Wireless Power Plug with Power Meter

User Manual

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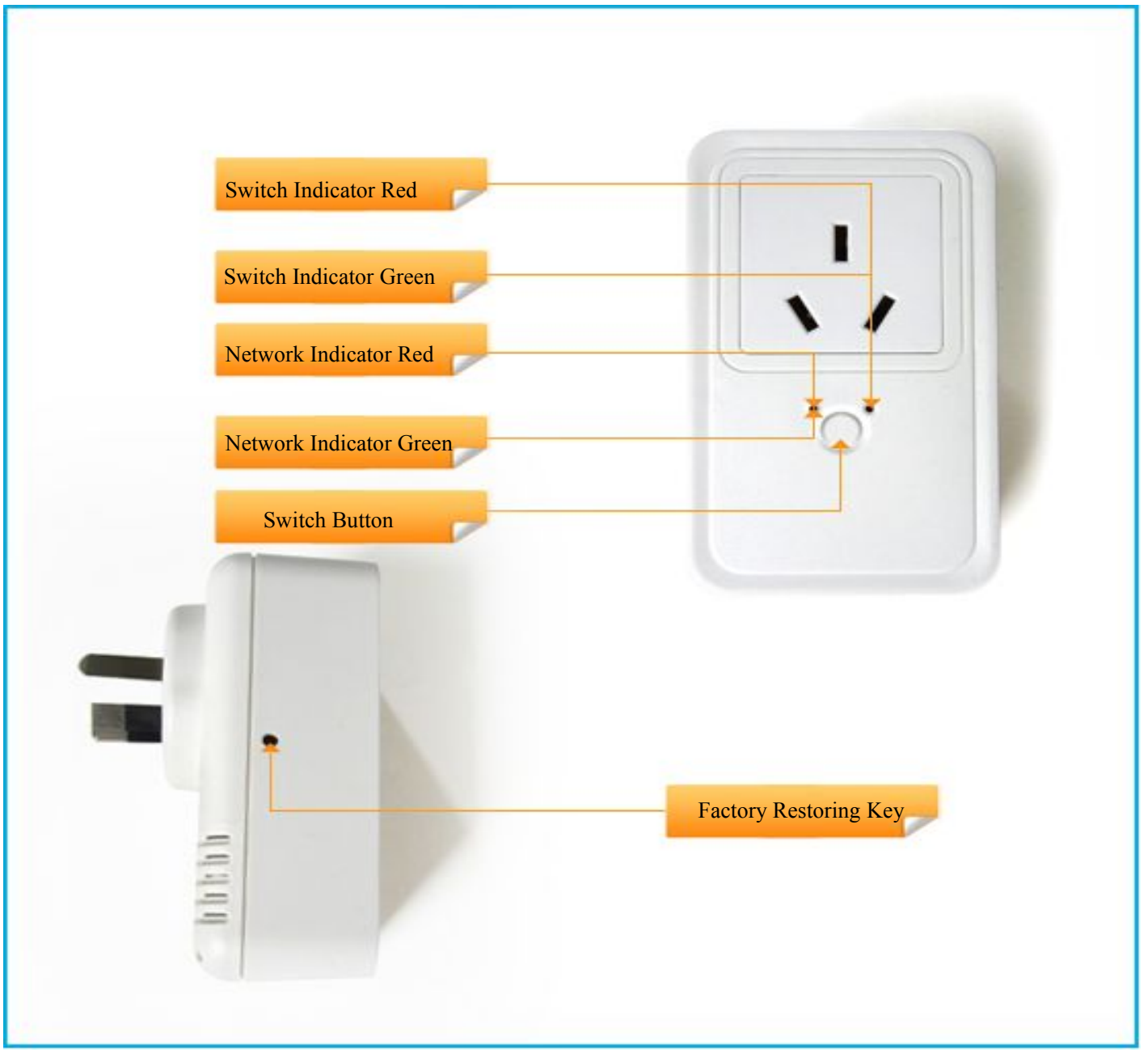
1. Introduction

R809A is a long-distance wireless socket device for Netvox ClassC type devices based on the LoRaWAN open protocol, compatible with the LoRaWAN protocol. The AppServer can be used to control the opening and closing of the external load of the R809A, and the external load can also be controlled by the switch that comes with the R809A device itself. The current, voltage, power and energy values of the current load can be viewed through the AppServer.

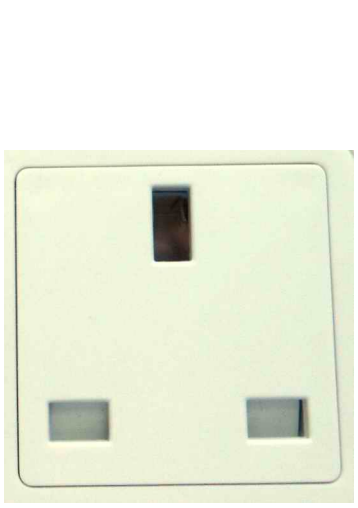
LoRa wireless technology:
LoRa is a wireless communication technology dedicated to long-distance low-power consumption. Its spread-spectrum modulation method greatly increases the communication distance compared with other communication methods, and can be widely used in long-distance low-rate IoT wireless communication fields in various occasions. Such as automatic meter reading, building automation equipment, wireless security systems, industrial monitoring and control. It has the characteristics of small size, low power consumption, long transmission distance and strong anti-interference ability.

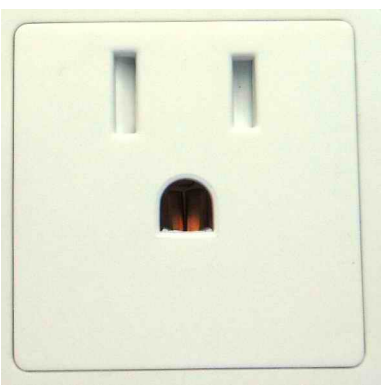
LoRaWAN:
LoRaWAN defines an end-to-end standard specification using LoRa technology to ensure interoperability between devices from different vendors.

2. Appearance



Different specifications diagram of plugs and sockets.




3. Main Characteristic

- Compatible with LoRaWAN standard
- 100-240VAC 50/60HZ power supply
- Simple operation and setting
- Compatible with LoRaWAN™ Class C
- Frequency hopping spread spectrum
- Applicable to third-party platforms: Actility/ThingPark, TTN, MyDevices/Cayenne
- Over current alarm
- Automatically disconnect the load due to over current

4. Operation

On/Off

Power on/Turn on	Plug the R809A into the power supply of the AC 100-240V, power on the device and all the indicators flash once.
Power off	When the R809A is removed from the power supply interface such as the socket, the R809A will be powered off and stopped.

Network Joining

Never joined the network	Turn on the device to search the network to join. The green indicator stays on: success The green indicator remains off: fail
Had joined the network	Turn on the device to search the previous network to join. The green indicator stays on: success The green indicator remains off: fail
Fail to join the network (when the device is on)	First two mins: send join request every 15 seconds. After two mins: send request every 15 minutes. Note: Suggest to check the device verification information on the gateway or consult your platform server provider.

Function Key

Press and hold the factory restoring key for 5 seconds (release the key and the green indicator flashes once to restore to factory setting)	Restore to factory setting / Turn off The green indicator flashes for 10 times: success The green indicator remains off: fail
Press and hold the factory restoring key for 10 seconds(the green indicator flashes once at 5th second and once at 10th second; release the key to erase energy history)	Erase the energy history. The device is in the network: green indicator flashes for 5 times The green indicator remains off: fail
Press the switch button	Control the relay switch on R809A for Toggle operation: When R809A is on, the green indicator of the switch indicator is on and the red indicator is off. When R809A is off, the red indicator of the switch indicator is on and the green indicator is off.

5. Data Report

A version package will be sent immediately after the device is powered on. The device reports data every 15 minutes by default, and the device sends data by default configuration before any configuration is performed.
Maximum time: 900 seconds
Minimum time: 2 seconds (Mintime is recommended to set by default 2 seconds. Need to control to reduce frequent Report recommendations by adjusting reportchange and Max Interval)
Default reportchange: Current --- 0x64 (100mA)
Power --- 0x14 (20W)

Note: the real data sending cycle is subject to real programming configuration before shipment.
Note: the device reports the switch state first, and after 10 seconds reports the power, current and voltage measurement information status.

Short press the switch or receive the switch command:
The device will be reported immediately.
(Report the switch status first, and after 10 seconds reports the power, current and voltage measurement information status.)

R809A default Max Interval = 15min, Min Interval = 2s (if there is a special custom shipping, the configuration is changed according to customer requirements) The uplink data reported by the device is referenced by the Netvox LoraWAN Application Command document and http://www.netvox.com.cn:8888/page/index

Data report configuration and sending period are as following:

Min Interval (Unit:second)	Max Interval (Unit:second)	Reportable Change	Current Change≥ Reportable Change	Current Change < Reportable Change
Any number between 1~65535	Any number between 1~65535	Can not be 0.	Report per Min Interval	Report per Max Interval

Example of Uplink Data Report:

1	1	1	Var(Fix=8 Bytes)				
Version	DeviceType	Report Type	NetvoxPayLoadData				
0x01	0x0E	0x01	OnOff (1Byte, OFF_0x00,ON_0x01)	Energy (4Byte, unit:1wh)	OverCurrentAlarm (1Byte,0:noalarm 1:alarm)	DashCurrentAlarm (1Byte, 0:noalarm 1:alarm)	PowerOffAlarm (1Bytes, 0:noalarm 1:alarm)
		0x02	Vol (2Bytes,Unit:1V)	Current (2Bytes,Unit:1ma)	Power (2Bytes,Unit:1W)	Reserved (2Bytes,fixed 0x00)	

Uplink example:
010E010000000006000001
The status of the switch is off.
The accumulated value of the energy is 6WH.
The device issues a power off alarm.

010E010000000006010000
The switch status is off.
The accumulated energy value is 6WH.
The device issues an over-current alarm
(the over-current alarm will disconnect the load connected to the R809A, and the network green light is about 25 times faster)

010E010100000006000000
The status of the switch is ON.
The accumulated energy value is 6WH without any alarm.

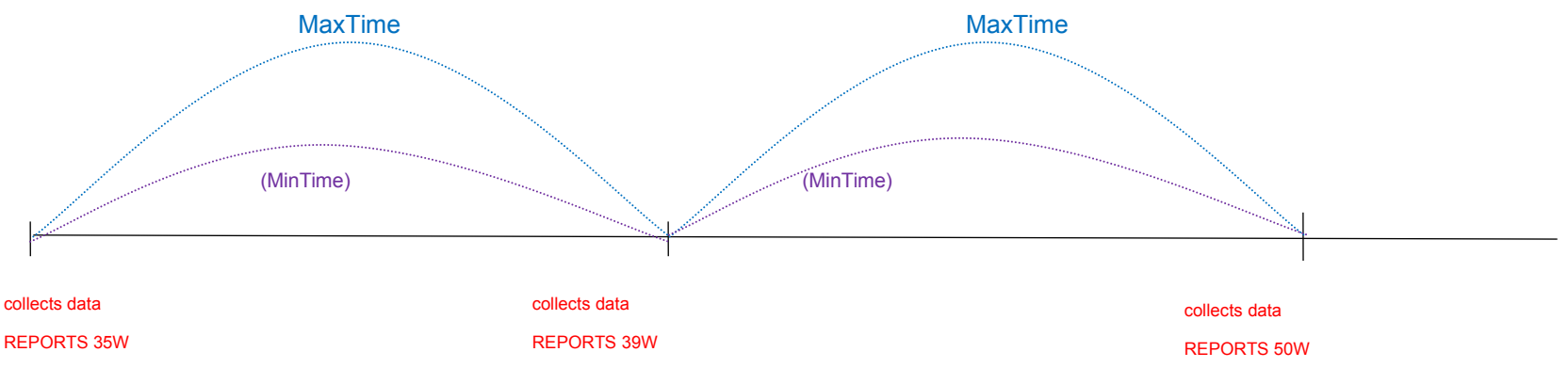
010E0200DB006400160000
Represents the voltage 219V and the current 100mA, power 20W.

Example of Downlink Data Configuration:

Description	Device	CmdID	DeviceType	NetvoxPayLoadData				
Off	R809A	0x90	0x0E	Reserved (9Bytes,Fixed 0x00)				
On		0x91		Reserved (9Bytes,Fixed 0x00)				
Toggle		0x92		Reserved (9Bytes,Fixed 0x00)				
ClearEnergy		0x93		Reserved (9Bytes,Fixed 0x00)				
ReadCurrentStatus		0x94		Reserved (9Bytes,Fixed 0x00)				
Config ReportReq		0x01		MinTime (2bytes Unit:s)	MaxTime (2bytes Unit:s)	CurrentChange (2byte Unit:1mA)	PowerChange （2byte Unit:1W）	Reserved (1Byte,Fixed 0x00)
Config ReportRsp		0x81		Status (0x00_success)	Reserved (8Bytes,Fixed 0x00)			
ReadConfig ReportReq		0x02		Reserved (9Bytes,Fixed 0x00)				
ReadConfig ReportRsp		0x82		MinTime (2bytes Unit:s)	MaxTime (2bytes Unit:s)	CurrentChange (2byte Unit:1mA)	PowerChange （2byte Unit:1W）	Reserved (1Byte,Fixed 0x00)

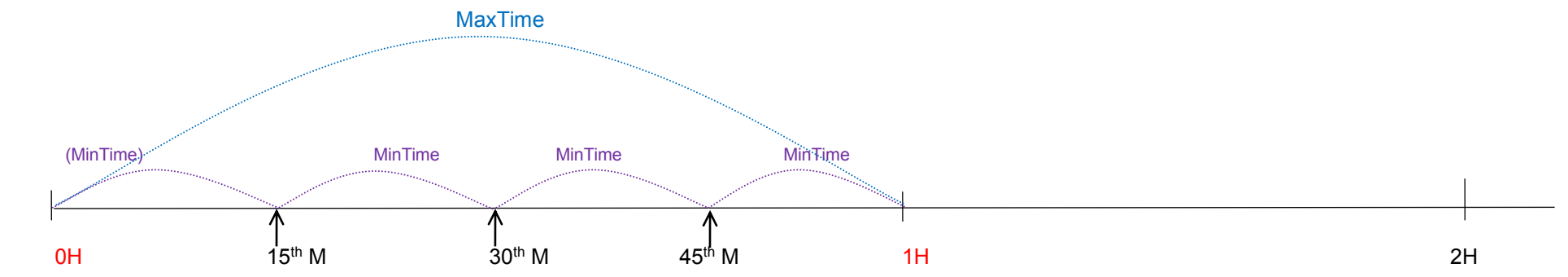
The shutdown operation is performed by the downlink control R809A:
900E000000000000000000
Open operation through the downlink control R809A:
910E000000000000000000
Toggle operation through the downlink control R809A:
920E000000000000000000
Clear and reset energy accumulation value operation through the downlink control R809A:
930E000000000000000000
Set the downlink to report if there is a change within 2 seconds. Report every 5mins if there is no change.
The current change is 100mA, and the power change is 20W:.
010E0002012C0064001400 (The device received a success response payload: 810E000000000000000000)
Operation to read the current report configuration by downlink:
020E000000000000000000 (The device received a success response payload: 820E0002012C0064001400)

Example#1 **based on MinTime = 1 Hour, MaxTime= 1 Hour, Reportable Change i.e. PowerChange=2W**



Note: MaxTime=MinTime. Data will only be report according to MaxTime (MinTime) duration regardless PowerChange value.

Example#2 **based on MinTime = 15 Minutes, MaxTime= 1 Hour, Reportable Change i.e. PowerChange=2W.**



collects data
REPORT 10W

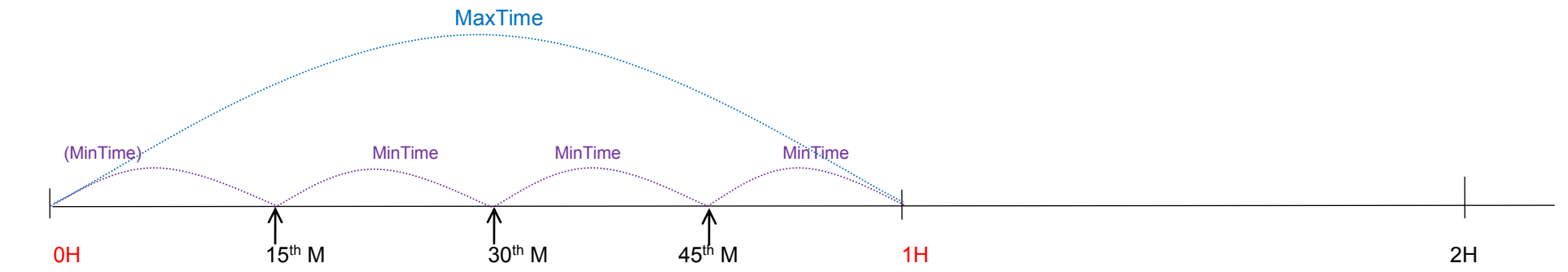
collects data
9W
Does not report

collects data
10W
Does not report

collects data
9W
Does not report

collects data
11W
REPORTS 11W

Example#3 **based on MinTime = 15 Minutes, MaxTime= 1 Hour, Reportable Change i.e. PowerChange=2W.**



Remarks:

1. Compare the collected data with the last reported data. If the amount of data change is greater than ReportableChange, the device will report based on the MinTime interval. If the data change is not greater than the last reported data, the device will report based on the MaxTime interval.
2. For the energy consumption detection device, because the device is a constant power supply device, it is not recommended to set the MinTime interval value too high in order to obtain the status information in real time. It is recommended to use the default 2 seconds. If users need to control frequent report recommendations to adjust ReportableChange and MaxTime.
3. After the device sends a packet (regardless of whether the data has changed, such as pressing a button or the maximum time is due), another MinTime / MaxTime calculation cycle is initiated.

6.Restore to Factory Setting

The device saves data including network key information, configuration information, etc. To restore to factory setting, users need to execute below operation.

Press and hold function key for 5 seconds till the green indicator flashes and then release; LED flashes quickly 20 times.

7. Load Property

Rated Load（AC） ** Remark**	**Max. Load with LEDs** **Remark**	**Max. Inductive Load（cosφ=0.4）**	**Max. Load with Electric Motors**	**Overload Protection with Auto Power Cutoff**
EU Type：16A/250V～ UK Type：13A/250V～ AU Type：10A/250V～ US Type：15A/125V～	LED power is less than 400W and less than 8 LEDs	8A/250V	1.5HP/250V	YES

When the detected current exceeds the rated load current range, the device will automatically disconnect the load within 2 seconds after the detection.

8. Product Installation

This product does not have a waterproof function. After the screening is completed, please place it indoors.

Note:
The energy data of R809A is saved once every 30 seconds if the memory chip is AT2401, once every 10 seconds for AT2402, and the high-capacity storage such as AT2404/08, it saves once per second.

The smart plug (R809AW-10A) is a removable, plug-and-play socket that plugs into a traditional three-hole socket or conventional cradle (100~240V AC) for normal use.

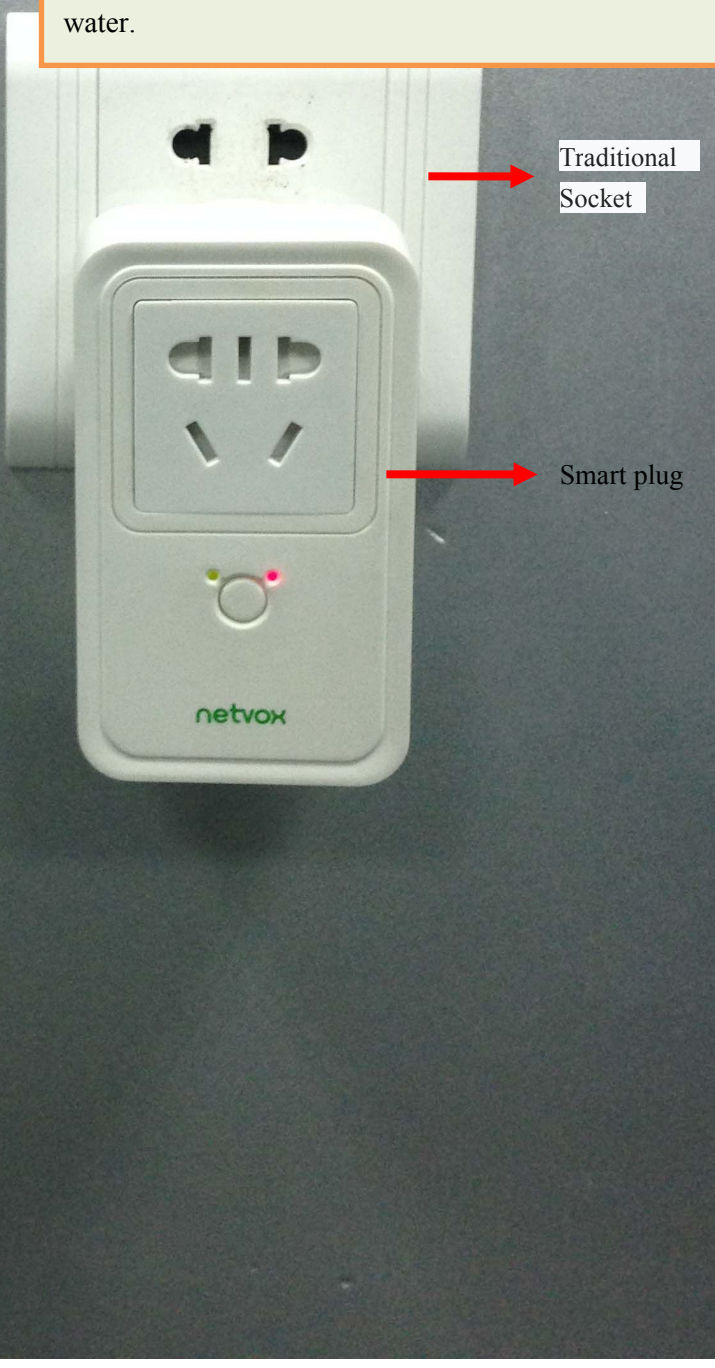
Precautions: This device is a strong electrical equipment, so be careful when installing or using it. Do not install the device in a metal shielded box or other electrical equipment around it to avoid affecting the wireless transmission of the device. Please stay away from magnetic fields, high temperature, humidity, etc. Do not wipe the device with a damp cloth or a volatile reagent. It is recommended to clean with a dry cloth. All repairs must be performed by qualified service personnel.

This figure shows the scenario where the smart socket (R809AW-10A) is applied in the office.
It can also be applied to the following scenarios:
--Family
--School
--Hospital
--The mall
When electrical equipment needs timing, remote, and scene control

Warning!
**In order to ensure the normal use of the product, please install or disassemble the full-time electrician, and the main power must be disconnected.
**Do not open the casing of this product without permission.
**Do not expose this product to leaking or splashing water.

When the smart plug is turned on, the load is connected to the power supply, the status information of the open is sent, and the energy consumption is transmitted at the same time, whether the current is over-current or not, and the current is transmitted; after 10 seconds, the voltage, current, power are transmitted.

When the smart plug is turned off, the load is disconnected from the power supply, the off status is sent, and the energy consumption is transmitted at the same time, whether the current is over-current or not, and the voltage, current, power and the like are transmitted after 10 seconds. Note: When the load power is disconnected, the current and power data sent at this time is "0".



9. Important Maintenance Instruction

Your device is a product of superior design and craftsmanship and should be used with care. The following suggestions will help you use the warranty service effectively.

- Keep the equipment dry. Rain, moisture, and various liquids or moisture may contain minerals that can corrode electronic circuits. In case the device is wet, please dry it completely.
- Do not use or store in dusty or dirty areas. This can damage its detachable parts and electronic components.
- Do not store in excessive heat. High temperatures can shorten the life of electronic devices, destroy batteries, and deform or melt some plastic parts.
- Do not store in a cold place. Otherwise, when the temperature rises to normal temperature, moisture will form inside, which will destroy the board.
- Do not throw, knock or shake the device. Rough handling of equipment can destroy internal circuit boards and delicate structures.
- Do not wash with strong chemicals, detergents or strong detergents.
- Do not apply with paint. Smudges can block debris in detachable parts and affect normal operation.
- Do not throw the battery into a fire to prevent the battery from exploding. Damaged batteries may also explode.

All of the above suggestions apply equally to your device, battery and accessories. If any device is not working properly.
Please take it to the nearest authorized service facility for repair.