SMART PLUG USER MANUAL

Introduction

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.

In the front casing, there is button that is used to carry out include, exclude or reset factory default settings on PCB Board.

When power is first supplied, the LED will flash on and off with yellow alternately every 1 second intervals within 5 seconds if the detector has not been added a Z-Wave network, otherwise the LED will flash on and off 5 times with cyan alternately every 300 millisecond. Please get familiar with the terms below before starting the operations.

This Plug has function that remembers the relay states, the plug will turn on after power up next time if the plug is turn on before the power cut-off.

Add the Device (Smart Plug) to Z-Wave Network

1. Make sure the sensor is powered.
2. Set Z-Wave controller or Z-Wave gateway into inclusion mode (Refer to the controller or gateway operating manual)
3. Press the button three times within 1.5 second, the device will enter inclusion mode. And the LED will flash on and off with green alternately five times within 2 seconds.

Remove the Device (Smart Plug) from Z-Wave Network

1. Make sure the sensor is powered.
2. Set Z-Wave controller or Z-Wave gateway into exclusion mode (Refer to the controller or gateway operating manual)
3. Press the button three times within 1.5 second, the device will enter exclusion mode. And the LED will flash on and off with yellow alternately five times within 2 seconds.

Note: If device has not been added to Z-wave network, the device will enter inclusion mode automatically when it is powered on. You should let the controller enter into inclusion first before power on the device in order to run this function.

Restore the Device (Smart Plug) to Factory Default Settings

Reset procedure will delete all information on the Z-Wave network and Z-Wave controller or Z-Wave Gateway, and restore the sensor to factory default settings.

1. Make sure the sensor is powered.
2. Press and hold the button more than 10 seconds until the LED blink with red color.
3. Release the button.

Associations

Through an association this Plug may control another Z-Wave network device, e.g. a alarm device, wall plug, lighting etc.

The Wall Plug provides three association groups, and every group can be support to associated 5 devices max.

GROUP 1 is lifeline service that assigned to plug status – ON/OFF. It enables the Plug to send reports and readings to Z-Wave Controller or Z-Wave Gateway. This Group Support:

NOTIFICATION_REPORT_V4
METER_REPORT_V4
SWITCH_BINARY_REPORT
DEVICE_RESET_LOCALLY_NOTIFICATION

GROUP 2 allows for sending control commands to associated devices such as Siren, relay module, lighting, etc. If current load is over the max current defined in parameter #3, the Plug will send a BASIC_SET (0xFF) to associated devices. When current load is normal, plug will send a BASIC_SET (0x00) to associated devices. This Group Support:

BASIC_SET

GROUP 3 allows for Send Notification to associated devices in this group. This Group Support:

NOTIFICATION_REPORT_V4

Current Load and Energy Consumption

This Plug provides line voltage, current load, power consumption and energy consumption measuring. These measurement results are sent to Z-Wave Controller or Z-Wave Gateway.

Voltage – The Supply Power Voltage For Plug.

Current – The Current for the Electric Device Connect to Plug Consumption.

Power – Power Consumed by an Electric Device in an Instant, unit: Watt(W).

Energy – Energy Consumed by an Electric Device through a Time Period. Most commonly Measure in Kilowatt-hours (kWh). One kilowatt-hour is Equal to One Kilowatt of Power Consumed over a Period of One Hour, 1kWh = 1000Wh.

NOTE: **Energy (kWh) is default scale for Meter Command Class Version 1.**

About Notification CC

If current load is great than value defined in parameter #3, plug will send NOTIFICATION CC to Z-Wave controller. And if there are some devices associated with this plug, it will receive a BASIC_SET command from plug.

Notification Report Command:
Event Present:
Command Class: COMMAND_CLASS_NOTIFICATION
Command: NOTIFICATION_REPORT
Notification Type: NOTIFICATION_TYPE_POWER_MANAGEMENT
Event: NOTIFICATION_EVENT_POWER_MANAGEMENT_OVER_CURRENT_DETECTED
Event Clear:
Command Class: COMMAND_CLASS_NOTIFICATION
Command: NOTIFICATION_REPORT

Notification Type: NOTIFICATION_TYPE_POWER_MANAGEMENT
Event: NOTIFICATION_EVENT_POWER_MANAGEMENT_NO_EVENT

Over Current Protection Simulating (For Certification Test / Production Test)

When the wall plug is turn on, you can set 0xFF to parameter #100 through Configure CC to trigger over current protection. If you set, the wall plug will send **NOTIFICATION_EVENT_POWER_MANAGEMENT_OVER_LOAD_DETECTED** to lifeline, and the wall plug will be turn off, red Led will blink every second. You can press the button once to clear this alarm and then the wall plug will be back to normal state.

Advanced Configuration

1. Send Meter Report Enable.

This parameter defines Disable/Enable meter report measure data to controller.

Function: Meter Report Enable
Parameter Number: 1.
Parameter Size: 1 Byte
Available Settings： 0, 1.
0 – Disable Report,
1 - Enable Report
Default Setting: 1.

2. Meter Report Interval

This parameter defines interval time (in seconds) that Meter report data to main controller.

Function: Set Report Interval
Parameter Number: 2.
Parameter Size: 2 Byte
Available Settings： 1 – 65535(s).
Default Setting: 300(s)

3. Configure maximum over-load current.

This parameter defines maximum current the plug can provide to load that be connected to plug. If the current consumed by load is greater than maximum current, the plug will cut off power, and send **NOTIFICATION_EVENT_POWER_MANAGEMENT_OVER_LOAD_DETECTED** to associated devices in lifeline. Red Led will blink every seconds until current is normal (less than Parameter #3). You must remove the loader and turn on the Plug (press the button once) to enable current monitor and clear **NOTIFICATION ALARM**.

This parameter value must be great than #4. If user set this parameter to default by Configure CC, the parameter #4 will be set to default value.

Function: Set the upper current threshold.
Parameter Number: 3.
Parameter Size: 1 Byte

Available Settings： 1 – 16 (Ampere).
Default Setting: 13(A).

4. Configure maximum Alarm current.

This parameter defines maximum current, if the current plug provide to load is great than this parameter, the plug will light yellow LED, but plug cannot cut-off power.
This parameter value must be less than parameter #3. If user set this parameter to default by Configure CC, the parameter #3 will be set to default value.

Function: Set Alarm upper current threshold.
Parameter Number: 4.
Parameter Size: 1 Byte
Available Settings： 1 – Parameter #3 (Ampere).
Default Setting: 12(A).

5. Led Display Enable

This parameter defines the LED indication Function ON/OFF. This parameter can be configured with 0 or 1, where 0 means disable LED indication Function and will always be turn-off, and 1 means enable LED Function.

Function: LED Enable/Disable
Parameter Number: 5.
Parameter Size: 1 Byte
Available Settings： 0, 1.
Default Setting: 1.

6. Configure report by Current Changed

This parameter defines by how much current changed must change to be reported to the Z-Wave Controller or Z-Wave Gateway, in percents. If the rate of current change ratio is greater than this parameter, the plug will report the results, voltage, current, power and energy, that plug measure to Z-Wave Controller or Z-Wave Gateway.

Function: Meter Reporting Setting
Parameter Number: 6.
Parameter Size: 1 Byte
Available Settings： 1 – 100 (%).
Default Setting: 5(%).

7. Remember Relay ON/OFF status

This parameter defined the relay status if remember or not. If remembered, the plug will restore the relay status last power off when the plug supply power next time.

Function: Remember Relay Status
Parameter Number: 7.

Parameter Size: 1 Byte
Available Settings： 0 , 1
0 – Don’t Remember, the relay will keep OFF when Plug Supply Power.
1 – Remember the Relay Status.
Default Setting: 1.

8. Configure Plug Time switch Function

This parameter defines the timer function Enable/Disable. This parameter can be configured with 0 or 1, where 0 means disable time switch function and 1 enable. The time period will be defined in parameter #9.

If this parameter is Set to 1, and when turn the plug relay on, the timer in plug start run with time period defined in parameter #9 and the plug will turn the relay off.

Function: Time switch Configure
Parameter Number: 8.
Parameter Size: 1 Byte
Available Settings： 0, 1
0 – Time switch Disable.
1 – Time switch Enable.
Default Setting: 0

9. Configure Time switch Period

This parameter defines the time period that plug time switch off. This parameter can be configured 1 ~ 65535(in minutes). If Parameter #9 is set to ‘1’, and relay is turn-on, the relay will be turn-off after delay this parameter.

Function: Time switch Configure
Parameter Number: 9.
Parameter Size: 2 Byte
Available Settings： 1 ~ 65535(minutes).
Default Setting: 150(min)

10. Button On/Off Enable

This parameter defines the button on/off function is enabled or not on the top of the wall plug. This parameter can be configured 0 and 1. If this parameter is set to ‘1’, users can turn on and off the wall plug by pressing the button on the top of the wall plug. If this parameter is set to ‘0’, the wall plug cannot be turned on and off by pressing the button.

Function: Enable Button On/Off
Parameter Number: 10.
Parameter Size: 1 Byte
Available Settings： 0, 1.
Default Setting: 1

11. Clear Accumulated Energy

If set this parameter to '0' or default, the accumulated energy saved in the plug will be clear by '0'. Other values will not change current accumulated energy value.

This parameter value cannot be saved in NVR mounted in the plug. The accumulated energy consumed will not be changed when the plug is added in or removed from Z-Wave network, but this value will be cleared after resetting the plug to factory default settings.

Note: User can send METER_RESET (Meter Command Class) command to clear accumulated energy also.

Function: Clear accumulated energy
Parameter Number: 11.
Parameter Size: 1 Byte
Available Settings: 0 ~ 255.
Default Setting: 0.

LED Color Indicator

LED Color	Led Display Status	Description
Pink	Blink 5 Times(1s Interval)	Power on or Reset and Not Add in Z-Wave Network
	Blink 5 Times(500ms Interval)	Send Node Info when Press Button tripled.
Blue	Blink 5 Times(300ms Interval)	Power on or Reset and Already Add in a Z-Wave Network
Yellow	Blink 5 Times(500ms Interval)	Press Button tripled, Adding the Plug in a Z-Wave Network.
	Always Light On	The Load Current is Arrived Alarm limit(Param #4)
Red	Blink 1 Time	Press the Button Long Time, Reset the Plug to restore default settings
	Blink with 1 second interval	The Load Current is great than Max Load defines in Param #3.
	Always Light On	The Plug Initialize Fail When Plug is Power On.
Green	Always Light On	The Plug is Power on.

Manufacture ID: 0x0258
Product ID: 0x1087(EU)

Command Classes

The Plug supports Command Classes as Below:

* COMMAND_CLASS_ZWAVEPLUS_INFO (V2)
* COMMAND_CLASS_MANUFACTURER_SPECIFIC (V2)
* COMMAND_CLASS_VERSION (V2)
* COMMAND_CLASS_ASSOCIATION (V2)
* COMMAND_CLASS_ASSOCIATION_GRP_INFO (V1)
* COMMAND_CLASS_DEVICE_RESET_LOCALLY (V1)

* COMMAND_CLASS_POWERLEVEL (V1)
* COMMAND_CLASS_SWITCH_BINARY (V1)
* COMMAND_CLASS_NOTIFICATION (V4)
* COMMAND_CLASS_METER (V4)
* COMMAND_CLASS_CONFIGURATION (V1)
* COMMAND_CLASS_SWITCH_ALL (V1)
* COMMAND_CLASS_BASIC (V1)

SPECIFICATIONS

Power Supply:	AC110 ~ 230V(±10%), 50/60Hz
Rate Load Current:	13A, 110-230V, 50/60Hz – Continuous Load
	16A, 110-230V, 50/60Hz – Momentary Load
Power Consumption:	0.13W
EU Standards Compliance:	
Radio Protocol:	Z-Wave
Radio Frequency:	EU – 868.4MHz
	US – 908.4MHz
Valid Range:	Up to 60m outdoors
	Up to 30m indoors (Depending on terrain and building structure)
Operational Temperature:	0 – 40 ℃