



SA-105

Dual Relay Touch Wall
Switch

User Manual



www.airlive.com



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FCC Interference Statement

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.

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.

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.

Disposal



This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.



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Overview



The SA-105, is a Z-Wave plus compliant Z-Wave Dual Relay Touch Wall Switch to replace your current light switch with a Z-Wave included one. The Z-Wave command is translated to a switching command. The wall mounted switch is a component of the lighting control system. This wall mounted switch is designed to work with other Z-Wave enabled devices. Z-Wave nodes of other types can be added to the system and act as repeaters if they support this function of repeating the signal received to other modules in the system. As part of a Z-Wave network, this switch will also act as a wireless repeater to insure that commands intended for another device in the network are received. This is useful when the device would otherwise be out of the radio range of the Z-Wave controller. There are no field repairable assemblies on this unit. If service was needed, the unit must be returned where purchased. This product 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.

1.1 Adding to Z-Wave™ Network

Connect switch to power source, after making it powered, **please do not operate it within 20s.**

Note: This switch must be “Included in the Network” where it will be permanently installed. The proper operation of the SA-105 in the mesh network is dependent on knowing its location with respect to other nodes. You cannot “test bench” configure this switch and then install it.

First time adding, When first power is applied, its LED flashes on and off alternately and repeatedly at 1-second intervals. It implies that it has not been assigned a node ID yet and start the auto inclusion. To add the device into the Z-Wave™ network, first make sure the primary controller is in the inclusion mode.

1.1.1. Auto Inclusion

On the front casing, there is an On/Off touch button with LED indicator which is used to on and off or carry out inclusion, exclusion, reset or association. When first power is applied, its LED flashes on and off alternately and repeatedly at 1-second intervals. It implies that it has not been assigned a node ID and cannot work with Z-Wave enabled devices. The table below lists an operation summary of basic Z-Wave function. Please refer to the instructions for your Z-Wave™ certificated primary controller to access the Setup function, and to include/exclude/associate devices.

Note: Auto inclusion timeout is 2 minute during which the node information of explorer frame will be emitted once several seconds. Unlike “inclusion” function as shown in the table below, the execution of auto inclusion is free from pressing the Include/Exclude button in on the front case.

The table below lists an operation summary of basic Z-Wave functions. Please refer to the instructions for your Z-Wave™ Certificated Primary Controller to access the Setup function, and to include/exclude/associate devices.

Function	Description
No node ID	The Z-Wave controller does not allocate a node ID to the Switch
Inclusion (Add)	<ol style="list-style-type: none"> 1. Have Z-Wave™ Controller entered Inclusion (Add) mode. 2. Touching the on/off button three times in rapid succession within 1.5 seconds will enter inclusion mode.
Exclusion (Remove)	<ol style="list-style-type: none"> 1. Have Z-Wave™ Controller entered Exclusion (remove) mode. 2. Touching the On/Off button three times in rapid succession within 1.5 Press will enter exclusion mode

	Node ID has been excluded.
Reset	<ol style="list-style-type: none"> 1. Touch the On/Off button and hold for 10 seconds. 2. IDs are excluded.
Association	<ol style="list-style-type: none"> 1. Have Z-Wave Controller entered association mode. Or Touch the On/Off button three times within 1.5 seconds will enter association mode 2. There are three groups for the switch (it can associate max five devices).
	<ol style="list-style-type: none"> 1. Including a node ID allocated by Z-Wave™ Controller means “Add” or “Inclusion”. Excluding a node ID allocated by Z-Wave™ Controller means “Remove” or “Exclusion”. 2. Failed or success in including/excluding the node ID can be viewed from Z-Wave™ Controller. 3. Association: it can be associated by Z-Wave devices with association 4. Use the "Reset" procedure only in the event that the network primary controller is missing or otherwise inoperable

1.2 LED Indication

To distinguish what

LED Color	Led Display Status	Description
Red	Blink 5 Times (1s Interval)	Light switch is powered on, and has not been added to Z-Wave network
	Blink 5 Times (500ms Interval)	<ol style="list-style-type: none"> 1: Enter Inclusion Mode, 2: Send Node Info
	Blink red color once then pink color 4 times on and off alternately	1:Enter Exclusion Mode
	Blink 5 Times in 2s	Reset successfully
	Always On	Back light is disabled and Relay is on
Blue	Always On	Back light is enabled and Relay is off
Pink	Always On	Back light is enabled and Relay is on

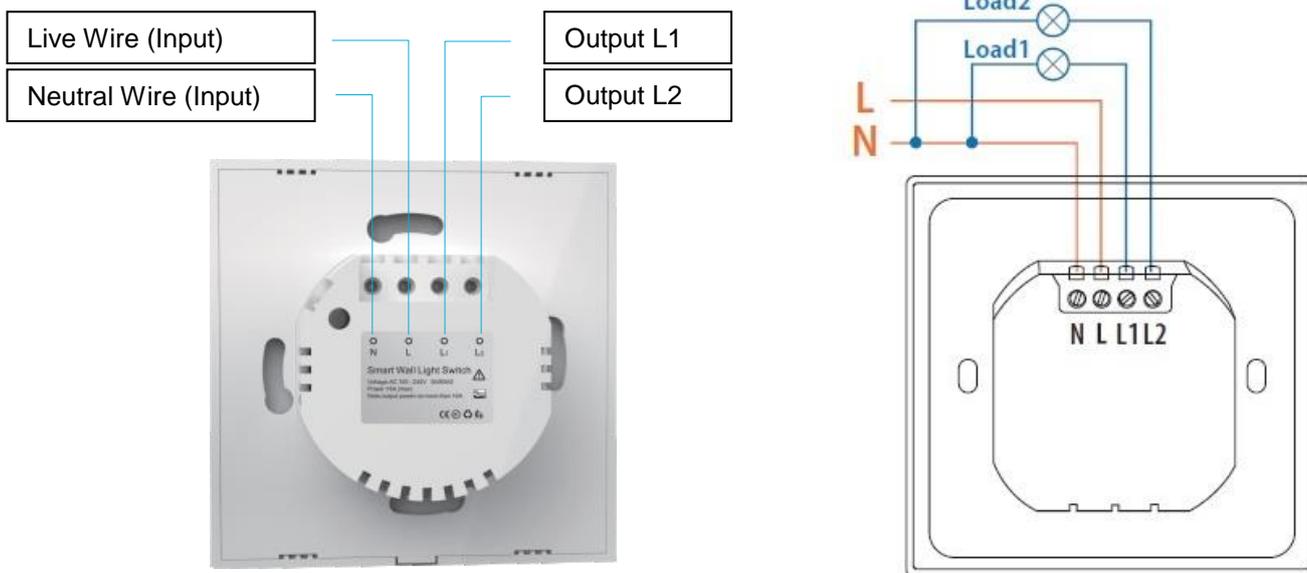
1.3 Choosing a Suitable Location

1. The SA-105 Z-Wave Wall Switch can replace your original Switch the location there for would be the same as your original wall switch. Do not place the switch in a wet environment.

1.4 Installation and Basic Operation

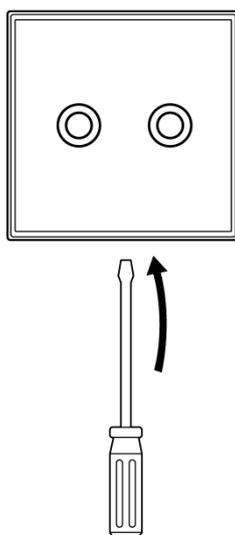
Step 1 Connection diagram of SA-105.

Note: A Neutral wire is required for the correct operation.



Step 2 Removal of front cover.

Carefully use a flathead screw driver to remove the front cover from the base. Do not use force, as this could break the cover.





Step 3 Basic Operation

Basic Operation (Local Control)

The switch allows the user to:

- Turn ON or OFF the attached load.
- Include or exclude the module from the Z-Wave system.
- Control other Z-Wave enabled devices.

Also, when a controller prompts you to “Send Node ID” or to “Press Button on Unit” quickly tap the switch On or OFF three times to satisfy those instructions.

- Tapping the left switch button turns the load attached to L1 ON/OFF.
- Tapping the right switch button turns the load attached to L2 ON/OFF.

Caution: Note: Upon restoration of power after a power loss, the switch returns to previous known state.

LED Indication

The LED on the switch will change color when the load attached is turned on/off

Advance operation all on/all off

The switch support the all on/all off commands. The switch can be set to respond to all on and all off commands 4 different ways. Refer to your controller for information on how to set the switch to operate in the manner you desire. Some controllers may be only able to set certain settings of all on /all off response. The 4 different ways the switch can be setup to respond to all on and all off

1.5 Association and Parameter

1.5.1. Association Setup

Association

(Association Command Class Version 2)

This Light Switch supports 3 groups; each group supports max 5 associated nodes

GROUP 1: Is lifeline service that assigned to Light Switch status. It enables Light Switch to send reports to Z-Wave Gateway whenever some button is touched. This Group

Support: SWITCH_BINARY_REPORT,
DEVICE_RESET_LOCALLY_NOTIFICATION

Notice: The SWITCH_BINARY_REPORT is sent only by
MULTI_CHANNEL_CMD_ENCAP command

GROUP 2: Allows Sending Binary Switch Report to associated devices in this group. This group is mapping to Endpoint 1 This Group Support

SWITCH_BINARY_REPORT

GROUP 3: Allows Sending Binary Switch Report to associated devices in this group. This group is mapping to Endpoint 2 This Group Support

SWITCH_BINARY_REPORT

1.5.2 Configuration Parameter

Configuration Parameter	Function	Value	Default Value	Size (Byte)
1	Back Light Enable	0 - 1	1	1
2	Relay On/Off Indicate	0 - 1	1	1
3	Relay On/Off Status Saved Enable	0 - 1	1	1
4	Root Device Mapped Setting	0 - 3	1	1

1.5.3 Parameter Description

Back Light Enable

-Parameter NO:1

-Length: 1 Byte

-Valid values=0 or 1 (default value is 1)

This parameter defines the back light state of touch button. The back light led would be on when Light Switch is powered on if this parameter is set to '1', otherwise the back light led would be off. The default value is '1'

Relay On/Off Indicate

-Parameter NO:2

-Length: 1 Byte

-Valid values=0 or 1 (default value is 1)

This Parameter defines the relays state. The led will be turned on with pink color when the button is touched to turn on relay if this parameter is set to 1; otherwise the led state is not changed. The default value is '1'.

Relay On/Off Status Saved Enable

-Parameter NO:3

-Length: 1 Byte

-Valid values=0 or 1 (default value is 1)

This parameter defines the on/off status of relay needs saving or not. The status will be saved when relay status is changed if this parameter is set to '1'; otherwise the relay status is not saved. The Light Switch will restore the relay On/Off status when is powered on again.

Root Device Mapped Setting

-Parameter NO:4

-Length: 1 Byte

-Valid values = 0 ~ 3 (default value is 1)

This parameter defines which endpoint is mapped to root device (Endpoint 0). The valid values are explained as follows. The default value is "1". 0-No endpoint is mapped to root device; 1-Endpoint 1 is mapped to root device; 2-Endpoint 2 is mapped to root device; 3-Both endpoint 1 and 2 are mapped to root device. For example, assumes this parameter is set to '1' (default value). Gateway or other devices (such as door/window sensor, motion sensor, etc) that is associated with Light Switch send a command BASIC_SET=0xFF to Light Switch, the relay in endpoint 1 will be turned on; other relay status will not be changed.

1.5.4 Command Class Interact

Command Class Interact

This Light Switch supports two channel relays. Gateway must use command MULTI_CHANNEL_CMD_ENCAP to encapsulate the command class switch binary to control these two relays.

Binary Switch Command Class

Light Switch can be turned on and off by receiving commands SWITCH_BINARY_SEND or BASIC_SET

RelayOn

Command Class:COMMAND_CLASS_SWITCH_BINARY

Command:SWITCH_BINARY_SEND

Value:0xFF

Relay Off:

Command Class:COMMAND_CLASS_SWITCH_BINARY

Command:SWITCH_BINARY_SEND

Value:0x00

Basic Command Class

The Functions of BASIC_SET= 0x00 And BASIC_SET = 0xFF are same as Binary Switch Command Class.

1.5.5 Command Classes

The root device of Light Switch supports Command Classes as Below,

- *COMMAND_CLASS_ZWAVEPLUS_INFO (V21)
- *COMMAND_CLASS_VERSION (V2]
- *COMMAND_CLASS_MANUFACTURER_SPECIFIC (V2]
- *COMMAND_CLASS_DEVICE_RESET_LOCALLY (V1]
- *COMMAND_CLASS_POWERLEVEL (V1)
- *COMMAND_CLASS_ASSOCIATION (V2]
- *COMMAND_CLASS_ASSOCIATION_GRP_INFO (V1]
- *COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION (V2]
- *COMMAND_CLASS_MULTI_CHANNEL (V4)
- *COMMAND_CLASS_SWITCH_BINARY (V1)
- *COMMAND_CLASS_CONFIGURATION (V11)

Endpoint 1/2 supports Command Classes as Below (only2CH)

- *COMMAND_CLASS_ZWAVEPLUS_INFO (V21)
- *COMMAND_CLASS_ASSOCIATION (V2]
- *COMMAND_CLASS_ASSOCIATION_GRP_INFO (V1)
- *COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION (V2)
- *COMMAND_CLASS_SWITCH_BINARY (V1)
- *COMMAND_CLASS_BASIC (V1)

1.6 Specifications

Specification	
Model	SA-105 Dual Relay Touch Wall Switch
Z-Wave Standard	Z-wave plus
Z-Wave Frequency	CE : 868.40MHz,869.85MHz
Maximum Transmission Distance	40M (indoor) 100m (open space)
Supply Voltage	230 VAC
Maximum Output Current	16A (Resistive Load)
Maximum Output Power	2500 W (Resistive Load)
LED Indicator	2 x LED (one per button)
Dimension and Environment	
Dimensions	86(L) x 86(W) x 34(H) mm
Operating Temperature	0 ~ 40° C

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



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