



EU Smart Plug (Z-Wave)

User Guide

(6A-PL-VAB-C0)

Smart plug is a Z-Wave Switch plug in module specifically used to enable Z-Wave command and control (on/off) of any plug-in tool. It can report wattage consumption or kWh energy usage.

Smart Plug 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.

Smart Plug is also a security Z-Wave device and supports the Over The Air (OTA) feature for the product' s firmware upgrade.

If you want your Smart Plug to be a security device that use secure/encrypted message to

communicate in a Z-Wave network, then a security enabled Z-Wave controller is needed.

Features:

- 1) Supporting 1xAC output;
- 2) AC output switch on/off by manual or Z-Wave command;
- 3) LED indicates the Z-WAVE network range;
- 4) LED indicates the load power;
- 5) Supporting power meter;
- 6) Supporting repeater role;
- 7) Supporting firmware OTA;

1 Familiarize yourself with your Smart Plug

Smart Plug Layout



2 Technical specifications

2.1 Hardware specifications

Rated voltage:	230V~, 50Hz
Rated load current:	10A
Power consumption:	≤1.5W
Rated Power output	2300W
(plug for resistive load):	
Operational temperature:	0°C~35°C (testing 25°C)
Radio protocol:	Z-Wave
Radio frequency:	868.0-868.6MHz,869.7-870MHz
Maximum RF output power:	1.68mW
Additional SPEC:	
Rated impulse withstand voltage: 2.5KV	
Duty-type: S1, continuous duty	
Number of operating cycles: 10000	
CIRCUIT DISCONNECTION: Micro-disconnection	
Glow-wire temperature: 650 °C	
Non-replaceable built-in protection: thermal fuse,10A, 84° C,	
Do not connect after each other	
Frequency Range: 868.0-868.6 MHz, 869.7-870MHz.	

2.2 Software specification

1, Command List

	Included Non-Secure Network	Included Secure Network
Node	COMMAND_CLASS_ZWAVEPLUS_INFO	COMMAND_CLASS_ZWAVEPLUS_INFO
Info	COMMAND_CLASS_SWITCH_BINARY	COMMAND_CLASS_SECURITY

Frame	COMMAND_CLASS_SECURITY	COMMAND_CLASS_MANUFACTURER_
	COMMAND_CLASS_MANUFACTURER_	SPECIFIC
	SPECIFIC	COMMAND_CLASS_VERSION
	COMMAND_CLASS_VERSION	COMMAND_CLASS_TRANSPORT_SERV
	COMMAND_CLASS_BASIC	ICE_V2
	COMMAND_CLASS_SWITCH_BINARY	COMMAND_CLASS_SECURITY_2
	COMMAND_CLASS_SWITCH_ALL	COMMAND_CLASS_POWERLEVEL
	COMMAND_CLASS_ASSOCIATION	
	COMMAND_CLASS_ASSOCIATION_GR	
	P_INFO	
	COMMAND_CLASS_MANUFACTURER_	
	SPECIFIC	
	COMMAND_CLASS_DEVICE_RESET_LO	
	CALLY	
	COMMAND_CLASS_METER_V3	
	COMMAND_CLASS_SCENE_ACTIVATIO	
	N	
	COMMAND_CLASS_CONFIGURATION	
	COMMAND_CLASS_SUPERVISION	
	COMMAND_CLASS_FIRMWARE_UPDA	
	TE_MD_V4	
	COMMAND_CLASS_SCENE_ACTUATO	

	R_CONF	
Security Comma nd Support ed Report Frame		COMMAND_CLASS_BASIC, COMMAND_CLASS_SWITCH_BINARY, COMMAND_CLASS_SWITCH_ALL, COMMAND_CLASS_ASSOCIATION, COMMAND_CLASS_ASSOCIATION_GRP_INFO, COMMAND_CLASS_DEVICE_RESET_LOCALLY, COMMAND_CLASS_CONFIGURATION_V3, COMMAND_CLASS_METER_V3, COMMAND_CLASS_SCENE_ACTUATOR_CONF, COMMAND_CLASS_SCENE_ACTIVATION, N,

		COMMAND_CLASS_SUPERVISION COMMAND_CLASS_FIRMWARE_UPDATE_MD_V4
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2, SDK 6.71.01

3, Library

Device Type	Generic Device class	Specific Device Class	Role Type
On/Off Power Switch	GENERIC_TYPE _SWITCH_BINARY	SPECIFIC_TYPE_POWER_SWITCH_BINARY	ROLE_TYPE_SLAVE_ALWAYS_ON

3 LED indicator mode

Smart Plug's LED indicator supports two work modes, including Power indication mode and night lamp mode.

Power indication mode: Power indication mode will allow the LED to follow the state of the Smart Plug, when the Plug is on, LED will be on in the color blue, and while the Plug is off, LED will off.

Night lamp mode: Night lamp mode will allow LED turn on hold 5 seconds and then turn off

When the Smart plug state changes you have configured.

4 Functions of each trigger

Function of ZWAVE Button:

Smart Plug is not in the Z-Wave network:

Trigger	Description
Power on	1. LED has been slow flash, Smart Plug sends security node info frame. 2. Add for inclusion(security) 1. Set the Z-Wave network main controller into learning mode. 2. Short press the Z-button twice 3. The LED keep blink to the end of add inclusion, If the add for inclusion is successful, LED will turn on within 2 seconds and Then will be in power indication mode, Otherwise, The LED will keep slow flash.
Short press one (within 1 second)	1. LED has been slow flash, Smart Plug sends security node info frame. 2. Add for inclusion(security); 1. Set the Z-Wave network main controller into learning mode. 2. Short press the Z-button twice,

	1. The LED keep blink to the end of add inclusion, If the add for inclusion is successful, LED will turn on within 2 seconds and Then will be in power indication mode, Otherwise, The LED will keep slow flash.
Short press twice (within 1 second)	1. LED has been slow flash, Smart Plug sends non-security node info frame. 2.Add for inclusion(non-security); 1. Set the Z-Wave network main controller into learning mode. 2. Short press the Z-button twice 2. The LED keep blink to the end of add inclusion, If the add for inclusion is successful, LED will turn on within 2 seconds and Then will be in power indication mode, Otherwise, The LED will keep slow flash.
Short press triple	1. LED has been slow flash, Smart Plug sends security node info frame. 2.Add for inclusion(security); 3. Set the Z-Wave network main controller into learning mode. 4. Short press the Z-button triple 5. The LED keep blink to the end of add inclusion, If the add for inclusion is successful, LED will turn on within

	2 seconds and Then will be in power indication mode, Otherwise, The LED will keep slow flash.
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Smart Plug is in the Z-Wave network:

Trigger	Description
Short press once	1. Changing the status of Smart Plug' s load. 2. LED will be in power indication mode.
Short press twice	1. Smart Plug will send node info frame. 2. Remove for exclusion: 1. Set the Z-Wave network main controller into removing mode. 2. Short press Z-button twice. 3. The LED keep blink to the end of remove exclusion, If the remove for exclusion is successful, The LED will keep slow flash, Otherwise, LED will be in power indication mode.
Short press triple	1. Smart Plug will send node info frame. 2. Remove for exclusion: 1. Set the Z-Wave network main controller into

	removing mode. 2. Short press Z-button triple. 3. The LED keep blink to the end of remove exclusion, If the remove for exclusion is successful, The LED will keep slow flash, Otherwise, LED will be in power indication mode.
Press more than 5seconds	Reset Smart Plug to factory Default: LED in 5 seconds to accelerate flash, The reset successful will send "Device_Reset_Locally" to the main controller and exclude from the Z-Wave network, this procedure will reset Smart Plug to factory default.

5 Note for special command

5.1 Association Command

1, The Smart Plug supports only one association group.

Grouping Identifier	Max Nodes	Send Commands
Group 1	0x05	1. When the state of Smart Plug (turn on or off the load) is changed: 1.Set Configuration parameter 0x03 to 0:Do not send Basic Report

		2. Set Configuration parameter 0x03 to 1: Send Basic Report 3. Set Configuration parameter 0x03 to 2: Send Basic Report only when Load condition is changed not by Z-WAVE Command, such as short pressing. 2. Sending Meter Report.
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2, Association Group Info Command

Association Group Name Report Command

Grouping identifier	value
Group 1	Lifeline , ASSIC Code : 4C 69 66 65 6C 69 6E 65

Association Group Info Report Command

Parameter	Group	Value
Profile	Group 1	General:Lifeline , Profile MSB=0x00,Profile LSB=0x01

3, Association Group Support Command List

Group number	Command Support	
Group 1	COMMAND_CLASS_BASIC(0x20)	BASIC_REPORT(0x03)
	COMMAND_CLASS_METER_V3(0x32)	METER_REPORT_V3(0x02)
	COMMAND_CLASS_DEVICE_RESET_LOCALLY(0x5A)	DEVICE_RESET_LOCALLY_NOTIFICATION(0x01)

5.2 Z-Wave Plus Info Report Command

Parameter	value
Z-Wave Plus Version	1
Role Type	6(ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_ALWAYS_ON)
Node Type	0 (ZWAVEPLUS_INFO_REPORT_NODE_TYPE_ZWAVEPLUS_NODE)
Installer Icon Type	0x0701 (ICON_TYPE_GENERIC_ON_OFF_POWER_SWITCH)

User Icon Type	0x0701 (ICON_TYPE_GENERIC_ON_OFF_POWER_SWITCH)
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5.3 Manufacturer Specific Report Command

Parameter	value
Manufacturer ID 1	0x03
Manufacturer ID 2	0x00
Product Type ID 1	0x02
Product Type ID 2	0x00
Product ID 1	0x00
Product ID 2	0x0b

5.4 Version Report Command

Parameter	Value (HEX)
Z-Wave Protocol Library Type	0x03
Z-Wave Protocol Version	0x04
Z-Wave Protocol Sub Version	0x3d
Firmware 0 Version	(Software Version high Byte)
Firmware 0 Sub Version	(Software Version low Byte)
Hardware Version	0x01
Number of firmware targets	0x00

5.5 Meter Support Report Type

Parameter	value
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Meter Type	01
Meter Reset	TRUE
Scale Supported	35 (Power , Current , voltage , energy)

5.6 Basic Command

BasicCC maps to SWITCH_BINARY Command

5.7 Configuration Command

Smart Plug offers a wide variety of advanced configurations settings. Below parameters can be accessed from main controllers configuration interface.

Parameter No. 01 Overcurrent protection

Smart Plug keep detecting the load power, once the AC current exceeds 16A for more than 5s, smart plug's relay will turn off.

0 - The function is disabled

1 - The function is enabled.

Default setting: **1**

Parameter size: **1 [byte]**

Parameter No. 02 Setting device status after power failure

Define how the Plug reacts after the power supply is back on.

0 - Smart Plug memorizes its state after a power failure.

1 - Smart Plug does not memorize its state after a power failure.

Connected device will be on after the power supply isreconnected.

2 - Smart Plug does not memorize its state after a power failure.

Connected device will be off after the power supply isreconnected.

Default setting: **0**

Parameter size: **1 [byte]**

Parameter No. 03 Notification when Load status change

Smart Plug can send notifications to associated device (Group Lifeline) when the status of smart plug' s load is changed.

0 - The function is disabled.

1 - Send Basic report.

2 - Send Basic report only when Load status is not changed by Z-WAVE Command.

Default setting: **1**

Parameter size: **1 [byte]**

Parameter No. 04 LED Load indicator mode selection

Configure LED Display mode to prevent light pollution at night.

0 -The LED status follows the load change.

1—when operating the load, The LED lights for 5 seconds and then turns off.

Default setting:**0**

Parameter size: **1 [byte]**

Parameter No. 16 The value here represents minimum change in wattage (in terms of wattage) for a meter report to be sent

When the change value of load power exceeds the setting value, smart plug will send meter report (watt)to associated device (Group Lifeline).

Available settings: **0 - 65535** (0 - 65535W)

0 - The function is disabled.

Default setting: **50** (50W)

Parameter size: **2 [byte]**

Parameter No.17 The value here represents minimum change in wattage percent (in terms of percentage) for a meter report (watt) to be sent

When the change value of the load power exceeds the setting value, smart plug will send meter report to associated device (Group Lifeline).

Available settings: **-128 - 127** (0 - 255%)

-128 to -1 : 255% to 128%

1 to 127: 1% to 127%

0 - The function is disabled.

Default setting: **10** (10%)

Parameter size: **1 [byte]**

Parameter NO.100 Setting the parameters 101~104 to the default states.

Available settings: 85

Default Setting: 85

Parameter size: **1 [byte]**

Parameter No. 101 Setting time for sending meter report (watt)

The interval time of sending meter report (watt) to associated device (Group Lifeline).

Available settings: **5- 2678400** (5 - 2678400s)

0 - The function is disabled.

Default setting: **600** (10 minutes).

Parameter size: **4 [byte]**

Parameter No. 102 Setting time for sending meter report (KWh)

The interval of sending meter report (KWh) to association device (Group Lifeline).

Available settings: **5- 2678400** (5 - 2678400s)

0 - The function is disabled.

Default setting: **3600** (one hours).

Parameter size: **4 [byte]**

Parameter No. 103 Setting time for sending meter report (voltage)

The interval of sending meter report (voltage) to association device (Group Lifeline).

Available settings: **5- 2678400** (5 - 2678400s)

0 - The function is disabled.

Default setting: **0** (disabled).

Parameter size: **4 [byte]**

Parameter No. 104 Setting time for sending meter report (current)

The interval time of sending meter report (current) to associated device (Group Lifeline).

Available settings: **5- 2678400** (5 - 2678400s)

0 - The function is disabled.

Default setting: **0** (disabled).

Parameter size: **4 [byte]**

Parameter No.254 Enable/disable the configuration command

Lock/unlock all configuration parameters.

0—Unlock.

1 – Lock.

Default setting: **0**

Parameter size: **1[byte]**

Parameter No.255 Reset Smart Plug

Reset the Smart Plug or remove from the Z-Wave network

Available settings:**0x88888888 Or 0x80000000**

0x88888888 - Smart Plug will send "Device_Reset_Locally" ,remove from the Z-Wave network and reset to factory default.

0x80000000— Smart Plug will reset all parameters to the default state

Default: --

Parameter size: **4[byte]**

Value: **85**

Default: **1**

Parameter size: **1[byte]**

Reset the values of the configuration command to default setting.

6 Security and non-security features of Smart Plug in Z-Wave network

The way to add for inclusion and node info frame of Smart Plug as a security and non-security device is different.

1. The way to add for inclusion is different.

1.1 Add for inclusion (non-security):

See the section of "5. Functions of each trigger" above.

1.2 Add for inclusion (security):

See the section of "5. Functions of each trigger" above.

2. The way this device communicates

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.

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