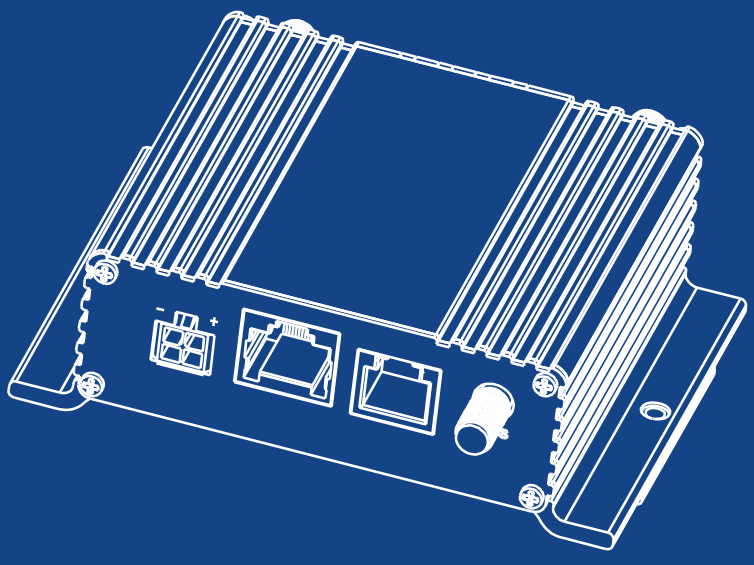
Vola LM150

User Manual

— 4G Modem with VoLTE



V0.1.1

Table of Contents

Revision

Release Version	Note	Date	Editor
V0.1.0	Initial Release	2025.3.1	Albert Yuan
V0.1.1	Update MultiSIM, MAC binding, Port mapping and other features.	2025.10.28	Albert Yuan

Statement

WARRENTY

Product specifications and information in this guide are subject to change without notice. All statements, information and recommendations in this guide are believed to be accurate and are provided without warranty of any kind, either expressed or implied. Users must take full responsibility for their product applications. Do not use the equipment beyond this guide.

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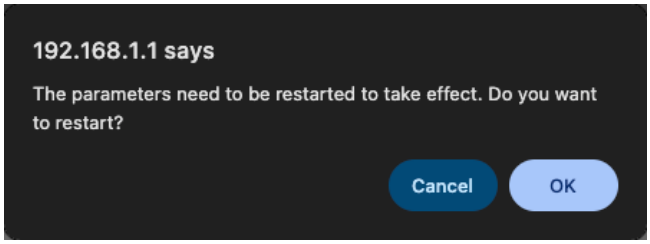
ATTENTION

The telephone port (RJ11) on this device is only for connecting local analog terminals such as analog telephones, fax machines, alarm panel, etc. Do not connect it to the telephone port on the wall (PSTN line). Do not use the port as FXO port to connect any Telecommunication Network. Incorrect connection may lead to broken device.

CAUTION

If not handled properly, the battery used in this equipment may present a risk of burnout or chemical burns. Do not replace the battery in the device by yourself, as this may result in a risk of fire or explosion and void the device warranty.
Dispose of used battery promptly in a manner authorized for your region. Do not dispose of the device or the battery in the device.
To replace the battery in the device, contact your dealer or our technical support: support@volanetworks.com.
Avoid using this product in hot environments. The battery charging circuit will stop charging when the temperature of the battery exceeds 60°C.
Do not dismantle, crush, or dispose of it in fire or any hot spot. Keep away from children.

Important Notice



When you receive this notification during the configuration, you can click the "cancel" and continue to configure other parameters, and reboot after all parameters are changed.

If you only need to change the current parameter, just click "OK" to reboot the device， and the parameter will then take effect.

Declaration of Conformity

Part 15 FCC Rules

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

• This device may not cause harmful interference

• This device must accept any interference received, including interference that may cause undesired operation.

• The distance between user and products should be no less than 20cm.

Note: This equipment has been tested and found to comply with the limits of 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 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.

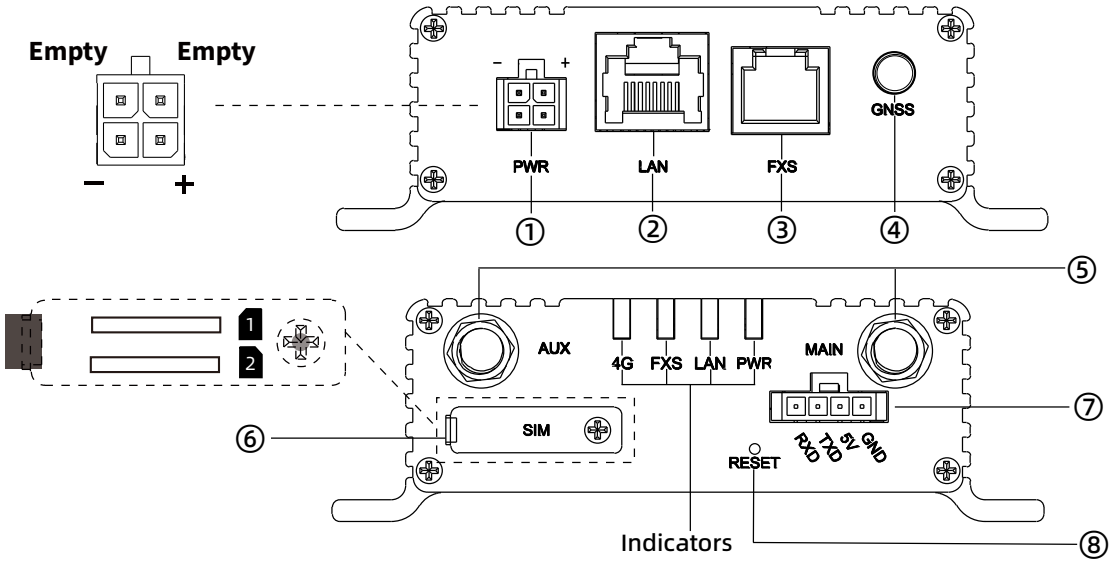
Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate this equipment.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

1. Hardware & Installation

This chapter describes the physical structure of LM150, and how to connect LM150 to other devices.

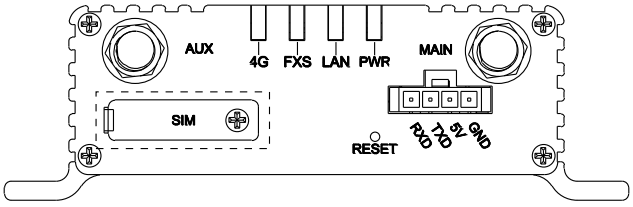
1.1. Physical Specification



Number	Port Name	Port Description
①	PWR Port	Connect to Power Supply (12V 1A is recommanded)
②	LAN Port	Connect to PC or other terminal devices for network
③	FXS Port	Connect to analog phone, support VoLTE
④	GNSS Antenna Port	Connect to the antenna for satellite signal (purchased separately)
⑤	4G Antenna Port	Connect to the antenna for receiving 4G signal
⑥	SIM Card Slot	Support inserting 2 SIM cards for network and VoLTE
⑦	Extension Port	Connect to extension devices
⑧	Reset Button	Press and hold for 5 seconds to restore factory settings

1.2.LED Indicator

This section describes the LED Indicators' status and the meaning of it.



See the table below:

4G Indicator

Status	Description
Solid Green	Strong Signal
Solid Blue	Medium Signal
Solid Red	Weak Signal
Off	No SIM card or Unrecognized

PWR Port Indicator

Status	Description
Solid Green	Power On
Off	Power Off or Abnormality

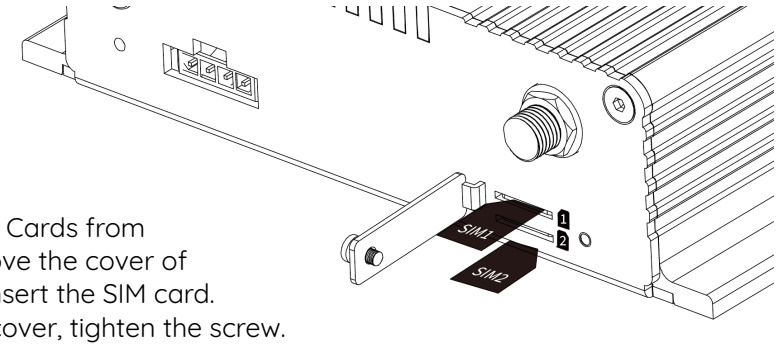
FXS Port Indicator

Status	Description
Solid Green	Account Registered
Blinking Green	Ringing, Off-hook, On Call
Off	Disconnected or Unregistered

LAN Port Indicator

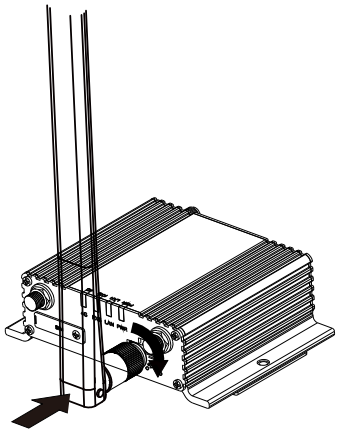
Status	Description
Solid Green	Connection successful
Blinking Green	Data transmission
Off	Disconnected

1.3. Install the device



1. Get standard Nano-SIM Cards from supported carrier, remove the cover of the SIM card slot, and insert the SIM card. and then put back the cover, tighten the screw.

   We Recommend to use the first SIM card if you only have one SIM card.



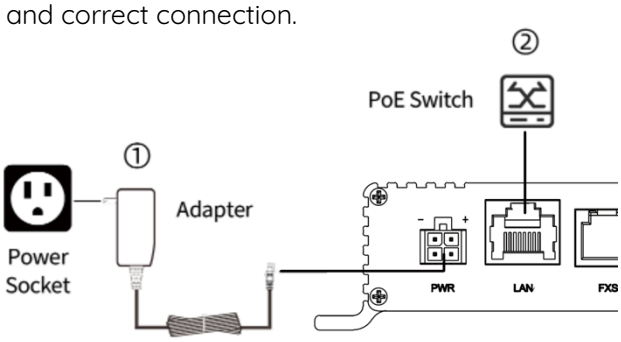
2. Use the 2 antennas included in the package, tighten and fix them on the port of MAIN and AUX of the device respectively.
   (If you want to use GNSS, please purchase another antenna)
   (For more details, please contact support@volanetworks.com)

   Adjust the antenna to the desired angle and direction.

1.4. Power up the device

This section describes how to power the device and correct connection.

LM150 supports the following power method:



1. **Power adapter**
2. **PoE Input**

If it is powered by PoE:

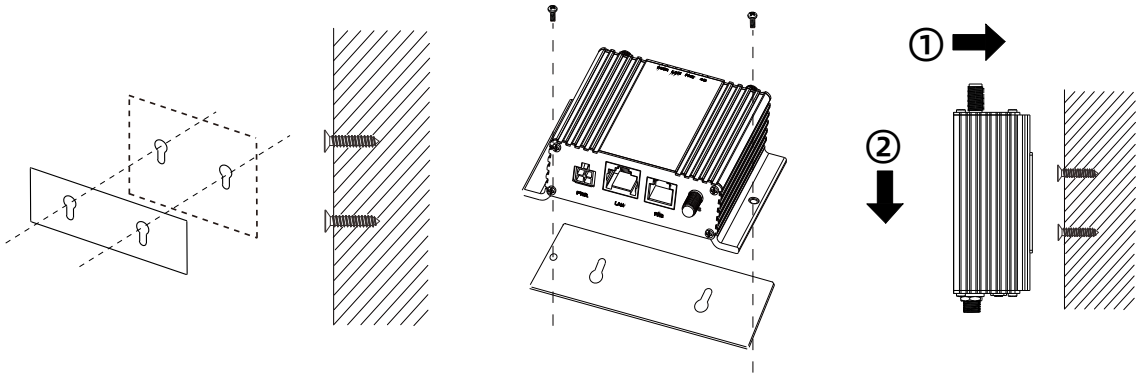
use the network cable that comes with the device, plug one end into the Eth0 port of the device, and connect one end to a device that supports PoE Out, such as PoE switch or Vola PR08-Pro/PR08;

If it is powered by Power adapter: Connect the power adapter to the 4-pin power port. After powering the device, the device will automatically boot up and activate the battery.

1.5.Wall Mounting

This section describes how to mount the LM150 at the wall or other vertical surface.

1. Using the metal sheet included in the package, mark the wall mounting position;
2. Drill 2 screws at the wall according to the metal sheet;
3. Using the screws in the package, align the metal sheet with the holes and drive in the screws according to the 4 pre-drilled screw holes on the back of the device;
4. After fixing the metal sheet and the device, snap the 2 wall mounting holes of the metal sheet onto the screws on wall and pull down the device to lock it in place.



2. Basic Web Configuration

This chapter describes basic configuration of the LM150.

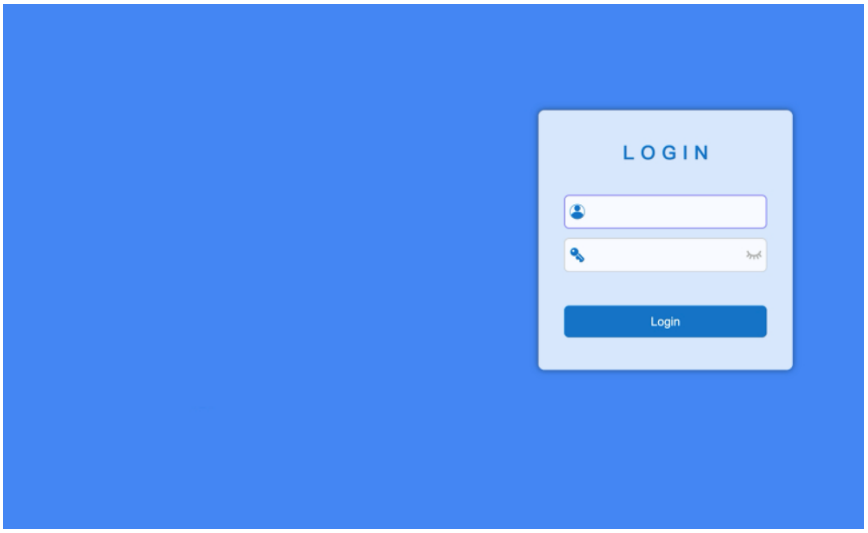
2.1. Web Login

This section describes how to enter the web GUI of LM150.

The device can provide a Web browser-based interface that can be used to configure and manage the device. See below for more information.

Use a RJ45 network cable (included in the package) to connect the LAN port of LM150 with the WAN port of a PC or laptop.

TIPS: The URL format for the login web page is: http://<LAN port IP address>, generally the default LAN port IP address is: 192.168.1.1, please enter the corresponding address in the address blank: http://192.168.1.1, then the page will jump to the login page of the device, as follows:



Enter the username and password:

Administrator level:
admin/last 6 digits of SN

For remote Login

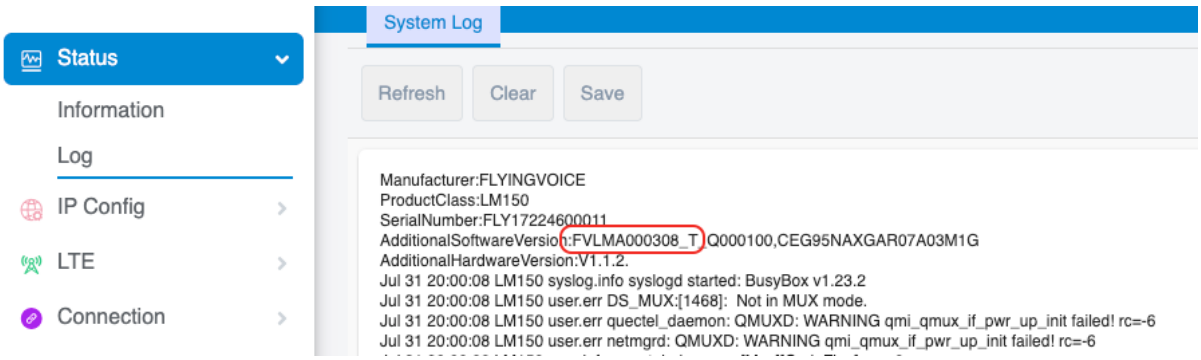
Please refer to section 4.3 in this guide.

2.2. Firmware Version Check

Before starting the configuration, please make sure your device is upgraded to the recommend version （Released Package）.Some configuration may differ from different version and some feature may not available in old version. If you have question about this guide and version, please contact us

This User Guide is based on the app version: **FVLMA000308 (APP 0.3.8)**

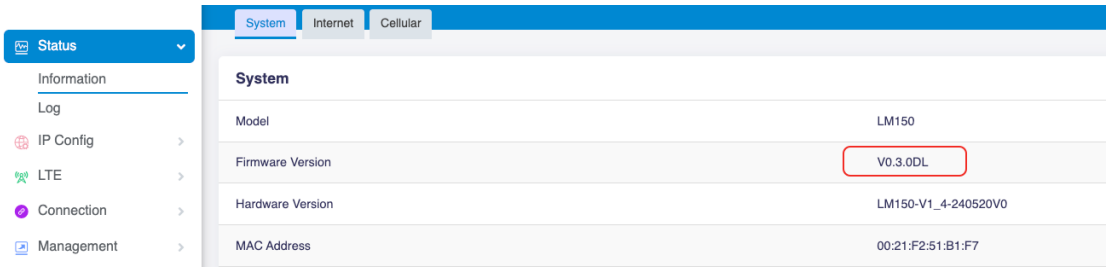
You can check your device's App version in the Log page:



Please contact your reseller/sales or our support team to get the latest version.
Our support team: support@volanetworks.com

You can also connect your device to the VolaCloud to directly upgrade your device, please refer to: https://docs.volanetworks.net/en/User_Manual/VolaCloud_User_Manual

Before upgrade, please check if your device has 0.3.0L/0.3.0DL Package. Lower version may not directly upgrade to this version.



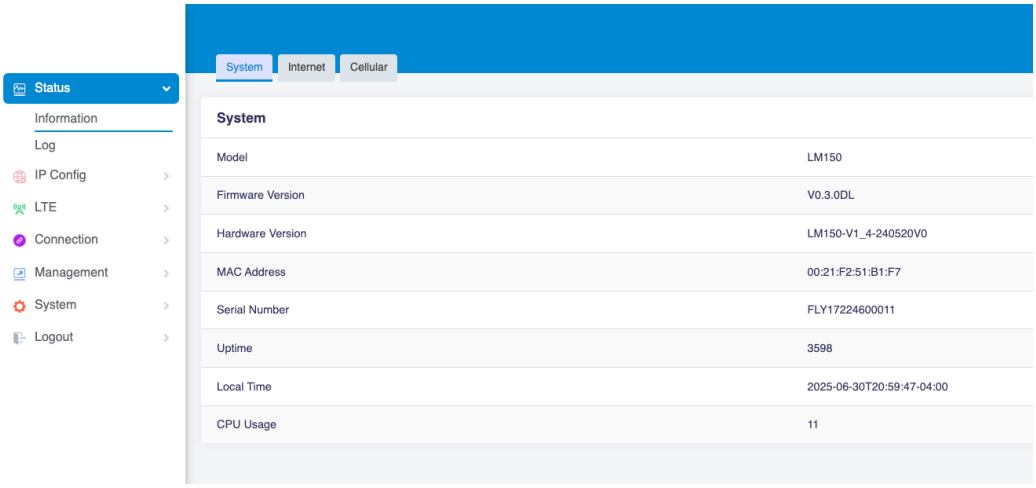
If you're not sure about the version and not clear about the upgrade procedure, please contact your reseller/sales or our support team to help you.

2.3. Status

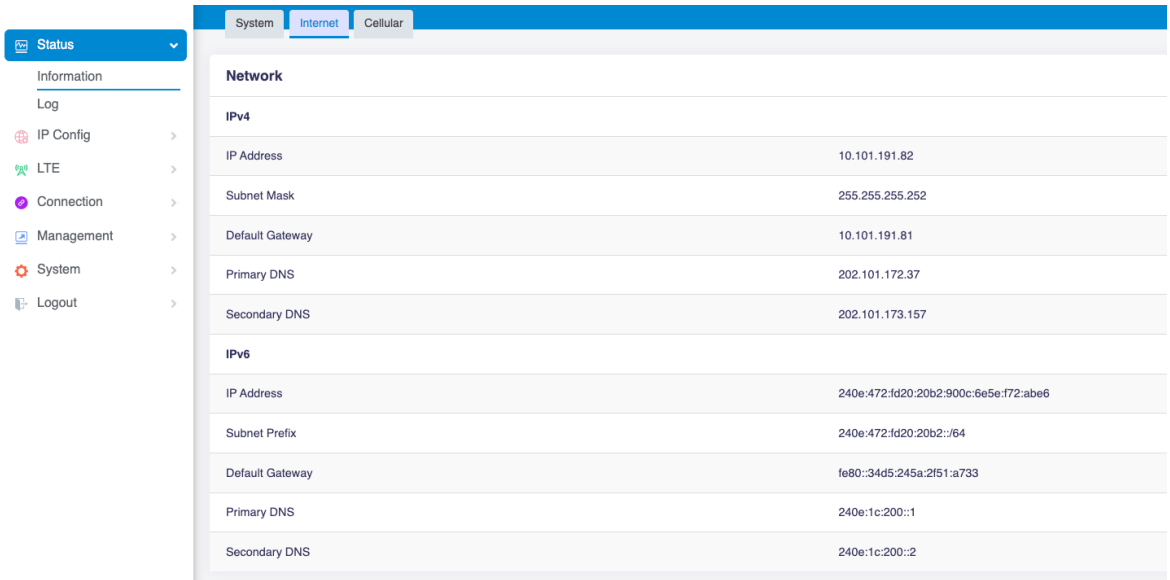
Navigate to Status -> Information

You can check the device's system information, battery status, FXS status, cellular status and more in this page.

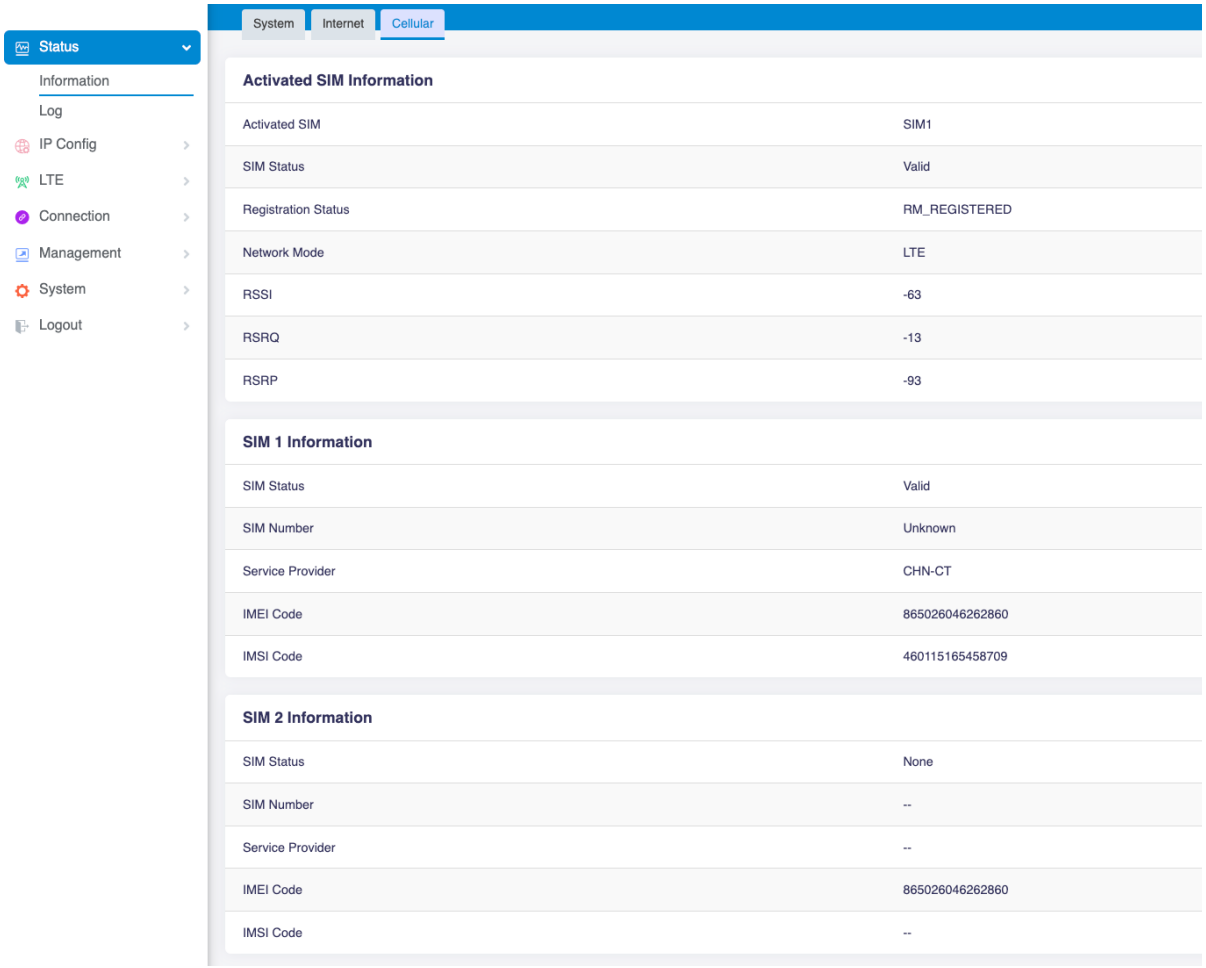
System: Check the device information and running status.



Internet: Check the IP information of the current connection



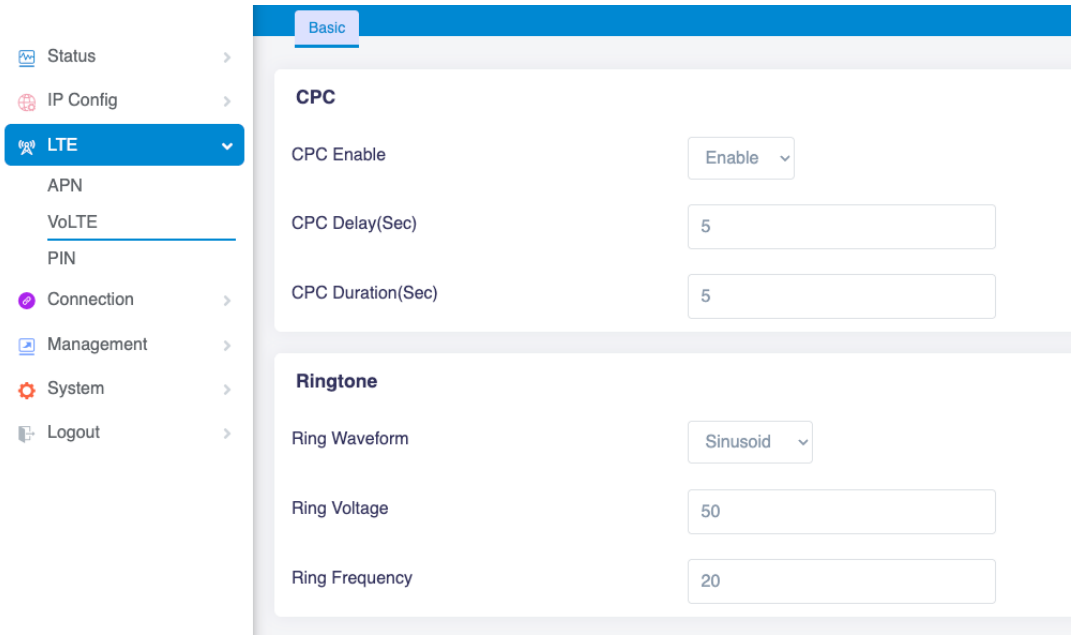
Cellular: Check the IP information of your SIM card.



2.4. VoLTE

2.4.1. VoLTE Configuration

Navigate to Phone-VoLTE



Fill in the corresponding information for Ringtone configuration.

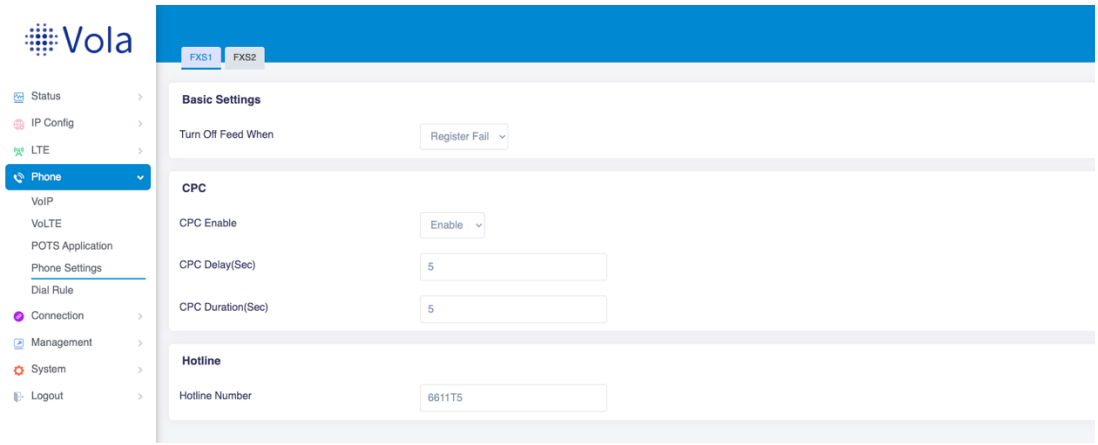
Parameter Name	Description
Ring Waveform	Select the waveform or ringing tone, optional for Sinusoid or Trapezoid.
Ring Voltage	Enter the ringing voltage, default is 45Vrms.
Ring Frequency	Enter the ringing frequency, default is 25Hz.

2.4.2. VoLTE CPC configuration

Note: VoIP and VoLTE share the same configuration on CPC, this configuration description is also applied to SIP registration.

Navigate to Phone-VoLTE

Fill in the corresponding information for CPC configuration.



Parameter Name	Description
CPC Enable	Whether to enable the CPC function. CPC (Calling Party Control) is a feature for elevator phone or public phone to hand up automatically. The analog phone under the device FXS port will automatically hangs up after the peer end hang up. The hang up process changes from busy tone to silent tone, and finally to off tone.
CPC Delay(Sec)	Enter the busy tone duration before the local device hangs up. The default is 5s.
CPC Duration(Sec)	Enter the silence duration before the local device hangs up. The default is 5s.

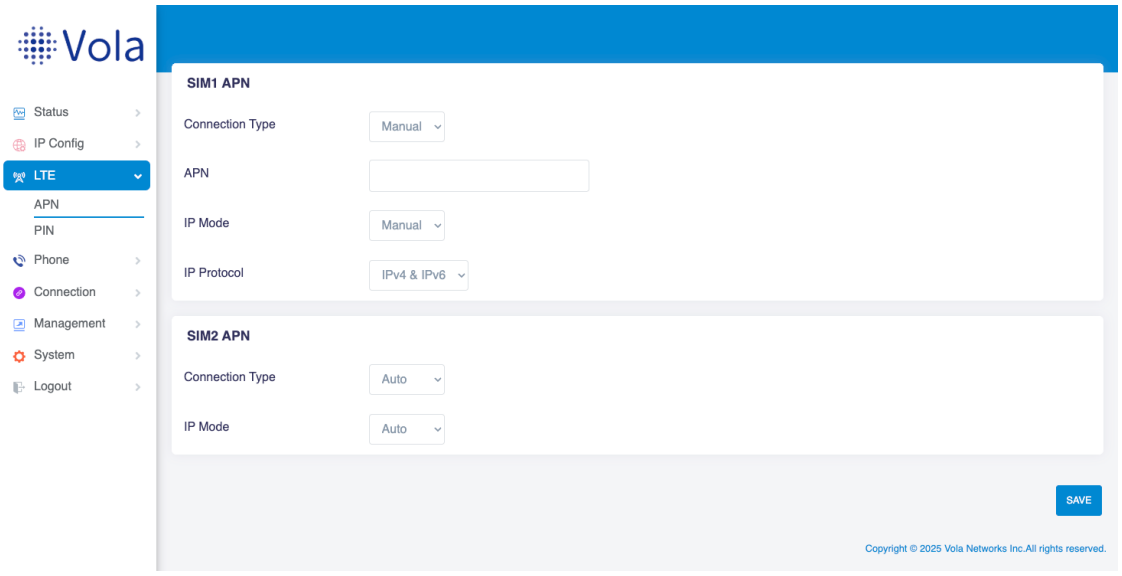
3. Networks Configuration

3.1. LTE Configuration

3.1.1. APN Configuration

This section describes how to configure the SIM cards related parameters, normally, your SIM card can work under auto settings.

Navigate to LTE -> APN



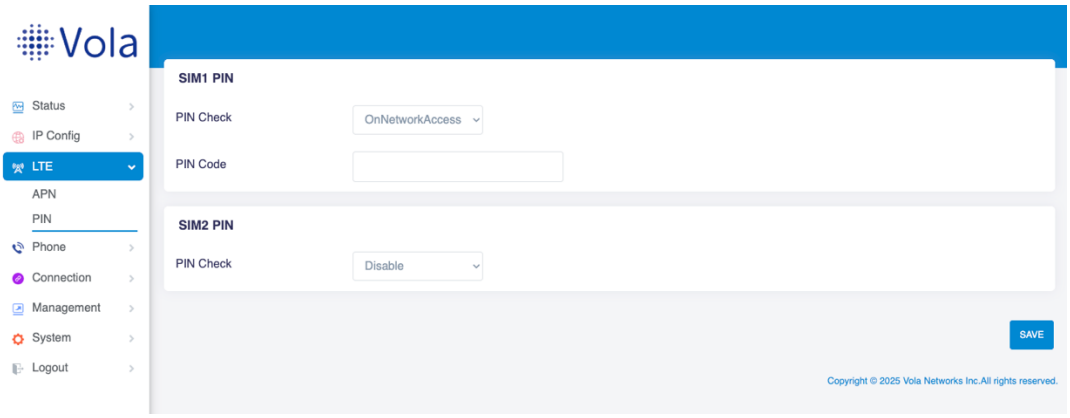
Fill in the corresponding information for LTE connection configuration:

Parameter Name	Description
Connection type	The default is Auto, it will use default settings; Select Manual to enable manual settings.
APN	Access Point Name, Fill in the name of Access Point to connect to specific Access Point that you want to connect.
IP Mode	Optional for Manual, Auto. When Auto is selected, device will search for specific IP Protocol according to the APN in built-in database. When manual is selected, device will use IPv4 and IPv6 according to setting or carrier's preference.
IP Protocol	IPv4: device will use IPv4 only IPv6: device will use IPv6 only IPv4&IPv6: device will try to get IPv6 and IPv4 at the same time Available only when IP Mode is "manual".

3.1.2. PIN Configuration

This section describes how to configure the SIM cards related parameters, normally, your SIM card can work under auto settings.

Navigate to LTE-PIN



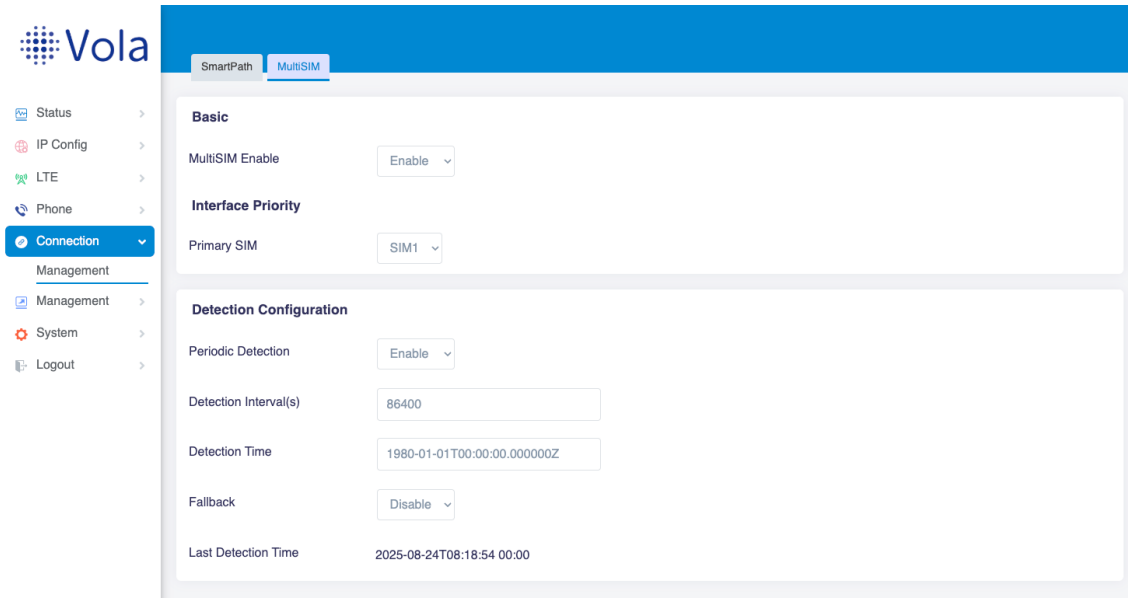
Fill in the corresponding information for PIN configuration.

Parameter Name	Description
PIN Check	This configure when will the PIN Check be performed. **OnNetworkAccess:** Check PIN code when every time the device access to a new network. **Disable**: PIN function will be disable.
PIN Code	Enter PIN code value, should match with the SIM card's PIN.

MultiSIM Configuration

MultiSIM is a mechanism for SIM card failover and fallback, the device will try to stay in the primary SIM card and switch to another SIM card based on detection status.

If you don't use multiple SIM cards, we recommend **disable** the MultiSIM and insert the SIM card to **slot 1**, otherwise the SIM card may not work properly.



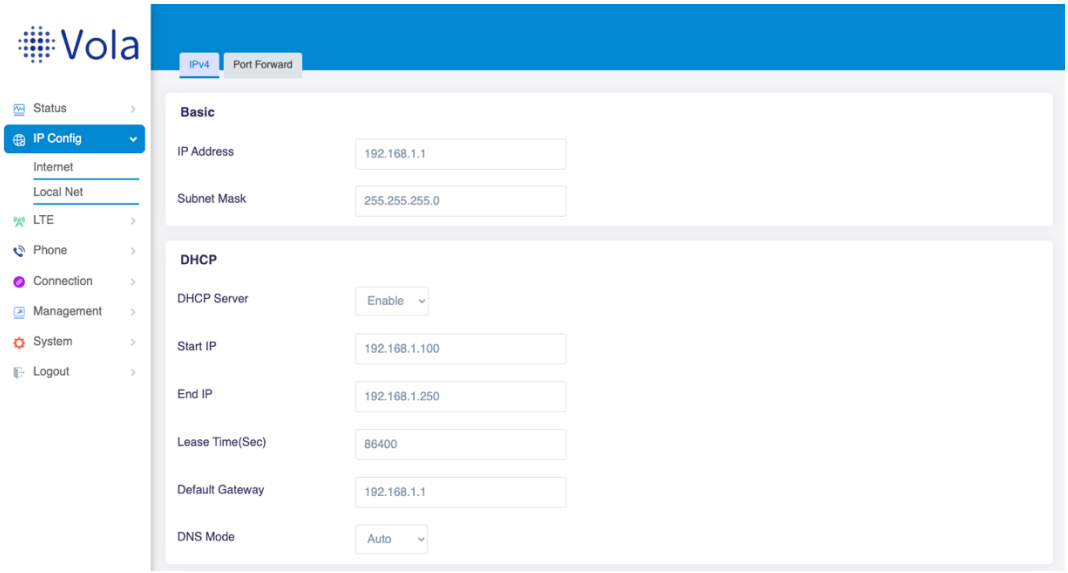
Parameter Name	Description
MultiSIM Enable	Multisim enable switch. 1. Enable to open SIM auto switch. 2. when Disable, only SIM1 can be used, SIM2 will not be used. **Note: The following configuration and status have no effect on Multisim after it is Disable.**
Primary SIM	Set the primary card, the primary card can be USIM1 or USIM2. The device will try to stay in the Primary SIM card if possible.
Periodic Detection	This enable the periodic detection. **Note: Due to the single modem in device, periodic detection may lead to network interruption.** 1. On: when timer is up, and one card enters the WORK state, the device will immediately switch to another USIM to update the information of another card (and display on web), and then switch back to the current WORK SIM card after the update is completed. 2. Off: the device will not switch to another SIM to update the information when a card is in WORK state. The device will switch to another SIM card only when the current SIM card is in "NOWORK" status.

Detection Interval(s)	This configure the interval of periodic detection. 1. Before successful NTP synchronisation: After a card enters the WORK state, it switches to another USIM to query the necessary information of the USIM according to the Interval Time. 2. After successful NTP synchronisation: After a card enters the WORK state, take Detection Time as the base time, when the UTC time of the device minus the base time is an integer multiple of Interval, switch to another USIM to query the necessary information of another USIM. **Note: Smaller interval may result in frequent network interruption.**
Detection Time	The base time for Periodic detection in the format dateTime (ISO8601), UTC+0 time Example: 2025-06-13T15:50:00.000+00:00 2025-06-13T15:50:00.000000Z 2025-06-13T15:50:00.0Z 1. if the device's current UTC time is <= base time, the device will perform the Periodic detection action at the next base time. 2. if the device's current UTC time is > the base time, the device will perform the Periodic detection action at the base time + Interval*N.
FallBack	This enable the FallBack feature. 1. On: If the current working card is a backup card, it will switch to the main card if the main card detection returns a successful result when the periodic detection timer is up. 2. Off: Fallback not available, the device will only switch when current SIM card is "WORK" and another SIM card is "NOWORK". 3. Fallback only takes effect when Periodic detection is enabled (since fallback is performed by the result of the Periodic detection, so there will be no fallback action if Periodic detection is not enabled).
Last Detection Time	Status showing the UTC-0 time of the most recent SIM card detection completed

3.2. LAN Configuration

3.2.1. Basic LAN setting

This section describes how to configure the IP address of the devices connected to the LM150.



Navigate to IP config -> Local Net -> IPv4

Fill in the corresponding information for LAN configuration

Parameter Name	Description
IP Address	Enter the local IP address of the device on the LAN. The IP addresses of all devices on the LAN must be in the same network segment as this IP address. The default gateway address is 192.168.255.1
Subnet Mask	Enter the subnet mask to determine the network size (default: 255.255.255.0)
DHCP Server	Whether to enable the DHCP server
Start IP	After the DHCP server is enabled, this is needed to be filled. Enter a valid IP address as the start IP address sent by the DHCP server to the DHCP client. If the IP address of the LAN port is 192.168.255.1, the start IP address must be greater than or equal to 192.168.255.2 but smaller than the end IP address
End IP	After the DHCP server is enabled, this is needed to be filled. Enter a valid IP address as the end IP address sent by the DHCP server to the DHCP client. This IP address should be greater than "Start IP"
Lease Time (Sec)	The validity period of the IP address assigned by the DHCP server to the device. During this time, the server will not assign the IP address to other devices.

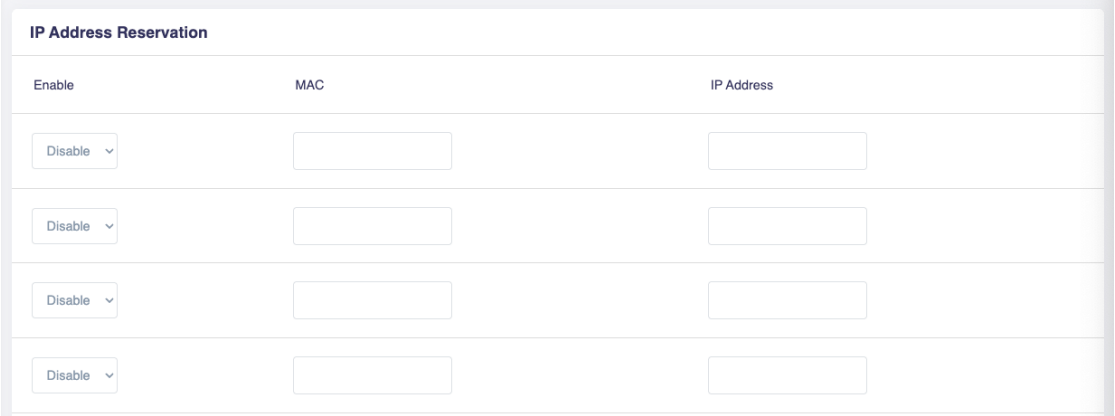
	Default for 86400s
Default Gateway	Default gateway for devices in LAN network, this should normally remain the same with LAN IP address of device
DNS Mode	If "Auto" is selected, devices on the LAN port automatically obtain the primary DNS and secondary DNS. If "Manual" is selected, you need to manually enter the primary DNS and secondary DNS.
Primary DNS	The value of primary DNS server address
Secondary DNS	The value of secondary DNS server address

3.2.2. IP Address Reservation

This section describes how to configure IP address reservation, this allows you to set a static rule to distribute specific IP address to device according to MAC address.

Navigate to IP config -> Local Net -> IPv4

Fill in the corresponding information for IP address reservation



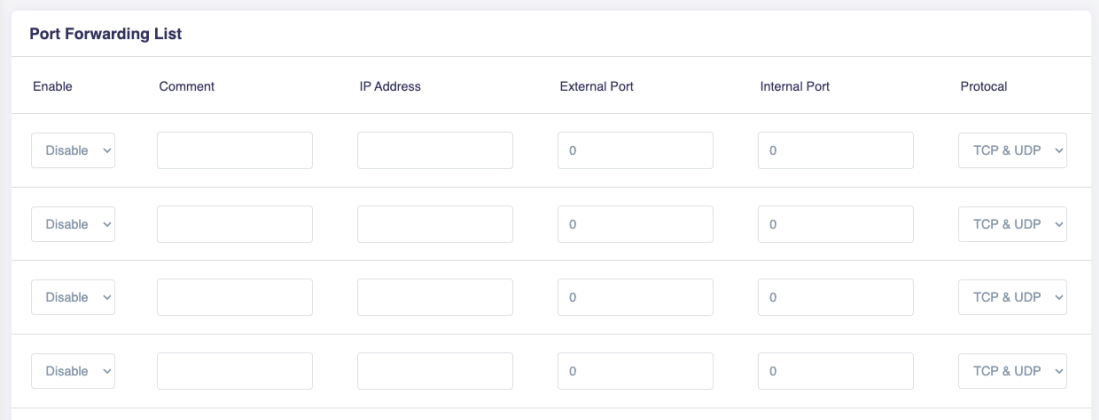
Parameter Name	Description
Enable	Whether to enable this IP-MAC binding rules
MAC	Fill in the MAC address of the device that you want to set a specific IP address for
IP Address	Fill in the IP address to set, this should be in the same network segment of the LAN address of the device.

3.2.3. Port Forward

This section describes how to configure Port Forward, this allows you to set a rule to forward the external packets from WAN to a specific IP address and port combination under LAN network by using specific external Port.

Navigate to IP config -> Local Net -> IPv4

Fill in the corresponding information for Port Forward



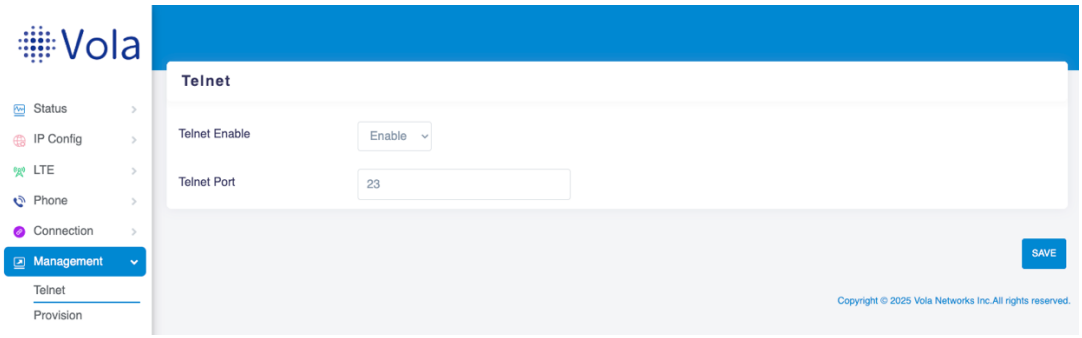
Parameter Name	Description
Enable	Whether to enable this port forward rule
Comment	Comment to identify this rule
IP Address	Internal IP address to forward the packets
External Port	External port number (on WAN side)
Internal Port	Internal port number (on LAN side)
Protocol	Applied protocol for this rule of port forward

4. Device Management Configuration

This chapter describes how to manage the device locally or remotely.

4.1. Telnet

Navigate to Management -> Telnet



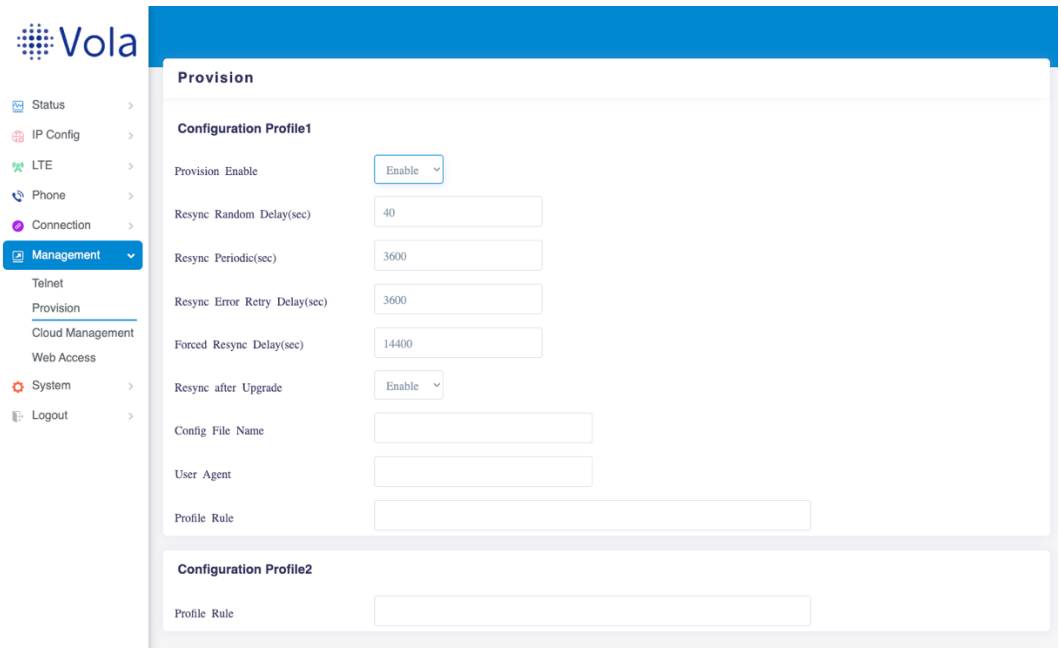
Fill in the corresponding information for SIP registration

Parameter Name	Description
Telnet Enable	Enable the telnet function to locally command the device.
Telnet Port	Enter the port to connect to the device with telnet

4.2. Provisioning

Navigate to Management -> Provision

On this page, you can configure Provision related parameters. For more details about provisioning template, please contact your reseller/sale or our support team.



Parameter Name	Description
Provision Enable	Whether to enable the Provision.
Resync Random Delay	Sets the maximum delay time for requesting file synchronization, default for 40 seconds. With the interval from 0 to 40 seconds, a value is generated randomly and the device waits for the interval of this value before requesting the Provision server. When filled in with 0, it indicates that the feature is disabled as a way to prevent a large number of devices from sending too many server requests at the same time.
Resync Periodic	Fill in the cycle time for the device to automatically resynchronize with the server, default 3600 seconds.
Resync Error Retry Delay	Fill in the interval time for re-synchronization again after synchronization error, default 3600 seconds.
Forced Resync Delay	Fill in the forced synchronization time, i.e., if the device is in a busy state such as a call at the specified re-synchronization time, server synchronization is not possible, then define the interval time to guarantee that the device is forced to re-synchronize after being idle, default 14400 seconds.
Resync after Upgrade	Whether to trigger resynchronization after each firmware upgrade.
Config File Name	Fill in the configuration file name.

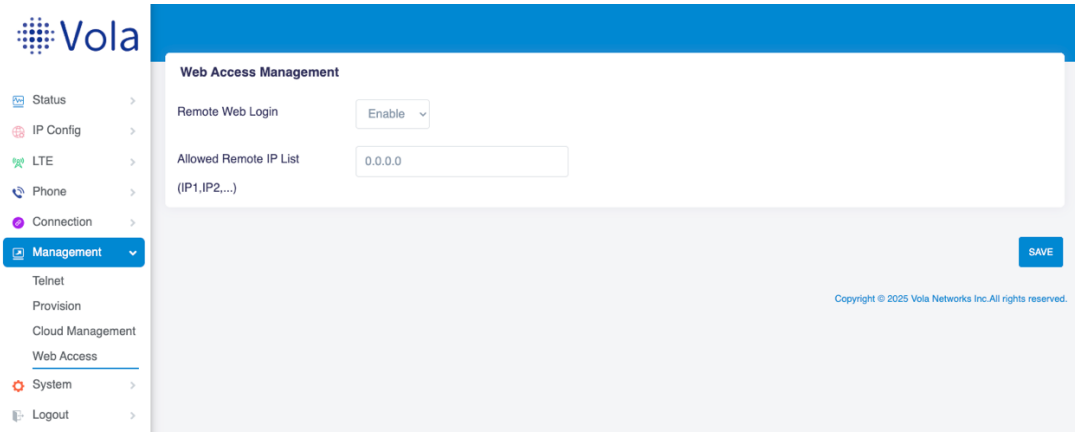
User Agent	Fill in the user agent name.
Profile Rule	Fill in the path URL of the configuration file to complete the provision, which is a TCP/IP operation and an associated URL. The TCP/IP operation can be TFTP, HTTP, or HTTPS. This is the first priority profile rule.
Profile 2/Profile Rule	Second priority Profile Rule.

4.3. Remote Web Access

LM150 support remote web access, you can visit the Web configuration page from its WAN port. Before using this feature, please make sure your LM150 is deployed properly with available uplink.

The format of URL is: **http://WAN Port IP address**

Navigate to Management -> Web Access



Fill in the corresponding information for remote web access.

Parameter Name	**Description**
Remote Web Login	Enable or disable the remote Web access. If disable, you can not access the web page from WAN port.. If enable, you can enter the web page by the IP address of the device. **Note: if you use WAN port and SIM card at the same time, you will need different IP address for WAN Interface and LTE interface. This depends on the active interface.**
Allowed Remote IP List	White list for allowed IP address, if multiple IP address is used, divided by **","** **For example:** 125.152.115.67,125.152.110.1 0.0.0.0 stands for "all IP address is allowed"

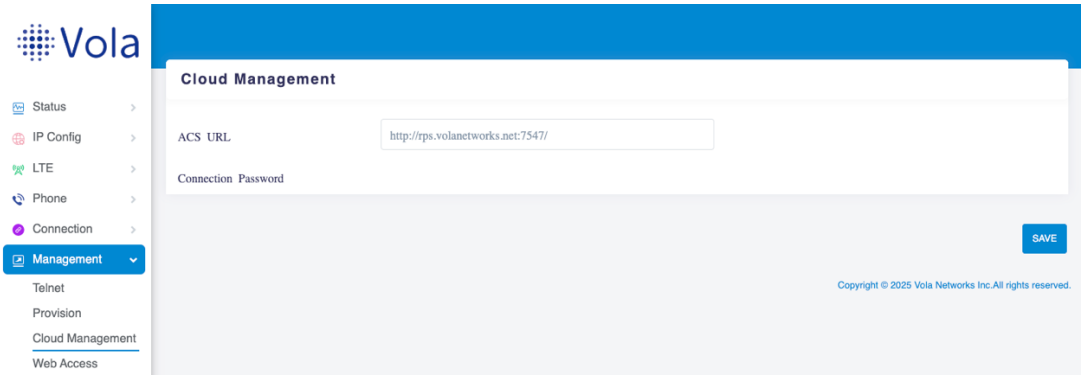
4.4. Cloud Management

Navigate to Management -> Cloud Management

The device will connect to VolaCloud by default, please refer to this document to use VolaCloud:

https://docs.volanetworks.net/en/User_Manual/VolaCloud_User_Manual

to know more details about VolaCloud, please contact our support: support@volanetworks.com.



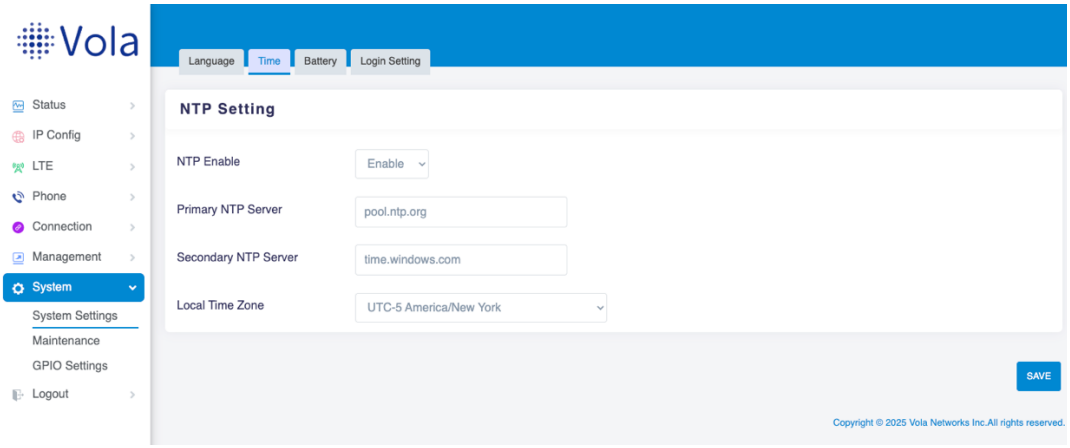
5. System Configuration

This chapter describes how to configure the device's system setting, and frequently used maintenance operation.

5.1. System Settings

5.1.1. Time Settings

Navigate to System -> System Settings -> Time



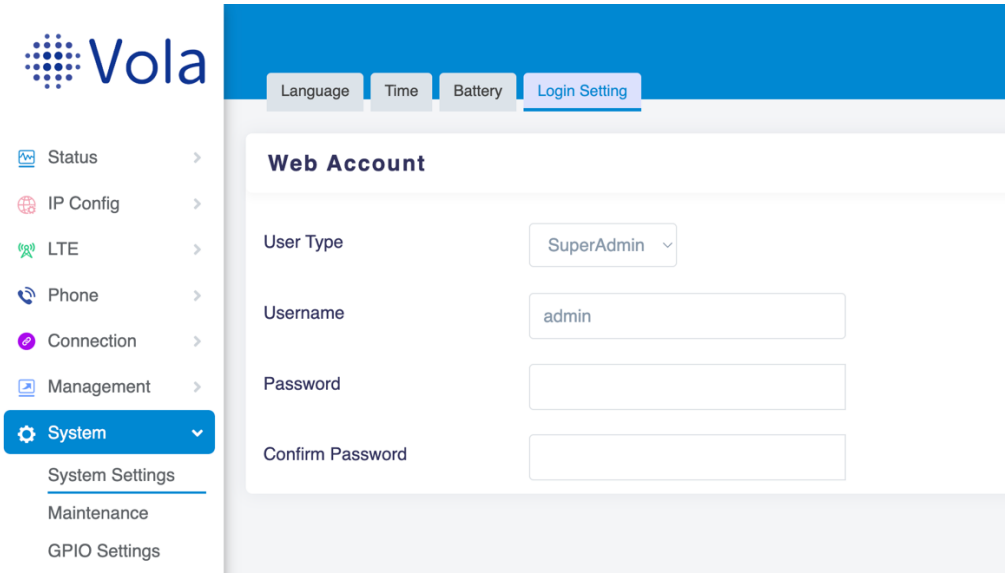
Fill in the corresponding information for time settings

Parameter Name	Description
NTP Enable	Whether to enable the NTP (Network Time Protocol) switch, used to synchronize the time.
Primary NTP Server	Fill in the IP address or domain name of the preferred NTP server.
Secondary NTP Server	Fill in the IP address or domain name of the alternative NTP server.
Local Time Zone	Optional time zone, default is UTC-5 American/New York.

5.1.2. Login Information Setting

Navigate to System -> System Settings -> Login Setting

You can configure the login username and password in this page,



Note: currently, only SuperAdmin is supported

5.2. System Maintenance

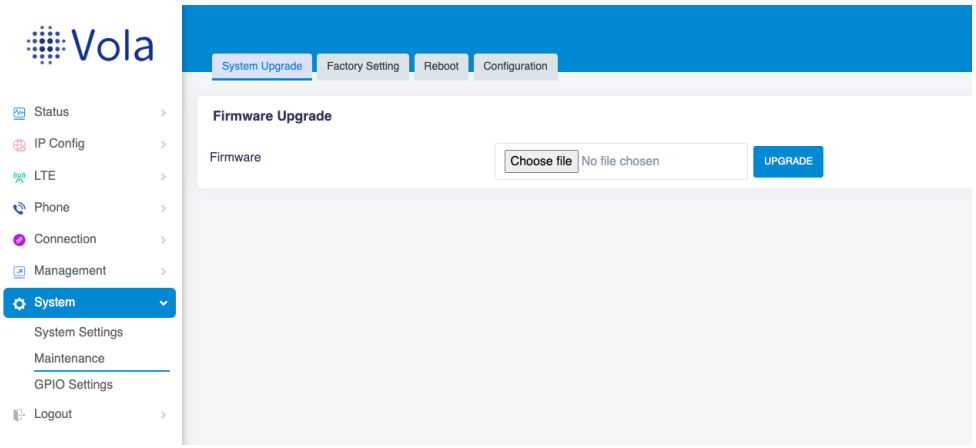
Navigate to System -> Maintenance

5.2.1. Firmware Upgrade

The device supports uploading firmware files to update the software version

Procedure:

1. Navigate to System -> Maintenance -> System Upgrade;
2. Click Choose File to select your firmware from the laptop/PC;
3. Click UPGRADE to upload the file and wait for the reboot.

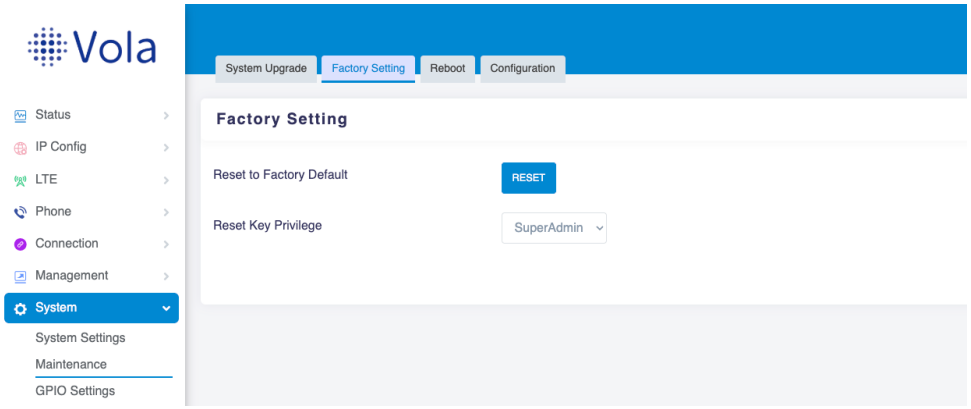


5.2.2. Factory Default

You can reset the device to factory default settings here.

Procedure:

1. Navigate to System -> Maintenance -> Factory Setting;
2. Click the RESET Button, wait for the system reboot.



Reset Key Privilege:

Super Admin: The physical reset key **can** factory reset the device.

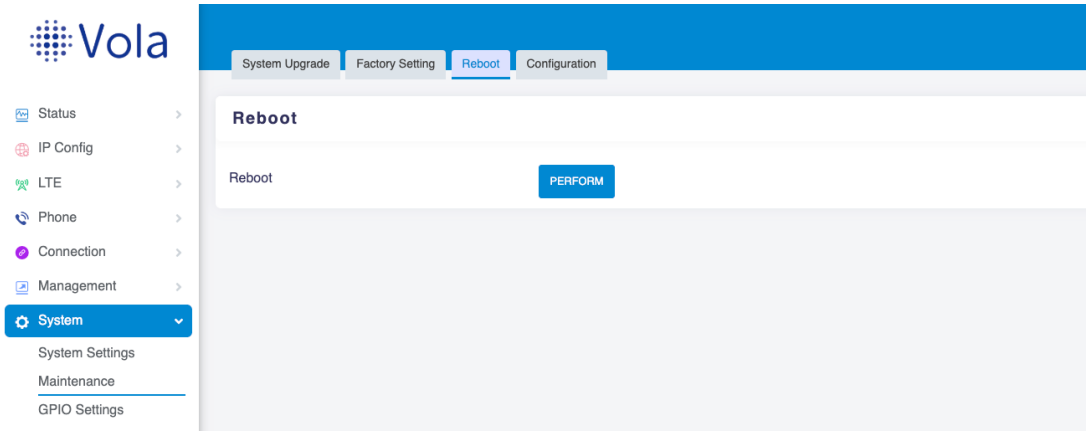
None: The physical reset key **cannot** factory reset the device, the device can only be reset by web interface or remote management, this feature can be used to prevent another user to factory reset the device.

5.2.3. Reboot

You can reboot the device by clicking Perform button here.

Procedure:

1. Navigate to System -> Maintenance -> Reboot
2. Click PERFORM, confirm and wait for the device to reboot



5.2.4. Configuration Upload & Download

You can Upload & Download the configuration of the device here.

Upload: You can upload a configuration file from other device or manually edit the configuration file which is xml format, parameters in the configuration file are following the TR-069 (CWMP) protocol. To know more details of this, please refer to the administrator guide. The description of each parameter are also inside the template.

Download: You can export the current configuration of the device by this button, the downloaded file is xml format. You can edit the downloaded file and upload it to another device. Same configuration will be applied.