



ZigBee™-Switch Ctrl Unit w/t Consumption Monitoring

User Manual

Ceiling Mounted Dimmable Unit with Consumption Monitoring

Model: Z817B

Energy Consumption Monitoring Series

For Home Automation

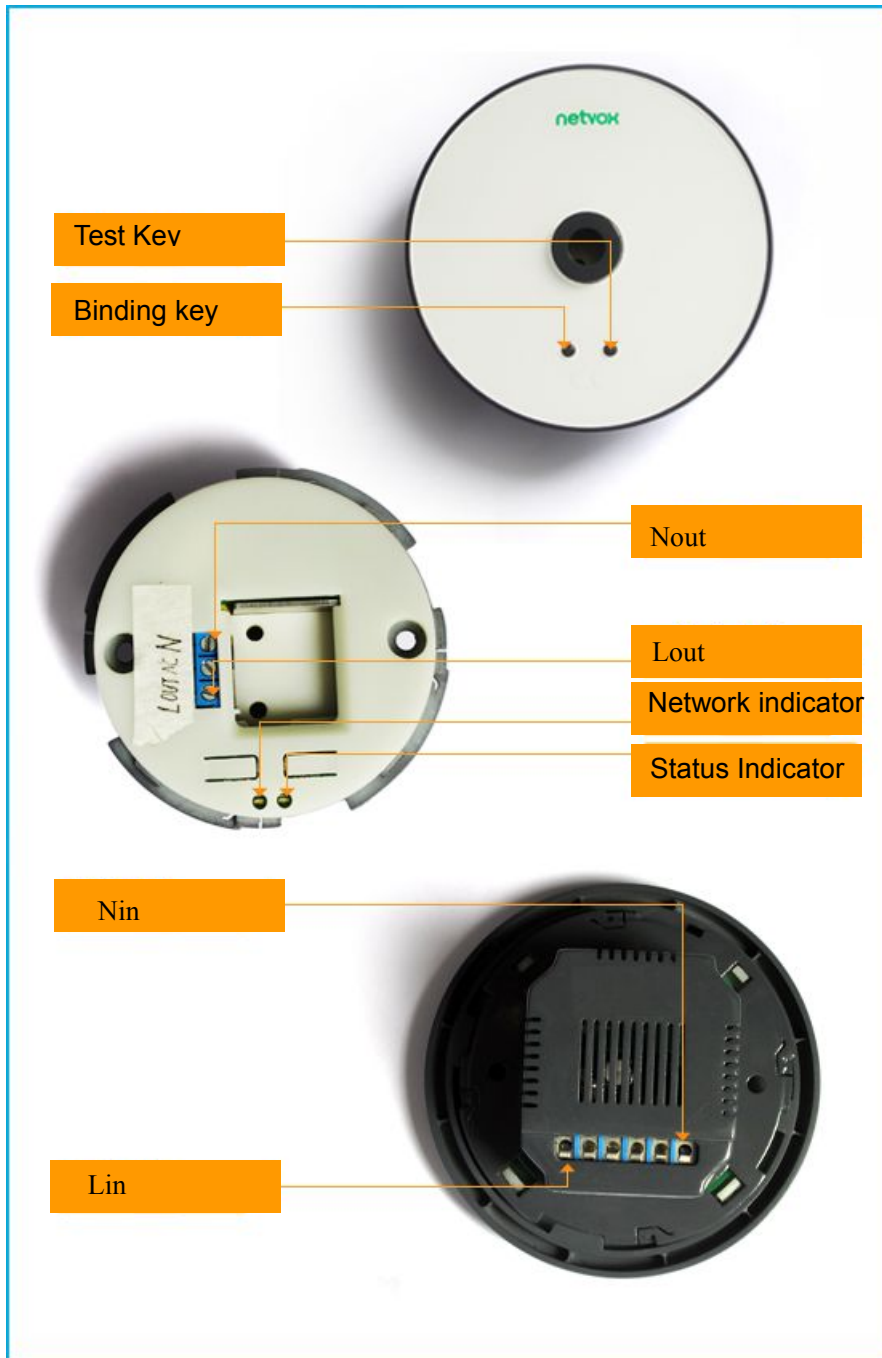
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FW V1.1

HW V1.0~V1.2

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

Switch Control Unit



Introduction

NETVOX Z817B is a ZigBee Home Automation enabled ceiling mount dimmable 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 wirelessly controlled through any paired ZigBee Home Automation enabled switch or control center, i.e. ZiG-BUTLER. Consumption reading can be captured and displayed on ZiG-BUTLER -Netvox application software, or on any 3rd 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
- ✓ Signal power: 7dBm (max); Rx sensitivity: -97dBm
- ✓ 100~240VAC, 50/60HZ input power
- ✓ Resistive load: 2.5A, 500VA
- ✓ Up to 70 meters non-obstacle wireless transmission distance
- ✓ Simple operation and device configuration
- ✓ Consumption monitoring range 50mA to 2.5A, 1% measurement tolerance.

Operating Ambient	Temp: -10°C ~50°C R.Hum: 5% ~ 85%
Storage Ambient	Temp: -40°C ~85°C

Setting up the Z817B 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 Z817B 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 Z817B make sure it is within the wireless coverage distance (~70 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 Z817B is powered on Z817B 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 Z817B.

Step 1: Make sure you have open up permit-join function (valid for 60 seconds) of a coordinator or a router. Refer to [permit other device to join](#) section of its user manual.

Step 2: Connect AC power source to Z817B to power it. Z817B 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 Z817B 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 Z817B, it is required to pair with ZigBee enabled on/off/level controller. If you do not wish to control Z817B with a remote or a switch, you may skip this step and go to [How to use Z817B](#).

Pairing operation:

- 1). *Press the binding key on the level switch according to the instructions of that device*
- 2). To exchange binding, 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.

When binding is **successful** the LED indicator on Z817B will flash **5 times** then turn non-flashing solid, otherwise it flashes **10 times** indicating **unsuccessful** then turn non-flashing solid

Clear pairing setting: You may remove the pairing between the two or more devices. *Unbinding procedure is exactly the same as binding operation. When you repeat the binding process, the two devices will remove the binding information stored.*

How to use Z817B

Remote control

When the device has joined to the network and paired (see [Device pairing](#)) with a controller the device is ready to be controlled wirelessly. Z817B should now be able to respond to on, off, level control command from a wireless remote controller.

Operation: If the Z817B device is properly paired with a switch device, you should see the AC output responds to the instruction wirelessly.

Mechanical switch

Z817B does not have a mechanical switch.

Permit other device to join

Z817B 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 Z817B 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 Z817B 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 status LED will begin to flash once per second. The Z817B will allow joining of other devices for up to 60 seconds.

Z817B 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.

Power Consumption Reporting

Z817B can report the consumption reading to Netvox's ZIG-BUTLER or to any 3rd party in-home display. When the load is attached to the device, the embedded meter reads the supplied current drawn overtime. Z817B 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. Current ([unit mA](#)), Voltage ([unit V](#)), Power ([unit kW](#)) and Energy ([unit kWh](#)). Z817B stores a new value read and updates such value and clears up the previous. User may want to return the reading back to zero when wish. Refer to [Resetting Power Consumption Summation](#) section bellow.

Reading accuracy

If the output current is above 50mA, the reading accuracy of current, voltage and power is $\pm 1\%$. Current detection range is between 50mA and 2.5A.

Resetting Power Consumption Summation

Z817B updates and stores the last energy reading. In some cases user would wish to return the counter to zero. Same feature can be found in ZIG-BUTLER software with the **Recalculate** button.

Operation:

Hold press Binding Key for 20 seconds until the indicator flashes once then, *within 2 seconds*, short press the any key once. If successful the indicator will flash once.

Restore to factory setting

Z817B is capable of storing and saving includes network routing information. If you wish to remove Z817B 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:

1. While the device is given power, **hold press** the binding key for about **15 seconds** the network indicator will flash once then release the key. Then within 2 seconds time, **short press once** on any key. The device should start resetting.
2. If restore to factory setting is **successful**, you should see the 10 quick indicator light flashes.

The device will soon reboot. After rebooted, the device will enter network search mode to attempt to join to a network. (Refer to [Network Association](#) section of the manual)

Z817B 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.

Dimming Test

*use test button for dimming test

1 st short press	12.5%
2 nd	25%
3 rd	37.5%
4 th	50%
5 th	62.5%
6 th	75%
7 th	87.5%
8 th	100%
9 th	87.5%
10 th	75%
11 th	62.5%
12 th	50%
13 th	37.5%
14 th	25%
15 th	12.5%
16 th	0%
17 th	key press, cycle repeats

Summary of Key function and corresponding display

Function	Key	Display
Restore to factory setting	Hold press binding key 15s then within 2s short press any key once.	1 flash (hold press binding key) Then 10 quick flashes if successful
Permit Join	Short press binding key once	Flashes 60 times in 60 seconds.
Resetting power consumption summation	Hold press binding key 20s then within 2s short press any key once.	1 flash (hold press binding key) 1 flash (any key once)
Device Pairing	Hold press binding key 3s.	1 flash (hold press binding key) 5 flashes if successful or it flashes quickly 10 times

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 Z817B

Home Automation device feature is defined by the endpoint which contains functional clusters. Table 1 lists clusters for the endpoint of Z817B

Table 1: Clusters supported by the endpoint

Cluster for Z817B	
Device ID: Dimmer Light (0x0101)	
EndPoint: 0x01	
Server side	Client side
Basic (0x0000)	<i>None</i>
Identify (0x0003)	
Group (0x0004)	
Scene (0x0005)	
On/Off (0x0006)	
Level Control (0x0008)	
Commission (0x0015)	
Meter (0x0702)	
<i>Netvox Proprietary</i>	

Attributes of the Basic Information

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0000	<i>ZCLVersion</i>	8-bit Unsigned integer	0x00 – 0xff	Read only	0x03	M
0x0001	<i>ApplicationVersion</i>	8-bit Unsigned integer	0x00 – 0xff	Read only	0x0B	O
0x0002	<i>StackVersion</i>	8-bit Unsigned integer	0x00 – 0xff	Read only	0x0B	O
0x0003	<i>HWVersion</i>	8-bit Unsigned integer	0x00 – 0xff	Read only	0x0C	O
0x0004	<i>ManufacturerName</i>	Character string	0 – 32 Bytes	Read only	netvox	O
0x0005	<i>ModelIdentifier</i>	Character string	0 – 32bytes	Read only	Z817BE3R	O
0x0006	<i>DateCode</i>	Character string	0 – 16 bytes	Read only	20121010	O

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0007	<i>PowerSource</i>	8-bit Enumeration	0x00 –0xff	Read only	0x01	M

Descriptions of Attributes of the Simple Metering Cluster

(Information for Netvox SDK users and developers)

Z817B utilizes Simple Metering cluster (0x0702) defined within Smart Energy Profile (SEP). Voltage, Current, Power and Energy are Netvox proprietary attributes.

[CurrentSummationDeliver](#) Attribute of SEP corresponds to [Energy](#) Attribute of Netvox proprietary. (Unit kwh);

[InstantaneousDemand](#) Attribute of SEP corresponds to [Power](#) Attribute of Netvox proprietary. (Unit kw);

[Current](#) Attribute of Netvox proprietary. (Unit mA);

[Voltage](#) Attribute of Netvox proprietary. (Unit V)

Troubleshooting

(1) I found that power outlet Z817B is not functioning. We've done the pairing to a wireless control device and there is no power connection for the appliances.

Please use the method below to verify:

Test 1. Enable permit join on other router device and see if Z817B LED indicator is also flashing which will last for 60 seconds together like other routers do. This result implied that Z817B 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 2. If test 1 and 2 items are found working, then what was left is device pairing between Z817B 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 1 item isn't working, please restore Z817B to factory setting then associate Z817B 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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