Tonmind Network IO Relay Module

SIP-T30

User Manual



Xiamen Tonmind Technologies Co., Ltd.

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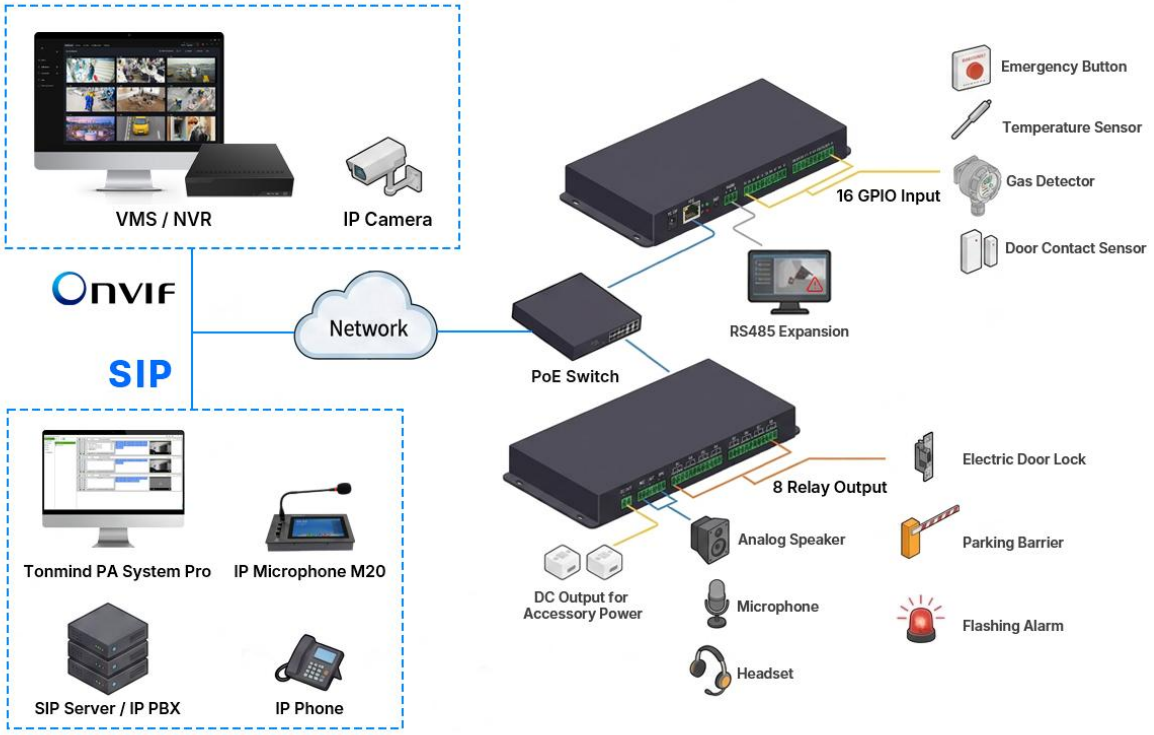
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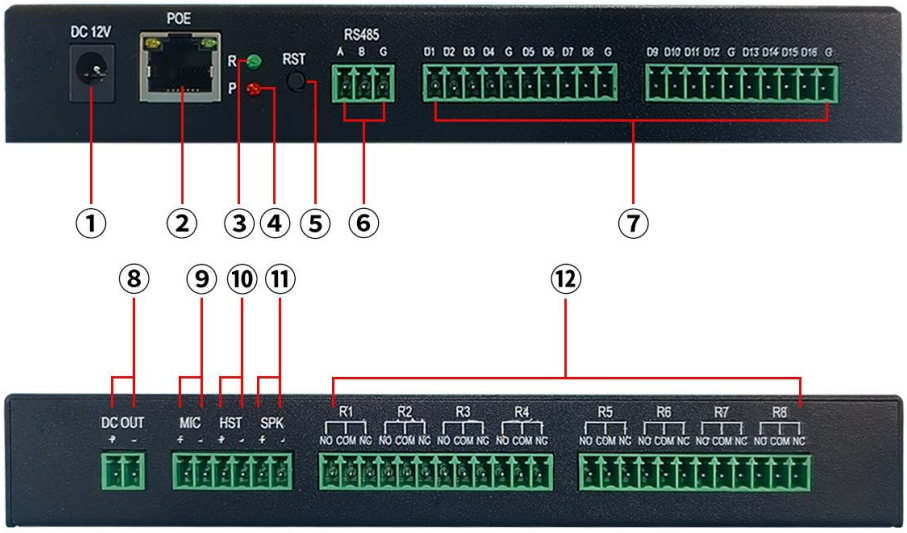
1. Introduction

The Tonmind SIP-T30 Network I/O Relay Module is a multifunctional IP-based controller designed for security, alarm integration, audio communication, and building automation systems. It provides 16 GPIO alarm inputs for connecting emergency buttons, environmental sensors, and other detection devices, together with 8 relay outputs for controlling door locks, parking barriers, warning lights, sirens, and other external equipment.

The T30 supports SIP and ONVIF protocols, allowing integration with IP PBX systems, VMS/NVR platforms, CCTV systems, and other network management platforms. It also supports RS485 Modbus communication for industrial and automation applications. With MIC input, headset output, speaker output, and a built-in 15W amplifier, the device can provide live broadcasting and two-way intercom functions. It supports both PoE and DC 12V power supplies and can be easily configured through its web management interface, making it suitable for smart buildings, access control, parking systems, industrial automation, IP audio, and remote monitoring applications.



2. Interface Specification



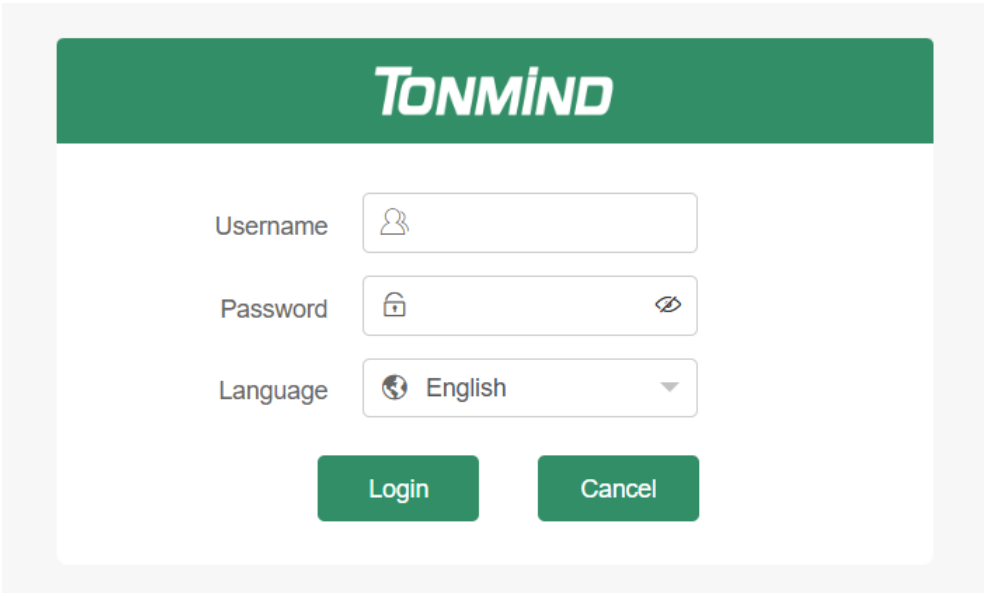
Label	Description	Label	Description
①	DC 12V Power Input	②	PoE Interface
③	Status LED	④	Power LED
⑤	Reset Button	⑥	RS485 Interface
⑦	GPIO Input Interface	⑧	DC 12V output Interface
⑨	Microphone Interface	⑩	Headset Interface
⑪	Speaker Interface	⑫	Relay Interface

3. Web Configuration

Web configuration includes complete function setting, after the device and PC are connected to a same network, type the device's IP address in a web browser, the default IP address is 192.168.5.200, then log in with defaulted username and password as below.

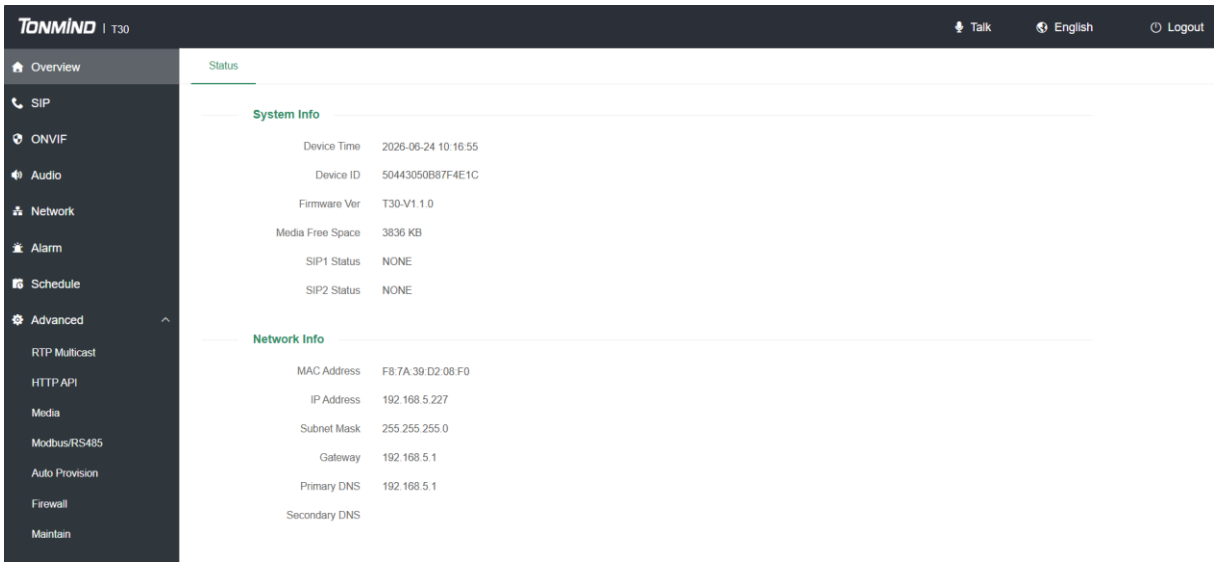
Username: admin

Password: tm1234



3.1 Overview

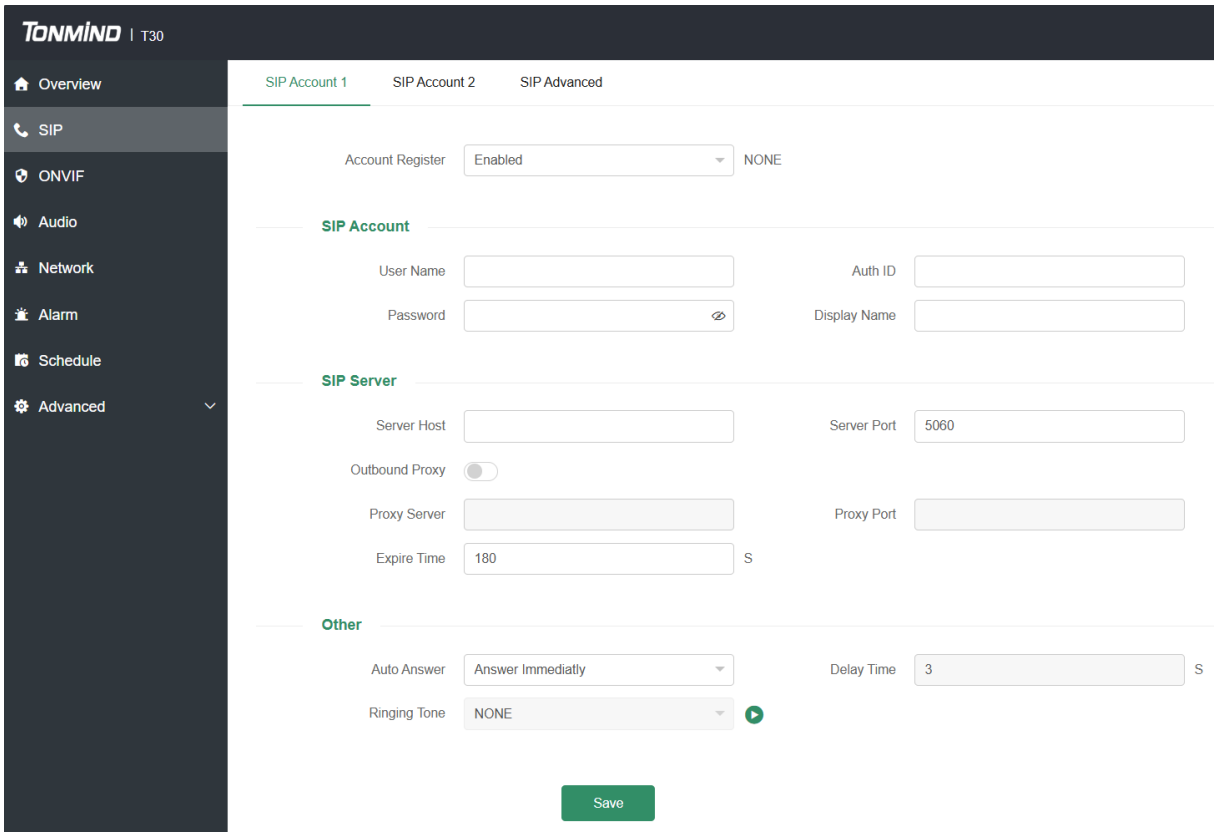
The device status page displays the device time, firmware version, available storage space, SIP account status, and network information including MAC address, IP address, subnet mask, and gateway.



3.2 SIP

3.2.1 SIP Account

Each T30 supports two SIP accounts. Enter the SIP server and extension information into the corresponding fields and save the configuration, then check the registration status to confirm whether the account has successfully registered.



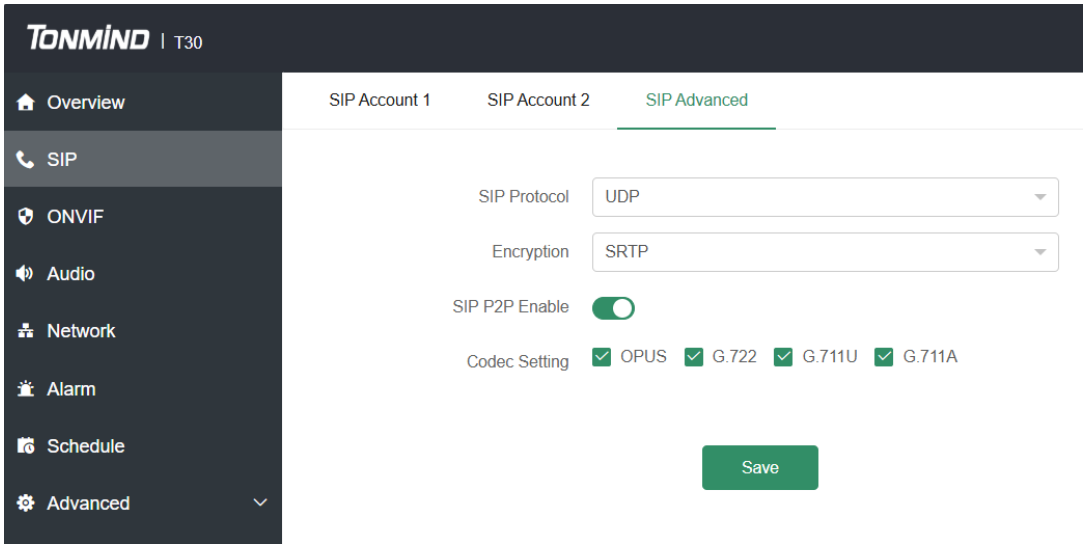
User Name	User account, provided by SIP server.
Auth ID	SIP service subscriber's ID used for authentication.
Password	Account password provided by SIP server.
Display Name	SIP service subscriber's name.
Server Host	SIP server address.
Server Port	SIP port, default to be 5060.
Outbound Proxy	It is used to process signals and help data streams to go through firewall or NAT if there have.
Expire Time	Set the expire time of registered account information.
Auto Answer	Answer immediately and answer delay when a calling income.
Ringing Tone	5 system ringtones and 10 users upload media files.

3.2.2 SIP Advanced

On the SIP Advanced page, users can configure the SIP transport protocol, audio encryption, SIP P2P mode, and audio codecs.

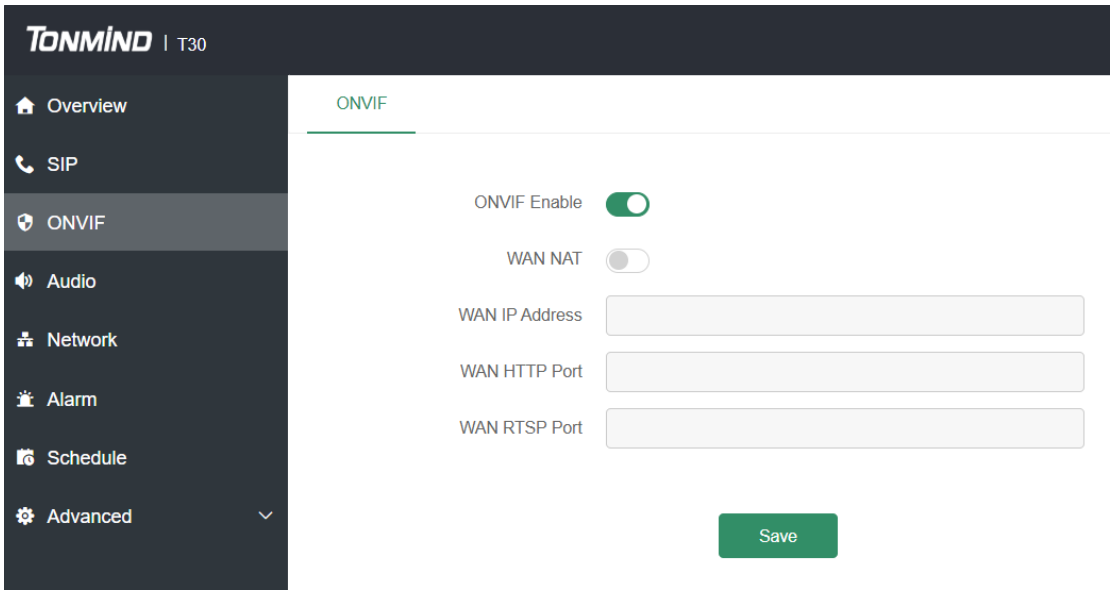
- SIP Protocol: Select UDP, TCP, or TLS.
- Encryption: Enable SRTP for secure audio transmission.
- SIP P2P Enable: Allows devices on the same local network to communicate directly without a SIP server.
- Enter the target device's SIP address, for example: sip:192.168.5.200.
- Codec Setting: Select the required audio codecs, including OPUS, G.722, G.711U, and G.711A.

Click Save to apply the settings.



3.3 ONVIF

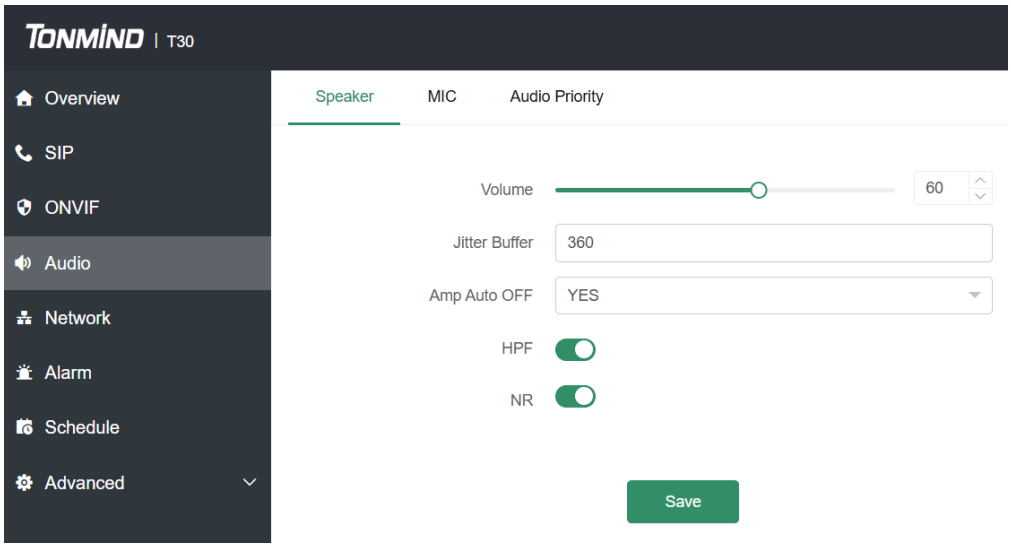
- Enable ONVIF to allow the device to be discovered by ONVIF VMS systems. The ONVIF username and password are the same as the IP Speaker login credentials.
- For WAN NAT, configure port forwarding on the router to ensure proper communication between the server and the public internet. Then enable WAN NAT on the speaker web page and enter the IP address, HTTP Port, and RTSP Port.



3.4 Audio

3.4.1 Speaker

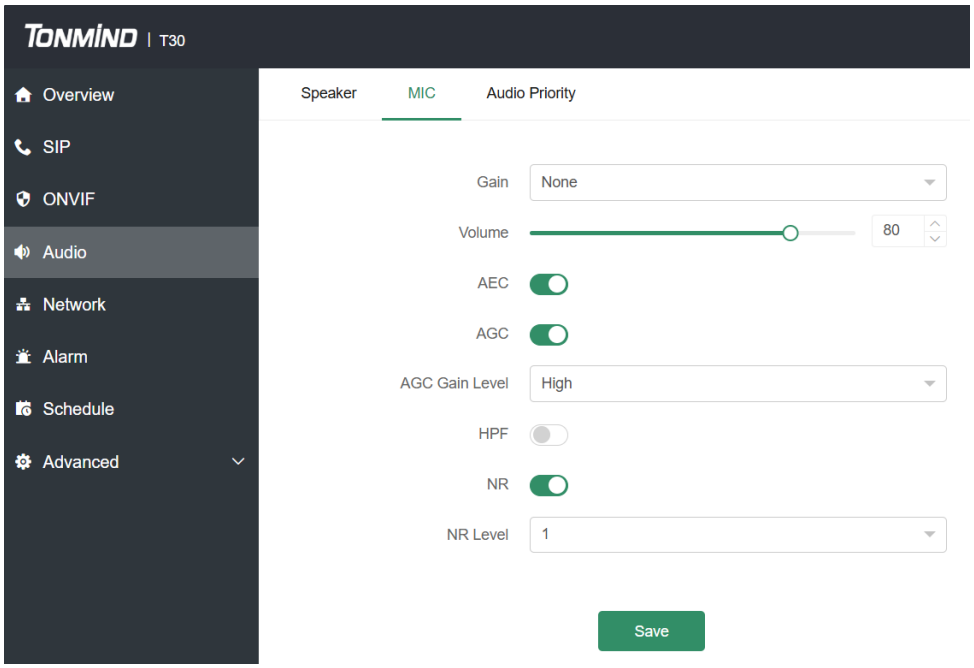
The T30 is equipped with a Speaker Output interface, which can be configured and adjusted in this section.



- Volume: Adjust the speaker output volume.
- Amp Auto OFF: Default setting is "YES". When the speaker is not playing audio, the built-in amplifier will automatically turn off to reduce power consumption.
- Jitter Buffer: Improves audio playback stability under network transmission.
- HPF: High Pass Filter. Filters frequencies below 150Hz to improve audio clarity.
- NR: Noise Reduction. Reduces background noise from the audio input to improve sound quality when enabled. The function is processed by the built-in audio chip.

3.4.2 MIC

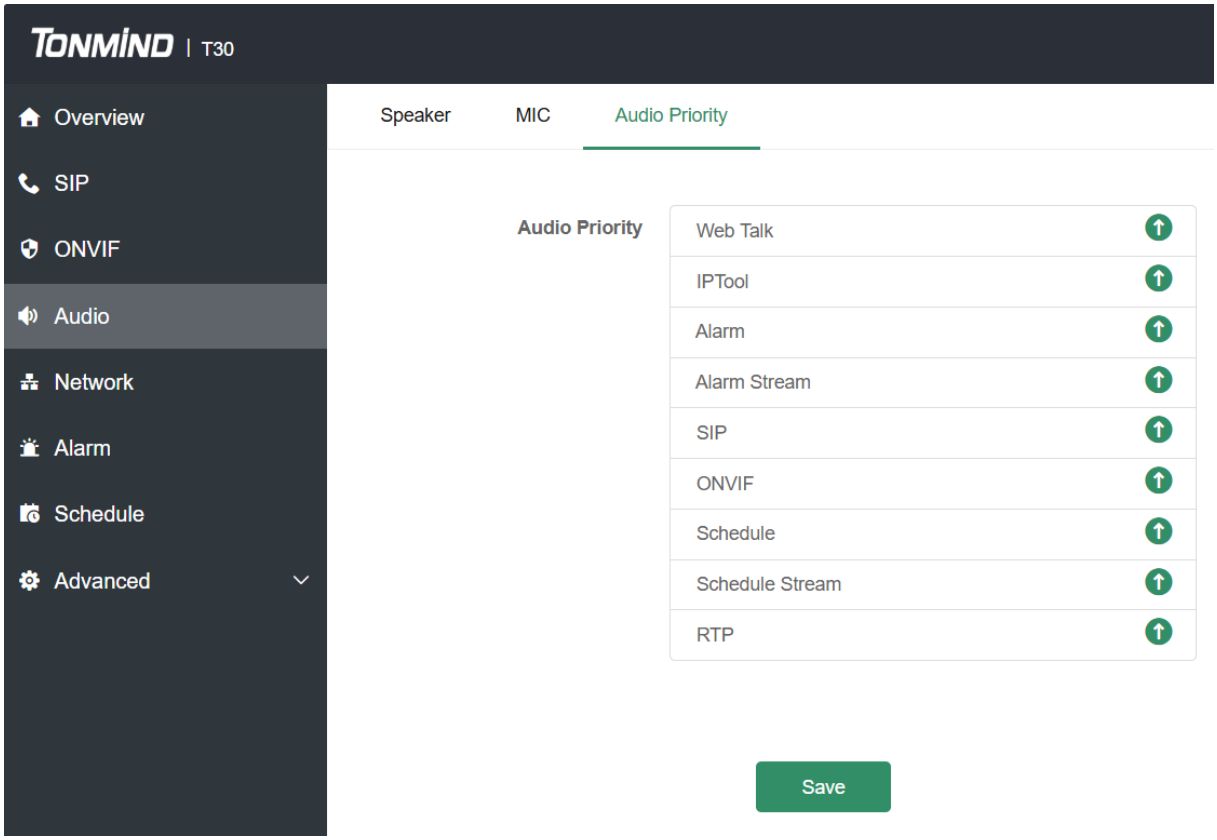
The T30 is equipped with a Microphone Input interface, which can be configured and adjusted in this section.



- Gain: Four levels (None, Low, Middle, High) for different input sensitivity.
- Volume: Adjusts microphone output volume.
- AEC (Acoustic Echo Cancellation): Reduces echo during communication.
- AGC (Automatic Gain Control): Automatically adjusts mic gain for stable audio levels.
- AGC Gain Level: Sets AGC strength (High, Middle, Low).
- HPF (High Pass Filter): Filters low-frequency noise below 150 Hz.
- NR (Noise Reduction): Reduces ambient noise from mic input. Three levels (0, 1, 2).

3.4.3 Audio Priority

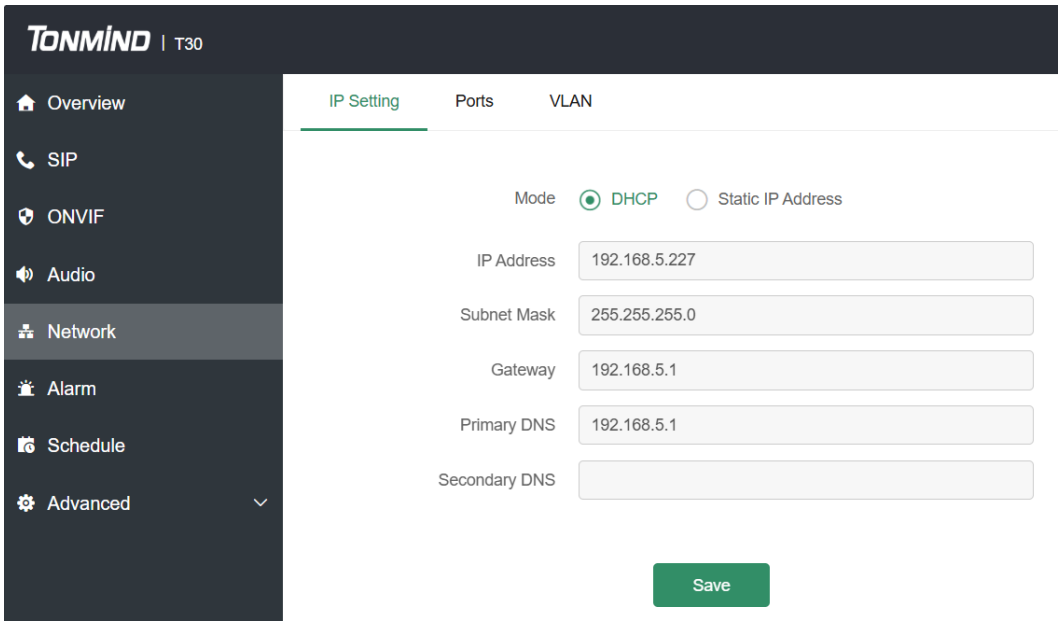
On the Audio Priority page, users can set the priority order of different audio sources. Click the up arrow beside an audio source to move it to a higher priority.
A higher-priority audio source will interrupt a lower-priority source. For example, when SIP is placed above RTP, an incoming SIP call will interrupt RTP multicast playback. After the SIP call ends, RTP playback will resume automatically.
Click Save to apply the settings.



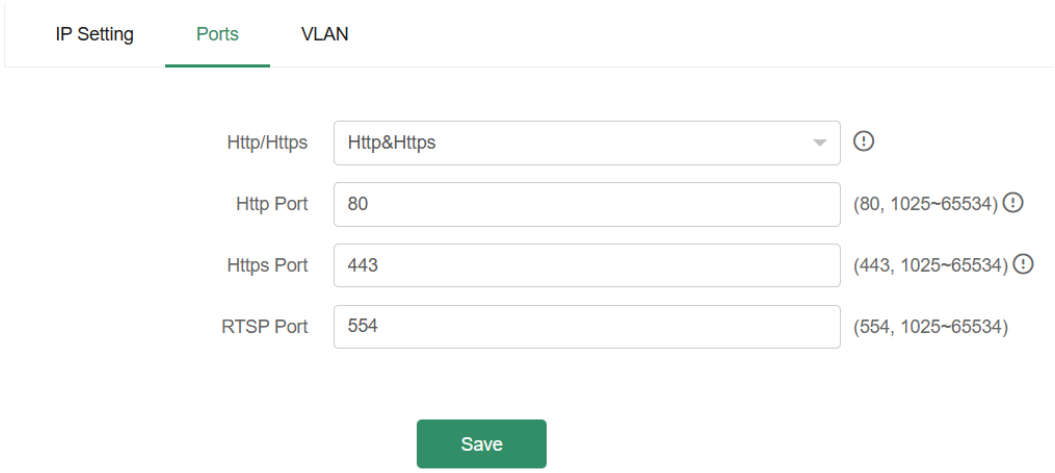
3.5 Network

IP Setting: Select DHCP or Static IP Address.

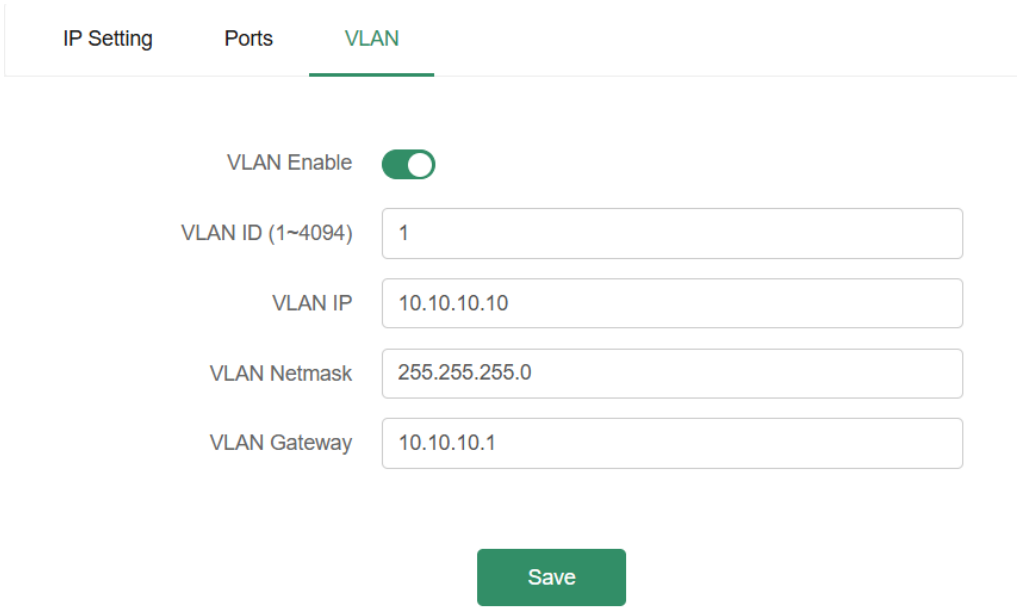
- DHCP: The IP address is automatically assigned by a DHCP server.
- Static IP Address: Manually configure the IP Address, Subnet Mask, Gateway, Primary DNS, and Secondary DNS as required.



Ports: Configure the HTTP, HTTPS and RTSP port numbers.



VLAN: Enable “VLAN Enable” to configure the VLAN ID, VLAN IP, VLAN Netmask, and VLAN Gateway.



3.6 Alarm

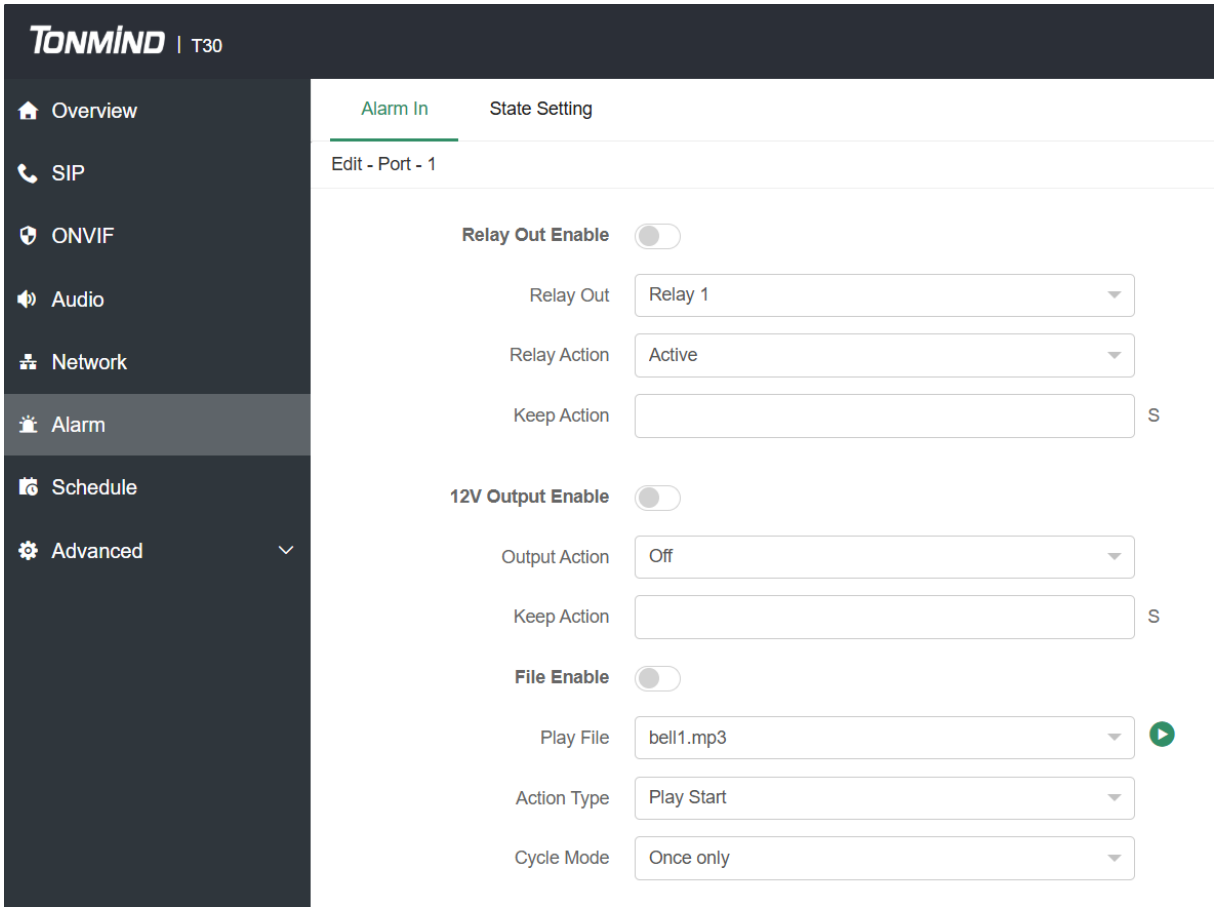
This section includes Alarm In and State Setting for configuring alarm inputs and event-triggered actions.

3.6.1 Alarm In

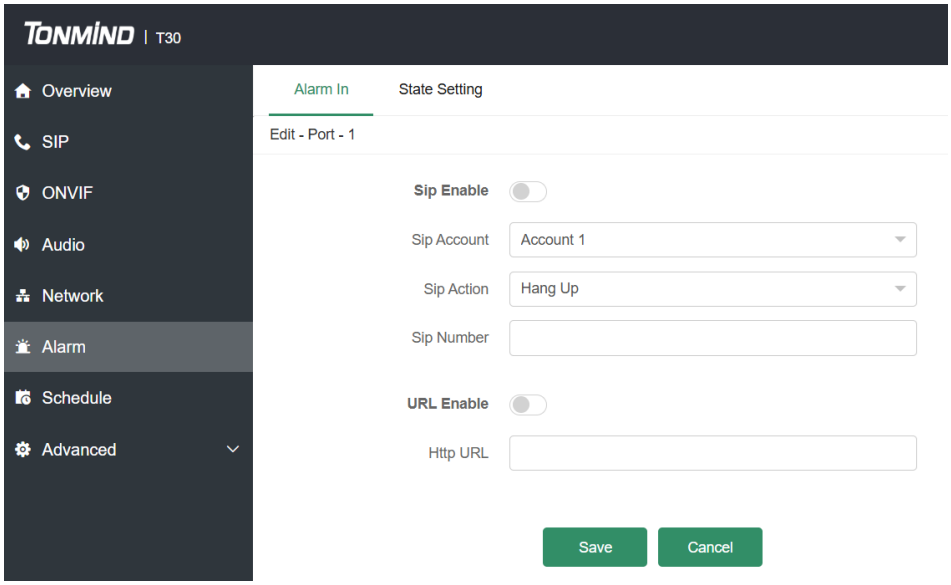
The T30 provides 16 GPIO input ports and supports event triggering through two SIP accounts. Select a GPIO port or SIP account to configure the corresponding action.

● GPIO Input Actions:

Each GPIO input can trigger one or more of the following actions: Relay Out, 12V Output, File, SIP, and URL.



- Relay Out:
  Relay Out Enable: Enable or disable the relay action.
  Relay Out: Select Relay 1-8.
  Relay Action: Select Active or Deactivate.
  Keep Action: Set the action duration in seconds.
- 12V Output:
  12V Output Enable: Enable or disable the 12V output action.
  Output Action: Select On or Off.
  Keep Action: Set the action duration in seconds.
- File:
  File Enable: Enable or disable audio file playback.
  Play File: Select one of the 5 built-in bell files or user-uploaded audio files.
  Action Type: Select Play Start or Play Stop.
  Cycle Mode: Select Once Only, Multiple Times, Duration, or Loop.



- SIP:

  SIP Enable: Enable or disable the SIP action.

  SIP Account: Select Account 1 or Account 2.

  SIP Action: Select Hang Up or Call Out.

  SIP Number: Enter the SIP number to be called.

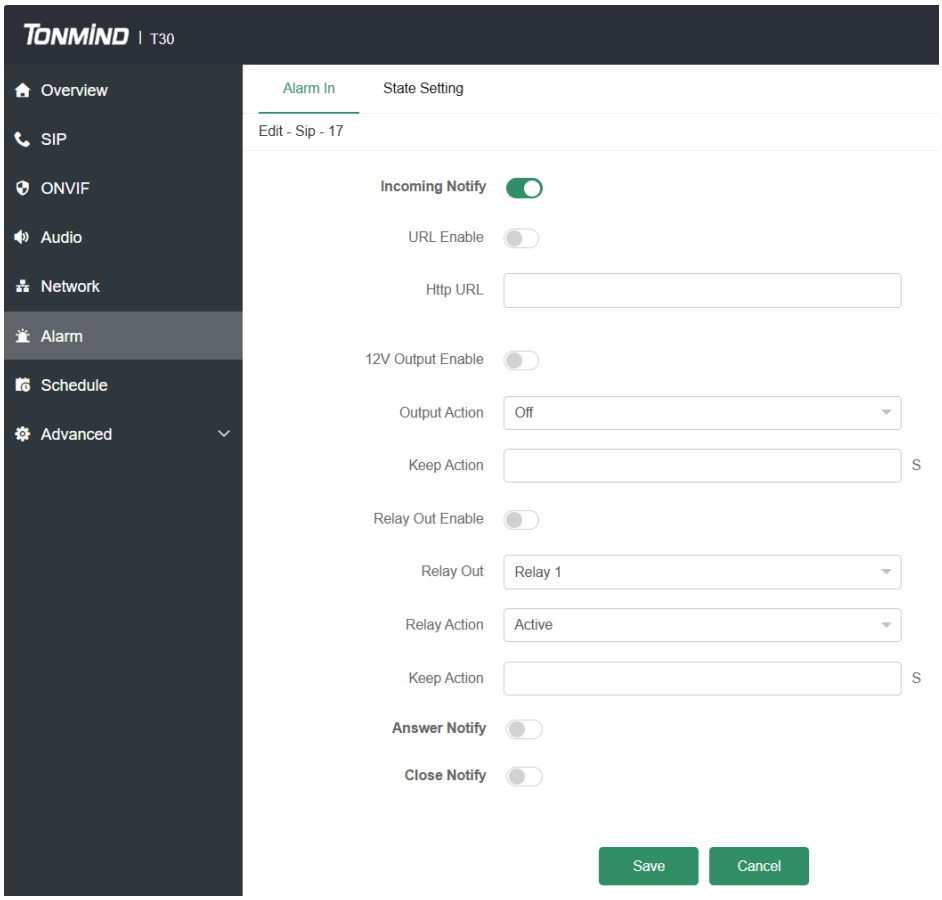
- URL:

  URL Enable: Enable or disable the HTTP URL action.

  HTTP URL: Enter the URL to be accessed when the GPIO input is triggered.

● SIP Event Actions:

For each SIP account, the T30 supports the following call-status triggers:

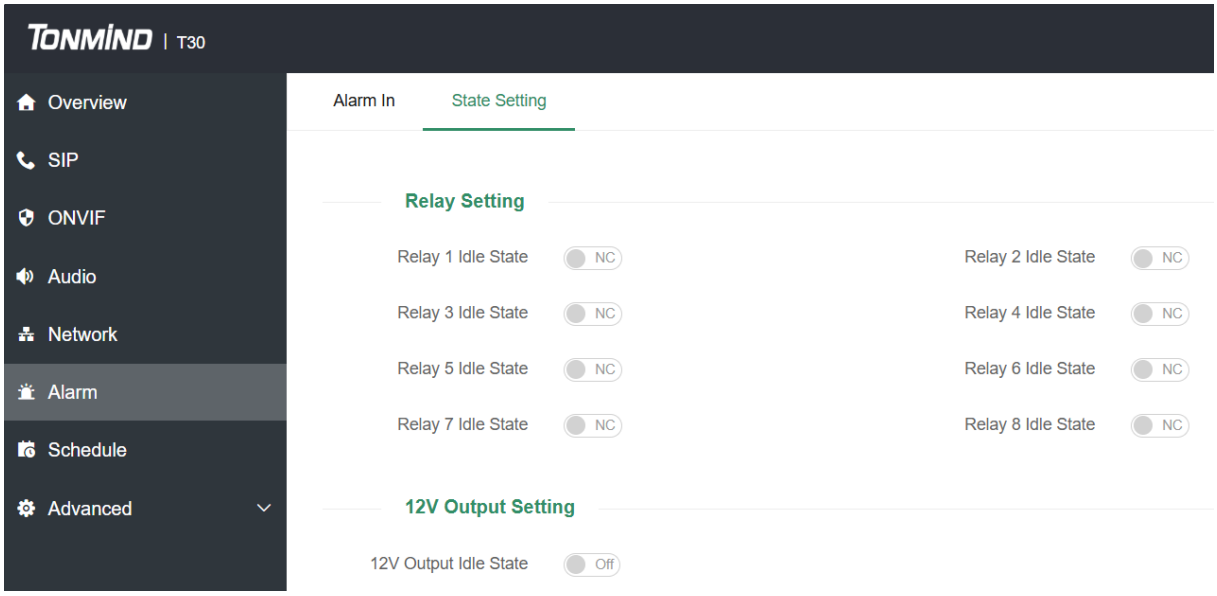


- Incoming Notify: Trigger an action when an incoming SIP call is received.
- Answer Notify: Trigger an action when the SIP call is answered.
- Close Notify: Trigger an action when the SIP call is ended.

Each SIP event can trigger HTTP URL, 12V Output, and Relay Out actions. Enable the required notification event and configure the corresponding actions using the same settings described above.

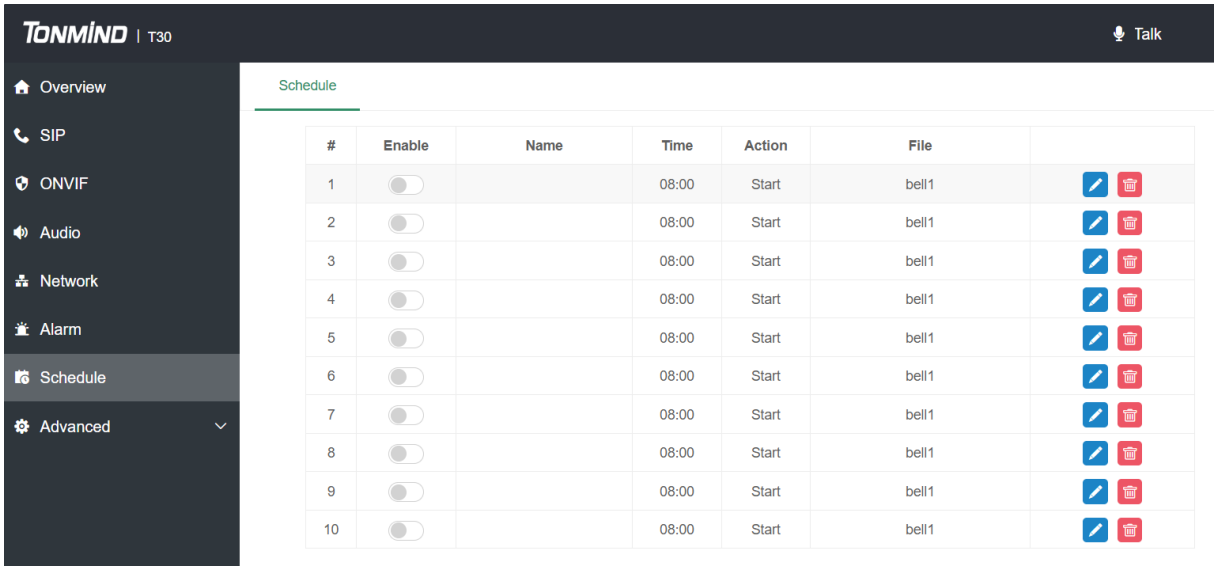
3.6.2 State Setting

The T30 provides 8 relay outputs and one 12V DC output. In this page, you can configure the idle state of each relay as NC or NO, and set the default state of the 12V output to On or Off.



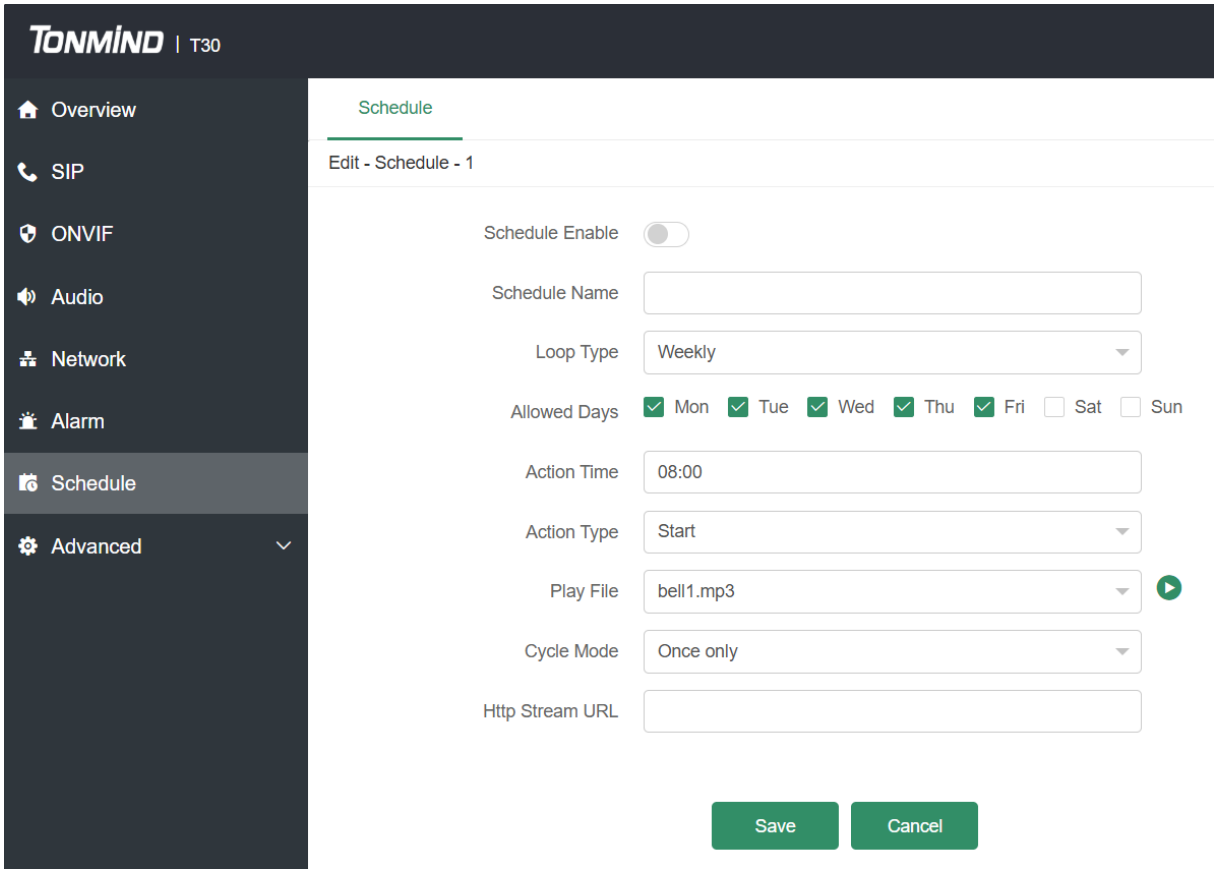
3.7 Schedule

The Schedule section allows you to create and manage up to 10 schedules, and select which ones to enable as needed.



Click the  to enter the schedule configuration page:

- Schedule Enable: Enable or disable the schedule.
- Schedule Name: Enter a name for the schedule.
- Loop Type: Three modes are available:
  - Once Only: Set Start Date and End Date.
  - Daily: Repeat every day.
  - Weekly: Select the days of the week for the schedule to take effect.



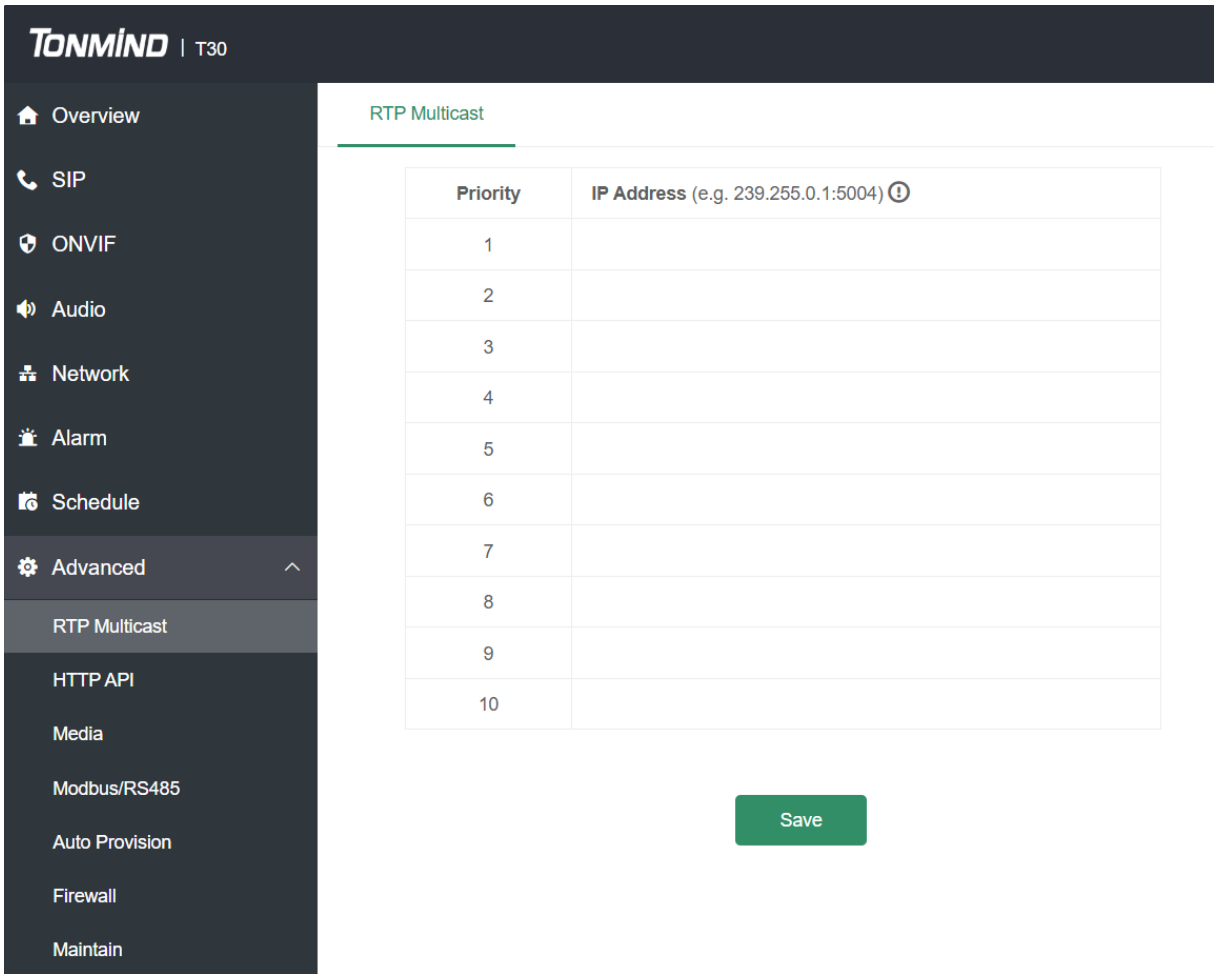
- Action Time: Set the schedule start time.
- Action Type: Select Start or Stop.
- Play File: Select a media file stored in the device.
- Cycle Mode: Available modes: Once Only, Multiple Times, Duration, and Infinite.
- HTTP Stream: Enter an HTTP stream URL to play during the schedule, such as http://listen.livestreamingservice.com/181-greatoldies_128k.mp3

3.8 Advanced

3.8.1 RTP Multicast

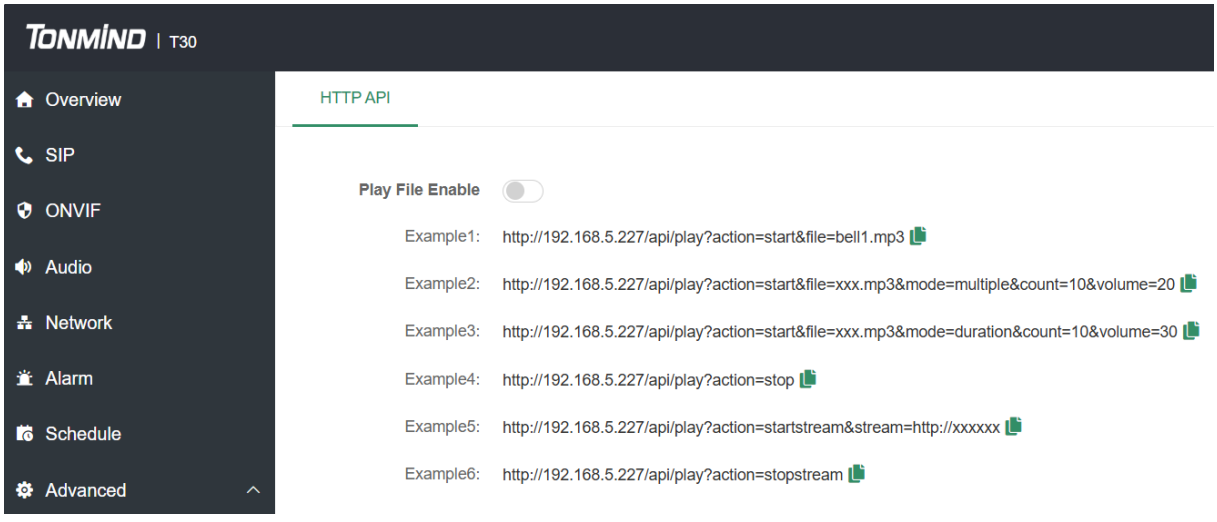
Support 10 RTP addresses, please note that: port numbers do not use continuous numbers when setting the same RTP addresses. Use discontinuous numbers. e.g.:
239.255.1.2:8000，239.255.0.1:8001，239.255.0.1:8002（×）
239.255.0.1:8000，239.255.0.1:8002，239.255.0.1:8004（√）

- Multicast address range: 224.0.0.0-239.255.255.
- Ports range: 1024-65536



3.8.2 HTTP API

The HTTP API section allows you to enable and configure API control for the device. Click Enable to activate the HTTP API and view several usage examples.



3.8.3 Media

The Media section includes Media Manage and Storage Manage for managing audio files and checking available storage space.

● Media Manage

The T30 includes 5 built-in system bell files. You can view and preview these files on the Media Manage page.

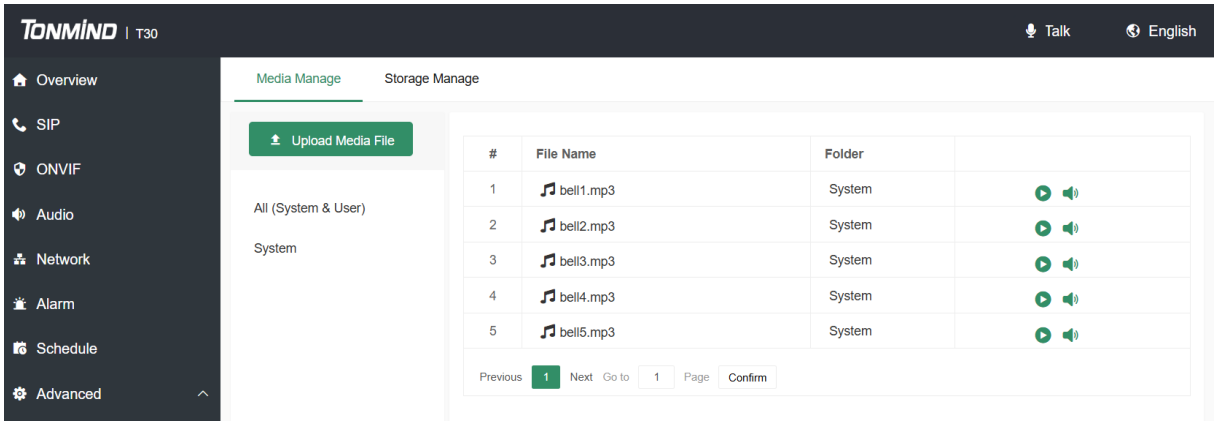
To upload a custom audio file:

Click Upload Media File.

Select the audio file from your computer.

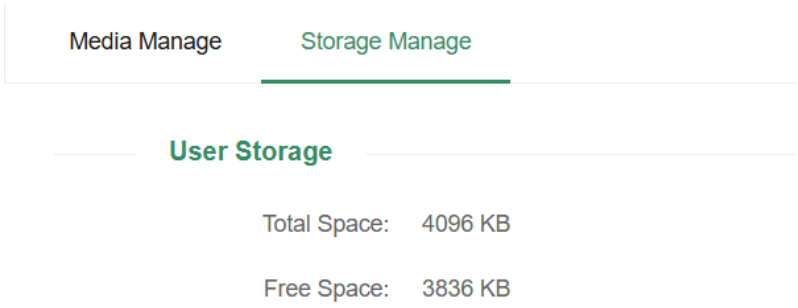
Upload it to the T30 as a user media file.

Uploaded files can be used for alarm triggering, scheduled playback, and other audio actions.



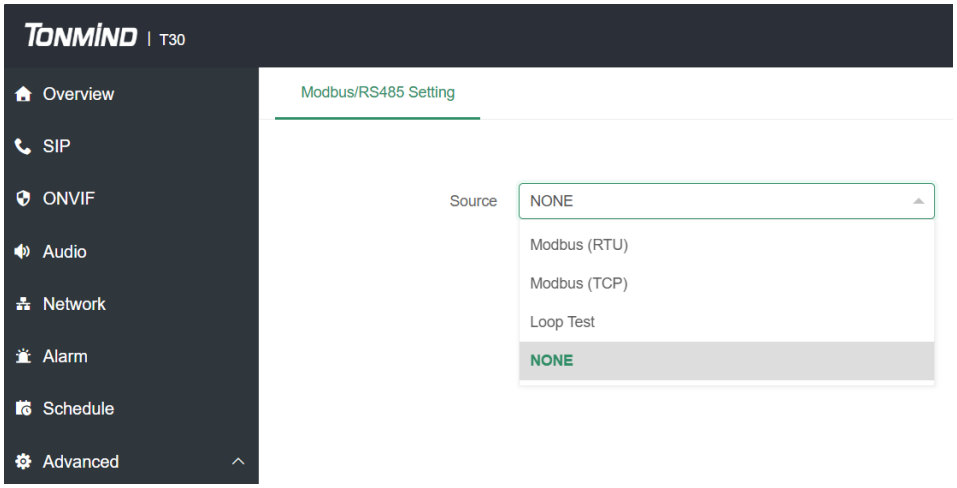
● Storage Manage

The Storage Manage page displays the current Total Space and Free Space storage status.



3.8.4 Modbus/RS485 Setting

The T30 provides one RS485 Modbus interface for integration with external control and automation systems. Select the required Source, including Modbus (RTU), Modbus (TCP), Loop Test, or NONE, configure the corresponding parameters, and click Save to apply the settings.



3.8.5 Auto Provision

The Auto Provision section allows automatic device configuration based on MAC address. It supports third-party servers using DHCP, PnP, TFTP, FTP, and HTTP protocols.

There are three provisioning methods available:

- DHCP Option:

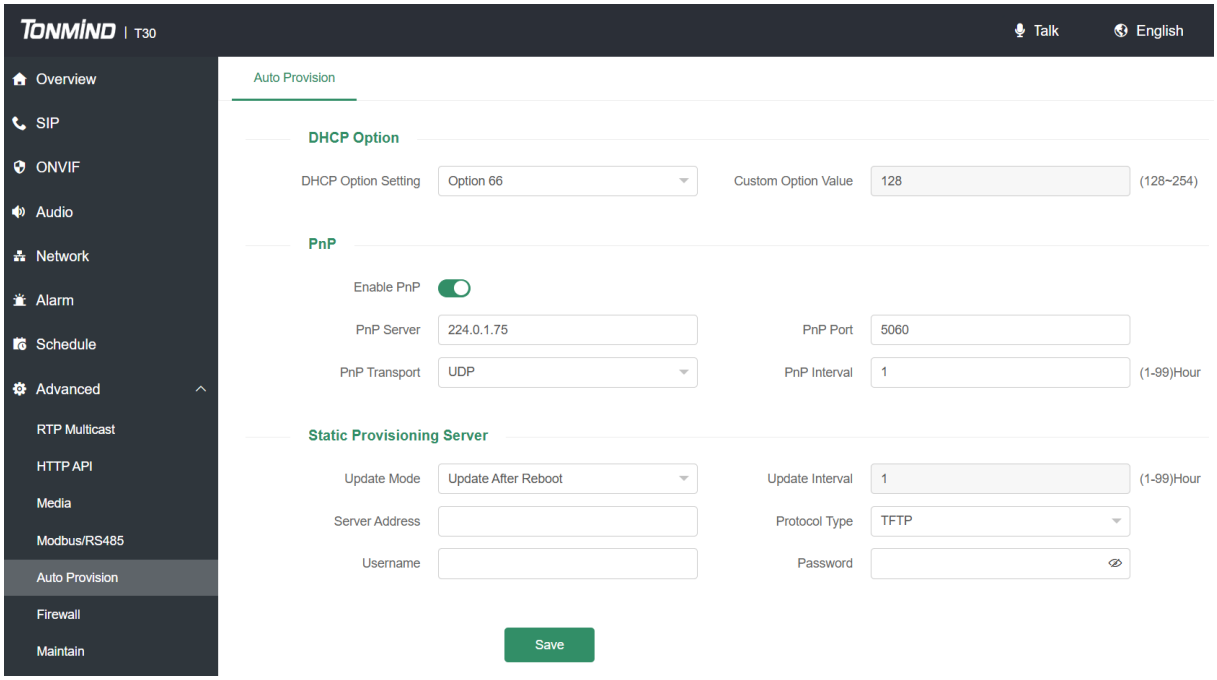
Set up a DHCP server first, then select the option code (Option 66, Option 43, or Custom Option). Configure the path to the provisioning file and run the DHCP server.

- PnP (Plug and Play):

Set up a PnP server, configure the provisioning file path, and run the PnP service for automatic device discovery and configuration.

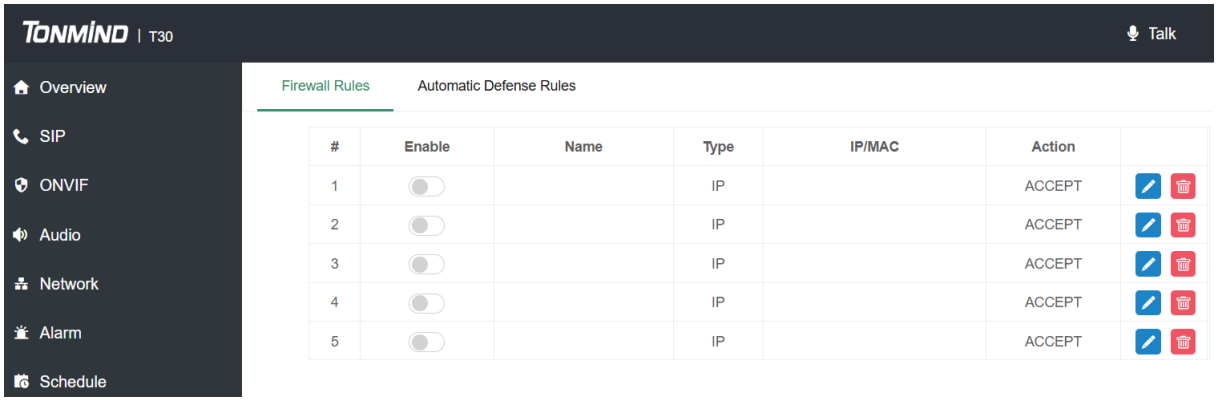
- Static Provisioning Server:

Supports TFTP, FTP, and HTTP protocols. Prepare the corresponding server, then configure the server address and file path for the provisioning file. If authentication is required, enter the username and password.



3.8.6 Firewall

The Firewall section provides two types of protection: Firewall Rules and Automatic Defense Rules.



- Firewall Rules:

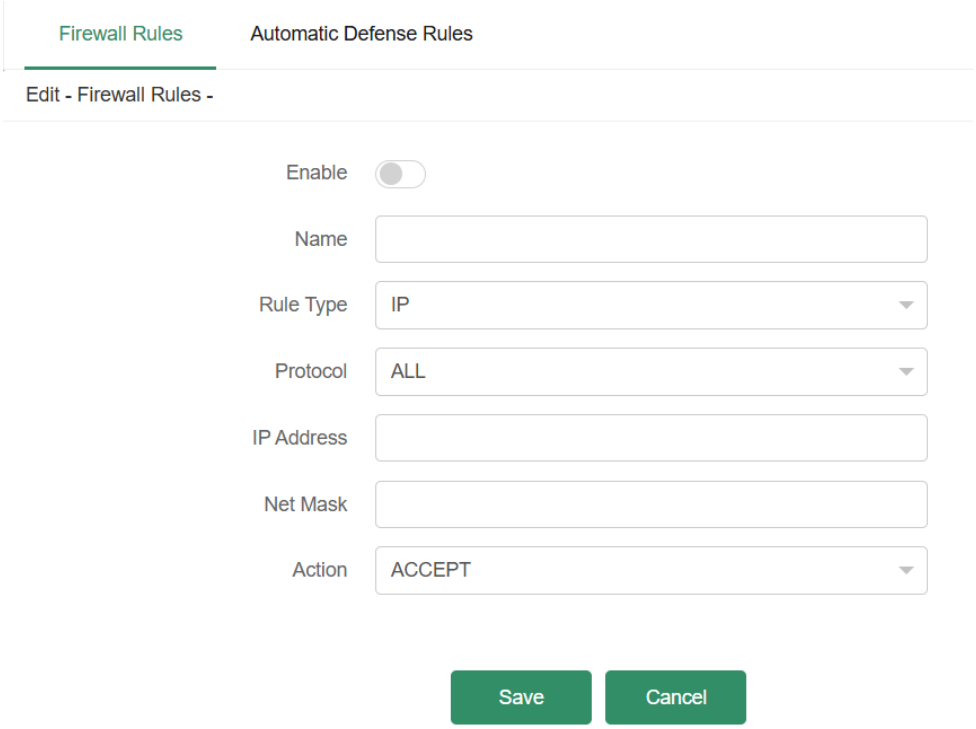
Name: Set a custom rule name.

Rule Type: Choose IP Address or MAC Address.

IP Address: Select protocol (ALL, TCP, or UDP), then enter the IP Address and Netmask.

MAC Address: Enter the MAC address directly.

Action: Choose ACCEPT or DROP.



- Automatic Defense Rules

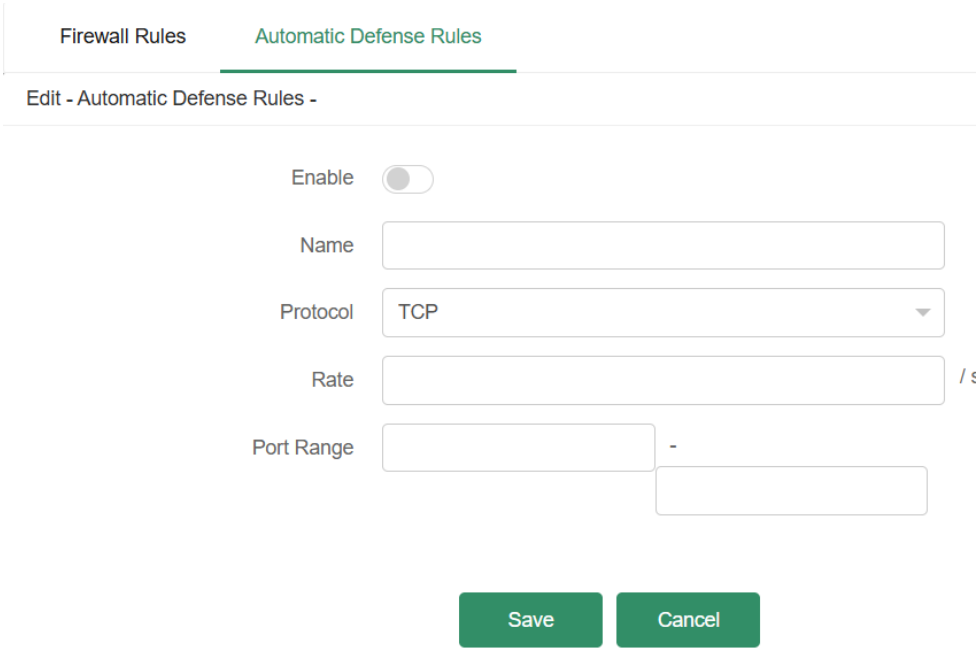
Used to automatically protect against abnormal traffic:

Name: Set a custom rule name.

Protocol: Select TCP, UDP, or ICMP.

Rate: Define the allowed request rate (per second).

Port Range: Set the applicable port range.



3.8.7 Maintain

The Maintain section includes Maintain, Password, and Date/Time settings for device management and system configuration.

- Maintain

Download Log File: Click Log to view and download device logs.

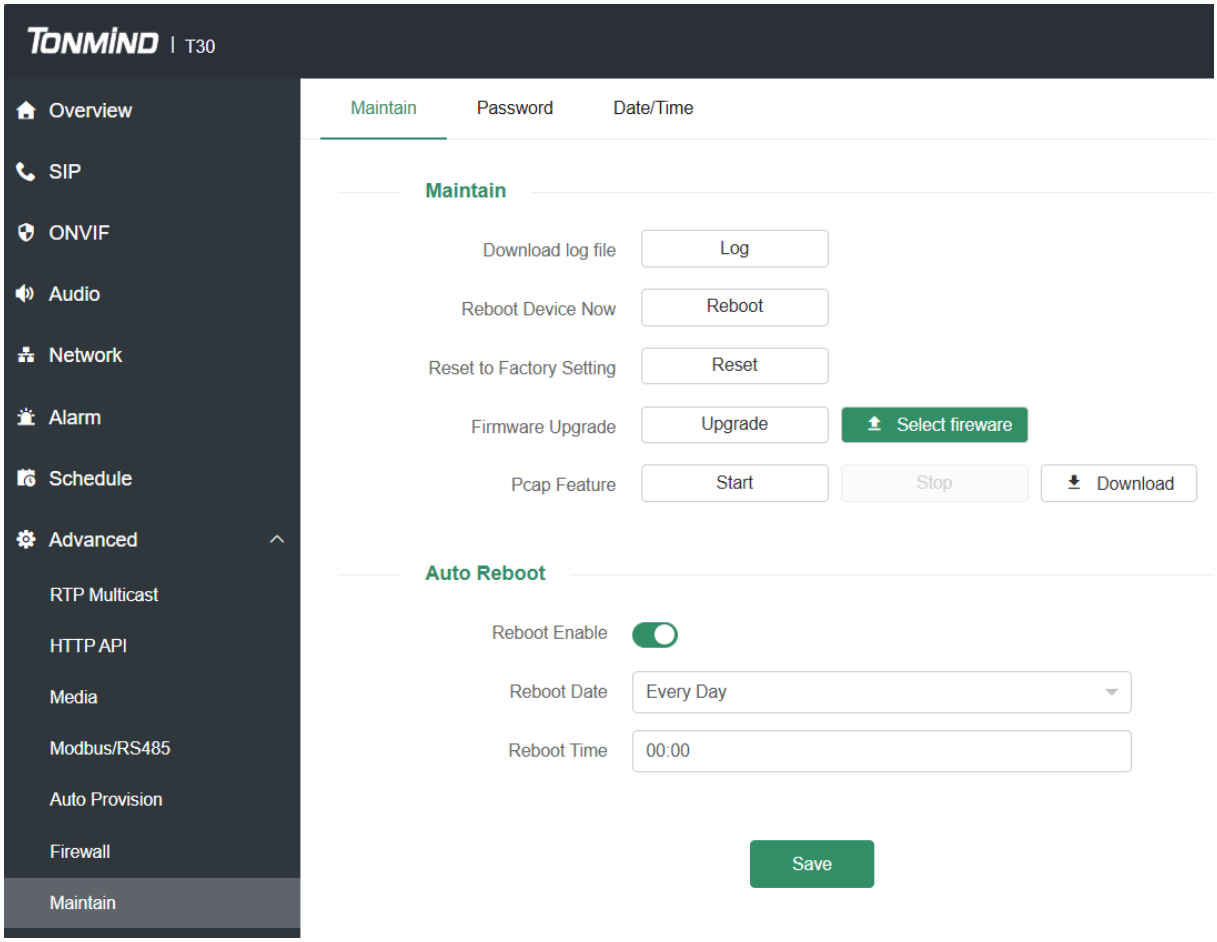
Reboot Device Now: Click Reboot to restart the device.

Reset to Factory Setting: Click Reset to restore factory defaults.

Firmware Upgrade: Click Select Firmware to choose the upgrade file, then click Upgrade to update the device firmware.

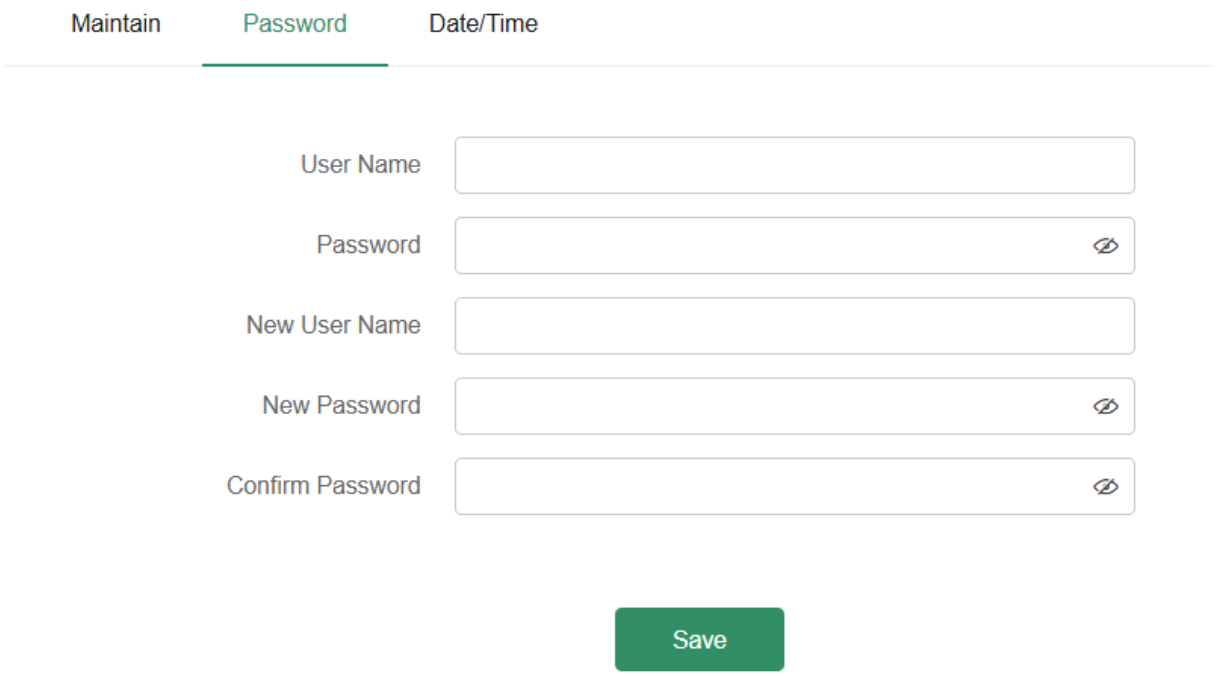
Pcap Feature: Used for packet capture. Click Start to begin, Stop to end, and Download to export the capture file.

Auto Reboot: Enable Reboot Enable, select Every Day or a specific day from Monday to Sunday, enter the desired Reboot Time, and click Save to apply the settings.



- Password

Set a new username and password. Save the configuration and log in again after changes take effect.



- Date/Time

Supports two time setting modes:

NTP: Synchronize time automatically with an NTP server.

Local Time: Sync with the local PC time.

