



## High Mount Outdoor Detector HX-40RAM

By utilizing the OPTEX's unique pyro-element, HX series achieves high reliable detection performance against false and missed alarms. HX series provides stable and accurate detection in outdoor severe environmental conditions.

HX-40RAM: Battery operated model with IR anti-masking feature.


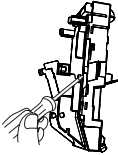



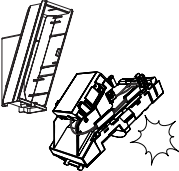
Installation and connection methods differ depending on the type and size of the transmitter battery.

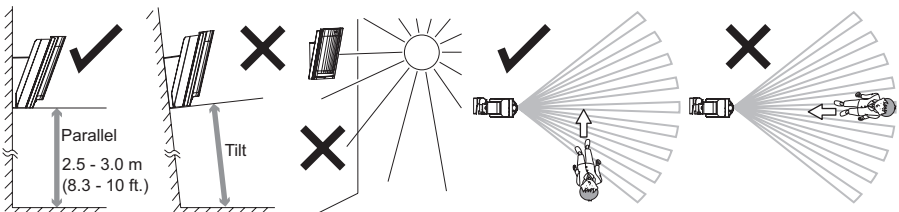
## CONTENTS

① INTRODUCTION	
1-1 BEFORE YOUR OPERATION	1
1-2 PARTS IDENTIFICATION	2
1-3 DETECTION AREA	2
② PREPARATIONS	
2-1 TRANSMITTER PREPARATION	3
2-2 BATTERY PREPARATION	4
③ INSTALLATION	
3-1 DETERMING THE DETECTION LENGTH	5
3-2 MOUNTING THE BATTERY	5
3-3 MOUNTING THE TRANSMITTER AND THE BATTERY BOX	7
3-4 MOUNTING THE BRACKET	8
3-5 ADJUSTING THE VERTICAL ANGLE	9
3-6 WIRING	10
④ SETTING	
4-1 FUNCTION	11
4-2 ANTI-MASKING	13
4-3 AREA ADJUSTMENT	14
⑤ SPECIFICATIONS	
5-1 SPECIFICATIONS	15
5-2 DIMENSIONS	16

## 1 INTRODUCTION

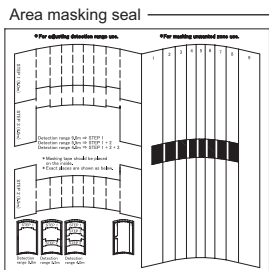
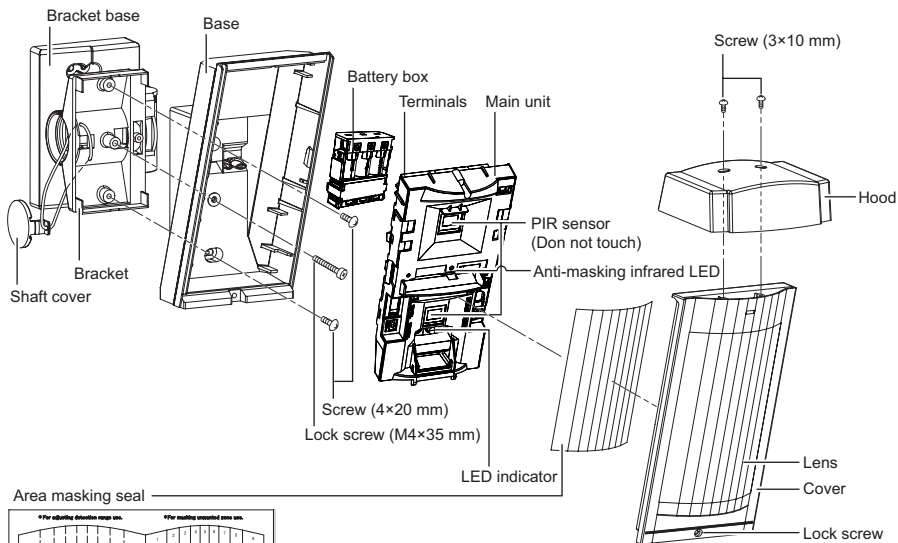
### 1-1 BEFORE YOUR OPERATION

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



The check (✓) mark indicates recommendation.  
The cross (×) mark indicates prohibition.

## 1-2 PARTS IDENTIFICATION



### Accessories

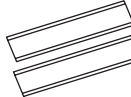
#### Battery leads



#### Alarm cable



#### Velcro tapes



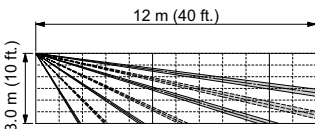
#### Dummy battery



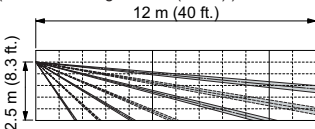
## 1-3 DETECTION AREA

### Side view

(Installation height 3.0 m (10 ft.))

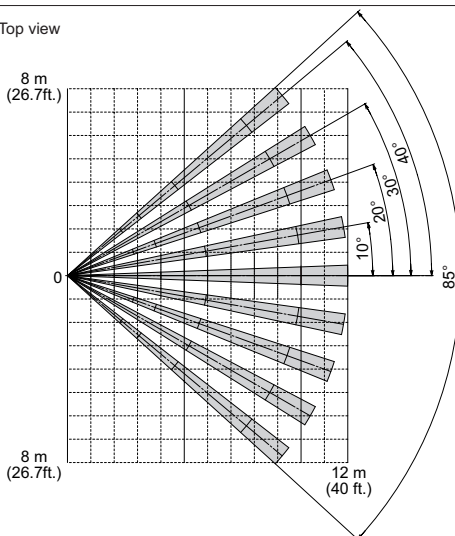


(Installation height 2.5 m (8.3 ft.))



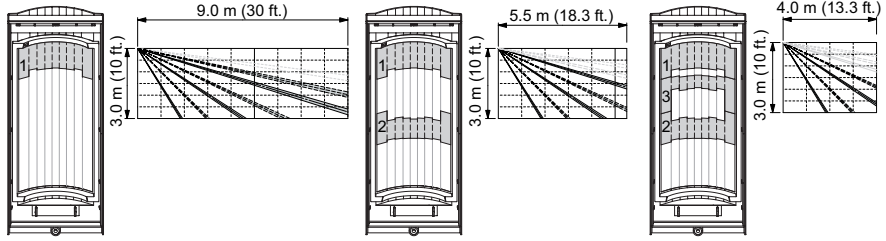
• vertical angle : 2.5 degrees (1 click) upward  
(Refer to "caution" in 3-5).

### Top view



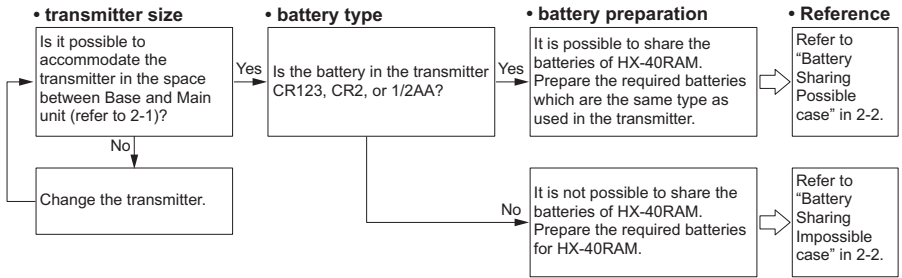
**Note : How to change detection length>>**

Apply area masking seal to limit the detection length. Note that there are three different types of seal.



## 2 PREPARATIONS

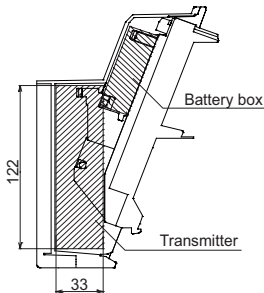
To use HX-40RAM, transmitter and battery should be prepared.  
First check the following flowchart.



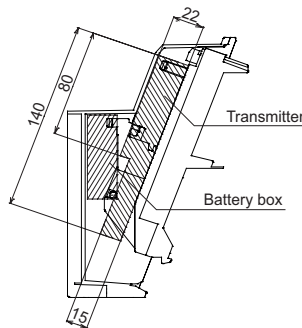
### 2-1 TRANSMITTER PREPARATION

The transmitter that HX-40RAM can accommodate are either 1 or 2 below:  
Note that a transmitter with greater dimensions than these is not applicable.  
Installation position for the transmitter and the battery box differ depending on their dimensions.

**Case 1) 122 × 50 × 33 mm**



**Case 2) 80 × 50 × 22 mm**

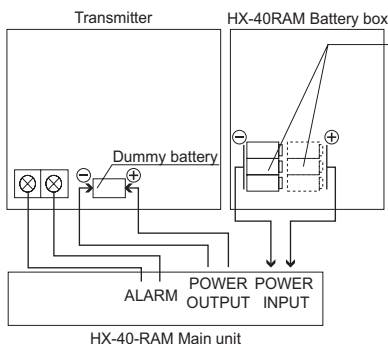


## 2-2 BATTERY PREPARATION

### -Battery Sharing Possible Case

(See P5)

Power supply is available from the battery box to both HX-40RAM and the transmitter.



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

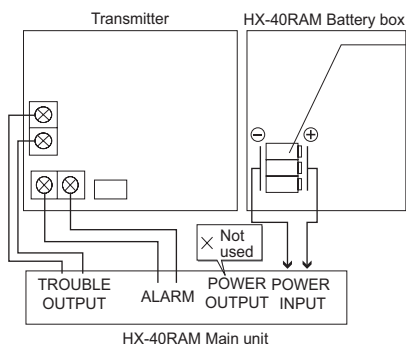
Type	CR123A	CR2	1/2AA	1/2AA(*1)
Voltage	3.0VDC	3.0VDC	3.6VDC	7.2VDC(*1)
Number of cells to use	3 cells	3 cells	3 cells	6 cells(*1)

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

### -Battery Sharing Impossible Case

(See P6)

Separate batteries for HX-40RAM 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.

## 3 INSTALLATION

### -Installation procedure

DETERMINING THE DETECTION LENGTH

MOUNTING THE BATTERY

- Battery Sharing Possible Case
- Battery Sharing Impossible Case

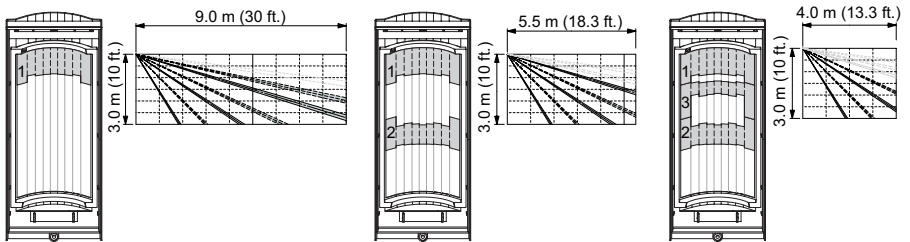
MOUNTING THE TRANSMITTER  
AND THE BATTERY BOX

MOUNTING THE BRACKET

ADJUSTING THE VERTICAL ANGLE

### 3-1 DETERMINING THE DETECTION LENGTH

Apply masking seal to set the detection length directly on lens. To set an length shorter than the standard 12 meters, select one of the three patterns and apply the appropriate masking seal to the lens.



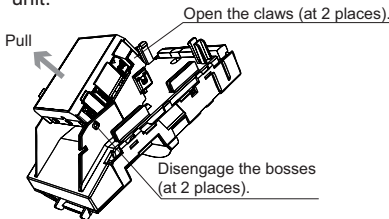
### 3-2 MOUNTING THE BATTERY

#### -Battery Sharing Possible Case

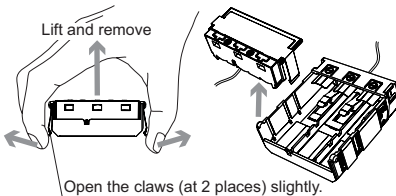
#### ⚠ Warning

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.

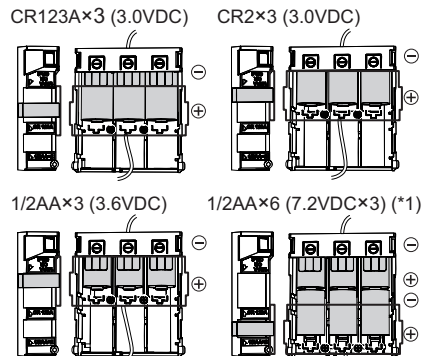
- 1 Remove the battery box from the main unit.



- 2 Remove the battery box cover.



- 3 Mount batteries and put the cover onto the right position indicated on the side of the battery box. Hook the cover firmly by the claws on the right and left sides.



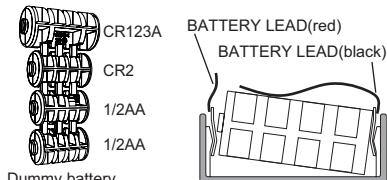
\*1: 3.6 VDC 1/2 AA battery in series.

#### Caution>>

Do not contact the ends of the red and black wires to avoid short-circuit.

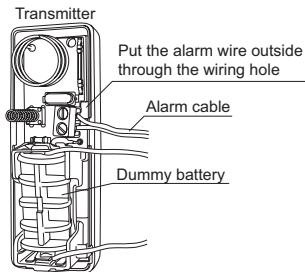
- 4 Open the transmitter cover and remove the battery.

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



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

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



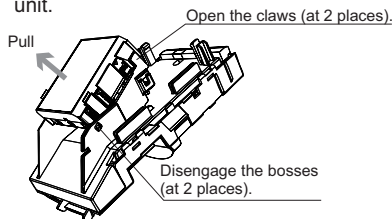
### -Battery Sharing Impossible Case

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

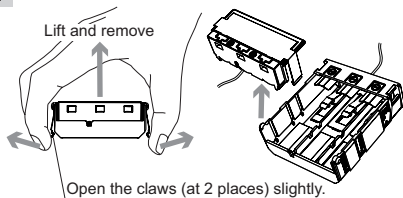
#### ⚠ Warning

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.

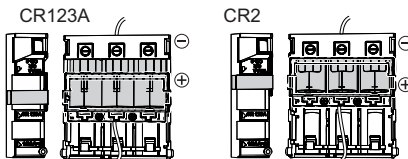
- 1 Remove the battery box from the main unit.



- 2 Remove the battery box cover.



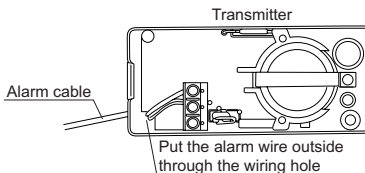
- 3 After installing the batteries, check the guide on the side and install the cover. Hook the cover firmly by the claws on the right and left sides.



#### Caution>>

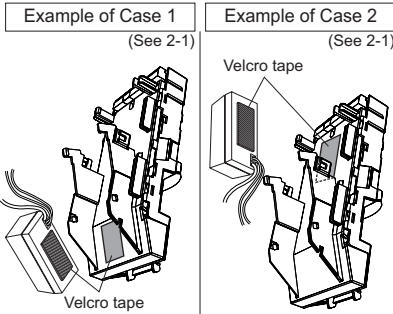
Do not contact the ends of the red and black wires to avoid short-circuit.

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



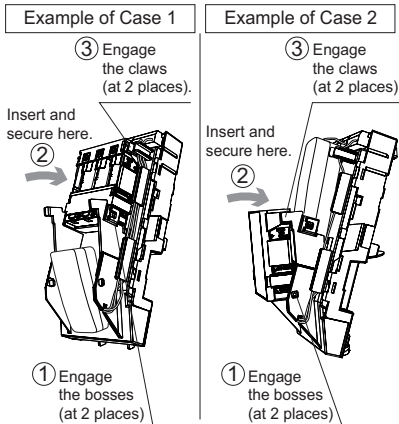
### 3-3 MOUNTING THE TRANSMITTER AND THE BATTERY BOX

- 1 Using a Velcro tape (included in the set), fix the transmitter to the main unit.

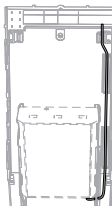


- 2 Connect the alarm cable to the terminal block of the main unit.

- 3 Install the battery box into the main unit and connect the necessary wires to the terminal block. (refer to "3-6 Wiring")

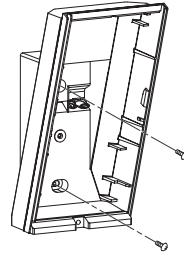


**Caution>>**

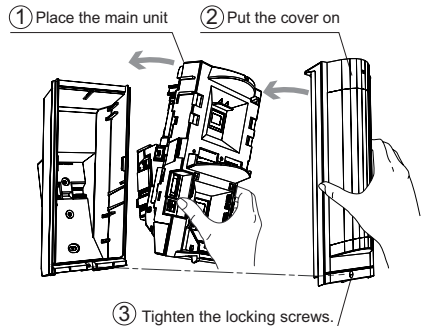


Fix the battery leads and alarm cable through the grooves as shown in the diagram.  
Cut off the excessive portion of wiring to the necessary length.  
Protruding wires, if any, may be caught by the base.

- 4 Fix the base to the wall surface.



- 5 Mount the main unit and the lens onto the base.

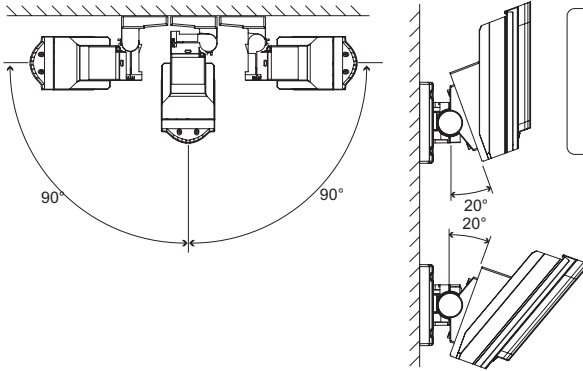


**Caution>>**

If the main unit does not easily fit on to the base, the transmitter may be in contact or the wiring may have become caught.

## 3-4 MOUNTING THE BRACKET

Using the bracket makes it possible to adjust the unit horizontally by  $\pm 90$  degrees.  
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  $\pm 20$  degree (refer to 3-5)

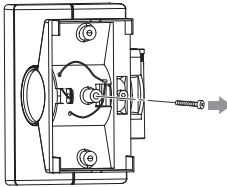


### Caution>>

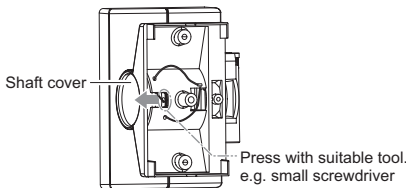
Do not change the detection length with bracket.  
Use the masking seal to adjust the detection length.

### -Bracket installation

- 1 Remove the up-down lock screw.

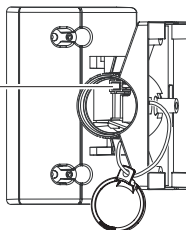


- 2 Push the shaft cover clip outwards to remove the shaft cover.



- 3 Loosen the adjustment screw two turns.

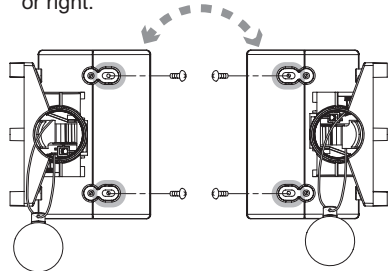
Adjustment screw



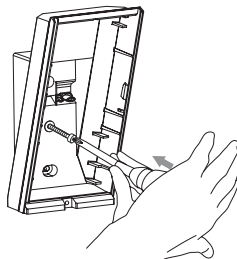
### Caution>>

Do not loosen the screw too much.  
The screw separates from the unit.

- 4 Fasten the bracket to the wall.  
Change the bracket direction according to whether the Main unit is to face left or right.

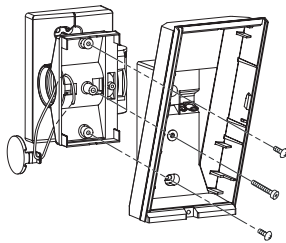


- 5 Open the up-down lock screw knockout for bracket.





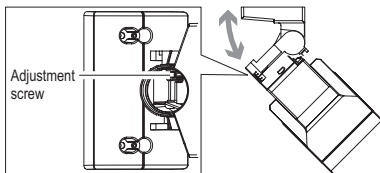
- 6 Install the base on the bracket.



**Caution>>**

Do not tighten the up-down lock screw.

- 7 Decide the horizontal angle, and tighten the adjustment screw clockwise.



- 8 Install the Main unit and cover on the base.

- 9 Complete the 3-5 "ADJUSTING THE VERTICAL ANGLE".

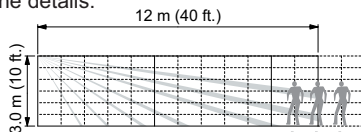
- 10 Remove the cover and the Main unit to tighten the up-down lock screw, and install the Main unit and cover on the base again.

- 11 Fit the shaft cover into the place.

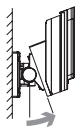
### 3-5 ADJUSTING THE VERTICAL ANGLE

To have the right performance, set the vertical angle parallel to a ground. Decide the wanted detection length at first. If you choose 9.0m/5.5m/4.0m, mask the unwanted lens with masking seals. Refer to the 3-1 for the details.

Carry out the walk test to check if the vertical angle is perpendicular or not.

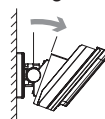


If you see the detection only inside the designated distance, change the vertical angle upward.



If you see the detection at the designated distance, no adjustment is needed.

If you see the detection outside the designated distance, change the vertical angle downward.

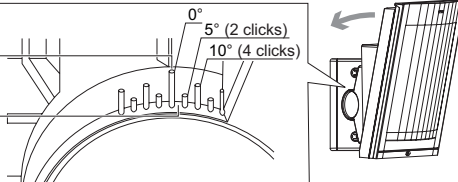


\* This is the case to have 12 meters detection length.

**Caution>>**

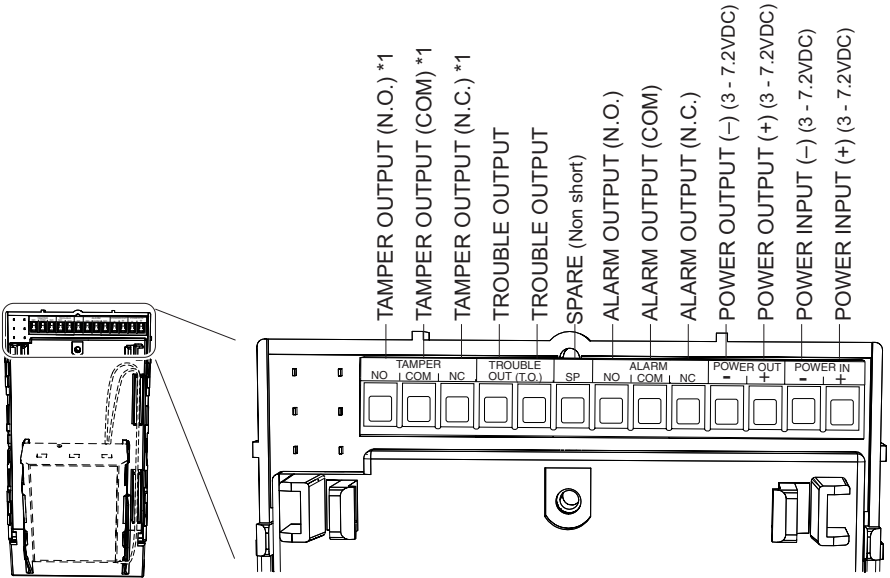
- If the base of the unit is already parallel to the ground,
- Do not change the detection distance by tilting the unit up or down. Detection area and length should be adjusted with masking tapes. Refer to 1-3 and 3-1 for the details.
- Walk test the unit to ensure that the desired detection distance is achieved.

0° is the right setting for 3m (10 ft.) height installation.  
Adjust 1 click (2.5° upward) for 2.5m (8.3 ft.) height installation to maintain the 12m (40 ft.) detection range.



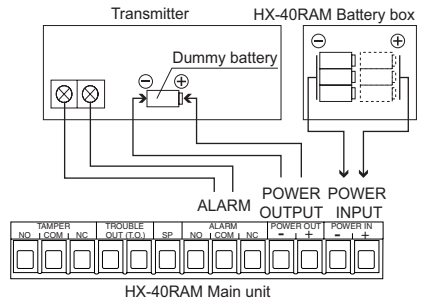
NOTE: This setting is available only for the HX is installed vertically to the ground.

### 3-6 WIRING



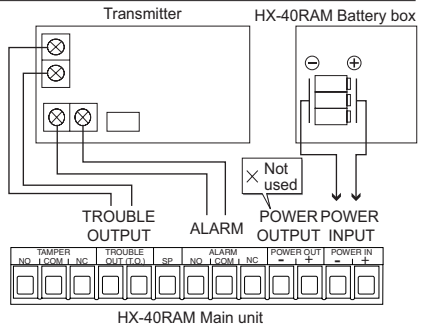
\*1: TAMPER terminals to be connected to a 24 hour supervisory loop.

#### -Battery Sharing Possible Case



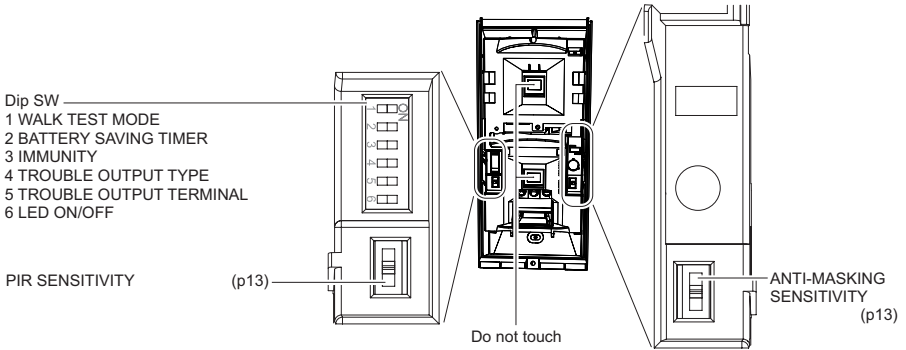
#### -Battery Sharing Impossible Case

- Use a transmitter with 2 inputs or low battery terminal and connect to TROUBLE OUTPUT.
- 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-40RAM internal spaces (A/B)).
- To output LOW BATTERY SIGNAL to ALARM OUTPUT terminal, set DIP-SW 5 (see p12) "Trouble output" to "Trouble output + Alarm".



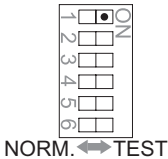
# 4 SETTING

## 4-1 FUNCTION



### -WALK TEST MODE

Dip switch 1



POSITION	FUNCTION
TEST (factory default)	<ul style="list-style-type: none"> <li>•LED will lights at the time of detection regardless DIP-SW 6. (Lights up irrespective of the LED ON/OFF (DIP-SW 6, see p13) setting)</li> <li>•Alarm will be generated at the time of detection regardless DIP-SW 2.</li> </ul>
NORM.	<ul style="list-style-type: none"> <li>•Normal operation. (Battery saving mode.)</li> <li>•LED is off. (When LED ON/OFF is OFF.)</li> </ul>

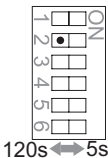
NOTE: For the walk test, move more than 1m(3.3ft.) away from the detector.

#### 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

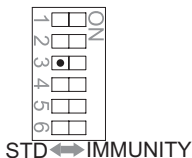


Even if there are continuous alarm events, the alarm is generated only once in the timer period to save the battery life.

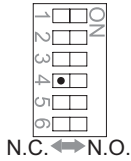
POSITION	FUNCTION
120s (factory default)	120 seconds
5s	5 seconds.

### -IMMUNITY SWITCH

Dip switch 3



POSITION	FUNCTION
STD (factory default)	Normal sensitivity.
IMMUNITY	Sensitivity will be relaxed under the hostile environment.



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.

\* This setting is valid only when the “TROUBLE OUTPUT TERMINAL (factory default)” is selected at Dip switch 5.

**Trouble signal output >>**

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

**• ANTI MASKING OUTPUT**

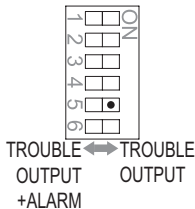
When an object is placed close to the lens surface, for a period of more than 180 seconds, the IR Anti-Masking circuit will activate and generate a trouble signal. Anti-Masking output will be automatically reset within about one minute after a masking object is removed.

**• LOW BATTERY OUTPUT**

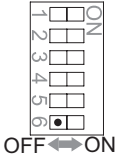
When the battery capacity becomes low, the unit automatically outputs fixed time transmission to call attention. When LOW BATTERY signal is output, Anti-Masking function will be canceled in order to extend the battery life. When LOW BATTERY signal is output, replace all the batteries with new ones.

**⚠ 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.

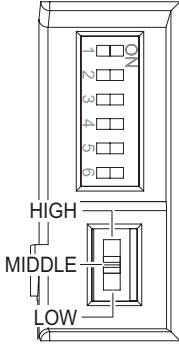


POSITION	FUNCTION
TROUBLE OUTPUT TERMINAL (factory default)	Trouble signal is output from the TROUBLE OUTPUT TERMINAL.
TROUBLE OUTPUT +ALARM TERMINAL	Trouble signal is output from the TROUBLE OUTPUT TERMINAL and the ALARM TERMINAL.



POSITION	FUNCTION
OFF (factory default)	The LED does not light even at the time of detection.
ON	The LED lights when someone is detected.

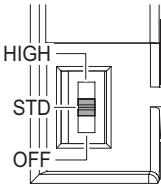
-PIR SENSITIVITY



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

## 4-2 ANTI-MASKING

-ANTI-MASKING SENSITIVITY



POSITION	FUNCTION
HIGH	High sensitivity
STD (factory default)	Standard sensitivity
OFF	Disabled

**Caution >>**

When turning on the power, do not leave any object with 1 meter from the unit.

**-LED INDICATION**



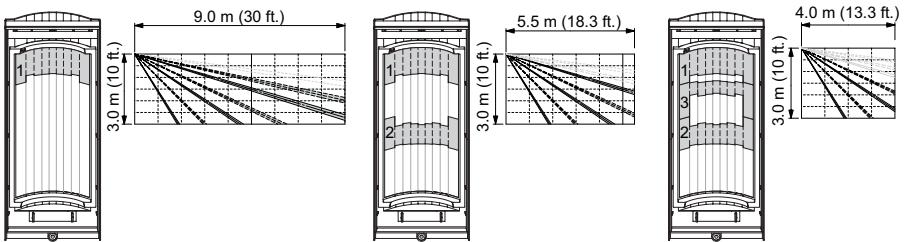
STATUS		LED Indication	
Alarm		Red lights	○ ● ○
Warm-up period		Red blinks	○ ☼ ○
Trouble output	Anti-Masking booting (Anti-Masking start up)	Red blinks 2 times and goes off for 5 sec. This movement is repeated.	○ ☼ ○
	Anti-Masking	Red blinks 3 times and goes off for 3 sec. This movement is repeated.	○ ☼ ○
	Low Battery Output	Red blinks 4 times rapidly and goes off for 3 sec. This movement is repeated.	○ ☼ ○

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, see p13) is set to OFF.

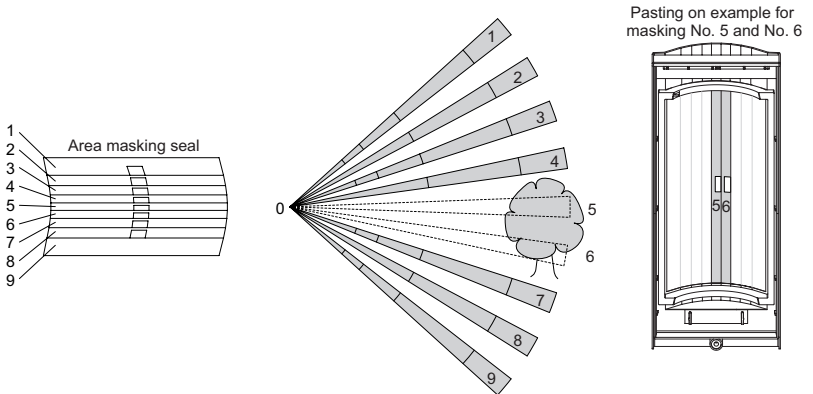
**4-3 AREA ADJUSTMENT**

**-DETECTION LENGTH ADJUSTMENT**

To limit the detection length, apply the appropriate masking seal. Note that there are three different types of seal.



**-AREA MASKING**



## 5

## SPECIFICATIONS

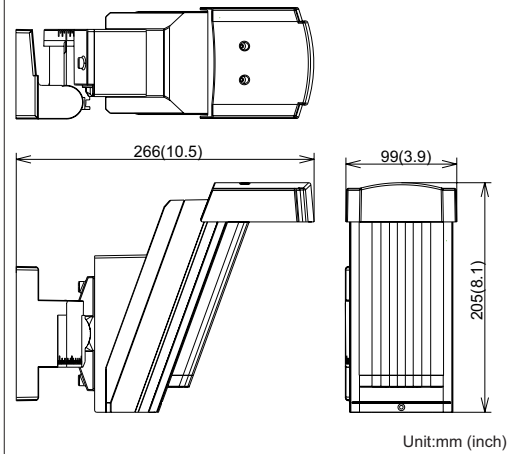
## 5-1 SPECIFICATIONS

Model	HX-40RAM
Detection method	Passive infrared
PIR Coverage	12 m (40 ft.) 85° wide / 94 zones
Distance limit	4 m, 5.5 m, 9 m, 12 m (13 ft, 18 ft, 30 ft, 40 ft.)
Detectable speed	0.3 – 1.5 m/s (1 – 5 ft/s)
Sensitivity	2.0°C (3.6°F) at 0.6 m/s
Power input	3 – 7.2VDC Lithium Battery (CR123A×3, CR2×3, 1/2AA×3, 1/2AA×6)
Operating Voltage	2.5 – 9VDC
Current draw	30µA(standby) / 4 mA (max) at 3VDC
Alarm period	2.0 ± 1 sec
Warm-up period	Approx. 90 sec(LED blinks)
Alarm output	Form C -Solid State Switch- 10VDC 0.01A max
Trouble output	N.C./N.O. Selectable -Solid State Switch- 10VDC 0.01A max
Tamper output	Form C. 28V DC, 0.1A 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 (Outdoor, Indoor)
Mounting height	2.5 - 3.0 m (8.3 - 10 ft.)
Bracket adjust angle	Vertical: ± 20° Horizon: ± 95°
Weight	600 g (21.2 oz)
Accessories	Bracket, Hood, Area masking seal, Screw kit (3×10-2, 4×20-4) Velcro tape×2, Alarm cable, Battery lead×2, Dummy battery kit

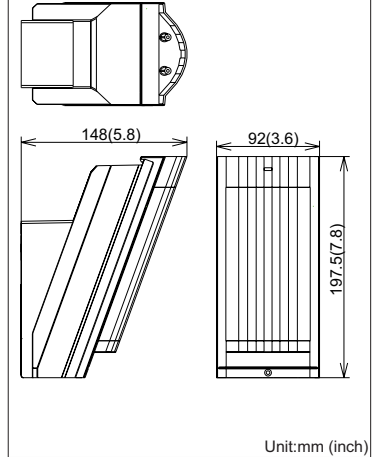
\* Specifications and design are subject to change without prior notice.

## 5-2 DIMENSIONS

Using bracket and hood



Without bracket and hood



The HX-40 series is only a part of a complete system, we cannot accept complete responsibility for any damages or other consequences resulting from an intrusion. Due to our policy of continuous improvement Optex reserves the right to change specification without prior notice.

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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