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ADVANCED ADAPTIVE PIR/MICROWAVE TECHNOLOGY SENSORS

GEMC-BSLC-DT-L "DUAL TECH"

INSTALLATION INSTRUCTIONS

WI2071A\1 06/14

GENERAL DESCRIPTION

SPECIFICATIONS

General Coverage with standard wide-angle lens, measured indoors at 68°F (20°C), typical: 50 feet long x 40 feet wide; plus "Look-down" zone.

Operating Temperature: 14° to 122°F (-10° to +49°C)

Mounting: Wall or corner, 6 - 9.8 feet (2 - 3m) maximum

Microwave Frequency: 10.525GHz ±25MHz

Dimensions (HxWxD): 4.6 x 2.5 x 2.5" (11.7 x 6.35 x 6.35cm)

Shipping Weight: .3lb (4.8oz, 136g)

Electrical Ratings

Input Power: 13.6-16.3VDC supplied by model GEMC-BSLC, 4mA.

Maximum Wiring Length: 2000' (#16 AWG). Refer to GEMC-BSLC documentation for complete wiring information. Unit shall be connected to model GEMC-BSLC which is employed in the GEMC C-Series control panel which is provided with a minimum of 4 hours standby on battery power.

FEATURES

- Microprocessor signal processing
- Utilizes analog to digital signal conversion
- System diagnostic electronics
- Watchdog microprocessor supervision
- Dual-element PIR sensor
- High-efficiency, dirt-resistant grooves-in lens
- "Look-down" zone
- Extensive RFI and EMI filtering ensure optimum immunity to false alarms
- Large lens area assures high PIR sensitivity
- Selectable microwave/PIR LED indication visible from virtually any angle, extinguishable after testing.
- Small size; modern, unobtrusive design
- Silent operation
- Bracket-free corner or wall mountable
- Universal Swivel Bracket Kit available (not evaluated by UL)

ORDERING INFORMATION

SVLBKT Swivel Bracket Kit

BASIC OPERATION

This unit is a combination passive-infrared (PIR) sensor and microwave sensor, both contained in a single package. The unit will go into alarm when both sensors detect intrusion at the same time. The PIR section operates by detecting a rapid change in temperature when an intruder crosses a protected area. When a beam experiences a change in heat (projected back through the lens), a pulse is generated by the sensor element. The microwave transmitter sends out short bursts of RF energy, and the receiver detects changes in the returned signal caused by motion within its coverage area.

The microwave section is unaffected by visible light, air drafts, or temperature changes (as from space heaters or air conditioners, for example), but is sensitive to motion. Strong vibrations can be troublesome. Microwave signals may pass through non-metallic walls and windows. Infrared is virtually unaffected by vibration, and will not penetrate walls or windows.

Thus the two technologies complement each other, and it is the combination of the two that provides an inherent immunity to false alarms. Dual technology is ideal for use in hostile environments. Since both must trip to cause an alarm, installation is easier and requires less discipline.

DETECTION PATTERNS

Figure 1 illustrates maximum PIR and microwave detection patterns superimposed on each other.

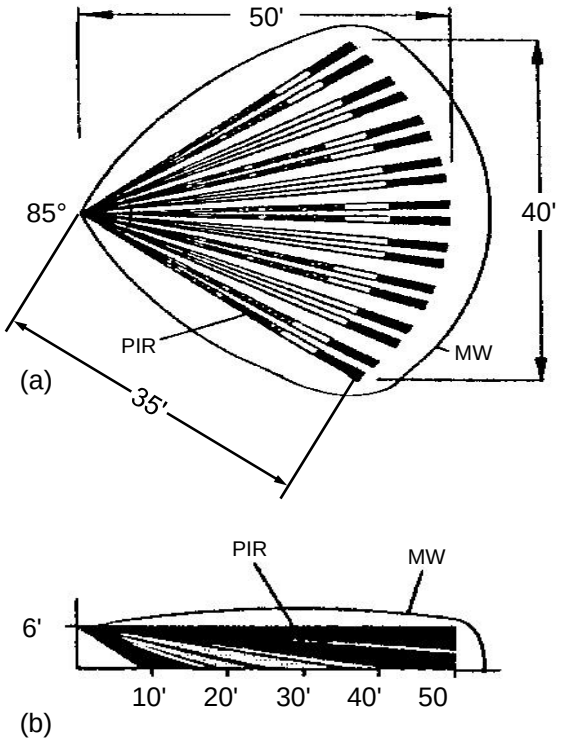


Fig. 1. GEMC-BSLC-DT-L wide-angle lens patterns showing maximum recommended coverage:
(a) top view;
(b) side view for 6' mounting height.

STANDARD LENS

The supplied lens will perform best in typical applications, thus it is factory installed. Following are its specifications.

Number of Zones: 18 zones, 40 beams, plus "Look-down".

Maximum Coverage: 50ft. long x 40ft. wide

Field of View: 80°

Note: (1) Should the lens become heavily soiled, it may be cleaned using lukewarm water and a mild detergent. To dry, use a soft lint-free cloth or allow to air dry. (2) If the standard lens does not suit the application, select another available lens. **Note:** Non-standard lenses have **not** been evaluated by UL.

INSTALLATION

CHOOSING A SUITABLE LOCATION

The unit may be either wall mounted or corner mounted. Corner mounting is generally recommended as greater coverage may be obtained. Select a rigid surface that is relatively free of vibration.

Position the sensor with respect to access doors or windows so that an intruder will pass across its field of view, not directly toward or away from it. Avoid areas containing devices that may pose a chronic problem to either sensor. For the dual-technology feature to be truly effective in rendering the unit free from false alarms, neither sensor should detect intrusion under normal conditions. **Note:** The unit is shipped from the factory with jumper **4(A) ALARM** installed in **Jumper Block J1** to allow the LED to indicate simultaneous PIR and Microwave trips.

MOUNTING THE SENSOR

Open the case by inserting a small screwdriver in the slot at the bottom and pushing up slightly. Remove the front cover.

An array of "push-thru" holes is provided in the rear case to simplify wall or corner mounting. A round push-thru hole permits cable entry at the bottom. Cutaway notches in the rear case will accommodate surface-mounted cables if the outer jacket is removed. After the proper knock-outs have been removed, the rear case may be used as a template to mark drill holes. **Note:** Any unused knockout **must be sealed** with the caulking material supplied to eliminate drafts and prevent entry by insects. If mounting higher than 3 meters, it may be necessary to tilt the unit downward slightly for proper microwave coverage, and to reset the Height Scale slightly for proper PIR coverage.

WIRING

Complete the terminal connections as follows:

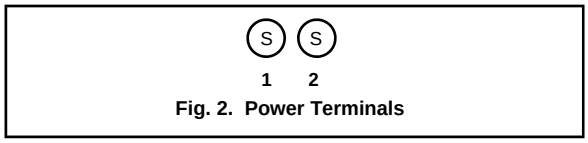


Fig. 2. Power Terminals

Power (Terminals 1 [S] & 2 [S]): Connect to the [S] and [S] terminals on the GEMC-BSLC.

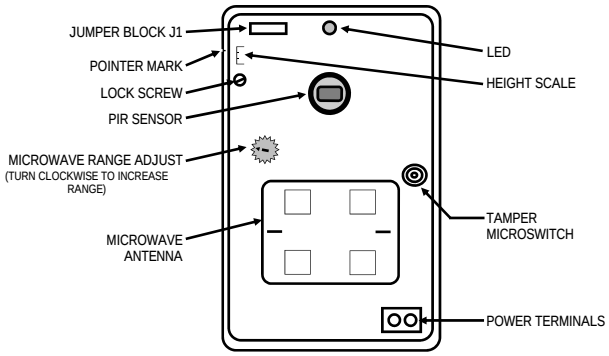


Fig. 3. Circuit board layout

SETTING THE HEIGHT SCALE

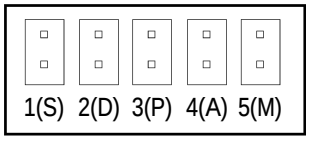
The **Height Scale** must be set to obtain the maximum recommended coverage. Remove the front cover. Note that the **Height Scale** is printed along the edge of the circuit board in the upper-left corner (see Fig. 3). The scale calibrations represent sensor mounting height (6 feet to 9.8 feet or 2-3 meters maximum) for the standard wide-angle lens only. To set, loosen the **Lock Screw** shown in the illustration to slide the board up or down, and align the Pointer Mark groove in the rear case with the index Height Scale on the PC board representing the mounting height of the unit. Then tighten the **Lock Screw** (do not over-tighten!).

LOOK DOWN ZONE

Coverage sensitivity is extended to the "Look-down" zone, located directly below the unit. To remove the Look-down zone, simply remove the lens from the Look-down holder. You may wish to remove the Look-down lens if there are large pets that may get below the unit.

JUMPER BLOCK

The **Jumper Block "J1"** (see Fig. 4) is used to select operating modes, numbered 1-5 from left to right, as follows:



- Jumper **1(S) SENSITIVITY**
- Jumper **2(D) LED DISABLE**
- Jumper **3(P) PIR**
- Jumper **4(A) ALARM**
- Jumper **5(M) MWAVE**

Fig. 4. Jumper Block "J1"

Jumper 1(S) SENSITIVITY. Install this jumper for high sensitivity or when using in narrow areas or corridors.

Jumper 2(D) LED DISABLE. Install this jumper if you want to disable the LED.

After testing, be sure to either install jumper **4(A) ALARM** for normal LED operation where the LED lights upon an alarm condition, or install jumper **2(D) LED DISABLE** to prevent the LED from lighting upon an alarm condition.

Note: Regardless of the position of this **2(D) LED DISABLE** jumper, troubles will always be displayed on the keypad.

Jumper 3(P) PIR. Install this jumper for PIR Walk-Test Mode; LED indicates PIR trips only. The PIR coverage is adjusted by resetting the Height Scale (see **SETTING THE HEIGHT SCALE**).

Jumper 4(A) ALARM. Install this jumper for LED to indicate simultaneous PIR and Microwave trips (the LED will indicate a condition that would cause an alarm if the system were armed).

Jumper 5(M) MWAVE. Install this jumper to enable Microwave Walk-Test Mode; LED indicates microwave trips only.

RANGE ADJUSTMENT

The **Microwave Range Adjust** control (see Fig. 3) should be set at the minimum required to achieve the desired coverage. It is set so that the LED lights when motion is detected at the maximum desired range.

All tests MUST be made with the front cover in place.

1. Remove the front cover and install jumper **5(M) MWAVE** to enable Microwave Walk-Test Mode (LED will indicate microwave trips only).
2. Set the **Microwave Range Adjust** control at mid-position. Replace the front cover and *walk test* the unit (turn knob clockwise to increase range).
3. If the desired range is insufficient, increase the **Microwave Range Adjust** slightly and repeat the test as necessary, increasing the control each time, until motion is detected at the desired range. (If the desired range was excessive, decrease the control slightly and repeat this step). Turn knob counter-clockwise to decrease range.
4. Re-install jumper **4(A) ALARM** for the LED to indicate simultaneous PIR and Microwave trips.
   NOTE: The proper setting of the **Microwave Range Adjust** control is when motion is detected at the desired range. Because the range of the microwave detector is not limited by the confines of walls, windows or doors, further advancement of the control may result in detection of motion beyond the desired coverage area.

TESTING THE COVERAGE AREA

After the unit has been mounted and set up, its coverage should be tested and, if necessary, altered to accommodate local environmental conditions (within the coverage area). Satisfactory checks may be made using the LED on the front of the unit. It is recommended that the coverage area be tested at least once a year.

Testing the Unit

Complete connections to the terminal strip (see **WIRING**). The unit will require a 1-minute "settling" time to adjust itself to the surrounding temperature. After sufficient time has been allowed, proceed as follows.

Test the range of the coverage

Install jumper **3(P) PIR** to enable PIR Walk-Test Mode. Replace the front cover. Walk out to the maximum determined coverage distance, then walk across the field of coverage. The LED will remain lit as long as motion is detected.

Remove jumper **3(P) PIR** and install jumper **5(M) MWAVE**. Replace the cover and repeat test.

Remove jumper **5(M) MWAVE**, and install jumper **4(A) ALARM**. Replace the cover and repeat test. Confirm that the LED lights at the maximum desired range.

Zone Masking

A problem zone may be deactivated in order to preserve reliable system operation by zone masking the lens. Carefully apply a piece of zone masking foil (supplied) to the inside grooved surface of the lens segment representing the problem zone to block signal from the offending device (refer to Fig. 5).

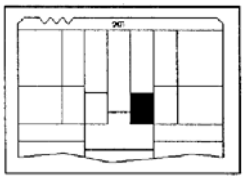


Fig. 5. Zone masking foil (shaded area) applied to a lens segment to deactivate a problem zone.

Fig. 5. Zone Masking Foil

COMPLETING THE INSTALLATION

When testing is finished, for proper operation, no jumpers should be installed at **5(M) Microwave** or **3(P) PIR Walk Test** positions.

- **When jumper 4(A) ALARM is installed**, the LED indicates simultaneous PIR and Microwave trips (a condition that would cause an alarm if the system were armed).
- **When jumper 2(D) LED DISABLE is installed**, the LED is prevented from lighting upon simultaneous PIR and Microwave trips (a condition that would cause an alarm if the system were armed).

TROUBLESHOOTING		
SYMPTOM	**PROBABLE CAUSE**	**REMEDY**
Rapid LED flash, twice a second.	Microwave failure	Power down for 5 seconds. Power up again and wait 1½ minutes. If symptom persists, return unit for repair.
High speed LED winking flash.	PIR Failure	Power down for 5 seconds. Power up again and wait 1½ minutes. If symptom persists, return unit for repair.
Unit holding loop in alarm.	Walk-Test Mode selected	Check to ensure jumper 4(A) ALARM or jumper 2(D) LED DISABLE is installed

NAPCO LIMITED WARRANTY

NAPCO SECURITY SYSTEMS, INC. (NAPCO) warrants its products to be free from manufacturing defects in materials and workmanship for *thirty-six months* following the date of manufacture. NAPCO will, within said period, at its option, repair or replace any product failing to operate correctly without charge to the original purchaser or user.

This warranty shall not apply to any equipment, or any part thereof, which has been repaired by others, improperly installed, improperly used, abused, altered, damaged, subjected to acts of God, or on which any serial numbers have been altered, defaced or removed. Seller will not be responsible for any dismantling or reinstallation charges.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THERE IS NO EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. ADDITIONALLY, THIS WARRANTY IS IN LIEU OF ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF NAPCO.

Any action for breach of warranty, including but not limited to any implied warranty of merchantability, must be brought within the six months following the end of the warranty period. IN NO CASE SHALL NAPCO BE LIABLE TO ANYONE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF THIS OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, EVEN IF THE LOSS OR DAMAGE IS CAUSED BY THE SELLER'S OWN NEGLIGENCE OR FAULT.

In case of defect, contact the security professional who installed and maintains your security system. In order to exercise the warranty, the product must be returned by the security professional, shipping costs prepaid and insured to NAPCO. After repair or replacement, NAPCO assumes the cost of returning products under warranty. NAPCO shall have no obligation under this warranty, or otherwise, if the product has been repaired by others, improperly installed, improperly used, abused, altered, damaged, subjected to accident, nuisance, flood, fire or acts of God, or on which any serial numbers have been altered, defaced or removed. NAPCO will not be responsible for any dismantling, reassembly or reinstallation charges.

This warranty contains the entire warranty. It is the sole warranty and any prior agreements or representations, whether oral or written, are either merged herein or are expressly cancelled. NAPCO neither assumes, nor authorizes any other person purporting to act on its behalf to modify, to change, or to assume for it, any other warranty or liability concerning its products.

In no event shall NAPCO be liable for an amount in excess of NAPCO's original selling price of the product, for any loss or damage, whether direct, indirect, incidental, consequential, or otherwise arising out of any failure of the product. Seller's warranty, as hereinabove set forth, shall not be enlarged, diminished or affected by and no obligation or liability shall arise or grow out of Seller's rendering of technical advice or service in connection with Buyer's order of the goods furnished hereunder.

NAPCO RECOMMENDS THAT THE ENTIRE SYSTEM BE COMPLETELY TESTED WEEKLY.

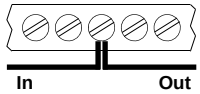
Warning: Despite frequent testing, and due to, but not limited to, any or all of the following; criminal tampering, electrical or communications disruption, it is possible for the system to fail to perform as expected. NAPCO does not represent that the product/system may not be compromised or circumvented; or that the product or system will prevent any personal injury or property loss by burglary, robbery, fire or otherwise; nor that the product or system will in all cases provide adequate warning or protection. A properly installed and maintained alarm may only reduce risk of burglary, robbery, fire or otherwise but it is not insurance or a guarantee that these events will not occur. CONSEQUENTLY, SELLER SHALL HAVE NO LIABILITY FOR ANY PERSONAL INJURY, PROPERTY DAMAGE, OR OTHER LOSS BASED ON A CLAIM THE PRODUCT FAILED TO GIVE WARNING. Therefore, the installer should in turn advise the consumer to take any and all precautions for his or her safety including, but not limited to, fleeing the premises and calling police or fire department, in order to mitigate the possibilities of harm and/or damage.

NAPCO is not an insurer of either the property or safety of the user's family or employees, and limits its liability for any loss or damage including incidental or consequential damages to NAPCO's original selling price of the product regardless of the cause of such loss or damage.

Some states do not allow limitations on how long an implied warranty lasts or do not allow the exclusion or limitation of incidental or consequential damages, or differentiate in their treatment of limitations of liability for ordinary or gross negligence, so the above limitations or exclusions may not apply to you. This Warranty gives you specific legal rights and you may also have other rights which vary from state to state.

IMPORTANT WIRING METHODS

For single-conductor terminal blocks (like the type shown at left), to terminate more than one conductor to a terminal, use the wiring methods shown at right:



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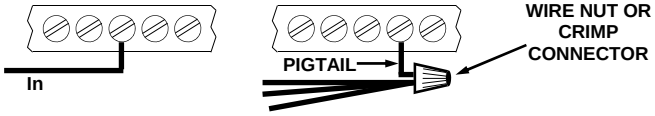
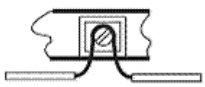


Correct -- Single incoming and/or pigtail with wire nut / crimp connectors

For "barrier" type terminal blocks (like the type shown at left), to terminate two conductors to a terminal, use the wiring methods shown at right:



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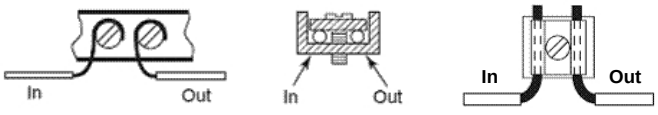
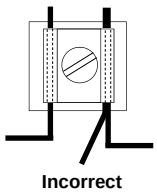


Correct -- Separate incoming and outgoing conductors

To terminate more than two conductors or conductors of different wire sizes to a terminal, use the "pigtail" type wiring method as shown at right. Use insulated wire for the pigtail, and firmly secure the conductors to the pigtail using an appropriate wire nut or crimp connector for the number and gauge of conductors used.



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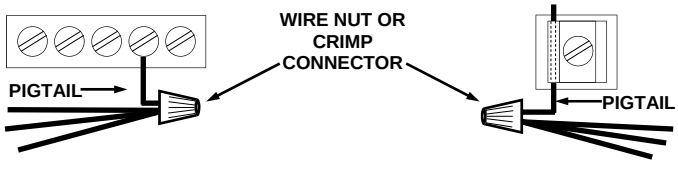

Correct -- Use pigtail and wire nut / crimp connector