NETWORK TIME SERVER

GF-NTP-MINI

USER GUIDE

Contents

1 Introduction

The GF-NTP-MINI is a stratum 1 NTP server with an integrated GNSS receiver. It provides NTP output. The NTP server uses GNSS (Global Navigation Satellite Systems) signals from GPS, GLONASS, BeiDou, and QZSS as the primary time source for synchronization.

The time server has small size box, convenient installation, ultra-low power consumption.

2 Key Features

- 6000 transaction/second for every port
- NTP accuracy 0.5-2ms
- Web UI monitoring and management
- Multi-GNSS receiver (GPS, GLONASS, Beidou and QZSS)
- NTP v2 (RFC 1119)，NTP v3 (RFC 1305)，NTP v4 (RFC5905)
- SNTP v3 (RFC 1769), SNTP v4 (RFC 2030)
- NTP md5 authentication
- NTP Unicast and Broadcast mode
- GPSd is supported via ethernet port 1 (TCP protocol, port 4001)
- 6 ~ 24 VDC
- Power consumption <2W

3 Mechanical Size

Mechanical size: 80 W × 23.80 H × 90 D (mm)

4 Physical Specifications

Item	Label	Comment
1	ANT	GNSS input, SMA connector
2	Ethernet	RJ45 connector, 10BASE-T/100BASE-TX Default IP: 192.168.0.100
3	PW	Power indication
4	NTP	NTP service state ON - Active, OFF - Stop
5	DC 12V	6V ~ 24V DC input

5 GNSS Antenna Placement

The antenna receives the GNSS satellite signals and passes them to the receiver. The GNSS signals are spread spectrum signals in the 1575 MHz to 1610 MHz range and do not penetrate conductive or opaque surfaces. Therefore, **the antenna must be located outdoors with a clear view of the sky.**

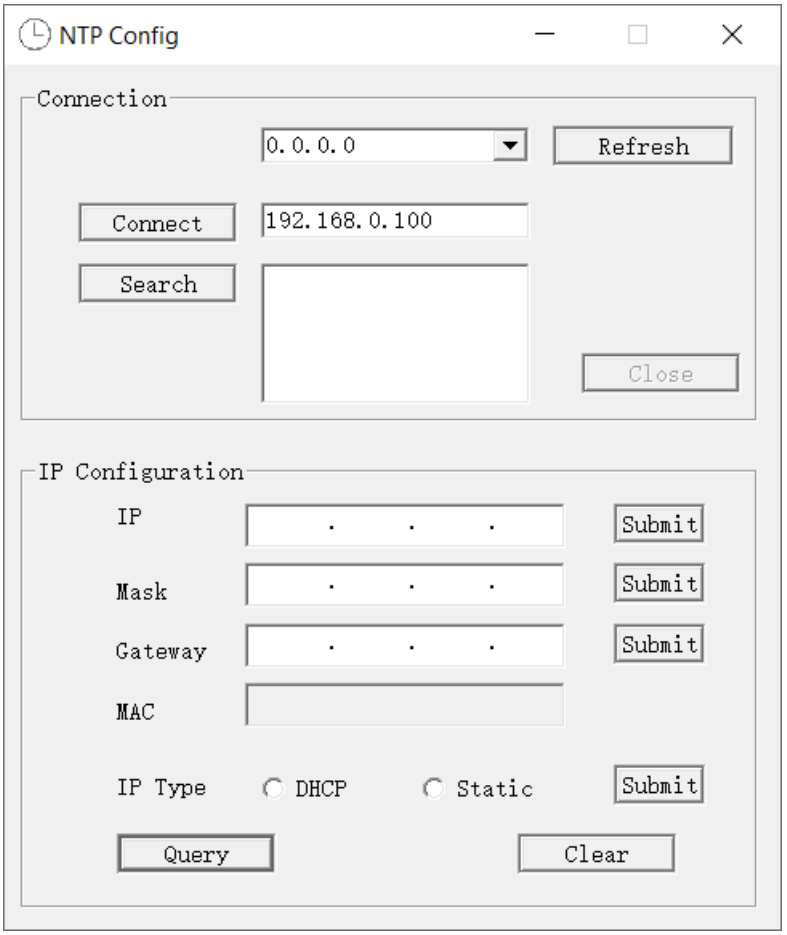
GNSS signals can only be received on a direct line of sight between antenna and satellite. The antenna should see as much as possible of the total sky. Seen from the northern hemisphere of the earth, more satellites will be visible in the southern direction rather than in northern direction. The antenna should therefore have open view to the southern sky. If there are obstacles at the installation site, the antenna should be placed south of the obstacles, preferably, in order not to block sky-view to the south.

If the installation site is in the southern hemisphere of the earth, then the statements above are reversed – more satellites will be visible in the northern direction. Near to the equator, it doesn't matter.

6 IP Configuration with Software

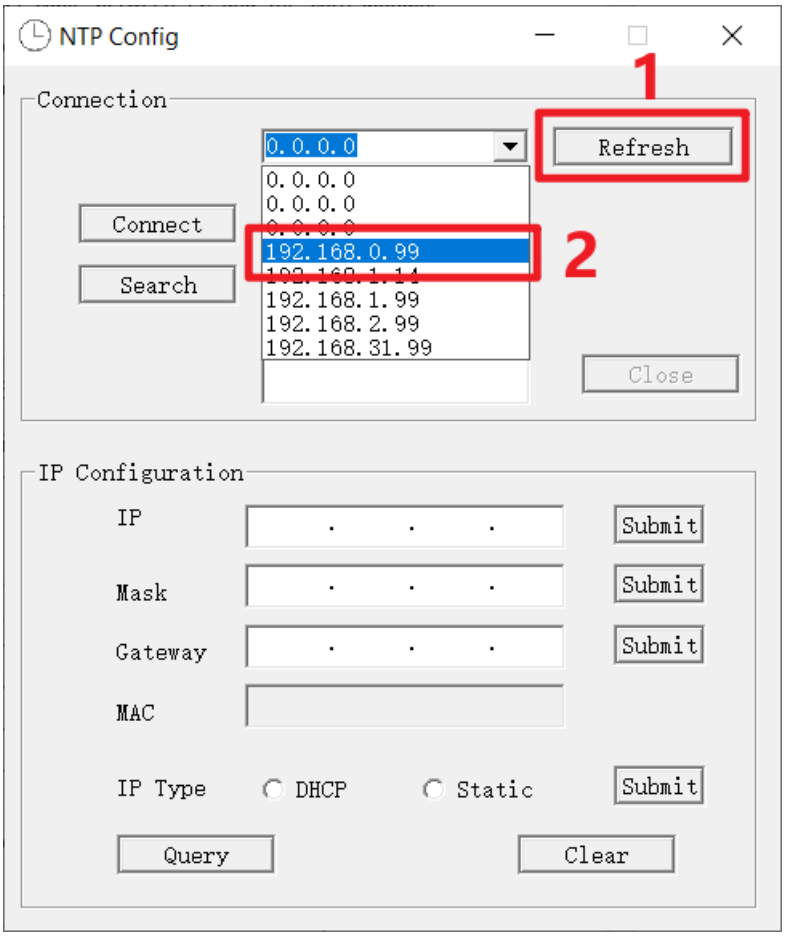
Prepare a PC and plug the ethernet cable between PC and the corresponding ethernet port which to be configured. For example, if you want to configure the IP address of ethernet port 2, then should connect the cable to it. The IP configuration software looks like below picture.

The default subnet is 192.168.0.X for this NTP server, so the IP address of the PC must been set to the same subnet before the configuration.



1. Click the Refresh button

2. Select the IP which connected to NTP server port from the list box

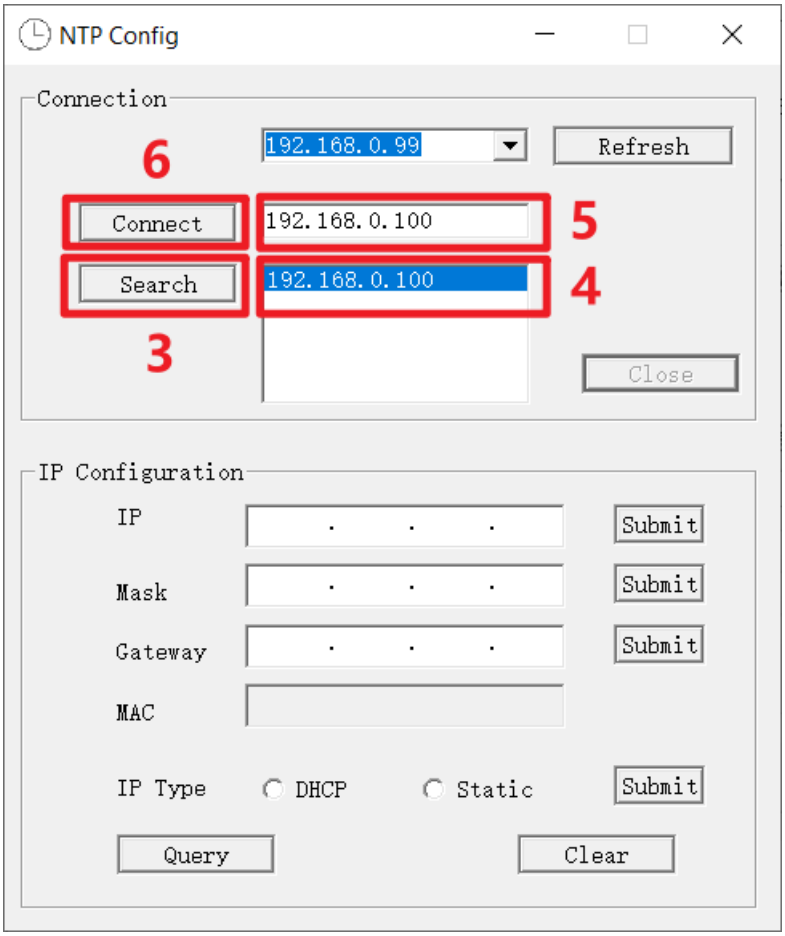


3. Click the search button

4. The IP address will be scanned on the edit box

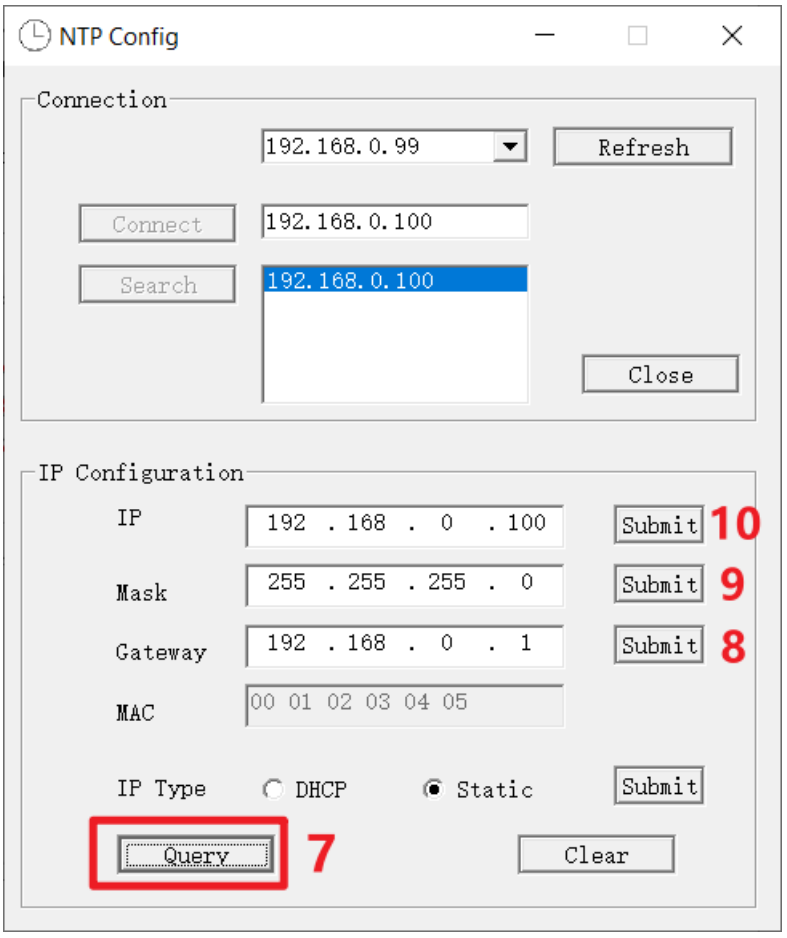
5. Input the scanned the IP address on the edit box right of connect button

6. Click the connect button



7. Click the Query button

8. Edit the value on the IP edit box, and then click the set button to modify the IP. The suggested modification order is Gateway - > Mask - > IP address



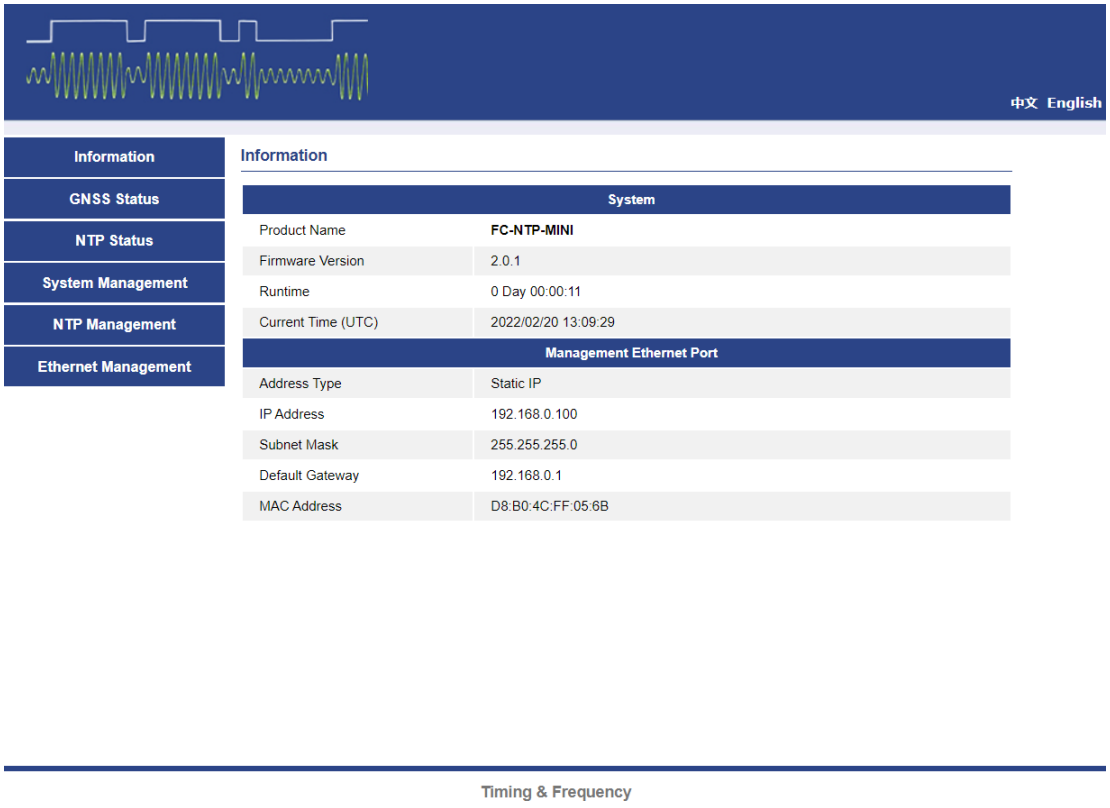
Note: If you want to check the configuration then click the Close button and reconnect the port from step 1 and query the IP parameters.

7 Web Interface

7.1 Main Page

Web access is permitted only through Ethernet port 1. Launch a web browser and open a connection to the NTP Server by entering the URL that specifies the IP address, http://192.168.0.100 with username admin, password admin by default. Internet Explorer is not supported, Firefox, and Chrome are recommended.

Entering the IP address will launch the main page.

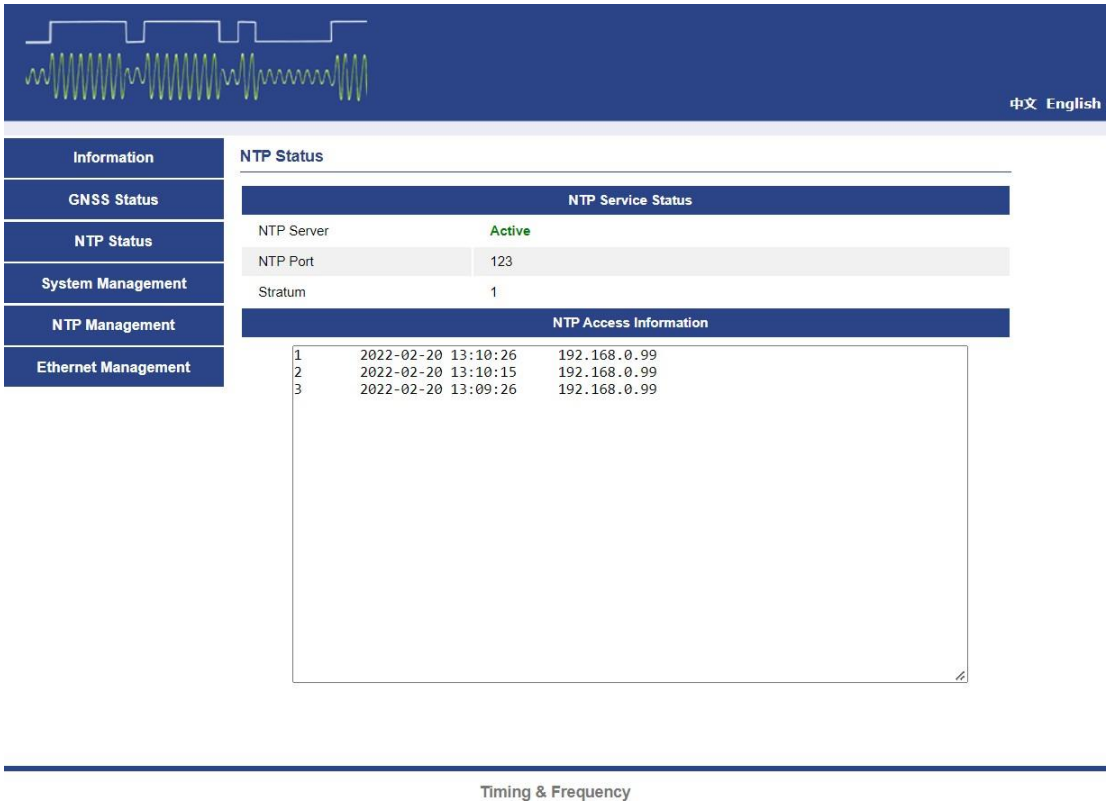


7.2 GNSS Status

The antenna connection, constellation, satellites tracking, and position information can be viewed on the GNSS status page.

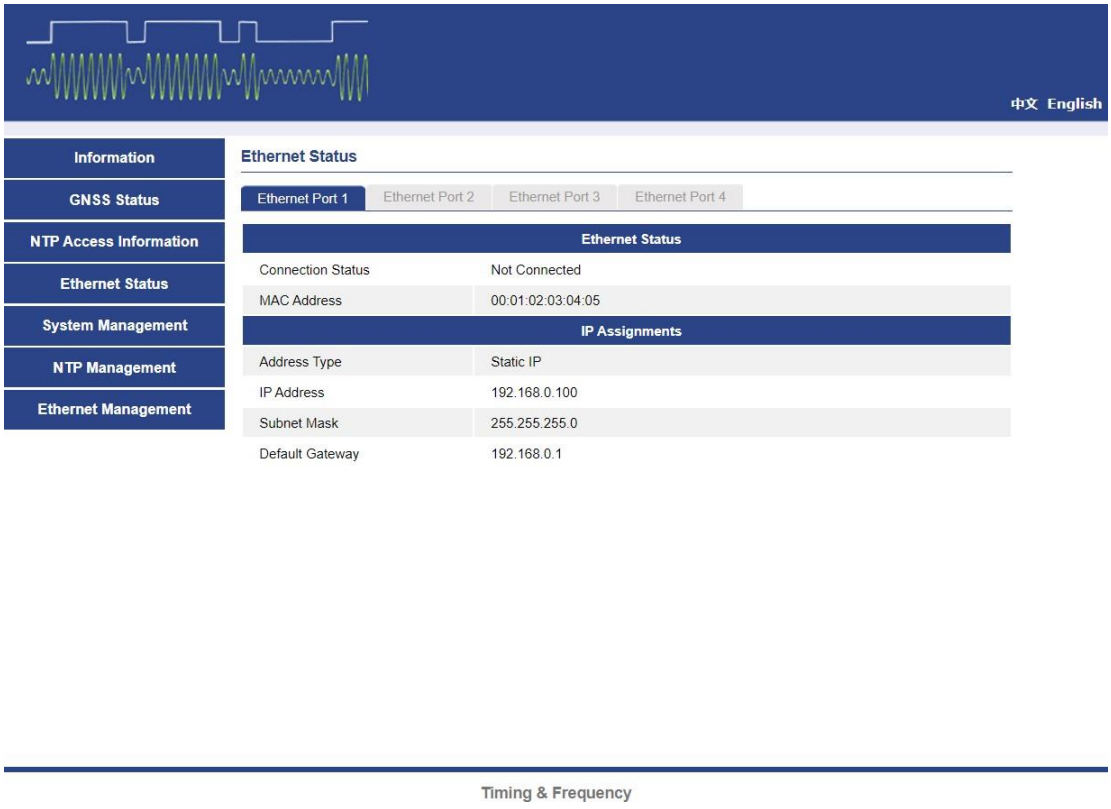
7.3 NTP Access Information

The NTP service status and clients access information can be viewed on this page.



7.4 Ethernet Status

The connection status and IP address configuration can be viewed on this page.



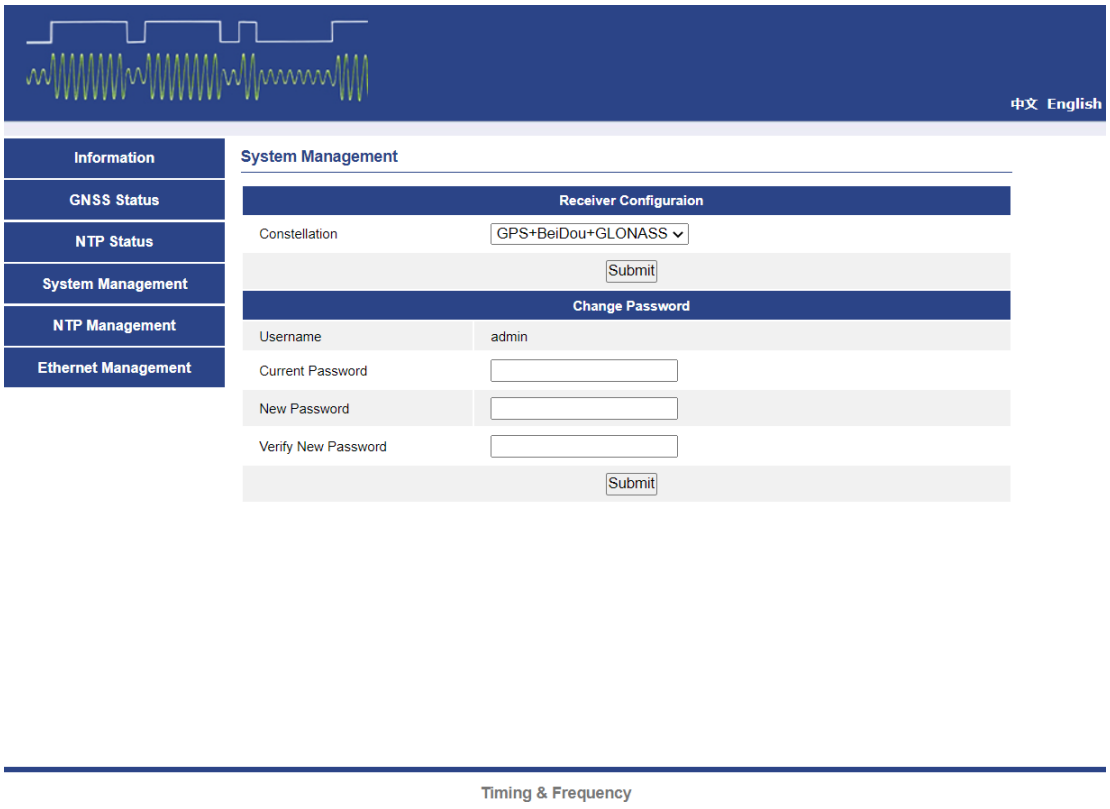
7.5 System Management

7.5.1 Receiver Configuration

The constellation can be configured as GPS only, BeiDou only, GPS + BeiDou, GPS + GLONASS, GPS + GLONASS + BeiDou.

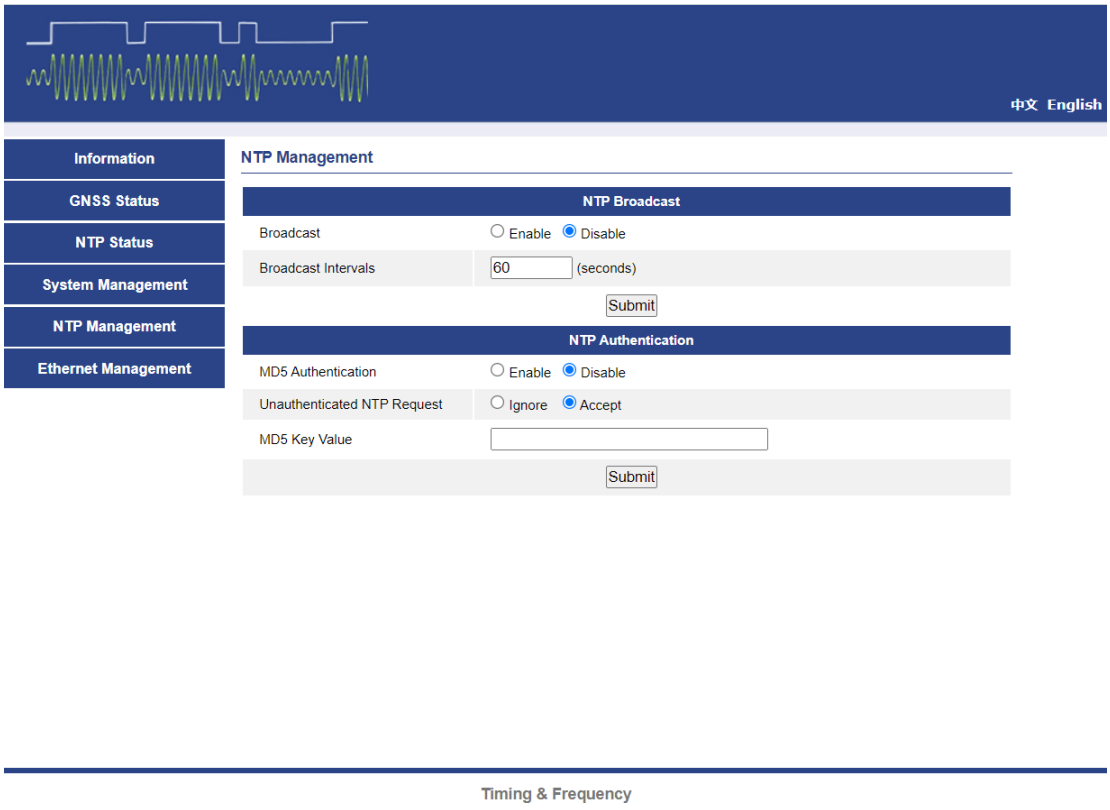
7.5.2 Change Password

The password can be changed on this page, please note that the default login name is admin, and can't be modified.



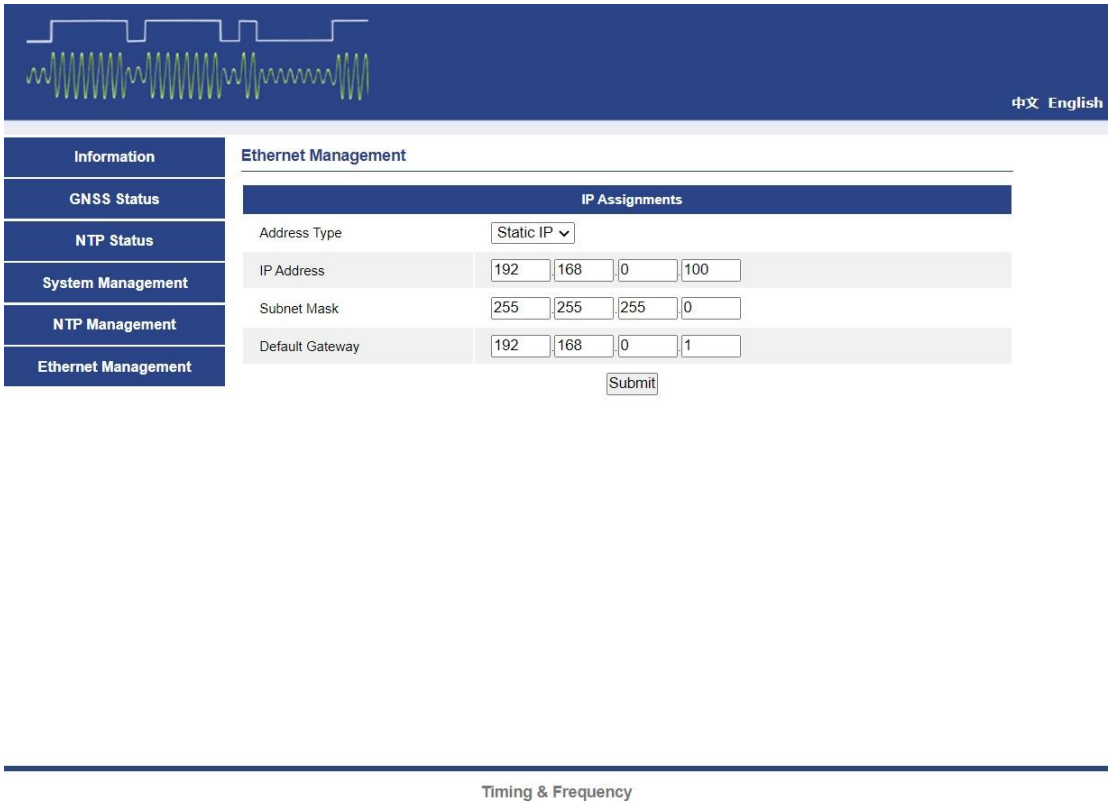
7.6 NTP Management

NTP broadcast and authentication of all ethernet ports can be configured on this page.



7.7 Ethernet Management

The IP address can be configured on this page.



8 Specification

NTP

Parameter	Description
Interface	10BASE-T/100BASE-TX Conforms to the IEEE 802.3
Connector	RJ-45
Accuracy	0.5-2ms
Standard	NTP v2 (RFC 1119) NTP v3 (RFC 1305) NTP v4 (RFC5905) SNTP v3 (RFC 1769) SNTP v4 (RFC 2030)
MD5 Authentication	Yes
NTP Broadcast	Yes

GNSS Receiver

Parameter	Description
Constellation	GPS L1 Beidou B1 GLONASSL1 QZSS L1
Antenna Power Feed	3.3V
Horizontal Position Accuracy	<2.5 m CEP50 (autonomous) <2 m CEP50 (SBAS)
Vertical Position Accuracy	<5 m CEP50 (autonomous) <3 m CEP50 (SBAS)
Time to First Fix	<46s (50%), <50s (90%) cold start
Sensitivity	Tracking: -160 dBm Acq: -148 dBm
Dynamic	Velocity 515m/s

Power

Parameter	Description
DC Input Voltage	6 ~ 24 VDC
Power Consumption	< 2W

Environmental

Parameter	Description
Operating Temperature	-40 ~ 85℃
Storage Temperature	-40 ~ 85℃
Operating Humidity	5% ~ 95% RH (non-condensing)
Storage Humidity	5% ~ 95% RH (non-condensing)