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***ZigBee™-Switch Ctrl Unit w/t Consumption Monitoring***

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## **User Manual**

# **Ceiling Mounted Switch Unit with Consumption Display**

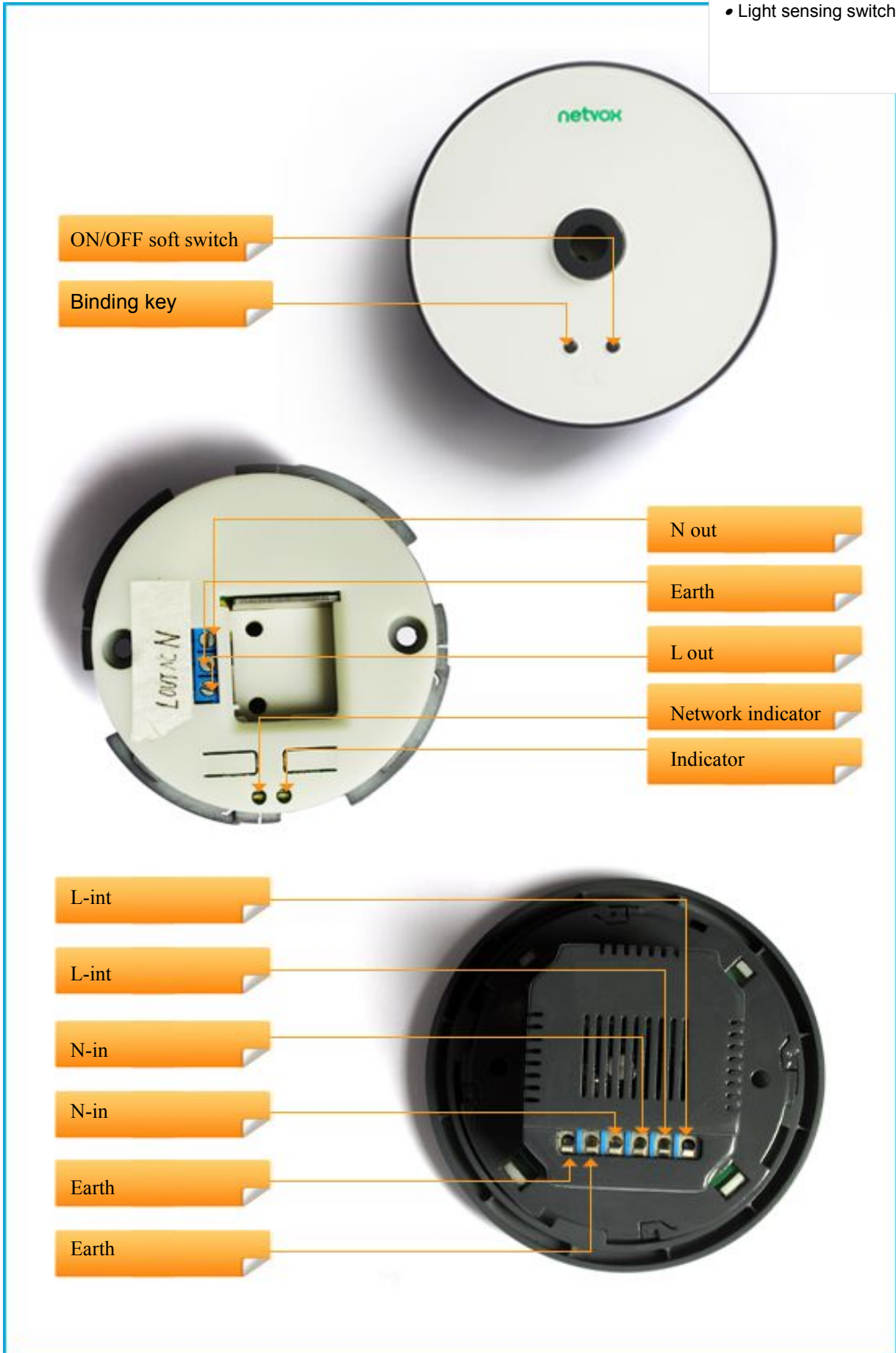
**Model: Z817A**

**Energy Consumption Monitoring Series**

For Home Automation

- Simple controller Z501 series
- Multiple/Scene controller Z503
- Wall switch ZB02 series
- Light sensing switch Z302B

# Switch Control Unit



## Introduction

NETVOX Z817A is a ZigBee Home Automation enabled ceiling mount power switch unit with power/energy/current/voltage consumption monitoring. It acts as a router device in the Home Automation profile network. It can be manually switched through a mechanical on/off switch or switched wirelessly through any paired ZigBee Home Automation enabled switch.

Consumption reading can be captured and displayed on ZiG-BUTLER -Netvox application software, or on any 3<sup>rd</sup> party ZigBee enabled in-home display.

### *What is ZigBee?*

ZigBee is a short range wireless transmission technology which defined for a minimum complexity, low power consumption, low data rate, cost effective wireless solution. ZigBee lies in between wireless markup technology and Bluetooth. ZigBee is based on IEEE802.15.4 standard, the mutual co-ordination between thousands of sensors to exchange data. Sensor to sensor or node-to-node communication is achieved through relays of control data between devices with only a fraction of energy use which denoted for highly transmission efficiency.

*Note: Wireless communication, in some real use cases, can be limited by the signal blockage. Please consult your service provider or place of purchase.*

## Product Specification

- ✓ Fully IEEE 802.15.4 compliant (ZigBee Pro)
- ✓ Utilizes 2.4GHz ISM band, up to 7 channels
- ✓ 85~250VAC, 50/60HZ input power
- ✓ Resistive load: 15A/250VAC
- ✓ Inductive load: 1HP(Horsepower)@250VAC; ½ HP@125VAC
- ✓ Up to 50 meters non-obstacle wireless transmission distance
- ✓ Simple operation and device configuration
- ✓ Consumption monitoring range 500mA to 15A, 1% measurement tolerance.

## Setting up the Z817A and network

### **Setting Up Summary**

- (1) Startup and network association
- (2) Bind the device with other device where applicable (i.e. bind it with a ZigBee switch for wireless control).
- (3) It is ready to be used.

### **Step 1. Startup and Network Association**

To allow Z817A to function, it must first join to a ZigBee network. When it is given powered it will automatically start searching for an existed network. So before you give power to Z817A make sure it is within the wireless coverage distance (~50 meters or less) and make sure **first** you have the **permit-join feature enabled** either on a coordinator or a router device in the network so that when Z817A is powered on Z817A will automatically join to the network.

*\*On how to enable permit-join please refer to the router or coordinator device user manual*

#### **Operation:**

Ensure you have detached any home appliance from Z817A.

Step 1: Make sure you have open up permit-join function (valid for 60 seconds) of a coordinator or a router

Step 2: Connect AC power source to Z817C to power it.. Z817A device will start to search for the network within reach. LED will flashing to indicate it is searching for a channel around the area to join.

Step 3: The indicator on the Z817A will turn non-flashing indicates network join is successful otherwise the indicator stays flashing in searching for a network. Make sure that the permit-join of a router or coordinator is enabled.

## Step 2. Device pairing (binding)

To wirelessly control Z817A, it is required to pair with ZigBee enabled on/off/toggle remote controller. If you do not wish to control Z817A with a remote, you may skip this step and go to [How to use Z817A](#).

### Pairing operation:

- 1). Now hold press the binding key for **3 seconds**, release the key until you see the LED flash once while it sends binding request to the air.
- 2). Likewise, do the same to the other device to exchange binding. (*refer to the other device user manual for binding details*)

When binding is successful the LED indicator on Z817A will flash 5 times then turn non-flashing solid, otherwise it flashes 10 times indicating unsuccessful then turn non-flashing solid

**To remove pairing setting:** repeat the pairing operation the 2<sup>nd</sup> time will *remove the binding setting and information stored*.

## How to use Z817A

### *Remote control*

When the device has joined to the network and paired (see [Device pairing](#)) with a remote controller the device is ready to be controlled wirelessly. Z817A should now be able to respond to on, off, toggle control command from a wireless remote controller.

**Operation:** If the Z817A device is properly paired with a switch device, you should see the AC output responds to on or off instruction wirelessly.

### *Mechanical soft switch*

Z817A can also be switched by a mechanical toggle switch attached to it. Toggle switch may not specifically On or Off in either switch position depends on the previous switch position at last power cycle.

*Note that device pairing is not a must feature with Z817A. You may operate it without pairing it to a remote controller as Z817A already has a manual switch.*

## Power Consumption Reporting

Z817A can report the consumption reading to Netvox's ZiG-BUTLER or to any 3<sup>rd</sup> party in-home display. When the load is attached to the device, the embedded meter reads the supplied current drawn overtime. Z817A reports the readings to the matched device. [Reporting time interval configuration followed by device matching is required.](#)

If you have ZiG-BUTLER and uses USB dongle or Z202 gateway then you should go to [Consumption Reporting](#) subsection under [ZiG-BUTLER](#) page.

Power drawn overtime is measured in wh (watt-hour). Each time a new value is read, Z817A stores and updates such value and clears up the previous.

### *Reading accuracy*

If the output current is above 500mA, the reading accuracy of current, voltage and power is  $\pm 1\%$ . Current detection range is between 500mA to 15A.

## Permit other device to join

Z817A is featured to be a router in the network. It permits other devices to join the network. In normal operation, by default the router device Z817A does not permit any device to join to the network to protect the network from unexpected or unauthorized join attempt. You will need to open up the permit-join manually on Z817A or on other router device to allow new devices (a router or an end device) to join.

### Operation:

1. **Short press the binding key once.**
2. The permit join is now enabled for 60 seconds and the indicator light will flash 60 times.
3. Z817A waits the new device to join in automatically. Please note that the maximum waiting time to join is 60 seconds. Repeat the process if you missed the 60 seconds period.

## Restore to factory setting

Z817A is capable of storing and saving includes network routing information. If you wish to remove Z817A from an exited network, you would need to clear the saved routing information to join to a new network by simply reset the device to restore to the factory setting.

### Operation:

**Step 1.** Hold press the binding key for 5 seconds until network indicator flashes once then release the key.

**Step 2.** If restore to factory setting is **successful, you should see the indicator light stays dark.** Now the device has restored to the factory setting.

Z817A will reboot. Soon the device will enter network search to attempt to join to a new network. Refer to [Network Association](#) section of this manual.

## Customized customer's factory default setting

At the time of power recovery from power outage, the device would remain at the default status at the AC output. There are either two status, either **restore to the last status** before the power outage happened or **Off** at power restored. The default status is being given by our customer at the time of purchase order. The device is set to one of these statuses at factory level



## Clusters of Home Automation for Z817A

Home Automation device feature is defined by the endpoint which contains functional clusters. Table 1 lists clusters for the endpoint of Z817A

Table 1: Clusters supported by the endpoint

Cluster for Z817AE3R	
Device ID: Mains Power Outlet (0x0009)	
EndPoint: 0x01	
Server side	Client side
Basic (0x0000)	<i>None</i>
Identify (0x0003)	
Group (0x0004)	
Scene (0x0005)	
On/Off (0x0006)	
Meter (0x0702) <i>Netvox Proprietary</i>	

### Attributes of the Basic Information

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0000	<i>ZCLVersion</i>	Unsigned 8-bit integer	0x00 – 0xff	Read only	0x03	M
0x0001	<i>ApplicationVersion</i>	Unsigned 8-bit integer	0x00 – 0xff	Read only	0x22	O
0x0002	<i>StackVersion</i>	Unsigned 8-bit integer	0x00 – 0xff	Read only	0xF0	O
0x0003	<i>HWVersion</i>	Unsigned 8-bit integer	0x00 – 0xff	Read only	0x3C/0x3D	O
0x0004	<i>ManufacturerName</i>	Character string	0 – 32 bytes	Read only	netvox	O
0x0005	<i>ModelIdentifier</i>	Character string	0 – 32 bytes	Read only	Z817AE3R T5R	O
0x0006	<i>DateCode</i>	Character string	0 – 16 bytes	Read only	20110413	O

0x0007	<i>PowerSource</i>	8-bit Enumeration	0x00 – 0xff	Read only	0x01	M
0x0010	<i>LocationDescription</i>	Character string	0 – 16 bytes	Read/write	-----	O
0x0011	<i>PhysicalEnvironment</i>	8-bit Enumeration	0x00 – 0xff	Read/write	0x00	O
0x0012	<i>DeviceEnabled</i>	Boolean	0x00 – 0x01	Read/write	0x01	O

Netvox Proprietary Meter Cluster (0x0702) contains  
Current ([unit mA](#)), Voltage ([unit V](#)), Power ([unit W](#)) and Energy([unit WH](#)).

## Troubleshooting

**(1)** I found that power outlet Z817A is not functioning.

We done the paring to a wireless control device and there is no power connection for the appliances.

Please use the method bellow to verify:

**Test 1.** Flip the mechanical switch of Z817A and see if the load attached can be turned on and off.

**Test 2.** Enable permit join on other router device and see if Z817A LED indicator is also flashing which will last for 60 seconds together like other routers do. This result implied that Z817A is within the network and receives command from the network no problem. (How to enable permit join, please refer to any ZigBee router device for such feature).

**Test 3.** If test 1 and 2 items are found working, then what was left is device pairing between Z817A and the control device. Please refer to Step 2.Device pairing (binding) of this user manual. Please keep in mind that when device pairing is done twice will actually clear pairing setting instead.

If test 2 item isn't working, please restore Z817A to factory setting then associate Z817A to the network again. Then perform device pairing.

If the problem persists, we would conclude that the device is faulty. Please inform us for ship back procedure.

## 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.

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