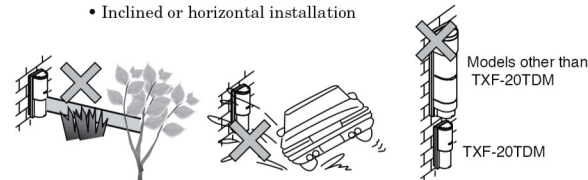
- Uneven places

- Places subject to polluted water, seawater, and/or chemicals

- Places where small animals may pass, such as directly above fences

- Places close to fences

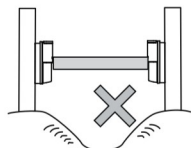
- Inclined or horizontal installation



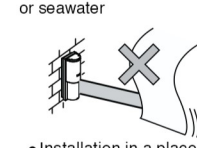
- Installation in a place shaded by trees, etc

- Installation in a place exposed to sewage or seawater

- Using TXF-20TDM together with other models



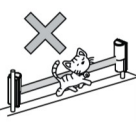
- Installation on an uneven ground



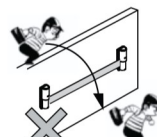
- Installation in a place shielded from light by moving objects on the optical axis (laundry, etc.)



- Installation in an unstable and wobbling place



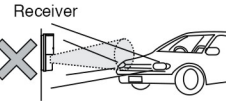
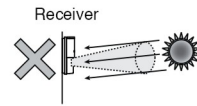
- Installation right above the fence



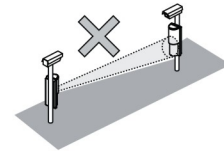
- Installation near the fence



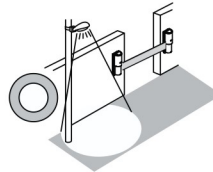
Installing the unit in location where direct sunlight, headlight of vehicle, IR illumination or LED light directly enter the optical axis may result in false and / or non-detection.



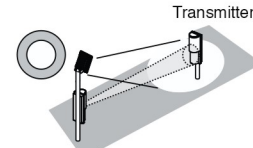
Avoid installing the unit in a place where strong light such as sunlight or headlights directly enters the optical axis of the receiver.



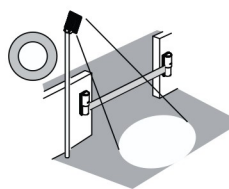
Never install IR or LED lighting overlapping the detection line of the beam sensor



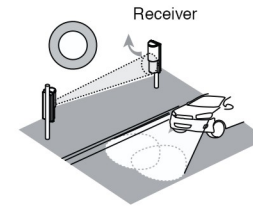
Install the unit so that the light from the IR and LED lighting do not enter the detection line of the sensor (not to face the lighting)



When IR or LED lighting is required, install it so that it illuminates the transmitter side without facing the receiver.



When IR or LED lighting illuminates in parallel with detection line, install it at the highest mounting position possible to keep it away from the optical axis of the receiver.



Point the optical axis (receiver side) opposite to the vehicle passage side as much as possible, when the detection line is set in parallel with the road.



Do not touch connector sections and batteries with wet hands, which could result in electric shock and/or corrosion.



Make sure that batteries are not heated, when removing them.



Avoid mounting, battery connection, and battery replacement where humidity is high. Humidity may enter the unit and generates condensation, which could result in malfunction.



For replacement of batteries, use the batteries specified in the instruction manual.

If you use different batteries, specified performance will not be met.



Do not install the unit in places subject to oil smoke, steam, high humidity, and/or a lot of dust. Electricity that travels through these substances may result in fire, electric shock, and/or false operation.



Before actual installation, perform a sufficient operation check in a place of operation and confirm that the receiver can clearly receive the beams.



Make sure to perform a sufficient operation check on the whole system before operation.

Cautions when using the outdoor photoelectric beam sensor (Regular maintenance)

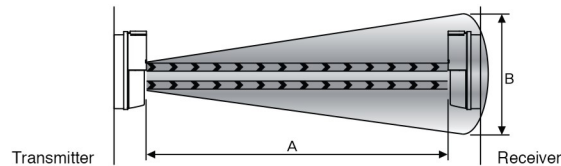
- In areas where there are trees or weeds, the photoelectric beams may become obstructed by overgrown branches or leaves. As this may cause false detection, be sure to trim down leaves and branches according to the growth of the plants. Furthermore, the photoelectric beams may get obstructed by swaying branches or leaves due to wind.
- Vine plants may wrap around the photoelectric beam sensors causing false detections. Therefore, be sure to prune such plants regularly.
- Insects, bird droppings, or other natural phenomena may also soil the sensors causing false detection. Be sure to clean the sensors regularly.

PROTECTION DISTANCE AND LIGHT BEAM COVERAGE

As the infrared light leaves the transmitter, it expands into conical shaped light beams. The optical axis is in the center of the light beams. Adjust the reflector so that the device on the opposite side is in the center of the light beams.



If the optical axis (center of the light beams) is aligned correctly, a detection line with sufficient margin of sensitivity is formed.



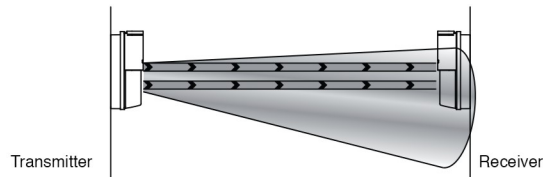
A: Protection Distance	B: Light Beam Coverage
20 m (66')	Approx. 0.6 m (2')

The spread of the light beam can be calculated as follows.

$$B(m) = 0.03 \times A(m)$$



If the optical axis is not aligned correctly, there will be insufficient margin of sensitivity even if the receiver is at the center of the light beams, making the system more susceptible to adverse effects of the environment resulting in a malfunction.



! Perform the correct optical axis adjustment according to the section "6 OPTICAL AXIS ADJUSTMENT"

MOUNTING HEIGHT

As these sensors are designed to detect humans, adjust the center of the sensors to the height of approximately 0.8m(2.6ft) from the ground when installing both on a wall and on a pole.

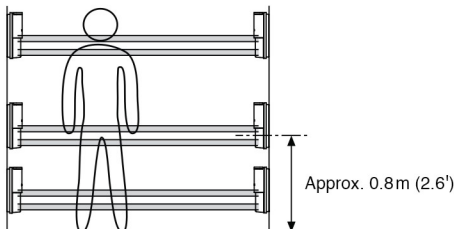
WRONG



CORRECT



WRONG



Installing by adjusting the center of the sensor to approximately 0.8 m (2.6ft) from the ground i.e. the protection line is at waist height for humans, for reliable detection.



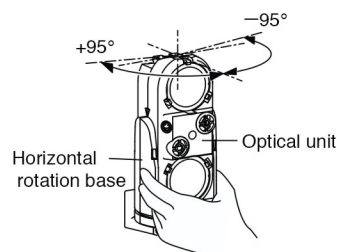
If the installation position is too high or too low, making protection line above shoulder height or below knee height, detection becomes less reliable.

OPTICAL AXIS ADJUSTMENT RANGE

Refer to the diagram below, and install the sensors within the optical axis adjustment range. (Photoelectric beams are shown in simplified form)

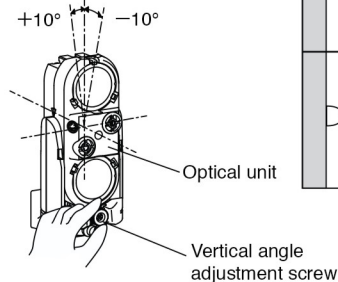
Horizontal

Adjustable in the range of 0° to ±95° with the horizontal rotation base

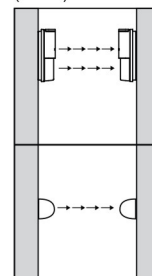


Vertical

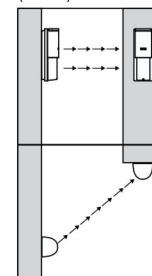
Adjustable in the range of 0° to ±10° with the vertical angle adjustment screw



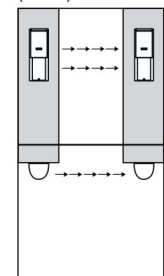
(Ex. 1)



(Ex. 2)



(Ex. 3)



EXAMPLE OF PRACTICAL APPLICATION

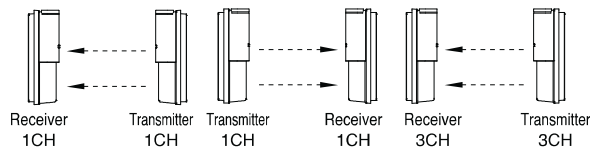
In order to minimize the occurrence of malfunctions, refer to the protection diagram below for optimal operation. Using the sensors incorrectly may cause malfunction. (Light beams are shown in simplified form)



- When installing with multi-level or straight line protection, select the correct modulation frequency channel (CH) and place the transmitter/receiver appropriately, by referring to the example below. Mutual interference or wraparound of photoelectric beams can be prevented in this way.
* Be sure to select the same channel for the transmitter and receiver facing each other.
- When installation is needed in a way other than those described in the instruction manual, contact your dealer or TAKEX.

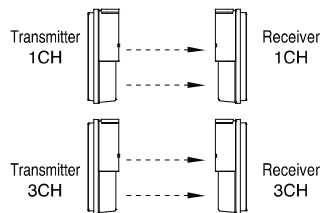
- When using multi-level protection or installing straight line protection with multiple spans, use a sensor with selectable modulation frequency. In addition, select an appropriate channel and install the transmitter and the receiver in appropriate locations, according to the following examples. Incorrect channel selection may cause malfunction.
- In case of multi-level protection, set modulation frequency channel for upper and lower sensors to the channels at intervals, such as "1" and "3", or "2" and "4".

• Straight Line Protection



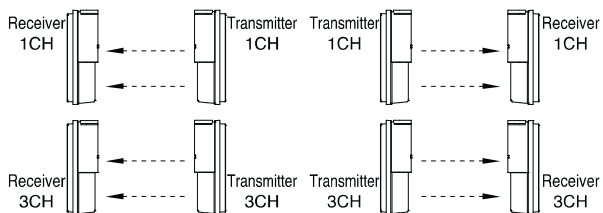
Caution
For straight line protection, set the frequency of 2 adjacent sensors to the channels at intervals and provide up to 4 spans. Also, perform a sufficient operation check before actual operation. Failure to follow this may result in false detection due to wraparound.

• 2 Level Protection



Caution
For 2 level protection, set the frequency of 2 adjacent sensors to the channels at intervals and perform a sufficient operation check before actual operation. Failure to follow this may result in false detection due to wraparound.

• 2 Level Straight Line Protection



Caution
For 2 level straight line protection, set the frequency of 2 adjacent sensors to the channels at intervals and provide up to 2 spans. Also, perform a sufficient operation check before actual operation. Failure to follow this may result in false detection due to wraparound.

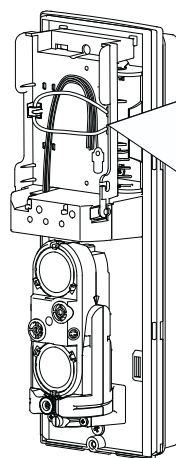
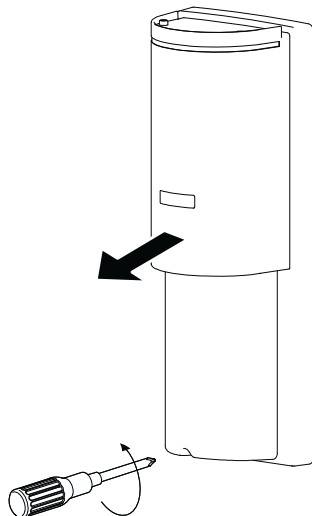
3 BEFORE USE

(1) SPACE FOR WIRELESS TRANSMITTER

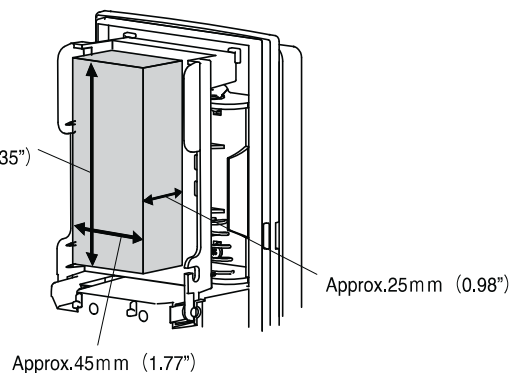
(For both transmitter and receiver)

① Loosen the cover fixing screw and remove the cover.

② Accommodate the wireless transmitter in the space below.



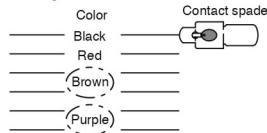
Approx. 85mm (3.35")



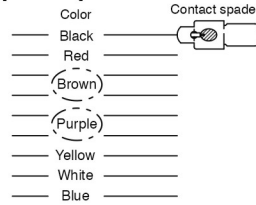
(2) WIRELESS TRANSMITTER CONNECTION CORD

Use wireless transmitter connection cord to connect the wireless transmitter and the sensor unit.

[Transmitter]



[Receiver]



[Cable color]

POWER OUTPUT Note: Transmitter and receiver		
Black	—	3.0 to 3.6V DC 65mA max.
Red	+	(When using two or more new batteries)
TAMPER OUTPUT Note: Transmitter and receiver		
Brown	N.C.	Contact method: Solid state switch (N.C.)
Brown	COM	Contact capacity: 3.6V DC 0.01A (resistive load)
LOW BATTERY OUTPUT Note: Transmitter and receiver		
Purple	N.O.	Contact method: Solid state switch (N.O.)
Purple	COM	Contact capacity: 3.6V DC 0.01A (resistive load)
ALARM OUTPUT Note: Only receiver		
Yellow	N.C.	Contact method: Solid state switch form C
White	COM	Contact capacity: 3.6V DC 0.01A (resistive load)
Blue	N.O.	



Be sure to insulate unused wiring.

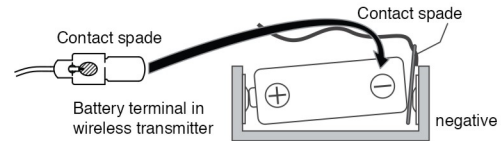
How to connect contact spade

■ When using different power supplies for beam sensor and wireless transmitter

Insert the contact spade to the negative terminal of battery in the wireless transmitter. Do not connect Red wire (+ positive) to the wireless transmitter

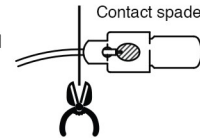


To avoid malfunction, must connect the contact spade to the wireless transmitter.



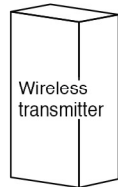
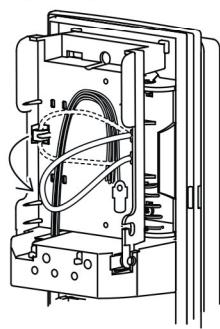
■ When sharing power supplies of beam sensor with the wireless transmitter

Cut the contact spade and process the tip of cable to fit the wireless transmitter

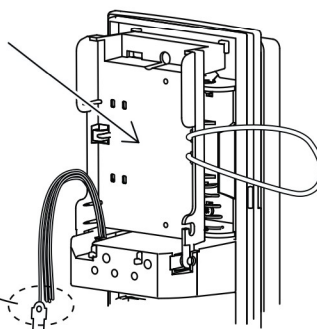


(3) MOUNTING WIRELESS TRANSMITTER

① Remove the wireless transmitter fixing band (on the hook side)

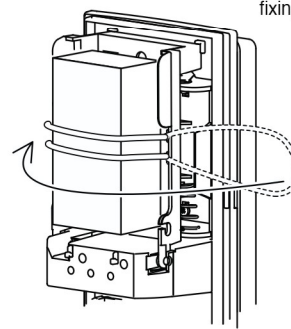


③ Put the transmitter on



② Connect the wireless transmitter connection cord to the transmitter.

④ Fix the wireless transmitter by hooking the transmitter fixing band.



4 MOUNTING BATTERIES

Mount batteries in the battery holder.

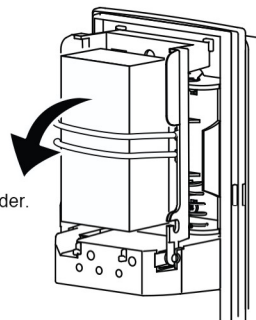
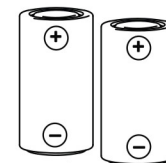
*For transmitter : 2 batteries

*For receiver : 2 batteries

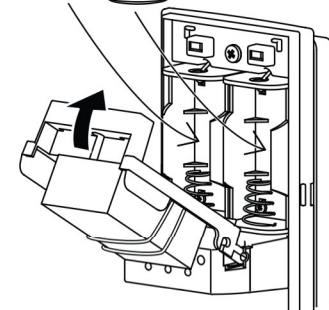


- Make sure the battery polarities match as shown.
- The recommended battery is SAFT LS33600 (3.6VDC).
- Battery life : Approx. 3years
- When the unit performs detection 100 times a day. (excluding consumption of wireless transmitter)
- Be careful when using non-recommended batteries, it may not work properly.
- The battery life is just a reference when used at the normal temperature, and it is not the guaranteed value.

② Install the batteries.



① Release the wireless transmitter holder.

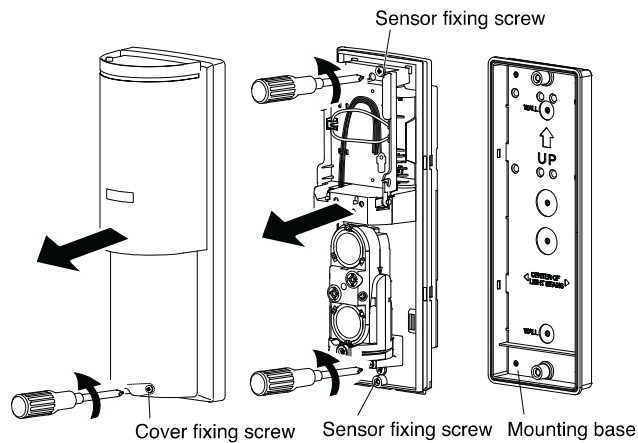


③ Return the wireless transmitter holder to its original position.

5 INSTALLATION

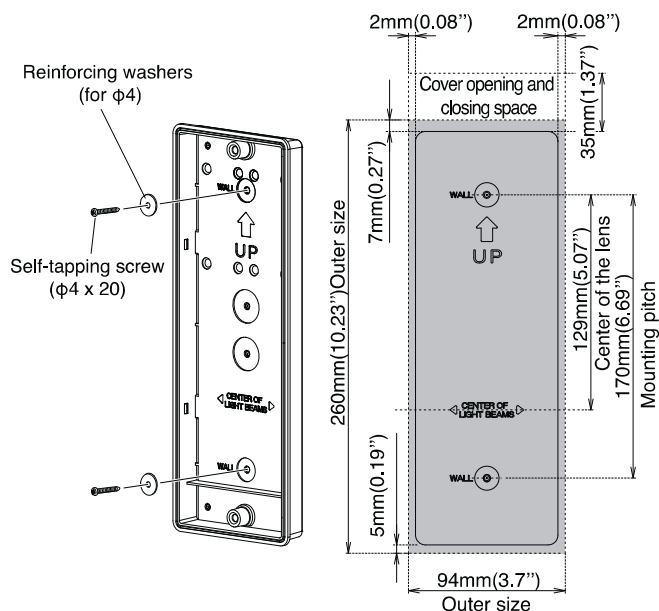
(1) WALL INSTALLATION

- 1** ① Loosen the cover fixing screw and remove the cover.
② Loosen the sensor fixing screws (upper and lower) and remove the mounting base from the sensor unit.

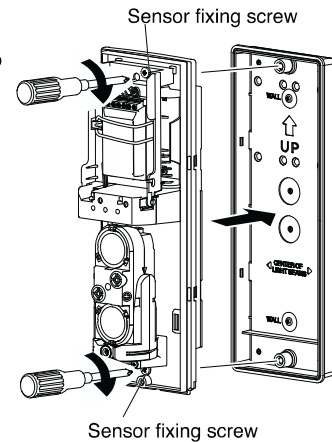


- 2** Refer to "3 BEFORE USE" and install your wireless transmitter

- 3** ① Break the knockout of the mounting base with a Philips screwdriver, etc.
② Fix the mounting base to the wall using the supplied self-tapping screws and reinforcing washers.



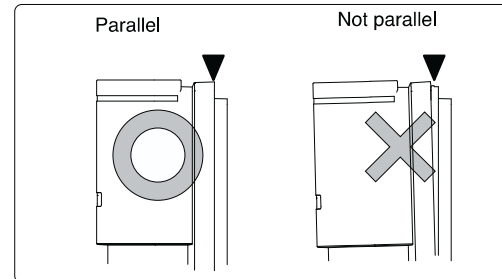
- 4** Fix the sensor unit to the mounting base with the sensor fixing screws (upper and lower).



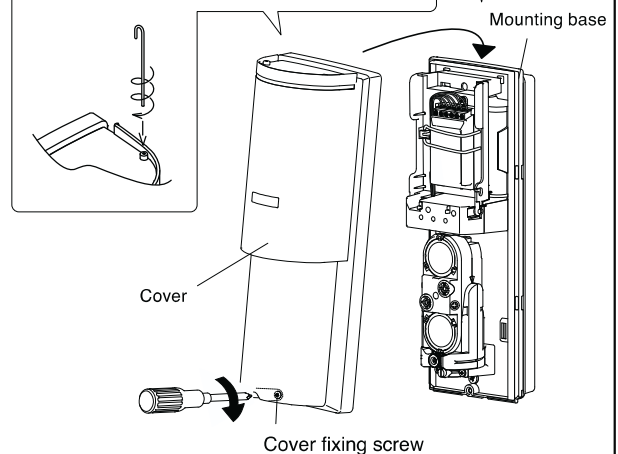
- 5** Mount the batteries and adjust the optical axis. (refer to "4 MOUNTING BATTERIES" and "6 OPTICAL AXIS ADJUSTMENT")

- 6** Attach the cover to the sensor unit and fix it with the cover fixing screw.

! After fixing the cover, make sure it is attached correctly to be parallel to the mounting base.



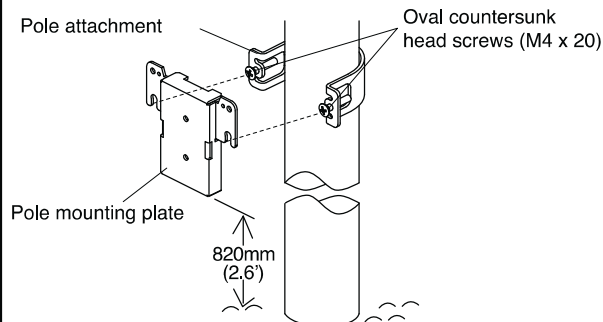
Use anti-bird spikes(optional), if necessary.



! Use BP-60A(pole attachment : optional) for pole installation

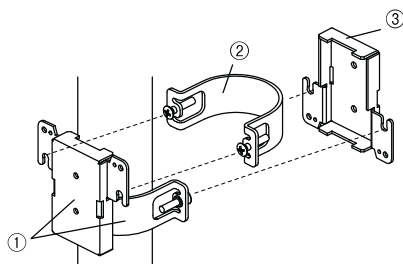
(2) POLE INSTALLATION

- 1 ① Turn the oval countersunk head screws (M4 x 20) 2 or 3 times into the pole attachment to temporarily fix it.
② Fix the pole mounting plate to the pole with the mounting bracket.

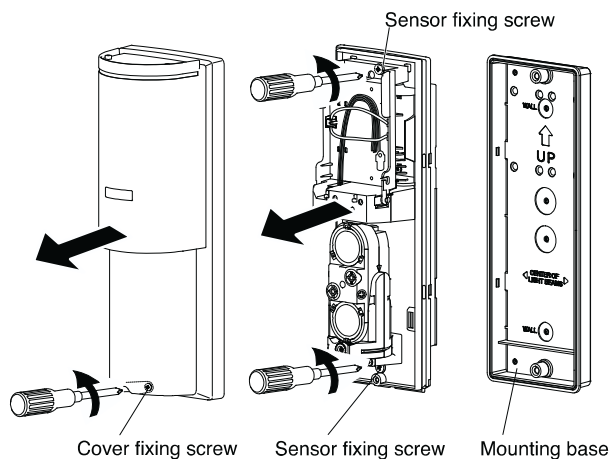


★ Back-to-back mounting to the pole

• Install the pole brackets following the sequence shown in the diagram below.

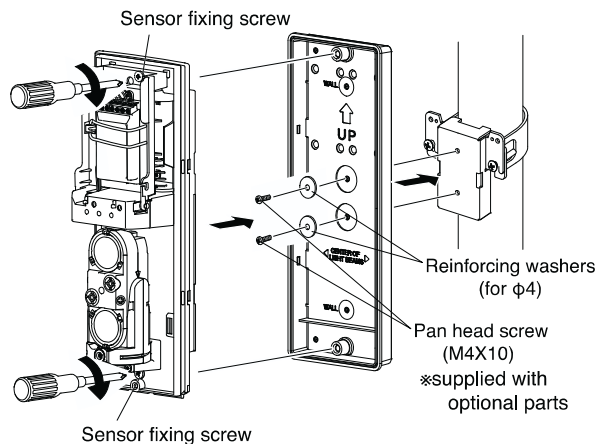


- 2 ① Loosen the cover fixing screw and remove the cover.
② Loosen the sensor fixing screws (upper and lower) and remove the mounting base from the sensor unit.



- 3 Refer to "3 BEFORE USE" and install your wireless transmitter

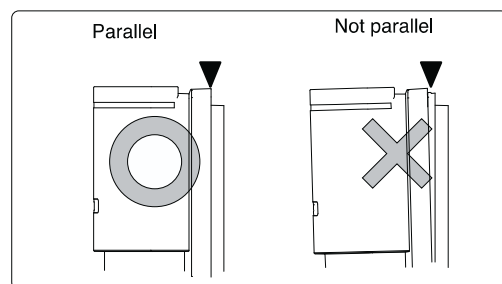
- 4 ① Break the knockout of the mounting base with a Philips screwdriver, etc.
② Fix the mounting base to the pole mounting plate using the pan head screws (M4x10:supplied with optional parts) and supplied reinforcing washers.
③ Fix the sensor unit to the mounting base with the sensor fixing screws (upper and lower).



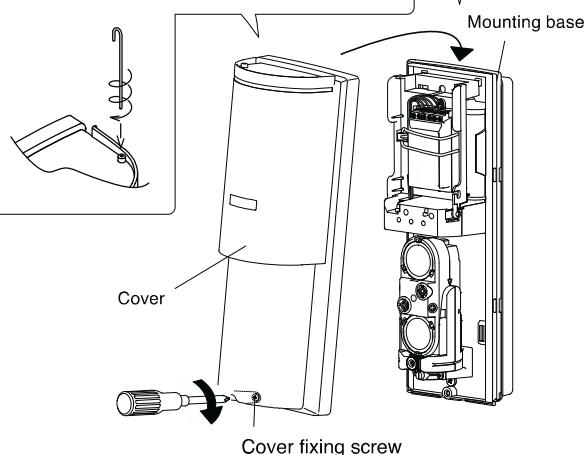
- 5 Mount the batteries and adjust the optical axis.
(refer to "4 MOUNTING BATTERIES" and "6 OPTICAL AXIS ADJUSTMENT")

- 6 Attach the cover to the sensor unit and fix it with the cover fixing screw.

! After fixing the cover, make sure it is attached correctly to be parallel to the mounting base.



Use anti-bird spikes (optional), if necessary.



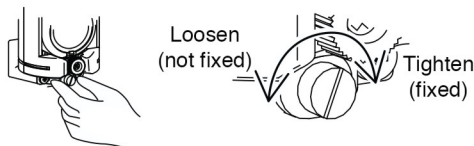
6 OPTICAL AXIS ADJUSTMENT

By accurately aligning the optical axis, a protection line with sufficient sensitivity margin can be created, reducing malfunctions. Be sure to adjust the optical axis.

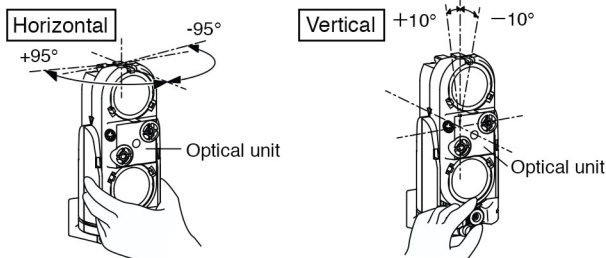
(1) ADJUSTMENT METHOD

When the cover is removed, the lower beam is not transmitted nor received for easier optical axis adjustment. It doesn't matter if the lower beam is obstructed by a hand or tool.

- 1 Loosen the horizontal rotation lock screw.



- 2 Adjust the horizontal rotation base and vertical angle adjustment screw until the optical units of the opposing sensors face each other.



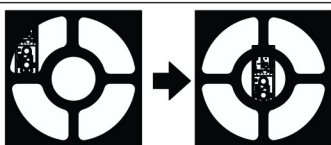
adjustable 0° to $\pm 95^\circ$
by moving the horizontal
rotation base.

adjustable 0° to $\pm 10^\circ$
with the vertical angle
adjustment screw.

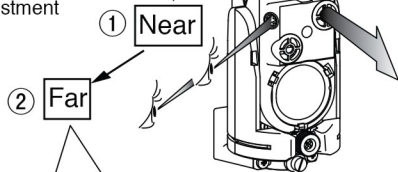
(2) ALIGNMENT MECHANISM

- 1 Turn on the power with the cover removed. Be sure to select the same channel for the transmitter and receiver facing each other (Factory setting : 1CH)
- 2 Look through the viewfinder on the optical unit and adjust the horizontal and vertical directions so that the opposing sensor appears in the center of the ring.

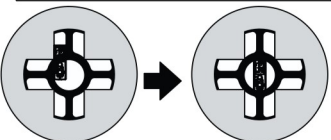
When looking at the viewfinder from near, the view is as the diagram on the right. Adjust the angles so that the target color appears in the center of the ring.



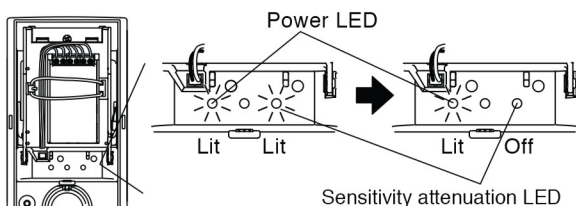
※Order of adjustment
①→②



When looking at the viewfinder from far, the view is as the diagram on the right. Adjust the angles so that the target color appears in the center of the ring.



- 3 Continue adjustment until the sensitivity attenuation LED on the receiver goes out.



- 4 For adjustment with higher accuracy, make fine adjustment of the optical axis by either "sound check" or "monitor output voltage".

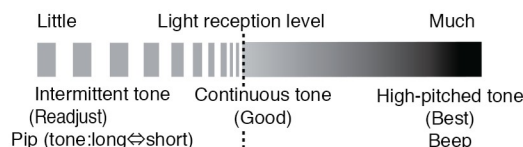
SOUND CHECK (equipped only on the receiver)

Set the sound check of the receiver to "ON" (function setting switch No. 7).

When the optical axis is roughly aligned, the beep sound is made.

Fine-tune the horizontal and vertical angles of the transmitter and the receiver until the pitch of the beep reaches its highest.

※Pitch of the beep changes according to the light reception level, as below.



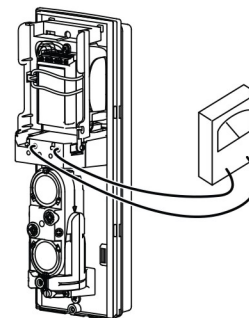
MONITOR OUTPUT VOLTAGE (equipped only on the receiver)

Insert a commercially available tester into the monitor jack of the receiver.

Fine-tune the horizontal and vertical angles of the transmitter and the receiver until the monitor output voltage reaches its highest.

Monitor output voltage	Reception sensitivity
More than 1.3V DC	Best
1.0 to 1.3V DC	Good
Less than 1.0V DC	Poor, readjust

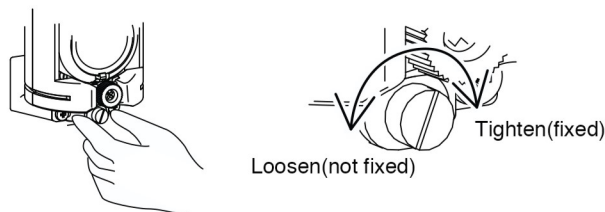
Adjust the monitor output voltage as high as possible to improve environmental resistance.



- The monitor jack is polarized.
- Check the polarity of the tester pins before inserting them.
- Use a tester with an internal resistance of 100Ω or more.

- 5 After confirming the specified value by fine-tuning each optical axis, tighten the horizontal rotation lock screw so that the optical unit does not rotate.

- Be careful not to overtighten the screw when tightening it with a tool.
- Loosen the screw before readjusting.



7 OPERATION CHECK Be sure to perform an operation check after the optical axis adjustment.

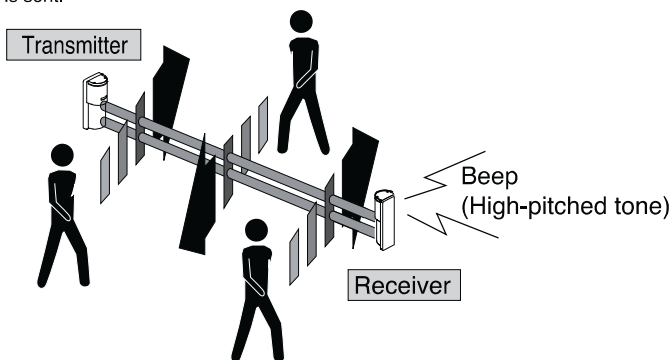
After adjusting the optical axis, attach the cover to the transmitter and receiver. Next, interrupt the detection line near the sensor or near the center of the detection line, and check that a beep * sounds when an alarm is sent.



※When the sound check function is set to ON, and the cover is closed, the unit enters the walk test mode. (activated for approximately 5 minutes after the cover is closed.)
The beep sounds in synchronization with alarm output.



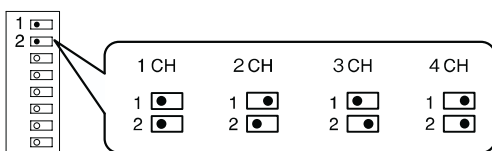
Be sure to check that the alarm transmission is received on the wireless receiver as well.



8 SENSOR FUNCTIONS This section describes the functions of this sensor to be set for correct operation. Set the function referring to the explanation below.

(1) MODULATION FREQUENCY CHANGEOVER (equipped on the transmitter and the receiver)

Each channel has its own frequency to prevent mutual interference or wraparound of the photoelectric beams. Set corresponding transmitters and receivers to the same channel.

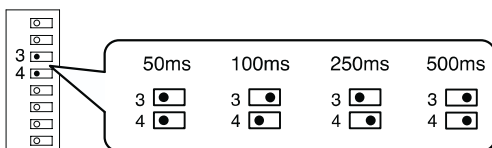


Function setting switch
(Factory setting : 1CH)

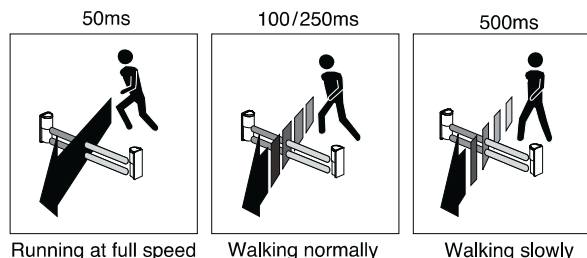
(2) RESPONSE TIME ADJUSTMENT (equipped only on the receiver)

The interruption time of the detection can be adjusted.
(Refer to the diagram and set the response time according to the interruption time of the object to be detected.)

[Interruption time]



Function setting switch
(Factory setting : 50ms)

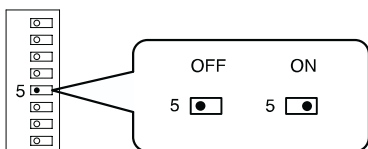


Caution

- (1) If the interruption time is shorter than the response time, the obstructing object is not detected.
- (2) In areas where there are large objects fluttering in the wind to obstruct the optical axis (e.g., birds, newspaper, and cardboard), set the response time slightly longer according to the installation conditions. (However, if the response time is too long, the units may not detect an intruder.)

(3) BATTERY SAVING (equipped only on the receiver)

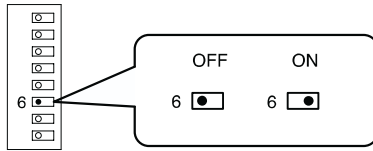
This function can be used to regulate the alarm output, reduce current consumption, and extend the battery life.
If there is a possibility that people often pass across the detection line, set this function.
Once the alarm output is generated, next output is not generated for a 15 minutes even if detection occurs.



Function setting switch
(Factory setting: OFF)

(4) REPEAT OUTPUT (equipped only on the receiver)

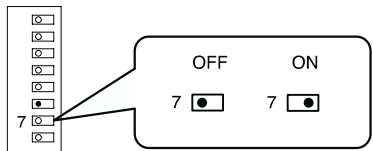
When the unit outputs an alarm continuously (e.g. beam path obstructed by a parked vehicle), this function will repeat the output signal only every 2 minutes, or if the low battery warning is output it will repeat the output signal every 15 minutes. Note that using this function will result in quicker consumption of the batteries.



Function setting switch
(Factory setting: OFF)

(5) SOUND CHECK (equipped only on the receiver)

You can check status of the beam reception or the alarm operation on the receiver by sound tone.



Function setting switch
(Factory setting: OFF)

Item	Operation (status)	Other settings
Beam reception level	Beam reception level can be checked by the sound tone. (The tone pitch becomes higher as the light reception level increases.)	While cover on the receiver is removed.
Walk test mode	Beep sound is generated according to the alarm output. (Activated approximately 5 minutes after cover closed.)	SOUND CHECK FUNCTION "ON"

(6) TAMPER (equipped on the transmitter and the receiver)

When the cover is open, the tamper signal is output through the wireless transmitter connection cord. (cable color:brown)

(7) LOW BATTERY (equipped on the transmitter and the receiver)

(when the battery voltage drops.)

1.The low battery signal is output through the wireless transmitter connection cord. (cable color:purple)

2.The power LED blinks as follows.

※When the cover is open : lights 0.5 sec for every 1 sec.

※When the cover is closed: lights 0.1 sec for every 5 sec.

(8) SENSITIVITY ATTENUATION DISPLAY (equipped only on the receiver: active when the cover is open)

The sensitivity attenuation LED lights up when the amount of received light is insufficient.

Without any tester in hand, check this LED to continue adjusting the optical axis until it is off before operation.

9 TROUBLESHOOTING

• Check the device by referring to the table below. If you cannot restore the device to normal condition after the check, contact the place of purchase or TAKEX.

Status	Cause	Action
Power LED does not light up	(1)No battery in place (2)Batteries exhausted (3)Incorrect polarity	(1)Mount batteries (2)Replace used batteries with new ones (3)Correct the polarity of the batteries
Alarm LED continues lighting (Alarm output does not stop)	(1)Optical axis misaligned (2)Presence of obstacles between the transmitter and the receiver (3)Dirt on the lens of the transmitter and the receiver (4)Different frequency channel set for the transmitter and the receiver	(1)Readjust the optical axis (2)Remove obstacles (3)Clean with a soft cloth (4)Match the frequency channel
The alarm LED is off, but the sensitivity attenuation LED is on	(1)Optical axis misaligned	(1)Readjust the optical axis
Power LED blinks	(1)Batteries exhausted	(1)Replace used batteries with new ones
No alarm signal output even if the protection line is interrupted	(1)No battery in place (2)Batteries exhausted (3)Incorrect polarity (4)Wireless transmitter connection cord disconnected (5)Wireless transmitter connection cord incorrectly connected (6)Interrupted for shorter time than set response time (7)Infrared beam reflected on any object enters the receiver (8)Other beams enter the receiver	(1)Mount batteries (2)Replace used batteries with new ones (3)Correct the polarity of the batterie (4)Reconnect the cord (5)Reconnect the cord (6)Set the response time shorter (7)Remove reflective objects, change the installation place or reorient optical axis (8)Reorient the optical axis, or change the frequency channel setting
Intermittent alarm signal is output	(1)Batteries exhausted (2)Presence of obstacles between the transmitter and the receiver (Swaying trees in the wind, etc) (3)Unstable installation of the unit (4)Dirt on the cover or lens of the transmitter and the receiver (5)Optical axis misaligned (6)Protection line possibly interrupted by large birds or cats	(1)Replace used batteries with new ones (2)Remove obstacles (3)Firmly secure the sensor (4)Clean with a soft cloth (5)Readjust the optical axis (6)Set the response time longer

Maintenance

- To clean the device, use a soft, wet cloth and then wipe off any water drops.
- If the device is particularly dirty, dip soft cloth in water that contains a weak neutral detergent. Wipe the device gently with the cloth, then wipe off any detergent that remains. Do not use substances such as thinner or benzene. (The plastic parts may be deformed,discolored or deteriorated.)
- Perform operation checks on a regular basis.

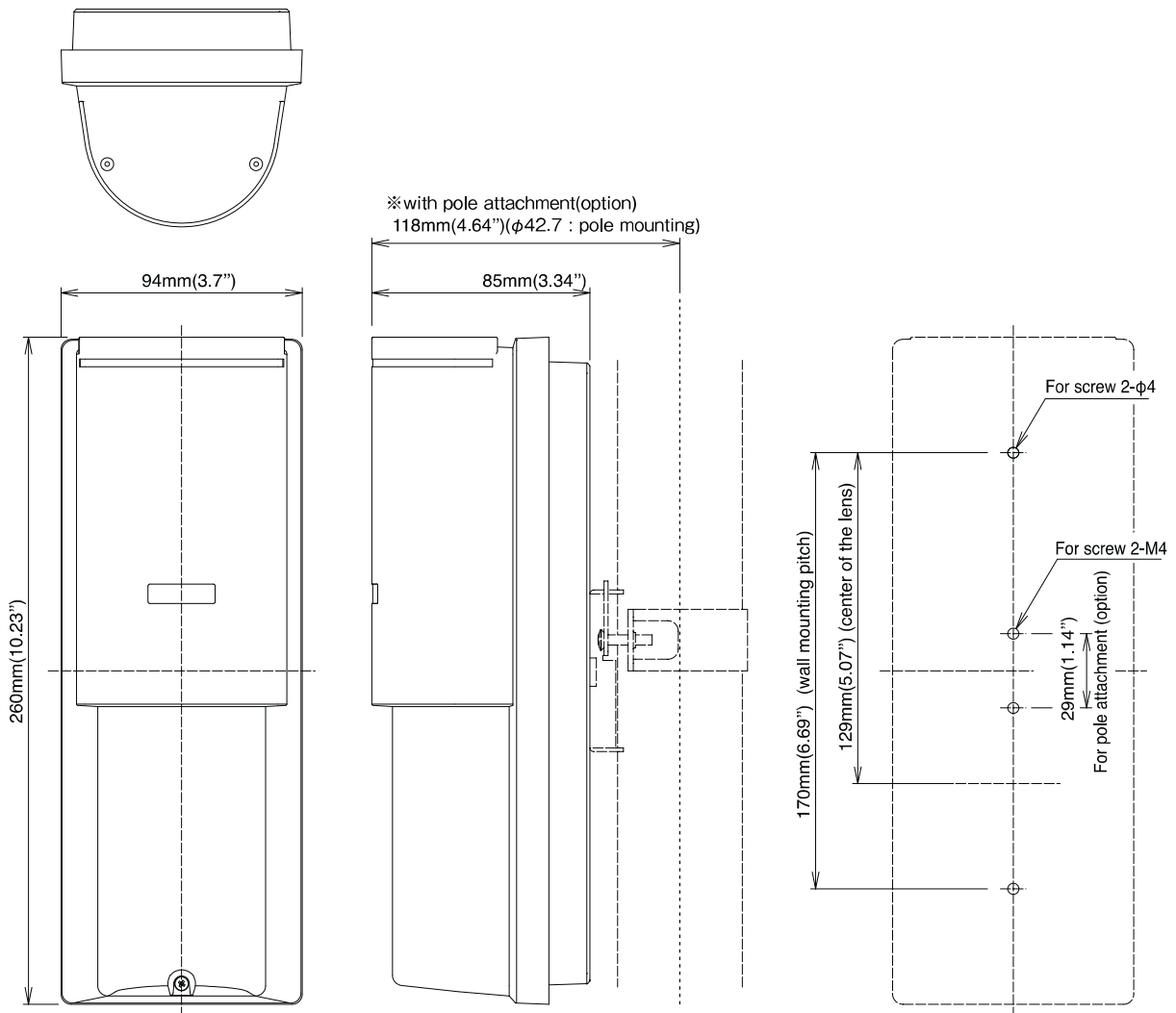
10 SPECIFICATIONS

	BATTERY OPERATED PHOTOELECTRIC BEAM SENSOR	
Model	TXF-20TDM	
Detection system	Near infrared pulsed beam interruption system (TR-RE 2 beam simultaneous interruption)	
Infrared beam	Double modulation pulsed beam by LED (near infrared beam light-emitting diode)	
Protection distance	Outdoor 20m(66') or less	
Distance margin (maximum arrival distance)	10 times 200m(660')	
Response time	50ms, 100ms, 250ms, 500ms (4-level changeover)	
Modulated beam frequency selection	4 channels	
Power supply voltage	3.6VDC (recommended battery: SAFT lithium-thionyl chloride battery LS33600)	
Current consumption	Transmitter : Approx. 670 μ A (during protection) Receiver : Approx. 520 μ A (during protection) (normal temperature, 3.6V DC)	
Battery life	Transmitter : Approx.3 years (at normal temperature, with 2 recommended batteries, excluding wireless transmitter) Receiver : Approx.3 years (detects 100 times a day, at normal temperature, with 2 recommended batteries, excluding wireless transmitter)	
Alarm output (receiver only)	Contact method: Solid state swich form C Contact capacity:3.6V DC 0.01A (resistive load)	
Low battery output (transmitter and receiver)	Contact method: Solid state swich (N.O.) Contact capacity:3.6V DC 0.01A (resistive load)	
Tamper output (cover) (transmitter and receiver)	Contact method: Solid state swich (N.C.) Contact capacity:3.6V DC 0.01A (resistive load)	
Power output (transmitter and receiver)	3.0 to 3.6V DC 65mA max. (2 $\times$ new batteries)	
Beam adjustment	Horizontal: $\pm 95^\circ$, Vertical: $\pm 10^\circ$	
Alarm LED	Red LED (Receiver) ON : when alarm is generated (Active only when the cover is open)	
Attenuation LED	Red LED (Receiver) ON : when beam is attenuated (Active only when the cover is open)	
Ambient temperature	-25°C to $+60^\circ\text{C}$ (-13°F to $+140^\circ\text{F}$) (No freezing or condensation) (The battery function may decrease at 0°C or less, or $+40^\circ\text{C}$ or more)	
Functions	Sound check Monitor jack Low battery indication Battery saving Repeat output	
IP rating	IP 55	
Mounting position	Outdoor, Indoor	
Weight	Transmitter : 500g (17.6oz) (excluding batteries) Receiver : 520g (18.3oz) (excluding batteries)	
Appearance	Cover:Resin(Wine red) Base : Resin (Black)	

* Specifications and design are subject to change without prior notice.

11 EXTERNAL DIMENSIONS

Unit: mm (inch)



■Options : Pole attachment BP-60A
Anti-bird spike

Limited Warranty :

TAKEX products are warranted to be free from defects in material and workmanship for 12 months from original date of shipment. Our warranty does not cover damage or failure caused by Acts of God (including inductive surge by lightning), abuse, misuse, abnormal usage, faulty installation, improper maintenance or any repairs other than those provided by TAKEX. All implied warranties with respect to TAKEX, including implied warranties for merchantability and implied warranties for fitness, are limited in duration to 12 months from original date of shipment. During the Warranty Period, TAKEX will repair or replace, at its sole option, free of charge, any defective parts returned prepaid. Please provide the model number of the products, original date of shipment and nature of difficulty being experienced. There will be charges rendered for product repairs made after our Warranty period has expired.



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