# AN186 | ON/OFF PLUG (US)

The AN186 On/Off Plug is a Z-Wave Plus™ enabled device and is fully compatible with any Z-Wave™ enabled network. The device can be set up in a Z-Wave network to communicate directly with other end devices such as PIR motion detector, or to report directly to a Z-Wave controller (usually a gateway).

This product supports the S2 security protocol that uses encrypted Z-Wave Plus messages to communicate to other security-enabled Z-Wave Plus products. A security-enabled Z-Wave Plus Controller must be used in order to fully utilize the security features of this product.

This On/Off Plug module is designed to control the on/off status of lighting and appliances in the home. Remote On/Off control of the connected load is possible even when paired with other manufacturer's Wireless Controller. Each module is also designed to act as a repeater to re-transmit RF signal to ensure that it is received by its intended destination by routing the signal around obstacles and radio dead spots.

Product Overview

Controllable outlet
Pass-through outlet

On/Off knob
& LED Indicator
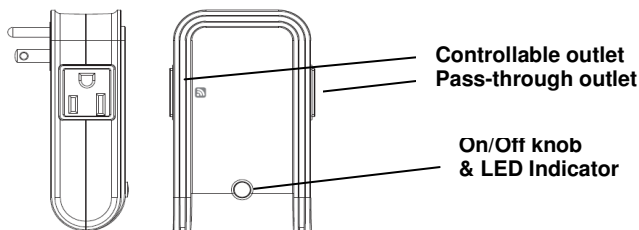
Adding to Z-Wave'™ Network

Auto Inclusion

The On/Off plug supports Auto Inclusion feature where it will automatically enter Inclusion mode when first powered up after a factory reset.

1. In the front casing, there is an On/Off knob which is used to carry out inclusion, exclusion or association.
2. Put a Z-Wave Controller into inclusion/exclusion mode.
3. Plug this On/Off device into a wall outlet near the load to be controlled.
4. The Inclusion process should be completed when the LED stops blinking.

   Note: If Auto Inclusion fails, refer to the Troubleshooting section regarding Manual Inclusion.

Testing

1. From the Z-Wave Controller's interface, turn on the newly added On/Off Module (refer to the Controller's user manual for instructions). The LED indicator on the module should turn on.

2. Turn off the module before connecting any appliance to it.

Installation

1. Plug this On/Off Module into a wall outlet near the appliance/lighting to be controlled.

2. Plug the appliance into the Controllable outlet of the module, indicated by a wireless icon printed on the module.
   Note: There are two outlets at opposite sides of the module. Appliances plugged into the controllable outlet can be controlled by this module whereas the other side is non-controllable and acts only as an electrical pass-through outlet.
   Important: Make sure the total appliance load of both sides do not exceed 1400 watts, which means if the load of controllable outlet is changed, the other side should be altered accordingly. For

instance, if the load of controllable outlet is 1400 watts, the other should be 0 watt; while if the load of controllable outlet is 1100 watts, the other should be 300 watts.

3. Set the switch on the appliance permanently to the ON position.
4. To control the appliance manually from the module, simply press the module's On/Off knob. When the red indicator LED turns ON (for about 5 seconds) this indicates electrical power is directed into the appliance. When the LED turns off, electrical power is cut off from the appliance.

Programming

Z-Wave Group

The unit supports either one of two Z-Wave Association Groups:
Group 1: Association with 1 Controller node.
Group 2: Association with 4 nodes (i.e. end devices such as detectors or other lighting switches).This allows the On/Off module to receive commands directly from these end devices without the participation of the controller.

Group 1 commands:
● When the unit is powered for the first time, the unit will send a Notification Report to the node of Group 1.
● When setting the unit or changing the unit's status, the unit will send a Binary Switch Report to the node of Group 1. When the unit is OFF, Switch Binary Report Value = 0x00. When the unit is ON, Switch Binary Report Value = 0xFF.
● Device Reset: When performing Factory Reset the unit will send Device Reset Locally Notification to the node of Group1.

Group 2 commands:
● When the button on the unit is pressed, the unit will send a Basic Set command to the nodes of Group 2. When the unit is OFF, Basic Set Value = 0x00. When the unit is ON, Basic Set Value = 0xFF.

Z-Wave Plus Info

Role Type	Node Type	Installer Icon	User Icon
Slave Always On	Z-Wave Plus node	On Off Power Switch	On Off Power Switch

Version

Protocol Library	3 (Slave_Enhance_232_Library)
Protocol Version	4.61 (6.71.01)

Manufacturer

Manufacturer ID	Product Type	Product ID
0x0060	0x0004	0x000C

AGI (Association Group Information) Table

Group	Profile	Command Class & Command (List) N bytes	Group Name(UTF-8)
1	General	Binary Switch Report, Notification Report Device Reset Locally Notification	Lifeline
2	Control	Basic Set	Basic Set

Notification

The device will send notifications (Notification Type =0x08, Event = 0x01) upon being powered on.

Configuration

The configurable values are as following:

Remember the last status:

Parameter Number	Size	Range	Default
3	1	1/0	1: remember (0: do not remember)

Command Classes

The module supports Command Classes including…
- COMMAND_CLASS_ZWAVEPLUS_INFO_V2
- COMMAND_CLASS_SWITCH_BINARY*
- COMMAND_CLASS_SWITCH_ALL* (Only for US Freq.)
- COMMAND_CLASS_ASSOCIATION_V2*
- COMMAND_CLASS_ASSOCIATION_GRP_INFO*
- COMMAND_CLASS_TRANSPORT_SERVICE_V2
- COMMAND_CLASS_VERSION_V2*
- COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2*
- COMMAND_CLASS_DEVICE_RESET_LOCALLY*
- COMMAND_CLASS_POWERLEVEL*
- COMMAND_CLASS_SECURITY
- COMMAND_CLASS_SECURITY_2
- COMMAND_CLASS_NOTIFICATION_V8*
- COMMAND_CLASS_CONFIGURATION_V2*
- COMMAND_CLASS_FIRMWARE_UPDATE_MD_V4*
- COMMAND_CLASS_SUPERVISION*

*Items marked an asterisk are secure command classes.

Troubleshooting

The table below lists the several steps involved when adding or removing the unit from the Z-Wave network.

Action/Status	Description	LED indication
No node ID Status	The unit has not been added to the Z-Wave network.	2-second on, 2-second off
Auto Inclusion	Inclusion starts immediately when power is applied for the first time. (This occurs only if no node ID is stored in the module, usually after Exclusion or after executing a Factory Reset).	
Manual Inclusion	1. Put the Z-Wave Controller into Inclusion mode.	
	2. Press the On/Off knob 3 times within 1.5 seconds to put the unit into Inclusion mode.	
Exclusion	1. Put the Z-Wave Controller into Exclusion mode.	
	2. Press the On/Off knob 3 times within 1.5 seconds to put the unit into Exclusion mode.	
Factory Reset (This procedure should only be used when the controller is inoperable.)	1. Press the On/Off knob 3 times within 1.5 seconds to put the unit into exclusion mode.	
	2. Within 1 second of step 1, press and hold the knob for 5 seconds.	
	3. Node ID is deleted. The device reverts to factory default state.	2-second on, 2-second off
※ Failure or success in including/excluding the ID can be viewed on the Z-Wave Controller.		

Note: If you are connecting this unit to a Z-wave Controller that utilizes the S2 security protocol, you may be asked to enter a 5 digit Device Specific Key (DSK) that is unique to each unit by your controller. This can be found in one of two places:
- on the QR code label on the back of the unit
- on the insert card inside the packaging

Table below lists typical problems encountered:

Symptom	Cause of Failure	Recommendation
The unit is not working and LED is always off even when knob is pressed	The unit is not plugged into the electrical outlet properly	Check power connections to the unit.
The unit's LED turns on but connected appliance does not turn on.	1. The connected appliance has its own power switch set to off.	1. Set the ON/OFF switch of the appliance itself to ON position.
	2. The appliance requires a separate	2. Appliances turned on/off by with

	remote control to turn.	remote control cannot be controlled by this On/Off plug module.
The module works if operated manually but cannot be controlled wirelessly by end devices in Group 2 mode.	1. Z-Wave Association process was not implemented. 2. Frequency interference 3. Out of range	1. Carry out Z-Wave Association. 2. Wait for a while to re-try 3. Move the device or module closer to each other.

Specification

Operating Voltage	AC100-120V, 50/60Hz
Maximum Load	1400W
Range	Up to 100 meters line of sight
Frequency Range	US: 908.42 MHz JP: 922.5MHz
FCC ID	FU5AN186
IC	23210-AN186

*** Specifications are subject to change without notice.**

Mobile of end product

Federal Communication Commission Interference Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Industry Canada statement:

This device complies with ISED's licence-exempt RSSs. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d' ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage

susceptible de provoquer un fonctionnement indésirable.

Radiation Exposure Statement:

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

WARNING:

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.
Contact your local government for information regarding the collection systems available.
If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.
When replacing old appliances with new ones, the retailer is legally obligated to take back your old appliance for disposal at least for free of charge.

A501112667R02