

# D38

Microwave Motion Detector with Human Presence Radar™ (HPR™) Technology




## INSTALLATION INSTRUCTIONS

### Section 1

#### General Description

Until now, conventional microwave motion detectors for the automatic door industry have been able to reliably detect motion only down to a few inches per second.

Using MS SEDCO's patented Human Presence Radar™ (HPR™) technology, the D38 detects  extremely small motion, down to less than a fraction of an inch per second. Once a person moving 2" per second or more triggers the D38, HPR™ is enabled, allowing for continuous detection of all people, even extremely slow moving persons.

Along with HPR™ Technology, the D38 provides:

- Microprocessor controlled detection, for state-of-the-art performance and reliability
- Unidirectional and bidirectional detection in one unit
- Narrow and wide patterns, and variable elevation, in one unit
- Two (2) interchangeable planar antenna are provided—wide and narrow
- Easy installation and set-up (no need for proprietary external devices)
- A vandal resistant design
- A UV stabilized enclosure
- Service from the MS SEDCO Team (where customer service has always been our #1 priority)

### Section 2

#### Installation

##### Mounting & Wiring

The D38 is a flush mount sensor that easily mounts to the header of any automatic door. The typical mounting height is 7'6" (2.3m) with a maximum height of 15' (4.5m). The D38 can be mounted using the optional D38-BDB or D38-MP mounting brackets (see page 6) when more flexible mounting is required. Mounting screws are included with the D38. Operating voltage is 12V to 24V AC or DC ± 10%. AC power is typically supplied through a 12V or 24V transformer. Power consumed by the unit is 3.5 watts maximum. *NOTE: Transformer is not included.*

A screwdriver and drill are the only tools needed to install the D38. Using the screwdriver, gently pry the cover away from the back plate. This is done by inserting the flat head of the screwdriver into the lock at the top of the vandal-resistant cover. The model DRC rain cover may be necessary if no awning is available to protect the unit from direct rainfall.

Using the mounting template provided, locate the preferred mounting position (typically centered above the clear opening of the door) and drill the screw holes. Then drill the wire hole within the shaded area of the mounting template. Finally, install both screws part way only (screws provided). Complete the next section before actually mounting unit.

Remove (unplug) the terminal connector and connect the wires according to the wiring diagram. Once wired, replace the terminal connector and continue to wire the sensor to the operator as usual. *NOTE: Allow for a small drip loop behind the unit to insure that water will not enter through wiring hole.* Once all secondary wiring is completed, mount the D38 to the header as follows:

- 1) Place the screw on the right side into the slot on the right side of the sensor.
- 2) Slide the sensor up so that the screw on the left side slips into the wide part of the mounting keyhole on the left side of the sensor.
- 3) Slide the sensor down so that the screw on the left side slides into the narrow part of the hole on the sensor.
- 4) Once the screws are tightened, ensure that the sensor is tight by trying to move it up and down.

The sensor should fit snug to the mounting surface. If not, check for wires pinched under the edge of the back plate.



**NOTE:** Terminal Wiring is dependent on selection of "Failsafe On" or "Failsafe Off" (Dip Switch 4).

#### BEFORE APPLYING POWER, MAKE THE FOLLOWING ADJUSTMENTS:

In order to manipulate the detection zone, the following adjustments are available:

1. **Wide or Narrow Pattern.** To adjust pattern, simply install the appropriate planar antenna (see page 5 for diagram).
2. **Elevation Angle** (antenna tilt angle). To adjust the Elevation Angle, simply tilt the antenna up or down (21° to 45°, each click represents a 3° change).
3. **Potentiometers.** Two potentiometers are provided to further adjust the D38. To adjust the pots, simply turn clockwise to maximum, counterclockwise to minimum.

|                 |   |
|-----------------|---|
| Range           | Allows adjustment of pattern size                       |
| Relay Hold Time | Allows adjustment of time delay from 1 1/2 to 5 seconds |



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4. **Indicator LEDs (on).** LEDs are provided for ease of installation, walk testing and operation.

|               |   |
|---------------|---|
| Green LED     | Ready Mode  |
| Yellow LED #1 | Standard Motion Active (detecting motion 2" per second or faster)                   |
| Yellow LED #2 | Human Presence Radar™ (HPR™) Active (detecting motion to less than 1/2" per second) |
| Red LED       | Relay Active—Motion Sensed  |

5. **Four Position Dip Switch.** These dip switches set the internal threshold limits used by the software.

|  |     |  |
|--|-----|--|
| <b>Switch 1</b><br>Directionality              | ON  | Unidirectional (detects motion toward unit)              |
|  | OFF | Bidirectional (detects motion toward and away from unit) |
| <b>Switch 2</b><br>Standard Motion Sensitivity | ON  | High (more sensitive)                                    |
|  | OFF | Low (less sensitive)                                     |
| <b>Switch 3</b><br>HPR™ Sensitivity            | ON  | High (more sensitive)                                    |
|  | OFF | Low (less sensitive)                                     |
| <b>Switch 4</b><br>Failsafe Mode               | ON  | Door CLOSES in event of power failure (Failsafe OFF)     |
|  | OFF | Door OPENS in event of power failure (Failsafe ON)       |

Once alignment is complete, apply power to the D38.



**CAUTION:** DO NOT APPLY 120V AC primary power to power supply until all secondary wiring is complete.

Once the unit is powered up, the LEDs will flash while the unit is running a self-test. During the self-test, the door may remain open for a short period of time. The self-test is complete when the red LED stops flashing and the green LED illuminates and remains on. The red LED (on) is an indication that the relay has closed and activated the automatic door. The red indicator LED should be used to help set the pattern for the desired coverage.

Walk test the unit to ensure that the pattern extends to the edge of the door but does not see the door. If the unit sees the door, it will cycle continuously. Adjust the elevation angle and/or range, wait for the door to close and walk test again. When the pattern adjustment and final walk test are finished, replace the vandal resistant cover by inserting the pins in the bottom of the cover into

the back plate and rotating the cover upward until it snaps into place. Installation is complete.

Whenever the D38 settings are changed, exit the pattern and allow the door to close, then walk test again.

*NOTE: Each sensor is factory tuned to one of three frequencies centered around 24.125 GHz so that two or more doors in the same vicinity can be operated without interference.*

### Section 3

#### System Inspection and Instructions

**\*\*\*\*\*EXTREMELY IMPORTANT\*\*\*\*\***  
After final set-up, test unit(s) completely to ensure that proper coverage has been achieved (width, depth and location of the pattern must be tested).

After the installation and operational check of the system:

1. Place the proper labels on the door per ANSI/BHMA A156.10, A156.19 & BS 7036.
2. Instruct the owner of the door system operation and how to test it. This should be checked on a daily basis.
3. Instruct the owner on what to do if the door or any of its components become damaged.
4. Strongly recommend to the owner that the complete entry be inspected twice a year as part of the service agreement.

### Section 4

#### Technical Data

|                            |  |
|----------------------------|--|
| Model.....                 | D38  |
| Frequency.....             | 24.125 GHz ± 50 MHz (K-band)                       |
| Detection Method.....      | Doppler Shift Microwave                            |
| Detection Pattern.....     | Adjustable, Wide or Narrow                         |
| Detection Angle.....       | Adjustable, 21° to 45° in 3° increments            |
| Directionality.....        | Switch Selectable, Unidirectional or Bidirectional |
| Range.....                 | Adjustable (Range Pot.)                            |
| Max. Mounting Height.....  | 15 ft. (4.5m)                                      |
| Power.....                 | 12 to 24V AC or DC ± 10%                           |
| Power Consumption.....     | 3.5 W Maximum                                      |
| Output Contact.....        | Form C, Rated at 1 Amp                             |
| Output Power.....          | 5 mW Typical, 2 mW Minimum                         |
| Relay Contact Ratings..... | 0.5A: 50V AC—1A: 24V DC                            |
| Hold Time.....             | Adjustable, 1 1/2 to 5 Seconds                     |
| Mounting.....              | Flush Mounted                                      |





Temperature..... -22° F to 158° F  
 (-30° C to 70° C)  
 Color..... Flat Black  
 Enclosure..... UV Stabilized, ABS Plastic,  
 Ready To Paint  
 Weight..... <1 lb. (< 0.454kg)  
 Size (w/Cover On)..... 5 1/4"W x 4"H x 2 7/8"D  
 13.3cmW x 10.2cmH x 7.3cmD

### Section 5

#### Approvals

ANSI Standard (ANSI/BHMA A156.10-1999)  
 FCC Certified—FCC Rules, Part 15  
 Industry Canada—Section RSS210  
 U.S. Patent No. 5,903,217

This product is guaranteed to operate to the specifications listed if it is installed in accordance with these installation instructions.

### Section 6

#### Warranty

MS SEDCO guarantees this product to be free from manufacturing defects for 3 years from date of installation. Unless MS SEDCO is notified of the date of installation, the warranty will be in effect for 3 years from the date of shipment from our factory. If, during the first 3 years, our motion detector or support device fails to operate and has not been tampered with our abused, the unit can be returned prepaid to factory and it will be repaired free of charge. After 3 years, the unit will be repaired for a nominal service charge. **This limited warranty is in lieu of all other warranties expressed or implied, including any implied warranty of merchantability, and no representative or person is authorized to assume for MS SEDCO any other liability in connection with the sale of our products. All warranties are limited to the duration of this written warranty. In no event shall MS SEDCO be liable for any special, incidental, consequential or other damages arising from any claimed breach of warranty as to its products or services.**

**Questions? Call us toll-free at 1-800-842-2545 or visit us online at [www.mssedco.com](http://www.mssedco.com).**

### Section 7

#### Troubleshooting

**PROBLEM: Door will not open when activated.**

*Does red LED come on when sensor is approached?*

**NO**  
 Turn sensitivity adjustment to maximum.

**YES**  
 Connect one lead of OHM meter to the N.O. terminal of sensor and the other lead to the COM terminal of the sensor. Be sure all the wires are disconnected from those 2 terminals. (Set meter to 1K).

*Does red LED come on when sensor is approached?*

**YES**  
 Adjust sensor settings. If problem persists, replace sensor.

**NO**  
 Verify adequate power supply to sensor. Repair as necessary.

**If problem persists, please call us at 1-800-842-2545.**

*Does circuit open and close when sensor is activated?*

**YES**  
 Ensure that wiring is accurate between sensor and activate input. Be sure to check door on/off switch for proper operation.

**NO**  
 Replace sensor.

**If problem persists, please call us at 1-800-842-2545.**

**PROBLEM: Door will not close.**

*Does red LED at sensor come on an go out when you enter and exit the detection field?*

**NO**  
 Test input power to sensor with voltmeter.

**YES**  
 Disconnect the wires from the N.O. and COM terminals of the motion sensor.

*Is voltage sufficient (12V to 24V AC or DC ± 10%)?*

**YES**  
 Replace sensor.

**NO**  
 Replace power supply and/or related wiring.

**If problem persists, please call us at 1-800-842-2545.**

*Did the door close?*

**YES**  
 Replace sensor.

**NO**  
 Problem is NOT motion sensor. Check door on/off switch and related wiring. Refer to the door manual.

**If problem persists, please call us at 1-800-842-2545.**

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**PROBLEM: Door constantly recycles (opens and closes).**

*First, determine whether or not the sensor is causing the recycling. Ensure that there is nothing moving in the field of detection and watch the sensors' red LED as the door recycles. Does the red LED come on as door recycles?*

**NO**

Problem is NOT motion sensor. Refer to the door manual.

**YES**

Reduce the motion sensor range to minimum.

***If problem persists, please call us at 1-800-842-2545.***

***Does recycling stop?***

**YES**

Slowly increase range while continually walk testing the door. If proper operation cannot be achieved, read NO section to the right.

**NO**

Increase the elevation angle of the antenna to shift pattern out from the face of the door. Once done, adjust the sensitivity for proper detection field.

***If problem persists, please call us at 1-800-842-2545.***

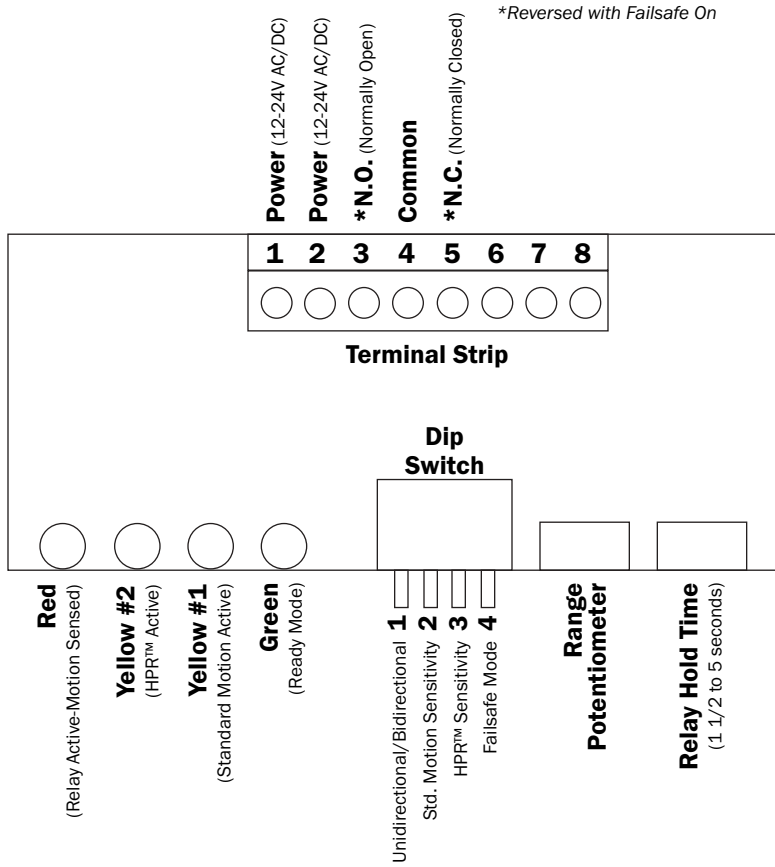
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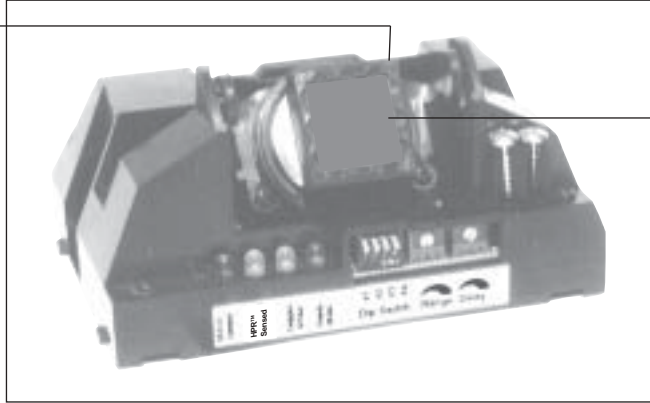


## INSTALLATION INSTRUCTIONS

### D38 WIRING DIAGRAM



**Snap-Ring**  
Square Actually!  
Plastic retainer—fits over antenna & holds in place.



**Wide Pattern**  
Wide planar antenna shipped in place.

**Narrow Pattern**  
Remove snap-ring, replace wide with narrow planar antenna and replace snap-ring.

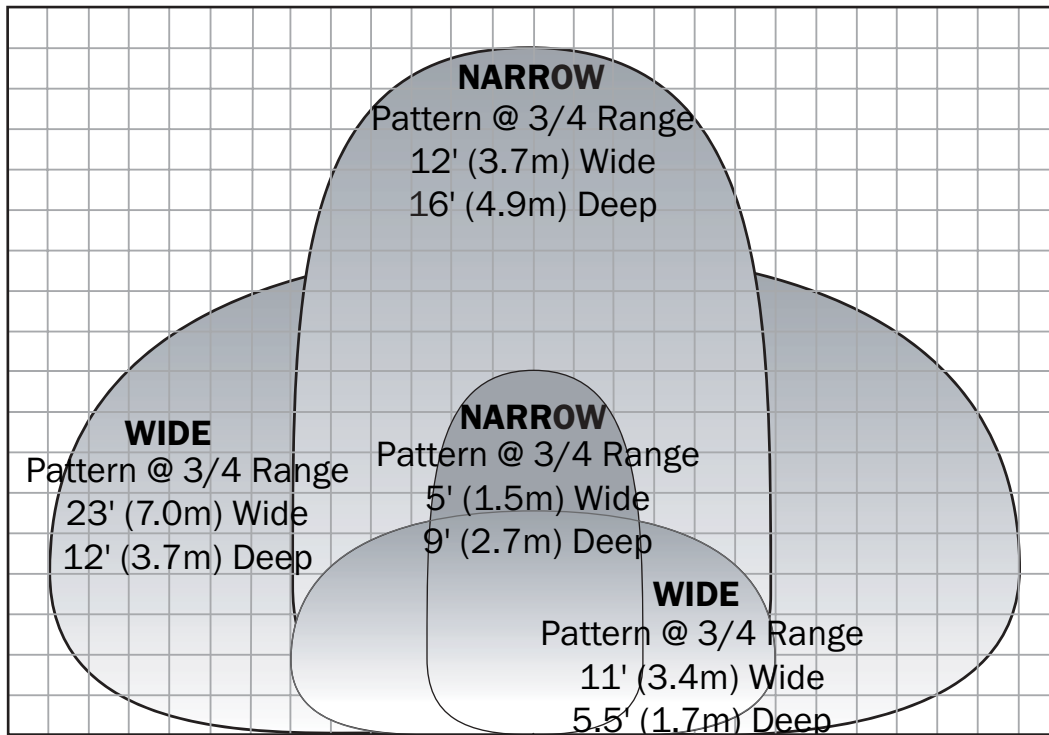
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INSTALLATION INSTRUCTIONS

## D38 PATTERN DIAGRAM



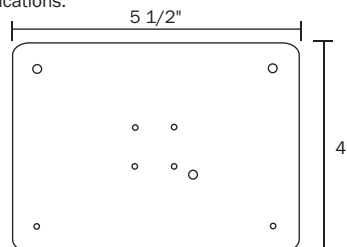
NOTE: The smaller detection patterns shown are from a D38 mounted 7'6" above the finished floor with an elevation angle of 27°. The larger detection patterns shown are from a D38 mounted 15' above the finished floor with an elevation angle of 27°. All patterns shown are approximate and can vary slightly. Walk test the unit to assure the pattern desired.

## D38-BDB BACKPLATE/BRACKET AND D38-MP MOUNTING PLATE

The D38-BDB is an optional bracket for the D38 sensor. It allows universal aim adjustment and adapts the D38 for unique mounting requirements.



The D38-MP is an optional mounting plate that adapts the D38 sensor for mounting to a 1 3/4" door header. It can also be field prepped for a variety of unique mounting applications.



(Drawing Not To Scale)