⬡OPTEX

BOUNDARY GARD ™
BX-80N

CE

───────── **Read instructions completely before beginning installation.** ─────────

·Optex presents a new concept, BOUNDARY GARD ™, which protects a building's exterior by detecting intruders before an entry is attempted. In addition to signaling an alarmsystem, BOUNDARY GARD ™ 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 Indicator · Audible Walk Test

3. Limited Detection Range Function.

4. Size Judging Function.

5. Waterproof

- 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 walk testing (See Section 8-3 "DIP Switch Setup").
- Since both upper and lower fingers have to be blocked at the same time to activate the detector, the detection range of the BX-80N can be limited to avoid detecting unwanted object.
- Upper and lower detection fingers must be blocked at same time to activate the detector. BX-80N does not detect objects which do not block the upper fingers.
- IP rating : IP 55

1. Safety-Related Precautions

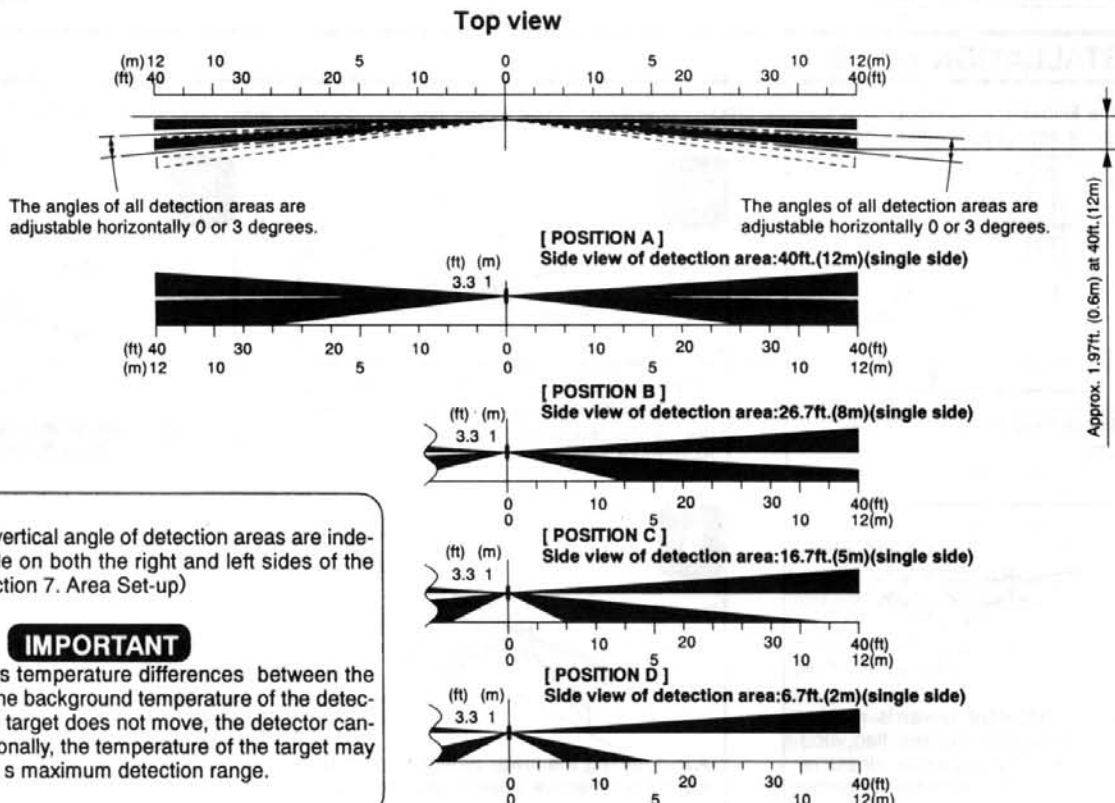Before installation, make sure to read this instruction manual carefully for safe and effective product operation.

⚠ **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 avoid. 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 dissembled)

⚠ **Warning**		⚠ **Warning**	
Never use this product for any applications except as stated above or unexpected accidents can occur.	🚫	Never attempt to disassemble or modify the product, which increases the risk of fire or damage of the product.	🚫
⚠ **Warning**		⚠ **Caution**	
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.	🚫	Avoid applying water directly from buckets, houses, or otherwise splashing water directly onto the product. It increases the risk of damaging the product.	🚫

2. DETECTION AREA

Top view

The angles of all detection areas are adjustable horizontally 0 or 3 degrees.

The angles of all detection areas are adjustable horizontally 0 or 3 degrees.

Approx. 1.97ft. (0.6m) at 40ft.(12m)

[POSITION A]
Side view of detection area:40ft.(12m)(single side)

[POSITION B]
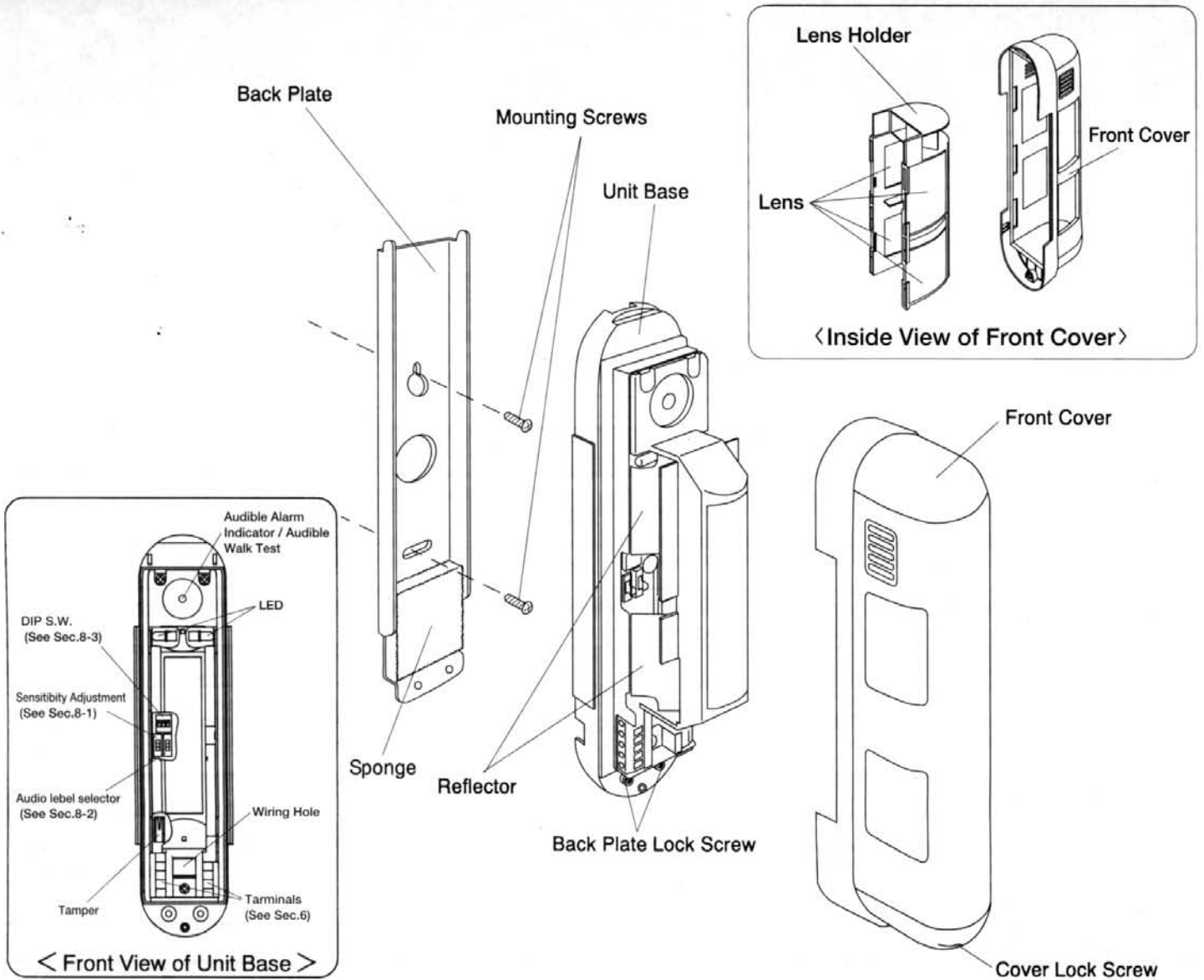Side view of detection area:26.7ft.(8m)(single side)

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 Set-up)

[POSITION C]
Side view of detection area:16.7ft.(5m)(single side)

◼ 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 cannot detect it. Additionally, the temperature of the target may affect the detector's maximum detection range.

[POSITION D]
Side view of detection area:6.7ft.(2m)(single side)

3 . PARTS IDENTIFICATION

Back Plate

Mounting Screws

Unit Base

Lens Holder

Lens

Front Cover

⟨ Inside View of Front Cover ⟩

Front Cover

Audible Alarm Indicator / Audible Walk Test

LED

DIP S.W. (See Sec.8-3)

Sensitibity Adjustment (See Sec.8-1)

Audio lebel selector (See Sec.8-2)

Tamper

Wiring Hole

Tarminals (See Sec.6)

⟨ Front View of Unit Base ⟩

Sponge

Reflector

Back Plate Lock Screw

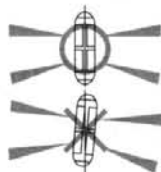Cover Lock Screw

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.
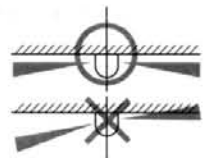
1
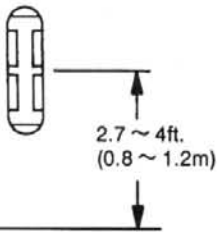
2.7 ~ 4ft.
(0.8 ~ 1.2m)

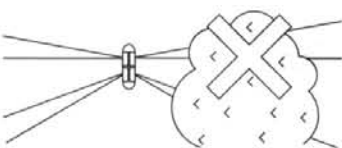Installation height is 2.7 ~ 4ft.(0.8m ~ 1.2m)

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.
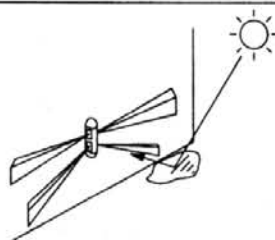
3

Install detector with upper and lower detection parallel to the wall.

4

Avoid pointing detector towards moving objects(i.e. swaying tree, bushes, flag, etc.). If moving objects are unavoidable, please refer to Trouble Shooting reference for proper installation.

5

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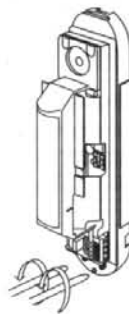
5 . INSTALLATION

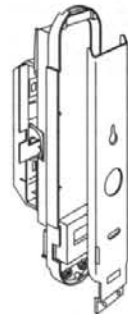## 5-1. Before the Installation

1

Loosen the Cover Lock Screws and re-move the Front Cover. Do not touch the Lens surface.

2

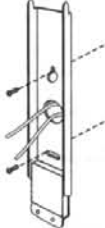Loosen the Back Plate Lock Screws. Do not touch the Reflectors.

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 Mount-ing Screws (two places). Installation height must be between 2.7ft. and 4ft.(0.8m and 1.2m).
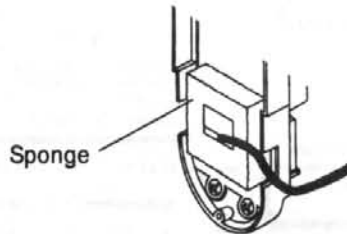
2

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 pro-tection.
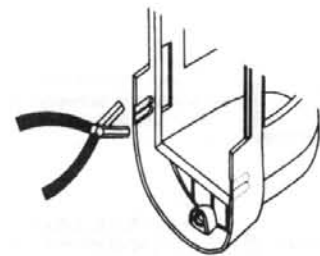
3

Set the Unit Base on the Back Plate. And, fasten the Back Plate Lock Screws.
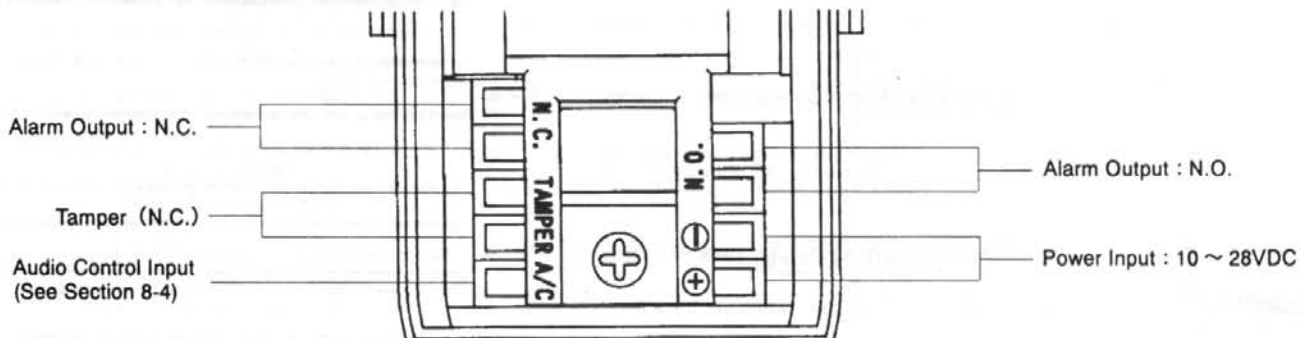
For exposed wiring

Sponge

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 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 wir-ing on one side of the Front Cover with pliers. After wiring, replace the Front Cover on the Unit Base.

6 . WIRING

Alarm Output : N.C.

Tamper (N.C.)

Audio Control Input (See Section 8-4)

N.C. N.C. TAMPER A/C

N.O.

Alarm Output : N.O.

Power Input : 10 ~ 28VDC

Wiring Distance

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

Wire Size	Power Supply 12VDC	24VDC
AWG22 (0.33mm²)	500ft.(150m)	1650ft.(500m)
AWG20 (0.52mm²)	830ft.(250m)	2500ft.(760m)
AWG18 (0.8 mm²)	1300ft.(400m)	4000ft.(1200m)
AWG16 (1.31mm²)	2000ft.(600m)	6000ft.(1800m)

· UL requires BX-80N to be connected to a UL listed power supply capable 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 SET-UP

7-1. Area Angle Adjustment

◯ If there is an obstacle blocking the detection fingers on the wall, you can adjust the angle of the fingers horizontally 0 or 3 degrees to keep a distance from the obstacle.

IMPORTANT · Avoid adjusting the horizontal angles of only the upper or lower detection areas. 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 upper and lower ones together. When the angle of detection areas are adjusted horizontally, sensitivity adjustment should be set to [HIGH] . (See Sec.8-1.Sensitivity Adjustment)
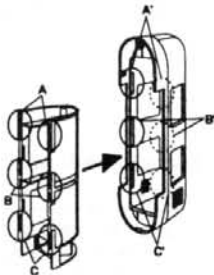
1
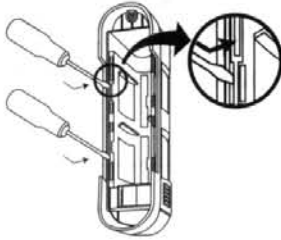
Unhook the three-tabs on each side of the Lens Holder by inserting the blade of a screwdriver as shown above. Then, remove the Lens Holder from the Front Cover by holding the knobs on the Lens Holder.

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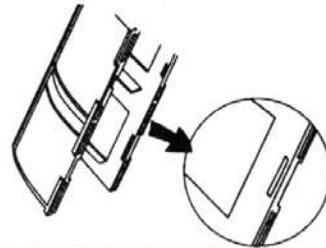
Move the Lens to select the angle (0 or 3 degree) of the detection areas as shown above and confirm that the Lens is unhooked from the groove on the Lens Holder.

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

WALL

Approx.1.97ft.(0.6m)

If you select the 3 degree angle, the detection area will be 1.97ft.(0.6m) from the wall at 40ft.(12m).
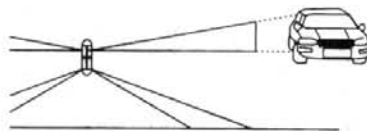
7-2. Detection Length Adjustment

◯ The upper detection finger will stay parallel to the ground at all times. The lower detection finger moves as shown above 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.
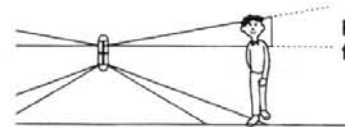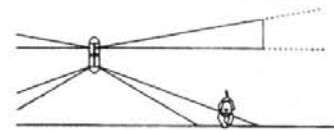
Both upper and lower finger are blocked!

Detection!

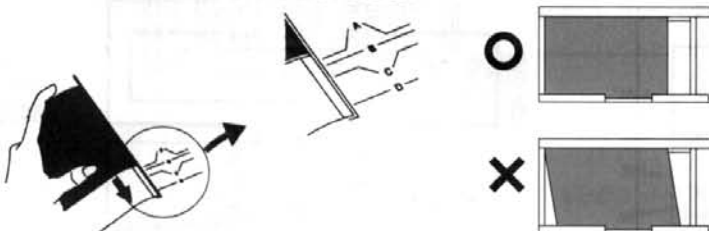**Only upper finger is blocked!**

No

Detection

Only lower finger is blocked!

No

Detection

◯ Adjust the detection length by sliding the lower Lens as shown.
(The lower areas are adjustable on right and left sides independently.)
SLIDE lens to remove. DO NOT BEND.

◯

✕

Remove the Lens Holder from the Front Cover as described in section 7-1, Area Angle Adjustment.
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).
Be sure to check the detection area by walk testing the detector.
The LED light and the Audible Walk Test Function (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)]

POSITION	A	B	C	D
DETECTION LENGTH	0～40ft	0～26.7ft	0～16.7ft	0～6.7ft
	0～12m	0～8m	0～5m	0～2m
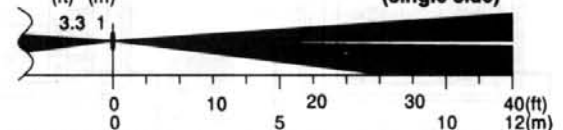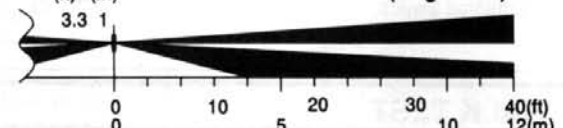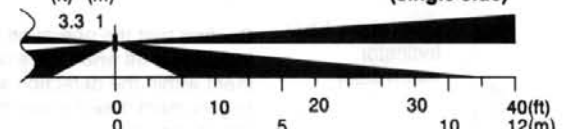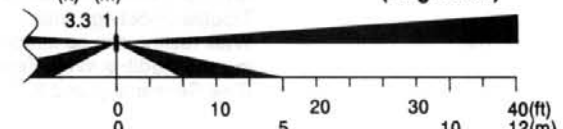
IMPORTANT · Installation Height must be between 2.7～4ft.(0.8m to 1.2m).
· The maximum detection length may vary as above due to environmental thermal conditions.
· Detection range depends on installation height.

POSITION [A] Side view of detection area:40ft.(12m)
(ft) (m)   (single side)
3.3 1

0   10   20   30   40(ft)
0   5   10   12(m)

POSITION [B] Side view of detection area:26.7ft.(8m)
(ft) (m)   (single side)
3.3 1

0   10   20   30   40(ft)
0   5   10   12(m)

POSITION [C] Side view of detection area:16.7ft.(5m)
(ft) (m)   (single side)
3.3 1

0   10   20   30   40(ft)
0   5   10   12(m)

POSITION [D] Side view of detection area:6.7ft.(2m)
(ft) (m)   (single side)
3.3 1

0   10   20   30   40(ft)
0   5   10   12(m)

8 . FUNCTION SET-UP

8-1. Sensitivity Adjustment

HI
MID
LOW

When greater sensitivity is desired, select [H]. When the installation site is poor(bad conditions) select [L].

8-2. Audio Level Selector

MAX
MIN
OFF

Set the Audio Level used during Audible Alarm Indication (See Section 8-4) and/or Audible Walk Test Indication (See Section 8-3).
Select OFF if neither function is used.

8-3. DIP Switch Setup

ON
1 2 3

1. LED Indicator — Select LED Indicator status : ON or OFF.
2. Status Select — Countrol Panel Status adjustment for use with Audible Alarm Indication feature.See Section 8-4 to select configuration. Or, set to OFF if Audible Alarm Indication will not be used.
3. TEST Mode — Select Off position for normal operation or ON position to activate Audible Walk Test feature (set volume in Section 8-2).

8-4. Audible Alarm Indicator Function

O The Audible Alarm Indicator 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 (CH2)

ON
1 2 3

Armed : Open / High
⇕
Armed : Closed / Low

O Set the Audible Alarm Indicator 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.

O When Audio Control Input is not used, set the Status Select switch (ch 2) OFF (Closed / Low) if Audible Alarm Indication is used.

	CP's Status	Detector Setting
Armed	Closed : 0~1VDC	Armed : Open/High
Disarmed	Open : 5~18VDC	
Armed	Open : 5~18VDC	Armed : Closed/Low
Disarmed	Closed : 0~1VDC	

———— < Wiring plans for Audible Alarm Indication only while control panel is armed. > ————

< Non-Voltage type >
This wiring is required when there is no PGM output from control panel.

O In case there is no Negative type output from the control panel.

O In the case there is Negative type output or Relay Output (N.C. or N.O.) from the Control Panel.
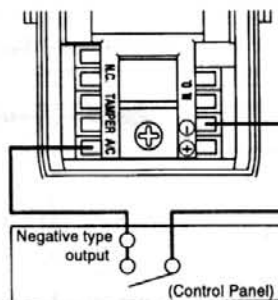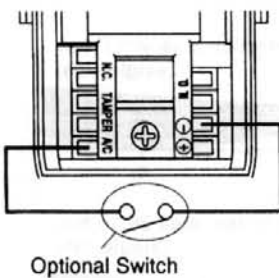
< Voltage type >
In case there is a programmable (PGM) output terminal (High or Low) from the control panel.

Optional Switch

Negative type output
(Control Panel)

PGM Output (+) (−)
(Control Panel)
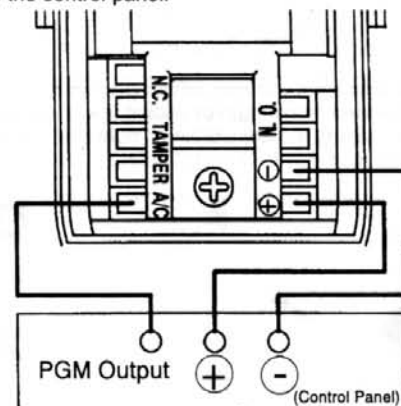
9. WALK TEST

Confirm detection by walk testing after installation.

Operation LED
Indicator
(each side)

Confirm that the operation LED Indicator is off when there is no movement within the detection area. Both fingers must detect movement to create an alarm.
If LED lights without both fingers detecting motion,see Section 11 for Trouble Shooting Hints.
Walk testing can be simplified by using the Audible Walk Test Indicator (See Section 8-2 and 8-3).

Installation is complete after checking that the LED and/or Audible Alarm Indicator operate after both fingers are blocked. If these indicators do not operate after the detection fingers are blocked, see Section 11 for Trouble Shooting hints.
After walk testing is completed, turn off Test Mode (Section 8-3). Audible Alarm Indication and / or LED can be active or deactivated for normal operation (Section 8-2 and 8-3).

● Walk test should be conducted annually.

1 0 . SPECIFICATIONS & DIMENSIONS

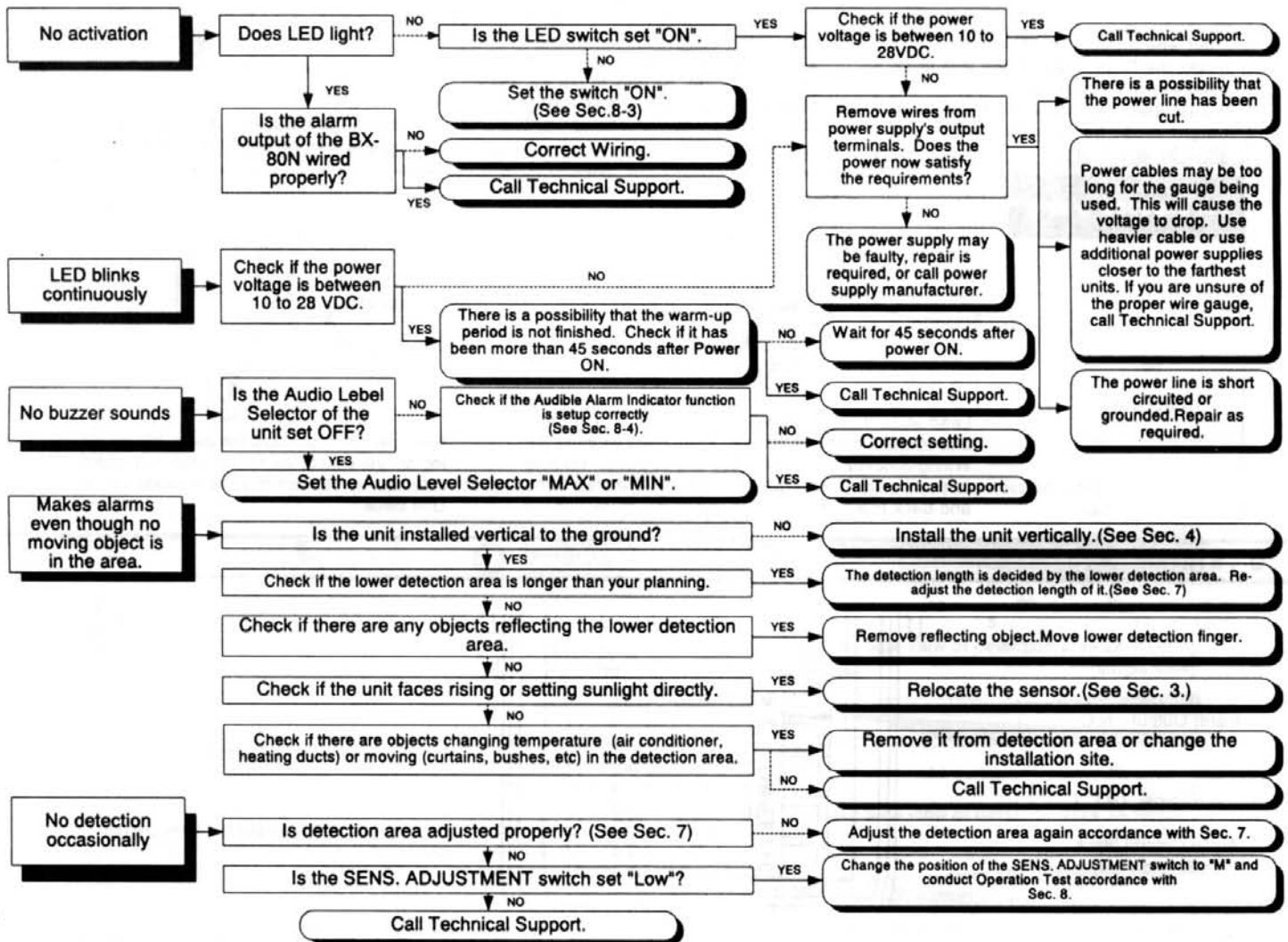| MODEL	BX-80N
Detection Method	Passive Infrared
Coverage	80ft. (24m) (40ft.(12m) on each side)
Detection Zones	4 Zones (2 zone on each side)
Sensitivity	3°F (1.6°C) at 2ft./s (0.6m/s)
Detectable Speed	1~6.7ft./s (0.3~2.0m/s)
Power Input	10~28V DC
Current Draw	28mA (normal) 38mA (max)
Alarm Period	2.0±1.0 sec.
Relay Output	2 Relay outputs N.O and N.C 28VDC 0.2A(MAX.)each.
Tamper Switch	N.C. Opens when cover removed.
Test Mode	ON / OFF
Warm-up Period	Approx. 45 sec. (LED blinks)
Volume	Approx.70 dB (at 1 meter distance)
LED Indicator	LED is blinking during warm-up period Alarm condition
Operating Temperature	-4 ~ +122°F (-20°C ~ +50°C)
Environmental Humidity	95% (MAX.)
RF Interference	No Alarm 20 V/m
Mounting	Wall (Indoor/Outdoor)
Mounting Height	2.7 ~ 4ft. (0.8 ~ 1.2m)
Weight	14oz (400g)
IP rating	IP 55
Accessories	Mount screw (4×20) × 2

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

2.70(68.7)
9.16(232.7)
Mounting Pitch 3.28(83.5)
2.16(55)

inches (mm)

1 1 . TROUBLE SHOOTING

No activation → Does LED light?
- NO → Is the LED switch set "ON".
  - NO → Set the switch "ON". (See Sec.8-3)
  - YES → Check if the power voltage is between 10 to 28VDC.
    - YES → Call Technical Support.
    - NO → Remove wires from power supply's output terminals. Does the power now satisfy the requirements?
      - YES → There is a possibility that the power line has been cut.
      - NO → The power supply may be faulty, repair is required, or call power supply manufacturer.
- YES → Is the alarm output of the BX-80N wired properly?
  - NO → Correct Wiring.
  - YES → Call Technical Support.

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.

LED blinks continuously → Check if the power voltage is between 10 to 28 VDC.
- NO →
- YES → There is a possibility that the warm-up period is not finished. Check if it has been more than 45 seconds after Power ON.
  - NO → Wait for 45 seconds after power ON.
  - YES → Call Technical Support.

The power line is short circuited or grounded.Repair as required.

No buzzer sounds → Is the Audio Lebel Selector of the unit set OFF?
- NO → Check if the Audible Alarm Indicator function is setup correctly (See Sec. 8-4).
  - NO → Correct setting.
  - YES → Call Technical Support.
- YES → Set the Audio Level Selector "MAX" or "MIN".

Makes alarms even though no moving object is in the area.
→ Is the unit installed vertical to the ground?
- NO → Install the unit vertically.(See Sec. 4)
- YES → Check if the lower detection area is longer than your planning.
  - YES → The detection length is decided by the lower detection area. Re-adjust the detection length of it.(See Sec. 7)
  - NO → Check if there are any objects reflecting the lower detection area.
    - YES → Remove reflecting object.Move lower detection finger.
    - NO → Check if the unit faces rising or setting sunlight directly.
      - YES → Relocate the sensor.(See Sec. 3.)
      - NO → Check if there are objects changing temperature (air conditioner, heating ducts) or moving (curtains, bushes, etc) in the detection area.
        - YES → Remove it from detection area or change the installation site.
        - NO → Call Technical Support.

No detection occasionally → Is detection area adjusted properly? (See Sec. 7)
- NO → Adjust the detection area again accordance with Sec. 7.
- NO → Is the SENS. ADJUSTMENT switch set "Low"?
  - YES → Change the position of the SENS. ADJUSTMENT switch to "M" and conduct Operation Test accordance with Sec. 8.
  - NO → Call Technical Support.

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 cannot accept responsibility for any damages or other consequences resulting from an intrusion.
This product confirms to the EMC Directive 89/336 EEC.

No.0875 00.03.31 5908751 00.05