MAGEWELL®

Modator 2U

User Manual, Reference and FAQs



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Overview

Modator 2U is a high-density, flexible, and expandable modular rack server designed for Magewell's encoder and decoder modules. The 2U high rack server meets the requirements of standard rack deployments and supports up to 10 hot-swappable Modator modules. The LED screen indicates the operating status of each module and the chassis. Empowered with dual power supply and built-in centralized heat dissipation design for stable 24/7 operation, the server is suitable for various scenarios requiring high stability.
When installed in the server via Modator slots, each module can work independently to convert high-quality audio and video signals to and from NDI® and other IP streams.



Key Features

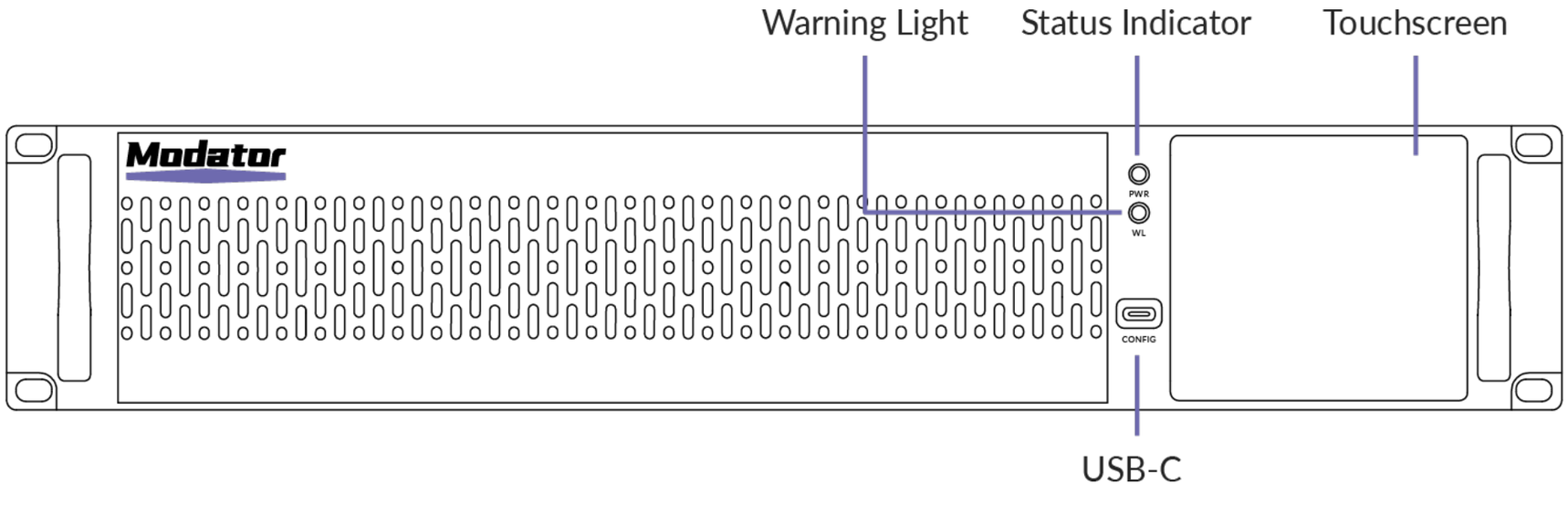
- Supports up to 10 Magewell modules, freely combinable and hot-swappable
- Meets standard rack deployment requirements
- Features LED touch screen for easy monitoring of chassis and module status, logs, alarms, network configuration, etc.
- Equipped with dual hot-swappable power supply modules for safety redundancy
- Utilizes centralized heat dissipation design for long-term stable operation
- Provides Web UI for convenient configuration and management of Modator and modules

Supported Modules

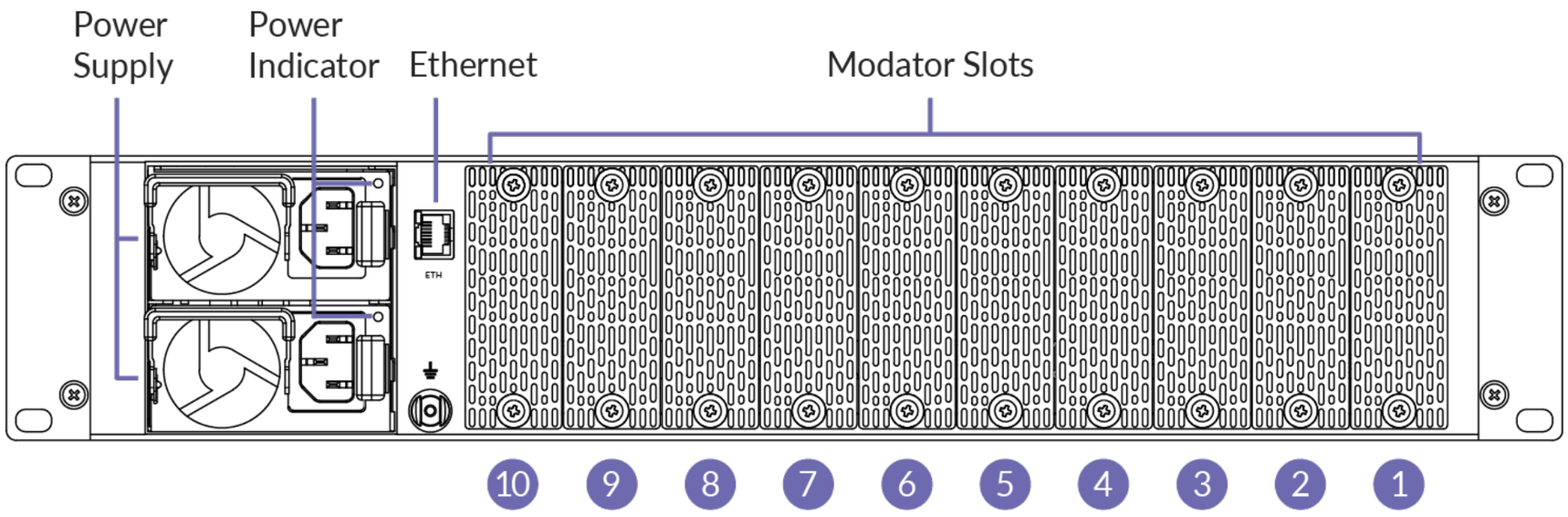
- Please refer to Modator 2U.

Appearance

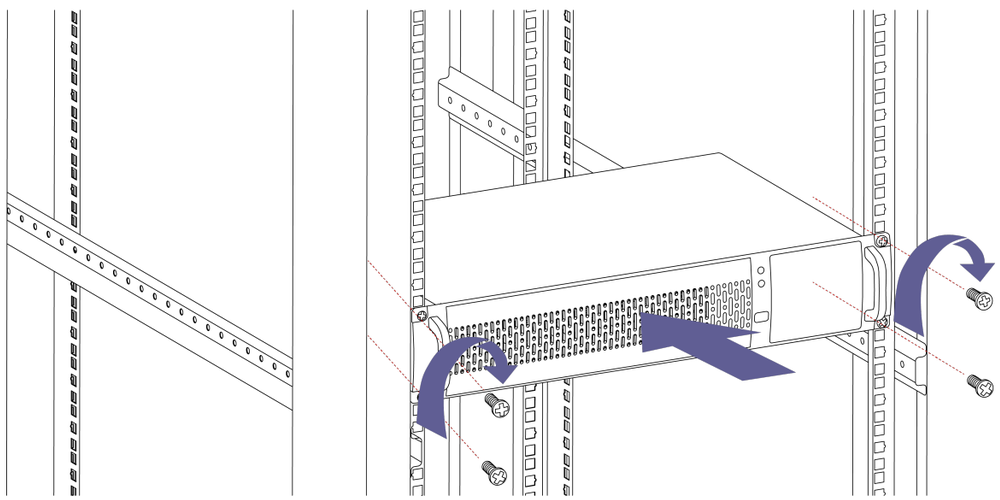
Front View



Rear View



Installation Guide



Installing Chassis into Rack

Before installation, please confirm the following:

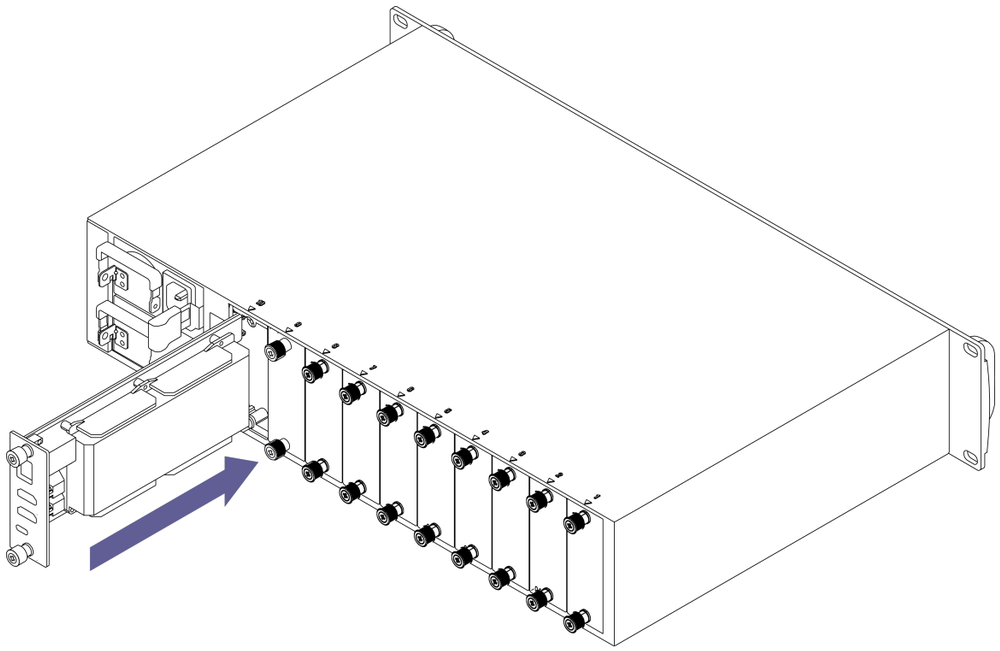
- The rack has been securely fixed.
- The installation position of the chassis in the rack has been arranged, and the L-shaped rails (prepared by user) have been installed.
- The chassis to be installed is ready and placed in a location close to the rack for easy handling.

Preparation

- Phillips screwdriver (prepared by user)
- M6 screws (4 pieces)

Procedure

1. Move the chassis into the rack and place it on the L-shaped rails. Push it smoothly into the rack until the mounting ears are snug against the front holes of the rack.
2. Use the M6 screws to secure the mounting ears to the rack.

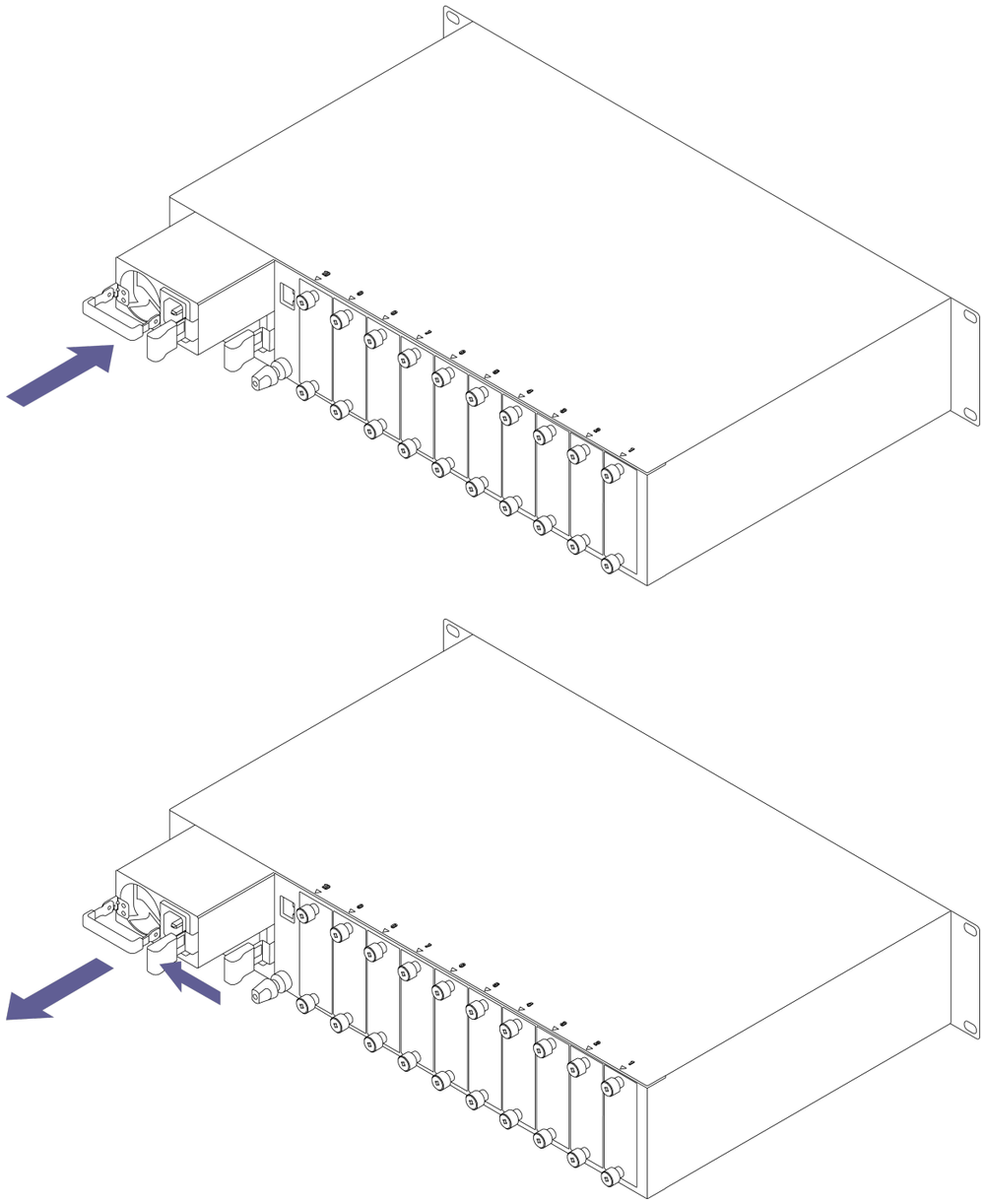


Installing Modules

⚠
- All modules support hot-swapping.
- All modules must be individually connected to both network cables and signal cables to function properly. For details, please refer to the module's manual.
- Unused slots must be fitted with blank panels.
- When installing modules, insert them slowly. If you encounter significant resistance or if the module becomes misaligned during insertion, you must remove the module and reinsert it. Do not force the installation to prevent damage to the module and chassis connectors.

Procedure

1. It is recommended to wear an anti-static wrist strap. Ensure that one end of the anti-static wrist strap is grounded and the other end is in good contact with the wearer's skin.
2. Loosen the screws on the blank panel in the slot and remove the blank panel. Please store the removed blank panel properly so that it can be installed in unused slots if needed in the future.
3. Horizontally push the module along the guide rails in the slot until the module's panel is snug against the equipment.
4. Tighten the screws at the top and bottom of the module to secure it.



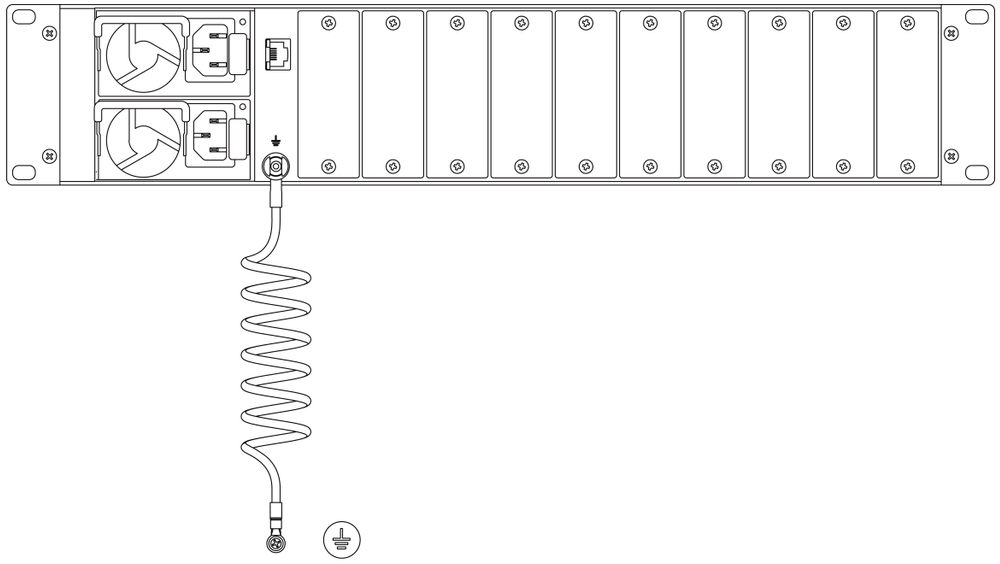
Installing and Removing Power Supply Modules

The power supply modules of the chassis are pre-installed at the factory. If necessary, please refer to the following instructions for installing or removing the power supply modules.

⚠
- The two power modules serve as redundant units and support hot-swapping.
- To ensure stable operation of the chassis, both power modules must be installed on the chassis.

Procedure

1. It is recommended to wear an anti-static wrist strap. Ensure that one end of the anti-static wrist strap is grounded and the other end is in good contact with the wearer's skin.
2. To install power module:
   i. Grasp the handle and insert the power module parallel into the power slot, pushing it inward until you hear a "click" sound, indicating the power module is securely in place.
3. To remove power module:
   i. Grasp the handle and press the blue latch.
   ii. Pull the power module outwards.



Connecting the Chassis

Connecting the Grounding Cable

⚠
- Properly connecting the grounding cable is essential for lightning protection and interference resistance of the chassis.
- It is strictly prohibited to power on the chassis before the cable connection is completed.

Preparation

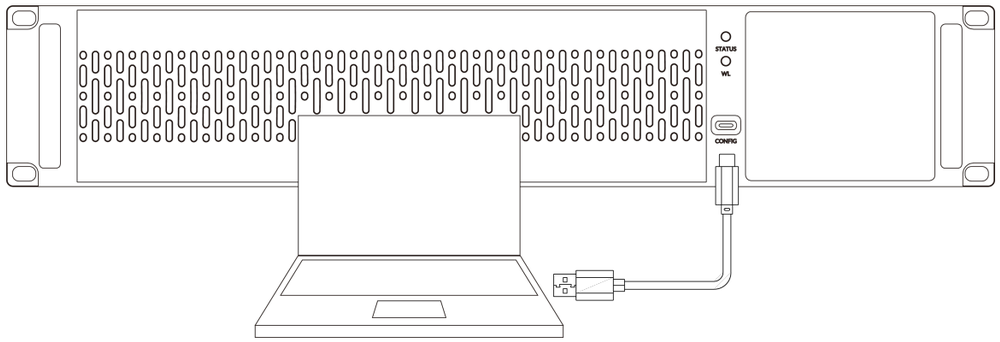
- Multimeter (prepared by user)
- Grounding cable (prepared by user)

Procedure

1. It is recommended to wear an anti-static wrist strap. Ensure that one end of the anti-static wrist strap is grounded and the other end is in good contact with the wearer's skin.
2. Unscrew the M4 screw located on the grounding terminal on the rear panel by hand or with the appropriate tool, and place the removed M4 screw properly.
3. Align the M4 end of the grounding cable with the screw hole on the grounding terminal and secure it with the screw.
4. Connect the M6 end of the grounding cable to the grounding terminal of the cabinet.

Grounding Inspection

- The grounding cable is securely connected to the grounding terminal.
- Measure the resistance between the chassis grounding point and the grounding terminal using the ohm range of a multimeter, with a requirement of less than 5Ω for the grounding resistance.



Connecting the Configuration Cable

⚠
- It is strictly prohibited to power on the chassis before connecting the cables.
- When connecting the cables, pay attention to the interface labels to avoid inserting them into the wrong interfaces, which may damage the interface module or chassis.

Preparation

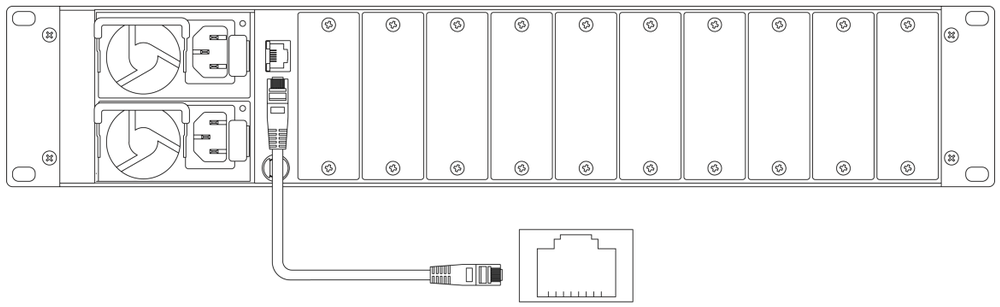
- USB-C cable

Procedure

1. Connect one end of the USB-C cable to the CONFIG interface on the front panel of the chassis.
2. Connect the other end of the USB-C cable to the computer.

Configuring the Chassis

After powering on the chassis, you can log in to the Web UI via USB NET on the computer for management and configuration. For specific instructions on logging into the Web UI for the first time via the CONFIG interface, please refer to Access Web UI.



Connecting Ethernet Cables

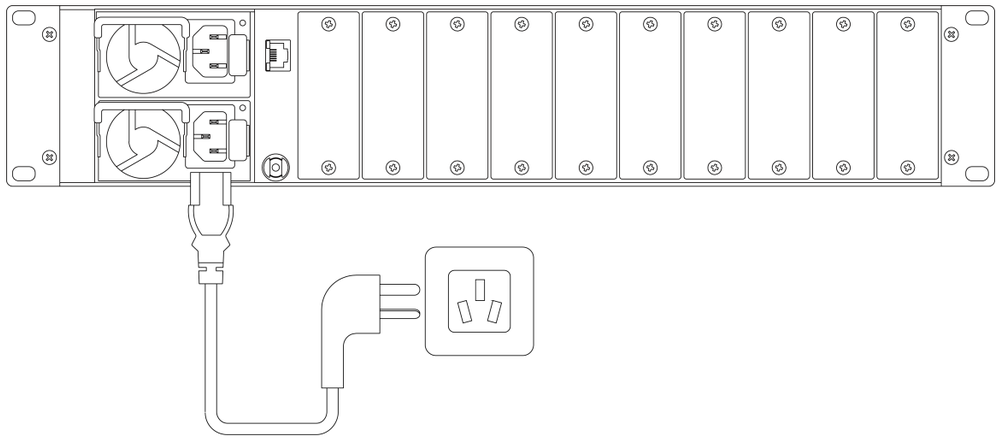
⚠
- It is strictly prohibited to power on the chassis before connecting the cables.
- When connecting the cables, pay attention to the interface labels to avoid inserting them into the wrong interfaces, which may damage the interface module or chassis.

Preparation

- Ethernet cable (prepared by user)

Operating Steps

1. Choose the corresponding quantity and length of Ethernet cables based on the number of ports and the work distance of the chassis and modules.
2. Connect one end of the Ethernet cable to the Ethernet port of the chassis and modules, and the other end to the Ethernet port of the switch.
3. Straighten the connected Ethernet cables without crossing each other and use cable ties to bundle them.
4. It is recommended to attach labels at both ends of the Ethernet cables for easy management and maintenance.



Ethernet Cable Inspection

1. The Ethernet cables and connectors should be free from damage and breakage, and the connections should be correct and reliable.

Connecting Power Cords

⚠
- Do not connect power cards while they are live to avoid personal injury.
- Do not power on the chassis before all cable connections are completed.
- The power cords included in the product packaging are accessories shipped with the device and should only be used with the device in this packaging and not with other devices.

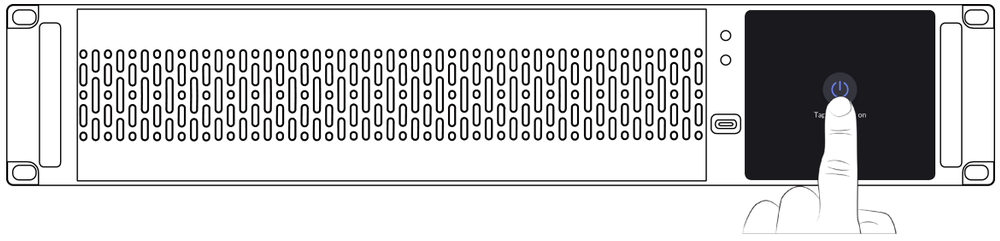
Preparation

- AC power cables

Procedure

1. Ensure that the chassis grounding point is properly grounded.
2. It is recommended to wear an anti-static wrist strap. Ensure that one end of the wrist strap is grounded and the other end is in good contact with the wearer's skin.
3. Connect one end of the power cord to the power interface of the AC power module.
4. Connect the other end of the power cord to the AC power socket.

5. Secure the anti-loose buckle to the power cord to fasten it securely.
6. To ensure the safe operation of the equipment, please connect both power modules to the power cords.



Powering On/Off

Procedure

- Power on the chassis
  1. Turn on the power switch, the touchscreen on the front panel will light up.
  2. Tap ⏻ on the touchscreen to start the device.
  3. Check the status indicator and warning light on the front panel, and check the power indicators on the rear panel.

Indicator	State	Description
Status indicator	Blue	Working
	Off	Standby
Warning light	Red	Error
	Off	Normal
Power indicator	Green	Output on and OK
	Flashing Green	Standby or Cold Redundancy
	Red	Error or fault

- Powering off the chassis

  > Powering off the chassis will cause interruption to the running services, please proceed with caution.

  1. Tap to light up the touchscreen.
  2. Tap  on the touchscreen.
  3. Tap , and then tap **OK** on the popup. Then the device enters standby mode.
  4. Turn off the power supply switch.

Device Management

After the device is powered on, you can view and manage the device and modules through the touchscreen or Web UI. For more details, please refer to Touchscreen and Web UI。

> If the device is not properly shut down and experiences a power failure, when the power is restored, the device will automatically recover to its previous state before the power failure.

Touchscreen

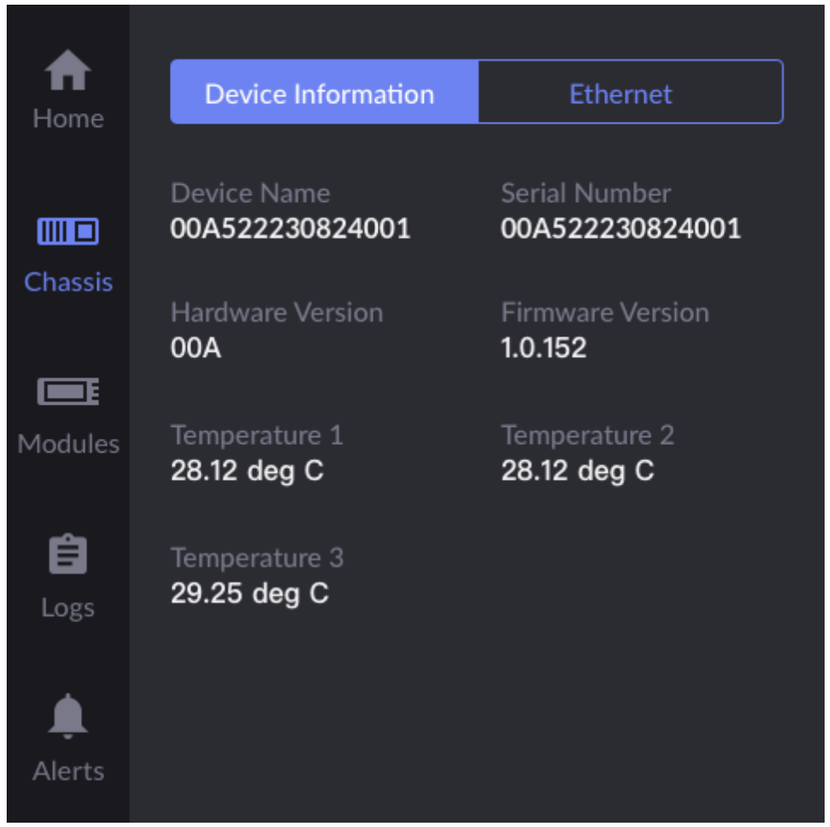
The touchscreen on the front panel of the Modator allows you to view the status and basic information of the device and modules, perform simple network configurations, and also enables you to power on/off the device.



Viewing Basic Information

After the device is powered on, it will enter the home page. You can also tap to switch to the home page.
The home page displays the following information:

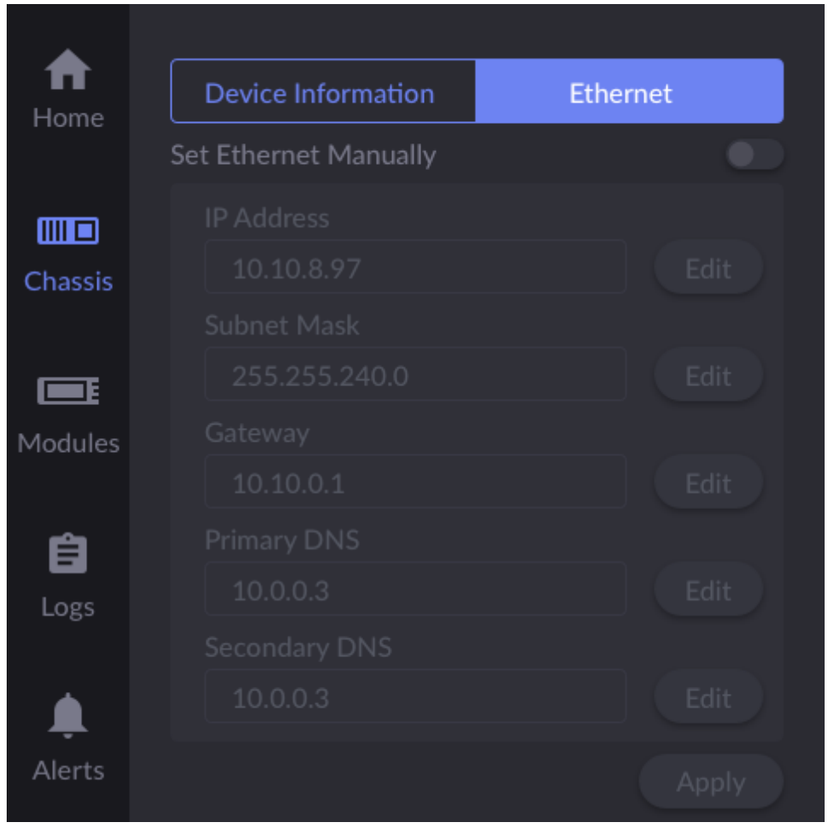
- **Product Name**: Displays the product name.
- **Max Sensor Temp.**: Maximum temperature of the sensor. To prevent the device from overheating, keep the working environment clean and at a moderate temperature. When the temperature approaches 90°C, it is recommended to cool the device by lowering the ambient temperature.
- **Power 1/2**: Corresponds to two power modules.
  - **ON**: Power supply is normal.
  - **Error**: Power module not inserted, power cable not connected, no power supply, high temperature, power fan failure, input overvoltage alarm, output current overcurrent alarm, overtemperature alarm, etc.
- **Fan Speed**: Displays the speed of 5 fans in revolutions per minute (rpm).
- **Modules**: Displays the connection status of modules in 10 slots. When a module is inserted into a slot, an illustration of the module will be displayed. A green lamp indicates the module is working.
- : Tap the button to put the device into standby mode.



Viewing Chassis Information

Tap on the left side of the touch screen to enter the chassis page, then click on the "Device Information" tab at the top to view the following information.

- **Device Name**: The device name.
- **Serial Number**: The serial number, same as the one on the chassis.
- **Hardware Version**: The hardware version of the device.
- **Firmware Version**: The firmware version of the device.
- **Temperature 1/2/3**: Correspond to the temperatures of the three sensors inside the device. To prevent the device from overheating, keep the working environment clean and at a moderate temperature. When the temperature approaches 90°C, it is recommended to cool the device by lowering the ambient temperature.



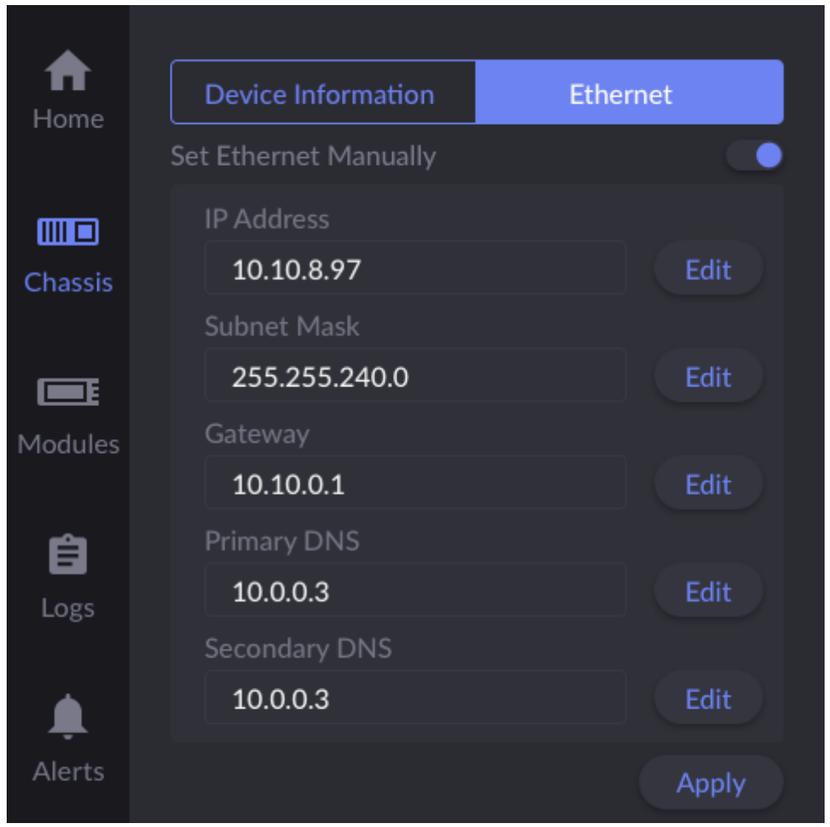
Setting IP Address

Checking IP Information

Modator defaults to using DHCP to automatically assign IP addresses. This method effectively avoids IP address conflicts, but the IP address may change automatically. To view the current network's IP information, tap on the left side of the touchscreen to enter the chassis page, then tap the **Ethernet** tab at the top.

- **IP Address**: The device's IP address.
- **Subnet Mask**: A 32-bit mask used to divide an IP address into network and host addresses.
- **Gateway**: The gateway IP address.
- **Primary DNS**: Information about the primary DNS. The default is the current network setting.
- **Secondary DNS**: Information about the secondary DNS. The value is left empty by default.

> If there is no IP information displayed, it indicates that the current network is not connected. Please check the network cable connection on the rear panel.

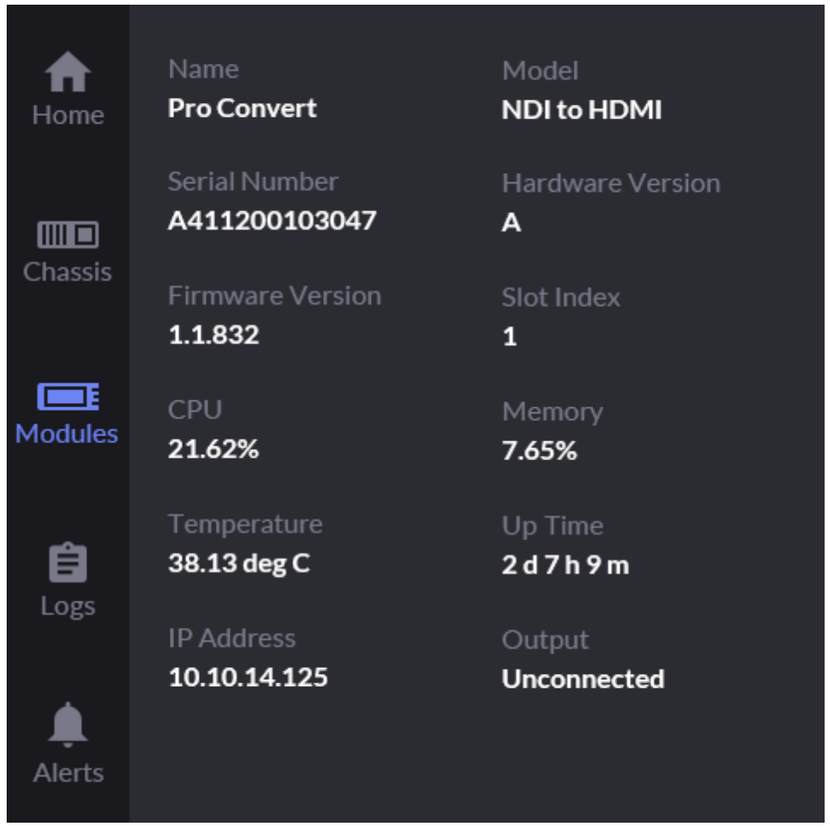


Setting Static IP Address

If there is no DHCP service configured in the network, you can manually set a static IP. Once set, the device's IP address will remain constant.

Please make sure that the IP address you set does not conflict with other devices in the local area network.

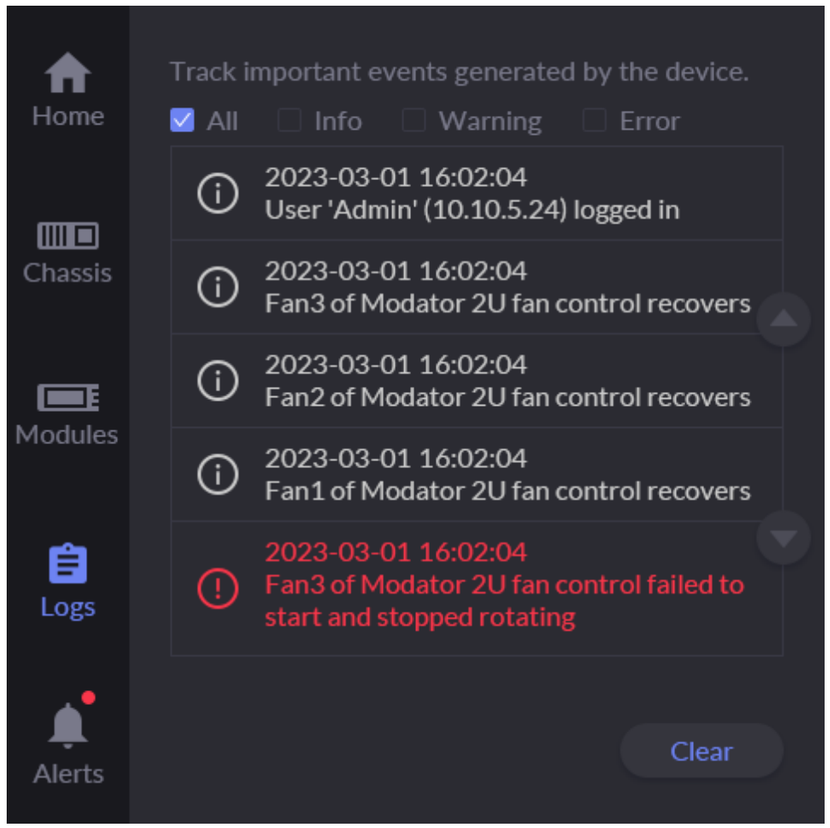
1. Tap on the left side of the touchscreen to enter the chassis page.
2. Tap the **Ethernet** tab at the top.
3. Toggle off the switch of **Set Ethernet Manually** to enable manual configuration.
4. Tap the "Edit" button after "IP Address", "Subnet Mask", and "Gateway", enter the address, and tap **OK**.
5. Tap **Apply** to save the configuration.



Viewing Module Information

Tap on the left side of the touchscreen to access the modules page.
This page displays the connection status of modules in 10 slots. Once a module is inserted into a slot, the diagram of that module will be displayed. A green lamp indicates the module is working.
Tap the diagram of the module to view the following information:

- **Name**: The name of the module.
- **Model**: The model of the module.
- **Serial Number**: The serial number, which matches the one on the module.
- **Hardware Version**: The hardware version of the module.
- **Firmware Version**: The firmware version of the module.
- **Slot Index**: The slot number where the module is inserted.
- **CPU**: The current CPU usage of the module, displayed as a percentage.
- **Memory**: The current memory usage of the module, displayed as a percentage.
- **Temperature**: The current temperature of the module chip. To prevent overheating, please maintain a clean and moderate working environment. It is recommended to cool down the module by lowering the ambient temperature when the core temperature approaches 90°C.
- **Up Time**: The duration since the module was last started.
- **IP Address**: The IP address of the module.
- **Output**: The connection status of the module's output interface.
  - **Connected**: Connected
  - **Unconnected**: Not connected

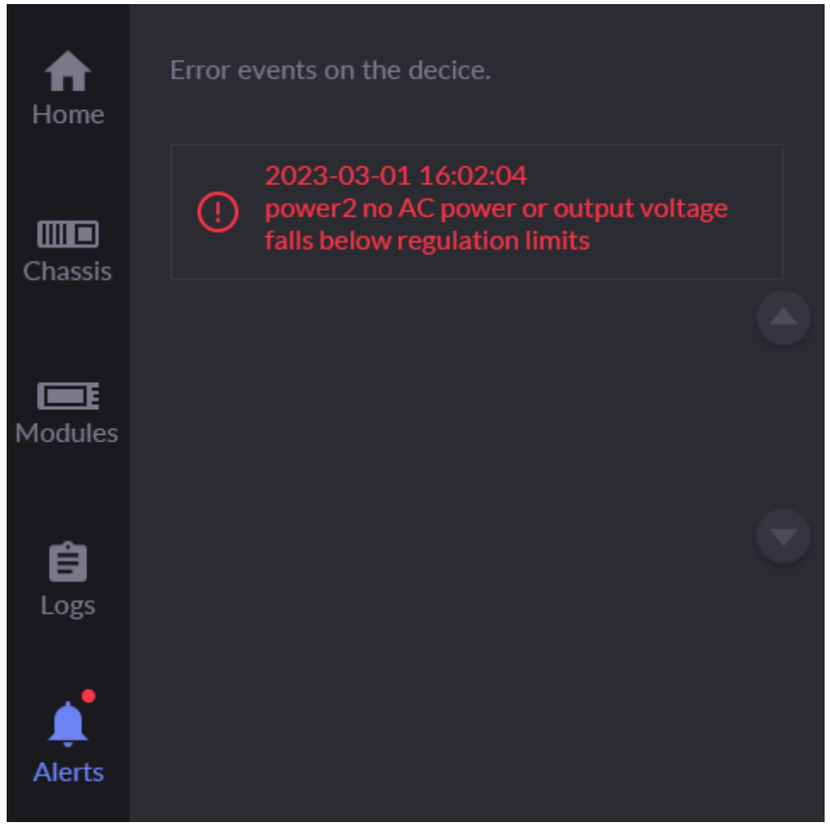


Viewing Logs

Logs provide device operation information.

1. Tap on the left side of the touchscreen to enter the log page.
2. By default, all logs are displayed. Tap the checkboxes to display corresponding logs:
   - **All**: All logs.
   - **Info**: Information-level logs. These logs record user operations and system events.
   - **Warning**: Warning-level logs. These logs record abnormal system phenomena.
   - **Error**: Error-level logs. These logs record serious errors in the system.
3. Tap or on the right to page through logs up or down.
4. (Optional) Tap **Clear**, and in the pop-up window, tap **Yes** to delete all logs.

It only displays the latest 20 logs on the touchscreen. To view all the logs, please access the Web UI.



Viewing Alerts

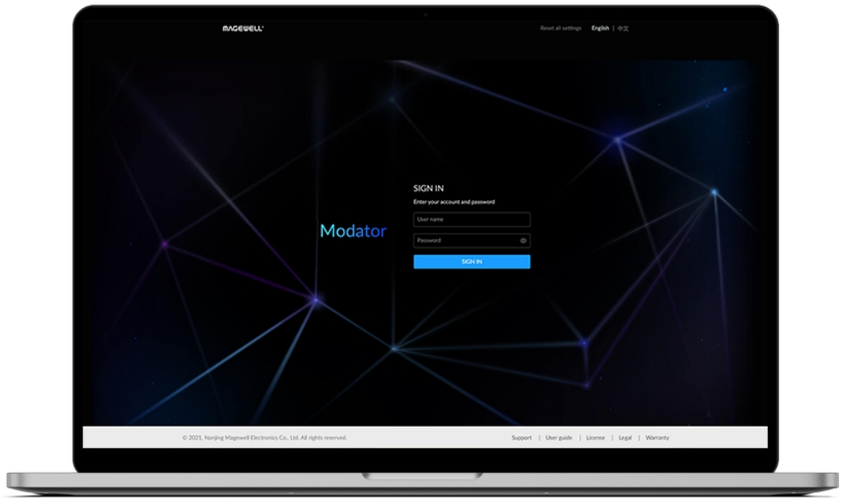
When the device encounters an error or fault, a small red dot will appear on on the left side of the touchscreen. At the same time, the device's warning light will turn red, and the buzzer will beep (the buzzer activation needs to be set in the Web UI).

Please tap to view the alert information and take appropriate actions, to ensure the stable and reliable operation of the device.

The alert information includes the time when the alert occurred and a description of the alert.

Web UI

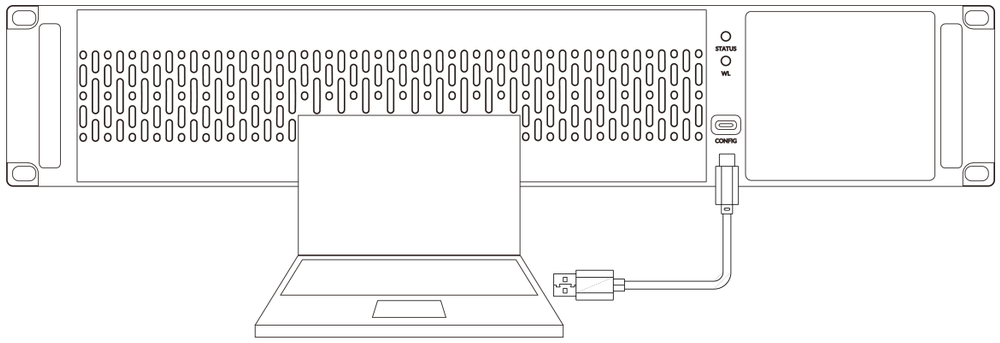
Modator provides a companion Web UI, allowing users to view device information, module information, and manage the device.
Once a network connection is established between the local computer and Modator, you can access the Web UI.



Accessing Web UI

Modator supports accessing the Web UI through diverse methods, including:

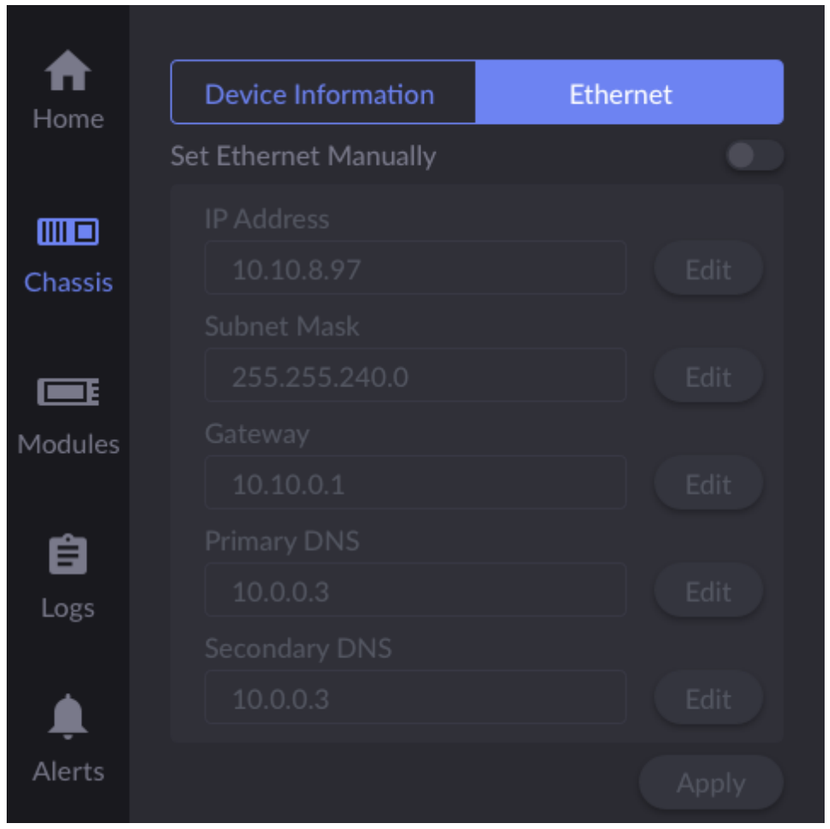
Access Method	Requirements
Use a USB network IP address	The computer is connected to Modator with the supplied USB cable.
Use an Ethernet IP address	The Ethernet address of Modator has been obtained.
Use Windows network discovery	On a Windows Operating system.



Using USB Network IP Address

USB network provides a virtual network connection. Using this technology, you only need to connect Modator and your computer with a USB cable so that your computer can access Modator. Linux, macOS 10.12 and later, and Windows 10 19H1 and above are supported.

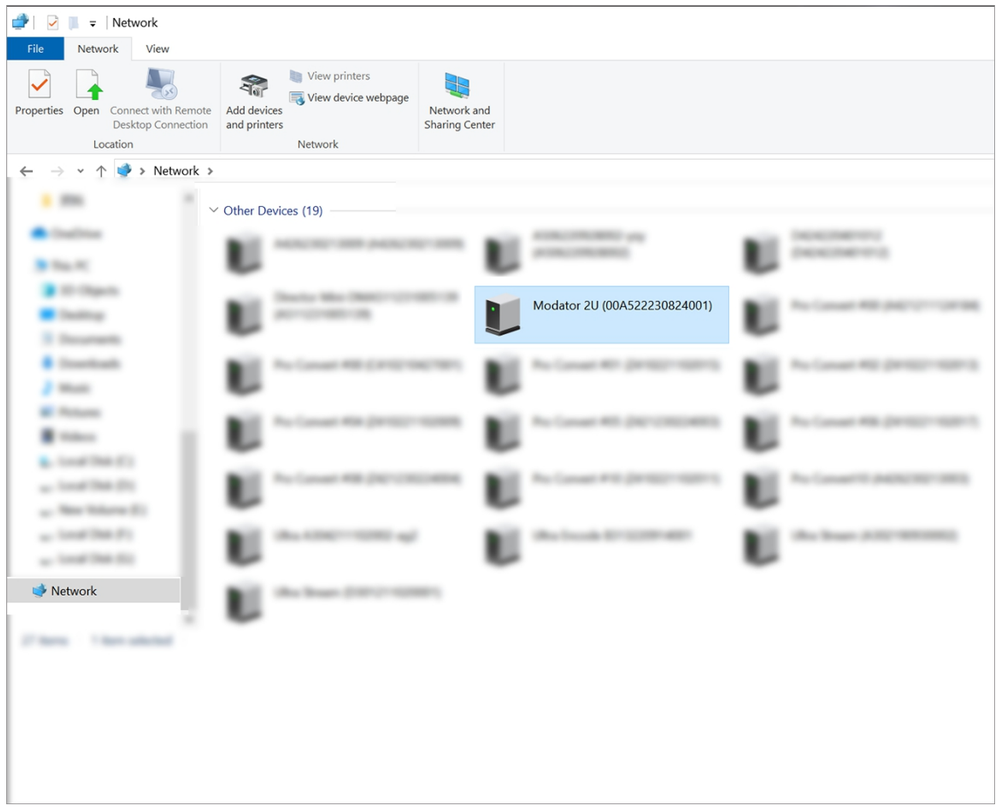
1. Make sure that Modator has been powered on.
2. Connect a USB cable from the CONFIG port of Modator to a computer.
   The cable connection will establish a network connection between your computer and Modator through USB network.
3. Open a browser on the computer, enter the static IP address for USB network, and press **Enter**.
   The default address for USB network is 192.168.66.1.



Using Ethernet IP Address

You can use the dynamic or static Ethernet IP address to access the Web UI of Modator. This method applies to Windows, Linux, and macOS.

1. Make sure that Modator has been powered on and connected to the network.
2. View the IP address on the touchscreen of Modator.
3. Connect your computer to the same network of Modator.
4. On the computer, open a browser, enter the IP address, and press **Enter**.



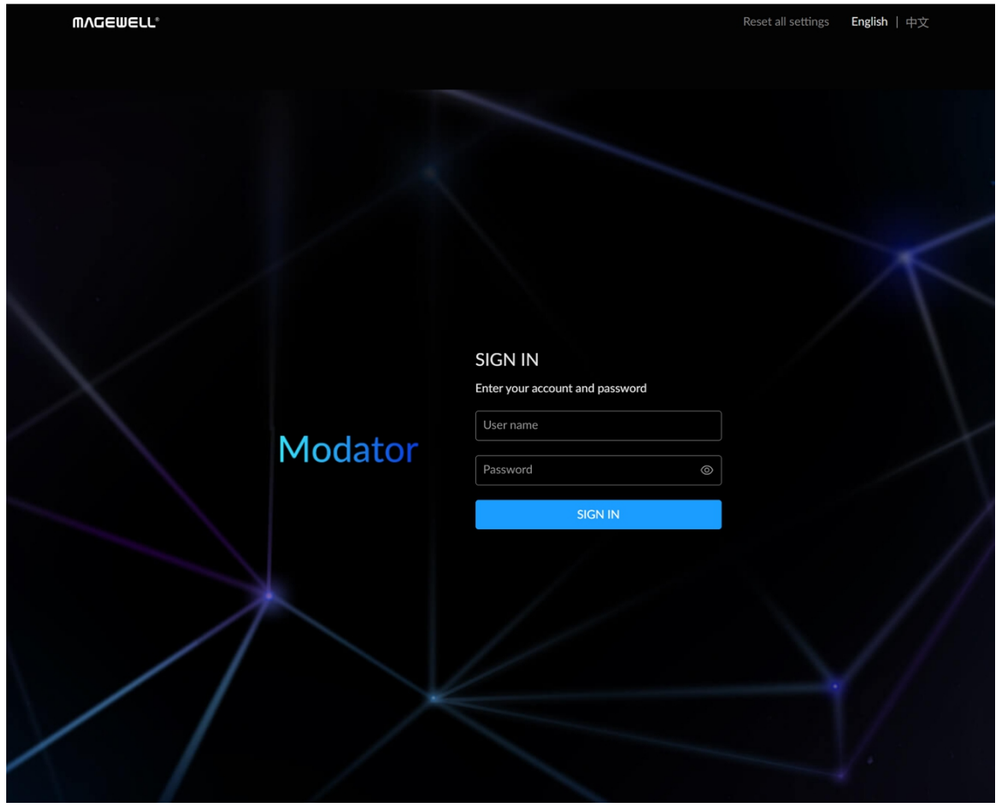
Using Windows Network Discovery

Modator supports SSDP-based network discovery, which you can use to access the device.

On Windows, you can use the File Explorer to discover Modator. This method applies to Windows 7 and later.

The following uses Windows 10 as an example.

1. Make sure that Modator has been powered on and connected to the network.
2. Connect your computer to the same network of Modator.
3. On the computer, open **File Explorer**. You can:
   - Click the **Start** button , and select **File Explorer** in the start menu.
   - Hold down the key and press E on your keyboard.
4. At the left panel of **File explorer**, click **Network**.
   If network discovery is disabled, you need to first enable it by referring to the following method:
   Choose > , then choose **Network and Internet** > **Network and Sharing Center** > **Change advanced sharing settings**. Under the current network (the one marked as **current profile**), click **Turn on network discovery**.
5. In the **Other Devices** area, find your Modator device based on the **Serial number**.
   - The default device name is "Serial number + Serial number". You can set the device name on the Web UI.
   - The serial number of Modator is the one that can be found on the device, for example 00A522231201001.
6. Double-click the device icon to access the Web UI login page.



Logging Into the Web UI

To ensure system stability and security, Modator grants permissions based on role. The roles and permissions are as follows:

Role	Default Name	Permission
Administrator	Admin	Basic view and configuration permissions, and system management and configuration permissions, which include user management, network configuration, firmware update. This role cannot be deleted nor changed name.
Common user	None	Basic view and configuration permissions. No system management and configuration permissions. Common users are created and managed by the administrator.

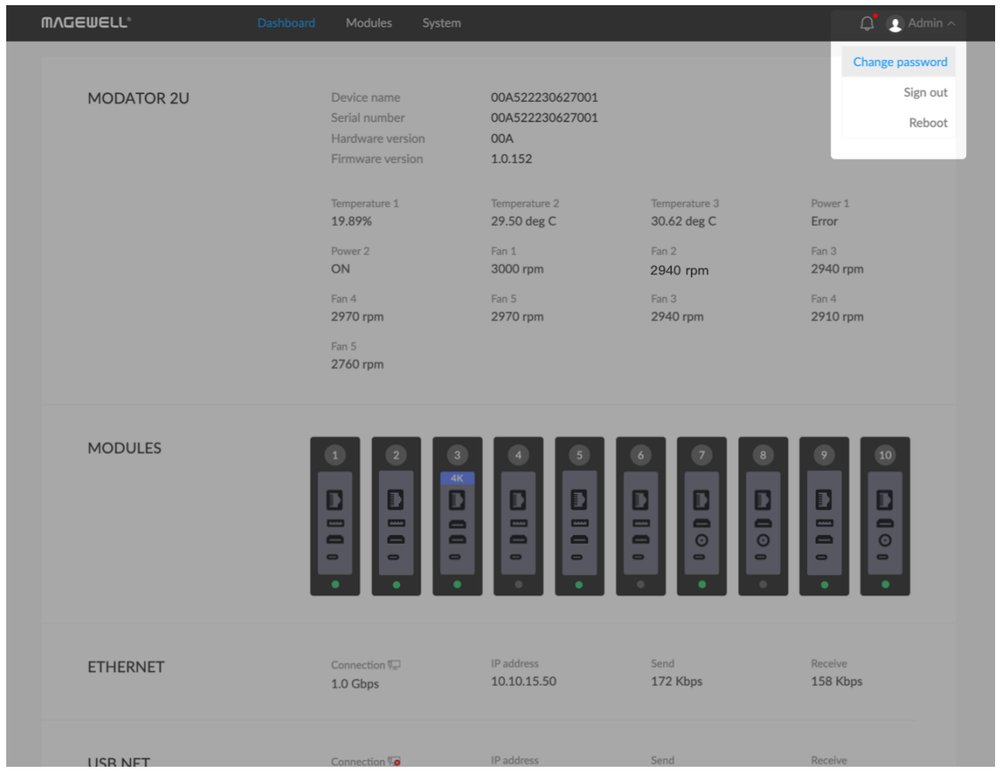
Modator allows multiple users to simultaneously log in to the Web UI and perform configurations. However, this may lead to previous configurations being overwritten by latter configurations. Therefore, to prevent configuration conflicts, different users should avoid changing configurations at the same time.

- **Sign in**: Enter your account name and password on the Web UI login page.

  > To access the login page, see Access Web UI.

  The default account name is **Admin**, and password is **Admin**, both of which are case sensitive:

  > The Web UI uses English by default. You can switch language on the upper right corner of Web UI's login page.



If you forget the login password:

- For a common user: Use the admin account to reset your password. For details, see Reset the Password.
- For the administrator: Reset the device, and use the default admin account to log in. For details about device resetting, see Reset Modator.

- **Sign out**: After you log in, click the user name at the upper right corner, and click **Sign out**.
  After using the Web UI, make sure you log out so as to prevent unauthorized access.

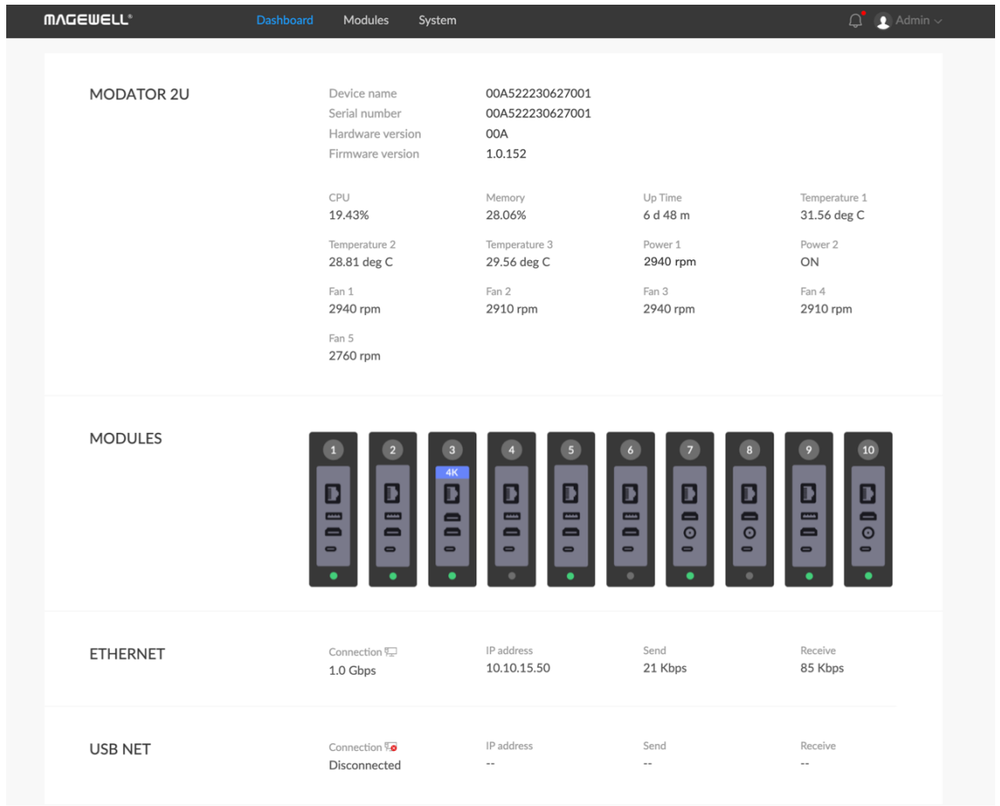
Changing Login Password

Periodically changing the login password can improve your account security.

> For account security, you are advised to change the default password for the Admin user.

1. Log in to the Web UI using an account.
2. Click the user name at the upper right corner, and click **Change Password**.
3. In the displayed dialog box, enter the old password, new password, and confirm the new password.
   The password is case sensitive, ranging from 1 to 32 characters. Supported characters are as follows: A-Z, a-z, 0-9, and special characters _~!@#$%^&*-+=
4. Click **OK**.

Besides changing its own password, the Admin user can also reset passwords for common users. For details, see Reset the Password.



Viewing Device Status

When using Modator, you can learn about the device status on the **Dashboard** page of the Web UI, including system resource usage, modules connection status and network connection status.

Viewing Device Information

The "MODATOR 2U" area display basic information and operation status of the device.

- **Device name**: Displays the current device name. Default is the serial number.
- **Serial number**: Same as the serial number on the device.
- **Hardware version**: The hardware version of the device.
- **Firmware version**: The firmware version of the device. Only the administrator can upgrade the firmware on the "System > Firmware" tab. Refer to Upgrade Firmware for details.
- **CPU**: Current CPU usage rate, in percentage.
- **Memory**: Current memory usage rate, in percentage.
- **Up Time**: Duration that the device keeps running since last startup.
- **Temperature 1/2/3**: Correspond to the temperatures of three temperature sensors inside the device. To prevent overheating, keep the device working environment clean and at a moderate temperature. When the temperature approaches 90°C, it is recommended to cool the device by lowering the ambient temperature.
- **Power 1/2**: Correspond to two power modules.
  - ON: Power is on
  - OFF: Power is off

  - Error: Power module not inserted, power cable not connected, no power supply, or other faults

- **Fan 1/2/3/4/5**: Correspond to five fans inside the device, showing the revolutions per minute of each fan, which varies with the device temperature.

When prompted with an error, you can click  to view the warning message and take appropriate action to ensure stable and reliable operation of the device.

Viewing Module Connection Status

In the "MODULES" area, you can view the module connection status of each slot. When a module is inserted in a slot, the diagram of the module type is displayed in that slot. A green lamp indicates the module is working.

- Move your mouse over the diagram to view the model, device name, and serial number of the module.
- Click the diagram to jump to the Web UI login page of the module, enter the user name (default is Admin) and password (default is Admin), and click **SIGN IN** to manage the module.

Viewing Network Connection Status

In the **ETHERNET** or **USB NET** area, you can view the network connection status.

- **Connection**: connection status.

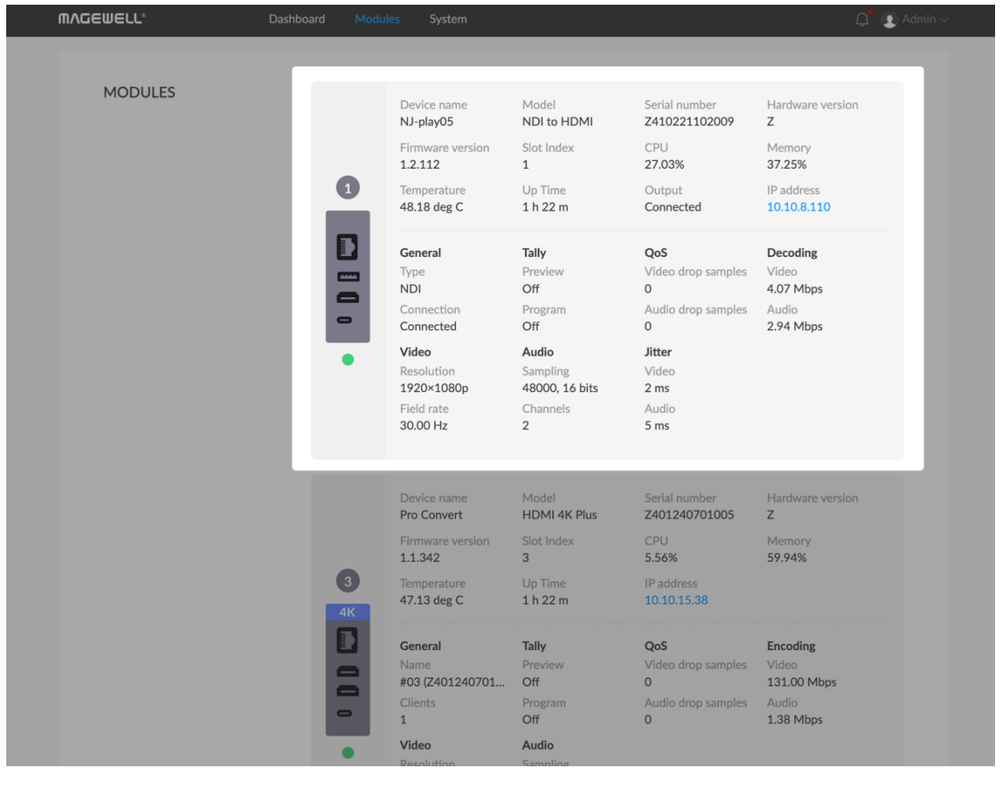
  Ethernet:

  - **Down**: The network port is down.
  - **Disconnected**: No network is connected.
  - 10 Mbps, 100 Mbps, 1.0 Gbps, 2.5 Gbps, 5 Gbps, 10 Gbps: Ethernet connection speed

  USB NET:

- **Down**: The network port is down.
- **Disconnected**: No network is connected.
- **Full Speed**: USB 1.1 speed at 12 Mbps
- **High Speed**: USB 2.0 at 480 Mbps
- **Super Speed 5G**: USB 3.0 speed at 5 Gbps

- **IP Address**: IP address of the network
- **Send**: speed for sending data
- **Receive**: speed for receiving data



Viewing Module Information

Click the **Modules** tab to know the real-time basic information and operation status of each module connected to the 10 slots of the device. When a module is inserted into a slot, the corresponding slot appears on the **Modules** page, displaying a diagram of the module model, basic information, and signal source status. A green lamp indicates the module is working.

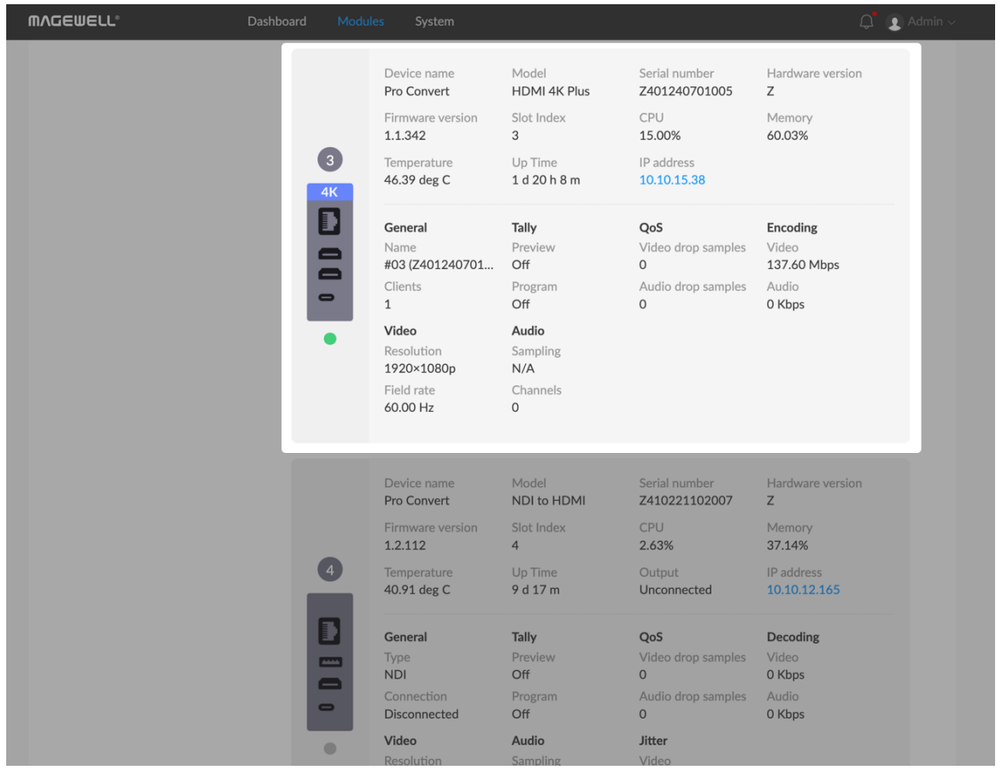
Viewing Basic Information of Module

- **Device name**: The name of the module.
- **Model**: The model of the module.
- **Serial number**: Same as the serial number on the module.
- **Hardware version**: The hardware version of the module.
- **Firmware version**: The firmware version of the module.
- **Slot Index**: The slot number that the module is plugged into.
- **CPU**: The current CPU usage of the module, in percentage.
- **Memory**: The current memory usage of the module, in percentage.
- **Temperature**: The current temperature of the module chip. To avoid module overheating, please keep the working environment clean and moderate temperature. When the core temperature is close to 90**℃**, it is recommended to cool down the module by lowering the ambient temperature.
- **Up Time**: Duration that the module keeps running since last startup.
- **Output**: The connection status of the module's output interface.
- **IP address**: IP address of the module. Click the IP address to jump to the Web UI login page of the module, enter the user name (default is Admin) and password (default is Admin), and click "SIGN IN" to manage the module.

Viewing Signal Source Status

Decoder Module

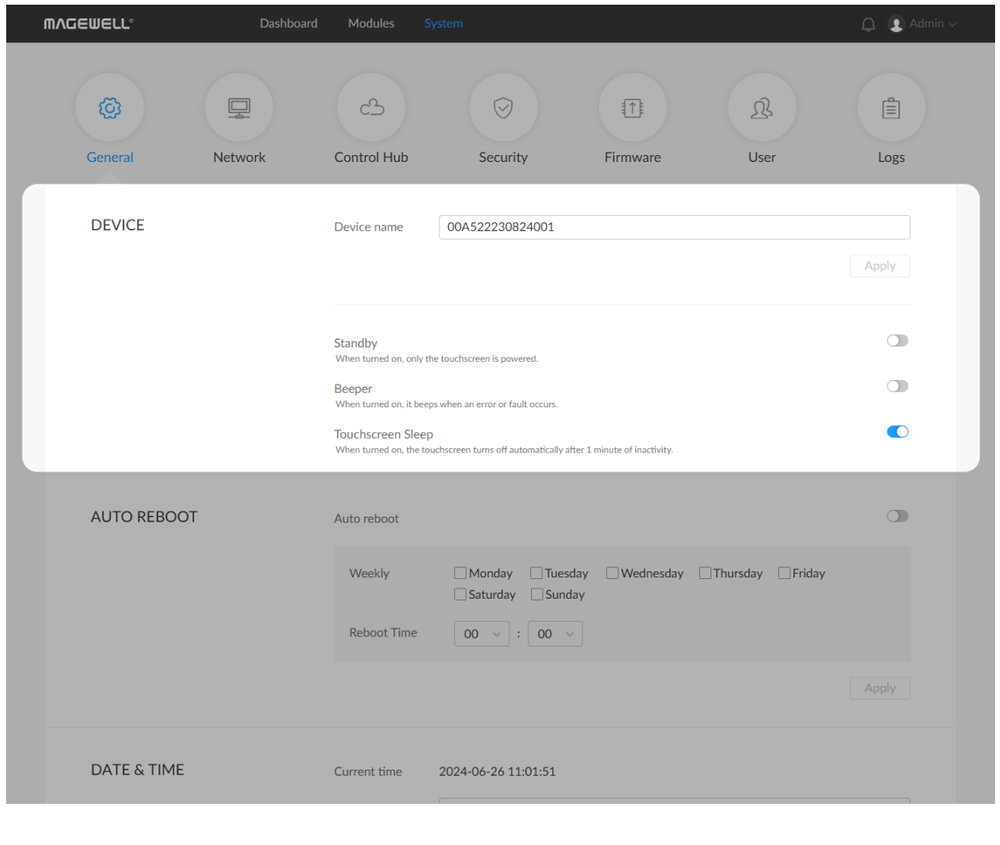
- **General** shows video source information.
  - **Type** shows the decoding stream type.
  - **Connection** shows whether a stream data is received by your decoder.
- **Tally** shows the "on-air" status of decoded stream.
  NOTE: This group of parameters is ONLY available for NDI® decoders.
  - **Preview** shows whether the decoded source stream is being previewed. If yes, it shows **On**; otherwise, it is **Off**.
  - **Program** shows whether the decoded source stream is being programmed. If yes, it shows **On**; otherwise, it is **Off**.
- **QoS** shows the number of frames dropped in the previous second.
  - **Video drop samples** shows dropped video samples in the previous second.
  - **Audio drop samples** shows dropped audio samples in the previous second.
- **Decoding** shows the decoding speed in the previous second.
  - **Video** shows the video bitrate for the previous second.
  - **Audio** shows the audio bitrate for the previous second.
- **Video** shows the decoded video information.
  - **Resolution** shows the resolution of decoded video .
  - **Field rate** shows the field rate of decoded video .
- **Audio** shows audio information.
  - **Sampling** shows the sampling rate and bit depth of the audio source.
  - **Channels** shows the total number of source audio channels.
- **Jitter** shows the time difference between the estimated and actual arrival time of a frame of source image.



- **Video** shows the video time difference.
- **Audio** shows the audio time difference.

Encoder Module

- **General** shows video source information.
  - **Name** shows video source name.
  - **Clients** shows the total number of clients receiving the streams sent by your converter.
- **Tally** shows the "on-air" status of NDI outputs.
  - **Preview** shows whether the NDI stream has been selected to the Preview bus by any client. If yes, it shows **On**; otherwise, it is **Off**.
  - **Program** shows whether the NDI stream has been selected to the Program bus by any client. If yes, it shows **On**; otherwise, it is **Off**.
- **QoS** shows the number of frames dropped in the previous second.
  - **Video drop frames** shows dropped video frames in the previous second.
  - **Audio drop frames** shows dropped audio frames in the previous second.
- **Encoding** shows the encoding speed in the previous second.
  - **Video** shows the video bitrate for the previous second.
  - **Audio** shows the audio bitrate for the previous second.
- **Video** shows the information of NDI video output.
  - **Resolution** shows the resolution of NDI video output.
  - **Field rate** shows the field rate of NDI video output.
- **Audio** shows NDI audio information.
  - **Sampling** shows the sampling rate and bit depth of the audio output.
  - **Channels** shows the total number of NDI audio input channels.



General Settings

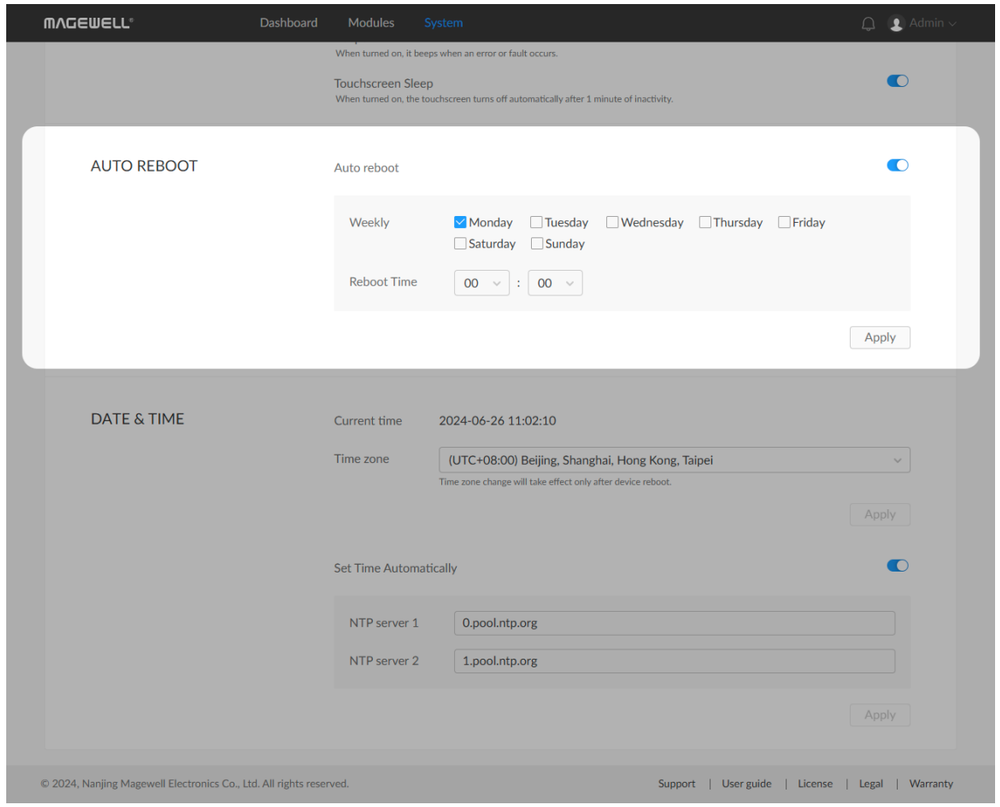
Managing Device

You can change the device name, turn the device on or off, and enable or disable the buzzer.

1. Log in to the Web UI as the Admin user..
2. Choose **System** > **General**.
3. Manage the following items in the **DEVICE** area.
   - **Device name**: Enter a custom name and click **Apply**. It supports 1-32 characters, including A-Z, a-z, 0-9, spaces, and _-. Spaces cannot be at the beginning or end.

     In the "Dashboard" > "MODATOR 2U" area, check if the "Device name" has been modified. Besides, the device name displayed in network discovery will also be synchronized.

   - **Standby**: When turned on, the device enters standby mode. When turned off, the device resumes operation.
   - **Beeper**: When turned on, it will beep when the device encounters a problem or malfunction. When turned off, it will no longer beep for alerts.
   - **Touchscreen Sleep**: When turned on, the touchscreen turns off automatically after 1 minute of inactivity. When turned off, the touchscreen keeps lighting up.

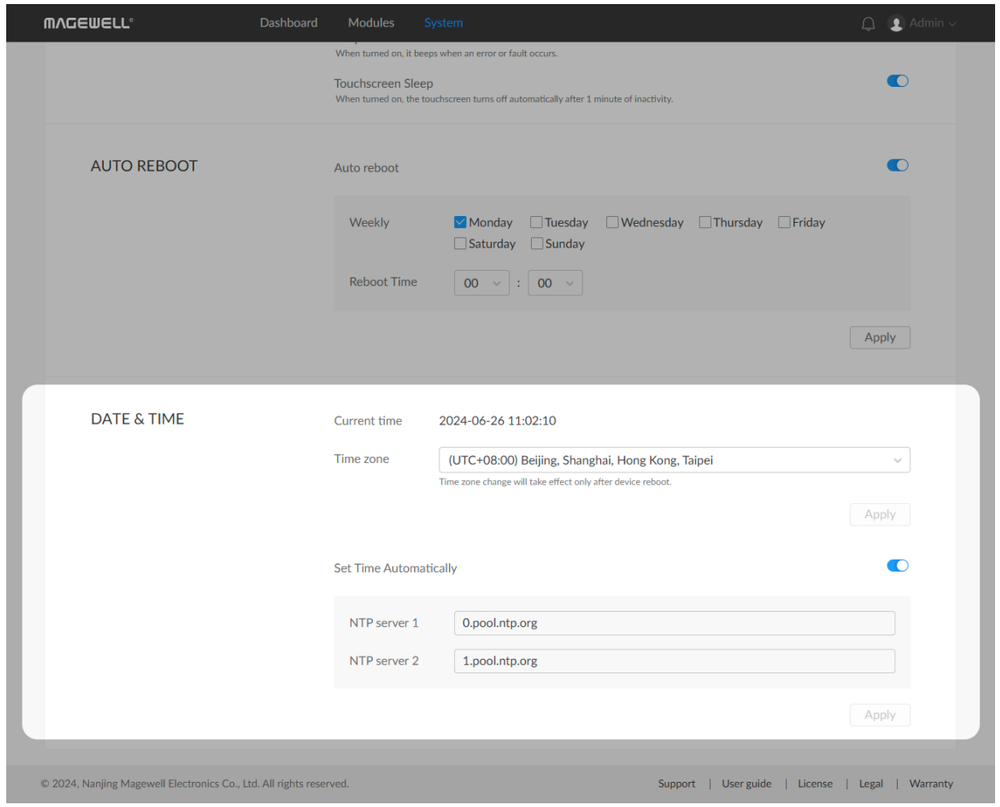


Setting Auto Reboot

You can set to reboot the device automatically at a fixed time.

1. Log in to the Web UI as the Admin user.
2. Choose **System** > **General**.
3. Toggle on the switch of **Auto reboot**.
4. Select date and reboot time (24-hour clock).
5. Click **Apply** to finish your setting. The device will reboot automatically at the set time.

⚠ Note: After auto reboot is set successfully, the device will automatically reboot when it reaches the set time, regardless of whether there are recording, streaming or any other tasks in progress.



Setting System Time

Before using this device, you need to select your time zone and adjust time to ensure time accuracy.

Selecting Time Zone

1. Log in to the Web UI as the Admin user.
2. Choose **System** > **General**.
3. (Optional) In the **DATE & TIME** area, view **Current time**.
4. Select a time zone from the **Time zone** drop-down list box. Modator uses **(UTC+08:00) Beijing, Shanghai, Hongkong, Taipei** by default.
5. Click **Apply**.

Setting Time Automatically

You can automatically synchronize time from the network.

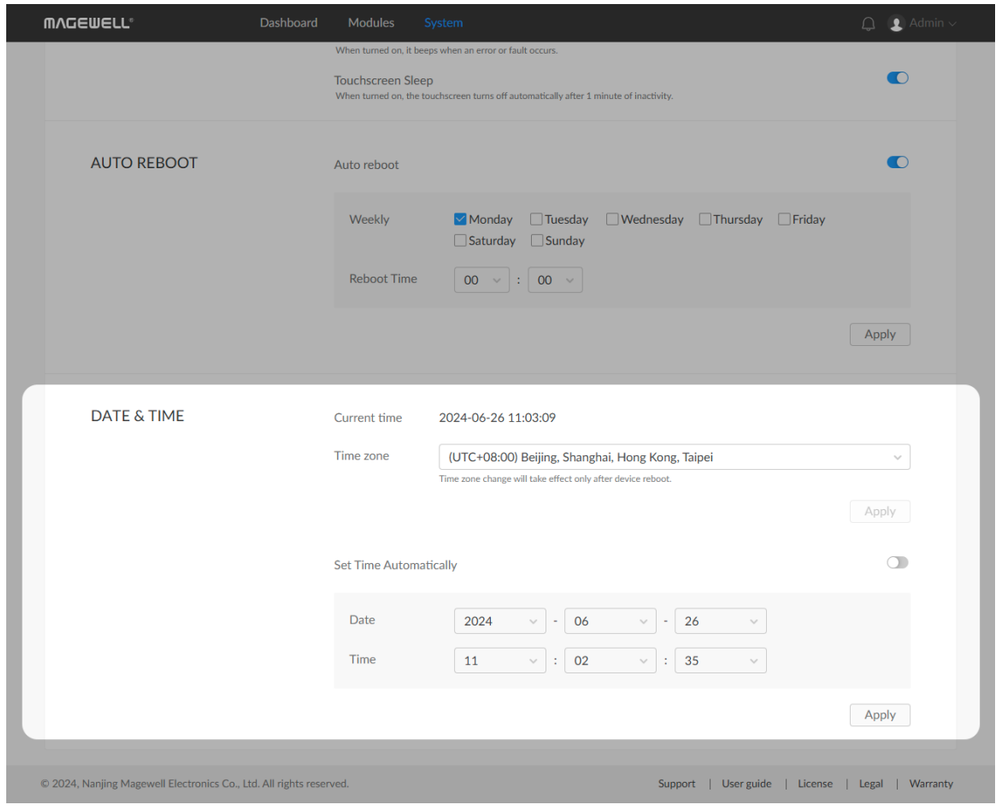
By default, Modator automatically synchronizes time from NTP servers. Network Time Protocol (NTP) servers provide network-based time synchronization service. There are many NTP servers available on the Internet. You may also deploy your own ones. Modator uses the NTP servers provided by ntp.org by default. You can change these NTP servers as needed. For example, you may change to nearer servers to reduce network latency and improve time accuracy. ntp.org also provides recommended practices for configuring NTP servers.

1. Log in to the Web UI as the Admin user.
2. Choose **System** > **General**.
3. In the **DATE & TIME** area, enable **Set Time Automatically**.

> The **Set Time Automatically** switch is enabled by default. If it is disabled, you need to first enable it.

4. Set domain names for NTP servers.
   - **NTP server 1**: Domain name for NTP server 1, mandatory. The default is **0.pool.ntp.org**. Make sure you enter a valid domain name.
   - **NTP server 2**: Domain name for NTP server 1, optional. The default is **1.pool.ntp.org**. Make sure you enter a valid domain name.
5. Click **Apply**.

> Make sure you click this button after configuring. Otherwise, your configuration will become invalid.

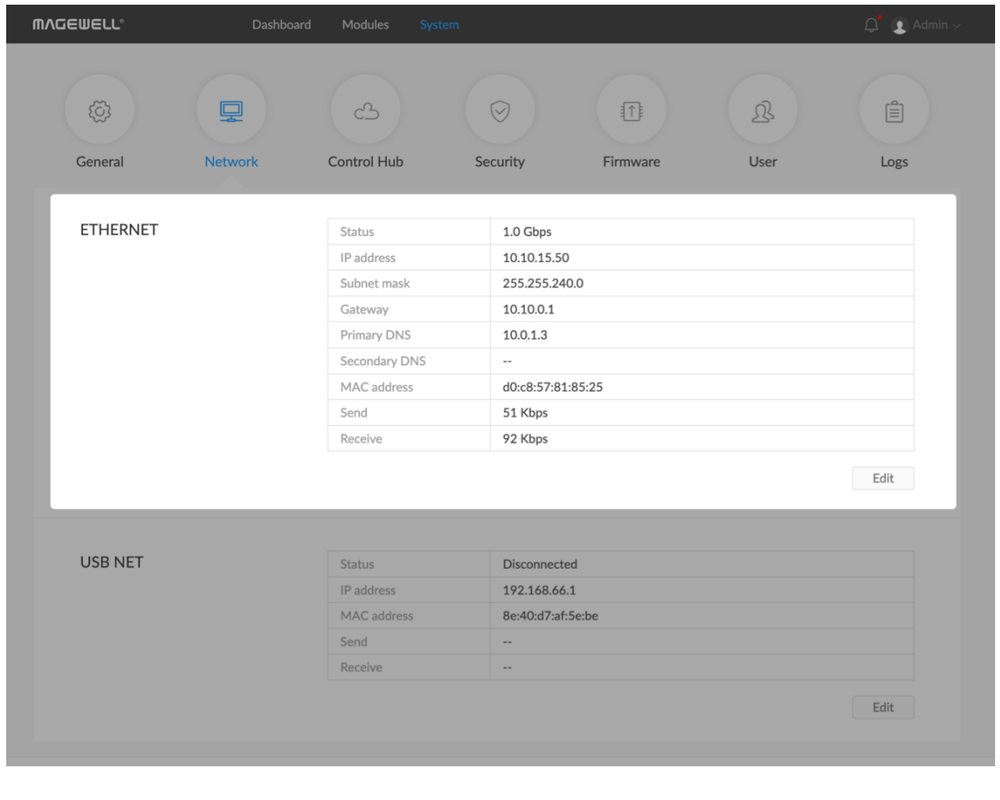


Setting Time Manually

You can also manually calibrate your system time.

1. Log in to the Web UI as the Admin user.
2. Choose **System** > **General**.
3. In the **DATE & TIME** area, disable **Set Time Automatically**.
4. Set **Date** and **Time**, and click **Apply**.
   Select data and time from the drop-down list boxes.
5. Click **Apply**.

> Make sure you click this button after configuring. Otherwise, your configuration will become invalid.



Configuring Network

After connected to a network, Modator can be accessed by other devices. It supports the following network connections:

Connection	How to Connect	Requirements
Ethernet	Connect the Ethernet cable to ETH port of Modator.	Support access by other devices on the same network.
USB network	Connect the supplied USB cable from the CONFIG port of Modator to a computer.	Only the computer connected through the USB cable can access Modator. Linux, macOS 10.12 and later, and Windows 10 19H1 and later are supported.

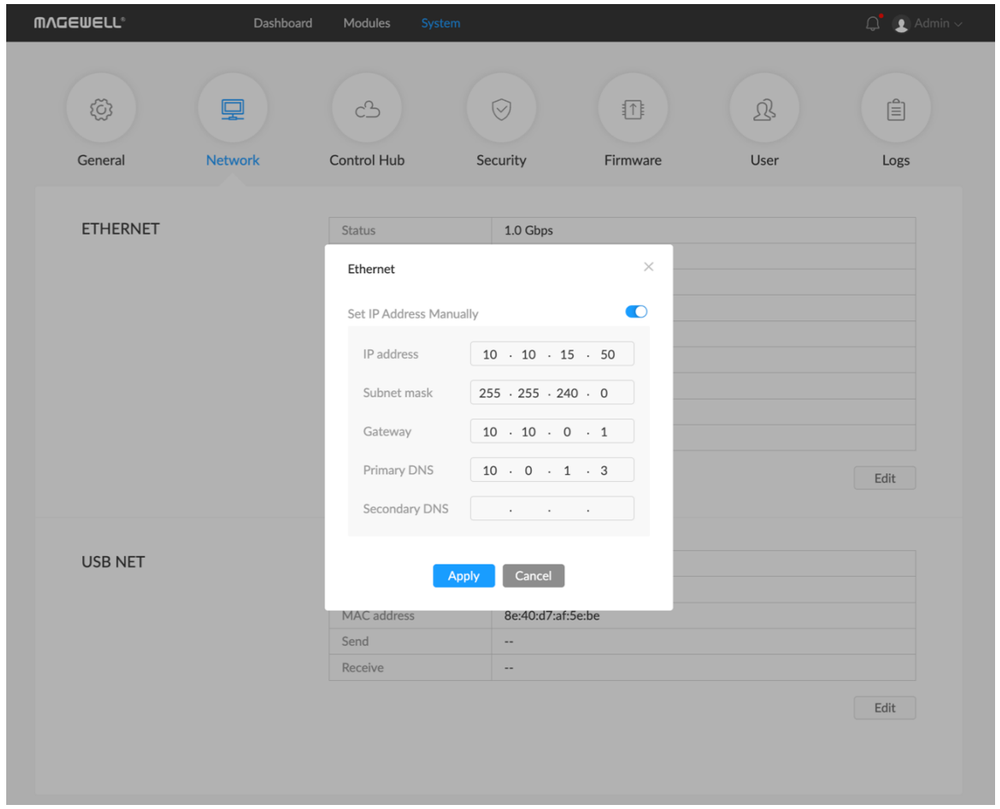
Configuring Ethernet

Viewing Network Information

After Modator connects to an Ethernet network through the ETH port, you can view the following Ethernet connection information in the **ETHERNET** area on the **Network** page.

1. Log in to the Web UI as the Admin user.
2. Choose **System** > **Network**.
3. In the **ETHERNET** area, view Ethernet connection information.
   - **Status**: Ethernet connection status
     - **Down**: The network port is down.
     - **Disconnected**: No network is connected.

    - 10 Mbps, 100 Mbps, 1.0 Gbps, 2.5 Gbps, 5 Gbps, 10 Gbps: Ethernet connection speed
- **IP address**: IP address of the device
- **Subnet mask**: a 32-bit mask that divides an IP address into two parts, network address and host address
- **Gateway**: IP address of the gateway, which connects different networks
- **Primary DNS**: IP address of the primary DNS server. The default is the current network setting.
- **Secondary DNS**: IP address of the secondary DNS server. The value is left empty by default.
- **MAC address**: MAC address of the current network adapter
- **Send**: data sending speed of the device
- **Receive**: data receiving speed of the device



Configuring Static IP Address for Ethernet

Modator uses an DHCP-assigned IP address by default, which can effectively avoid IP address conflict, but can also result in constant IP address changes.

If no DHCP service is available in a network, you can manually set a static IP address. The static IP address will remain unchanged. However, you must make sure that this IP address is not used by any other device on the same network.

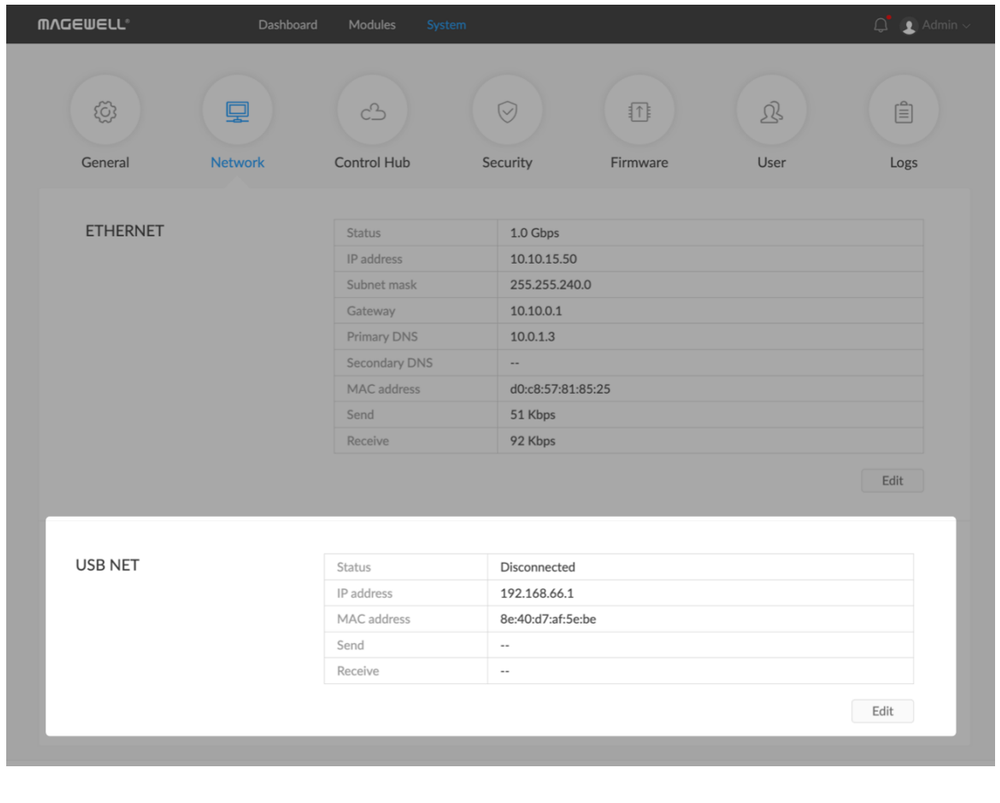
1. Log in to the Web UI as the Admin user.
2. Choose **System** > **Network**.
3. In the **ETHERNET** area, click **Edit**.
4. On the displayed window, enable **Set IP Address Manually**, and set **IP address**, **Subnet mask**, **Gateway**, **Primary DNS** and **Secondary DNS**. The current network settings are used by default.

   > To change back to using the DHCP service to obtain an IP address, disable **Set IP Address Manually** and click **Apply**. The parameters in the dialog box will be restored to their defaults.

5. Click **Apply**.

   > If you are currently accessing the Web UI using an Ethernet IP address, since the original IP address can no longer be used for access, the device will log you out.

6. In the address bar of a browser, enter the new IP address to ensure it can be used to access the Web UI.



Configure USB Network

You can use the USB network function to connect a USB cable from the CONFIG port of Modator to your computer, which establishes a virtual network between the computer and the device. Modator comes with a default network IP, namely 192.168.66.1.

Viewing USB Network Information

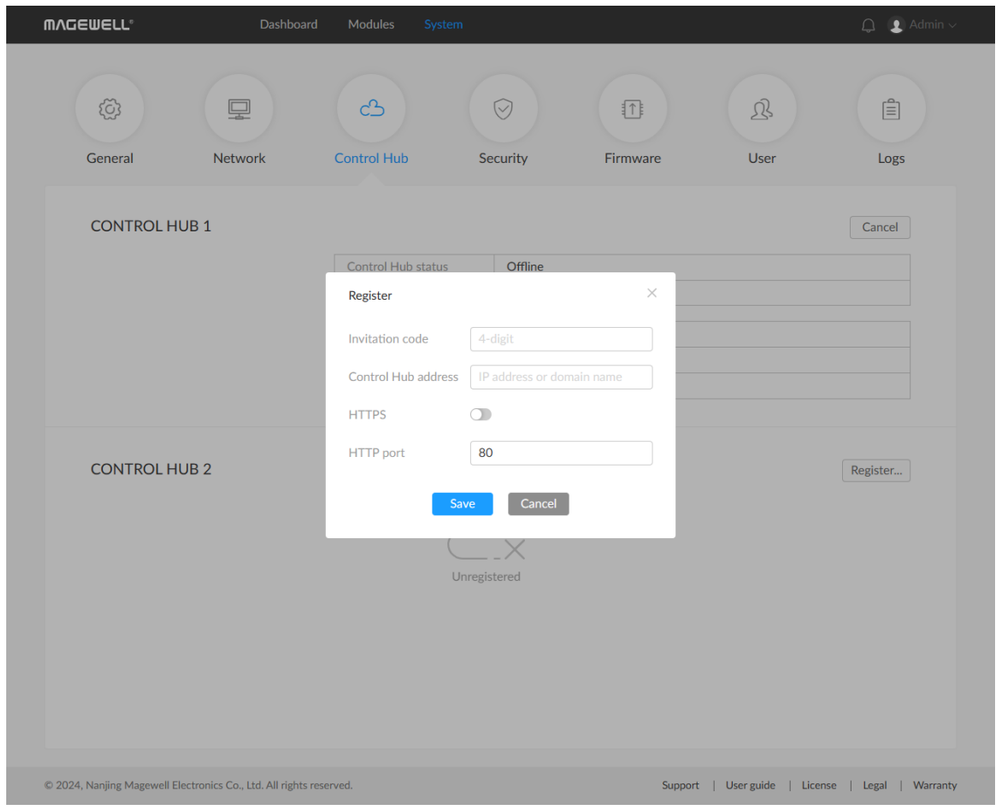
1. Log in to the Web UI as the Admin user.
2. Choose **System** > **Network**.
3. In the **USB NET** area, view USB network connection information:
   - **Status**: USB network connection status
     - **Down**: The network port is down.
     - **Disconnected**: No network is connected.
     - **Full Speed**: USB 1.1 speed at 12 Mbps
     - **High Speed**: USB 2.0 at 480 Mbps
     - **Super Speed 5G**: USB 3.0 speed at 5 Gbps
   - **IP address**: IP address of the device
   - **MAC address**: MAC address of the current network adapter
   - **Send**: data sending speed of the device
   - **Receive**: data receiving speed of the device

Changing USB Network IP Address

- If there is no conflict within the network, it is not recommended to change the USB network IP address.
- It is not recommended to connect multiple Modator devices to the same computer. If you connect multiple devices, only the first device is assigned the default IP address. You will need to change the IP address of previous devices for the subsequent devices to successfully connect to the computer.

1. Log in to the Web UI as the Admin user.
2. Choose **System** > **Network**.
3. In the **USB NET** area, click **Edit**.
4. In the displayed dialog box, set **IP address**.
   You can only change the third segment of the address. Make sure that the new IP address is not occupied in the local network.
5. Click **Apply**.

   If you are currently accessing the Web UI using an USB network IP address, since the original IP address can no longer be used for access, the device will log you out.
6. Use USB network to access the Web UI to ensure that the new IP address can be used for access.



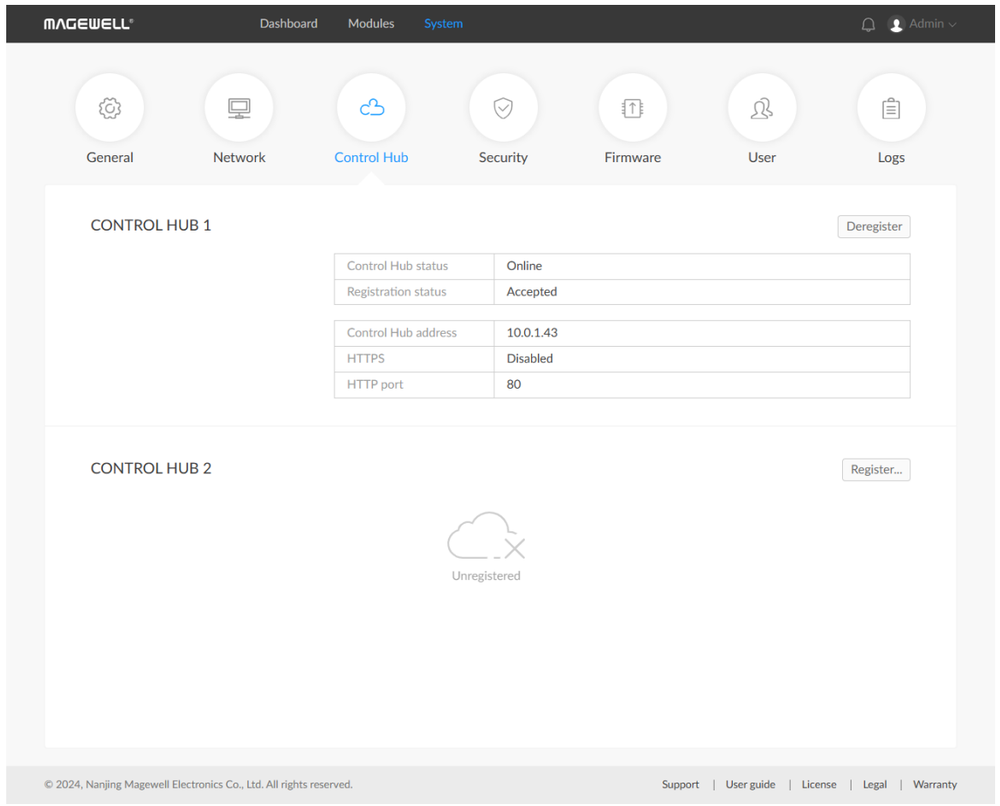
Joining Magewell Control Hub

Modator can join Magewell Control Hub, so that administrators can remotely configure device parameters, trigger operational functions and upgrade the firmware of multiple devices in batches. They can also group devices together and assign permissions for different devices or groups. Currently, you can connect two Control Hub instances.

Please install and log in Magewell Control Hub at first by referring to Magewell Control Hub User Manual.

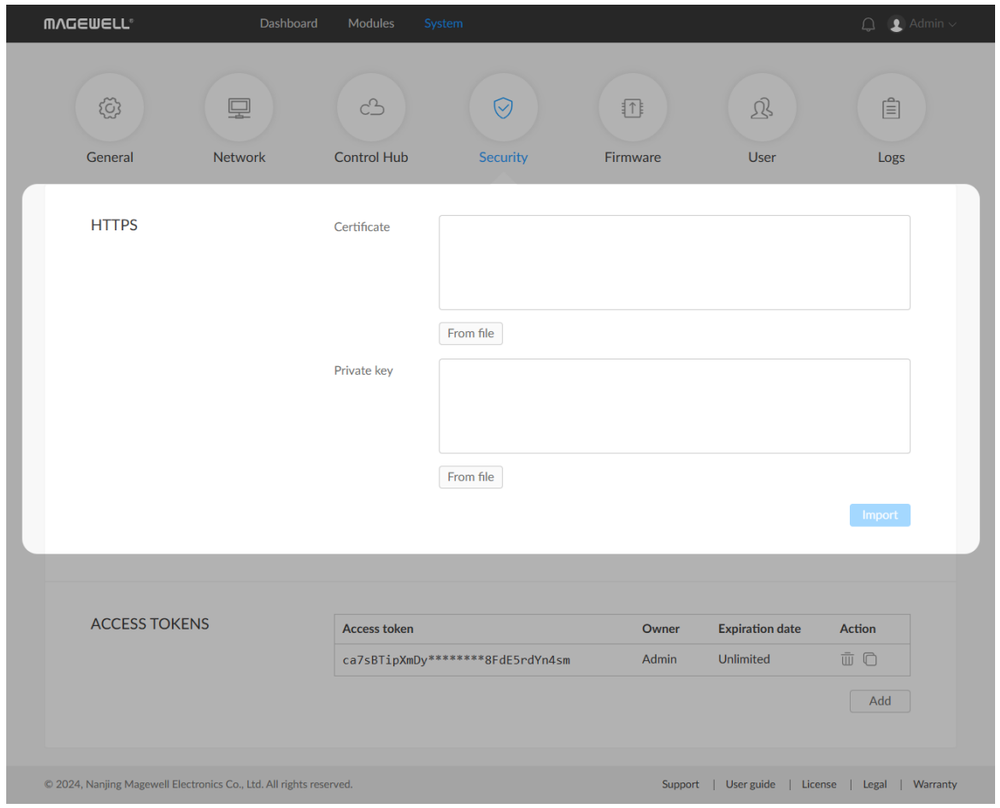
The following steps take the CONTROL HUB 1 area as an example.

1. Log in to the Web UI as the Admin user.
2. Choose **System** > **Control Hub**.
3. Click **Register...** in the **CONTROL HUB 1** area.
4. Input parameters in the pop-up window.
   - **Invitation code**: a 4-digital numbers security code enabled on Magewell Control Hub. If not enabled, leave it empty.
   - **Control Hub address**: input IP address or domain name of Control Hub.
   - **HTTPS**: turn it on if you need to connect Control Hub via HTTPS.
   - **HTTP/HTTPS port**: input the HTTP/HTTPS port number, which should be consist with that of Control Hub. It uses the HTTP 80 port by default. The value ranges from 1 to 65535.
5. Click **Save**.
6. In the **CONTROL HUB 1** area, check parameters related to Control Hub management.
   - **Control Hub status**: **Online** or **Offline**. Online indicates that the communication between device and Control Hub goes well. On the other hand, Offline indicates the communication is interrupted.



- **Register status**: shows current status of Control Hub join permission, including:
  - **Incorrect invitation code**: you need to change your registration with correct code.
  - **Waiting**: registration is successfully submitted to Control Hub and waiting for approval.
  - **Accepted**: registration is approved. This device can be remotely controlled.
  - **Rejected**: Registration is denied.
  - **Deleted**: Registration is deleted, you can re-apply for joining the Control Hub.
- **Control Hub address**: shows IP address or domain name of Control Hub.
  - **HTTPS**: it displays "Enabled" when connecting Control Hub via HTTPS; it displays "Disabled" when via HTTP.
  - **HTTP/HTTPS port**: shows the HTTP/HTTPS port of the device used to communicate with Control Hub.

7. Manage the device on Magewell Control Hub. For details, please refer to Magewell Control Hub User Manual.
8. To deregister from Magewell Control Hub, click **Deregister** in the **CONTROL HUB 1** area.

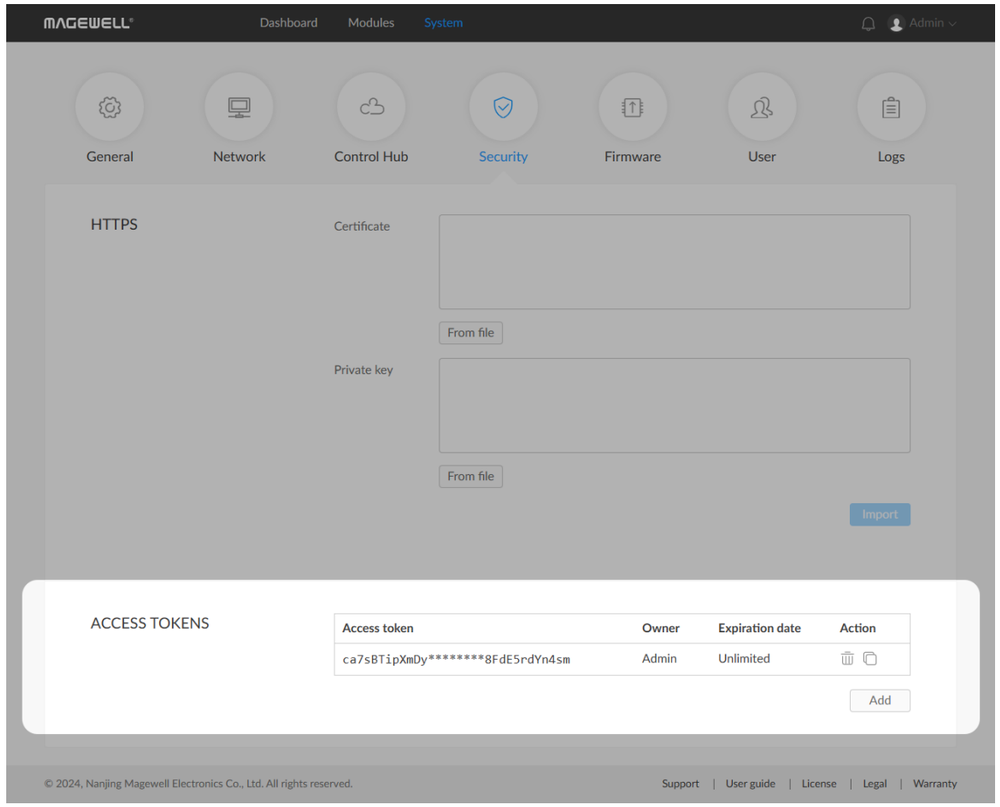


Security Settings

Modator supports login via HTTPS or Token, to enhance security.

Setting HTTPS

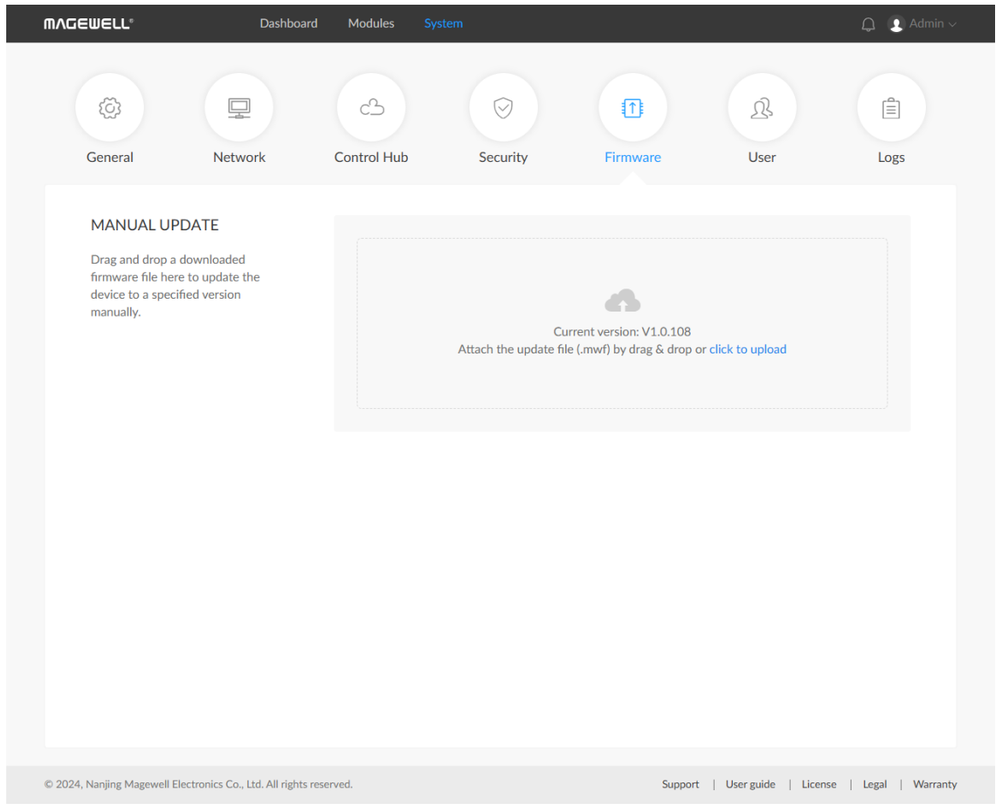
1. Log in to the Web UI as the Admin user.
2. Choose **System** > **Security**.
3. Add HTTPS credentials.
   i. **Certificate**: Click **From file** and choose the certificate file.
   ii. **Private Key**: Click **From file** and select the key file.
   iii. Click **Import**, and the relevant information of the certificate will be displayed on the page.
4. Click **Enable**, and then restart the device to make the configuration take effect.
5. Enter the IP address with the prefix https:// in the browser, and access the Web UI and log in again.
6. To change the certificate, click **Change** and re-import the certificate.
7. To delete the certificate, click **Delete**, and then restart the device to make the configuration take effect.
8. To disable HTTPS login, click **Disable**, and then restart the device to make the configuration take effect.



Adding Token

You can add a Token and use the authentication methods of the Token mechanism to enable login-free calls to the API.

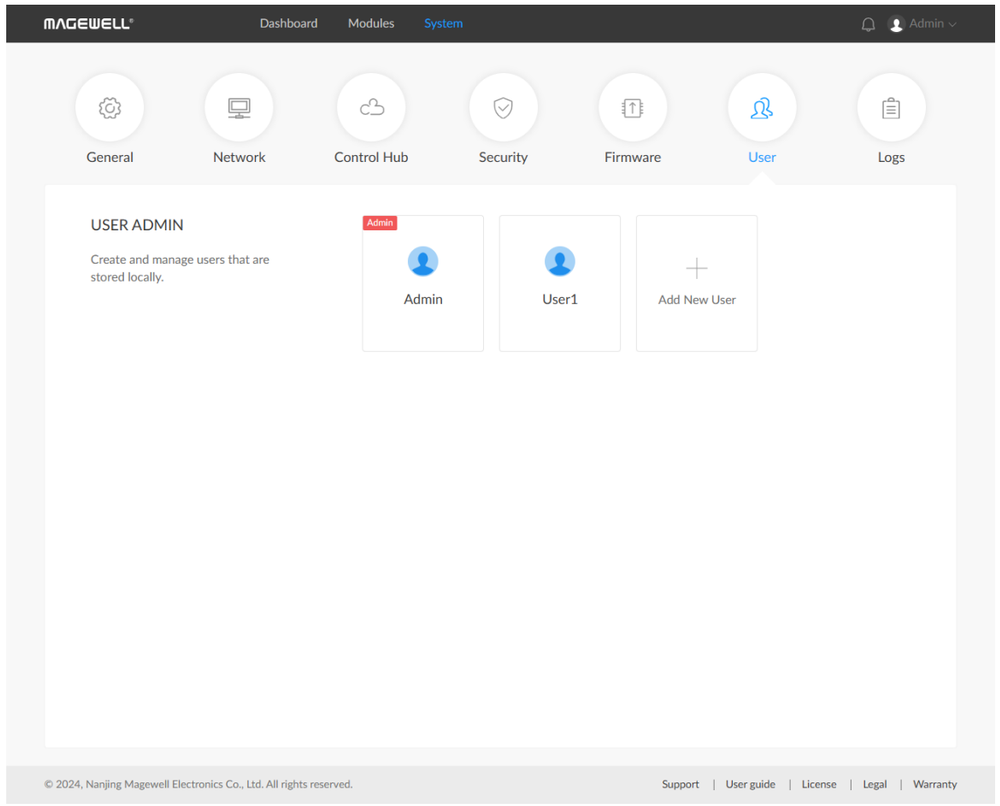
1. Log in to the Web UI as the Admin user.
2. Choose **System** > **Security**.
3. In the **ACCESS TOKENS** area, click **Add**.
4. Select **Owner**, which can be Admin or a common user.
5. Enter **Access token**. The system will provide a random token.
   The token must be 64 characters long and can include A-Z, a-z, and 0-9.
6. (Optional) Toggle on the **Expire** switch to set an expiration date. If disabled, the token remains valid indefinitely.
7. Click **Apply**.
8. (Optional) Repeat steps 3 - 7 to add more tokens.
9. In the "Access token" list, you can view the added tokens, their owners, and expiration times.
   - Click on the right to delete a token.
   - Click on the right to copy a token.



Updating Firmware

Before updating, download the firmware from the official website to your local computer.

1. Log in to the Web UI as the Admin user.
2. Choose **System** > **Firmware**.
3. In the **UPDATING FIRMWARE** area, click **click to upload** in the file upload box to select the firmware file stored locally and upload.
   You can also drag the firmware file to the file upload box.
   The device will automatically verifies if the update file is valid. If yes, the device then loads the file.
4. Click **Update**.
   - The update consists of operations including erasing and writing, so you need to wait for a while.
   - While updating, do not shut down/reboot the device, or disconnect from the network.
   - If the update is interrupted due to unexpected exceptions (such as power outage or network disconnection), the firmware will roll back to the factory version, and you need to update the firmware again.
5. When the update is completed, click **Reboot**.
   The reboot will automatically disconnect from and then connect to the network. when the reboot is completed, you will be directed to the Web UI login page.
6. Log in to the Web UI again and check **Firmware version** in the **MODATOR 2U** area on the **Dashboard** page.
   The firmware version should be the one you just updated to.



Managing Users

Modator has a preset Admin user that cannot be deleted. The Admin user can create and manage users for the current device.

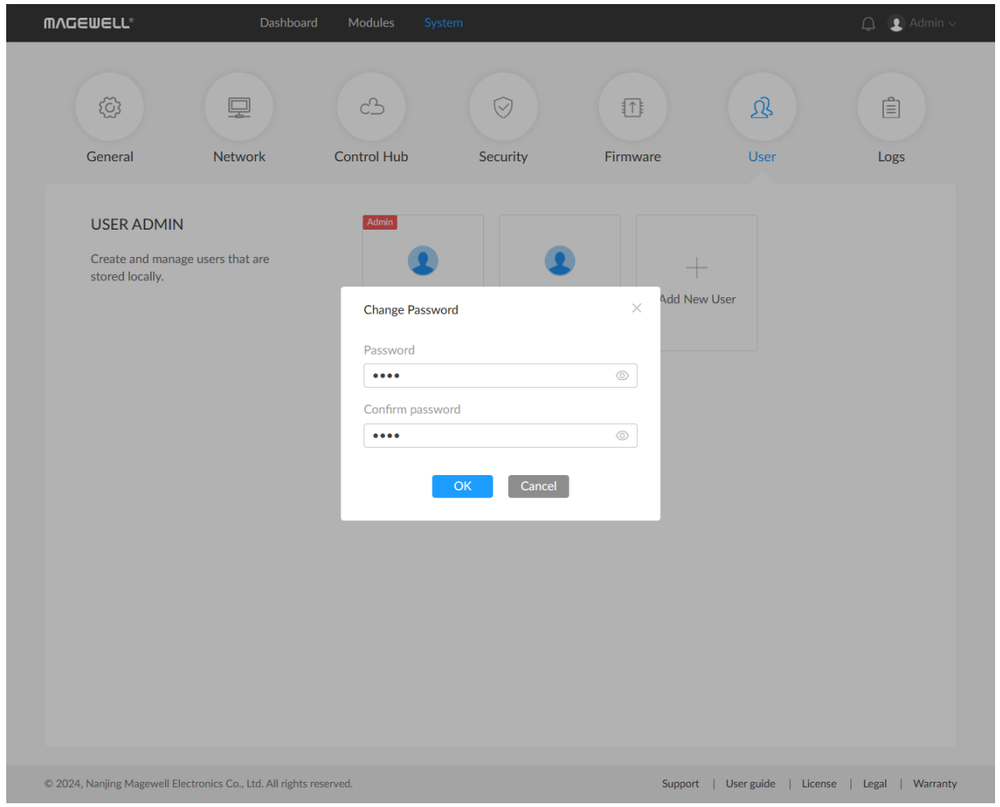
Creating Users

Multiple users can access the same device for monitoring or other operations.

1. Log in to the Web UI as the Admin user.
2. Choose **System** > **User**.
3. On the **User** tab page, click the **Add New User** button.
4. Enter the user name and password, and confirm the password.
   - The user name is case sensitive, ranging from 3 to 12 characters consisting of A-Z, a-z, 0-9 and underscores (_).
   - The password is case sensitive, ranging from 1 to 32 characters consisting of A-Z, a-z, 0-9, and special characters _-~!@#$%^&*-+=
5. Click **OK**.

Deleting Users

1. Log in to the Web UI as the Admin user.
2. Choose **System** > **User**.
3. On the **User** tab page, move the mouse to a user and click the **X** icon at the upper right corner.
   The **Admin** user cannot be deleted.
4. In the displayed dialog box, click **Yes**.



Resetting the Password

1. Log in to the Web UI as the Admin user.

   If you need to reset the password of the Admin user, you need to reset the device to restore to the default Admin account. For details, see Resetting Device.

2. Choose **System** > **User**.

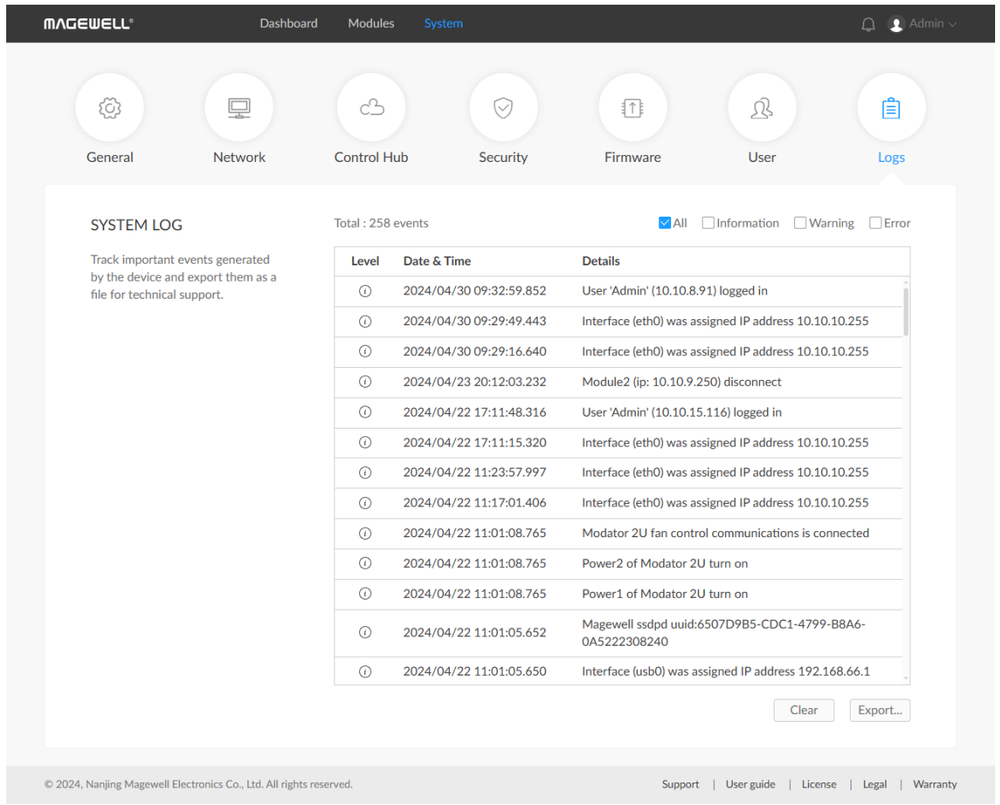
3. On the **User** tab page, move the mouse to a user and click **Set password** .

4. In the displayed window, enter the new password, and confirm the new password.

   The password is case sensitive, ranging from 1 to 32 characters consisting of A-Z, a-z, 0-9, and special characters _-~!@#$%^&*-+=

5. Click **Yes**.

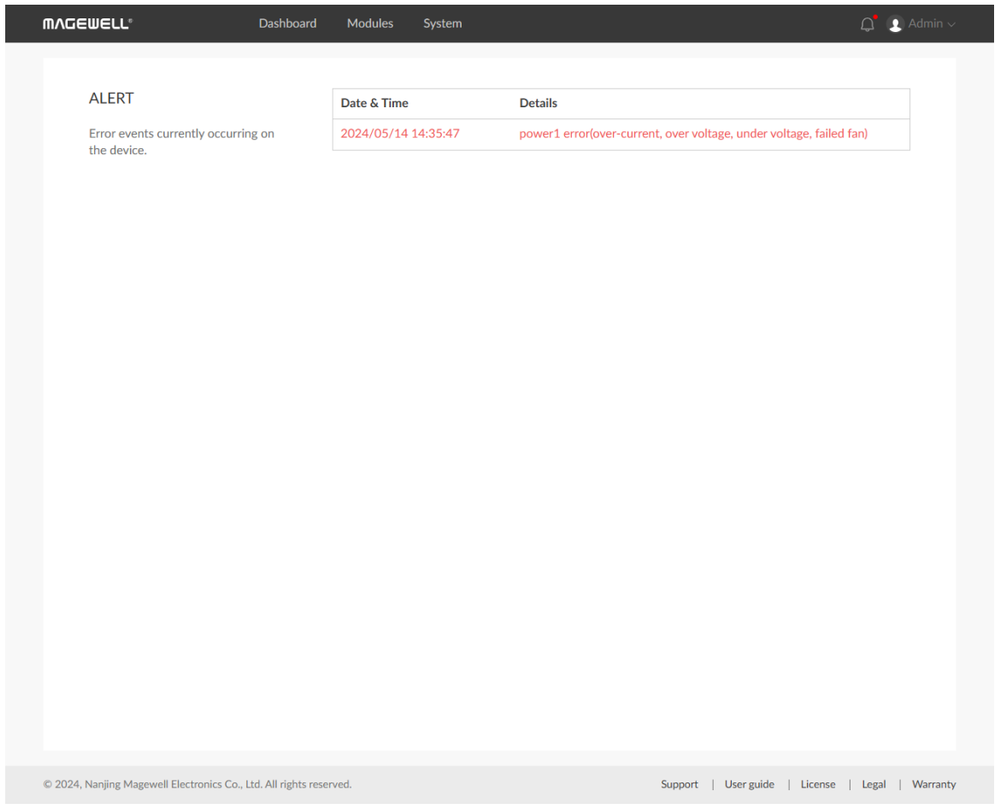
   The new password will take effect immediately.



Viewing Logs

When you need support service, providing logs to support engineers can often help troubleshooting your problem. Only the Admin user can export logs.

1. Log in to the Web UI as the Admin user.
2. Choose **System** > **Logs**.
3. (Optional) In the **SYSTEM LOG** area, filter logs.
   By default, all logs are displayed in the table. Check the following boxes to display corresponding logs:
   - **All**: Check to display all logs.
   - **Information**: Check to display information logs. This log level records user operations and system events, such as login and signal locking.
   - **Warning**: Check to display warning logs. This log level records system exceptions, such as Ethernet disconnection, and signal not locked.
   - **Error**: Check to display error logs. This log level records serious system errors, such as device initiation failure.
     The total number of logs is also displayed above the log list.
4. (Optional) Click **Export...** to export a log file in .html format.
   In the displayed window, click **Export**.
5. (Optional) Click **Clear** to remove all logs.
   In the displayed window, click **Yes**.

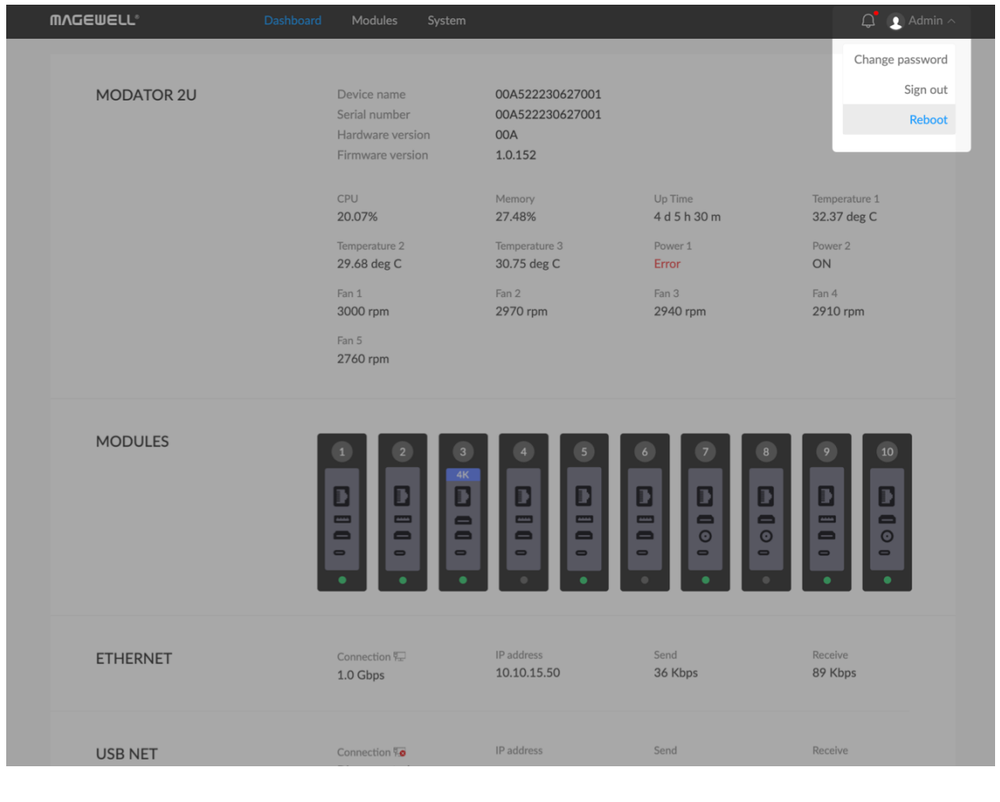


Viewing Alerts

When the device encounters an error or failure, a red dot will appear on the alert sign in the upper right corner of the Web UI.

Please click to view the warning information and take appropriate measures to ensure the stable and reliable operation of the equipment.

The warning information includes the time the warning was generated and a description.

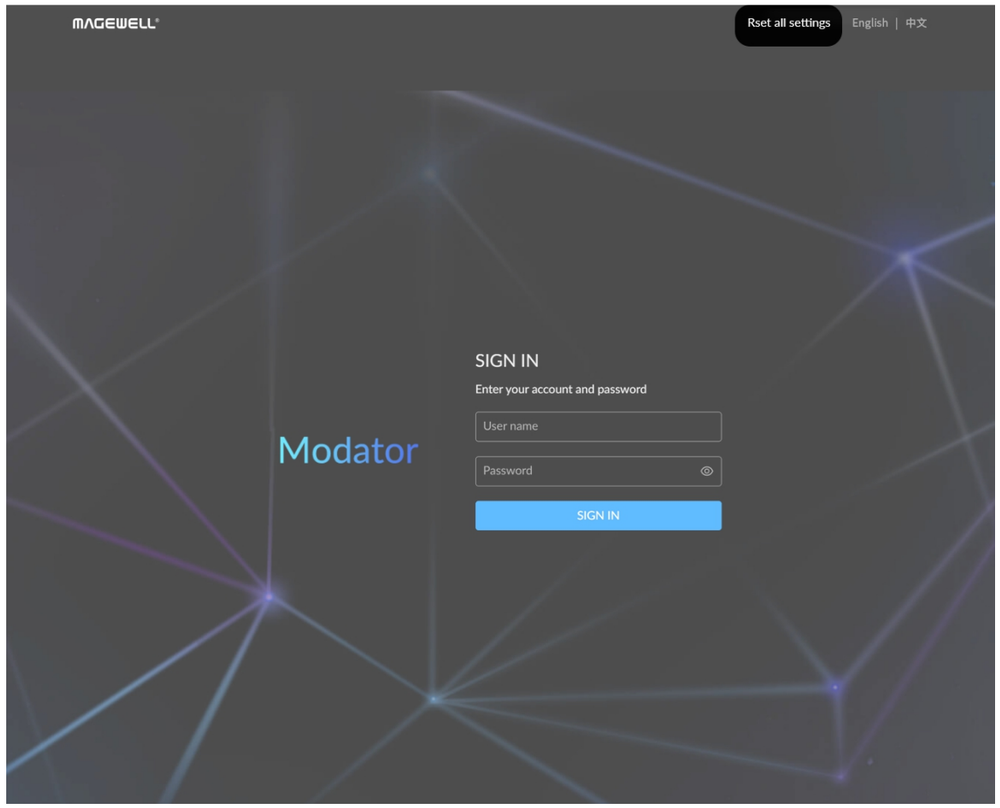


Rebooting Device

When Modator cannot run properly, you can reboot the device for troubleshooting.

> ⚠ Rebooting will not make the current device settings invalid.

1. Log in to the Web UI as the Admin user.
2. At the upper right corner of the Web UI, click the user name, and click **Reboot**.
3. In the displayed window, click **Reboot**.
   The reboot will automatically disconnect from and then connect to the network. when the reboot is completed, you will be directed to the Web UI login page.



Resetting Device

Both the Admin user and common users can reset Modator. To avoid unintended resetting, you can only reset the device after connecting to it through USB network.

⚠ Note: The resetting will restore your device to default settings.

1. Use an USB cable to connect the device and your computer.
2. On the computer, open a browser and enter the USB network IP address in the address bar.
   The default IP address is 192.168.66.1. You are not advised to change this address unless IP address conflict exists in the local network.
3. Click **Reset all settings** at the upper right corner of the Web UI login page.
   In the displayed window, click **Reset**.
   Resetting may take a few minutes to complete. Do not shut down or operate the device during the resetting.

Support

Get the Latest Information

If you have any problems using Magewell products or need more technical information, please visit the following channels.

- Tutorial video: www.magewell.com/tv
- YouTube channel: Magewell Video Capture Device
- Knowledge base: www.magewell.com/kb/
- Official website: www.magewell.com/
- Linkedin: Magewell
- Facebook: Magewellcn
- Twitter: Magewellcn

Technical Support

- Submit your questions in the online Ticket System: tickets.magewell.com
- Contact the Magewell Technical Support Team at support@magewell.net

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