# V1200 Series User Manual

**Version 2.0, July 2025**

**www.moxa.com/products**

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# V1200 Series User Manual

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# 1. Introduction

The V1200 computing platform is designed for railway TCMS data-acquisition and train-to-ground applications. The computer comes with dual M12 10/100/1000 Mbps Ethernet ports, built-in 5G and Wi-Fi 6 modules and dual RS-232/422/485 serial ports. The slim, compact design with multiple mounting options reduces installation space and provides flexibility for mounting in various cabinets or onboard locations. The wireless enabled models are thoroughly tested in a testing chamber, guaranteeing that the wireless-enabled computing platforms meet EN50155 OT4 requirements and are suitable for wide-temperature applications.

Each unit is equipped with Moxa Industrial Linux (MIL) for long-term Linux support and vulnerability patching. A web-based interface is provided for easy configuration of Ethernet and wireless network settings without the need for programming.

## Package Checklist

Before installing a V1200 computer, verify that the package contains the following items:

- 1 x V1200 Series computer
- 1 x Wall-mounting kit
- 1 x Quick installation guide (printed)
- 1 x Warranty card (printed)

**NOTE**

Notify your sales representative if any of the above items are missing or damaged.

## Product Features

- Arm Cortex-A53 quad-core 1.6 GHz processor
- Integrated 5G Sub-6GHz NR module and Wi-Fi 6 module with dual SIM
- Slim, compact design with multiple mounting options
- Isolated power with 24 to 110 VDC power supply range
- TPM 2.0 built-in and developed according to the IEC 62443-4-1 and security features referencing IEC 62443-4-2 industrial cybersecurity standards.*
- Moxa Industrial Linux built-in for long-term Linux support
- Meet EN 50155 OT4 operating temperature (-40 to 70°C with cellular and Wi-Fi modules enabled)

*IEC-62443-4-2 SL2 referencing features to be released in 2026.

## Product Specifications

**NOTE**

The latest specifications for Moxa's products can be found at https://www.moxa.com.

# Supported Firmware Version

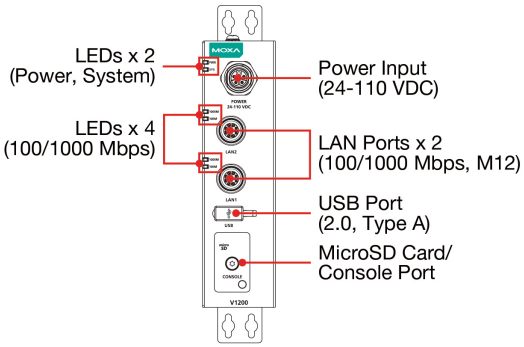
This instructions in this manual are based on firmware version v1.1. For configuration instructions, primarily focusing on the Web UI features available in this release, see the Getting Started section.

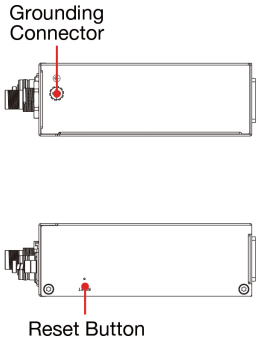
# 2. Hardware Introduction

The V1200 computer is compact and designed to be rugged enough for industrial applications. This chapter provides information on the appearance and dimensions of the V1200 and describes the LED indicators that can help you monitor system performance and identify issues. The multiple installation options allow you to find the most suitable installation method for your site and ensure the correct installation of computer.

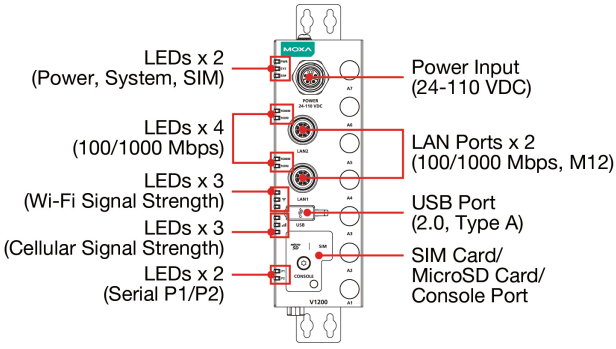
# Appearance

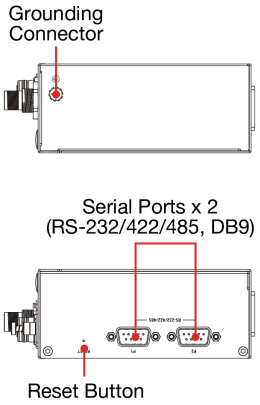
## V1202-CT-T



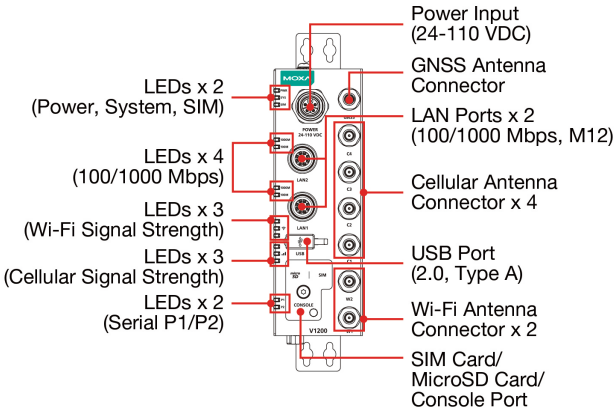



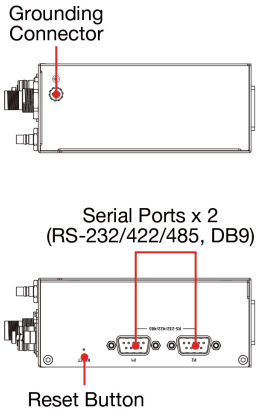

## V1222-CT-T



## V1222-W-CT-T

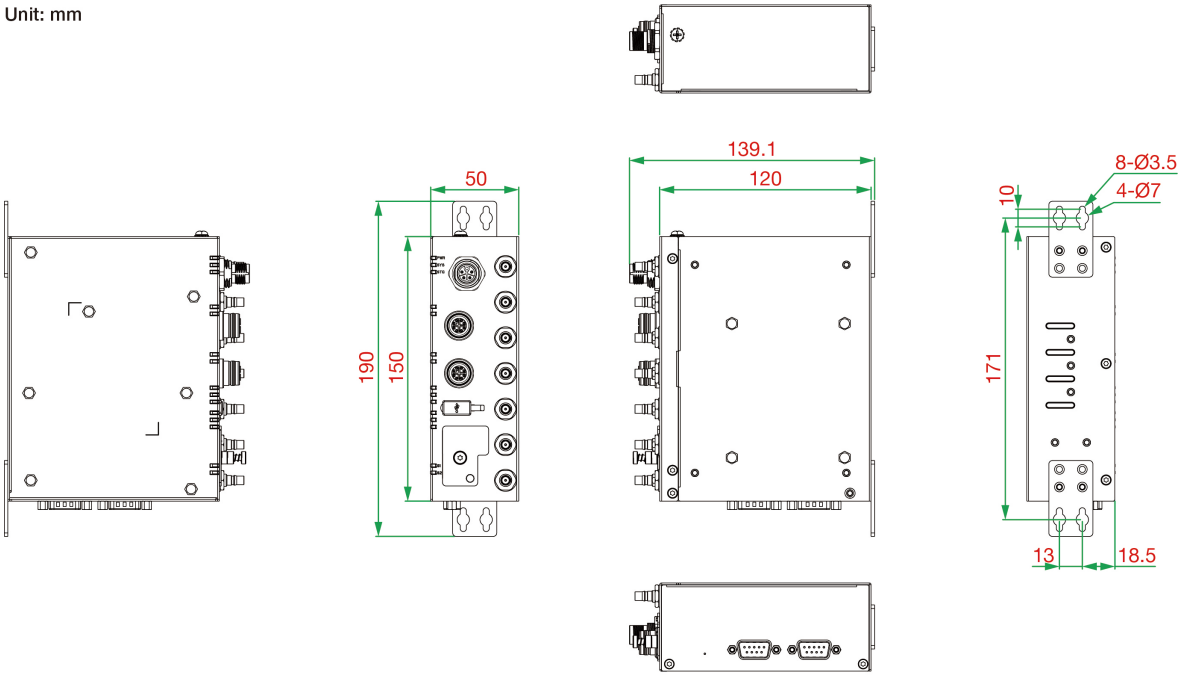



# Dimensions

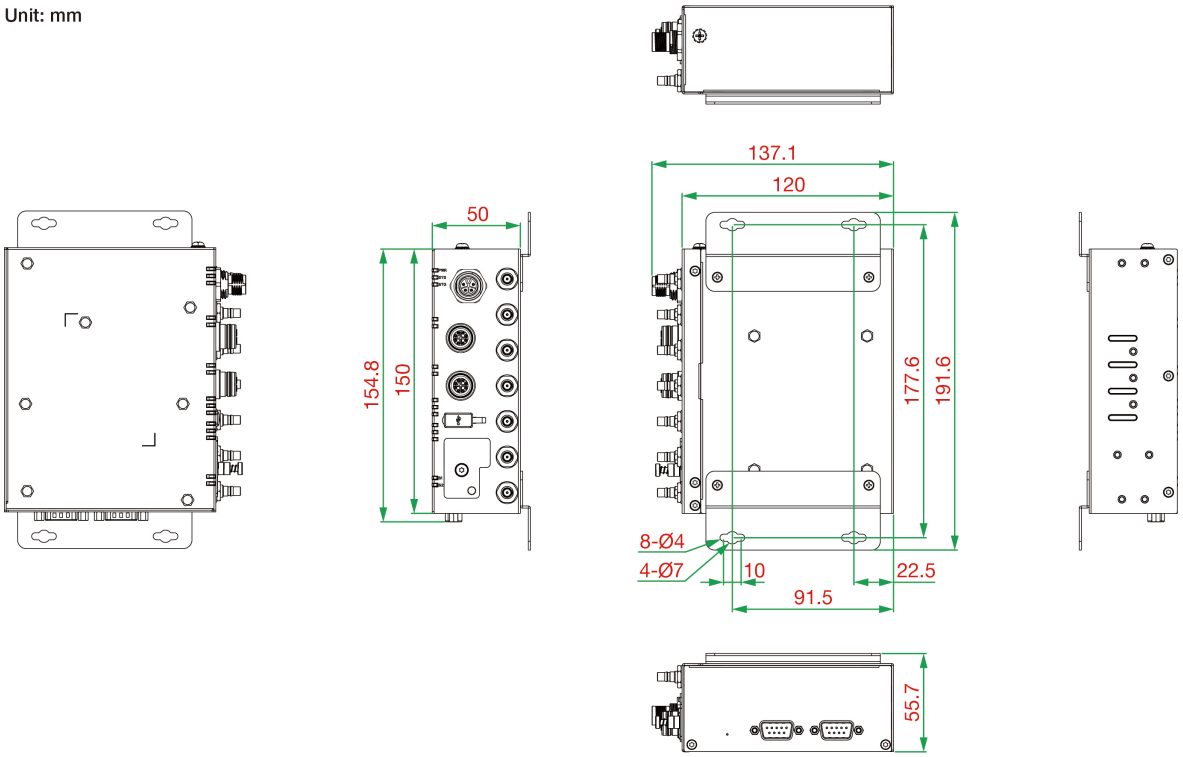
## Wall Mounting (default)

Unit: mm



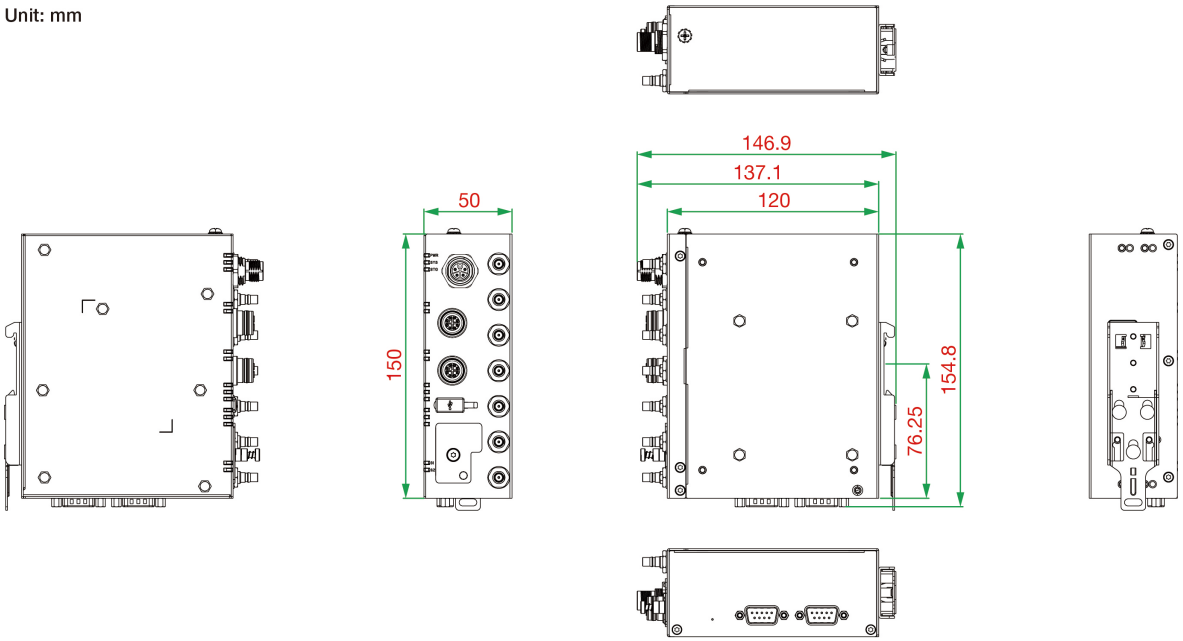
# Desk Mounting (optional)

Unit: mm




# DIN-rail Mounting (optional)

Unit: mm



# LED Indicators

The function of each LED is described in the table below:

| LED Name | Color | LED Status | Description |
|---|---|---|---|
| PWR | Green | Steady on | Power is on |
| | Off | Off | No power |
| SYS | Green | Steady on | Device has booted successfully<br>(all system services are initialized) |
| | Green | Blinking | Device is in the process of booting up |
| | Red | Steady on | Device boot up failed<br>(one or more system services failed to initialize) |
| | Off | Off | The device is still in the bootloader stage; is not booted into the kernel yet |
| LAN | Green | Steady on | 100 Mbps Ethernet link |
| | | Blinking | Data is being transmitted or received |
| | Yellow | Steady on | 1000 Mbps Ethernet link |
| | | Blinking | Data is being transmitted or received |
| | Off | Off | The Ethernet cable is disconnected |

# Installation Options

**NOTE**

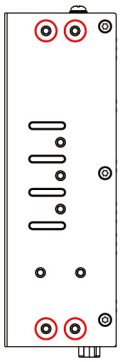
For IP40 compliance, the cover of the SD card, SIM card, and console port, should be secured properly with screws.

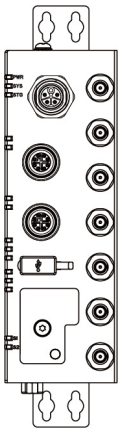
Ensure that the USB port is covered with the rubber cap if it is not in use.

The V1200 Series can be mounted on to a DIN rail, a wall, or installed on a desk. The wall-mounting kit is included in the product package by default. If you want to use another mounting method, you will need to order the optional DIN-rail mounting or desk-mounting kits separately. Contact a Moxa sales representative to place an order.

## Wall Mounting (default)

The wall-mounting kit is included in the product package by default. To attach the wall-mounting backets, first align them to the apertures on the back panel of the V1200 and fasten the four M3 screws (torque value of 4.5±0.5 kgf-cm) included in the package to secure the mounting brackets.

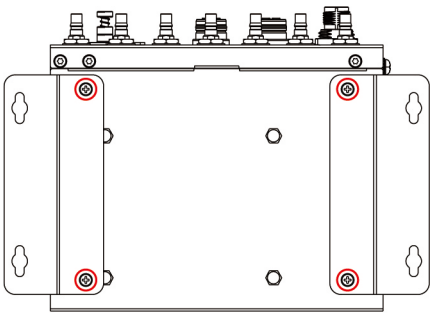




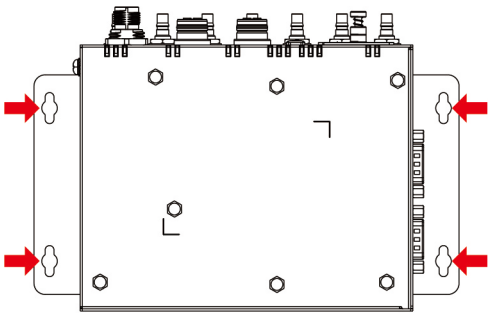
To mount the V1200 on to a wall, use four M3 x 6 mm screws and a torque value of 4.5±0.5 kgf-cm. See *Additional Screws for Wall and Desk Mounting*.

# Desk Mounting (optional)

**Step 1**
Use the four screws (M3 x 5 mm) in the package to fasten the wall-mounting brackets to the computer.



**Step 2**
Use another four screws (M3 x 6 mm) to mount the computer on to a wall or in a cabinet.



To fix the V1200 on to a desk, use four M3 x 6 mm screws and a torque value of 4.5±0.5 kgf-cm. See *Additional Screws for Wall and Desk Mounting*.

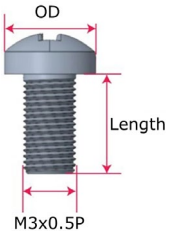
## NOTE

- Test the screw head and shank size by inserting the screws into one of the keyhole shaped apertures of the wall-mounting plates before attaching the plate to the wall.
- Do not drive the screws in all the way—leave a space of about 2 mm to allow room for sliding the wall mount panel between the wall and the screws.

### Additional Screws for Wall and Desk Mounting

You will require additional screw for mounting the V1200 with the mounting brackets on to a wall or a desk. These screws are not included in the mounting kit package and must be purchased separately. The specifications of the additional screws required are as follows:

**Head Type:** Pan/Doom
**Head Diameter** 5.2 mm < OD < 7.0 mm
**Length** > 6 mm
**Thread Size:** M3 x 0.5P
**Recommended Fastening Torque:** 4.5 ± 0.5 kgf-cm



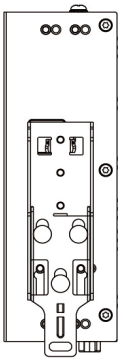
# DIN-rail Mounting (optional)

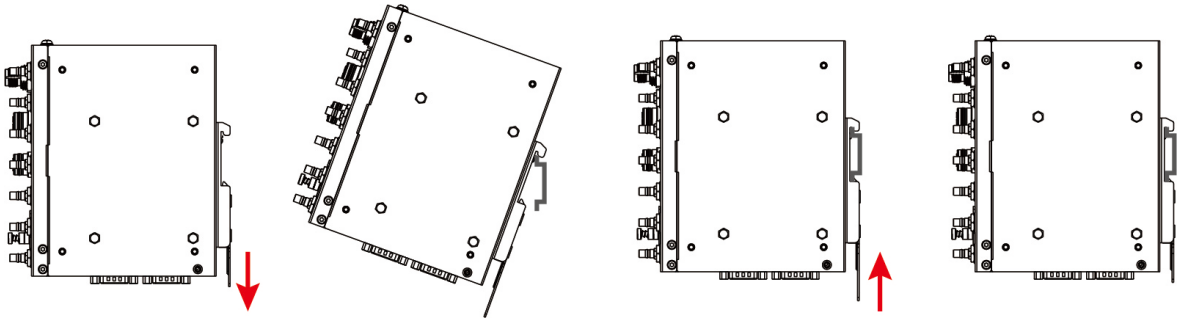
The DIN-rail mounting kit is an optional accessory not included in the product package and needs to be purchased separately.

To attach the DIN-rail mounting bracket to the computer, align the mounting bracket to the mounting apertures on the back panel of the computer. Fasten the five M3 x 4 mm screws in the mounting-kit package to secure the bracket to the computer with a torque value of 4.5±0.5 kgf-cm.

To mount the V1200 Series on to a DIN rail, ensure that the stiff metal spring is facing upwards and follow these steps.

Pull down the slider of the DIN-rail bracket located at the back of the unit.
Insert the top of the DIN rail into the slot just below the upper hook of the DIN-rail bracket.
Latch the unit firmly on to the DIN rail as shown in the illustrations below.
Once the computer is mounted properly, you will hear a click and the slider will rebound back into place automatically.





# 3. Hardware Connection Description

In this chapter, we describe how to connect the V1200 to a network and various devices.

## Wiring Requirements

In this section, we describe how to connect various devices to the embedded computer. Be sure to read and follow these common safety precautions before proceeding with the installation of any electronic device:

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.

### NOTE

Do not run signal or communication wiring and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.

- You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separate.
- When necessary, it is strongly advised that you label wiring to all devices in the system.

### ATTENTION

**Safety First!**

Be sure to disconnect the power cord before doing installations and/or wiring.

**Electrical Current Caution!**

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.

If the current goes above the maximum rating, the wiring could overheat, causing serious damage to your equipment.

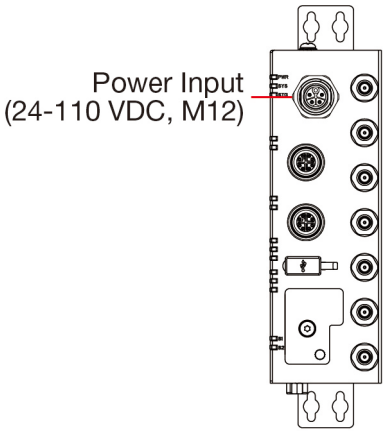
**Temperature Caution!**

Be careful when handling the unit. When the unit is plugged in, the internal components generate heat, and consequently the outer casing may feel hot to the touch.

# Connecting the Power

Connect the 24 to 110 VDC power line with M12 K-coded connector (needs to be purchased separately) to the V1200 computer. If the power is supplied properly, the "PWR" LED will glow a solid green after a 25 to 30-second delay. The power input location and pin definition are shown in the following figures:

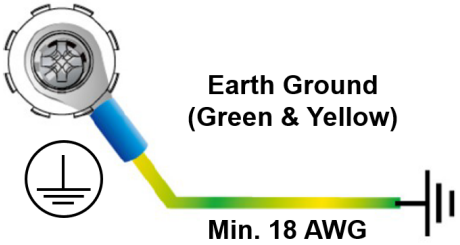
| PIN | Con. |
|---|---|
| 1 | V1+ |
| 2 | V1- |
| 3 | N/A |
| 4 | N/A |
| 5 | N/A |




# Grounding the Computer

There is a grounding connector located on the top panel of the computer. Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Note that this product is intended to be mounted on a well-grounded mounting surface, such as a metal panel.

The power cord adapter should be connected to a socket outlet with an earthing connection.



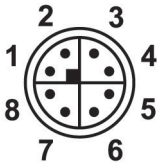

**ATTENTION**

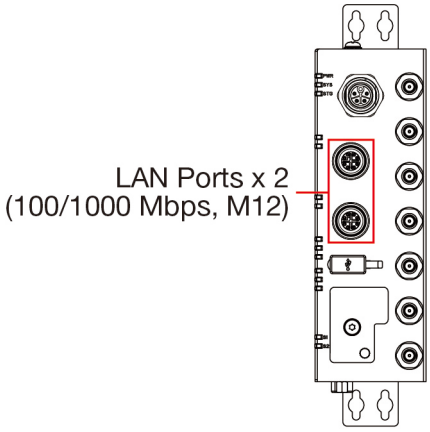
This product is intended to be mounted to a well-grounded mounting surface such as a metal panel. Use the green-and-yellow cable type minimum with American Wire Gauge (AWG) 18 for grounding.

# Connecting the Network

The pin assignments for the V1200 computer's Ethernet ports are shown in the following figure. If you are using your own Ethernet cable, make sure that you match the pin assignment on the connector of the Ethernet cable to the pin assignment shown below:

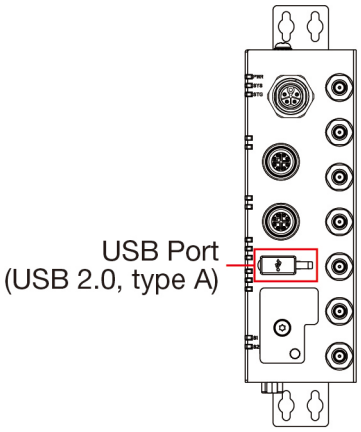
| PIN | Definition |
|---|---|
| 1 | DA+ |
| 2 | DA– |
| 3 | DB+ |
| 4 | DB– |
| 5 | DD+ |
| 6 | DD– |
| 7 | DC– |
| 8 | DC+ |



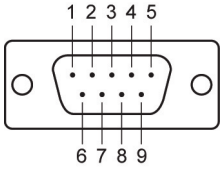

# Connecting a USB Device

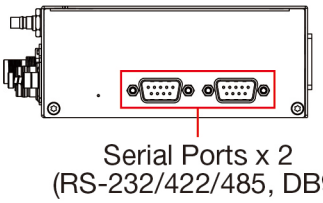
The USB port, located on the front panel, is a type-A USB 2.0 console port which you can use to connect a USB storage device or a type-A USB compatible device.



# Connecting Serial Ports

The computer comes with two serial ports on the bottom panel. Use a serial cable to connect your serial device to the computer via a serial port. The serial ports use DB9 connector and can be configured for RS-232, RS-422, or RS-485 communication. The location and pin assignments of the serial ports are shown in the following tables:



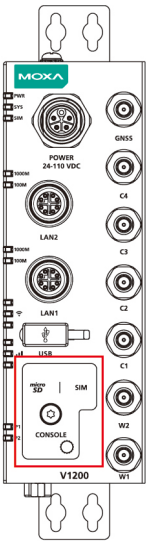

| Pin | RS-232 | RS-422 | RS-485 (4-wire) | RS-485 (2-wire) |
|---|---|---|---|---|
| 1 | DCD | TxDA(-) | TxDA(-) | – |
| 2 | RxD | TxDB(+) | TxDB(+) | – |
| 3 | TxD | RxDB(+) | RxDB(+) | DataB(+) |
| 4 | DTR | RxDA(-) | RxDA(-) | DataA(-) |
| 5 | GND | GND | GND | GND |
| 6 | DSR | – | – | – |
| 7 | RTS | – | – | – |
| 8 | CTS | – | – | – |

# Inserting the SIM Card

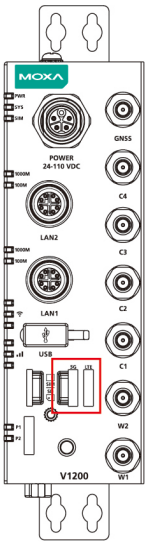
The V1200 models come with 1 or 2 SIM card slots on the front panel. When you install the SIM cards into the slots, ensure that they are inserted in the correct direction, as indicated on the label.

To install a SIM card, do the following:

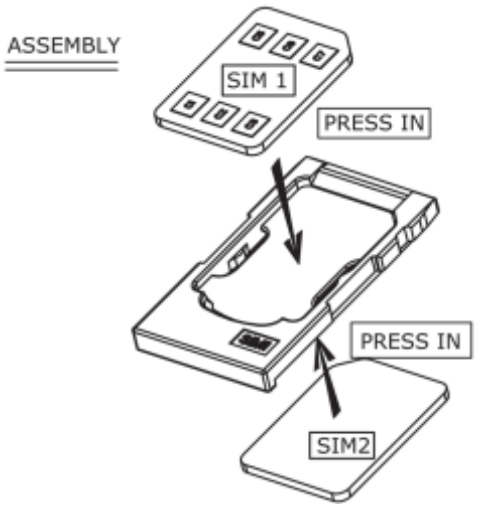
**Step 1**
Remove the screw securing the SIM card holder cover on the front panel of the computer.




**Step 2**
Remove the SIM card tray by pressing the tray inwards and releasing it to eject the tray, then pulling out the tray.



**Step 3**
The SIM card tray can hold two SIM cards, one on each side. Install the first SIM card in the SIM1 slot and the second SIM card on the other side of the tray.




**NOTE**

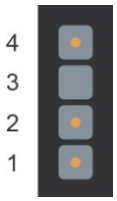
When the V1222-CT-T model is used with a 5G module, LTE communication is supported through backward compatibility. Therefore, if you are using an LTE-only SIM card, ensure that the SIM card is inserted into the 5G SIM slot for proper operations..

# Inserting a MicroSD Card

The V1200 comes with a microSD socket for storage expansion. The microSD socket is located on the lower part of the front panel. To install the card, remove the screw and the protection cover to access the socket, and then insert the microSD card into the socket. You will hear a click when the card is in place. To remove the card, push the card in before releasing it.

# Connecting the Console Port

The console port is an RS-232 port located on the lower part of the front panel. To install the card, remove the screw and the protection cover to access the console port. Connect a 4-pin pin header cable and use the port for debugging issues or system image upgrades.

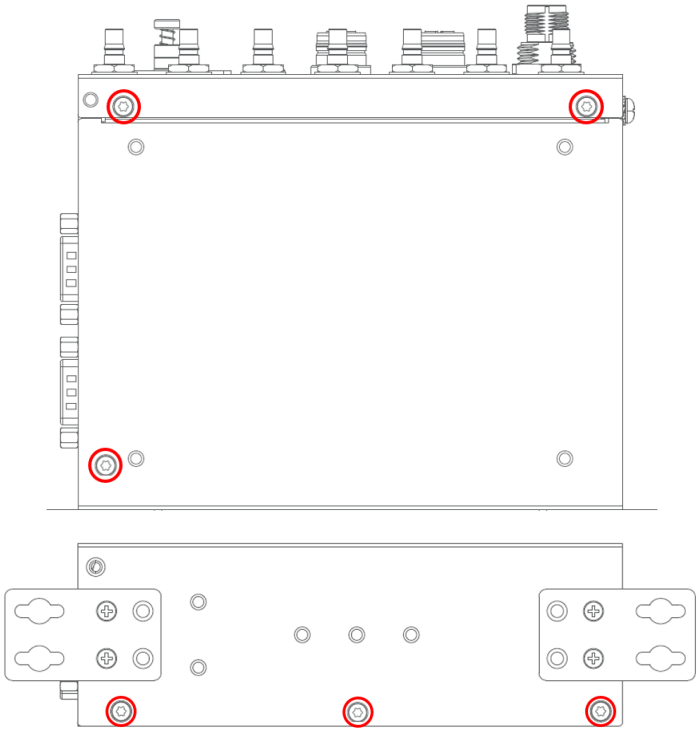



| Pin | Signal |
|---|---|
| 1 | TxD |
| 2 | RxD |
| 3 | NC |
| 4 | GND |

# Installing Wireless Modules

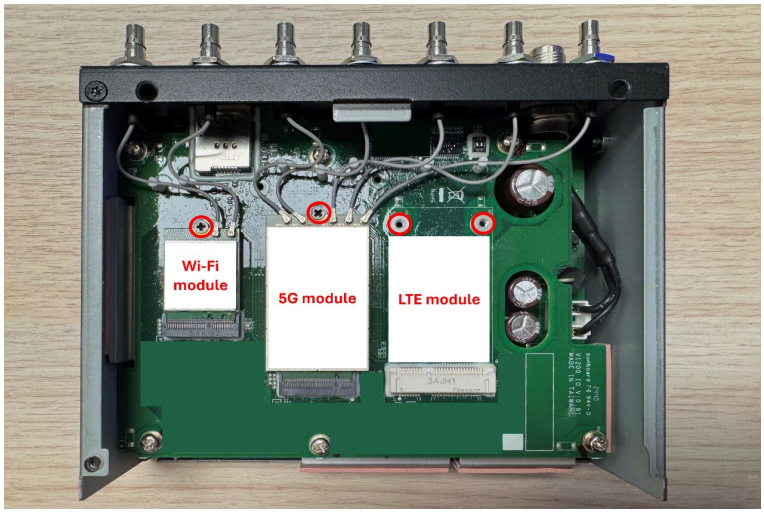
To install wireless modules, do the following:

1. Remove the cover by unfastening the six screws on the panel of the computer as indicated in the following diagrams:



2. Install the modules in their corresponding slots.

   Use the indicators in the picture and the instructions as a guide to install the modules




Step 1: Paste the heat sink on the area marked in the picture.

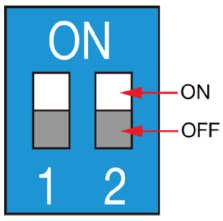
Step 2: Paste the first thermal pad on top of the heat sink.

Step 3: Insert the module into the socket.

Step 4: Fasten the screws to secure the module in place.

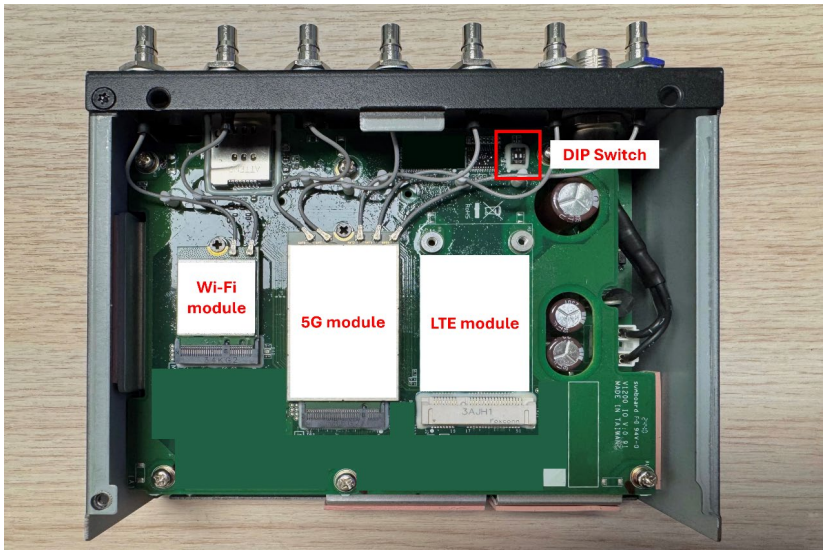
Step 5: Paste the second thermal pad on top of the module.

3. If using a 5G or LTE module, ensure the DIP switch is set to the correct position.




| | |
|---|---|
| **ON** | 5G Module |
| **OFF** | LTE Module |

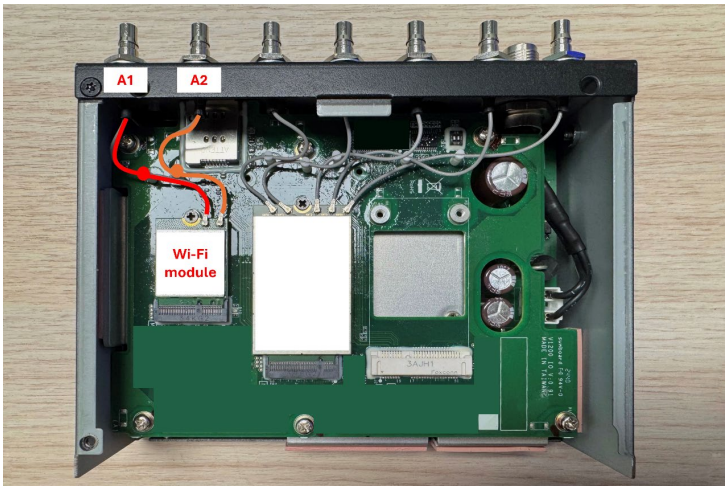
The location of the DIP switch on the board is shown here:



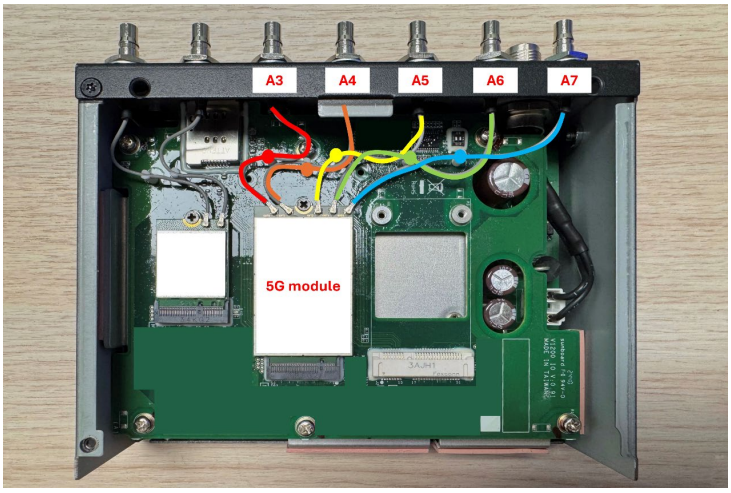

# Installing Cables and Antennas

Each module accessory package includes the necessary coaxial cable, lock washer, and nuts.

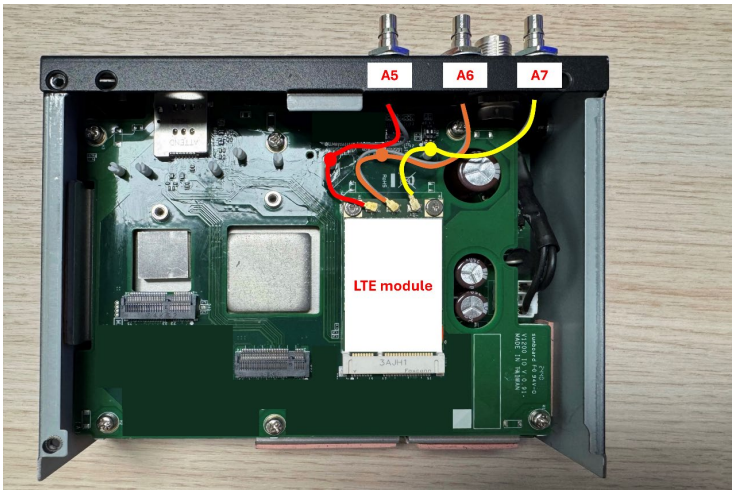
1. Insert the QMA connector of the coaxial cable through the antenna aperture on the front panel. Based on the length of the cable and the location of the module, we recommend:
   - A1 and A2 for Wi-Fi 6 module.



- A3, A4, A5, A6, A7 for 5G modules.




- A5, A6, A7 for LTE module.




2. Insert the lock washer through the connector from outside and hold it against the panel.
3. Finally, secure the antenna connector with the nut by tightening it on the on the threaded protection ring towards the lock washer.

# 4. Getting Started

The V1200 Series offers a flexible computing platform. Users can develop their own applications based on the Moxa Industrial Linux (MIL). In addition, we provide a Web-based Network Configuration Tool that allows users to easily configure network settings without using command-line instructions.

# Disabling the Web-based Network Configuration Tool

If you prefer not to use the web-based network configuration tool, you can disable it and manage the settings via the command line using the following commands:

- sudo **systemctl stop tpe**
- sudo systemctl disable tpe
- sudo nft flush ruleset
- sudo systemctl enable ssh
- sudo systemctl start ssh

For instructions on getting started with cmd, see Moxa Industrial Linux Arm-based Computers Manual.

**NOTE**

If you configure the network via a console or terminal (e.g., SSH) using Linux commands and notice that the settings revert back to the default, we recommend one of the following:

- Use the web-based network configuration tool to configure the network settings, or
- Disable the web-based network configuration tool before configuring network settings via cmd.

**NOTE**

The ping function is not supported when the web-based network configuration tool is running. To use the ping command, first disable the web-based network configuration tool.

# Access to the Web Console

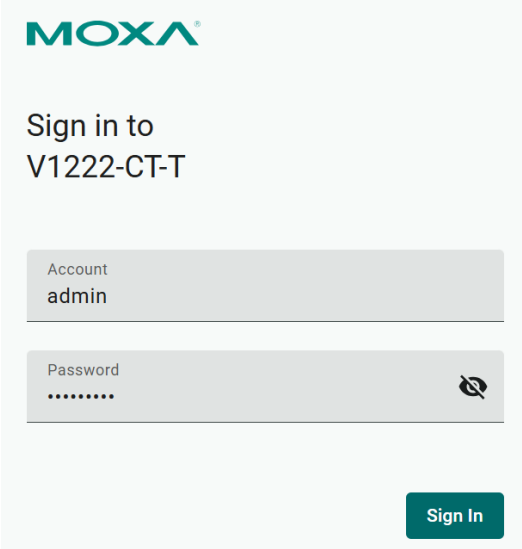
The default LAN2 IP address to access the web console of the V1200 is 192.168.4.127.

When you use the default IP address to access the V1200, do the following:

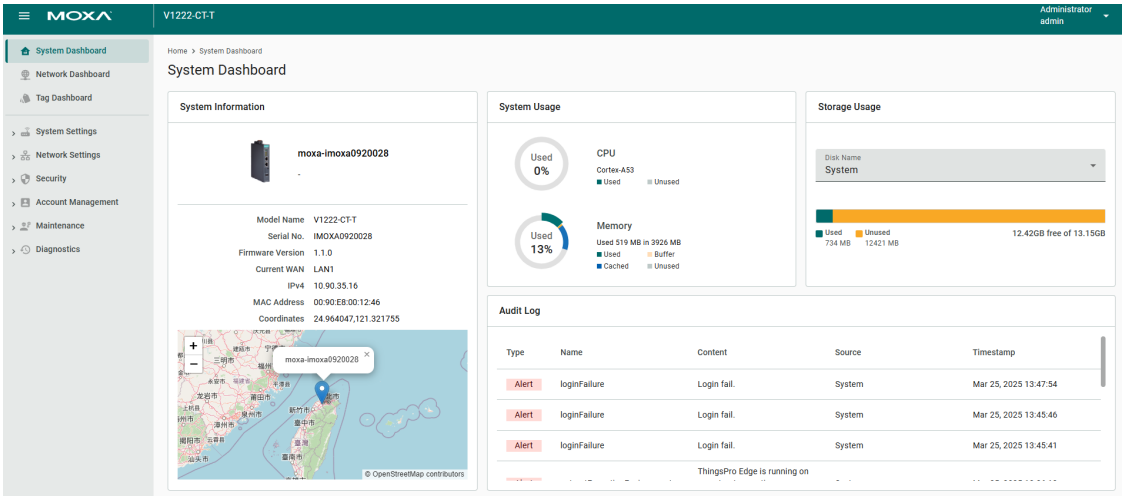
1. Ensure your host and the V1200 are in the same subnet (V1200's default subnet mask is 255.255.255.0). Connect to LAN2 and enter **`https://192.168.4.127`** in your web browser.
2. Read the system notification and click **Agree and Continue**.
3. Enter the account and password information.

   Default account: **admin**

   Password: **admin@123**




You will see the following homepage after logging in successfully.




## NOTE

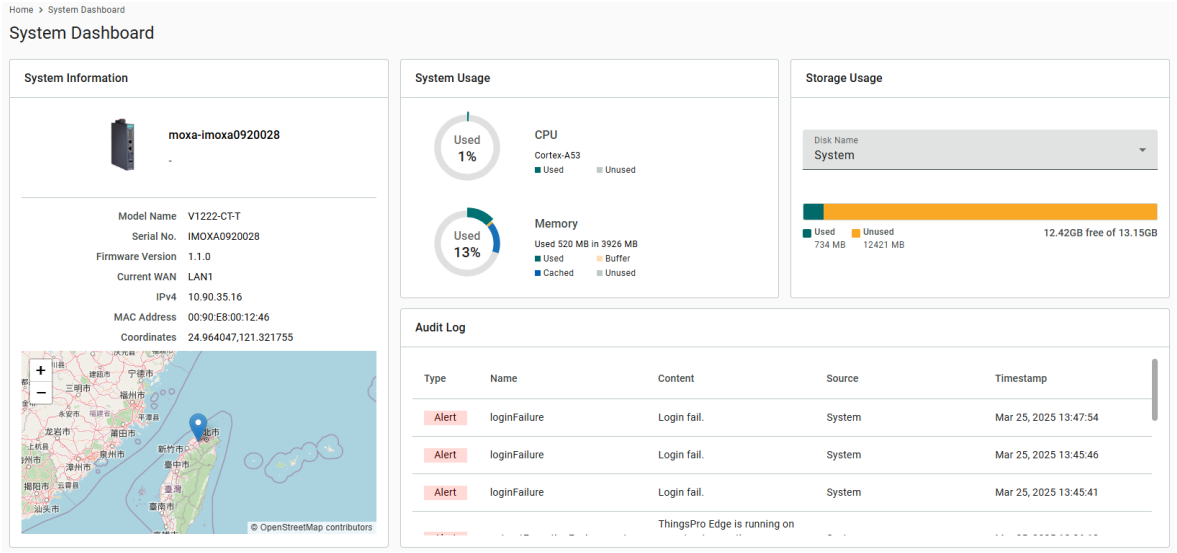
After the first login, we force a password change to comply with general security policies and practices and to increase the security of your device.

# Dashboard

## System Dashboard

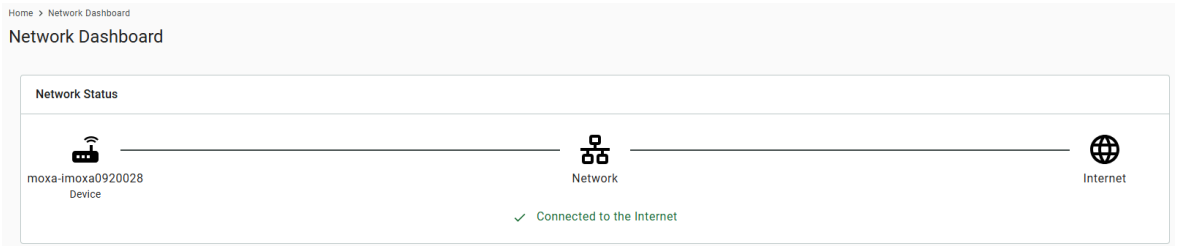
To view the device's system status, go to System Dashboard.

This page displays basic system information such as model name, serial number, firmware version, system usage, storage usage, and audit logs.



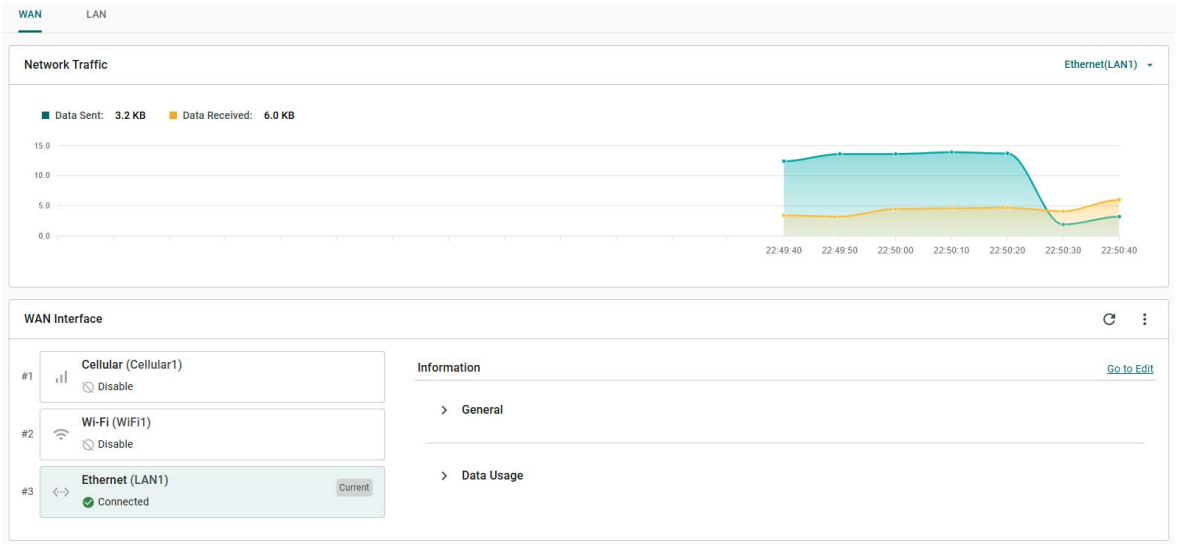

## Network Dashboard

To view information about WAN/LAN interfaces and traffic statistics, go to Network Dashboard.
The dashboard shows interface usage details and network status, including Internet connectivity.



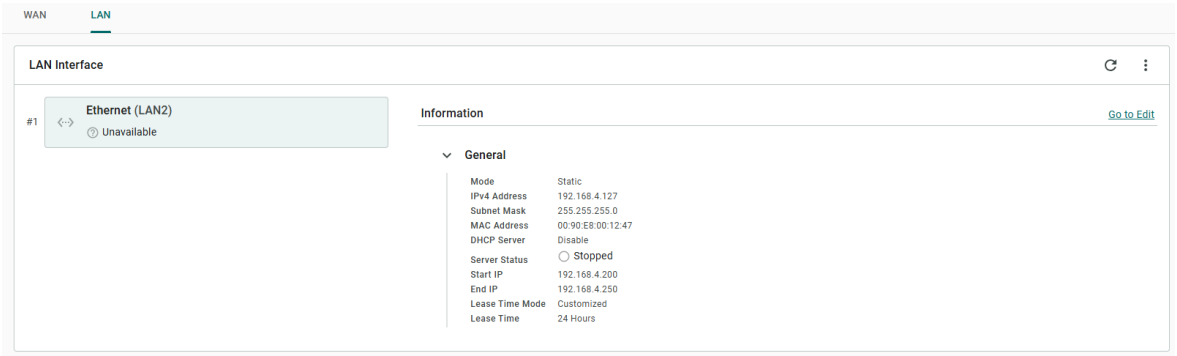
# WAN

The WAN tab displays information about data sent and received through the WAN interfaces. You can select a specific interface to monitor. Additional usage details are also provided. The information is refreshed every 10 seconds.



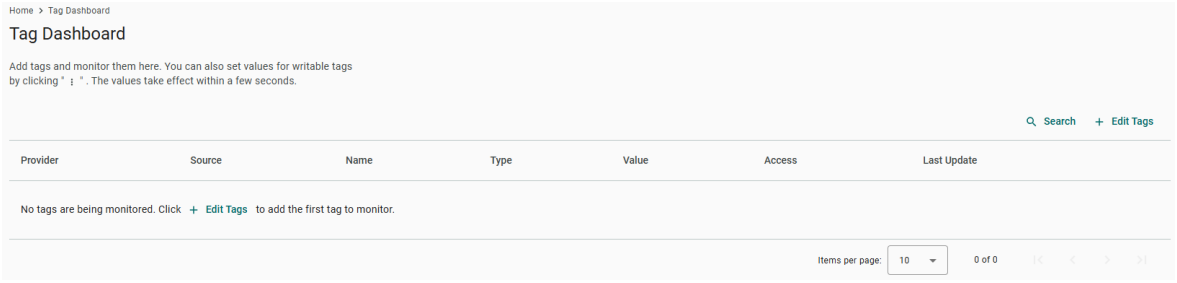

# LAN

The LAN tab displays usage details and traffic statistics for the LAN interfaces. You can view real-time data for each interface under this section.

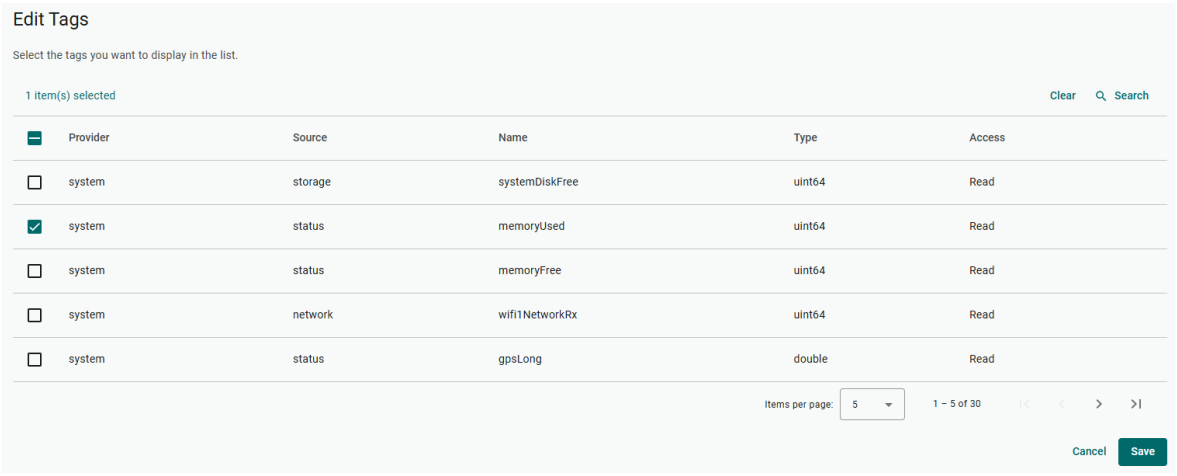


# Tag Dashboard

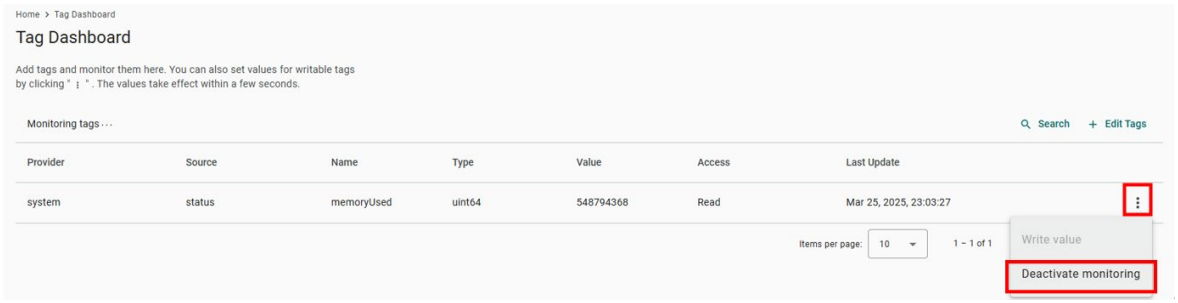
To create and monitor real-time tag values for troubleshooting, go to Tag Dashboard.
You can add tags for monitoring and view their current values in real time.




To create and monitor the real-time tag value, click + **Edit Tags** first, select the tags to monitor in the list then click Save.



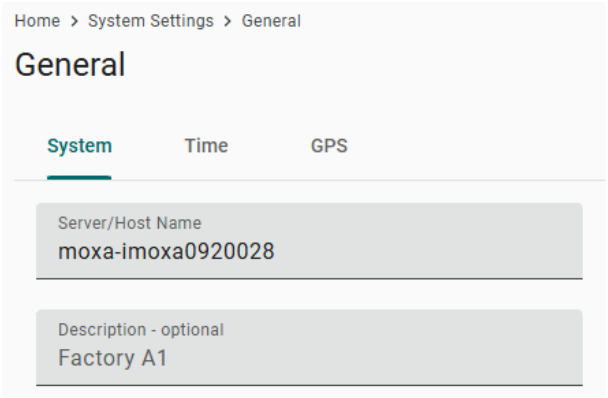

(Optional) Click the icon ⋮ to deactivate the monitoring tags.



# System Settings

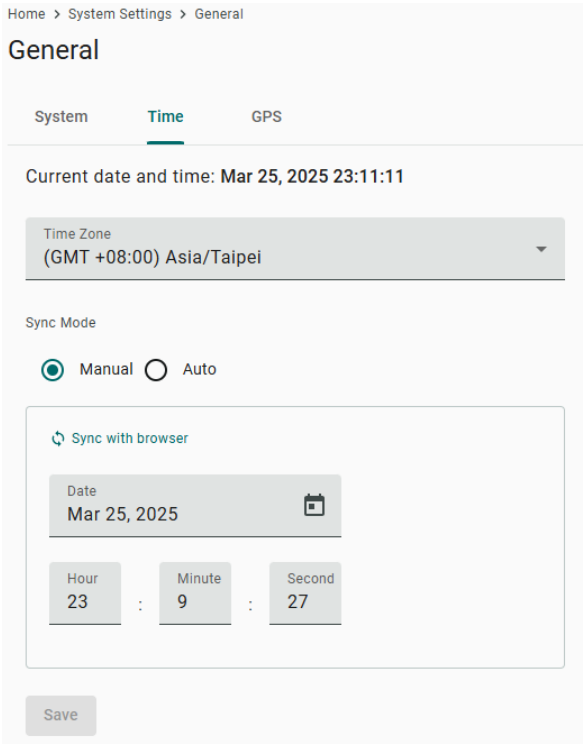
## General

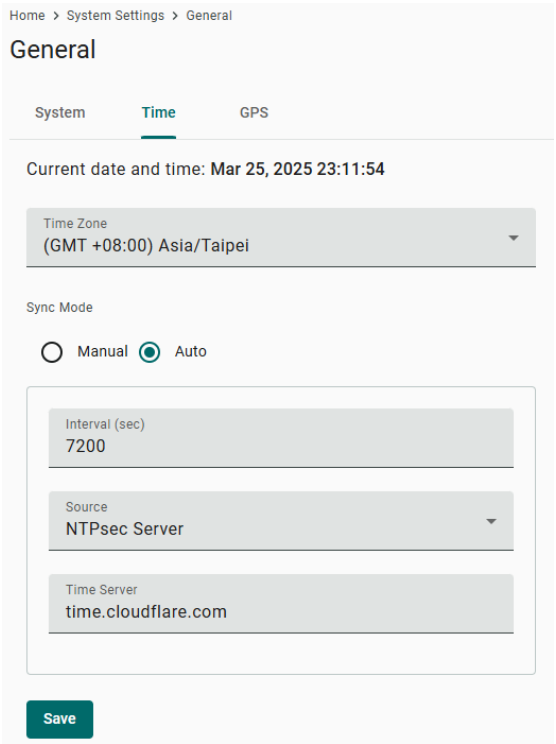
Go to **System Settings > General > System** to specify a new server/host name and enter a description for the device.




| Parameter | Value | Description | Default Value |
|---|---|---|---|
| Server/Host Name | Alphanumeric string | You can enter a name to identify the unit, such as the function, etc. | Moxa-imoxaxxxxxxx |
| Description - optional | Alphanumeric string | You can enter a description to help identify the unit location such as “Factory A1”. | Factory A1 |

Go to **System Settings > General > Time** to select a time zone. Choose between the Manual or Auto option to update the system time.



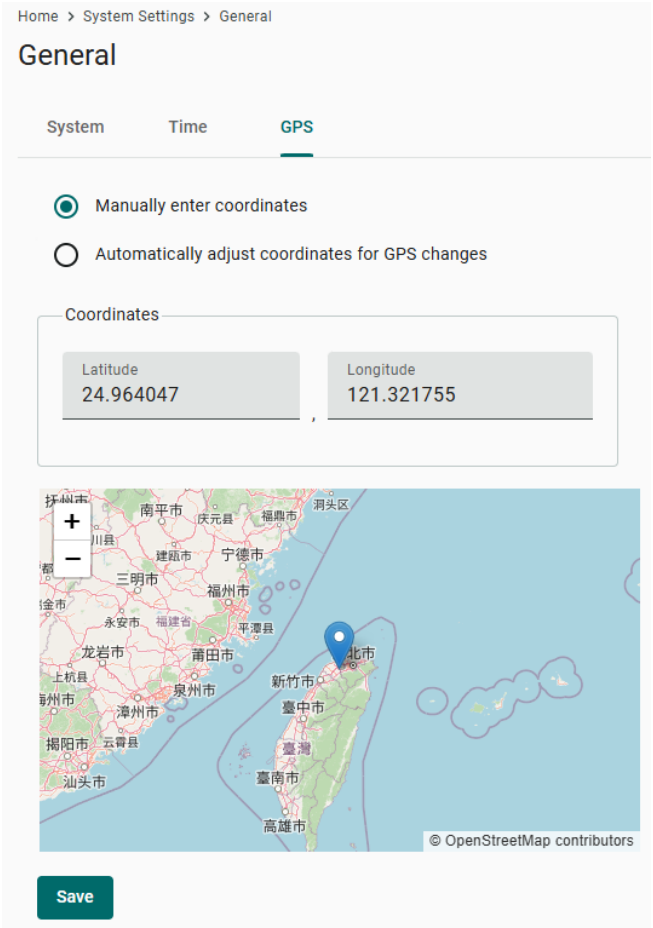
| Parameter | Value | Description | Default Value |
|---|---|---|---|
| Time Zone | User's selectable time zone | The field allows you to select a different time zone. | Current Time Zone |
| Sync Mode | Manual, Auto | Manual: input the time parameters by yourself<br>Auto: it will automatically sync with time source. NTP and GPS can be selected.<br>NOTE: When the Auto mode is selected, in general, it takes 2 to 4 minutes. If the satellite search is slower, it could take up to 12 minutes (worst-case scenario) | Manual |
| Interval (sec) | 3600 to 86400 | The time interval to sync the time source | 7200 |
| Source | NTPsec Server, NTP Server, GPS | The way to sync the time clock | N/A |
| Time Sever | IP or Domain address | This field is required to specify your time server's IP or domain name if you choose the NTP server as the source | N/A |

## NOTE

When using GPS as a time-synchronization source, set the GPS mode to **Auto** before entering the configuration page.

Go to **System Settings > General > GPS** to view the GPS location of the device on a map. There are two options:

- Input latitude and longitude in **manual**.
- Check the **Automatically adjust coordinates for GPS changes** option if you want the system to automatically update the device coordinates.



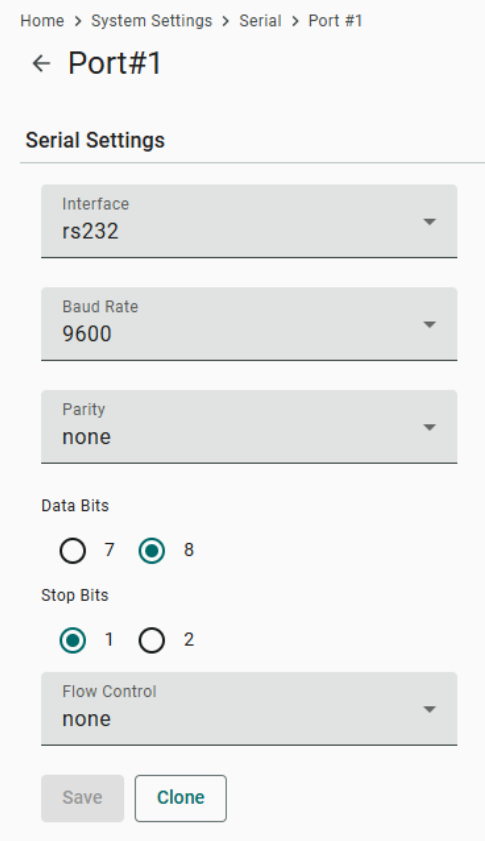
# Serial

Go to **System Settings > Serial** to view and configure serial parameters.

To configure serial settings, do the following:

4. Click the icon ⋮ on the chosen port and select Edit.

5. Set and click **Save** for the settings to take effect.

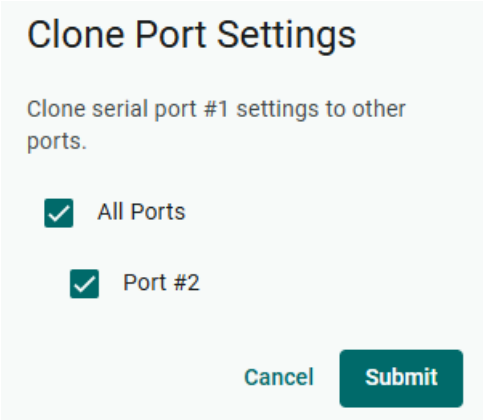



| Parameter | Value | Description | Default Value |
|---|---|---|---|
| Interface | rs232, rs485-2w, rs422, rs485-4w | The serial interface type to use for the serial device. | rs232 |
| Baud Rate | 300 to 115200 | The data transmission rate to and from the serial device. | 9600 |
| Parity | none, odd, even, space, mark | The parity mode of the serial device. | none |
| Data Bits | 7, 8 | The size for data characters. | 8 |
| Stop Bits | 1, 2 | The size for stop characters. | 1 |
| Flow Control | none, hardware, software | The flow control method determines how the system will suspend and resume data transmissions to prevent data loss. If hardware is selected as flow control method, it will be controlled by RTS/CTS signal. | none |

**NOTE**

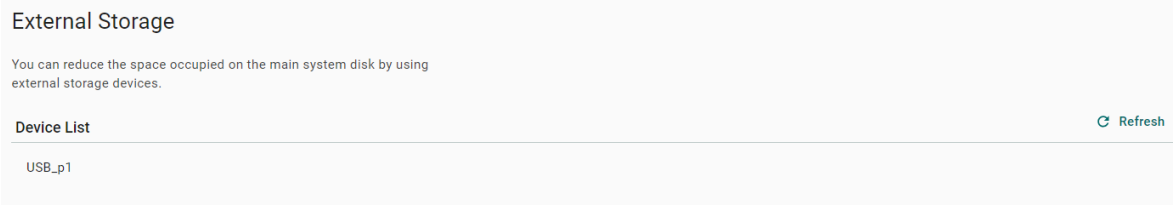
Incorrect settings will cause communication failures.

6. (Optional) Click the icon ⋮ on the chosen port and select Clone to clone the setting to the chosen port.




# External Storage

To manage external storage devices, go to System Settings > External Storage. You can attach external storage to the V1200 to save logs, provide buffer space for Store and Forward, and create system backups. Once connected, the storage device will appear in the **Device List**.




**NOTE**

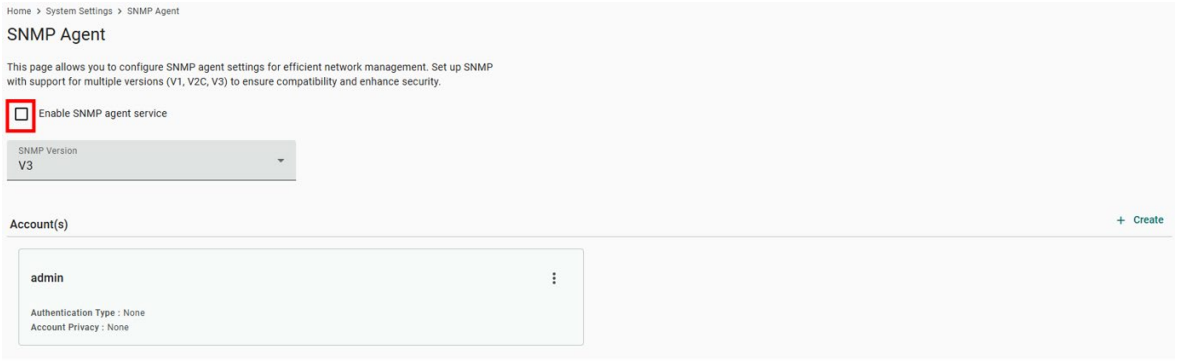
**LIMITATION**

- V1200 does not allow the connection of multiple USB devices through a USB hub.
- The external USB format supported for V1200 is FAT.

# SNMP Agent

Go to **System Settings > SNMP Agent** to view and configure SNMP agent service.

Select Enable SNMP agent service to enable SNMP agent service.




| Parameter | Value | Description | Default Value |
|---|---|---|---|
| SNMP Version | V3<br>V1, V2c, V3<br>V1, V2c | The SNMP protocol version used to manage your device. It's strongly recommend choosing the 'V3' option for enhanced security. | V3 |

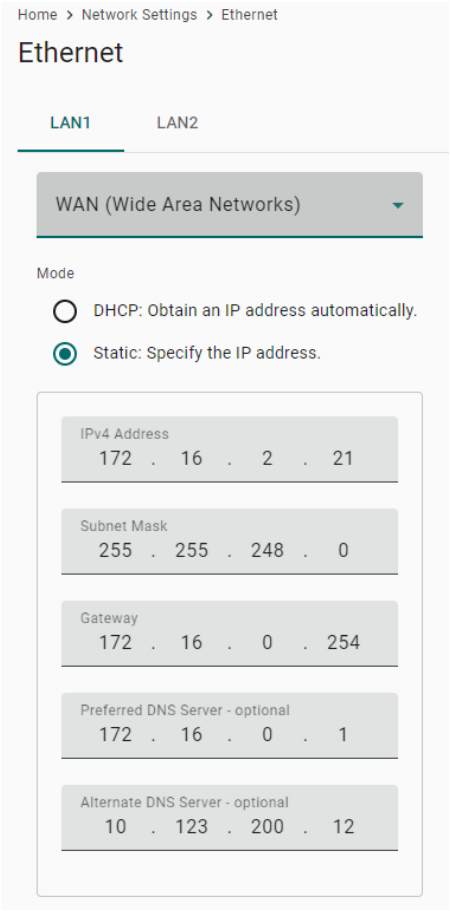
# Network Settings

## Ethernet

Go to **Network Settings > Ethernet** to view and configure LAN1 and LAN2 network settings.

To configure the network, do the following:

1. Choose **LAN1** or **LAN2** for configuration.
2. Select the **WAN (Wide Area Networks)** or **LAN (Local Area Networks)**.
3. Select **DHCP** or **Static** mode.
4. Configure **IP address, Subnet mask, Gateway,** and **DNS**.

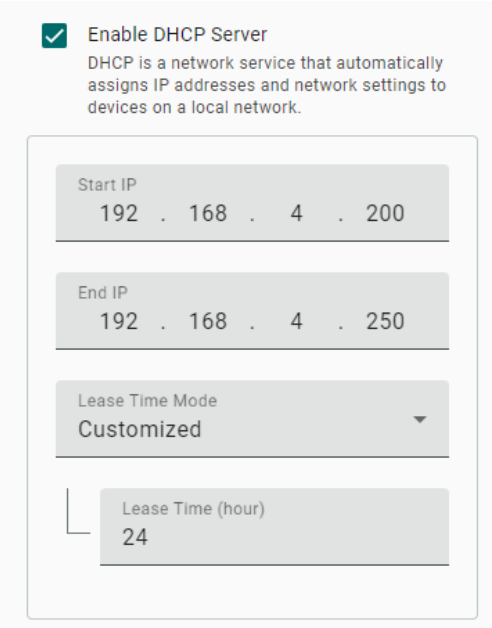



| Parameter | Value | Description |
|---|---|---|
| Types of connectivity | WAN, LAN<br>(NOTE: LAN2 does not support WAN.) | WAN: Wide Area Networks<br>LAN: Local Area Networks |
| Mode | DHCP, Static | DHCP: Obtain the IP address automatically.<br>Static: Specify the IP address |
| IPv4 Address | LAN1 default: DHCP<br>LAN2 default: 192.168.4.127 | The IP (Internet Protocol) address identifies the server on the TCP/IP network |
| Subnet Mask | Default: 255.255.255.0 | Identifies the server as belonging to a Class A, B, or C network. |
| Gateway—optional | 0.0.0.0 | The IP address of the router that provides network access outside the server's LAN. |
| Preferred DNS Server—optional | 0.0.0.0 | The IP address of the primary domain name server. |
| Alternate DNS Server—optional | 0.0.0.0 | The IP address of the secondary domain name server. |

If the LAN is selected as type of connectivity, the V1200 can be configured to operate as a DHCP server, offering the additional benefit of dynamically assigning IP addresses to devices on the network.

To configure DHCP server settings, do the following:

1. Check Enable DHCP Server.
2. Input IP Address Range parameters.
3. Specify Lease Time.
4. Click **Save**.

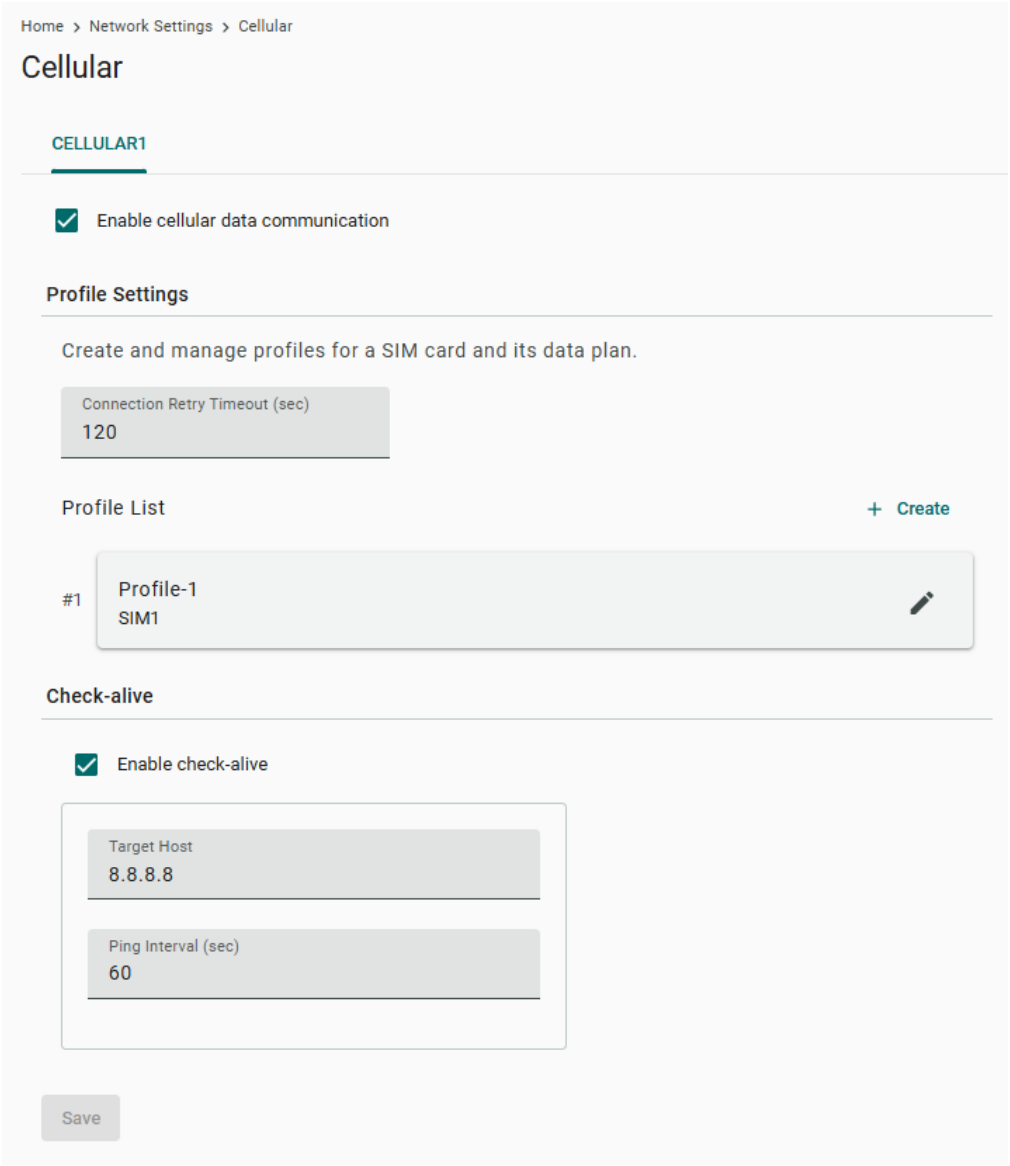



**NOTE**

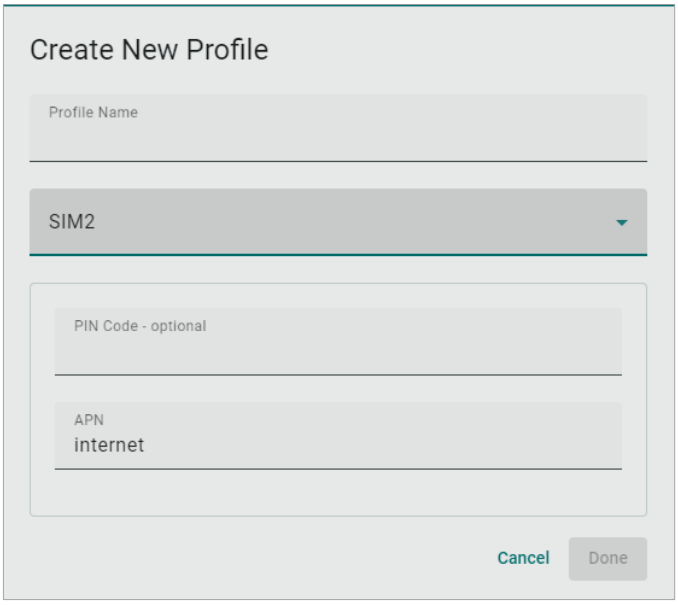
Limitation: When V1200 acts as the DHCP server, it will not allocate the DNS IP to the DHCP client.

# Cellular

Go to **Network Settings > Cellular** to view the current cellular settings. You can enable or disable cellular connectivity on your device, create profiles, manage **Profile Settings**, and enable or disable the connection **Check-alive** function to optimize the cellular connection.



You can create customized cellular profiles in the **Profile Settings** section.
A list of all the profiles in the system is displayed. **Create**, **Edit**, or **Delete** cellular profiles here.




To create a new cellular connection profile, do the following:

1. Click **+ Create**.
2. Specify a unique **Profile Name**.
3. Specify the target **SIM** card.
4. Enter the **PIN Code** if your SIM card requires it.
5. Input **APN**.
6. Click **Done**.
7. On the **Cellular** setting page, click **Save**.

When you click **Save** in the Cellular section, the module restarts to apply the changes. The settings will take effect after the cellular module is successfully initialized.

## NOTE

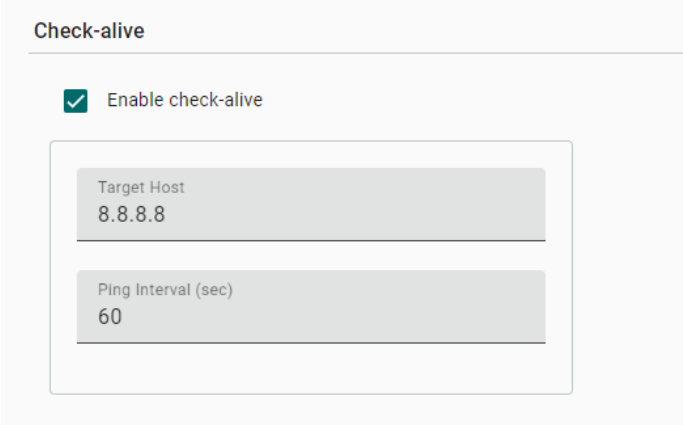
To prevent the SIM from being locked due to three incorrect attempts, a mechanism in the V1200 stops attempting to unlock the SIM when the PIN Retry count reaches 2 (only one attempt is remaining). At this point, insert the SIM into another device (e.g., cellphone) and attempt to unlock it. This way, when you reinsert the SIM card into the V1200 and restart, the PIN Retry count is reset to 3.

## NOTE

**LIMITATION**

V1200 does not support hot-plugging of the SIM card; device restart is required after inserting or removing the SIM card.

The **Check-alive** function will help you maintain the connection between your device and the carrier service by pinging a specific host on the Internet at periodic intervals.

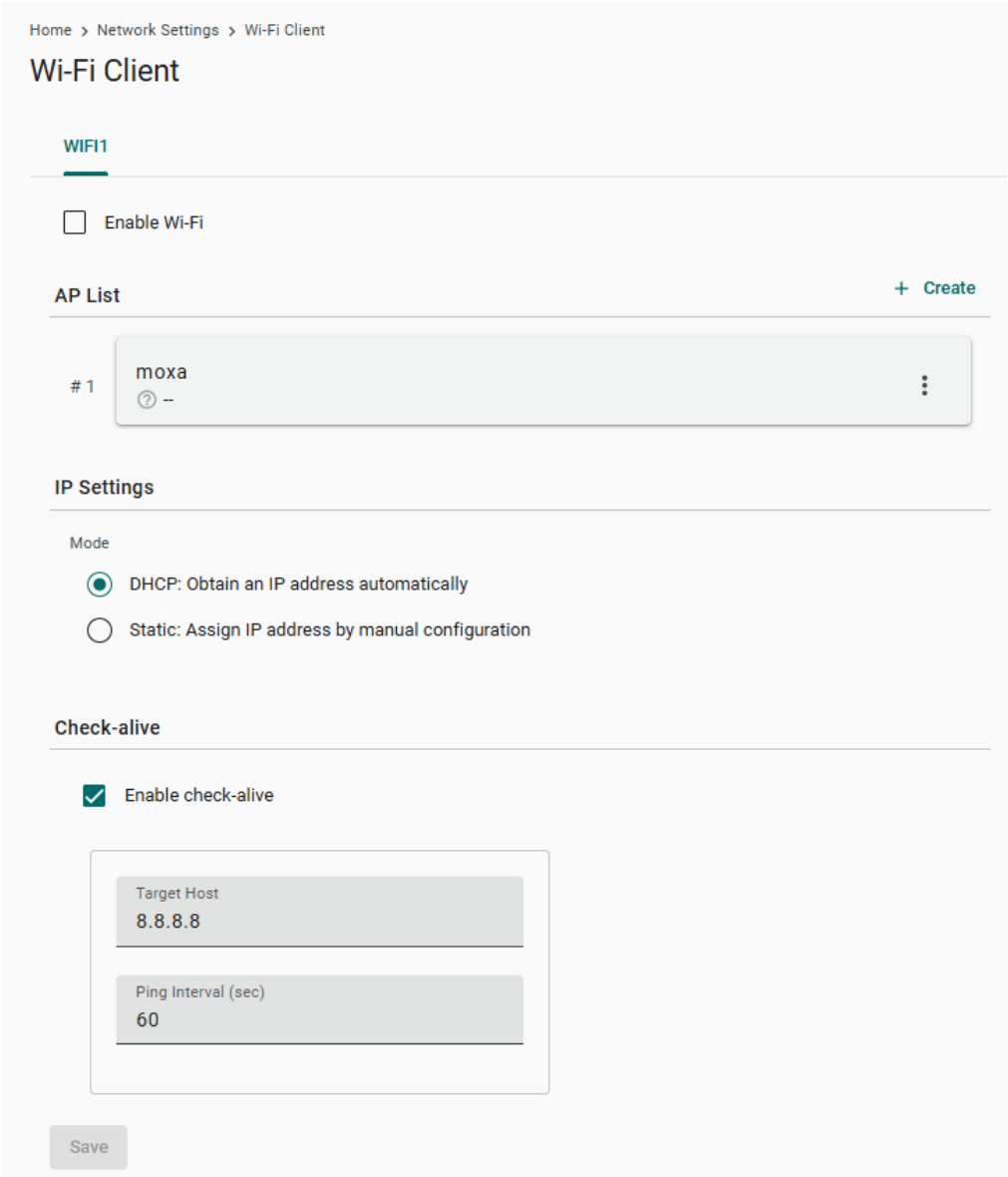



## NOTE

After configuring the Cellular network, you can check the cellular network's connection status by going to **Network Dashboard > WAN**

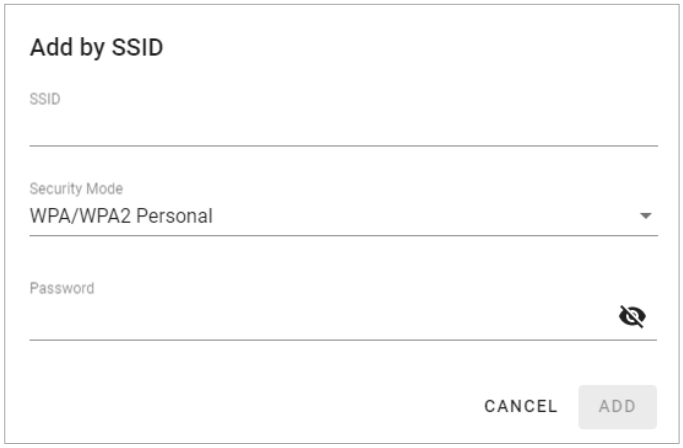
# Wi-Fi Client

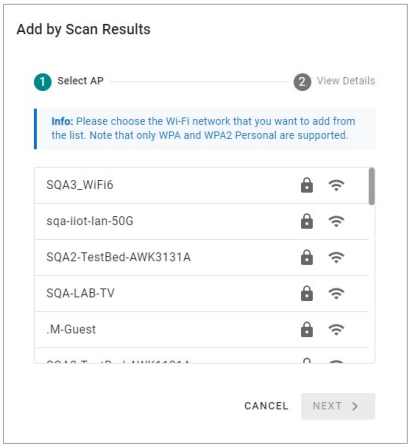
Go to **Network Settings > Wi-Fi** to view the Wi-Fi settings. You can enable or disable Wi-Fi connectivity on your device, create profiles, manage Profile Settings, and enable or disable the connection Check-alive function to optimize the cellular connection.



To configure Wi-Fi settings, check **Enable Wi-Fi** and do the following:

1. Click **+create** to manually **Create by SSID** or be **Created by Scan Results**.



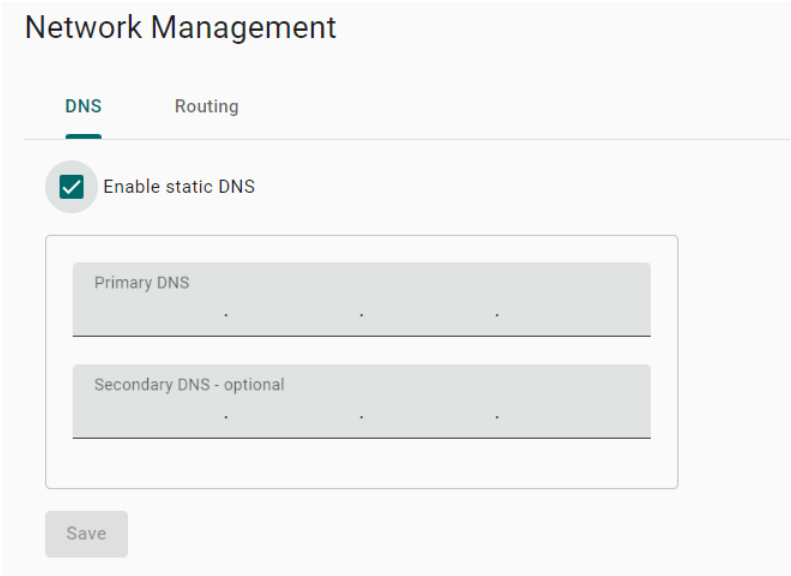

2. Select **DHCP** or **Static mode**.
3. Check **Check-alive** function which can be used to ensure Internet connectivity.
4. Click **Save**.

> **NOTE**
>
> After configuring the Wi-Fi network, you can check the Wi-Fi network's connection status by going to **Network Dashboard > WAN**

# Network Management

## DNS

By manually configuring specific DNS server addresses, users can ensure stable and predictable internet connectivity without relying on potentially fluctuating or unreliable DNS settings provided by dynamic configurations (such as those obtained from a DHCP server). This helps to improve DNS resolution speed, enhance overall network performance, and strengthen control over network traffic and security by specifying trusted DNS servers.

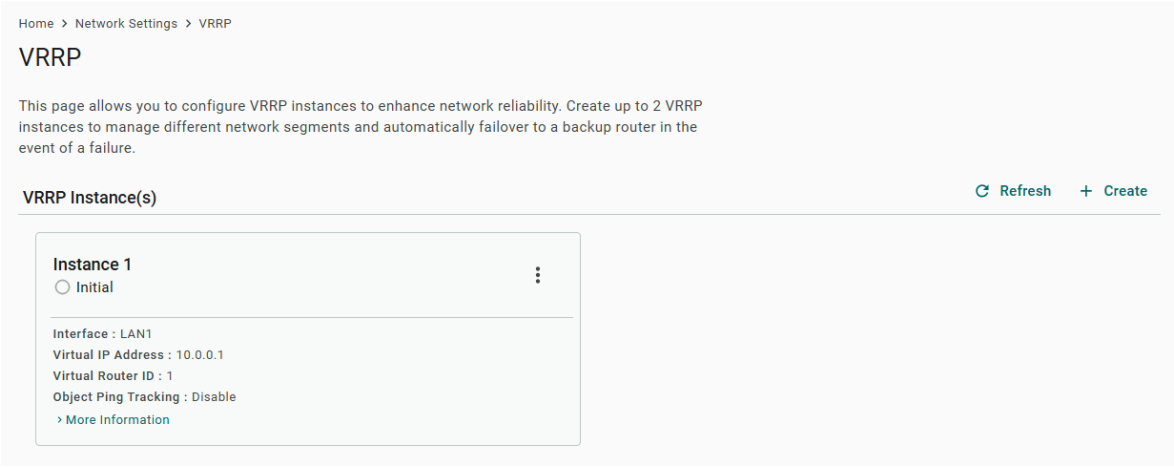


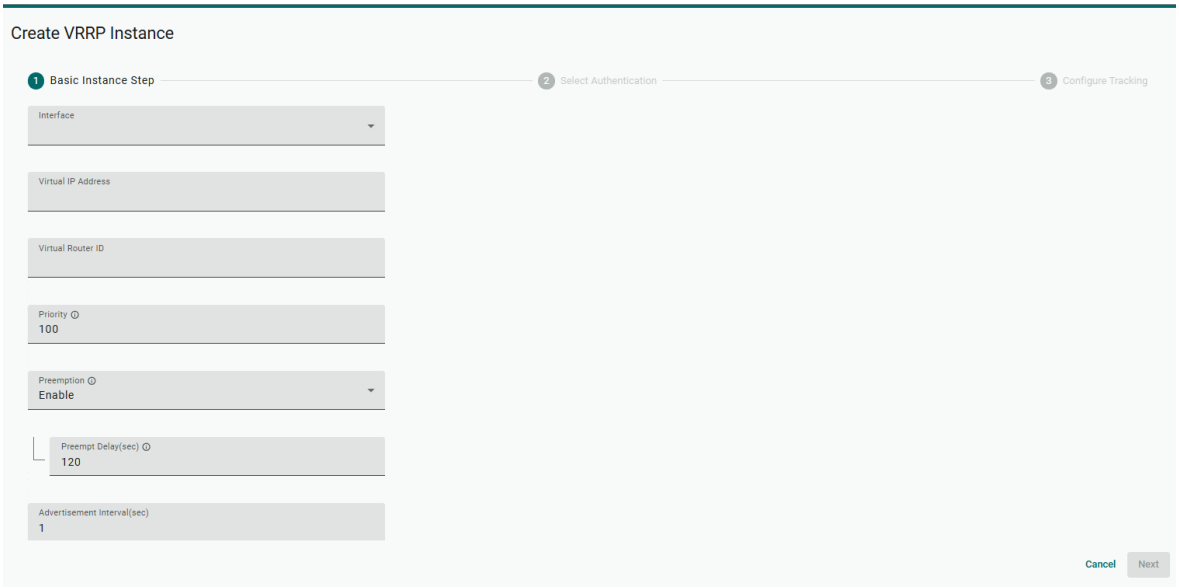
## Routing

The Routing priority feature allows the V1200 to prioritize different network interfaces (such as cellular, LAN, and Wi-Fi) as needed to optimize network performance.

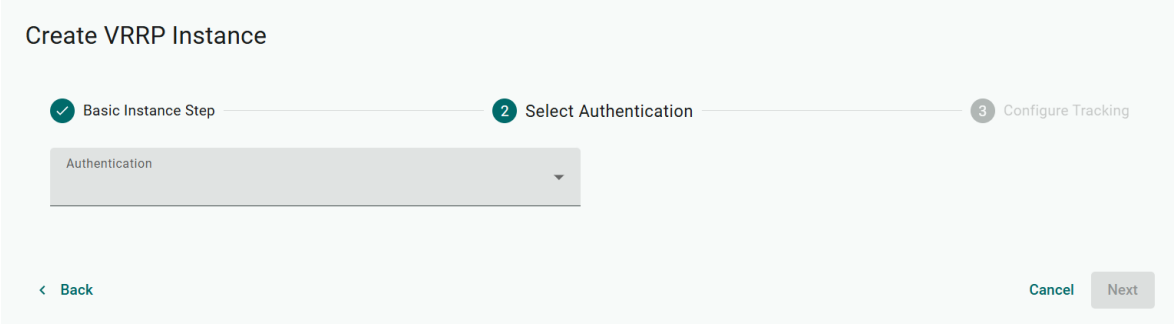
# VRRP

Go to **Network Settings > VRRP** to view and configure the VRRP settings.

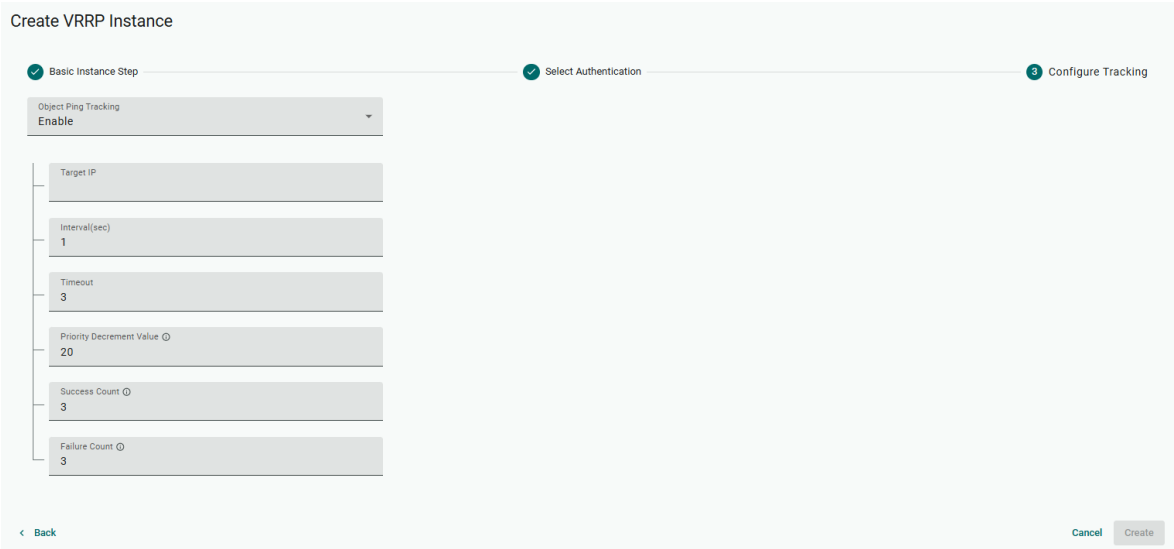


| Parameter | Value | Description | Default Value |
|---|---|---|---|
| Interface | Drop-down list of interfaces | Specify which network interface to use for the VRRP interface. | N/A |
| Virtual IP Address | Valid IP address | Specify the virtual router IP address for the VRRP interface. | N/A |
| Virtual Router ID | 1-255 | Specify the virtual router ID to use for the VRRP interface.<br>The virtual router ID is used to assign the virtual router to a VRRP group. | N/A |
| Priority | 1-254 | Specify the priority of the VRRP interface. Higher numbers indicate higher priority, with 254 being the highest. | 100 |
| Preemption | Enabled / Disabled | Enable or disable preemption for the VRRP interface. When enabled, preemption will decide if the master will retake authority or not after being unavailable. | Enabled |
| Preempt Delay (sec) | 0-300 | Specify the preemption delay in seconds to use for the VRRP interface. The preempt delay is the amount of time the master will wait before retaking authority back in order to prevent the master from acting before the network connection is ready. | 120 |
| Advertisement Interval | 1-30 | Specify the advertisement interval in seconds for the VRRP interface. This determines the interval for the master sending packets to all slave devices to inform them who the master device is. | 1 |

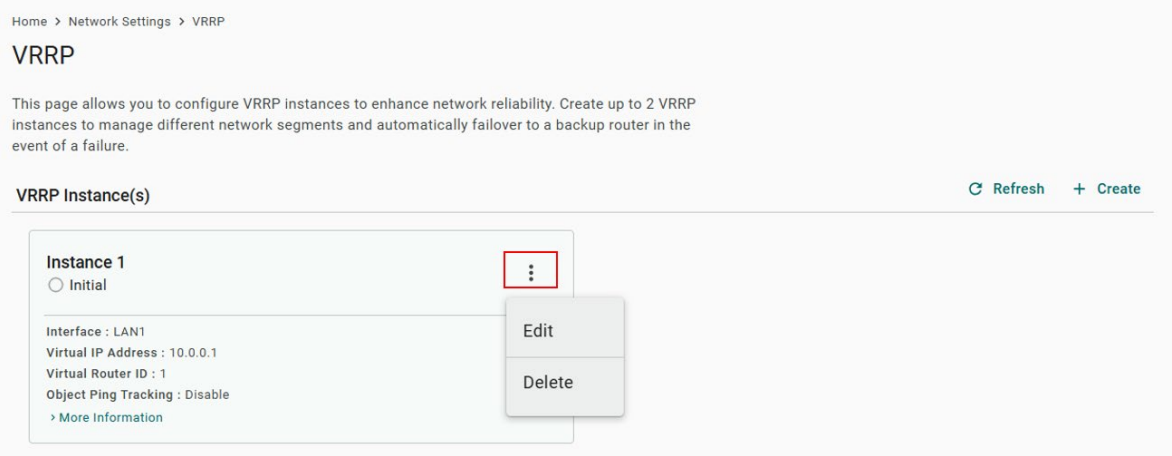



| Parameter | Value | Description | Default Value |
|---|---|---|---|
| Authentication | None/ Simple/ AH | | None |
| Authentication Password | | Specify the password when Simple or AH is chosen for authentication method. | N/A |



| Parameter | Value | Description | Default Value |
|---|---|---|---|
| Object Ping Tracking | Disabled/ Enable | Disable or specify which interface to use for Object Ping Tracking for the VRRP interface. When enabled, if all interfaces on the device are disconnected, it will be considered to be a disconnection. | Disabled |
| Target IP | Valid IP address | Specify the target IP to ping to verify if the connection to the destination is working. | N/A |
| Interval (sec) | 1-100 | Specify the interval in seconds the device will use for pinging the target IP. | 1 |
| Timeout | 1-100 | Specify the timeout duration in seconds the device will wait for a response before timing out. | 3 |
| Priority Decrement Value | 1-254 | Specify the amount by which the priority of a backup router is decreased when a ping test fails. | 20 |
| Success Count | 1-100 | Specify the success count, which indicates how many responses the device must receive to consider the connection as working. | 3 |
| Failure Count | 1-100 | Specify the failure count, which indicates how many times the target IP fails to respond before the device considers the connection as not working. | 3 |

Click ( ⋮ ) to Edit or Delete the existing VRRP instances.

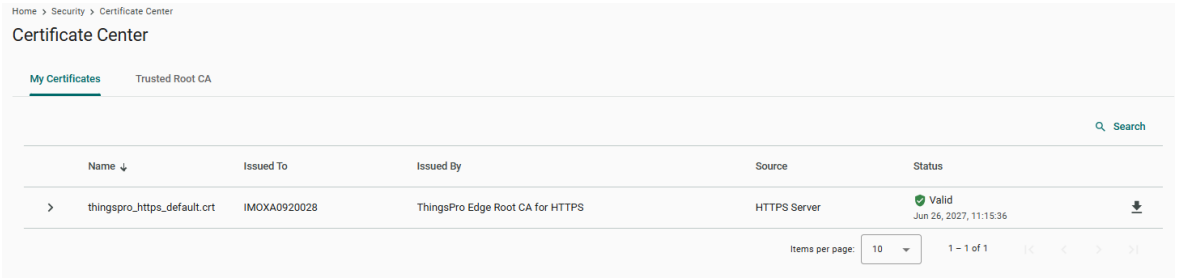


# Security

## Certificate Center

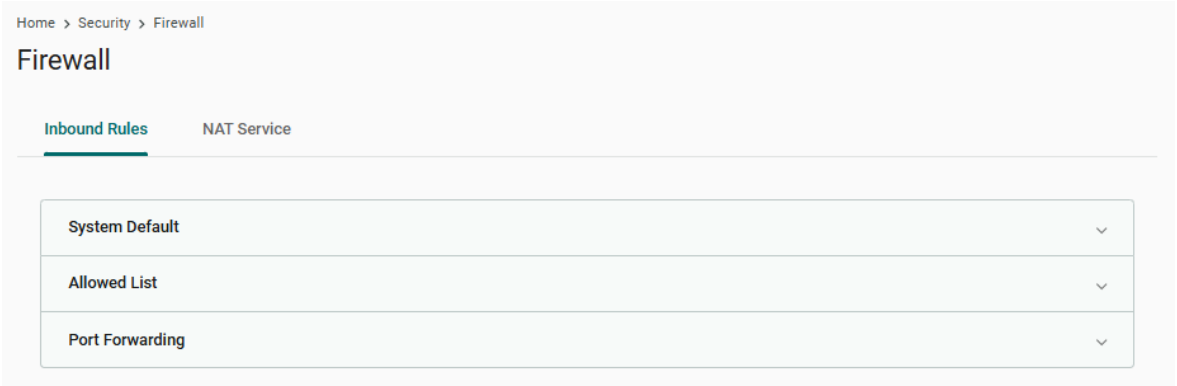
To check what certificates have been used on the devices, go to **Security > Certificate Center** to view all of them. On this page, you can search, view the status, and download the certificate for backup purposes.

The **ThingsPro Edge Root CA for HTTPS** certificate is used to sign the HTTP SSL X.509 certificate, default.crt. You can download this root CA and import it to your client devices to trust the HTTPS connection between clients and V1200. To import to Google Chrome, you can refer to the below link: https://docs.moxa.online/tpe/users-manual/security/certificate_center/#import-rootcacer-to-google-chrome




## Firewall

V1200 provides a firewall that allows you to create inbound rules for inbound Internet network traffic and enable NAT service to protect your gateway of train-to-ground communication.




### Inbound Rules

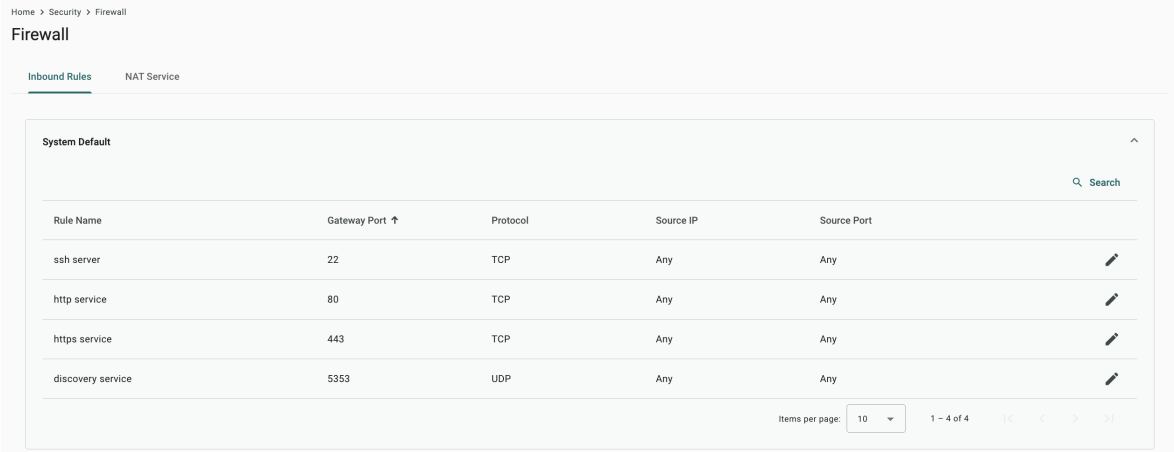
#### System Default

V1200 reserves ports for certain services and purposes as indicated in the table below.

| No. | Service/purpose | Port |
|---|---|---|
| 1 | HTTP service | 80 |
| 2 | HTTPS service | 443 |
| 3 | SSH server | 22 |
| 4 | Discovery service | 5353 |

**NOTE**

The V1200 disables all ports by default excluding the reserved ports mentioned above. To enhance the security of your device, we recommend configuring a rule that includes the source IP and source port, thereby granting access only to specific individuals.

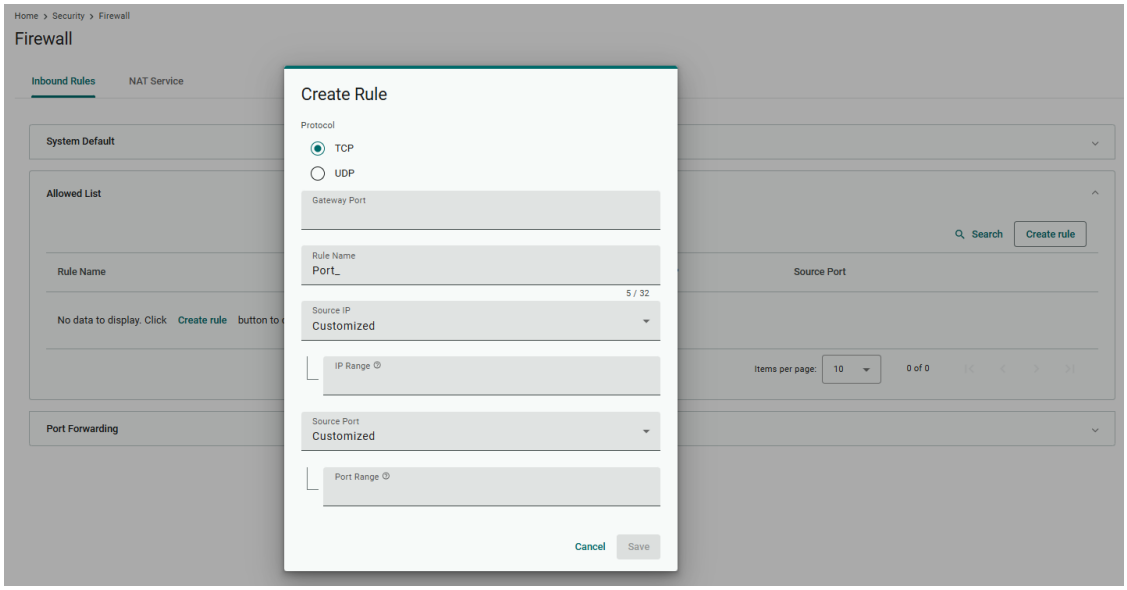



## Allowed List

V1200 provides an allowed list for creating firewall rules. You can create, edit, and delete firewall rules here.

To create firewall rules, do the following:

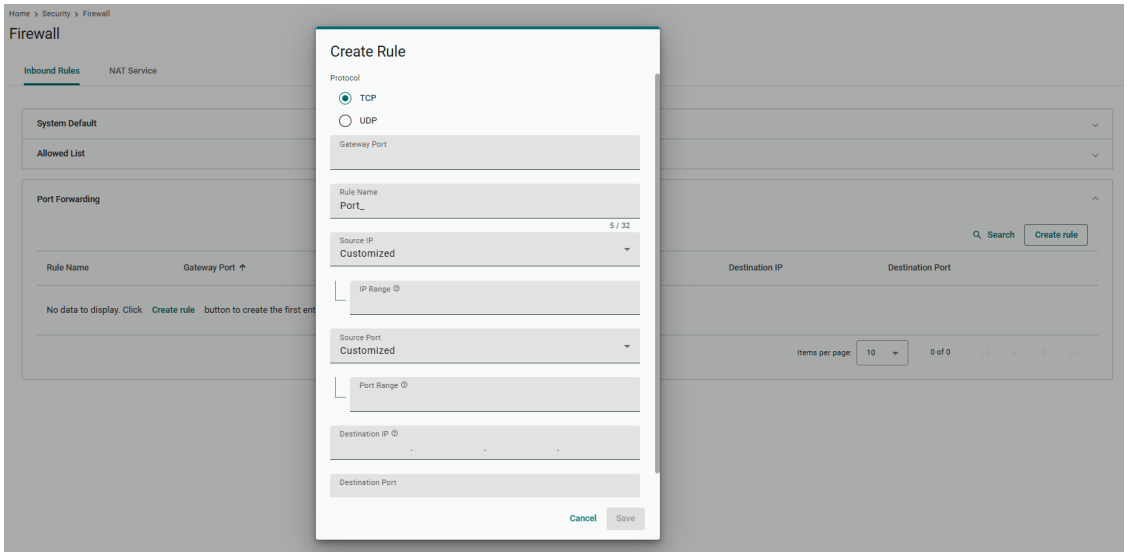
1. Click **+ Create Rule.**
2. Specify the protocol, gateway port, and rule name.
3. Specify a source IP or a subnet.
4. Specify a source port or a range of ports.
5. Click **Save**.



## Port Forward

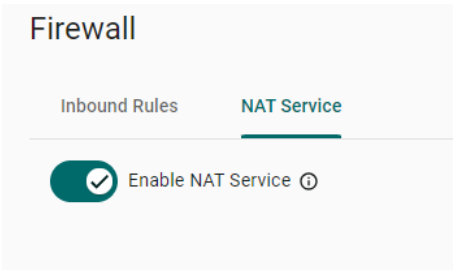
V1200 provides port forwarding function. You can create, edit, and delete firewall rules here. To create firewall rules, do the following:

1. Click **+ Create Rule.**
2. Specify the protocol, gateway port, and rule name.
3. Specify a source IP.
4. Specify the destination IP and port.
5. Click **Save**.




## NAT Service

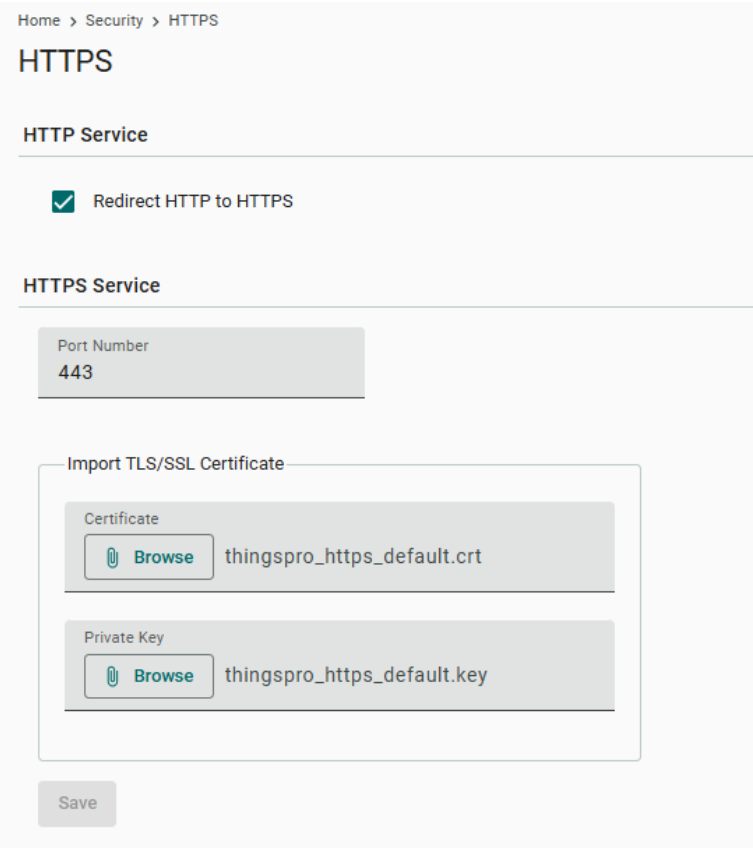
Enable the NAT service to allow child devices to connect to external networks.



# HTTPS

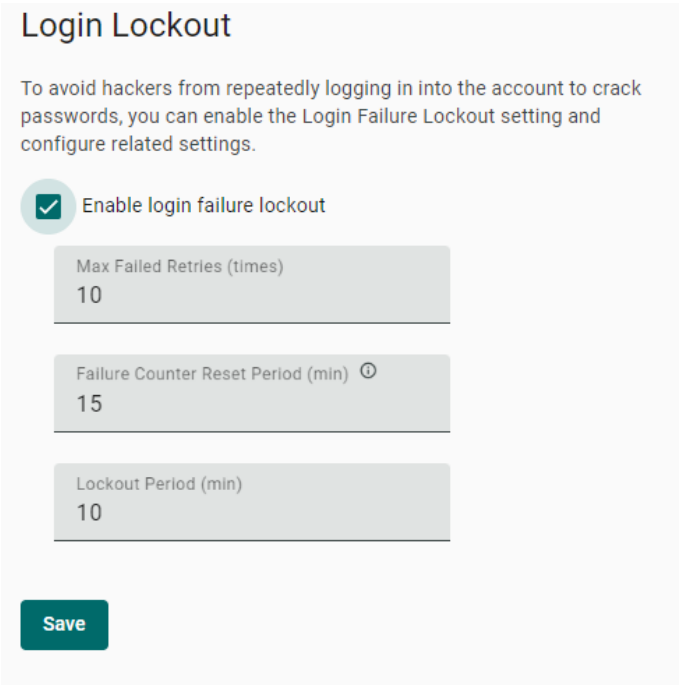
To ensure the securely access web console of the device, HTTPS has been enabled by default.

To use the HTTPS console without a certificate warning appearing, you need to import a trusted certificate issued by a third-party certificate authority. If there are no imported certificates, the V1200 Series can generate the "ThingsPro Edge Root CA for HTTPS" certificate instead.



# Login Lockout

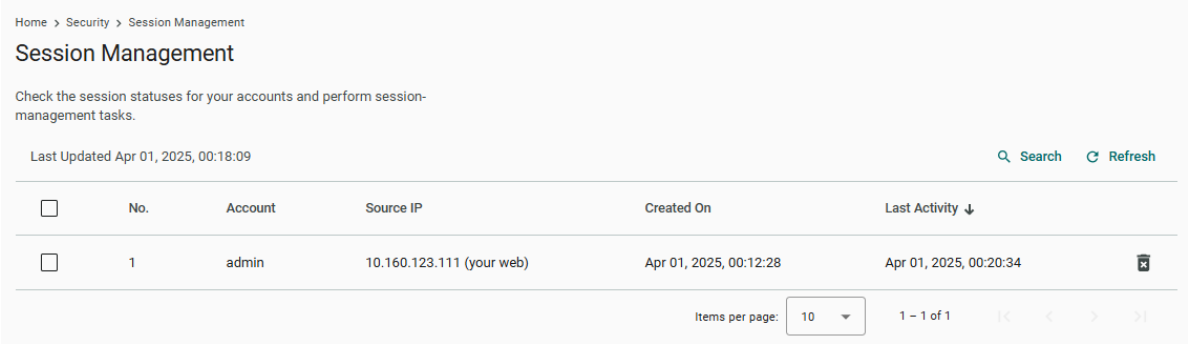
To avoid hackers repeatedly logging into the account to crack the passwords, you may choose to enable the login failure lockout and configure related settings. Login Lockout has been disabled by default.



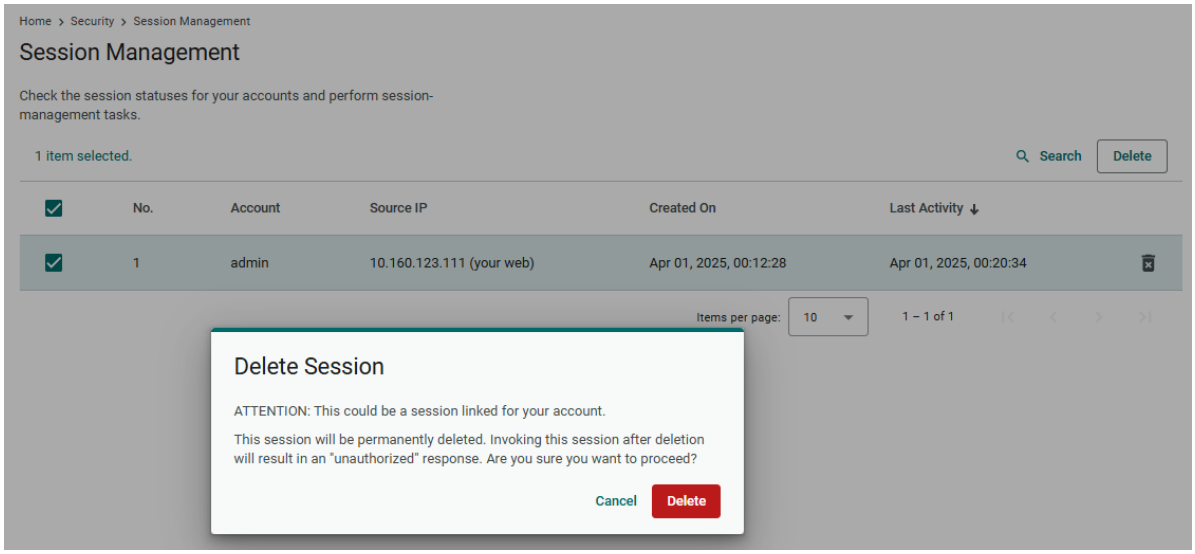

| Parameter | Value | Description | Default Value |
|---|---|---|---|
| Max Failed Retries (times) | 3 to 32 | You can specify the maximum number of failures reties, if exceed the retry times, V1200 will lock out for that account login | 10 |
| Failure Counter Reset Period (min) | 1 to 60 | The login failure counter will be recalculated after the reset period that you have set. | 15 |
| Lockout Period (min) | 5 to 1440 | When the number of login failures exceeds the Max Failed Retries, the V1200 will lock out for a period. | 10 |

# Session Management

You can review session statuses for all accounts and manage sessions for individual accounts.



In the event of detecting unusual connections, you can enhance the security of your device by deleting the respective session.




# OpenVPN Client

OpenVPN allows you to create secure connections over the internet. It provides encryption and authentication to ensure confidentiality and integrity of your data. OpenVPN uses a client-server architecture where the server acts as the VPN endpoint and the client connects to the server to establish a secure connection.

To enable the function, go to **Security > OpenVPN Client** and do the following:

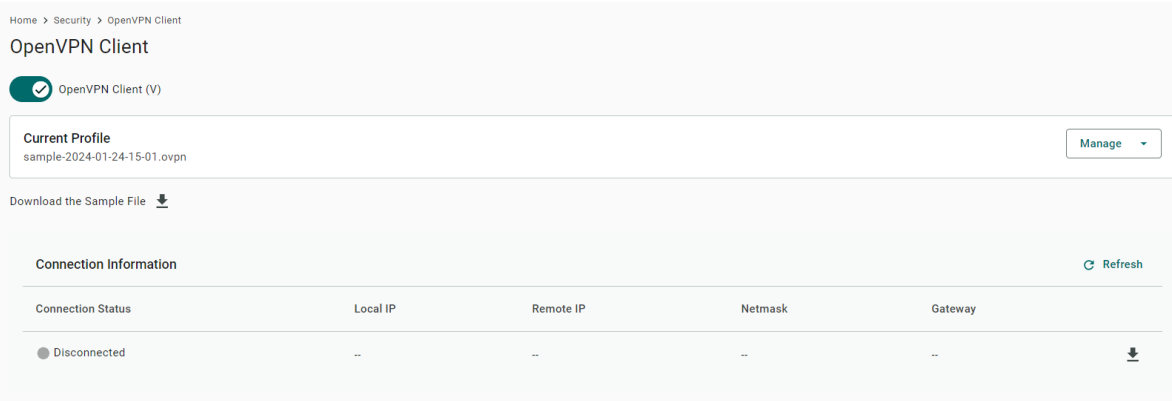
1. Download the OpenVPN sample profile template.
2. Revise the profile by inputting the necessary information provided by your VPN service provider.

   This information includes:

   a. Remote server IP: This is the address of the VPN server you want to connect to.
   b. Port number: The port through which the VPN connection will be established. The default is usually 1194.
   c. Protocol: The protocol to be used for the VPN connection, such as UDP or TCP.
   d. Authentication method: The method used to authenticate your connection.
   e. Encryption settings: The encryption algorithm to be used for securing the VPN connection.
3. Import the OpenVPN profile.

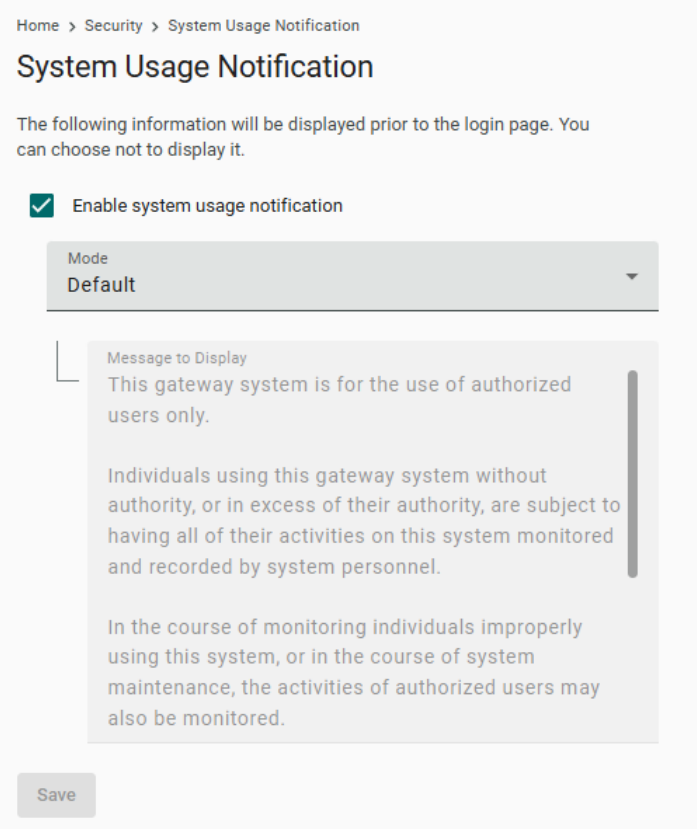
   You should see it listed in the OpenVPN client.
4. Click the button to enable OpenVPN client to connect.

If the connection is successful, you will be connected to the VPN network, and your internet traffic will be encrypted and routed through the VPN server.




# System Use Notification

The System Use Notification feature is designed to provide users with essential information prior to accessing the main functionalities of the system. These notifications are displayed on the login screen to ensure users are aware of important details before logging in. The system usage notification has been enabled by default.

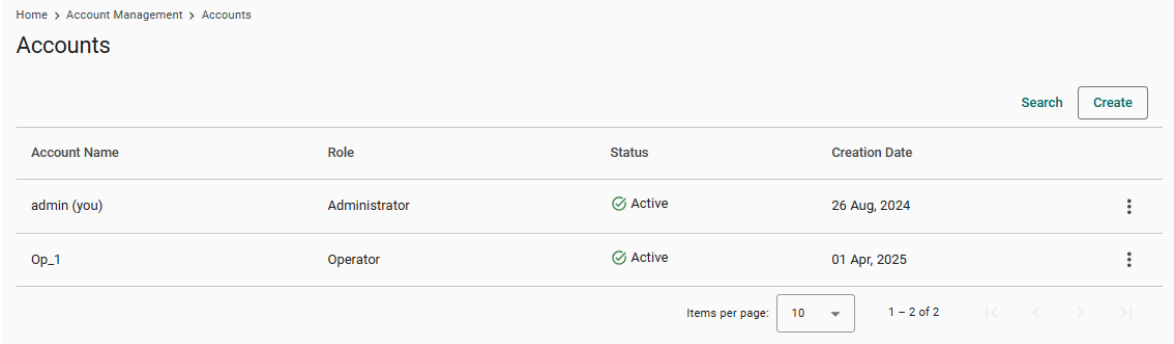


# Account Management

You can maintain user accounts and assign a role with specific permissions to each account. These functions allow you to track and control who accesses this device.

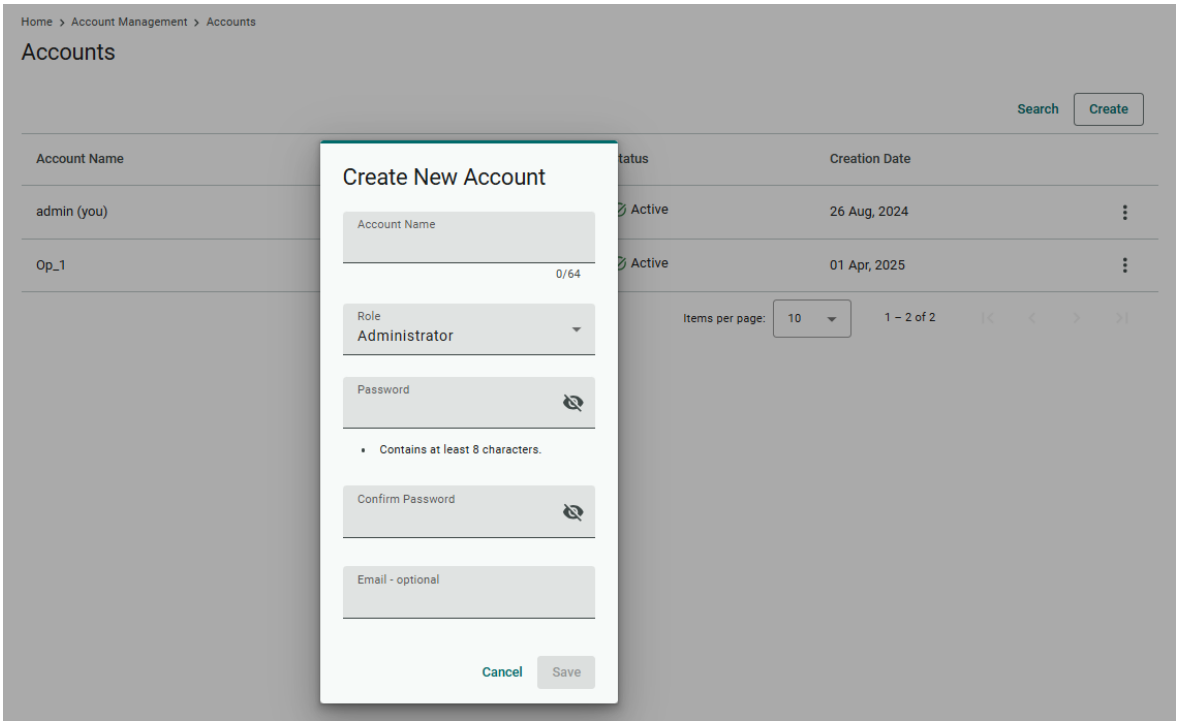
## Accounts

You can **View**, **Create**, **Edit**, **Deactivate**, and **Delete** user accounts. In the main menu, go to **Account Management > Accounts** to manage user accounts.




### Creating a New User Account

Click on **+ Create** to create a new user account. In the dialogue box that is displayed, fill up the fields and click **SAVE**.



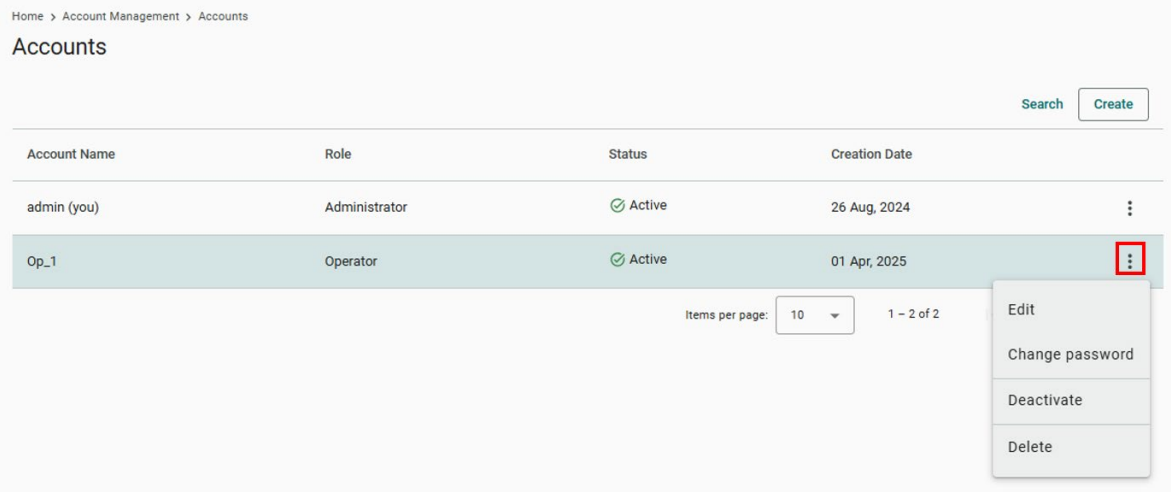

**NOTE**

To comply with security policy and best practices, specify a strong password that is at least eight characters long, consisting of at least one number and at least one special character.

All roles, with the exception of the Administrator role, must be created prior to creating a new account associated with them. Go to Account Management > Role

### Managing Existing User Accounts

To manage an account, click on the pop-up menu icon for the account.



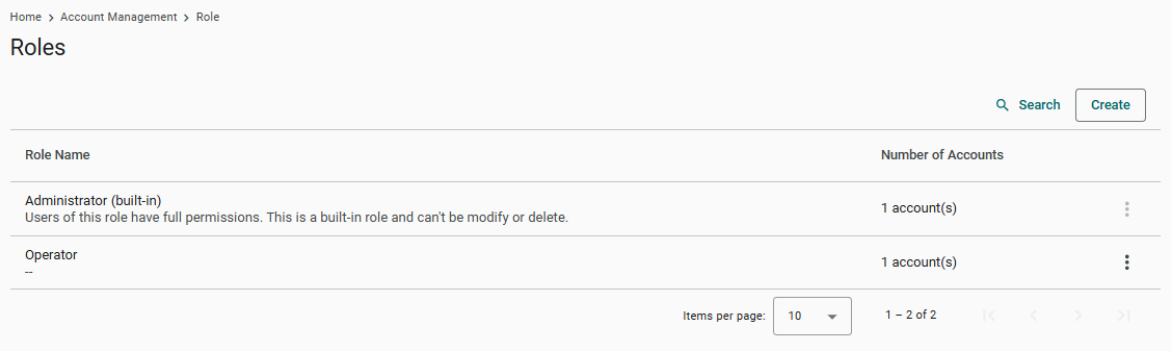

| Function | Description |
|---|---|
| Edit | Change the role, email, or password of an existing account. |
| Deactivate | Does not allow the user to log in to this device. |
| Delete | Delete the user account.<br>**(NOTE:** This operation is irreversible.) |

**NOTE**

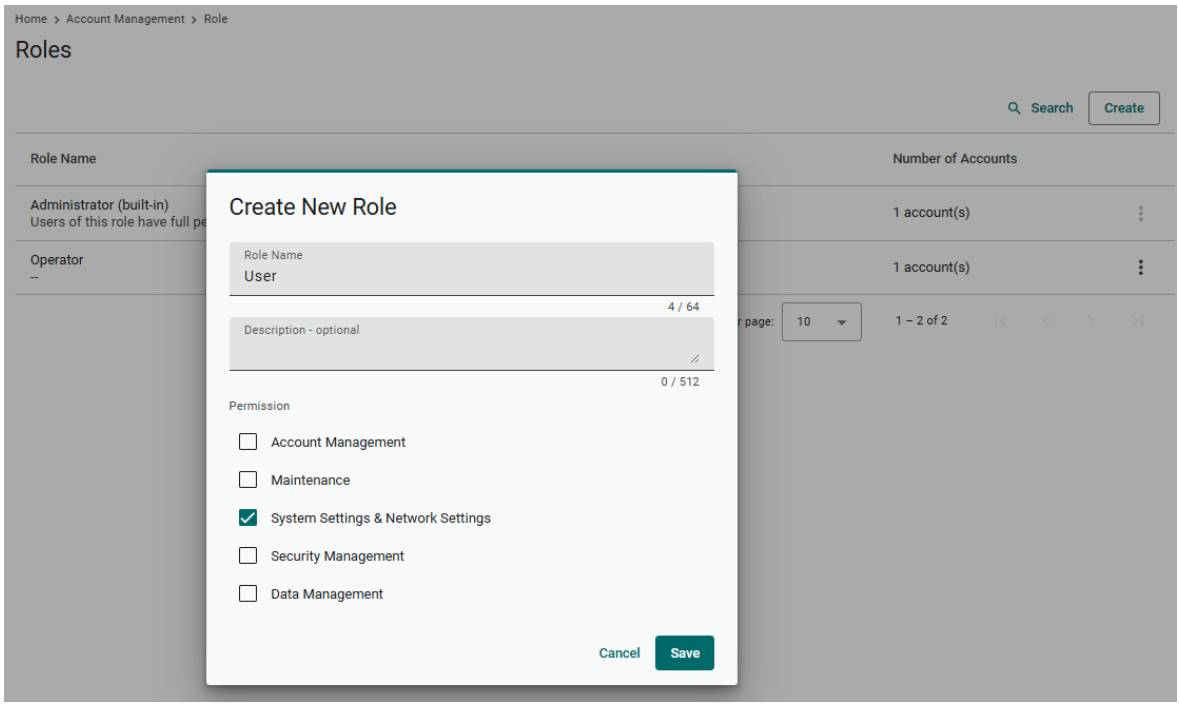
You cannot **Deactivate** or **Delete** the last remaining account with an Administrator role. This is to prevent an unauthorized account from fully managing this system. When the system detects only one active account when the Administrator role is selected, all items in the pop-up menu will be grayed out.

# Roles

You can **View**, **Create**, **Edit**, and **Delete** user roles on your V1200 device.



Click **+ Create** to set up a new user role. Specify a unique name for the role and assign the appropriate permissions. When you are done, click **Save** to create the role in the system.

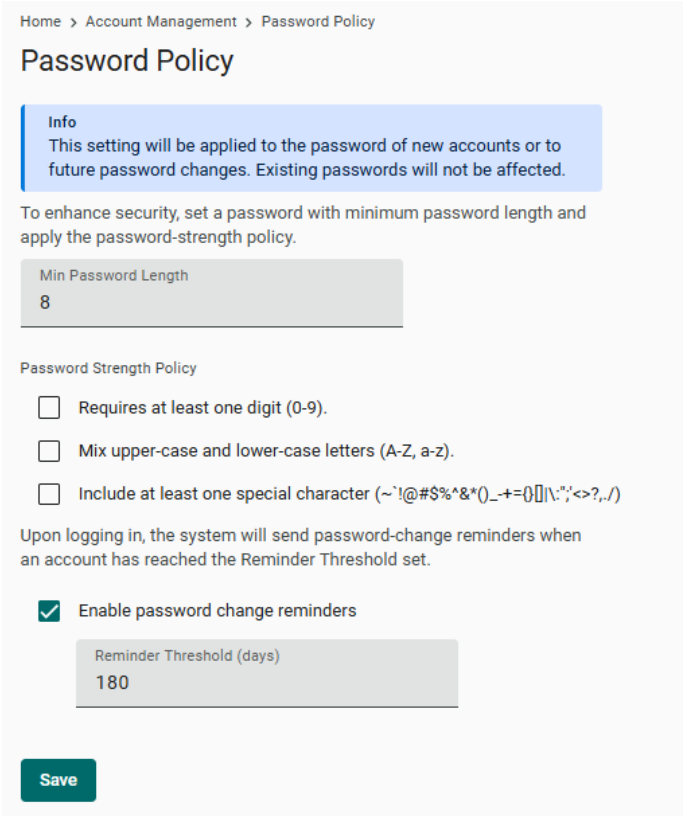



You can **edit** the settings or **delete** an existing role by clicking on the pop-up menu icon next to the role.

When the Role has been set up, it is available for selection under the Account.

# Password Policy

You can define password policy for the V1200.



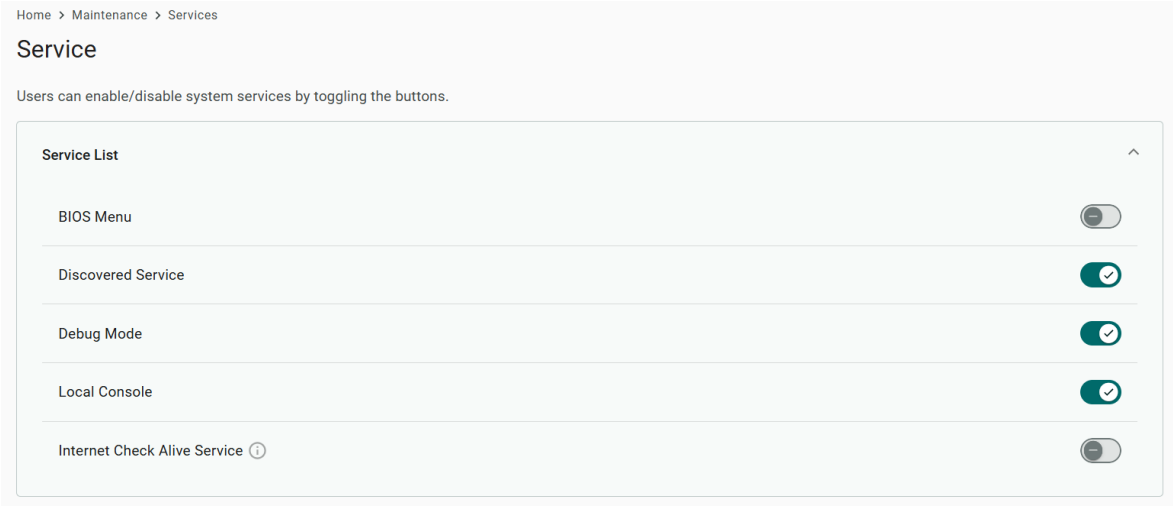
| Parameter | Value | Description | Default Value |
|---|---|---|---|
| Min. Password Length | 8 to 256 | The minimum password length. | 8 |
| Password Strength Policy | N/A | To define how the V1200 checks the password's strength. | Disabled |
| Password Change Reminders | N/A | Notify user to change the password. | Enabled |
| Reminder Threshold (days) | 10 to 360 days | Period to remind the change of password. | 180 |

# Maintenance

## Service

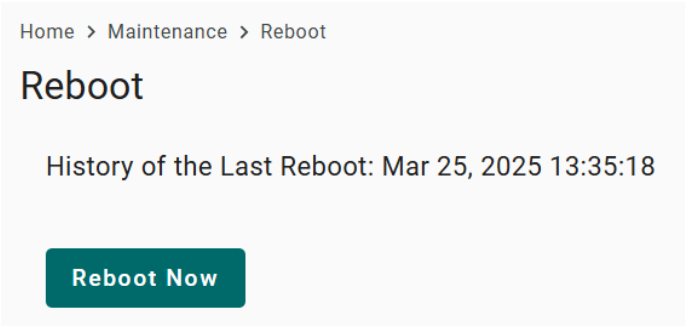
> **NOTE**
>
> To be able to use SSH, you must first enable the Debug Mode.

To enhance system security, make sure to disable any services that are not in use. Enable or disable system services by toggling the switches in Maintenance > Service.



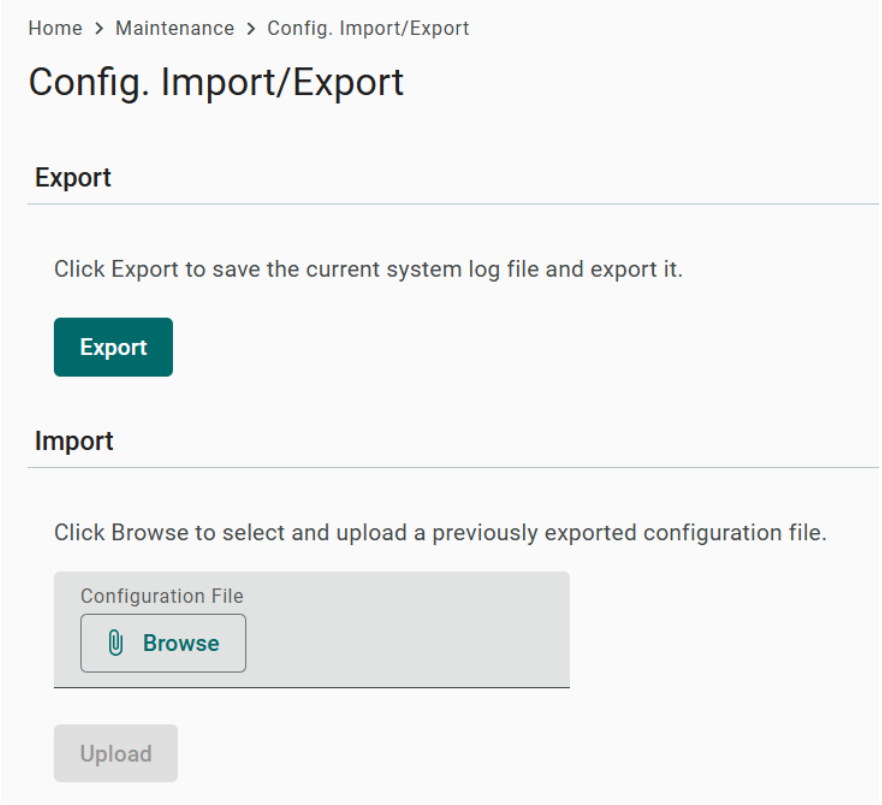

## Reboot

If you want to reboot the device, go to **Maintenance > Reboot** and click **Reboot Now**.



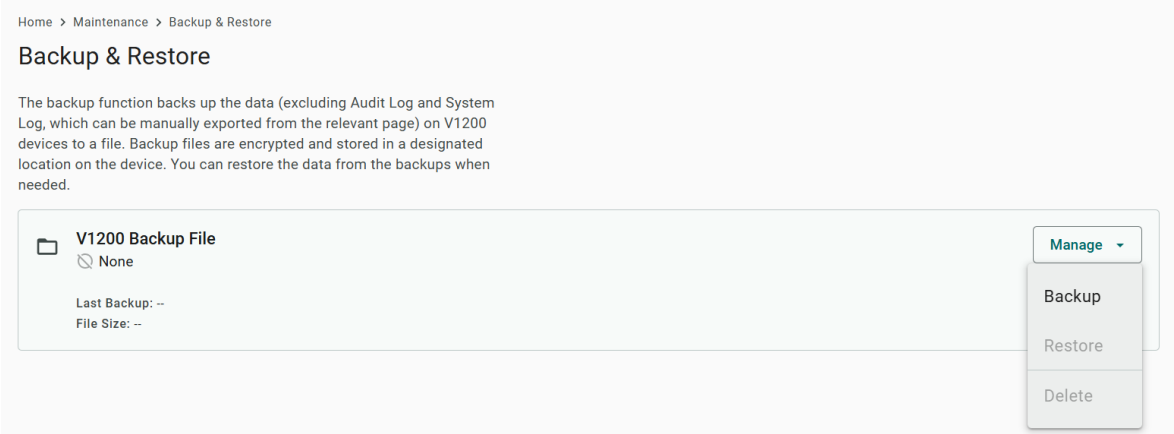
# Config. Import/Export

Go to **Maintenance > Config. Import/Export,** where you can import or export the configuration file. The exported configuration file will be compressed into the **tar.gz** format and downloaded on your computer.




# Backup & Restore

The backup function backs up the data on V1200 device to a file (only one back up file can be created at a time). Backup files are encrypted and stored in a designated location on the device. You can restore the data from the backups when needed.



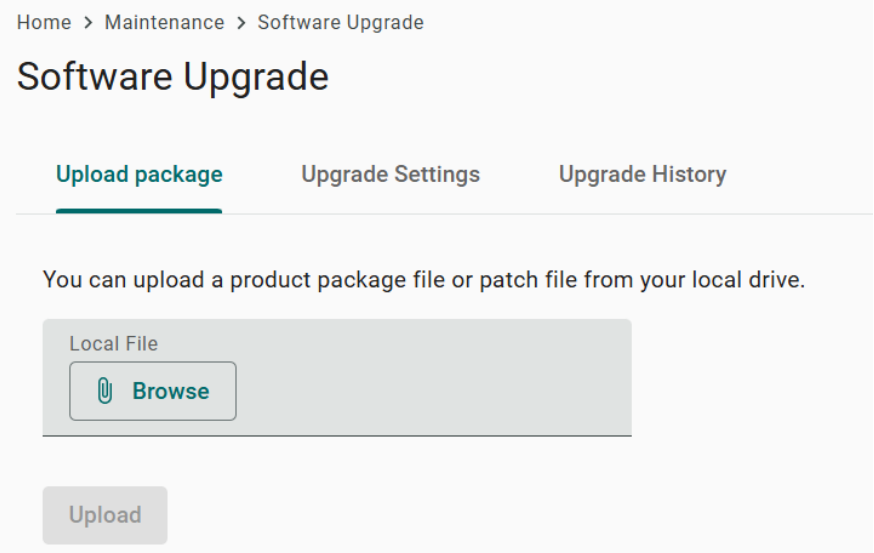
# Software Upgrade

Before performing a software upgrade, take the following precautions:

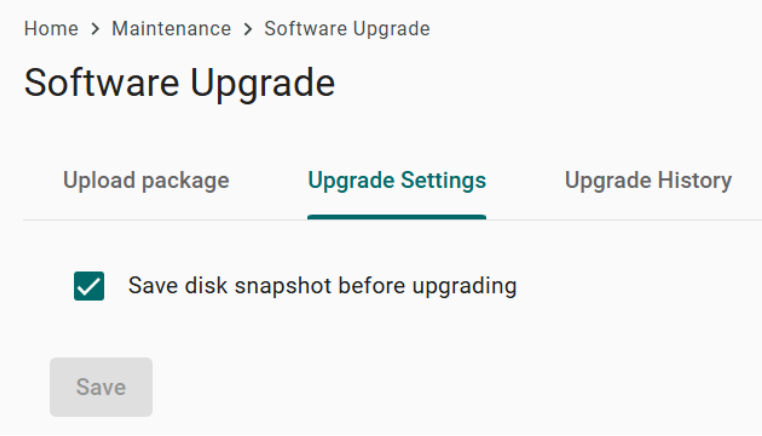
- Back up your configuration before upgrading the software
- Ensure that the device has power during the entire process
- Ensure that the connection to the software source is not interrupted during the upgrade process

## Upload Package

A pack that integrates all patches between two versions (e.g., from version 1.0 to version 1.1.) This scenario is applicable when the V1200 cannot access the Internet.

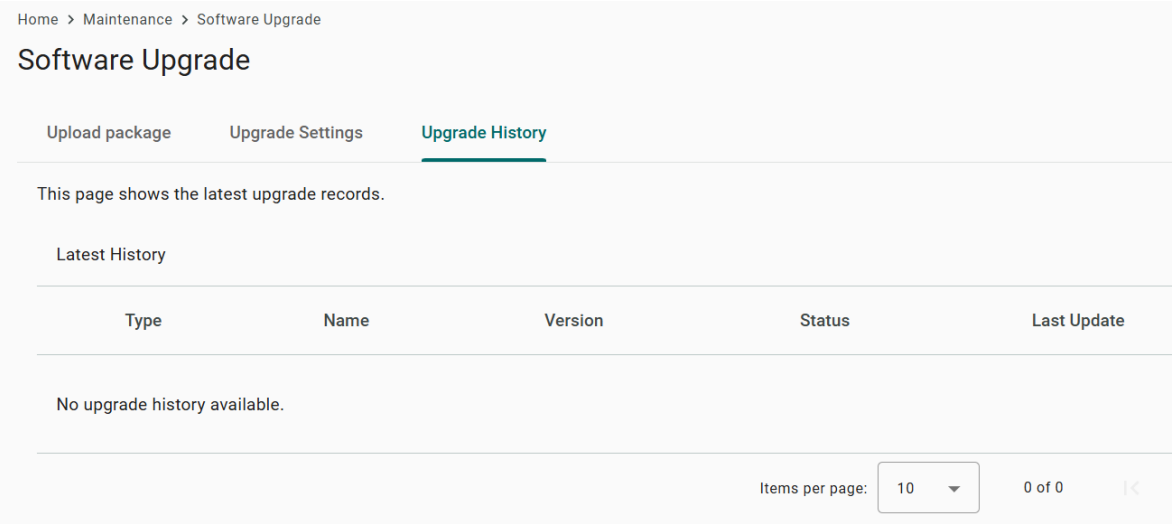



## Upgrade Settings



## Upgrade History

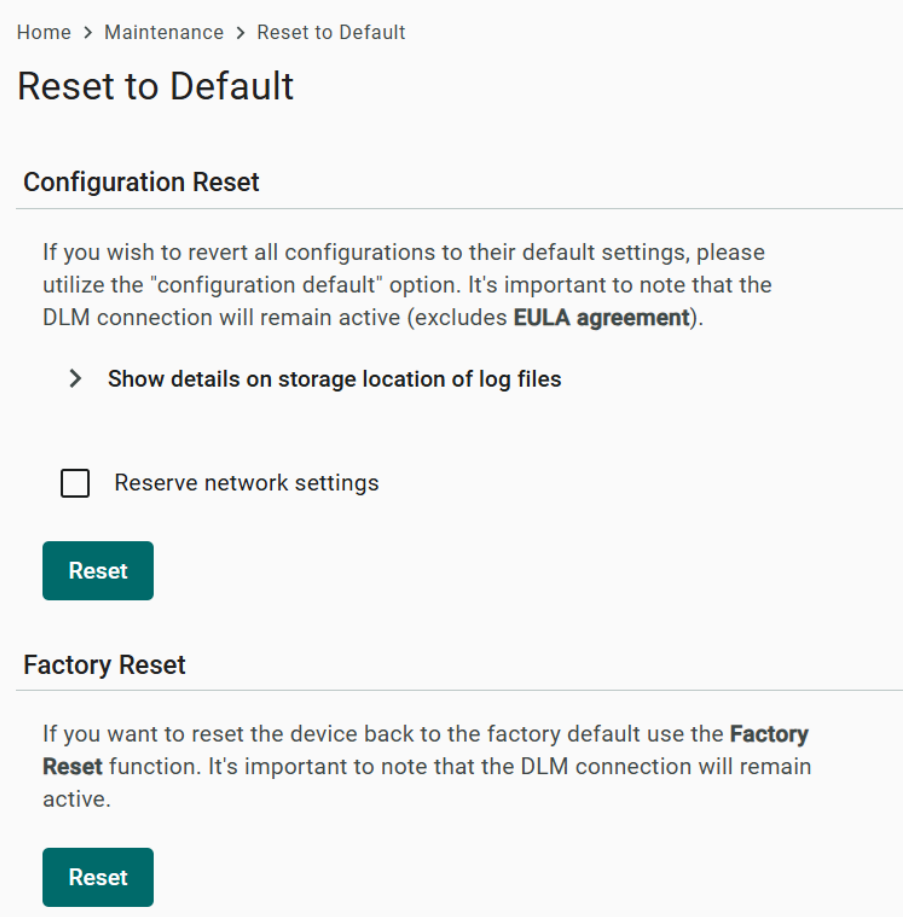
This page shows the latest upgrade records.




# Reset to Default

There are two ways to reset to the default.

1. If you only want to reset the configuration settings, use the **Reset** under **Configuration Reset**.
2. If you want to reset both the configuration settings and revert to the factory default firmware settings, use the **Reset** under **Factory Reset**.

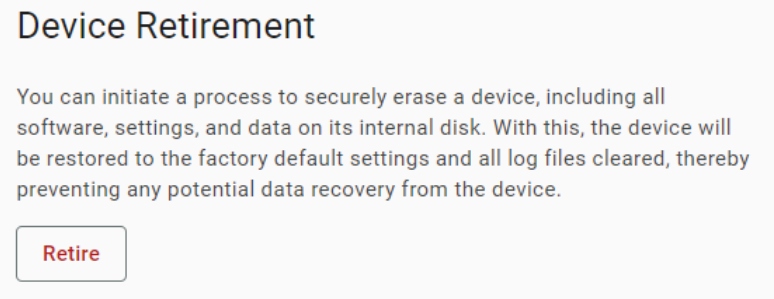


**NOTE**

When **Reserve network settings** under **Configuration Reset** is selected, the VRRP settings will not be reserved; it will be reset to the default.

## Device Retirement

Utilize this function when the device is being retired, and you wish to securely delete all files and logs for security purposes to ensure the data cannot be recovered. Due to the low-level formatting of memory that is required to erase data, it may take approximately 1.5 hours.



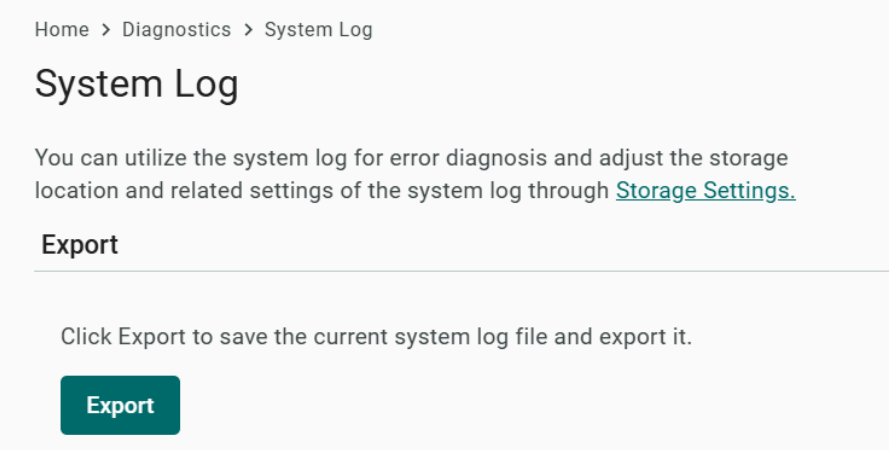

# Diagnostics

## System Log

The main purpose of system log is to help Moxa engineers with troubleshooting. When you encounter an issue that you are not able to solve by yourself, export the log file and send it to Moxa TS for analysis.

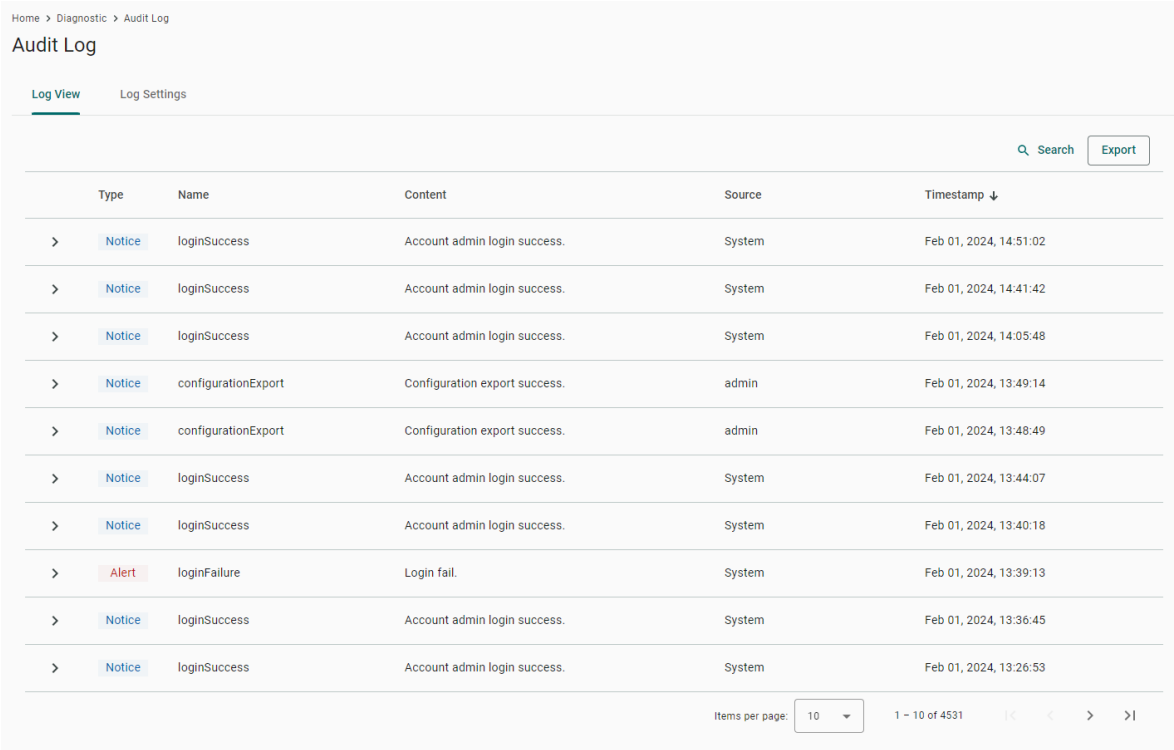
Go to **Diagnostic** > **System Log** to export the system log file and specify the location to save the system logs.

Click **Storage Settings** to specify the location to store the event logs. To optimize the use of storage space on your V1200, you can check the Enable **Time to Live** option and specify the maximum storage space for the system logs. Click **Save** to confirm your settings.

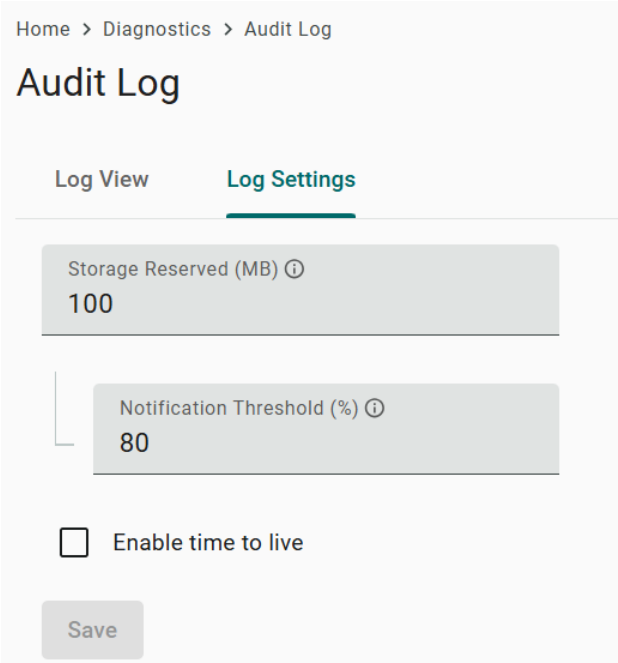


# Audit Log

When you face issues, you can go to **Diagnostic** > **Audit Log** to check historical events that help you to narrow down the problems. When there are a large number of event logs, exporting them allows for easier review. The audit logs can be exported and downloaded onto your computer.




In the **Log Settings**, you can specify the storage size to store the logs and notification threshold. Also, you also can enable time to live for maximum stored days.



# A. Regulatory Approval Statements

## FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated at a minimum distance of 20 cm between the radiator and your body.

This device and its antenna must not be co-located or operating with any other antenna or transmitter.