Read instructions completely before beginning installation.

- Optex presents a new concept, BOUNDARY GiARD™, which protects a building's exterior by detecting intruders before an entry is attempted. In addition to signaling an alarm system, BOUNDARY GiARD™ can create an audible local alarm to deter intruders before a break-in occurs.
- BX-80N is a passive infrared detector which detects the infrared heat energy that is emitted by humans and is designed with this concept.

Features

1. Double output terminals
2. Audible alarm - Area check mode
3. Limited detection range function
4. Size judging function
5. Waterproof
6. Double conductive shielding

- Individual N.O. & N.C. outputs.
- BX-80N's built-in buzzer can sound an alarm while an alarm is occurring. This buzzer can also be used to annunciate detection during area check mode (see section 8-3 DIP Switch Setup).
- Since both upper and lower fingers have to be blocked at the same time to be activated, the detection range of the BX-80N can be limited to avoid detecting unwanted objects.
- Upper and lower detection fingers must be blocked simultaneously to activate the detector. BX-80N does not detect objects which do not block the upper fingers.
- IP rating: IP 55
- This patent listed shielding greatly reduces the chance of false alarms due to car headlights, sunlight and other ambient light sources.

1. SAFETY-RELATED PRECAUTIONS

Before installation, make sure to read this instruction manual carefully for safe and effective product operation.

⚠️ Warning
This icon denotes a situation involving the risk of serious injury or even death, if the warning given is ignored.

⚠️ Caution
This icon denotes a situation involving the risk of serious injury or damage to property if the warning given is ignored.

( This icon indicates actions to be avoided. Details of the actions to be avoided are written beside or near icon. (The icon on the left indicates that the product must not be disassembled )

⚠️ Warning
Never use this product for any applications except as stated above or unexpected accidents can occur.

⚠️ Warning
Never attempt to disassemble or modify the product, which increases the risk of fire or damage of the product.

⚠️ Warning
Never attempt to connect the terminals to units which require higher power supply or current draw than its rating. It increases the risk of fire or damage to the product.

⚠️ Caution
Avoid applying water directly from buckets, hoses, or otherwise splashing water directly onto the product. It increases the risk of damaging the product.

2. DETECTION AREA

The horizontal and vertical angle of detection areas are independently adjustable on both the right and left sides of the detector. (See section 7 Area Setup)

IMPORTANT
This product detects temperature differences between the moving target and the background temperature of the detection area. So, if the target does not move, the detector can not detect it. Additionally, the temperature of the target may affect the detector's maximum detection range.
3. PARTS IDENTIFICATION

4. INSTALLATION HINTS

Refer to the following installation hints for best product operation. If you do not follow these installation hints there is the possibility that the unit will malfunction or not operate with its best performance.

1. Installation height is 2.7 ~ 4ft. (0.8m ~ 1.2m).

2. Install detector upright, with upper detection areas parallel to the ground. If detector is installed with an angle towards the ground, operational reliability of the detector may be decreased.

3. Install BX-80N so that its detection flanges can be parallel to the wall.

4. Avoid pointing detector towards moving objects (e.g., swaying tree, bushes, flag, etc.). If moving objects are unavoidable, please refer to trouble shooting for proper installation.

5. Avoid aiming the lower detection area toward the reflective objects (puddles, windows, etc.).

6. For proper activation, do not use BX-80N away from the wall.
5. INSTALLATION

5-1. Before the Installation

1. Loosen the cover lock screws and remove the front cover. Do not touch the lens surface.

2. Loosen the back plate lock screws. Do not touch the reflectors.

3. Remove the back plate by sliding it down and away from the unit base.

5-2. Installation Method

1. Lead wire through the wiring hole and install the back plate on the wall in an upright position by using provided mounting screws (two pieces). Installation height must be between 2.7 ft. and 4 ft. (0.8 m and 1.2 m).

2. Lead wire through the wiring hole on the unit base and connect to the terminals (See section 6). Be sure to put the wires between sponges on the unit base and back plate for rain, dust and insect protection.

3. Set the unit base on the back plate, and fasten the back plate lock screws.

For exposed wiring

Lead wires through the wiring hole on the unit base and connect to the terminals. Then, lead wires to the wiring groove on the lower side of the unit base. Be sure to put the wires between sponges on the unit base and back plate for rain, dust and insect protection.

Remove the knockouts for the exposed wiring on one side of the front cover with pliers. After wiring, replace the front cover on the unit base.

6. WIRING

Wiring Distance
Power wires should not exceed the following length. When using two or more units on one wire, the maximum length is obtained by dividing the wire length listed by the number of units used.

- UL requires BX-80N to be connected to a UL listed power supply cable of providing a nominal input of 12VDC, 38mA(MAX)(at 10-28VDC) and battery standby time of 4 hours.

- The equipment shall be installed in accordance with the National Electrical Code, NFPA 70.
7. AREA SETUP

7-1. Area Angle Adjustment

- If there are obstacles blocking the detection fingers, the angle of the fingers can be adjustable horizontally with the lens setting 0 or 3 degrees to keep a distance from the obstacles.
- Because of the detection technology (pulse count setting = 2) of BX-80N, both upper and lower detection fingers should be triggered for alarm activation. Therefore, make sure that the both detection fingers should be set at the same angle from the wall so that they are triggered at the same time. (In this case, sensitivity [HI] is recommended when greater sensitivity is required around the rated area (near 12m).

**IMPORTANT** Avoid adjusting the horizontal angles of only the upper or lower detection finger separately. BX-80N requires both upper and lower fingers to be blocked to make an alarm. So, if you adjust the horizontal angle of the detection areas, do it for both of them together. When the both angles are adjusted horizontally, sensitivity adjustment should be set to [HI]. (See section 8-1 Sensitivity Adjustment)

1. Unhook the three tabs on each side of the lens holder by inserting the blade of a screwdriver as shown above. Then, remove the lens holder from the front cover by holding the knobs on the lens holder.

2. Move the lens to select the angle (0 or 3 degree) of the detection areas as shown above and confirm that the lens is unhooked from the groove on the lens holder.

3. After selecting the detection area adjustment, replace the lens holder in the front cover by aligning the three tabs (A, B and C) on each side of the lens holder with the three grooves (A', B' and C') on the front cover.

4. If you select the 3 degree angle, the detection area will be 1.97ft.(0.6m) away from the wall at 40ft.(12m).

7-2. Detection Length Adjustment

- The upper detection finger stays parallel to the ground at all times. The lower detection finger moves as shown in this section depending on the position. So, the length of detection is limited by the angle of lower finger, since both upper & lower fingers have to be blocked at the same time to activate detector.

- If only upper finger is blocked, there will be no detection.

- If only lower finger is blocked, there will be no detection.

- Adjust the detection length by sliding the lower lens as shown. (The lower areas are adjustable on right and left sides independently.) Do not press hard.

- Remove the lens holder from the front cover as described in section 7-1. The lower lens slides to adjust the detection length. Select the appropriate position from the guide on the lens holder (A, B, C or D).

- Make sure to conduct walk tests after changing the position. The LED lights on the area check mode (See section 8-3) can be used to identify detection areas. If the detection areas are not appropriate, re-adjust the detection length by sliding the lens to a different position on the lens holder.

- The lower detection finger can be adjusted to control the detection length as shown below:

  **[ Detection length setting chart (single side) ]**

<table>
<thead>
<tr>
<th>POSITION</th>
<th>DETECTION LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0~40ft (1.2m)</td>
</tr>
<tr>
<td>B</td>
<td>0~20ft (6m)</td>
</tr>
<tr>
<td>C</td>
<td>0~10ft (3m)</td>
</tr>
<tr>
<td>D</td>
<td>0~5ft (1.5m)</td>
</tr>
</tbody>
</table>

**IMPORTANT**
- Installation height must be between 2.7 ~ 4ft.(0.8m ~ 1.2m).
- The maximum detection length may vary as above due to environmental thermal conditions.
- Detection range depends on installation height.
8. FUNCTION SETUP

8-1. Sensitivity Adjustment
When greater sensitivity is desired, select [HI]. When the installation site is poor (bad conditions) select [LOW]. Sensitivity [HI] is recommended when:
1. the angles of detection areas are changed in horizontal direction.
2. greater sensitivity is required around the end of detection area (near 12m).

8-2. Audio Level Selector
Set the audio level at proper volume during audible alarm function (See section 8-4) and/or area check mode (See section 8-3). Select [OFF] if neither function is used.

8-3. DIP Switch Setup
1. LED Indicator
2. Status Select
3. Area Check Mode
- Select LED indicator status: [ON] or [OFF].
- Control panel status adjustment for use with the audible alarm function feature. See section 8-4 to select configuration. Or, set to [OFF] if the audible alarm function will not be used.
- Select [ON] for normal operation or [OFF] to activate the area check mode (See section 8-4).
- Regardless of the setting of switch 1.2, LED will be indicated and buzzer will sound while the area check mode is ON. Switch off the area checking mode during walk tests.

8-4. Audible Alarm Function
- The audible alarm function warns against intruders with a beep sound (approx. 70dB) for 15 seconds when both upper and lower detection areas are blocked. This function can be controlled by program output of control panel.

Status Select (switch 2)
- Armed: Open / High
- Armed: Closed / Low

Set the audible alarm function to beep when both upper and lower detection areas are blocked at the same time. Select [ON] or [OFF]. This function can be controlled remotely using switches or outputs from a control panel. Refer to the following chart for wiring instructions.

Non-voltage type
This wiring is required when there is no PGM output from the control panel.
- In case there is no negative type output from the control panel.
- In the case there is negative type output or relay output (N.C. or N.O.) from the control panel.

9. WALK TEST
Confirm detection area referring to this section.

Walk test should be conducted annually.
If LED and buzzer are not activated when detection fingers are blocked, or LED and buzzer are activated while there is nothing to detect in detection area, see section 11 Troubleshooting.
10. SPECIFICATIONS & DIMENSIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>BX-80N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detection Method</td>
<td>Passive Infrared</td>
</tr>
<tr>
<td>Coverage</td>
<td>80ft. (24m) (40ft.(12m) on each side)</td>
</tr>
<tr>
<td>Detection Zones</td>
<td>4 zones (2 zones on each side)</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>3 F. at 5ft.(1.5m) ~ 0.6m/s</td>
</tr>
<tr>
<td>Detectable Speed</td>
<td>1<del>6.7kHz (0.3</del>2.0m/s)</td>
</tr>
<tr>
<td>Power Input</td>
<td>10~28V DC</td>
</tr>
<tr>
<td>Current Draw</td>
<td>26mA (normal) 38mA (max)</td>
</tr>
<tr>
<td>Alarm Period</td>
<td>2.0 ± 1.0 sec</td>
</tr>
<tr>
<td>Relay Outputs</td>
<td>2 relay outputs N.C. and N.C. 28VDC 0.2A/4A,each.</td>
</tr>
<tr>
<td>Tamper Switch</td>
<td>N.C. Opens when cover removed.</td>
</tr>
<tr>
<td>Test Mode</td>
<td>ON/ OFF</td>
</tr>
<tr>
<td>Warm-up Period</td>
<td>Approx. 45 sec. (LED blink)</td>
</tr>
<tr>
<td>Volume</td>
<td>Approx. 70 dB (at 1 m distance)</td>
</tr>
<tr>
<td>LED Indicator</td>
<td>LED is blinking during warm-up period alarm condition</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-4~+122°F (-20°C ~+50°C)</td>
</tr>
<tr>
<td>Environmental Humidity</td>
<td>95% (MAX)</td>
</tr>
<tr>
<td>RF Interference</td>
<td>No alarm 20 V/m</td>
</tr>
<tr>
<td>Mounting</td>
<td>Wall (Indoor/Outdoor)</td>
</tr>
<tr>
<td>Mounting Height</td>
<td>2.7<del>4ft. (0.8</del>1.2m)</td>
</tr>
<tr>
<td>Weight</td>
<td>4oz (120g)</td>
</tr>
<tr>
<td>IP rating</td>
<td>IP56</td>
</tr>
<tr>
<td>Accessories</td>
<td>Mount screw (4x20) x 2</td>
</tr>
</tbody>
</table>

*For UL certified installations, the sounder (audible alarm) may not be used as the primary audible device for a burglary alarm system. Specifications and design are subject to change without prior notice.

11. TROUBLE SHOOTING

No activation

- Does the LED light?
  - NO
    - Is the LED switch set ON?
      - NO
        - Set the switch ON. (See section 8-3)
      - YES
        - Call technical support.
    - YES
      - Check if the power voltage is between 10 to 28VDC.
        - NO
          - Remove wires from power supply output terminals. Does the power now satisfy the requirements?
            - YES
              - The power supply may be faulty, repair is required, or call power supply manufacturer.
            - NO
              - There is a possibility that the power line has been cut. Power cables may be too long for the gauge being used. This will cause the voltage to drop. Use heavier cable or use additional power supplies closer to the farthest units. If you are unsure of the proper wire gauge, call technical support.
        - YES
          - There is a possibility that the warm-up period is not finished. Check if it passes more than 45 seconds after power is on.
            - NO
              - Call technical support.
            - YES
              - Correct setting.
    - YES
      - LED blinks continuously
        - NO
          - Check if the power voltage is between 10 to 28 VDC.
            - YES
              - Call technical support.
            - NO
              - There is a possibility that the power line has been cut. Power cables may be too long for the gauge being used. This will cause the voltage to drop. Use heavier cable or use additional power supplies closer to the farthest units. If you are unsure of the proper wire gauge, call technical support.
        - YES
          - There is a possibility that the power line has been cut. Power cables may be too long for the gauge being used. This will cause the voltage to drop. Use heavier cable or use additional power supplies closer to the farthest units. If you are unsure of the proper wire gauge, call technical support.

No buzzer sounds

- Is the alarm output of the BX-80N wired properly?
  - NO
    - Set the alarm output selector of the BX-80N to "MAX" or "MIN".
      - YES
        - Is the unit installed vertically to the ground?
          - YES
            - Check if the lower detection area is longer than your planning.
          - NO
            - Check if there is any object reflecting the lower detection area.
              - NO
                - Check if the unit faces rising or setting sunlight directly.
              - YES
                - Check if there are objects changing temperature (air conditioner, heating ducts) or moving (curtain, bushes, etc) in the detection area.
      - NO
        - Call technical support.

Makes alarms even when there is no moving object in the area.

- Is the alarm output selector of the unit set off?
  - YES
    - Set the alarm output selector of the unit to "MAX" or "MIN".
      - YES
        - Call technical support.
      - NO
        - Check if the lower detection area is longer than your planning.
          - YES
            - Check if there is any object reflecting the lower detection area.
          - NO
            - Check if the unit faces rising or setting sunlight directly.
      - NO
        - Check if there are objects changing temperature (air conditioner, heating ducts) or moving (curtain, bushes, etc) in the detection area.

No detection occasionally

- In detection area adjusted properly? (See section 7)
  - YES
    - Is the sensitivity adjustment switch set [Low]?
      - NO
        - Have already precise walk tests been conducted?
          - YES
            - Call technical support.
          - NO
            - Refer to section 3 walk test and conduct walk tests.
      - YES
        - Change the position of the sensitivity select switch [MED] and conduct operation test in accordance with section 8.
    - NO
      - Adjust the detection area again according to section 7.

Manufacturer:
OPTEX CO., LTD.
5-8-12 Ohts, Otsuka, S20-0101 JAPAN

Authorized representative in Europe:
OPTEX (EUROPE) LTD. / optic HEADQUARTERS
Merindale House 1 Cordwells Park, Elmorton Road, Maidstone, Bexley, SE6 7BU U.K.

Note >>
This unit is designed to detect movement of an intruder and activate an alarm control panel. Being only a part of a complete system, we can not accept responsibility for any damages or other consequences resulting from an intrusion.