# AN196-0 — Dual Relay In-Wall Module

The dual relay in-wall module contains two sets of relays and switches, with each set dedicated for controlling lighting or an appliance in your home.

The module is a Z-Wave™ enabled device which is fully compatible with any Z-Wave™ enabled network.

Each relay can be turned on/off individually using Z-wave™ commands or using the switches connected to the module. At 230V voltage, this module can support up to 2*4.3A output, 2*1000W resistive load.

This unit is to be installed and sealed inside an electrical switch box.

Product Overview

Switch inputs

LED indicator

Link Key

AC input /outputs

LS1 LS2 L N
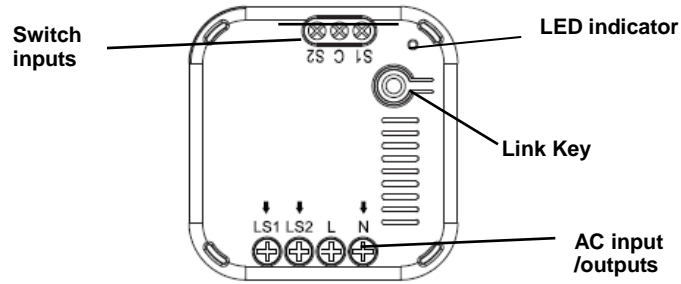
Adding to Z-Wave™ Network

The unit supports SmartStart function, where inclusion is initiated automatically on power-on, and repeated at dynamic intervals for as long as the device is not included into a Z-Wave network. Z-Wave SmartStart is based on the embedded SDK 6.8x and requires related gateway software components.

If the gateway does not support SmartStart function, this device can be added to the Z-Wave network using manual inclusion, or by scanning the DSK QR code or entering a 5-digit Device Specific Key (DSK) when requested by the gateway.

## Safety Precautions & Installation

- Avoid installing the unit in storming or raining weather.
- Be sure to isolate or switch off power source before installing or maintenance.
- Do ensure that the power supply circuit is protected by a 16 amp circuit breaker or suitable equivalent fuse.

IMPORTANT

Installation must be performed by skilled technicians who are informed about the standards and technical requirements of the appliance and its proper installation. Note that the In-Wall On/Off Module is designed to be installed in a wall switch box to operate.
Check your local codes as they apply to your situation. If the house wiring is of aluminum, consult with an electrician about proper wiring methods.
Before proceeding with the installation, TURN OFF THE POWER TO THE LIGHTING CIRCUIT AT THE CIRCUIT BREAKER OR FUSE BOX TO AVOID ELECTRICAL SHOCK.

To connect up the module, follow the wiring connection according to the following diagram.

The unit contains two relays, each relay independently controlling loads connected to LS1 and LS2. External switches S1 and S2 can be connected to the module to allow manual control of the LS1 and LS2 respectively.
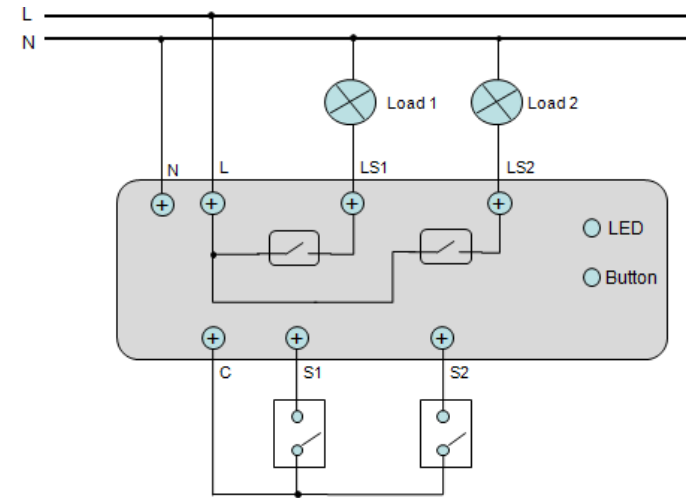
Operation

The relays in the unit can be controlled through Z-wave commands from a Z-Wave Controller, through connected switches S1 and S2.

When either one of connected load is on, the LED indicator will turn on, when both of connected load are off, the LED indicator will turn off.

The unit can be set to remember the status of the relay before power is cut off (such as power black-out). When power is supplied again, the unit will resume the last status of the relay (on or off) automatically.

Programming

Z-Wave Group Support

The 2 relay module supports three Z-wave Association Groups:
Group 1: Association with 5 Controller nodes.
Group 2: Association with 5 nodes.
Group 3: Association with 5 nodes.

Group 1 commands:
- When the unit is powered up for first time, a Notification Report will be sent to the node of Group 1.
- When performing Factory Reset, a Device Reset Locally Notification will be sent to the node of Group 1.
- When relay is activated through the switch, the unit will send a Binary Switch Report to the node of Group 1.

Group 2 commands:
- When switch 1 is pressed, a BASIC SET command containing a value will be sent to the node of Group 2 (When relay is off, Basic Set Value=0x00, when relay is on, Basic Set Value=0xFF).

Group 3 commands:
- When switch 2 is pressed, a BASIC SET command containing a value will be sent to the node of Group 3 (When relay is off, Basic Set Value=0x00, when relay is on, Basic Set Value=0xFF).

Z-Wave Plus Info (Root/Endpoint1/Endpoint2)

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

Version

Protocol Library	3 (Slave_Enhance_232_Library)
Protocol Version	6.04 (6.81.03)

Manufacturer

Manufacturer ID	Product Type	Product ID
0x0060	0x0004	0x000E

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	On/Off control (Button1)
3	Control	Basic Set	On/Off control (Button 2)

Basic commands

Command	Description
Basic Get	Inquire about the status of the device
Basic Report	Report the status of the device.
Basic Set	Set the status of the device.(Value=0XFF (ON), 0x00 (OFF))

Notification

Event	Type	Event	Event Parameters Length
Power applied for first time	0x08	0x01	0x00

Configuration
The configurable values are as following:

Parameter Number	Parameter Function	Size	Range	Default
1	Switch 1 Type	1	0~1	0 (0: Momentary 1: Toggle)
2	Switch 2 Type	1	0~1	0 (0: Momentary 1: Toggle)
3	Relay 1 Auto Off Time	4	0~43200(sec.)	0 (Not auto off) (Max 12 hours)
4	Relay 2 Auto Off Time	4	0~43200(sec.)	0 (Not auto off) (Max 12 hours)
5	Set whether to remember the last status of Relay 1	1	1/0	1:Remember (0: do not remember)
6	Set whether to remember the last status of Relay 2	1	1/0	1:Remember (0: do not remember)

Command Classes

The module supports Command Classes including…
- COMMAND_CLASS_ZWAVEPLUS_INFO_V2
- COMMAND_CLASS_ASSOCIATION_V2
- COMMAND_CLASS_ASSOCIATION_GRP_INFO
- COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V2
- COMMAND_CLASS_MULTI_CHANNEL
- 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_SUPERVISION
- COMMAND_CLASS_FIRMWARE_UPDATE_MD_V4
- COMMAND_CLASS_NOTIFICATION_V4
- COMMAND_CLASS_CONFIGURATION
- COMMAND_CLASS_SWITCH_BINARY

End Point 1/2
- COMMAND_CLASS_ZWAVEPLUS_INFO_V2
- COMMAND_CLASS_SWITCH_BINARY
- COMMAND_CLASS_ASSOCIATION_V2
- COMMAND_CLASS_ASSOCIATION_GRP_INFO
- COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V2
- COMMAND_CLASS_SUPERVISION

Additional Command Classes Supported

- Binary Switch: Refer to Basic.
- Multi Channel: To control 2 relay independently.
- Firmware Update: For OTA function.

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

Action/Status	Description	LED indication
No node ID	The Z-Wave Controller does not allocate a node ID to the unit.	2-second on, 2-second off
Auto Inclusion	The power is applied for the first time and no node ID has been stored in the module, or after executing reset.	
Inclusion	1. Put the Z-Wave Controller into inclusion mode.	
	2. Press the link key three 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 link key three times within 1.5 seconds to put the unit into exclusion mode.	
Reset (This procedure should only be used when the network primary controller is inoperable.)	1. Press the link key three times within 1.5 seconds to put the unit into exclusion mode.	
	2. Within 1 second of step 1, press link key again and hold until LED is off (about 5 seconds).	
	3. Node ID is excluded. The device reverts to factory default state and will be in auto-inclusion mode for 4 minutes.	
※ Failed or successful results 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
Device not responding and LED not displaying	The device is not wired to the mains power correctly	Check if wiring is correct, or voltage is too high or too low
	Device malfunction	Send the device to be repaired
LED displaying, but cannot control On/Off status of connected load	The connected load has its own on/off switch	Turn the switch of the connected load to On.
Cannot control by RF but switch control works.	RF interference is occurring. Someone nearby might be emitting RF signal of the same frequency	Wait for a while and retry the operation

Specifications

Power Input	AC230V,50Hz
Maximum Power Load	2x1000W@230V, or 2 x 4.3A
Transmission Range	70 meters (Indoor open area with antenna outside of wall box)
Working Temperature	-10°C - 40°C

Specifications are subject to change without notice

CE ♺

Warning:

Do not dispose of electrical appliances as unsorted municipal waste. Please use separate collection facilities instead.

Contact your local government for information regarding the available collection systems.

If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get in to the food chain, damaging your health and well-being.

When replacing old appliances, the retailer is legally obligated to take back your old appliances for disposal free of charge.

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