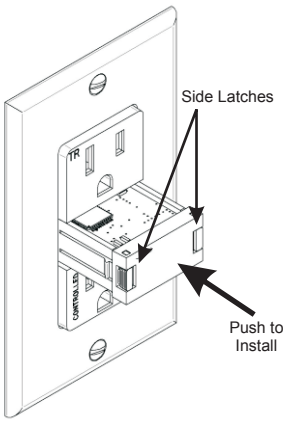
SWIDGET
POWER TO LIVE SMART

IMPORTANT SAFETY INSTRUCTIONS

Z-Wave Power Control Insert

Cat. No. ZW000RWA

MUST BE INSTALLED AND USED ONLY WITH AN APPROVED/CERTIFIED SWIDGET OUTLET. USE WITH ANY OTHER DEVICE IS PROHIBITED AND WILL VOID THE WARRANTY.



WARNING AND CAUTIONS:

- **WHILE NOT REQUIRED, IT IS RECOMMENDED TO AVOID ANY RISK OF SHOCK OR DEATH; TURN OFF POWER AT CIRCUIT BREAKER OR FUSE AND TEST THAT THE POWER IS OFF BEFORE INSTALLING OR REMOVING ANY INSERT.**
- Not for use to control medical or life support equipment.
- For INDOOR use only: 32-104F (0-40C).
- Do not use Z-Wave devices to control electric heaters or any other appliances which may present a hazardous condition due to unattended or unintentional or automatic power on control.
- Double check any external Z-Wave programming for accuracy before using them.
- Insert can only be installed in one orientation. Rear alignment pins prevent incorrect installation. Do not forcibly install an Insert.
- For reference, the controlled Swidget receptacle is marked on the face as “CONTROLLED”.
- Do not exceed the load rating for the Swidget outlet:
  - Resistive: 1800W
  - Motor: 0.5HP
  - Inductive: 8A@125VAC (PF0.4)
- Requires a certified Z-Wave hub for operation.
- This device complies with Z-Wave standard of open air, line of sight transmission. Actual performance in a home depends on the numbers of walls/ obstacles between the Insert and other Z-Wave devices/hubs.
- This device must be used in conjunction with an S2 Security Enabled Z-Wave Controller to fully utilize all implemented security functions.
- **Use with Swidget Outlet Model Number R1015S[ ][ ].**

DESCRIPTION:

The Swidget Configurable Smart Outlet with the Z-Wave Power Control Insert allows the user to control power to a receptacle (marked “CONTROLLED”) and monitor power (both receptacles independently) for devices plugged into the Swidget outlet. Z-Wave is a standardized mesh network protocol used by many devices and hubs. Swidget certification to this standard means compatibility with other Z-Wave certified devices or hubs. Please consult your Z-Wave controller/hub manufacturer for instructions on how to add a new Z-Wave device.This product can be operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers. All non-battery operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

FEATURES:

- One controlled AC receptacle (marked “CONTROLLED”) Remote ON/OFF control via external Z-Wave controller/hub
  - Requires 3rd party Z-Wave Controller/Hub
- Manual ON/OFF control via front panel push button
- One always ON AC receptacle
- Independent power monitoring of both AC receptacles
- Swidget Z-Wave Device detected as:
  - Meter (always ON receptacle)
  - Switch + Meter “CONTROLLED” receptacle

INSERT BUTTON ACTIONS

Less than 1 sec	No change	None
1 - 5 sec	Green ON OFF	Manual Outlet Toggle
5 - 10 sec	No change	None
10 - 15 sec	Blue ON	Network **ADD/REMOVE** Mode
15 - 20 sec	OFF	None
20 - 25 sec	Red ON	Device Local Reset (Factory Reset)
More than 25 sec	No change	None - button press ignored

LED INDICATOR CHART

ON	OFF	OFF	Outlet ON, Radio Connected
OFF	OFF	OFF	Outlet OFF, Radio Connected

NETWORK ADD/REMOVE MODE

LED COLOR CODE			DESCRIPTION
Green	Blue	Red	
OFF	ON	OFF	Entered **ADD/REMOVE** Mode Mode enabled
OFF	Flash	OFF	Connecting to network
OFF	Off→On	Flash	**ADD/REMOVE successful** Blue to OFF when complete
Flash	OFF	OFF	**POWER READING ZERO** Green flash for >60 sec then off
OFF	OFF	Flash	**ADD/REMOVE failed** after 60 sec Red flashes for 5 sec

DEVICE RESET MODE

LED COLOR CODE			DESCRIPTION
Green	Blue	Red	
Cycle	Cycle	Cycle	**DEVICE LOCAL RESET is in progress**
OFF	OFF	OFF	**Network Connection FAIL.** Red will flash

INSTALLATION:

1. TO AVOID SHOCK OR DEATH, IT IS RECOMMENDED TO TURN OFF POWER AT CIRCUIT BREAKER OR FUSE AND TEST THAT THE POWER IS OFF BEFORE INSTALLING OR REMOVING INSERT

2. This device is to be installed in a Swidget outlet ONLY.
3. Orient the Insert to line up with the pins in the Outlet cavity. NOTE: alignment pins will prevent incorrect installation.
4. Push Insert into the Outlet cavity until the two side latches engage.
5. Re-enable power to Outlet.
6. a. For a first time installation or after Device Local Reset, the Insert requires network ADD pairing/joining (see below).
   b. For Inserts being moved, the Insert will power up with the previous location settings. For any required adjustments, consult the manual of the connecting Z-Wave controller/hub.

OPERATION:

MANUAL OUTLET SWITCHING - Works with radio connection only

1. Lightly press Insert push button and hold for 1-5 seconds then release. Outlet will toggle state.

Z-WAVE NETWORK ADD

1. Follow network ADD steps for your Z-Wave controller/hub.
2. **IMPORTANT**- Nothing plugged into either receptacle during NETWORK ADD as this will interfere with POWER READING ZERO operations.
3. Lightly press Insert push button and hold for 10-15 seconds then release (LED turns solid blue).
   a. LED will flash blue to indicate ADD mode is enabled. No manual or external Z-Wave operations are possible during this activity.
   b. LED will flash green to indicate POWER READING ZERO running. Process will take >60sec and will stop flashing when done.
4. Insert will remain in ADD mode for up to 60sec. If successful, LED will be solid blue for 5 sec then return to the normal operational state. IF FAILED to connect after 60sec, red LED will flash indicating no or failed network ADD. If necessary, consult your Z-Wave controller/hub manual and retry.

Z-WAVE NETWORK REMOVE

1. Follow network REMOVE steps for your Z-Wave controller/hub.
2. Lightly press Insert push button and hold for 10-15 seconds then release. LED will flash blue to indicate REMOVE mode is enabled. No manual or external Z-Wave operations are possible during this activity.
3. Insert will remain in REMOVE mode for up to 60sec. If successful, LED will be solid blue for 5 sec then return to the normal operational state. IF FAILED to connect after 60sec, red LED will flash indicating no or failed network REMOVE. If necessary, consult your Z-Wave controller/hub manual and re-try.

Z-WAVE LOCAL DEVICE RESET (FACTORY RESET)- *Should only be used when the original controller is inoperable or has been replaced.*

1. Lightly press Insert push button and hold for 20-25 seconds then release. LED will cycle green/blue/red until complete.

PROBLEMS or QUESTIONS:

If you have any problems or questions with the Swidget Outlet or Insert, contact our tech support team:
support@swidget.com

For the most up-to-date product support, accessories, electronic (PDF) format manuals and more, visit **www.swidget.com**.
For additional Z-Wave network technical information, see Swidget Z-Wave Power Control Insert Technical Notes on the swidget website.
No user servicable parts in this unit.

If you have problems with the connecting hub, please consult the manufacturer for the appropriate support

FCC COMPLIANCE STATEMENT:

This device complies with part 15 of the FCC and Industry Canada license-exempt RSS standard(s). 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.

FCC NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user’s authority to operate the equipment.

NOTE: 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 or more 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.

Important note: To comply with the FCC RF exposure compliance requirements, no change to the antenna or the device is permitted. Any change to the antenna or the device could result in the device exceeding the RF exposure requirements and void user’s authority to operate the device.

SAVE THESE INSTRUCTIONS

SWIDGET
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Swidget Z-Wave Power Control Insert Technical Notes

1. PURPOSE

This document provides details for the behavior of the Swidget Z-Wave Power Control Insert in a Z-Wave network.

The following notes apply to Cat. No.ZW000RWA.

2. REFERENCES / DOCUMENTS

N/A

3. COMMAND CLASS BEHAVIORS

The Swidget Z-Wave Power Control Insert can be operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers. All non-battery-operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network. The Swidget Z-Wave insert is mains powered, and therefore will act as a repeater when mains power is available.

3.1 Supported Command Classes

When the Swidget Z-Wave Plus Insert is included into an S2 capable Z-Wave network, it will request to join as an S2 unauthenticated device.

This device must be used in conjunction with an S2 Security Enabled Z-Wave Controller to fully utilize all implemented security functions. If included by a non-S2 enabled Z-Wave controller, the device will still provide access to all functionality not involved in providing S2 Security support.

The following table (Table 1) lists all the command classes found in the Node Info Frame (NIF) when included in a Non-Secure Network:

Table 1: NIF Contents when Included in Non-Secure Network

Command Class	Command Class Byte	Version
Z-Wave Plus Info	0x5E	2
Version	0x86	2
Association	0x85	2
Association Group Information	0x59	1
Manufacturer Specific	0x72	2
Binary Switch	0x25	1
Powerlevel	0x73	1
Meter	0x32	2
Security 2	0x9F	2
Transport Service	0x55	2
Supervision	0x6C	1
CRC-16 Encapsulation	0x56	1
Application Status	0x22	1
Device Reset Locally	0x5A	1
Multi-Channel	0x60	4
Multi-Channel Association	0x8E	3

The following table (Table 2) lists all the command classes found in the Node Info Frame (NIF) when included in a Secure Network:

Table 2: NIF Contents when Included in Secure S2 Network

Command Class	Command Class Byte	Version
Z-Wave Plus Info	0x5E	2
Security 2	0x9F	2
Transport Service	0x55	2
Supervision	0x6C	1

The following table (Table 3) lists all the command classes reported in the Security S2 Commands Supported Report:

Table 3: Command Classes Included in Security S2 Commands Supported Report

Command Class	Command Class Byte	Version
Version	0x86	2
Association	0x85	2
Association Group Information	0x59	1
Manufacturer Specific	0x72	2
Binary Switch	0x25	1
Powerlevel	0x73	1
Meter	0x32	2
CRC-16 Encapsulation	0x56	1
Application Status	0x22	1
Device Reset Locally	0x5A	1
Multi-Channel	0x60	4
Multi-Channel Association	0x8E	3

3.2 Multi-Channel Command Class Support

The Swidget Z-Wave Plus Insert root device is a GENERIC_TYPE_SWITCH_BINARY / SPECIFIC_TYPE_POWER_SWITCH_BINARY device and supports all the command classes listed in section 3.1.

Endpoint 1 must be identical to the root node with respect to device functionality, and so it also appears as a GENERIC_TYPE_SWITCH_BINARY / SPECIFIC_TYPE_POWER_SWITCH_BINARY device, and supports the following subset of command classes:

Endpoint 1 Command Class	Version	Required Security Class
Z-Wave Plus Info	2	None
Association	2	Highest Granted Security Class
Association Group Information	1	Highest Granted Security Class
Multi-Channel Association	3	Highest Granted Security Class
Binary Switch	1	Highest Granted Security Class
Basic	1	Highest Granted Security Class
Meter	2	Highest Granted Security Class
Security 2	2	None
Supervision	1	None

Endpoint 2 appears as a GENERIC_TYPE_METER / SPECIFIC_TYPE_SIMPLE_METER device, and supports the following command classes:

Endpoint 2 Command Class	Version	Required Security Class
Z-Wave Plus Info	2	None
Association	2	Highest Granted Security Class
Association Group Information	1	Highest Granted Security Class
Multi-Channel Association	3	Highest Granted Security Class
Meter	2	Highest Granted Security Class
Security 2	2	None
Supervision	1	None

3.3 Basic Command Class Support

In a non-multi-channel environment, the Basic Command Class functions are mapped to the Binary Switch Command Class functions.

In a multi-channel environment, the Basic Command Class functions are mapped to the Binary Switch Command Class functions for Endpoint 1 (the Root node).

For Endpoint 2, no mappings exist for the Basic Command Class, so any Basic Commands received by Endpoint 2 will be ignored, and no report will be generated.

3.4 Application Status Behaviour

The Swidget outlet has a built-in hardware power-switching safety feature that limits the toggling of the switch to a maximum frequency of approximately 1 state change per second.

If consecutive BINARY_SWITCH_SET or BASIC_SET Commands are received at a rate faster than 1 per second (approx.), the module will return an APPLICATION_STATUS: BUSY report to the requesting node, and the SET operation will be ignored.

When the Swidget Z-Wave Power Control Insert is included in a network, the insert module will perform a synchronization and calibration operation with the outlet metering hardware which takes approximately 2 minutes. If BINARY_SWITCH_SET or BASIC_SET Commands are received during this synchronization period, the module will return an APPLICATION_STATUS: BUSY report to the requesting node, and the SET operation will be ignored.

3.4 Meter information

The Swidget Z-Wave Power Control Insert supports two separate METER_V2 devices. One meter is associated with the controlled outlet, and is accessible through the root, and through Endpoint 1 via Multi-Channel operations. The second meter is associated with the always-on, unswitched outlet, and is accessible only through Endpoint 2 Multi-Channel operations.

Both meters have identical capabilities. When queried with a METER_SUPPORTED_GET command, either will return the following information in the METER_SUPPORTED_REPORT:

Report Field	Value	Description
Meter Reset	0	Reset is NOT supported
Meter Type	1	Electric meter
Scale Supported	4	Watts

Both meters generate the same type of METER_REPORT_V2 reports:

Report Field	Value	Description
Rate Type	0x01	Import (consumed)
Meter Type	0x01	Electric meter
Precision	0x02	Number of decimal places in meter value
Scale	0x02	Watts
Size	0x04	4-byte report
Meter Value Byte 1 (MSB)	0xXX	MSB of 32-bit meter value
Meter Value Byte 2	0xXX	Meter value data
Meter Value Byte 3	0xXX	Meter value data
Meter Value Byte 4 (LSB)	0xXX	LSB of 32-bit meter value
Delta Time 1	0x00	No previous meter data included
Delta Time 2	0x00	No previous meter data included

NOTE: Optional "Previous Meter Value" field data is not used, and not included in the meter reports.

3.6 Association Information

The Swidget Z-Wave Power Control Insert supports Group 1 ("Lifeline") associations. One Lifeline association is supported.

The root device will send a DEVICE RESET LOCALLY report to the lifeline in response to a user-initiated local reset of the device prior to performing the local reset activities.

Creating a regular (non-Multi-Channel) Association with the Lifeline will cause the device to send an un-encapsulated METER_V2 REPORT from the root device to the Lifeline every minute.

Creating a Multi-Channel Association with the Lifeline will cause the device to send *two* Multi-Channel encapsulated METER_V2 REPORTs to the Lifeline every minute. One will be sent from Endpoint 1 (the controlled outlet), and one will be sent from Endpoint 2 (the always-on outlet).

4. User-Initiated Device and Network Activities

4.1 Manual Outlet On/Off Functionality

If the device is included in a Z-Wave network, the LED will operate to reflect the status of the controllable outlet. If the controllable outlet is enabled (switched 'ON'), the LED will be illuminated solid green. If the controllable outlet is disabled (switched 'OFF'), the LED will not be illuminated green.

When in the network-connected state, the user may change the state of the local output with a momentary press of the Swidget push button. Lightly press the push button on the Swidget Z-Wave Insert and hold for at least 1 second, but not longer than 5 seconds. When the button press is accepted, the state of the switched outlet will change, and the LED green state will change to match it.

A press of less than one full second or of longer than 5 seconds will be ignored by the Swidget insert, and no action will be taken.

Note: When connected to the network, a press of 10 seconds or more will initiate a Network Remove operation (see section 4.3). If the user exceeds the momentary press period by 10 seconds or more, they may continue to hold the push button until the device passes through the network remove AND device reset periods (approximately 30 seconds), after which no action will be taken when the button is released.

Note: Immediately following a network add, after indicating the operation success with a solid blue LED, the LED will then begin to flash green to indicate the device is in the insert-outlet synchronization period. When synchronization is completed (approximately 2 minutes later), the switch outlet will be placed in its default 'ON' state, and the LED will be solid green to reflect the outlet state. During this period, momentary button presses will have NO EFFECT on the outlet switch or the LED state.

4.2 Z-Wave Network Add

NOTE: Before beginning the network add procedure, ensure there are no devices plugged into either receptacle outlet. After the device has been successfully added to the network, DO NOT plug anything into either receptacle outlet for at least 2 minutes to allow the module time to synchronize with the outlet metering hardware, otherwise the accuracy of your meter readings may be adversely affected.

1. Follow network ADD steps for your Z-Wave controller/hub to prepare the network to accept a device addition.
2. Lightly press the push button on the Swidget Z-Wave Insert and hold for 10-15 seconds until the LED illuminates solid blue, then release the button. The LED will flash blue to indicate ADD mode is enabled. No manual or external Z-Wave operations are possible during this activity.
3. The Swidget Z-Wave Insert will remain in ADD mode for up to 60 seconds. If the device is successfully added to the Z-Wave network, the LED will be solid blue for 5 seconds then return to the normal operational state; LED will be solid green if switch is ON (default), LED will not be illuminated if switch is OFF. If the device fails to be successfully added to the network after 60 seconds, the red LED will begin to flash. If necessary, consult your Z-Wave controller/hub manual and re-try.
4. Please see section 4.4 on how to perform a local device reset if multiple remove attempts fail.

4.3 Z-Wave Network Remove

1. Follow network REMOVE steps for your Z-Wave controller/hub.
2. Lightly press the push button on the Swidget Z-Wave Insert and hold for approximately 10 seconds until the LED illuminates solid blue, then release the button. The LED will flash blue to indicate REMOVE mode is enabled.
3. The Swidget Z-Wave Insert will remain in REMOVE mode for up to 60 seconds. If the device is successfully removed from the Z-Wave network, the LED will be solid blue for 5 seconds then return to the normal operational state. If the device fails to be successfully removed from the network after 60 seconds, the red LED will begin to flash. If necessary, consult your Z-Wave controller/hub manual and re-try.
4. Please see section 4.4 on how to perform a local device reset if multiple remove attempts fail.

4.4 Factory Default Local Reset

To perform a local device reset, lightly press and hold the push button on the Swidget Z-Wave Insert for approximately 20 seconds until the LED turns SOLID RED, and then release.

- After 10 seconds the LED will illuminate SOLID BLUE; indicating user is passing through network add/remove period.
- After 15 seconds elapsed hold time, the LED will turn off
- After 20 seconds elapsed hold time, the LED will turn SOLID RED; indicating that the user has entered the device reset period. Releasing the button during this period triggers the Factory Default Local Reset operations.

When the Reset operation is in progress, the LED will progress from green to blue to red repeatedly until the reset process is complete, after which the LED will be turned OFF.

If the user continues to hold the button, after 25 seconds elapse, the user will leave the device reset period, the LED will turn OFF, and no actions will be taken when the button is released.

NOTE: The local reset procedure should only be used when the original controller is inoperable or has been replaced, or if Network Add or Network Remove operations have failed after a few attempts.

Resetting to factory default settings will reset the Swidget Z-Wave Power Control Insert network parameters to the default removed state and delete the Lifeline Association if it exists.