

Z-Wave Plus AUX Switch Engineering Specifications



V1.2

Version History

NO.	Version	Date	User	Description
1	V1.0	2020.09.27	Eric	Created
2	V1.1	2020.12.23	Eric	1. Add dim up/dim down description for multilevel start level change in section 5.2 & 5.3; 2. Modify the button actions for scene control in section 6.4; 3. Update configuration table by removing unnecessary items in section 6.5; 4. Update command version in section 4.2; 5. Add Short press 2 times action in section 6.2; 6. Redescribe the LED behavior for reset operation in section 5.4.
3	V1.2	2021.01.09	Eric	1. Update Required Security Class in section 4.2. 2. Add Indicator Report in Lifeline Group. 3. Update [Altering capability] value to false.

The AUX Switch is a Wall Controller device based on Z-Wave™ slave library of V7.13.06. This AUX Switch integrated Z-Wave communication module to connect with Z-Wave gateway.

The AUX Switch 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.

The AUX Switch is a security Z-Wave device (S2), so a security enabled controller is needed for take full advantage of all functionality for the AUX Switch.

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.

Features:

- LED indicates the working status.
- Supporting repeater role.

1 Hardware Specifications

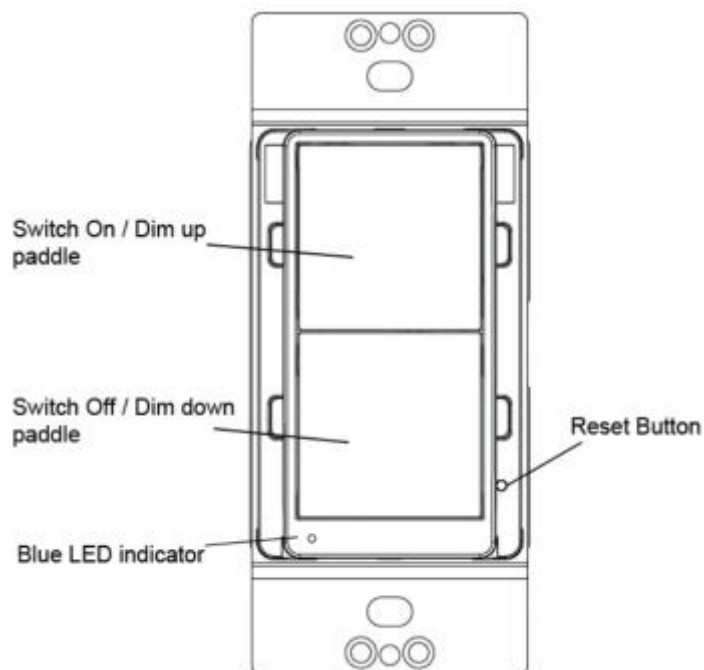
Wireless Protocol	Z-Wave
Radio Frequency	908.42MHz(US)
Communication Distance	40m(LOS)
Modulation Mode	FSK(BFSK/GFSK)
Voltage(V)	120V +/-10%, 60Hz
Dimensions(mm)	103mm*43mm*44.5mm

2 Z-Wave Specifications

SDK Version	7.13.06
SDK Library	libZWaveSlave
Explorer Frame Support	Yes
Routing	Yes
SmartStart	Yes
Device Type	Central Scene
Basic Device Class	BASIC_TYPE_ROUTING_SLAVE
Generic Device Class	GENERIC_TYPE_WALL_CONTROLLER
Specific Device Class	SPECIFIC_TYPE_NOT_USED

Role Type	Always On Slave (AOS)
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3 Familiarize yourself with AUX Switch



4 Security and non-Security features of AUX Switch

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.

When a node includes into a S2 Z-Wave network, the node supports S2 unauthenticated class, S2 authenticated and so do the supported CCs.

4.1 Supported Security Levels

- SECURITY_KEY_S2_AUTHENTICATED_BIT
- SECURITY_KEY_S2_UNAUTHENTICATED_BIT

4.2 Commands List

Supported Command Classes	Version	Required Security Class
COMMAND_CLASS_ZWAVEPLUS_INFO_V2	2	None
COMMAND_CLASS_TRANSPORT_SERVICE_V2	2	None
COMMAND_CLASS_SECURITY_2_V1	1	None
COMMAND_CLASS_SUPERVISION_V1	1	None
COMMAND_CLASS_APPLICATION_STATUS_V1	1	None

COMMAND_CLASS_CENTRAL_SCENE_V3	3	S2 Authenticated/Unauthenticated
COMMAND_CLASS_CONFIGURATION_V4	4	S2 Authenticated/Unauthenticated
COMMAND_CLASS_ASSOCIATION_V2	2	S2 Authenticated/Unauthenticated
COMMAND_CLASS_ASSOCIATION_GRP_INFO_V3	3	S2 Authenticated/Unauthenticated
COMMAND_CLASS_VERSION_V3	3	S2 Authenticated/Unauthenticated
COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2	2	S2 Authenticated/Unauthenticated
COMMAND_CLASS_DEVICE_RESET_LOCALLY_V1	1	S2 Authenticated/Unauthenticated
COMMAND_CLASS_POWERLEVEL_V1	1	S2 Authenticated/Unauthenticated
COMMAND_CLASS_FIRMWARE_UPDATE_MD_V5	5	S2 Authenticated/Unauthenticated
COMMAND_CLASS_INDICATOR_V3	3	S2 Authenticated/Unauthenticated
COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V3	3	S2 Authenticated/Unauthenticated
COMMAND_CLASS_PROTECTION_V2	2	S2 Authenticated/Unauthenticated

5 All functions of each trigger

5.1 SmartStart

Trigger	Description
PowerOn	AUX Switch is not on the Z-Wave network: 1. The AUX Switch led will slow blink 3 minutes. 2. Add the AUX Switch into the Z-Wave network via SmartStart (SmartStart Inclusion) Add the AUX Switch DSK into the primary controller SmartStart Provisioning List (If your controller does not support SmartStart inclusion, please refer to the manual for your controller for non-SmartStart inclusion.). a) Power cycle once for Switch. b) The AUX Switch will send “Explorer Auto inclusion” frame to start SmartStart inclusion. c) Wait a moment, the AUX Switch should be added to the controller. Then the AUX Switch led will keep on 1 minute when it has been included into the network. Otherwise, the Switch led will slow blink 3 minutes. In which case you need to repeat the process from step a. Note: The AUX Switch has a DSK string, you can key in first five digit to increment SmartStart process, or you can scan QR code. The QR

	code can be found on the Switch. Ex: DSK: <u>65286</u>-19008-32952-20593-44872-18102-41266-46651. The AUX Switch will start SmartStart inclusion when it is removed from a Z-Wave network. Switch is on the Z-Wave network: 1. The AUX Switch led will keep on 1 minute. 2. The AUX Switch will send INIF.
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5.2 ON Button

ON Button Trigger	Description
Press once	Send Basic Set 0xFF to group 2 Send Multilevel Set 0xFF to group 3 (Duration is 0xFF)
Short press 2 times	Send Basic Set 0x63 to group 2 Send Multilevel Set 0x63 to group 3 (Duration is 0x00)
Short press 3 times (within 1.5second)	AUX Switch is not on the Z-Wave network: 1. The AUX Switch led will fast blink, and send node info frame. 2. Add the AUX Switch into the Z-Wave network (Manual Inclusion): a) Set the Z-Wave network main controller into inclusion mode. b) Short press 3 times ON Button, the AUX Switch led will fast blink. c) Wait a moment, the AUX Switch should be added to the controller. Then the AUX Switch led will keep on 1 minute when it has been included into the network. Otherwise, the AUX Switch led will slow blink 3 minutes. In which case you need to repeat the process from step a. Normal mode – AUX Switch is on the Z-Wave network: 1. The AUX Switch led will fast blink, and send node info frame. 2. Remove the AUX Switch from a Z-Wave network (Manual Exclusion): a) Assuming AUX Switch was added to controller and was power on. b) Set the Z-Wave network main controller into removing mode. c) Short press 3 times ON Button, the AUX Switch led will fast blink. d) Wait a moment, and then the AUX Switch led will slow blink 3 minutes when it has been removed from the network. Otherwise, the AUX Switch led will keep on 1 minute. In which case you need to repeat the process from step b.
Press and Hold: >1s	Send switch multilevel start level change (dim up) to group 3
Release	Send switch multilevel stop level change to group 3

5.3 OFF Button

OFF Button Trigger	Description
Press once	Send Basic Set 0x00 to group 2 Send Multilevel Set 0x00 to group 3 (Duration is 0xFF)
Short press 2 times	Send Basic Set 0x63 to group 2 Send Multilevel Set 0x63 to group 3 (Duration is 0x00)
Short press 3 times (within 1.5second)	AUX Switch is not on the Z-Wave network: 1. The AUX Switch led will fast blink, and send node info frame. 2. Add the AUX Switch into the Z-Wave network (Manual Inclusion): a) Set the Z-Wave network main controller into inclusion mode. b) Short press 3 times OFF Button, the AUX Switch led will fast blink. c) Wait a moment, the AUX Switch should be added to the controller. Then the AUX Switch led will keep on 1 minute when it has been included into the network. Otherwise, the AUX Switch led will slow blink 3 minutes. In which case you need to repeat the process from step a. Normal mode – AUX Switch is on the Z-Wave network: 1. The AUX Switch led will fast blink, and send node info frame. 2. Remove the AUX Switch from a Z-Wave network (Manual Exclusion): a) Assuming AUX Switch was added to controller and was power on. b) Set the Z-Wave network main controller into removing mode. c) Short press 3 times OFF Button, the AUX Switch led will fast blink. d) Wait a moment, and then the AUX Switch led will slow blink 3 minutes when it has been removed from the network. Otherwise, the AUX Switch led will keep on 1 minute. In which case you need to repeat the process from step b.
Press and Hold: >1s	Send switch multilevel start level change (dim down) to group 3
Release	Send switch multilevel stop level change to group 3

5.4 Reset Button

Reset Button Trigger	Description
Press and hold:20 Seconds	Reset the device to factory default: 1. Press and hold the Reset Button for 20 seconds, then the Switch led will fast blink 1 second. 2. The Switch led will blink 2 seconds, when released Reset Button. It will send "Device Reset Locally Command". Otherwise please repeat step 1. Note:

	1. Please use this procedure only when the network primary controller is missing or otherwise inoperable. 2. Reset the AUX Switch to factory default settings will sets the AUX Switch to not in z-wave network state; delete the Association setting and restore the Configuration setting to the default.
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6 Special Rule of Each Command

6.1 Basic Command Class

The Basic Command Class not mapped to any commands.

6.2 Association Command Class

The AUX Switch supports 2 association groups.

Grouping Identifier	Max Nodes	Send Commands
Lifeline	0x05	1. Central Scene Notification 2. Device Reset Locally 3. Indicator Report
Group2	0x05	Basic Set
Group3	0x05	1. Switch Multilevel set 2. Switch Multilevel Start Level Change 3. Switch Multilevel Stop Level Change

Group 1: Lifeline

Description: Members of this group will receive unsolicited messages related to the status of the AUX switch.

Group 2: On/Off Control

Description: Sends Basic Set to associated devices.

1. Single press ON button send Basic Set(0xFF)
2. Single press OFF button send Basic Set(0x00)
3. Short press 2 times ON or OFF button send Basic Set(0x63)

Group 3: Dimmer Control

Description: Sends start and stop level change to associated devices.

1. Single press ON button send Switch Multilevel set(0xFF)
2. Single press OFF button send Switch Multilevel set(0x00)
3. ON button hold send Switch Multilevel Start Level Change(Dim Up)
4. ON button release send Switch Multilevel Stop Level Change
5. DOWN button hold send Switch Multilevel Start Level Change(Dim Down)
6. DOWN button release send Switch Multilevel Stop Level Change

7.Short press 2 times ON or OFF button send Switch Multilevel set 0x63 (Duration is 0x00)

6.3 Z-Wave Plus Info Command Class

Parameter	Value
Z-Wave Plus Version	V2
Role Type	ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_ALWAYS_ON
Node Type	ZWAVEPLUS_INFO_REPORT_NODE_TYPE_ZWAVEPLUS_NODE
Installer Icon Type	ICON_TYPE_GENERIC_WALL_CONTROLLER
User Icon Type	ICON_TYPE_GENERIC_WALL_CONTROLLER

6.4 Central Scene Capability

The AUX Switch should send the following **CentralSceneNotification** Reports when the indicated button is pressed the indicated number of times

Up Button

Action	Report Content
Key Pressed 1 time	keyAttributes: 0, sceneNumber: 1
Key Released	keyAttributes: 1, sceneNumber: 1
Key Held Down	keyAttributes: 2, sceneNumber: 1
Key Pressed 2 times	keyAttributes: 3, sceneNumber: 1
Key Pressed 4 times	keyAttributes: 5, sceneNumber: 1
Key Pressed 5 times	keyAttributes: 6, sceneNumber: 1

Down Button

Action	Report Content
Key Pressed 1 time	keyAttributes: 0, sceneNumber: 2
Key Released	keyAttributes: 1, sceneNumber: 2
Key Held Down	keyAttributes: 2, sceneNumber: 2
Key Pressed 2 times	keyAttributes: 3, sceneNumber: 2
Key Pressed 4 times	keyAttributes: 5, sceneNumber: 2
Key Pressed 5 times	keyAttributes: 6, sceneNumber: 2

6.5 Indicator Command Class

The Dimmer support the Indicator Command Class, version 3 and support the Indicator ID 0x50 (Identify) and Properties ID 0x03, 0x04 and 0x05

6.6 Configuration Command Class

#	Name	Size	Range	Description	Default
1	Child Lockout Enable	1	0-1	Child lockout feature can enabled and disabled local control. 0= Disable 1= Enable	0

Name	Info	Parameter Number	Default Value(dec)	Max Value(dec)	Min Value(dec)	Size	ReadOnly	Format	Altering capability
Child Lockout Enable	Child Lockout Enable	0x04	0	1	0	1	No read-only	Unsigned integer	False