FLYINGVOICE

LM150
User Guide

Version 1.0.1
Nov. 2024

Copyright

Trademark

Warranty

1. Warranty

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS GUIDE ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS GUIDE ARE BELIEVED TO BE ACCURATE AND PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF PRODUCTS.

2. Disclaimer

FLYINGVOICE NETWORK TECHNOLOGY CO., LTD. MAKES NO WARRANTY OF ANY KIND WITH REGARD TO THIS GUIDE, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A

PARTICULAR PURPOSE. FLYINGVOICE Network Technology CO., LTD. shall not be liable for errors contained herein nor for incidental or consequential damages in connection with the furnishing, performance, or use of this guide.

3. Limitation of Liability

Flyingvoice and/or its respective suppliers are not responsible for the suitability of the information contained in this document for any reason. The information is provided "as is", and Flyingvoice does not provide any warranty and is subject to change without notice. All risks other than risks caused by use of the information are borne by the recipient. In no event, even if Flyingvoice has been suggested the occurrence of damages that are direct, consequential, incidental, special, punitive or whatsoever (Including but not limited to loss of business profit, business interruption or loss of business information), shall not be liable for these damages.

End User License Agreement

This End User License Agreement ("EULA") is a legal agreement between you and Flyingvoice. By installing, copying or otherwise using the Products, you: (1) agree to be bounded by the terms of this EULA, (2) you are the owner or an authorized user of the device, and (3) you represent and warrant that you have the right, authority and capacity to enter into this agreement and to abide by all its terms and conditions, just as if you had signed it. The EULA for this product is available on the Flyingvoice Support page for the product.

Patent Information

China, the United States, EU (European Union) and other countries are protecting one or more patents of accompanying products and/or patents being applied by Flyingvoice.

Technical Support

Visit www.flyingvoice.com for product documents and FAQ, or contact Flyingvoice by email at support@flyingvoice.com. We'll get you the help you need.

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.

CE

Manufacturer: Flyingvoice Network Technology Co., Ltd.

Address: 1801-1802, Building 1, Chongwen Park, Nanshan Zhiyuan, Nanshan District, Shenzhen, China

Hereby, Flyingvoice Network Technology Co., Ltd. declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU

A copy of the declaration of conformity can be obtained with this user manual; this product is not restricted in the EU.

Safety warning and Attentions

If use adapter, adapter must be comply 2014/30/EU Directive.

Adapter Caution: Adapter shall be installed near the equipment and shall be easily accessible.

Do not store or use your product in temperatures higher than 50°C.

RF Exposure Statement

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

GNU GPL INFORMATION

Flyingvoice phone firmware contains third-party software under the GNU General Public License (GPL). Flyingvoice uses software under the specific terms of the GPL. Please refer to the GPL for the exact terms and conditions of the license.

The original GPL license, source code of components licensed under GPL and used in Flyingvoice products can be downloaded online:

https://www.flyingvoice.com/soft_GPL.aspx

Risk Warning Statement

This risk warning statement contains a summary of external network servers that FVUI will access under its factory settings in order to obtain necessary service support. If you want to prohibit these accesses based on security considerations, you can disable them through the WEB management page.

Number	Server Domain Name	Description	Factory Setting
1	https://prv3.flyingvoice.net:442	Flyingvoice Provision web management configuration server	Enable
2	prv3.flyingvoice.net:3450	Flyingvoice Provision web management stun server	Enable
3	https://prv4.flyingvoice.net	Flyingvoice Provision web management backup server	Enable
4	log3.flyingvoice.net:9005	Flyingvoice Provision web management log server	Disable
5	http://acs3.flyingvoice.net:8080	Flyingvoice TR069 web management server	Disable
6	acs3.flyingvoice.net:3478	Flyingvoice TR069 web management server	Disable
7	pool.ntp.org/cn.pool.ntp.org	NTP server	Enable
8	https://rps.flyingvoice.net	Flyingvoice Provision redirect server	Enable

Table of Contents

About This Guide

Thank you for choosing Flyingvoice LM150, which is a VoLTE modem dedicated to POTS system replacement VoIP solution, integrates CAT-4 LTE module and is equipped with 2 SIM card slots, supporting Nano-SIM card plug-and-play and convenient networking. At the same time, LM150 provides 1 FXS port to connect to an analog phone to realize dual-SIM network link backup, call backup, and VoLTE call function, and provides 2 SMA 4G antenna and 1 GNSS antenna ports, which can be flexibly changed antennas, to meet the user's different needs for the network signal and satellite positioning signal. LM150 also integrates LAN port and UPS power port, supports PoE In, and is often used with Flyingvoice PR08 to provide a set of "4GLTE+POTS" IP communication solution, which is committed to providing customers with stable and reliable voice solutions.

Related Documentation

The following types of related documents are available on each page:

- Datasheet
- Quick Installation Guide

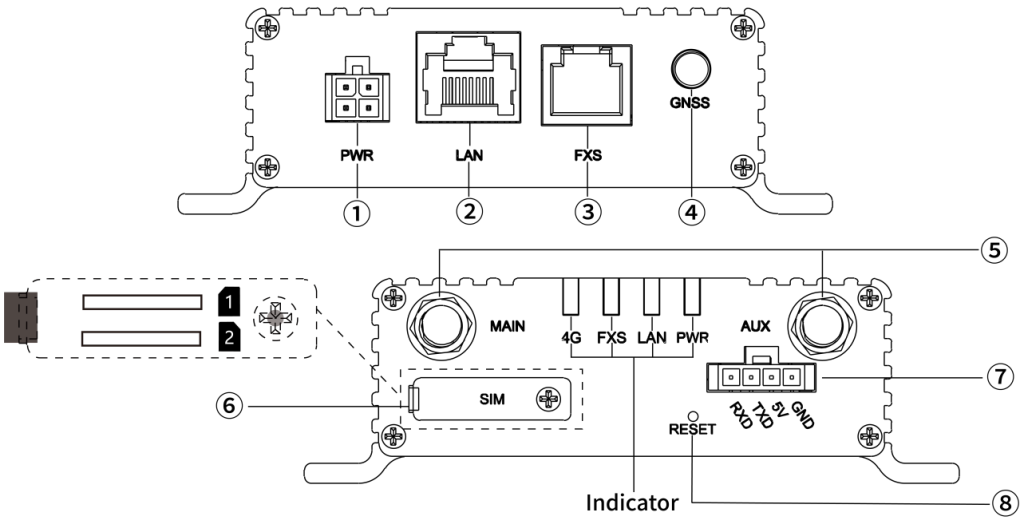
Chapter 1 Introduction

This section describes the product's hardware, indicator lights, and installation procedures.

Topics

1.1 Hardware Introduction

This section describes the exterior interfaces on the product.



Number	Name	Description
①	PWR Port	Connect to UPS power
②	LAN Port	Connect to PC or other terminals to supply network
③	FXS Port	Connect to analog phone
④	GNSS Antenna Port	Connect to antenna to receive satellite signals
⑤	4G Antenna Port	Connect to antenna to receive 4G signal to connect to the internet or make calls
⑥	SIM Card Slot	Supports insertion of 2 Nano-SIM cards for both network and call number provisioning
⑦	Extension Port	For connecting extension devices
⑧	Reset Button	Long press for over 5s to restore to factory settings Short Press for 1~3s to reboot the device

1.2 LED Indicator

This section describes the status of the indicators for power, LAN port, FXS port,

LED	Status	Description
PWR	Solid Green	Power on
	Off	No power or power abnormality
LAN	Solid Green	Connected
	Blinking Green	Data transferring
	Off	Disconnected
FXS	Solid Green	Successful account registration
	Blinking Green	Ringing, Hook-off, On Call
	Off	Disconnected or register failed
4G	Solid Green	Strong signal
	Solid Blue	Medium signal
	Solid Red	Weak signal
	Off	No card inserted or Unrecognized SIM card

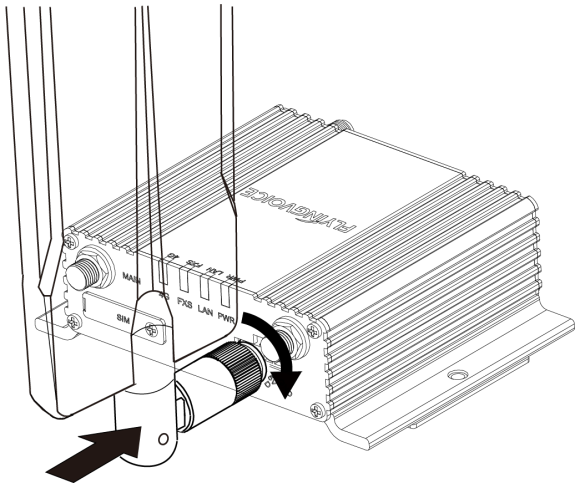
1.3 Hardware Installation

This section describes how the interface is mounted and how it is powered.

Topics

Install the Antenna

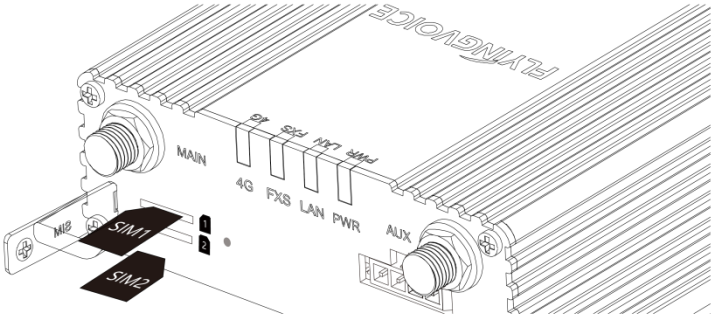
Use the three supplied antennas, spin them to connect to the Main, AUX, GNSS port, and adjust them to the suitable angle.



Antenna Installation Diagram

Install SIM Card

Obtain a standard Nano-SIM card from your carrier. Open the card slot cover on the side of the device. Insert the SIM card and close the cover, then tighten the screws.



SIM Card Insert Diagram

Note: Please make sure your SIM card support the following frequency bands:

> LTE-FDD: B2/4/5/12/13/25/26 & WCDMA: B2/4/5

Power Supply

Power the LM150, LM150 supports two power supply ways:

PoE Cable Supply

A. Supply power to LM150 through PoE type switch.

B. Connect the LAN port of LM150 to the WAN port of the PR08 or other device to provide network for them.

UPS Port Power Supply

Use the 4-PIN to 4-PIN cable to connect the UPS ports of LM150 and PR08.

TIPS: If other network devices have UPS interfaces, they can also power the LM150.

Chapter 2 Basic Configuration

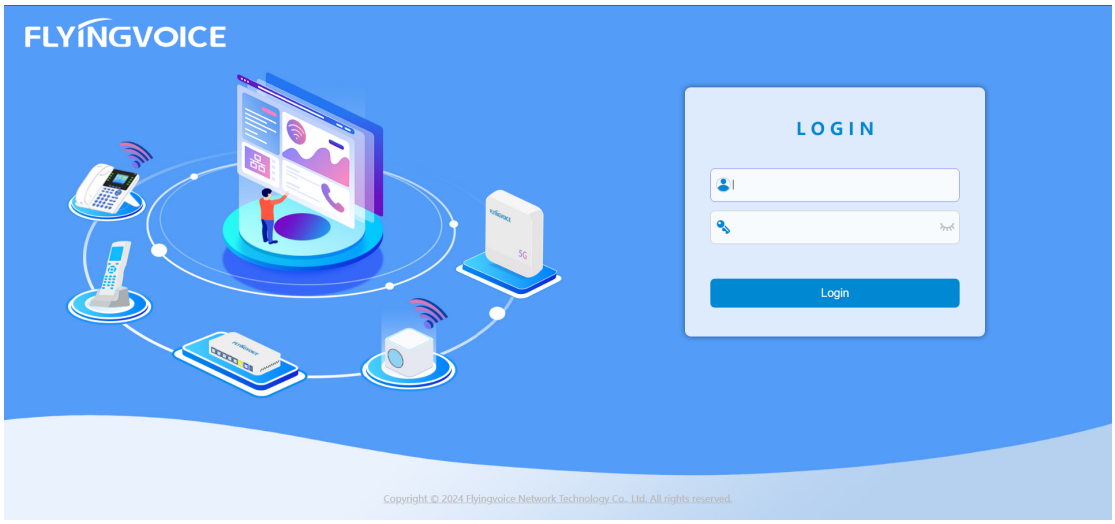
This section describes how to log in to the device interface, view device information and network configuration and other related operations.

Topics

2.1 Login

The device can provide a Web browser-based interface that can be used to configure and manage the device. See below for more information. Make sure that your device is properly connected to the LAN port of the LM150 to get network. You can check for the indicator to confirm the connection.

TIPS: The URL format for the login web page is: http://<LAN port IP address>, generally the default LAN port IP address is: 192.168.225.1, please enter the corresponding address in the address blank: http://192.168.225.1, then the page will jump to the login page of the device, as follows:



Procedure

1. **Open the browser on your PC that is connected to the LM150 with Ethernet cable**
2. **Enter the IP address of LM150, the page will automatically jump to the login page**
3. Enter the username/password (Default is **admin/last 6 digits of SN number**)
4. Click **Login** to start the configuration

2.2 Status

You can view system status as well as network and LTE information in this section.

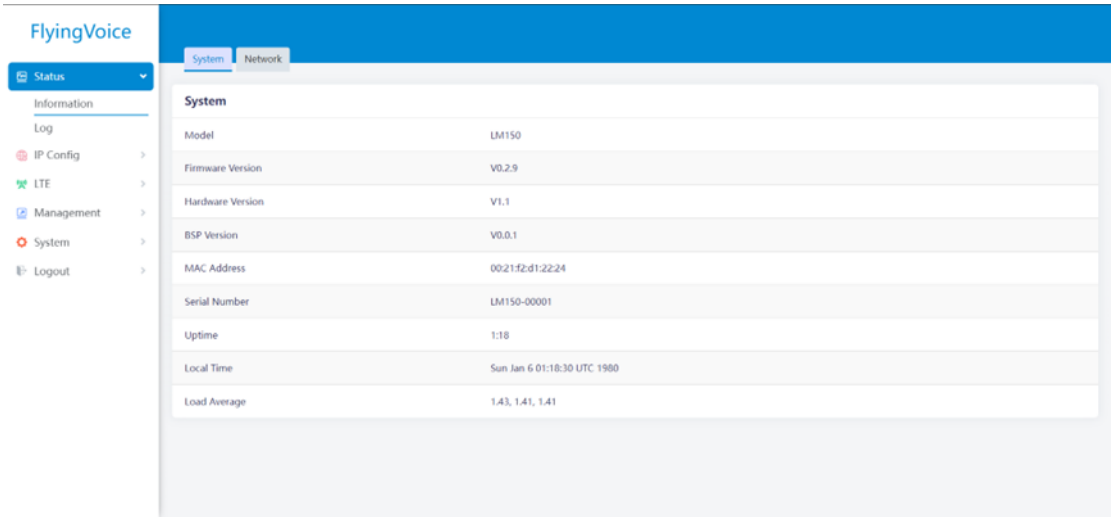
Topics

System

Procedure

1. Navigate to **Status -> System**

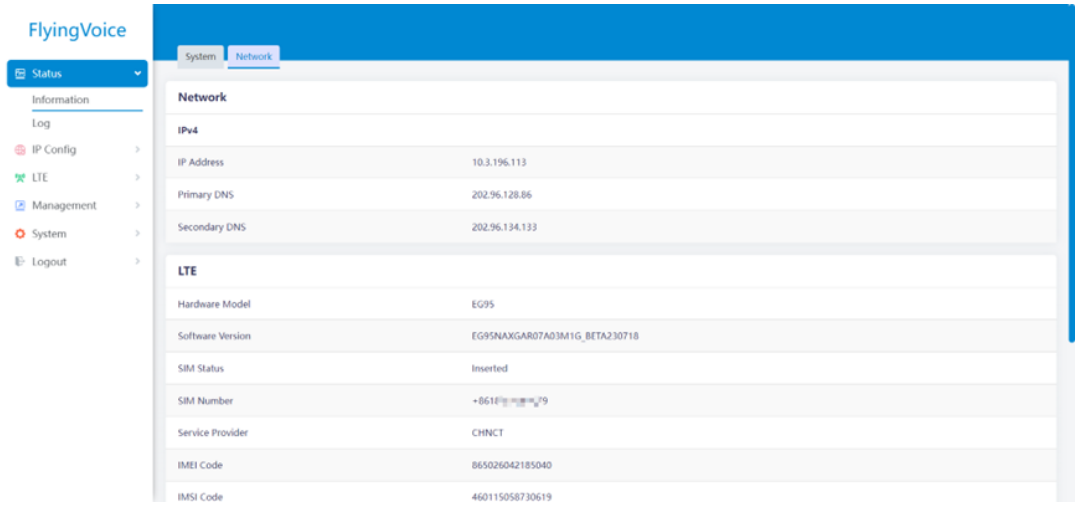
In this section you can view the system information of the device.



Network

Path: Status -> Network

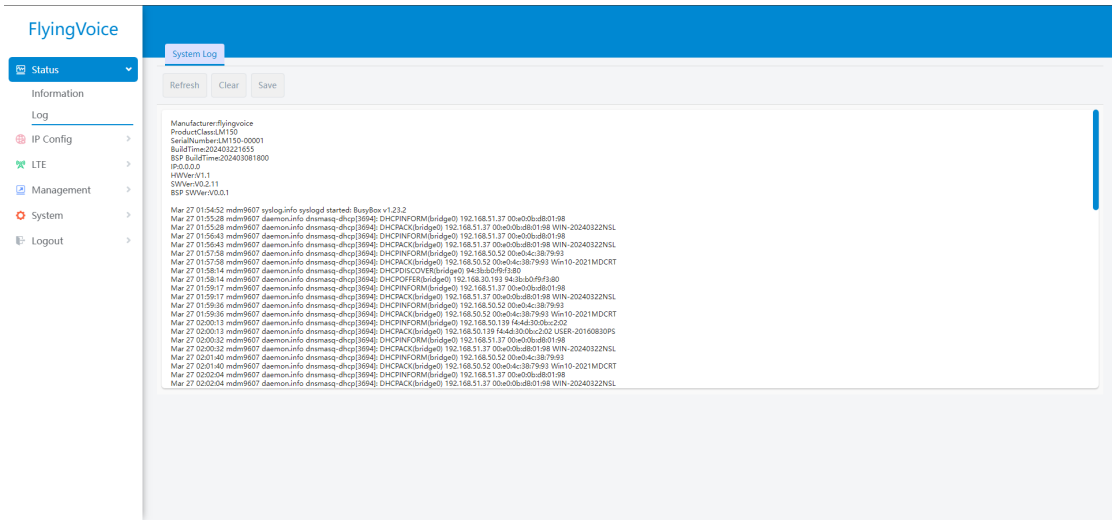
You can view network information and LTE connection conditions of the device through this page.



Log

Path: Status -> Log

You can check, clear and save the log of the device here. The format of the downloaded file will be TXT.



2.3 IP Config

Before proceeding with the following configurations, please confirm with your network administrator that the network environment is properly deployed and confirm that the device is properly installed according to the Quick Installation Guide.

Topic

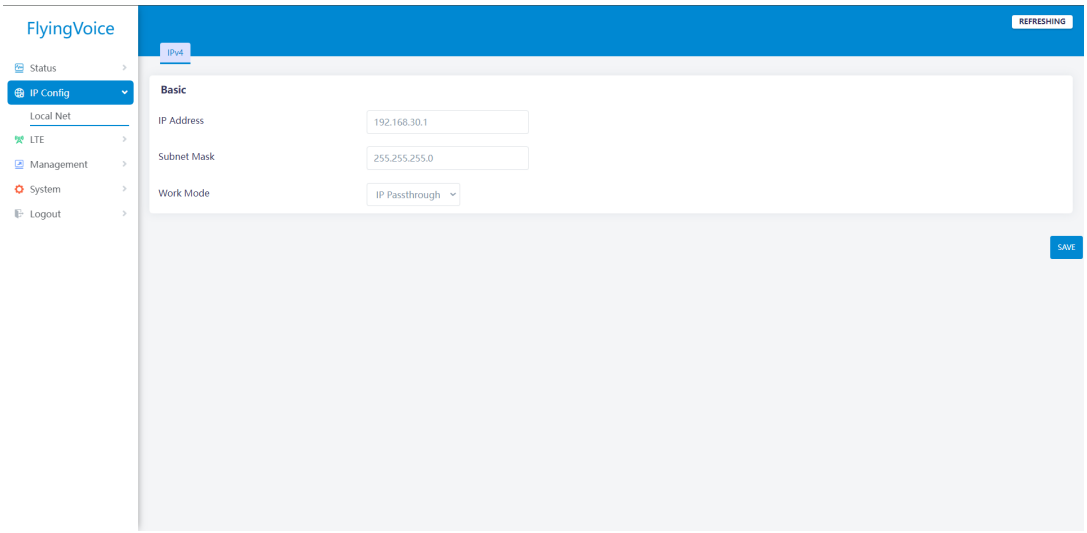
Local Net

Local Net

In this page, you can configure the IP address of the LAN port and to configure the IP address of the devices under LM150's LAN port.

Procedure

1. Navigate to **IP Config** -> **Local Net** -> **IPv4**
2. Enter IP Address, Subnet Mask, and select Work Mode



The descriptions are as follows:

Parameter name	Description
IPv4 address	Configure the IP address of the LAN port. The default is 192.168.254.1, Can be modified according to their own needs, modified to use this address to log in to the device.
IPv4 netmask	The default is 255.255.255.0
Work Mode	Default is IP NAT, Optional for IP Passthrough mode. This define the work mode of the devices under LM150's LAN port.

2.4 Make a Call

The LM150 provides VoLTE function to make a phone call, please refer to the following steps to use VoLTE function:

Procedure

1. Follow the section **"Hardware Installation"** in *Chapter 1* to install the device correctly. Check the FXS indicator, the light will be solid green if registration is successful.
2. Use a phone cable (RJ11 cable, comes with the LM150 in the package), connect one end to the FXS port of the LM150, and the other end to an analog phone.
3. Directly dial a telephone number on the analog phone.

FXS Indicator Status and Description:

Indicator Status	Description
Solid Green	Registration Successful
Flashing Green	Ringing/Hook-Off/On Call
Off	Unconnected, Unregistered

Note: Only when the SIM card is installed and the registration is successful, will the FXS port output power for the analog phone.

Chapter 3 LTE Configuration

This chapter describes the relevant network parameters of the device's mobile network operator and VoLTE-related settings.

Topics

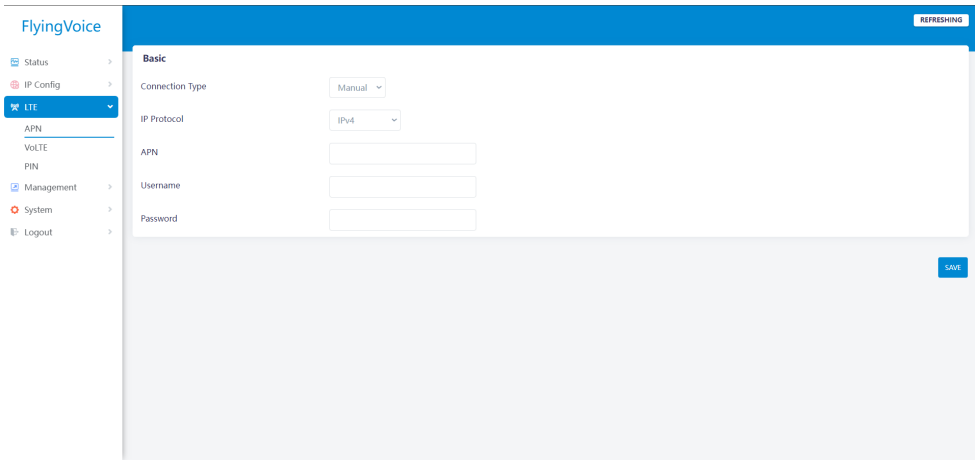
3.1 APN

APN (Access Point Name) configuration is used in mobile networks to specify the parameters needed for a device to connect to the network of a mobile operator. Each mobile operator has its own APN, which includes the network parameters required to connect to the data network.

Procedure

1. Navigate to **LTE** -> **APN**

2. After completing the configuration, click **SAVE**



The descriptions are as follows:

Parameter name	Description
Connect type	The default is Auto, it will use default settings; Select Manual to enable manual settings.
APN	Fill in the name of APN, eg. CMNET, CMWAP.
Username	Fill in the username provided by operator.
Password	Fill in the password provided by operator.
IP Protocol	Default is IPv4, optional IPv6, IPv4&IPv6.

3.2 VoLTE

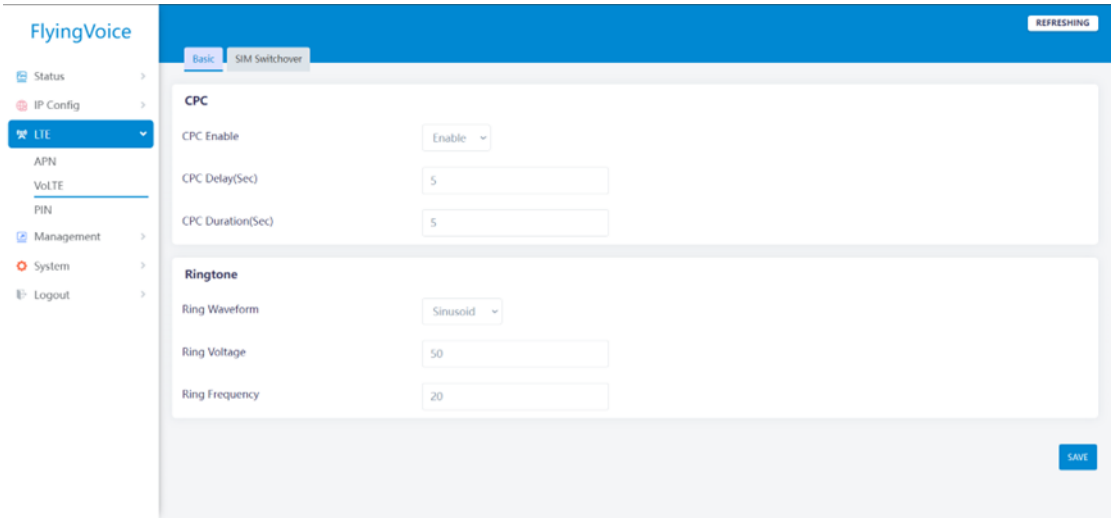
The device supports VoLTE, and has default setting for these configuration parameters. If you want to configure LTE manually, please refer to the following contents:

Topics

Basic Settings

Procedure:

1. Navigate to **LTE** -> **VoLTE** -> **Basic**
2. After completing the configuration, click **SAVE**.



The descriptions are as follows:

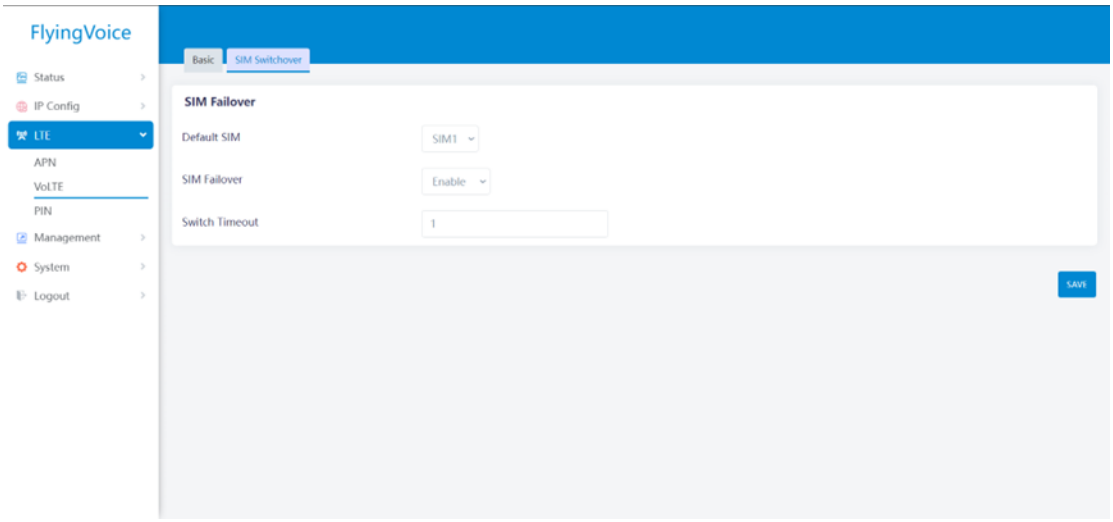
Parameter name	Description
CPC Enable	• Enable, Disable Allows the calling party to control certain aspects of the call, Enable by default.
CPC Delay (sec)	Default is 5 The time in seconds before the calling party gains control of the call.
CPC Duration (sec)	Default is 5 The duration in seconds for which the calling party maintains control of the call.
Ring Waveform	Sinusoid by default, Trapezoid is optional. The pattern or shape of the electrical signal used for the ringing sound.
Ring Voltage	Default is 50 (40-63 Vrms) The level or intensity of the electrical signal used for the ringing sound.
Ring Frequency	Default is 20 (15-30 Hz) The rate at which the electrical signal oscillates to create the ringing sound.

SIM Switchover

In this section you can set the primary and secondary SIM cards, and set the switching time between 2 SIM cards.

Procedure:

1. Navigate to **LTE** -> **VoLTE -> SIM Switchover**
2. After completing the SIM Failover configuration, click SAVE.



The descriptions are as follows:

Parameter name	Description
Default Sim	SIM1 by default, SIM2 is optional. The primary SIM card used by a device for data and voice services unless manually switched or in the event of SIM failover.

SIM Failover	• Disable, Enable Automatic switch to a backup SIM card upon failure for uninterrupted connectivity. Default is Disable

Chapter 4 Management

This section is mainly used for remote deployment configuration, as well as subscribing to remote updates, etc.

Topic

System Settings

Firmware Update

4.1 Telnet

Telnet is a remote login protocol that allows users to connect to remote computers or devices over a network and perform operations.

Procedure:

1. Navigate to **Management** -> **Telnet**
2. After modifying the configuration, click Save (Default Telnet Enable, port 23)

4.2 Management Provision

Provisioning, commonly used for remote configuration, involves setting up and preparing resources such as servers, networks, or software applications for use from a distant location.

Topic

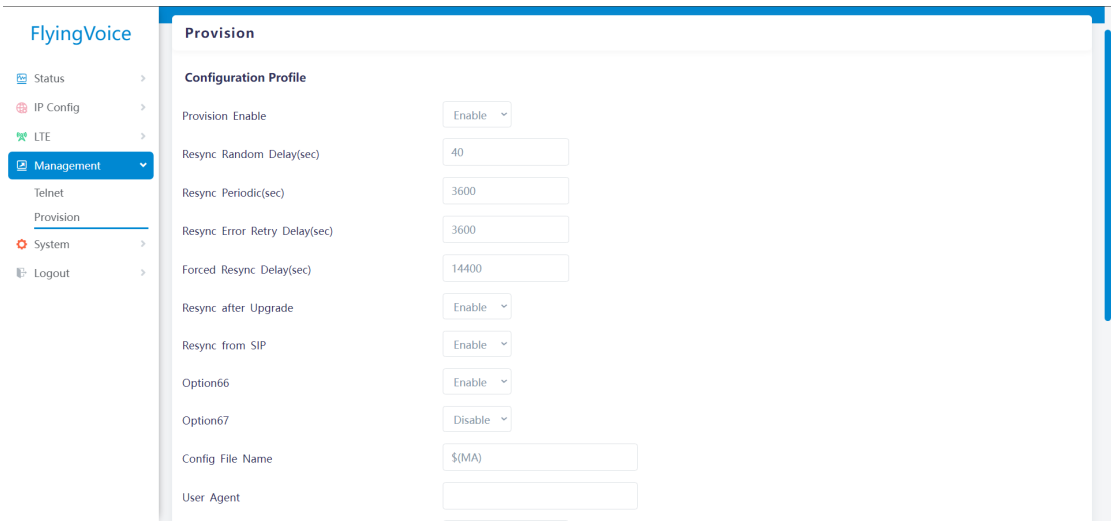
Configuration Profile

Firmware Upgrade

Configuration Profile

Procedure:

1. Navigate to **Management** -> **Provision**
2. After modifying the configuration, click **SAVE**.



The descriptions are as follows:

Parameter name	Description
Provision Enable	• Enable, disable. Setting to enable or disable the provisioning process.
Resync Random Delay(sec)	Default is 40 Time interval in seconds for a random delay before resynchronization.
Resync Periodic(sec)	Default is 3600 Time interval in seconds for periodic resynchronization.
Resync Error Retry Delay(sec)	Default is 3600 Delay in seconds before retrying resynchronization after an error.
Forced Resync Delay(sec)	Default is 14400 Time delay in seconds before a forced resynchronization.
Resync after Upgrade	• Enable, disable. Option to perform resynchronization after a firmware or software upgrade.
Resync from SIP	• Enable, disable. Synchronizing configuration from Session Initiation Protocol (SIP) server.
Option 66	• Enable, disable. DHCP option for configuring server hostname or IP address.
Option 67	• Enable, disable. DHCP option for configuring boot file name.
Config File Name	Default Recognition Name of the configuration file used for provisioning.
User Agent	Identifying information of the client device.
User Name	Username used for authentication.
Password	Password used for authentication.
Profile Rule	Set of conditions or rules that define how profiles are applied or configured.

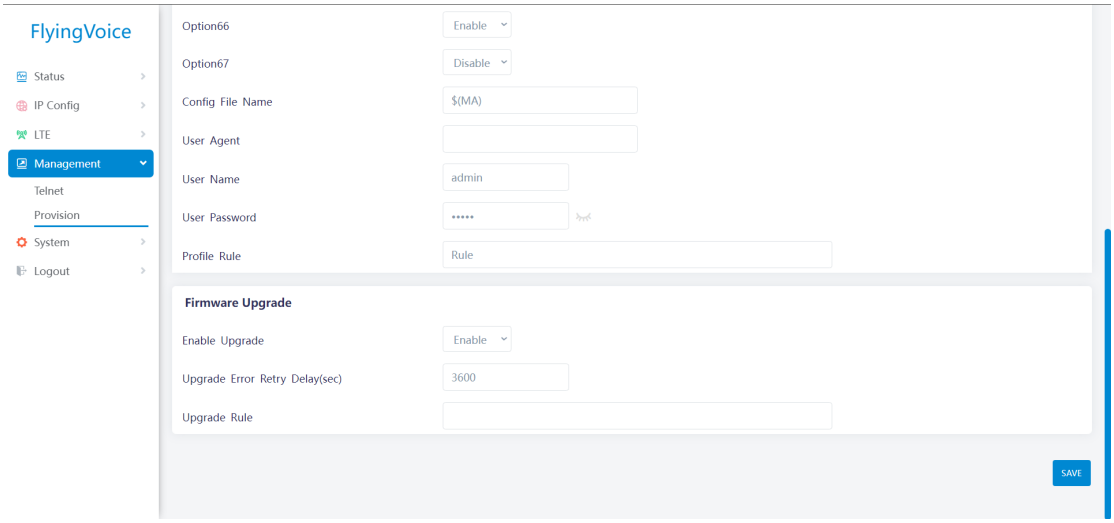
Firmware Upgrade

This section is used to subscribe to remote updates.

Procedure:

1. Navigate to **Management** -> **Provision**

2. After modifying the configuration, click **SAVE**.



The descriptions are as follows:

Parameter name	Description
Enable Upgrade	• Enable, disable Setting to enable or disable the upgrade process.
Upgrade Error Retry Delay (sec)	Default is 3600 Time delay in seconds before retrying an upgrade process after encountering an error.
Upgrade Rule	Enter the Upgrade Configuration link

Chapter 5 System

This chapter describe how to modify system settings, such as language, user information, logging levels, etc., as well as system upgrades, restoration of factory settings, reboots, and other operations.

Topic

5.1 System Config

This part introduces how to set the basic setting of your device.

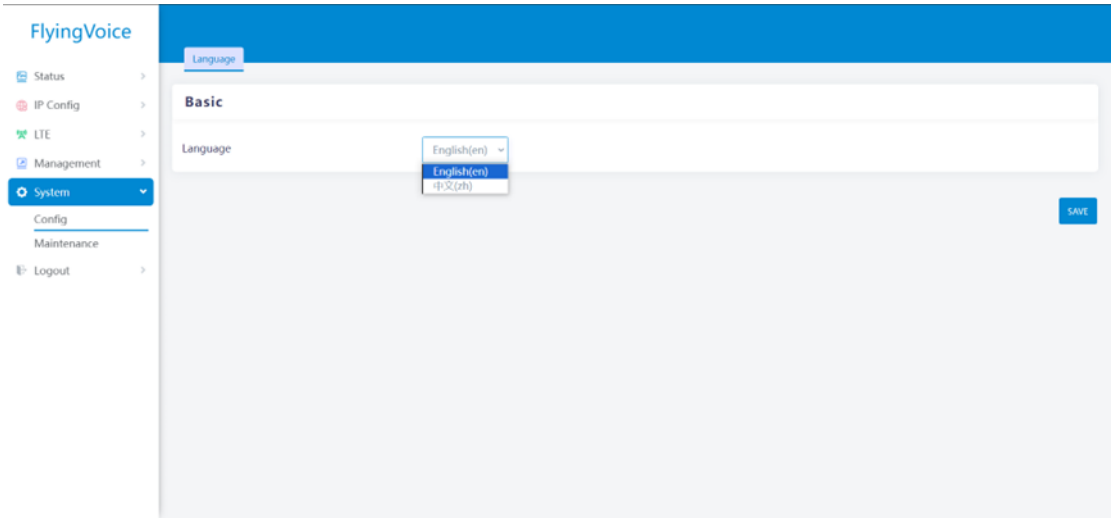
Topics

Language

You can choose the language type here.

Procedure:

1. Navigate to **System** -> **Config** -> **Language**
2. You can change Language here.

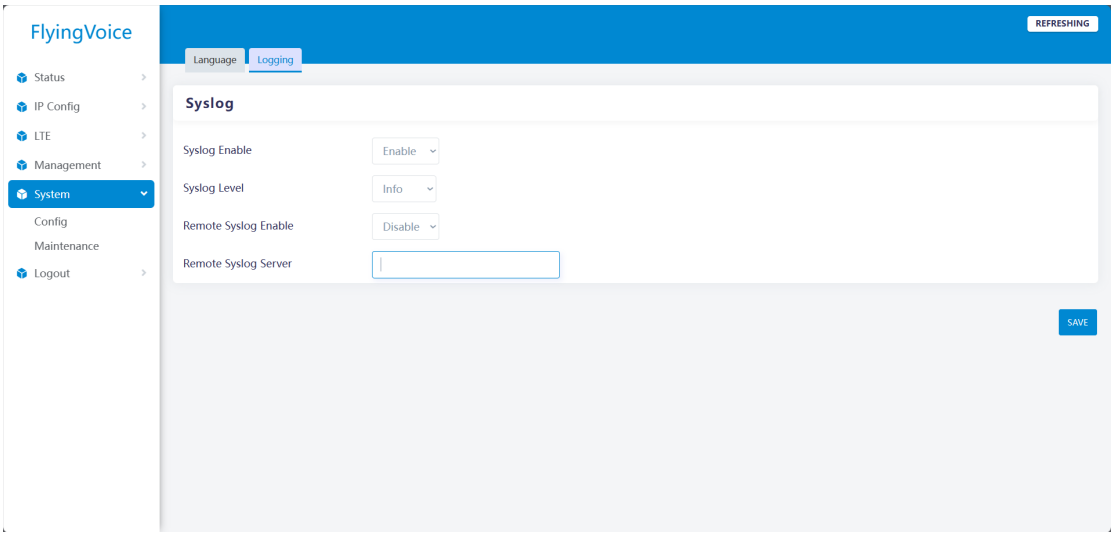


Logging

You can configure the syslog here, including syslog level and remote syslog.

Procedure:

1. Navigate to **System** -> **Config** -> **Logging**
2. Select to modify the syslog configuration.



The descriptions are as follows:

Parameter name	Description
Syslog Enable	Whether to enable system log, when this is enable, there will be syslog information in the status page. Default for enable
Syslog Level	Configure the level of log. Optional for Debug, Info
Remote Syslog Enable	Whether to enable remote system log, when this is

	enable, a syslog file will be sent to the Remote Syslog Server
Remote Syslog Server	Fill in the address of remote syslog server

5.2 Maintenance

This section describes the maintenance-related operations of the equipment.

Topic

Backup

Firmware Update

Factory Default

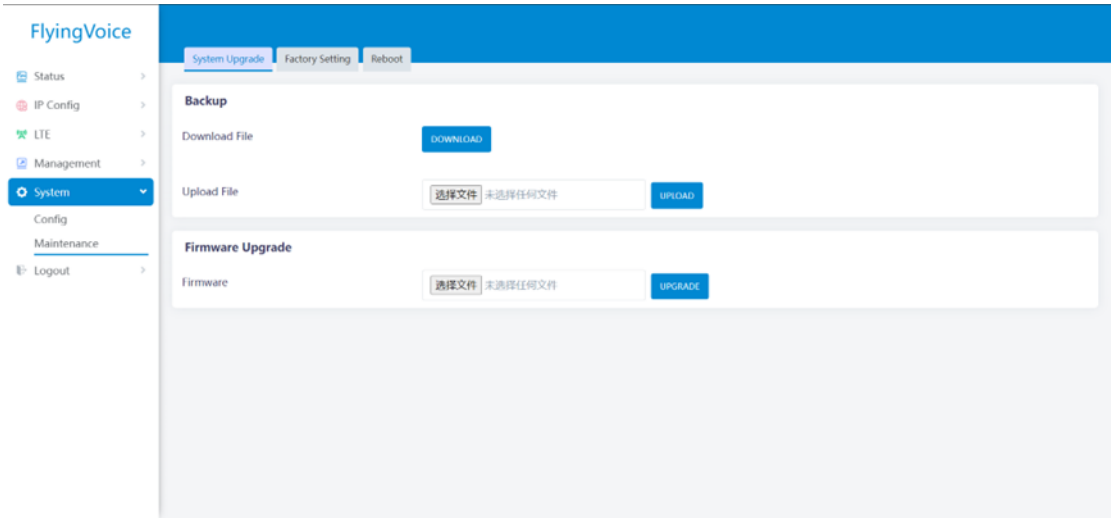
Reboot

Backup

You can download the current device backup file at the click of a button to prevent information loss.

Procedure

1. Navigate to **System** -> **System Upgrade**
2. Click **DOWLOAD**, save the current configuration as backup file.

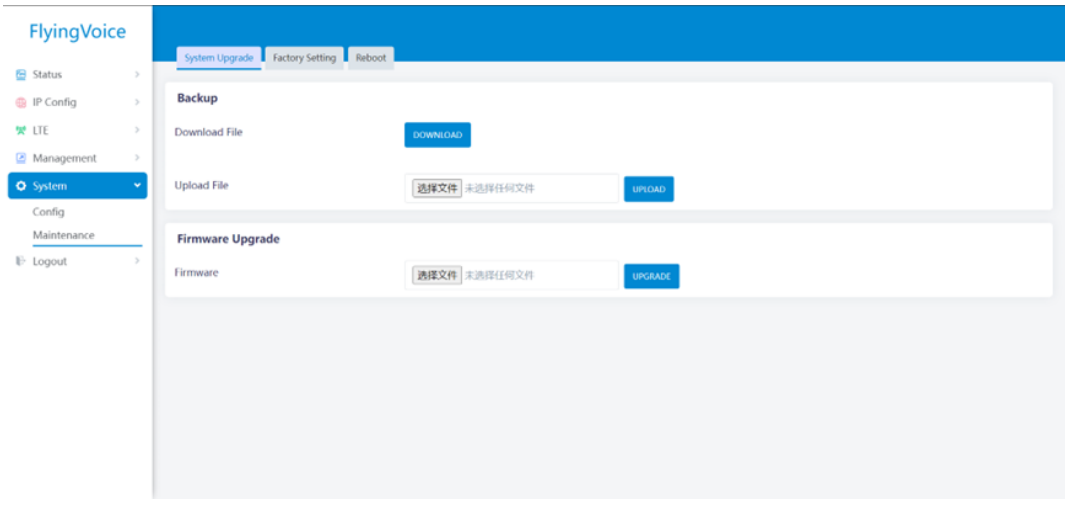


Firmware Update

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
3. Click UPGRADE to upload the file and wait for the reboot



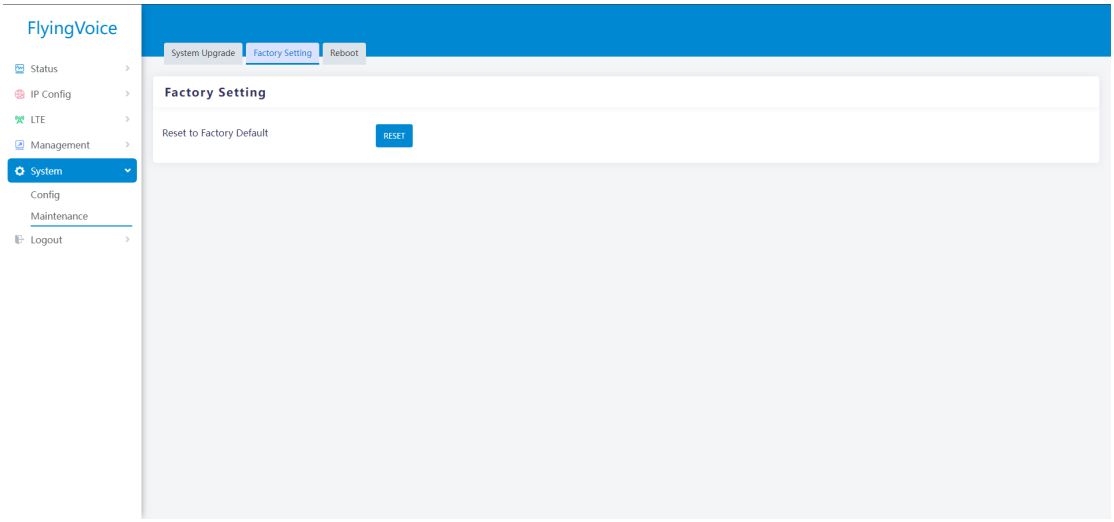
Factory Default

You can reset the device to factory default settings here.

Procedure

1. Navigate to **System** -> **Factory Setting**

2. Click the **RESET** Button



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