

# **AM4000D Outdoor CPE User Manual**

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## PLEASE READ THESE SAFETY PRECAUTIONS!

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### RF Energy Health Hazard



The radio equipment described in this guide uses radio frequency transmitters. Although the power level is low, the concentrated energy from a directional antenna may pose a health hazard.

Do not allow people to come in close proximity to the front of the antenna while the transmitter is operating.

### Protection from Lightning



Before connecting this instrument to the power line, make sure that the voltage of the power source matches the requirements of the instrument. The unit must be standards.

### Disposal and Recycling Information



Pursuant to the WEEE EU Directive electronic and electrical waste must not be disposed of with unsorted waste. Please contact your local recycling authority for disposal of this product.

### Reduction of Hazardous Substances



This CPE is compliant with the EU Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulation (Regulation No 1907/2006/EC of the European Parliament

and of the Council) and the EU Restriction of Hazardous Substances (RoHS) Directive (Directive 2002/95/EC of the European Parliament and of the Council).

### FCC Notice, USA

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE 1: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

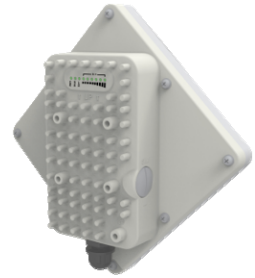
NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 50cm between the radiator & your body.

## 1. Overview

The ODU is a high performance 4G LTE outdoor CPE product designed to enable quick LTE fixed data service deployment to the remote customers. It provides high data throughput and networking features to end users who need both bandwidth and quality service in the remote area.



### 1.1. User Interface Specification

Model	Description & User Interface
ODU	<ul style="list-style-type: none"><li>- Panel antenna: B43(3650-3700MHZ) 15±1dBi</li><li>- 1 RJ45 10/100M LAN Port</li><li>- PWR, RUN, LAN, SIM, LTE(1-5) LEDs</li><li>- 24 VDC PoE supply, ODU Power &lt;12 Watts</li><li>- Dimensions: 203 mm (L) × 203 mm (W) × 76.5 mm (D)</li><li>- Weight: &lt; 1.5 Kg</li></ul>

### 1.2. LTE Interface Specification

Frequency Bands	Band 43 (3650-3700MHZ)
Radio Access	3GPP LTE Release9
Operation Mode	TDD, 2RX, 1TXD, DLMIMO
Output Power	> 23dBm at antenna port
Throughput	Category 4
SIM Support	SIM card slot

## 2. GettingStarted

### 2.1. Packing list and CPE Unit

Upon receiving the product, please unpack the product package carefully. Each product is shipped with the following items:

**Table 2-1 Packing List**

<b>Outdoor CPE Products</b>	<b>Quantity</b>
ODU unit	1
Power adapter	1
Power Line	1
Mounting brackets	1
PC Ethernet Cable	1

If you find any of the items missed, please contact our local distributor immediately.

**CPE Unit:**

Please unpack the package and check the units as following list.



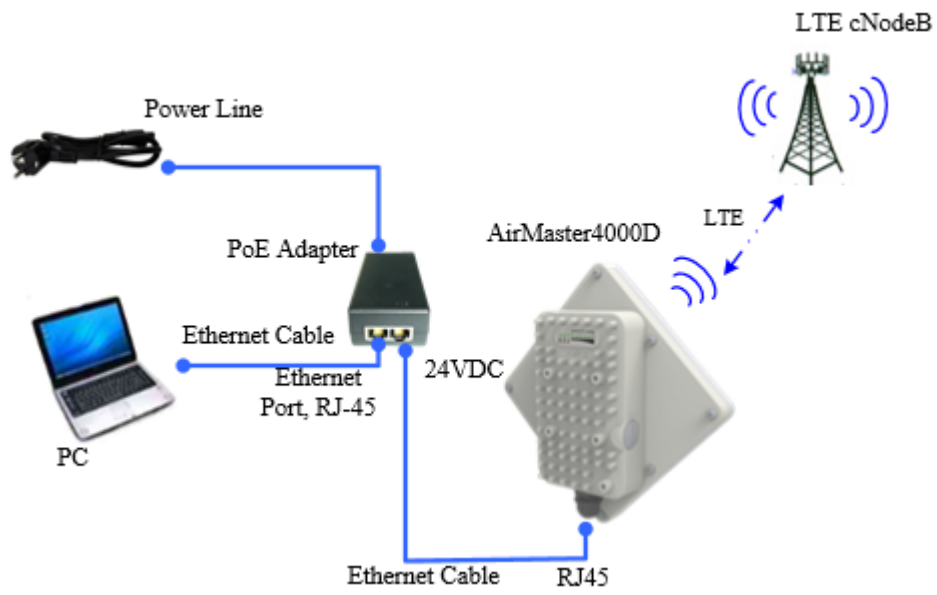
## 2.2. Installing the Equipment

### ◆ Device logic connection

For outdoor CPE product, it is suggested that the CPE device be installed in a shaded area to avoid direct sun light exposure which may cause over heat in certain extreme weather condition. The CPE should be properly grounded for proper protection against lightning or power surge.

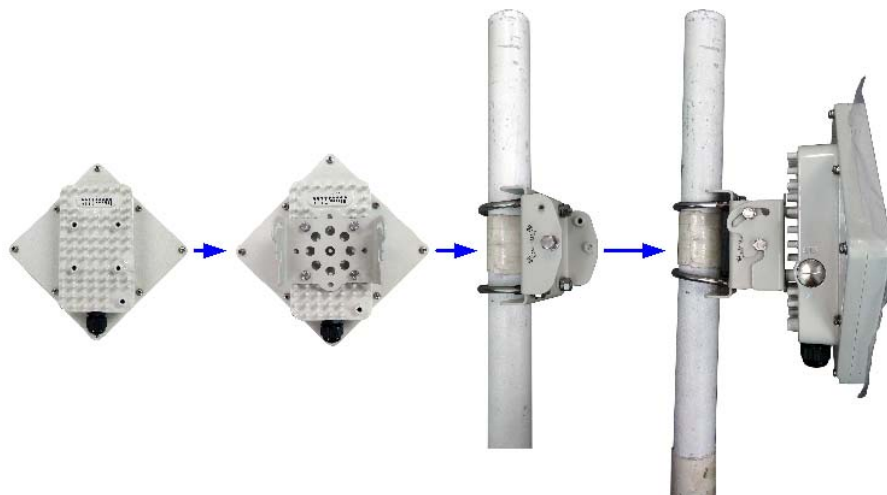
To power on the device, the outdoor CPE must uses a 24V PoE integrated DC power supply adapter. The power adapters can operate in 90-250V AC range and therefore can be used in different country. Once the device is powered up, the user should wait for about 2 minutes before the device becomes operational. For CPE with the RUN LED indicator, a slowly flashing light indicates the system has completed the startup procedure.

To connect PC, LAN switch or other type of IP device to the CPE product, the user should use standard CAT5 Ethernet cable and connect to the appropriate LAN port. Once connect the CPE LAN LED indicator should come on.



◆ **Installing Outdoor Unit (ODU)**

**Mounting Bracket::**



**Header Connection:**





#### ◆ LED Display

LED Indicator	Function	Description
PWR	Power Indicator	Green Color – Device is powered on
RUN	System Run Indicator	Fast Blinking – Device is rebooting Slow Blinking – Device is in normal operation
LAN	LAN port status	Solid Green – LAN port is up Blinking Green – LAN data activity in progress
SIM	SIM Card Indicator	Light is on – SIM card state ready.
RF(5LEDs)	RF Signal Strength	5 level signal strengths indication by 5 green LEDs 1 green LED: RSRP<= -118dBm 2 green LEDs: -118 dBm <=RSRP< -105 dBm 3 green LEDs:-105dBm<=RSRP< -95dBm 4 green LEDs:-95dBm<=RSRP< -85dBm 5 green LEDs:-85dBm<=RSRP

### 3. Managing CPE Device

The ODU supports several management interfaces including TELNET, WEB, and TR-069 for local or remote managements. However normal end user is only provided with WEB based access

#### 3.1. WEB Login--192.168.0.1

It is a preferred to setup the CPE using a Web browser from a local PC connected to device LAN

port. The user should ensure that the connected PC acquired IP address via DHCP from the device. After IP connectivity is established between the PC and CPE device, the user may launch a Web browser and specify <http://192.168.0.1> in the address bar. A window will pop up requesting password. Input the user login password and then click the “Log In” button. After successful log on, the default home page of the WEB GUI interface will appear. Note that the default user password is “admin123”.

### 3.2. LTE Status Display-Overview

Once the user is logged in, the following window LTE Information window will be prompted for viewing. The page gives quite detailed LTE information including the System Information.

System Information	
Manufacturer	KZ TECH
Model Name	AirMaster 4000D
Chip Model	SQN31X0
Serial Number	K4000DFFD991
IMEI	864423020401138
IMSI	460880000000027
Duplexing Scheme	TDD
Supported Band	43
Firmware Version	3.3.2.0-0_[M]

**System Information:**  
This section shows the basic device 4G Radio hardware and firmware information.

**Radio Information:**  
This section shows the basic wireless information.

**Connection:**  
This section shows the status of connecting for 4G Radio.

### 3.3. LTE Configuration

#### ◆ Radio Settings-ND&S Configure

There is a LTE radio button which is used for the user can turn the radio on or off to restart the LTE module.

The CPE would scan frequency auto as soon as the system has completed the startup procedure, and you can configure the fixed Frequency manual as follow:



**Radio Settings**

Select 4G Radio

4G Radio  ON  OFF

Discrete Band Setting

Band ID	undefined(MHz)	undefined(MHz)	undefined	undefined	Delete
43					Delete

Add Cancel

Save & Apply Cancel Changes

**Help**

**Radio Settings:**  
In this page, you can turn on/off the 4G radio and set band settings including the band ID and EARFCN/Frequency.

undefined:  
B43 43590 - 45589

undefined:  
B43 3600 - 3799.9 MHz

**Note:** After configure any parameters of the device, you must click the “**Save & Apply**” button to save the configuration otherwise the configuration will not take effect.

#### ◆ APN Setting-Bearer configure

The Bearer List is design for the operator to configure the APN. You can configure the only one APN for all the service classes, as follow:

**Bearer Settings**

Bearer List

Index	APN Name	Class ID	IP Type	Priority	Delete
1	internet1	1	IPv4v6	Up	Delete

Add Cancel

Save & Apply Cancel Changes

**Help**

**Bearer List:**  
In this page you can settings Bearer 1-8,The most length of APN Name is 64 bytes.

And the operator also can configure two APNs for Manage and data service classes. As follow picture, the Management Data Class will be transport via the “internet1 “ network and the Data Traffic Class will be transport via the “internet2” network.

**Bearer Settings**

Bearer List

Index	APN Name	Class ID	IP Type	Priority	Delete
1	internet1	1	IPv4v6	Up	Delete
2	internet2	2	IPv4v6	Up	Delete

Add Cancel

Save & Apply Cancel Changes

**Help**

**Bearer List:**  
In this page you can settings Bearer 1-8,The most length of APN Name is 64 bytes.

And the CPE will obtain two different IP for two networks.

### 3.4. Network Configuration

### ◆ Modify MTU Size

The default Operation Mode is Router, and the PC of the user that connected to device LAN port will obtain IP address via DHCP server of the device. The default MTU Size is 1400, user can modify the MTU Size if necessary

The screenshot shows the 'Internet Setup' configuration page. The 'Internet Connection' section has 'Connection Mode' set to 'Router / NAT' and 'NAT' checked. The 'Optional' section has 'Device Name' as 'KZ TECH', 'Host Name' and 'Domain Name' as empty fields, 'MTU' set to 'Manual' with a value of '1300', and 'IP Type' set to 'IPv4v6'. The 'DS-Lite Connection' section has 'DS-Lite Configuration' set to 'Disable'. At the bottom, there are 'Save & Apply' and 'Cancel Changes' buttons.

### ◆ Change model from Router to Bridge

The operation mode could be changed from Router to Bridge if necessary .Change model as follow picture: **Network**→**Internet**→**L3 Bridge**→**Save & Apply**

The screenshot shows the 'Internet Setup' configuration page. The 'Internet Connection' section has three radio buttons: 'Router / NAT', 'L2 Bridge (GRE)', and 'L3 Bridge', with 'L3 Bridge' selected and highlighted by a red box. The 'Optional' section includes fields for 'Device Name' (KZ TECH), 'Host Name', 'Domain Name', 'MTU' (Manual, 1300), and 'IP Type' (IPv4, IPv6, IPv4v6), with 'IPv4v6' selected. The 'DS-Lite Connection' section has 'DS-Lite Configuration' set to 'Disable' (selected) and 'Manual Config'. There are also fields for 'AFTR IPv6 Address', 'B4 IPv4 Address' (192.0.0.), 'WAN IPv6 Address', and 'IPv6 WAN Default Gateway'. At the bottom, there are 'Save & Apply' and 'Cancel Changes' buttons.

The operator's PC which connected the LAN port of CPE will auto obtain the IP of APN Net when the CPE attached to the APN network, then you can connected to the APN network for data services. And the PC should configure a static IP address as 10.1.1.x manual in order to visit the CPE managing page <http://10.1.1.1> .

### 3.5. Service Configuration-DMZ Setting

By enabling this option will make the specified local LAN host (DMZ IP) was exposed to the Internet, all ports can be accessed by other computers on the Internet.

The screenshot shows the 'Demilitarized Zone (DMZ)' configuration page. The 'DMZ' section has 'DMZ Enable Status' set to 'Enable' (selected) and 'Disable'. The 'DMZ Host IP Address' is set to '192.168.0.100', with the IP address field highlighted by a red box. There are three checkboxes: 'Exclude Web Server Port' (checked), 'Exclude Remote Port' (checked), and 'Exclude Ping' (checked). At the bottom, there are 'Save & Apply' and 'Cancel Changes' buttons.

### 3.6. System Maintenance

WEB GUI menu to configure the device in more details (see diagram below). The configuration is easy to use and self explanatory.

#### ◆ Telnet Enable (for beta release)

The users can telnet to the CPE in the beta release when set the Remote connection as Enable. Then set the Access Control as Unrestricted Access.

LTE Network Security Applications Management Maintenance Status Exit

Device Management TR069 Configuration admin

**Device Management Setting**

**Device Mangement**

Device Management Mode TR069

**Device Management Control**

Remote connection(telnet&ssh)  Enable

Access Control Unrestricted Access

Auto-Logout Timeout Enable 20 ( minutes:1 ~ 25 )

Save & Apply Cancel Changes

**Help**

**Local:**  
Means user will configure all the device setting locally.

**TR069:**  
Means the device will be managed remotely using standard TR069 platform.

**Access Control:**  
It defines the login restriction for Web and SSHD access, as well controls how hard RESET works.

cmd shell and run command:

telnet 192.168.0.1

Login: root

Password: root123

#### ◆ TR069 Configuration

After setting the Device Management Mode as TR069, you must also configure the validity ACS URL for monitoring the device via standard TR-069 ACS systems.

LTE Network Security Applications Management Maintenance Status Exit

Device Management TR069 Configuration admin

**Device Management Setting**

**Device Mangement**

Device Management Mode TR069

**Device Management Control**

Remote connection(telnet&ssh)  Enable

Access Control Unrestricted Access

Auto-Logout Timeout Enable 20 ( minutes:1 ~ 25 )

Save & Apply Cancel Changes

**Help**

**Local:**  
Means user will configure all the device setting locally.

**TR069:**  
Means the device will be managed remotely using standard TR069 platform.

**Access Control:**  
It defines the login restriction for Web and SSHD access, as well controls how hard RESET works.

LTE Network Security Applications Management Maintenance Status Exit

Device Management TR069 Configuration admin

**TR069 Management Setting**

**TR069 Configuration**

ACS URL

ACS Username

ACS Password

Re-enter Password

Periodic Inform Enable

Periodic Inform Interval  seconds(90~604800)

Periodic Inform Time  -  -  T  :  :  (eg2000-01-01T01:01:01)

CPE Username

CPE Password

Re-enter Password

**ACS STUN Configuration**

STUN Enable Status  Enable

Server Address

Server Port  (0~65535)

Username

Password

Re-enter Password

Minimum Keep Alive Period  seconds(10~90)

Maximum Keep Alive Period  seconds(10~90)

Save & Apply Cancel Changes Connect ACS

**Help**

**TR069 Configuration**

This part contains TR069 ACS server and ACS STUN server configuration.

### ◆ Firmware Upgrade over HTTP

Select the **Default settings** to reset the CPE after upgrade

Click on the **Browser** button to select the firmware file to be uploaded to the device.

Click the **Upgrade** button to begin the upgrade process.

LTE Network Security Applications Management Maintenance Status Exit

General Firmware Upgrade Config Management Ping System Reset admin

**Firmware Management**

**Local Firmware Upgrade**

Reset to defaults after upgrade  No Reset  Reset to Factory Defaults

Please select a file to upgrade

**Remote Firmware Upgrade**

Update Method

Save & Apply Cancel Changes

**Help**

**Local Firmware Upgrade:**

Click on the *Browse...* button to select the firmware file to be uploaded to the device.

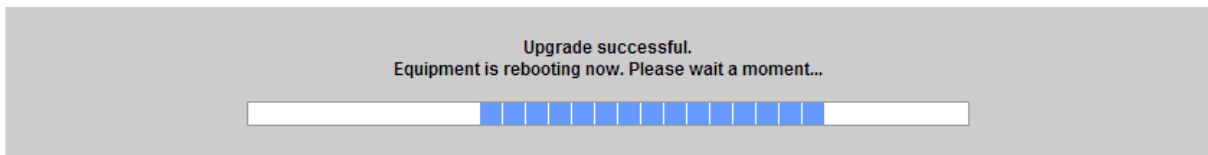
Click the *Upgrade* button to begin the upgrade process which must not be interrupted.

**Remote Firmware Upgrade:**

You need to fill in the connection configs of HTTP,FTP or TFTP server.

Click the *Upgrade* button to begin the upgrade process which must not be interrupted.

Please do not interrupt the upgrade process and continue to wait for the following pop window appear. The CPE will reboot after upgrade successful.



◆ **Change Password**

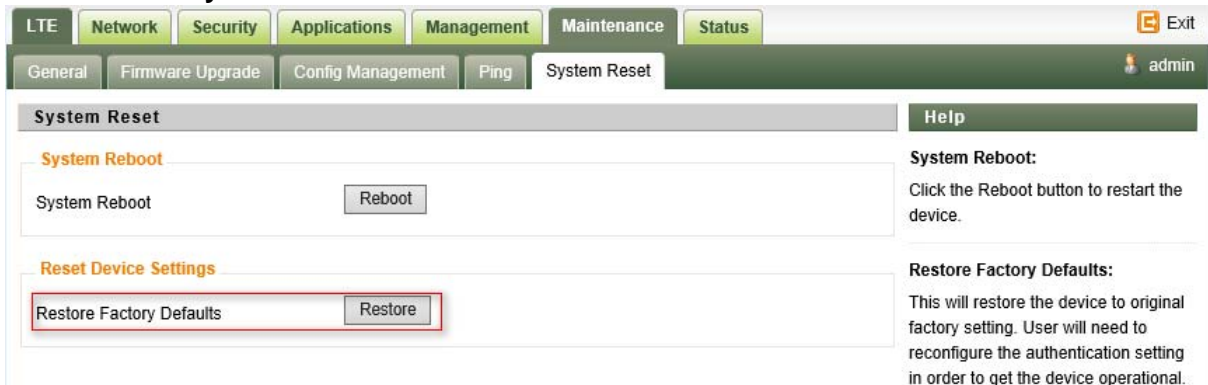
You can select the language or modify the web login password via the Maintenance page.



◆ **Load Factory Default**

Click the “Restore” button will restore the device to original factory setting. User will need to reconfigure the authentication setting in order to get the device operational.

**Maintenance → System Reset → Restore**



**4. FAQ and Troubleshooting**

**1) My PC cannot connect to the CPE.**

- Re-plug the PC Ethernet cable and check if the PC LAN connection is up or showing activity.
- Check if the system run LED is on. If it is not, check the power cord and make sure it is connected properly. Also verify that the AC power supply is available.
- If the PC LAN shows no activity and system run LED is off but the power cord is connected properly and there is AC supply, then it is likely the adapter is damaged. Please contact distributor to obtain replacement part.

**2) My PC cannot acquire IP from the CPE.**

- First check if the NIC is up and working properly. Then check the PC NIC configuration and make sure the DHCP is enabled.
- Open the MS-DOS window, enter “ipconfig /release” and “ipconfig /renew” commands and see if PC can obtain IP correctly.
- If the problem persists, please contact the operator or distributor for further diagnose.

**3) My CPE networking is not working properly.**

- You may want to check if the LTE connection is up and running properly. You can do this by login the WEB GUI and check the Interface Info page.
- You may want to perform a factory reset and see if the problem is being corrected. You can do this by log into the WEB GUI using “admin” password and perform restore the unit to default factory setting.
- If the problem cannot be corrected by factory reset, please contact the operator or distributor for further diagnose.

**4) I forget the login password and like to reset the unit to factory default.**

- Please contact the operator or distributor and give them the MAC address of the unit. The operator or distributor can issue you a RESET password for you to enter in the WEB login window.
- After the unit is reset to factory default, you can login using the default password.