Nano Switch (User Guide)

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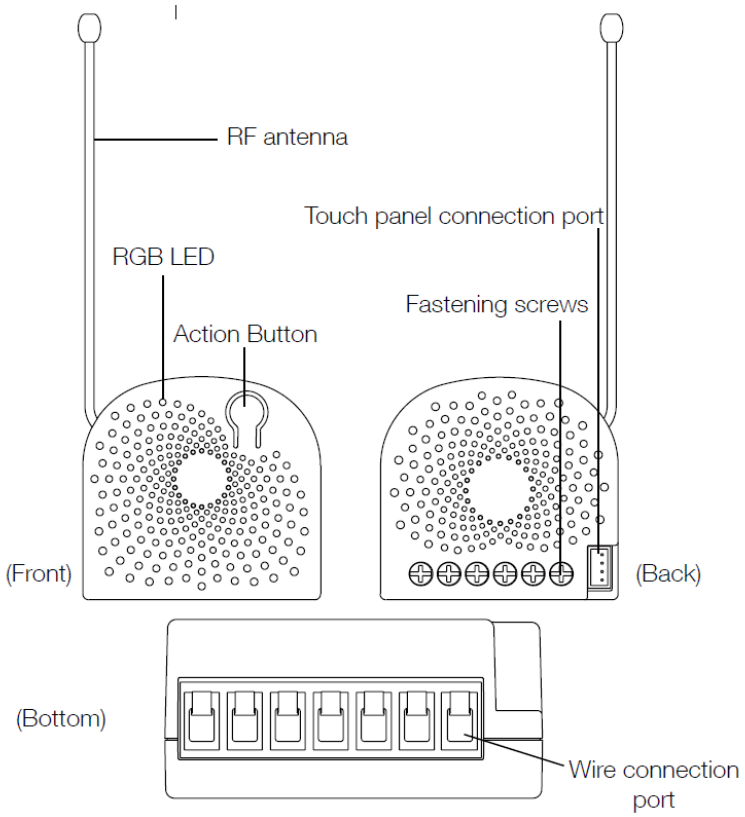
Aeotec by Aeon Labs Nano Switch.

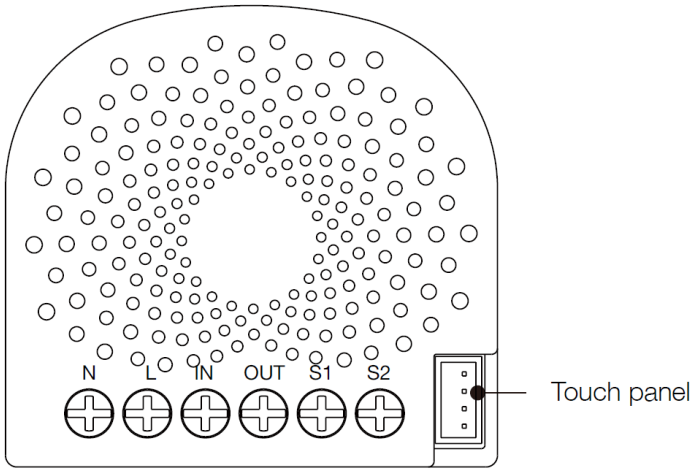
Aeotec Nano Switch is a low-cost Z-Wave Switch specifically used to enable Z-Wave command and control (on/off) of any wall switches. It can report immediate wattage consumption or kWh energy usage over a period of time. In the event of power failure, non-volatile memory retains all programmed information relating to the unit's operating status.

It can connect to 2 external manual switches to control the load ON/OFF independently. Its surface has a pin socket, which can be used for connecting to the touch panel, so you can also use the touch panel to control the Nano Switch.

The Nano Switch is also a security Z-Wave plus device and supports Over The Air (OTA) feature for the products firmware upgrade.

Familiarize yourself with your Nano Switch.





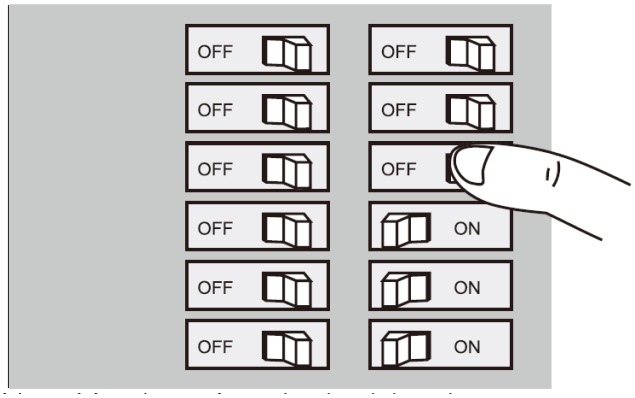
Notes for the wire connection ports:

L – Power input for live
N – Power input for neutral
IN – Input for load power supply
OUT – Output for load
S1 – External switch control for load
S2 – External switch control for load

Install the Nano Switch.

Important: A licensed electrician with knowledge and understanding electrician systems and electrical safety should complete the electrical installation.

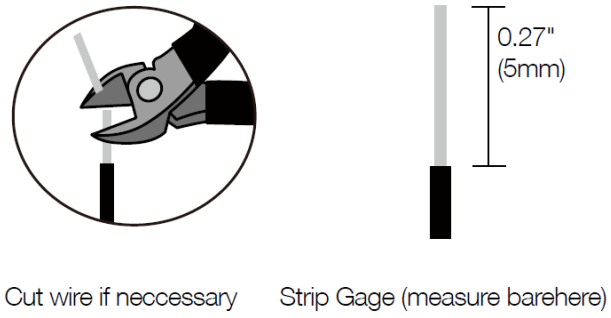
1. Shut off the main circuit breaker of your home for safety during the installation and ensure the wires are not short circuited during the installation which will cause damage to the Nano Switch.



Note: Your home's main circuit breaker must support the overload protection for safety.

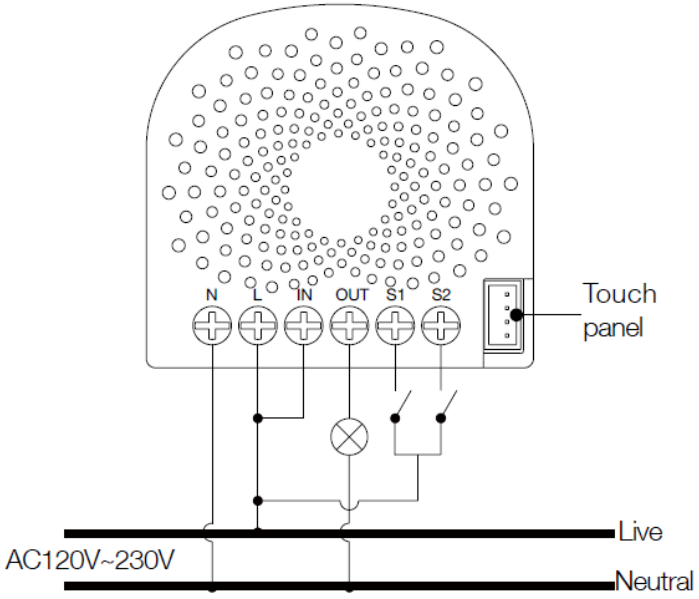
2. Preparing connection wires

14 AWG power wires for Input / Output.
18 AWG copper wires for external manual switch.
Use the wire stripper cut the metallic part of the connection wire and make sure the length of the metallic part is about 5mm.

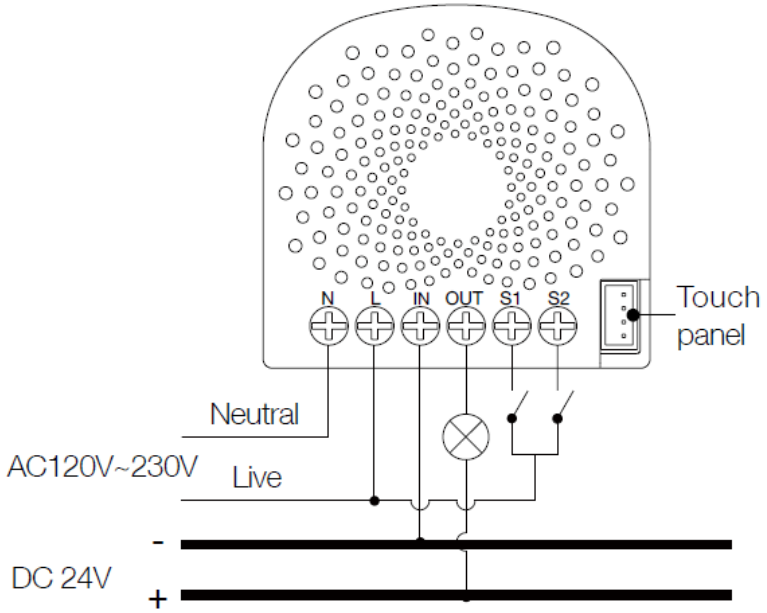


Note: All connection wires needs to be flexible cable.

Wiring diagram of 120/230VAC power input.



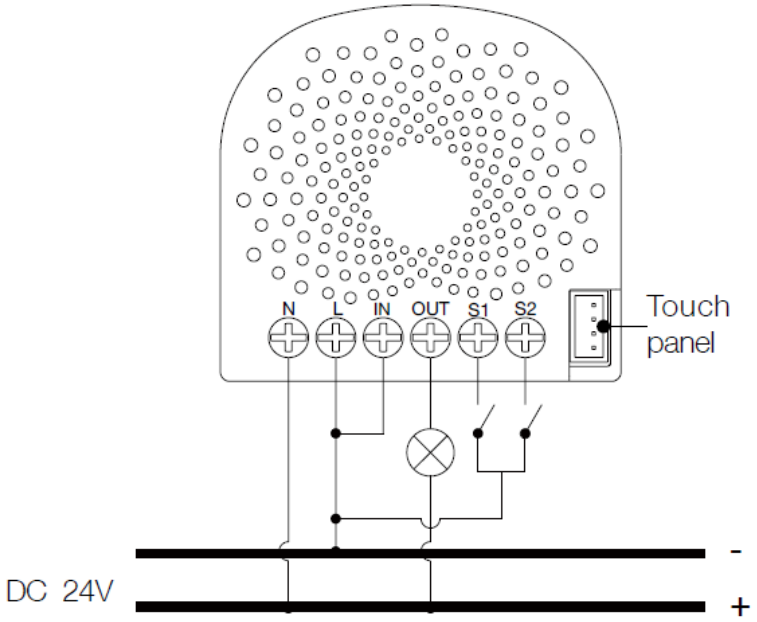
In some cases, you may have some loads just only can be used on the voltage of 24VDC and hope that it still can be controlled by the Nano Switch, so please refer to the following diagram to achieve this:



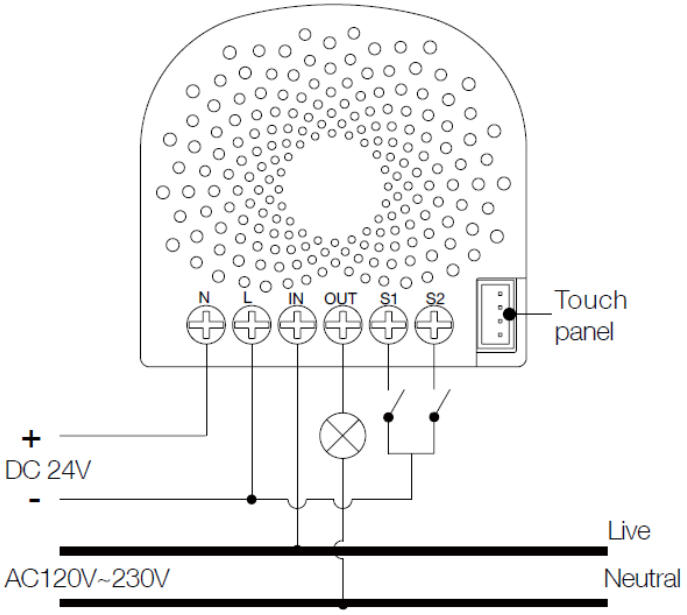
Note: The “IN” terminal should be connected to the “-” of 24VDC input.

Wiring diagram of 24VDC power input.

Since the Nano Switch also supports the 24VDC power input, so you can use it to control the loads that powered by 24VDC.



If the output loads should be only powered by AC120V or AC230V, you can change the wire connection as below:

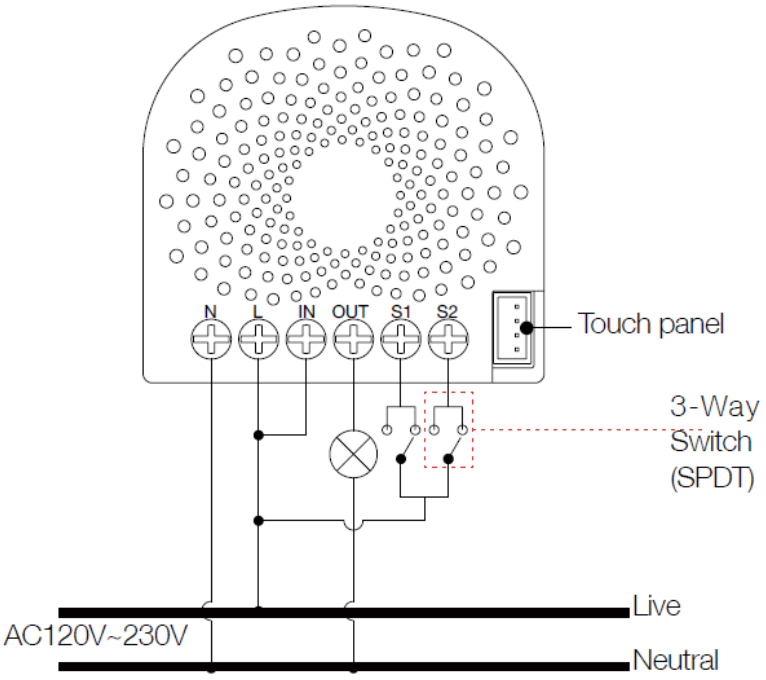


Note: The “IN” terminal should be connected to the “Live” of AC 120V/230V power wire.

All above wiring diagrams show that the Nano Switch uses 2-Way or momentary button switches as the external manual switch for 2-Way connection.

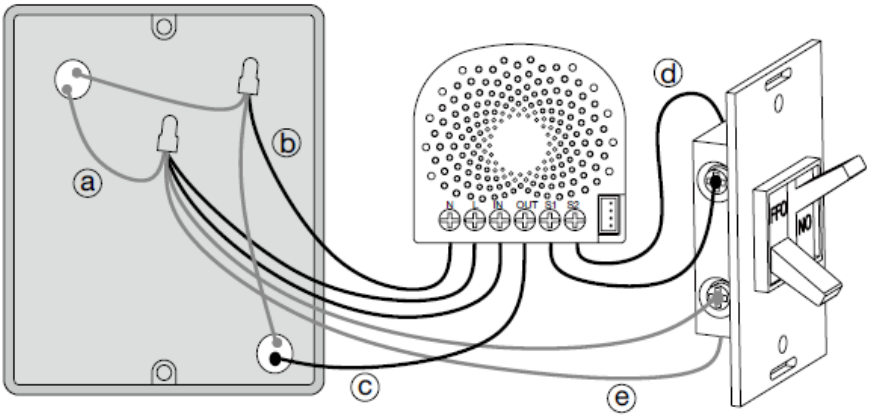
The below diagram will show you that the Nano Switch uses the SPDT (Single-Pole Double-Throw) switches as the external manual switch for 3-Way connection.

Wiring diagram of 3-Way connection for the external manual switch.



3. Install Nano Switch to the gang box.

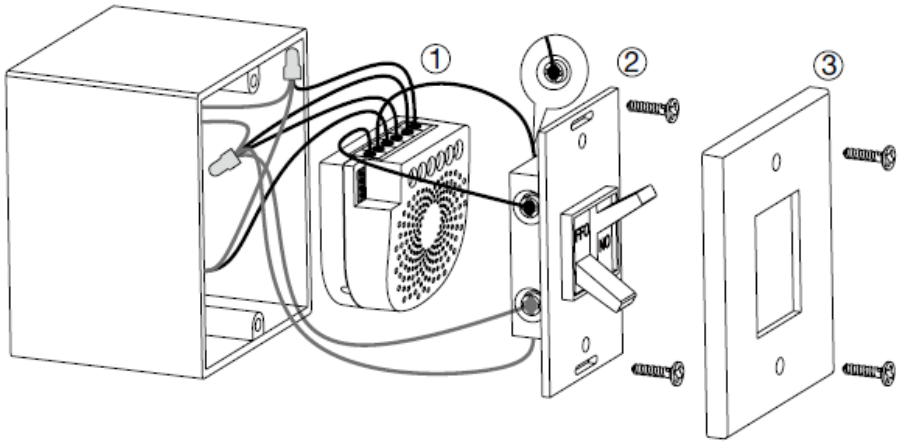
1. Live/Hot wire connection: Connect the Live/Hot wire to the “L” terminal on the Nano Switch.
2. Neutral wire connection: Connect the Neutral wire to the “N” terminal on the Nano Switch.
3. Load wire connection: Connect the Load wire to the “OUT” on the Nano Switch.
4. External/manual Switch connection: Connect 2 18AWG wires to the “S1” and “S2” on the Nano Switch.
5. External/manual Switch connection: Connect 2 18AWG wires form the 2 terminals on the External/manual Switch to the Live wire.



Note: This is the physical connection diagram for 120/230VAC power input.

4. Mounting the gang box.

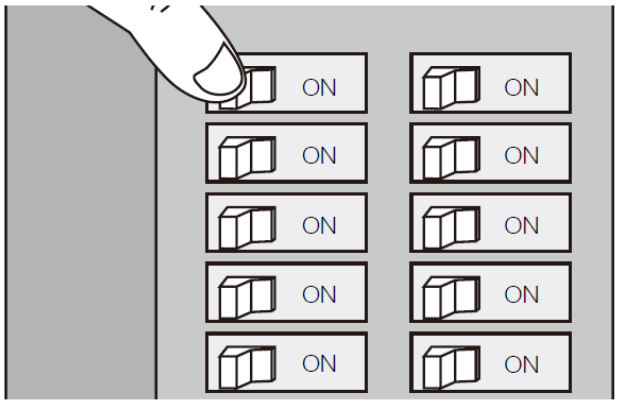
1. Position all wires to provide room for the device. Place the Nano Switch inside the gang box towards the back of the box.
2. Position the antenna towards the back of the box, away from all other wiring.
3. Reinstall the Nano Switch to the gang box.
4. Reinstall the cover onto the gang box.



Note: 1. The gang box should be sized 3×2×2.75 inch / 75×50×70 mm or larger, minimum volume 14 in / 230cm .
2. Use flexible copper conductors only.

5. Restore Power.

Restore power at the circuit breaker or fuse.



Adding your Nano Switch to a Z-Wave network.

After your Nano Switch is installed and powered on, you are now able to manually control the Nano Switch to turn it On/Off directly via pressing your Nano Switch's Action Button, it is now time to add your Nano Switch to the Z-Wave network. To set your Z-Wave gateway/controller into pairing mode, please refer to the respective section within your controller instruction manual.

1. Set your Z-Wave controller into pairing mode.
2. Press the Action Button on the Nano Switch once or toggle the external manual switch once, the green LED (non-secure indication) will blink to indicate the Nano Switch is entering into pairing mode.
3. If the Nano Switch has been successfully added to your Z-Wave network, its RGB LED will be solid. If the pairing was unsuccessful, the red LED will be on for 2 seconds and then remain a colorful gradient. Repeat the instructions above from step 1.

With your Nano Switch now working as a part of your smart home, you'll be able to configure it from your home control software/phone application. Please refer to your software or gateway user guide for further instructions on configuring Nano Switch to your needs.

Removing Nano Switch from a Z-Wave network.

Your Nano Switch can be removed from your Z-Wave network at any time. You'll need to use your Z-Wave network's main controller. To set your Z-Wave controller/gateway into removal mode, please refer to the respective section within your controller instruction manual.

1. Set your Z-Wave controller into removal mode.
2. Press the Action Button on the Nano Switch once or toggle the external manual switch 3 times in fast succession.
3. if the Nano Switch has been successfully removed from your Z-Wave network, its RGB LED will remain colourful gradient. If the removal was unsuccessful, the RGB LED will still be solid (following the state of the output load), repeat the instructions above from step 1.

Advanced functions.

Changing mode on the External Switch/Button Control.

The Nano Switch can be controlled via 2-state (flip/flop) external/manual switch, momentary push button or the 3-way switch. To automatically detect and set the mode to the appropriate type of manual switch wired into Nano Switch, toggle the button on the manual switch once and wait 2 seconds for the Nano Switch to detect the type of manual switch.

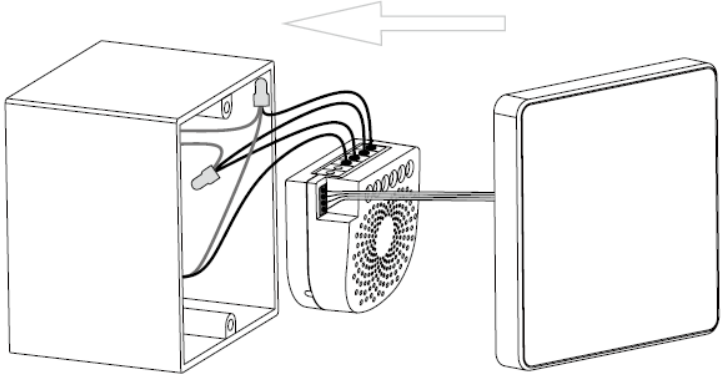
You can also set the external switch mode through Configuration Command Class.

Parameter 120 [1 byte] is the parameter that will set one of the 3 different modes. You can set this configuration to:

(0) 2-state switch mode
(1) Momentary push button Mode
(2) 3-way switch mode

Touch panel control.

As you can see that the Nano Switch's surface has a pin port, this port is used to connect the Touch panel. When you have already connected it to the Nano Switch, you will be possible to control the Nano Switch through the Touch panel directly.



Monitoring Energy Consumption.

The Aeotec Nano Switch can report wattage energy usage or kWh energy usage to a Z-Wave control point when requested. If this function is supported by the control points, the energy consumption will be displayed in the user interface of the control points. (The specific Z-Wave commands supporting energy monitoring are the Meter Command Class. Automatic reports are sent to association group 1, which is setup via the Association Command Class.) Please consult the operation manual for these control points for specific instructions on monitoring the Nano Switch.

Note: The model ZW139 Nano Switch does not have the ability to monitor energy consumption. The model ZW116 Nano Switch supports the energy metering feature and you can see the words “with Energy Metering” on its packaging box.

Security or Non-security feature of your Nano Switch in Z-Wave network.

Including Nano Switch as a non-secure device:

If you want your Nano Switch as a non-secure device in your Z-Wave network, press the Action Button once on Nano Switch when you pair it to your gateway.

If inclusion is successful, the green LED will be on for 2 seconds, and then return to a solid indication. If inclusion is unsuccessful, the red LED will be on for 2 seconds and then return to a colorful gradient.

Including Nano Switch as a secure device:

In order to take full advantage of the Nano Switch, you will want your Nano Switch as a security device that uses encrypted messages to communicate in your Z-wave network. A security enabled controller/gateway (or Z-Wave Plus controller) is required.

1. Set your Z-Wave Plus controller into pairing mode.
2. Press the Action Button 2 times within 1 second on the Nano Switch, the blue LED (secure indication) will blink to indicate the Nano Switch is entering into secure pairing mode.
3. If the Nano Switch has been successfully added to your Z-Wave network, its RGB LED will be solid. If the pairing was unsuccessful, the red LED will be on for 2 seconds and then remain a colorful gradient, repeat the instructions above from step 1.

Reset your Nano Switch.

If at some stage, your primary controller is missing or inoperable, you may wish to reset all of your Nano Switch’s settings to their factory defaults.

To do this, press and hold the Action Button for 20 seconds and then release it. Your Nano Switch will now be reset to its original settings, and the green LED will be solid for 2 seconds and then remain the colorful gradient status as a confirmation.

Technical specifications.

Model number: ZW116 (with energy reading) / ZW139 (no energy reading)
Max standby power: 0.8W.
Operating temperature: 0℃ to 40℃ /32 ℉ to 104 ℉ .

Relative humidity: 8% to 80%.

Operating distance: Up to 492 feet/150 meters outdoors.

AC power supply:

Version	Input/output	Working band
AU	230V 50Hz, Max: 10A	921.42MHz
BR	220V 60Hz, Max: 10A	921.42MHz
CN	220V 50Hz, Max: 10A	868.42MHz
EU	230V 50Hz, Max: 10A	868.42MHz
IL	230V 50Hz, Max: 10A	868.42MHz
IN	230V 50Hz, Max: 10A	865.22MHz
UK	230V 50Hz, Max: 10A	868.42MHz
US	120V 60Hz, Max: 15A	908.42MHz