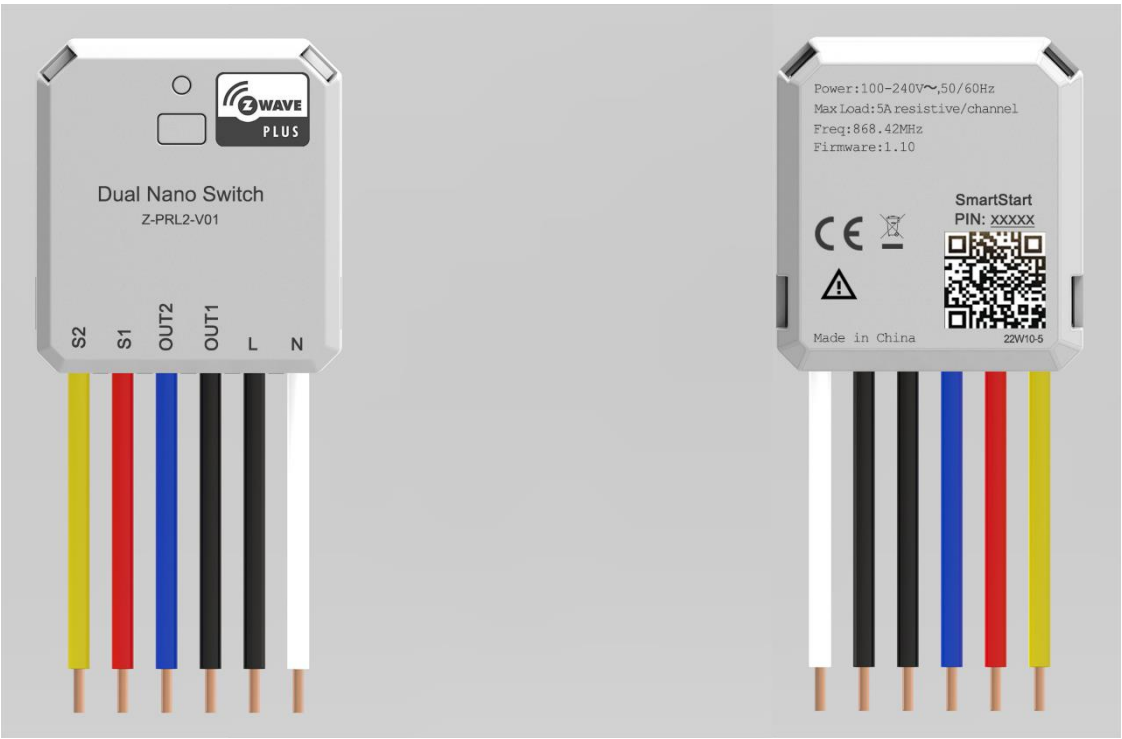
Dual Nano Switch Engineering Specifications



The Switch based on Z-Wave™ Slave library of V7.15.04. This Switch integrated Z-Wave communication module to connect with Z-Wave gateway.
The 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 Switch is a security Z-Wave device (S2), so a security enabled controller is needed for take full advantage of all functionally for the Switch.

Features:

- The Switch Support SmartStart.
- Manual or Z-Wave on/off control of 2 electrical loads up to 5A.
- Add Z-Wave to two wall switches with a single device.
- Installs behind your existing wall switch (single pole or 3-way).
- 700 series Z-Wave chip for better range and faster control.
- Scene control: trigger actions with multi-tap (select hubs only).
- Remembers and restores on/off status after power failure.
- Built-in Z-Wave timer functionality and signal repeater.
- Works with LED and incandescent bulbs.
- SmartStart and S2 Security for a safer network.

1 Technical Specifications

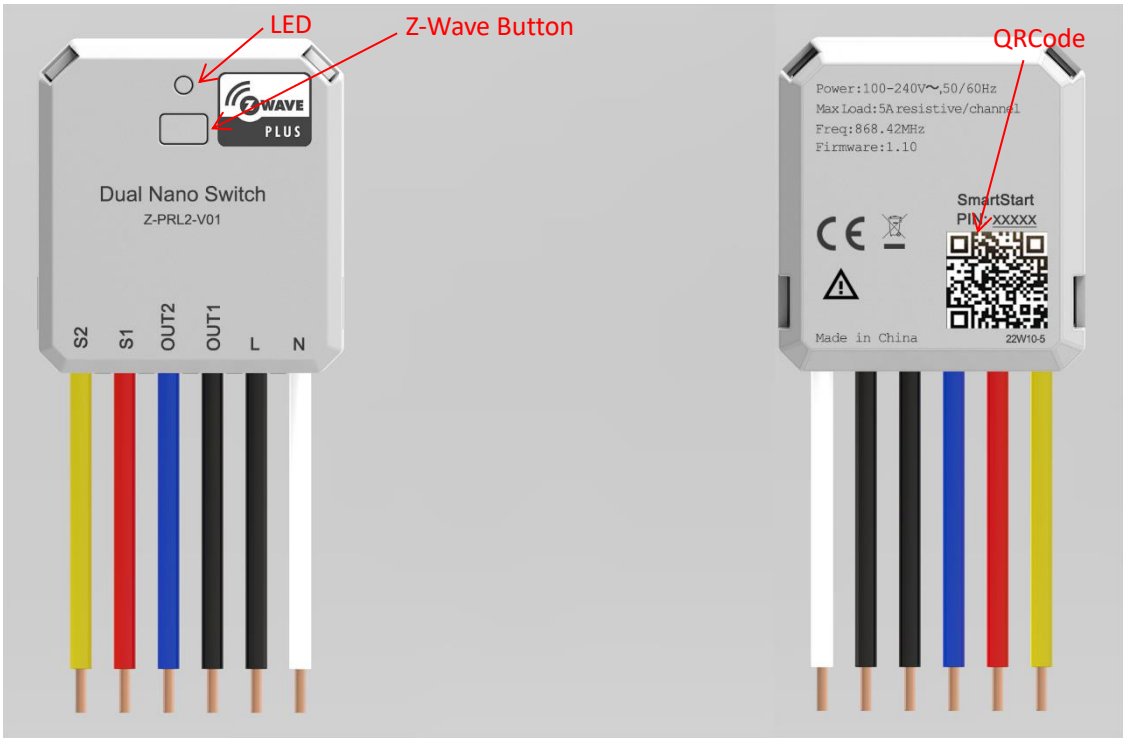
Model Number	Z-PRL2-V01
Z-Wave Signal Frequency	868.42MHz
Range	Up to 300 feet line of sight
Power	100-240V~,50/60Hz
Maximum Load	100W LED bulbs,500W incandescent,5A resistive per relay
Operating Temperature	32-104° F (0-40° C)
Operating Humidity	Up to 85% non-condensing

2 Z-Wave Specifications

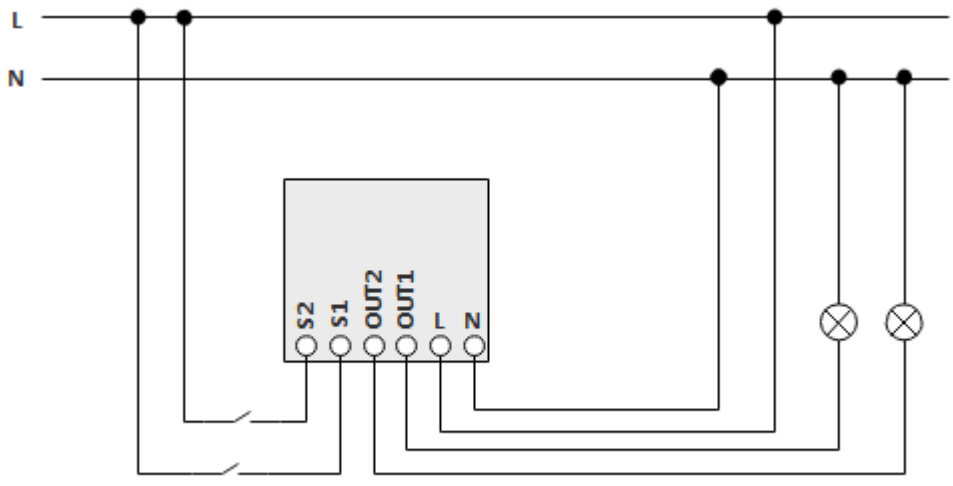
SDK Version	7.15.04
SDK Library	libZWaveSlave
Explorer Frame Support	Yes
Routing	Yes
SmartStart	Yes

Device Type	Binary Switch
Basic Device Class	BASIC_TYPE_ROUTING_SLAVE
Generic Device Class	GENERIC_TYPE_SWITCH_BINARY
Specific Device Class	SPECIFIC_TYPE_NOT_USED
Role Type	Always On Slave (AOS)

3 Familiarize yourself with Switch



3.1 Installation



4 Security and non-Security features

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

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_BASIC_V2	2	Highest granted Security Class
COMMAND_CLASS_SWITCH_BINARY_V2	2	Highest granted Security Class
COMMAND_CLASS_CONFIGURATION_V4	4	Highest granted Security Class
COMMAND_CLASS_ASSOCIATION_V2	2	Highest granted Security Class
COMMAND_CLASS_ASSOCIATION_GRP_INFO_V3	3	Highest granted Security Class
COMMAND_CLASS_VERSION_V3	3	Highest granted Security Class
COMMAND_CLASS_MANUFACTURER_SPECIFIC_V2	2	Highest granted Security Class
COMMAND_CLASS_DEVICE_RESET_LOCALLY_V1	1	Highest granted Security Class
COMMAND_CLASS_POWERLEVEL_V1	1	Highest granted Security Class
COMMAND_CLASS_FIRMWARE_UPDATE_MD_V5	5	Highest granted Security Class
COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V3	3	Highest granted Security Class
COMMAND_CLASS_CENTRAL_SCENE_V3	3	Highest granted Security Class
COMMAND_CLASS_MULTI_CHANNEL_V4	4	Highest granted Security Class

COMMAND_CLASS_INDICATOR_V3	3	Highest granted Security Class
ENDPOINT 1/2		
COMMAND_CLASS_ZWAVEPLUS_INFO_V2	2	None
COMMAND_CLASS_SUPERVISION_V1	1	None
COMMAND_CLASS_SECURITY_2_V1	1	None
COMMAND_CLASS_SWITCH_BINARY_V2	2	Highest granted Security Class
COMMAND_CLASS_ASSOCIATION_V2	2	Highest granted Security Class
COMMAND_CLASS_ASSOCIATION_GRP_INFO_V3	3	Highest granted Security Class
COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION_V3	3	Highest granted Security Class

5 All functions of each trigger

5.1 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.

Add the Switch into the Z-Wave network via SmartStart (SmartStart Inclusion):

a. Add Switch DSK into the primary controller SmartStart Provisioning List (If you don't know how to do this, refer to its manual, DSK usually print on the main body).

b. Remove the battery from the Switch. A few seconds later, reinsert battery in the DUT.

c. The Switch will send "Z-Wave protocol Command Class" frameto start SmartStart Inclusion.

LED will blink green during the inclusion, and then solid green for 2 seconds to indicate that the inclusion is successful, otherwise the LED will solid red for 2 seconds in which you need to repeat the process form step b

5.2 Power on

In the network:

LED Following load state.

Not in the network:

LED will keeps green slow blink and start SmartStart.

5.3 Short press Z-Wave Button three times

Add the Switch into the Z-Wave network (Manual Inclusion):

a. Power on your Switch, set your Z-Wave controller into add/inclusion mode.

b. Short press Z-Wave Button three times.

c. LED will fast blink green during the inclusion, and then solid green for 2 seconds to indicate the inclusion is successful, otherwise the LED will solid red for 2 seconds in which you need to repeat the process form step a

Remove Switch from a Z-Wave network (Manual Exclusion):

a. Power on your Switch, and let the Z-Wave primary controller into remove/exclusion mode.

b. Short press Z-Wave Button three times.

c. LED will fast blink green during the exclusion, and then solid green for 2 seconds to indicate that the exclusion is successful, otherwise the LED will solid red for 2 seconds in which you need to repeat the process form step a.

5.4 Reset Switch to factory default

Click Z-Wave button 2 times quickly, and hold for at least 15 seconds > LED start blinking quickly once tapped twice, then after 15s confirmed reset with 3 seconds. The Switch will reset itself to factory default by sending a “Device Reset Locally Notification” to gateway when the button is released.

Note: Please use this procedure only when the network primary controller is missing or otherwise inoperable.

6 Special Rule of Each Command

6.1 Basic Command Class

Basic CC is maps to Switch Binary CC

6.2 Z-Wave Plus Info Report Command Class

Z-Wave Plus Version: 0x02

Role Type: 0x05 (ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_ALWAYS_ON)

Node Type: 0x00 (ZWAVEPLUS_INFO_REPORT_NODE_TYPE_ZWAVEPLUS_NODE)

Installer Icon Type: 0x0700 (ICON_TYPE_GENERIC_ON_OFF_POWER_SWITCH)

User Icon Type: 0x0700 (ICON_TYPE_GENERIC_ON_OFF_POWER_SWITCH)

6.3 Association Command Class

Below is an overview of the different association groups for each the endpoints.

Endpoint	Grouping Identifier	Max Nodes	Mapping	Send Commands
Root Device	1(Lifeline Group)	0x05	Endpoint1 Endpoint2	1. Basic Report. Switch will send Basic Report(Configurable) when Switch status changed. 2. Switch Binary Report. Switch will send Switch Binary Report(Configurable) when Switch status changed. 3. Device Reset Locally. Click Z-Wave button 2 times quickly, and hold for at least 15. 4. Central Scene Notification. Switch will send Central Scene Notification (Configurable) when Button action.
	2	0x05	Endpoint1	1. Basic Set. Switch will send Basic Set when Switch status changed.
	3	0x05	Endpoint2	1. Basic Set. Switch will send Basic Set when Switch status changed.
Endpoint 1	1	0x00		
	2	0x05		1. Basic Set. Switch will send Basic Set when Switch status changed.
Endpoint 2	1	0x00		
	2	0x05		1. Basic Set. Switch will send Basic Set when Switch status changed.

6.4 Central Scene Capability

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

External Button 1

Action	Report Content
Held	keyAttributes: 2, sceneNumber: 1
Released	keyAttributes: 1, sceneNumber: 1
1x	keyAttributes: 0, sceneNumber: 1
2x	keyAttributes: 3, sceneNumber: 1

3x	keyAttributes: 4, sceneNumber: 1
4x	keyAttributes: 5, sceneNumber: 1
5x	keyAttributes: 6, sceneNumber: 1

External Button 2

Action	Report Content
Held	keyAttributes: 2, sceneNumber: 2
Released	keyAttributes: 1, sceneNumber: 2
1x	keyAttributes: 0, sceneNumber: 2
2x	keyAttributes: 3, sceneNumber: 2
3x	keyAttributes: 4, sceneNumber: 2
4x	keyAttributes: 5, sceneNumber: 2
5x	keyAttributes: 6, sceneNumber: 2

6.5 Indicator Command Class

The Receptacle 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
2	Led indicator load status	1	0~1	Led indicator load status. 0 = Disable 1 = Enable	1
3	Auto turn-off timer Relay 1	2	0~65535	Automatically turns the switch off after this many minutes. When the switch is turned on a timer is started that is the duration of this setting. When the timer expires, the switch is turned off. 0 = timer disabled 1 ~ 65535 = (minutes) timer enabled	0

4	Auto turn-on timer Relay 1	2	0~65535	Automatically turns the switch on after this many minutes. When the switch is turned off a timer is started that is the duration of this setting. When the timer expires, the switch is turned on. 0 = timer disabled 1 ~ 65535 = (minutes) timer enabled	0
5	Auto turn-off timer Relay 2	2	0~65535	Automatically turns the switch off after this many minutes. When the switch is turned on a timer is started that is the duration of this setting. When the timer expires, the switch is turned off. 0 = timer disabled 1 ~ 65535 = (minutes) timer enabled	0
6	Auto turn-on timer Relay 2	2	0~65535	Automatically turns the switch on after this many minutes. When the switch is turned off a timer is started that is the duration of this setting. When the timer expires, the switch is turned on. 0 = timer disabled 1 ~ 65535 = (minutes) timer enabled	0
7	Timer for relay 1 seconds or minutes	1	1~2	Timer for relay 1 seconds or minutes 1 = minutes 2 = seconds	1
8	Timer for relay 2 seconds or minutes	1	1~2	Timer for relay 2 seconds or minutes 1 = minutes 2 = seconds	1

14	Restores state after power failure, relay 1	1	0~2	The state the switch should return to once power is restored after power failure, relay 1. 0 = output off 1 = output on 2 = output the state after power	2
15	Restores state after power failure, relay 2	1	0~2	The state the switch should return to once power is restored after power failure, relay 2. 0 = output off 1 = output on 2 = output the state after power	2
16	Enable or Disable Scene	1	0~1	Enable/disable to send scene notification command when the switches external action. 0 = disable 1 = enable	0
17	Enable or Disable Output control relay 1	1	0~2	Enable or Disable Output control (disable LOAD ONLY, ON/OFF works) relay 1. 0 = disable local button and External Switch control enable Z-Wave control (reports on hub ON/OFF) 1 = enable local button and External Switch control enable Z-Wave control 2 = disable local button and External Switch control disable Z-Wave control (reports on hub ON/OFF)	1
18	Enable or Disable Output control relay 2	1	0~2	Enable or Disable Output control (disable LOAD ONLY, ON/OFF works) relay 2. 0 = disable local button and External Switch control enable Z-Wave control (reports on hub ON/OFF) 1 = enable local button and External Switch control enable Z-Wave control 2 = disable local button and External Switch control	1

				disable Z-Wave control (reports on hub ON/OFF)	
20	External switch type input 1	1	0~4	External switch type input 1. 0 = toggle switch (device changes status when switch changes status) 1 = momentary switch 2 = Switch ON ->always ON. Switch OFF->always OFF 3 = 3-way impulse control 4 = Garage Mode	2
21	External switch type input 2	1	0~4	External switch type input 2. 0 = toggle switch (device changes status when switch changes status) 1 = momentary switch 2 = Switch ON ->always ON. Switch OFF->always OFF 3 = 3-way impulse control 4 = Garage Mode	2
22	Impulse time for par 20=3	1	2~200	Impulse time for par 20=3.	10
23	Impulse time for par 21=3	1	2~200	Impulse time for par 21=3.	10
24	Association reports	1	0~1	Association reports. 0 = Z-Wave control: Binary switch report Manual control: Basic repor t 1 = Z-Wave control: Binary switch report Manual control: Binary switch report	1
25	Relay 1 type	1	0~1	Relay 1 type behavior. 0 = NO	0

	behavior			1 = NC	
26	Relay 2 type behavior	1	0~1	Relay 2 type behavior. 0 = NO 1 = NC	0

Name	Info	Parameter Number	Default Value(dec)	Max Value(dec)	Min Value(dec)	Size	ReadOnly	Format	Altering capability
Led indicator load status	Led indicator load status	2	1	1	0	1	No read-only	Unsigned integer	false
Auto turn-off timer Relay 1	Auto turn-off timer Relay 1	3	0	0xFFFF	0	2	No read-only	Unsigned integer	false
Auto turn-on timer Relay 1	Auto turn-on timer Relay 1	4	0	0xFFFF	0	2	No read-only	Unsigned integer	false
Auto turn-off timer Relay 2	Auto turn-off timer Relay 2	5	0	0xFFFF	0	2	No read-only	Unsigned integer	false
Auto turn-on timer Relay 2	Auto turn-on timer Relay 2	6	0	0xFFFF	0	2	No read-only	Unsigned integer	false
Timer for relay 1 seconds or minutes	Timer for relay 1 seconds or minutes	7	1	2	1	1	No read-only	Unsigned integer	false
Timer for relay 2 seconds or minutes	Timer for relay 2 seconds or minutes	8	1	2	1	1	No read-only	Unsigned integer	false
Restores state after power failure, relay 1	Restores state after power failure, relay 1	14	2	2	0	1	No read-only	Unsigned integer	false
Restores state after power failure, relay 2	Restores state after power failure, relay 2	15	2	2	0	1	No read-only	Unsigned integer	false
Enable or Disable Scene	Enable or Disable Scene	16	0	1	0	1	No read-only	Unsigned integer	false
Enable or Disable Output control relay 1	Enable or Disable Output control relay 1	17	1	2	0	1	No read-only	Unsigned integer	false
Enable or Disable Output control relay 2	Enable or Disable Output control relay 2	18	1	2	0	1	No read-only	Unsigned integer	false
External switch type input 1	External switch type input 1	20	2	4	0	1	No read-only	Unsigned integer	false
External switch type input 2	External switch type input 2	21	2	4	0	1	No read-only	Unsigned integer	false
Impulse time for par 20=3	Impulse time for par 20=3	22	10	200	2	1	No read-only	Unsigned integer	false
Impulse time for par 21=3	Impulse time for par 21=3	23	10	200	2	1	No read-only	Unsigned integer	false
Association reports	Association reports	24	1	1	0	1	No read-only	Unsigned integer	false
Relay 1 type behavior	Relay 1 type behavior	25	0	1	0	1	No read-only	Unsigned	false

								integer	
Relay 2 type behavior	Relay 2 type behavior	26	0	1	0	1	No read-only	Unsigned integer	false