



ZigBee™-Switch Ctrl Unit w/t Consumption Monitoring

User Manual

Dual Dimmer Switch Unit with Consumption Monitoring

Model: Z815E

Energy Consumption Monitoring Series

For Home Automation

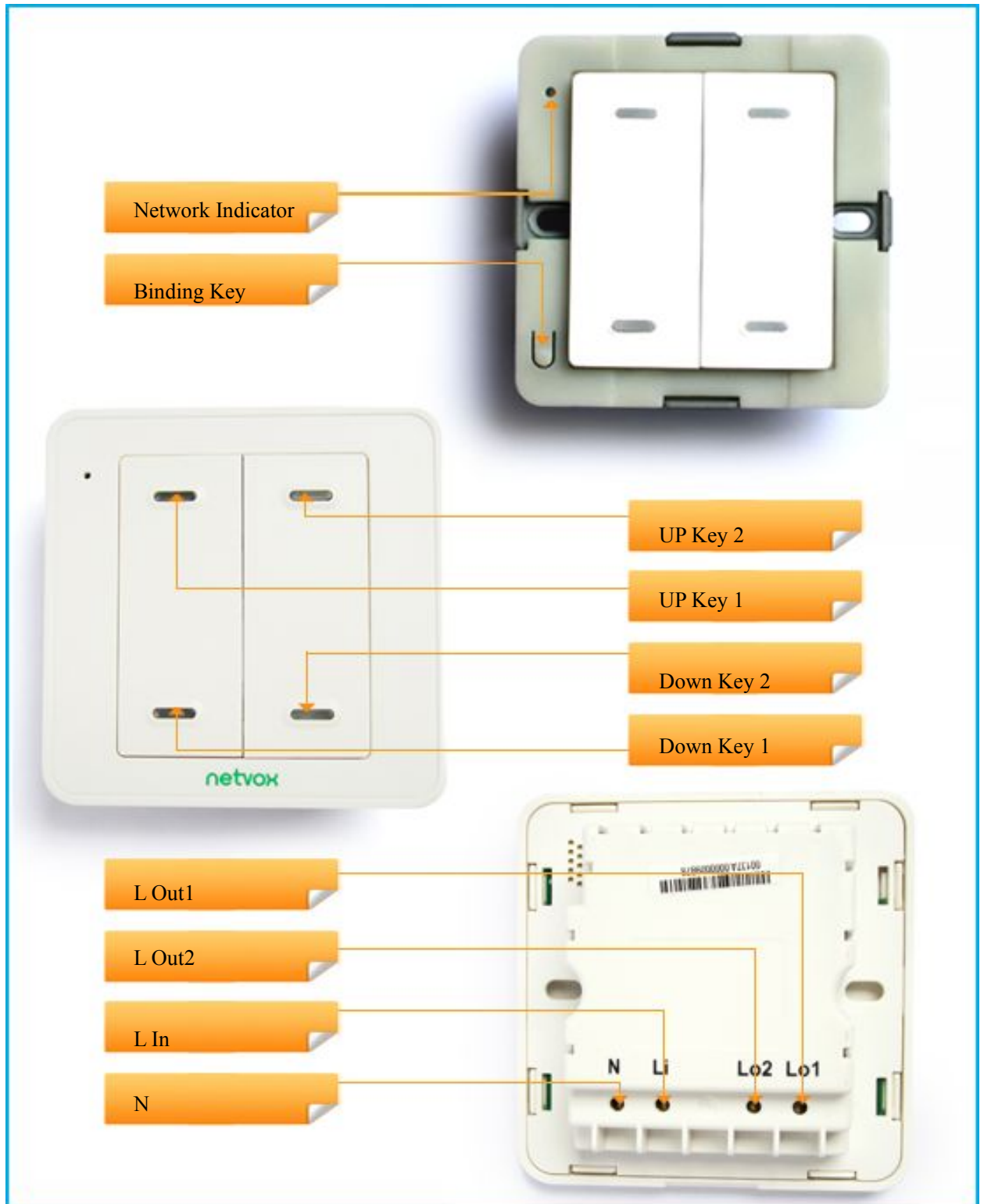
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FW V1.1~V1.4/ V2.0

HW V1.4

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

Dimmer Switch Unit



Introduction

NETVOX Z815E is a ZigBee Home Automation enabled wall dimmer switch unit with power/energy/current/voltage consumption monitoring. It acts as a router device in the Home Automation profile network. The AC output can be manually controlled or 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 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 16 channels
- ✓ 100~240VAC, 50/60HZ input power
- ✓ Up to 120 meters non-obstacle wireless transmission distance
- ✓ Simple operation and device configuration

Setting up the Z815E 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

When Z815E is given powered, it will automatically start searching for an existed network. So before you give power to Z815E 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 Z815E is powered on Z815E 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 Z815E.

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 Z815E to power it. Z815E 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 Z815E 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 Z815E, 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 Z815E](#)

Pairing operation:

Step 1: Long press the binding key for **3 seconds**. Release the binding key after the indicator flashes once.

Step 2: Within 5 seconds after releasing the binding key, press the binding key N times (N=1: to bind the control key 1; N=2: to bind the control key 2). After 5 seconds, it will send out a pairing request.

Step 3: The indicator flashes 5 times when the binding is successful; otherwise, it will flash 10 times.

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 Z815E

Dimmer switch

To adjust the light intensity, hold press the up or down key the light flashes once. The light will take 5 seconds for each increment or decrement.

To adjust the light by steps, short press the up or down key.

Remote control

When the device has joined to the network and had properly paired with a remote controller (described in [Device pairing](#)) section the device is ready to be controlled wirelessly. Z815E should now be able to responds to on, off, level control command from a wireless remote controller.

Power Consumption Reporting

Z815E 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. Z815E 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, Z815E stores and updates such value and clears up the previous.

Reading accuracy

If the output current is above 100mA, the reading accuracy of current, voltage and power is $\pm 1\%$. Current detection range is between 100mA to 4A.

Permit other device to join

Z815E 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 Z815E 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 Z815E or on other router device to allow new devices (a router or an end device) to join.

Operation:

1. Short press (less than a 3 seconds) the binding key once.
2. The permit join is now enabled for 60 seconds and the indicator light will flash 60 times.
3. Z815E 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.

Clear Consumption Summation

Z815E stores meter reading in its memory. You may wish to recount the energy reading (Kilowatt-hour) to zero.

Operation:

Hold press the binding key for about 20 seconds until the network indicator flashes its 4th flash then release the key. Within 2 seconds, very short presses (less than a second) on the right switch (on either the up key or the down key).

Restore to factory setting

Z815E is capable of storing and saving includes network routing information. If you wish to remove Z815E 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 about 15 seconds until the network indicator flashes its 3rd flash then release the key. Within 2 seconds, very short presses (less than a second) on the right switch (on either the up key or the down key).

Note: do not release the key before the 3rd flash.

Step 2. If restore to factory setting is **successful**, you should see the indicator **flashes 10** times. Now the device has restored to the factory setting.

Z815E 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.

Summary of Key function and corresponding display

Function	Key	Display
Restore to factory setting	Hold press binding key until the 3 rd flash then within 2s press on the right switch.	-
Permit Join	Short press binding key once	flash 60 times in 60 seconds.
Resetting power consumption summation	Hold press binding key until the 4th flash then within 2s press on the right switch.	-
Device Pairing / Clear pairing	Hold press binding key 3s until LED flash once	LED flash 5 times 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 Z815E

Home Automation device feature is defined by the endpoint which contains functional clusters. Table 1 lists clusters for the endpoint of Z815E

Table 1: Clusters supported by the endpoint

Cluster for Z815E Device ID: Dimmer Light (0x0101) EndPoint: 0x01, 0x02	
Server side	Client side
Basic (0x0000)	<i>None</i>
Identify (0x0003)	
Groups (0x0004)	
Scenes (0x0005)	
On/Off (0x0006)	
Level Control (0x0008)	
Commission (0x0015)	
Simple Metering (0x0702)	

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	0x14	O
0x0002	<i>StackVersion</i>	8-bit Unsigned integer	0x00 –0xff	Read only	0x2F	O
0x0003	<i>HWVersion</i>	8-bit Unsigned integer	0x00 –0xff	Read only	0x0E	O
0x0004	<i>ManufacturerName</i>	Character string	0 – 32 Bytes	Read only	netvox	O

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0005	<i>ModelIdentifier</i>	Character string	0 – 32bytes	Read only	Z815ME3R	O
0x0006	<i>DateCode</i>	Character string	0 – 16 bytes	Read only	20130114	O
0x0007	<i>PowerSource</i>	8-bit Enumeration	0x00 –0xff	Read only	0x01	M

Troubleshooting

(1) I found that power outlet Z815E 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 Z815E and see if the load attached can be turned on and off.

Test 2. Enable permit join on other router device and see if Z815E LED indicator is also flashing which will last for 60 seconds together like other routers do. This result implied that Z815E 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 Z815E 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 Z815E to factory setting then associate Z815E 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.

- ONLY dimmable bulbs/ lamps/ lightings can be used with Z815E.
- 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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