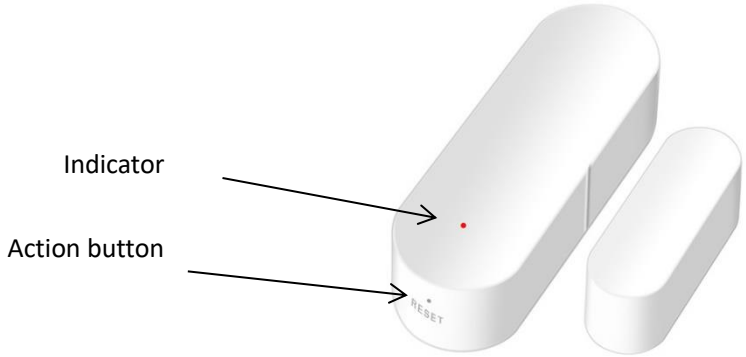
Door Sensor Engineering Specifications

V1.0

The Door Sensor based on Z-wave Slave library of V7.18.01. The Door Sensor lets you know when door/window be open or close.
The Door Sensor can be included and operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers and/or other applications. All non-battery operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.
The Door Sensor is a security Z-Wave device (S0, S2), so a security enabled controller is needed for take full advantage of all functionally for the Door Sensor.

1 Familiarize yourself with Door Sensor



1.1 What's included in the package?

1x Door Window Sensor
2x AAA batteries
1x Pin
1x 3M tape
2x Screw
2x expansion bolt

1.2 Features:

- The Door Sensor is a universal Z-Wave Door Sensor.
- The Door Sensor is powered by two AAA batteries with 10 year's battery life.
- The Door Sensor is designed to be mounted on the wall and indoor use only.
- The Door Sensor Support low battery alarm function.
- The Door Sensor Support Smart Start.
- Supporting firmware OTA.

2 Technical Specifications

Communication Protocol	Z-Wave
Radio Frequency	908.42MHz (US) 868.42MHz (EU) 921.42MHz (AU)
Wireless Range	More than 100m outdoors About 30m indoors (depending on building materials)
Power Source	3V, AAA*2
Working current	~5mA
Standby current	~2μA
Battery Life	10 years
Operating Temperature	-10°C to + 45°C
Operating Humidity	Up to 85% non-condensing

3 Security and non-Security features of Door Sensor

This device is a security enabled Z-Wave Plus™ product that is able to use encrypted Z-Wave Plus messages to communicate to other security enabled Z-Wave Plus products.

When a node includes into a S2 Z-Wave network, the node supports S2 unauthenticated class, S2 authenticated and so do the supported CCs.

This product can be operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers. All mains operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

3.1 Supported Security Levels

- SECURITY_KEY_S2_AUTHENTICATED_BIT
- SECURITY_KEY_S2_UNAUTHENTICATED_BIT

3.2 Library

- Basic Device Class: BASIC_TYPE_ROUTING_SLAVE
- Generic Device Class: GENERIC_TYPE_SENSOR_NOTIFICATION
- Specific Device Class: SPECIFIC_TYPE_NOTIFICATION_SENSOR

3.3 Commands List

Command Classes	Version	Required Security Class
COMMAND_CLASS_ZWAVEPLUS_INFO_V2	2	None
COMMAND_CLASS_TRANSPORT_SERVICE_V2	2	None
COMMAND_CLASS_SECURITY_2_V1	1	None
COMMAND_CLASS_SUPERVISION_V1	1	None
COMMAND_CLASS_APPLICATION_STATUS_V1	1	None
COMMAND_CLASS_BASIC	3	S0 or S2 Authenticated/Unauthenticated
COMMAND_CLASS_NOTIFICATION_V8	8	S0 or S2 Authenticated/Unauthenticated
COMMAND_CLASS_BATTERY_V1	1	S0 or S2 Authenticated/Unauthenticated
COMMAND_CLASS_WAKE_UP_V2	2	S0 or S2 Authenticated/Unauthenticated
COMMAND_CLASS_CONFIGURATION_V4	4	S0 or S2 Authenticated/Unauthenticated
COMMAND_CLASS_ASSOCIATION_V2	2	S0 or S2 Authenticated/Unauthenticated
COMMAND_CLASS_ASSOCIATION_GRP_INFO_V1	3	S0 or S2 Authenticated/Unauthenticated
COMMAND_CLASS_VERSION_V2	3	S0 or S2 Authenticated/Unauthenticated
COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2	2	S0 or S2 Authenticated/Unauthenticated
COMMAND_CLASS_DEVICE_RESET_LOCALLY_V1	1	S0 or S2 Authenticated/Unauthenticated
COMMAND_CLASS_POWERLEVEL_V1	1	S0 or S2 Authenticated/Unauthenticated
COMMAND_CLASS_FIRMWARE_UPDATE_MD_V5	5	S0 or S2 Authenticated/Unauthenticated
COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V3	3	S0 or S2 Authenticated/Unauthenticated
COMMAND_CLASS_INDICATOR_V3	3	S0 or S2 Authenticated/Unauthenticated

4 All functions of each trigger

4.1 SmartStart

SmartStart enabled products can be added into a Z-Wave network by scanning the Z-Wave QR Code present on the product with a controller providing SmartStart inclusion. No further action is required and the SmartStart product will be added automatically within 10 minutes of being switched on in the network vicinity.

Add the Door Sensor into the Z-Wave network via Smart Start:

a. Add Door Sensor DSK into the primary controller Smart Start Provisioning List (If you don’t

know how to do this, refer to its manual, DSK usually print on the main body).

b. Remove the battery from the Door Sensor. A few seconds later, reinsert battery in the DUT.

c. The Door Sensor will send "Z-Wave protocol Command Class" frame to start Smart Start Inclusion.

LED will blink green during the inclusion, and then solid green for 2 seconds to indicate that the inclusion is successful, otherwise the LED will solid red for 2 seconds in which you need to repeat the process form step b

4.2 Power on

In the network:

Send Battery report and Wake up notification, LED keeps green on 1 second.

Not in the network:

LED will keeps red on 1 second and start Smart Start.

4.3 Short press Config Button one time

In the network:

Send Wake up notification, and LED will fast blink green during sending data.

4.4 Short press Config Button three times

Add the Door Sensor into the Z-Wave network:

a. Power on your Door Sensor, set your Z-Wave controller into add/inclusion mode.

b. Short press Config Button three times.

c. LED will fast blink green during the inclusion, and then solid green for 2 seconds to indicate the inclusion is successful, otherwise the LED will solid red for 2 seconds in which you need to repeat the process form step a

Remove Door Sensor from a Z-Wave network:

a. Power on your Door Sensor, and let the Z-Wave primary controller into remove/exclusion mode.

b. Short press Config Button three times.

c. LED will fast blink green during the exclusion, and then solid green for 2 seconds to indicate that the exclusion is successful, otherwise the LED will solid red for 2 seconds in which you need to repeat the process form step a.

4.5 Press and hold Config Button 10 seconds

Reset Door Sensor to factory default:

Click Z-Wave button 2 times quickly, and hold for at least 10 seconds > LED start red led blinking quickly once tapped twice, then after 10s confirmed reset. The Door Sensor will reset itself to factory default by sending a “Device Reset Locally Notification” to gateway when the button is released.

Note: Please use this procedure only when the network primary controller is missing or otherwise inoperable.

4.6 Magnetic is triggered

In the network:
Send Notification report and Basic set (Configurable), and the LED will be turn on red 0.2 second.

Not in the network:
Only the LED will be turn on red 0.2 second.

5 Special Rule of Each Command

5.1 Z-Wave Plus Info Report Command Class

Z-Wave Plus Version: 0x02
Role Type: 0x06 (ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_SLEEPING_REPOR TING)
Node Type: 0x00 (ZWAVEPLUS_INFO_REPORT_NODE_TYPE_ZWAVEPLUS_NODE)
Installer Icon Type: 0x0C06 (ICON_TYPE_SPECIFIC_SENSOR_NOTIFICATION_ACCESS_CONTROL)
User Icon Type: 0x0C06 (ICON_TYPE_SPECIFIC_SENSOR_NOTIFICATION_ACCESS_CONTROL)

5.2 Association Command Class

The Door Sensor supports 2 association groups and max 5 nodes for each group.

Grouping Identifier	Max Nodes	Send Commands
Group 1	0x05	**1. Notification Report.** Sensor will send Notification Report when the supported event is triggered. **2. Battery Report.** Power on or the battery level is low **3. Device Reset Locally Notification**. Config Button is press and hold for 20 seconds **4.Indiator Report.**
Group 2	0x05	1. Basic Set Sensor will send Basic Set when the sensor body and magnet removed or combined.

5.3 Notification Commands

Notification Type	Notification Event
ACCESS_CONTROL (0x06)	(0x16) WINDOW_DOOR_IS_OPEN (0x17) WINDOW_DOOR_IS_CLOSE
POWER_MANAGEMENT (0x08)	(0x0A) REPLACE_BATTERY_SOON 10 (0x0B) REPLACE_BATTERY_NOW 11

How to trigger these different notifications;

Access Control:

Door is open (0x16): the separation of the main body and the magnet.

Door is closed (0x17): the combination of the main body and the magnet.

Power Management:

REPLACE_BATTERY_SOON (0x0A): When the battery level is less than/equal the value set by configuration parameter 0x0A.

REPLACE_BATTERY_NOW (0x0B): When the battery level is less than/equal 5%.

5.4 Wake Up Interval Capabilities Report CC

WAKEUP_PAR_DEFAULT_SLEEP_TIME	0x0E10
WAKEUP_PAR_MAX_SLEEP_TIME	0x015180
WAKEUP_PAR_MIN_SLEEP_TIME	0x3C
WAKEUP_PAR_SLEEP_STEP	0x3C

5.5 Indicator Command Class

The Receptacle support the Indicator Command Class, version 3 and support the Indicator ID 0x50 (Identify) and Properties ID 0x03, 0x04 and 0x05

5.6 Configuration Set Command Class

#	Name	Size	Range	Description	Default
1	Enable send basic set	1	0~2	Door Sensor reverse its value of BASIC SET when door is opened/closed. 0 - Disable. 1 - Send BASIC SET VALUE = 0xFF/0x00 to nodes associated with group 2 when door is opened/closed.	1

				2 - Send BASIC SET VALUE = 0x00/0xFF to nodes associated with group 2 when door is opened/closed.	
2	Turn on LED when Door triggered	1	0~1	Turn on led when Door Sensor triggered. 0 - Disable 1 - Enable	1
3	Low battery level alarm threshold	1	5~50	This parameter defines a battery level as the “low battery”	10