ARITECH DD1012PI-N Dual Detector Installation Guide

ARITECH DD1012PI-N Dual Detector

Contents

Description

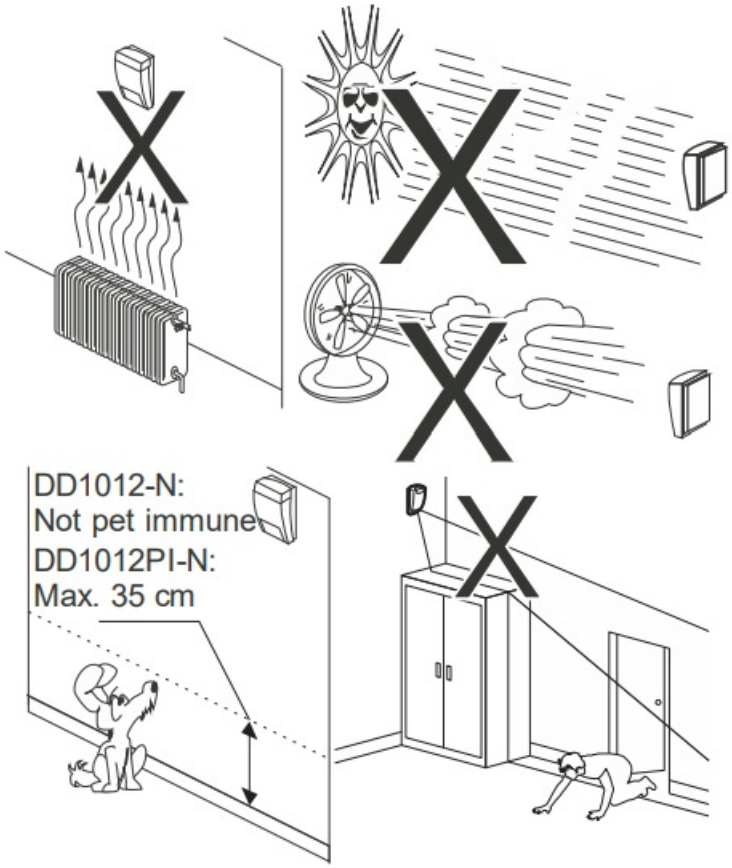
DD1012-N and DD1012PI-N are dual motion sensors. They combine the patented PIR mirror optics technology with the patented Range Controlled Radar technology.

The DD1012PI-N is designed to be immune up to certain size and build of pets. Pets up to 18 kg (about 35 cm height) normally do not cause any problems in standard application unless they are able to move higher than 35 cm from the floor in the detection field of view.

Installation guidelines

See Figure 1.

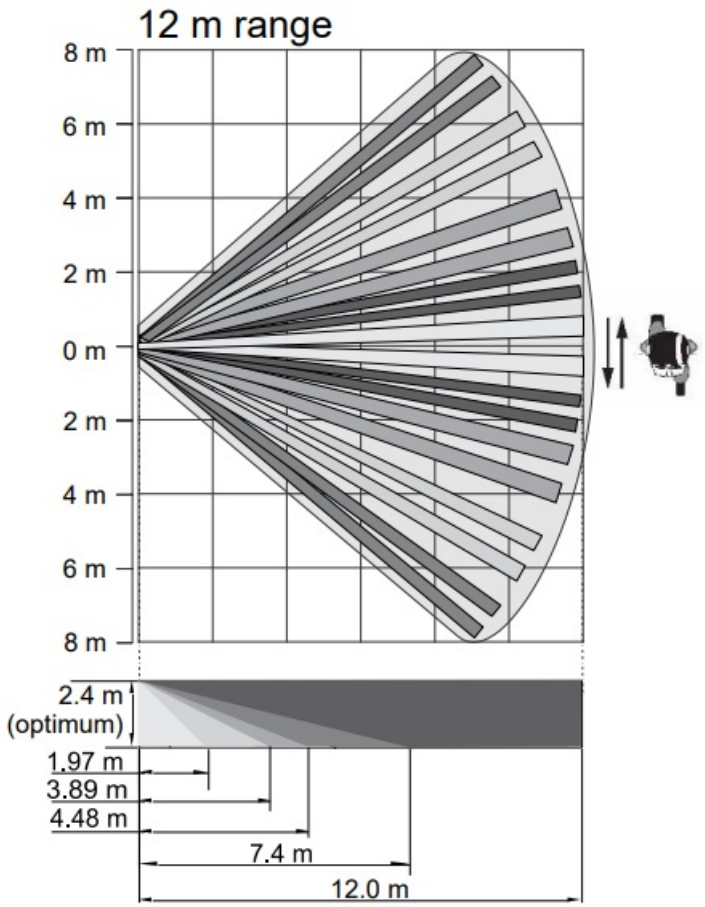
1



The detector is intended to be mounted on walls but can also be mounted on ceilings by using a mounting bracket.
Use the following guidelines to determine the best location to install the detector.

- Mount the detector so the expected movement of an intruder is across the detection pattern (see Figure 3).

3



- Mount the detector at a stable surface. For the allowed mounting height, see “Specifications” on page 6.
- Do not mount the detector within 0.5 m of metallic objects or within 1.5 m of fluorescent lights.
- Do not place objects in front of the detector that may prevent a clear line of sight.
- Place detectors at least 6 m apart, and use the shortrange setting to avoid interference, when mounting detectors face to face.

The dual technology processing of this detector is very resistant to false alarm hazards. However, avoid potential causes of instability, such as:

PIR hazards:

- Direct sunlight on the detector
- Heat sources within the detector field of view
- Strong air draughts onto the detector
- Animals in the field of view (DD1012-N detectors)
- Obscuring the detector field of view with large objects, such as furniture

Microwave hazards:

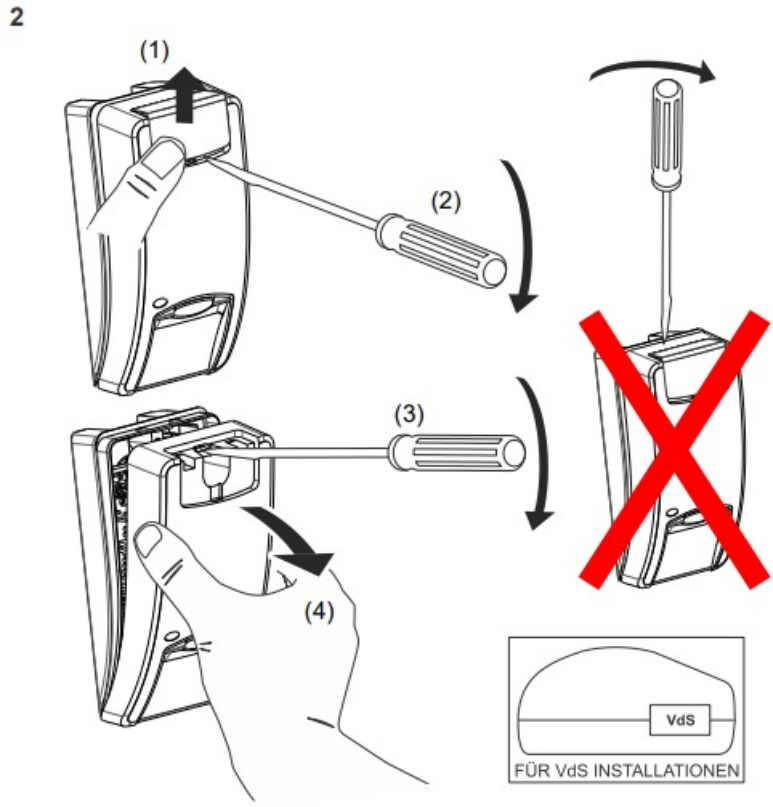
- Mounting surface susceptible to vibrations
- Metal surfaces reflecting microwave energy
- Water movement through plastic pipes
- Moving or vibrating objects like fans, heating or air conditioning ducts

WARNING! The equipment is not earthed. Any external circuit connected to the equipment must be located within the same building and connected to a protective earthing conductor.
Wire insulation of cables connected to the equipment must conform to IEC 60332-1-2 and IEC 60332-1-3 or IEC 60332- 2-2, depending on the wire cross sectional area, or IEC TS 60695-11-21, regardless of cross sectional area. Alternatively, such wires must comply with UL 2556 VW-1.
The detector power supply source must be power limited at 15 W.

We recommend that the detector is regularly walk tested and checked at the control panel.

To install the detector:

1. Lift off the custom insert (see Figure 2, items 1 and 2).



2. Using a screwdriver, carefully prise open the detector (see Figure 2, items 3 and 4).
   Caution: Do not touch the pyroelectric sensor (Figure 6).

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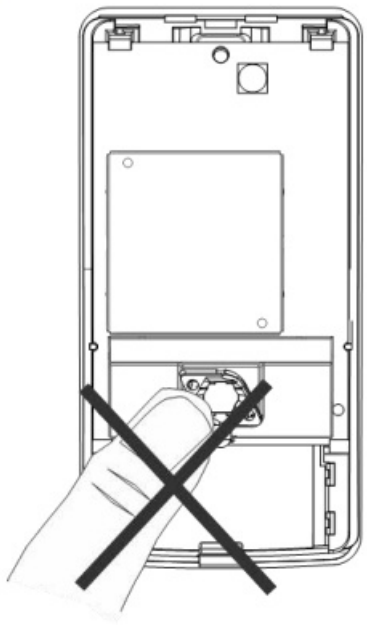
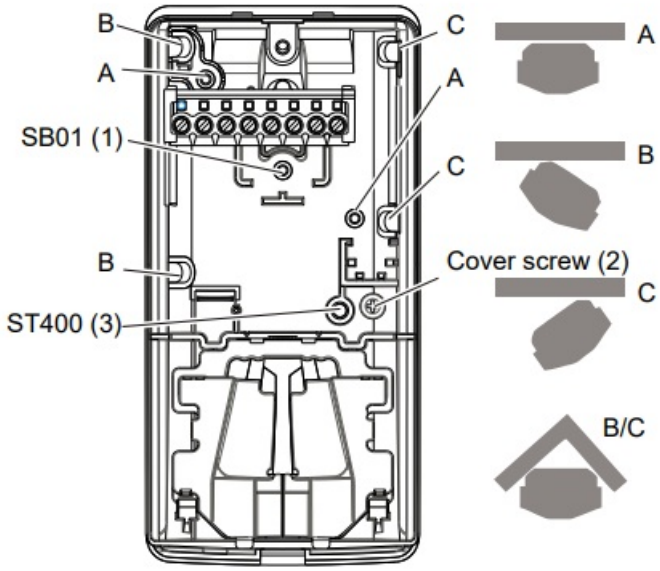


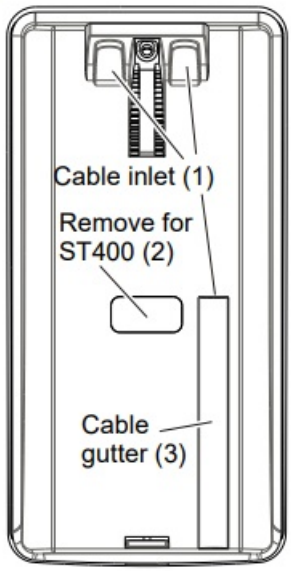
3. Take out the cover screw (Figure 4, item 2).

4



4. Fix the detector base to the wall. For the allowed mounting height, see “Specifications” See Figure 4.
   – For flat mounting, use a minimum of two screws (DIN 7998) in positions A.
   – For corner mounting, use screws in position B or C.
   – To install the pry-off tamper ST400, use mounting positions A. ST400 mounting position is shown as item 3 in Figure 4. Open the outlet in the back plate (Figure 5, item 2).
5. Wire the detector (see Figures 4 and 13). Use back plate cable inlets (Figure 5, item 1) and cable gutter (Figure 5, item 3).

5



6. Select the desired jumper and DIP switch settings. See “Setting the detector” below for more information.
7. Remove the blinders and add the stickers, if required. See “Configuring the coverage pattern” on page 5 for more details.
8. For ceiling-mount applications, use the SB01 swivel-mount bracket. SB01 mounting position is shown as item 1 in Figure 4.
9. Close the cover, insert the cover screw, and place the custom insert.

Connections

See Figure 13.

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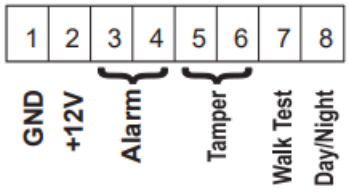


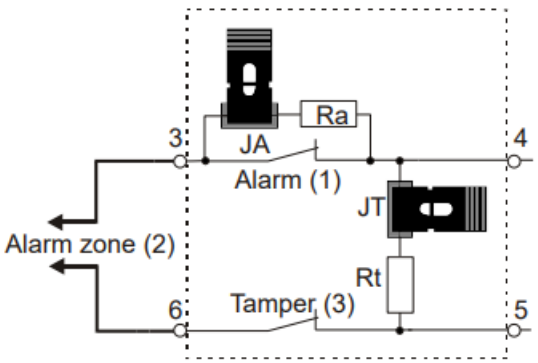
Terminal	Label	Explanation
1, 2	GND, +12V	Power supply connection (9 to 15 VD, 12 V⎓ nominal)
3, 4	ALARM	Alarm relay output (33 Ω). Use jumper JA to set the onboard EOL resistor in series with the relay. See “Jumpers” below.
5, 6	TAMPER	Tamper switch output (0 Ω). Use jumper JT to set the onboard EOL resistor in series with the switch. See “Jumpers” below.
7	Walk test	This input enables and disables the LED (walk test On/Off). Walk test mode can only be entered when detector is in Day mode (pin 8). Active high or low is determined by SW1-3 (see “SW1-3: Polarity” on page 5).
8	Day/Night	This input switches the detector in day (show memory on the LED indicator) or night mode (activates the alarm memory and clears previous stored alarms). Active high or low polarity is determined by SW1-3 (see “SW1-3: Polarity” on page 5).

Notes

- Inputs 7 and 8 are only useable when SW1-5 is set to Remote on. See “SW1-5: Remote functionality” on page 5.
- The LED is only enabled when SW1-6 is set to LED on.

Figure 11 explains how to create a single zone with multiple resistor configuration.

Figure 11



1. Alarm relay
2. Alarm zone
3. Tamper switch output

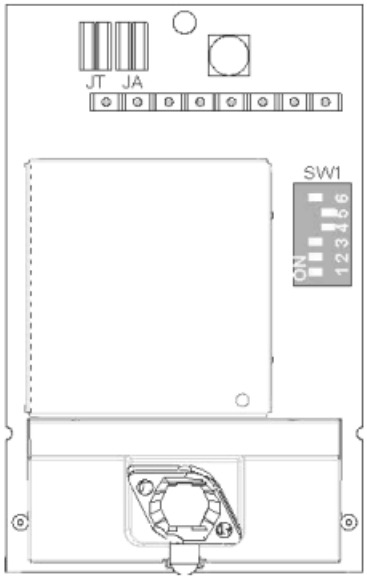
   Ra Alarm EOL resistor

   Rt Tamper EOL resistor

Setting the detector

See Figure 14 for jumpers and DIP switch location.

14



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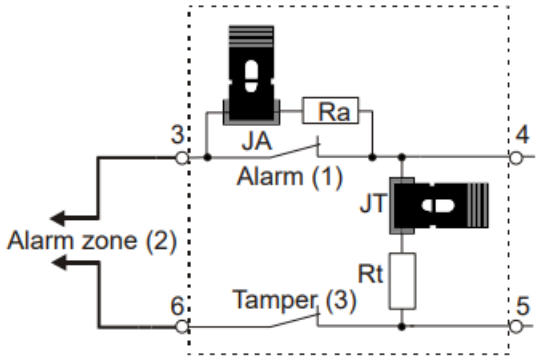
Single zone EOL

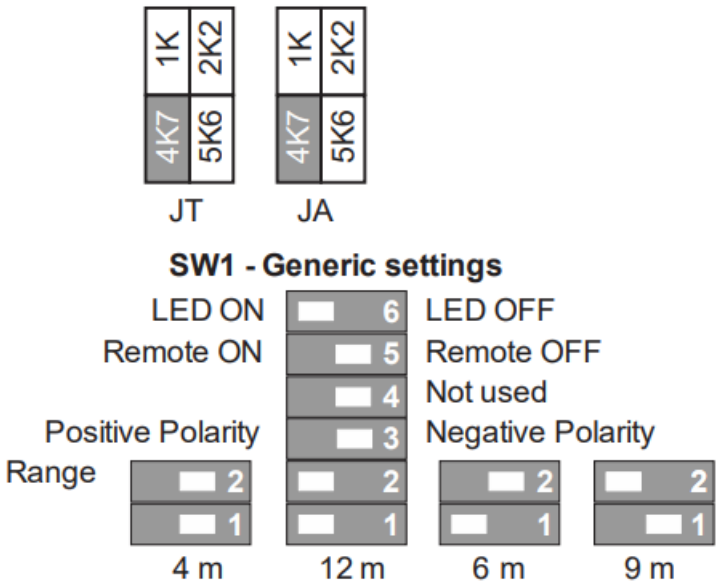
Zone state	Value	Default
Tamper (short)	0 Ω	0 Ω
Normal	Rt	4.7 kΩ
Alarm	Rt+Ra	9.4 kΩ
Tamper (open)	∞	∞

Jumpers

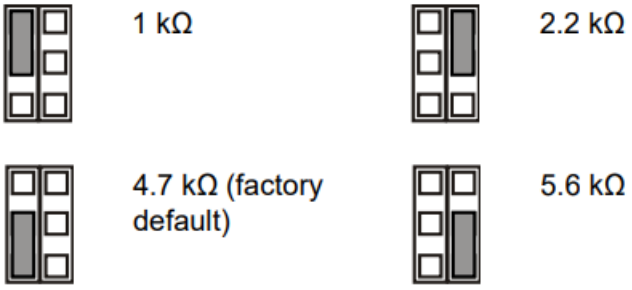
Jumpers set onboard EOL mode and value. The circuit is shown in Figure 11.

11



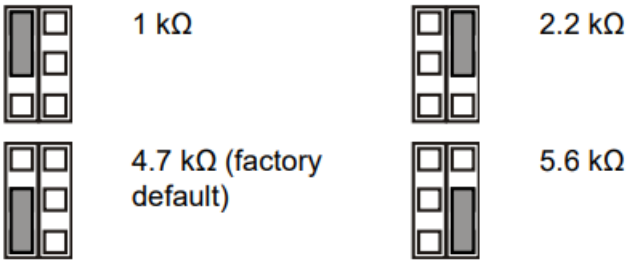


JA: Set onboard alarm EOL resistor (Ra)



Off: No onboard alarm EOL.

JT: Set onboard tamper EOL resistor (Rt)



Configuring the zone

To set up the zone, apply the following guidelines.

- Select appropriate EOL resistor values with JA and JT.
  For example, setting of jumper JT determines Rt value.
- For isolated outputs remove JT.
- Remove jumpers JA and JT to exclude onboard EOL values.

For a single zone with all onboard resistors set, the zone resistance can be the following.

Table 2: Zone resistance values

Zone state	Value	Default
Tamper (short)	0 Ω	0 Ω
Normal	Rt	4.7 kΩ
Alarm	Rt+Ra	9.4 kΩ
Tamper (open)	∞	∞

DIP switches

Table 3: SW1, general settings

Switch	**Values**	
6: LED	On: LED on*	Off: LED off
5: Remote	On: Remote on	Off: Remote off*
4: Reserved		
3: Polarity	On: Positive polarity	Off: Negative polarity*
1, 2: Radar range	1 On, 2 On: 12 m* 1 Off, 2 On: 9 m	1 On, 2 Off: 6 m 1 Off, 2 Off: 4 m

Factory default

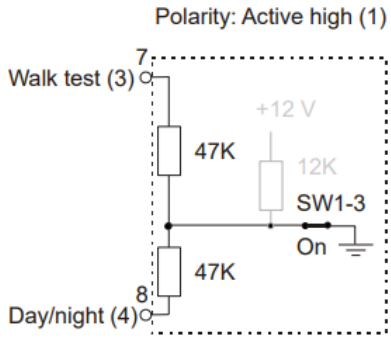
DIP switch SW1

SW1-1, SW1-2: Radar range

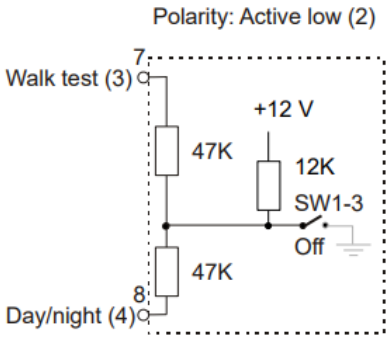
Use SW1-1 and SW1-2 to set the radar range exactly to fit the application. The radar is of a range-gating type which means that the range of detection is very accurate.

SW1-3: Polarity
On: Positive polarity. Configures the inputs (WT and D/N) as “Active high”.
Off: Negative polarity. Configures the inputs (WT and D/N) as “Active low”. Factory default.
The functionality is explained in Figure 10.

Figure 10



Walk test On = Pin 7 to +12 V
Walk test Off = Pin 7 to GND or floating
Night (armed) = Pin 8 to +12 V
Day (disarmed) = Pin 8 to GND or floating



Walk test On = Pin 7 to GND
Walk test Off = Pin 7 to +12 V or floating
Night (armed) = Pin 8 to GND
Day (disarmed) = Pin 8 to +12 V or floating

1. Polarity high
2. Polarity low
3. Walk test
4. Day/night

This function also depends on the SW1-5 setting. See “SW1-5: Remote functionality” below.

SW1-4: Reserved

Do not change.

SW1-5: Remote functionality
On: Remote on. Enables WT and day/night inputs.
Off: Remote off. Disables WT and day/night inputs (factory default).
The following functionality depends on the Remote setting.

Table 4: Functions dependent on the Remote setting

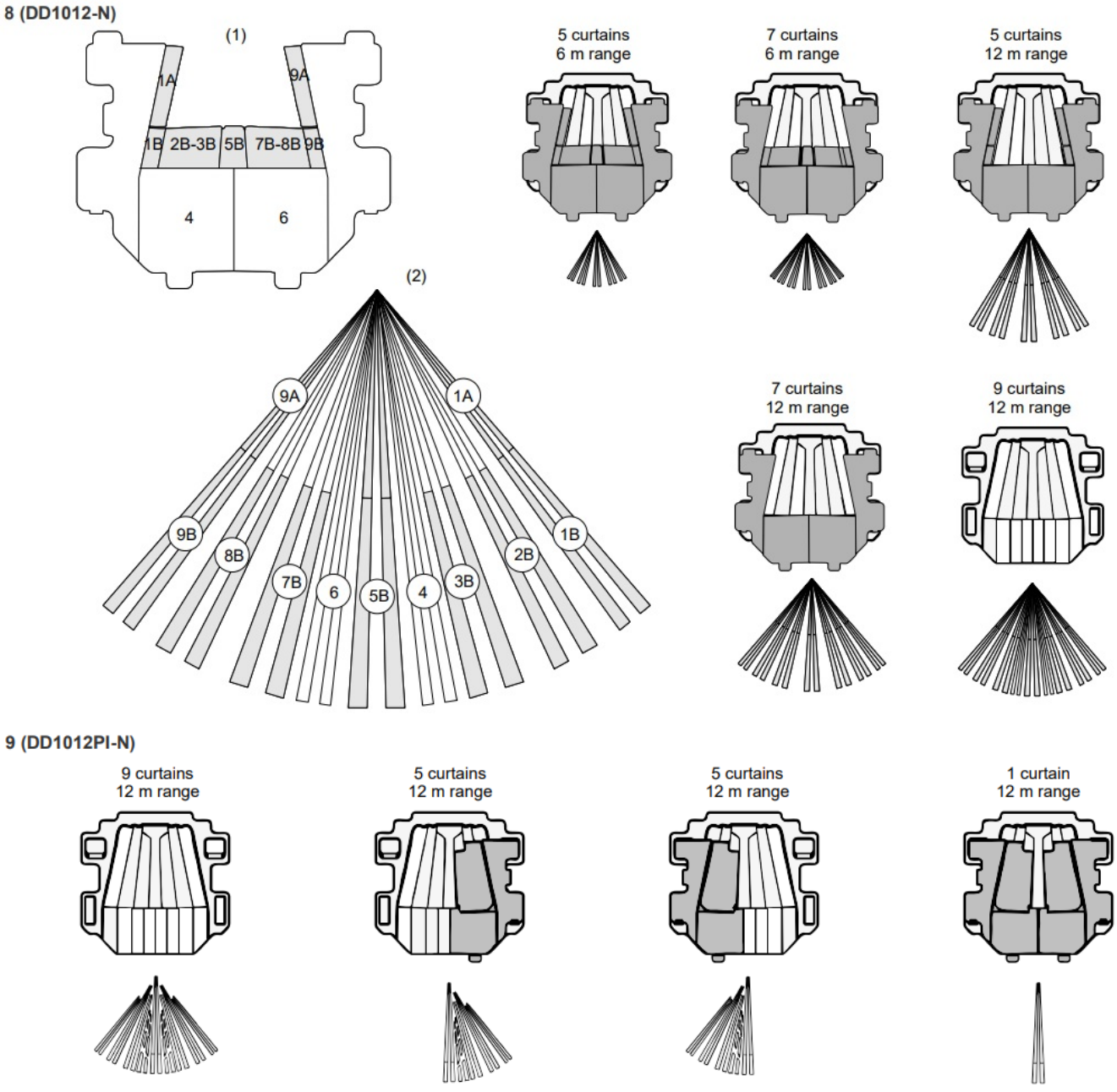
Item	Description	SW1-5 Remote on	SW1-5 Remote off
SW1-3	Polarity	Selectable	Positive only
WT	WT input	Enabled	Disabled
D/N	D/N input	Enabled	Disabled
Other	Green Mode	Enabled in day mode with no WT	Disabled
	Alarm memory	Enabled in day mode with no WT	Disabled

See also “Connections” on page 4.

SW1-6: LEDs
On: LEDs are enabled. See “LEDs and outputs” on page 6 for LED functionality.
Off: LEDs are disabled for any state.

Configuring the coverage pattern

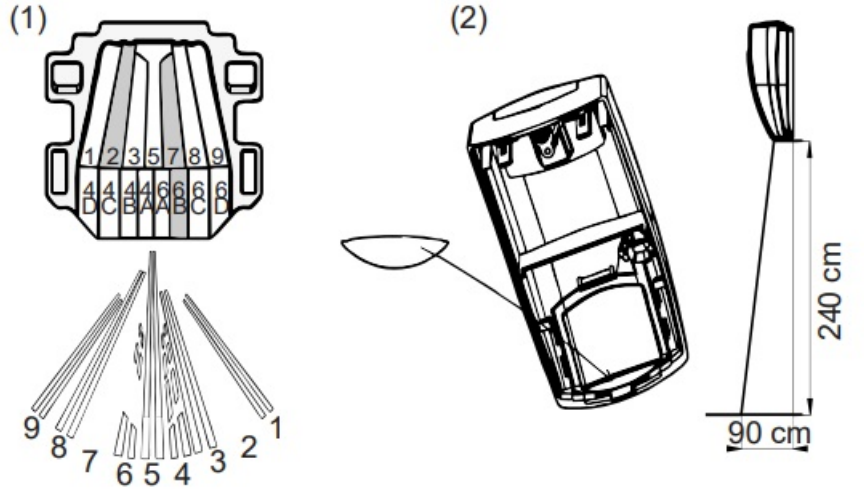
- Remove blinders (Figures 8 and 9) if necessary. The modified pattern is shown below blinder configuration.



Note: If both blinders are installed in DD1012-N, the detector range is limited to 6 m (default) .

- In case of DD1012-N, modify the pattern by breaking out blinder parts (shown as gray in Figure 8, item 1). The corresponding curtain fragments are shown in Figure 8, item 2.
- Put in the appropriate mirror stickers if necessary. See Figure 7, item 1 for details.

7



Caution: Removing stickers can damage the mirror surface.

- When near objects directly under the detector, fit the mask to the inside of the window (default). This disables the part of the curtains looking down at the object, whose closeness might destabilize the detector. See Figure 7, item 2.

Walk testing the detector

There are two ways for switching on the walk test mode.
SW1-6 set to LED on, SW1-5 set to Remote off
In this mode the LED indication is always enabled (constant walk test mode).
SW1-6 set to LED on, SW1-5 set to Remote on
This setting enables the walk test input (pin 7) and the
day/night input (pin 8). This allows the user to activate LED indication remotely by setting the detector into the day mode and activate the walk test.

Green mode

When SW1-5 is set to Remote on, the radar is switched off during the day mode (with no WT) to reduce current consumption. The detector is then operating in PIR only mode.

Note: The Day/night line must be connected to the control panel for this mode to work.

This mode is not compliant with the EN 50131-2-4 standard.

Alarm memory

When SW1-5 is set to Remote on, alarms that occurred during the night mode are stored in the detector memory. They are indicated by flashing red LED when the unit switches to day mode (walk test disabled). The memory is cleared when the detector switches back to the night mode.

Note: Set SW1-6 to Off to prevent showing the alarm memory on the LEDs. See “SW1-6: LEDs” on page 5.

LEDs and outputs

To enable LEDs functionality, set SW1-6 to On, otherwise LEDs are disabled in any condition. See “SW1-6: LEDs” on page 5 for more details.

Table 5: LEDs and outputs

Status	**Red LED**	**Alarm relay**	**To reset**
Start up		Closed	Automatically after 60 s
Low voltage		Open	Apply correct voltage
PIR intruder alarm		Closed	
Microwave intruder alarm		Closed	
Dual motion intruder alar m		Open	Automatically after 3 s
Dual Alarm Memory		Closed	Switch to the night mode
	Continuously on		Normal blinking (1 Hz)

Specifications

Detector technology:

DD1012-N	Dual
DD1012PI-N	Dual, pet immune

Range	4, 6, 9, 12 m selectable via SW1-1 and SW1-2
Viewing angle	78 degrees
PIR optics	9 high-density mirror curtains
Microwave frequency	5725 to 5875 MHz
Maximum power output	13.46 mW
Max microwave output at 1 m	0.003 pW/cm^2
Memory function	Yes
Input power	9 to 15 V⎓ (12 V nominal)
Peak-to-peak ripple immunity	2 V (at 12 V⎓)
Detector start-up time	60 s
Current consumption	5 to 17 mA (9 mA nom.)
Mounting height: DD1012-N DD1012PI-N	 1.8 to 2.6 m 2.3 to 2.6 m
Target speed range	0.2 to 3.0 m/s
Alarm (NC) / Tamper relay characteristic	80 mA 30 V⎓, Form A
Alarm time	3 s
Operating temperature	-10 to +55°C
Relative humidity	95% max., noncondensing
Weight	120 g
Dimensions (H x W x D)	126 x 63 x 50 mm
IP/IK rating	IP30 IK04
Pry-off tamper	Optional (ST400)

Regulatory information

Manufacturer	PLACED ON THE MARKET BY: Carrier Fire & Security Americas Corporation I nc. 13995 Pasteur Blvd Palm Beach Gardens, FL 33418, USA AUTHORIZED E U REPRESENTATIVE: Carrier Fire & Security B.V. Kelvinstraat 7, 6003 DH We ert, Netherlands

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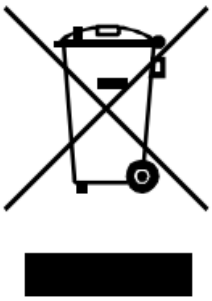	Carrier Fire & Security hereby declares that this device is in compliance with the applicable requirements and provisions of all applicable rules and regulations, including but not limited to the Directive 2014/53/EU. For more information see: **www.firesecurityproducts.com**
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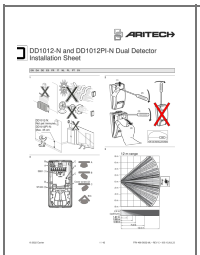
Documents / Resources

	ARITECH DD1012PI-N Dual Detector [pdf] Installation Guide DD1012-N, DD1012PI-N, DD1012PI-N Dual Detector, Dual Detector, Detector

References

- AFNOR solutions – Les services du groupe en France et à l'international
- Aritech - Fire Security Products
- CNPP, votre expert en prévention et en maîtrise des risques - CNPP
- Home - Fire Security Products
- HOME
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