

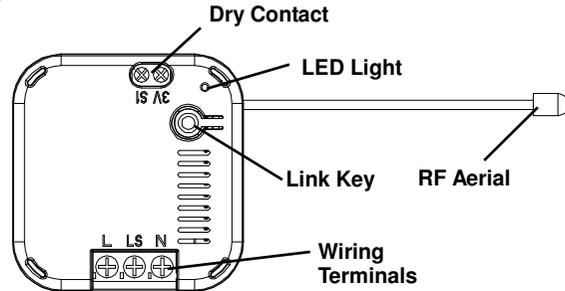
# AD146

# In-Wall Dimmer Module

The In-Wall Dimmer Module is a Z-Wave™ enabled device which is fully compatible with any Z-Wave™ enabled network. Z-Wave™ enabled devices displaying the Z-Wave™ logo can also be used with it regardless of the manufacturer, and ours can also be used in other manufacturer's Z-Wave™ enabled networks. Inclusion of this unit on other manufacturer's Wireless Controller menu allows remote operation of the unit and the connected load.

The In-Wall Dimmer Module is designed to control the on/off status of lighting and appliances load in your house. The unit also provides dimmer function which is only applicable to light bulbs. At 230V voltage, this module can support up to 300W resistive/ incandescent load, or 200W fluorescent load.

## Product Overview



## Adding to Z-Wave™ Network

On the unit you can find a link key which is used to carry out the function of inclusion, exclusion, and reset. When power is applied for the first time, the LED will flash on and off alternately and repeatedly, implying that it has not yet been assigned a node ID and cannot work with other Z-Wave enabled devices. This unit supports the Auto Inclusion function when power is applied and no node ID is stored in the memory.

## Auto Inclusion

The module may automatically execute the function of inclusion when...

1. The power is applied for the first time and no node ID has been stored in the module.
2. The execution of reset is successful where the stored node ID is cleared.

**Note:** The duration for Auto Inclusion is about 4 minutes. Unlike the "inclusion" procedure shown in the table below, the execution of Auto Inclusion is automatic without the necessity of pressing the link key.

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)	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).	

primary controller is inoperable.)	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.		

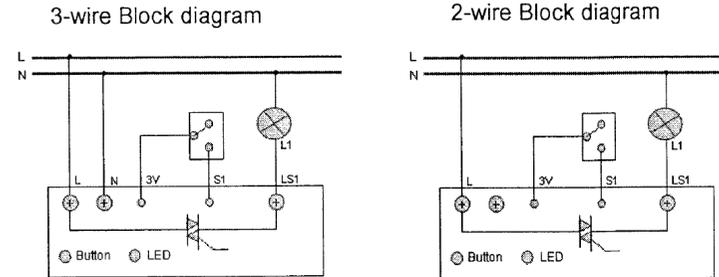
## Safety Precautions & Installation

- 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. 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.

The In-Wall Dimmer Module supports both 2-wire and 3-wire connections. Study the following figures and implement the wiring accordingly.



As illustrated in the above diagrams, S1 provides a wall switch connection to the dry contacts. By default the supported switch is Single-Pole-Double-Throw (SPDT) type of binary switch. However, through the setting of Gateway, S1 can be configured to support Toggle switches as well.

## Operation

Under normal operation mode, press the button on the unit to control the on/off status of the connected load. The LED indicator will also turn on or off accordingly. The unit can also be controlled by receiving command signals from the Z-Wave Controller. The unit is able to remember the status of the relay when 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.

**Note:** Pressing the button on the unit for over 5 seconds but no more than 8 seconds can switch the operation mode of the dry contacts. The LED will flash 3 times rapidly upon successful switch.

## Programming

### Z-Wave Group Support

The unit supports two association groups with 1 node support for Grouping 1 and 4 nodes support for Grouping 2. This has the effect that when the unit is operating, all devices associated with the unit will receive the relevant reports.

- When the unit is powered up and was already a part of a Z-Wave network, the unit will send a Notification Report to the node in Group 1.
- When setting the unit or changing the unit's status, the unit will send a Multilevel Switch Report to the node of Group 1.

- When performing Reset the unit will send Device Reset Locally Notification to the node of Group1.
- The minimum interval time between two reports sent from this unit to the node of Group 1 is 3 seconds. Refer to **Configuration** parameter 2 for more information.
- When the button on the unit or the wall switch (S1) is pressed, the unit will send a Basic Set command to the nodes of Group 2. When the unit is OFF, Basic Set Value = 0x00. When the unit is ON, Basic Set Value = 0xFF.

### Z-Wave Plus Info

Role Type	Node Type	Installer Icon	User Icon
Slave Always On	Z-Wave Plus node	Light Dimmer Switch	Light Dimmer Switch

### Version

Protocol Library	3 (Slave Enhance 232 Library)
Protocol Version	3.95 ( 6.51.02)

### Manufacturer

Manufacturer ID	Product Type	Product ID
0x0060	0x0003	0x0002

### AGI (Association Group Information) Table

Group	Profile	Command Class & Command (List) N bytes	Group Name(UTF-8)
1	General:NA	Multilevel Switch Report, Notification Report, Device Reset Locally Notification	Lifeline
2	Control:Key1	Basic Set	On/Off control (Button1)

### Basic

- 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.

Basic Set Value	Description
0x00	Device OFF
0x01 ~ 0x63	Device ON, output Level as the specified Value.
0xFF	Device ON, output Level as the last memorized Level.

### Notification

The device will send notifications (Notification Type =0x08, Event = 0x01) upon being powered on.

### Configuration

The configurable values are as following:

Basic Set Command value:

Parameter Number	Size	Range	Default
1	2	0~99 , 255(0xFF)	255 (0xFF)

The delaying time to report to Group 1:

Parameter Number	Size	Range	Default
2	1	3 - 25 (seconds)	3

Remember the last status:

Parameter Number	Size	Range	Default
3	1	1/0	1: remember (0: do not remember)

Switch 1 switching type:

Parameter Number	Size	Range	Default
4	1	1/0	0: Single Pole Double Throw (1: Toggle switch)

Output mode setting: Dimming, On/Off

Parameter Number	Size	Range	Default
5	1	1/0	0: Dimming (1: On/Off)
<b>Note:</b> When set to 1, the operation mode is not changed; only the light would be turned on with 100% brightness immediately.			

### Command Classes

The module supports Command Classes including...

- COMMAND\_CLASS\_ZWAVEPLUS\_INFO\_V2
- COMMAND\_CLASS\_VERSION\_V2
- COMMAND\_CLASS\_MANUFACTURER\_SPECIFIC\_V2
- COMMAND\_CLASS\_DEVICE\_RESET\_LOCALLY\_V1
- COMMAND\_CLASS\_ASSOCIATION\_V2
- COMMAND\_CLASS\_ASSOCIATION\_GRP\_INFO\_V1
- COMMAND\_CLASS\_POWERLEVEL\_V1
- COMMAND\_CLASS\_BASIC\_V1
- COMMAND\_CLASS\_NOTIFICATION\_V4
- COMMAND\_CLASS\_CONFIGURATION\_V1
- COMMAND\_CLASS\_SWITCH\_MULTILEVEL
- COMMAND\_CLASS\_SWITCH\_ALL\_V1
- COMMAND\_CLASS\_FIRMWARE\_UPDATE\_MD\_V2

### Additional Command Classes Supported

- Power Level: For test purpose during product installation.
- Multilevel Switch: Refer to Basic.
- Switch All: The device turns on when receiving "Switch All On", and turns off upon receiving "Switch All Off".
- Firmware Update: For OTA function.

### Troubleshooting

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.
Can press button to control, but cannot control by RF	RF interference is occurring. Someone nearby might be emitting RF signal of the same frequency	Wait for a while and retry the operation

### Specification

Power Input	220-240V/50Hz
Maximum Load	6W - 300W
Transmission Range	30 meters (Indoor; Open space)
Working Temperature	-10°C - 40°C

\*Specifications are subject to change without notice

2013/07



### Warning:

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities. Contact your local government for information regarding the collection systems available. If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being. When replacing old appliances with new ones, the retailer is legally obligated to take back your old appliance for disposal at least for free of charge.