FENGER®

INSTALLATION & CONFIGURATION MANUAL

FDH710X8

(IP to DVB-T/C Modulator)

Preface

Thank you for choosing our product.

This manual details the performance, installation and operation of the product. Please read this manual before use.

Our company does not assume any responsibility for any losses caused by violation of safety regulations.

1. Incoming inspection

(1) Open the equipment box and check the contents against the product packing list.

(2) If the packing list does not match the actual item, please contact us.

2. Read the instruction manual

Please read the instructions and follow all instructions.

(1) Power

The power supply used with this device must comply with the indicated power supply and be grounded. When not using the machine for a long time, please unplug the power cord.

(2) Working environment

Keep the equipment working in a ventilated and dry place. Avoid excessive heat, moisture, dust and heat.

(3) Equipment cleaning

Before cleaning the device, unplug the power cord. Do not use liquid or spray cleaners.

(4) Power cable protection

Pay special attention to the safety protection of plugs, sockets and power cords.

(5) Overload

Be careful not to overload the power supply at the outlet. Use caution when using extension cords or integrated sockets as this may result in electric shock and fire.

(6) Lightning

To prevent damage caused by lightning, please use this device in a lightning protection device, which can effectively prevent damage caused by lightning or power grid fluctuations.

(7) Foreign matter or liquid intrusion

Do not insert foreign objects into the machine or spill any liquid into the machine.

(8) Attachments

Do not use accessories not recommended by the manufacturer, as this may cause danger.

(9) Transportation

When transporting the machine, the original packaging of the product should be used to avoid damage. Do not place heavy objects on the machine or step on it. Otherwise, personal injury may occur and the machine may be damaged.

(10) Maintenance

Do not open the box and repair by yourself to avoid personal injury or serious damage to the machine.

During the warranty period, if the product is damaged due to natural causes and is disassembled without authorization, free warranty will not be provided.

Content

1. Product description

1.1. Overview

The FENGER® FDH710X8 is a highly integrated platform engineered for centralized processing of IPTV front-end services. Designed for versatility, it supports both desktop installation and standard rack mounting, making it adaptable to a wide range of deployment environments.

Configuration and management can be performed locally or remotely through cloud-based network access, ensuring efficient and flexible operation. Its intuitive web interface features a clean, user-friendly design that simplifies setup, monitoring, and daily management.

Combining high integration with exceptional cost performance, the FDH710X8 delivers a reliable and comprehensive signal processing solution for modern IPTV & RF systems.

1.2. Pictures

Front panel

Rear panel

1.3. Parameters

FDH710X8 Base unit parameter		
Size	318(L) x 260(W) x 44(H) mm	
Installation form	1U 19-inch chassis, Desktop	
Working temperature, humidity	5ºC ~ 45ºC, 40% ~ 70%	
Storage temperature and humidity	-10ºC ~ 70ºC, 40% ~ 95%	
Power parameters	**Supply voltage**	DC12V
	Maximum current	7000mA
IP Input	**IP input port**	1 Gigabit RJ45 network port
	Transport Protocol	UDP, RTP
	MAX Input IP Address	256 Channels
	Input Transport Stream	MPTS and SPTS
	Addressing	Unicast and Multicast
	IGMP Version	IGMP V2, IGMP V3
RF output	**Output**	8 Frequencies
	Output port	1 RF output and 1 -20dB test port output. F female connectors
	Output standard	DVB-C, DVB-T
	Frequency range	50-999.999MHz, minimum step 0.001MHz
	Output level	≥105dBuV (0-20dB Adjustable, step 0.5dB)
	Out band rejection	≥60dB
	Output impedance	75 Ohm

Modulation Parameters		
DVB-C	**Standard**	J.83 Annex A/C
	Frequencies	8
	Constellation	16QAM, 32QAM, 64QAM, 128QAM, 256QAM
	MER	≥36dB
	Symbol rate	3.600~6.960 KS/s
	Output frequency	50~999.999MHz, minimum step 0.001MHz
	Output level	≥105dBuV (0-20dB Adjustable, step 0.5dB)
	Out band rejection	≥60dB
	Output impedance	75 Ohm
DVB-T	**Standard**	ETS 300 744
	Frequencies	8
	Constellation	QPSK, 16QAM, 64QAM
	FFT	2K, 4K, 8K
	Guard interval	1/4, 1/8, 1/16, 1/32
	Code Rate	1/2, 2/3, 3/4, 5/6, 7/8
	Symbol Rate	6000, 7000, 8000 KS/s
	Bandwidth	6MHz, 7MHz, 8MHz
	MER	≥36dB
	Output frequency	50~999.999MHz, minimum step 0.001MHz
	Output level	≥105dBuV (0-20dB Adjustable, step 0.5dB)
	Out band rejection	≥60dB
	Output impedance	75 Ohm

1.4. Features

- Supports 256 IP addresses, Gigabit input
- Supports UDP/RTP protocol, SPTS/MPTS stream processing
- Supports digital Modulation output of 8 frequencies DVB-T or DVB-C
- Supports PID remapping, PSI/SI information editing and insertion
- 1 × Gigabit Ethernet (Data) port & 1 × Management port
- Graphical Web UI for fast and easy configuration
- Local or remote control via Ethernet
- 19'' rack-mount installation, with mounting brackets included

1.5. Application scenarios

- Hotel
- Resort
- Hospital
- Cruise ship
- School
- Leisure and entertainment clubs

2. Structure diagram

2.1. Front panel

Number	Function	
1	PER	This indicator light lights up when the device is powered on.

	RUN	This indicator light lights up when the device is running.
2	DATA IN	Gigabit output network port.
3	NMS	Management port.
4	DEFAULT	Restore factory settings button. If you need to restore factory settings, you need to press and hold for 15 seconds.

2.2. Rear panel

Number	Function	
1	RF OUT	Signal output port, level does not attenuate.
	TEST -20dB	Test port, level signal attenuation 20dB.
2	Switch.	
3	Power inlet.	
4	Ground.	

3. Installation guide

3.1. Preparation

When installing the device, follow these steps:

- Check for possible loss or damage of equipment during transportation.
- Prepare a suitable environment for installation.
- Install the required input and output cables.

Each detail of the equipment installation is described in the remainder of this chapter, using the rear panel diagram as a reference for specific locations.

3.2. Equipment installation process

Step 1: Unpacking and inspecting goods

Step 2: Fixed equipment

Step 3: Connect power and ground wires

Step 4: Connect signal cable

Step 5: Set device parameters

Step 6: Equipment operation

3.3. Environmental conditions requirements

Project	Requirement
Control room space	When installing multiple rows of cabinets, the distance between the front and rear doors of the cabinet is 1.2~1.5m and the distance from the wall is 0.8m.
Control room floor	Non-conductive and dust-free. The volume resistivity of the ground anti-static material is 1X107~1X1010, and the grounding current limiting resistance is 1M. The floor load-bearing should be greater than 450Kg/m^2.
Ambient temperature	For long-term work in an environment of 5~40ºC, and for short-term work in an environment of 0~45ºC, it is best to install air conditioners in places to facilitate heat dissipation.
Relative humidity	Work long-term in the 20% to 95% environment and short-term in the 10% to 97% environment.
Ambient air pressure	86kPa~106kPa.
Windows	Dust-proof rubber strips must be added for sealing. It is recommended that windows be installed with double-glazing and strictly sealed.
Wall	Wallpaper can be applied or matte paint can be applied, but paint that is easily powdered should not be applied.
Fire protection requirements	The control room should be equipped with an automatic fire alarm system and a portable fixed fire extinguishing system.

Power requirements	Three independent power supply systems are required for equipment power supply, air conditioning power supply, and lighting power supply. The equipment is powered by AC power supply. The AC power supply adopts 220V±20% 50/60Hz. Please check carefully before operating the equipment.

3.4 Grounding requirements

- The good ground wire design of each functional module is the basis for the stable and reliable operation of the whole machine, and is the primary guarantee for lightning protection and anti-interference. Therefore, system grounding must follow the following principles.
- The ground conductor must use copper conductor to reduce high-frequency impedance, and the ground wire should be as thick and short as possible.
- The connection points at both ends of the grounding wire should be confirmed to have good electrical contact and should be treated with anti-corrosion treatment.
- It is strictly prohibited to use other equipment as part of the electrical connection of the ground wire.
- The cross-sectional area of the ground wire connecting the cabinet to the lightning protection unit must be greater than or equal to 25mm^2.

3.4.1. Cabinet grounding

The ground terminals of each cabinet in the same computer room should be connected to the protective ground copper bar provided by the control room. The grounding wire is required to be as short as possible. If the wiring is too long during project installation, it should be cut off to avoid coiling of the grounding wire. The cross-sectional area of the conductor from the ground terminal to the ground bar must be greater than or equal to 25mm^2.

4. Built-in web management terminal operation

4.1. Preparation

- The NMS network port of the device is connected to the PC network port.
- Power the equipment.

4.2. Login

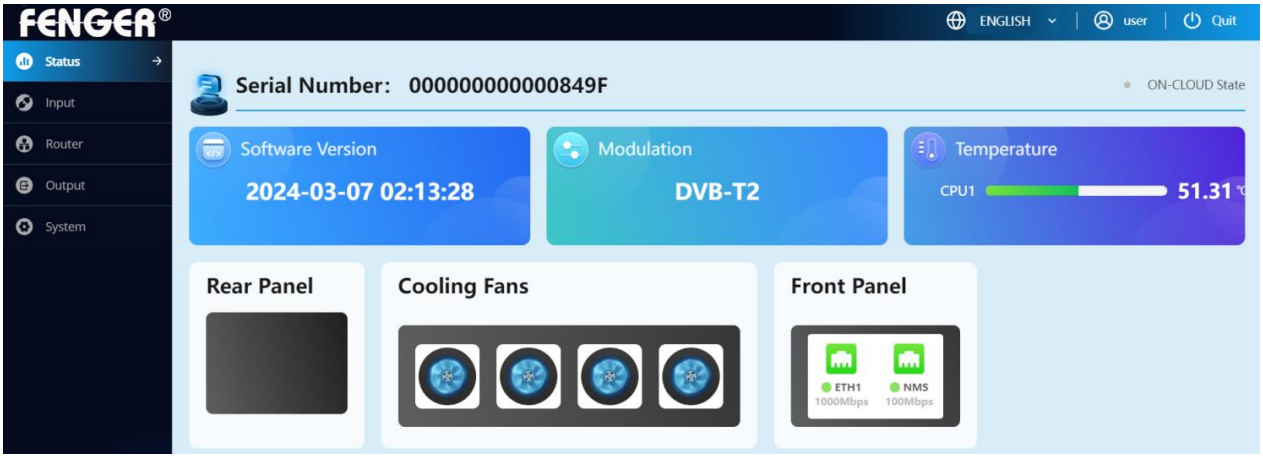
- You can check the IP address of the device through the operation panel.
- Open IE browser / Firefox browser / Google Chrome / Opera browser, enter the device IP address in the address bar (generally default: **192.168.1.30**), and after confirmation, the login interface will be displayed as follows:
- Enter username and password, the default is: **user**
- Click to log in

Notice:

1. If the connection cannot be made, please check whether the PC and the device are on the same network segment. If not, please add a new network segment in the advanced TCP/IP settings of the PC. For example: the PC's IP address is 192.168.99.252, which can be changed to 192.168.1.xxx (xxx can be any value from "1" to "254" except "252" to avoid IP conflicts).

2. If you still cannot connect after the above operations, or you forgot to log in to the IP address, please operate the front panel of the device to restore the factory default values.
3. If you need to change the language, please change it in the upper right corner of the page. Select ENGLISH/CHINESE.

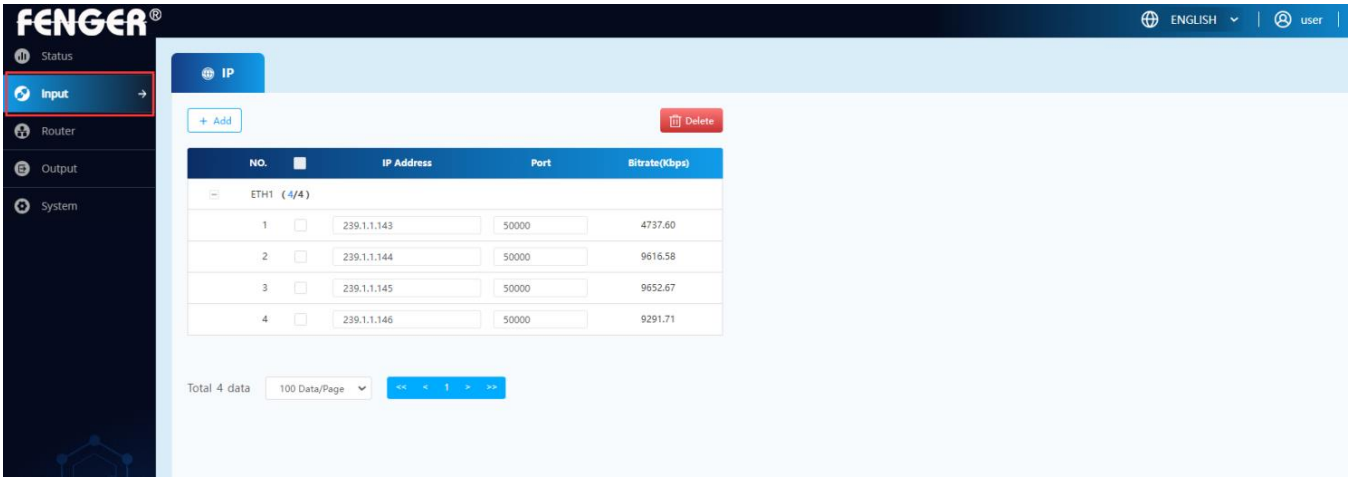
4.3. Status



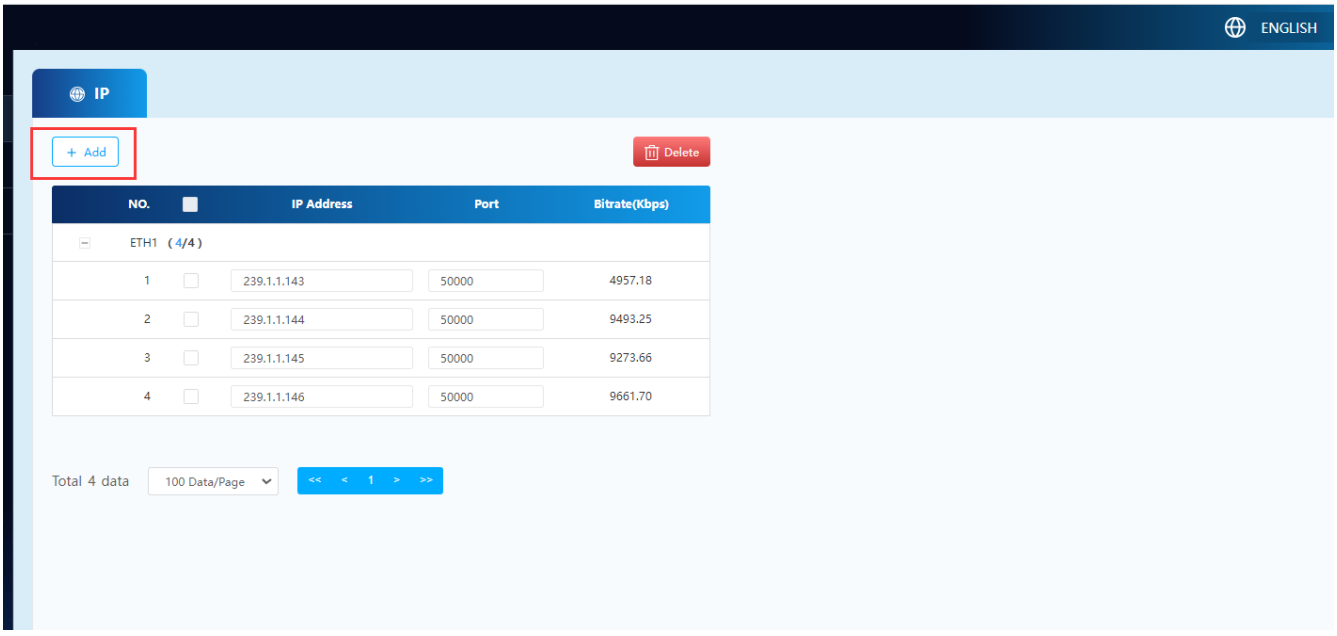
Serial number	Display device serial number.
Software version	Display the current software version number of the device.
Modulation	Display the modulation system currently output by the device.
Temperature	Display the temperature of the device's core board, and display the number of temperature progress bars based on the number of core boards.
Rear Panel	Gray color
Cooling fans	Display the operating status of the fans in the device. Under normal conditions, all fans will rotate. Blue: running; black: stopped; the fan stops running and a yellow triangle warning appears□
Front panel	Display the current access status of the front panel. - Green: connected - Gray: not connected

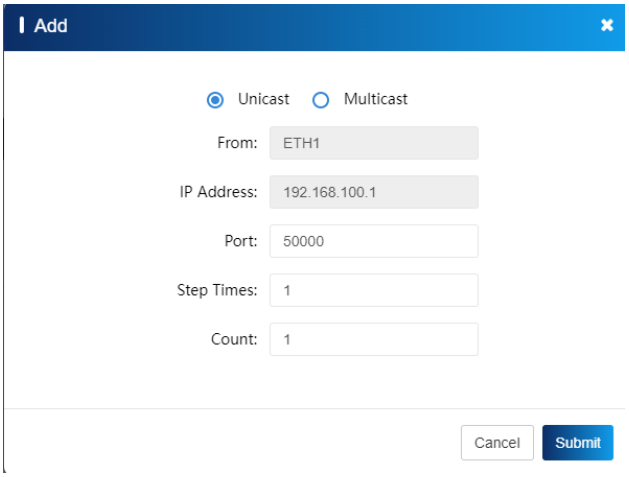
Language	ENGLISH / CHINESE
User	Display the user name currently logged in to the device backend.
Quit	Exit the device background management terminal.
On Cloud State	Display the binding status of the device. - Green: bound - Gray: unbound

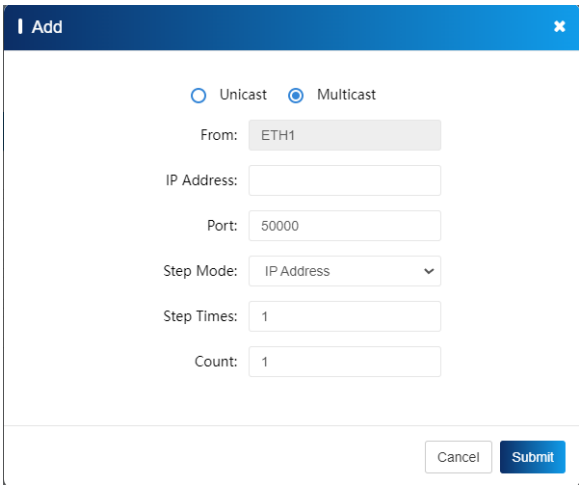
4.4 IP Input



Add IP address:







Unicast	
From	Default device network port
IP address	The default IP address is 192.168.100.1
Port	Default is 50000, can be modified, value range is 1-65535
Step times	Default 1, value range 1-10
Count	Default 1, value range 1-248
Submit	After filling it out, click the submit button
Multicast	
From	Default device network port
IP address	Fill in the new IP address
Port	Fill in the port of the new IP address. Value range 1-65535
Step mode	IP address / port / IP address + port, three steps
Step times	Range 1-10
Count	Range 1-248
Submit	After filling it out, click the submit button

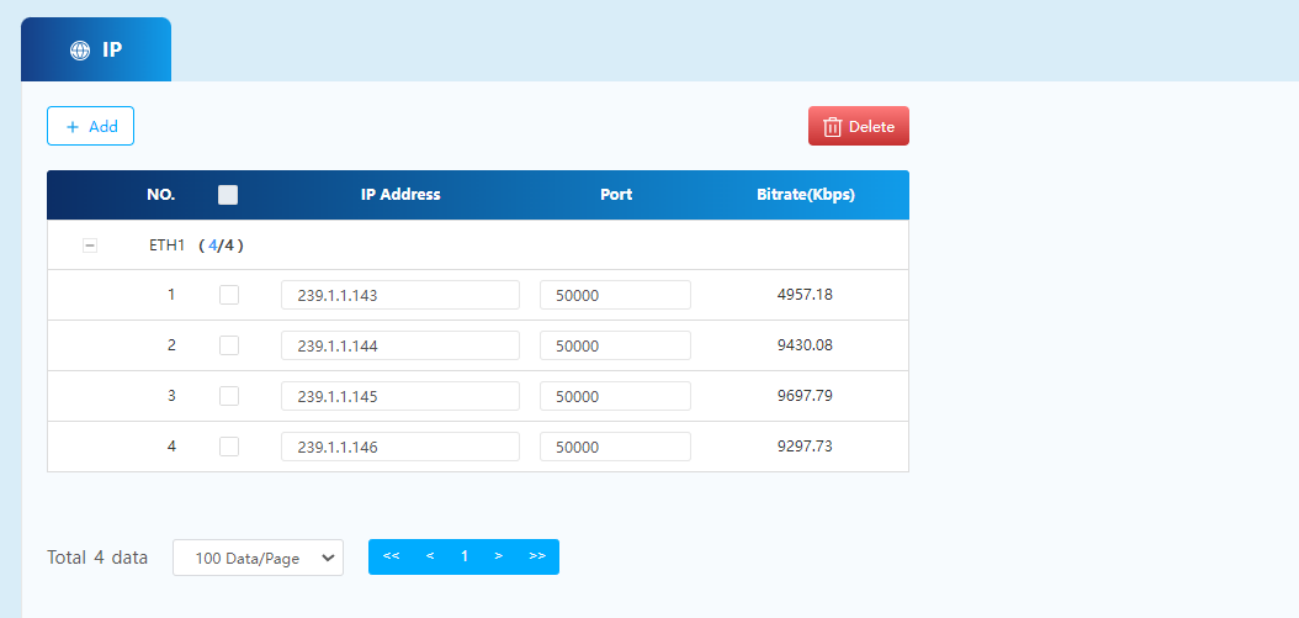
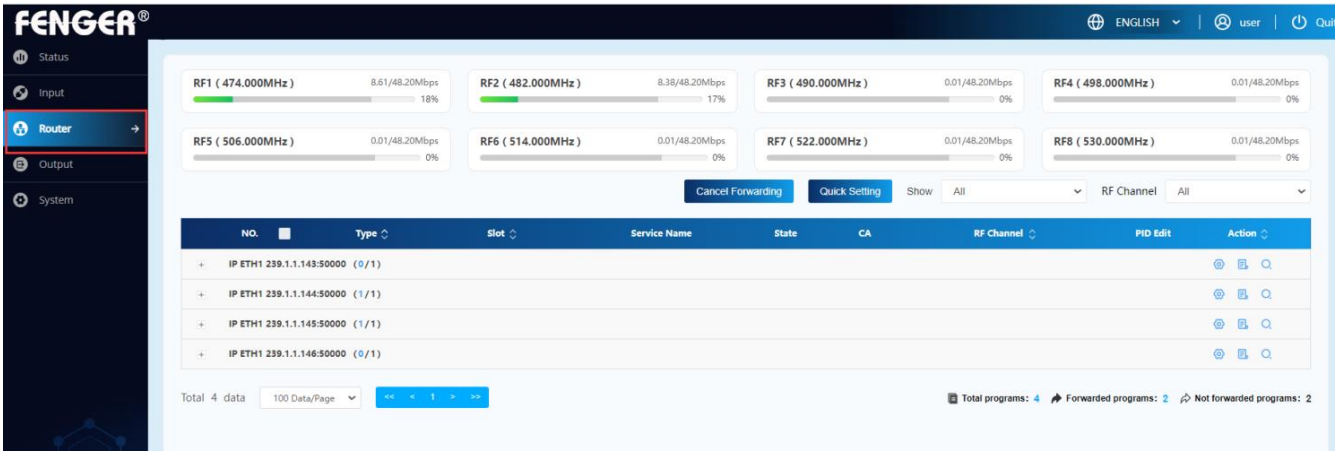


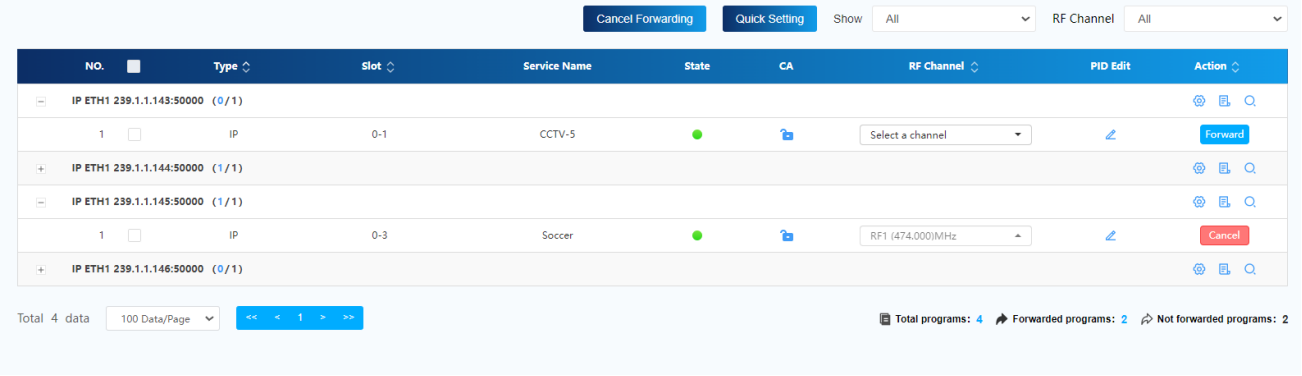
Table Contents Explanation	
Up to 256 IP addresses can be added as long as they do not exceed the range	
NO.	Visually display the amount of table data. The check box next to it can select all table contents.
ETH1	Input network port display
IP address	Display and set IP address
Port	Display and set port number. Value range 1-65535
Bitrate	Display and update bitrate in real time
Page Button Explaination	
Delete	Single/batch deletion. Delete checked data
Modifications to the table data will take effect.	

4.5. Router

In routing management, we can analyze and forward programs.

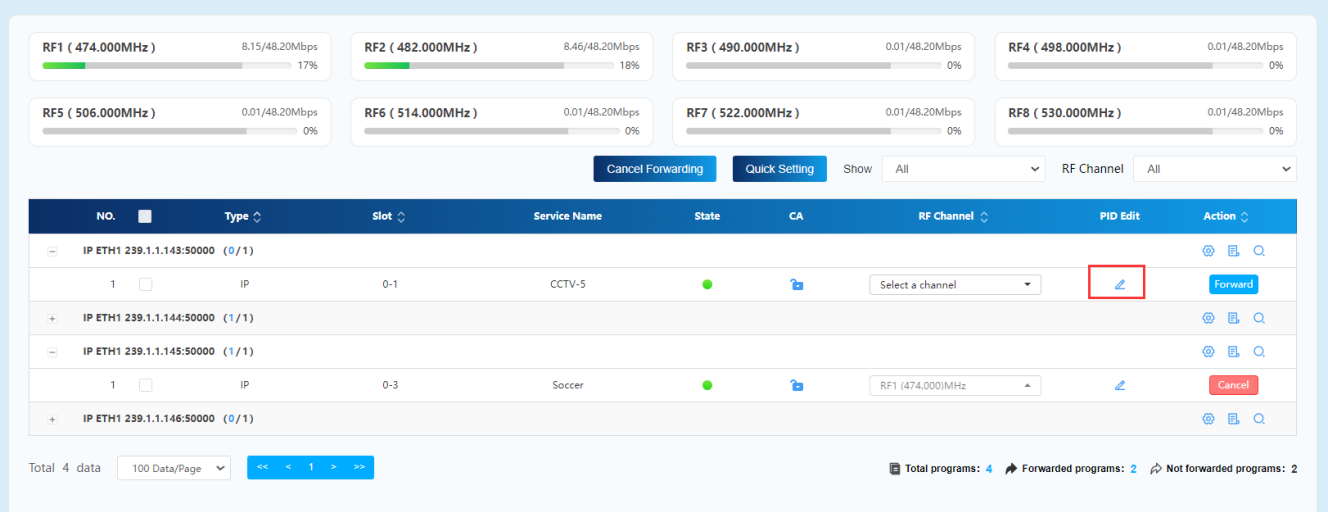


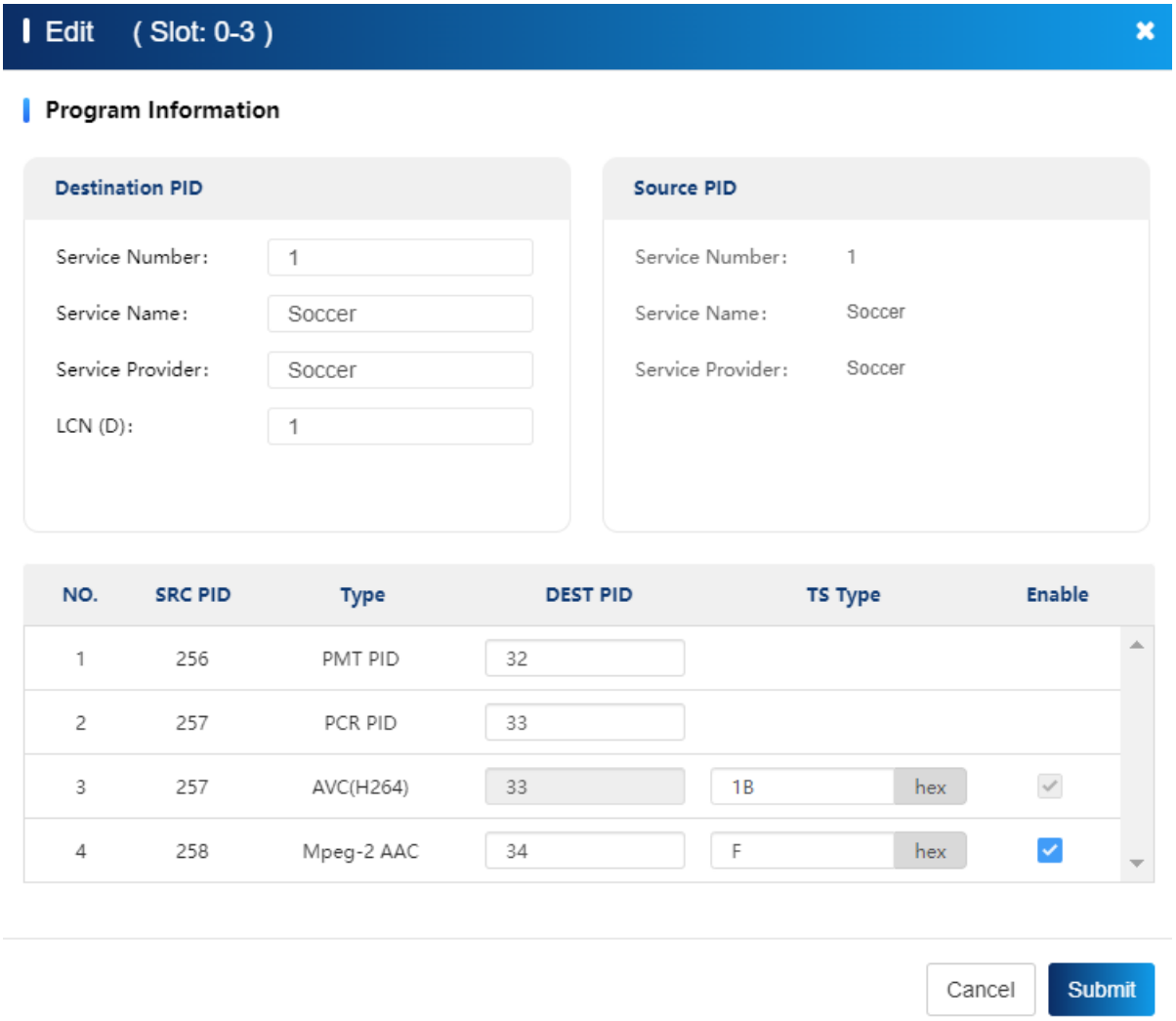
RF1-RF8	The quantity of output channels is determined by the quantity of modulation cards, with a maximum of 8 channels supported.	
	Gray bar	Indicates a suitable bit rate range. When the bit rate of the forwarded program exceeds this range, the program may appear mosaic.
	Green bar	When a program is forwarded to a designated channel, the channel will identify the bit rate of the program and indicate it with a green bar.



Check	You need to click the + sign firstly to expand the program before you can select the program. The all-select check box can only select all expanded programs. Programs that have not been expanded cannot be selected.
Cancel Forwarding	First check, then click the Cancel Forwarding button to cancel forwarding the program

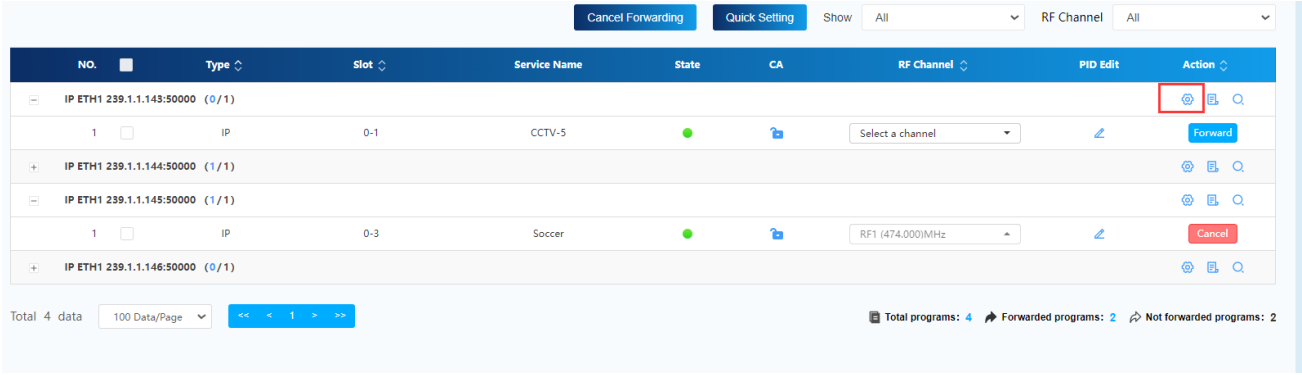
Quick Setting	Set RF channels for selected programs individually/batch	
Show	Type	Filter by the type of connected signal source
	RF channel	Filter by radio frequency channel for program forwarding
NO.	Represents: signal source slot-channel (quantity of forwarded programs/total quantity of programs) Click the "+" sign to expand and display the program list under the channel. The programs can be set, analyzed and forwarded; Click the "-" sign to close the program list;	
Type	Display the input type of this program	
Slot	Display the input channel of the program	
Service name	Display service name. It is analyzed from the program source and can be modified.	
State	Display the status of the program, green: normal; red: interruption; yellow: PSI change; Program playback conditions are different in different states. When green and yellow, the program plays normally. When turns red, the program plays abnormally.	
CA	CA certification, an electronic certification service, is used to check whether the program stream is encrypted. Unlocked means the program stream is not encrypted, locked means the program stream is encrypted.	
RF channel	Allocate RF channels to programs according to actual conditions	
PID Edit	Edit program information, which will be explained in detail below	
Forward	When clicked it, will turn into a cancel button, allowing you to cancel the forwarding.	

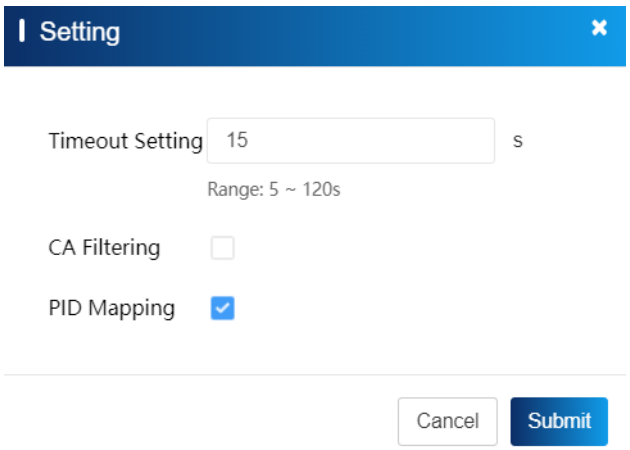




Detailed explanation of editing program information		
Destination PID	Service number	Fill in according to actual needs, the value range is: 1-65535. The content shown in gray below is the target program number analyzed in the program source.

	Service name	Fill in the actual value, the value range is: 32 bytes. The content shown in gray below is the name of the target program analyzed in the program source.
	Service provider	It is analyzed from the program source and does not need to be changed. The value range is: 32 bytes.
Source PID	Service number	Comment the source target number and prompt the user for the value of the source target number.
	Service name	Annotate the source program name and prompt the user for the value of the source program name.
	Service provider	Annotate source program name, prompt user service provider value
Detailed explanation of the table below the pop-up window		
NO.		List serial number
SRC. PID		Each media data stream has a unique PID that identifies the source and type of media packets.
Type		The type of genre is determined by the content contained in the program source, and there may be more genres.
Type	PMT PID	Each program has a unique PMT PID that identifies the program's PMT.
	PCR PID	Each program needs an independent PCR PID to synchronize the audio and video streams of the program.
	AVC(H264)	Video compression standards.
Dest PID	It is based on analysis of program source data and does not need to be changed.	
TS type	It is based on analysis of program source data and does not need to be changed.	
Enable	It can be controlled to open or close. It will not take effect after it is closed.	
Submit	After the modified content is submitted successfully, it will take effect.	
Cancel	Close editing page.	

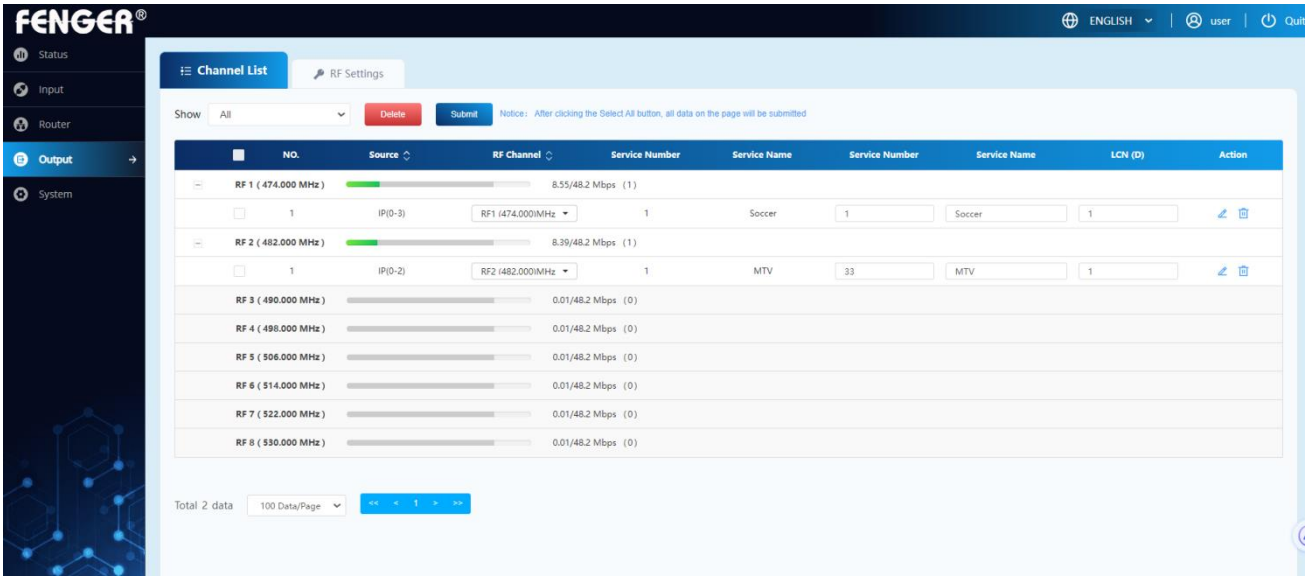




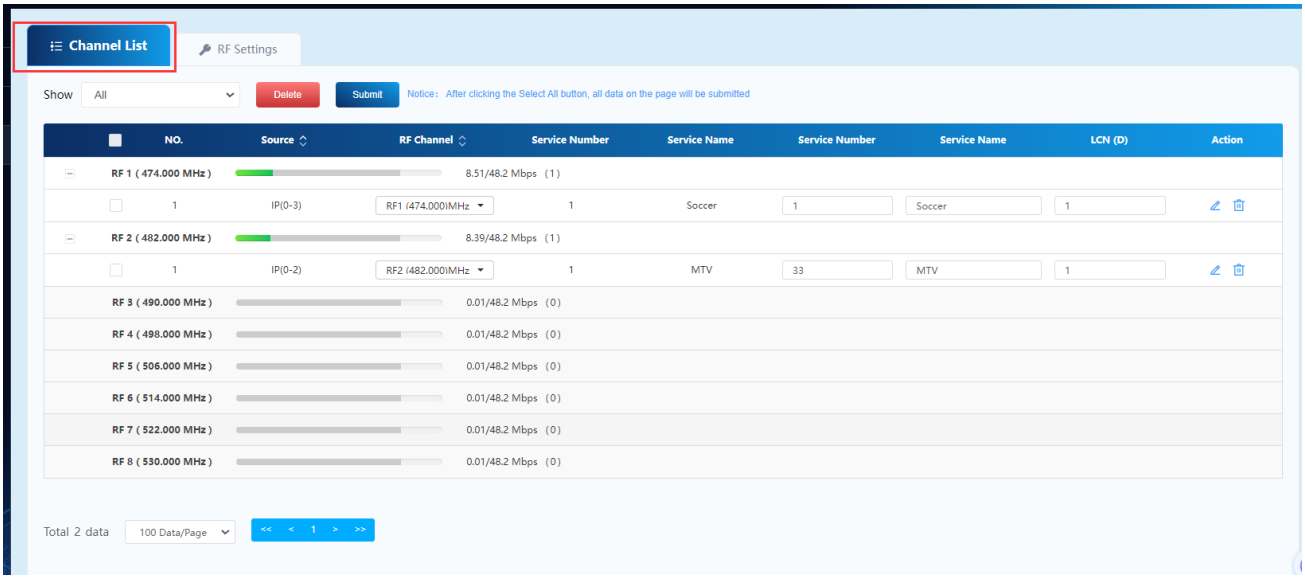
Setting	
Time out setting	Set the time to analyze the program, and stop the analysis after timeout. Value range: 5-120s.
CA Filtering	After turning it on, you can filter the encrypted EMM information of satellite programs.
PID Mapping	Open by default. In order to prevent two programs from having the same target PID.

4.6. Output

Output management mainly manages output programs and sets the output frequency, modulation format, etc. of the program.



4.6.1. Channel list

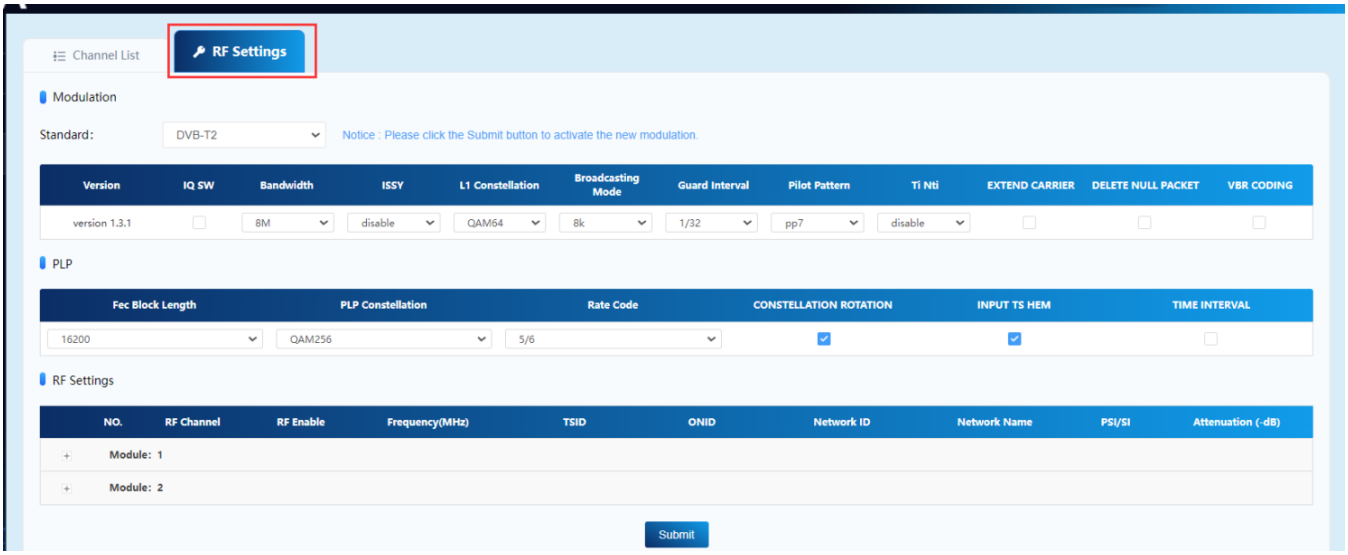


Source	Filter the signal source of the program according to the type of signal source.
Delete	After checking the programs that need to be deleted, click Delete. After deletion, the programs will become unforwarded, and the status of these programs in routing management will become unforwarded.

Submit	Modification of the information in the form will only take effect after successful submission.

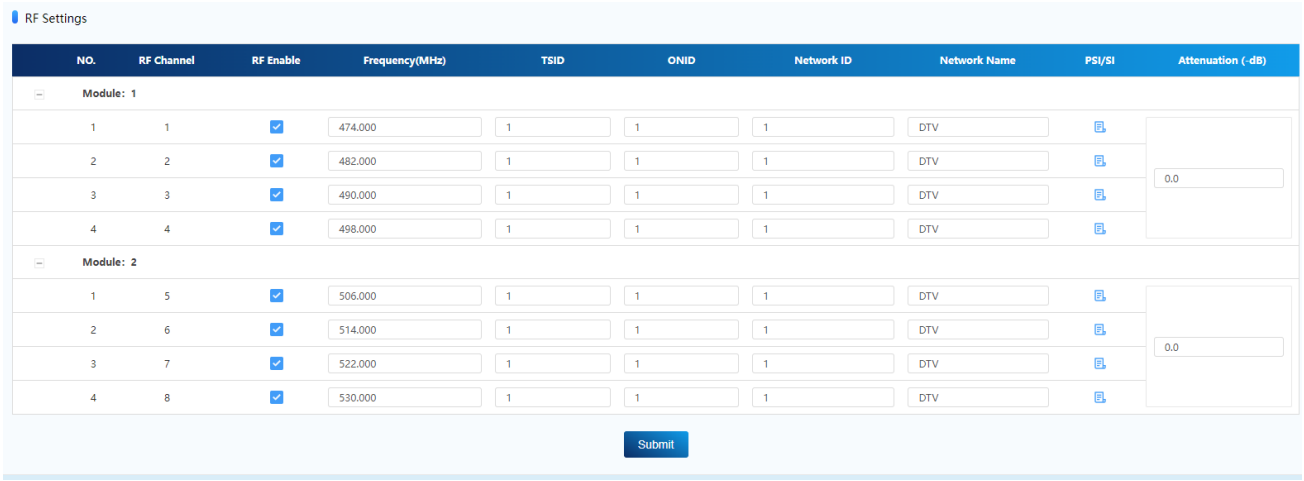
Note: The remaining parameter settings are consistent with those in routing management.

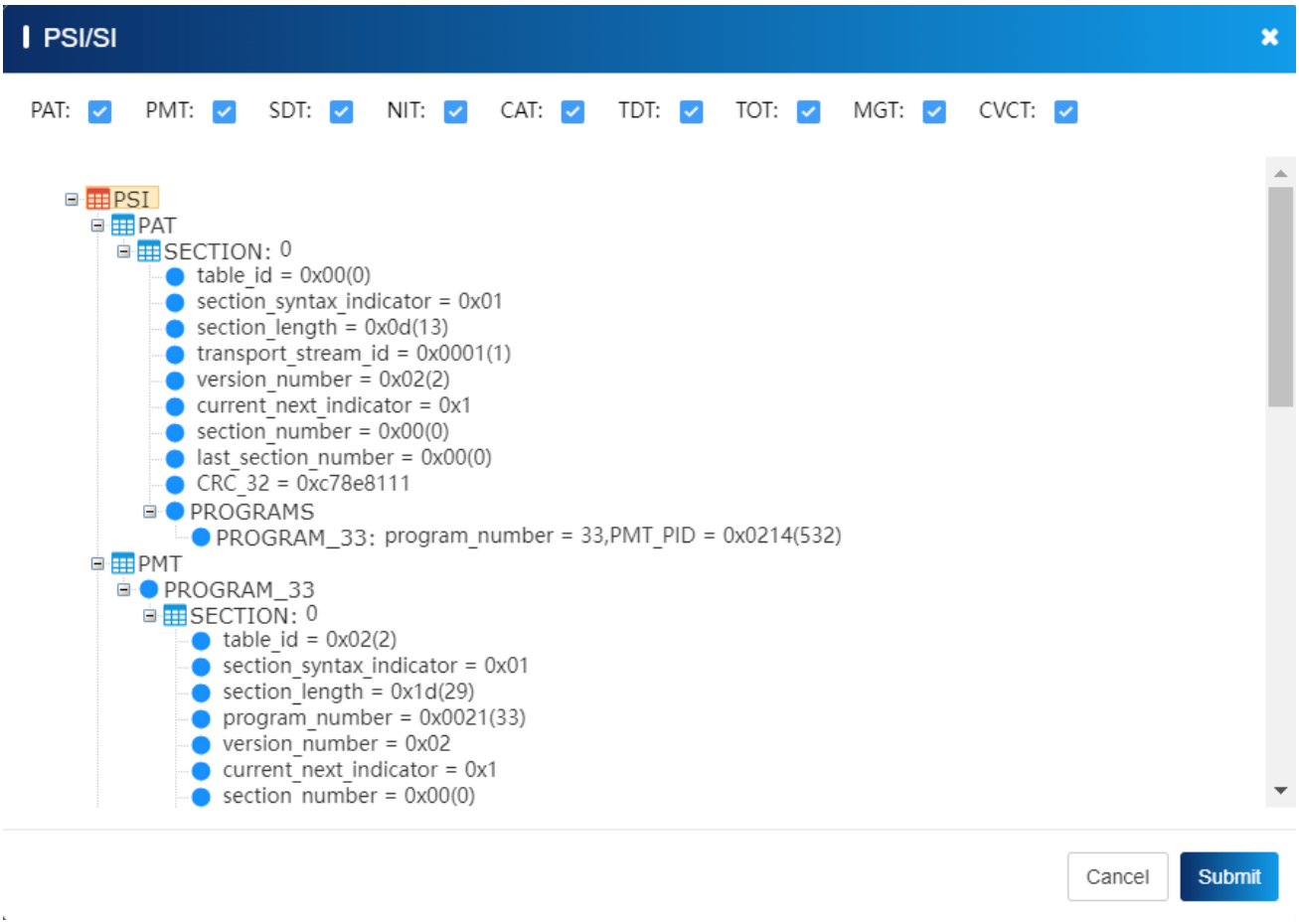
4.6.2. RF settings



Set the 8 output channels in the RF settings. There are 2 modules; each module has 4 RF frequencies.

Note: Modified data must be submitted successfully to take effect.



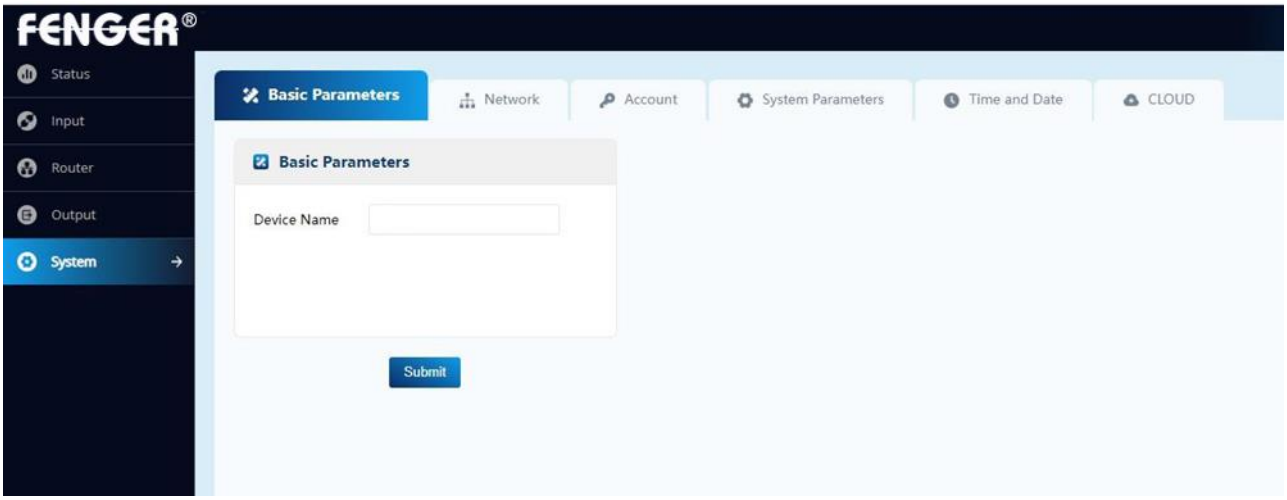


NO.	Display the serial number of the RF channel number to visually display the number of RF channels.	
RF channels	Display the numbers of different channels in the module	
RF enable	Enabled by default. When closed, the output channel is closed	
Frequency	Unit: MHz Set according to actual needs. Value range: 50-999.999	
TSID	Set according to actual needs. Value range: 1-65535	
ONID	Set according to actual needs. Value range: 0-65535	
Network ID	Set according to actual needs. Value range: 0-65535	
Network name	Fill in the network name according to actual needs. Value range: 32 bytes.	
PSI/SI	PAT	Program association table. Associating the program number with the program mapping table PID is the beginning of data acquisition.
	PMT	Program mapping table, specifying the PID of one or more programs.
	SDT	Business description table, describing various program and service information in the transmitted digital television signal.

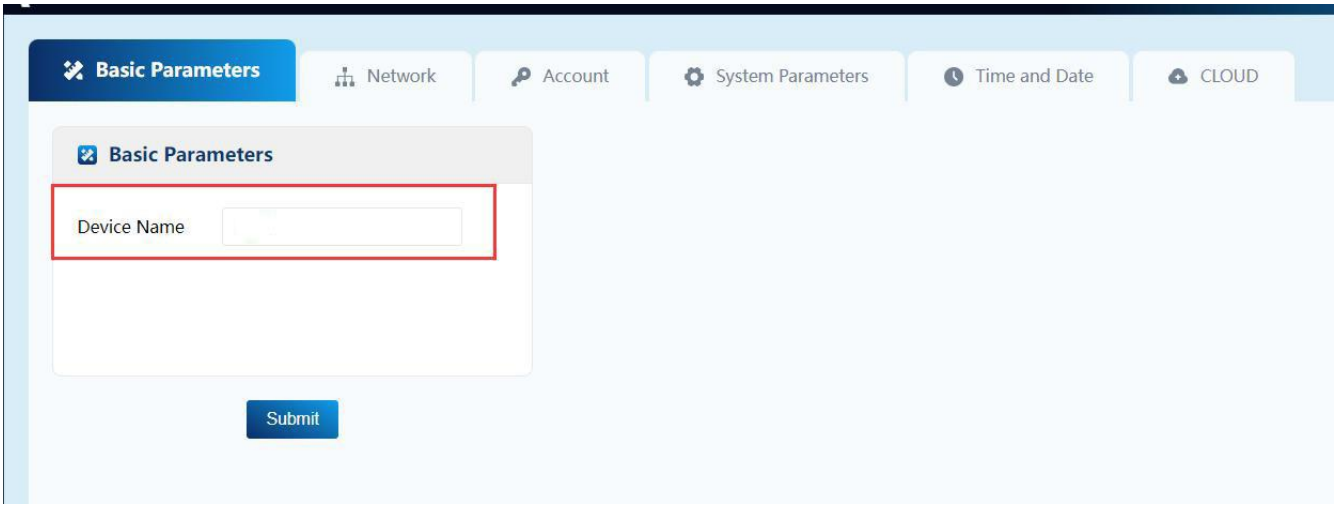
	NIT	The network information table describes the entire network, such as the number of TS streams, frequency points, modulation methods, etc.
	CAT	A conditional access table that associates one or more dedicated EMM flows with a unique PID.
	TDT	Time and date table. TDT is one of the various service information (SI) tables contained in the MPEG-2 transport stream. It is the abbreviation of time and date table and is used to update the internal clock of the IRD.
	TOT	Time offset table. Gives information about the current time, date, and local time offset.
	MGT	Main wizard table. Master Wizard Table (MGT) is like an index to all other PSIP tables.
	CVCT	Cable virtual channel list
Attenuation	Adjust when the TV signal is poor, 0 is the default value. The setting range is 0-20, in steps of 0.5, and the maximum value can only be changed to 20.	
Submit	Modifying the data in the form will take effect only after successful submission.	

4.7. System

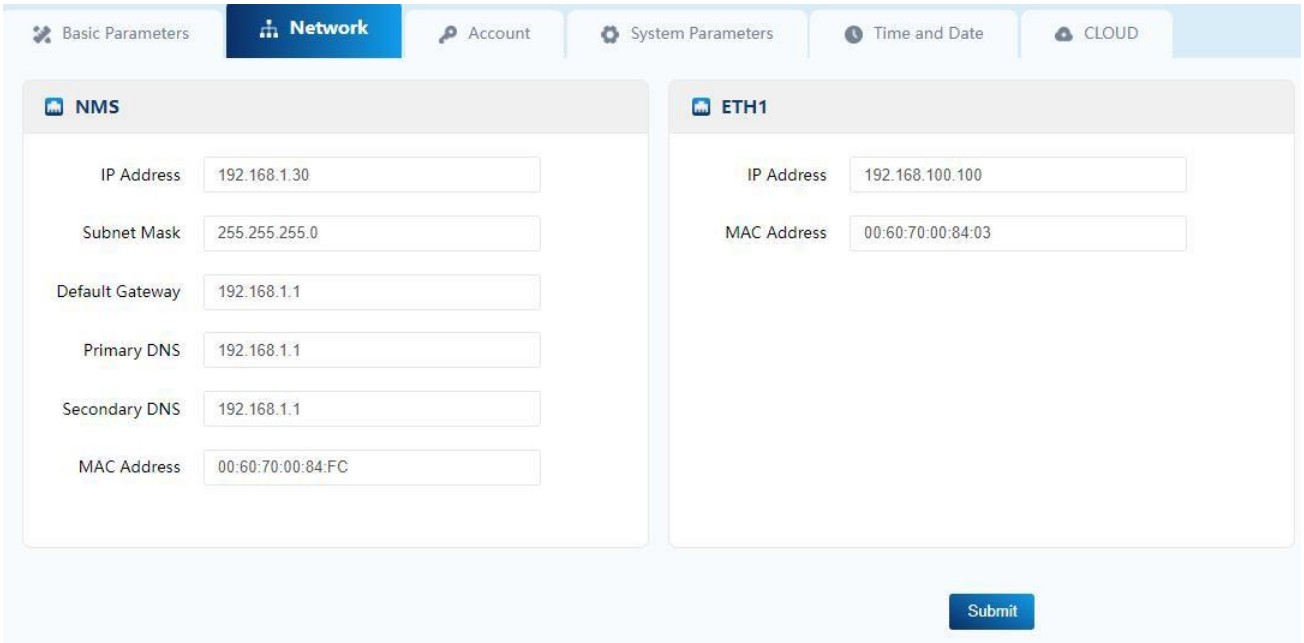
Able to perform network and IP input network port settings, password settings, system configuration, time settings and cloud network management binding.



4.7.1. Basic parameters



4.7.2. Network



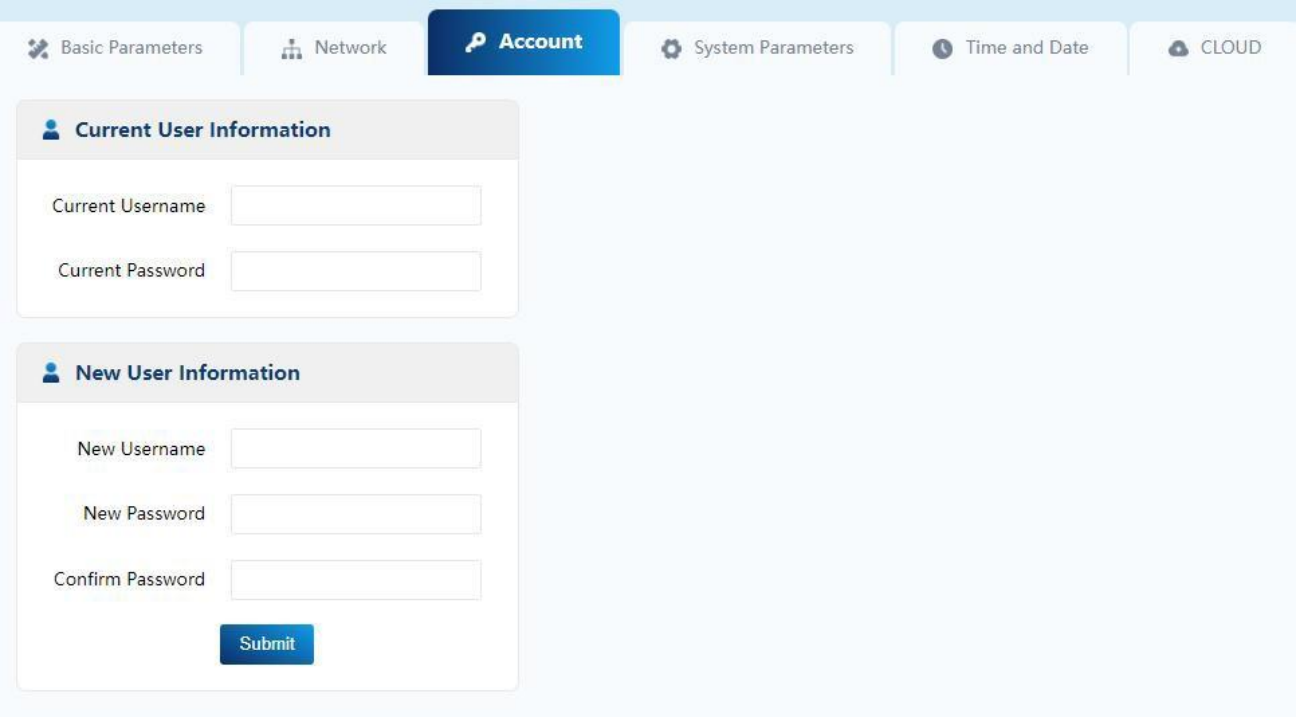
Network	
NMS	Network management port, connected computers must be in the same network segment.
ETH1	Network port 1; fill in according to actual needs.

IGMP version: IGMPv1 defines the basic group member query and reporting process. IGMPv2 adds a mechanism for querier election and group member departure on this basis. The main function added in IGMPv3 is that members can specify to receive or not to receive certain Packets from the multicast source.

4.7.3. Account

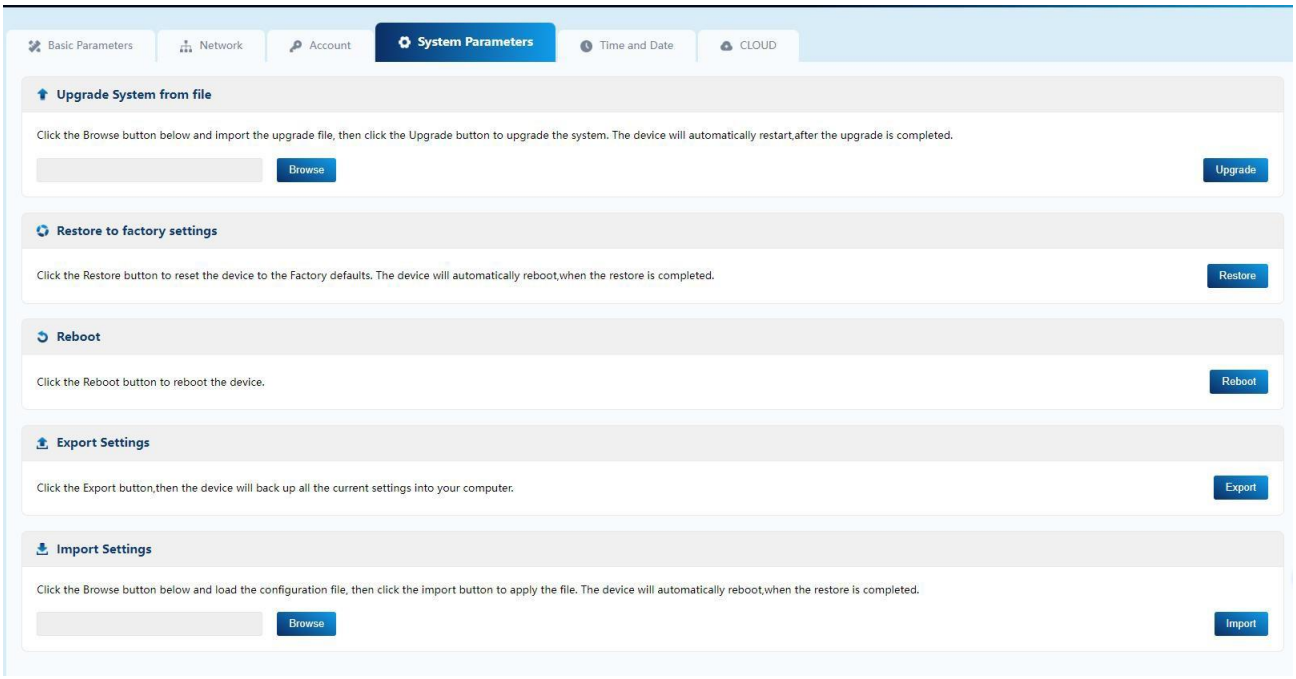
Reset a new username and password.

Operation steps: First fill in the username and password in the initial information, and then fill in the new username and password. Only when the initial username and password are entered correctly can the password be modified.



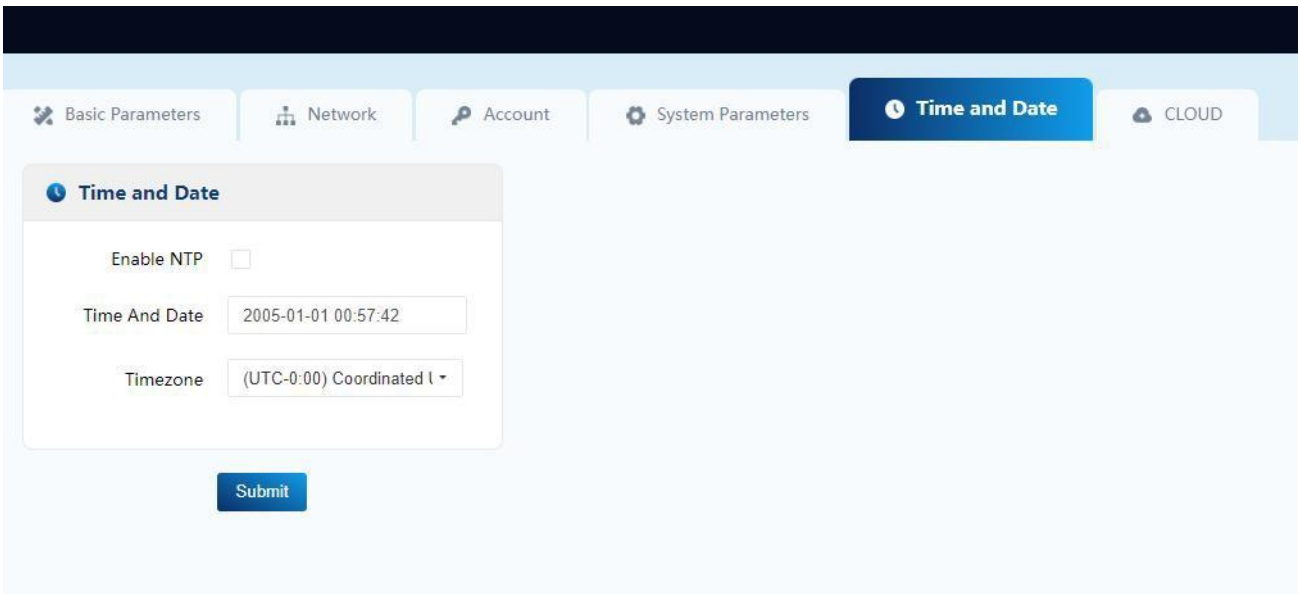
4.7.4. System parameters

In the system configuration, follow the operating instructions to upgrade the system, restore the factory, restart, export the system configuration file, and import the system configuration file. The import and export files can manually back up the system configuration information. When you need to restore the previous configuration information, import the corresponding configuration file is enough.



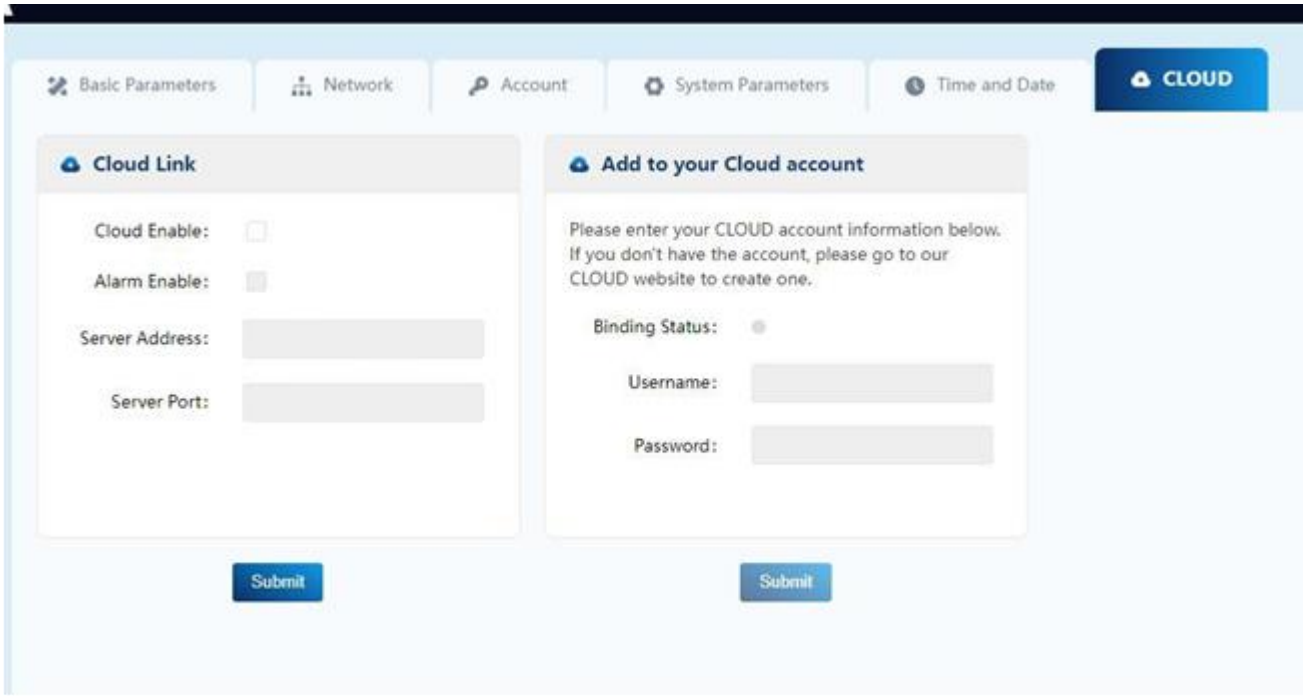
4.7.5. Time and Date

It can automatically calibrate time information, or manually set the time and adjust the time zone according to actual needs.



4.7.6. Cloud

Please enter the cloud network management system account to bind the device. If you do not have an account, please register an account in the cloud network management system. Enter the cloud network management account and password to bind. After the binding is successful, the binding status light turns green.



Cloud enable	Cloud network management is enabled, checked by default. After unchecking, the device will be disconnected from the cloud network management.
Alarm enable	Checked by default, device alarm information can be detected on the cloud network management.
Server domain name	Fill in the server domain name of the cloud network management.
Server port	Fill in the server port of the cloud network management.
Binding status	Green: Binding successful; Gray: Unbound.
Username	User name registered on the cloud network management system.
Password	Password registered on the cloud network management system.

5. Equipment operation precautions

The company's product quality assurance system includes equipment testing and operating procedure inspections to ensure the reliability of product quality. The company has taken all possible measures before the product leaves the factory. The optical, electrical and mechanical indicators of the products all meet national standards. During use, in order to prevent possible potential problems, the following precautions should be strictly followed for relevant operations.

5.1. Precautions

1) Place the device at an ambient temperature of 0~45°C. Other conditions meet the required scope of work.
2) Make sure the rear panel radiator is well ventilated and make sure all jacks are not blocked.
3) Check whether the power supply voltage is within the specified range and whether all connections are correct.
4) Check whether the adjustment level (dB) change is within its allowable range.
5) Check whether the connection of each signal line is loose.
6) Please do not switch machines frequently (the switching interval should be at least 10 seconds).

5.2. The chassis needs to be unplugged from the power supply

1) The power cord or socket is damaged.
2) If there is liquid injection equipment.
3) Any debris falls into the chassis hole, causing an internal short circuit.
4) Use water or soak.
5) Collision or internal damage.
6) Do not use this machine for a long time.
7) If the preset is restored and the power is turned on, the device still does not work properly.
8) Equipment needs maintenance.

5.3. Common malfunctions

1) No signal: Please check whether the modulation standard of the device is consistent with the receiving standard.
2) Missing program: Please check whether there is a channel conflict, whether the video signal input is normal, and restart the device.

These terms are subject to change without prior notice, and we reserve the right of final interpretation. If you have any further questions, please contact our sales department directly.