Door Sensor Manual

Version	Written By	Date	Change List
1.0	Yongqi	20170628	Initial
1.1	Yongqi	20170824	Add “Wakeup” and “Product Test Mode” Operation
1.2	Yongqi	20170901	Modify Some Command Classes Version Number
1.3	Yongqi	20180228	Modify the description for SmartStart

The Door/Window Detector is a Z-Wave™ enabled device and is fully compatible with any Z-Wave™ enabled network. Z-Wave™ enabled devices displaying the Z-Wave™ logo can also be used with it regardless of the manufacturer, and ours can also be used in other manufacturer's Z-Wave™ enable networks.

This product 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.

Z-Wave™ Network Inclusion/Exclusion/Reset

Remove the sensor casing, there is one button on the top side of PCB board, it can be executed inclusion, exclusion and reset from Z-Wave™ network.

Inclusion[1]	1、 Power up the device. 2、 Set Z-Wave™ Controller into inclusion mode 3、 Press the button 3 times within 1.5s to enter inclusion mode. 4、 The device will be recognized and automatically included into Z-Wave™ Network.	Led light will be blinked with 1s interval until inclusion successful.
Exclusion	1、 Power up the device. 2、 Set Z-Wave™ Controller into exclusion mode 3、 Press the button 3 times within 1.5s to enter exclusion mode	Led light will be blinked 3 times with 0.5s interval.
Factory Reset[2]	1、 Power up the device. 2、 Press and hold the button for 10s until led light is on, then release the button.	Reset successfully, led light will be Blinked 5 times.
Wakeup	1、Press the button briefly.	Led will blink once.
Product Test Mode	1、 Press and hold the button. 2、 Power on the device, device will enter factory product test mode	Led will blink with 100ms interval.

Notice 1: When device enters into inclusion mode, the device all functionality will be useless. The inclusion mode will be timeout after 30s, user can press the button 3 times within 1.5s to terminate inclusion mode.

Notice 2: Factory Reset will clear the device all Z-Wave™ Network data (include home id, node id, etc…) saved in memory, and restore all configuration parameters to factory default. Please use this procedure only when the network primary controller is missing or otherwise inoperable.

Association

The device supports 2 association groups, and each group supports max 5 associated nodes.
Group 1 is lifeline group; all nodes which associated in this group will receive the messages sent by device through lifeline.
Group 2 is controlling group, all nodes associated in this group will be controlled through BASIC_SET command by the device when device detects a door/window opened or closed event.
The Command Class supported by each association group is shown in the table below:

Group	**Command Class**	**Event**
1 (Lifeline)	COMMAND_CLASS_NOTIFICATION COMMAND_CLASS_SENSOR_BINARY COMMAND_CLASS_BATTERY COMMAND_CLASS_DEVICE_RESET_LOCALLY	NOTIFICATION_REPORT SENSOR_BINARY_REPORT BATTERY_REPORT DEVICE_RESET_LOCALLY_NOTIFICATION
2 (Control)	COMMAND_CLASS_BASIC	BASIC_SET

Z-Wave™ Message Report

Once the device detects a door/window opened or closed event, it will report the event to the controller.
In default, device will use COMMAND_CLASS_NOTIFICATION to represent the door/window event. User can also enable COMMAND_CLASS_SENSOR_BINARY report by setting the "**Configuration No.8**" to '1'.

Door/Window Report

When device detects a door/window opened or closed event, it will automatically send the notification report to nodes associated in lifeline.

Command Class	COMMAND_CLASS_NOTIFICATION
Command	NOTIFICATION_REPORT
Type	ACCESS_CONTROL (0x06)
Event	WINDOW_OR_DOOR_IS_OPENED (0x16) WINDOW_OR_DOOR_IS_CLOSED(0x17)
Command Class	COMMAND_CLASS_SENSOR_BINARY
Command	SENSOR_BINARY_REPORT
Type	DOOR/WINDOW (0x0A)
Event	OPENED (0xFF) / CLOSED (0x00)

Command Class Configuration

The device supports the controller to configure parameters of the device through Configuration Command Class, and the device has 4 parameters available for users to set according to their different needs:

1) **Basic Set Off Delay Time**

   This configuration sets the time delay for device sending BASIC_SET = 0x00 to nodes that associated in group 2 when device detects a door/window closed event.

   [0] – No time delay.

   [1 … 32766] – Time delay count. Unit: Second.

   [32767] – Device will not send BASIC_SET = 0x00.

Parameter Number	Size (Byte)	Available Settings	Default value
1	2	0 ~ 32767	~~30~~

2) **Basic Set Level**

   This configuration sets the level for device sending BASIC_SET to nodes that associated in group 2 when device detects a door/window opened event.

   [0] – Off, BASIC_SET = 0x00, all nodes associated in group 2 will be off.

   [1 … 99] – On. BASIC_SET = [Setting Value].

   [100] – On, BASIC_SET = 0xFF.

Parameter Number	Size (Byte)	Available Settings	Default value
2	1	0 ~ 100	100

3) **Led Indicated Disable**

   This configuration sets to '0' will disable the Led indicating when device detects a door/window opened or closed event.

Parameter Number	Size (Byte)	Available Settings	Default value
3	1	0, 1	1

4) **Binary Sensor Report Enable**

   This configuration sets to '1' will enable SENSOR_BINARY_REPORT when device detects a door/window opened or closed event.

Parameter Number	Size (Byte)	Available Settings	Default value
4	1	0 , 1	0

5) **Battery Report Interval**

   This configuration sets the time interval for battery state report to controller. Unit: Minute.

Parameter Number	Size (Byte)	Available Settings	Default value
5	2	1 ~ 1080	480

Wakeup Command Class

The device stays in sleep status for the majority of time in order to conserve battery life.
The minimum wakeup interval is 1800s (30 minutes)
The maximum wakeup interval is 64800s (18 Hours)
Allowable min step among each wakeup interval is 60 seconds, such as 1860s, 1920s,1980s…
Note: The default value is 8 hours with factory default. This value is greater, the battery life is longer.

Battery Command Class

The users can also enquire the battery status of the device by sending BATTERY_GET command. Once the device receivers the command, it will return BATTERY_REPORT command.
The device will send BATTERY_LEVEL = 0xFF command to the Z-Wave™ Controller to inform that the device is in dead battery status, otherwise BATTERY_LEVEL value range is 0% to 100%.

Command Class Basic

The COMMAND_CLASS_BASIC is realized to control the devices associated in group 2 in this device. When device detects a Door/Window opened event occurred, it will send a “BASIC_SET = [Value]” command to control the devices in group 2. And it will send a “BASIC_SET = 0x00” command to control the devices in group 2 after the Door/Window is closed. The [Value] is set by **configuration No.2**.

SmartStart

This device supports SmartStart function. QR code printed by laser can be found on surface of product and the outside of packing box. And the full DSK code is printed can be found on the packing box.

The device will enter SmartStart if the device is not included in network after power up. And if device is not included successfully during 10 second, it will enter sleep mode. And then
2nd SmartStart time delay approximately 16s
3rd SmartStart time delay approximately 32s
4th SmartStart time delay approximately 64s
5th SmartStart time delay approximately 128s
6th SmartStart time delay approximately 256s
7th SmartStart time delay approximately 512s

Afterwards, the Smartstart mode will be auto running with 512 second interval until device is included successfully or battery run down.

Led Action Indicator

LED Color	Led Display Status	Description
Red	Blink 5 Times(1s Interval)	Power on and Not Add in Z-Wave Network
	Blink 5 Times(300ms Interval)	Power on and Already Add in a Z-Wave Network
	Blink 3 Times(500ms Interval)	1, Press button tripled, device sends Node Info. 2, Press button tripled, device enters into exclusion mode.
	1, Blink with 1s interval and then 2, blink 15 times with 2s interval	Press button tripled, device enters into inclusion mode. Device assigned a node id and wait for configuration completed.
	Light On 150ms	Press the button briefly, device send a wakeup information to controller
	Light On 300ms	Detect a door/window opened or closed
	Light On 500ms	Hold pressed the button and factory reset.

Security Network

The device supports the security function with S2 encrypted communication. The device will auto switch to the security mode when the device included with a security controller. In the security mode, the follow commands must use security and security_2 command class wrapped to communicate, otherwise the device will not response any commands.

Security Keys

This device supports security levels are listed in below table:

Security Levels	Support (Yes/No)
SECURITY_KEY_S0	No
SECURITY_KEY_S2_UNAUTHENTICATED	Yes
SECURITY_KEY_S2_AUTHENTICATED	Yes
SECURITY_KEY_S2_ACCESS	No

All Supports Command Class

This device supports All Z-Wave Command Classes in NIF List as follows:

* COMMAND_CLASS_ZWAVEPLUS_INFO (V2)
* COMMAND_CLASS_SECURITY_2 (V1)
* COMMAND_CLASS_TRANSPORT_SERVICE (V2)
* COMMAND_CLASS_VERSION (V2)
* COMMAND_CLASS_POWERLEVEL (V1)
* COMMAND_CLASS_ASSOCIATION (V2)
* COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION (V3)
* COMMAND_CLASS_ASSOCIATION_GRP_INFO (V1)
* COMMAND_CLASS_MANUFACTURER_SPECIFIC (V2)
* COMMAND_CLASS_DEVICE_RESET_LOCALLY (V1)
* COMMAND_CLASS_BATTERY (V1)
* COMMAND_CLASS_WAKEUP (V2)
* COMMAND_CLASS_NOTIFICATION (V8)
* COMMAND_CLASS_SENSOR_BINARY (V2)
* COMMAND_CLASS_CONFIGURATION (V1)
* COMMAND_CLASS_SUPERVISION (V1)

All Security Command Class in Security Network

The Z-Wave Command Classes are secured in security network as follows:

* COMMAND_CLASS_VERSION (V2)
* COMMAND_CLASS_POWERLEVEL (V1)
* COMMAND_CLASS_ASSOCIATION (V2)
* COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION (V3)
* COMMAND_CLASS_ASSOCIATION_GRP_INFO (V1)
* COMMAND_CLASS_MANUFACTURER_SPECIFIC (V2)
* COMMAND_CLASS_DEVICE_RESET_LOCALLY (V1)
* COMMAND_CLASS_BATTERY (V1)
* COMMAND_CLASS_WAKEUP (V2)
* COMMAND_CLASS_NOTIFICATION (V8)
* COMMAND_CLASS_SENSOR_BINARY (V2)
* COMMAND_CLASS_CONFIGURATION (V1)

Non-Secure Command Class in Secure Network

Unsecure Command Class which included in a secure Z-Wave Network is listed in unsecure node information.

* COMMAND_CLASS_ZWAVEPLUS_INFO (V2)
* COMMAND_CLASS_SECURITY_2 (V1)
* COMMAND_CLASS_TRANSPORT_SERVICE (V2)
* COMMAND_CLASS_SUPERVISION (V1)

Specifications

Power Supply	CR14250 × 1
Standby Current	2uA
Work Current(RF Tx)	Up to 36mA
Operational Temperature	0 - 70℃
Communication frequency	868.40MHz, 869.85MHz (EU) 908.40MHz, 916.00MHz(US)
Range	Up to 45m indoors (depending on the building structure), and 80m for outdoor open fields. Up to 60m outdoors.