Dimmer Switch

(ZWA037-A)

Engineering Specifications

This product can be operated in any Z-Wave™ network with other Z-Wave Plus™ 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. Each module is designed to act as a repeater, which will re-transmit a radio frequency (RF) signal by routing the signal around obstacles and radio dead spots to ensure that the signal is received at its intended destination. ZWA037-A is a security enabled Z-Wave Plus™ device. A security Enabled Z-Wave Plus™ Controller must be used in order to fully utilize the product.

1 Library and Command Classes

1.1 Embedded SDK

v 7.13.9

1.2 Device Type

Generic Type: Switch Multilevel
Specific Type: Not Used

1.3 Role Type

Always On Slave (AOS): ROLE_TYPE_SLAVE_ALWAYS_ON (0x05)

1.4 Command Class

Command Class Name	Version	Required Security Class
Z-Wave Plus Info	V2	none
Security 2	V1	none
Supervision	V1	none
Transport Service	V2	none
Association	V3	highest granted
Association Group Information	V3	highest granted
Multi-Channel Association	V4	highest granted
Version	V3	highest granted
Manufacturer Specific	V2	highest granted
Device Reset Locally	V1	highest granted
Power Level	V1	highest granted
Indicator	V3	highest granted
Firmware Update Meta Data	V5	highest granted
Configuration	V4	highest granted
Central Scene	V3	highest granted

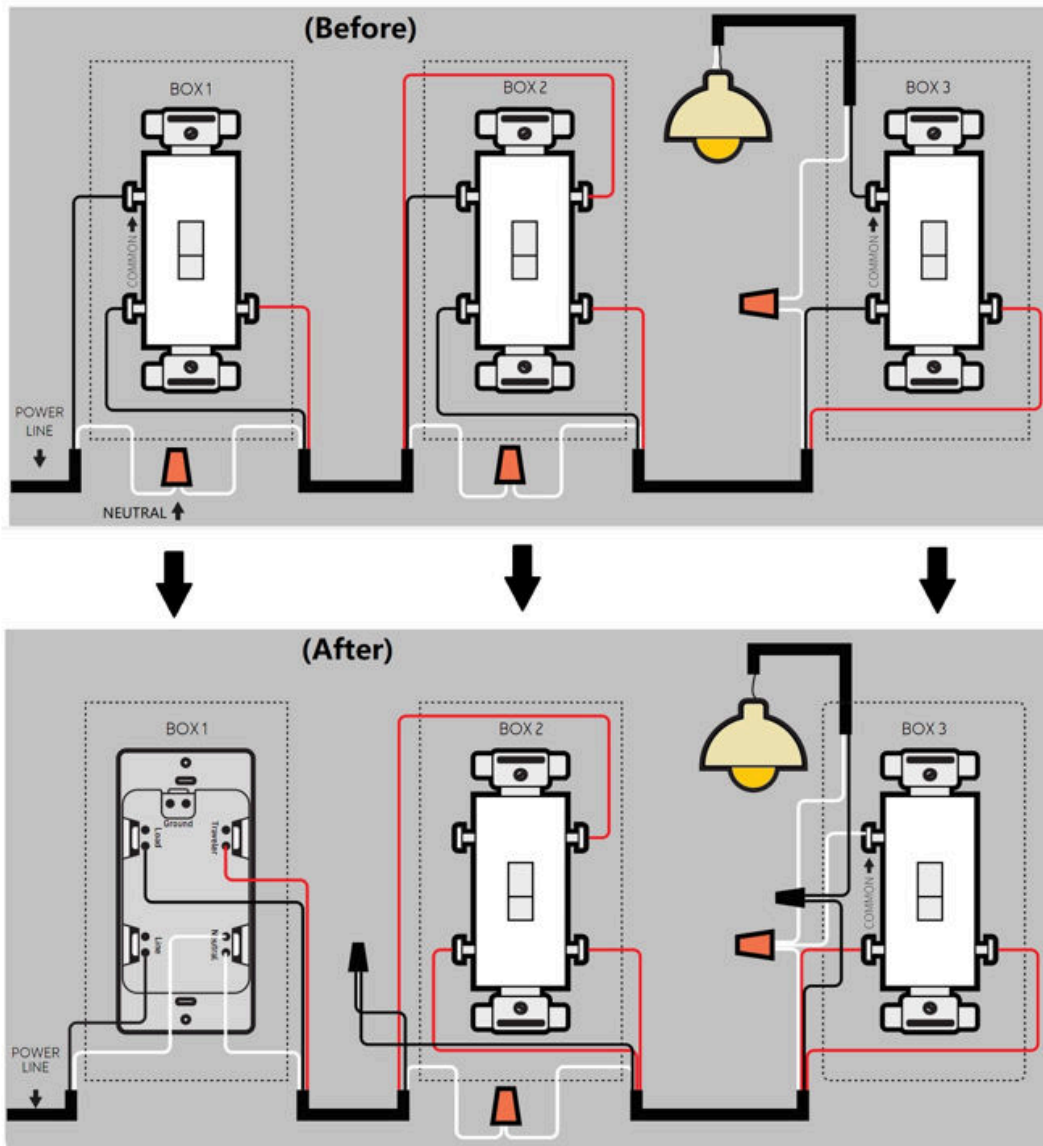| Switch Multilevel	V4	highest granted
Scene Activation	V1	highest granted
Scene Actuator Configuration	V1	highest granted

2 Installation wiring diagram

2.1 Single pole wiring
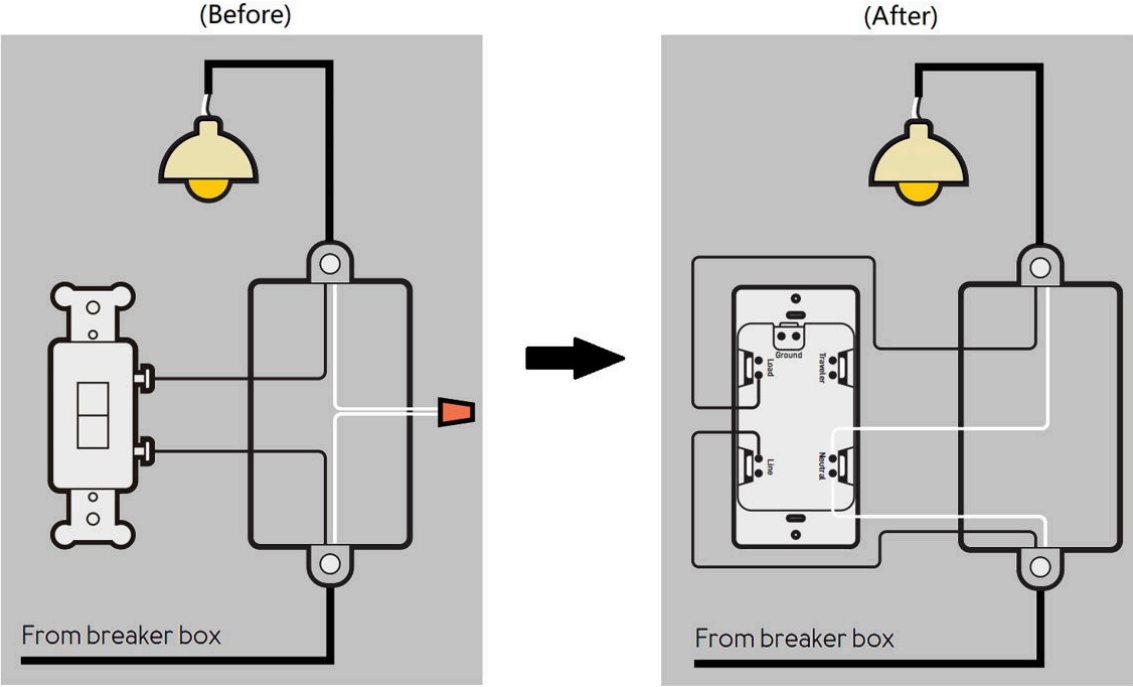
2.2 3-Way wiring
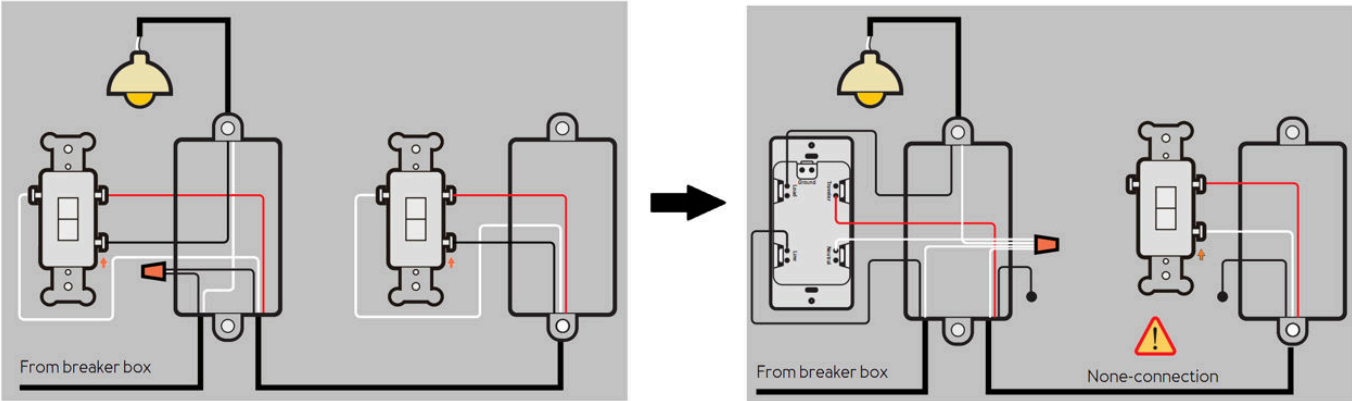
2.3 4-Way wiring

3 Z-Wave™ Network Operation

Functions	Action Button		Description
Inclusion	1x tap	Out of network	Send NIF for network pairing/ inclusion (white LED quick flashes). If pairing is successful, the LED will turn to solid green for 2s, then deactivates.
		In network	Trigger to send Central Scene 1x tap scene. ON/OFF control of output load.
Central Scene	2x tap	In network	Trigger to send Central Scene 2x tap scene.
Exclusion	3x tap	In network	Send NIF for network unpairing/ exclusion (purple LED flashes).
		Out of network	Trigger to send Central Scene 3x tap scene.

Toggle parameter 86	4x tap	Top button	Toggles parameter 86 from value 0 - 100%.
Toggle parameter 84	5x tap		Toggles parameter 84 from value 0 - 9.
Toggle parameter 85	6x tap		Toggles parameter 85 from value 0 - 9
Toggle parameter 83	7x tap		Toggles Parameter 83 from values 0, 1, 2.
Set the max brightness level	8x tap + hold on 8th, then release.		Sets the default max brightness level on Parameter 132, when released, saves set brightness as the max brightness level. Starts ramp up from current output level. Ramps speed at 5 seconds to 100%
Toggle parameter 110	9x tap		Toggle parameter 110 from value 0, 1, 2
Toggle parameter 121	4x tap	Bottom button	Toggle parameter 121 from value 0, 1, 2, 3.
Toggle parameter 122	5x tap		Toggle parameter 122 from value 0, 1, 2.
Toggle parameter 20	6x tap		Toggle parameter 20 from value 0, 1, 2
Set the min brightness level	8x tap + hold on 8th, then release.		Sets the default minimum brightness level on Parameter 131, when released, saves set brightness as the minimum brightness level. Starts ramp down from current output level. Ramps speed at 5 seconds to 100%.
Toggle parameter 111	9x tap		Toggle parameter 111 from value 0, 1, 2
Toggle parameter 120	10x tap		Toggle parameter 120 from value 0, 1, 2
Central Scene	Press and hold for 1 - 15s		Trigger to send Central Scene hold scene. Dim control output load.
Central Scene	Release		Trigger to send Central Scene release scene. Stop dim control output load.
Nothing	Press and hold for 16 – 19s		Flash red LED rapidly.
Factory reset	Press and hold for 20s		Manual Factory reset -> Send gateway RESET DEVICE LOCALLY **Note:** When the LED turns into Blue, then release the button, the LED will be solid Blue for 2 seconds, during the 2 seconds, tap the button again, it will start the factory reset process, then return to factory reset LED status.

1) This device must be used in conjunction with a Security 2 Enabled Z-Wave Controller in order to fully utilize all implemented functions.

3 Association Groups

The device supports 9 association groups and every group supports max 5 associated nodes.
Group 1 is lifeline group, all nodes associated in this group will receive the messages sent by device through lifeline.
Group 2-9 are controlling groups.

The Command Class supported by each association group is shown in the table below:

ID	Name	Node Count	Profile	Function
1	Lifeline	5	General: Lifeline	**Device Reset Locally Notification:** Issued when Factory Reset is performed. **Indicator Report:** Issued when included successfully. **Switch Multilevel Report:** Issued when output level is changed. (Determined by Parameter 80). **Basic Report:** Issued when output level is changed (Determined by Parameter80). **Central Scene Notification:** Issued when button press or hold or release. (Determined by Parameter 121).
2	Top button set ON/OFF	5	Control: Key 1	**Basic Set or Switch Binary Set:** Issued when Top button press. (The command class is determined by Parameter 82)
3	Top button multilevel set	5	Control: Key 1	**Switch Multilevel Set:** Issued when Top button press or hold and release.
4	Bottom button set ON/OFF	5	Control: Key 2	**Basic Set or Switch Binary Set:** Issued when Bottom button press. (The command class is determined by Parameter 82)
5	Bottom button multilevel set	5	Control: Key 2	**Switch Multilevel Set:** Issued when Bottom button press or hold and release.
6	External switch set ON/OFF	5	Control: Key 3	**Basic Set or Switch Binary Set:** Issued when External Switch press. (The command class is determined by Parameter 82).
7	External switch multilevel set	5	Control: Key 3	**Switch Multilevel Set:** Issued when External Switch press or hold and release.
8	Top and bottom button set ON/OFF	5	Control: Key 4	**Basic Set or Switch Binary Set:** Issued when Top/ Bottom button press. (The command class is determined by Parameter 82).
9	Top and bottom button set multilevel set	5	Control: Key 4	**Switch Multilevel Set:** Issued when Top/Bottom button press or hold and release.

4 Basic Command Map

- Basic CC is mapped to Switch Multilevel CC.
- Basic Set is mapped to Switch Multilevel Set.

5 Indicator Command Class

Indicator ID	Property ID
0x50 (NODE IDENTIFY)	0x03(ON OFF PERIOD)

0x50 (NODE IDENTIFY)	0x04(ON OFF CYCLES)
0x50 (NODE IDENTIFY)	0x05(ONE TIME ON OFF PERIOD)

6 Manufacturer Information

Parameter	Value
Manufacturer ID 1	0x03
Manufacturer ID 2	0x71
Product Type ID 1	0x01
Product Type ID 2	0x03
Product ID 1	0x00
Product ID 2	0x25

7 Configuration

User can change the default settings by the below configuration parameters. After device reset, all these parameters will be set to their default values.

Number	Name	Information	Size	MIN	MAX	Default	Description
20	Power Restore	Status after power failure.	1	0	2	2	0 - return to OFF 1 - return to ON 2 - returns to last known state when repowered
40	Auto Turn Off Timer	Timer that auto turn off once turned on.	4	0	65535	0	0 - disabled 1 - Auto turn off after 1s once turned on ... 65535 - Auto turn off after 65535s once turned on
41	Auto Turn On Timer	Timer that auto turn on once turned off.	4	0	65535	0	0 - disabled 1 - Auto turn on after 1s once turned off ... 65535 - Auto turn on after 65535s once turned off
80	Instant Status Report	The command for status report.	1	0	2	2	0 - Nothing 1 - Basic Report 2 - Binary Switch Report
82	Association Control Settings	Setting command for association group.	1	1	2	1	1 - Basic Set 2- Binary Switch SET
83	Led Indicator Settings	Select the indicator function for output.	1	0	2	2	0 - disable completely 1 - Momentary blink 2 - LED follows status of output
84	Led Indicator Color For Output	Select the indicator color for output.	1	0	9	9	0 - Disabled 1 - Red 2 - Blue 3- Green 4- Pink 5- Cyan 6- Purple 7- Orange 8- Yellow 9- White
85	Led Indicator Color For	Select the indicator color for scene.	1	0	9	2	0 - Disabled 1 - Red

			1	0	100	60	
	Scene						2 - Blue 3- Green 4- Pink 5- Cyan 6- Purple 7- Orange 8- Yellow 9- White
86	Led Brightness	Setting the brightness of indicator.	1	0	100	60	0 - Disable 1 - 1% ... 60 - 60% ... 100 - 100%
110	Single Tap behavior	Select behavior when single tap.	1	0	3	0	0 - Last brightness level 1- Custom value from Param 133 2- Max brightness from Param 132 3- Full brightness at 100%
111	Double Tap behavior	Select behavior when double tap.	1	0	3	0	0 - Full brightness at 99 ... 1- Custom value from Param 133 2- Max brightness from Param 132 3- disabled
119	External Switch Scene	Enable or disable the scene function of external(3-way) switch.	1	0	1	1	0 - Disable 1 - enable
120	External Switch Type	Select the external (3-way) switch's type.	1	0	3	1	0 - toggle on or off only 1 - toggle switch/1x to toggle /2x use Param 132 or 133 /3x toggle dimmer loop ramp -> toggle once more to stop dim 2 - momentary switch / 1x to toggle / 2x user Param 132 or 133/ Press and hold to dim up and down 3 - momentary switch / 1x quick toggle / 2x user Param 132 or 133 / Press and hold to dim up and down (but after a double click to full brightness, then press and hold will always go down instead of increasing)
121	Output Control	Enable or disable output.	1	0	3	3	0 - disable completely 1 - enable local control 2 - enable central scene 3 - enable local and central scene
122	Button Function	Select the paddle button functions.	1	0	2	0	0 - up/ON, down/OFF 1 - down/ON, up/OFF 2 - toggle (up or down are the same)
123	Report Behavior	Select behavior for report and indicator when output is disable.	1	0	1	0	0 - report on/off status and change LED indicator when parameter 121 is set to 0 or 2 1 - Don't report on/off status is pressed and parameter 121 is set to 0 or 2
125	Ramp Rate for Tap and Hub control	Setting ramp rate when tap to on off or controlled by HUB.	1	0	99	2	0 - instant... 2 - Ramp Rate 2s ... 99 - Ramp Rate 99s
126	Ramp Rate for press and hold	Setting ramp rate when press and hold the paddle.	1	1	99	4	1 - Ramp Rate 1s ... 4 - Ramp Rate 4s ... 99 - Ramp Rate 99s
131	Minimum most dim	Setting the minimum value of dimmer.	1	0	99	0	0 - Disable 1 - Minimum value is 1

							...
	setting						99 - Minimum value is 99
132	Maximum most dim setting	Setting the maximum value of dimmer.	1	0	100	100	0 - Disable 1 - Maximum value is 1 ... 100 - Maximum value is 100
133	Custom brightness	Setting user custom brightness.	1	0	99	0	0 - Disable 1 - custom brightness level is 1 ... 99 - custom brightness level is 99

8 Security Network

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.

This device supports security levels are listed in below table:

Security Levels	Support (Yes/No)
SECURITY_KEY_S0	No
SECURITY_KEY_S2_UNAUTHENTICATED	Yes
SECURITY_KEY_S2_AUTHENTICATED	Yes

9 SmartStart

SmartStart enabled products can be added into a Z-Wave network by scanning the Z-Wave QR Code present on the product with a controller providing SmartStart inclusion. No further action is required and the SmartStart product will be added automatically within 10 minutes of being switched on in the network vicinity. You can find the QR code on the bottom of the product, like this:

PIN: XXXXX

And the DSK information will be shown like this:

DSK: XXXXX-XXXXX-XXXXX-XXXXX-XXXXX-XXXXX-XXXXX-XXXXX

10 Specifications

Power Supply	AC120V, 60Hz
Max load	150W LED/CFL, 500W incandescent.
Min load	5W LED
Communication Frequency	908.40MHz, 916.00MHz (US)
Communication Range	Up to 70m+ indoors (line of sight) or 150m outdoors.
Communication Certification	Z-Wave Plus v2 with SmartStart

Operational Temperature	0 - 40℃ / 32 - 104℉
Operating Humidity	8% to 80%