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Z-Wave Plus® 4-in-1 Motion Sensor with Temperature, Humidity, and Light Sensors

P/N **15902**

User's Manual

CONTENTS

SAFETY WARNINGS AND GUIDELINES

• This device is intended for indoor use only.

• Do not expose this device to water or moisture of any kind. Do not place drinks or other containers with moisture on or near the device. If moisture does get in or on the device, immediately remove the battery and allow it to fully dry before reapplying power.

• Do not expose this device to excessively high temperatures. Do not place it in, on, or near heat sources, such as a fireplace, stove, radiator, etc. Do not leave it in direct sunlight.

• Clean using a soft, dry cloth only. Do not use chemical cleaners, solvents, or detergents. For stubborn deposits, moisten the cloth with warm water.

• This device has no user serviceable parts. Do not attempt to service or modify this device.

• This device includes a Lithium-ion battery. Dispose of the battery only in accordance with local, state, or federal regulations for electronic waste.

INTRODUCTION

Thank you for purchasing this Z-Wave Plus® 4-in-1 Motion Sensor! This sensor is a wireless Z-Wave enabled device and is fully compatible with any Z-Wave enabled network. Z-Wave is an interoperable, two-way RF mesh networking technology used for home automation and security. Any Z-Wave enabled device displaying the Z-Wave logo can be used with Z-Wave devices from other manufacturers.

This passive infrared (PIR) sensor detects motion and sends a Z-Wave trigger signal to the network. It also features temperature, humidity, and light sensors, which will automatically report changes in the conditions and will report the absolute values when queried. It also has a tamper-proof switch, which will trigger a Z-Wave signal when the cover is removed. These trigger signals can be used to activate various other devices and perform preprogrammed tasks. This is a security enabled Z-Wave Plus product and a security enabled Z-Wave gateway /controller must be used to fully utilize this sensor.

FEATURES

- Four smart sensors in a single small device

- Seven selectable levels of motion sensitivity

- Three different methods of reporting motion detection and temperature changes

- Tamper sensor sends an alert to the controller if the sensor is tampered with

- A report is automatically sent when the battery level is low

- Multicolor LED indicates temperature ranges at a glance

- Uses the latest backward compatible revision of Z-Wave technology

- Z-Wave Plus® provides 50% more power than previous generations

- Z-Wave Plus provides 67% improvement in transmission range

- Z-Wave Plus offers Plug-n-Play inclusion network wide

CUSTOMER SERVICE

The Monoprice Customer Service department is dedicated to ensuring that your ordering, purchasing, and delivery experience is second to none. If you have any problem with your order, please give us an opportunity to make it right. You can contact a Monoprice Customer Service representative through the Live Chat link on our website **www.monoprice.com** during normal business hours (Mon-Fri: 5am-7pm PT, Sat-Sun: 9am-6pm PT) or via email at **support@monoprice.com**

PACKAGE CONTENTS

After receiving the product, please inventory the contents to ensure you have all the proper parts, as listed below. If anything is missing or damaged, please contact Monoprice Customer Service for a replacement.

- 1x 4-in-1 motion sensor

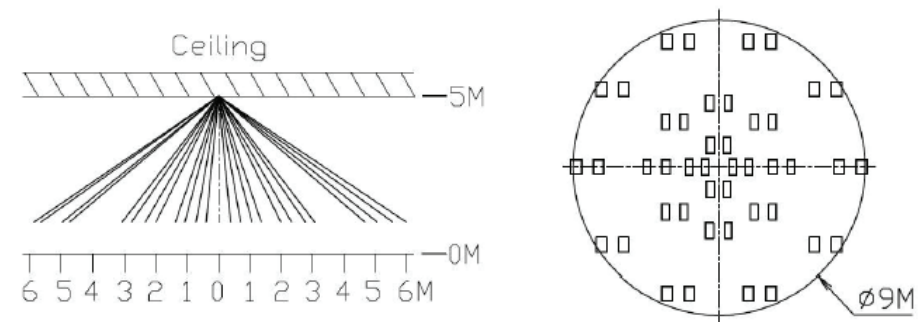- 1x Adhesive tape

- 2x AAA batteries

- 1x User's manual

Z-WAVE SETUP

Note: If you are installing a complete Z-Wave® system for the first time, please refer to the installation guide of your Z-Wave Interface Controller (ZIC) before installing this sensor.

1. Determine where you will be mounting the sensor. It should be mounted at least six feet above the ground to provide the best coverage.

2. Remove the sensor cover and install the included AAA batteries.

3. Bring your Z-Wave® Interface Controller (ZIC) and the sensor to the sensor's intended location. The distance between the sensor and ZIC should be no more than 3 feet (1 meter) during the "inclusion" process.

4. Momentarily press the **Program Switch**. The LED should blink 5 times, indicating that the sensor has not yet been included into the network. If it blinks only one time, the sensor has already been included in the network.

5. Following the instructions that came with your ZIC, put it into "inclusion" mode.

6. Momentarily press the **Program Switch** again. The sensor will broadcast a Network Identification Frame (NIF) to the network. In response, the ZIC will send an auto-inclusion signal to the sensor to include it into the network.

7. The 4-in-1 sensor will appear in your ZIC's device list. The sensor will go to sleep after about 20 seconds.
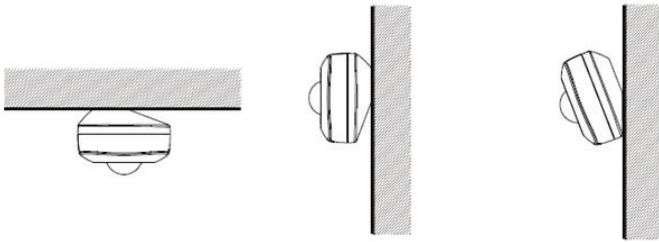
DETECTION AREA

The following images show the detection area from a side view and a top view.

PHYSICAL INSTALLATION

Note that the sensor should be included into the network before it is physically attached to the wall or ceiling.

- You can mount the sensor perpendicular to the mounting surface or at an angle.

- Use the included adhesive tape to attach the sensor to the mounting surface.

- The sensor should be mounted at least 2 meters (6 feet) above the ground for optimal coverage.

EXCLUSION

Perform the following steps to remove the sensor from your Z-Wave® network.

1. Following the instructions that came with your Z-Wave Interface Controller (ZIC), put it into "exclusion" mode.

2. When prompted, press the **Program Switch** to complete the "exclusion" process. The LED will begin flashing, indicating that the sensor is no longer "included" in your network.

ASSOCIATION

This sensor can be part of a single Association Group of up to 5 nodes. Its Grouping Identifier is 1. Perform the following steps to associate the sensor with another Z-Wave® device.

1. Press the **Program Switch** on the sensor. The sensor will send a Network Identification Frame (NIF) and the LED will flash once.

2. Put your Z-Wave Interface Controller (ZIC) into association mode, then follow the instructions to associate the sensor with another device.

AUTO WAKE UP

Under normal operation, the sensor is in "sleep" mode. While asleep, the sensor is still detecting motion, temperature, humidity, and light levels, but is not in active communications with the network. When it detects motion or detects a configurable change in temperature, humidity, or light levels, the sensor will automatically "wake up" and broadcast an alarm signal to the network. Use the **WAKE UP** command class to adjust the period between checks.

BATTERY CAPACITY DETECTION

Use the **BATTERY GET** command class to report the remaining battery capacity, as a percentage. Note that when the battery voltage is reduced to 2.6 ±0.1 volts, the sensor will broadcast a **LOW BATTERY AUTO REPORT** signal.

Refer to your controller's documentation for information on using this option.

TEMPERATURE DETECTION

The sensor will automatically report the measured temperature whenever it changes by a particular amount. By default, it reports every time the temperature changes by 1°C. Use the Sensor Multilevel Report command to query the sensor for a temperature report.

Multilevel Sensor Report	
Sensor Type	0x01
Scale	0x00 (°C) 0x01 (°F)
Size and Precision	2

Every three minutes the LED on the sensor will flash. The color it flashes indicates the detected temperature range, as shown in the following table.

Temperature Range	LED Color
Under +59°F (+15°C)	Green
+59 ~ +73°F (+15 ~ +23°C)	Blue
+73 ~ +82°F (+23 ~ +28°C)	Yellow/Yellow-Green
+82 ~ +97°F (+28 ~ +36°C)	Purple
Over +97°F (+36°C)	Red

Use the following parameters to configure the temperature units and the amount of change required for an automatic report.

Parameter	Size	Value		Default
1	1	°C	0x00	°C
		°F	0x01	
2	1	1 ~ 50 (0.1~5°C)		10 (1°C)

HUMIDITY DETECTION

The sensor will automatically report the measured humidity level whenever it changes by a particular amount. By default, it reports every time the humidity level changes by 10%. Use the Sensor Multilevel Report command to query the sensor for a humidity level report.

Multilevel Sensor Report	
Sensor Type	0x05
Scale	0x00 (%)
Size and Precision	2

Use the following parameter to change the default amount by which the humidity level must change to trigger a report.

Parameter	Size	Value	Default
3	1	1 ~ 50 (1 ~ 50%)	10%

LIGHT DETECTION

The sensor will automatically report the measured light level whenever it changes by a particular amount. By default, it reports every time the light level changes by 10%. Additionally, the sensor will automatically report the light level for every 10% decrease from 100%. Use the Sensor Multilevel Report command to query the sensor for a light level report.

Multilevel Sensor Report	
Sensor Type	0x03
Scale	0x00 (%)
Size and Precision	2

Use the following parameter to change the default amount by which the light level must change to trigger a report.

Parameter	Size	Value	Default
4	1	1 ~ 50 (1 ~ 50%)	10%

MOTION SENSOR

Whenever the sensor detects motion within its detection area, it will send an alarm to the network. To prevent the network from receiving continual triggers, the sensor will not send an alarm for a period of time. By default, this retrigger time is 3 minutes, after which the sensor will again send an alarm signal if it detects motion. Use the following parameters to configure the Retrigger Time and Sensitivity.

Parameter	Type	Size	Value	Default
5	Retrigger Time	1	1 ~ 255 minutes (unsigned decimal)	3
6	Sensitivity	1	1 ~ 7	4

LED MODE

By default, the LED will flash every 3 minutes to report the current temperature range, as indicated by the LED color. Additionally, the LED flashes whenever motion is detected. You can change how the LED operates using the following parameter to set one of three modes.

Parameter	Size	Value	Default
7	1	1 ~ 3	3

Mode 1: The LED is off and does not ever flash.

Mode 2: The LED "breathes" to indicate the temperature range and flashes quickly when motion is detected. This mode will shorten the battery life.

Mode 3: The LED quickly flashes the temperature or whenever motion is detected. This is the default behavior.

OPERATION

- Whenever an object that emits infrared energy moves within the sensor's detection area, the sensor will broadcast a **BASIC SET ON** (**0xFF**) alarm signal to the network. At the same time, the LED will flash red once.

- Once this signal has been sent, the sensor will continue to monitor the area for motion. If no additional motion is detected after 3 minutes (default), the sensor will broadcast a **BASIC SET OFF** (**0x00**) signal and the LED will flash red once. Note that the default time of 3 minutes can be adjusted from 1 to 255 minutes using configuration parameter 5.

- If the cover is removed, the tamper switch will activate, the sensor will broadcast a **COVER REMOVED** alarm signal, and the LED will flash red once.

- If the cover is subsequently reinstalled, the sensor will broadcast a **COVER CLOSED** alarm signal and the LED will extinguish.

The following table shows the command states and values for this sensor.

Function	Alarm V1 (Motion Detection and Tamper Switch)	Notification V4 (Movement)	Notification V4 (Tamper Switch)
Alarm Type	0x07		
Alarm Level	0x00 (No motion after 3 minutes) 0xFF (Motion Detected)		
Notification Type		0x07	0x07
Notification Event		0x08 (Motion Detected) 0x00 (No motion after 3 minutes)	0x03 (Cover Removed) 0x00 (Cover Closed)
Notification Parameter		0x08	0x03

Z-WAVE COMMAND CLASSES

This sensor supports the following Z-Wave command classes:

COMMAND_CLASS_ASSOCIATION_GRP_INFO

COMMAND_CLASS_ASSOCIATION_V2

COMMAND_CLASS_BATTERY

COMMAND_CLASS_CONFIGURATION

COMMAND_CLASS_DEVICE_RESET_LOCALLY

COMMAND_CLASS_FIRMWARE_UPDATE_MD_V2

COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2

COMMAND_CLASS_NOTIFICATION_V4

COMMAND_CLASS_POWERLEVEL

COMMAND_CLASS_SECURITY

COMMAND_CLASS_SENSOR_MULTILEVEL_V7

COMMAND_CLASS_VERSION_V2

COMMAND_CLASS_WAKE_UP_V2

COMMAND_CLASS_ZWAVEPLUS_INFO_V2

SPECIFICATIONS

Protocol: Z-Wave® (ZM5202)

Operating Frequency: 908.42 MHz

Operating Range: up to 100 feet line of sight

Operating Temperature: +14 ~ +104°F (-10 ~ +40°C)

Battery: 2x AAA

REGULATORY COMPLIANCE

Notice for FCC

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.

Modifying the equipment without Monoprice's authorization may result in the equipment no longer complying with FCC requirements for Class B digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.

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:

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

Radio Notice for FCC

Caution

This FCC Part 15 radio device operates on a non-interference basis with other devices operating at this frequency. Any changes or modification to said product not expressly approved by Monoprice, including the use of non-approved antennas, could void the user's authority to operate this device.

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.

Notice for Industry Canada

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

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