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

Parallel
2.5 - 3.0 m (8.3 - 10 ft.)

Tilt

The check (√) mark indicates recommendation.
The cross (×) mark indicates prohibition.
### 1-2 PARTS IDENTIFICATION

- **Bracket base**
- **Base**
- **Bracket**
- **Shaft cover**
- **Battery box**
- **Terminals**
- **Main unit**
- **PIR sensor** (Do not touch)
- **Anti-masking infrared LED**
- **LED indicator**
- **Lock screw (M4×35 mm)**
- **Screw (3×10 mm)**
- **Screw (4×20 mm)**
- **Area masking seal**

### 1-3 DETECTION AREA

**Side view**

- Installation height 3.0 m (10 ft.)
- 12 m (40 ft.)
- 8 m (26.7 ft.)

**Top view**

- 8 m (26.7 ft.)
- 12 m (40 ft.)

- Vertical angle: 2.5 degrees (1 click) upward
  (Refer to “caution” in 3-5).

**Accessories**

- Battery leads
- Velcro tapes
- Dummy battery
- Alarm cable
- Siren cable
- Lock screw
- Velcro tapes
2 PREPARATIONS

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

- transmitter size
  - Is it possible to accommodate the transmitter in the space between Base and Main unit (refer to 2-1)?
    - Yes
    - No
      - Change the transmitter.

- battery type
  - Is the battery in the transmitter CR123, CR2, or 1/2AA?
    - Yes
    - No
      - It is possible to share the batteries of HX-40RAM. Prepare the required batteries which are the same type as used in the transmitter.
      - It is not possible to share the batteries of HX-40RAM. Prepare the required batteries for HX-40RAM.

- battery preparation
  - Refer to "Battery Sharing Possible case" in 2-2.

- Reference
  - Refer to "Battery Sharing Impossible case" in 2-2.

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

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

![Diagram of battery sharing possible case]

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

<table>
<thead>
<tr>
<th>Type</th>
<th>CR123A</th>
<th>CR2</th>
<th>1/2AA</th>
<th>1/2AA(*1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>3.0VDC</td>
<td>3.0VDC</td>
<td>3.6VDC</td>
<td>7.2VDC(*1)</td>
</tr>
<tr>
<td>Number of cells to use</td>
<td>3 cells</td>
<td>3 cells</td>
<td>3 cells</td>
<td>6 cells(*1)</td>
</tr>
</tbody>
</table>

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

-Battery Sharing Impossible Case

Separate batteries for HX-40RAM and the transmitter.

![Diagram of battery sharing impossible case]

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.

(See P5) (See P6)

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 DETERMING 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.
   - Pull
   - Open the claws (at 2 places).

2. Remove the battery box cover.
   - Lift and remove
   - Open the claws (at 2 places) slightly.

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.
   - CR123A×3 (3.0VDC)  
   - CR2×3 (3.0VDC)  
   - 1/2AA×3 (3.6VDC)  
   - 1/2AA×6 (7.2VDC×3) (*)1

4. Open the transmitter cover and remove the battery.

*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.

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

- 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.

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”)

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.

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.
3-4 MOUNTING THE BRACKET

Using the bracket makes it possible to adjust the unit horizontally by ±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 ±20 degrees (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.

**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.

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-8-
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.
**-Battery Sharing Possible 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 case 1) / 2).
- To output LOW BATTERY SIGNAL to TROUBLE OUTPUT terminal, set DIP-SW 5 (see p12) “OFF” to “ON”.

**-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 case 1) / 2).
- To output LOW BATTERY SIGNAL to TROUBLE OUTPUT terminal, set DIP-SW 5 (see p12) “OFF” to “ON”.

*1: TAMPER terminals to be connected to a 24 hour supervisory loop.*
4-1 FUNCTION

-WALK TEST MODE

Dip switch 1

- LED will light at the time of detection regardless of DIP-SW 6.
- Alarm will be generated at the time of detection regardless of DIP-SW 2.
- Normal operation (battery saving mode).
- LED is off (when LED ON/OFF is OFF).

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.

<table>
<thead>
<tr>
<th>POSITION</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>120s (factory default)</td>
<td>120 seconds</td>
</tr>
<tr>
<td>5s</td>
<td>5 seconds</td>
</tr>
</tbody>
</table>

- IMMUNITY SWITCH

Dip switch 3

<table>
<thead>
<tr>
<th>POSITION</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>STD (factory default)</td>
<td>Normal sensitivity</td>
</tr>
<tr>
<td>IMMUNITY</td>
<td>Sensitivity will be relaxed under the hostile environment</td>
</tr>
</tbody>
</table>
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 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.

- TROUBLE OUTPUT TYPE
Dip switch 4

<table>
<thead>
<tr>
<th>POSITION</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>N.C.</td>
<td>N.C. signal is output to the TROUBLE OUTPUT TERMINAL.</td>
</tr>
<tr>
<td>(factory default)</td>
<td></td>
</tr>
<tr>
<td>N.O.</td>
<td>N.O. signal is output to the TROUBLE OUTPUT TERMINAL.</td>
</tr>
</tbody>
</table>

- LOW BATTERY OUTPUT
Dip switch 5

<table>
<thead>
<tr>
<th>POSITION</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>Low battery output is not operational.</td>
</tr>
<tr>
<td>(factory default)</td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td>Low battery signal is output from the TROUBLE OUTPUT.</td>
</tr>
</tbody>
</table>
**LED ON/OFF**

<table>
<thead>
<tr>
<th>POSITION</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF (factory default)</td>
<td>- The LED does not light even at the time of detection.</td>
</tr>
<tr>
<td>ON</td>
<td>- The LED lights when someone is detected.</td>
</tr>
</tbody>
</table>

**PIR SENSITIVITY**

<table>
<thead>
<tr>
<th>POSITION</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH</td>
<td>High sensitivity</td>
</tr>
<tr>
<td>MIDDLE (factory default)</td>
<td>Middle sensitivity</td>
</tr>
<tr>
<td>LOW</td>
<td>Low sensitivity</td>
</tr>
</tbody>
</table>

**4-2 ANTI-MASKING**

**ANTI-MASKING SENSITIVITY**

<table>
<thead>
<tr>
<th>POSITION</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH</td>
<td>High sensitivity</td>
</tr>
<tr>
<td>STD (factory default)</td>
<td>Standard sensitivity</td>
</tr>
<tr>
<td>OFF</td>
<td>Disabled</td>
</tr>
</tbody>
</table>

*Caution >>*

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

Red lights
Red blinks
Red blinks 2 times and goes off for 5 sec. This movement is repeated.
Red blinks 3 times and goes off for 3 sec. This movement is repeated.
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

Pasting on example for masking No. 5 and No. 6
## 5-1 SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>HX-40RAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detection method</td>
<td>Passive infrared</td>
</tr>
<tr>
<td>PIR Coverage</td>
<td>12 m (40 ft.) 85° wide / 94 zones</td>
</tr>
<tr>
<td>Distance limit</td>
<td>4 m, 5.5 m, 9 m, 12 m (13 ft, 18 ft, 30 ft, 40 ft.)</td>
</tr>
<tr>
<td>Detectable speed</td>
<td>0.3 – 1.5 m/s (1 – 5 ft/s)</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>2.0°C (3.6°F) at 0.6 m/s</td>
</tr>
<tr>
<td>Power input</td>
<td>3 – 7.2VDC Lithium Battery (CR123A×3, CR2×3, 1/2AA×3, 1/2AA×6)</td>
</tr>
<tr>
<td>Operating Voltage</td>
<td>2.5 – 9VDC</td>
</tr>
<tr>
<td>Current draw</td>
<td>30μA(standby) / 4 mA (max) at 3VDC</td>
</tr>
<tr>
<td>Alarm period</td>
<td>2.0 ± 1 sec</td>
</tr>
<tr>
<td>Warm-up period</td>
<td>Approx. 90 sec(LED blinks)</td>
</tr>
<tr>
<td>Alarm output</td>
<td>Form C -Solid State Switch- 10VDC 0.01A max</td>
</tr>
<tr>
<td>Trouble output</td>
<td>N.C./N.O. Selectable -Solid State Switch- 10VDC 0.01A max</td>
</tr>
<tr>
<td>Tamper output</td>
<td>Form C. 28V DC, 0.1A max. changes when cover removed.</td>
</tr>
<tr>
<td>LED indicator</td>
<td>Disable: During normal operation. Enable: During WALK TEST or LED SW on. Red: Warm-up, Alarm, Trouble, Low battery</td>
</tr>
<tr>
<td>RF Interference</td>
<td>No alarm 10 V/m</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-20 – +60°C (-4 – +140°F)</td>
</tr>
<tr>
<td>Environment humidity</td>
<td>95% max</td>
</tr>
<tr>
<td>Weatherproof</td>
<td>IP55</td>
</tr>
<tr>
<td>Mounting</td>
<td>Wall (Outdoor, Indoor)</td>
</tr>
<tr>
<td>Mounting height</td>
<td>2.5 - 3.0 m (8.3 - 10 ft.)</td>
</tr>
<tr>
<td>Bracket adjust angle</td>
<td>Vertical: ± 20° Horizon: ± 95°</td>
</tr>
<tr>
<td>Weight</td>
<td>600 g (21.2 oz)</td>
</tr>
<tr>
<td>Accessories</td>
<td>Bracket, Hood, Area masking seal, Screw kit (3×10-2, 4×20-4) Velcro tape×2, Alarm cable, Battery lead×2, Dummy battery kit</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Battery type</th>
<th>Date (Year/Month)</th>
</tr>
</thead>
</table>

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