PARADOX

# PMD780M

Outdoor Dual-Side View Motion Detector

INSTALLATION MANUAL

Version - 1.0

## Introduction

The Paradox PMD780M is an outdoor, wireless, dual-side view Passive Infrared (PIR) motion detector. It communicates with the Paradox M systems using 2-way wireless communication, featuring the latest Gaussian Frequency Shift Keying (GFSK) technology with frequency and encryption hopping. This ensures superior wireless range, enhanced encryption, supervision, reliability, and extended battery life.

The PMD780M detector is configurable to report as a single unit (two side detectors reporting to a single zone output) or as dual units (each side reporting to a separate zone). The optics are specially designed to provide multiple narrow beams for excellent detection covering up to 12m (39.37 ft) for each side.

## Quick Installation - Experienced Installers

To install PMD780M:

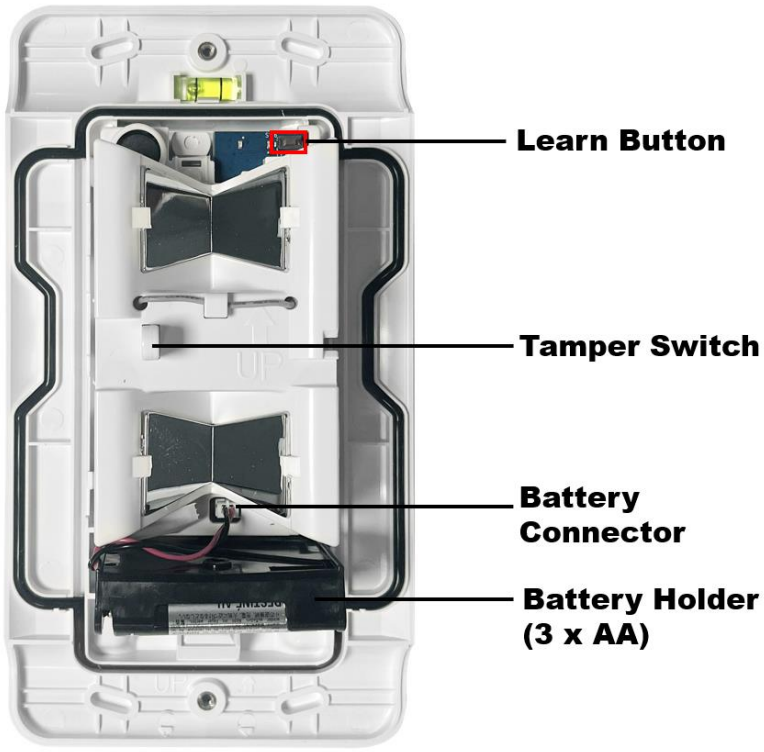
1. Open the detector, remove the battery holder and PCB.
2. Fix the backplate.
3. Insert the battery holder and the PCB. Close the detector.
4. Slide up or down the white tab on the lens frame to adjust the detection range.
5. Push in or pull out the lens tray to set the angle to $0^0$ or $3^0$ with the wall.
6. Pair PMD780M with the console (Using the BlueEye application):
    - Go to: **Hardware** > Tap **+** on the top-right of the page >**Auto learn devices**. **NOTE**: *You can instantly pair PMD780M by pressing the **Learn** button, or by opening the tamper or a zone.*
7. Configure PMD780M (Using the BlueEye application):
    - Go to: **Hardware** > Tap PMD780M from the device list > Enter the necessary details > **Save**.

Built-in status indications of PMD780M:

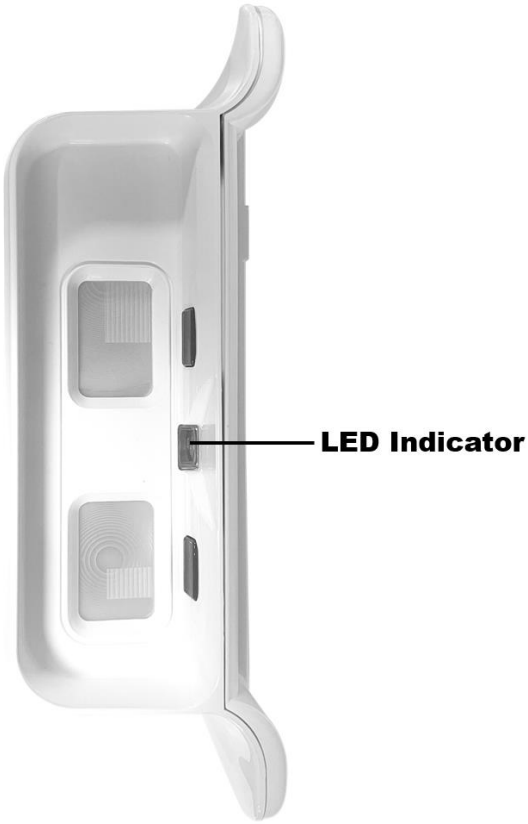
- Red Blinking 3 times - Not connected to the console; the device is defaulted (new or unpaired).
- Red (3 seconds) - Not connected to the console; but the device is paired.
- Green (3 seconds) - Detection and transmission occurred (maximum twice within 3 minutes)
- Green Blinking - Two detections within 3 minutes and goes to cool-down mode.
- Red/Green - After the tamper is detected, the device blinks red and green alternately for 3 seconds. After the tamper is resolved and the device is closed, the device blinks green for 3 seconds.
- Green Blinking (50 seconds) - PIR stabilization is in progress (after power-up).

## Components of PMD780M

The following figure displays the components of PMD780M.



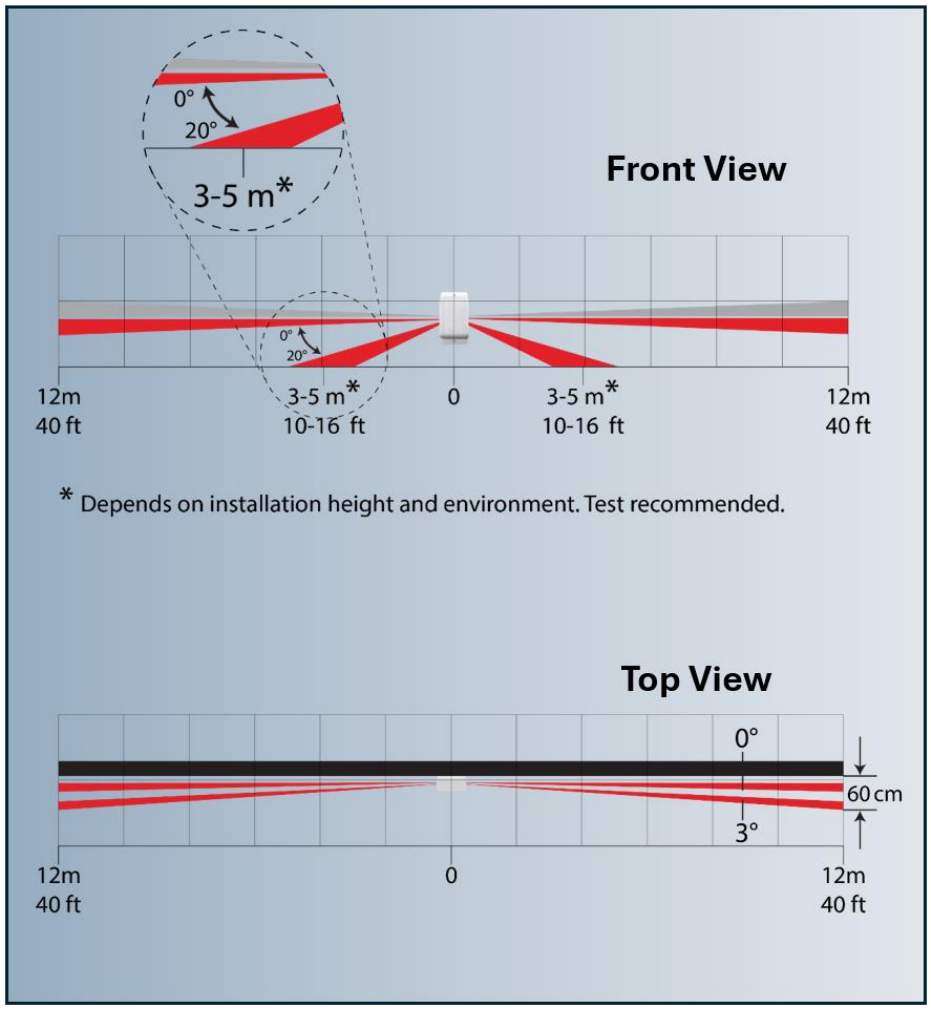





Components of PMD780M

## Detection Field

The detector must be installed at a height of 2 meters (6.5 feet) above the floor level. It creates a narrow detection beam pattern from 3m (10 ft) up to 12m (40 ft) on each side protecting windows, doors, and walls. The detection range can be adjusted by changing the viewing angle of the bottom-facing beams (moving them up and down).




**NOTE**: *Mounting the detector at a lower height may reduce its detection range while mounting it higher could reduce the performance of the lower detection beams.*

### Pet Immunity

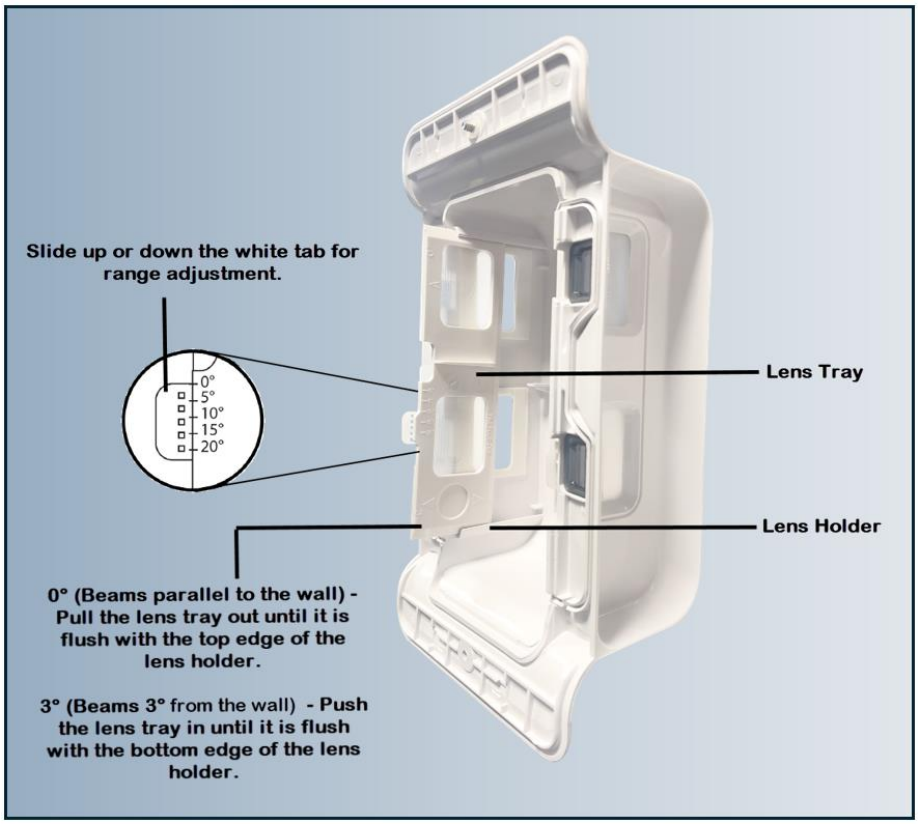
The PMD780M detector offers pet immunity for animals weighing up to 40 Kg (90 lbs). When an animal of this size moves close to the ground, it cannot cross enough beams at once to trigger an alarm. This minimizes false alarms caused by pets while maintaining accurate detection of human intrusions.

## Physical Mounting

To mount the PMD780M motion detector:

1. Release the screws from the bottom and top of the PMD780M detector.
2. Remove the front cover, and then remove the main unit from the backplate.
3. Fix the backplate on the wall.
   **NOTE**: A*s per the EN security standards, one screw must be secured in the tamper hole. The use of double-sided tape does not trigger a wall tamper alarm.*
4. Reattach the main unit to the backplate.
5. Remove the battery tab (present only if the battery is included with the product) from the battery holder. Ensure that three ***AA*** Lithium batteries in the compartment are installed with the correct polarity.

6. Connect **Battery Connector**.
   The PMD780M is powered on.
7. To adjust the detection range:




   a. Inside the front cover, slide the white tab next to the lower lens up or down on the side you wish to adjust, based on the detection range given below:
      - $0^0$ – 12m
      - $5^0$ – 10.5m
      - $10^0$ – 7.5m
      - $15^0$ – 5.25m
      - $20^0$ – 3m to 5m
   b. After adjusting the white tab, lock it into the nearest slot.
8. To adjust the horizontal beams with respect to the wall:
   - For the beams parallel to the wall ($0^0$ with the wall), slide the lens tray until it aligns with the top edge of the lens holder.
   - For the beams at a $3^0$ angle from the wall, slide the lens tray until it aligns with the bottom edge of the lens holder.
9. Reattach the front cover and tighten it using the screw at the bottom.

**NOTE**: *Maintain at least 40cm (15.7 in.) clearance from the protected area (door or window).*

### Power-up Sequence

During the power-up sequence, the LED will flash five times red if the device is not paired to the console or five times green if paired to the console. The PMD780M waits between 0-10 seconds before connecting/pairing with the console. If the cover of the device is open, green and red LEDs will flash quickly.

## Pairing PMD780M with the Wireless M Console

The pairing and configuration settings of PMD780M are managed through the BlueEye application.

## Prerequisites

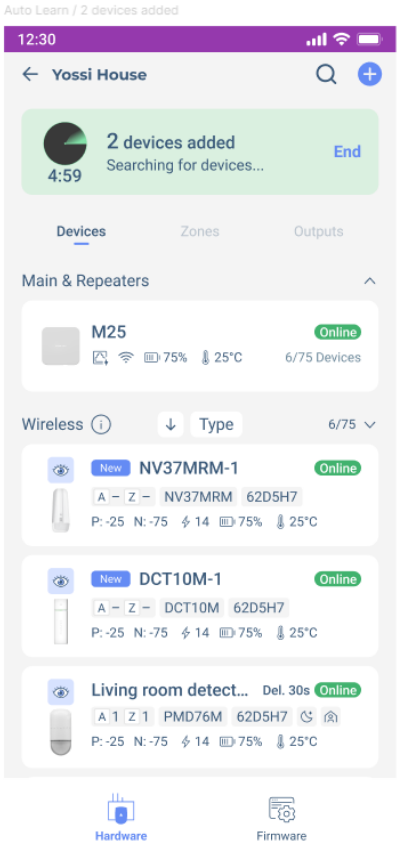
Ensure that:

1. The PMD780M is within the range of the console.
2. The BlueEye application is installed on your mobile and connected to the site.
3. The M console is powered on (Paradox logo color - white, red, or green).

## Pairing PMD780M

To pair the PMD780M with the wireless console by an installer:

1. In BluEye, when in the **Hardware** tab, tap **+** on the top-right of the page, and then tap **Auto learn wireless devices**.
   The wireless console searches for new devices and a rotating radar icon is displayed. All unpaired devices pair within 6 minutes and appear at the top of the device list with a ***new*** tag and voice announcements. You can open the front cover of the detector and press the **Learn** button momentarily, or open the tamper or a zone for immediate pairing.




To identify the device that you want to pair, you can either open or close the zone, or trigger the device tamper, and then check the device's screen in the BlueEye application to see the corresponding display.
When you open or close the zone, an eye icon displayed beside the device name shows opening and closing. When you trigger the device tamper, a T symbol appears on the device name in the BlueEye application.

## Pairing Previously Used Devices

You can pair used devices under the following conditions:

- **When the previously used device is not online with another wireless console:** Start auto-learn. Open the device or press the **Learn** button momentarily for immediate pairing, or wait up to 6 minutes for automatic pairing.

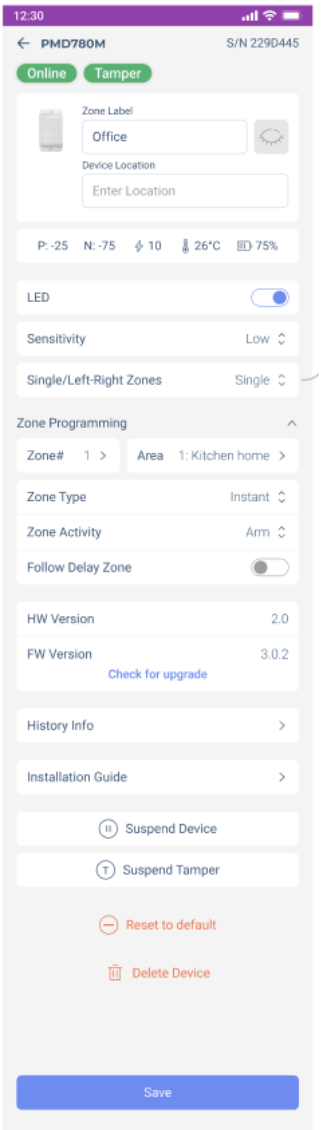
- **When the previously used device is online with another wireless console:** Press and hold the **Learn** button for 8 seconds to reset the device to its default settings. Reset is indicated by the LED flashing red three times.

Once the reset is complete, initiate auto-learn.
**NOTE:** *Ensure the device is not connected or paired with the previous console before resetting the device.*

## Configuring PMD780M

To configure the PMD780M settings:

1. When in the **Hardware** tab, tap **PMD780M** from the device list if the device is already paired. If the device is not paired, see the Pairing PMD780M section in this manual and pair the device.
2. On the page that opens, enter the necessary details for the parameters and then tap **Save**. For details about each parameter displayed on the page, see Table 1.




The following table lists the parameters displayed for configuring the PMD780M, along with their descriptions.

**Table 1**

| Parameter | Description |
|---|---|
| **LED** | Determines whether the LED indications for the device are enabled or disabled. |
| **Sensitivity** | There are two sensitivity levels, **High** (default) and **Low**. |

| | | |
|---|---|---|
| | | • **High** sensitivity mode detects smaller, subtle movements; useful for high-security areas or when precise detection is needed.<br>• **Low** sensitivity mode requires larger movements to trigger detection. It is recommended in areas where the incidence of false alarms from vibrations may be greater. |
| **Single/Left-Right Zones** | | • **Single** (Default) – The detector reports as a single unit without separating the left and right sides. Any motion detected across the whole field of view will trigger an alarm.<br>• **Left/Right** – The detector divides its field of view into two separate zones – one on the left and the other on the right. |
| **Zone Programming** | **Zone#** and **Area** | Assign a zone and area number. |
| | **Zone Type** and **Zone Activity** | Select the type of zone – Instant, Delay, 24 hours when the device is active in the Arm, Stay, or Sleep modes.<br>The following are the different zone types:<br>• **Instant** – When in any armed status, an immediate alarm occurs. However, a delay period can be added to the **Instant** zone when arming in the Stay and Sleep modes.<br>• **Delay** – When a zone is opened, it triggers an entry delay in any arming mode.<br>• **24 hours** – Always armed. The system remains in alarm as long as this zone is open. The system can be armed even if the 24-hour zone is in alarm. |
| | **Follow Delay Zone** | This zone is instant and becomes a delay zone if a delay zone is opened first. |
| **About** | | This tab displays details such as the installation date, production date, last programming date, battery replacements, battery history, and upgrade history. |
| **Suspend Device** | | Disables monitoring of the device in the system. |
| **Suspend Tamper** | | Disables tamper monitoring for the device. |
| **Reset to Default** | | This will reset the device to the factory default settings.<br>**NOTE**: *Only an installer can reset the device.* |
| **Delete Device** | | This option deletes the device from the system completely. After deletion, the system generates a push notification only if the owner registration is complete, not during installation.<br>**NOTE**: *Only an installer can delete the device.* |

## LED Indications

After configuring PMD780M, the device displays various LED indications based on specific events. The following table lists the LED indications and their corresponding event.

Table 2

| LED Indication | Event |
|---|---|
| **Red Blinking 3 times** | Not connected to the console (new or unpaired). |
| **Red (3 seconds)** | Not connected to the console; but the device is paired. |
| **Green (3 seconds)** | Detection and transmission occurred (maximum twice within 3 minutes) |
| **Green Blinking** | Two detections within 3 minutes and goes to ***Cool Down*** mode. |
| **Red/Green** | After tamper is detected, the device blinks red and green alternately for 3 seconds. After the tamper is |

| | |
|---|---|
| | resolved and the device is closed, the device blinks green for 3 seconds. |
| **Green Blinking (50 seconds)** | PIR Stabilization is in progress (after power-up). |

## Resetting

Press and hold the **Learn** button for 8 seconds to reset the device to its default settings. Reset is indicated by LED flashing red three times.

## Upgrading Firmware

To upgrade the firmware:

1. In the **Hardware** tab, tap on the device > **Check for Upgrade**.
2. If an upgrade is available, tap **Upgrade** when prompted.
   The process may take a few minutes. Keep track of the progress in the BlueEye application to ensure that the upgrade is completed successfully. Both the Installers and owners can perform the upgrade.

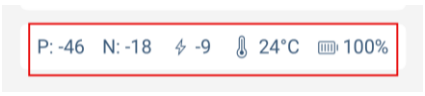
## Signal Strength and Transmit Power Monitoring

The BlueEye application provides insights into each device's received signal strength and transmission power to optimize performance.

To view the RSSI and transmit power range:

1. When in the **Hardware** tab, tap the ⓘ icon next to the **Wireless** tab.
   A pop-up window with the RSSI and transmit power range is displayed.
2. Maximum power transmitted by PMD780M:
   - 868 MHz: +14 dBm
   - 914 MHz: +22 dBm


Tap on any listed device to view signal strength and additional device metrics. The following parameters are displayed for each device:




- **P** - Received signal strength at the panel
- **N** - Received signal strength at the device

-  - Transmit power of the device.
-  - Current temperature reading of the device.
-  - Battery level of the device

A higher P and N value indicates stronger and clearer communication between the console and the device.

- If **P** is low, the console struggles to receive signals from the device.
- If **N** is low, the device struggles to receive signals from the console.

**NOTE**: *Values below -93 with maximum Tx power are not recommended values, and RPT5M can be used to extend the range.*

Power transmission impacts only **P**:

- When **power transmission** increases, the **P** value at the console generally improves, as a stronger signal is sent.
- If **P** value is good, the device can reduce its transmission power to save battery life.

## Walk Test

After powering on the detector or opening/closing the cover (if already powered on), the detector enters a walk-test mode for 15 minutes. Perform the following walk test to ensure the motion detector detects movement in the intended area.

**Steps**:

1. Walk across the detection field, moving in and out of the detector's range.
2. Observe LED Indications.
3. If the motion detector doesn't pick up movement as expected, adjust its height or location and re-test.

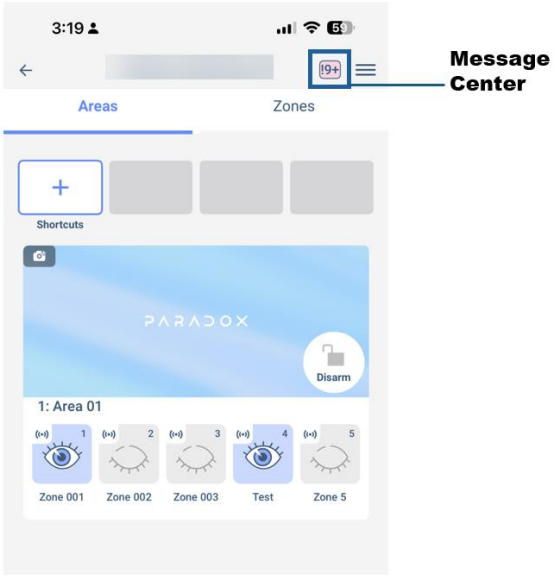
With **Sensitivity** set to **High**, and **Detection Energy** set to **Fast,** then crossing two beams is detected as a movement. With the **Sensitivity** set to **Low,** the amount of movement required to generate detection is doubled. The detector exits the walk-test mode after 15 minutes. To reactivate it, open the cover of the device to trigger the tamper switch, and then close the cover.

## Cool-Down Mode

The PMD780M motion detector indicates detection with a 3-second green LED display (or 3-second red if the detector is not paired or connected to the console). After two detections within 3 minutes, the PMD780M enters a ***cool-down*** mode to conserve battery life. During this period, it is indicated by a green blink (or red if not paired), but this signal will not be transmitted to the console.

## Dual Tamper Protection

The PMD780M motion detector is equipped with dual tamper protection (wall and cover). If the system is armed, any tamper activation immediately triggers a system alarm. When the system is disarmed, a tamper activation generates a report to the CMS, sends a push notification, and displays a tamper trouble alert in the BlueEye application.




## Technical Specifications

The following table lists the technical specifications of PMD780M along with their descriptions.
**NOTE**: *The specifications are subject to change without prior notice.*

Table 3

| Specification | Description |
|---|---|
| **Wireless Type** | GFSK two-way with frequency and encryption hopping |
| **Sensor Type** | 4 x dual low-noise rectangular elements |
| **Coverage** | 3m (9.8ft) – 12m (39.37ft) on each side |
| **Detection Speed** | 0.2m / sec.– 4m/sec. (0.6 ft/sec.– 13.1 ft /sec.) |
| **RF Frequency** | 868 (865.05 - 867.95) MHz or 914 (902.25 - 927.55) MHz<br>Other countries might change |
| **RF power** | 868 MHz up to +14 dBm radiated, 914 MHz up to +22 dBm in permitted countries. |
| **Transmission Time** | Less than 20 ms |
| **Supervision Time** | 20 minutes, 10 minutes (Default), and 3 minutes |
| **Status Indicators** | Battery, temperature, TX/RX values |
| **Battery Lithium** | 3 x 1.5 VDC AA, up to 5 years of battery life |
| **Installation Environment** | Outdoor |
| **Firmware Upgrade** | Remotely over the air, via BlueEye |
| **IP Rating** | IPX4 |
| **Operating Temperature** (with lithium batteries) | -20°C to +40°C (-4°F to 104°F) |
| **Auto Learn** | Yes |
| **Colors** | White |
| **Dimensions** | 11W x 21H x 7D cm (4.3W x 8.2H x 2.7D in.) |
| **Weight** | 0.45 kg |
| **Certification** | CE, EN 50131-2-2, EN 50131-6, EN 50131-5-3,<br>FCC 15.247 |

## FCC Statements

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

**NOTE**: This equipment 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 harmful interference in a residential installation. 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 communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and the receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

**WARNING** – RF EXPOSURE COMPLIANCE: This equipment should be installed and operated with a minimum distance 20cm between the radiator and your body.

**FCC ID**: KDYPMD780M
**IC**: 2438A-PMD780M

- This Class B digital apparatus complies with Canadian ICES-003.

## IC Statements

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

## Warranty

For complete warranty information on this product, see the Limited Warranty Statement document, or contact your local Paradox distributor.

## Patents

US, Canadian, and international patents may apply. Paradox is a trademark or registered trademark of Paradox Security Systems (Bahamas) Ltd.