

Philio Technology Corporation

PSC03 Gateway User Manual

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1. Introduction

The PSC03 Gateway is a control center (gateway), based on Z-Wave technology. It is used to control different single devices and actions combining device functions within the network.

This device is a security enabled Z-Wave Plus product (**S0/S2 security**) that is able to use encrypted Z-Wave Plus messages to communicate to other security enabled Z-Wave Plus products.

Z-Wave is a wireless communication protocol designed for home automation, specifically to remotely control applications in residential and light commercial environments.

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.

Please refer to the chapters below for detailed information about all aspects of the products usage.

1.1 Product description

The PSC03 Gateway is a transceiver which belongs to the member of Z-Wave series and is fully compatible with any Z-Wave enabled devices. It is accompanied by Z-Wave System, the software of the device, to reliably and remotely control and monitor your Z-Wave enabled devices. Whether you'll be on site and logging in through your network, or away from the premises, logging in through the internet, you'll always have access to control and monitor your security system. With this device and Z-Wave System, you can achieve a better control of your home security, to make your life safer and easier than ever before.

This gateway using two way to connect to internet, one is wired Ethernet and the other is wireless Wi-Fi, when using Wireless Wi-Fi interface, this gateway become Wi-Fi STA and login through customer's existed Wi-Fi AP, in this way, customer have the flexibility to put the device on any place (sometimes, suitable install position may not easy to find the Ethernet wire).

1.2 Features

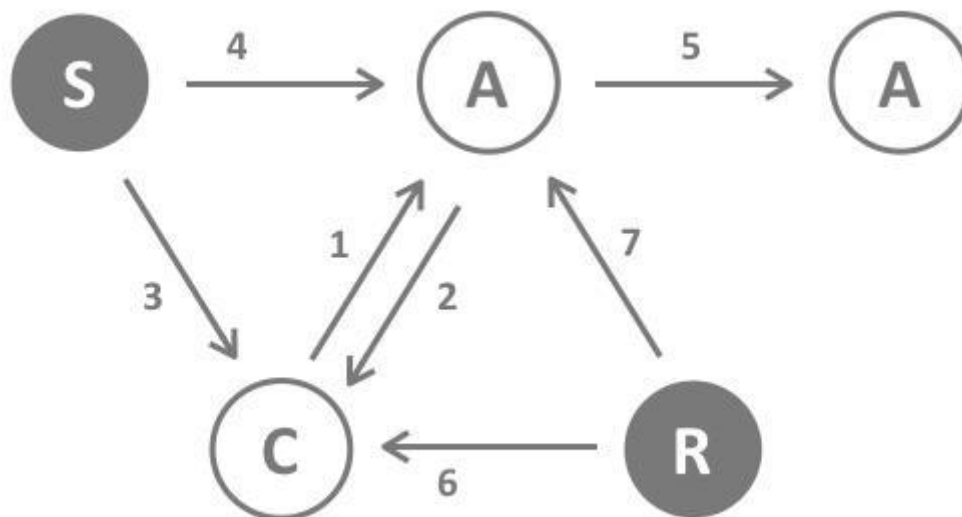
- Wireless 500 series Z-Wave module inside
- **Z-Wave S0/S2 Security**
- Higher output power (+5dBm output power as compared to -2.5dBm 300 series Z-Wave module) to enhance more than 50% the communication range
- Built in 110dB Siren
- Wi-Fi + Ethernet port (WAN)
- 2 internal and 1 external USB port for optional USB device expand
- Remote firmware upgrade
- Invisible Antenna design, Invisible wiring
- Side LED for side background light
- Front LED for icon background light
- Optional rechargeable backup battery last for over 24hour when main power is off

1.3 Technical Information

1.3.1 What is Z-Wave?

This device is equipped with wireless communication complying to the Z-Wave standard. Z-Wave is the **international standard for wireless communication** in smart homes and buildings. It realizes a very stable and secure communication. Each message is reconfirmed (**two-way communication**) and every mains powered node can act as a repeater for other nodes (**meshed network**) in case the receiver is not in direct wireless range of the transmitter.

Z-Wave differentiates between Controllers and Slaves. Slaves are either sensors (**S**) transmitting metered or measured data or actuators (**A**) capable to execute an action. Controllers are either static mains powered controllers (**C**) also referred to as gateways or mobile battery operated remote controls (**R**). This results in a number of possible communication patterns within a Z-Wave network that are partly or completely supported by a specific device.



There are two different roles a controller can have. There is always one single primary controller that is managing the network and including/excluding devices. The controller may have other functions – like controllers don't manage the network itself but can control other devices. They are called secondary controllers. The image also shows that it is not possible to operate a sensor just from a remote control. Sensors only communicate with static controllers.

1.3.2 Behavior within the Z-Wave network

On factory default the device does not belong to any Z-Wave network. The device needs to join an existing wireless network to communicate with the device of this network. This process is called **Inclusion (Add)**. Devices can also leave a network. This process is called **Exclusion (Remove)**. Both processes are initiated by the primary controller of the Z-Wave network. This controller will be turned into exclusion respective inclusion mode. Only if the primary controller is in inclusion or exclusion mode, this device can join or leave the network. Leaving the network - i.e. being excluded – sets the device back to factory default.

If the device already belongs to a network, follow the exclusion process before including it in your network. Otherwise inclusion of this device will fail. If the controller being included was a primary controller, it has to be reset first.

Please refer to your device user manual, inclusion and exclusion your devices into the Z-Wave network.

1.3.3 Explanation of Z-Wave specific terms

- **Controller** – is a Z-Wave device with capabilities to manage the network. Controllers are typically Gateways, Remote Controls or battery operated wall controllers.
- **Slave** – is a Z-Wave device without capabilities to manage the network. Slaves can be sensors, actuators and even remote controls.
- **Primary Controller** – is the central organizer of the network. It must be a controller. There can be only one primary controller in a Z-Wave network.
- **Inclusion** – is the process of bringing new Z-Wave devices into a network.
- **Exclusion** – is the process of removing Z-Wave devices from the network.
- **Association** – is a control relationship between a controlling device and a controlled device.
- **Wakeup Notification** – is a special wireless message issued by a Z-Wave device to announce that is able to communicate.
- **Node Information Frame** – is a special wireless message issued by a Z-Wave device to announce its capabilities and functions.

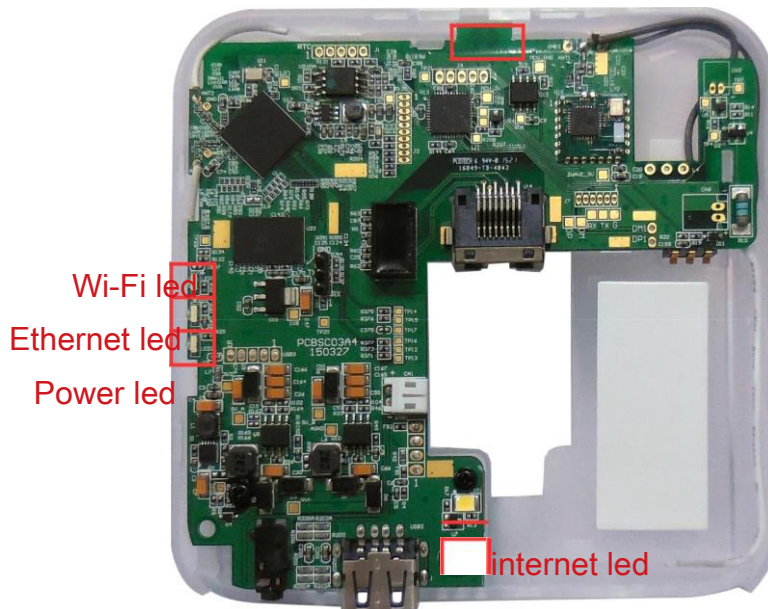
1.4 Button function



- **WPS button** – If you use Wi-Fi to connect gateway , you can press this button instead typing password
- **Reset button** – Press this button for 10 seconds above, it can reset gateway to factory default. Factory default means reset Wi-Fi SSID, reset gateway connected password. If press it over 20 seconds, it will reset to factory default and reset customer setting. Both reset ways will NOT reset device added into gateway.
- **Reboot button**– It can reboot gateway when you press it.

1.5 Indication modes

Include/Exclude led (at the back)



- **Include/Exclude led** – It will flash in slow mode, when PSC03 is in include mode, and flash in fast mode is in exclude mode.
- **Wi-Fi led** – It will flash, when data transfer via Wi-Fi.
- **Ethernet led** – It will flash, when data transfer via Ethernet.
- **Power led** – It will turn on when power on, it will turn off when power off.
- **Internet led** – It will turn on when PSC03 can connect to Internet, and turn off when it disconnect to Internet.

2. Home Setup

2.1 Connect to gateway via Wi-Fi

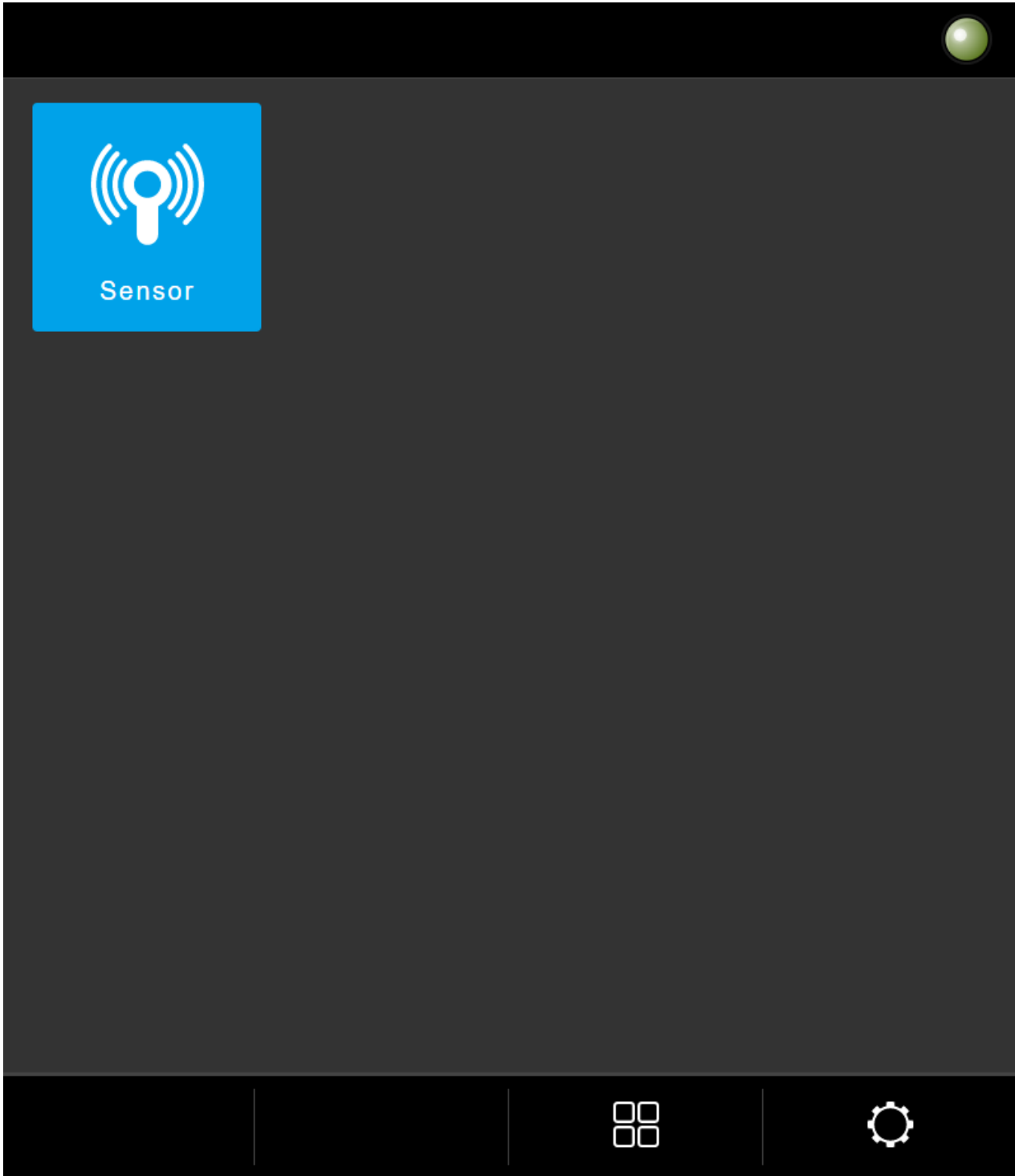
Power on gateway, and wait for Wi-Fi SSID (like this format PSC03-18:cc:23:00:xx:xx) of gateway show up on Wi-Fi SSID list.

Connect the Wi-Fi SSID and type password, default password is "12345678".

2.2 Open the web page

Once you connect to gateway, open your browser, and then type the URL: 10.10.10.254 in the browser.

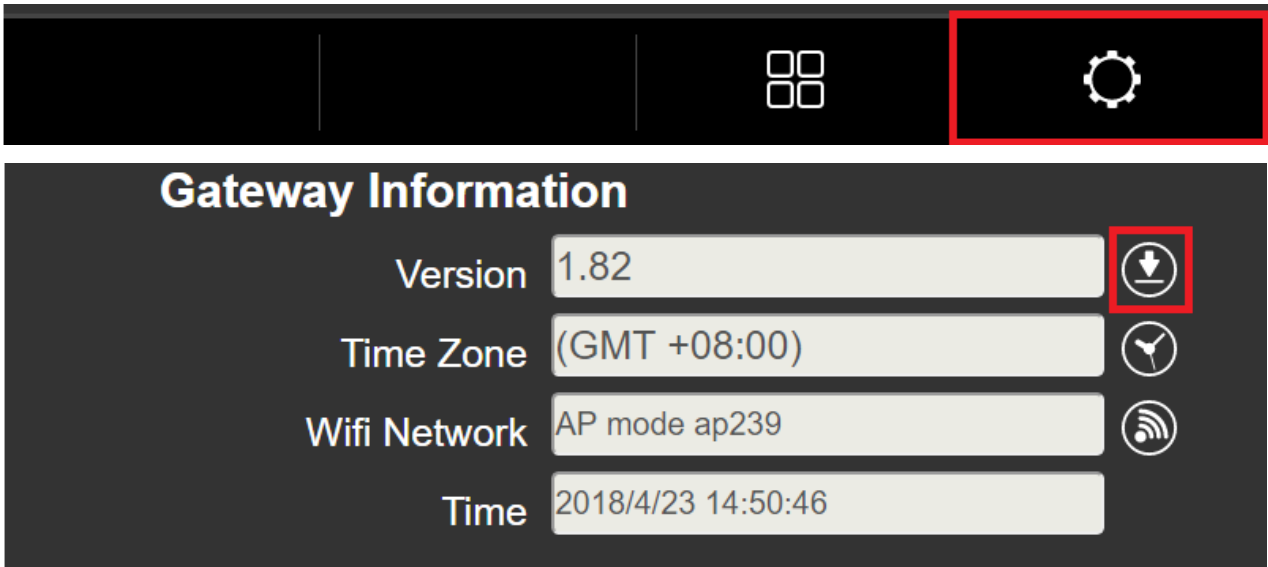
Default account is "admin", password is "888888"



5. Sometimes the web browser will be cached. Please refresh the web page by manually or press F5.

2.3 Firmware Update page

After connected the gateway, Click gear of the bottom-right corner. It will show "Gateway Setting" page



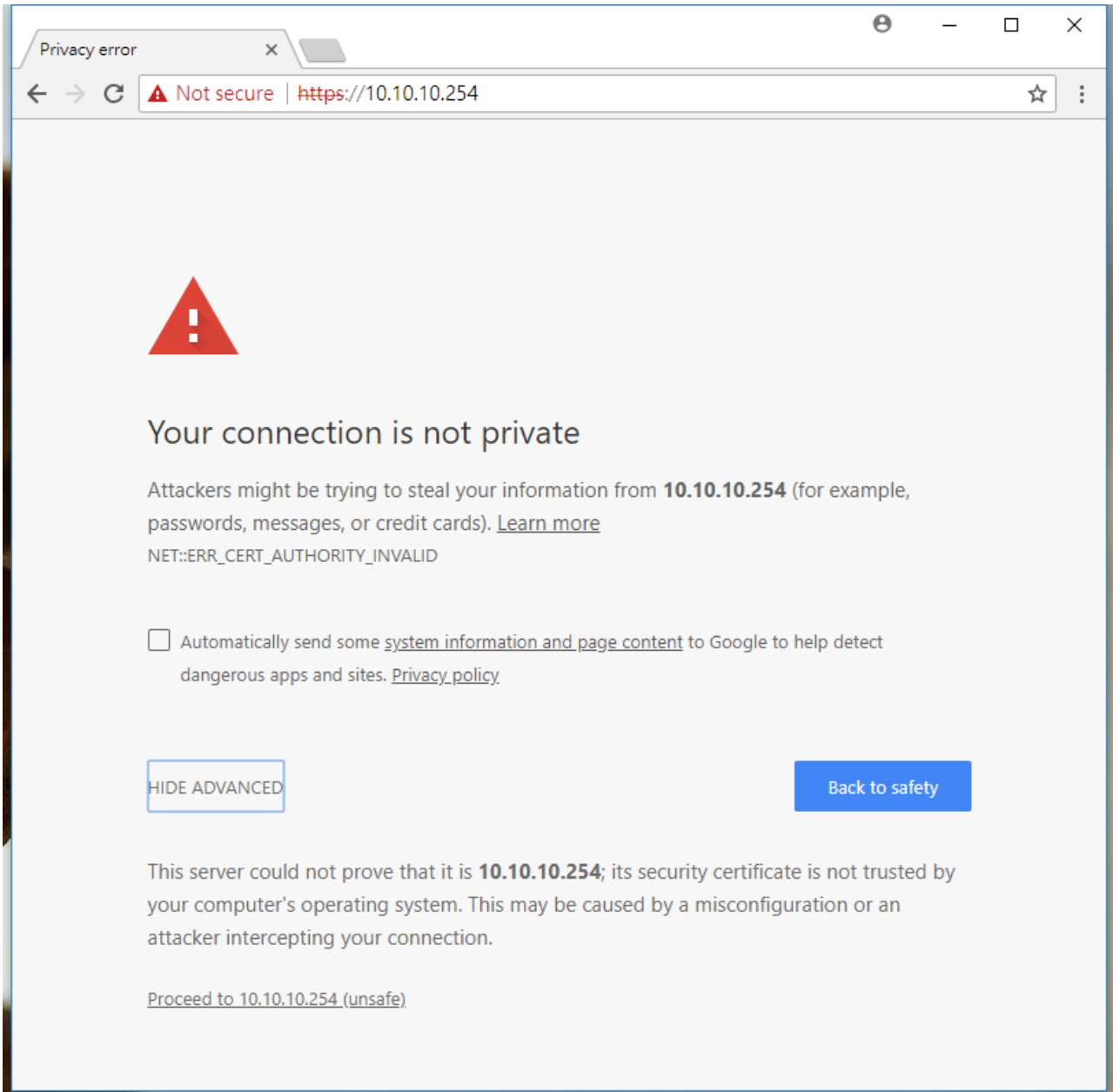
Please select the new firmware file and press "Update".

Update File (update.bin): No file chosen

2.4 HTTPS connection

The website is accessed over HTTPS which is encrypted information send between web browser and PSC03.

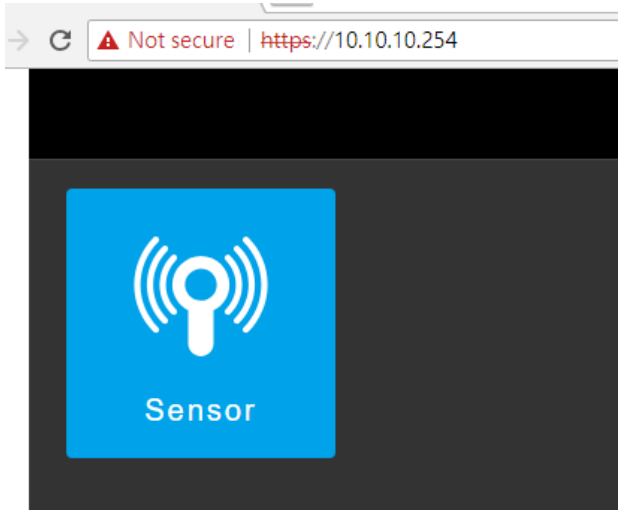
You will get a warning from web browser when linking for the first time.



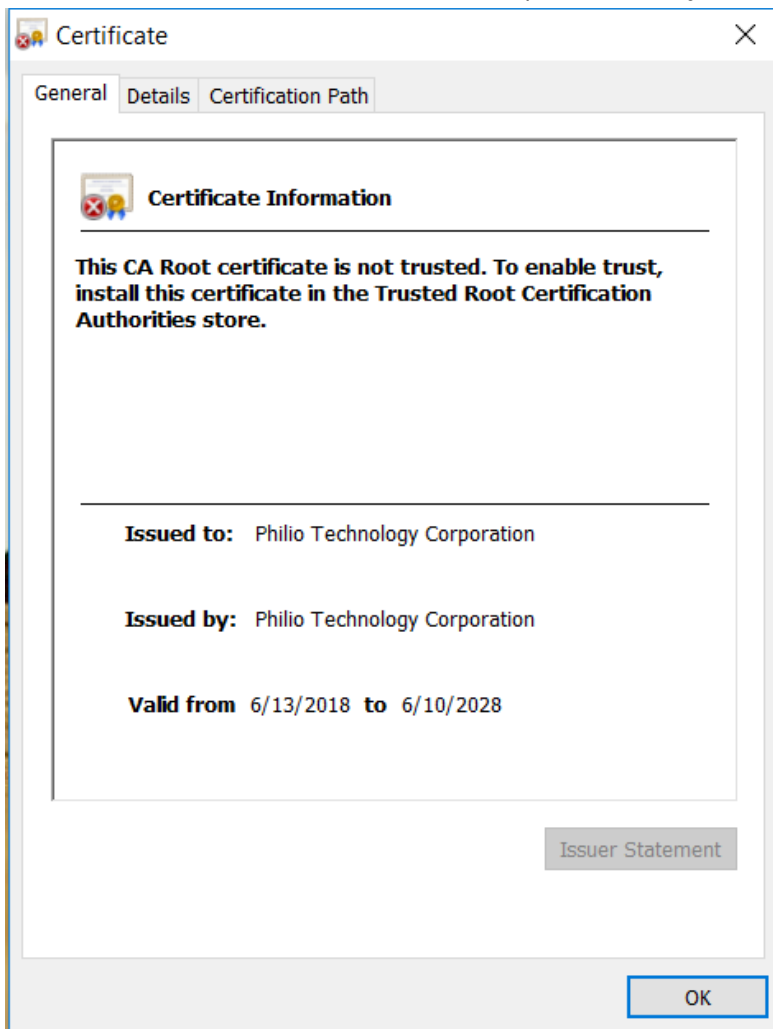
Please accept this and click "Proceed 10.10.10.254".

Then see “Not secure”. But the connection still runs over HTTPS.

Web browser shows the alert because 10.10.10.254 is a private ip and protected with self-signed certificate.



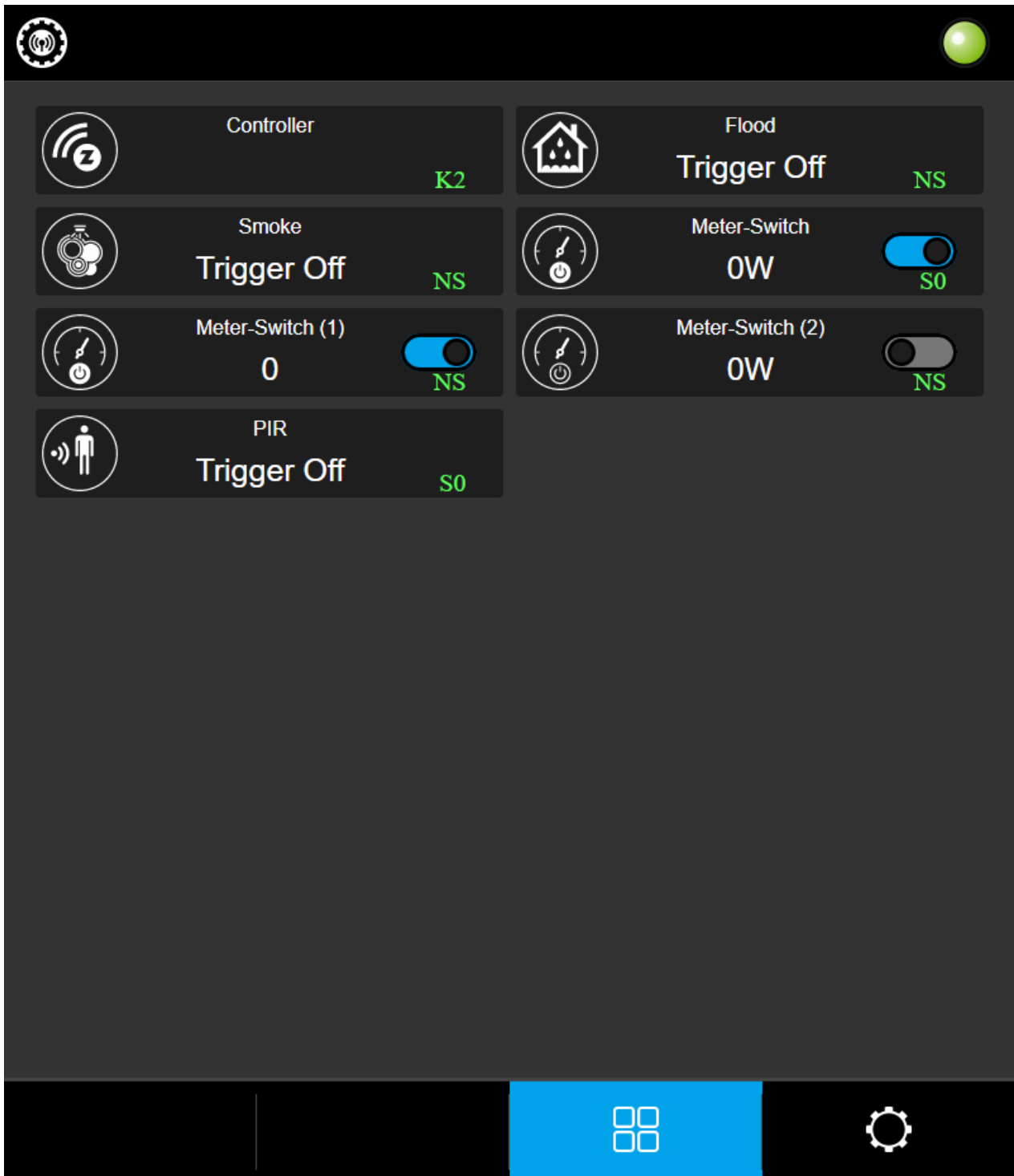
To check the Certificate Information (Issued to/by: Philio Technology Corporation)



3. Realize your Smart Home

All functions and beyond the access and control of wireless devices are realized with the web page.

The web page are like templates. Only when activated they become a real part of the smart home system.



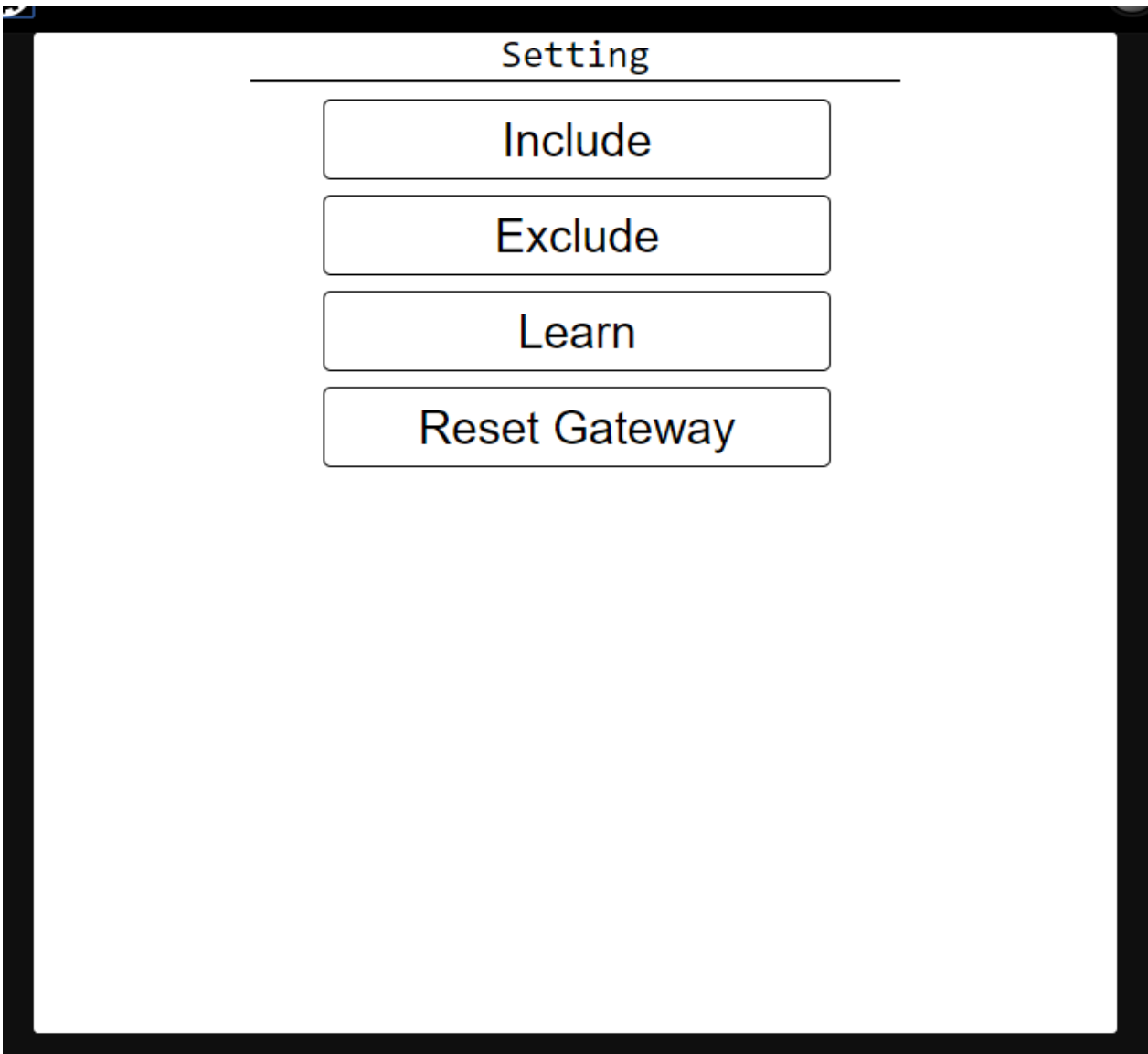
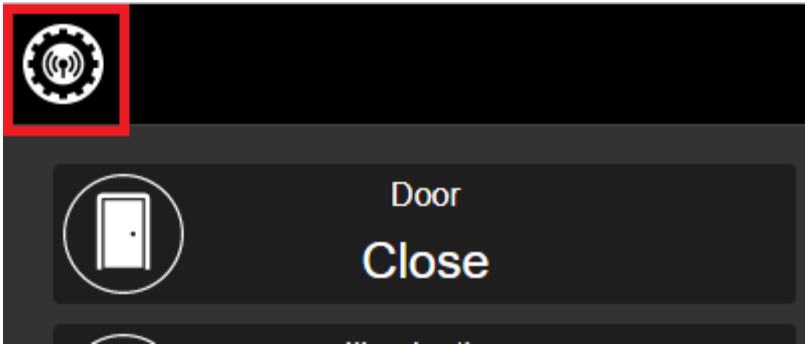
When you add device in our gateway, it will show device panel on screen. There are 3 parts can be pressed.



- **Icon** – press it and it will show device option
- **Name and Status** – press it and it will show device detail.
- **Switch** – Toggle it and it will control device directly.

3.1 Basic operation

Click gear of the top-left corner. It will show "Setting" menu.



3.1.1 Add (Include) your device

Communication between two Z-Wave devices only works if both belong to the same wireless network. Joining a network is called inclusion and is initiated by a controller. The controller needs to be turned into the inclusion mode.

Please click "Include", it will show "Include" message.

Include

Preparation: If you are not sure the device is in factory default , just run *Exclusion.*

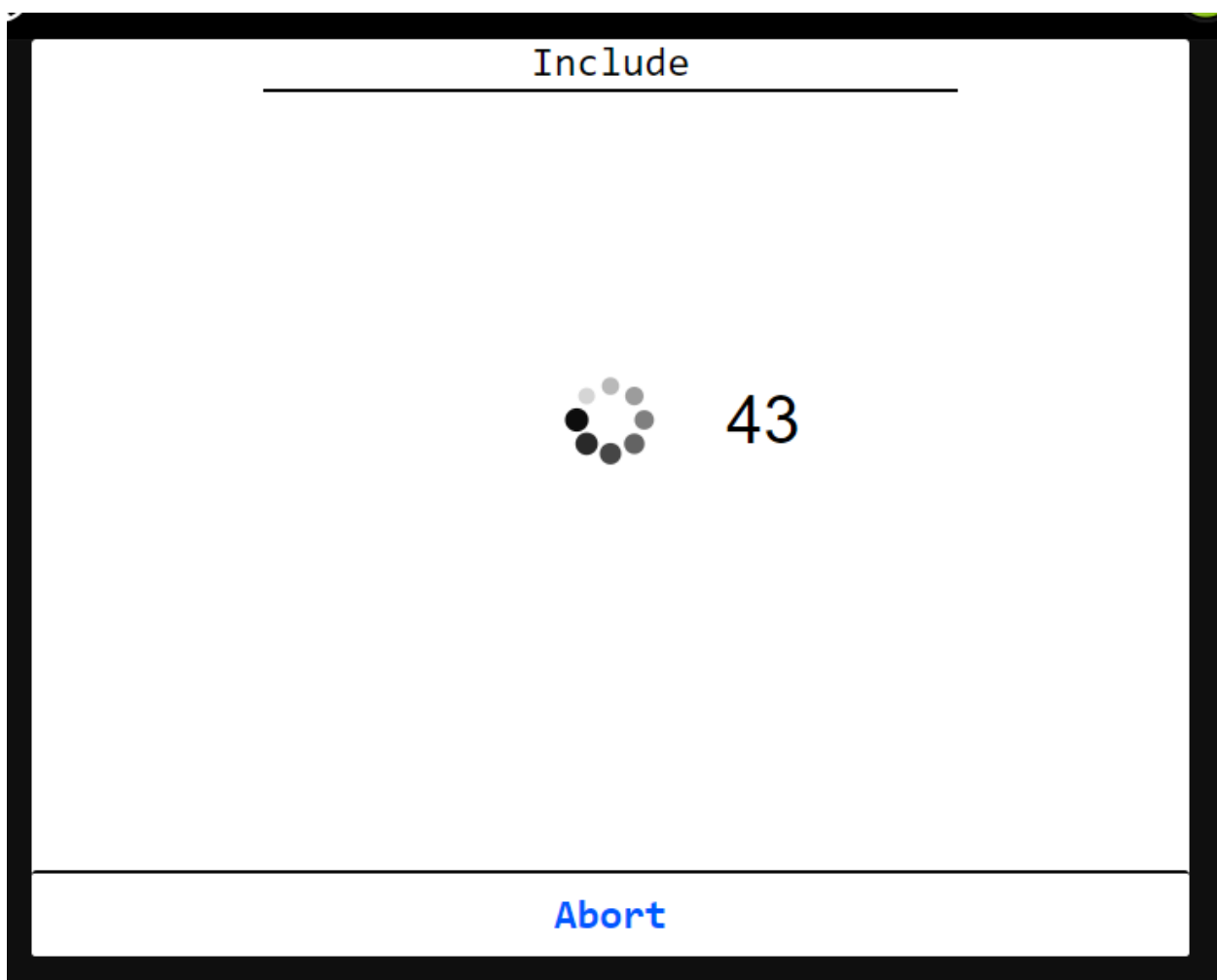
DSK

Start Inclusion

- Please input DSK (such as 01097-63067-18934-20959-43445-64709-13695-03917) or PIN Code (such as 01097) for including S2 devices.
- The gateway will automatically choose the highest security mode.

Then click "Start Inclusion".

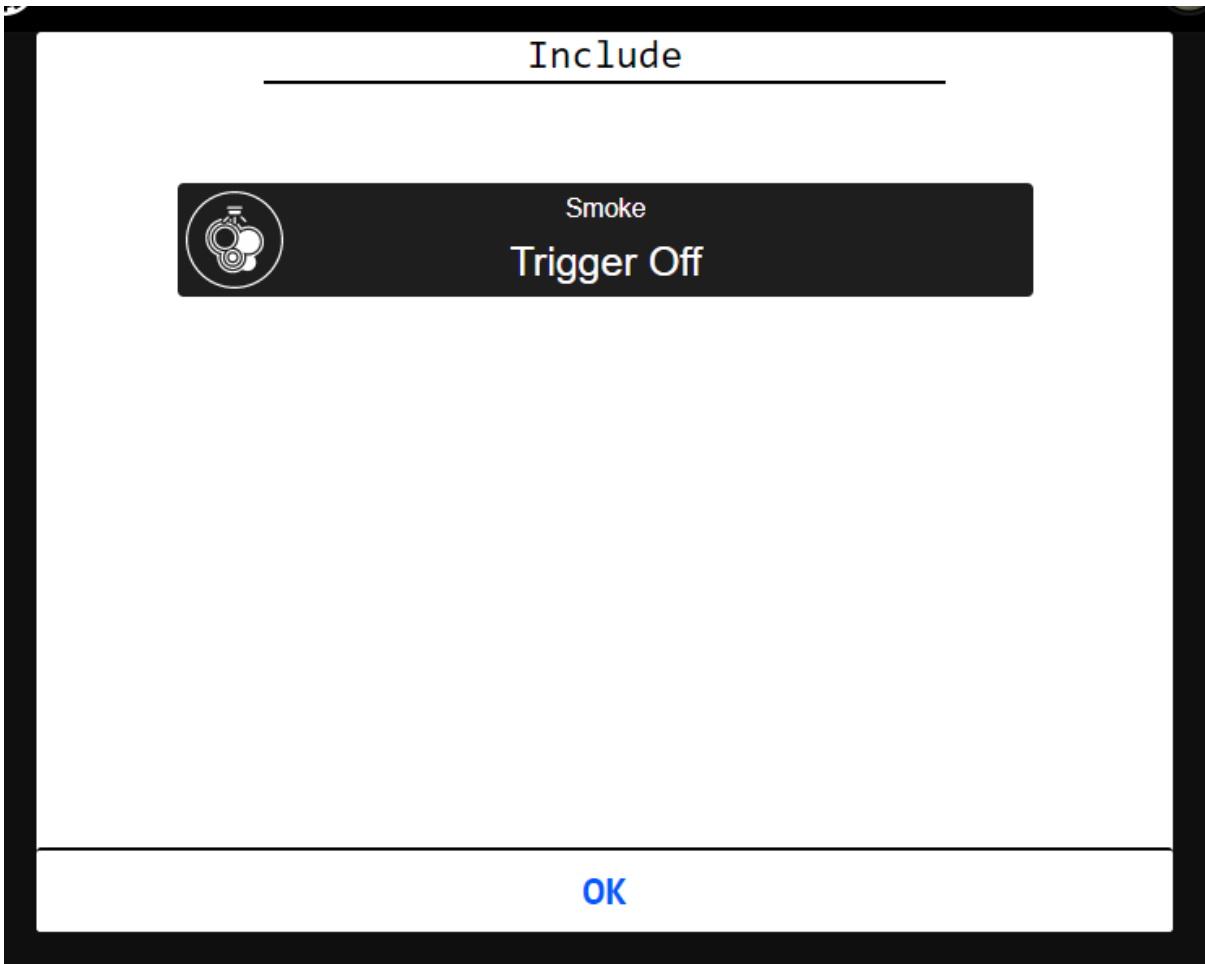
It will show count down time, and gateway will be in inclusion mode, include/exclude led will start flash in slow mode. Please send "Node Info" from device before count down time end.



If wrong DSK or without DSK, the device may be included with lower security.
(Security level from high to low: S2 Access Control, S2 Authenticated, S2 Unauthenticated, S0 and Non-security).



If success, it will show device on screen



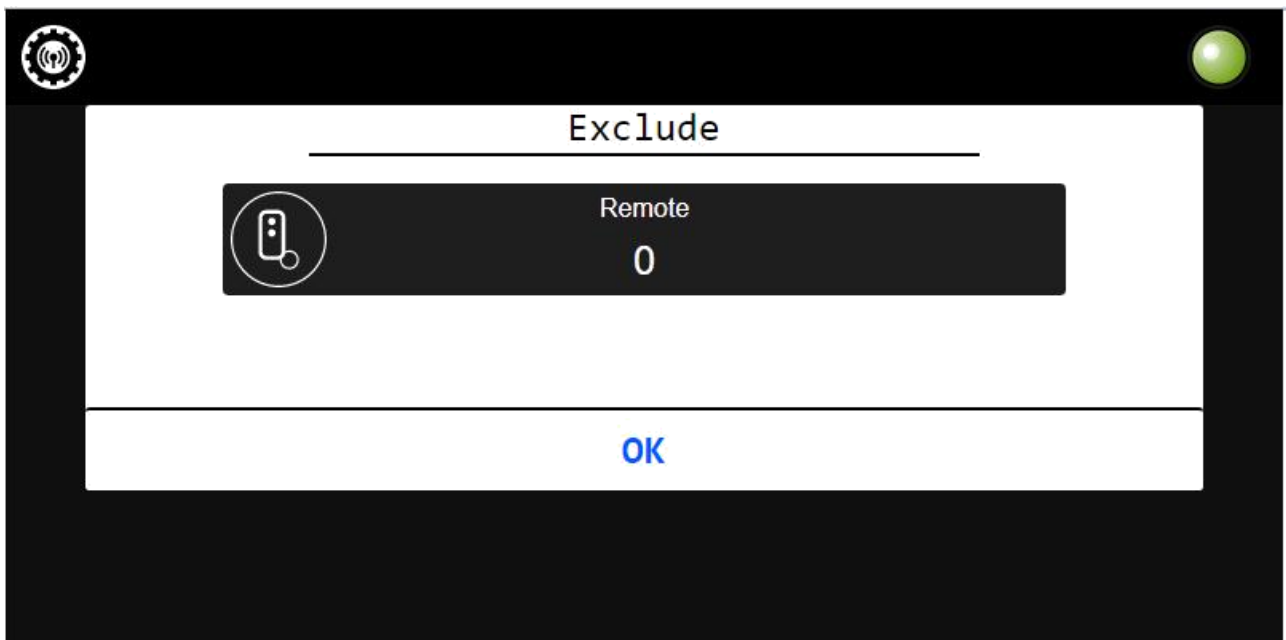
3.1.2 Remove (Exclude) your device

The primary controller can exclude devices from the Z-Wave network. During exclude the relationship between the device and the controller. No communication could happen after successful exclusion, between the device and other devices in the original network.

Please click "Exclude".

It will show count down time, and gateway will be in exclusion mode, include/exclude led will start flash in fast mode. Please send "Node Info" from device before count down time end.

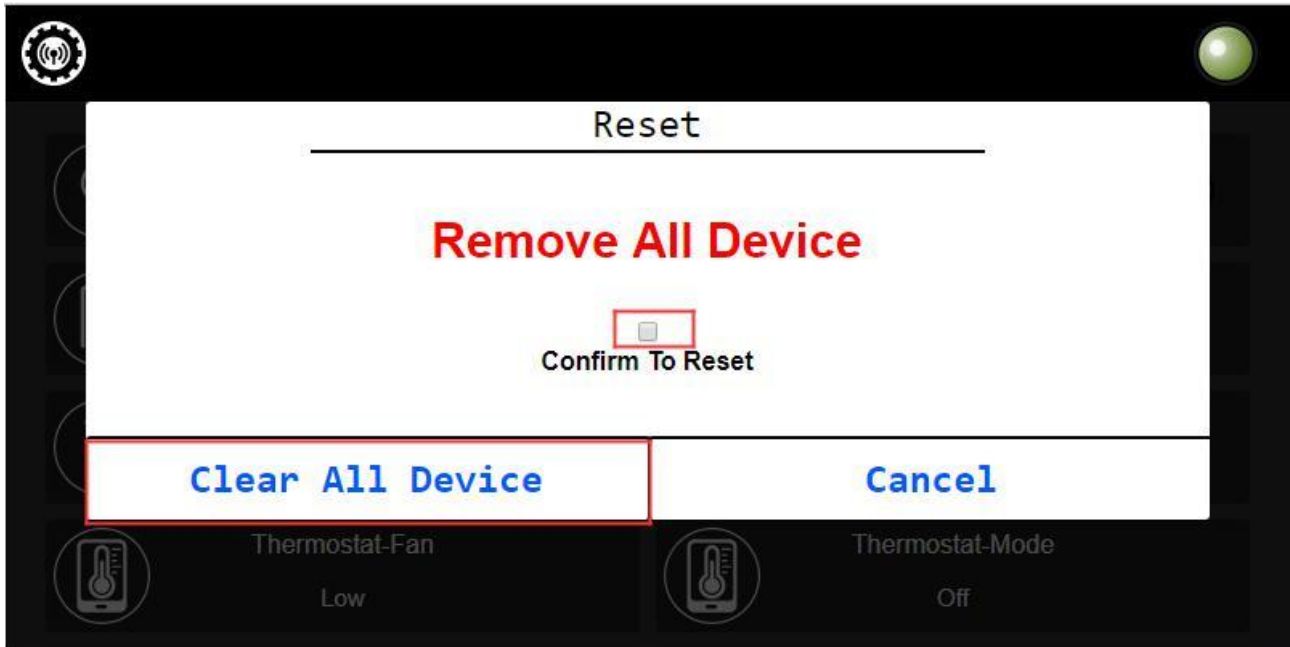
If success, it will show device which was added in gateway on screen, but if device wasn't added into gateway before, it will show nothing on screen.



3.1.3 Clear all devices

Reset the Z-Wave controller. It will reset the Z-Wave controller and will be assign a **new Z-Wave home id**.

Please click "Reset Gateway", it will show "Reset" message



Select "checkbox" first then click "Clear All Device".

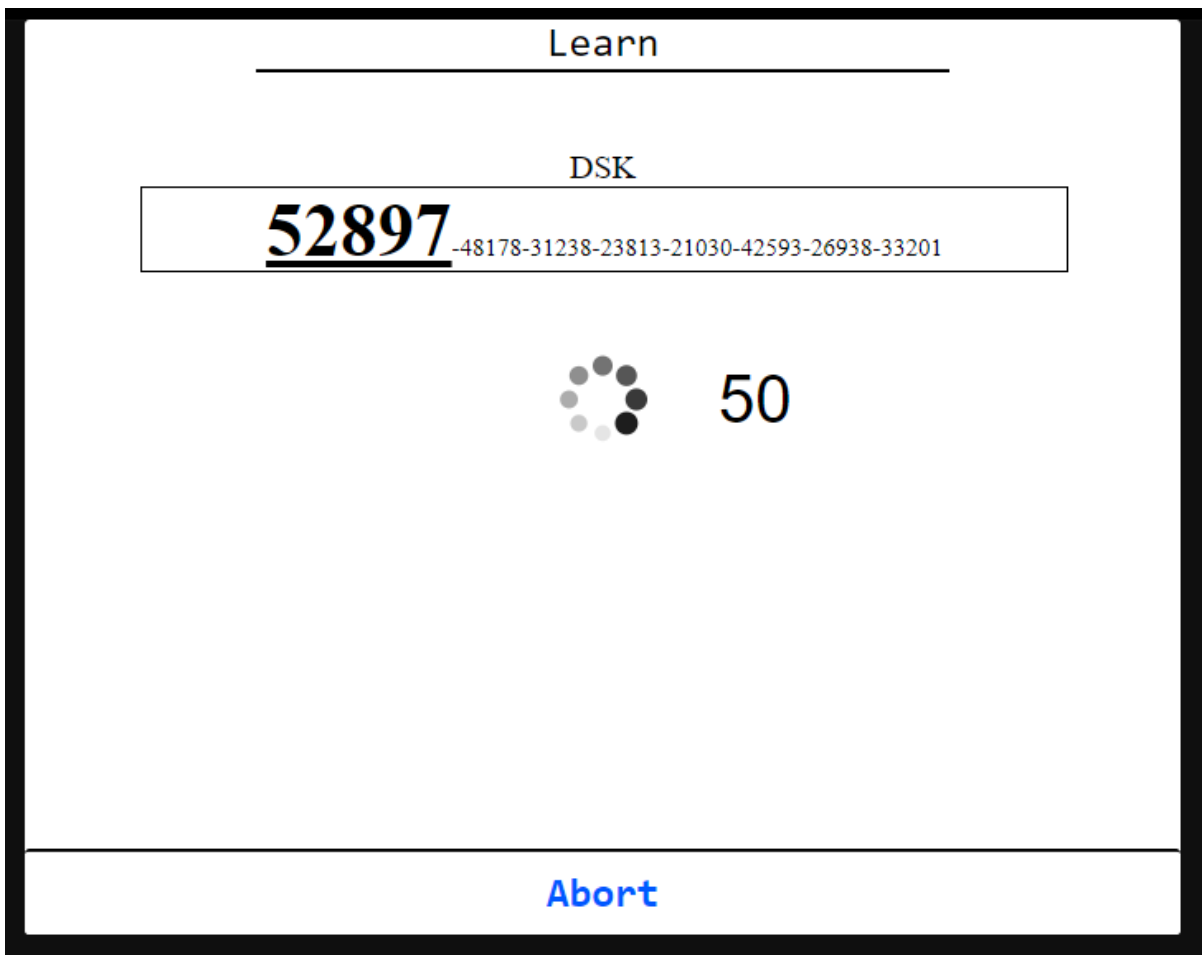
If this controller is the primary controller for your network, resetting it will result in the nodes in your network being orphaned and it will be necessary after the reset to exclude and re-include all of the nodes in the network. If this controller is being used as a secondary controller in the network, use this procedure to reset this controller only in the event that the network primary controller is missing or otherwise inoperable.

3.1.4 Learn (Replication) mode

The gateway can join another Z-wave network and will be a slave device. If the gateway is included in other network, it can receive (replication) the latest network information from SUC again.

But the gateway can't use this function if the gateway is the SIS and others nodes are included in the network

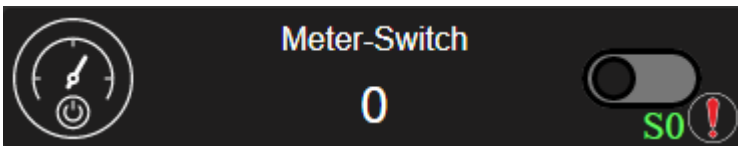
Please click "Learn". It will show learn message (the count down time and the gateway's DSK).



3.2 Device panel

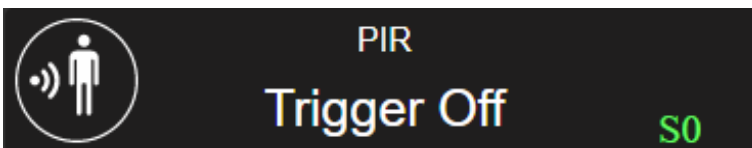
3.2.1 Device no response

- When a device didn't response or wakeup, it will show an exclamation mark.



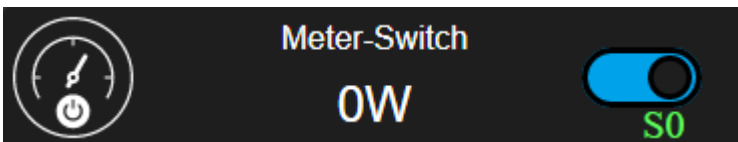
3.2.2 Device is included in security or non-security.

- When a device is included, it will show NS, S0, K0, K1 or K2.



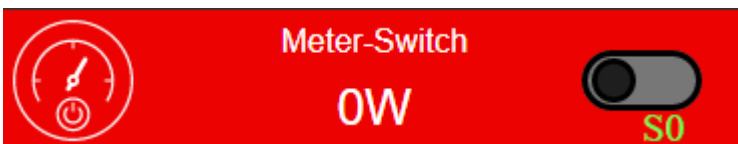
3.2.3 Control device

- Plug, siren, dimmer, curtain and door lock can use switch on device panel to On/Off.



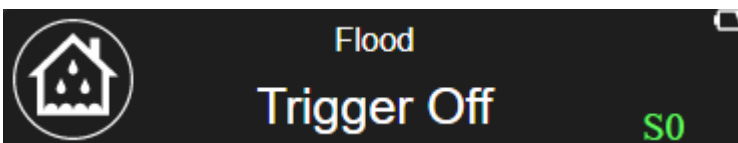
3.2.4 Device event

- When event is coming, the device panel will flash in red background about 5 seconds.



3.2.5 Device low battery

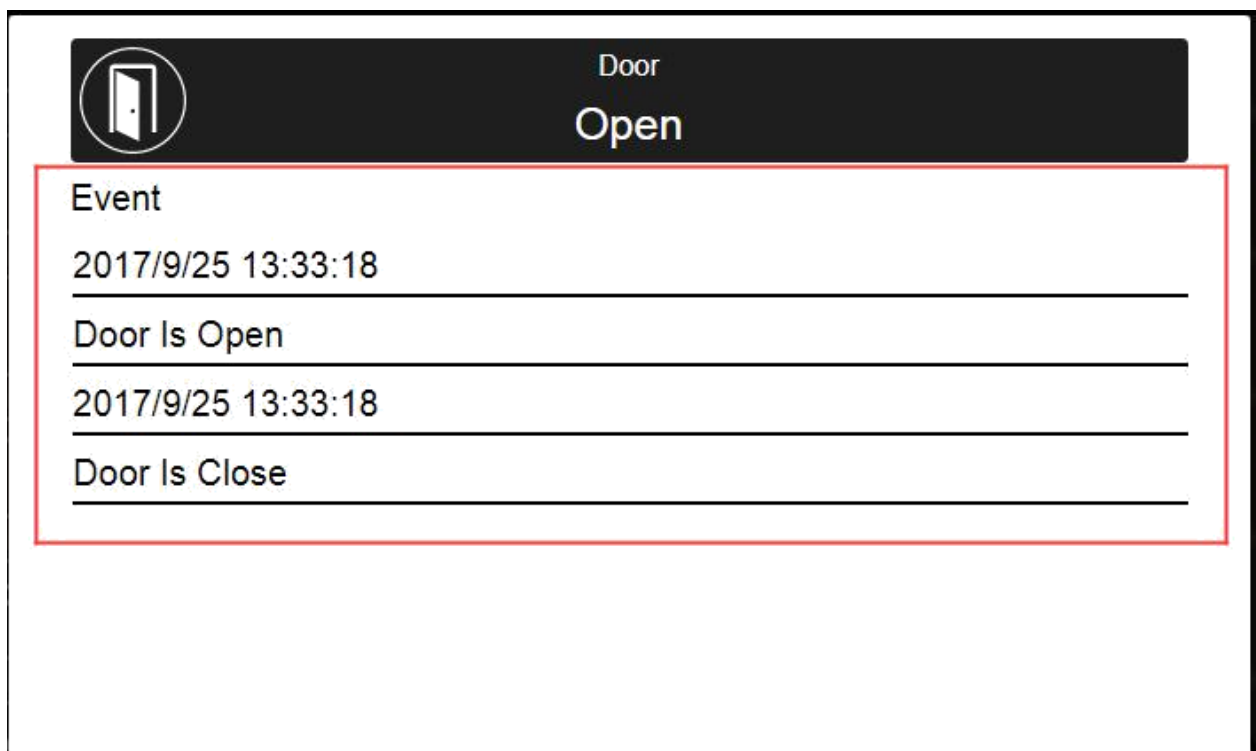
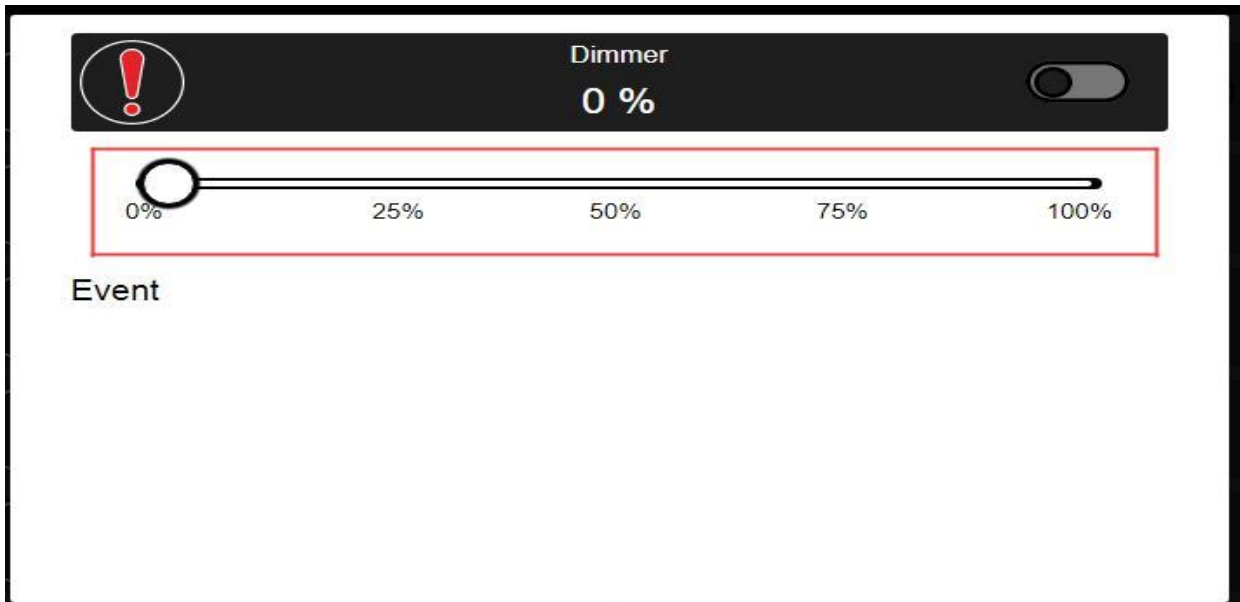
- When event is coming, the device panel will show battery icon on right-top.



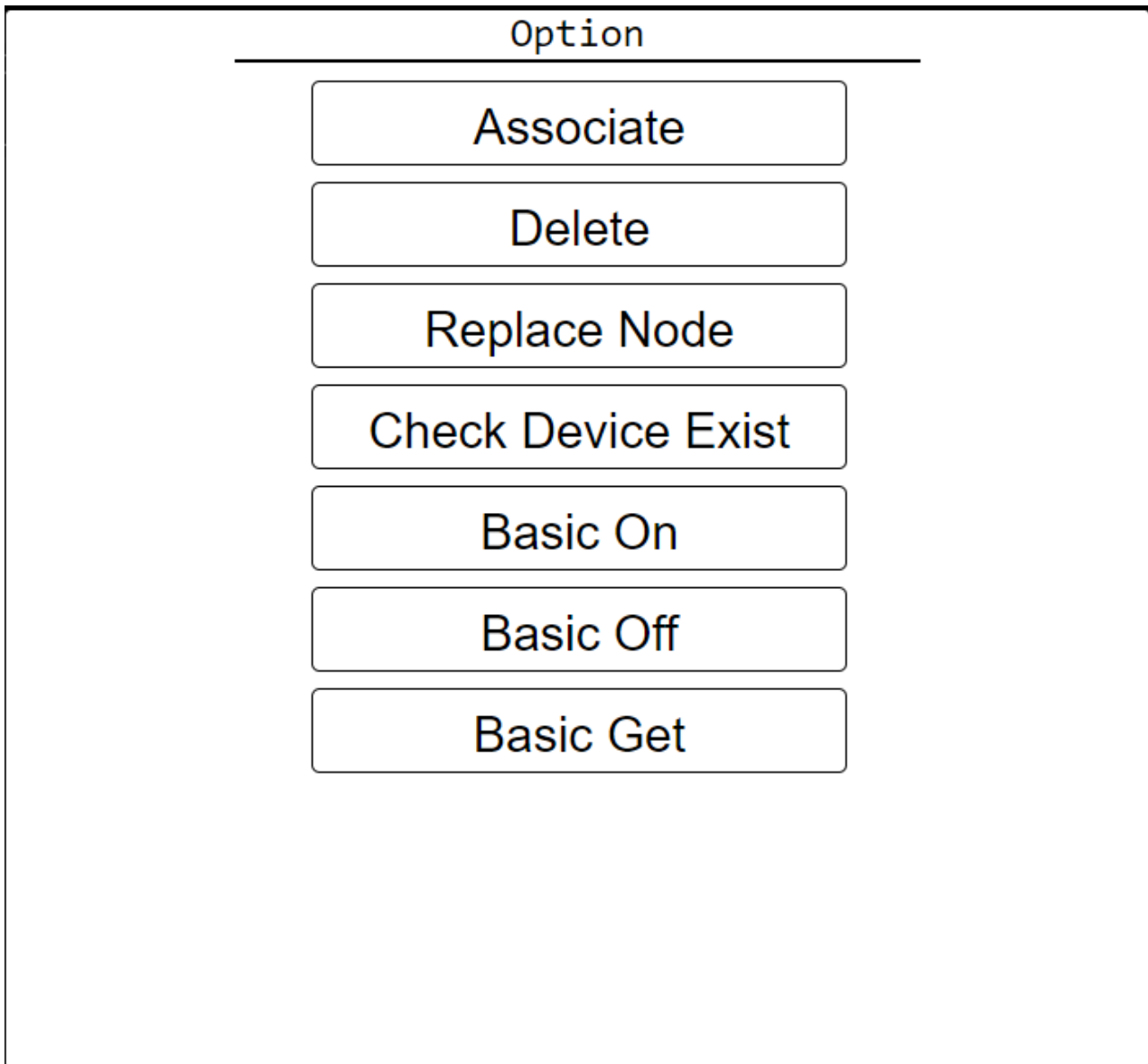
3.3 Device detail

It has 4 parts to introduce

- **Icon** – press it and it will show device option
- **Switch** – Toggle it and it will control device directly.
- **Control panel**
 - Dimmer and curtain type will show slider
- **Event** – it will show event witch belong to this device

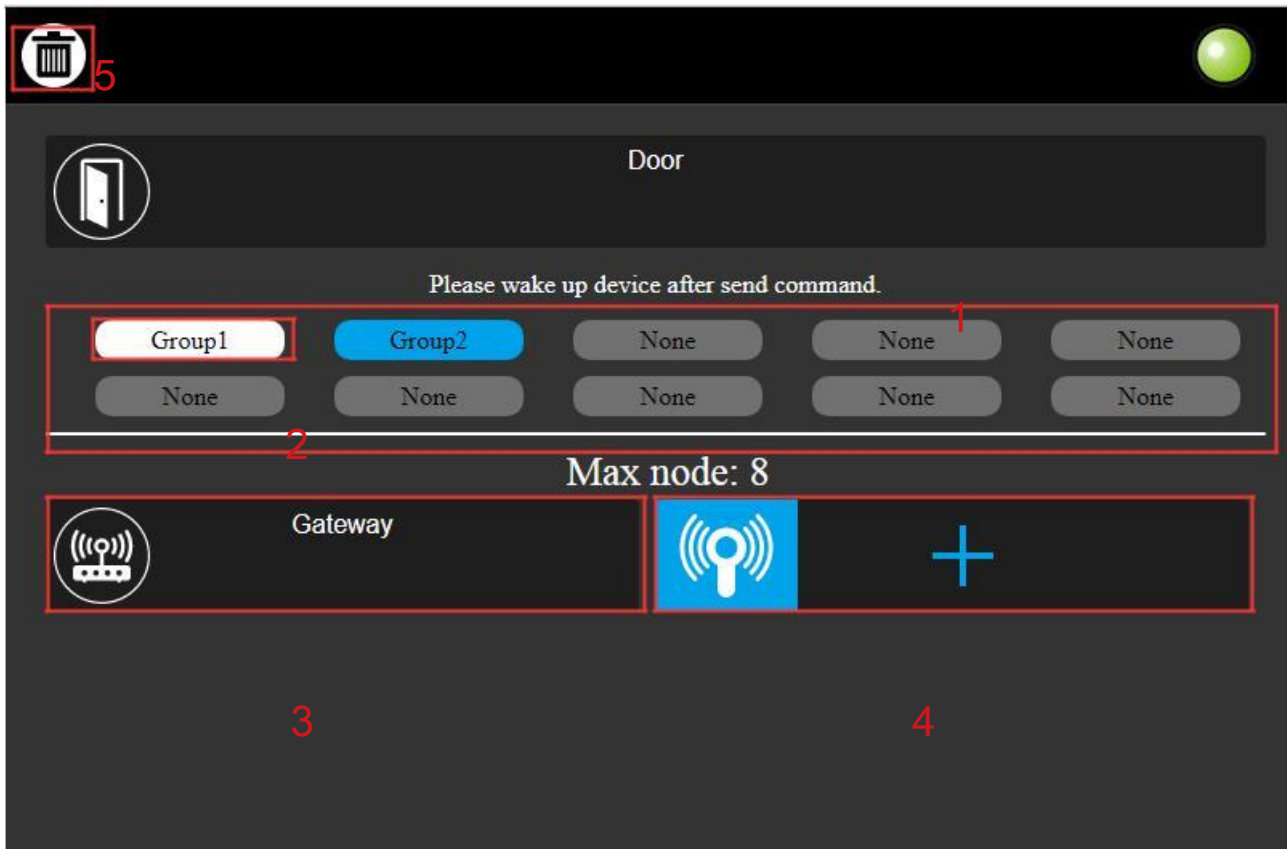


3.4 Device option



3.4.1 Association

Press "Associate", it will show "Association" Page



- **Group block** – show groups which can be used
- **Group button** – press it , and it will show device in this group
- **Group device** – show device which is added in this group
- **Add device** – show device which is not added in this group
- **Remove device** – delete device which is added in this group, gateway can't be removed.

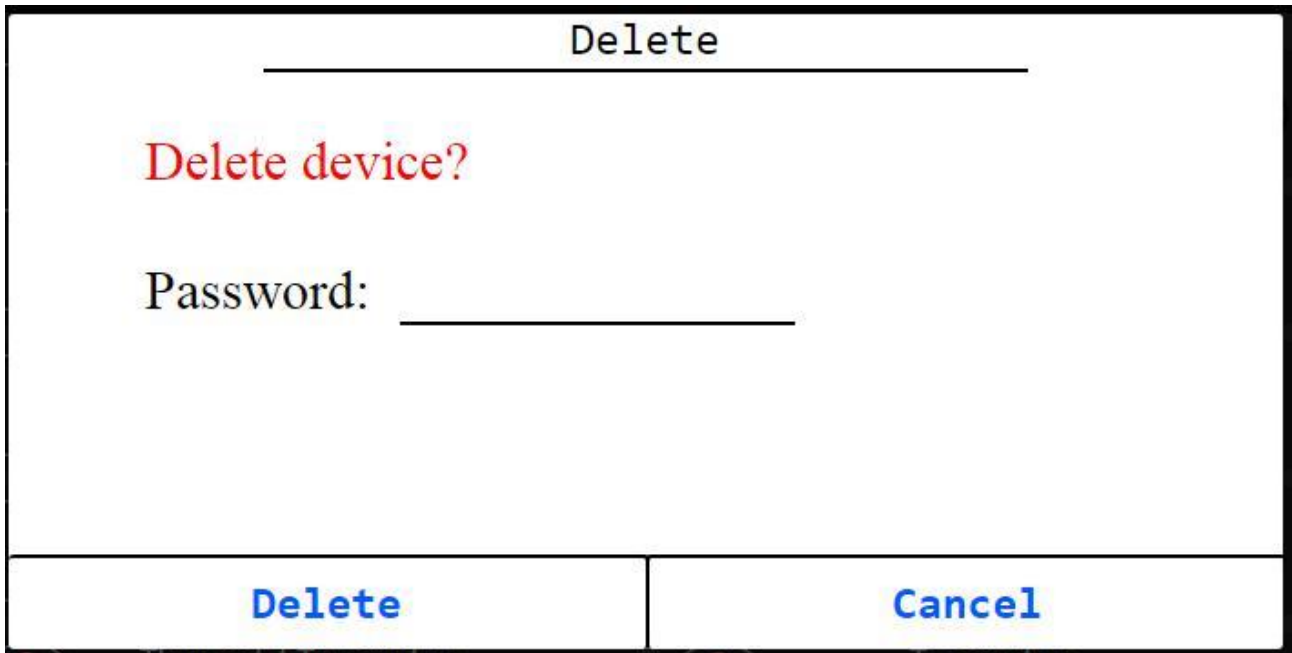
3.4.2 Check if device is alive

Please click "Check Device Exit". The gateway will send NOP command to check if device is alive. If the device will response (ack) immediately, the device is alive. Otherwise the device is broken or in sleeping. The gateway will display warning symbol.

3.4.3 Delete the broken device

After checked the device and it is out of work, you can remove the broken device from the network.

Please click "Delete", it will show "Delete menu"



Delete

Delete device?

Password: _____

Delete **Cancel**

- Input password (default: "888888"), then press delete and wait a moment. If this device can't be connected, the gateway will delete this device from the network. The device will not exclude itself. So if you want to add it again, please do exclude first.

3.4.4 Replace your broken device

After checked the device and it is out of work, you can replace the broken device.

Please click "Replace Node". And the same steps as 3.1.1 Add (Include) your device.

3.4.5 Basic On

Please click "Basic On". The gateway will send BASIC SET On to the end point. If the device is a sleeping device, the command will be queued and wait for the next wakeup notification.

3.4.6 Basic Off

Please click "Basic Off". The gateway will send BASIC SET Off to the end point. If the device is a sleeping device, the command will be queued and wait for the next wakeup notification.

3.4.7 Basic Get

Please click "Basic Get". The gateway will send BASIC GET to the end point. If the device is a sleeping device, the command will be queued and wait for the next wakeup notification.

4.1 CSC or SSC Role Type

The gateway if into CSC or SSC Role Type and it receives a **Basic Command**, the gateway do nothing only update Heartbeat.

4.2 Supported / Control Command Classes

- **Supported**

Application Status (0x22)

Association Group Information V3 (0x59)

Association V2 (0x85)

CRC16 Encapsulation (0x56)

Device Reset Local V1 (0x5A)

Inclusion Controller (0x74)

Manufacturer Specific V2 (0x72)

Network Management and Installation Maintenance V1 (0x34)

Network Management Basic V2 (0x4D)

Network Management Inclusion V3 (0x34)

Network Management Proxy V2 (0x52)

Powerlevel V1 (0x73)

Security S2 (0x9F)

Security V1 (0x98)

Supervision V1 (0x6C)

Transport Service V2 (0x55)

Version V2 (0x86)

Z-Wave Plus Info V2 (0x5E)

- **Control**

Application Status

Association Group Information V3

Association V2

Basic V1

Battery V1

Binary Switch V1

CRC16 Encapsulation

Device Reset Local V1

Manufacturer Specific V2

Meter (Electric) V1

Multi-Channel Association V3

Multi-Channel V4

No Operation

Notification V8

Security S2

Security V1

Sensor Multilevel V5

Version V2

Wake-Up V2

Z-Wave Plus Info V2

5. Associations

Z-Wave devices control other Z-Wave device. The relationship between one device controlling another device is called association. In order to control a different device, the controlling device needs to maintain a list of devices that will receive controlling commands. These lists are called association groups and they are always related to certain events (e.g. button pressed, sensor triggers ...). In case the event happens all devices stored in the respective association group will receive a common wireless command.

The PSC03 Gateway has 1 association group: **Lifeline**.