

# 5G CPE

## UF51

### Quick Start Guide

## Safety Precautions

Milesight will not shoulder responsibility for any loss or damage resulting from not following the instructions of this operating guide.

- The device must not be modified in any way.
- Do not place the device close to objects with naked flames.
- Do not place the device where the temperature is below/above the operating range.
- Do not power on the device or connect it to other electrical device when installing.
- Check lightning and water protection when used outdoors.
- Do not connect or power the equipment using cables that have been damaged.

## Related Documents

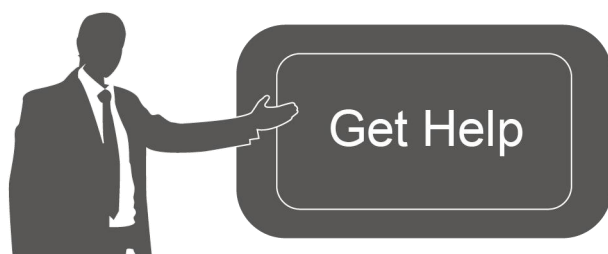
This Quick Start Guide only explains the installation of Milesight UF51 5G CPE. For more functionality and advanced settings, please refer to the relevant documents as below.

| Document        | Description                                                                                                       |
|-----------------|-------------------------------------------------------------------------------------------------------------------|
| UF51 Datasheet  | Datasheet for UF51 5G CPE.                                                                                        |
| UF51 User Guide | Users can refer to the guide for instruction on how to log in the web GUI, and how to configure all the settings. |

The related documents are available on Milesight website: <https://www.milesight-iot.com>

## Declaration of Conformity

UF51 is in conformity with the essential requirements and other relevant provisions of the CE, FCC, and RoHS.



For assistance, please contact  
Milesight technical support:  
Email: [iot.support@milesight.com](mailto:iot.support@milesight.com)  
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## Revision History

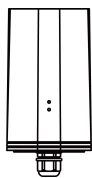
| Date          | Doc Version | Description     |
|---------------|-------------|-----------------|
| July 28, 2021 | V1.0        | Initial version |

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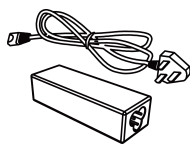
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## 1. Packing List

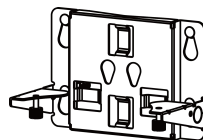
Before you begin to install the UF51 5G CPE, please check the package contents to verify that you have received the items below.



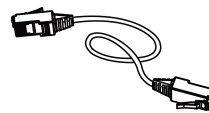
1 × UF51 Device



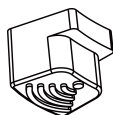
1 × PoE Injector



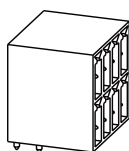
1 × Mounting Bracket



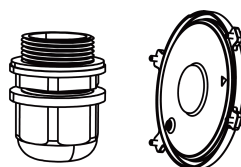
1 × Ethernet Cable



4 × Rubber Feet



1 × 8-Pin Pluggable  
Terminal Block



1 × Bottom Cover  
with Cable Gland



1 × Waterproof  
Rubber Ring



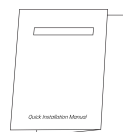
Wall Mounting Kits



2 × Hose Clamps



1 × Warranty Card



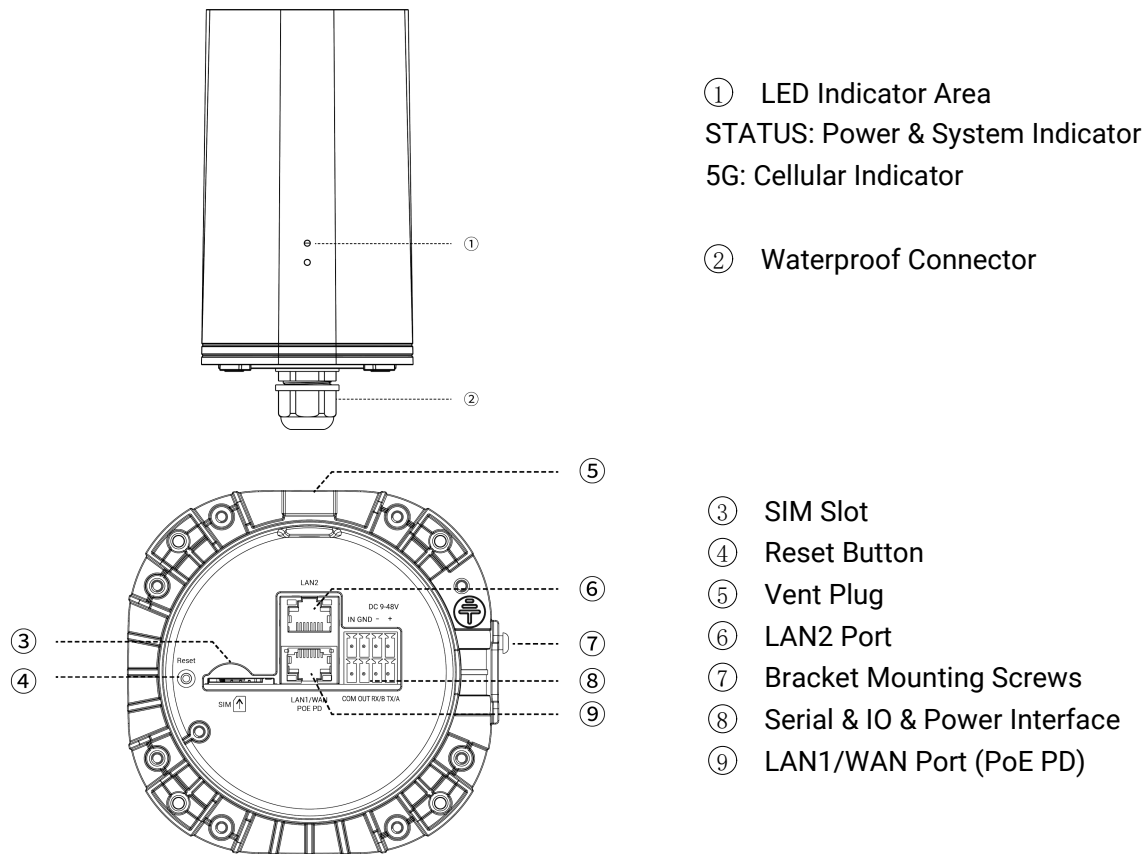
1 × Quick Start Guide



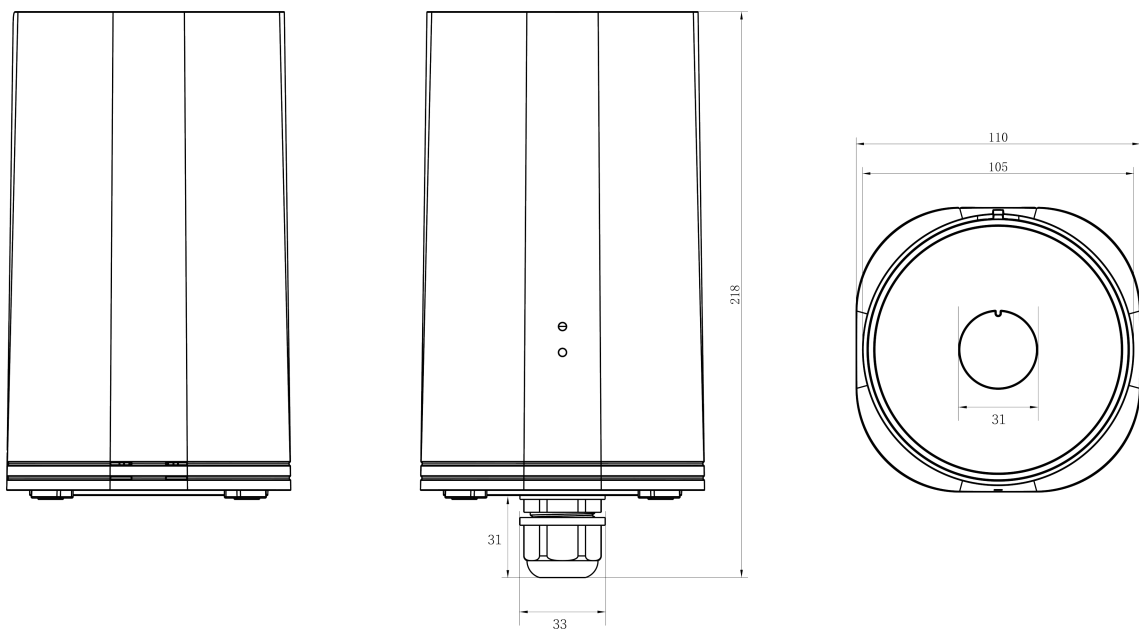
**If any of the above items is missing or damaged, please contact your sales representative.**

## 2. Hardware Introduction

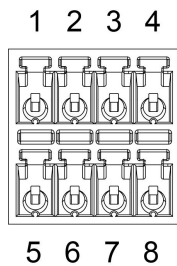
### 2.1 Overview



### 2.2 Dimensions (mm)



## 2.3 Serial & IO & Power Pinouts



| PIN | RS232 /RS485 | DI  | DO  | Power | Description          |
|-----|--------------|-----|-----|-------|----------------------|
| 1   | ---          | IN  | --- | ---   | Digital Input        |
| 2   | GND          | GND | --- | ---   | Ground               |
| 3   | ---          | --- | --- | (-)   | Negative             |
| 4   | ---          | --- | --- | (+)   | Positive (9-48V)     |
| 5   | ---          | --- | COM | ---   | Common Ground        |
| 6   | ---          | --- | OUT | ---   | Digital Output       |
| 7   | RXD/B        | --- | --- | ---   | RS232-RXD<br>RS485-B |
| 8   | TXD/A        | --- | --- | ---   | RS232-TXD<br>RS485-A |

## 2.4 LED Indicators

| LED           | Indication              | Status   | Description                                                                       |
|---------------|-------------------------|----------|-----------------------------------------------------------------------------------|
| STATUS        | Power & System Status   | Off      | The power is switched off                                                         |
|               |                         | Orange   | Static: The system is startup                                                     |
|               |                         | Green    | Static: The system is running properly                                            |
|               |                         | Red      | Static: The system goes wrong                                                     |
| 5G            | Cellular Status         | Off      | SIM card is registering or fails to register (or there are no SIM cards inserted) |
|               |                         | Green    | Blinking slowly: SIM card has been registered and is ready for dial-up            |
|               |                         |          | Blinking rapidly: SIM card has been registered and is dialing up now              |
|               |                         |          | Static: SIM card has been registered and dialed up to 5G network                  |
|               |                         | Orange   | Static: SIM card has been registered and dialed up to 4G network                  |
| Ethernet Port | Link Indicator (Orange) | Off      | Disconnected or connect failure                                                   |
|               |                         | On       | Connected                                                                         |
|               |                         | Blinking | Transmitting data                                                                 |
|               | Rate Indicator (Green)  | Off      | 100 Mbps mode                                                                     |
|               |                         | On       | 1000 Mbps mode                                                                    |

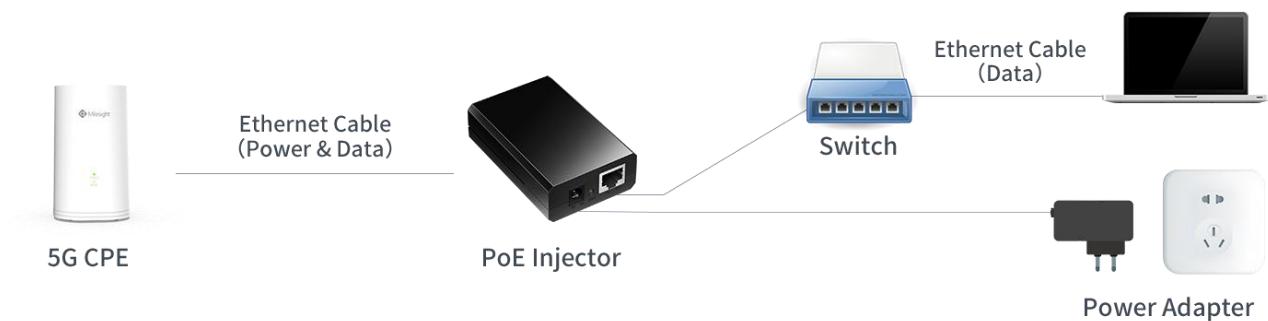
## 2.5 Reset Button

| Function | Description        |                                                          |
|----------|--------------------|----------------------------------------------------------|
|          | STATUS & 5G LED    | Action                                                   |
| Reset    | Static             | Press and hold the reset button for more than 5 seconds. |
|          | Static → Blinking  | Release the button and wait.                             |
|          | Off → Static Green | The device resets to factory default.                    |

## 3. Power Supply

UF51 can be powered by 802.3af standard PoE or 9-48VDC. **Both power supplies can't be used at the same time.**

**PoE Supply:** Follow the below picture to provide power supply via PoE injector. Besides, UF51 can also be powered by PoE switch.

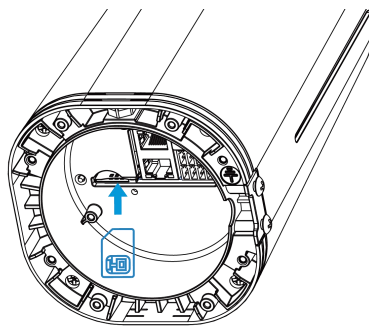


**DC Supply:** Connect the DC power cable to terminal block, then connect the terminal block to DC interface to power the device.

## 4. Hardware Installation

### 4.1 SIM Card Installation

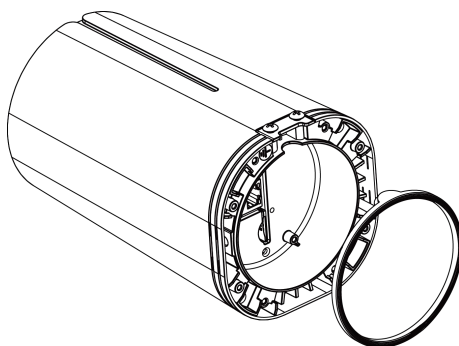
Insert the SIM card into the device according to the direction icon on the device. If you need to take out the SIM card, press into the SIM card and it will pop out automatically.



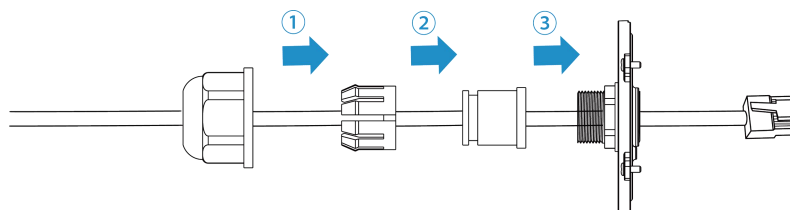
## 4.2 Waterproof Cover & Ethernet Cable Installation

If you need to use UF51 outdoors, the waterproof cover and cable gland should be installed under the bottom of the device.

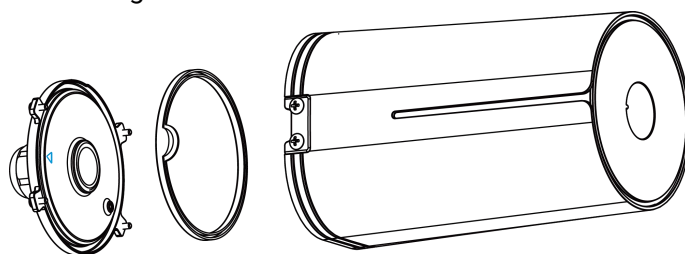
A. Install the rubber ring into the bottom of the device. Note that the round part needs to face the gap of bottom when installing, otherwise it may cause waterlogged.



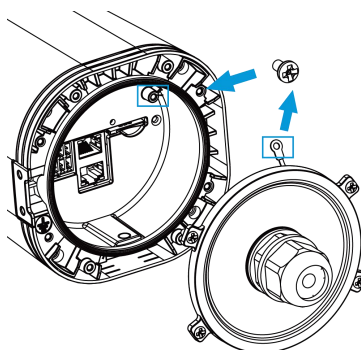
B. Connect a round Ethernet cable to LAN1/WAN port, then pass the Ethernet cable through all parts of the cable gland and the bottom cover.



C. Fix the bottom cover to the bottom of the device with 4 screws. Note that the arrow behind the cover needs to face the bracket mounting screws.



**Note:** Bottom cover can be fixed with the device via the wiring behind the cover.



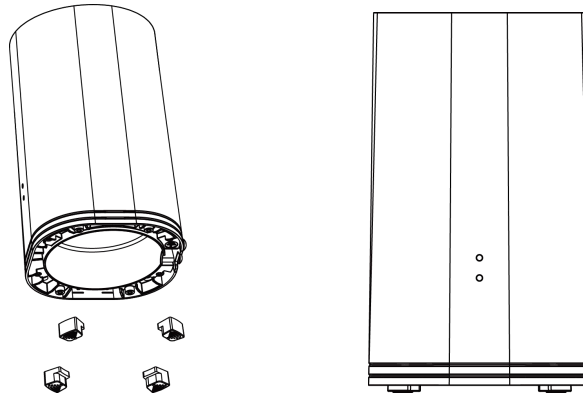
## 4.3 Device Installation

UF51 supports multiple installation methods like desktop, wall mounting, pole mounting, etc. Before you start, make sure that your SIM card has been inserted and all cables have been installed.

**Note:** Do not connect device to power supply or other devices when installing.

### 4.3.1 Desktop

When using indoors, pile 4 rubber feet into the gaps at the bottom of the device. The rough surface of rubber feet should face desktop.



### 4.3.2 Wall Mounting

**Preparation:** mounting bracket(with 2 screws), wall plugs, wall mounting screws and other required tools.

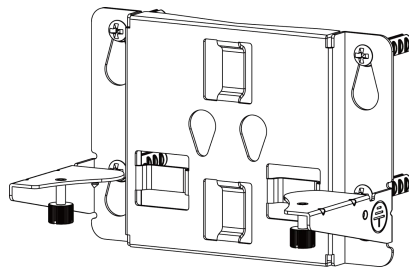
A. Align the mounting bracket horizontally to the desired position on the wall, use a marker pen to mark four mounting holes on the wall, and then remove the mounting bracket from the wall.

**Note:** The connecting lines of adjacent points are at right angles.

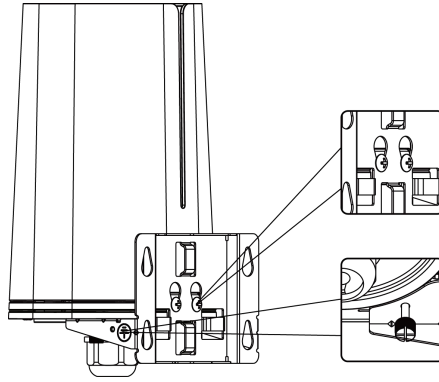
B. Drill four holes with a depth of 32 mm by using your drill with a 6 mm drill bit on the positions you marked previously on the wall.

C. Insert four wall plugs into the holes respectively.

D. Mount the mounting bracket horizontally to the wall by fixing the wall mounting screws into the wall plugs.



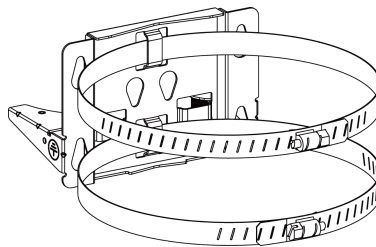
E. Hang the device to the mounting bracket via bracket mounting screws on the back of device, then screw the 2 bracket screws to the bottom of the device.



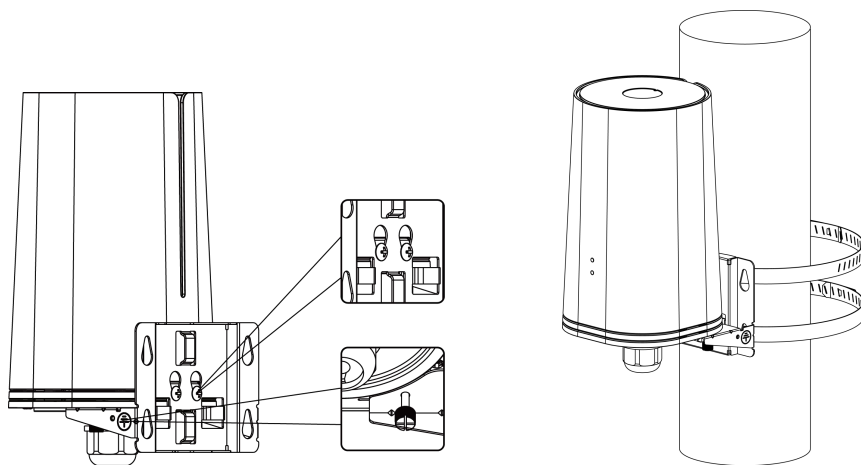
### 4.3.3 Pole Mounting

**Preparation:** mounting bracket(with 2 screws), hose clamps and other required tools.

- Loosen the hose clamp by turning the locking mechanism counter-clockwise.
- Straighten out the hose clamp and slide it through the rectangular rings in the mounting bracket, wrap the hose clamp around the pole.
- Use a screwdriver to tighten the locking mechanism by turning it clockwise.



- Hang the device to the mounting bracket via bracket mounting screws on the back of device, then screw the 2 bracket screws to the bottom of the device.



## 5. Login the Web GUI

UF51 provides web-based configuration interface for management. If this is the first time you configure the device, please use the default settings below:

Username: **admin**

Password: **password**

### 5.1 Wireless Access

A. Enable Wireless Network Connection on your computer and search for access point **"Router\_\*\*\*\*\*"** to connect it.

B. Open a Web browser on your PC (Chrome is recommended) and type in the IP address **192.168.1.1** to access the web GUI.

C. Enter the username and password, click "Login".

English



Login



If you enter the username or password incorrectly more than 5 times, the login page will be locked for 10 minutes.

D. After logging in the web GUI, you can view system information and perform configuration of the device.

admin

For your device security, please change the default password!

Status

Network

System

Industrial

Maintenance

APP

Overview

Cellular

Network

WLAN

VPN

Routing

Host List

GPS

System Information

Model

Serial Number

Firmware Version

Hardware Version

UF51-501EU

6901B1901925

76.2.0.2

V1.0

System Status

Local Time

Uptime

CPU Load

RAM (Available/Capacity)

Flash (Available/Capacity)

2021-07-28 10:44:44 Wednesday

1 days, 13:57:19

7%

215MB/512MB(41.99%)

2911MB/4096MB(71.07%)

Cellular

Link in use

Status

IPv4

IPv6

Connection Duration

Ready, 5G NR

10.2.25.72/28

fe80::7cf3:90ff:fe33:6151/64

0 days, 23:05:19

WAN

Status

IPv4

IPv6

MAC

Online

192.168.22.213/24

fe80::26e1:24ff:fe1:e38d/64

24:e1:24:ff

Manual Refresh

Refresh

Help

Model

Serial Number

Firmware Version

Hardware Version

Local Time

Uptime

CPU Load

Show the model name of router.

Show the serial number of router.

Show the current firmware version of router.

Show the current hardware version of router.

Show the current local time of system.

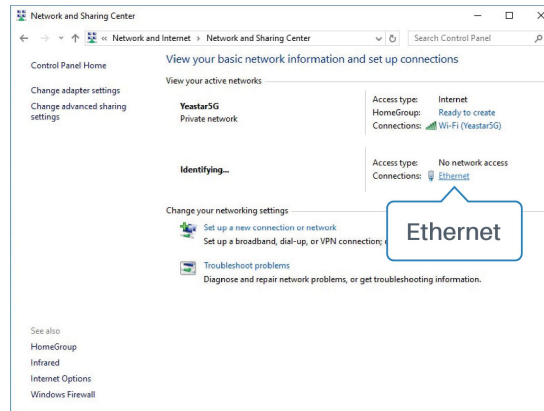
Show the information on how long the router has been running.

Show the current CPU utilization of the router.

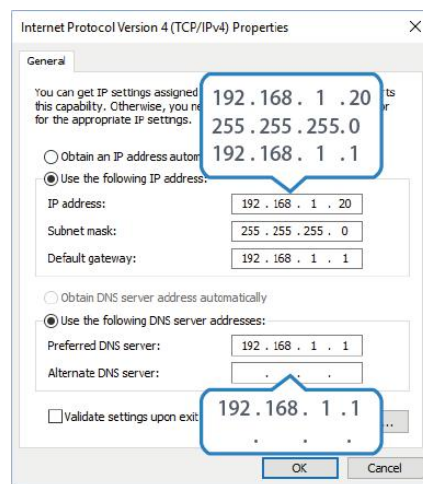
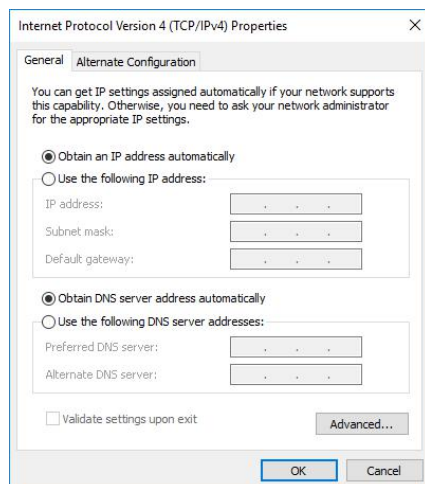
## 5.2 Wired Access

Connect PC to UF51 LAN port directly or through PoE injector. The following steps are based on Windows 10 operating system for your reference.

A. Go to “Control Panel” → “Network and Internet” → “Network and Sharing Center”, then click “Ethernet” (It may have different names).



B. Go to “Properties” → “Internet Protocol Version 4(TCP/IPv4)”, select “Obtain an IP address automatically” or “Use the following IP address”, then assign a static IP manually within the same subnet of the device.



C. Open a Web browser on your PC (Chrome is recommended) and type in the IP address **192.168.1.1** to access the web GUI.

D. Enter the username and password, click “Login”.



Login



If you enter the username or password incorrectly more than 5 times, the login page will be locked for 10 minutes.

E. After logging in the web GUI, you can view system information and perform configuration of the device.

Milesight

admin

For your device security, please change the default password!

Status

Network

System

Industrial

Maintenance

APP

Overview

Cellular

Network

WLAN

VPN

Routing

Host List

GPS

System Information

Model

UF51-501EU

Serial Number

6901B1901925

Firmware Version

76.2.0.2

Hardware Version

V1.0

System Status

Local Time

2021-07-28 10:44:44 Wednesday

Uptime

1days, 13:57:19

CPU Load

7%

RAM (Available/Capacity)

215MB/512MB(41.99%)

Flash (Available/Capacity)

2911MB/4096MB(71.07%)

Cellular

Link in use

Status

Ready, 5G NR

IPV4

10.2.25.72/28

IPV6

fe80::7cf3:90ff:fe33:6151/64

Connection Duration

0 days, 23:05:19

WAN

Status

Online

IPV4

192.168.22.213/24

IPV6

fe80::26e1:24ff:fe1:e38d/64

MAC

24:e1:24:ff

Manual Refresh

Refresh

Model

Show the model name of router.

Serial Number

Show the serial number of router.

Firmware Version

Show the current firmware version of router.

Hardware Version

Show the current hardware version of router.

Local Time

Show the current local time of system.

Uptime

Show the information on how long the router has been running.

CPU Load

Show the current CPU utilization of the router.

## 6. Network Connection

This section explains how to connect the device to network via WAN connection, Wi-Fi or cellular.

### 6.1 Configure the Ethernet Connection

A. Go to “Network”→ “Interface” → “Port” page to select connection type and configure WAN parameters, then Click “Save & Apply”.

Link Failover

Cellular

Port

WAN

Bridge

WLAN

Switch

WAN Settings

— WAN\_1

Enable

☒

Port

LAN1/WAN

Connection Type

Static IP

IPv4 Address

192.168.22.213

Netmask

255.255.255.0

IPv4 Gateway

192.168.22.1

IPv6 Address

fe80::26e1:24ff:fe1:e38d

Prefix Length

64

IPv6 Gateway

MTU

1500

IPv4 Primary DNS

114.114.114.114

IPv4 Secondary DNS

3.3.3.3

IPv6 Primary DNS

IPv6 Secondary DNS

Enable NAT

☒

- B. Connect WAN port to other network devices like modem.
- C. Go to “Network” → “Interface” → “Link Failover” to enable WAN.

| Link Failover | Cellular                            | Port        | WAN       | Bridge          | WLAN           | Switch      | Loopback    |
|---------------|-------------------------------------|-------------|-----------|-----------------|----------------|-------------|-------------|
| Link Priority |                                     |             |           |                 |                |             |             |
| Priority      | Enable Rule                         | Link in use | Interface | Connection Type | IP             | Operation   |             |
| 1             | <input checked="" type="checkbox"/> | <div></div> | WAN       | Static          | 192.168.22.213 | <div></div> | <div></div> |
| 2             | <input checked="" type="checkbox"/> | <div></div> | Cellular  | DHCP            | 10.2.25.72     | <div></div> | <div></div> |
| 3             | <input checked="" type="checkbox"/> | <div></div> | WLAN-2.4G | DHCP            | 192.168.3.147  | <div></div> | <div></div> |

- D. Log in web GUI via WAN IP address and check the network connection.

## 6.2 Configure the Wi-Fi Connection

A. Go to “Network” → “Interface” → “WLAN” and select “Client” mode.

B. Click “Scan” to search for Wi-Fi access point. Select the available one and click “Join Network”.

| Link Failover   | Cellular | Port   | WAN  | Bridge            | WLAN          | Switch  | Loopback     |
|-----------------|----------|--------|------|-------------------|---------------|---------|--------------|
| Gateway_F1B88F  | 6        | -83dBm | Auto | 24:E1:24:F1:B8:8F | No Encryption | 2437MHz | Join Network |
| Gateway_F161F2  | 6        | -88dBm | Auto | 24:E1:24:F1:61:F2 | No Encryption | 2437MHz | Join Network |
| 22-28-wifi-test | 6        | -79dBm | Auto | 24:E1:24:F1:20:BD | No Encryption | 2437MHz | Join Network |
| Gateway_F128C1  | 6        | -66dBm | Auto | 24:E1:24:F1:28:C1 | No Encryption | 2437MHz | Join Network |

C. Type the key of Wi-Fi.

| Link Failover     | Cellular                            | Port | WAN | Bridge | WLAN |
|-------------------|-------------------------------------|------|-----|--------|------|
| <b>WLAN1-2.4G</b> |                                     |      |     |        |      |
| Enable            | <input checked="" type="checkbox"/> |      |     |        |      |
| Work Mode         | Client                              |      |     |        | Scan |
| SSID              | Milesight_HW                        |      |     |        |      |
| BSSID             | 24:31:54:83:6E:C8                   |      |     |        |      |
| Encryption Mode   | WPA2-PSK                            |      |     |        |      |
| Cipher            | AES                                 |      |     |        |      |
| Key               | *****                               |      |     |        |      |
| IP Setting        |                                     |      |     |        |      |
| Protocol          | DHCP Client                         |      |     |        |      |

D. Go to “Network” → “Interface” → “Link Failover” to enable WLAN.

Link Failover

Cellular

Port

WAN

Bridge

WLAN

Switch

Loopback

Link Priority

| Priority | Enable Rule                         | Link in use | Interface | Connection Type | IP             | Operation                           |
|----------|-------------------------------------|-------------|-----------|-----------------|----------------|-------------------------------------|
| 1        | <input checked="" type="checkbox"/> | <div></div> | WLAN-2.4G | DHCP            | 192.168.3.147  | <div></div> <div></div> <div></div> |
| 2        | <input checked="" type="checkbox"/> | <div></div> | Cellular  | DHCP            | 10.2.25.72     | <div></div> <div></div> <div></div> |
| 3        | <input checked="" type="checkbox"/> | <div></div> | WAN       | Static          | 192.168.22.213 | <div></div> <div></div> <div></div> |

E. Go to “Status” → “WLAN” to check Wi-Fi status. If it shows “Connected”, it means the device connects to Wi-Fi successfully.

| Overview    | Cellular  | Network | WLAN             | VPN              | Routing      | Host List | GPS |
|-------------|-----------|---------|------------------|------------------|--------------|-----------|-----|
| WLAN Status |           |         |                  |                  |              |           |     |
| Name        | Status    | Type    | SSID             | IPv4 Address     | IPv6 Address |           |     |
| WLAN-2.4G   | Connected | Client  | Milesight_HW     | 192.168.3.147/24 | -            |           |     |
| WLAN-5G     | Running   | AP      | Router_F1E390_5G | 192.168.213.1/24 | -            |           |     |

## 6.3 Configure the Cellular Connection

- Go to "Network" → "Interface" → "Cellular" → "Cellular Setting" page to enable cellular settings.
- Choose relevant network type and fill in SIM card information like APN or PIN code, then click "Save" and "Apply".

| Link Failover       | Cellular                            | Port | WAN | Bridge |
|---------------------|-------------------------------------|------|-----|--------|
| Cellular Settings   |                                     |      |     |        |
| Protocol Type       | IPv4                                |      |     |        |
| APN                 |                                     |      |     |        |
| Username            |                                     |      |     |        |
| Password            |                                     |      |     |        |
| PIN Code            |                                     |      |     |        |
| Access Number       |                                     |      |     |        |
| Authentication Type | Auto                                |      |     |        |
| Network Type        | Auto                                |      |     |        |
| SMS Center          |                                     |      |     |        |
| Enable NAT          | <input checked="" type="checkbox"/> |      |     |        |
| Roaming             | <input checked="" type="checkbox"/> |      |     |        |

- Go to "Network" → "Interface" → "Link Failover" to enable Cellular.

| Link Failover | Cellular                            | Port                                 | WAN       | Bridge          | WLAN           | Switch    | Loopback |
|---------------|-------------------------------------|--------------------------------------|-----------|-----------------|----------------|-----------|----------|
| Link Priority |                                     |                                      |           |                 |                |           |          |
| Priority      | Enable Rule                         | Link in use                          | Interface | Connection Type | IP             | Operation |          |
| 1             | <input checked="" type="checkbox"/> | <span style="color: green;">●</span> | Cellular  | DHCP            | 10.2.25.72     |           |          |
| 2             | <input checked="" type="checkbox"/> | <span style="color: gray;">●</span>  | WLAN-2.4G | DHCP            | 192.168.3.147  |           |          |
| 3             | <input checked="" type="checkbox"/> | <span style="color: gray;">●</span>  | WAN       | Static          | 192.168.22.213 |           |          |

D. Go to “Status” → “Cellular” page to view the status of the cellular connection. If it shows “Connected”, it means the SIM has dialed up successfully. On the other hand, you can check the status of indicator. If it keeps light up statically, it means SIM has dialed up successfully.

| Overview        | Cellular                  | Network             | WLAN                         | VPN                      | Routing | Host List | GPS |
|-----------------|---------------------------|---------------------|------------------------------|--------------------------|---------|-----------|-----|
| Modem           |                           | Network             |                              |                          |         |           |     |
| Status          | Ready                     | Status              | Connected                    |                          |         |           |     |
| Model           | RG500Q-EA                 | IPv4 Address        | 10.2.25.72/28                |                          |         |           |     |
| Version         | RG500QEAAAR11A02M4G       | IPv4 Gateway        | 10.2.25.73                   |                          |         |           |     |
| Signal Level    | 31asu (-51dBm)            | IPv4 DNS            | 211.136.17.107               |                          |         |           |     |
| Register Status | Registered (Home network) | IPv6 Address        | fe80::7cf3:90ff:fe33:6151/64 |                          |         |           |     |
| IMEI            | 866897040051965           | IPv6 Gateway        | ::                           |                          |         |           |     |
| IMSI            | 460045927703652           | IPv6 DNS            | ::                           |                          |         |           |     |
| ICCID           | 89860439101880723652      | Connection Duration | 1 days, 06:05:30             |                          |         |           |     |
| ISP             | CHINA MOBILE              | Data Usage Monthly  |                              |                          |         |           |     |
| Network Type    | LTE                       | RX                  | 2.4 MiB                      |                          |         |           |     |
| PLMN ID         | 46000                     | TX                  | 13.8 MiB                     |                          |         |           |     |
| LAC             | 592F                      | AI I                | 16.3 MiB                     |                          |         |           |     |
|                 |                           |                     |                              | Manual Refresh ▼ Refresh |         |           |     |

[END]