1. Features

- Uses TSI™ - Target Specific Imaging technology for distinction between humans and pets (patent pending)
- Immune to pets weighing up to 36 kg (80 lb)
- True Motion Recognition™ (TMR) algorithm distinguishes between the true motion of a human body and other disturbances which invariably cause false alarms (patented)
- DRO-stabilized MW microstrip technology (patented)
- MW Motion Simulator simulates the effect created by a human body moving in the MW field (patent pending)
- Range control for adjusting the MW coverage
- Integral swivel bracket for wall or ceiling installation
- Sealed chamber protects the pyroelectric element from insects
- Programmable motion event counter (1 or 2 events)
- Simple-to-use three position vertical adjustment
- TEST input to remotely enable/disable the walk test LED (per new European standards)
- Open collector TROUBLE output
- White light protection

2. Specifications

Input Voltage: 9 to 16 VDC
Current Drain: About 28 mA @ 12 VDC

OPTICAL
Max. Coverage: Room of 12 m (40 ft) diagonal size / 90°
Pet Immunity: Immune to pets weighing up to 36 kg (80 lb)
Vertical Adjustment: 3-position adjustment scale: 1.8 m (6 ft), 2.1 m (7 ft) and 2.4 m (8 ft).

PIR SECTION
Detector: Low noise dual-element pyroelectric sensor
Tripping Indication: LED flashes green for up to 5 seconds
True Motion Event Verification Counter: Selectable, 1 or 2 motion events

MW SECTION
Oscillator: Microstrip DRO-stabilized Doppler module
Frequency: 10.525 GHz (U.S.A. only) or 2.45 GHz (Europe)
Detection Range: Adjustable from 25% to 100% (3 m to 12 m)
Trip Indication: LED glows green for up to 5 seconds

ALARM, TAMPER & TROUBLE DATA
Alarm Indication: LED glows red for 1.3 to 5 seconds if both detectors trip
Relay Contacts: N.C., rated at 0.1 A resistive / 30 VDC; 18 Ω resistor in series with contacts
Alarm Duration: 1.3 to 5 seconds (LED glows red and output relay contacts open)
Tamper Switch: N.C., rated at 50 mA resistive / 30 VDC
Trouble Output: Open collector, 100 mA max., with 18Ω resistor in series and 47 kΩ pull-up (see Figure 11)

3. Installation

3.1 Installation Hints

Important! The detector is immune to 36 kg (80 lb) animals moving on the floor or climbing on furniture as long as the activity takes place below 1 m (3 ft). Above the 1 m (3 ft) height limit, the detector is immune to 18 kg (40 lb) pets, but the pet immunity will decrease as the pet gets closer to the detector. It is therefore recommended to select a mounting location that minimizes potential close proximity of animals.

To minimize false alarms:
- Do not aim at heat sources
- Mount on solid, stable surfaces
In addition, a few important rules must be observed while selecting a mounting location:

A. Microwave radiation passes through glass and non-metallic walls. Be sure to adjust the MW range so that it does not exceed the room limits, or else motion in the next room or moving traffic along the outer side of the wall will cause the MW detector to trip.

B. Large reflecting objects (especially metals) within the coverage area can distort the microwave detector’s coverage pattern.

C. If two DISCOVERY DUO/K9-80 units are installed in the same room or on opposite sides of a shared wall, they should not face each other and must be mounted at least 2 meters apart.

D. Do not install the DISCOVERY DUO/K9-80 in places where one of the two detector circuits alarms constantly or intermittently, due to environmental interference.

3.2 Mounting without Swivel Bracket

A. Remove the front cover as shown in Figure 3.

B. Loosen the vertical adjustment screw, slide the PCB down and remove it via the “keyhole” (see Figure 4).

C. Pull the PCB straight out and put it aside until required again.

D. Refer to Figure 5 and punch out the mounting knockouts at the rear wall of the base (for surface mounting) or at the angled sides of the base (for corner mounting).
H. Route the cable through the bracket and into the detector as shown in Figure 9.

I. Attach the bracket to the mounting surface using the two screws supplied.

J. Swivel the detector horizontally to face the desired direction, but do not tilt it if this is a pet immune application (see Figure 10). However, if pets are not present it is advisable to tilt the detector as much as 20° down.

K. Having pointed the detector as desired, tighten the bracket screw strongly, to prevent any further change of position.

### 3.4 Wiring

Refer to Figure 11 and connect wires to the terminal block in the order given below:

**Terminal:** TAMP (tamper switch)

- **Connect to:** A normally closed 24-hour tamper zone of the control panel.
- **Details:** Upon removal of the cover, the tamper contacts open.

**Terminal:** NC (alarm relay)

- **Connect to:** A normally closed burglar protection zone.
- **Details:** Upon alarm or power failure, the output relay’s normally closed contacts open.

**Terminal:** TRB (trouble output)

- **Connect to:** 24-hour trouble zone
- **Details:** The TRB open collector output will be grounded upon detector malfunction, thus triggering the trouble zone.
- **Alternative:** A buzzer or an interface relay may be connected across the TRB output and the 12 VDC (+) terminals.

**Terminal:** TST (TEST input)

- **Connect to:** +12 VDC or ground potential (depending on the setting of DIP switch SW-3) via a test switch.
- **Details:** Applying the trigger voltage to the TST input will enable the dual color LED for walk testing.

**Terminals:** 12 V (+) and (–)

- **Connect to:** A power source within the range of 9 to 16 VDC.
- **Details:** It is advisable to connect the power source only after all other connections have been completed and rechecked. Disconnect the AC mains from the alarm control panel and verify that the voltage supplied to the detector is above 9 Volts with the backup battery as the only power source.

**IMPORTANT:** To comply with CE safety requirements, connect to CE-approved control panels with current-limited DC output.

**Note:** Use RTV to seal the base opening(s) to prevent insects from entering the detector.

### 3.5 The Power-up Process

After connecting the (+) and (–) terminals to the power source, the detector starts a 30-second warm-up period, indicated by alternate flashing of the green and red lights.

**Caution:** If the alternate flashing of the red and green lights does not stop within 30 seconds, a failure has been detected by the self-test circuitry.

### 3.6 Visual Indications

The dual color LED is used to signal various alarm and trouble messages as shown in Table 1 below:

<table>
<thead>
<tr>
<th>Visual Indication</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>No detection</td>
</tr>
<tr>
<td>Steady green (5 s)</td>
<td>MW walk-test detection</td>
</tr>
<tr>
<td>Flashing green</td>
<td>PIR walk-test detection</td>
</tr>
<tr>
<td>Steady red (5 s)</td>
<td>Alarm: MW + PIR detection</td>
</tr>
<tr>
<td>Flashing red and green (alternately)</td>
<td>Trouble is being detected by the self-test circuitry, or Initial warm-up routine (stops 30 seconds after power up).</td>
</tr>
</tbody>
</table>

**Notes:**
1. During walk testing, the green light lights steadily (MW detection) or flashes (PIR detection), depending on which one of the two detectors discovered the movement first. Upon subsequent discovery of the movement by the other detector, the green light goes off and the red light comes on (alarm).
2. If the LED maintains alternate red and green flashing beyond the warm-up period, a malfunction has been diagnosed. Replace the unit without delay.

### 3.7 Mode Selector

The DIP switch mode selector is mounted on the unit’s PC board (see Figure 5). It controls four functions as demonstrated in Figure 12 and as detailed in Table 2.

![Figure 12. DIP Switch Mode Selector](image)

### 3.8 Vertical Adjustment

#### A. Pet-Immune Applications

To maintain maximum coverage range and pet immunity, the vertical adjustment scale must be adjusted in accordance with the actual mounting height (refer to Figure 13). Loosen the vertical adjustment screw and slide the printed circuit board up or down until the pointer shows the actual mounting height on the scale. When done, re-tighten the screw well.
3.11 MW Walk Test
A. Remove the front cover.
B. Verify that the MW RANGE control is set fully counterclockwise to MIN and that DIP switch SW-2 is set to ON (LED is enabled).
C. Start by moving into the coverage area at the far edge. The LED should light green for up to 5 seconds each time your motion is detected.
D. If your motion was not detected at the far edge, advance the MW RANGE control slightly clockwise toward MAX and try again until your motion is detected reliably at the far edge.

Caution! The MW detection range must not exceed the far edge of the desired coverage area.

E. Walk across the coverage area at various ranges and verify that your motion is consistently detected.

Note: If PIR trips interfere with your test, disable the PIR by inserting a small piece of cardboard in front of the sensor.

3.12 Alarm Walk Test
A. Set DIP switch SW-2 to ON (the LED is enabled).
B. Install the front cover in place.
C. Walk across the detector’s field of view in different directions, at various distances from the detector, and verify proper alarming throughout the detector’s coverage area (the red light glows for 1.3 to 5 seconds).
D. When done, remove the cover and set DIP switch SW-2 to OFF to prevent unauthorized tracing of the coverage pattern.
E. Remount the cover and fasten it to the base using the small screw at the bottom.

Attention! To assure proper function of the detector, the range and coverage area should be checked at least twice a year. Furthermore, it is recommended that users perform a walk test at the far end of the coverage pattern to assure an alarm signal prior to each time the alarm system is armed.

4. MISCELLANEOUS COMMENTS
This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against interference in residential installations. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio and television reception. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause such interference, which can be verified by turning the device off and on, the user is encouraged to eliminate the interference by one or more of the following measures:
- Re-orient or re-locate the receiving antenna.
- Increase the distance between the device and the receiver.
- Connect the device to an outlet on a circuit different from the one which supplies power to the receiver.
- Consult the dealer or an experienced radio/TV technician.

WARRANTY
Visonic Ltd. and/or its subsidiaries and its affiliates (“the Manufacturer”) warrants its products hereinafter referred to as “the Product” or “Products” to be in conformance with its own plans and specifications and to be free of defects in materials and workmanship under normal use and service for a period of twelve months from the date of shipment by the Manufacturer. The Manufacturer’s obligations shall be limited within the warranty period, at its option, to repair or replace the product or any part thereof. The Manufacturer shall not be responsible for dismantling and/or reinstallation charges. To exercise the warranty the product must be returned to the Manufacturer freight prepaid and insured.

This warranty does not apply in the following cases: improper installation, misuse, failure to follow installation and operating instructions, alteration, abuse, accident, tampering, and repair by anyone other than the Manufacturer.

This warranty is exclusive and expressly in lieu of all other warranties, obligations or liabilities. Whether written, oral, express or implied, including any warranty of merchantability or fitness for a particular purpose, or otherwise. In no case shall the Manufacturer be liable to anyone for any consequential or incidental damages for breach of this warranty or any other warranties whatsoever, as aforesaid.

This warranty shall not be modified, varied or extended, and the Manufacturer does not authorize any person to act on its behalf in the modification, variation or extension of this warranty. This warranty shall apply to the Product only. All products, accessories or attachments of others used in conjunction with the Product, including batteries, shall be covered solely by their own warranty, if any. The Manufacturer shall not be liable for any damage or loss whatsoever, whether directly, indirectly, incidentally, consequentially or otherwise, caused by the malfunction of the Product due to products, accessories, or attachments of others, including batteries, used in conjunction with the Products.