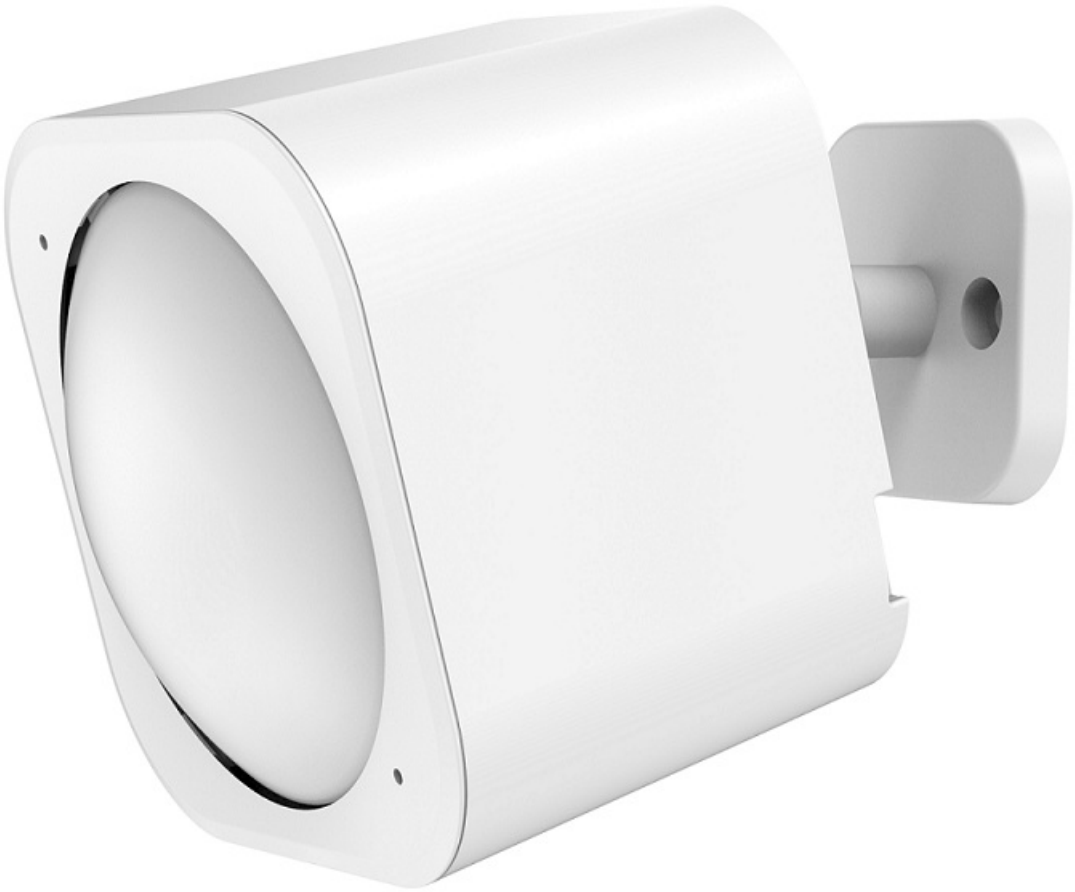
Aeotec MultiSensor 6 ZW100-D Manual

Contents

Aeotec

MultiSensor 6

SKU: ZW100-D



Quickstart

This is a
secure
Alarm Sensor
for
Hong Kong.

Please make sure the internal battery is fully charged.

To add this device to your network execute the following action:
Turn the primary controller of Z-Wave network into inclusion mode, short press the products Z-Wave button that you can find in the back of the product.

Please refer to the
Manufacturers Manual for more information.

Important safety information

Please read this manual carefully. Failure to follow the recommendations in this manual may be dangerous or may violate the law.
The manufacturer, importer, distributor and seller shall not be liable for any loss or damage resulting from failure to comply with the instructions in this manual or any other material.
Use this equipment only for its intended purpose. Follow the disposal instructions.

Do not dispose of electronic equipment or batteries in a fire or near open heat sources.

What is Z-Wave?

Z-Wave is the international wireless protocol for communication in the Smart Home. This device is suited for use in the region mentioned in the Quickstart section.

Z-Wave ensures a reliable communication by reconfirming every message (**two-way communication**) and every mains powered node can act as a repeater for other nodes (**meshed network**) in case the receiver is not in direct wireless range of the transmitter.

This device and every other certified Z-Wave device can be **used together with any other certified Z-Wave device regardless of brand and origin** as long as both are suited for the same frequency range.

If a device supports **secure communication** it will communicate with other devices secure as long as this device provides the same or a higher level of security. Otherwise it will automatically turn into a lower level of security to maintain backward compatibility.

For more information about Z-Wave technology, devices, white papers etc. please refer to www.z-wave.info.

Product Description

Aeotec by Aeon Labs MultiSensor looks like a motion sensor and it acts like one too. But its also so much more. Installing this 1 piece of Z-Wave technology is the same as installing 6 pieces of Z-Wave technology. Your home control network will immediately understand motion, temperature, humidity, light, Ultraviolet and Vibration readings wherever MultiSensor installed. Those intelligent readings will equate to intelligence automation. And intelligent automation will give you the perfect, smart home.

Prepare for Installation / Reset

Please read the user manual before installing the product.

In order to include (add) a Z-Wave device to a network it **must be in factory default state.** Please make sure to reset the device into factory default. You can do this by performing an Exclusion operation as described below in the manual. Every Z-Wave controller is able to perform this operation however it is recommended to use the primary controller of the previous network to make sure the very device is excluded properly from this network.

Reset to factory default

This device also allows to be reset without any involvement of a Z-Wave controller. This procedure should only be used when the primary controller is inoperable.

Press and hold the Z-Wave button that you can find in back of the product for 20 seconds and then release. This procedure should only be used when the primary controller is inoperable.

Inclusion/Exclusion

On factory default the device does not belong to any Z-Wave network. The device needs to be **added to an existing wireless network** to communicate with the devices of this network. This process is called **Inclusion**.

Devices can also be removed from a network. This process is called **Exclusion**. Both processes are initiated by the primary controller of the Z-Wave network. This controller is turned into exclusion respective inclusion mode. Inclusion and Exclusion is then performed doing a special manual action right on the device.

Inclusion

Turn the primary controller of Z-Wave network into inclusion mode, short press the products Z-Wave button that you can find in the back of the product.

Exclusion

Turn the primary controller of Z-Wave network into exclusion mode, short press the products Z-Wave button that you can find in back of the product.

Communication to a Sleeping device (Wakeup)

This device is battery operated and turned into deep sleep state most of the time to save battery life time. Communication with the device is limited. In order to communicate with the device, a static controller **C** is needed in the network. This controller will maintain a mailbox for the battery operated devices and store commands that can not be received during deep sleep state. Without such a controller, communication may become impossible and/or the battery life time is significantly decreased.

This device will wakeup regularly and announce the wakeup state by sending out a so called Wakeup Notification. The controller can then empty the mailbox. Therefore, the device needs to be configured with the desired

wakeup interval and the node ID of the controller. If the device was included by a static controller this controller will usually perform all necessary configurations. The wakeup interval is a tradeoff between maximal battery life time and the desired responses of the device. To wakeup the device please perform the following action:

Pressing the Z-Wave button once will trigger sending the Wake up notification command. If press and hold the Z-Wave button for 3 seconds, the MultiSensor will wake up for 10 minutes.

Quick trouble shooting

Here are a few hints for network installation if things dont work as expected.

1. Make sure a device is in factory reset state before including. In doubt exclude before include.
2. If inclusion still fails, check if both devices use the same frequency.
3. Remove all dead devices from associations. Otherwise you will see severe delays.
4. Never use sleeping battery devices without a central controller.
5. Dont poll FLIRS devices.
6. Make sure to have enough mains powered device to benefit from the meshing

Association – one device controls an other device

Z-Wave devices control other Z-Wave devices. The relationship between one device controlling another device is called association. In order to control a different device, the controlling device needs to maintain a list of devices that will receive controlling commands. These lists are called association groups and they are always related to certain events (e.g. button pressed, sensor triggers, …). In case the event happens all devices stored in the respective association group will receive the same wireless command wireless command, typically a ‘Basic Set’ Command.

Association Groups:

Group NumberMaximum NodesDescription

1	5	The MultiSensor supports 1 association group. Group 1 is assigned to the Lifeline association group and can add max 5 association nodes.When the PIR motion sensor is triggered, the MultiSensor will send Basic Set (0xFF) to the associated nodes. If no PIR motion is triggered after the PIR interval time (configurable), the MultiSensor will send Basic Set (0x00) to the associated nodes.The automatically reports of temperature, humidity, luminance and ultraviolet (configurable) also can be sent to the associated nodes.

Configuration Parameters

Z-Wave products are supposed to work out of the box after inclusion, however certain configuration can adapt the function better to user needs or unlock further enhanced features.

IMPORTANT: Controllers may only allow configuring signed values. In order to set values in the range 128 … 255 the value sent in the application shall be the desired value minus 256. For example: To set a parameter to 200â€ˆit may be needed to set a value of 200 minus 256 = minus 56. In case of a two byte value the same logic applies: Values greater than 32768 may needed to be given as negative values too.

Parameter 100: Set the parameter 101-103 to default values.

Set the parameter 101-103 to default values.

Size: 1 Byte, Default Value: 0

SettingDescription

1	Set the parameter 101-103 to default values.

Parameter 101: To set which report would be sent in Report group 1

To set which report would be sent in Report group 1.Note:You can also set all sensor reports to be sent out at the same time. E.g. If you want the batter report and temperature report to be sent out at the same time, you just need to set the configuration value to 33 (1+32).
Size: 4 Byte, Default Value: 241

SettingDescription

128	Luminance Report is enabled.
1	Battery Report is enabled.
32	Temperature Report is enabled.
64	Humidity Report is enabled.
16	Ultraviolet Report is enabled.

Parameter 102: To set which report would be sent in Report group 2

To set which report would be sent in Report group 2.Note:You can also set all sensor reports to be sent out at the same time. E.g. If you want the batter report and temperature report to be sent out at the same time, you just need to set the configuration value to 33 (1+32).
Size: 4 Byte, Default Value: 0

SettingDescription

16	Ultraviolet Report is enabled.
1	Battery Report is enabled.
32	Temperature Report is enabled.
128	Luminance Report is enabled.
64	Humidity Report is enabled.

Parameter 103: To set which report would be sent in Report group 3

To set which report would be sent in Report group 3.Note:You can also set all sensor reports to be sent out at the same time. E.g. If you want the batter report and temperature report to be sent out at the same time, you just need to set the configuration value to 33 (1+32).
Size: 4 Byte, Default Value: 0

SettingDescription

1	Battery Report is enabled.
128	Luminance Report is enabled.
16	Ultraviolet Report is enabled.
64	Humidity Report is enabled.
32	Temperature Report is enabled.

Parameter 111: To set the interval time of sending reports in Report group 1

To set the interval time of sending reports in Report group 1
Size: 4 Byte, Default Value: 3600

SettingDescription

5 – 2678400	Available rang is 5 to 2678400 seconds.

Parameter 112: To set the interval time of sending reports in Report group 2

To set the interval time of sending reports in Report group 2
Size: 4 Byte, Default Value: 3600

SettingDescription

5 – 2678400	Available rang is 5 to 2678400 seconds.

Parameter 113: To set the interval time of sending reports in Report group 3

To set the interval time of sending reports in Report group 3
Size: 4 Byte, Default Value: 3600

SettingDescription

5 – 2678400	Available rang is 5 to 2678400 seconds.

Parameter 2: Enable/Disable waking up for 10 minutes when re-power on (battery mode) the MultiSensor.

Enable/Disable waking up for 10 minutes when re-power on (battery mode) the MultiSensor.
Size: 1 Byte, Default Value: 0

SettingDescription

0	Disable
1	Enable.

Parameter 201: Temperature sensor calibration

Temperature sensor calibration.Note:1.High byte is the calibration value. Low byte is the unit (0x01=Celsius, 0x02=Fahrenheit)2.The calibration value (high byte) contains one decimal point. E.g. if the value is set to 20 (0x1401), the calibration value is 2.0(EU/AU version) or if the value is set to 20 (0x1402), the calibration value is 2.0 (US version)3.The calibration value (high byte) = standard value – measure value.E.g.If measure value =25.3 and the standard value = 23.2, so the calibration value= 23.2 – 25.3= -2.1 (0xEB).If the measure value =30.1 and the standard value = 33.2, so the calibration value= 33.2 – 30.1=3.1 (0x1F).

Size: 2 Byte, Default Value: 0

SettingDescription

-128 – 127	Available rang is -12.8 to 12.7.

Parameter 202: Humidity sensor calibration

Humidity sensor calibration.The calibration value = standard value – measure value.E.g.If measure value =80RH and the standard value = 75RH, so the calibration value= 75RH80RH= -5RH (0xFB).If the measure value =85RH and the standard value = 90RH, so the calibration value= 90RH85RH=5RH (0x05).
Size: 1 Byte, Default Value: 0

SettingDescription

-50 – 50	Available rang is -50RH to 50RH.

Parameter 203: Luminance sensor calibration

Luminance sensor calibration.The calibration value = standard value – measure value.E.g.If measure value =800Lux and the standard value = 750Lux, so the calibration value= 750800= -50 (0xFFCE).If the measure value =850Lux and the standard value = 900Lux, so the calibration value= 900850=50 (0x0032)
Size: 2 Byte, Default Value: 0

SettingDescription

-1000 – 1000	Available rang is -1000Lux to 1000Lux.

Parameter 204: Ultraviolet sensor calibration

Ultraviolet sensor calibration.The calibration value = standard value – measure value.E.g.If measure value =9 and the standard value = 8, so the calibration value= 89= -1 (0xFE).If the measure value =7 and the standard value = 9, so the calibration value= 97=2 (0x02).
Size: 1 Byte, Default Value: 0

SettingDescription

-10 – 10	Available rang is -10 to 10.

Parameter 252: Enable/disable all configuration parameters to be locked

Enable/disable all configuration parameters to be locked.
Size: 1 Byte, Default Value: 0

SettingDescription

0	Disable
1	Enable.

Parameter 255: Reset to factory defaults.

Reset to factory defaults.
Size: 4 Byte, Default Value: 0

SettingDescription

1	Reset all configuration parameters to factory defaults.
1431655765	Reset the product to factory defaults.

Parameter 3: Set the PIR time.

The default PIR time is 4 minutes. The Multisensor will send BASIC SET CC (0x00) to the associated nodes if no motion is triggered again in 4 minutes.
Size: 2 Byte, Default Value: 240

SettingDescription

10 – 3600	The range of PIR time is 10 to 3600.

Parameter 39: Configure the default low battery value.

Configure the default low battery value. When the current battery level is lower than this value, it will send out the low battery alarm.
Size: 1 Byte, Default Value: 20

SettingDescription

10 – 50	Available rang is 10% to 50%.

Parameter 4: Set the sensitivity of the motion sensor.

This parameter changes the sensitivity level of the motion detector.
Size: 1 Byte, Default Value: 5

SettingDescription

1	Sensitivity Level 1 of 6
5	Maximum Sensitivity
0	Minimum Sensitivity
4	Sensitivity Level 5 of 6
2	Sensitivity Level 2 of 6
3	Sensitivity Level 3 of 6

Parameter 40: Enable/disable the selective reporting only when measurements reach a certain threshold or percentage

Enable/disable the selective reporting only when measurements reach a certain threshold or percentage. This is used to reduce network traffic.Note: If USB power, the Sensor will check the threshold every 10 seconds. If battery power, the Sensor will check the threshold when it is waken up.
Size: 1 Byte, Default Value: 0

SettingDescription

0	Disable
1	Enable.

Parameter 41: Threshold change in temperature to induce an automatic report.

Threshold change in temperature to induce an automatic report. Note:1.The unit is Fahrenheit for US version, Celsius for EU/AU version.2.High byte is the threshold value. Low byte is the unit (0x01=Celsius, 0x02=Fahrenheit).3.The threshold value (high byte) contains one decimal point. E.g. if the value is set to 20 (0x001401), the threshold value =2.0(EU/AU version) or if the value is set to 20 (0x001402), the threshold value= 2.0(US version). When the current temperature gap is more then 2.0, which will induce a temperature report to be sent out.
Size: 4 Byte, Default Value: 20

SettingDescription

10 – 2120	Available rang of threshold is 1 to 212.

Parameter 42: Threshold change in humidity to induce an automatic report

Threshold change in humidity to induce an automatic report.Note:1.The unit is %.2.The default value is 10, which means that if the current humidity gap is more than 10%, it will send out a humidity report.
Size: 1 Byte, Default Value: 10

SettingDescription

1 – 100	Available rang is 1% to 100%.

Parameter 43: Threshold change in luminance to induce an automatic report.

Threshold change in luminance to induce an automatic report.
Size: 2 Byte, Default Value: 100

SettingDescription

1 – 30000	Available rang is 1 LUX to 30000 LUX.

Parameter 44: Threshold change in battery level to induce an automatic report.

Threshold change in battery level to induce an automatic report.Note:1.The unit is %.2.The default value is 10, which means that if the current battery level gap is more than 10%, it will send out a battery report.
Size: 1 Byte, Default Value: 10

SettingDescription

1 – 100	Available rang is 1% to 100%.

Parameter 45: Threshold change in ultraviolet to induce an automatic report.

Threshold change in ultraviolet to induce an automatic report.
Size: 1 Byte, Default Value: 2

SettingDescription

1 – 11	Available rang is 1 to 11.

Parameter 46: Enable/disable to send the alarm report of low temperature

Enable/disable to send the alarm report of low temperature(<-15).Note:If it is enabled, the MultiSensor will send a report of Multi Level Temperature CC to controller when the current temperature is less than -15).
Size: 1 Byte, Default Value: 0

SettingDescription

1	Enable.
0	Disable
1 – 30000	Available rang is 1LUX to 30000LUX.

Parameter 48: Enable/disable to send a report when the measurement is more than the upper limit value or less than the lower limit value.

Enable/disable to send a report when the measurement is more than the upper limit value or less than the lower limit value.
Size: 1 Byte, Default Value: 0

SettingDescription

0	Disable
1	Enable.

Parameter 49: Set the upper limit value of temperature sensor.

Set the upper limit value of temperature sensor.When the measurement is more than this upper limit, which will trigger to sent out a sensor report.
Size: 4 Byte, Default Value: 824

SettingDescription

-400 – 2120	Available rang is -40.0 to 212.0.

Parameter 5: Which command would be sent when the motion sensor triggered.

To set which command would be sent when the motion sensor triggered.
Size: 1 Byte, Default Value: 1

SettingDescription

2	Send Sensor Binary Report CC
1	Send Basic Set CC

Parameter 50: Set the lower limit value of temperature sensor.

Set the lower limit value of temperature sensor. When the measurement is less than this lower limit, which will trigger to sent out a sensor report.High byte is the lower limit value.
Size: 4 Byte, Default Value: 320

SettingDescription

-400 – 2120	Available rang is -40.0 to 212.0.

Parameter 51: Set the upper limit value of humidity sensor.

Set the upper limit value of humidity sensor. when the measurement is more than this upper limit, which will trigger to sent out a sensor report.

Size: 1 Byte, Default Value: 60

SettingDescription

0 – 100	Available rang is 0% to 100%.

Parameter 52: Set the lower limit value of humidity sensor.

Set the lower limit value of humidity sensor. When the measurement is less than this lower limit, which will trigger to sent out a sensor report.
Size: 1 Byte, Default Value: 50

SettingDescription

0 – 100	Available rang is 0% to 100%.

Parameter 53: Set the upper limit value of Lighting sensor

Set the upper limit value of Lighting sensor. When the measurement is more than this upper limit, which will trigger to sent out a sensor report.
Size: 1 Byte, Default Value: 1000

SettingDescription

0 – 30000	Available rang is 0 to 30000LUX.

Parameter 54: Set the lower limit value of Lighting sensor.

Set the lower limit value of Lighting sensor. When the measurement is less than this lower limit, which will trigger to sent out a sensor report.
Size: 1 Byte, Default Value: 100

SettingDescription

0 – 30000	Available rang is 0 to 30000LUX.

Parameter 55: Set the upper limit value of ultraviolet sensor.

Set the upper limit value of ultraviolet sensor. When the measurement is more than this upper limit, which will trigger to sent out a sensor report.
Size: 1 Byte, Default Value: 8

SettingDescription

1 – 11	Available rang is 1 to 11.

Parameter 56: Set the lower limit value of ultraviolet sensor.

Set the lower limit value of ultraviolet sensor. When the measurement is less than this upper limit, which will trigger to sent out a sensor report.
Size: 1 Byte, Default Value: 4

SettingDescription

1 – 11	Available rang is 1 to 11.

Parameter 57: Set the recover limit value of temperature sensor.

Note:1.When the current measurement <= (Upper limitRecover limit), the upper limit report is enabled and then it would send out a sensor report when the next measurement is more than the upper limit. After that the upper limit report would be disabled again until the measurement = (Lower limit + Recover limit), the lower limit report is enabled and then it would send out a sensor report when the next measurement is less than the lower limit. After that the lower limit report would be disabled again until the measurement >= (Lower limit + Recover limit).3.High byte is the recover limit value. Low byte is the unit (0x01=Celsius, 0x02=Fahrenheit).
Size: 2 Byte, Default Value: 20

SettingDescription

10 – 255	Available rang is 1.0 to 25.5

Parameter 58: Set the recover limit value of humidity sensor.

Set the recover limit value of humidity sensor.Note:1.When the current measurement <= (Upper limitRecover limit), the upper limit report is enabled and then it would send out a sensor report when the next measurement is more than the upper limit. After that the upper limit report would be disabled again until the measurement = (Lower limit + Recover limit), the lower limit report is enabled and then it would send out a sensor report when the next measurement is less than the lower limit. After that the lower limit report would be disabled again until the measurement >= (Lower limit + Recover limit).
Size: 1 Byte, Default Value: 5

SettingDescription

1 – 50	Available rang is 1 to 50%

Parameter 59: Set the recover limit value of Lighting sensor.

Set the recover limit value of Lighting sensor.Note:1.When the current measurement <= (Upper limitRecover limit), the upper limit report is enabled and then it would send out a sensor report when the next measurement is more than the upper limit. After that the upper limit report would be disabled again until the measurement = (Lower limit + Recover limit), the lower limit report is enabled and then it would send out a sensor report when the next measurement is less than the lower limit. After that the lower limit report would be disabled again until the measurement >= (Lower limit + Recover limit).3.Unit = 10Recover limit (Lux)
Size: 1 Byte, Default Value: 100

SettingDescription

1 – 127	Available rang is 10Lux to 1270Lux

Parameter 60: Set the recover limit value of Ultraviolet sensor.

Set the recover limit value of Ultraviolet sensor.Note:1.When the current measurement <= (Upper limitRecover limit), the upper limit report is enabled and then it would send out a sensor report when the next measurement is more than the upper limit. After that the upper limit report would be disabled again until the measurement = (Lower limit + Recover limit), the lower limit report is enabled and then it would send out a sensor report when the next measurement is less than the lower limit. After that the lower limit report would be disabled again until the measurement >= (Lower limit + Recover limit).
Size: 1 Byte, Default Value: 2

SettingDescription

256	Keep sleep state for Battery power mode
257	Keep awake for 10 minutes for battery power mode.
0	USB power mode
1 – 5	Available rang is 1 to 5.

Parameter 61: Get the out-of-limit state of the Sensors.

Get the out-of-limit state of the Sensors.
Size: 2 Byte, Default Value: 0

SettingDescription

8	Ultraviolet sensor is out of the lower limit
32	Humidity sensor is out of the upper limit
16	Temperature sensor is out of the upper limit
2	Humidity sensor is out of the lower limit
4	Luminance sensor is out of the lower limit
64	Luminance sensor is out of the upper limit
128	Ultraviolet sensor is out of the upper limit
1	Temperature sensor is out of the lower limit

Parameter 64: Set the default unit of the automatic temperature report in parameter 101-103.

Set the default unit of the automatic temperature report in parameter 101-103.
Size: 1 Byte, Default Value: 2

SettingDescription

2	The unit is Fahrenheit.
1	The unit is Celsius.

Parameter 8: Set the timeout of awake after the Wake Up CC is sent out..

Set the timeout of awake after the Wake Up CC is sent out..
Size: 1 Byte, Default Value: 30

SettingDescription

8 – 127	Available rang is 8 to 127 seconds.

Parameter 81: Enable/disable the LED blinking when the PIR is triggered.

Enable/disable the LED blinking when the PIR is triggered.
Size: 1 Byte, Default Value: 0

SettingDescription

1	Disable
0	Enable.

Parameter 9: Report the current power mode and the product state for battery power mode

Report the current power mode and the product state for battery power mode.Note: this parameter cannot be used as Set usage.
Size: 2 Byte, Default Value: 0

SettingDescription

257	Keep awake for 10 minutes for battery power mode.
256	Keep sleep state for Battery power mode
0	USB power mode

Technical Data

Hardware Platform	ZM5101
Device Type	Notification Sensor
Network Operation	Reporting Sleeping Slave
Firmware Version	HW: 100 FW: 1.09
Z-Wave Version	6.51.09
Certification ID	ZC10-17075692
Z-Wave Product Id	0x0086.0x0302.0x0064
Supported Notification Types	
Sensors	
Firmware Updatable	
IP (Ingress Protection) Rated	ok
Frequency	XXfrequency
Maximum transmission power	XXantenna

Supported Command Classes

- Association Grp Info
- Association V2
- Basic
- Battery
- Configuration
- Device Reset Locally
- Firmware Update Md V2
- Manufacturer Specific V2
- Notification V3

- Powerlevel
- Security
- Sensor Binary
- Sensor Multilevel V5
- Version V2
- Wake Up V2
- Zwaveplus Info V2

Controlled Command Classes

- Basic

Explanation of Z-Wave specific terms

- **Controller** — is a Z-Wave device with capabilities to manage the network. Controllers are typically Gateways,Remote Controls or battery operated wall controllers.
- **Slave** — is a Z-Wave device without capabilities to manage the network. Slaves can be sensors, actuators and even remote controls.
- **Primary Controller** — is the central organizer of the network. It must be a controller. There can be only one primary controller in a Z-Wave network.
- **Inclusion** — is the process of adding new Z-Wave devices into a network.
- **Exclusion** — is the process of removing Z-Wave devices from the network.
- **Association** — is a control relationship between a controlling device and a controlled device.
- **Wakeup Notification** — is a special wireless message issued by a Z-Wave device to announces that is able to communicate.
- **Node Information Frame** — is a special wireless message issued by a Z-Wave device to announce its capabilities and functions.