CONTENTS

1 INSTALLATION PRECAUTIONS ............2
  1-1 BEFORE INSTALLATION ................2
  1-2 PARTS IDENTIFICATION .............3
  1-3 KNOCKOUTS ............................3

2 DETECTION AREA ............................4
  2-1 OUTLINE OF DETECTION AREA ....4
  2-2 HOW TO REDUCE THE LONG RANGE DETECTION AREA ....6
  2-3 HOW TO DEACTIVATE THE SHORT RANGE DETECTION AREA ....8

3 INSTALLATION ................................10
  3-1 INSTALLING WITH BRACKET ..........10
  3-2 ADJUSTING THE VERTICAL ANGLE ...12
  3-3 INSTALLING WITHOUT BRACKET ......12
  3-4 WIRING ..................................13
  3-5 WALL TAMPER (OPTION) ..........14

4 WALK TEST ..................................16

5 SETTING ...................................16

6 LED INDICATION ...........................18

7 SPECIFICATIONS ...........................19
  7-1 SPECIFICATIONS .....................19
  7-2 DIMENSIONS .........................20
# INSTALLATION PRECAUTIONS

## 1-1 BEFORE INSTALLATION

<table>
<thead>
<tr>
<th><strong>Warning</strong></th>
<th><strong>Caution</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to follow the instructions provided with this indication and improper handling may cause death or serious injury.</td>
<td>Failure to follow the instructions provided with this indication and improper handling may cause injury and/or property damage.</td>
</tr>
</tbody>
</table>

The check mark indicates recommendation. The nix sign indicates prohibition.

<table>
<thead>
<tr>
<th><strong>Warning</strong></th>
<th><strong>Warning</strong></th>
<th><strong>Caution</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not repair or modify product</td>
<td>Keep product away from water</td>
<td>Mount the unit securely</td>
</tr>
</tbody>
</table>

**Mounting height**

Keep the detector parallel to the ground.

- 2.5 m – 3.0 m (8’2” – 9’10”)

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

Bracket base
Main unit
Bracket
LED indicator
Lock Screw* (M4 × 35 mm)
Lens
Base
PIR1
(Do not touch)
Terminals
Anti-masking infrared LED
(PIR2 (Do not touch))
Screw (4 × 20 mm)
PIR2
For wall fastening/bracket fastening
(Installation pitch 83.5 mm (3.29"))
Bracket
Main unit
Cover
LED indicator
Lens
Lock screw
Screw kit
For part
For wall mounting
Screw (4 × 20 mm)
Screw (4 × 20 mm)
*Lock screw attached on bracket base

1-3 KNOCKOUTS

Main unit
Bracket
For bracket
For wall fastening/bracket fastening
(Installation pitch 83.5 mm (3.29"))
Wiring Hole
For wall fastening
For switch box fastening
Wiring Hole
For main unit fastening
Wiring Hole
For wall mounting
(Off-the-shelf) Universal magnet switch install position
For switch box fastening
Do not touch
Up-Down lock screw
Up-Down lock screw
2 DETECTION AREA

2-1 OUTLINE OF DETECTION AREA
DETECTION AREA (factory default)

- Adjust 1 click (1.25° upward) for 3.0 m (9'10") height installation. (Refer to 3-2)

- Adjust 2 clicks (2.5° upward) for 2.5 m (8'2") height installation. (Refer to 3-2)
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.

<table>
<thead>
<tr>
<th></th>
<th>Lower</th>
<th>Factory default</th>
<th>b</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper</td>
<td>Factory default</td>
<td>24.0 m (80°)</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td>a</td>
<td>18.0 m (60°)</td>
<td>13.0 m (42°)</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
<tr>
<td>b</td>
<td>N.A.</td>
<td>10.0 m (32°)</td>
<td>4.0 m (22°)</td>
<td></td>
</tr>
</tbody>
</table>

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

Upper position: a, Lower position: Factory default

Upper position: a, Lower position: b

Upper position: c, Lower position: b

Upper position: c, Lower position: d
HOW TO DEACTIVATE THE SHORT RANGE DETECTION AREA

To adjust the SHORT range of detection, set the upper and lower plates as 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.

<table>
<thead>
<tr>
<th>Lower</th>
<th>Upper</th>
<th>j</th>
<th>h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not used</td>
<td>Factory default</td>
<td>1</td>
<td>N.A.</td>
</tr>
<tr>
<td>i</td>
<td>N.A.</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>g</td>
<td>N.A.</td>
<td>N.A.</td>
<td>4</td>
</tr>
</tbody>
</table>

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

1. Upper position: Factory default, Lower position: j
2. Upper position: i, Lower position: j
3. Upper position: i, Lower position: h
4. Upper position: g, Lower position: h
3 INSTALLATION

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 3m (9'10").
• Horizontal adjustment is not necessary.
• The ground must be level.

3-1 INSTALLING WITH BRACKET

Using the bracket makes it possible to adjust the unit horizontally by ±90°. In cases where the ground is uneven and/or not parallel with the base of the unit, it is possible to adjust the unit vertically by ±20°.

Caution>>
Do not change the detection length with bracket. Use the flaps and plates to adjust the detection length.

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.
4. Tilt the bracket about 45° and pass through the wire.

Caution>>
Do not loosen the screw too much. It may disassemble.
5 Determine the horizontal direction (left or right) of the detector before installing the bracket on the wall.

6 Open the wiring knockout.

7 Open the Up-Down lock screw knockout for connecting the bracket.

8 Tighten screws ① and ②, adjust the bracket angle (refer to 3-2), then tighten screw ③. Perform an area check. If re-adjustment is required, loosen screw ③ and change the bracket angle. After the adjustment is complete, tighten screw ③ again.

9 Tighten the adjustment screw clockwise.

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

11 Install shaft cover into place.
3-2 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.

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 3-1 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.

3-3 INSTALLING WITHOUT BRACKET

1. Open the wiring knockout with suitable tool e.g. screwdriver.  
2. Pull the wire through the base knockout.
3 Fasten the base to the wall.

4 Install main unit after wiring to the terminal.

### 3-4 WIRING

Power wires should not exceed the following lengths.

<table>
<thead>
<tr>
<th>WIRE GAUGE</th>
<th>HX-80N</th>
<th>HX-80NAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWG22 (0.33 mm²)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 V</td>
<td>140 m</td>
<td>310 m</td>
</tr>
<tr>
<td>14 V</td>
<td>(460')</td>
<td>(1,020')</td>
</tr>
<tr>
<td>AWG20 (0.52 mm²)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 V</td>
<td>230 m</td>
<td>490 m</td>
</tr>
<tr>
<td>14 V</td>
<td>(750')</td>
<td>(1,610')</td>
</tr>
<tr>
<td>AWG18 (0.83 mm²)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 V</td>
<td>360 m</td>
<td>780 m</td>
</tr>
<tr>
<td>14 V</td>
<td>(1,180')</td>
<td>(2,560')</td>
</tr>
</tbody>
</table>

*1: TAMPER terminals to be connected to a 24 hour supervisory loop.
**3-5 WALL TAMPER (OPTION)**

Universal magnet switch may be mounted as a wall tamper. Installation space for magnet switch 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") Magnets switch is not included.

**Main unit**

- Wiring sponge pad
- Magnet switch (Wall side) installation position
- Magnet switch (Base side) installation position

**Bracket**

- Wiring hole
- Magnet switch (Bracket side) installation position
- Magnet switch (Wall side) installation position

**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 the main unit to the walls surface.

5 Connect the magnet switch wiring to the tamper terminal of the main unit.
**4 WALK TEST**

1. Set the DIP switch 1 (LED ON/OFF) to “ON”.

   ![DIP switch diagram]

   **Note>>**
   The switch is set “ON” 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.

   ![LED light diagram]

   **Note>>**
   For the walk test, move more than 1.0 m (3’3”) away from the detector.

3. If the LED indication is not required at all times, set the DIP switch 1 (LED ON/OFF) to “OFF”.

   ![DIP switch diagram]

**5 SETTING**

- **DIP switch**
  1. LED ON/OFF
  2. IMMUNITY
  3. AUX INPUT
  4. PIR AND/OR

- **PIR sensitivity selector**

- **Anti masking sensitivity selector**

- **PIR 1**
  (Do not touch)

- **PIR 2**
  (Do not touch)
### LED ON/OFF

<table>
<thead>
<tr>
<th>POSITION</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ON</strong></td>
<td>The LED lights when someone is detected.</td>
</tr>
<tr>
<td><strong>(Factory default)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>OFF</strong></td>
<td>The LED does not light even if someone is detected.</td>
</tr>
</tbody>
</table>

### IMMUNITY

<table>
<thead>
<tr>
<th>POSITION</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STD</strong></td>
<td>IMMUNITY logic is not activated.</td>
</tr>
<tr>
<td><strong>(Factory default)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>IMMUNITY</strong></td>
<td>IMMUNITY logic is activated. Use this under harsh environment (e.g. vegetation sway).</td>
</tr>
</tbody>
</table>

### AUX INPUT

By connecting a secondary unit (another warning sensor), you can extend the detection area and correct false alarms. The secondary unit must have a voltage free N.C. output such as another PIR detector or AIR detector: *<Infrared (AIR) sensors, thermal line (PIR) sensors, magnet switches, etc.>*

<table>
<thead>
<tr>
<th>POSITION</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AND</strong></td>
<td>When both the main unit and the secondary detect someone, the alarm is activated. Choose this setting when a secondary unit is not connected.</td>
</tr>
<tr>
<td><strong>(Factory default)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>OR</strong></td>
<td>When either the main unit or the secondary detects someone, the alarm is activated.</td>
</tr>
</tbody>
</table>

### PIR AND/OR

<table>
<thead>
<tr>
<th>POSITION</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AND</strong></td>
<td>An alarm is output when both PIR1 and PIR2 detect an object.</td>
</tr>
<tr>
<td><strong>(Factory default)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>OR</strong></td>
<td>An alarm is output when either PIR1 or PIR2 detects an object. Selecting &quot;OR&quot; mode makes detection range longer than &quot;AND&quot; mode. Walk test to readjust the detection range is required when &quot;OR&quot; is selected. Actual adjustment should be conducted by adjusting the bracket angle.</td>
</tr>
</tbody>
</table>

**Notes>>**

- The alarm is only activates if both the main unit and the secondary unit are activated within 60 sec.
- In OR mode, a secondary detector must be fitted. If not fitted, the unit will generate an alarm continuously.

**Note>>**

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

**-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>Normal sensitivity</td>
</tr>
<tr>
<td>OFF</td>
<td>Disabled</td>
</tr>
</tbody>
</table>

**Caution**

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

## 6 LED INDICATION

**Detector Condition**

<table>
<thead>
<tr>
<th>Detector Condition</th>
<th>LED Indicator (Red Only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm-up</td>
<td>Blink for approx. 60 sec.</td>
</tr>
<tr>
<td>Alarm</td>
<td>Lights for 2 sec.</td>
</tr>
<tr>
<td>Trouble output (HX-80NAM only)</td>
<td>Blinks 2 times and goes off for 5 sec. and then repeats for 180 sec.</td>
</tr>
<tr>
<td>Masking detection</td>
<td>Blinks 3 times and goes off for 3 sec. and then repeats.</td>
</tr>
</tbody>
</table>
## SPECIFICATIONS

### 7-1 SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>HX-80NAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detection method</td>
<td>Passive infrared</td>
</tr>
<tr>
<td>PIR Coverage</td>
<td>24.0 m × 2.0 m (80' × 67&quot;) narrow / 20 zones</td>
</tr>
<tr>
<td>PIR distance limit</td>
<td>6.5 m, 10.0 m, 13.0 m, 18.0 m (22', 33', 42', 59&quot;)</td>
</tr>
<tr>
<td>Detectable speed</td>
<td>0.3 m/s – 1.5 m/s (1'/s – 4'11&quot;/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>9.5 – 18 V DC</td>
</tr>
<tr>
<td>Current draw</td>
<td>35 mA (max.) at 12 V DC</td>
</tr>
<tr>
<td>Alarm period</td>
<td>2.0 ±1 sec.</td>
</tr>
<tr>
<td>Warm-up period</td>
<td>Approx. 60 sec. (LED blinks)</td>
</tr>
<tr>
<td>Alarm output</td>
<td>Form C 28 V DC 0.2 A (max.)</td>
</tr>
<tr>
<td>Tamper output</td>
<td>N.C. 28 V DC, 0.1 A (max.) N.C. open when cover removed.</td>
</tr>
<tr>
<td>Trouble output</td>
<td>–</td>
</tr>
<tr>
<td>Aux input</td>
<td>N.C. 28 V DC, 0.1 A (max.)</td>
</tr>
<tr>
<td>LED indicator</td>
<td>Red: Warm-up, Alarm</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</td>
</tr>
<tr>
<td>Mounting height</td>
<td>2.5 – 3.0 m (8'2&quot; – 9'10&quot;)</td>
</tr>
<tr>
<td>Bracket adjust angle</td>
<td>Vertical: ±20° Horizontal: ±95°</td>
</tr>
<tr>
<td>Weight</td>
<td>720 g (25.4 oz.)</td>
</tr>
<tr>
<td>Accessories</td>
<td>Bracket, Screw (4 × 20 mm) × 4</td>
</tr>
</tbody>
</table>

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