

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 back cover, there have one button on PCB board which can be executed inclusion, exclusion and reset from Z-Wave™ network.

Add ¹	1、 Set Z-Wave™ Controller into inclusion mode 2、 Power on the device. 3、 Press the button 3 times within 1.5s. 4、 The device will be entered into inclusion mode automatically.	All Led lights will be blinked with 1s interval until inclusion successful.
Remove	1、 Set Z-Wave™ Controller into exclusion mode 2、 Power on the device. 3、 Press the button 3 times within 1.5s 4、 The device will be entered into exclusion mode automatically.	All Led lights will be blinked 3 times with 0.5s interval.
Factory Reset ²	1、 Power on the device. 2、 Keep holding touched the button for 10s until the led turn to red, then release.	All Led will be lighted on and then blinks 5 times
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 tampering event.

The Command Class supported by each association group is shown in the table below:

Group	Command Class	Event
1 (Lifeline)	COMMAND_CLASS_SWITCH_BINARY COMMAND_CLASS_NOTIFICATION COMMAND_CLASS_DEVICE_RESET_LOCALLY	SWITCH_BINARY_REPORT NOTIFICATION_REPORT DEVICE_RESET_LOCALLY_NOTIFICATION
2 (Control)	COMMAND_CLASS_BASIC	BASIC_SET

Z-Wave™ Control Command

Turn on Siren

When siren is turned on, the led will blink with some different patterns that can be configured by configuration No. 4. The alarm time duration also can be configured by configuration No.3.

There are three modes to turn on siren listed as table below:

Siren State	Command Class	Command	Value
ON	COMMAND_CLASS_SWITCH_BINARY	SWITCH_BINARY_SET	0xFF
	COMMAND_CLASS_BASIC	BASIC_SET	0xFF
	COMMAND_CLASS_INDICATOR	INDICATOR_SET	0x01 ~ 0x06

Turn off Siren

There are three modes to turn off siren listed as table below:

Siren State	Command Class	Command	Value
OFF	COMMAND_CLASS_SWITCH_BINARY	SWITCH_BINARY_SET	0x00
	COMMAND_CLASS_BASIC	BASIC_SET	0x00
	COMMAND_CLASS_INDICATOR	INDICATOR_SET	0x00

Z-Wave™ Message Report

The Message Report for Siren On

Siren State	Command Class	Command	Value
ON	COMMAND_CLASS_SWITCH_BINARY	SWITCH_BINARY_REPORT	0xFF
	COMMAND_CLASS_NOTIFICATION	NOTIFICATION_REPORT	

The Message Report for Siren Off

Siren State	Command Class	Command	Value
OFF	COMMAND_CLASS_SWITCH_BINARY	SWITCH_BINARY_REPORT	0x00
	COMMAND_CLASS_NOTIFICATION	NOTIFICATION_REPORT	

Main Power Disconnect

When main power is disconnected or power cut, the siren will work with the lithium battery back-up sequentially for a long time until battery running down. Siren will send some messages to controller as the states of battery are listed as table below changes.

Power Status	Reported data type	Notification Type	Notification Event
Disconnected	External power supply is disconnected	Power Manager (0x08)	AC_MAINS_DISCONNECTED (0x02)
	Voltage of the lithium battery is low [1]	Power Manager (0x08)	CHARGE_BATTERY_SOON (0x0E)
	Voltage of the lithium battery is insufficient [2]	Power Manager (0x08)	CHARGE_BATTERY_NOW (0x0F)

Main Power Connect

When the power state of siren changes from disconnected to connected, the siren will send some messages report to controller listed in table below. If the voltage of battery back-up is low, siren will charge it automatically.

Power Status	Reported data type	Notification Type	Notification Event
Connected	External power supply is connected	Power Manager (0x08)	AC_MAINS_RECONNECTED (0x03)
	Lithium battery is being charged	Power Manager (0x08)	BATTERY_IS_CHARGING (0x0C)
	Lithium battery is fully charged	Power Manager (0x08)	BATTERY_IS_FULLY_CHARGED (0x0D)

Tampering Event Report

When siren detects a tampering event (the back cover is removed out), it will send message to controller:

Event Triggered	Command Class	Notification Type	Event/Value
Tampering Event Detected	COMMAND CLASS NOTIFICATION	Home Security(0x07)	0x03
	COMMAND CLASS BINARY SENSOR	Tamper (0x08)	0xFF
Tampering Event Cleared	COMMAND CLASS NOTIFICATION	Home Security(0x07)	0x00
	COMMAND CLASS BINARY SENSOR	Tamper (0x08)	0x00

Alarm sound select

There have 6 alarm sounds building in this siren.

There have 2 methods for user to select different sound:

1 User can select alarm sound by configured the configuration No. 1.

2 User can play alarm sound by send INDICATOR_SET command with COMMAND_CLASS_INDICATOR:

Command	Sound number
INDICATOR_SET = 0x01	1
INDICATOR_SET = 0x02	2
INDICATOR_SET = 0x03	3
INDICATOR_SET = 0x04	4
INDICATOR_SET = 0x05	5
INDICATOR_SET = 0x06	6

Other values (0x07 ~ 0xFF) are invalid.

Command Class Configuration

The device supports the controller to configure parameters of the device through Configuration Command Class, and the device has 7 parameters available for users to set according to their different needs:

1. Alarm Sound Selected

This parameter is to set the sound sent by the alarm when giving an alarm and users can choose five different sound sources through this setting.

Parameter Number	Size (byte)	Available Settings	Default
1	1	1~6	1

2. Alarm Sound Volume Settings

Users can set through this parameter the sound volume sent when the alarm is activated, and there are 16 levels, with the adjustable scales being 0~15.0 is the minimum volume and 15 is the maximum volume.

Parameter Number	Size (Byte)	Available Settings	Default value
2	1	0 ~ 15	15

3. Alarm Duration Time

This parameter can set the duration of the alarm function after activation. Unit of time is: seconds. Parameter description: 0- No alarm; 1 ~ 32766 – Alarm duration; 32767 – The alarm keeps sending alarm until the user shuts it down.

Parameter Number	Size (Byte)	Available Settings (min)	Default value (min)
3	2	0 ~ 32767 (s)	300(s)

4. Led Blink Pattern

There have 3 led pattern mode for user selecting:

- 1- Led will not light on when an alarm is happened;
- 2- The Led blinks slowly when an alarm is happened;
- 3- The Led blinks fast when an alarm is happened;

Parameter Number	Size (Byte)	Available Settings	Default value
4	1	1 ~ 3	3

5. Switch Binary Report Disable

Set this configuration to '0', siren will not send an SWITCH_BINARY_REPORT to controller when an alarm is happed.

Parameter Number	Size (Byte)	Available Settings	Default value
5	1	0, 1	1

6. Alarm Disable

This configuration sets siren is enabled or disabled.

'0' – Disable, siren will never give an alarm.

'1' – Enable, siren will give an alarm when an alarm event is happened.

Parameter Number	Size (Byte)	Available Settings	Default value
6	1	0, 1	1

7. Binary Sensor Report Enable

'1' – Enable sensor binary report when device detects a tampering event.

'0' – Disable sensor binary report when device detects a tampering event.

Parameter Number	Size (Byte)	Available Settings	Default value
7	1	0, 1	0

Command Class Basic

The Basic Command Class is used to control other devices in this device when a tampering event detects by siren.

The siren will send BASIC_SET = 0xFF to the nodes that associated in group 2 when siren detects a tampering event (The back cover is removed out).

The siren will send BASIC_SET = 0x00 to the nodes that associated in group 2 when siren detects a tampering event (10s later that the back cover is covered).

Security Network

This siren supports the security function with S0 and S2 encrypted communication. The siren will auto switch to the security mode when the siren included with a security controller. In the security mode, the follow commands must use security or 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	Yes
SECURITY_KEY_S2_UNAUTHENTICATED	Yes
SECURITY_KEY_S2_AUTHENTICATED	No
SECURITY_KEY_S2_ACCESS	No

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_SWITCH_BINARY (V1)
- * COMMAND_CLASS_INDICATOR (V1)
- * COMMAND_CLASS_NOTIFICATION (V8)
- * COMMAND_CLASS_SENSOR_BINARY (V2)
- * COMMAND_CLASS_CONFIGURATION (V1)

All Supports Command Class

This device supports Z-Wave Command Class as follows:

- * COMMAND_CLASS_ZWAVEPLUS_INFO (V2)
- * COMMAND_CLASS_SECURITY (V1)
- * COMMAND_CLASS_SECURITY_2 (V1)
- * COMMAND_CLASS_TRANSPORT_SERVICE (V1)
- * 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_SWITCH_BINARY (V1)
- * COMMAND_CLASS_INDICATOR (V1)
- * COMMAND_CLASS_NOTIFICATION (V8)
- * COMMAND_CLASS_SENSOR_BINARY (V2)
- * COMMAND_CLASS_CONFIGURATION (V1)
- * COMMAND_CLASS_SUPERVISION (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 (V1)
- * COMMAND_CLASS_SECURITY_2 (V1)
- * COMMAND_CLASS_TRANSPORT_SERVICE (V2)
- * COMMAND_CLASS_SUPERVISION (V1)

Specifications

Power Supply	Main Power (12V/1A DC Adapter), One Cell 18650 Lithium Battery.
Work Current(RF Tx)	Max. 500mA at Sound Alarm
Operational Temperature	0 - 70°C
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.