**ALCAD systems ltd.**

# INSTALLATION INSTRUCTIONS

# AV-QDT100™

## Digital PIR & Microwave Detector with Pet Immunity up to 25 kg

C€ CE

**Item:** 4774_DT (A5DS). **Rev 3:** Nov 2011

## Product Features

The AVQDT-100 is a combination of PIR & MW detectors, providing intruders protection by PIR sensor element and MW (based on Doppler concept).
Using micro controller for PIR & MW signal analyzing, with special ASIC technology for PIR pulse processing.
The digital AVQDT-100 eliminates false alarms, caused by small animals and Pets.

- Four Element Quad PIR Sensor
- Microwave detection based on Doppler concept.
- Unique Microwave Motion Sensor Module with advanced Micro strip patch antenna.
- VLSI based electronics with movement speed spectrum analysis.
- Height installation calibrations free.
- User-friendly installation with or w/o swivel bracket.
- 2-way Microwave sensitivity adjustment.
- 2-way PIR sensitivity adjustment.
- Bi directional temperature compensation.
- Environmental immunity.
- Pet immunity up to 25Kg (Selectable: 15Kg or 25Kg). Pet active bellow 1m.
- LED ON/OFF Jumper
- EOL – Spare Terminal
- Tamper Switch

**OPTIONS**
- Long Range Curtain Lens
- Wall & Ceiling Mount Bracket

## Detection Patterns

**Fig. 1 - Wide Angle Lens at 2.4M high**
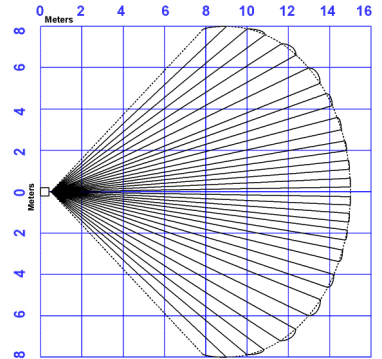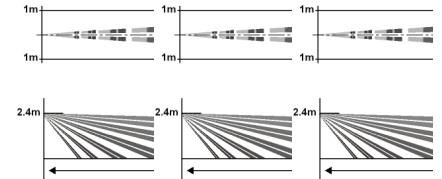


**Fig 2 - Long Range Curtain Lens – Option**



## Select Mounting Location

Choose a location most likely to intercept an intruder. See detection pattern **fig. 1 and fig.2.**
The **AVQDT-100** performs best when provided with a constant and stable environment and background.
The quad-element high quality sensor detects motion crossing the beam; it is slightly less sensitive detecting motion toward the detector.

**Long Range Curtain Lens - OPTION**
When pet immunity is required, optional Long Range Curtain Lens cannot be used. Pet immunity can only be achieved with Wide Angle Lens.

### AVOID THE FOLLOWING LOCATIONS:
- Facing direct sunlight
- Facing areas that may change temperature rapidly
- Areas where there are air ducts or substantial airflows
- Avoid screen, curtain that may block detection area
- Do not install outdoors
- Do not install near MW antennas

## Pet Immunity

Pet immunity is most effective on the following sized animals:
Rodents = 5 to 12cm high
Cats = 5 to 35 cm high at normal room temperature.
Small to medium sized dogs = 10 to 45cm high at normal room temperature.
When a dog jumps up on desks, the AVQDT-100 may detect it. Adjust detection area to avoid such places.
Mount between 2.1 and 2.4m. (For better immunity, especially for medium sized dogs, mount as close to 2.4m, as possible).
Do not angle detector towards the ground or use the angle bracket.
Mount flat on the wall or in the corner.
For best pet immunity, limit the detectors field of view to 10~12m maximum in any direction.
Pulse Count *Low* is not required for Pet Immunity applications.
Use **Low** pulse only in harsh environment.
For rodents.
If any shelves within 4.5m of the detector have a height that comes within 0.5~1m below the mounting height of the detector and rodents can access these areas, pet immunity will be reduced. Please select mounting location of detectors carefully to avoid this situation.
For cats.
If there are cats, any shelves in the detection area will reduce pet immunity.

## Mounting the Detector

The detector can either be wall or corner mounted. If ceiling or special wall mounting is required, use the optional bracket base. Refer to bracket description (See fig. 7). Mounting height at 2-2.4 meters, consider maximum range at 12 meters.

1. Unscrew the holding screw and gently raise the front cover (Fig. 4).
2. Carefully unscrew the PCB holding screw located on the PC board (Fig. 6).
3. Break out the desired knockout holes for proper installation (Fig. 3).
4. The circular and rectangular indentations at the bottom base are the knockout holes for wire entry. You may also use mounting holes that are not in use for running the wiring into the detector (Fig. 3).
5. For bracket mounting option - lead wire through the bracket.
6. Mount the detector base to the wall, corner or ceiling. (For option with bracket see Fig. 7).
7. Reinstall the PC board by fully tightening the holding screw. Connect wire to terminal block.
8. Replace the cover by inserting it back in the appropriate closing pins and screw in the holding screw.

## Mounting Description (Fig 3 & Fig 4)
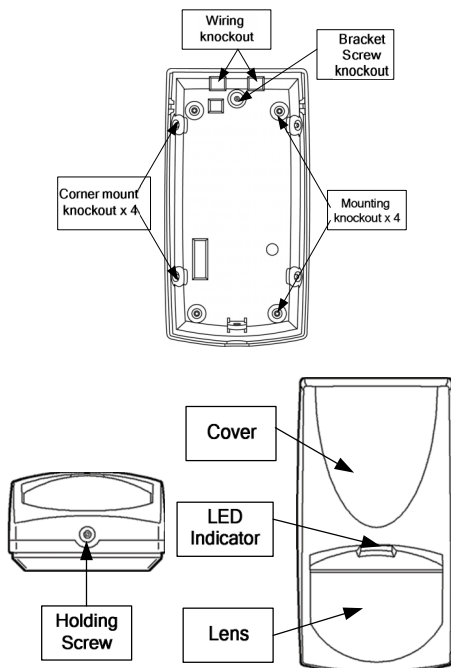




## Terminal Block Connections (fig 5)



AVQDT-100
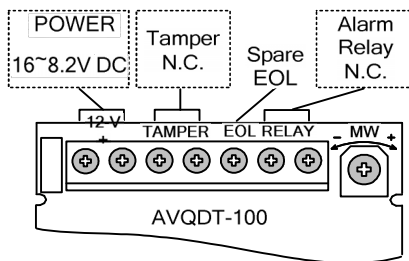
**Terminal 1 - Marked - (GND)**
Connect to ground of the control panel.

**Terminal 2 - Marked + (+12V )**
Connect to the positive Voltage output of 8.2 ~ 16Vdc source (usually from the alarm control unit).

**Terminals 3 & 4 - Marked TAMPER**
Connect these terminals to a 24hour normally closed protective zone in the control unit.
Once the front cover of the detector is opened, an immediate alarm signal will be sent to the control unit.

**Terminal 5 - Marked EOL**
End of line option.

**Terminals 6 & 7 - Marked RELAY**
These are the output relay contacts of the detector.
Connect to the control at zone input.

## Testing the Detector

Apply 12 Vdc power to the detector, wait 2 minutes to finish the detector warm up time. Conduct testing with the protected area cleared of all people.
**Walk test**
1. Remove front cover.
2. Make sure that **PIR and MW** switches are in positions high sensitivity.
3. Make sure that **LED** switch is **ON**.
4. Replace the front cover.
5. Start walking slowly across the detection zone.
6. Observe that the detector's LED lights whenever motion is detected.
7. Allow 5 sec. between each test.
8. After the walk test is completed, the **LED, PIR and MW** switches may be changed.
**NOTE:** Walk tests should be conducted, at least once a year, to confirm proper operation and coverage of the detector.

### WIRE SIZE REQUIREMENTS
Use #22 AWG (0.5mm) or wires with a larger diameter. Use the following table to determine required wire gauge (diameter) and length of wire between the detector and the control panel.

| Wire Length | m | 200 | 300 | 400 | 800 |
|---|---|---|---|---|---|
| Wire Diameter | mm | .5 | .75 | 1.0 | 1.5 |
| Wire Length | ft | 800 | 1200 | 2000 | 3400 |
| Wire Gauge | # | 22 | 20 | 18 | 16 |

## Setting up the Detector

### LED INDICATION OF ALARM SIGNAL
Switch 1 of dipswitch DIP5 use for setting - LED Enable / Disable
Position Right – ON - LEDs ENABLE
The RED LED will activate when the detector is in alarm condition.
Position Left – OFF - LEDs DISABLE
Note: the state of the switch "LED" does not affect the operation of the relay.
When an intrusion is detected, the LED will activate and the alarm relay will switch into alarm condition for 2 sec.

### PIR ADJUSTMENT
PULSE COUNT CONTROL
Switch 2 of dipswitch DIP5 use for setting the PULSE count function in order to provide PIR sensitivity control according to the environment.
Position Left – OFF. High sensitivity - 2 PULSES - for normal stable environment with wide angle lens.
Position Right – ON. Low sensitivity – 3 PULSES - for harsh environments.
Note: For Long Range Lens set Switch 2 to OFF.
RANGE CONTROL
Use the Potentiometer marked "PIR" to adjust the detection sensitivity between 15% and 100%, according to walk test in the protected area.
(Factory setting is 57%)
Rotate the potentiometer clockwise to increase range, counter-clockwise to decrease range.

### MW ADJUSTMENT
RANGE CONTROL
Switch 3 of dipswitch DIP5 use for setting the MW function in order to provide MW range control according to the room size.
Position Left – OFF – Long. For room size 10m – 18m.
Position Right – ON – Short. For room size 5m – 9m.
SENSITIVITY CONTROL
Position the potentiometer "MW" at min-scale firstly, then, along with walk testing, turn to mid-scale or max-scale gradually until you get detection at the longest distance for the required detection range.
Rotate the potentiometer clockwise to increase range, counter-clockwise to decrease range.

### PET IMMUNITY SETTING
Switch 4 at the dipswitch used for setting the PET Immune function - Up to 15Kg or 25Kg, depending on the pet weight.
Position Right - ON Immunity to an animal up to 15 kg
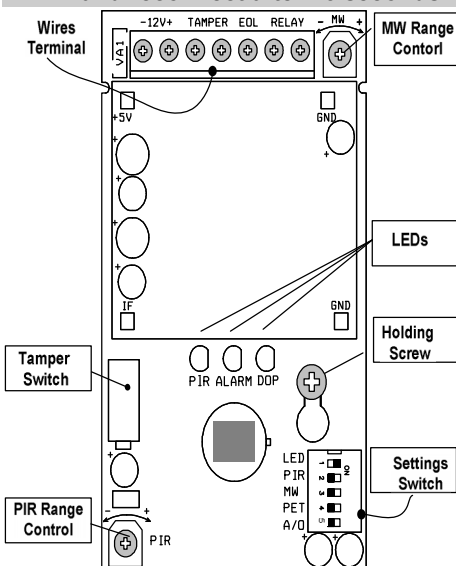Position Left - OFF Immunity to an animal up to 25 kg

### ALARM MODE SETTING
Switch 5 of dipswitch DIP5 use for setting the mode of the detector. Position Left-"AND" - The alarm signal occurred only when both sensor signals (PIR & MW) are present at the same time.
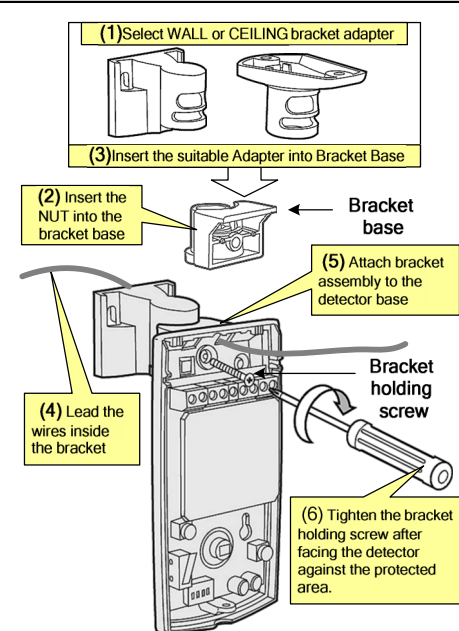Position Right -"OR"- The alarm signal (relay activation) occurred when one of the sensor signals (PIR & MW) is present. After setting make reset.
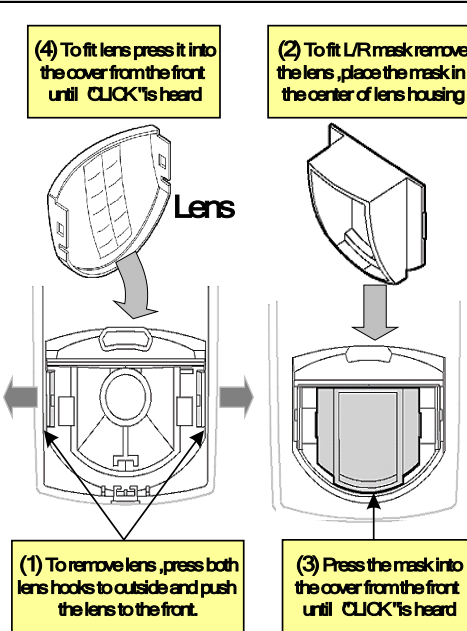
## PCB Layout (fig 6)

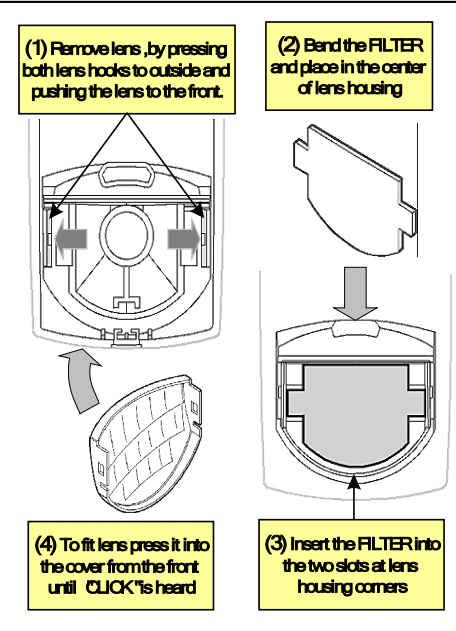**After set reset the detector; disconnect 12V and reconnect after 15 seconds**

## Bracket Installation Option (fig 7)

(1) Select WALL or CEILING bracket adapter
(3) Insert the suitable Adapter into Bracket Base
(2) Insert the NUT into the bracket base
Bracket base
(5) Attach bracket assembly to the detector base
(4) Lead the wires inside the bracket
Bracket holding screw
(6) Tighten the bracket holding screw after facing the detector against the protected area.

## Long Range Curtain Option (fig 8)

(4) To fit lens press it into the cover from the front until "CLICK" is heard
(2) To fit L/R mask remove the lens, place the mask in the center of lens housing
Lens
(1) To remove lens, press both lens hooks to outside and push the lens to the front.
(3) Press the mask into the cover from the front until "CLICK" is heard

## Visible Light Filter Option (fig 9)

(1) Remove lens, by pressing both lens hooks to outside and pushing the lens to the front.
(2) Bend the FILTER and place in the center of lens housing
(4) To fit lens press it into the cover from the front until "CLICK" is heard
(3) Insert the FILTER into the two slots at lens housing corners

## Technical Specifications

| | |
|---|---|
| Detection Method | Quad element PIR & microwave pulse Doppler |
| Power Input | 9.6 to 16 Vdc |
| Current Draw | Active: 25.5 mA |
| | Standby: 16.5 mA |
| Temperature Compensation | Digital with analog channel |
| Alarm Period | 2 +/- 1 sec |
| Alarm Output | N.C 28Vdc 0.1 A with 10 Ohm series protection resistors |
| Tamper Switch | N.C 28Vdc 0.1A with10 Ohm series protection resistor - open when cover is removed |
| Warm Up Period | 60 seconds |
| LED Indicator | Yellow LED is blinking during warm up period & self testing |
| | Red LED: ON during alarm |
| | Green LED: PIR CHANNEL |
| | Yellow LED: MW CHANNEL |
| Dimensions | 115 mm x 61 mm x 37.5 mm |
| Weight | 120g |

**We reserves the rights to change specifications without prior notice**

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## Warranty & Contact

Buyer understands that a properly installed and maintained alarm may only reduce the risk of burglary, robbery or fire without warning, but it is not insurance or a guarantee that such will not occur or that there will be no personal injury or property loss as a result. CONSEQUENTLY, SELLER SHALL HAVE NO LIABILITY FOR ANY PERSONAL INJURY, PROPERTY DAMAGE OR OTHER LOSS BASED ON A CLAIM THAT THE PRODUCT FAILS TO GIVE WARNING. HOWEVER, IF SELLER IS HELD LIABLE, WHETHER DIRECTLY OR INDIRECTLY, FOR ANY LOSS OR DAMAGE ARISING UNDER THIS LIMITED WARRANTY OR OTHERWISE, REGARDLESS OF CAUSE OF ORIGIN, SELLER'S MAXIMUM LIABILITY SHALL NOT IN ANY CASE EXCEED THE PURCHASE PRICE OF THE PRODUCT, WHICH SHALL BE THE COMPLETE AND EXCLUSIVE REMEDY AGAINST SELLER.
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**Warning: Test this product at least once a week**

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