

## AQUA PLUS

DIGITAL PASSIVE INFRARED DETECTOR



aqua\_plus\_e 07/06

The microprocessor-based, fully digital AQUA PLUS detector is characterized by high sensitivity and interference resistance. Due to an advanced digital temperature compensation feature, the device can work in a wide temperature range. A dual pyroelectric element is used in the detector. The processor performs two-way signal analysis, based on value and quantity.

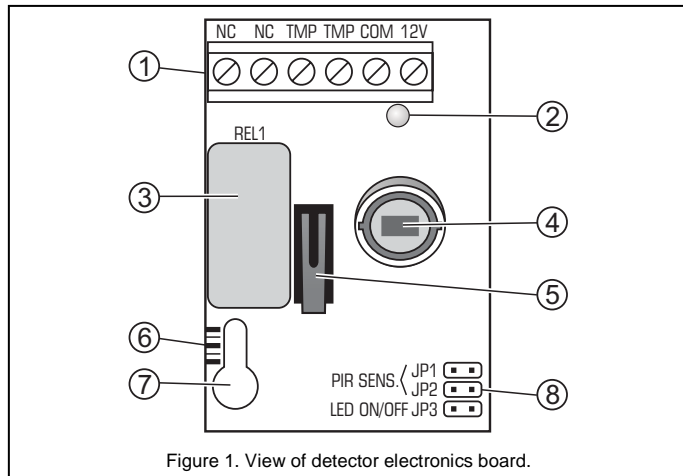


Figure 1. View of detector electronics board.

Explanations to Fig. 1:

1 – terminals:

- NC** – relay (NC)
- TMP** – tamper contact
- COM** – common ground
- 12V** – supply input

2 – LED indicator. It lights red for approx. 2 seconds after movement is sensed by the detector and the alarm relay activated (opening of the NC contacts). This allows the installer to check the detector for correct functioning and to approximately determine the protected area.

3 – alarm relay.

4 – pyroelement.

5 – tamper contact.

6 – scale for positioning of pyro element against the lens (see Table 2 and Figure 4).

7 – fixing screw hole.

8 – pins for setting detector operating parameters (see Table 1).

The detector is provided with a **prealarm feature**. The prealarm is indicated by a short flash of the LED for approx. 120ms, but does not activate the relay. Activation of the prealarm takes place when the detector registered disturbances in the environment, which do not meet the alarm criterion. The prealarm sensitivity depends on what sensitivity is set on the detector pins. Frequently occurring prealarms may cause activation of the alarm relay.

For 30 seconds after the power-up, the detector remains in the **starting state**, which is signalized by a rapid LED blinking. Only then the detector enters its operational readiness state.

The detector monitors the supply voltage. If the voltage drops below 9V ( $\pm 5\%$ ) for more than 2 seconds, the detector will signal a trouble by activation of the alarm relay and by steady light of the LED indicator. Restoration of a minimum 9V ( $\pm 5\%$ ) voltage will turn the signaling off.

	Pins			
	JP1	JP2	JP3	
Low sensitivity	■ ■	■ ■		■ - pins shorted □ - pins open
Medium sensitivity	■ ■	■ ■		
	■ ■	■ ■		
High sensitivity	■ ■	■ ■		
LED indicator ON			■ ■	
LED indicator OFF			□ □	

Table 1. Programming of working parameters.

## Installation

The detector is designed for indoor installation. It can be mounted on the wall, either directly or on the included holder (the manufacturer recommends mounting on the holder).



**Be careful so as not to soil or damage the pyro element in the process of installation.**

**Be careful during installation not to turn the detector towards heat sources and air-conditioning outlets, as well as objects exposed to strong solar radiation.**

1. Open the housing as shown on Fig. 2.

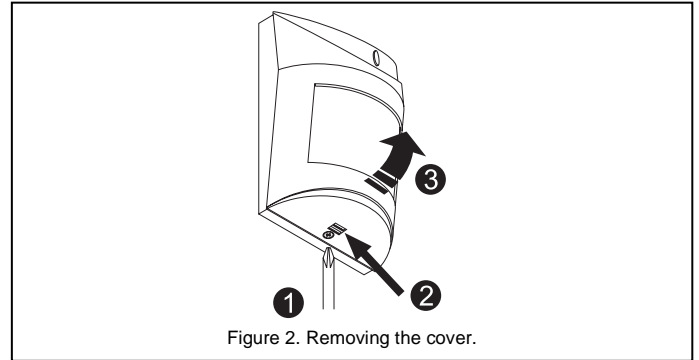


Figure 2. Removing the cover.

2. Remove the electronics board.

3. Make suitable openings for screws and cable in the rear panel of the housing.

4. Pass the cable through the prepared opening.

5. Fix the rear housing panel to the wall or to the attached holder.

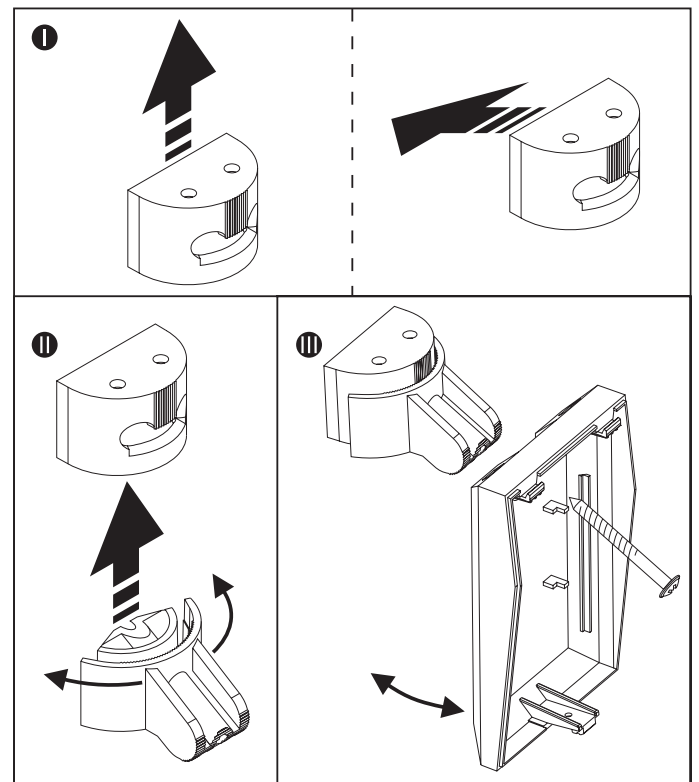


Figure 3. Mounting the detector on the holder.

6. Fasten the electronics board, taking into consideration the height of detector installation (see Table 2 and Figure 4).

Detector installation height	Scale position in relation to housing indicator
more than 2.1m	center scale mark above the indicator
<b>2.1m</b>	<b>center scale mark in line with the indicator</b>
less than 2.1m	center scale mark below the indicator

Table 2. Positioning of pyroelement in relation to the lens.

7. Connect the leads to the corresponding terminals.

8. Using jumpers, set the working parameters of the detector (see Table 1).

9. Close the detector housing.

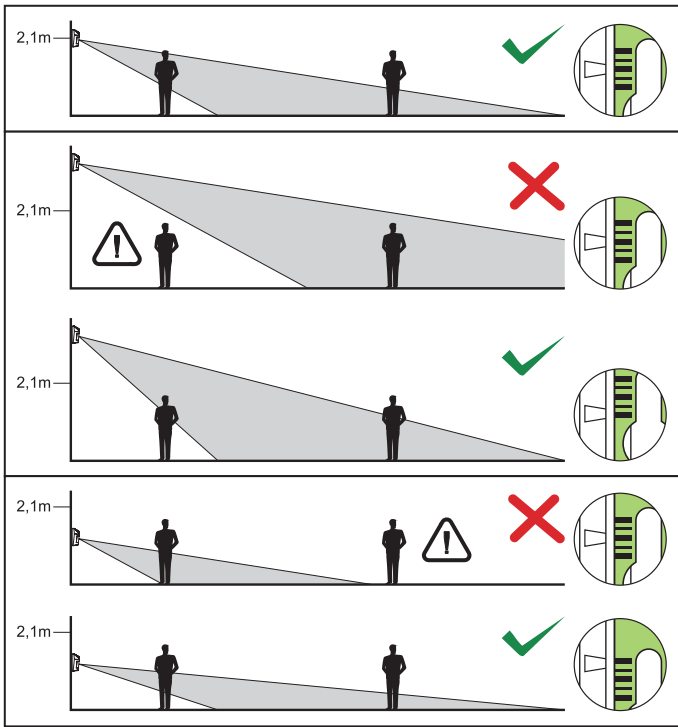


Figure 4. The controlled area depending on the detector installation height and positioning of pyroelement in relation to the lens for the optimal setting.

### Start-up

1. Switch the detector power on. The LED will start blinking (if the JP3 pins are shorted).
2. When the detector enters the ready state (the LED will stop blinking), carry out the detector range test, i.e. check that movement within the supervised area will activate the alarm relay and lighting of the LED.
3. If necessary, change the detector sensitivity (pins JP1 & JP2).

### Lenses

An extra wide angle (EWA) lens is installed in the detector, however, it is possible to replace it by another lens with different characteristics (range, number of beams, angle of view). The available lenses are described in Table 3.

Lens type	Range	Angle of view
extra wide angle (EWA)	15m	141,2°
long range with access zone monitoring (LR)	30m	main beam – 3m wide (at the end of range)
vertical barrier (VB)	22,5m	2.2m wide (at the end of range)

Table 3. Available lenses for AQUA PLUS detectors.

**Note:** The detector operating range should be selected to match the size of space where the detector will be installed. The size of the space along the main direction of detector positioning is not to be less than 1/3 the nominal range of the detector. Improper selection of the lens may cause excessive sensitivity and trigger false alarms.

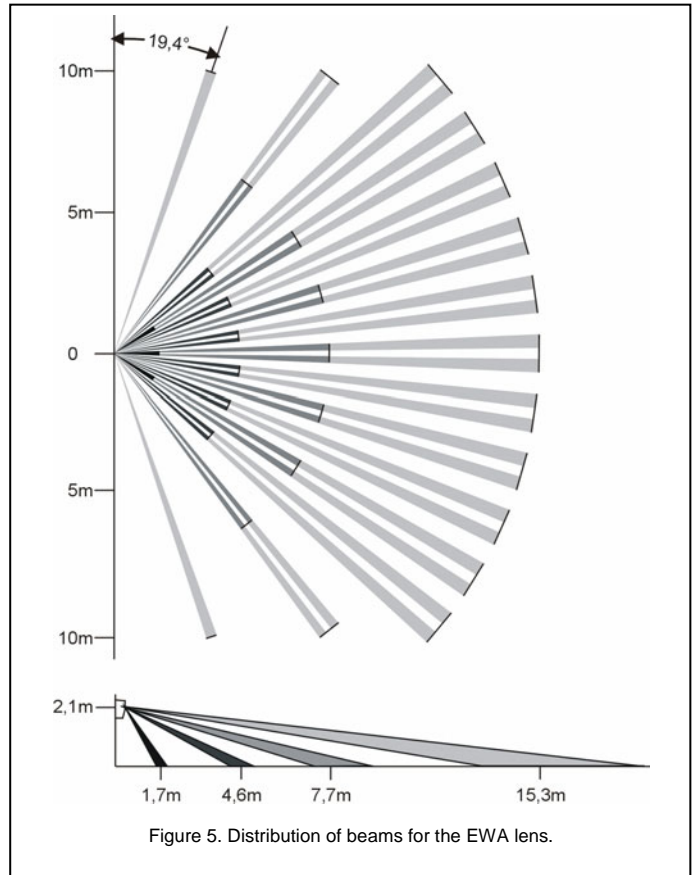


Figure 5. Distribution of beams for the EWA lens.

**Note:** The effective operating range of the detector can differ from the one, which is shown at the figure.

### Technical data

Nominal supply voltage (±15%).....	12V DC
Average current consumption (±10%).....	9.5mA
Violation signaling time.....	2s
Operating temperature range.....	-10...+55°C
Detectable motion speed.....	do 3 m/s
Dimensions.....	63x96x49mm
Recommended installation height.....	2,1m

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