

User Manual

User Manual Range Extender

Firmware: V4.2
Hardware: V1.1

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1. Introduction

Netvox Z809C is a dedicated network range extender. It is designed to have electrical outlet which inherent the look of its Z809A neighbor. The difference between them is that Z809C doesn't have power consumption monitoring nor does it support wireless on/off control. User may use it as a simple range extender. Z809C is equipped with a battery backup power in time of power cut.

What is ZigBee?

ZigBee is a short range wireless transmission technology based on IEEE802.15.4 standard and supports multiple network topologies such as point-to-point, point-to-multipoint, and mesh networks. It is defined for a general-purpose, cost-effective, low-power-consumption, low-data-rate, and easy-to-install wireless solution for industrial control, embedded sensing, medical data collection, smoke and intruder warning, building automation and home automation, etc.

2. Product Appearance

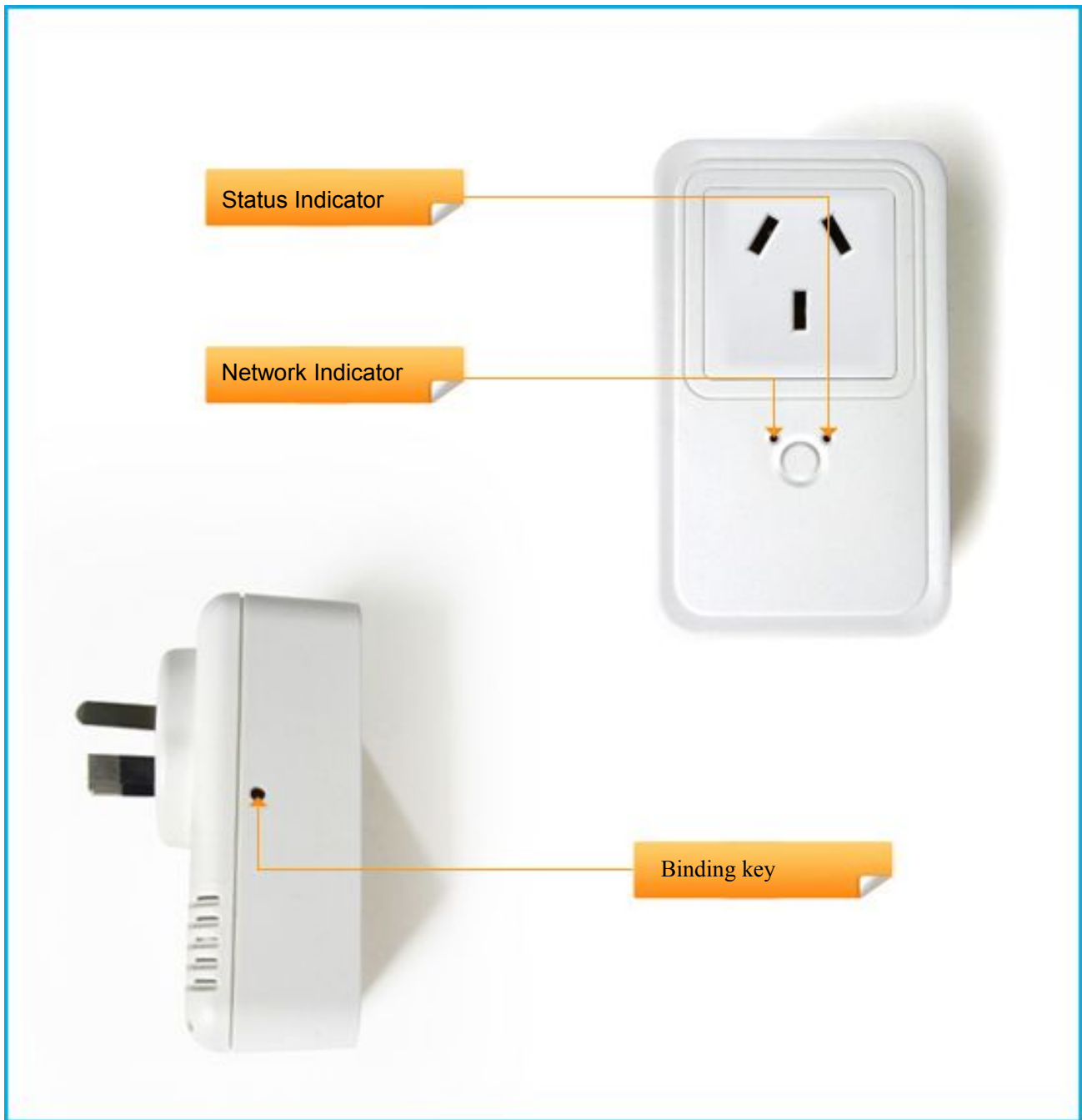


Figure: Z809C (different plug head is provided for different region)

3. Specification

- Fully IEEE 802.15.4 compliant
- Utilizes 2.4GHz ISM band; up to 16 channels
- Power supply: 100~240VAC; 50/60Hz
- Up to 210 meters wireless transmission range in non-obstacle space
- Easy installation and configuration

4. Installation

- This device is NOT truly waterproof/ resistant and is for indoor use.
- Power on Z809C using 100~240 VAC power supply. All the indicators will flash **once**.

5. Setting up Z809C

5-1. Power on

Connect Z809C to power supply AC 100-240V, LEDs flash once.

5-2. Join the ZigBee Network

After Z809C is turned on, it will search for an existing ZigBee network and send a request to join the network automatically. While Z809C is under the coverage from a coordinator or a router whose **permit-join feature is enabled**, Z809C will be permitted to join the network.

- A. Before Z809C is joined a ZigBee network → the network indicator will be off.
- B. After Z809C has joined a ZigBee network → the network indicator stays on.

5-3. Permit-Join

Z809C is designed to work as a router. To allow other devices to join the ZigBee network, users could enable the Permit-Join feature using the tips:

- A. Press once the *Binding Key* to enable the Permit-Join feature. The network indicator will flash **green** per second.
- B. The default Permit-Join period of time is 60 seconds.
- C. During Permit-Join period, press once binding key to stop Permit-Join function and network indicator

stays on.

5-4. Identify

Status indicator flashes once per second (on 500 ms, off 500 ms) during identifying.

5-5. Restore to Factory Setting

To restore to factory setting, please follow below steps:

Step1. Press and hold the *Binding Key* for 15 seconds. The status indicator flashes once and release it. (at the 3rd, the 10th, and the 15th second).

Step2. After releasing the *Binding Key*, press the *Binding Key* within 2 seconds. The status indicator will rapidly flash **20 times**.

Step3. After fast flashes 20 times, Z809C will reboot, and the restore is completed.

5-6. Backup battery Disable / Enable

Z809C has the ability to continue to function at the event of power outage.

There are times when user would want to disable the supplied power from backup battery to function in the time of power outage event.

To disable backup battery:

Hold press binding key for 3 seconds, until the indicator flashes once then release the key.

If successful, the indicator would flash 10 times **quickly**.

To enable backup battery:

Hold press binding key for 3 seconds, until the indicator flashes once then release the key.

If successful, the indicator would flash 10 times **slowly**.

5-7. Battery Voltage Report and Low Voltage warning

(1) Initial status:

Z809C is in “not configurate and not bind” status. Z809C checks voltage status every 10 minutes.

No report will be sent.

(2) Complete binding and configuration:

Firstly, bind Z809C with target device (refer to chapter 7-2). Configure the report of Voltage percentage remain attribute (0x0021), battery voltage (0020) and Alarm State value attribute (0x003E) under Power Configuration Cluster(0x0001). Users can also complete configuration before binding.

If binding is completed but configuration is not, device detects once every 10 minutes. Device will report while reportable change is over.

Only when Z809C enters “bind and configured” status, it starts to report voltage status to bind device. Z809C will check battery power and low power status according to Minimum Reporting interval. Once reportable change is over value, Z809C will send report (battery voltage and low voltage warning) to bind device. Otherwise, it will report current voltage status to bind device per “Maximum Reporting interval”. Default “Minimum Reporting interval”= 10 minutes. Default “Maximum Reporting interval”=60 minutes. Default ReportableChange =0.

(3) Unbind or configuration

After completing configuration and binding, if users unbind device or delete configuration information, Z809C will stop detecting and reporting.

5-8. Backup Battery Recharge

After joining the network, power detection will be on every 10 minutes. Once battery power is less than 2.4V, device will start to recharge for 16 hours.

In addition, users can change value of ALARM MASK to be 1 to enable low voltage warning, to be 0 to disable low voltage warning while recharging.

Low voltage will cause device to restart over and over again. It is recommended to use full power battery or power input to ensure working function. In addition, **backup battery can only be AAA NiCd battery. It would cause explosion once users use other batteries and connect power supply.**

Battery status instruction:

1. Voltage $\geq 2.4V$, red light stays on.
2. Voltage = 2.25V~2.4V, red light flashes slowly.
3. Voltage < 2.25 , device closes discharging function to avoid over-discharge
4. When discharge times reach 540 times or voltage lower than 1 V. Led light is off to show battery dead.

6. Home Automation Clusters for Z809C

A cluster is a set of related attributes and commands which are grouped together to provide a specific function. A simple example of a cluster would be the On/Off cluster which defines how an on/off switch behaves. This table lists the clusters which are supported by Z809C.

- 1.End Point(s): 0x01
- 2.Device ID: Range Extender (0x0008)
- 3.EndPoint Cluster ID

Server side	Client side
EP 0x01 (Device ID: Range Extender (0x0008)	
Basic(0000)	<i>None</i>
Identify(0003)	
Commission (0x0015)	
power configure(0x0001)	
Diagnostics Information(0x0B05)	

a) Attributes of the Basic Device Information attribute set

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0000	ZCLVersion	Unsigned 8-bit integer	0x00 – 0xff	Read only	0x03	M
0x0001	ApplicationVersion	Unsigned 8-bit integer	0x00 – 0xff	Read only	0x2A	O
0x0002	StackVersion	Unsigned 8-bit integer	0x00 – 0xff	Read only	0x35	O
0x0003	HWVersion	Unsigned 8-bit integer	0x00 – 0xff	Read only	0x0B	O
0x0004	ManufacturerName	Character string	0 – 17 bytes	Read only	netvox	O
0x0005	ModelIdentifier	Character string	0 – 17bytes	Read only	Z809CE3R	O
0x0006	DateCode	Character string	0 – 17 bytes	Read only	20141112	O

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0007	PowerSource	8-bit Enumeration	0x00 – 0xff	Read only	0x01	M
0x0010	LocationDescription	Character string	0 – 17 bytes	Read/write		O
0x0011	PhysicalEnvironment	8-bit Enumeration	0x00 –0xff	Read/write	0x00	O
0x0012	DeviceEnabled	Boolean	0x00 –0 0x01	Read/write	0x01	M

Report setting table:

Min Interval (Unit:second)	Max Interval (Unit:second)	Reportable Change	Change rate \geq Reportable Change	Change rate $<$ Reportable Change
1-65534	1-65534	$\neq 0$	To report per Minimum interval	To report per Maximum interval
		0	To report per Minimum interval	To report per Minimum interval
0	1-65534	$\neq 0$	To report instantly	To report per Maximum interval
		0	To report per second	To report per second
1-65534	0	$\neq 0$	To report per Minimum interval	No report
		0	To report per Minimum interval	To report per Minimum interval
0	0	$\neq 0$	To report instantly	No report
		0	To report per second	To report per second
Any	65535	Any	Stop reporting	
65535	Any	Any	Stop reporting	

Note: (1) It is not suggested to set:

Min Interval =0,

Reportable Change=0,

Z809C will report very densely to block up the network.

(2) Yellow areas are not suggested.

9. Important Maintenance Instructions

As the device is not water proof it is recommended to keep the device in a dry place. Liquid and heavy moisture contains minerals that may oxidize the electronic circuitry. In case of liquid spill, please leave the device to completely dry before storing or using.

- Do not use or store the device in a dusty area. Dust may cause electronic parts to destroy.
- Do not use or store the device in an over heated place. Store in a hotter temperature than the suggested maximum temperature may shorten the life span of the device; and may damage the battery and causing the housing to deform.
- Do not use or store the device in a very cold place than the suggested minimum temperature. The water can be condensed inside the device when moving to an area that is higher in temperature. This can severely damage the PCB board and circuitry. This may shorten the life span of the device; damage the battery and cause the housing to deform.
- Do not throw or strongly vibrate the device. This may damage connectivity of the electronic parts and other sensitive components on the PCB board.
- Do not use any strong chemical or washing to cleanse the device.
- Do not use any coloring materials on any removable parts which may cause poor connections and may keep the device from function properly.

All the above applies to the purchased products, battery and other packaged items. If any unusable or damaged items are found please return the product to your nearest authorized repairing center.