

# PSM-29ZW Power Switch Meter

## Introduction

The Z-Wave-enabled Power Switch Meter is capable of receiving wireless signals from the coordinator in the Z-Wave network to toggle On/Off of appliances that are attached to it. The Power Switch Meter also serves as a router in the Z-Wave network. After being included in the Z-Wave network, it allows other Z-Wave device to join the network through the Power Switch Meter.

The Power Switch Meter can further measure power consumption in kWh and W of the plugged in device and report the values to the Z-Wave network regularly to notify the user. The power consumption can also be transmitted simply with a button press.

Z-Wave is a wireless communication protocol that uses a low-power RF radio. By taking advantage of the Z-Wave mesh network, commands can be transmitted to their destination via intermediary “listening” Z-Wave products.

The Z-Wave Power Switch Meter allows access to the “S2 Unauthenticated” class and support Z-Wave SmartStart inclusion as well as classic inclusion.

## Parts Identification

### 1. Function Button aka LED indicator

The Function Button also doubles as the LED Indicator. The Function Button is used to control the Power Switch Meter. The LED indicator is used to indicate Power Switch Meter status.

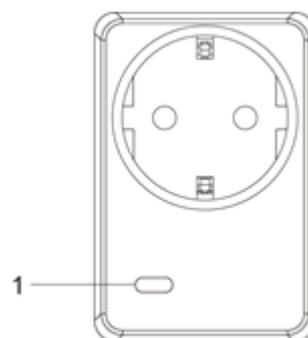
#### LED Indication:

The LED indicator lights up in the following conditions:

- On: power on
- Off: power off
- Red light flashes twice:
  1. The Power Switch Meter has just been powered on.
  2. The Power Switch Meter has just been factory reset.

#### Function Button Usage:

- Press the Function Button to switch on/off the Power Switch Meter.
- Press the Function Button once to send power consumption in kWh and W.
- Press the Function Button 3 times within 1.5 seconds to transmit a learn code.
- Press and hold the Function Button for 10 seconds to factory reset.



## Features

### ● Adding Device (Inclusion)

This product can be included and operated in any Z-Wave network with other Z-Wave certified devices from other manufactures 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 device supports both classic inclusion process and SmartStart inclusion process.

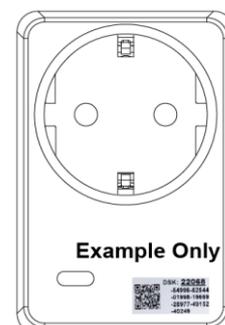
#### Classic Inclusion

- Plug the Power Switch Meter into a power outlet.
- Put the Z-Wave Gateway or Control Panel into **Inclusion mode** (please refer to the Z-Wave Gateway or Control Panel manual).
- Within 1.5 seconds, press the Function Button 3 times.
- Refer to the operation manual of the Z-Wave Gateway or Control Panel to complete the adding process.
- If the device has already been added (included) into another Z-Wave Gateway/Control Panel, or if the device is unable to be added into the current Z-Wave Gateway/Control Panel, please exclude it first (see **Removing Device**) before attempting to **include** it into the current Z-Wave Gateway/Control Panel.

#### SmartStart Inclusion

Z-Wave SmartStart utilizes the DSK of the device to enhance and simplify the inclusion process. DSK is Device Specific Key used for authentication and encrypted communication. The DSK information is stored in the QR code format that is printed on a label and adhered to the front side of the device, as example shown on the right hand side.

- Scan the QR Code sticker on the Power Switch Meter to obtain DSK and transfer to the Z-Wave gateway.



- Plug the Power Switch Meter into a power outlet, a SmartStart inclusion request will be automatically sent to the gateway.
- The gateway will automatically include the device upon recognition of the device by matching the inclusion request with the DSK obtained

<NOTE>

- ☞ The DSK of the device is used only during inclusion.
- ☞ The DSK can be read without the Power Switch Meter powered ON, so it is possible to prepare the gateway to include the device prior to powering up the Power Switch Meter.

## ● **Removing Device (Exclusion)**

The device must be removed from existing Z-Wave network before being included into another. There are two methods available to exclude a device.

### Exclusion Mode

- Put the Z-Wave Gateway or Control Panel into **Exclusion mode** (please refer to the Z-Wave Gateway or Control Panel manual).
- Within 1.5 seconds, press the Function Button 3 times and the device will be removed from the Z-Wave network.

### Factory Reset

*(Only use factory reset when network Control Panel/Gateway is missing or inoperable).*

- Press and hold the Function Button of the device for 10 seconds to factory reset.

<NOTE>

- ☞ Factory resetting the device will restore it to factory default settings (excluded from the Z-Wave network). The Z-Wave Gateway or Control Panel will still keep its Z-Wave settings. Please refer to the Gateway or Control Panel manual on how to remove the device's Z-Wave settings.
- ☞ Factory resetting the device will also clear all accumulated power data.
- ☞ Before you remove or factory reset the Power Switch Meter, please ensure that the device DSK information has been removed or does not exist in the gateway. If you remove or factory reset the device, but its DSK still exists in the gateway, the gateway will automatically include the device again.

## ● **Range Test**

To test whether the device is able to communicate with the Z-Wave Gateway or Control Panel:

- Put the Gateway / Panel into range test mode (Walk Test).
- Press the Function Button on the device.
- The Gateway / Panel should display if the device is within the operation range (please refer to the operation manual of the Gateway / Panel).

## ● **Z-Wave Router Device Capacity**

The Power Switch Meter allows other Z-Wave devices to join the Z-Wave Network through the Router. The maximum capacity of the devices to join the Z-Wave Network through the Power Switch Meter is 255.

## Operation

### ● **Appliance Control**

- After being included into a Z-Wave Gateway or Control Panel, plug a home appliance into the Power Switch Meter. This home appliance's power and energy usage data will be transferred to the Control Panel.
- Users can remotely turn on/off the electric appliance through the Control Panel (please refer your Control Panel manual).
- Pressing the Function Button on the Power Switch Meter can also toggle on/off the Power Switch Meter.
- The Power Switch Meter transmits a signal with power data to Z-Wave Gateway/Panel every 10 minutes starting from the last time a signal is transmitted.
- When the Power Switch Meter is re-plugged after it has been removed from the power outlet, the previous on/off status of Power Switch Meter will be resumed immediately.

### ● **Energy Consumption Monitor**

- The Power Switch Meter will report its status automatically every 10 minutes.
- When the Function Button is pressed, PSM-29 will send below values:

(1) 41 64 00 00 50 14 FF FF 00 00 00 00 kWh and 00005014 = 20500 = 20.5)

**00 00 50 14** can be viewed as current power consumption, while **00 00 00 00** can be viewed as power consumption detected previously.

**00 00 50 14** can be viewed as 0x00005014 in Hexadecimal number. You can convert hexadecimal to decimal to check power consumption. Divide the value by 1000 to check power consumption in kWh.

**00 00 50 14=0x00005014=20500=20.5 kWh**

(2) 41 74 **00 00 27 10** FF FF **00 00 00 00** W (00002710 = 10000 = 10 W)

**00 00 27 10** can be viewed as current power consumption, while **00 00 00 00** can be viewed as power consumption detected previously.

**00 00 27 10** can be viewed as 0x00002710 in Hexadecimal number. You can convert hexadecimal to decimal to check power consumption. Divide the value by 1000 to check power consumption in W.

**00 00 27 10=0x00002710=10000=10 W**

- Users can also use below command: [COMMAND\_CLASS\_BASIC] [BASIC\_SET] to remotely turn on or off the relay of the Power Switch Meter via the Z-Wave Gateway/Panel.  
To turn off the relay by using this command, set Basic Set: 0x00.  
To turn on the relay by using this command, set Basic Set: 0xFF.
- When the power consumed changes by +/- 2W, PSM-29 will transmit a signal to Z-Wave Gateway/Panel.
- When the power consumed changes by +0.1 kWh, PSM-29 will transmit a signal to Z-Wave Gateway/Panel.
- When the power is below 20W, measurement error is more likely to occur.

### ● **Power Specification**

- For **110V**: the maximum operation load is 1760W and 16A. Warning: please do not exceed the maximum load.
- For **230V**: the maximum operation load is 3680W and 16A. Warning: please do not exceed the maximum load.
- If the Power Switch Meter is overheating, it will cut off power automatically as a safety measure. The Power Switch Meter must be un-plugged and re-plugged after cut off to resume normal operation.

## ● **Z-Wave Information**

**Device Type:** Generic Type Switch Binary

**Role Type:** Always On Slave (AOS)

### **Command Class Support/Control**

**Mandatory CC Support:**

- Z-Wave Plus Info CC
- Association CC, (S2)
- Multi Channel Association CC, (S2)
- Association Group Information CC, (S2)
- Transport Service CC
- Version CC, (S2)
- Manufacturer Specific CC, (S2)
- Device Reset Locally CC, (S2)
- Powerlevel CC, (S2)
- Meter CC, v2
- Switch Binary CC
- Supervision CC, (S2)
- Firmware Update Md CC, (S2)

## ● **Z-Wave's Groups (Association Command Class Version 2)**

The Switch can be set to send reports to associated Z-Wave devices. It supports one association group with five node support for Grouping 1. For grouping 1, the Switch will report its latest status to Z-Wave Gateway/Panel.

Grouping 1 for "LifeLine": (max node: 5)

Switch Binary CC (COMMAND\_CLASS\_SWITCH\_BINARY)

Meter CC (COMMAND\_CLASS\_METER)

Device Reset Locally CC (COMMAND\_CLASS\_DEVICE\_RESET\_LOCALLY)

When toggling between On/Off, it will send Binary Switch Report and Meter Report for w & kwh consumed to the nodes of Grouping 1

## ● **Command Class Data Format**

- Relay On/Off: [COMMAND\_CLASS\_BASIC] [BASIC\_SET]

This command can be used to remotely turn on or off the relay of the Power Switch Meter via the Z-Wave Gateway/Panel.

- To turn off the relay by using this command, set Basic Set: 0x00.
- To turn on the relay by using this command, set Basic Set: 0xFF.