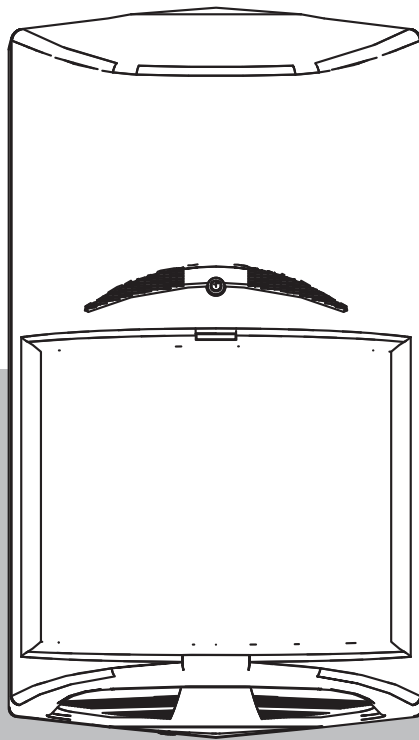


# Commercial Series TriTech and TriTech AM detectors





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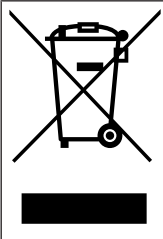
# 1

## Safety

Changes or modifications not expressly approved by Bosch Security Systems, Inc. can void the user's authority to operate the equipment.

At least once per year, vary the range and coverage. To ensure continual daily operation, instruct the end user to walk through the far end of the coverage pattern. This ensures an alarm output prior to arming the system.

### Old electrical and electronic equipment



This product and/or battery must be disposed of separately from household waste. Dispose such equipment according to local laws and regulations, to allow their reuse and/or recycling. This will help in conserving resources, and in protecting human health and the environment.

### ROHS

For use in China: CHINA ROHS DISCLOSURE TABLE

### Sensors

<b>Hazardous substance table according to SJ/T 11364-2014</b>						
	Pb (Pb)	Hg (Hg)	Cd (Cd)	Cr 6+ (Cr 6+)	PBB (PBB)	PBDE (PBDE)
PCB	X	o	o	o	o	o
Electronic components	X	o	X	X	o	o
PCBA	X	o	X	o	X	X
Cables	X	o	X	o	X	X
Plastic materials	o	o	o	o	X	X
Metal materials	X	o	X	X	o	o
Glass material (lenses)	X	o	o	o	o	o
Terminal block	X	o	X	X	o	o
This table was created according to the provisions of SJ/T 11364						
o: The content of such hazardous substance in all homogeneous materials of such component is below the limit defined in GB/T 26572						
X: The content of such hazardous substance in a certain homogeneous material is above the limit defined in GB/T 26572						

## 2 Introduction

This document provides installation, configuration, and operation information for Commercial Series Gen2 TriTech and TriTech AM motion detectors. Throughout this document, the words "motion detectors" refer to all motion detectors covered by this document.

### 2.1 About documentation

#### Copyright

This document is the intellectual property of Bosch Security Systems B.V. and is protected by copyright. All rights reserved.

#### Trademarks

All hardware and software product names used in this document are likely to be registered trademarks and must be treated accordingly.

#### Notifications

This document uses Notices, Cautions, and Warnings to draw your attention to important information.



#### Notice!

These include important notes for successful operation and programming of equipment, or indicate a risk of damage to the equipment or environment.



#### Caution!

These indicate a hazardous situation which, if not avoided, could result in minor or moderate injury.



#### Warning!

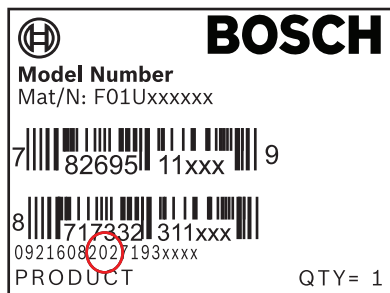
These indicate a hazardous situation which, if not avoided, could result in death or serious injury.

### 2.2 Bosch Security Systems B.V. product manufacturing dates

#### Manufacturing dates

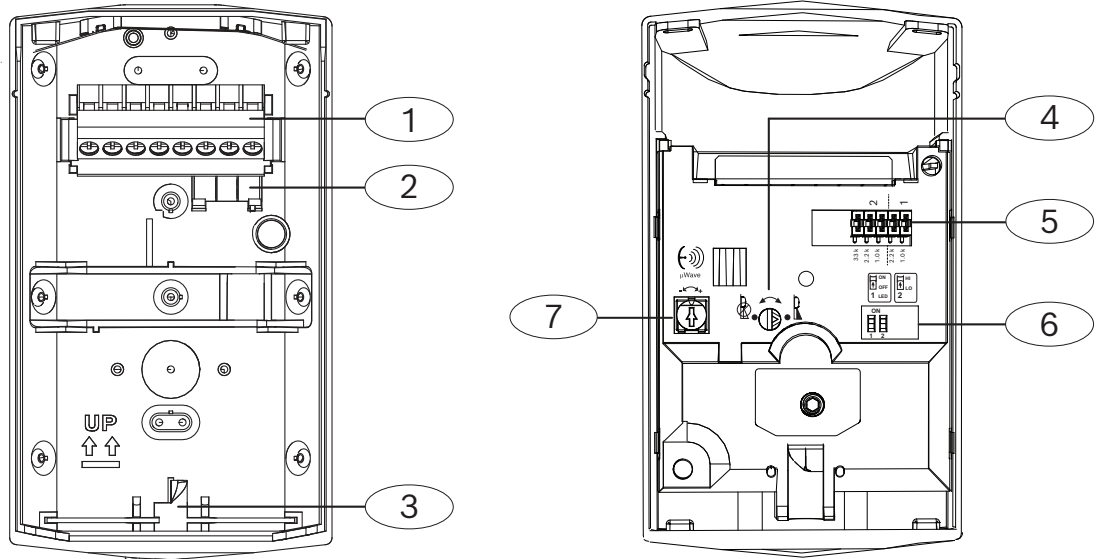
For product manufacturing dates, go to <http://www.boschsecurity.com/datecodes/> and refer to the serial number located on the product label.

The following image shows an example of a product label and highlights where to find the manufacturing date within the serial number.

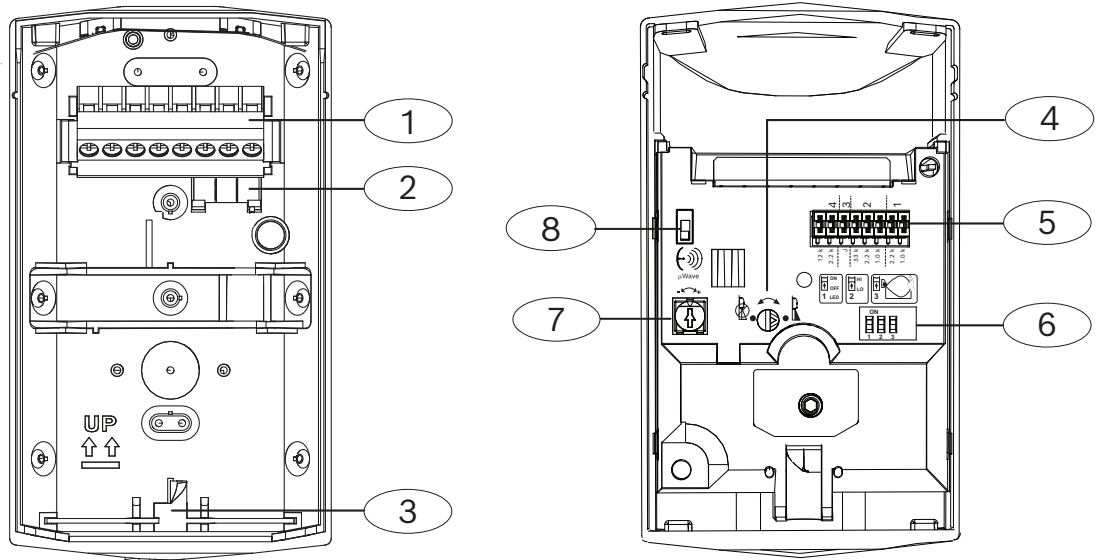


### 3 Detector overview

TriTech interior view - base (left), Interior view - body (right)



TriTech with Anti-mask interior view - base (left), Interior view - body (right)



Callout — Description	Callout — Description
1 — Removable terminal block	5 — Resistor jumper switches*
2 — Removable bubble level	6 — Configuration switches
3 — Self-locking cam lock	7 — Microwave adjustments
4 — Look down adjustment	8 — Remote LED switch (TriTech AM only)
*Location and number of features and configuration switches varies by model.	

## 4 Installation considerations

When installing the detector, observe the following installation considerations.


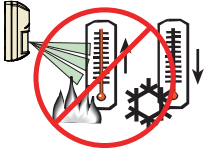
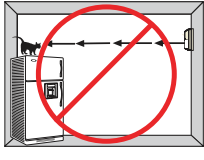
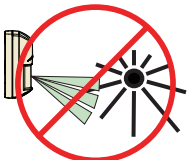



### Notice!

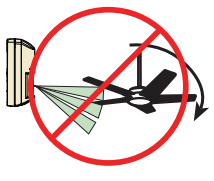

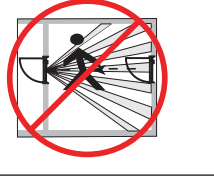



#### Bracket use


Using a mounting bracket might reduce catch performance and false alarm immunity. Reduced catch performance might invalidate regulatory certification on the installation. Regulatory agencies do not approve bracket use. In order to optimize catch performance and false alarm immunity, ensure that the motion detector is level both vertically and horizontally and is mounted within the defined mounting height range.

Microwave energy passes through glass and most common non-metallic walls. The PIR detector reacts to objects rapidly changing temperature within its field-of-view. Detectors using passive infrared (PIR) technology recognize that all objects give off (emit) infrared energy. The warmer an object is, the greater the amount of infrared energy is emitted. The PIR receiver technology is designed to detect the change in infrared energy caused when a target of a different temperature from a stable background passes through its field of view (coverage area).


<b>Point the detector away from:</b>	
	Glass exposed to the outdoors.
	Objects that might change temperature rapidly such as heat sources, air conditioning outlets, or surfaces heated by sunlight.
	Objects that small animals such as birds and mice might climb on (stairs, shelves, ledges, furniture) and appear in the upper zones of the PIR which are more sensitive. Small animals in close proximity in the field of view of the detector might also cause false alarms.
<b>Do not install:</b>	
	In a location where direct sunlight shines onto the detector.
	Outdoors.

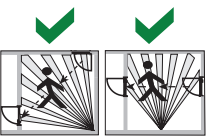
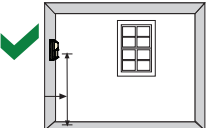


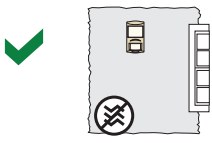
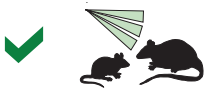
<b>Do not install:</b>	
	<p>Near rotating machines or other moving objects within the coverage pattern.</p>
	<p>Near objects that can block the field of view.</p>
	<p>Where an intruder would walk only directly toward or away from the detector.</p>
 	<p>In a location where the detector's field of view is blocked by movable objects such as boxes, furniture, doors or windows. The PIR detector does not detect through glass.</p>
	<p>Near doors and windows or other openings where cold or warm air can flow onto the detector.</p>

<b>Do not install:</b>	
	<p>Above doors where an object can appear within 30 cm (1 ft) in front of and/or underneath the detector to avoid false anti-mask alarms.</p> <p>In a location where the detector would be too close to any movable object that may cause anti-mask alarms.</p>

For detectors with anti-mask:

<b>Do not install:</b>	
	<p>Above doors where an object can appear within 30 cm (1 ft) in front of and/or underneath the detector to avoid false anti-mask alarms.</p> <p>In a location where the detector would be too close to any movable object that may cause anti-mask alarms.</p>

<b>Do install:</b>	
	<p>Where an intruder is most likely to cross through the coverage pattern.</p>
	<p>Within recommended installation height range measured from the floor. [2.3 m - 2.75 m (7.5 ft - 9 ft)]</p>

<b>Do install:</b>	
	On solid, vibration-free surface.
<b>Additional notes:</b>	
 ≤ 4.5 kg (10 lb)	The detector is immune to small animals such as rodents up to 4.5 kg (10 lbs) when installed according to the installation considerations listed in this document.

## 5 Installation

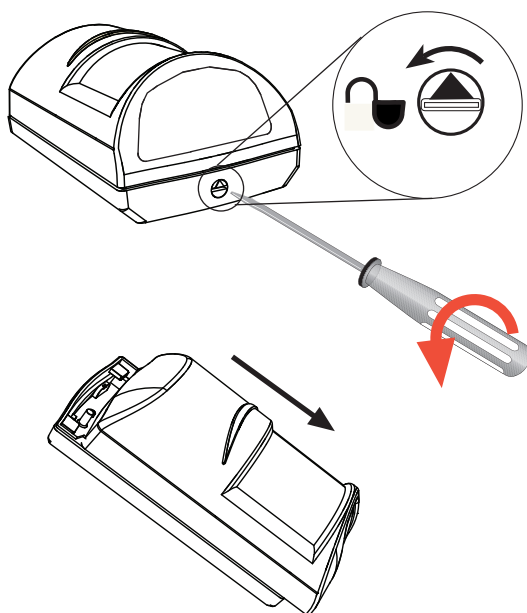
This section includes hardware details and the instructions you need to install the motion detector base.

### 5.1 Self-locking cam

The detector includes a self-locking cam for easy installation. Refer to the following information to open and close the detector.

#### Open the detector and remove the base

1. Insert a flathead screwdriver into the locking tab hole.
2. Turn to the unlock position.
3. Slide, then lift the detector from the base.



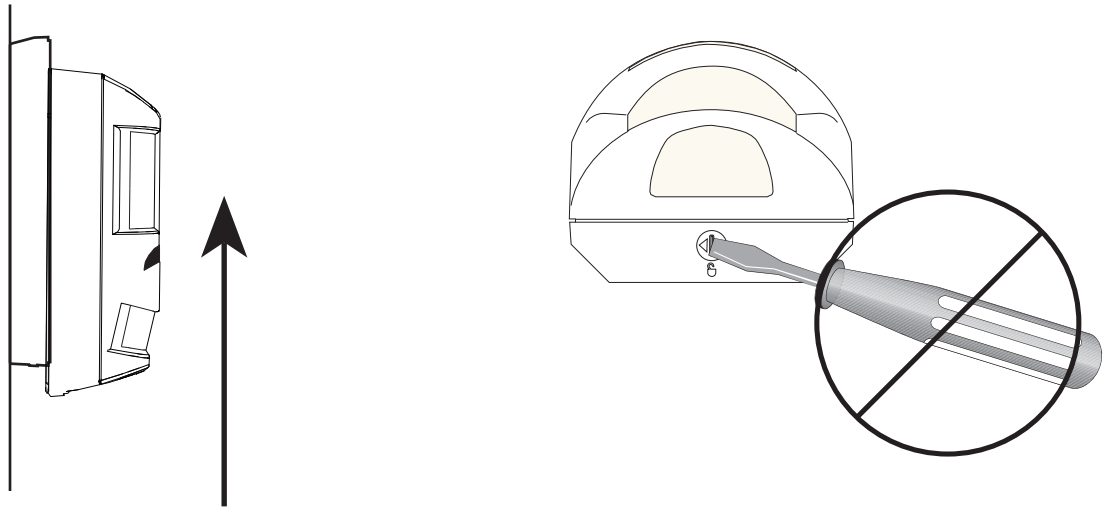
#### Attach the detector onto the base



#### Notice!

When you remove the detector from the base, the cam automatically returns to the locked position. When you place the detector onto the base, the cam must remain in locked position. Do not manually change the cam once you remove the detector from the base; doing so unlocks the detector and prevents you from putting the detector correctly onto to base.

1. Put detector onto the base.
2. Slide the detector up until you hear it "click."



## 5.2 Install options

	<p>Install the detector using the detector base.</p>
	<p>Install the detector on a flat wall or in a corner. Refer to Mount directly – for linking.</p>
	<p>Install the detector using a bracket. Refer to <i>Install on a bracket</i>, page 14.</p>
	<p>Detector coverage patterns are designed for optimal performance when installed level both vertically and horizontally. The detector base includes a removable bubble level which helps you align the unit. Before drilling the installation holes, use the bubble level to align the detector. Refer to Bubble level.</p>

### Install directly to the surface

When installing onto a flat surface, select the installation holes shown in the figure. Drill or tap out holes with a screwdriver.

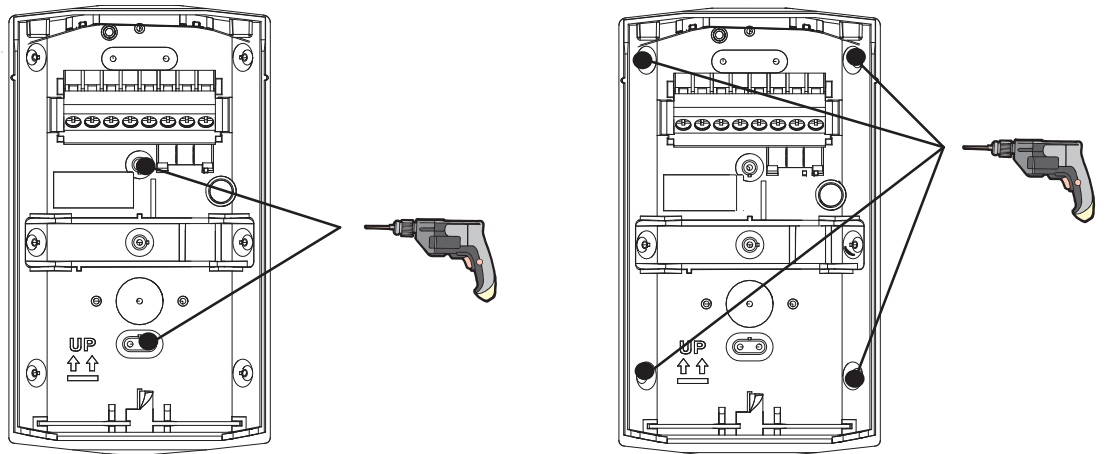


Figure 5.1: Left: wall installation, right: corner installation

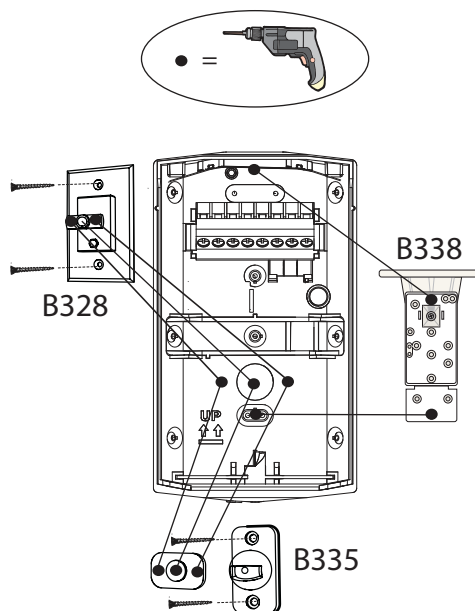
### Install on a bracket

Mounting brackets help align the detector to a vertical angle and to correct imperfections (non-perpendicular angles) of installation surfaces.

Choosing a mounting bracket:

- The B335 bracket allows a vertical pivot range of  $+10^\circ$  to  $-20^\circ$  and a horizontal pivot range of  $\pm 25^\circ$ .
- The B328 bracket installs on a single-gang box and allows rotation of the detector. The bracket allows you to insert the wiring through the black tube section in the center of the bracket mounting plate and through the back of the detector base.
- The B338 bracket designed for ceiling mounting allows a vertical pivot range of  $+7^\circ$  to  $-16^\circ$  and a horizontal pivot of  $\pm 45^\circ$ . The bracket allows you to insert the wiring through the ceiling cavity and into the detector base.

When using a mounting bracket, pre-drill or tap out all of the mounting holes shown for that bracket in the following figure.



**Figure 5.2:** Installation holes used with optional brackets

#### Notice!

Using a mounting bracket might reduce catch performance.

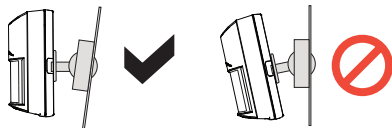
Always install the detector within the recommended installation height, with or without a mounting bracket.

Brackets are not investigated by UL.

Brackets are not EN50131 compliant.



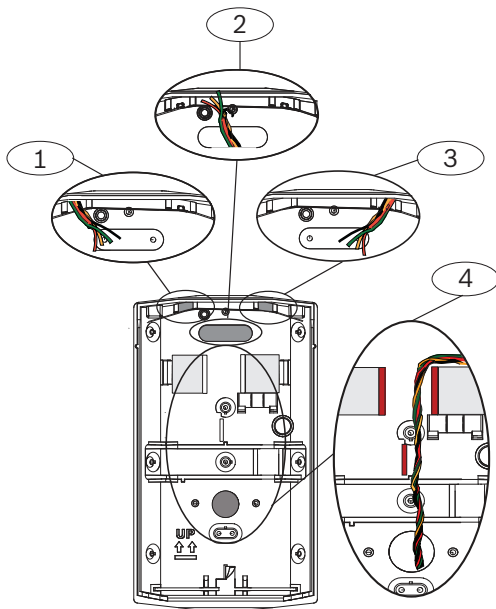
#### Notice!



Do not use the bracket to tip the detector vertically, unless you intend to compensate for a non-vertical surface. It may cause false alarms or reduced catch performance.

### 5.3 Wire knockouts

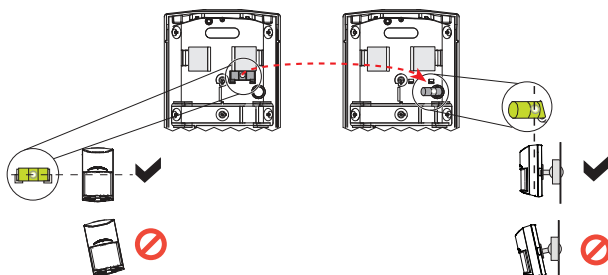
Use the figure to determine the knockouts to use for installation locations.



Callout — Description
1 — Surface wiring knockout, detector’s left side
2 — Through-the-wall wiring knockout
3 — Surface wiring knockout, detector’s right side
4 — Through-B328-bracket wiring knockout*
* If you use the bracket mount knockout for wires, run the wires between the walls marked in red in the figure. With the wiring between the walls and behind the terminal block, other features, such as EOL resistor jumper pins, cannot interfere with or puncture the wires.

### 5.4 Bubble level

The detector’s coverage pattern performs best when the detector is installed vertically and is level both vertically and horizontally. The detector base includes a removable bubble level which helps you align the unit. Use the bubble level to align the detector before drilling holes.



- ▶ Put the detector base on the surface and install it in place using one screw only. Do not over-tighten the screw.
- ▶ Make sure the base is level from side to side.
- ▶ Remove the bubble level and place it into the round cavity on the right side of the base. Make sure the base is level and not tipped forwards or back.
- ▶ Make adjustments until the base is level, and mark the remaining surface hole locations.

- 
- ▶ Remove the bubble level and place it back to its original position.

**Notice!**

Do not leave the bubble level in the circular holder. You cannot properly place the detector body onto the mounting base with the bubble level in the circular holder.

Do not use a bracket to tip the detector in any direction as it might cause false alarms or reduced catch performance.

- 
- ▶ Install the remaining screws.



## 6 Wiring

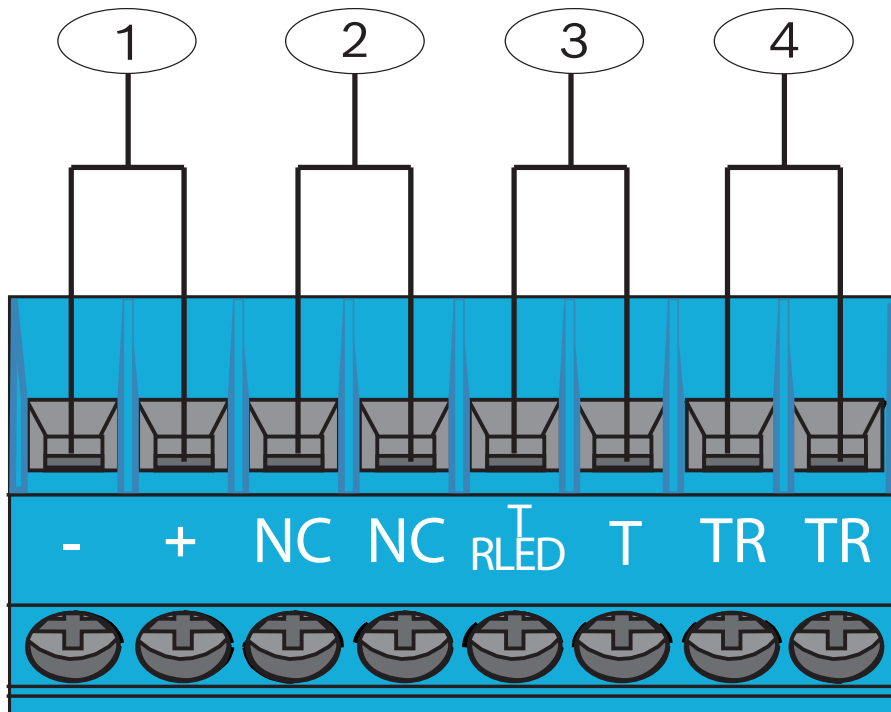


### Caution!

Apply power only after you have made and inspected all connections. Do not coil excess wiring inside the motion detector.

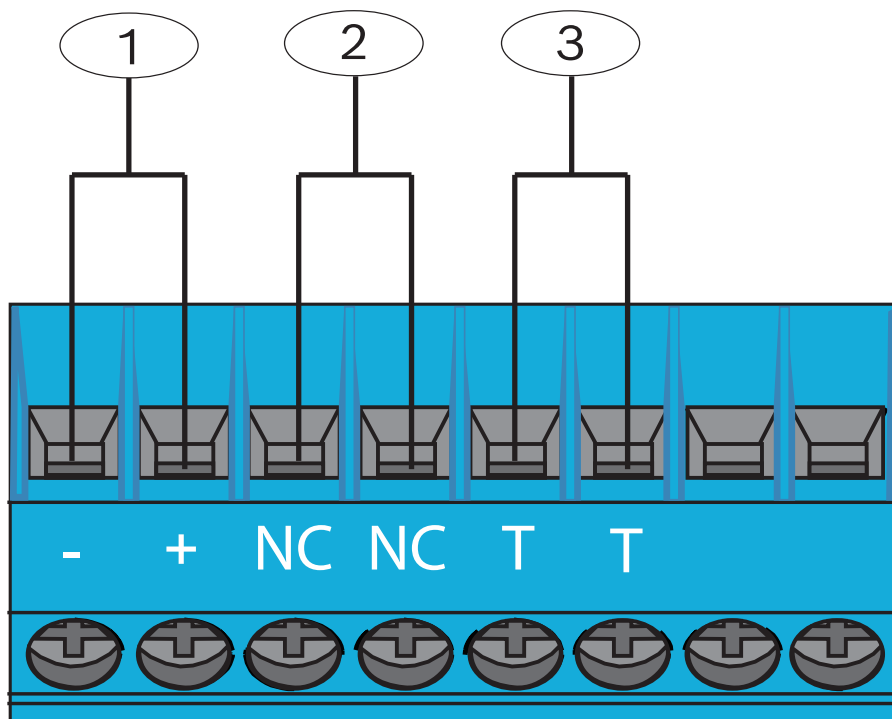
### 6.1 Wiring overview

TriTech AM terminal block strip



#### Callout — Description

1	Input power terminals. Voltage limits are 9 to 15 VDC. Use no smaller than 0.4 mm (26 AWG) wire pair between the detector and the power source.
2	Alarm terminals. Solid State output. Normally closed relay rated at 25 VDC, <35 mA, 2.5 W. Do not use with capacitive or inductive loads.
3	Tamper terminals. Normally closed switch rated at 25 VDC, <25 mA, 2.5 W.
4	Trouble terminals. Solid State output. Normally closed relay rated at 25 VDC, <35 mA, 2.5 W. Do not use with capacitive or inductive loads.

**TriTech terminal block strip****Callout — Description**

1 — Input power terminals. Voltage limits are 9 to 15 VDC. Use no smaller than 0.4 mm (26 AWG) wire pair between the detector and the power source.

2 — Alarm terminals. Solid State output. Use these terminals for Normally Closed relay rated at 25 VDC, <35 mA, 2.5 W. Do not use with capacitive or inductive loads.

3 — Tamper terminals. Tamper contacts rated at 28 VDC, <35 mA.

**6.1.1****Input Power terminals**

Use only an approved limited power source.

**6.1.2****Alarm terminals**

- Normally closed solid state voltage-free (dry contact) relay. The contacts are closed (shorted) during warm-up and during normal operation when no alarm is detected, or if only one technology (PIR or Microwave) is active.
- The alarm contacts change to open status under the following conditions:
  - Insufficient input power
  - Motion alarm condition (both PIR and microwave activity)

**Notice!**

When using the built-in resistors between the alarm terminals, there is a resistance value instead of an open circuit. Resistor jumper switch selection determines the resistance value

**6.1.3****Tamper terminals**

- Normally closed voltage-free (dry contact) switch. The tamper terminals change to an open state if the detector separates from the mounting base or if the motion detector is removed from the mounting surface.

### 6.1.4 Trouble terminals

- Normally closed solid state voltage-free (dry contact) relay. The contacts are closed (shorted) during warm-up and during normal operation when no trouble condition is detected.
- The trouble contacts change to open status under the following conditions:
  - Insufficient input power
  - Self test fault condition
  - Anti-mask alarm condition
  - Low power level detected



#### Notice!

When using the built-in resistors between the trouble terminals, there is a resistance value instead of an open circuit. Resistor jumper switch selection determines the resistance value. Connect the alarm, tamper, and trouble contacts to a SELV circuit only. Do not use with capacitive or inductive loads.



#### Warning!

Connect the alarm, tamper, and trouble contacts to a SELV (Safety Extra-Low Voltage) circuit only. Do not use with capacitive or inductive loads. Only apply power after all connections have been made and inspected. Do not coil excess wiring inside the motion detector.

#### Low voltage trouble condition

If the power supply voltage falls between 6.5 V and 8 V, the detector activates the trouble output (open condition) to indicate that while the detector is still operational, further voltage reduction below will result in functional failure. This condition may occur multiple times if the detector's power line is overloaded. Typical line overload causes include multiple detectors being powered from the same line, when the varying overall current consumption of all connected detectors cause arbitrarily changing voltage levels due to varying voltage drops on the wire.



#### Notice!

Do not confuse this condition with a situation when the supply voltage is insufficient for the detector to operate without failure. In a situation where the supply voltage drops below 6.5 V, both the alarm and the trouble output activate simultaneously.

## 6.2 EOL resistors overview

The detector includes multiple built-in status resistors to simplify the wiring when matching the alarm outputs with the control panel input loop resistance specifications. Use the Resistor jumper switch settings to match the loop circuit shown in the alarm control panel documentation.



#### Notice!

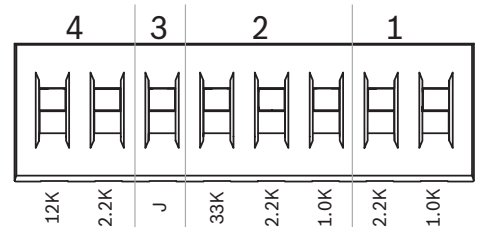
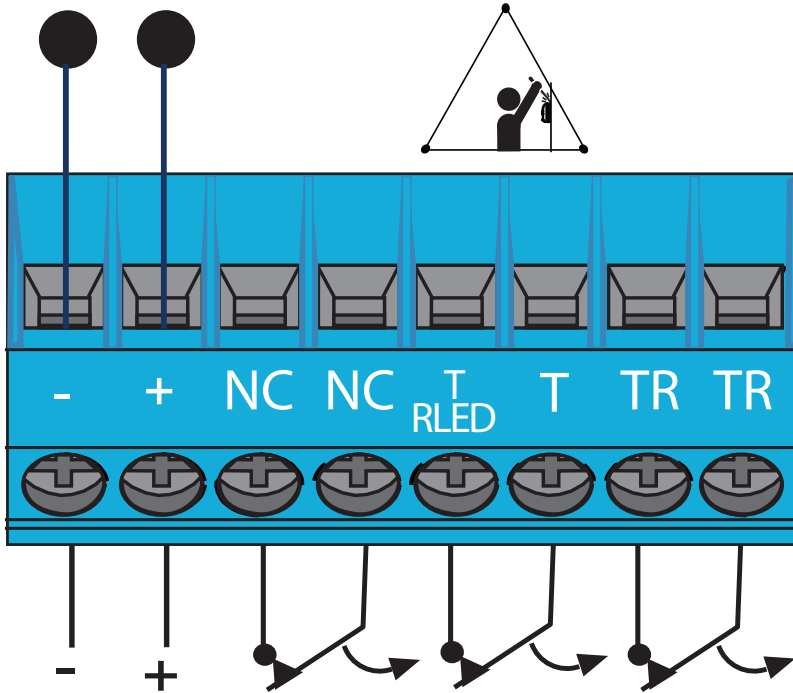
Built-in resistor values cannot meet every control panel resistor value requirement. If the connected control panel resistor values and loop structure do not match the combinations allowed by the built-in resistors, make sure to leave the resistor jumper switch settings to off and use only external resistors.



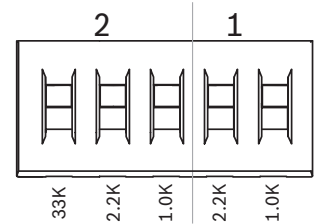
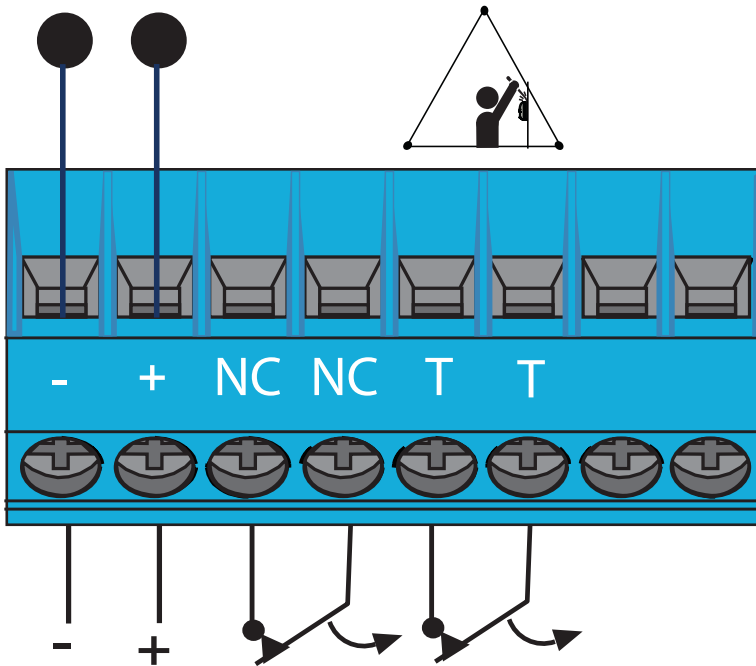
**Notice!**

When using external resistors for the following triple loops, use the pin block section 3 (J) to complete the circuit: EOL resistor.

**TriTech AM terminal block overview - no EOL resistors**



**TriTech terminal block overview - EOL resistors**



**6.2.1 Alarm resistors (dip switch section 1)**

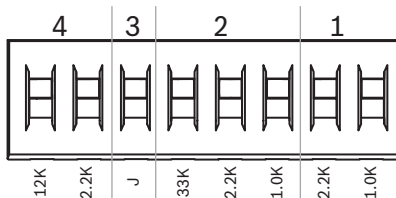
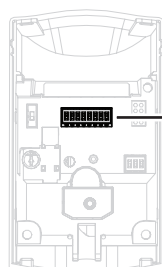
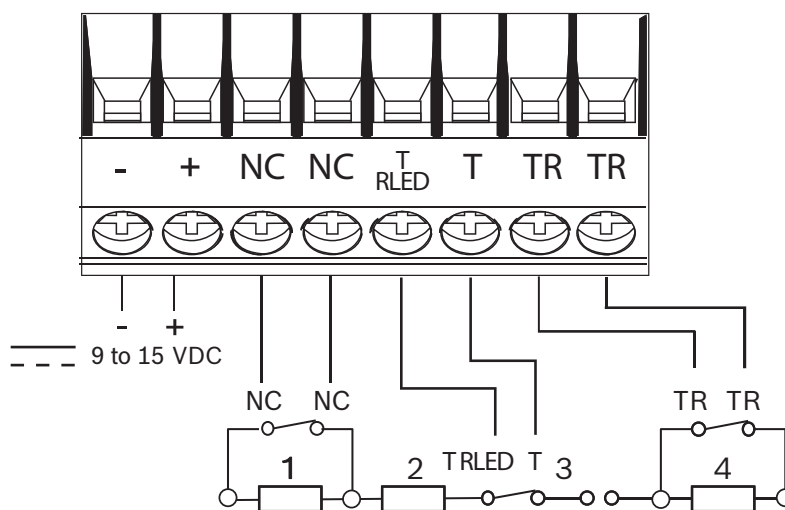
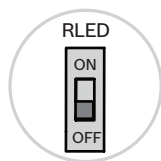
When tuning on/off the integrated EOL resistor dip switch, the corresponding resistance value is connected in parallel with the alarm contact.

Use the ON/OFF switches labeled 1 when wiring to control panels with the following configuration: single, dual EOL resistor.

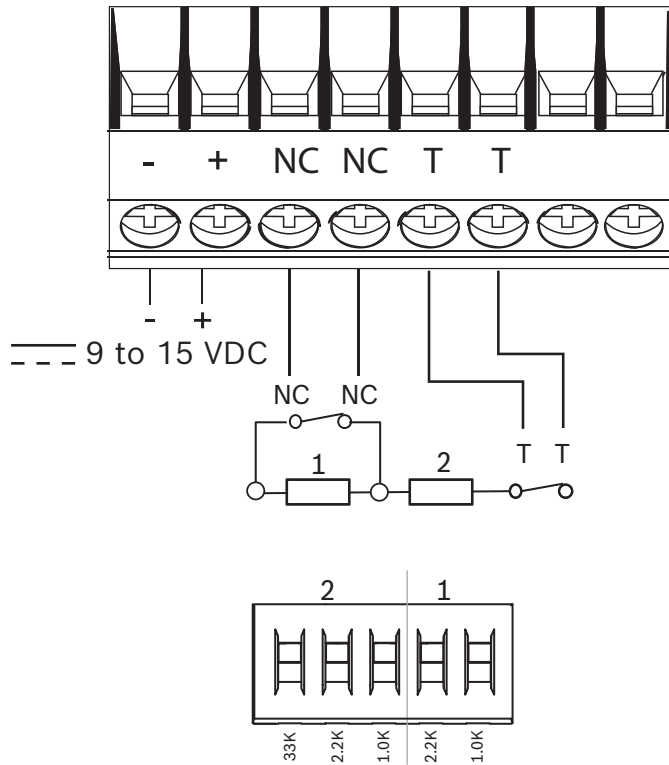
During normal operation the alarm contact is either in shorted condition or alarm resistance value condition.

The available resistance values are 1 kΩ and 2.2 kΩ.

### TriTech AM



**TriTech**



**6.2.2**

**Tamper/EOL resistors (dip switch section 2)**

Use the dip switch selection labeled 2 when wiring to control panels with the following configuration: single, dual, or triple EOL resistor.

When tuning on/off the integrated EOL resistor dip switch, the corresponding resistance value is connected in parallel with the alarm contact.

During normal operation, the control panel verifies the continuity of the alarm loop with the help of this resistor. The loop continuity breaks and indicates a tamper condition if any of the following occurs: the tamper switch opens, the detector body is removed from the base, or the wire is cut.

The available resistance values are 1 kΩ, 2.2 kΩ, and 33 kΩ.

**Notice!**



When using single EOL loops, this resistor represents: EOL resistor. Refer to the control panel documentation to verify whether individual outputs signaling different conditions (alarm, tamper, or trouble) should be connected on the same loop. Single EOL loops with multiple outputs connected in series with the resistor cannot determine which output contacts opened the loop.

### 6.3 EOL resistor loop combinations

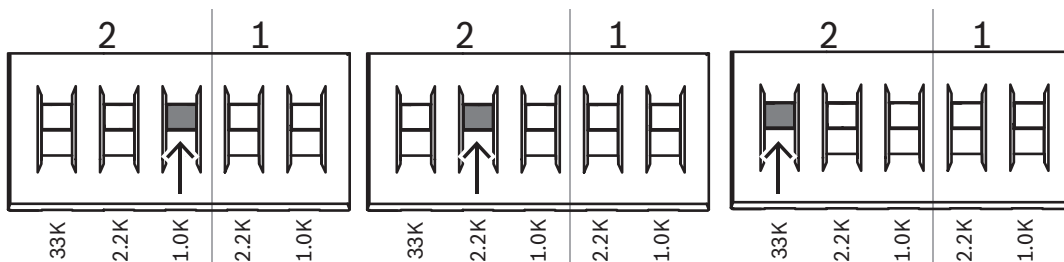
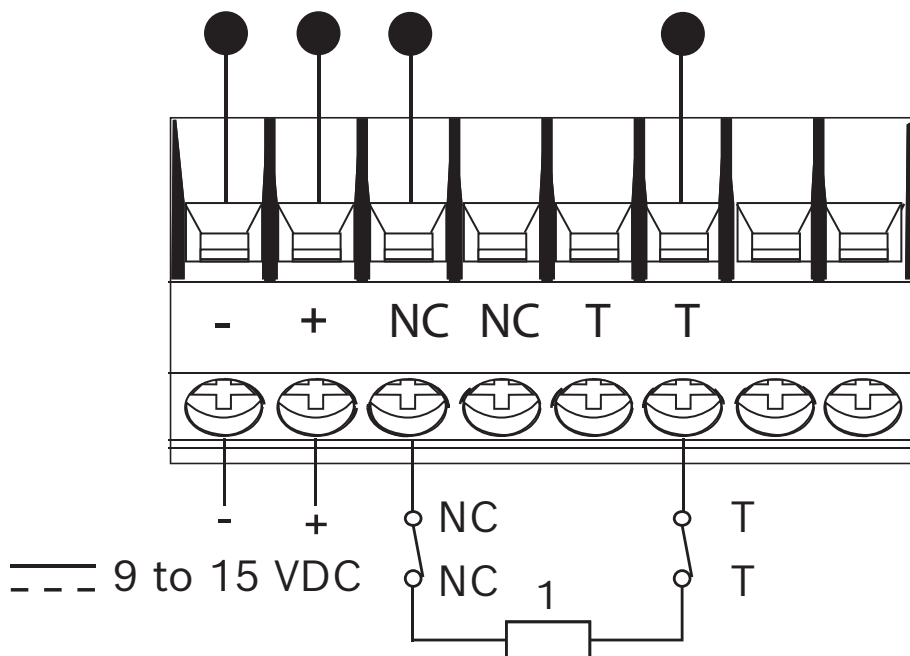


**Notice!**

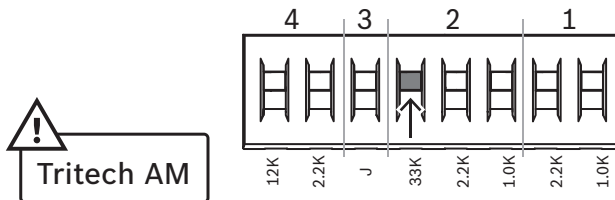
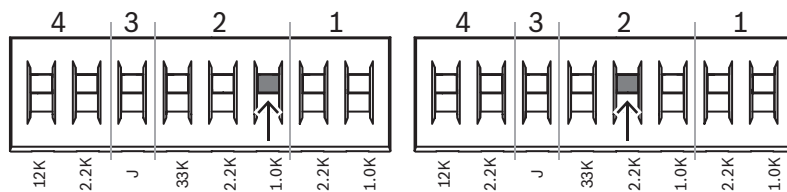
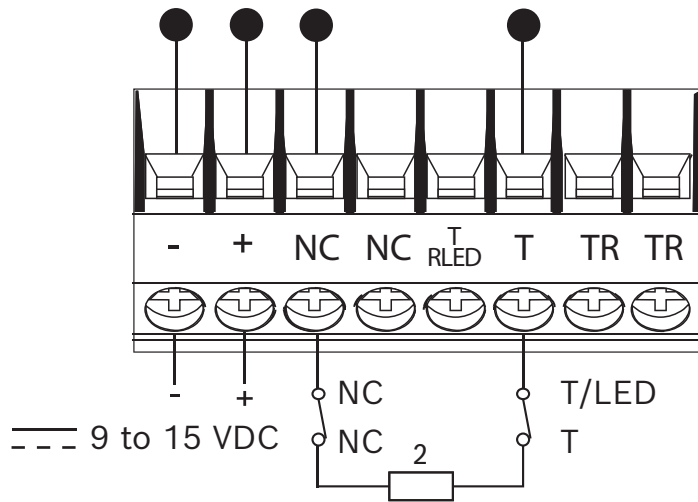
When wiring the detector, use either external resistors wired into the terminals, **or** the built-in resistors for the same output. Do not use both.

#### 6.3.1 Single EOL loop - Alarm and Tamper

TriTech

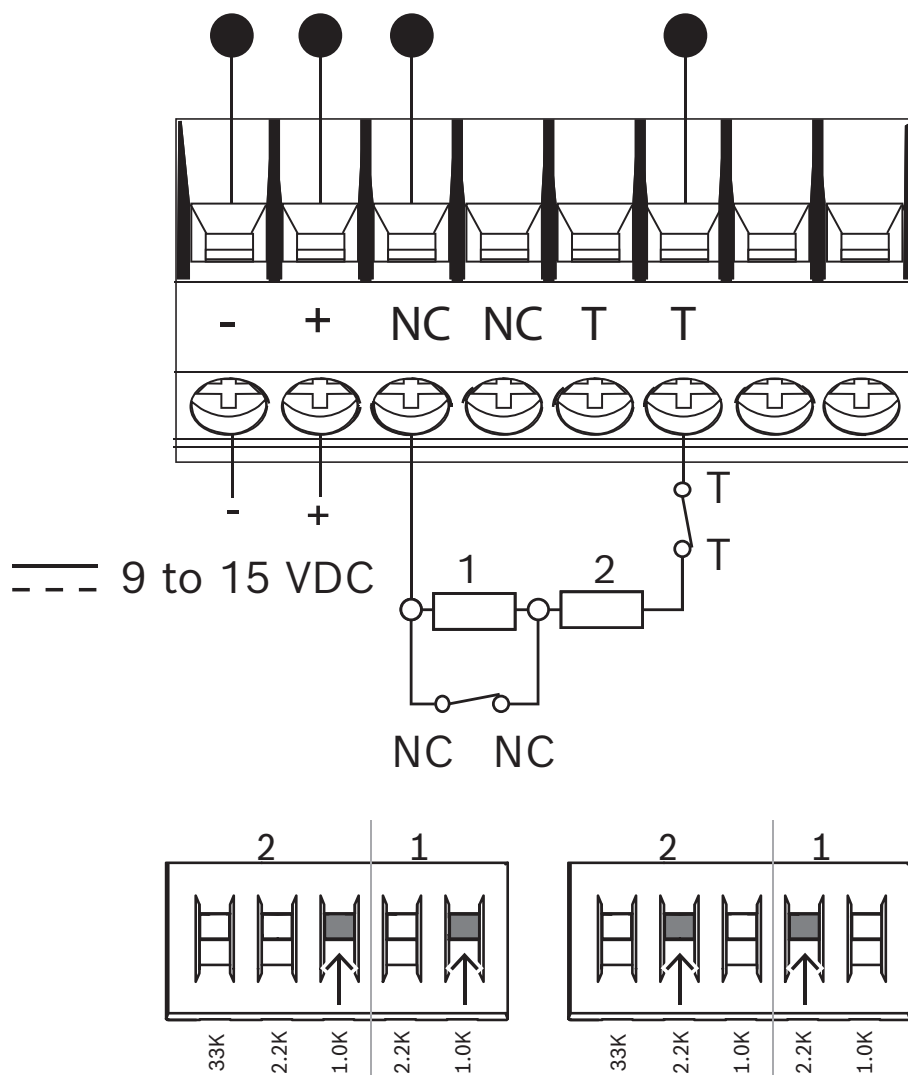


**TriTech AM**

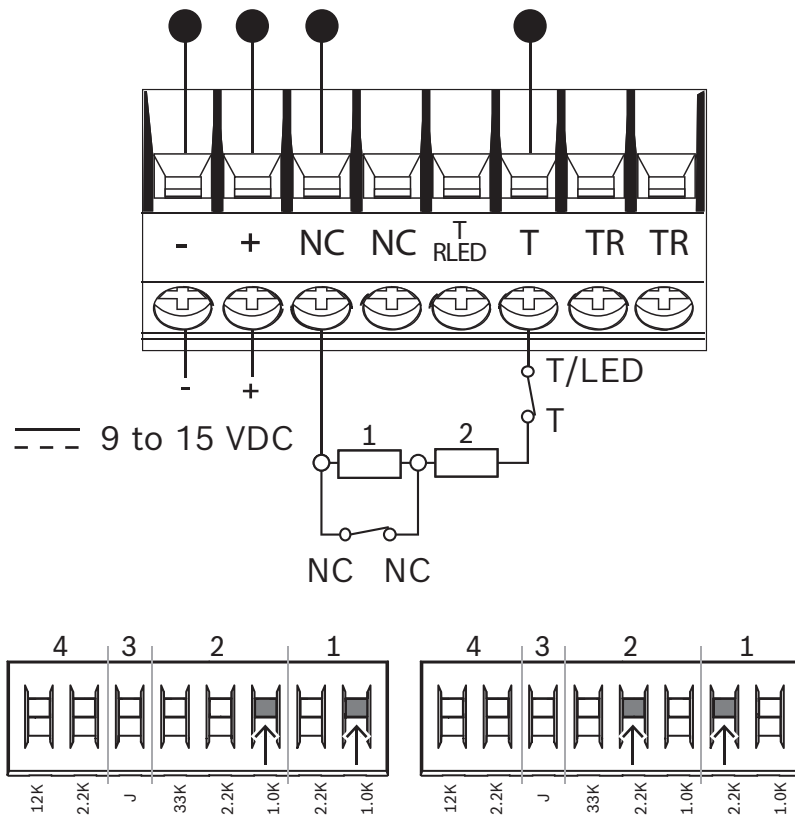




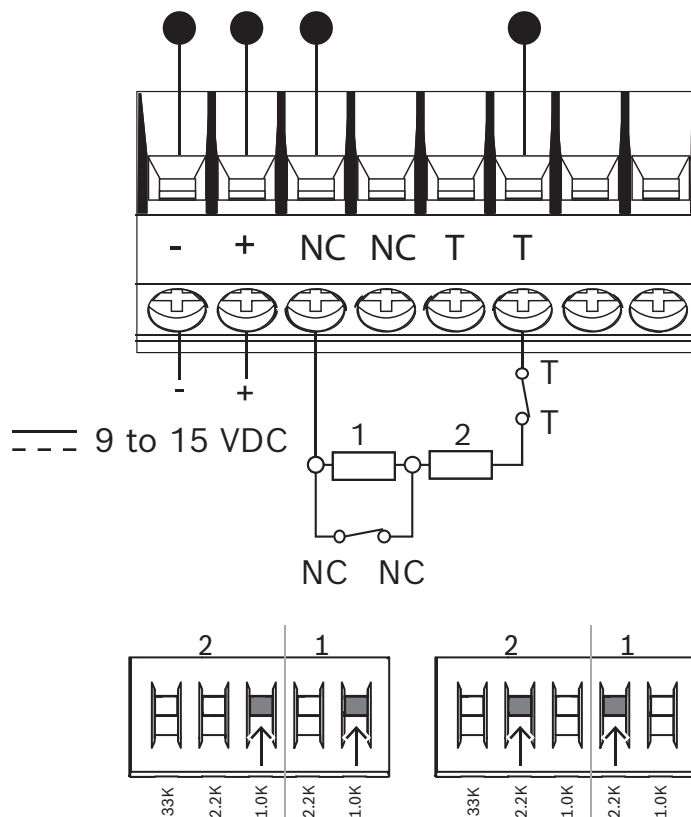
### 6.3.2 Double EOL loop - Alarm and Tamper TriTech



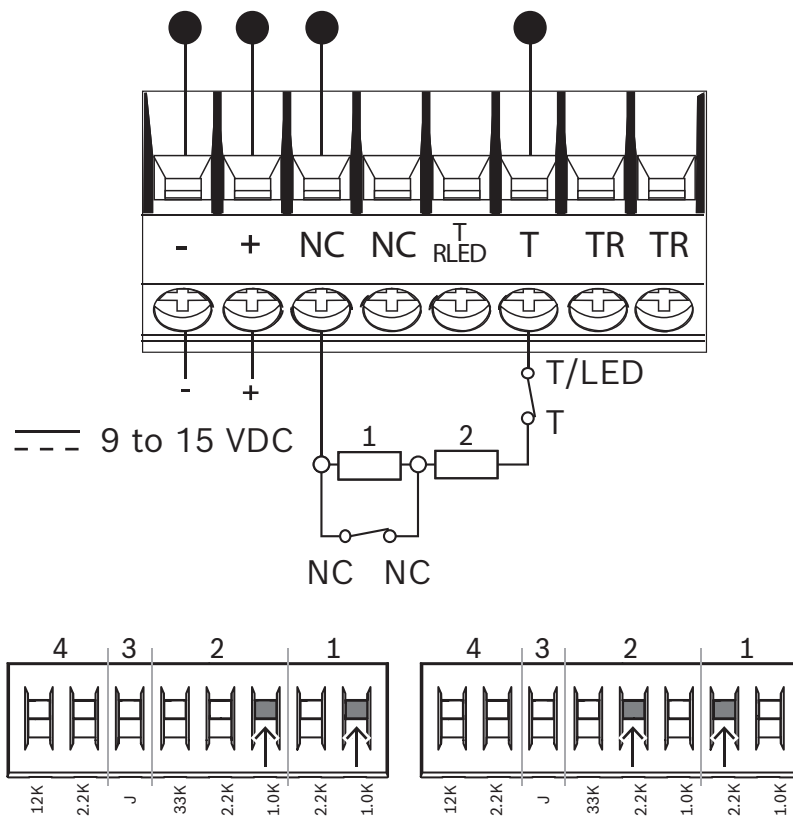
**TriTech AM**



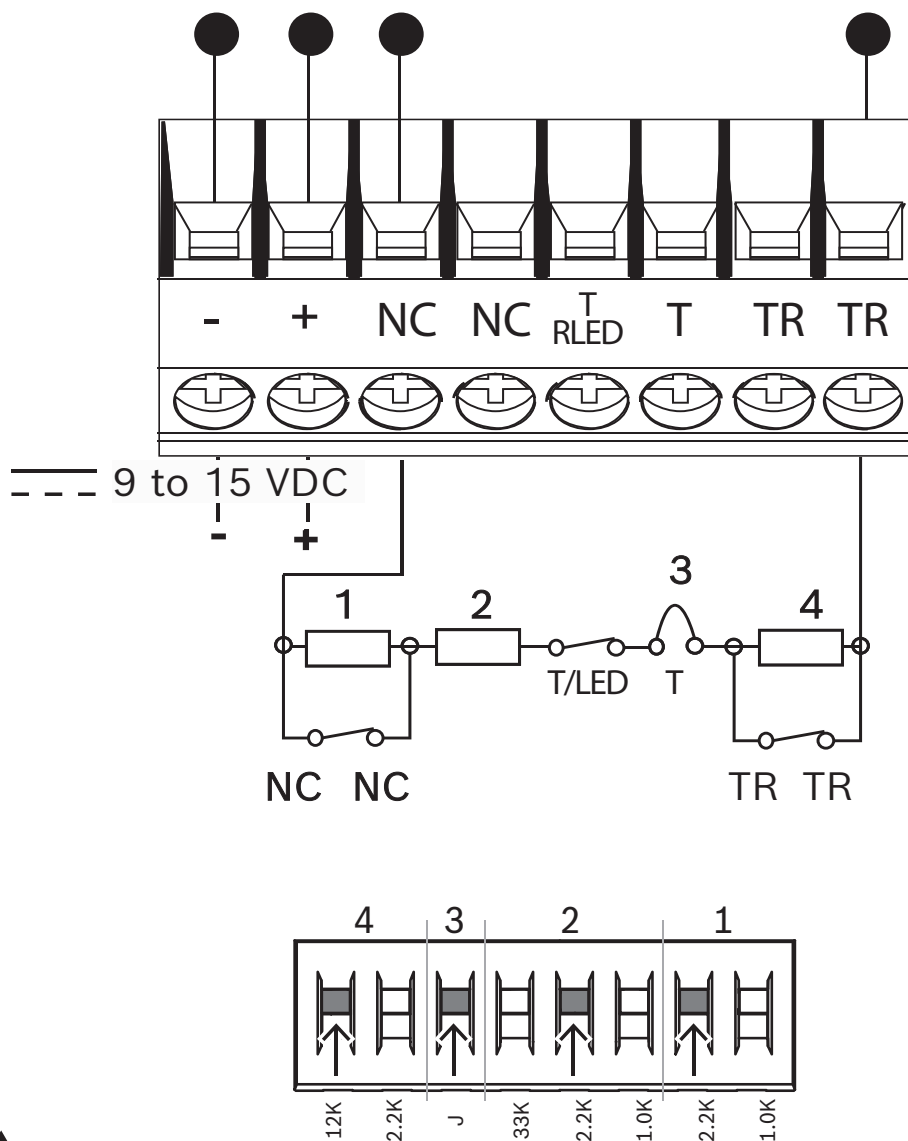
### 6.3.3 Double EOL loop - Alarm and Tamper with separate Trouble Input TriTech



**TriTech AM**



### 6.3.4 Triple EOL - Alarm, Tamper, and Trouble input TriTech AM



## 7 Configuration

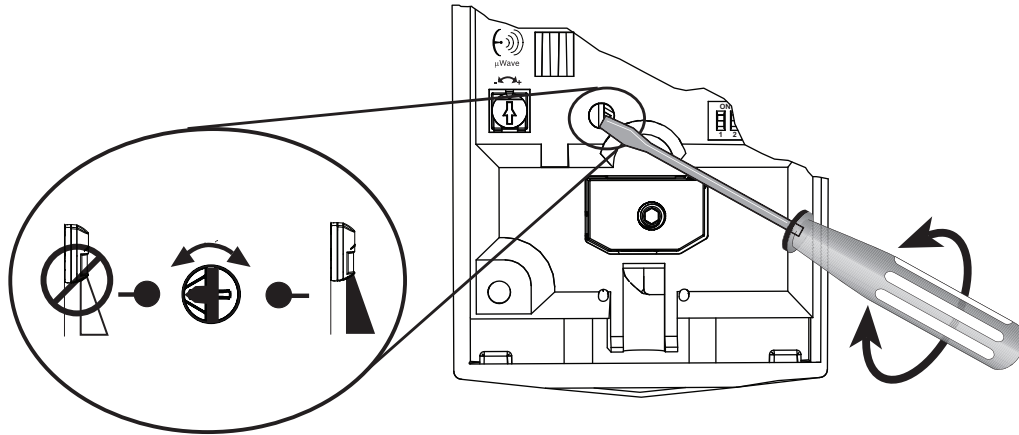
Before placing the detector body on the base, and before performing a walk test, configure the features and options located on the detector body.

### 7.1 Look-down zone

The detector has a manual cam to enable or disable the look-down zone. Enable the look-down zone to detect motion under the detector area.

To reduce false alarms, disable the look-down lens for locations where small animals are likely to cross the look-down zone.

Turn left to disable the look-down zone. Turn right to enable the look-down zone.



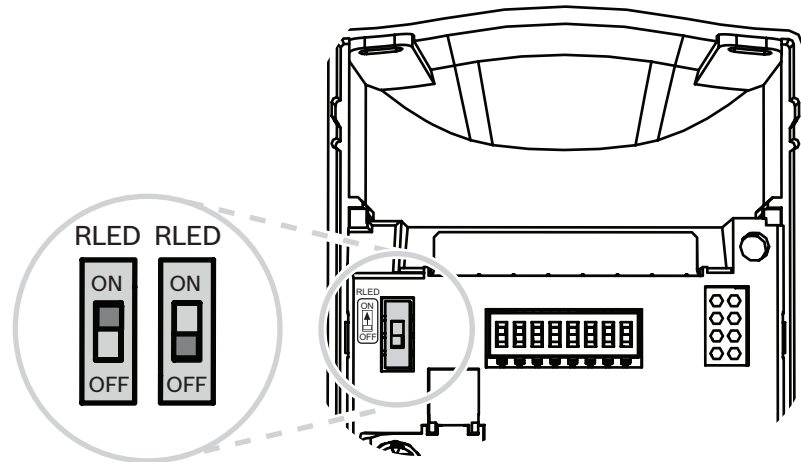
### 7.2 Remote LED



#### Notice!

Remote LED Input Terminal and Dip Switch  
This option is for the TriTech AM model only.

The RLED Dip Switch selection terminal input is a circuit that detects potential differences in voltage to change the behavior of the walk test LED functions. The RLED input is intended to allow enabling and disabling the walk test LED functionality without opening the detector locally. To change the status of the LED, the input requires signal ground voltage potential (often referred to as “-“, COM, 0 V, or as a COMMON point on the power source) to be applied. The change resulting by connecting signal ground to the RLED terminal also depends on how the RLED and LED switch are set. Refer to the table below for proper configuration to enable/disable the LED remotely



RLED			
OFF	LOW	OFF	OFF
	HIGH	ON	ON
ON	LOW	OFF	ON
	HIGH	ON	ON



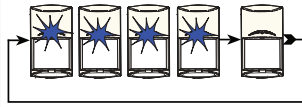
### 7.3 Walk test LED


Before you begin the walk test, review the walk test LED indicator statuses. Refer to Walk test LED.

At the beginning of the test, with no motion in the protection area, the LED should be OFF. If you observe LED activity without movement, check for disturbances affecting the microwave or PIR technologies.

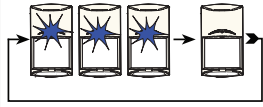
The walk test LED indicates the detector's operational status.

<p>2 min</p>	<p>During the warm-up period (after providing power to the device), the LED flashes continuously until the device is ready for use.</p>
	<p>During walk test, the LED indicates PIR and microwave activity activity and also a motion alarm condition (dual alarm).</p>

	<p>If the detector is in a self test fault condition, the LED flashes 4 times repeatedly.</p>
---	---

	<p>If the detector is in a low power supply fault condition, the LED flashes 5 times repeatedly.</p>
---	--

**For models with anti-mask:**

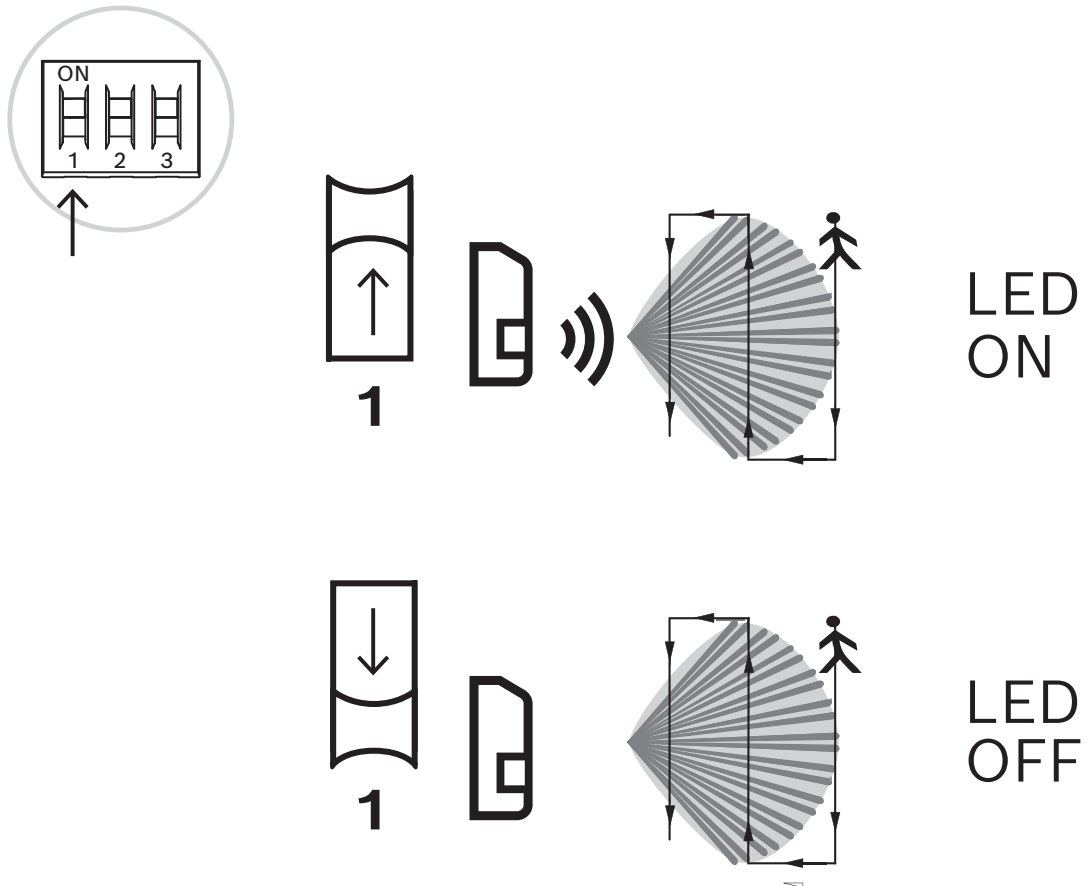
	<p>If the detector is in anti-mask alarm condition, the LED flashes 3 times repeatedly.</p>
---	---



**Notice!**

The walk test switch does not affect the warm-up flash after power-up or any of the trouble flash patterns. During the warm-up period, the blue LED flashes continuously until the unit has stabilized (approximately 2 minutes) and has seen no movement for at least 5 seconds.

**Activate LED**



The ON position enables the LED. If you do not want the LED indication after you finish the setup and walk tests, put the switch in the OFF position. The OFF position does not prevent the LED from indicating supervision trouble conditions.

The walk test LED can be controlled remotely by applying power to the W/T terminal matching the polarity setting of the feature select switch.



If you do not want the LED to light when the device detects a possible alarm event, disable the LED after you complete the walk test.



**Notice!**

Some regulations require that you disable the LED after the walk test.

**Automatic brightness**

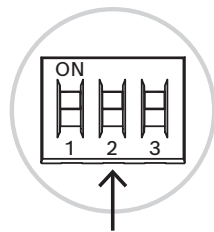
To improve LED visibility in any lighting environment, the walk test LED automatically changes brightness. In dark environments, the LED intensity lessens; in bright environments, the LED intensity increases.

**7.4**

**Adjustable Cloak and Camouflage Detection Technology sensitivity**

The detector includes two Cloak and Camouflage Detection Technology (C<sup>2</sup>DT) sensitivity modes: high and low.

- High sensitivity. The recommended setting for any location where an intruder might cover only a small portion of the protected area. C<sup>2</sup>DT tolerates normal environments on this setting. This setting improves catch performance.
- Low sensitivity. The recommended setting for maximum false alarm immunity. C<sup>2</sup>DT tolerates environmental extremes on this setting.



**2**

High

c<sup>2</sup>DT EN Grade3 [TriTechAM]

c<sup>2</sup>DT EN Grade2 [TriTech]



**2**

Low

c<sup>2</sup>DT EN Grade2 [TriTechAM]

**7.5**

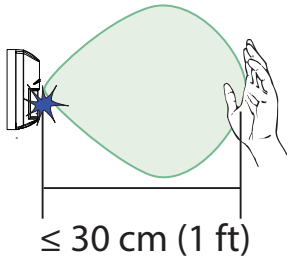
**TriTech Anti-mask**



**Notice!**

TriTech Anti-mask option

This option is for TriTech AM models only.



CDL2-A15G  
CDL2-A15H  
CDL2-A12G

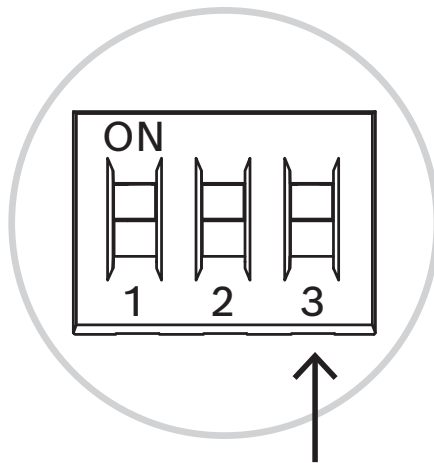
CDL2-A15G-CHI

This feature detects obstructions in the detector’s field of view. Obstructions include an object placed within 30 cm (1 ft) of the detector, or infrared blocking material placed or sprayed on the detector lens surface. When anti-mask detects a masking attempt, the detector activates the alarm and trouble outputs, and by an LED 3 flash pattern. The anti-mask notification occurs after 30 seconds of continuous blocking (masking).



**Notice!**

The anti-mask system can detect objects approximately 30 cm (1 ft) below the detector. Do not install the detector in locations where an object might appear too close to the unit (for example, above doorways).



**3**

**3**

EN Grade 3

EN Grade 2

1	Anti-mask enabled - EN Grade 3	2	Anti-mask disabled - EN Grade 2
---	--------------------------------	---	---------------------------------

During power-up, the anti-mask system learns its environment. Removing objects (such as a ladder) that are close to the detector can cause an anti-mask alarm.

#### **Resetting anti-mask alarms**

If an alarm occurs, after removing the obstruction from the detector you can clear the anti-mask condition by simply walking in front of the detector after 10 seconds with no activity.



#### **Notice!**

During the 10 seconds of quiet time before you can clear the anti-mask condition, the detector expects no microwave activity in the field of view. If the anti-mask condition doesn't clear after 10 seconds, there might have been some activity in the area which caused only microwave activity which is not indicated by the LED. Make sure the area is free of any moving objects, repeat the 10 second wait time, and then move in front of the detector to clear the anti-mask condition.

## **7.6**

### **Walk test**

Before you begin the walk test, review the walk test LED indicator statuses. At the beginning of the test, with no motion in the protection area, the LED should be OFF. If you observe LED activity without movement, check for disturbances affecting the microwave or PIR technologies.

#### **7.6.1**

#### **Establish the PIR and microwave coverage**

The motion detector PIR and microwave factory settings are optimal for most installations. If you must adjust the PIR and microwave coverages, use the microwave potentiometer and walk test to do so.

Preparing for the PIR and microwave walk test:

1. Remove the motion detector body from the base.
2. Turn the microwave potentiometer to the minimum range (to the left, counterclockwise).
3. Place the motion detector body onto the base.
4. Wait at least 2 minutes.

Performing the walk test and making adjustments:

1. Begin the walk test and observe the walk test LED.
2. If you do not observe LED activity while walking along the farthest edge of the desired coverage area, increase the microwave range. Remove the motion detector body from the base and increase the range by turning the potentiometer clockwise. (Refer to Adjustable microwave sensitivity for detailed instructions.)
3. Place the motion detector body onto the base.
4. Wait at least 2 minutes.
5. Repeat walk test procedures and range increase until the PIR and microwave detection range is as desired.
6. If on the last walk test, you observe LED activity while walking outside the coverage area, decrease the microwave range and repeat the walk test.

**Notice!**

Do not adjust the microwave range higher than required. Doing so might cause the motion detector to catch movement outside of the intended coverage pattern.

Microwave signals penetrate certain surfaces such as drywall, wood, and glass. If the protected area is significantly smaller than the motion detector's nominal range, reduce the microwave range so that it can still detect motion on the near side, but not on the other side of the surface.

**7.6.2****Establish the coverage pattern****Notice!**

Wait at least 10 seconds between the tests listed in this section.

1. Place the detector body onto the base.
2. Walk test across the coverage pattern at its farthest edge, then several times closer to the detector.
3. Start walking from outside of the intended protection area, and observe the LED.
4. Walk test from the opposite direction across the pattern to determine both boundaries. The center of the pattern should be pointed toward the center of the intended protection area.
5. Walk test the unit from all directions across the pattern to determine all the detection pattern boundaries.

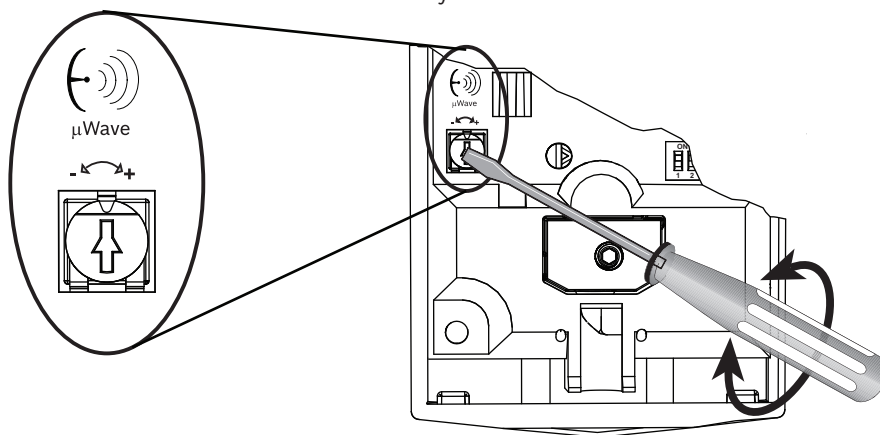
**7.6.3****Adjustable microwave sensitivity**

The motion detector has a microwave sensitivity adjustment potentiometer. Use this feature to adjust the microwave detection range, if necessary.

**Notice!**

The product ships with the potentiometer pre-set to meet the rated range. In most cases, you do not need to adjust the potentiometer during the installation. You might adjust the potentiometer, as instructed, to reduce the potential for false alarms or for very large rooms.

The following figure shows how to adjust the setting using the potentiometer. Turn counterclockwise to reduce sensitivity.



## 7.7

### Self test

The motion detector performs a routine self test every 7 hours, testing both the PIR and microwave circuit. If either technology fails the self test, the motion detector indicates a trouble condition by activating the trouble output and the LED 4 flash pattern.



#### **Notice!**

A self test fail condition indicates that the motion detector cannot perform as expected. Replace the motion detector.

## 8 Troubleshooting

This section includes trouble conditions and the potential causes.

### 8.1 Detector does not appear to respond to motion

#### Potential causes

- Insufficient power
- Loose wires in the terminals
- Cabling or wiring error
- Defective unit
- Walk test LED is disabled
- The detector is in Set (armed) status



#### Notice!

Some regulations require that you disable the LED after the walk test.

### 8.2 Detector is in continuous alarm

#### Potential causes

- Mounting location does not meet the recommendations listed in this document
- Insufficient power
- Input loop continuity broken
- Incorrect alarm loop resistance configuration
- Defective unit
- Masking attempt detected

### 8.3 Detector appears normal but does not send alarms to the control panel

#### Potential causes

- Incorrect alarm loop resistance configuration
- Incorrect alarm loop wiring

### 8.4 Detector does not appear to detect motion in the space directly under it

#### Potential causes

- The look-down zone is disabled
- MW Crosstalk: two devices or more are installed very close to each other (<3 ft) or are facing each other (<20 ft).

### 8.5 Motion detector does not appear to detect motion near the edge of the coverage area

#### Potential causes

- Microwave range too short
- Mounting height does not meet the recommendation listed in this document
- Level alignment does not meet the requirement noted in this document
- C<sup>2</sup>DT sensitivity too low

## **8.6 Detector does not appear to detect motion in the farther section of the coverage area**

### **Potential causes**

- Microwave range is too short
- C<sup>2</sup>DT sensitivity too low

## **8.7 Detector LED flashes continuously**

### **Potential causes**

- Warm-up mode requires a certain amount of time with no motion in the area to settle the PIR and microwave circuit
- Defective unit

## **8.8 Detector LED flashes two times in a row repeatedly**

### **Potential causes**

- Tamper Detection System Failure

## **8.9 Detector LED flashes three times in a row repeatedly**

### **Potential causes**

- Masking attempt is detected
- The installer or an object is too close to the detector during the power-up period

## **8.10 Detector LED flashes four times in a row repeatedly**

### **Potential causes**

- The detector failed during the routine self test

## **8.11 Detector LED flashes five times in a row repeatedly**

### **Potential causes**

- The supply voltage is too low

## **8.12 Detector LED continually flashing rapidly**

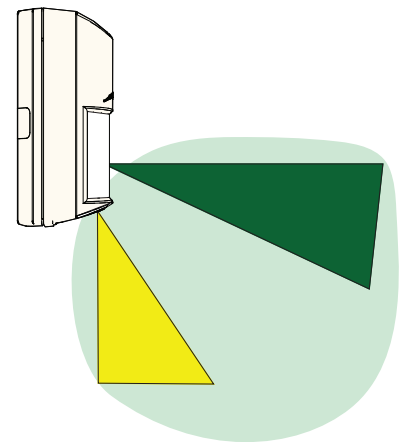
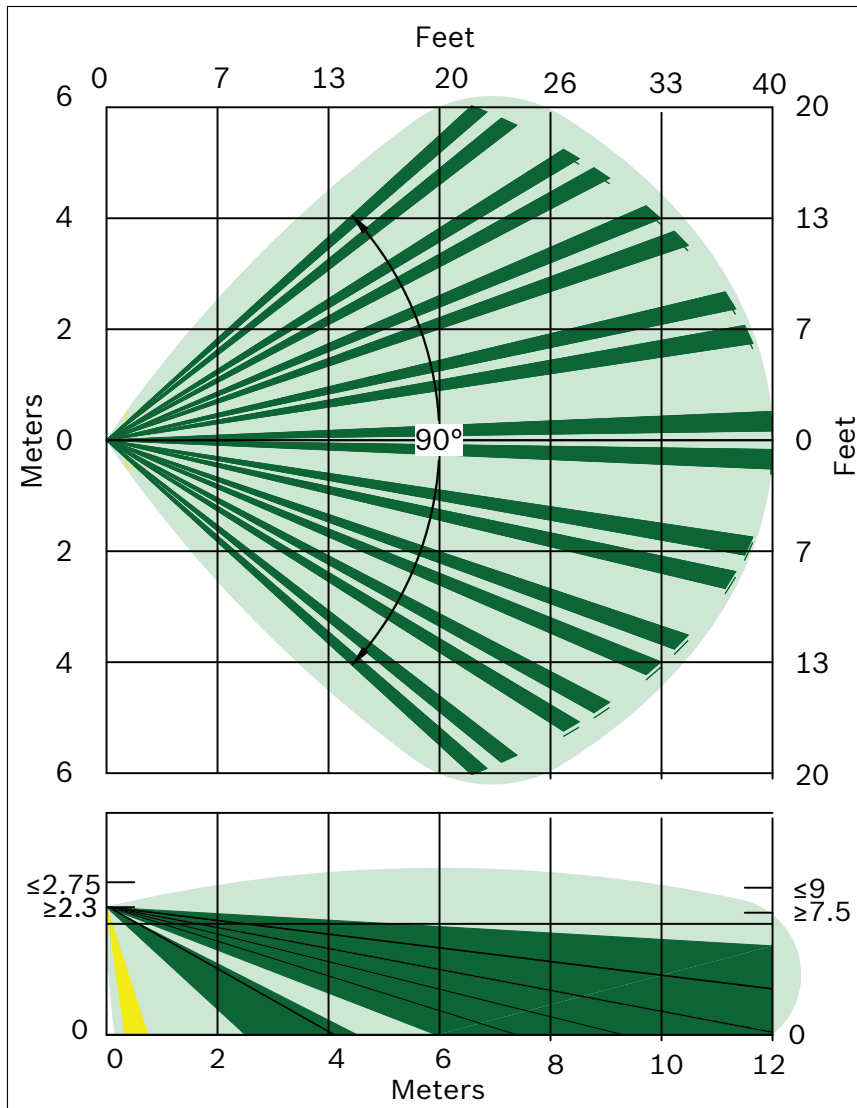
### **Potential causes**

- Unit mounted upside down

# 9 Coverage patterns

## 9.1 12 meter coverage pattern

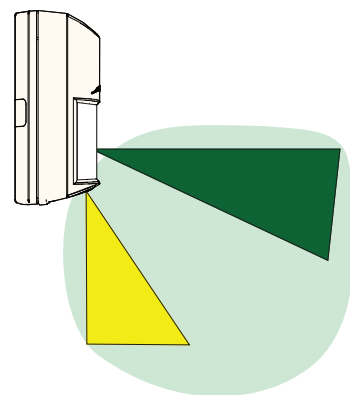
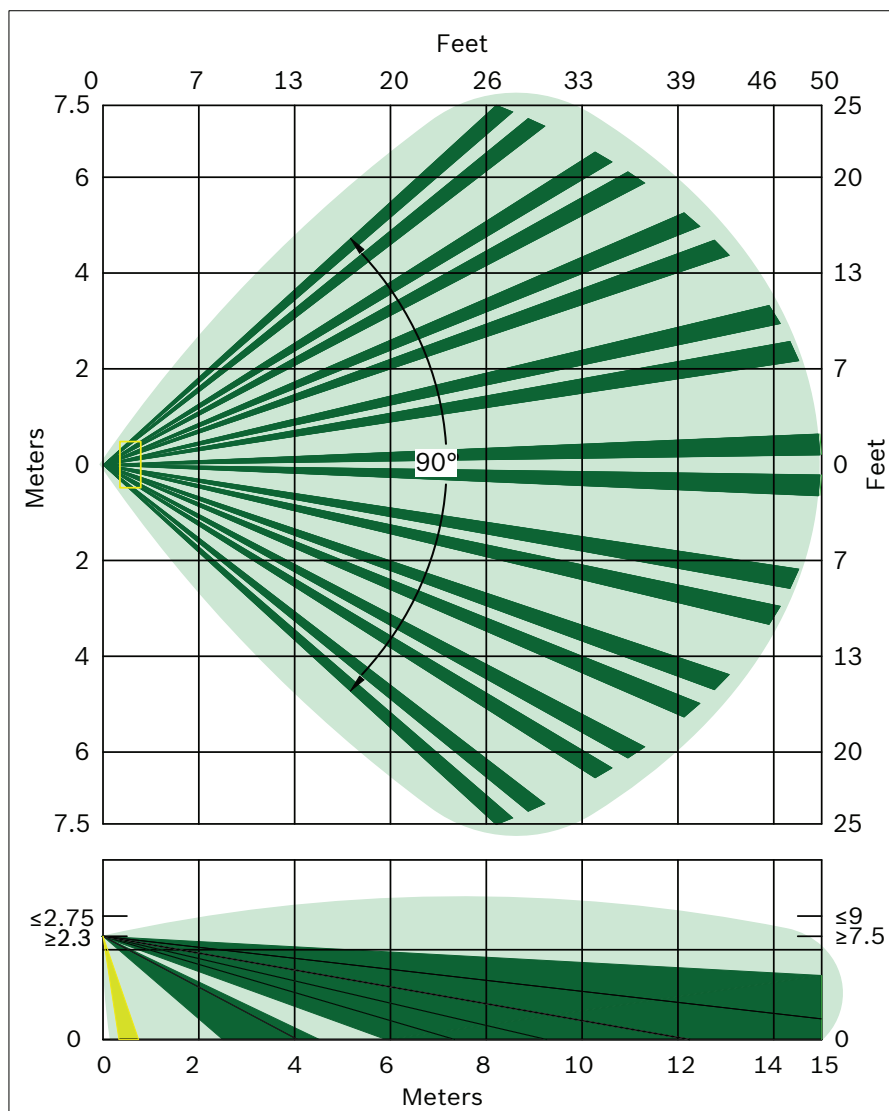
- CDL2-A12





## 9.2 15 meter coverage pattern

- CDL2-A15G | CDL2-A15H
- CDL2-15G | CDL2-15H
- CDL2-A15G-CHI | CDL2-15G-CHI







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