

High Mount Outdoor Detector **HX-80N RAM**



HX-80N RAM	Battery operated with 2 PIRs and anti-masking
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- Battery operated
- Battery saving logic
- Compatible with most wireless transmitter
- Long distance detection area (24.0 m)
- Flexible detection area setting with plates and flaps
- Unique pyro element
- Intelligent AND logic
- Dual signal processing logic
- Vegetation sway analysis logic
- Digital anti-masking

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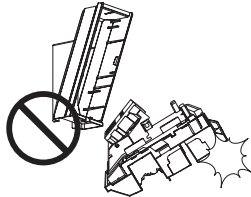
1 INSTALLATION PRECAUTIONS

1-1 BEFORE INSTALLATION

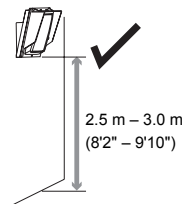
 Warning	Failure to follow the instructions provided with this indication and improper handling may cause death or serious injury.
 Caution	Failure to follow the instructions provided with this indication and improper handling may cause injury and/or property damage.

The check  mark indicates recommendation.

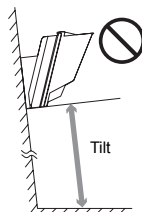
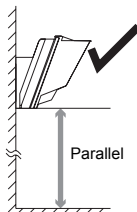
The nix  sign indicates prohibition.

 Warning	 Warning	 Caution
		
Do not repair or modify product	Keep product away from water	Mount the unit scurely

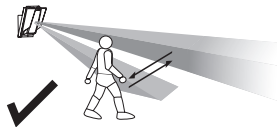
Mounting height



Keep the detector parallel to the ground.

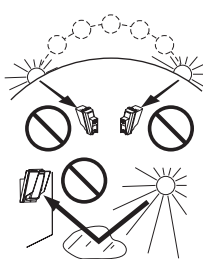


Consider the direction a person is approaching from, as well as the detection area.

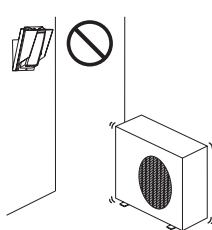


Install the detector in a place where it is free from false alarm factors. For example:

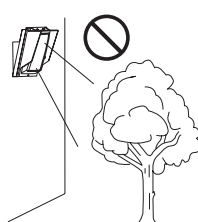
- Sunlight and reflection



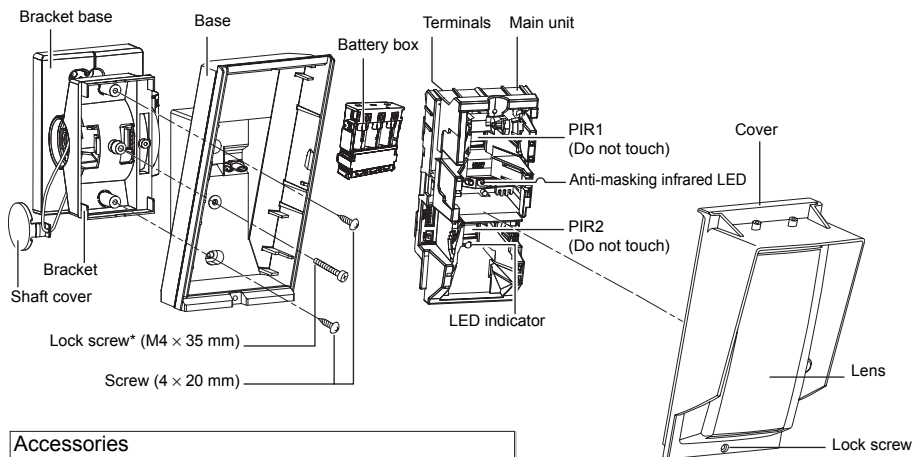
- Heat source



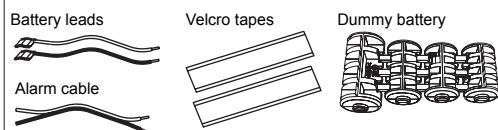
- Objects moving in the wind



1-2 PARTS IDENTIFICATION



Accessories



Screw kit

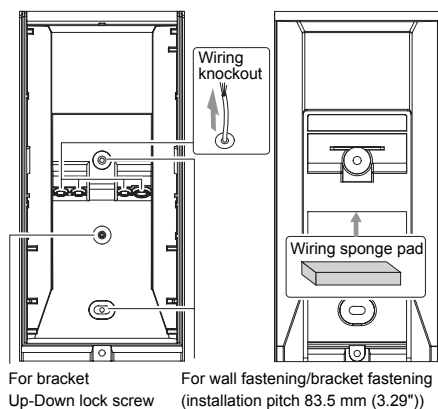
For joint	For wall mounting
Screw (4 x 20 mm)	Screw (4 x 20 mm)

*Lock screw attached on bracket base

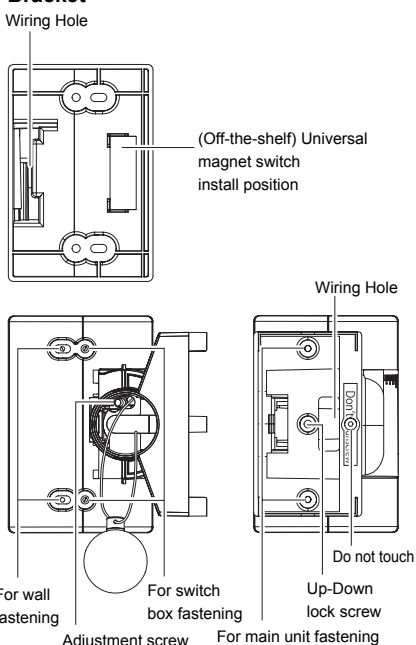
(Transmitter and battery are not included.)

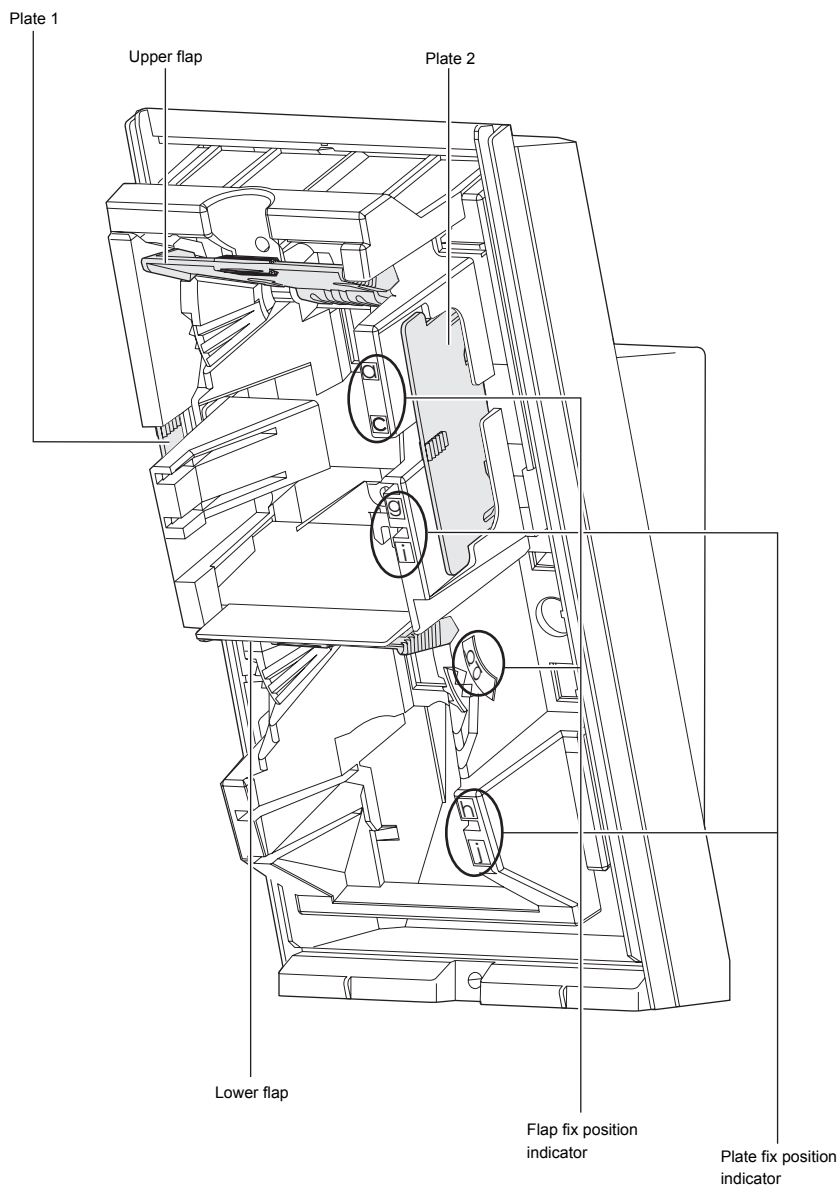
1-3 KNOCKOUTS

Main unit

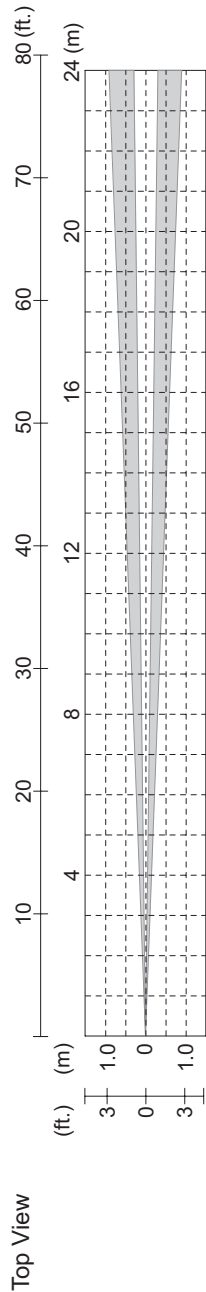
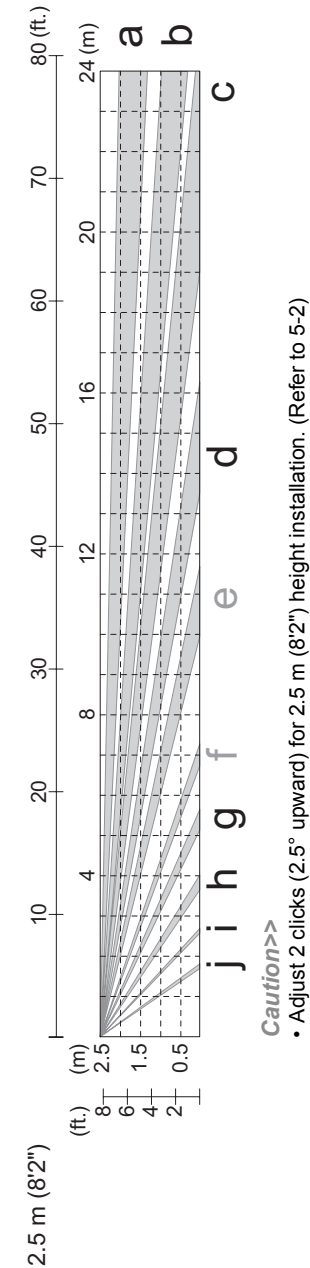
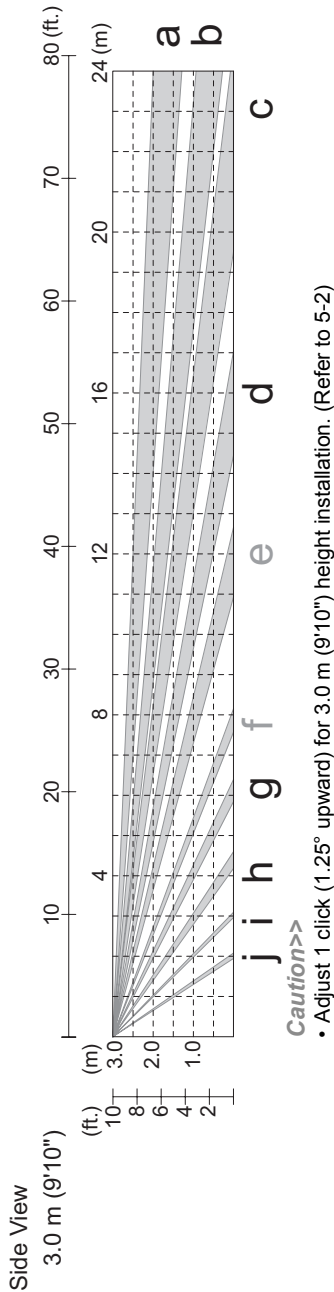


Bracket



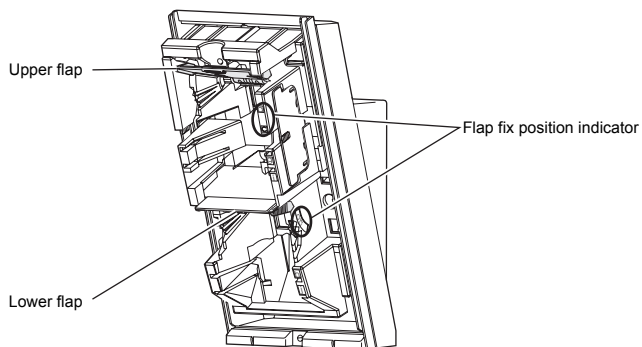


DETECTION AREA (factory default)

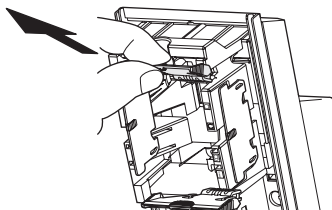


2-2 HOW TO REDUCE THE LONG RANGE DETECTION AREA

To adjust the LONG range of detection, set the upper and lower flaps as follows:

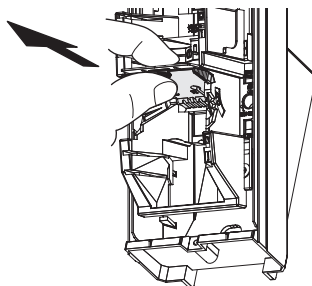


- 1** Pull out the flap.

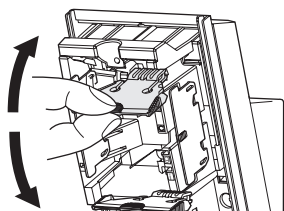


Note>>

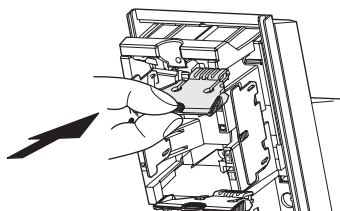
If the lower flap is located at the factory default position, slide it out with your thumb.



- 2** Move the flap to the position that corresponds with the desired detection distance.



- 3** Push the flap until it clicks into position.



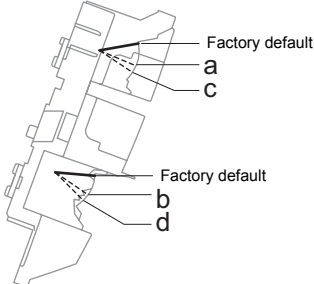
PIR long range detection area reduction

The detection distance in the following table can be limited by combining the positions of the flap.

Use the following table to determine the positions of the upper and lower flaps that set the required max. detection distance.

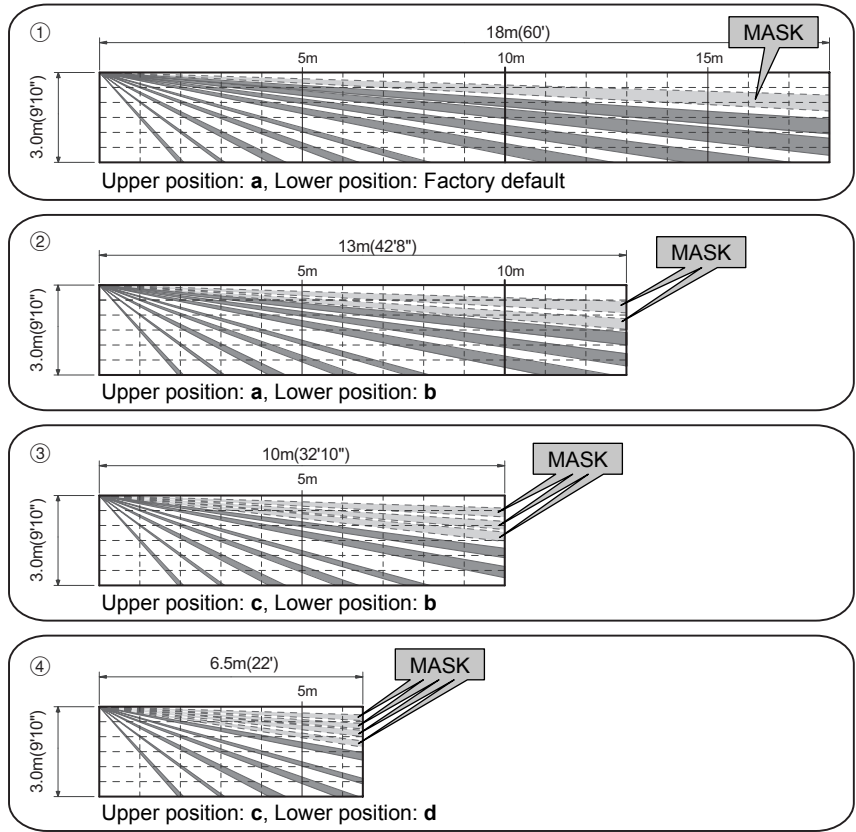
NOTES:

- 1. The distance may vary due to environmental conditions.
- 2. Always walk test the detector to confirm the detection distance.

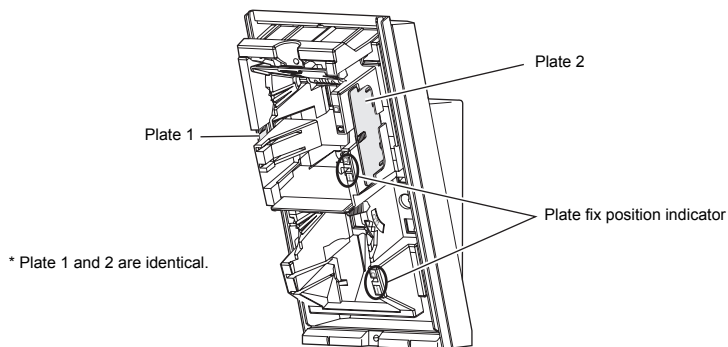


Lower Upper	Factory default	b	d
Factory default	24.0 m (80')	N.A.	N.A.
a	① 18.0 m (60')	② 13.0 m (42'8")	N.A.
c	N.A.	③ 10.0 m (32'10")	④ 6.5 m (22')

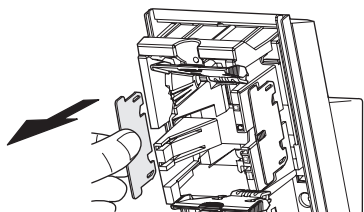
NOTE: Use only the following combinations for the flap settings.



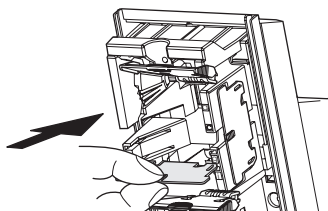
To adjust the SHORT range of detection, set the upper and lower plates follows:



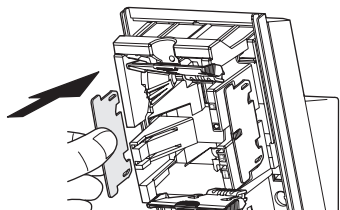
1 Remove the plate.



2 Insert the plate into the position determined by the required masking distance until it clicks.



3 If any plate is not used, place it in the storage position.

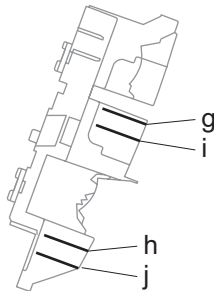


Note>>

Be careful not to lose the plates.

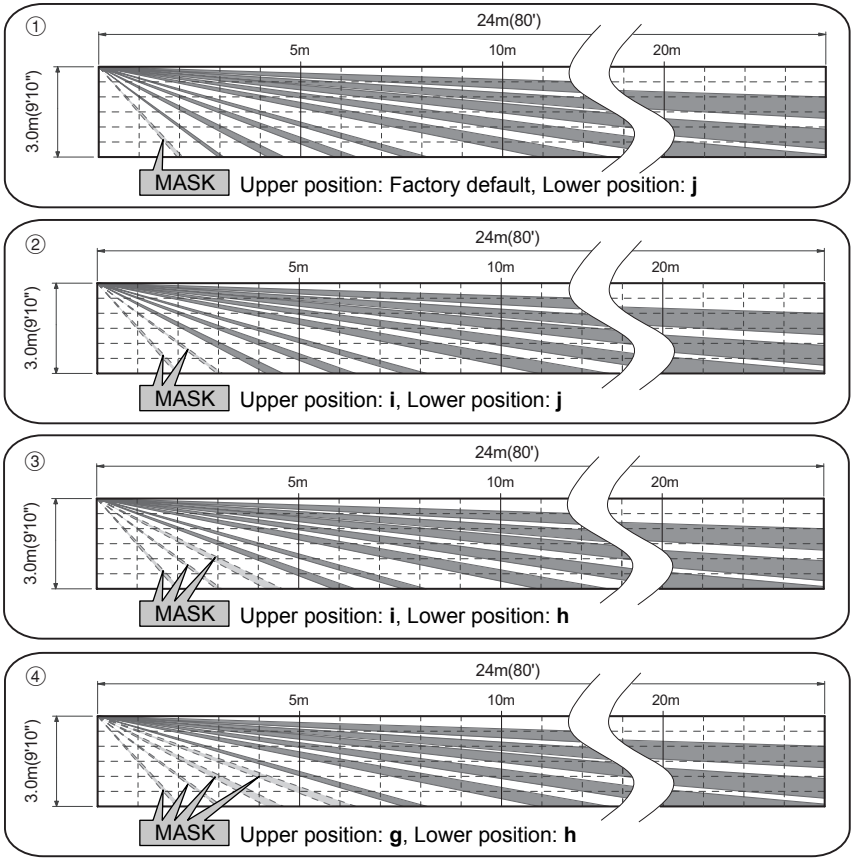
PIR short range detection area deactivation

Use the following table to determine the positions of the plates that set the required masked area.



Lower \ Upper	Not used	j	h
Not used	Factory default	①	N.A.
i	N.A.	②	③
g	N.A.	N.A.	④

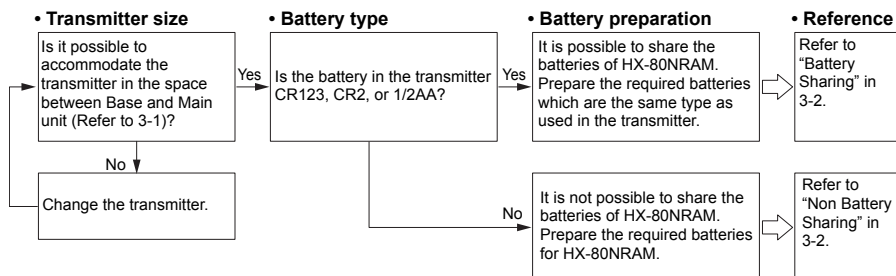
NOTE: Use only the following combinations for the plate settings.



3

PREPARATIONS

To use the HX-80NRAM, first prepare transmitters and batteries.
First check the following flowchart.

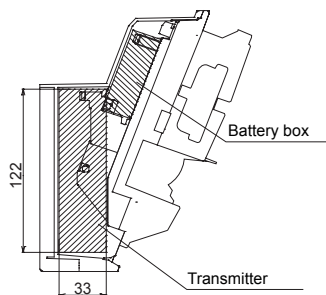


3-1

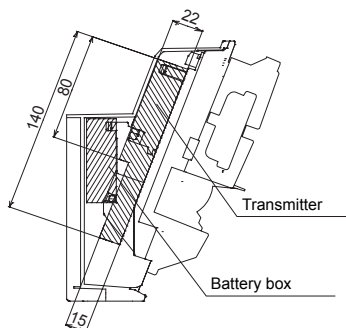
TRANSMITTER PREPARATION

Transmitters can be installed in one of two positions according to their size as follows.

Case 1) 122 × 50 × 33 mm



Case 2) 80 × 50 × 22 mm

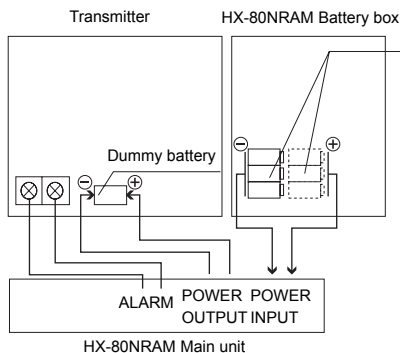


3-2 BATTERY PREPARATION

-Battery Sharing

(Refer to 4-1.)

Power supplied is available from battery box to power HX-80NRAM and the transmitter.



Note that battery type should be the same as that used for the transmitter.

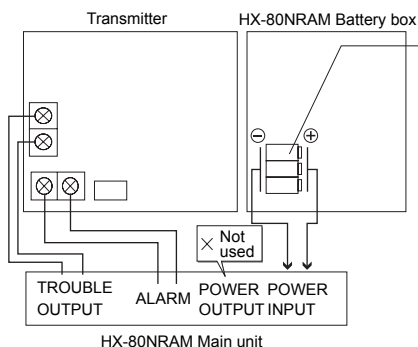
Type	CR123A	CR2	1/2AA	1/2AA(*1)
Voltage	3.0VDC	3.0VDC	3.6VDC	7.2VDC(*1)
Number of cells to use	3 cells	3 cells	3 cells	6 cells(*1)

*1: 3.6 VDC 1/2 AA battery in series.

-Non Battery Sharing

(Refer to 4-1.)

Separate batteries for HX-80NRAM and the transmitter.



Type	CR123A
Voltage	3.0VDC
Number of cells to use	3 cells

If CR123A battery cells are unavailable, three CR2 battery cells (3.0 VDC) can be substituted. Do not use 1/2AA batteries.

* Do not use the attached dummy batteries or battery lead.

4 INSTALLATION (BATTERY AND TRANSMITTER)

-Installation procedure

DETERMINING THE DETECTION LENGTH

INSTALLING THE BATTERY

- Battery Sharing
- Non Battery Sharing

INSTALLING THE TRANSMITTER
AND BATTERY BOX

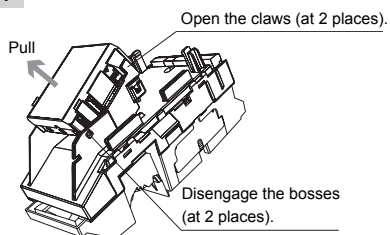
4-1 INSTALLING THE BATTERY

-Battery Sharing

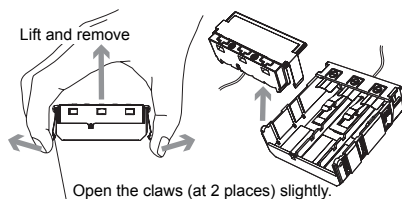
Warning

Do not use batteries of different capacities (i.e.: mixing new and used batteries) or of different manufacturers and/or types together. Not observing the above may result in an explosion, leakage of electrolyte, emission of toxic gases or other outcomes that may be harmful to people and property.

1 Remove the battery box from the main unit.



2 Remove the battery box cover.



- 3** Mount batteries and place cover into correct position using indicator on side of battery box.

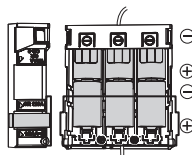
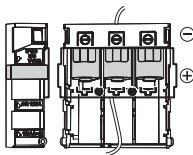
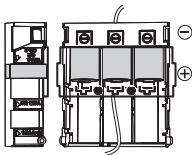
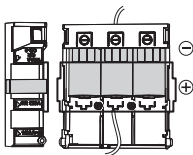
Hook the cover firmly by the claws on the right and left sides.

CR123A×3 (3.0VDC)

CR2×3 (3.0VDC)

1/2AA×3 (3.6VDC)

1/2AA×6 (7.2VDC×3) (*1)



*1: 3.6 VDC 1/2 AA battery in series.

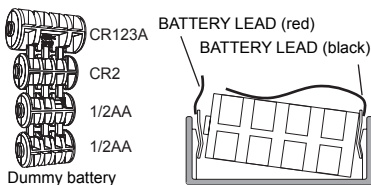
Caution>>

To avoid short circuit, do not connect ends of red and black wires together.



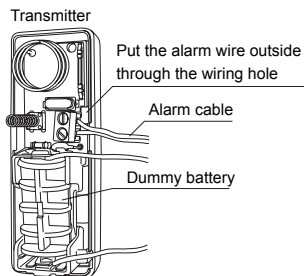
- 4** Open the transmitter cover and remove the battery.

- 5** Place the battery lead (included in the set) and a dummy battery in the battery case of transmitter.



* Twist and cut off the portion that fits the applicable battery type.

- 6** Connect the alarm cable to the transmitter and close the cover.



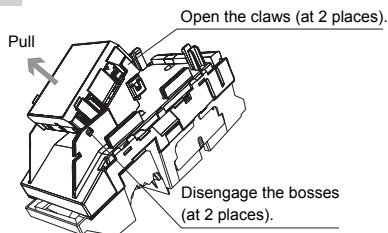
-Non Battery Sharing

Arrange 3 cells each of CR-123A (recommended) or CR2.

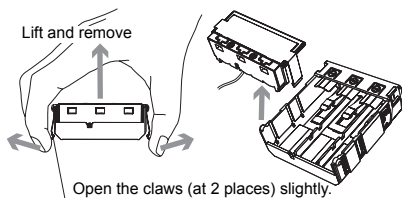
Warning

Do not use batteries of different capacities (i.e.: mixing new and used batteries) or of different manufacturers and/or types together. Not observing the above may result in an explosion, leakage of electrolyte, emission of toxic gases or other outcomes that may be harmful to people and property.

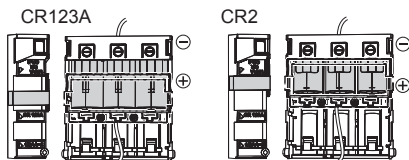
- 1** Remove the battery box from the main unit.



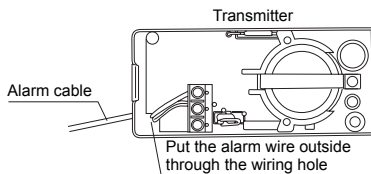
- 2** Remove the battery box cover.



- 3** After installing the batteries, check the guide on the side and install the cover. Hook the cover firmly by the claws on the right and left sides.

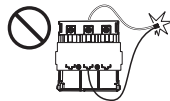


- 4** Connect the alarm cable to the transmitter and close the cover.



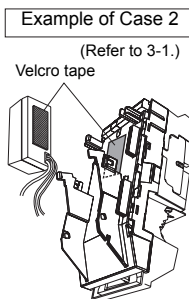
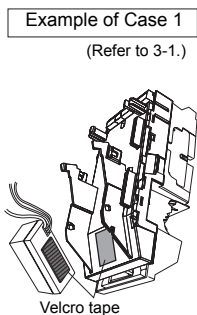
Caution>>

To avoid short circuit, do not connect ends of red and black wires together.



4-2 INSTALLING THE TRANSMITTER AND BATTERY BOX

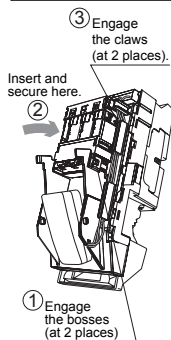
- 1 Using Velcro tape (included in box), install transmitter to main unit.



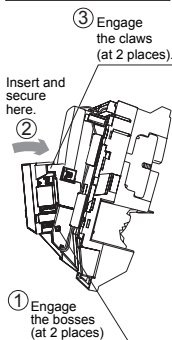
- 2 Connect the alarm cable to the terminal block of the main unit.

- 3 Install the battery box into the main unit and connect the necessary wires to the terminal block. (Refer to 5-4 "WIRING".)

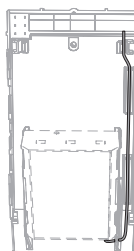
Example of Case 1



Example of Case 2



Caution>>



Install battery leads and alarm cable through the grooves as shown in diagram. Cut off excess portion of wiring to necessary length. Hanging wires can be caught by base.

5

INSTALLATION (BRACKET AND MAIN UNIT)

Use the bracket for normal installation. The unit may be installed directly on the wall, without the bracket, only if the following three conditions are met;

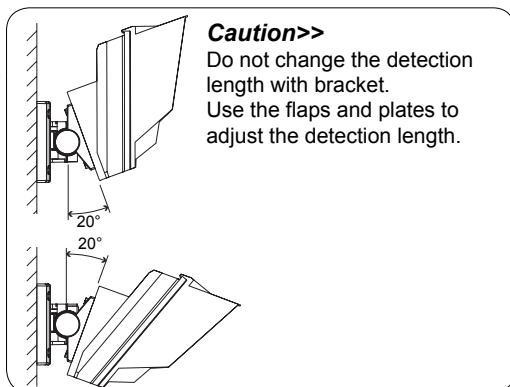
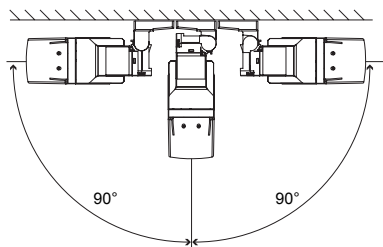
- The mounting height is less than 3 m (9'10").
- Horizontal adjustment is not necessary.
- The ground must be level.

5-1

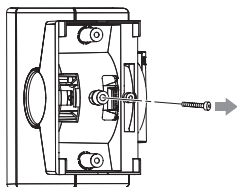
INSTALLING WITH BRACKET

Using the bracket makes it possible to adjust the unit horizontally by $\pm 90^\circ$.

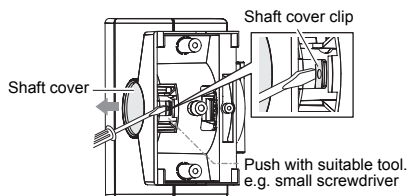
In cases where the ground is uneven and therefore not parallel with the base of the unit, it is possible to adjust the unit vertically by $\pm 20^\circ$.



- 1 Remove the Up-Down lock screw.



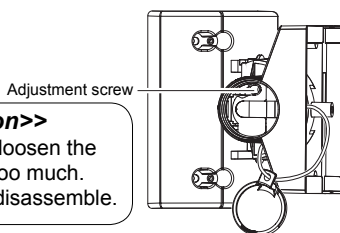
- 2 Push the shaft cover clip straightly to remove the shaft cover.



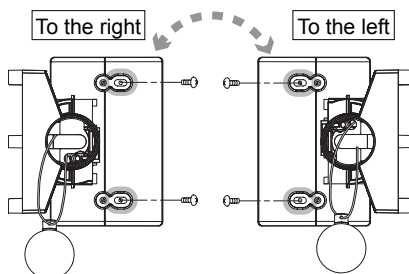
- 3 Loosen the adjustment screw two turns.

Caution>>

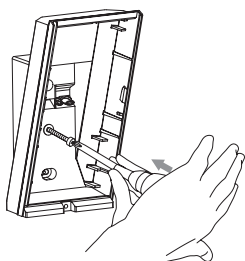
Do not loosen the screw too much.
It may disassemble.



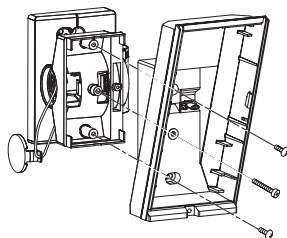
- 4 Determine the horizontal direction (left or right) of the detector before installing the bracket on the wall.



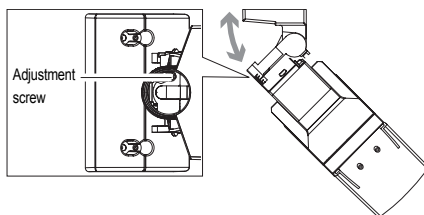
- 5 Open the wiring knockout and Up-Down lock screw knockout for the bracket.



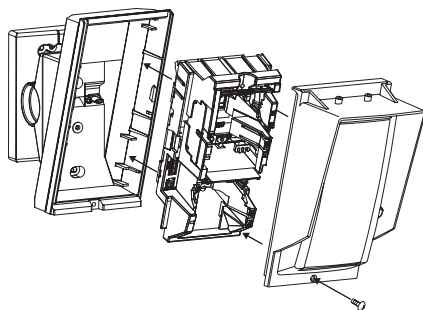
- 6 Pass wire through base knockout and install base to bracket.



- 7 Tighten the adjustment screw clockwise.



- 8 Wire to the terminal and install the main unit and lens on the base.



- 9 Complete the 5-2 "ADJUSTING THE VERTICAL ANGLE".

- 11 Install shaft cover into place.

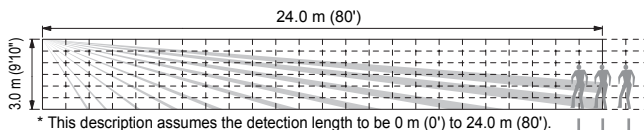
- 10 Remove the cover and the main unit to tighten the Up-Down lock screw, and install the main unit and cover on the base again.

5-2 ADJUSTING THE VERTICAL ANGLE

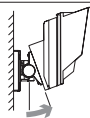
For best performance, install detector parallel to the ground.

Decide the detection length. To change the detection length, adjust the flap and plate positions. Refer to the 2-2, 2-3 for the details.

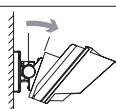
Perform walk test to ensure detector is parallel to the ground.



If the detection length is shorter than that which was setup (refer to page 7), change the detector angle upwards.



If the detection length is longer than that which was setup (refer to page 7), change the detector angle downwards.



If the detection length is equal to that which was setup (refer to page 7), the adjustment is complete.

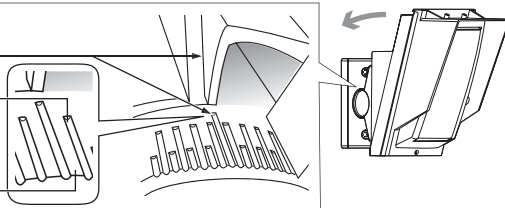
Caution>>

- If the base of the unit is already parallel to the ground, do not change the detection length by tilting the main unit up or down. Refer to 5-1 for the details.

Example (the ground is level)
0° is the origine.

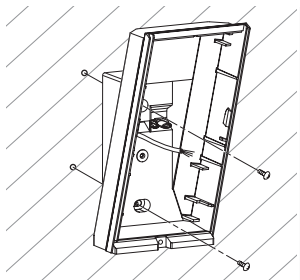
Adjust 2 clicks (2.5° upward) for
2.5 m (8'2") height installation.

Adjust 1 click (1.25° upward) for
3.0 m (9'10") height installation.

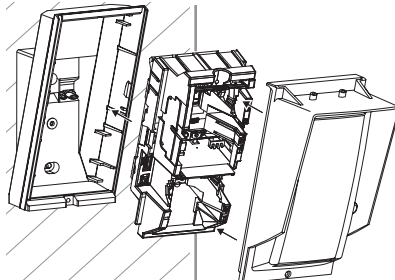


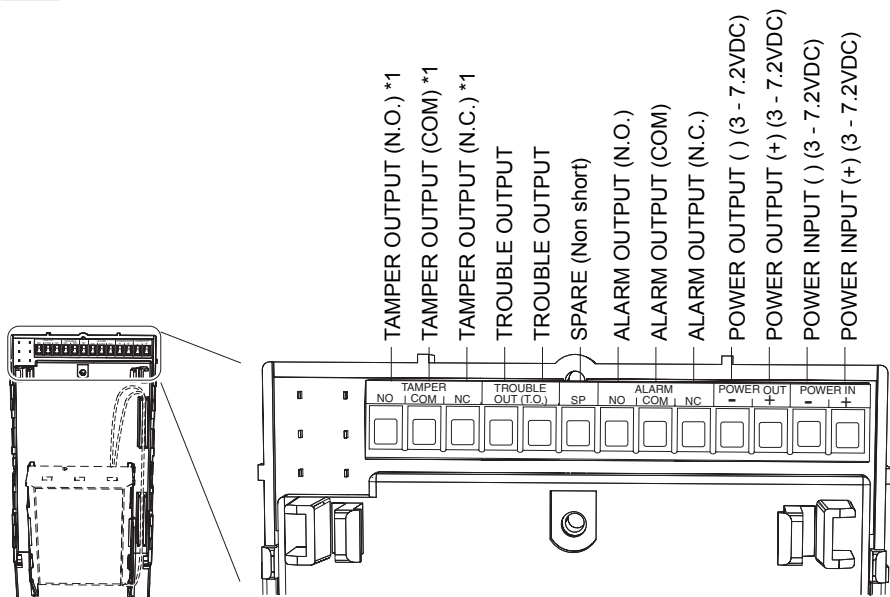
5-3 INSTALLING WITHOUT BRACKET

1 Fasten the base to the wall.



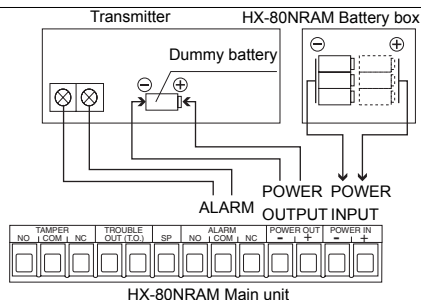
2 Fit the main unit to the base.





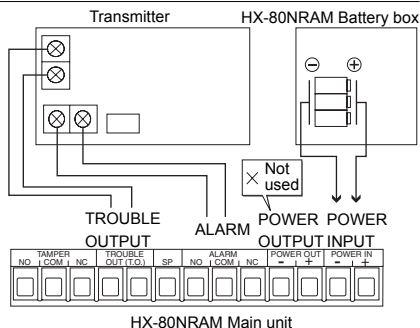
*1: TAMPER terminals to be connected to a 24 hour supervisory loop.

-Battery Sharing



-Non Battery Sharing

- Use a transmitter with 2 inputs and connect one input to the Alarm wiring and the other to the Trouble wiring of the HX-80.
NOTE: If the transmitter has a "low battery input" connect it to the Trouble wiring.
- Use 2 small transmitter units and connect one unit to the alarm wiring and the other to the trouble wiring (the size of such transmitters should be small enough to be accommodated in the HX-80N RAM internal spaces (A/B)).



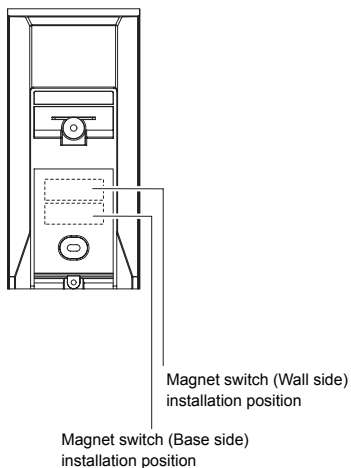
Commercial magnet switch may be mounted as a wall tamper.

Magnet switch installation space is provided on the back of the main unit and the bracket.

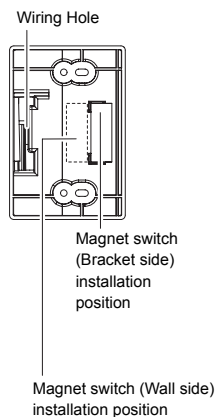
Maximum size of an applicable magnet switch: D 9 mm (0.35") × W 40 mm (1.57") × H 9 mm (0.35")

Magnet switch is not included.

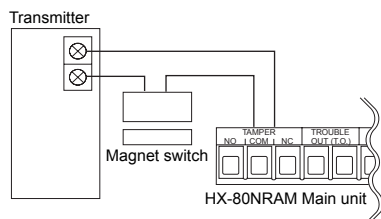
Main unit



Bracket

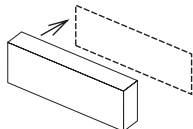


-WIRING DIAGRAM

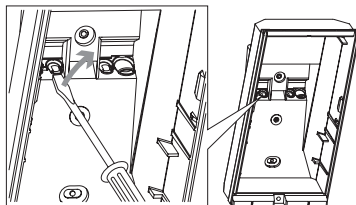


-Installation

- 1 Install the magnet switch (wall side) to the wall. To determine the installation position, use the "Installation position template" provided on the inside cover of the product package.

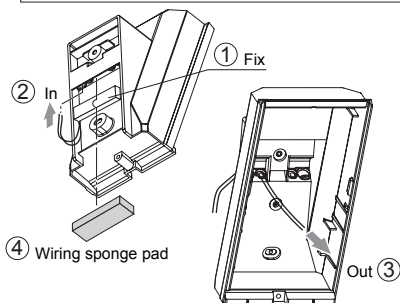


- 2 Open the wiring knockout with suitable tool e.g. screwdriver.

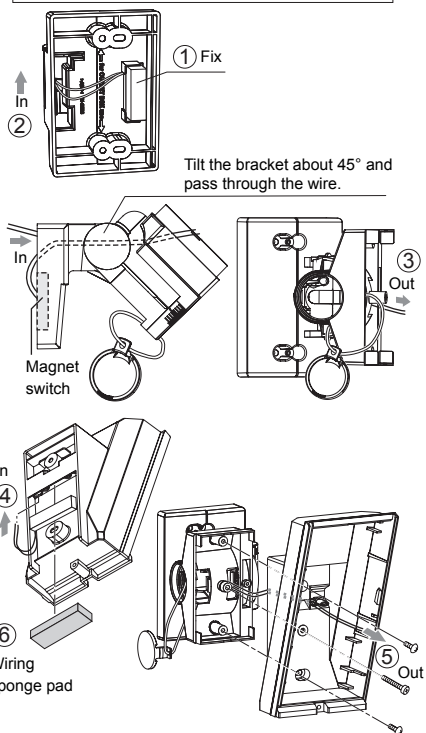


- 3 Install the other portion of the magnet switch to the back of the main unit or the bracket. Pull the wiring through the knockouts.

When not using the bracket



When using the bracket

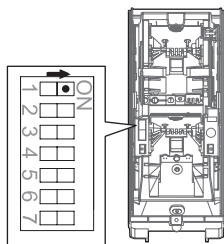


- 4 Install bracket and main unit to the walls surface.

- 5 Connect the magnet switch wiring to the tamper terminal of the main unit and the transmitter terminal.

6 WALK TEST

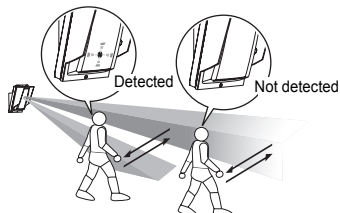
- 1 Set the DIP switch 1 (WALK TEST MODE) to "ON (TEST)".



Note>>

- The switch is set to "ON (TEST)" by factory default.

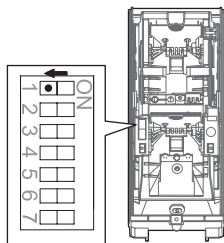
- 2 Check that the detector detects an object in the intended detection area. The installation has been successful if the LED lights for two seconds after a person walks into the detection area.



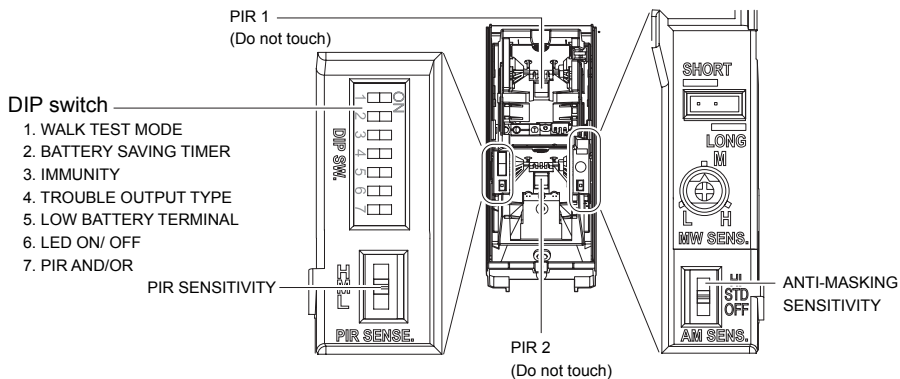
Note>>

For the walk test, move more than 1.0 m (3'3") away from the detector.

- 3 If the LED does not need to be turned on at all times, set the DIP switch 1 (WALK TEST MODE) to "OFF (NORM.)".

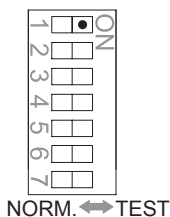


7 SETTING



-WALK TEST MODE

DIP switch 1



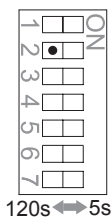
POSITION	FUNCTION
TEST (Factory default)	<ul style="list-style-type: none">• LED will lights when someone detected regardless DIP-SW 6. (Lights up irrespective of the LED ON/OFF (DIP-SW 6, refer to page 24) setting)• Alarm will be generated when someone detected regardless DIP-SW 2.
NORM.	<ul style="list-style-type: none">• Normal operation. (Battery saving mode.)• LED is off. (When LED ON/OFF is OFF.)

Caution>>

After completing a walk test, always set the unit to NORM. position for operation. Using the unit in TEST mode will shorten the battery life.

-BATTERY SAVING TIMER

DIP switch 2

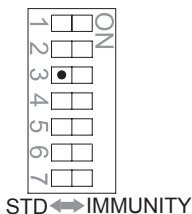


Even if there are continuous alarm events, the alarm is generated only once in the timer period to save the battery life.

POSITION	FUNCTION
120s (Factory default)	120 sec.
5s	5 sec.

-IMMUNITY SWITCH

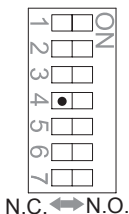
DIP switch 3



POSITION	FUNCTION
STD (Factory default)	IMMUNITY logic is not activated.
IMMUNITY	IMMUNITY logic is activated. Use this under harsh environment (e.g. vegetation sway).

-TROUBLE OUTPUT TYPE

DIP switch 4



Select the contact point output form with the TROUBLE OUTPUT TERMINAL.

POSITION	FUNCTION
N.C. (Factory default)	N.C. signal is output to the TROUBLE OUTPUT TERMINAL.
N.O.	N.O. signal is output to the TROUBLE OUTPUT TERMINAL.

Trouble signal output >>

Trouble signal at regular intervals is output after trouble condition continues for a certain period.

• ANTI MASKING OUTPUT

When an object is placed close to the lens surface, for a period of more than 180 seconds, the IR Anti-Masking circuit will activate and generate a trouble signal.

Anti-Masking output will be automatically reset within about one minute after a masking object is removed.

• LOW BATTERY OUTPUT (when the LOW BATTERY OUTPUT (DIP switch 5) is ON)

When the battery capacity becomes low, the unit automatically outputs fixed time transmission to call attention.

When LOW BATTERY signal is output, Anti-Masking function will be canceled in order to extend the battery life.

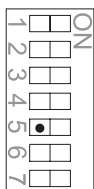
When LOW BATTERY signal is output, replace all the batteries with new ones.

⚠ Warning

Do not use batteries of different capacities (i.e.: mixing new and used batteries) or of different manufacturers and/or types together. Not observing the above may result in an explosion, leakage of electrolyte, emission of toxic gases or other outcomes that may be harmful to people and property.

-LOW BATTERY TERMINAL

DIP switch 5

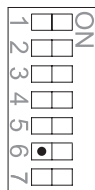


OFF ↔ ON

POSITION	FUNCTION
OFF (Factory default)	Low battery output is not operational.
ON	Low battery signal is output from the TROUBLE OUTPUT.

-LED ON/OFF

DIP switch 6

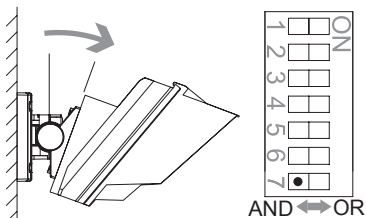


OFF ↔ ON

POSITION	FUNCTION
OFF (Factory default)	The LED does not light even if someone detected.
ON	The LED lights when someone is detected.

-PIR AND/OR

DIP switch 7



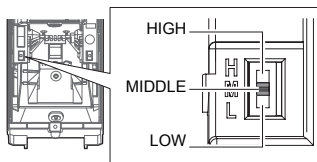
Note>>

“OR” mode is appropriate for the sites that require more detectability rather than false alarm tolerance such as lighting control and camera activation.

POSITION	FUNCTION
AND (Factory default)	An alarm is output when both PIR1 and PIR2 detect an object.
OR	An alarm is output when either PIR1 or PIR2 detects an object. Selecting “OR” mode makes detection range longer than “AND” mode. Walk test to readjust the detection range is required when “OR” is selected. <u>Actual adjustment should be conducted by adjusting the bracket angle.</u> ← OR mode only

-PIR SENSITIVITY

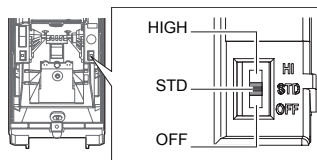
PIR SENSITIVITY SELECTOR



POSITION	FUNCTION
HIGH	High sensitivity
MIDDLE (Factory default)	Middle sensitivity
LOW	Low sensitivity

-ANTI-MASKING SENSITIVITY

ANTI-MASKING
SENSITIVITY SELECTOR



POSITION	FUNCTION
HIGH	High sensitivity
STD (Factory default)	Normal sensitivity
OFF	Disabled

















Caution>>

After closing the cover, do not leave any objects closer than 1 meter from the unit.

8

LED INDICATION



DETECTOR CONDITION		LED INDICATOR (RED ONLY)
Warm-up		 →  Blinks for approx. 60 sec.
Alarm		 →  Lights for 2 sec.
Trouble output	Anti-Masking booting (Anti-Masking start up)	 →  →  Blinks 2 times and goes off for 5 sec. and then repeats.
	Masking detection	 →  →  →  Blinks 3 times and goes off for 3 sec. and then repeats for 180 sec.
	Low Battery Output	 →  →  →  →  Blinks 4 times and goes off for 3 sec. and then repeats.

Note>>

To distinguish a trouble output caused by low battery power, the low battery power LED display will light up when the cover is opened even if the LED ON/OFF (DIP-SW 6, refer to 7) is set to OFF.

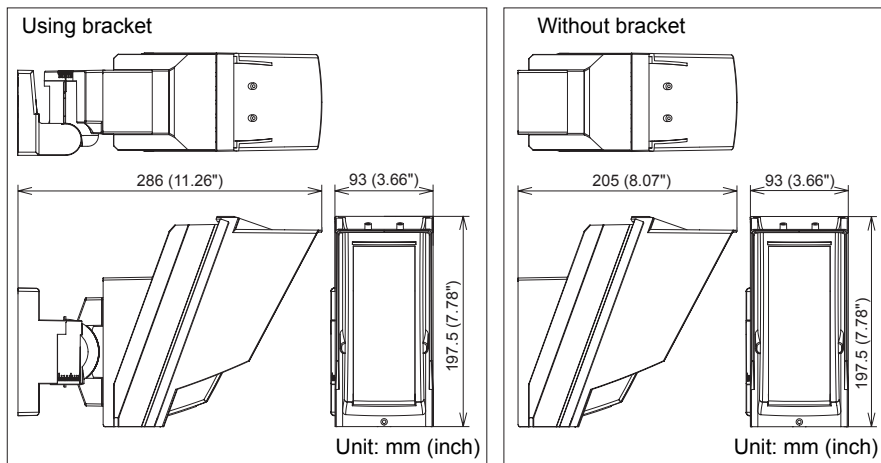
9 SPECIFICATIONS

9-1 SPECIFICATIONS

Model	HX-80NRAM
Detection method	Passive infrared
PIR Coverage	24.0 m × 2.0 m (80' × 6'7") narrow / 20 zones
PIR distance limit	6.5 m, 10.0 m, 13.0 m, 18.0 m (22', 33', 42', 59')
Detectable speed	0.3 m/s – 1.5 m/s (1'/s – 4'11"/s)
Sensitivity	2.0°C (3.6°F) at 0.6 m/s
Power input	3 – 7.2 V DC Lithium Battery (CR123A × 3, CR2 × 3, 1/2AA × 3, 1/2AA × 6)
Operating voltage	2.5 – 9 V DC
Current draw	30 µ A (standby) / 4 mA (max.) at 3 V DC
Alarm period	2.0 ±1 sec.
Warm-up period	Approx. 90 sec. (LED blinks)
Alarm output	Form C -Solid State Switch- 10 V DC 0.01 A max.
Trouble output	N.C./N.O. Selectable -Solid State Switch- 10 V DC 0.01 A max.
Tamper output	Form C. 28 V DC, 0.1 A max. changes when cover removed.
LED indicator	Disable: During normal operation. Enable: During WALK TEST or LED SW on. Red: Warm-up, Alarm, Trouble, Low battery
RF interference	No alarm 10 V/m
Operating temperature	-20 – +60°C (-4 – +140°F)
Environment humidity	95% max.
Weatherproof	IP55
Mounting	Wall
Mounting height	2.5 – 3.0 m (8'2" – 9'10")
Bracket adjust angle	Vertical: ±20° Horizontal: ±95°
Weight	780 g (27.5 oz.)
Accessories	Bracket, Screw (4 × 20 mm) × 4, Velcro tape × 2, Alarm cable, Battery lead × 2, Dummy battery kit

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

9-2 DIMENSIONS



The HX-80N series is only a part of a complete system, therefore we cannot accept complete responsibility for any damages or other consequences resulting from an intrusion.

As a rough indication of battery change timing, enter the battery type and the date it was first used.

Battery type _____

Date (Year/Month) _____



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