# AWK Series User Manual

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www.moxa.com/products

**Models covered by this user manual:**
AWK-1161C Series
AWK-1165C Series
AWK-1161A Series
AWK-1165A Series
AWK-3262A Series
AWK-4262A Series

# AWK Series User Manual

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# Table of Contents

# 1. About This Manual

Thank you for purchasing a Moxa AWK-1160A/AWK-1160C/AWK-3262A/AWK-4262A Series product, referred to as 'AWK Series" in this manual. Read this user's manual to learn how to connect your Moxa product with various interfaces and how to configure all settings and parameters via the user-friendly web interface. Note that the web interface screenshots shown in this manual use the AWK-3262A Series for reference. Since all AWK Series use the same firmware image, the screenshots will be identical for all models, with the exception of the model name.

Three methods can be used to connect to the Moxa's device, which all will be described in the next two chapters. See the following descriptions for each chapter's main functions.

**Chapter 2: Getting Started**

In this chapter, we provide instructions on how to initialize the configuration on Moxa's product. We provide two interfaces to access the configuration settings: CLI (Command Line Interface) via the RS-232 console or SSH/Telnet interfaces, and web interface.

**Chapter 3: Web Interface Configuration**

In this chapter, we explain how to access the AWK Series various configuration, monitoring, and management functions. These functions can be accessed through a web browser, or through the command line console (CLI). In this manual, we describe how to configure the AWK Series functions via the web interface, which provides the most user-friendly way to configure a Moxa device. For more information on how to configure the AWK Series using the command line interface, refer to the AWK Series Command Line Interface User Manual.

# Symbol Definition for Web Interface Configurations

The Web Interface Configuration includes various symbols. For your convenience, refer to the following table for the meanings of the symbols.

| Symbols | Meanings |
|---|---|
|  | Add |
|  | Read detailed information |
|  | Clear all |
|  | Column selection |
|  | Refresh |
|  | Enable/Disable Auto Save<br>When Auto Save is disabled, users need to click this icon to save the configuration. |
|  | Export |
|  | Edit |
|  | Perform a Wi-Fi site survey (Client mode only) |
|  | Re-authentication |
|  | Delete |

| Symbols | Meanings |
|---|---|
|  | Panel View |
|  | Expand |
|  | Collapse |
|  | Hint or additional information |
|  | Settings |
|  | Data comparison |
|  | Menu icon |
|  | Change mode |
|  | Locator |
|  | Reboot |
|  | Reset to defaults |
|  | Logout |
|  | Increase |
|  | Decrease |
|  | Equal |
|  | Menu |
|  | Search |
|  | Hide text that is typed into a text box (usually used when typing a password) |
|  | Show text typed into a text box (usually used when checking a password) |

# About Note, Attention, and Warning

Throughout the whole manual, you may see notes, attentions, and warnings. The definition of each type is explained below.

**Note:** This is used to provide additional information for a function, feature, or scenario. Here is an example:

## NOTE

Reset to Default button is disabled by default; users need to enable it in the web console if they want to use it.

**Attention:** This is used to notify readers of matters or situations that require extra attention to avoid possible issues. Here is an example:

## ATTENTION

When a different type of module has been inserted into the AWK Series, we suggest you configure the settings, or use reset-to-default.

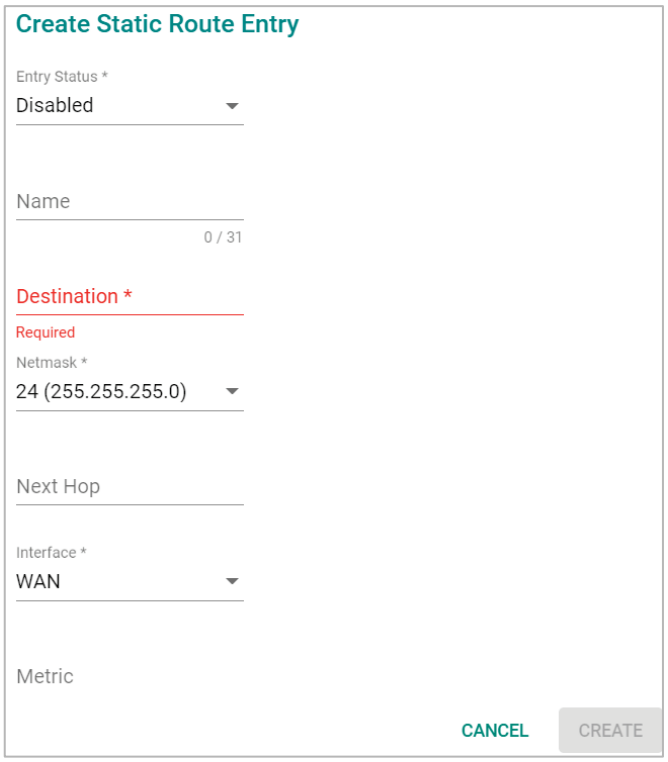
**Warning:** This is used to notify readers of matters or situations that require extra attention to avoid serious harm to the user or the device. Here is an example:

> **WARNING**
>
> There is a risk of explosion if the battery is replaced by an incorrect type.

# Configuration Reminders

In this section, several examples will be used to remind users when configuring the settings for Moxa's AWK Series.

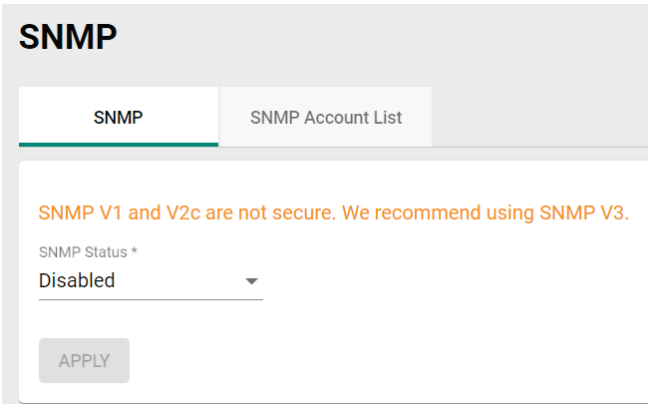
## A: About Mandatory Parameters




- The items with asterisks mean they are mandatory parameters that must be provided. In the figure above, the parameters for Entry Status, Destination, and Interface are required to be able to save or apply the configuration.
- If an item is marked in red means this item has been skipped. You need to fill in the parameters or you cannot apply or create the function.
- Some parameter values will be limited to a specific range. If the values exceed the range, it cannot be applied or created.
- Configuration input fields universally do not allow the following special characters: backslash (\), apostrophe ('), double quotes ("), backtick (`).

## B: Preconfiguring Settings

Some function settings can be configured while the function is disabled. These changes will take effect when the function is enabled, without having to reconfigure the settings again. For example, on the SNMP configuration page, users can configure the SNMP Account List settings while SNMP is disabled. When SNMP is enabled, the previously configured Account List settings will take effect.


SNMP
SNMP
SNMP Account List
SNMP V1 and V2c are not secure. We recommend using SNMP V3.
SNMP Status *
Disabled
APPLY

# 2. Getting Started

In this chapter, we provide an overview of the AWK Wi-Fi 6 Series, and explain how to log into the Moxa's AWK Series for the first time through the web-based interface.

# Supported Operating Modes

Supported features and function behavior depend on the operating mode of the device. Refer to the following table for an overview of supported operating modes for each AWK Series. For more information and configuration settings for each operation mode, refer to **Operation Mode**.

| Model | AP | Client | Master | Slave | Client-router | Sniffer | Mesh |
|---|---|---|---|---|---|---|---|
| **AWK-1160A** | Yes | No | Yes | No | No | Yes | No |
| **AWK-1160C** | No | Yes | No | Yes | Yes | Yes | No |
| **AWK-3262A** | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **AWK-4262A** | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

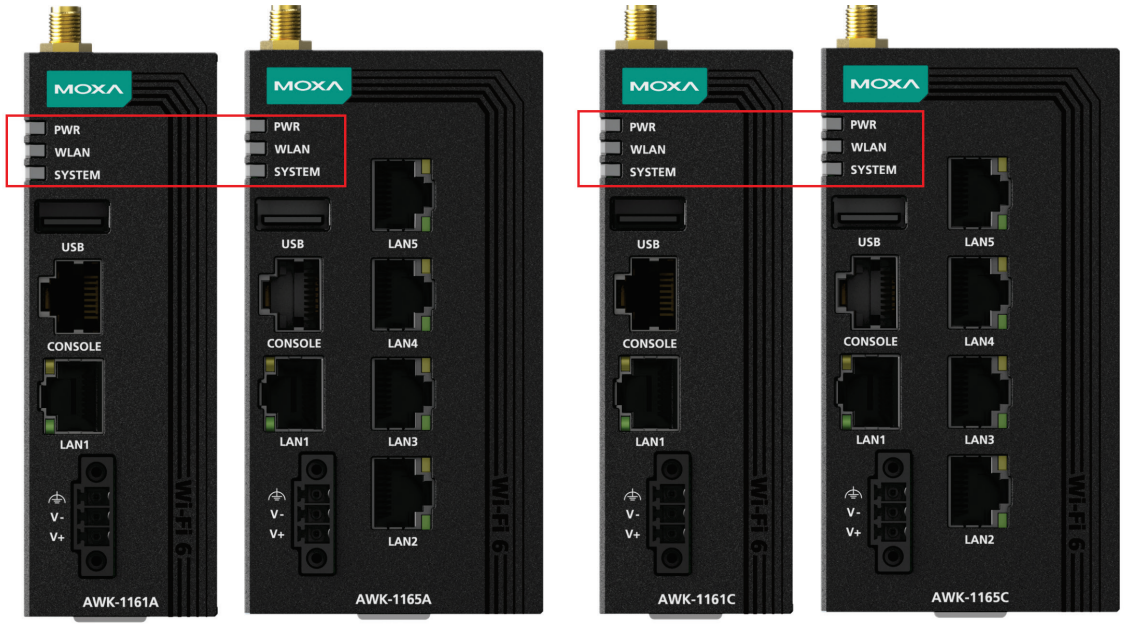
# Functional Design

## LED Indicators

The LEDs on the front and right panels of the AWK Series provide a quick and easy means of determining the current operational status and wireless settings.

The following tables summarize how to read the device's wireless settings from the LED displays.

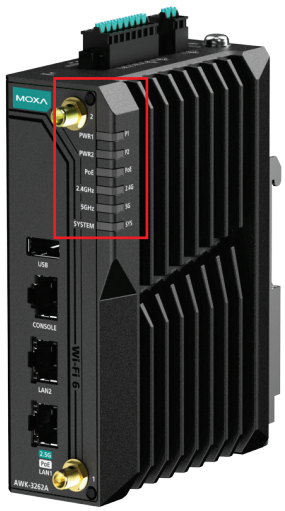
**AWK-1160A and AWK-1160C Series**




| LED | Color | State | Description |
|---|---|---|---|
| | | | **Front Panel LED Indicators** |
| **PWR** | Green | On | Power is being supplied from DC to the PWR socket. |

| LED | Color | State | Description |
|---|---|---|---|
| | | Off | Power is not being supplied from DC to the PWR socket. |
| **WLAN** | Green | On | Client/Client-router/Slave has established a Wi-Fi connection to an AP/Master with a SNR value of 35 or higher. |
| | | Blinking | Data is being transmitted over the wireless interface (2.4 GHz or 5 GHz). |
| | Amber | On | Client/Client-router/Slave has established a Wi-Fi connection to an AP/Master with a SNR value of less than 35. |
| | | Blinking | Data is being transmitted over the wireless interface (2.4 GHz or 5 GHz). |
| **SYSTEM** | Red | On | System initialization failure, configuration error, or system error. |
| | Green | On | System startup completed and is operating normally. |
| **LAN LED Indicators (integrated into the RJ45 Port)** | | | |
| **LAN1~5** | Green | On | Link established on the LAN port at 1000 Mbps. |
| | | Blinking | Data is being transmitted at 1000 Mbps. |
| | | Off | LAN port's 1000 Mbps link is inactive. |
| | Amber | On | Link established on the LAN port at 10/100 Mbps. |
| | | Blinking | Data is being transmitted at 10/100 Mbps. |
| | | Off | The LAN port's 10/100 Mbps link is inactive. |

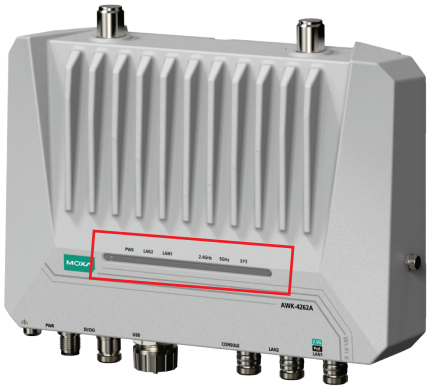
**AWK-3262A Series**




| LED | Color | State | Description |
|---|---|---|---|
| **Front Panel LED Indicators (System)** | | | |
| **PWR1** | Green | On | Power is being supplied to power input1. |
| | | Off | Power is not being supplied to power input 1. |
| **PWR2** | Green | On | Power is being supplied to power input 2. |
| | | Off | Power is not being supplied to power input 2. |
| **PoE** | Amber | On | Power is being supplied via PoE. |
| | | Off | Power is not being supplied via PoE. |
| **2.4G** | Green | On | Client/Client-router/Slave has established a Wi-Fi connection to an AP/Master with a SNR value of 35 or higher. |
| | | Blinking | Data is being transmitted over the 2.4 GHz band with a SNR value of 35 or higher. |
| | Amber | On | Client/Client-router/Slave has established a Wi-Fi connection to an AP/Master with a SNR value of less than 35. |
| | | Blinking | Data is being transmitted over the 2.4 GHz band with a SNR value of less than 35. |
| **5G** | Green | On | Client/Client-router/Slave has established a Wi-Fi connection to an AP/Master with a SNR value of 35 or higher. |
| | | Blinking | Data is being transmitted over the 5 GHz band with a SNR value of 35 or higher. |

| LED | Color | State | Description |
|---|---|---|---|
| | Amber | On | Client/Client-router/Slave has established a Wi-Fi connection to an AP/Master with a SNR value of less than 35. |
| | | Blinking | Data is being transmitted over the 5 GHz band with a SNR value of less than 35. |
| **SYS** | Red | On | System initialization failure, configuration error, or system error. |
| | Green | On | System startup completed and is operating normally. |
| **LAN LED Indicators (RJ45 Port)** | | | |
| **LAN1** | Green | On | Link established on the LAN port at 2500 Mbps. |
| | | Blinking | Data is being transmitted at 2500 Mbps. |
| | | Off | LAN port's 2500 Mbps link is inactive. |
| | Amber | On | Link established on the LAN port at 10/100/1000 Mbps. |
| | | Blinking | Data is being transmitted at 10/100/1000 Mbps. |
| | | Off | The LAN port's 10/100/1000 Mbps link is inactive. |
| **LAN2** | Green | On | Link established on the LAN port at 1000 Mbps. |
| | | Blinking | Data is being transmitted at 1000 Mbps. |
| | | Off | LAN port's 1000 Mbps link is inactive. |
| | Amber | On | Link established on the LAN port at 10/100 Mbps. |
| | | Blinking | Data is being transmitted at 10/100 Mbps. |
| | | Off | The LAN port's 10/100 Mbps link is inactive. |

**AWK-4262A Series**



| LED | Color | State | Description |
|---|---|---|---|
| **PWR** | Green | On | Power is being supplied to the power input from a DC power source or via PoE. |
| | | Off | Power is not being supplied to the power input. |
| **LAN2** | Green | On | Link established on the LAN port at 1000 Mbps. |
| | | Blinking | Data is being transmitted at 1000 Mbps. |
| | | Off | LAN port's 1000 Mbps link is inactive. |
| | Amber | On | Link established on the LAN port at 10/100 Mbps. |
| | | Blinking | Data is being transmitted at 10/100 Mbps. |
| | | Off | The LAN port's 10/100 Mbps link is inactive. |
| **LAN1** | Green | On | Link established on the LAN port at 2500 Mbps. |
| | | Blinking | Data is being transmitted at 2500 Mbps. |
| | | Off | LAN port's 2500 Mbps link is inactive. |
| | Amber | On | Link established on the LAN port at 10/100/1000 Mbps. |
| | | Blinking | Data is being transmitted at 10/100/1000 Mbps. |
| | | Off | The LAN port's 10/100/1000 Mbps link is inactive. |
| **2.4G** | Green | On | Client/Client-router/Slave has established a Wi-Fi connection to an AP/Master with a SNR value of 35 or higher. |
| | | Blinking | Data is being transmitted over the 2.4 GHz band with a SNR value of 35 or higher. |
| | Amber | On | Client/Client-router/Slave has established a Wi-Fi connection to an AP/Master with a SNR value of less than 35. |
| | | Blinking | Data is being transmitted over the 2.4 GHz band with a SNR value of less than 35. |

| LED | Color | State | Description |
|---|---|---|---|
| 5G | Green | On | Client/Client-router/Slave has established a Wi-Fi connection to an AP/Master with a SNR value of 35 or higher. |
| | | Blinking | Data is being transmitted over the 5 GHz band with a SNR value of 35 or higher. |
| | Amber | On | Client/Client-router/Slave has established a Wi-Fi connection to an AP/Master with a SNR value of less than 35. |
| | | Blinking | Data is being transmitted over the 5 GHz band with a SNR value of less than 35. |
| SYS | Red | On | System initialization failure, configuration error, or system error. |
| | Green | On | System startup completed and is operating normally. |

# Event Indicators

The device LEDs are also used to indicate specific device events or issues. Refer to the following table for more details.

| Applicable Models | AWK-1160C<br>AWK-1160A<br>AWK-3262A<br>AWK-4262A | | AWK-3262A<br>AWK-4262A | | | |
|---|---|---|---|---|---|---|
| LED | SYS | | 2.4 GHz | | 5 GHz | |
| | Red | Green | Amber | Green | Amber | Green |
| IP address conflict detected. | Blinks at 4 Hz | Off | - | - | - | - |
| Failed to get an IP from the DHCP server. | Blinks at 4 Hz | Off | - | - | - | - |
| ABC-02 is connected. | Off | Blinks at 4 Hz | - | - | - | - |
| Uploading/retrieving file(s) to/from ABC-02 (e.g., upgrading firmware, backup/restore configuration). | Off | Blinks at 4 Hz | Off | Blinks at 4 GHz | Off | Blinks at 4 GHz |
| Failed to upload/retrieve file(s) to/from ABC-02. Possible reasons are: The file does not exist, failed to copy the file, or the ABC-02 has insufficient space. | Blinks at 4 Hz | Off | - | - | - | - |
| The device is being located. | Off | Blinks at 4 Hz | Off | Blinks at 4 GHz | Off | Blinks at 4 GHz |
| The Reset button is being pressed for less than 5 seconds (system reboot). | Off | Blinks at 1 Hz | - | - | - | - |
| The Reset button is being pressed for 5 to 10 seconds (system factory reset). | Off | Blinks at 4 Hz | - | - | - | - |
| The Reset button is being pressed for longer than 10 seconds (abort reboot or reset). | Off | Solid on | - | - | - | - |

# Event Indicators (Mesh Mode Enabled)

| Applicable Role | Mesh Portal | | | | | | Mesh Node | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LED | 2.4 GHz | | 5 GHz | | SYS | | 2.4 GHz | | 5 GHz | | SYS | |
| Color | Green | Amber | Green | Amber | Green | Red | Green | Amber | Green | Amber | Green | Red |
| Failed to join mesh network, dismissed upon joining | – | – | – | – | – | – | – | – | – | – | – | Blinks at 4 Hz |
| **Mesh backhaul** | | | | | | | | | | | | |

| Applicable Role | | Mesh Portal | | | | | | Mesh Node | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Data transmission | Normal | – | – | Blinks | – | – | – | – | – | – | – | – | – |
| | Indicating signal-to-noise ratio | – | – | – | – | – | – | – | – | SNR≥ 35 | SNR< 35 | – | – |
| AP/Master (VAP) | | | | | | | | | | | | | |
| When data transmission | | Blinks | – | – | – | – | – | – | – | – | – | – | – |
| | | – | – | – | – | – | – | Blinks | – | – | – | – | – |

# Reset Button

Depending on the AWK Series model, the Reset is located on the bottom panel of the device. You can reboot the AWK series or reset it to factory default settings by pressing the **RESET** button with a pointed object such as an unfolded paper clip.

- **System reboot:** Hold down the Reset button for under 5 seconds and then release. The SYS LED will blink at 1 Hz.
- **Reset to factory default:** Hold down the Reset button for over 5 seconds until the SYS LED starts blinking green. Release the button to reset the AWK Series to its factory default settings. The SYS LED will blink at 4 Hz.
- **Abort the action:** Hold the Reset button down for longer than 10 seconds and then release to abort the reset action. The SYS LED will stop blinking and turn solid.

## NOTE

The reset to default factory settings function of the reset button is disabled by default and must be enabled in the web console. Refer to the Reset Button Active Duration section for more detailed information.

# Relay (AWK-3262A and AWK-4262A Only)

The AWK-3262A and AWK-4262A Series have one relay output which is used to forward system failures and user-configured events.

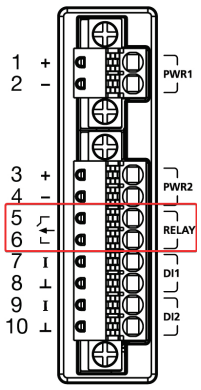
The two wires attached to the relay contacts form an open circuit when a user-configured event is triggered.

If a user-configured event does not occur, the relay circuit will remain closed. For safety reasons, the relay circuit is kept open when the device is not powered on.

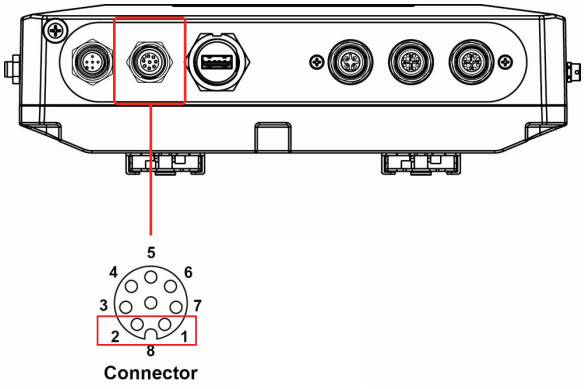
***Summary of the Relay Status***

| Power Status | Event | Relay |
|---|---|---|
| Off | - | Open |
| On | Yes | Open |
| | No | Closed |

The AWK-3262A relay is marked on the 2 terminal block contacts, as shown in the image below:




The AWK-4262A relay is integrated into the DI/DO connector (pins 1 and 2), as shown in the image below:




# First-time Installation and Configuration

Before installing the AWK Series, make sure that all items in the Package Checklist listed in the Quick Installation Guide are in the box. You will need access to a notebook computer or PC equipped with an Ethernet port.

**NOTE**

The images in the instructions below use the AWK-3262A Series interface for reference. The instructions are identical for all supported AWK models.

**Step 1: Select the power source.**

The AWK Series can be powered by a DC power input.

**Step 2: Connect the AWK Series to a notebook or PC.**

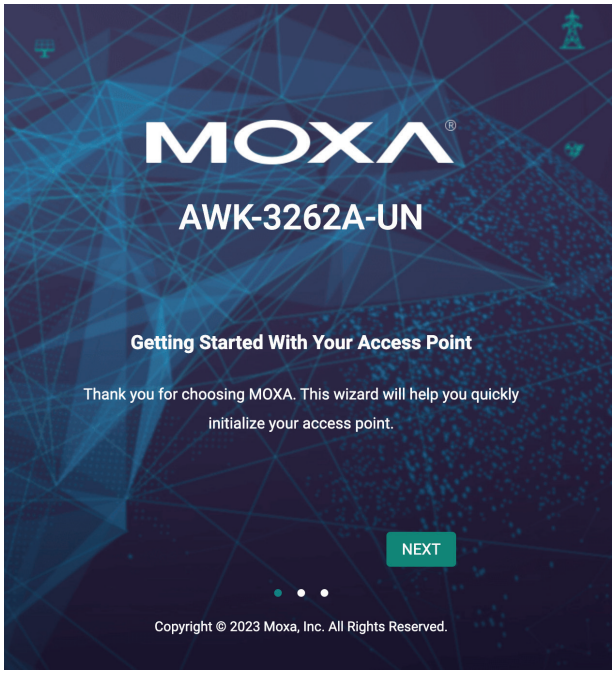
Since the AWK Series supports MDI/MDI-X auto-sensing, you can use either a straight-through or crossover cable to connect the AWK Series to the computer. The LED indicator on the AWK Series' LAN port will light up when a connection is established.

**Step 3: Set up the computer's IP address.**

Choose an IP address on the same subnet as the AWK Series. Since the AWK Series' default IP address is **192.168.127.253**, and the subnet mask is **255.255.255.0**, you should set the IP address of the computer to **192.168.127.xxx**.

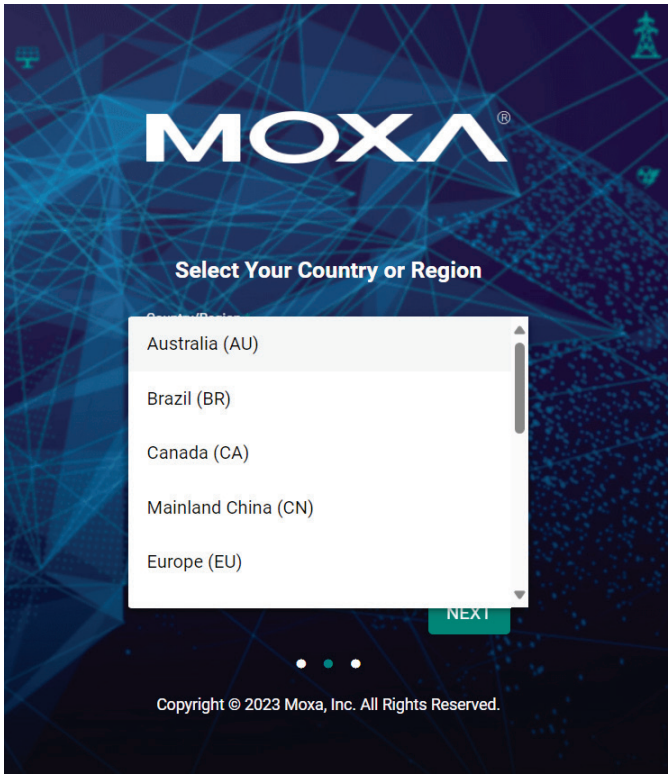
**Step 4: Access the homepage of the AWK.**

Open your computer's web browser and type **https://192.168.127.253** in the address field to access the AWK's homepage. If successfully connected, the AWK's interface homepage will appear. Click **NEXT**.




**Step 5: Choose your country or region. (Not applicable to -US models)**

Select your country or region from the drop-down list and click **NEXT**.

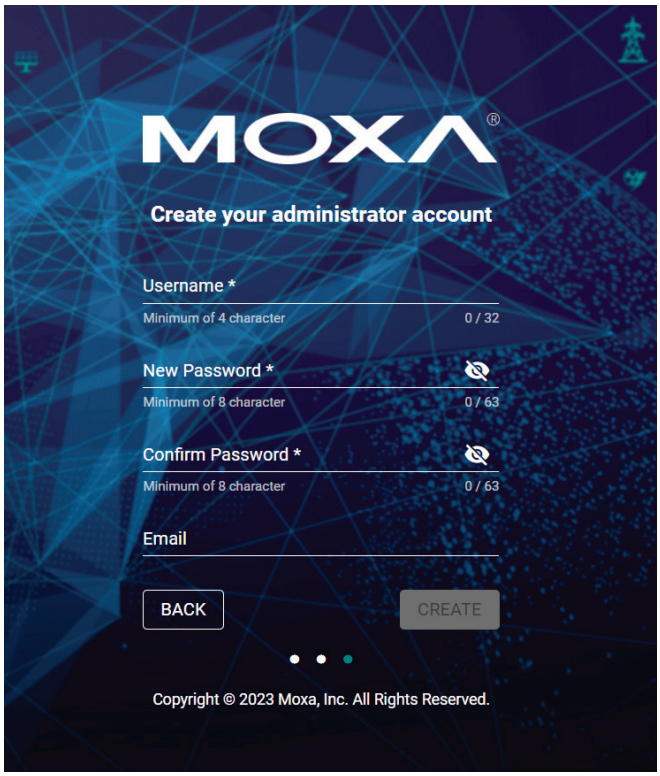



**Step 6: Create a user account and password.**

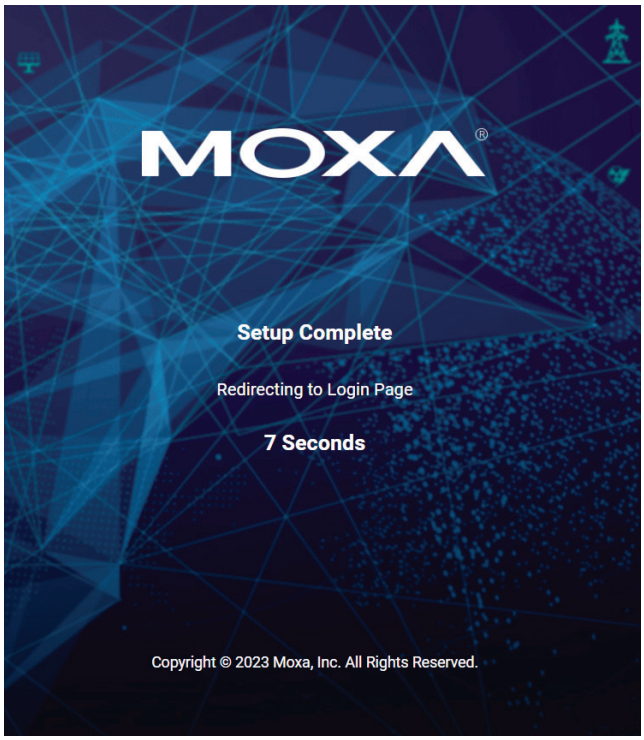
There is no default user account and password. Enter the username, password, and email address for your user account and click **CREATE**.

**NOTE**

The username and password are case-sensitive.




After creating your account, you will be automatically redirected to the login screen.




**Step 7:** Log in to the device.

Once the initialization message (in red font) has disappeared, enter your username and password and click **LOG IN**.


# Communication Testing

After installing the AWK Series you can run a sample test to make sure the AWK Series and the wireless connection are functioning normally. Two testing methods are described below. Use the first method if you are using only one AWK Series device as an AP and use the second method if you are using AWK Series devices as Client and AP.

## How to Test the AWK Series as an AP

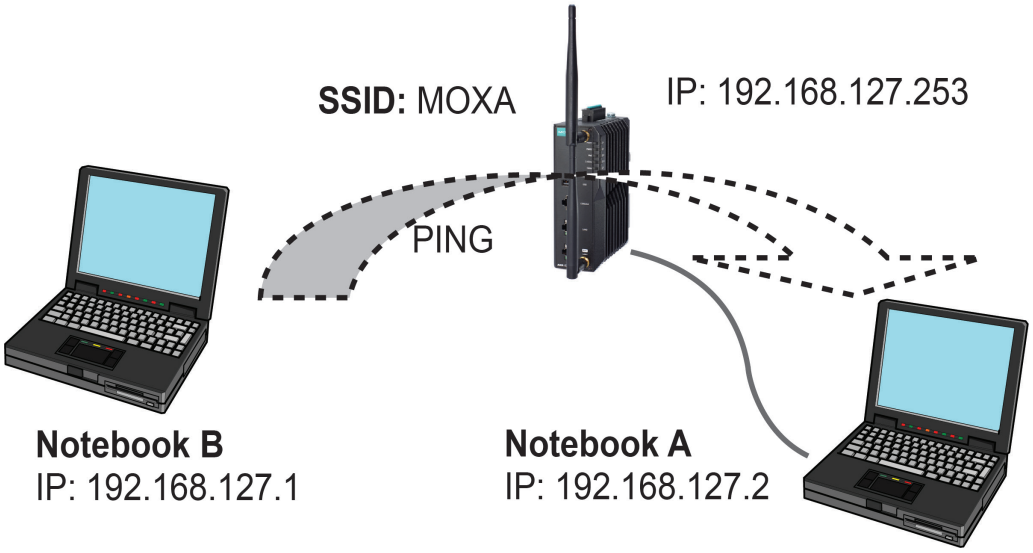
***AWK-1161A/AWK-1165A/AWK-3262A/AWK-4262A only***

If you are testing the AWK Series device as an AP, you will need a second notebook computer equipped with a WLAN card. Configure the WLAN card to connect to the AWK Series and change the IP address of the second notebook (Notebook B) so that it is on the same subnet as the first notebook (Notebook A), which is connected to the AWK Series.

After configuring the WLAN card, establish a wireless connection with the AWK Series and open a DOS window on Notebook B. At the prompt, type the following command:

**ping** *<IP address of notebook A>*

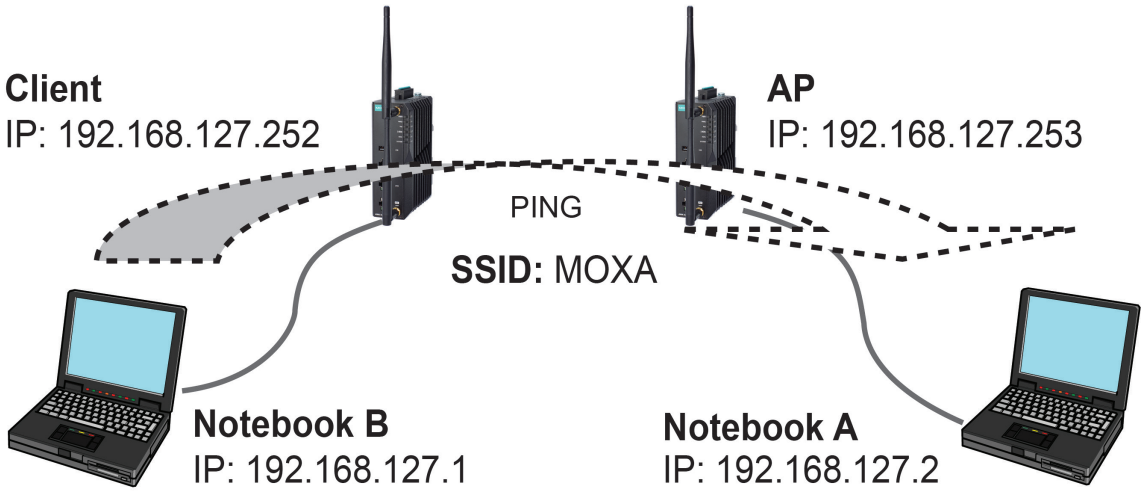
Press **Enter** to execute the command (see the figure below). A "Reply from IP address …" response means the communication was successful. A "Request timed out." response means the communication failed. In this case, recheck the configuration to make sure the connections are correct.




## How to Test the AWK Series as a Client

***AWK-1161C/AWK-1165C/AWK-3262A/AWK-4262A only***

If you are testing the AWK Series as a Client, you will need a second notebook computer (Notebook B) equipped with an Ethernet port as well as an AP connected to notebook A. Configure the AWK Series connected to notebook B for Client mode with the correct SSID and credentials matching the target AP.




After setting up the testing environment, open a DOS window on notebook B. At the prompt, type:

**ping** *<IP address of notebook A>*

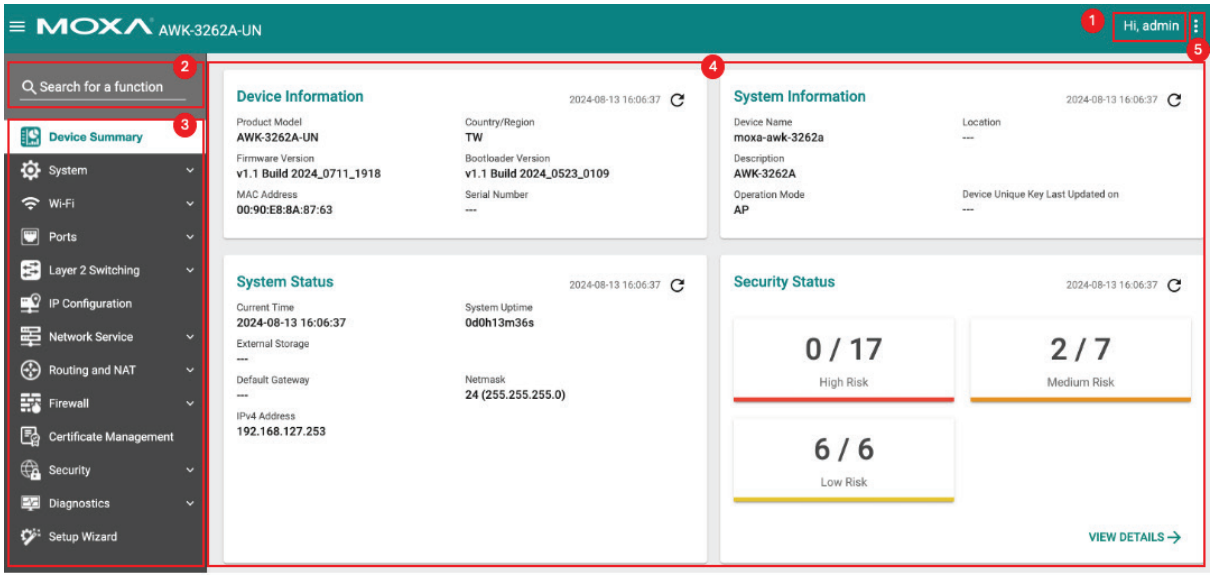
and then press **Enter**. A "Reply from IP address …" response means the communication was successful. A "Request timed out" response means the communication failed. In this case, recheck the configuration to make sure the connections are correct.

# 3. Web Interface Configuration

Moxa's AWK Series offers a user-friendly web interface for easy configuration. All functions of the Moxa's AWK Series can be configured via this web interface.

# Function Introduction

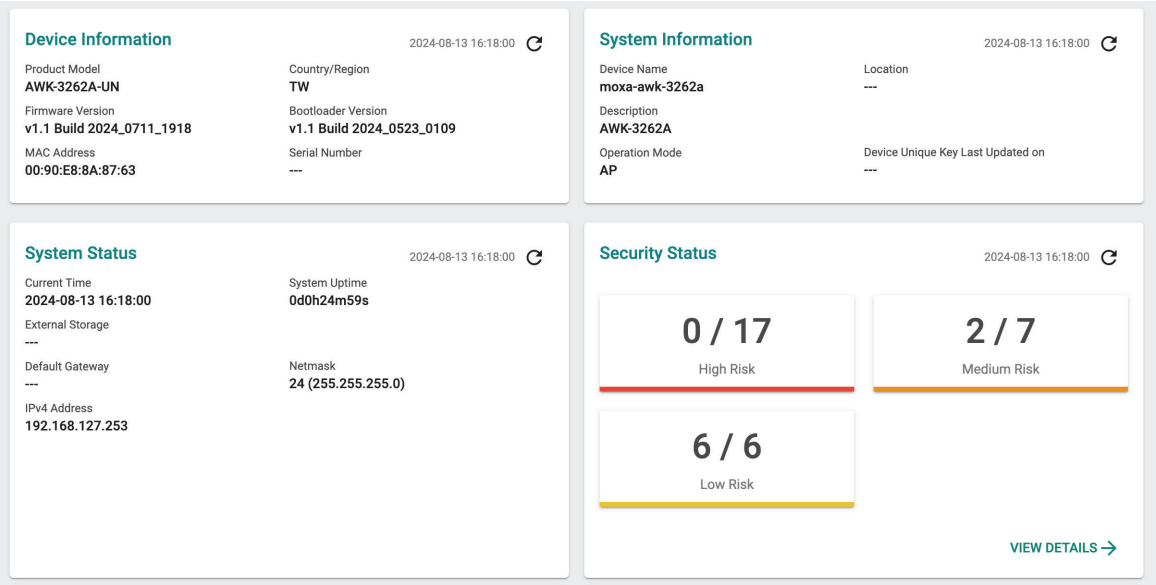
This section describes the web interface design, providing a basic visual concept for users to understand the main information or configuration menu for the web interface pages.




1. **Login Name:** This shows the name of the user that is currently logged in.
2. **Search Bar:** Type the name of the function you want to search for in the function menu tree.
3. **Function Menu:** All functions of the AWK Series are shown here. Click the function you want to view or configure.
4. **Device Summary:** All important device information and statistics are shown here.
5. **Maintenance:** Functions for device maintenance are located here.

# Device Summary

After successfully connecting to the AWK Series, the **Device Summary** will automatically appear. To view the device summary from anywhere in the interface, click **Device Summary** on the Function Menu.



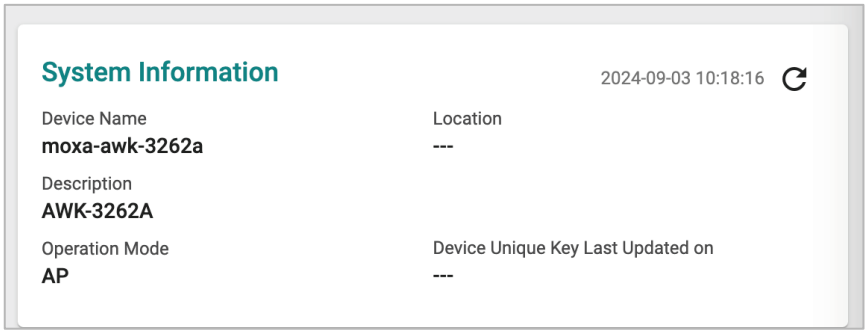

See the following sections for a detailed description of each widget.

## Device Information

This shows the model information, including product model name, the country or region of RF compliance, and firmware version.

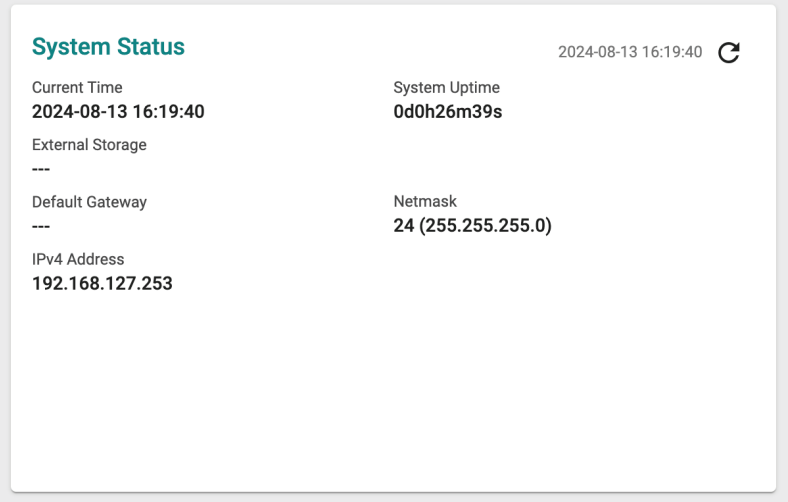

## System Information

This shows system information including the device name, location, description, and current operation mode.



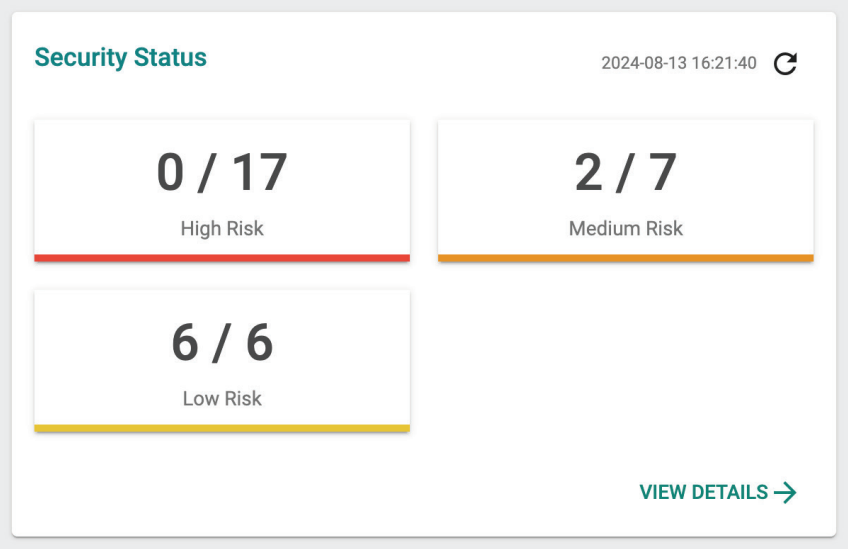
## System Status

This shows the system status, including system time, system uptime, and IP address.



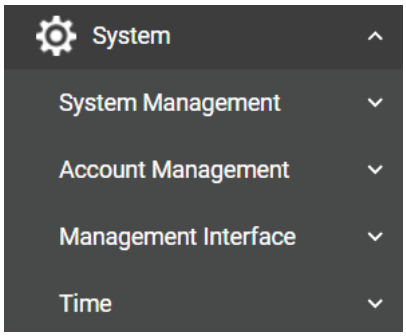

## Security Status

This section reflects the overall device security status categorized into High, Medium, and Low risks. The accompanying link opens a detailed view of the risk entries to check the risk details at a glance. This allows administrators to evaluate and take mitigation action where necessary.



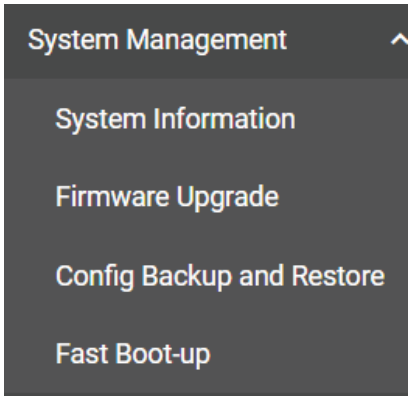

# System

The **System** section houses all device and system configuration functions. From here, you can configure the **System Management, Account Management, Management Interface**, and **Time** settings.



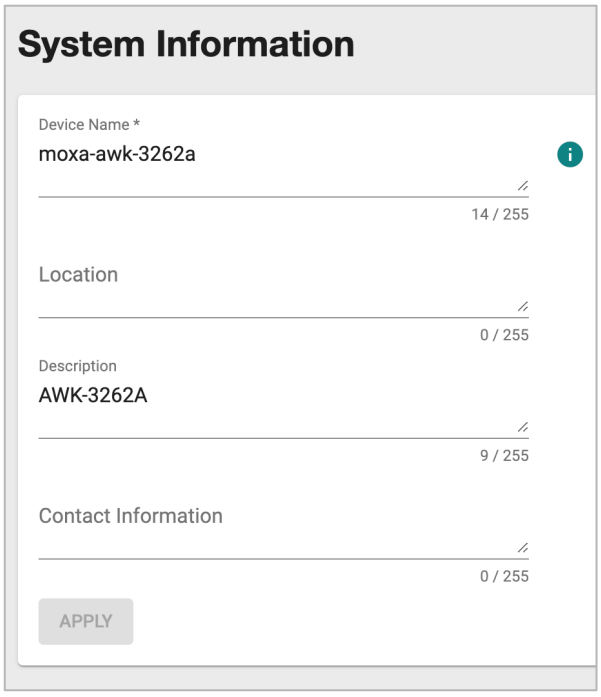

# System Management

The **System Management** section houses three subsections: **System Information, Firmware Upgrade,** and **Configure Backup and Restore**.




## System Information

On the **System Information** screen, you can enter a device name, description, and location for the device. This makes it easier to identify different AWKs that are connected to your network.



***Device Name***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 255 characters | Enter a name for the device. This is useful for differentiating between the roles or applications of different units. Note that the device name cannot be empty and must comply with the following naming rules:<br>• Only supports letters (a-z), numbers (0-9), and special character dash (-)<br>• Cannot contain spaces<br>• Cannot start with dash (-)<br>• Cannot end with dash (-)<br>• When used in a PROFINET environment, cannot start with the prefix "port-x" where "x" equals 0 to 9. There is no validity to identify incorrect name formats. | moxa-awk-3262a |

***Location***

| Setting | Description | Factory Default |
|---|---|---|
| Max. 255 characters | Enter a location for the device. This is useful for identifying where the device is deployed. Example: production line 1. | None |

***Description***

| Setting | Description | Factory Default |
|---|---|---|
| Max. 255 characters | Enter a description for the device. | AWK-3262A |

***Contact Information***

| Setting | Description | Factory Default |
|---|---|---|
| Max. 255 characters | Enter the contact information of the person responsible for the device in case there is a problem with the device. | None |

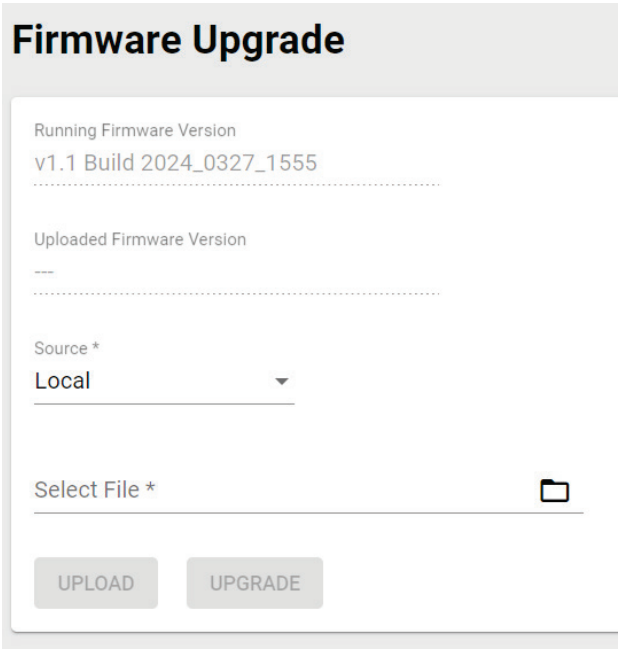
When finished, click **APPLY** to save your changes.

# Firmware Upgrade

There are four ways to update your AWK's device firmware: from a local *.rom file, by remote TFTP server, remote SFTP server, or the ABC-02 tool.

## Local

Select **Local** from the Source drop-down list. Before performing the firmware upgrade, download the target firmware (*.rom) file first from Moxa's website (www.moxa.com) to the local host.



***Running Firmware Version***

| Setting | Description | Factory Default |
|---|---|---|
| Current firmware version number | This shows the current running firmware version. | Current running version |

***Uploaded Firmware Version***

| Setting | Description | Factory Default |
|---|---|---|
| New firmware version number | This shows the new firmware version. | None |

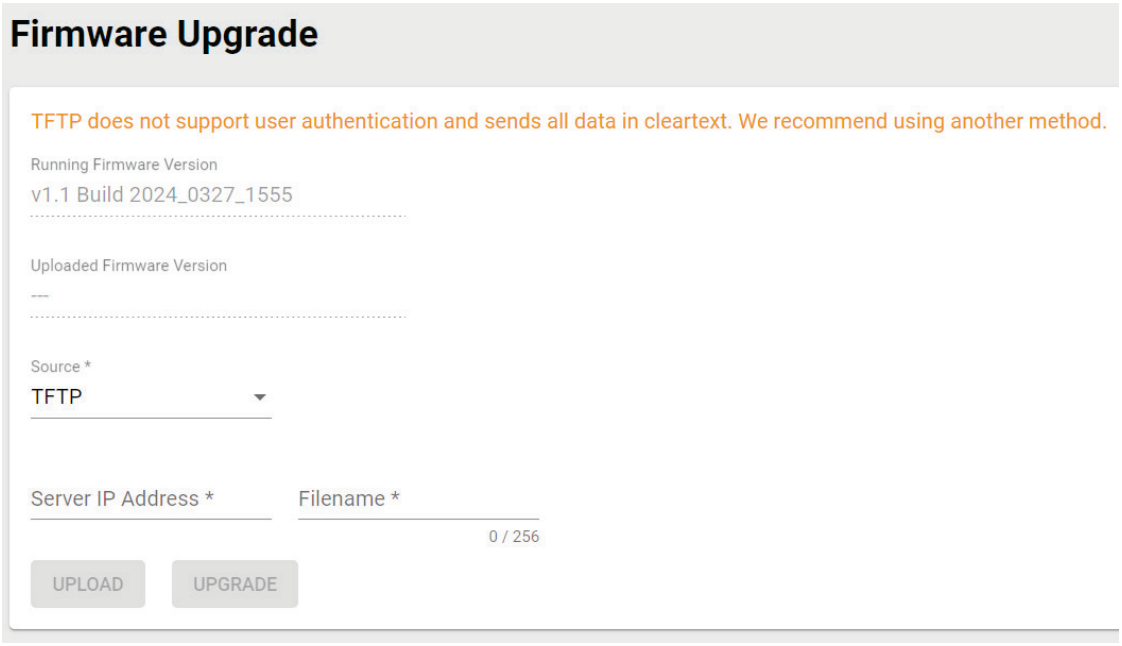
***Select File***

| Setting | Description | Factory Default |
|---|---|---|
| Select the firmware file | Click the browse icon and navigate to the firmware file on the local host. | None |

When finished, click **UPLOAD** to upload the file, then click **UPGRADE** to perform the firmware upgrade.

## TFTP Server

Select **TFTP** from the Source drop-down list.




***Running Firmware Version***

| Setting | Description | Factory Default |
|---|---|---|
| Current firmware version number | This shows the current running firmware version. | Current running version |

***Uploaded Firmware Version***

| Setting | Description | Factory Default |
|---|---|---|
| New firmware version number | This shows the new firmware version. | None |

***Server IP Address***

| Setting | Description | Factory Default |
|---|---|---|
| TFTP server address | Enter the IP address of the TFTP server where the new firmware file (*.rom) is located. | None |

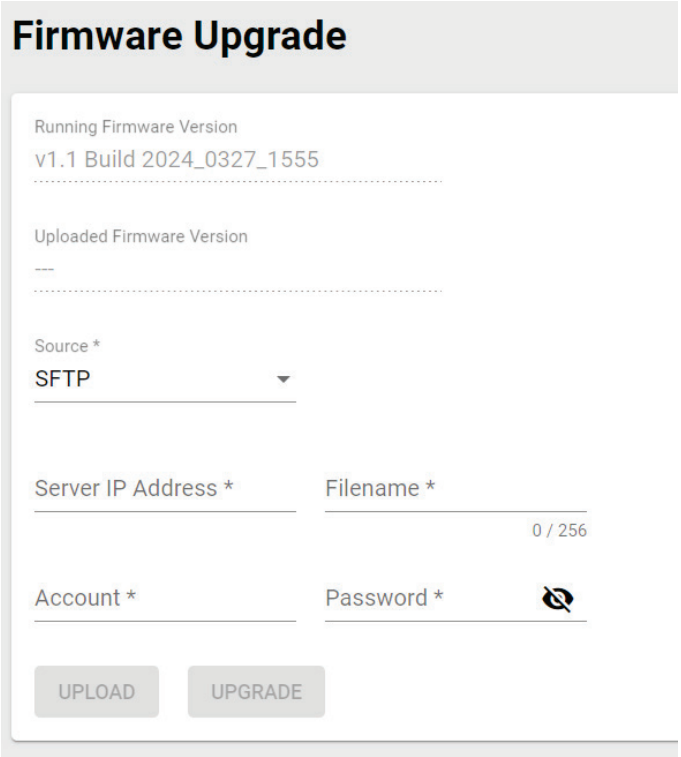
***File Name***

| Setting | Description | Factory Default |
|---|---|---|
| Firmware file name | Enter the file name of the new firmware. | None |

When finished, click **UPLOAD** to upload the file, then click **UPGRADE** to perform the firmware upgrade.

### SFTP

Select **SFTP** from the Source drop-down list.




***Running Firmware Version***

| Setting | Description | Factory Default |
|---|---|---|
| Current firmware version number | This shows the current running firmware version. | Current running version |

***Uploaded Firmware Version***

| Setting | Description | Factory Default |
|---|---|---|
| New firmware version number | This shows the new firmware version. | None |

***Server IP Address***

| Setting | Description | Factory Default |
|---|---|---|
| SFTP server address | Enter the IP address of the SFTP server where the new firmware file (*.rom) is located. | None |

***File Name***

| Setting | Description | Factory Default |
|---|---|---|
| Firmware file name | Enter the file name of the new firmware. | None |

***Account***

| Setting | Description | Factory Default |
|---|---|---|
| SFTP server account | Enter the SFTP user account name. This account must be authorized to ensure a secure connection to the SFTP server. | None |

***Password***

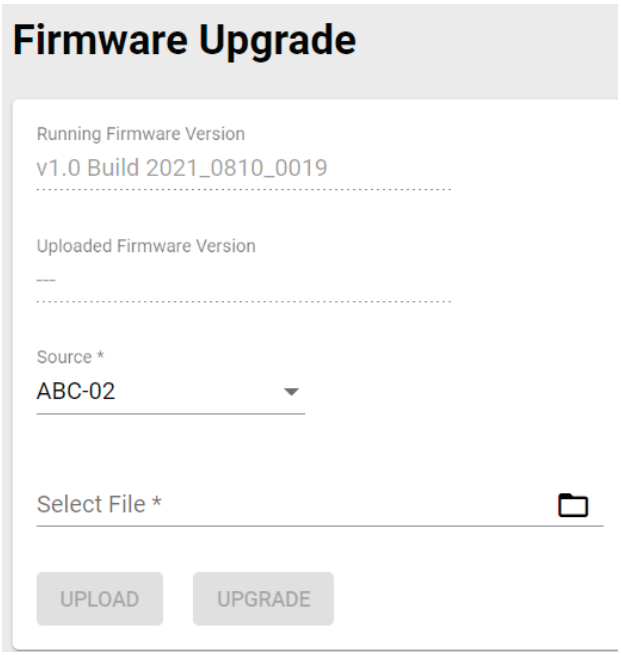
| Setting | Description | Factory Default |
|---|---|---|
| SFTP server password | Enter the SFTP user account password. This account must be authorized to ensure a secure connection to the SFTP server. | None |

When finished, click **UPLOAD** to upload the file, then click **UPGRADE** to perform the firmware upgrade.

### ABC-02

Select **ABC-02** from the Source drop-down. This method requires the Moxa ABC-02 USB configuration backup and restoration tool with the target firmware file is connected to the device. You can download the

target firmware (*.rom) file from Moxa's website (www.moxa.com). For more information about the Moxa ABC-02 Series USB tool, visit the product page.




***Running Firmware Version***

| Setting | Description | Factory Default |
|---|---|---|
| Current firmware version number | This shows the current running firmware version. | Current running version |

***Uploaded Firmware Version***

| Setting | Description | Factory Default |
|---|---|---|
| New firmware version number | This shows the new firmware version. | None |

***Select File***

| Setting | Description | Factory Default |
|---|---|---|
| Select the firmware file | Click the browse icon and navigate to the firmware file on the attached ABC-02 device. | None |

When finished, click **UPLOAD** to upload the file, then click **UPGRADE** to perform the firmware upgrade.

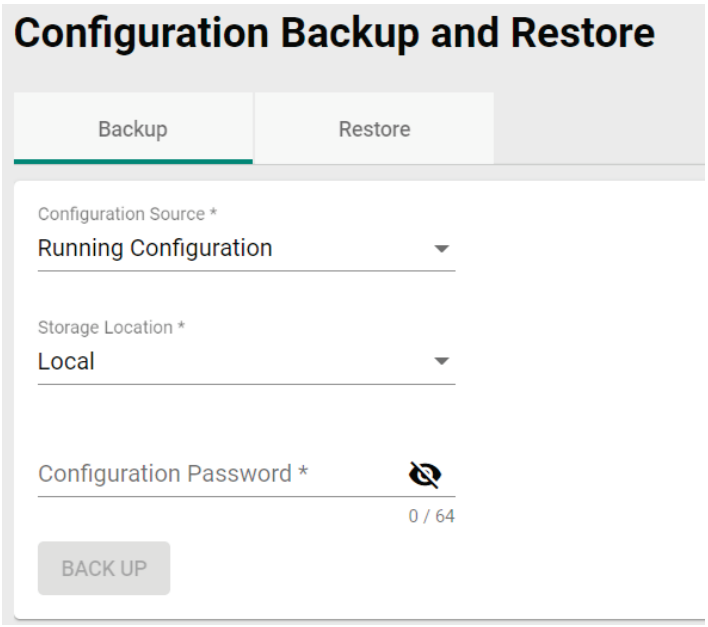
# Configuration Backup and Restore

There are four ways to back up and restore your Moxa AWK's configuration: from a local configuration file, by remote TFTP server, remote SFTP server, or an ABC-02 USB backup and restoration tool.

For all Backup and Restore methods, users can enable or disable CA signature. Enabling this function provides additional security by verifying the integrity of the configuration file.

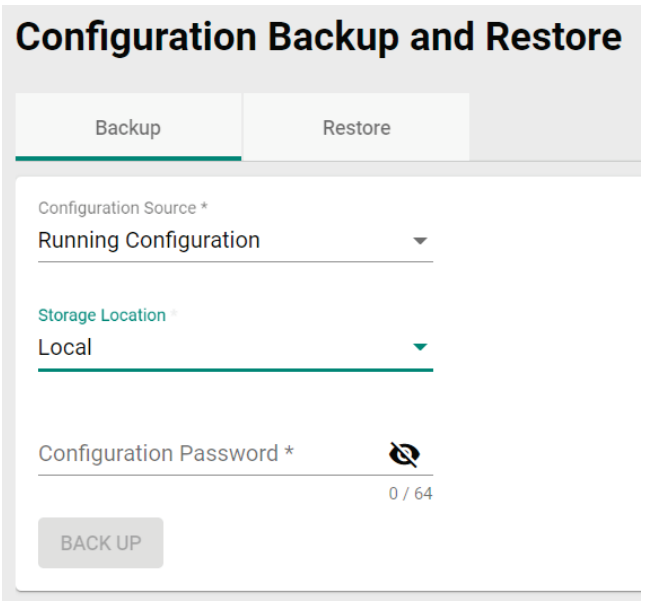
## Backup

The **Backup** tab is used to export a backup of the current configuration. This backup file can then be used to restore the device's configuration settings, or to import it to other AWK Series devices.




### Local

Select **Local** first from the Storage Location drop-down list.




***Configuration Source***

| Setting | Description | Factory Default |
|---|---|---|
| Running Configuration | Back up the running configuration. | |

| Setting | Description | Factory Default |
|---|---|---|
| Startup Configuration | Back up the start-up configuration. | Running Configuration |

***Storage Location***

| Setting | Description | Factory Default |
|---|---|---|
| **Local** | **Back up the configuration files for the local computer.** | Local |
| TFTP | Back up the configuration files via TFTP. | |
| SFTP | Back up the configuration files via SFTP. | |
| ABC-02 | Back up the configuration files via ABC-02 USB tool. | |

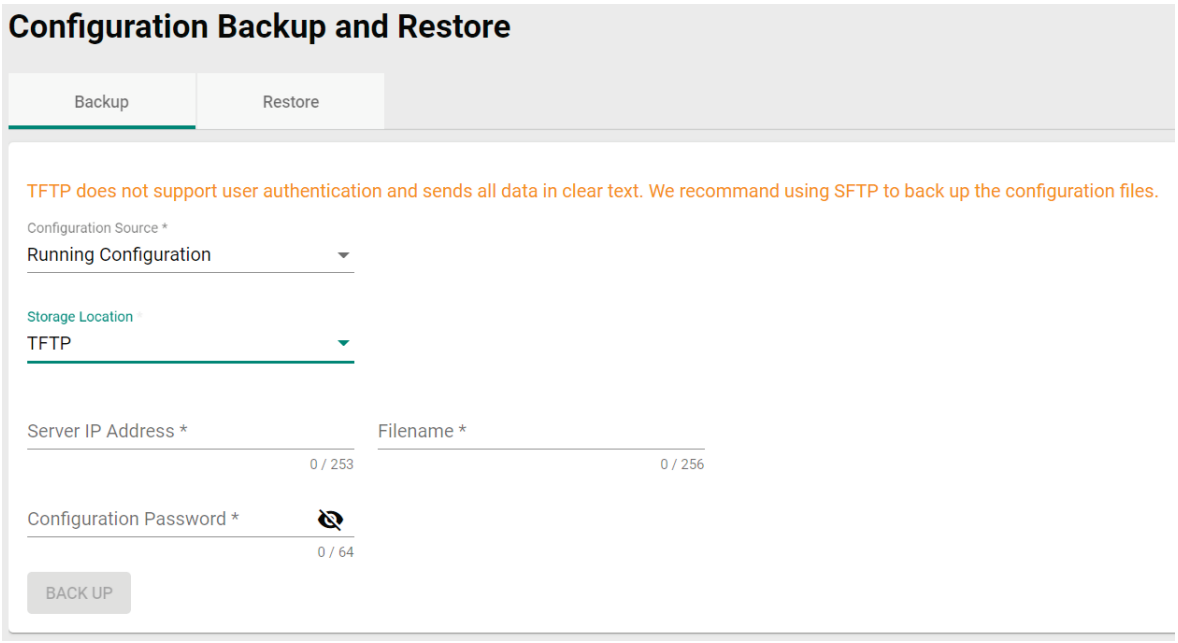
***Configuration Password***

| Setting | Description | Factory Default |
|---|---|---|
| Configuration password | Enter the configuration password. You will need to enter this password when importing the backup file.<br>For firmware v2.0 and above, the password must be at least 8 characters long. | None |

When finished, click **BACK UP**.

## TFTP Server

Select **TFTP** first from the Storage Location drop-down list.




***Configuration Source***

| Setting | Description | Factory Default |
|---|---|---|
| Running Configuration | Back up the running configuration. | Running Configuration |
| Startup Configuration | Back up the start-up configuration. | |

***Storage Location***

| Setting | Description | Factory Default |
|---|---|---|
| Local | Back up the configuration files for the local computer. | Local |
| **TFTP** | **Back up the configuration files via TFTP.** | |
| SFTP | Back up the configuration files via SFTP. | |
| ABC-02 | Back up the configuration files via ABC-02 USB tool | |

***Server IP Address***

| Setting | Description | Factory Default |
|---|---|---|
| TFTP server address | Enter the IP address of the TFTP server. | None |

***File Name***

| Setting | Description | Factory Default |
|---|---|---|
| Max. 256 characters (including the .ini file extension). | Enter the configuration backup file name. | None |

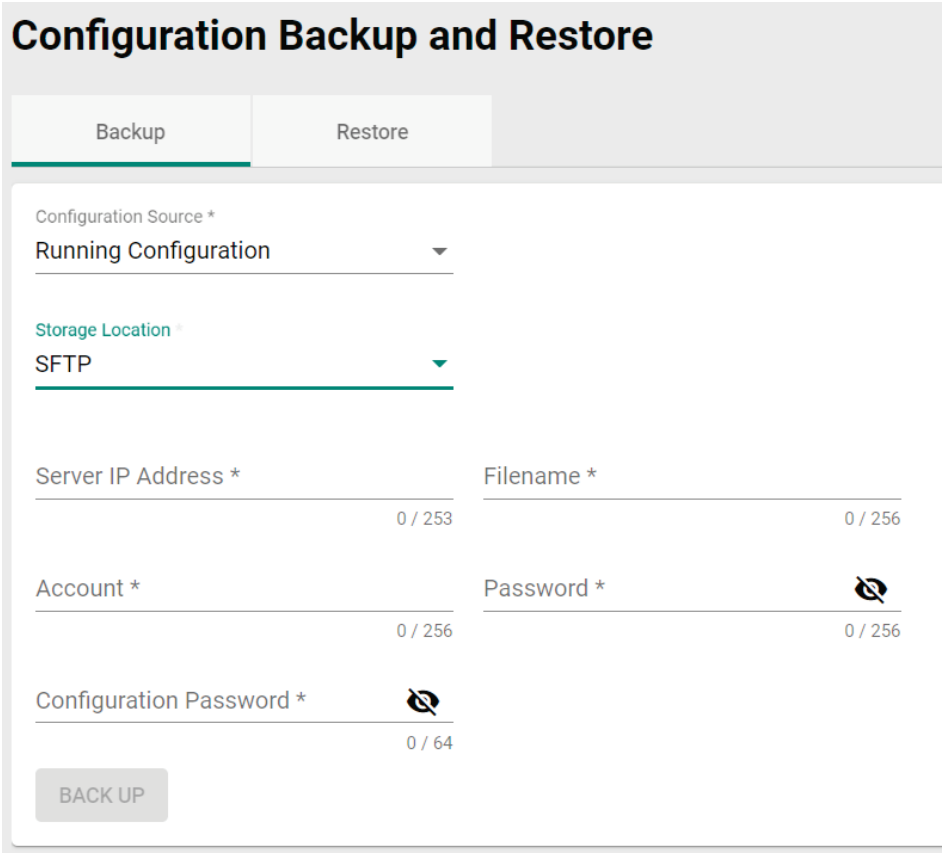
***Configuration Password***

| Setting | Description | Factory Default |
|---|---|---|
| Configuration password | Enter the configuration password. You will need to enter this password when importing the backup file. | None |

When finished, click **BACK UP**.

## SFTP Server

Select **SFTP** first from the Storage Location drop-down list.




***Configuration Source***

| Setting | Description | Factory Default |
|---|---|---|
| Running Configuration | Back up the running configuration. | Running Configuration |
| Startup Configuration | Back up the start-up configuration. | |

***Storage Location***

| Setting | Description | Factory Default |
|---|---|---|
| Local | Back up the configuration files for the local computer. | Local |
| TFTP | Back up the configuration files via TFTP. | |
| **SFTP** | **Back up the configuration files via SFTP.** | |
| ABC-02 | Back up the configuration files via ABC-02 USB tool | |

***Server IP Address***

| Setting | Description | Factory Default |
|---|---|---|
| SFTP server address | Enter the IP address of the SFTP server where the new firmware file (*.rom) is located. | None |

***File Name***

| Setting | Description | Factory Default |
|---|---|---|
| Max. 256 characters (including the .ini file extension). | Enter the configuration backup file name. | None |

***Account***

| Setting | Description | Factory Default |
|---|---|---|
| SFTP server account | Enter the SFTP user account name. This account must be authorized to ensure a secure connection to the SFTP server. | None |

***Password***

| Setting | Description | Factory Default |
|---|---|---|
| SFTP server password | Enter the SFTP user account password. This account must be authorized to ensure a secure connection to the SFTP server. | None |

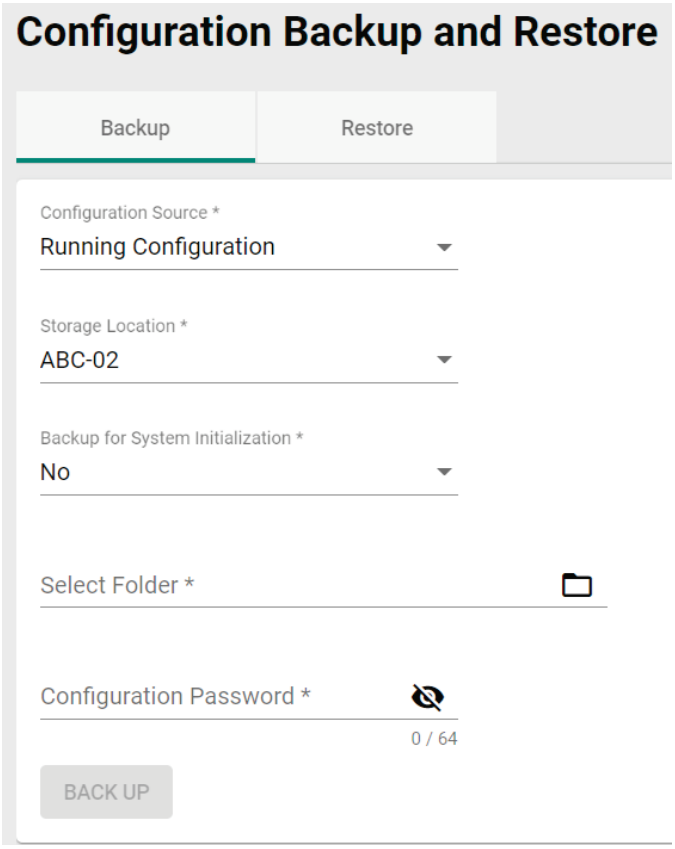
***Configuration Password***

| Setting | Description | Factory Default |
|---|---|---|
| Configuration password | Enter the configuration password. You will need to enter this password when importing the backup file. | None |

When finished, click **BACK UP**.

## ABC-02

Select **ABC-02** from the Storage Location drop-down list. This method requires a Moxa ABC-02 configuration backup and restore USB tool to be connected to the AWK Series.




***Configuration Source***

| Setting | Description | Factory Default |
|---|---|---|
| Running Configuration | Back up the running configuration. | Running Configuration |
| Startup Configuration | Back up the start-up configuration. | |

***Storage Location***

| Setting | Description | Factory Default |
|---|---|---|
| Local | Back up the configuration files for the local computer. | Local |
| TFTP | Back up the configuration files via TFTP. | |
| SFTP | Back up the configuration files via SFTP. | |
| **ABC-02** | **Back up the configuration files via ABC-02 USB tool.** | |

***Backup for System Initialization***

| Setting | Description | Factory Default |
|---|---|---|
| Yes | Back up the system initialization files. | No |
| No | Do not back up the system initialization files. | |

***Select Folder***

| Setting | Description | Factory Default |
|---|---|---|
| Folder path | Navigate to the folder path of the ABC-02 tool. | None |

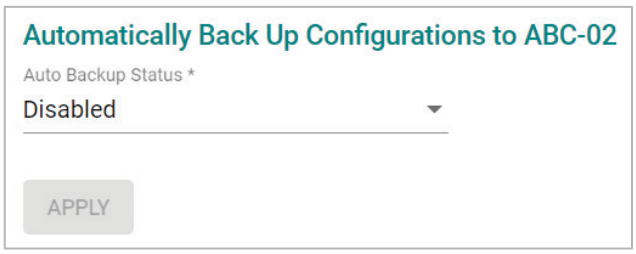
***Configuration Password***

| Setting | Description | Factory Default |
|---|---|---|
| Configuration password | Enter the configuration password. You will need to enter this password when importing the backup file. | None |

When finished, click **BACK UP**.

## Automatic Backup to ABC-02

The AWK-Series also supports automatic configuration backups when using a Moxa ABC-02 backup and restore tool.



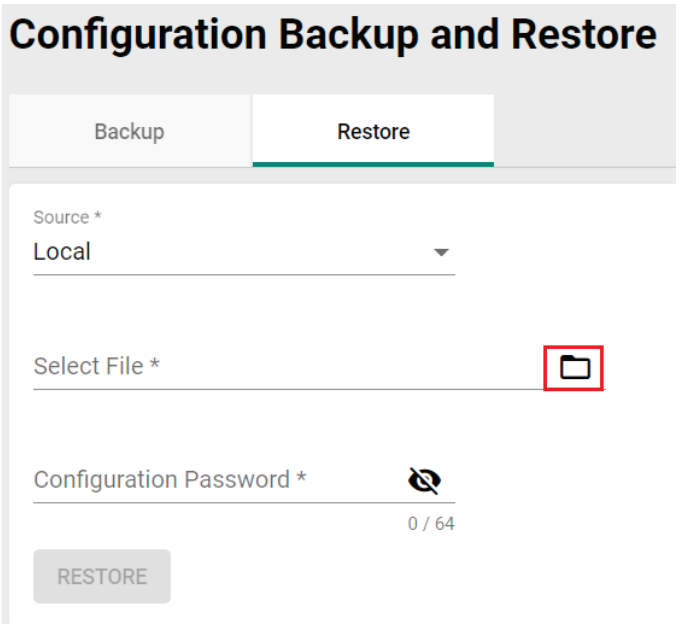

***Auto Backup Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable automatically backing up the device's configuration to the ABC-02. | Disabled |

When finished, click **APPLY**.

## Restore

From the **Restore** tab you restore the device's configuration using a previously created backup file.




## Local

***Source***

| Setting | Description | Factory Default |
|---|---|---|
| **Local** | **Restore the configuration from a local backup file.** | Local |
| TFTP | Restore the configuration from a backup file via TFTP. | |
| SFTP | Restore the configuration from a backup file via SFTP. | |
| ABC-02 | Restore the configuration from a backup file on an ABC-02 USB tool. | |

***Select File***

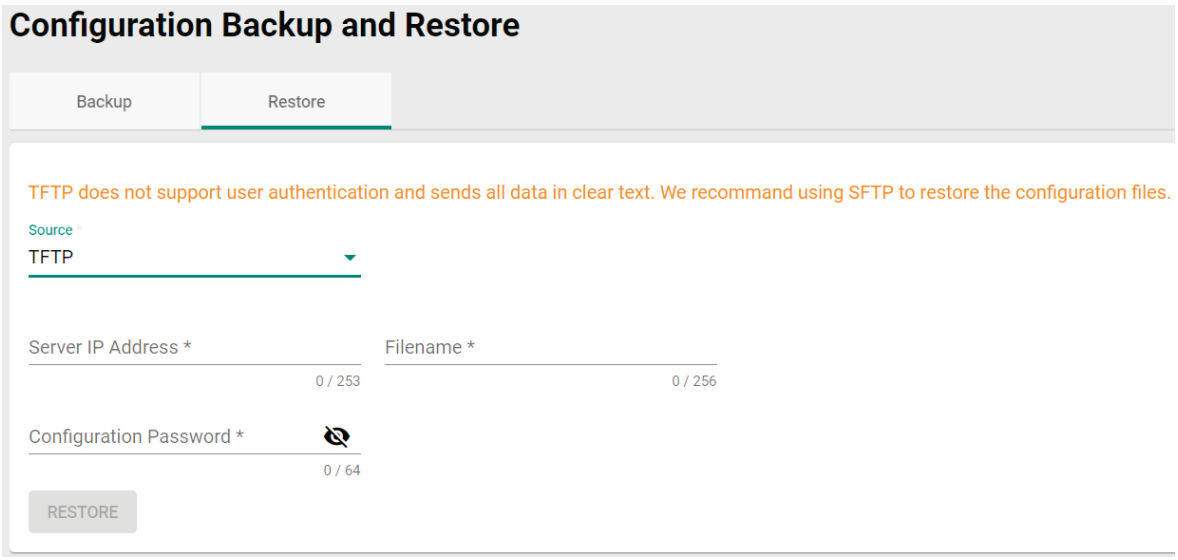
| Setting | Description | Factory Default |
|---|---|---|
| Backup file | Click the browse icon and navigate to the backup file on the local host. | None |

***Configuration Password***

| Setting | Description | Factory Default |
|---|---|---|
| Configuration password | Enter the configuration password. You will need to enter this password when importing the backup file. | None |

When finished, click **RESTORE**.

### TFTP Server




***Source***

| Setting | Description | Factory Default |
|---|---|---|
| Local | Restore the configuration from a local backup file. | Local |
| **TFTP** | **Restore the configuration from a backup file via TFTP.** | |
| SFTP | Restore the configuration from a backup file via SFTP. | |
| ABC-02 | Restore the configuration from a backup file on an ABC-02 USB tool. | |

***Server IP Address***

| Setting | Description | Factory Default |
|---|---|---|
| TFTP server address | Enter the IP address of the TFTP server. | None |

***File Name***

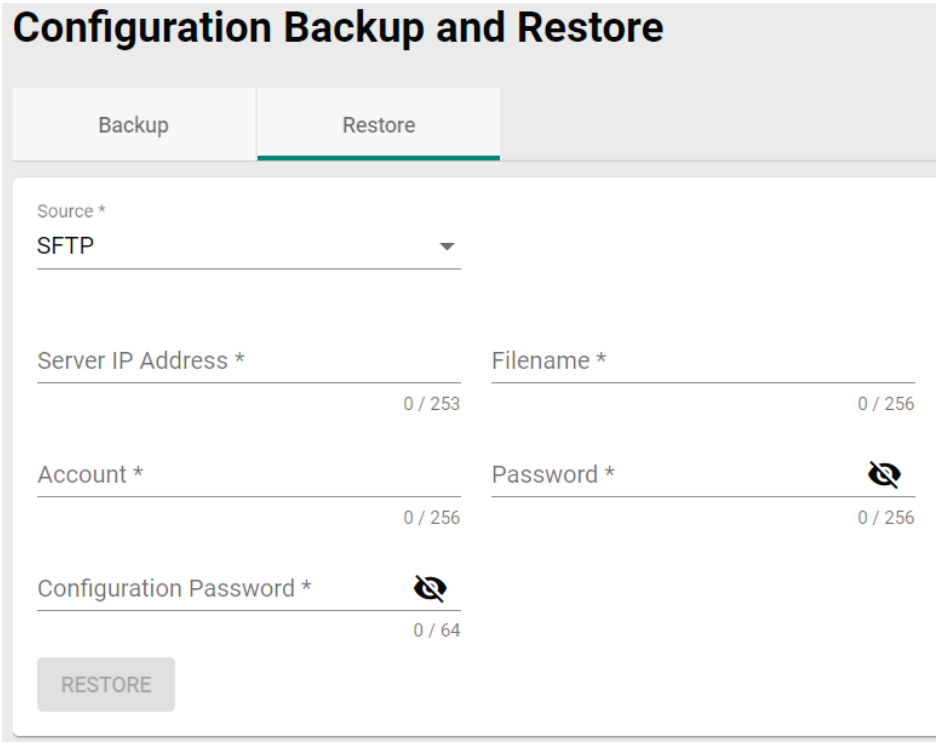
| Setting | Description | Factory Default |
|---|---|---|
| Max. 256 characters (including the .ini file extension) | Enter the file name of the configuration backup file. | None |

***Configuration Password***

| Setting | Description | Factory Default |
|---|---|---|
| Configuration password | Enter the configuration password. You will need to enter this password when importing the backup file. | None |

When finished, click **RESTORE**.

### SFTP Server




***Source***

| Setting | Description | Factory Default |
|---|---|---|
| Local | Restore the configuration from a local backup file. | Local |
| TFTP | Restore the configuration from a backup file via TFTP. | |
| **SFTP** | **Restore the configuration from a backup file via SFTP.** | |
| ABC-02 | Restore the configuration from a backup file on an ABC-02 USB tool. | |

***Server IP Address***

| Setting | Description | Factory Default |
|---|---|---|
| SFTP server address | Enter the IP address of the SFTP server where the new firmware file (*.rom) is located. | None |

***File Name***

| Setting | Description | Factory Default |
|---|---|---|
| Max. 256 characters (including the .ini file extension). | Enter the filename of the configuration restoration file. | None |

***Account***

| Setting | Description | Factory Default |
|---|---|---|
| SFTP server account | Enter the SFTP user account name. This account must be authorized to ensure a secure connection to the SFTP server. | None |

***Password***

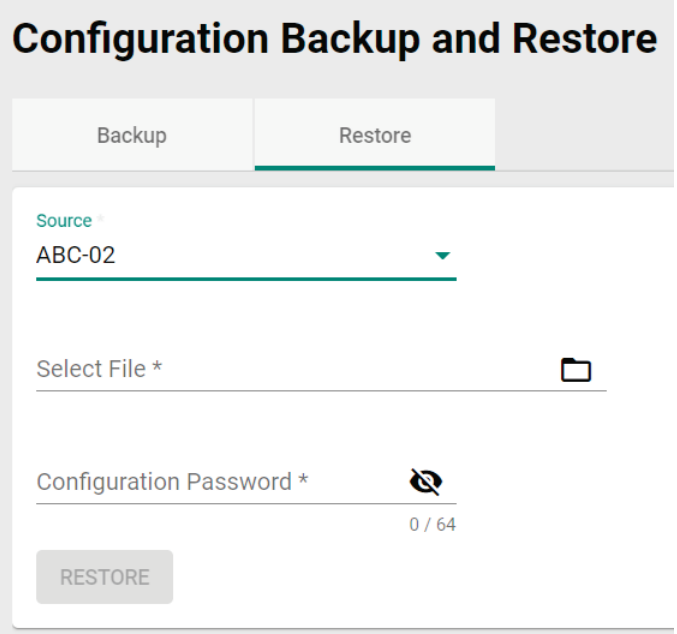
| Setting | Description | Factory Default |
|---|---|---|
| SFTP server password | Enter the SFTP user account password. This account must be authorized to ensure a secure connection to the SFTP server. | None |

***Configuration Password***

| Setting | Description | Factory Default |
|---|---|---|
| Configuration password | Enter the configuration password. You will need to enter this password when importing the backup file. | None |

When finished, click **RESTORE**.

**ABC-02**




***Source***

| Setting | Description | Factory Default |
|---|---|---|
| Local | Restore the configuration from a local backup file. | Local |
| TFTP | Restore the configuration from a backup file via TFTP. | |
| SFTP | Restore the configuration from a backup file via SFTP. | |
| **ABC-02** | **Restore the configuration from a backup file on an ABC-02 USB tool.** | |

***Select File***

| Setting | Description | Factory Default |
|---|---|---|
| Backup file | Click the browse icon and navigate to the backup file on the local host. | None |

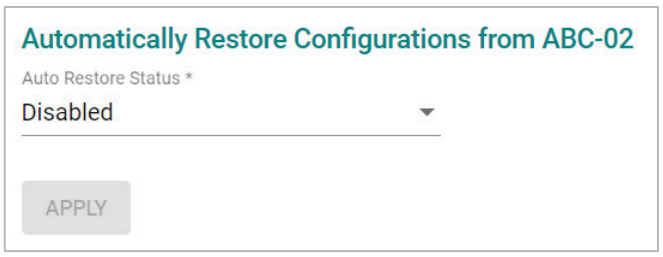
***Configuration Password***

| Setting | Description | Factory Default |
|---|---|---|
| Configuration password | Enter the configuration password. You will need to enter this password when importing the backup file. | None |

When finished, click **RESTORE**.

### Automatic Restore From ABC-02

The AWK Series supports automatic configuration restoration when using a Moxa ABC-02 backup and restore tool.




***Auto Restore Status***

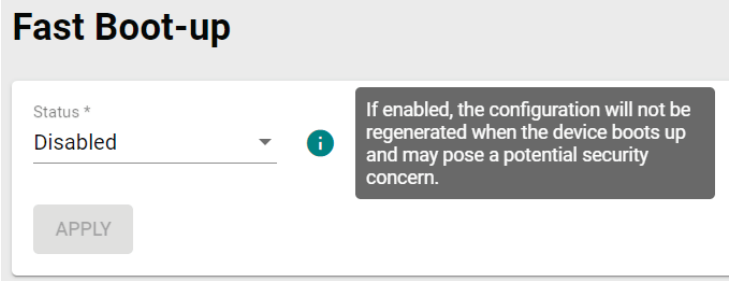
| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable automatically restoring the device's configuration from an ABC-02. | Disabled |

When finished, click **APPLY** to change your setting.

## Fast Boot-up

The AWK Series is designed with comprehensive security mechanisms to verify device integrity during boot-up. These security measures take time to process before the system is fully operational to provide wireless connectivity services. For applications that require fast connectivity services after a cold start, the Fast Boot-up feature skips some of the startup processes, including the configuration file verification and regeneration, to speed up the overall boot up time by around 30 seconds.

Please note that skipping the configuration file regeneration process to shorten the boot time implies that the device will be running the configuration file saved on the eMMC without prior verification. This could potentially be a security concern if the device has been physically accessed and the eMMC storage was tampered with.



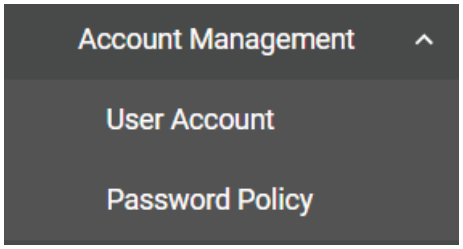

***Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable fast boot-up. | Disabled |

When finished, click **APPLY**.

# Account Management

From this section, you can manage User Account settings and the Password Policy.

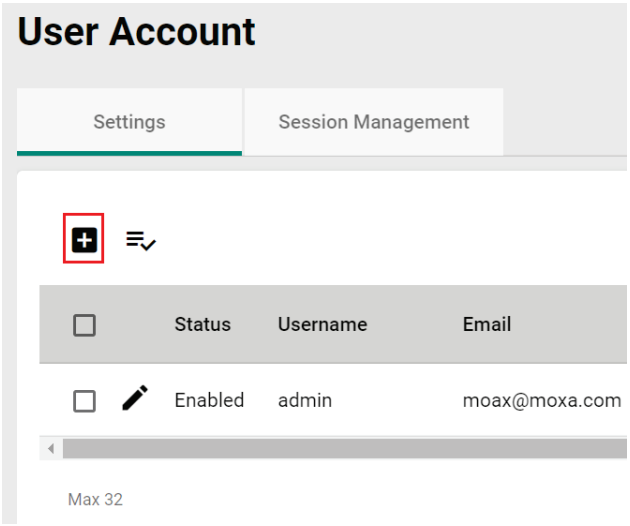


# User Account

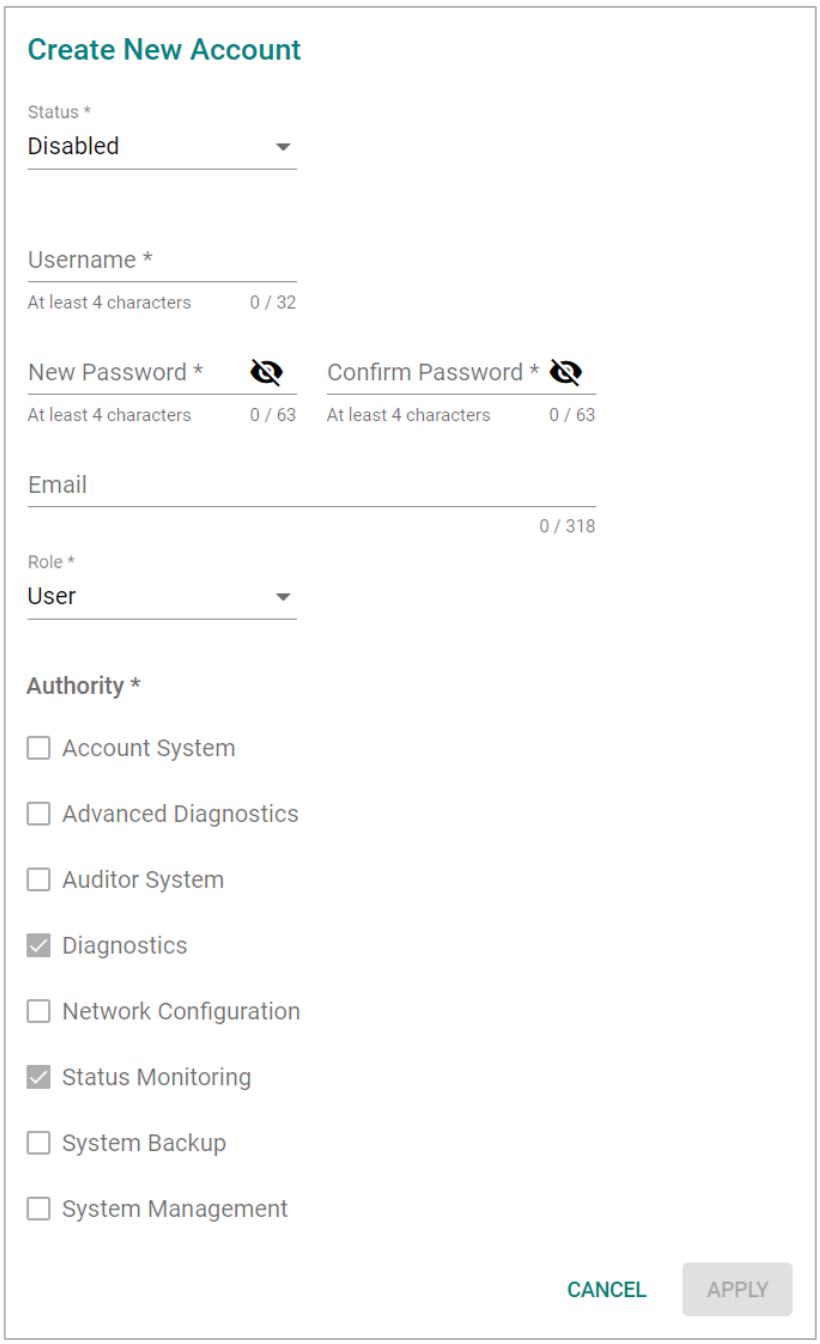
The **User Account** section lets you manage user accounts authorized to access this device and configure account privileges. You can choose to store user accounts on a RADIUS server or manage user accounts locally on the device. Click **User Account** under **Account Management** to access this configuration screen.

## Create a New Local Account

To create a new user account, click the **Settings** tab, then click the Add icon.




Edit the following settings:




***Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the user account. | Disabled |

***Username***

| Setting | Description | Factory Default |
|---|---|---|
| Min. 4 characters | Enter a username for this account. | None |

***New Password***

| Setting | Description | Factory Default |
|---|---|---|
| Min. 8 characters | Enter the password for this account.<br>For better protection, it is recommended to enforce stronger password complexity by enabling the following Password Policy requirements:<br>At least one digit (0-9)<br>At least one upper case letter (A-Z)<br>At least one lower case letter (a-z)<br>At least one special character (~!@#$%^&*-_\|:;,.<>{}[]()) | None |

***Confirm Password***

| Setting | Description | Factory Default |
|---|---|---|
| Password | Enter the account password again for confirmation. | None |

***Email***

| Setting | Description | Factory Default |
|---|---|---|
| Email | Enter the email address for this account. | None |

***Role***

| Setting | Description | Factory Default |
|---|---|---|
| Administrator | Set the user's role to Administrator. This role provides full access to all configurations on the device. (pre-defined authority) | User |
| Engineer | Set the user's role to Engineer. (pre-defined authority) | |
| User | Set the user's role to User. (pre-defined authority) | |
| Custom | If a mix of authorities is necessary, create an account via the Custom option and manually select the necessary authorities for this account. | |

***Authority***

| Setting | Description | Factory Default |
|---|---|---|
| Checkbox | Checking authorities gives the user the ability to access configurations pages in the corresponding category. These authority privileges extend to all access interfaces, including CLI. | None |

Refer to the table below for an overview of each role and corresponding authorities.

| Authority | Admin | Engineer | User |
|---|---|---|---|
| Account System | Yes | No | No |
| Advanced Diagnostic | Yes | Yes | No |
| Auditor System | Yes | Yes | No |
| Diagnostic | Yes | Yes | Yes |
| Network | Yes | Yes | No |
| Status Monitoring | Yes | Yes | Yes |
| System Backup | Yes | No | No |
| System Management | Yes | Yes | No |

## NOTE

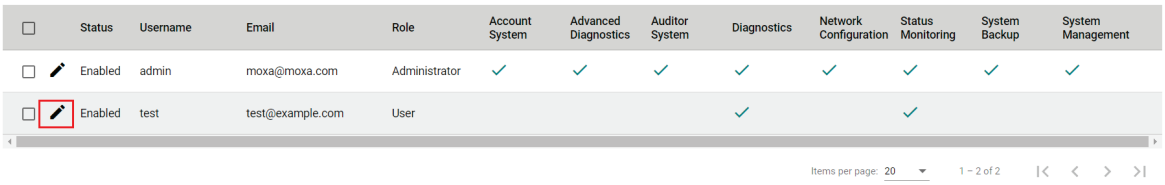
The Administrator, Engineer, and User roles have pre-defined authority options and cannot be changed. The Administrator has all authorities enabled by default. The Custom role allows you to select specific authorities for the user account.

Refer to Appendix D for a detailed overview of the required authority for each device feature or service to determine the privilege requirements when setting up an account.

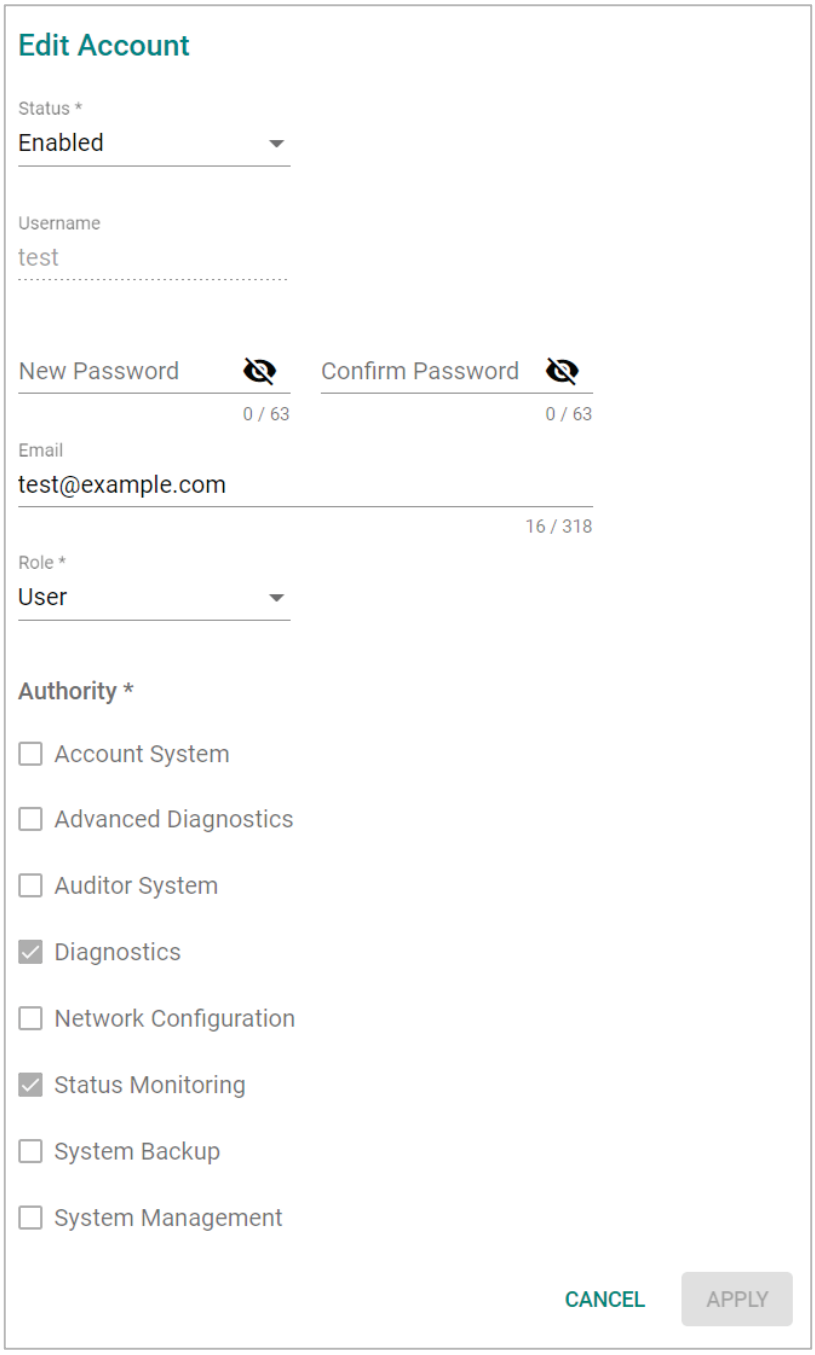
When finished, click **APPLY** to create a new account.

## Edit an Existing Local Account

Click the Edit icon of the account you want to edit.



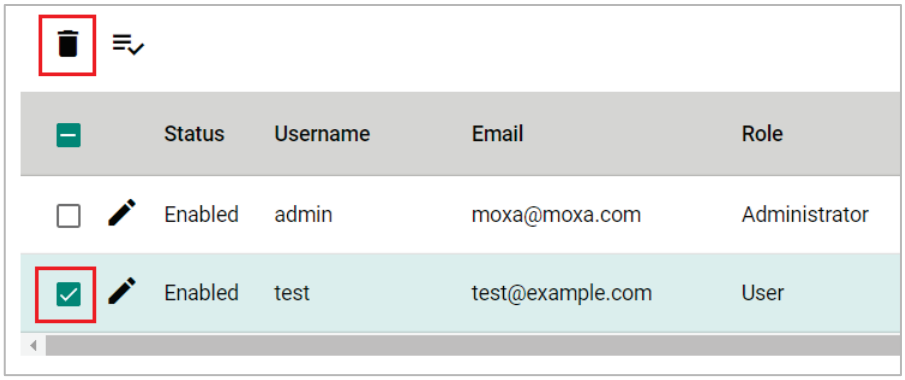
Edit the account settings. Refer to Create a New Account for a description of each setting.

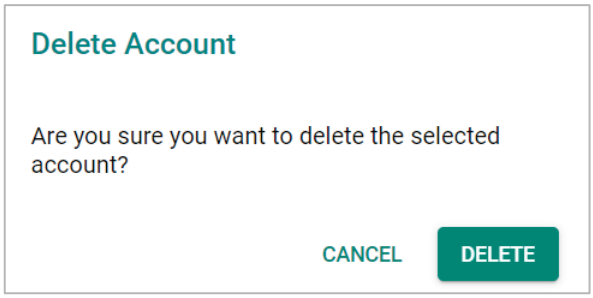



When finished, click **APPLY**.

## Delete an Existing Local User

To delete one or more existing users, check the user(s) you want to delete and click the **Delete** icon on the top of the page.



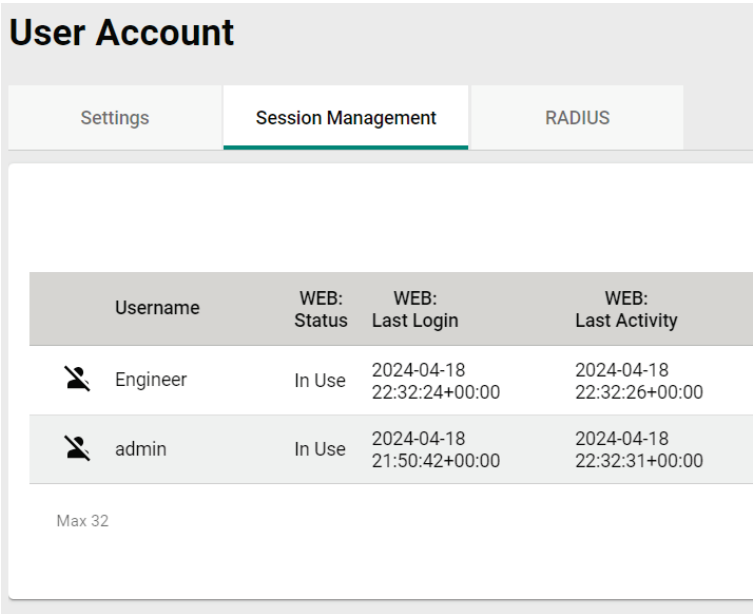




Click **DELETE** to delete the user.

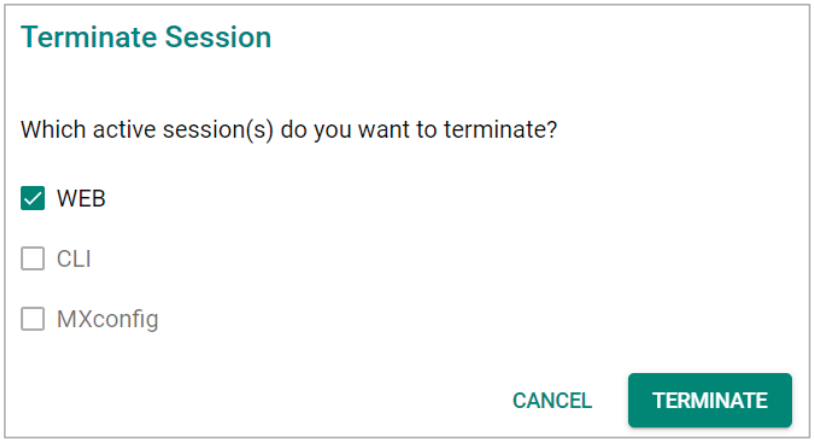
## Terminate the Active Session of a User

If necessary, you can manually terminate a specific user's active session for a specific interface. This will also record an event log.

Click **Session Management** tab and click the **Terminate Session** icon next to the user.



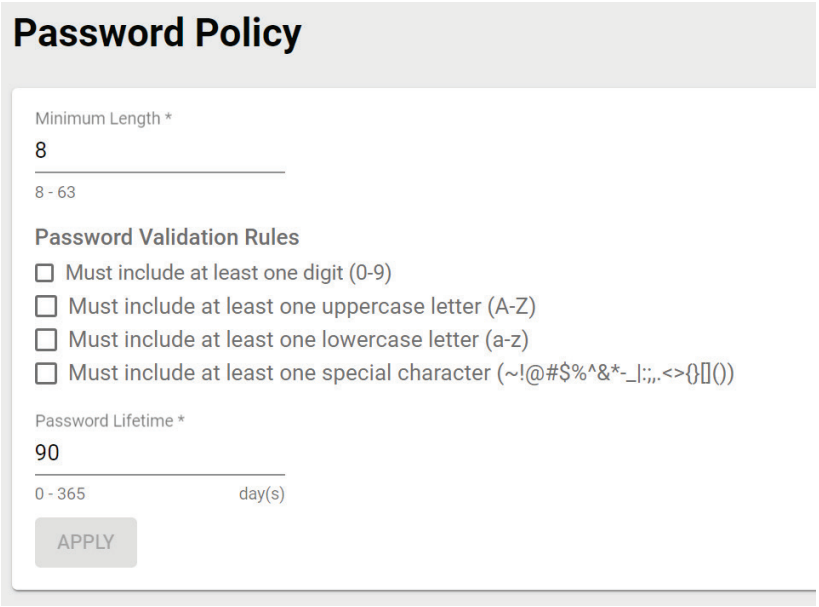
When prompted, select which active sessions you want to terminate.




Click **TERMINATE** to end the selected sessions. The user will be logged out of the corresponding interfaces immediately.

## Edit the Password Policy

To edit the password policy, click **Password Policy** under **Account Management** in the function menu tree.




***Minimum Length***

| Setting | Description | Factory Default |
|---|---|---|
| 8 to 63 | Specify the required user account password length based on your organization's password length policy. To comply with IEC 62443 requirements, the minimum length starts at 8. | 8 |

***Password Validation Rules***

| Setting | Description | Factory Default |
|---|---|---|
| Selectable checkboxes | Select check box to enforce the required password complexity:<br>At least one digit (0-9)<br>At least one upper case letter (A-Z)<br>At least one lower case letter (a-z)<br>At least one special character (~!@#$%^&*-_\|:;,.<>{}[]()) | Unchecked |

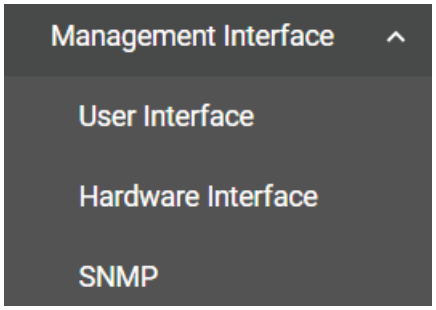
***Password Lifetime***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 365 day(s) | Specify the maximum password lifetime. At the end of this duration, the password will expire, and users will be requested to create a new password. | 90 |

When finished, click **APPLY**.

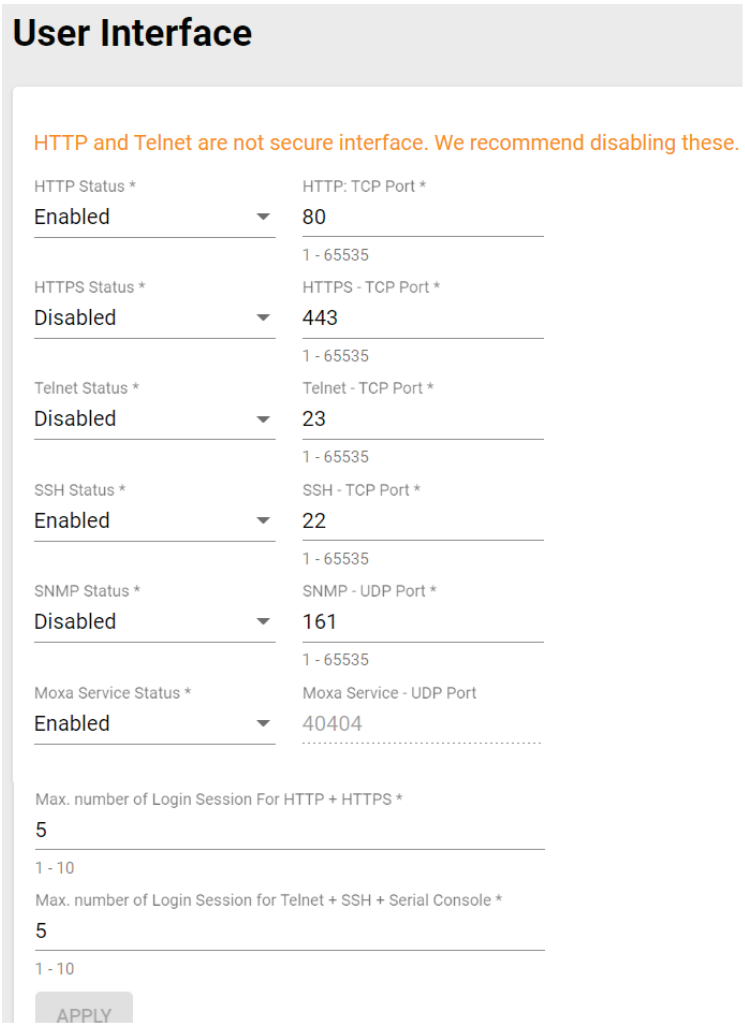
# Management Interface

The **Management Interface** section houses the **User Interface, Hardware Interface,** and **SNMP configuration** screens.




## User Interface

The **User Interface** configuration screen lets you manage the interfaces available to users to access the device. Click **User Interface** under **Management Interface** to access this screen.




***HTTP Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable HTTP connections. | Disabled |

## NOTE

If HTTP and HTTPS are both enabled, any HTTP session will automatically redirect to HTTPS.

***HTTP – TCP Port***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 65535 | Specify the HTTP interface TCP port number. | 80 |

***HTTPS Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable HTTPS connections. | Enabled |

***HTTPS – TCP Port***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 65535 | Specify the HTTPS interface TCP port number. | 443 |

***Telnet Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable Telnet connections. | Disabled |

***Telnet – TCP Port***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 65535 | Specify the Telnet interface TCP port number. | 23 |

***SSH Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable SSH connections. | Enabled |

***SSH – TCP Port***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 65535 | Specify the SSH interface TCP port number. | 22 |

***SNMP Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable SNMP. | Disabled |

***SNMP – Port***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 65535 | Specify the SNMP UDP port number. | 161 |

***Moxa Service Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable Moxa Service. | Enabled |

## NOTE

Moxa Service is only for Moxa network management software such as MXconfig.

***Moxa Service (Encrypted)***

| Setting | Description | Factory Default |
|---|---|---|
| 40404 (read only) | Specify the Moxa Service UDP port. | 40404 |

***Maximum number of Login Sessions for HTTP + HTTPS***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 10 | Specify the maximum number of concurrent HTTP+HTTPS login sessions allowed on the device. | 5 |

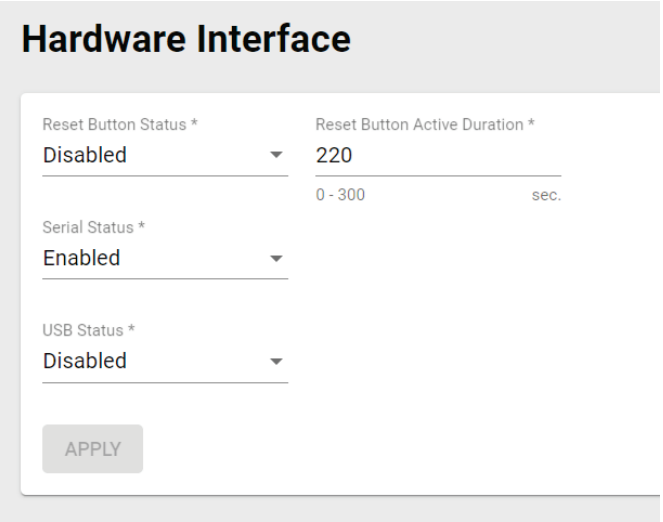
***Maximum number of Login Sessions for Telnet + SSH + Serial Console***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 10 | Specify the maximum number of concurrent Telnet, SSH, and Serial login sessions allowed on the device. | 5 |

When finished, click **APPLY**.

## Hardware Interface

From the **Hardware Interface** screen, you can manage the physical interfaces on the device. Click **Hardware Interface** under **Management Interface** to access this screen.




Configure the following settings:

***Reset Button Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the reset button. | Disabled |

***Reset Button Active Duration***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 300 (sec.) | If the reset button is disabled, the "Active Duration" defines the grace period (in seconds) where the reset button will be active for after a system cold boot up. After the grace period, the reset button will be disabled.<br>Note:<br>• If set to 0, the reset button will always be disabled.<br>• The Active Duration countdown begins as soon as the WLAN LED indicator turns from amber to off after the boot up process. | 220 |

***Serial Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the serial console port. | Enabled |

***USB Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the USB port. | Disabled |

When finished, click **APPLY**.

# SNMP

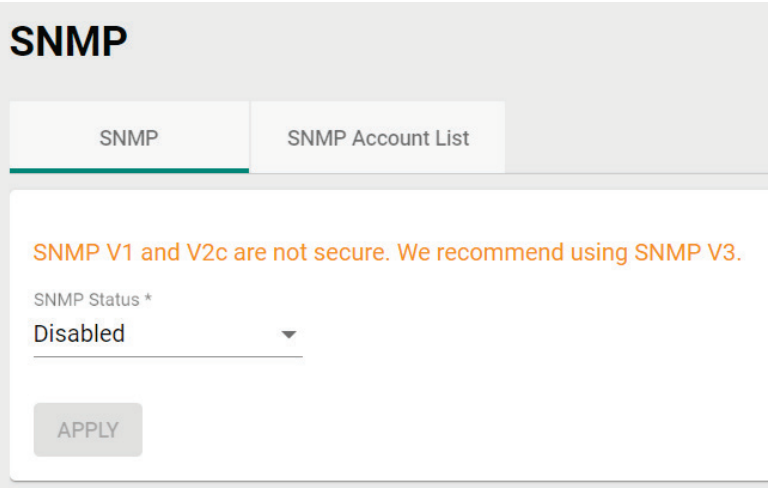
The Moxa AWK Series supports SNMP V1, V2c, and V3. SNMP V1 and SNMP V2c use a community string match for authentication, which means that SNMP servers access all objects with read-only or read/write permissions using the default "public" and "private" community strings. SNMP V3 requires MD5 or SHA authentication. You can also enable data encryption to enhance data security.

The supported SNMP security modes and levels are shown in the table below. Select the security mode and level that will be used to communicate between the SNMP agent and manager.

| Protocol Version | UI Setting | Authentication | Encryption | Method |
|---|---|---|---|---|
| SNMP V1, V2c | V1, V2c Read Community | Community string | None | Uses a community string match for authentication. |
| | V1, V2c Write/Read Community | Community string | None | Uses a community string match for authentication. |
| SNMP V3 | None | None | None | Uses an account with admin or user role to access objects. |
| | MD5 or SHA | Authentication based on MD5 or SHA | Disabled | Uses authentication based on HMAC-MD5, or HMAC-SHA algorithms. 8-character passwords are the minimum requirement for authentication. |
| | MD5 or SHA | Authentication based on MD5 or SHA | Data encryption key: DES, AES | Uses authentication based on HMAC-MD5 or HMAC-SHA algorithms, and a data encryption key. 8-character passwords and a data encryption key are the minimum requirements for authentication .and encryption. |

## Configure SNMP Settings

From the **SNMP** screen you can configure the SNMP status and manage the SNMP account. Click **SNMP** from the function tree to access this screen.




***SNMP Status***

| Setting | Description | Factory Default |
|---|---|---|
| Read/Write | Set SNMP to read-write. | Disabled |
| Read Only | Set SNMP as read-only. | |
| Disabled | Disable the SNMP. | |

***SNMP Version***

| Setting | Description | Factory Default |
|---|---|---|
| V1, V2c, V3 | Enable SNMP V1, V2c, and V3. | V3 only |
| V1, V2c | Enable SNMP V1 and V2c. | |
| V3 only | Enable SNMP V3 only. | |

***Read Community (for V1/V2c Versions)***

| Setting | Description | Factory Default |
|---|---|---|
| Public/Private | Specify the read community security authority level. | public |

***Read/Write Community (for V1/V2c Versions)***

| Setting | Description | Factory Default |
|---|---|---|
| Public/Private | Specify the read/write community security authority level. | private |

**NOTE**

SNMP V1 and V2c are not secure. We highly recommend using SNMP V3.

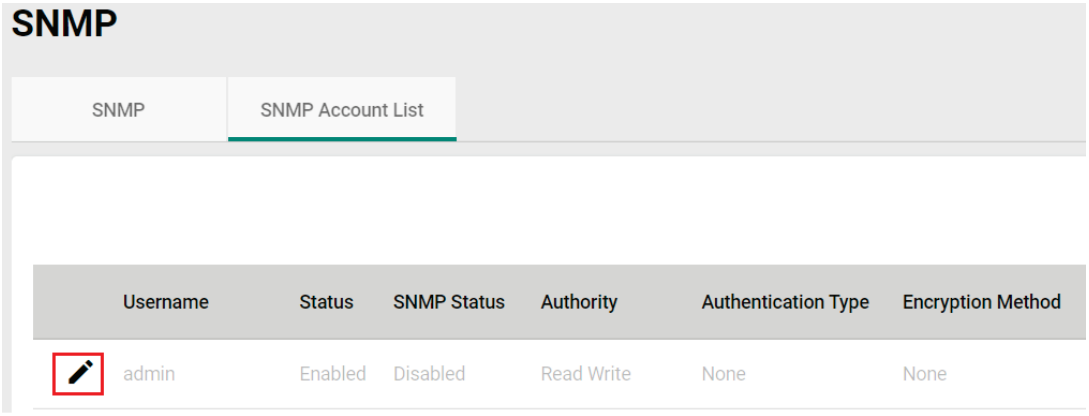
**NOTE**

While the AWK-1161A, AWK-1165A, AWK-1161C, and AWK-1165C Series use the same firmware and MIB structure, since the -C Series and -A Series only support client and AP feature sets respectively, please be aware that SNMP read or write to non-applicable OIDs will return "0 disabled" and "not support" messages. The AWK-3262A and AWK-4262A Series support all operating modes.

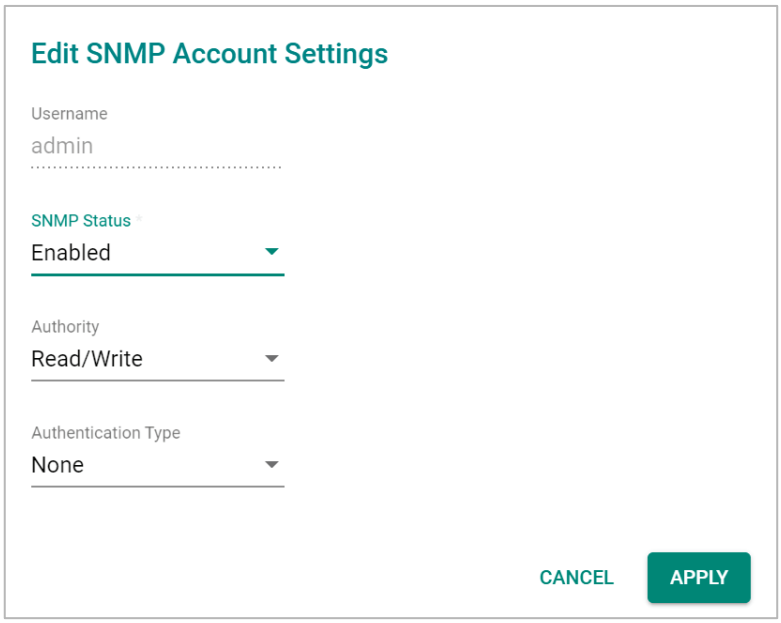
When finished, click **APPLY**.

## Edit an SNMP Account

On the SNMP Account List tab, click the Edit icon of the account you want to edit.




Configure the following settings:




***Username***

| Setting | Description | Factory Default |
|---|---|---|
| admin (read only) | Show the username. This cannot be changed. | Username for the current user |

***SNMP Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable SNMP. | Disabled |

***Authority***

| Setting | Description | Factory Default |
|---|---|---|
| Read/Write | Give the SNMP account as Read/Write authority. | Read/Write |
| Read Only | Give the SNMP account Read Only authority. | |

***Authentication Type***

| Setting | Description | Factory Default |
|---|---|---|
| None | No authority type selected. | None |
| MD5 | Specify MD5 as the authority type. | |
| SHA | Specify SHA as the authority type. | |

***Authentication Password***

| Setting | Description | Factory Default |
|---|---|---|
| 8 to 63 characters | Depending on the selected Authentication Type, specify the Authentication Password. The password must be at least 8 characters long. | None |

***Encryption Method***

| Setting | Description | Factory Default |
|---|---|---|
| None | No encryption method selected. | None |
| DES | Specify DES as the Encryption Method. | |
| AES | Specify AES as the Encryption Method. | |

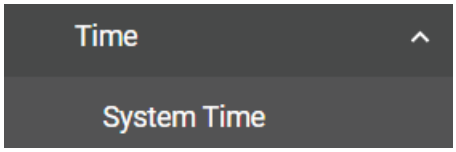
***Encryption Key***

| Setting | Description | Factory Default |
|---|---|---|
| 8 to 63 characters | Depending on the selected Encryption Method, specify the Encryption Key. The password must be at least 8 characters long. | None |

When finished, click **APPLY**.

# Time

From the **Time** section, you can configure the **System Time**.

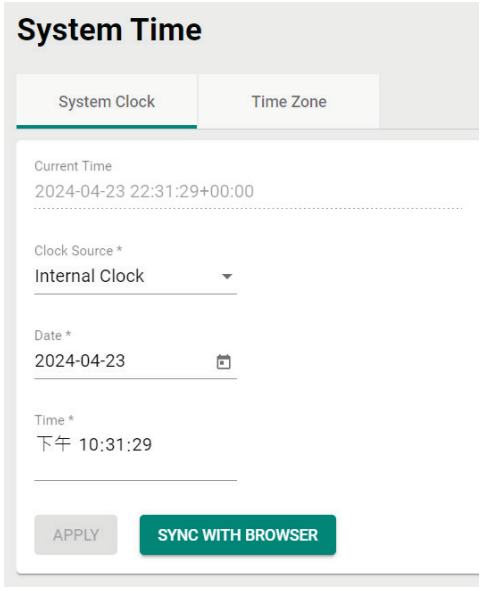



## System Time

The **System Time** screen lets you configure the device time settings and specify the time zone. Click **System Time** under **Time** in the function tree to access this screen.

### Edit the Clock

The system clock, time, and date can be set manually, or be synced to an external time server.




Configure the following settings:

**ATTENTION**

You must select the time zone first before configuring "System Clock" settings, as any changes made to the time zone after the system clock has been configured will shift the clock offset based on the deviation of the selected time zone.

***Current Time***

| Setting | Description | Factory Default |
|---|---|---|
| Current Time (read only) | Shows the current time. | Current Time |

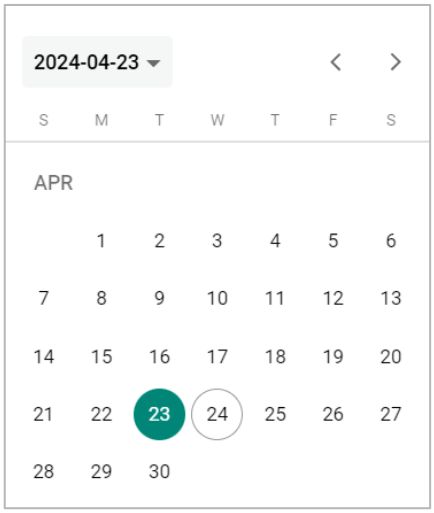
***Clock Source***

| Setting | Description | Factory Default |
|---|---|---|
| Internal Clock | Set the clock source to internal. This requires the date and time to be specified manually. | Internal Clock |
| NTP | Set the clock source to NTP. This will sync the system clock with an external NTP server. | |

## Configure the Time and Date (Internal Clock)

***Date***

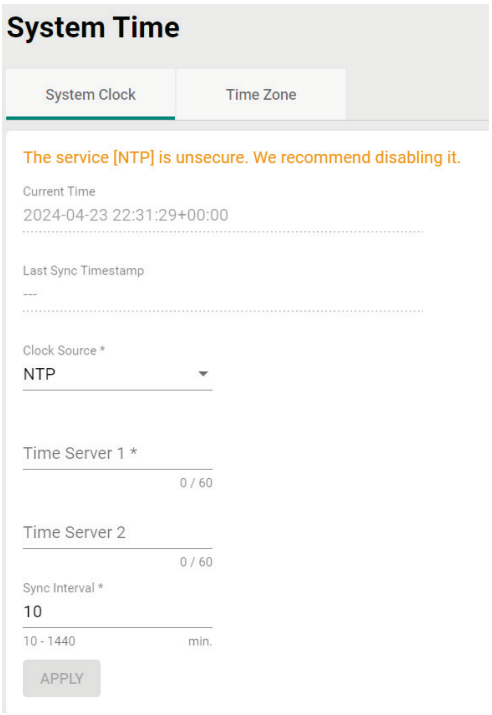
| Setting | Description | Factory Default |
|---|---|---|
| Day of the month | Select the current date. | Local |




***Time***

| Setting | Description | Factory Default |
|---|---|---|
| hh, mm, ss | Specify the current time using the 12-hour AM/PM format. You can manually input the time, or you can click **Sync From Browser** to sync the time with your web browser. | Sync From Browser |

## Configure Time Servers (NTP)




***Time Server 1***

| Setting | Description | Factory Default |
|---|---|---|
| NTP time server | Specify the IP or domain address of the primary NTP server to use (e.g., 192.168.1.1, time.stdtime.gov.tw, or time.nist.gov). | None |

***Time Server 2***

| Setting | Description | Factory Default |
|---|---|---|
| NTP time server | Specify the IP or domain address of the secondary NTP server. The secondary NTP server acts as a backup in case the device fails to connect to the first NTP server. | None |

***Sync Interval***

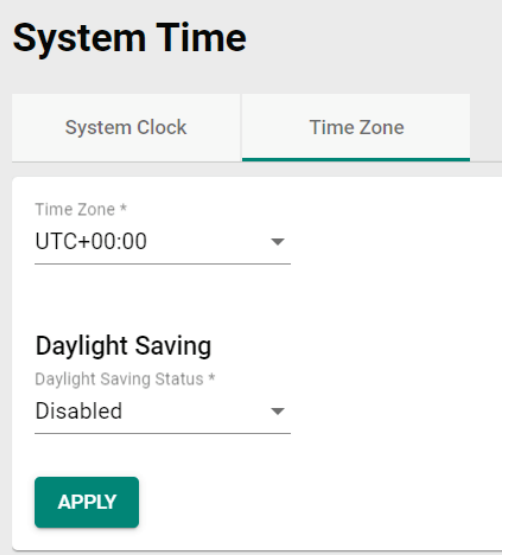
| Setting | Description | Factory Default |
|---|---|---|
| 10 to 1440 (sec.) | Specify the interval (in seconds) at which the system will sync the clock with the time server. | 10 |

When finished, click **APPLY**.

## Edit the Time Zone

You can specify the system clock time zone and apply daylight saving time.

Click the **Time Zone** tab.



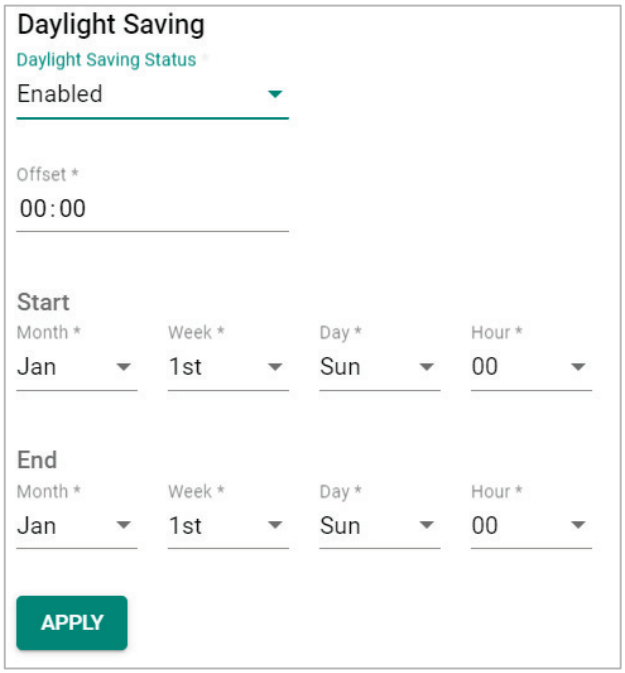

Configure the following settings:

***Time Zone***

| Setting | Description | Factory Default |
|---|---|---|
| Time zone | Select a time zone. | GMT (Greenwich Mean Time) |

### Daylight Saving Time

The Daylight Saving Time settings are used to automatically adjust the time according to regional standards.




***Daylight Saving Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable Daylight Saving Time. | Disabled |

***Offset***

| Setting | Description | Factory Default |
|---|---|---|
| User-specified value | Specify the offset value for Daylight Saving Time. | None |

***Start***

| Setting | Description | Factory Default |
|---|---|---|
| User-specified date | Specify the date that Daylight Saving Time begins. | Jan, 1st, Sun, 00. |

***End***

| Setting | Description | Factory Default |
|---|---|---|
| User-specified date | Specify the date that Daylight Saving Time ends. | Jan, 1st, Sun, 00 |

When finished, click **APPLY**.

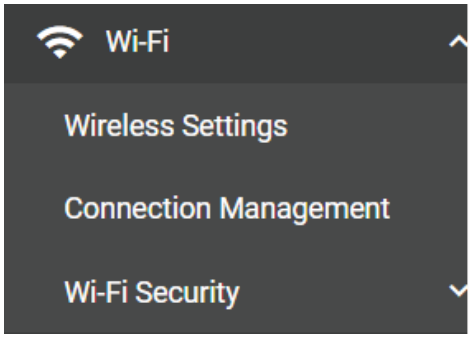
# Wi-Fi

From the Wi-Fi section, you can configure the Wireless Settings, Connection Check and Recovery, and Roaming.

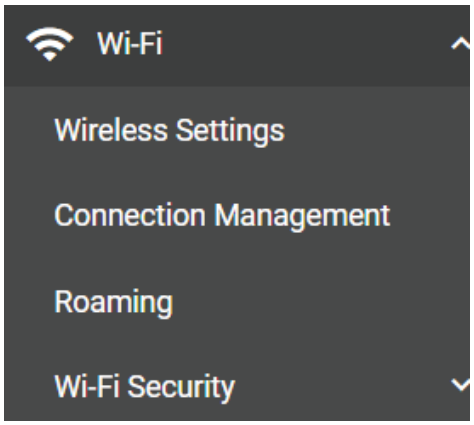
**NOTE**

The feature menu appears slightly different between AWK-1160A Series models and AWK-1160C/AWK-3262A/AWK-4262A Series models.

AWK-1161A/AWK-1165A Series




AWK-1161C/AWK-1165C/AWK-3262A/AWK-4262A Series

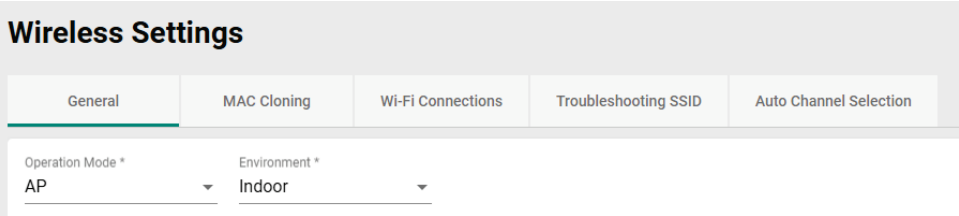



## Wireless Settings

On the **Wireless Settings** page, you can configure the device's operating mode, SSID, MAC Cloning settings, as well as check the Wi-Fi connection status. Click **Wireless Settings** under **Wi-Fi** in the function tree to access this screen.

### General Settings

The **General** section is used for setting the AWK's operation mode, creating SSIDs, and configuring RF settings. Click the **General** tab to access this screen.




Configure the following settings:

***Operation Mode***

The AWK Wi-Fi 6 Series support multiple operation modes. Refer to the following overview for a description of each operation mode.

| Operation Mode | Description |
|---|---|
| AP | The device acts as a Layer 2 bridge between wireless clients and the wired network (LAN). It broadcasts an SSID for client devices (stations) to connect to. The AP handles the association, authentication, and data forwarding of connected stations. If your network uses MAC-based authentication or Layer 2 communication, you may potentially encounter communication issues. In that case, it is recommended to use a Master/Slave setup instead. |
| Client | The device acts as a station (STA) and associates with an AP using pre-configured credentials. The client receives its networking information from the AP and will forward all traffic over the wireless link. The LAN ports on the device can be used to extend the LAN segment behind the client device. |
| Master | This is an alternative to standard AP mode that enables transparent point-to-point bridging, allowing devices' MAC addresses to remain unchanged as packets pass through the slave device. The device will handle the association, authentication, and data forwarding of connected slave devices. |
| Slave | Similar to Client mode, the device acts as a station and associates with a Master node. |
| Client-router | A variation of standard client mode with the addition of router functionality. This allows the device to translate and route subnet traffic from LAN segments behind the device to the upstream network. |
| Mesh | This mode enables Moxa's AeroMesh, allowing users to build a self-healing, adaptive Wi-Fi network using a Layer 2 transparent wireless backhaul without the need for wired infrastructure. Mesh mode allows for fast deployment in challenging environments and supports both Mesh and AP modes simultaneously on a single device, eliminating the need for dedicated hardware. |
| Sniffer | This puts the device in monitor mode and allows the wireless interface to capture raw 802.11 frames, including management, control, and data frames, without associating with an AP. Users can specify which channels to monitor depending on the requirements. This mode is commonly used for network diagnostics, performance tuning, and security auditing with tools like Wireshark or tcpdump. |

## NOTE

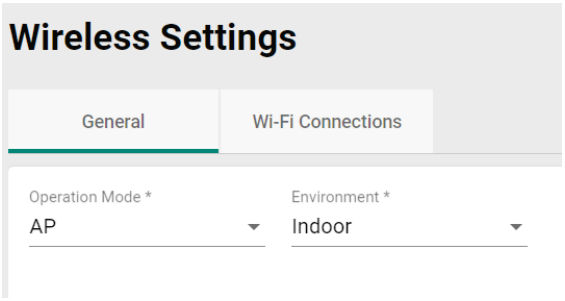
The available operation modes depend on the model. Refer to **Supported Operating Modes** for an overview of supported operating modes for each model.

| Setting | Description | Factory Default |
|---|---|---|
| Disabled | Disable the operation mode. | Disabled |
| AP | Specify the operation mode as AP. Refer to **AP Mode Settings**. | |
| Master | Specify the operation mode as Master. Refer to **Master Mode Settings**. | |
| Mesh | Specify the operation mode as Mesh. Refer to **Mesh Mode Settings**. | |

| Setting | Description | Factory Default |
|---|---|---|
| Sniffer | Specify the operation mode as Sniffer. Refer to **Sniffer Mode Settings**. | |
| Client | Specify the operation mode as Client. Refer to **Client Mode Settings**. | |
| Client-router | Specify the operation mode as Client-router. Refer to **Client-router Mode Settings**. | |
| Slave | Specify the operation mode as Slave. Refer to **Slave Mode Settings**. | |

## AP Mode Settings

Select **AP** from the **Operation Mode** drop-down list. AP Mode requires at least one active SSID.




***Environment***

| Setting | Description | Factory Default |
|---|---|---|
| Indoor | Set the application environment to indoor. Available channels vary depending on the selection. | Indoor |
| Outdoor | Set the application environment to outdoor. Available channels vary depending on the selection. | |

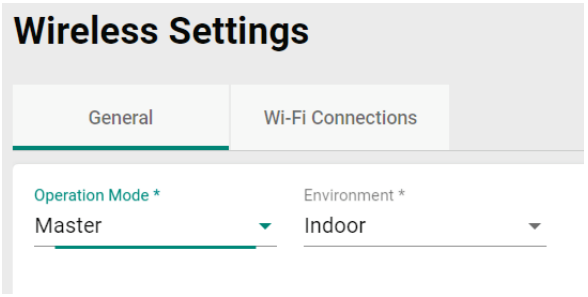
For SSID and security settings, refer to **Create a New SSID**.

For configuring RF settings, refer to **RF Settings**.

When finished, click **APPLY** to change the operation mode.

## Master Mode Settings

Select **Master** from the **Operation Mode** drop-down list. Master Mode requires at least one active SSID.




***Environment***

| Setting | Description | Factory Default |
|---|---|---|
| Indoor | Set the application environment to indoor. Available channels vary depending on the selection. | Indoor |
| Outdoor | Set the application environment to outdoor. Available channels vary depending on the selection. | |

For SSID and security settings, refer to **Create a New SSID**.

For configuring RF settings, refer to **RF Settings**.

When finished, click **APPLY** to change the operation mode.

## Mesh Mode Settings

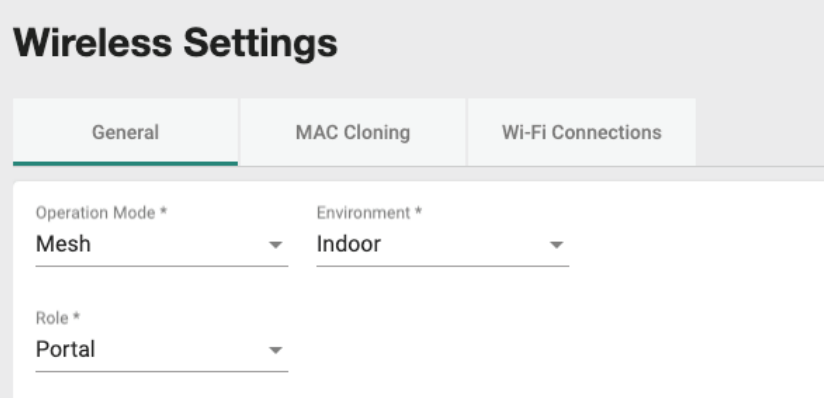
**NOTE**

Mesh mode is only supported by the AWK-3262A and AWK-4262A Series.

**NOTE**

We suggest deploying any servers and controllers behind the Portal device to ensure mesh network stability and minimize communication latency.

Select **Mesh** from the **Operation Mode** drop-down list. Mesh Mode requires at least one active SSID.




***Environment***

| Setting | Description | Factory Default |
|---|---|---|
| Indoor | Set the application environment to indoor. Available channels vary depending on the selection. | Indoor |
| Outdoor | Set the application environment to outdoor. Available channels vary depending on the selection. | |

***Role***

| Setting | Description | Factory Default |
|---|---|---|
| Portal | Set up the device as the portal (MPR). In this mode, the device acts like a controller. Bridge mesh nodes form the mesh backhaul.<br>Each mesh network can only have one mesh portal. | Portal |
| Node | Set up the device as a node (MAP). In this mode, it acts as an agent in mesh network and will establish peer links with another mesh nodes.<br>Each mesh network can have up to 10 nodes and 5 hops. | |

**NOTE**

Due to the theoretical value restrictions, throughput is approximately halved over every hop because those mesh nodes will use the same radio interface for control commands and data transmissions. Therefore, AeroMesh only supports a limited number of nodes per portal to ensure workable throughput at the last hop.

**NOTE**

Mesh mode requires constant data refreshing, which uses some bandwidth. As a result, Mesh mode may incur a 10% reduction in performance compared to other operating modes.

## ATTENTION

Each mesh network can only have one portal. If multiple portals are configured, multiple mesh networks will be created.

## ATTENTION

If the portal and hops limit is exceeded, additional devices can still join the network but will not provide transmission services.

### Mesh SSID Settings


***Mesh SSID***

This SSID is used to build the mesh backhaul. The mesh portal and nodes in the topology will use this SSID to form the mesh network.

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 32 characters | Enter a name for the mesh SSID. | None |

***Security***

| Setting | Description | Factory Default |
|---|---|---|
| WPA2 | Use WPA2 authentication. This mode supports IEEE 802.11i with TKIP/AES + 802.1X encryption. | WPA2 |
| WPA2/WPA3 Mixed | Use WPA/WPA3 Mixed authentication. This allows both WPA2 and WPA3 clients to connect to the device. | |
| WPA3 | Use WPA3 authentication. This mode supports SAE (Simultaneous Authentication of Equals) to reduce network attacks, such as KRACK. | |

***Mesh Passphrase***

| Setting | Description | Factory Default |
|---|---|---|
| 8 to 63 characters | Enter the passphrase for the mesh SSID. | None |

***AP/Master SSID Table***

The AP/Master SSIDs are the virtual access points (VAPs) used for connecting clients to the mesh network and transmitting data from clients to the WAN.

## NOTE

Because the Mesh backhaul exclusively uses 5 GHz channels, the Mesh SSID must be configured on the 5 GHz band. To prevent loss of performance from frequency resource conflicts, it is recommended to configure any AP/Master SSIDs on the 2.4 GHz band.

For SSID and security settings, refer to **Create a New SSID**.

For configuring RF settings, refer to **RF Settings**.

When finished, click **APPLY** to change the operation mode.

**NOTE**

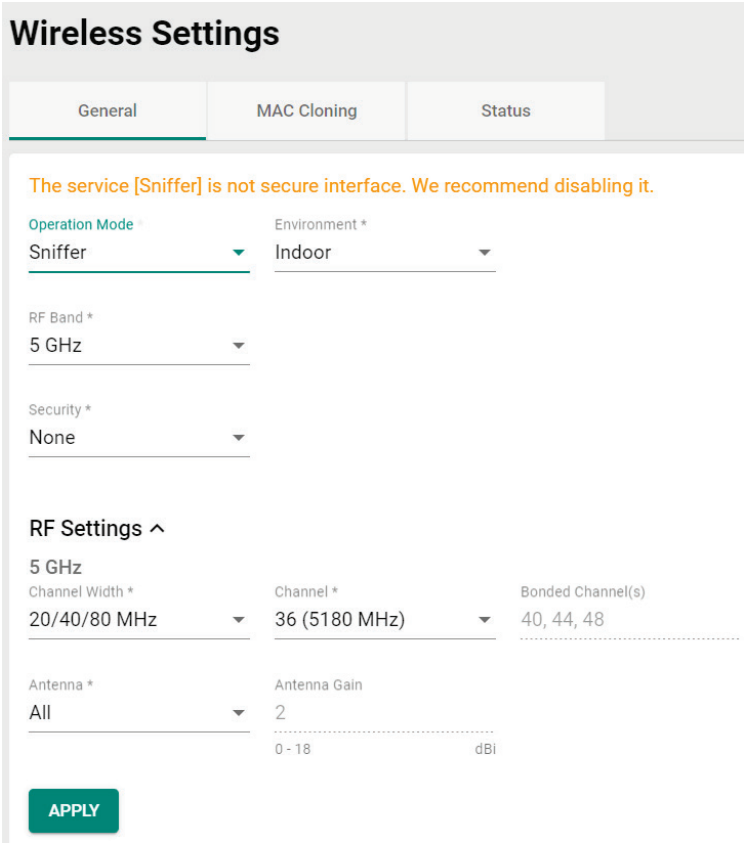
When the mesh role is set to Node, 5 GHz channel RF settings will be hidden. In the Node role, the device will follow the Mesh Portal's channel configuration.

**NOTE**

The channel and channel width of the backhaul network are determined by the Mesh portal configuration.

## Sniffer Mode Settings

Select **Sniffer** from the **Operation Mode** drop-down list.




Configure the following settings:

***Environment***

| Setting | Description | Factory Default |
|---|---|---|
| Indoor | Set the application environment to indoor. Available channels vary depending on the selection. | Indoor |
| Outdoor | Set the application environment to outdoor. Available channels vary depending on the selection. | |

***RF Band***

| Setting | Description | Factory Default |
|---|---|---|
| 5 GHz | Select 5 GHz as the RF band. | 5 GHz |
| 2.4 GHz | Select 2.4 GHz as the RF band. | |
| 5 GHz & 2.4 GHz | Select both 5 GHz and 2.4 GHz as the RF bands. | |

For configuring RF settings, refer to **RF Settings**.

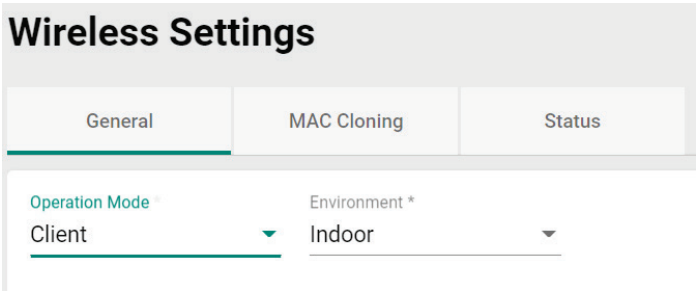
When finished, click **APPLY** to change the operation mode.

## NOTE

Once Sniffer and RF settings have been configured, you can add the device's IP as an interface in your network capturing software (e.g. Wireshark) and start capturing packets using Sniffer mode.

## Client Mode Settings

Select **Client** from the **Operation Mode** drop-down list. Client Mode requires at least one active SSID.




Configure the following settings:

***Environment***

| Setting | Description | Factory Default |
|---|---|---|
| Indoor | Set the application environment to indoor. Available channels vary depending on the selection. | Indoor |
| Outdoor | Set the application environment to outdoor. Available channels vary depending on the selection. | |

For SSID and security settings, refer to **Create a New SSID**.

For configuring RF settings, refer to **RF Settings**.

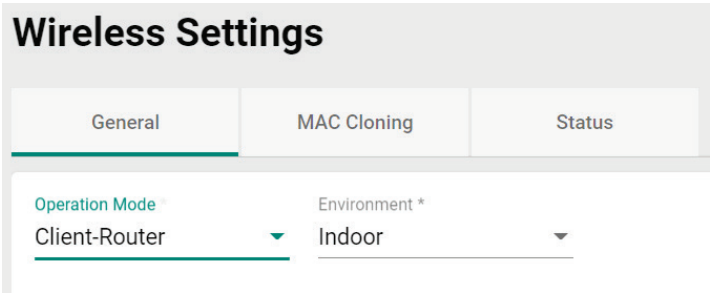
For configuring advanced settings, refer to **Advanced RF Settings**.

When finished, click **APPLY** to change the operation mode.

## Client-router Mode Settings

Client-router mode allows you to enable Network Address Translation (NAT) functionality to forward data to LAN ports of connected devices.

Select **Client-router** from the **Operation Mode** drop-down list. Client-router Mode requires at least one active SSID.




Configure the following settings:

***Environment***

| Setting | Description | Factory Default |
|---|---|---|
| Indoor | Set the application environment to indoor. Available channels vary depending on the selection. | Indoor |
| Outdoor | Set the application environment to outdoor. Available channels vary depending on the selection. | |

For SSID and security settings, refer to **Create a New SSID**.

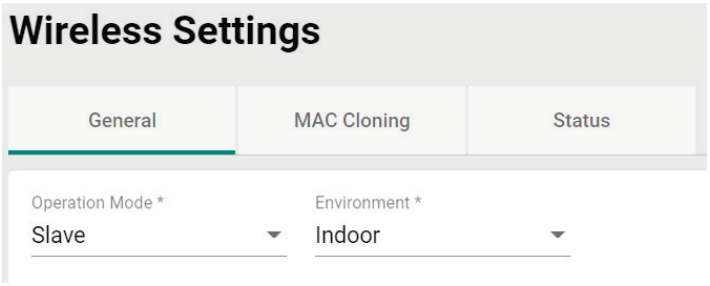
For configuring RF settings, refer to **RF Settings**.

For configuring advanced settings, refer to **Advanced RF Settings**.

When finished, click **APPLY** to change the operation mode.

## Slave Mode Settings

Select **Slave** from the **Operation Mode** drop-down list. Slave Mode requires at least one active SSID.




Configure the following settings:

***Environment***

| Setting | Description | Factory Default |
|---|---|---|
| Indoor | Set the application environment to indoor. Available channels vary depending on the selection. | Indoor |
| Outdoor | Set the application environment to outdoor. Available channels vary depending on the selection. | |

For SSID and security settings, refer to **Create a New SSID**.

For configuring RF settings, refer to **RF Settings**.

For configuring advanced settings, refer to **Advanced RF Settings**.

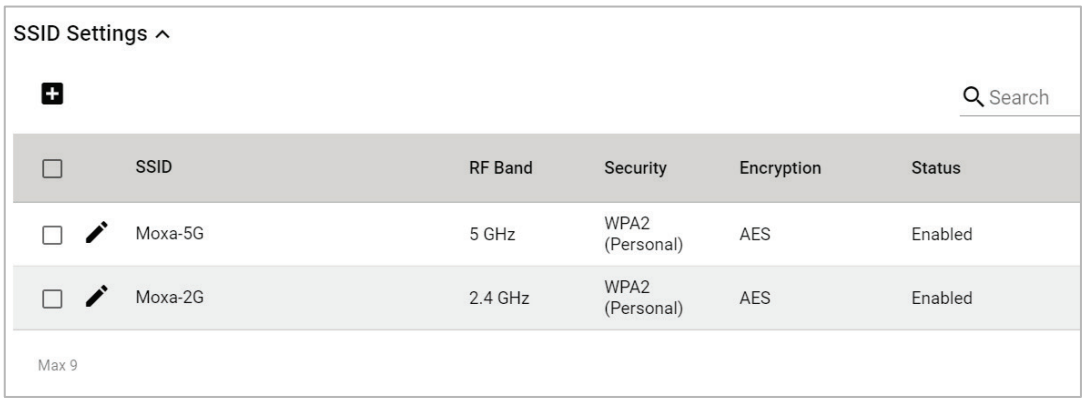
When finished, click **APPLY** to change the operation mode.

## Add a New SSID (AP, Master, Mesh Mode only)

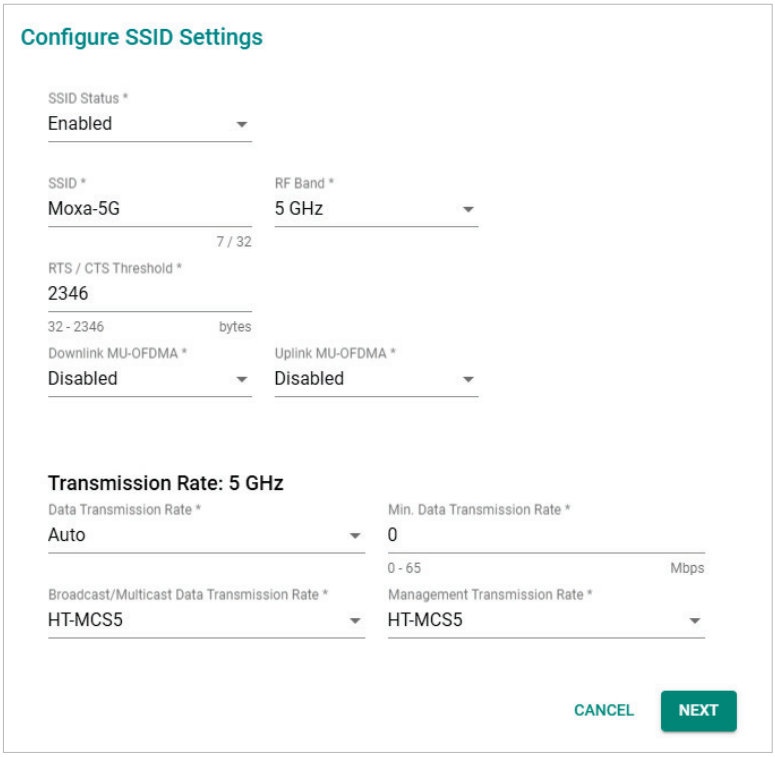
For AP, Master, and Mesh operation modes, configure and enable the SSID profile. There are no SSIDs on the device by default. To add a new SSID, click the **Add** icon.

### NOTE

For more information about Client, Client-router, and Slave Mode SSID settings, refer to the **Wi-Fi Basic** section.




Configure the following settings:




***SSID Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the SSID. | Disabled |

***SSID***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 32 characters | Enter a name for the SSID. | None |

***RF Band***

| Setting | Description | Factory Default |
|---|---|---|
| 2.4 GHz | Use the 2.4 GHz RF band on this SSID. | 5 GHz |
| 5 GHz | Use the 5 GHz RF band on this SSID. | |

***RTS/CTS Threshold***

| Setting | Description | Factory Default |
|---|---|---|
| 32 to 2346 bytes | Specify the RTS/CTS threshold for the SSID. | 2346 |

***Downlink MU-OFDMA***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable Downlink MU-OFDMA. Enabling this function allows the AP to send data to multiple clients at once by fragmenting the operating channel. | Disabled |

***Uplink MU-OFDMA***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable Uplink MU-OFDMA. Enabling this function allows the AP to receive data from multiple clients at the same time. | Disabled |

## NOTE

OFDMA settings are not available for Mesh mode.

## NOTE

OFDMA settings for Client, Client-router, and Slave mode are under **Advanced Settings**.

### Transmission Rate: 5 GHz/2.4 GHz

***Data Transmission Rate***

| Setting | Description | Factory Default |
|---|---|---|
| Auto | The AWK Series will automatically sense the speed of the connected device(s) and adjust the data rate accordingly. | Auto |

***Minimum Data Transmission Rate***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 65 Mbps<br>(0 to disable) | Specify a minimum transmission rate. By setting a minimum transmission rate, the AWK Series will avoid communicating over weak signal wireless links to maintain better wireless performance and optimize the wireless frequency usage. | 0 (Disabled) |

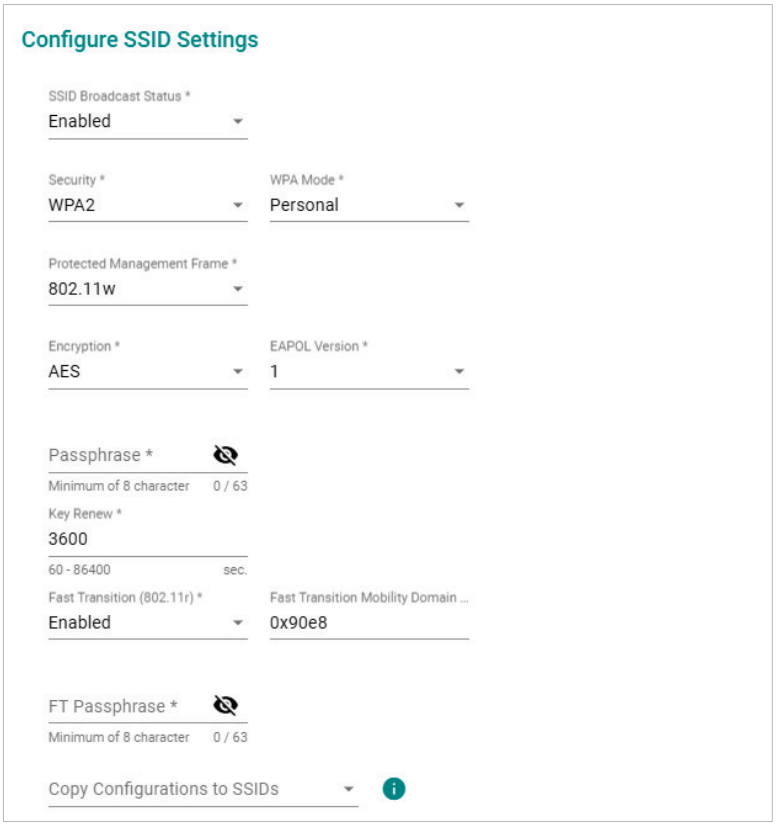
***Broadcast/Multicast Data Transmission Rate***

| Setting | Description | Factory Default |
|---|---|---|
| HT-MCS0 to HT-MCS15 | Set the broadcast/multicast data transmission rate for the AWK. | HT-MCS5 |

***Management Transmission Rate***

| Setting | Description | Factory Default |
|---|---|---|
| HT-MCS0 to HT-MCS15 | Set the management transmission rate for the AWK. | HT-MCS5 |

When finished, click **NEXT**.



***SSID Broadcast Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable broadcasting the SSID. If enabled, wireless clients will be able to see and connect to this SSID. | Enabled (depending on the settings on the previous page) |

***Security***

| Setting | Description | Factory Default |
|---|---|---|
| Open | Disable security on the SSID. This is not recommended. | Open |
| WPA | Use WPA authentication. | |
| WPA2 | Use WPA2 authentication. This mode supports IEEE 802.11i with TKIP/AES + 802.1X encryption. | |
| WPA3 | Use WPA3 authentication. This mode supports SAE (Simultaneous Authentication of Equals) to avoid network attacks, such as KRACK. | |
| WPA/WPA2 Mixed | Use WPA/WPA2 Mixed authentication. This allows both WPA and WPA2 clients to connect to the AWK. | |
| WPA2/WPA3 Mixed | Use WPA/WPA3 Mixed authentication. This allows both WPA2 and WPA3 clients to connect to the AWK. | |

The AWK Series provides various standardized wireless security modes: **Open, WPA** (Wi-Fi Protected Access), **WPA2**, and **WPA3**.

- **Open:** No authentication, no data encryption.
- **WPA/WPA2-Personal:** Also known as WPA/WPA2-PSK. You will need to specify the Pre-Shared Key in the Passphrase field, which will be used by the TKIP or AES engine as a master key to generate keys that encrypt outgoing packets and decrypt incoming packets.
- **WPA3-Peronal:** Provide a more secured data connection than WPA2 by using SAE (Simultaneous Authentication of Equals).
- **WPA/WPA2-Enterprise:** Also called WPA/WPA2-EAP (Extensible Authentication Protocol). In addition to device-based authentication, WPA/WPA2-Enterprise enables user-based authentication via IEEE 802.1X. When the Enterprise is selected as the WPA Mode, an additional EAP protocol drop-down field will appear, allowing you to select TLS, TTLS, or PEAP. The EAP-TLS option supports TLS certificates and password upload interface.
- **WPA/WPA2 Mixed:** The AWK supports WPA/WPA2 at the same time. The AWK is able to authenticate with both Wi-Fi clients that use WPA and WPA2.
- **WPA2/WPA3 Mixed:** The AWK supports WPA2/WPA3 at the same time. The AWK is able to authenticate with both Wi-Fi clients that use WPA2 and WPA3.

When using any security mode except **Open**, configure the following settings.

***Protected Management Frame***

| Setting | Description | Factory Default |
|---|---|---|
| Disabled | Disable the protected management frame. This option is not available when using WAP3. | Disabled |
| 802.11w | Use 802.11w protocol as the protected management frame. | |

***WPA Mode***

| Setting | Description | Factory Default |
|---|---|---|
| Personal | Authenticate WPA, WPA2, and WPA3 with a Pre-shared Key (PSK). | Personal |
| Enterprise | Authenticate WPA, WPA2, and WPA3 with EAP security protocol. | |

***Encryption***

| Setting | Description | Factory Default |
|---|---|---|
| AES | Use Advance Encryption System (AES) encryption. | TKIP/AES Mixed |
| TKIP/AES Mixed* | Use TKIP/AES Mixed encryption. This option provides a TKIP broadcast key and TKIP+AES unicast key to support legacy AP clients. This option is rarely used and is not available when using WAP3. | |

**This option is available for legacy mode in AP/Master only and does not support AES-enabled clients.*

***EAPOL Version***

If you selected AES encryption in AP mode, select the EAPOL version.

| Setting | Description | Factory Default |
|---|---|---|
| 1 | Use EAPOL Version 1 as the security authentication method. | 1 |
| 2 | Use EAPOL Version 2 as the security authentication method. | |

***Primary/Secondary RADIUS Server IP (for Enterprise mode only)***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Specify the RADIUS authentication server for EAP. | None |

***Primary/Secondary RADIUS Port (for Enterprise mode only)***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 65535 | Specify RADIUS server port number. | 1812 |

***Primary/Secondary RADIUS Shared Key (for Enterprise mode only)***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 128 characters | Enter the secret key shared for communication between AP and the RADIUS server. The key cannot contain the following special characters: ` ' " \| ; & $ | None |

***Passphrase (for Personal mode only)***

| Setting | Description | Factory Default |
|---|---|---|
| 8 to 63 characters | Enter the passphrase. This is the master key to generate keys for encryption and decryption. The passphrase cannot contain the following special characters: ` ' " \| ; & $<br>Check Show Password to display the password in clear text. | None |

***Key Renew***

| Setting | Description | Factory Default |
|---|---|---|
| 60 to 86400 seconds (1 minute to 1 day) | Specify the interval at which the group key is renewed. | 3600 (seconds) |

***Fast Transition (802.11r)***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable Fast Transition. | Disabled |

***Fast Transition Mobility Domain (AP/Master Mode Only)***

| Setting | Description | Factory Default |
|---|---|---|
| 0x0000 to 0xFFFF | Specify the identifier used for 802.11r fast transition (FT) roaming within the same mobility domain. APs with the same Mobility Domain value allow clients to perform fast roaming between them. | 0x90e8 |

***FT Passphrase (AP/Master Mode Only)***

| Setting | Description | Factory Default |
|---|---|---|
| 8 to 63 characters | Specify the passphrase for the Fast Transition (802.11r) key exchange between APs. | None |

***Copy Configurations to SSIDs***

| Setting | Description | Factory Default |
|---|---|---|
| SSID | Select a target SSID from the drop-down menu to copy the current configuration to. | None |

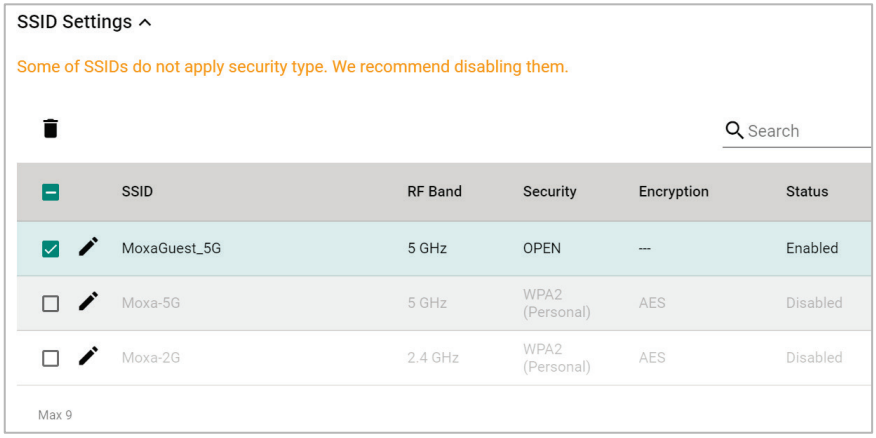
## WARNING

The Open mode does not feature any form of authentication or data encryption. For security reasons, we strongly recommend **against** using Open as the security mode.

When finished, click **CREATE** to add a new SSID.

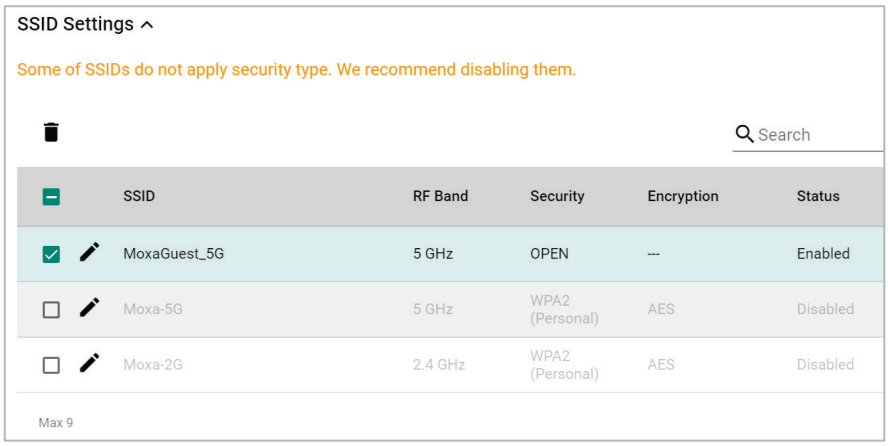
## Edit an Existing SSID

To edit an existing SSID, click the **Edit** icon next to the SSID you want to edit. Refer to **Create a New SSID** for more information about setting.

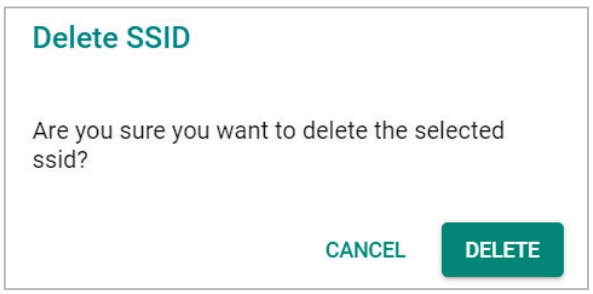



## Delete an Existing SSID

To delete an existing SSID, check the SSID, then click the **Delete** icon above the table.



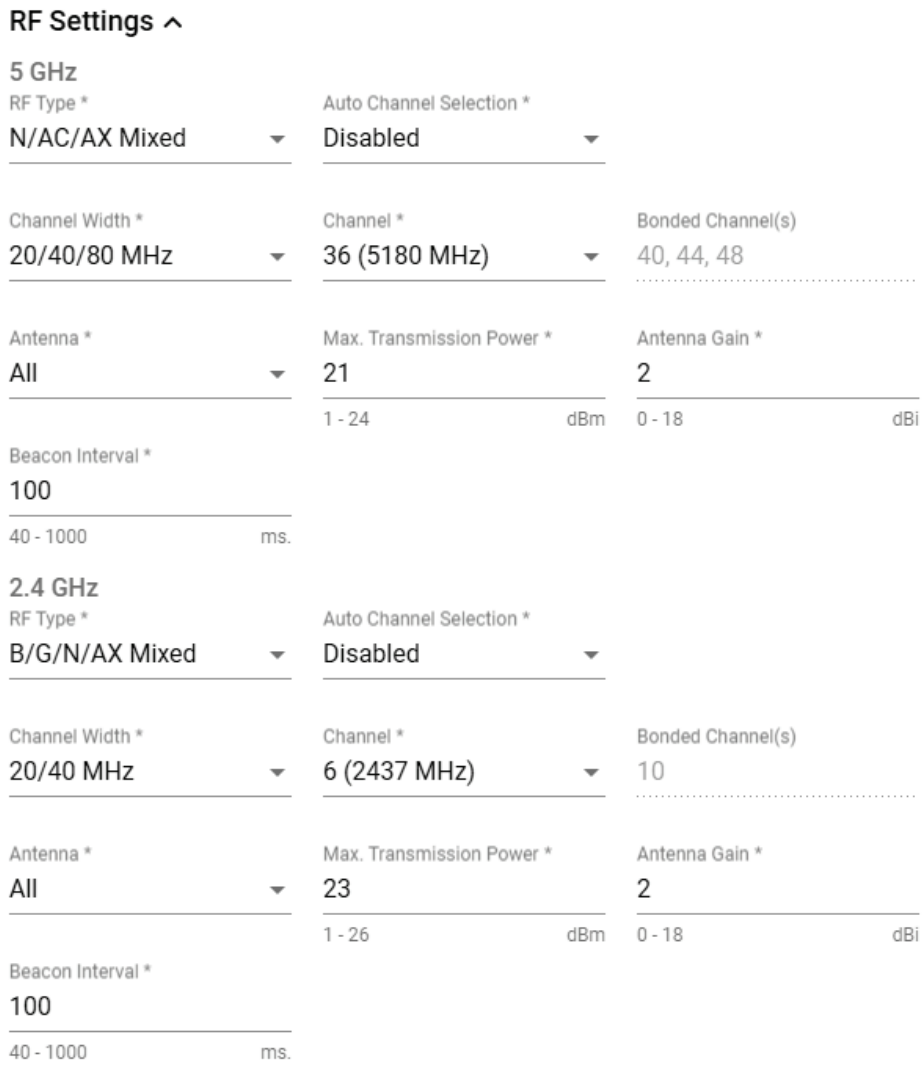

When prompted, click **DELETE**.



## RF Settings

When selecting any operation mode, configure the following RF settings.

> **NOTE**
>
> Available RF settings depend on which Operation mode is active.




### For 2.4 GHz

Configure the following settings:

***RF Type***

| Setting | Description | Factory Default |
|---|---|---|
| G/N/AX Mixed | Enable IEEE 802.11g/n/ax. Higher speed Wi-Fi clients may operate at slower speed if legacy Wi-Fi clients are connected to the network. | B/G/N/AX Mixed |
| B/G/N/AX Mixed | Enable IEEE 802.11b/g/n/ax. Higher speed Wi-Fi clients may operate at slower speed if legacy Wi-Fi clients are connected to the network. | |
| N/AX Mixed | Enable IEEE 802.11n/ax. Higher speed Wi-Fi clients may operate at slower speed if legacy Wi-Fi clients are connected to the network. | |
| AX Only | Only enable IEEE 802.11ax. | |

***Auto Channel Selection***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the Auto Channel Selection feature when the device boots up. When enabled, the system will automatically scan and select the optimal operating channel. | Disabled |

## NOTE

In addition to the default channel scan on bootup, you can also enable and configure scheduled-based auto channel scanning. Refer to **Auto Channel Selection**.

***Channel Width (for 802.11n RF types only)***

| Setting | Description | Factory Default |
|---|---|---|
| 20 MHz | Set the channel width to 20 MHz. If you are not sure which option to use, select 20/40 MHz. | 20/40 MHz |
| 20/40 MHz | Set the channel width to 20/40 MHz. This is recommended. | |

***Channel***

| Setting | Description | Factory Default |
|---|---|---|
| 1 (2412 MHz) to 11 (2462 MHz) / 13 (2472 MHz) | Select the channel from the drop-down list. Each channel supports different frequencies.<br>**Note**: Available channels depend on the selected country. | 6 (2437 MHz) |

***Bonded Channel***

| Setting | Description | Factory Default |
|---|---|---|
| 10 (read only) | The bonded channel used by the AP will be shown here if channel width is set to 20/40 MHz. | 10 |

***Antenna***

| Setting | Description | Factory Default |
|---|---|---|
| 1 | Specify antenna 1 as the output antenna port. | All |
| 2 | Specify antenna 2 as the output antenna port. | |
| ALL | Specify both antennas as the output antenna port. | |

***Maximum Transmission power***

| Setting | Description | Factory Default |
|---|---|---|
| dBm | Specify the maximum transmission power which acts as a hard ceiling for different transmission rates. | 18 dBm |

***Antenna Gain***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 18 (dBi) | Specify the antenna gain based on the antenna used. | 2 |

## NOTE

The AWK's output power is adjusted based on the specified antenna gain to meet the set maximum transmission power.

***Beacon Interval***

| Setting | Description | Factory Default |
|---|---|---|
| 40 to 1000 (ms.) | Specify the interval at which a beacon is sent. | 100 (ms) |

### For 5 GHz

Configure the following settings:

***RF Type: 5 GHz***

| Setting | Description | Factory Default |
|---|---|---|
| AC/AX Mixed | Enable IEEE 802.11ac/ax. Higher speed Wi-Fi clients may operate at slower speed if legacy Wi-Fi clients are connected to the network. | A/N/AC/AX Mixed |

| Setting | Description | Factory Default |
|---|---|---|
| N/AC/AX Mixed | Enable IEEE 802.11n/ac/ax. Higher speed Wi-Fi clients may operate at slower speed if legacy Wi-Fi clients are connected to the network. | |
| A/N/AC/AX Mixed | Enable IEEE 802.11a/n/ac/ax. Higher speed Wi-Fi clients may operate at slower speed if legacy Wi-Fi clients are connected to the network. | |
| AX Only | Only enable IEEE 802.11ax. | |

***Auto Channel Selection***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the Auto Channel Selection feature when the device boots up. When enabled, the system will automatically scan and select the optimal operating channel. | Disabled |

## NOTE

In addition to the default channel scan on bootup, you can also enable and configure scheduled-based auto channel scanning. Refer to **Auto Channel Selection**.

***Channel Width (for any 11N RF type only)***

| Setting | Description | Factory Default |
|---|---|---|
| 20 MHz | Set the channel width to 20 MHz. If you are not sure which option to use, select 20/40 MHz. | 20/40/80 MHz |
| 20/40 MHz | Set the channel width to 20/40 MHz. This is recommended. | |
| 20/40/80 MHz | Set the channel width to 20/40/80 MHz. If you are not sure which option to use, select 20/40 MHz. | |

***Channel***

| Setting | Description | Factory Default |
|---|---|---|
| 36 (5180 MHz) to 165 (5825 MHz) | Select the channel from the drop-down list. Each channel supports different frequencies. | 36 (5180 MHz) |

***Bonded Channel***

| Setting | Description | Factory Default |
|---|---|---|
| 40/44/48 (read only) | The bonded channel used by the AP will be shown here if channel width is set to 20/40/80 MHz. | 40/44/48 |

***Antenna***

| Setting | Description | Factory Default |
|---|---|---|
| ALL | Specify both antennas as the output antenna port. | All |
| 1 | Specify antenna 1 as the output antenna port. | |
| 2 | Specify antenna 2 as the output antenna port. | |

***Maximum Transmission power***

| Setting | Description | Factory Default |
|---|---|---|
| dBm | Specify the maximum transmission power which acts as a hard ceiling for different transmission rates.<br>**Note**: The supported Maximum Transmission Power depends on the selected country code. | 18 dBm |

***Antenna Gain***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 18 (dBi) | Specify the antenna gain based on the antenna used. | 2 |

## NOTE

The AWK's output power is adjusted based on the specified antenna gain to meet the set maximum transmission power.

***Beacon Interval***

| Setting | Description | Factory Default |
|---|---|---|
| 40 to 1000 (ms) | Specify the interval at which a beacon is sent. | 100 (ms) |

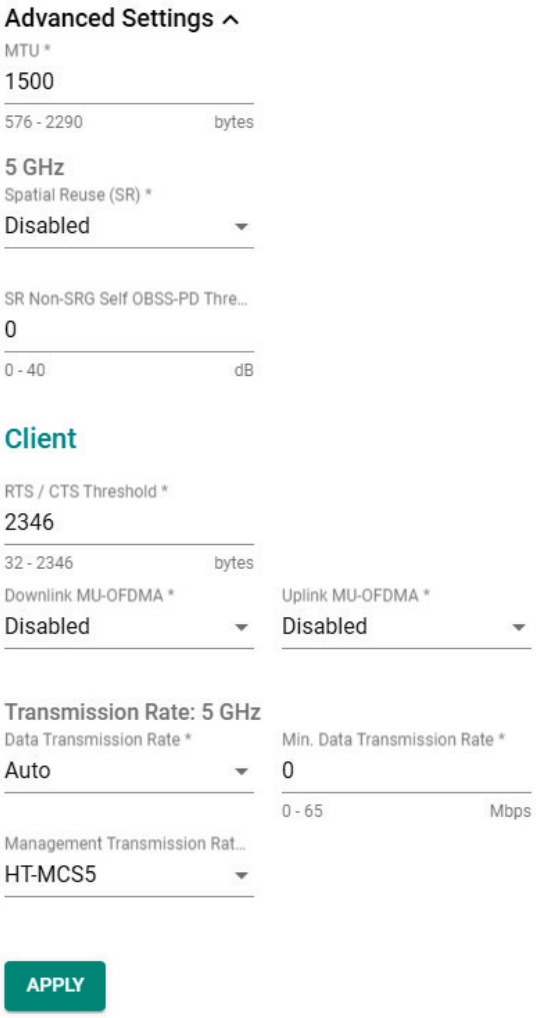
When finished, click **APPLY**.

## Advanced RF Settings

Some operation modes require additional advanced RF settings.

> **NOTE**
>
> Available RF settings depend on which Operation mode is active.

### Client, Client-router, Slave Mode Settings




***MTU***

| Setting | Description | Factory Default |
|---|---|---|
| 576 to 2290 bytes | Configure the Maximum Transmission Unit (MTU) size (in bytes) depending on the application traffic type. Configuring a larger MTU value results in a lower packet count (less network congestion) over the wireless network when transmitting applications generate large data packets. | 1500 |

***Spatial Reuse (SR)***

| Setting | Description | Factory Default |
|---|---|---|
| 32 to 2346 bytes | Enable or disable spatial reuse. If enabled, APs and clients use BSS Coloring to distinguish transmissions from different networks, allowing multiple devices to transmit on the same channel simultaneously. | 2346 |

***SR Non-SRG Self OBSS-PD Threshold***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 40 | Specify the Non-SRG self OBSS-PD threshold offset (in dB). This defines the tolerance level for the device. | 0 |

***RTS/CTS Threshold***

| Setting | Description | Factory Default |
|---|---|---|
| 32 to 2346 bytes | Specify the RTS/CTS threshold for the SSID. | 2346 |

***Downlink MU-OFDMA***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable Downlink MU-OFDMA. Enabling this function allows the AP to send data to multiple clients at once by fragmenting the operating channel. | Disabled |

***Uplink MU-OFDMA***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable Uplink MU-OFDMA. Enabling this function allows the AP to receive data from multiple clients at the same time. | Disabled |

***Data Transmission Rate***

| Setting | Description | Factory Default |
|---|---|---|
| Auto | The AWK Series will automatically sense the speed of the connected device(s) and adjust the data rate accordingly. | Auto |

***Minimum Data Transmission Rate***

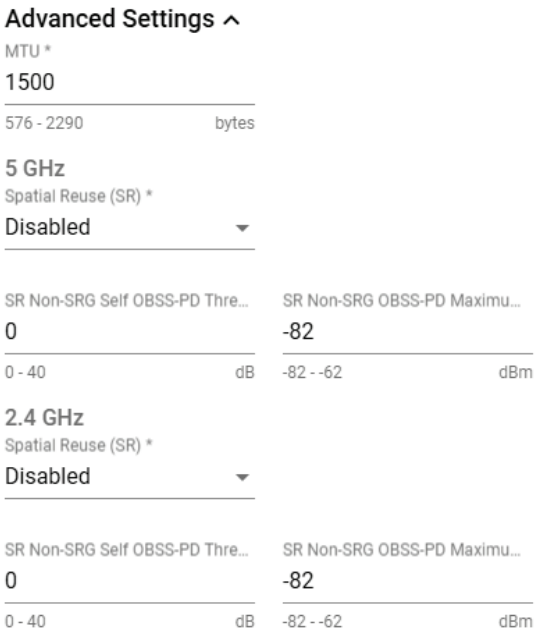
| Setting | Description | Factory Default |
|---|---|---|
| 0 to 64 Mbps<br>(0 to disable) | Specify a minimum transmission rate. By setting a minimum transmission rate, the AWK Series will avoid communicating over weak signal wireless links to maintain better wireless performance and optimize the wireless frequency usage. | 0 (Disabled) |

***Management Transmission Rate***

| Setting | Description | Factory Default |
|---|---|---|
| HT-MCS0 to HT-MCS15 | Set the management transmission rate for the AWK. | HT-MCS5 |

When finished, click **APPLY**.

## AP, Master Mode Settings




***MTU***

| Setting | Description | Factory Default |
|---|---|---|
| 576 to 2290 bytes | Configure the Maximum Transmission Unit (MTU) size (in bytes) depending on the application traffic type. Configuring a larger MTU value results in a lower packet count (less network congestion) over the wireless network when transmitting applications generate large data packets. | 1500 |

***Spatial Reuse (SR)***

| Setting | Description | Factory Default |
|---|---|---|
| 32 to 2346 bytes | Enable or disable spatial reuse. If enabled, APs and clients use BSS Coloring to distinguish transmissions from different networks, allowing multiple devices to transmit on the same channel simultaneously. | 2346 |

***SR Non-SRG Self OBSS-PD Threshold***

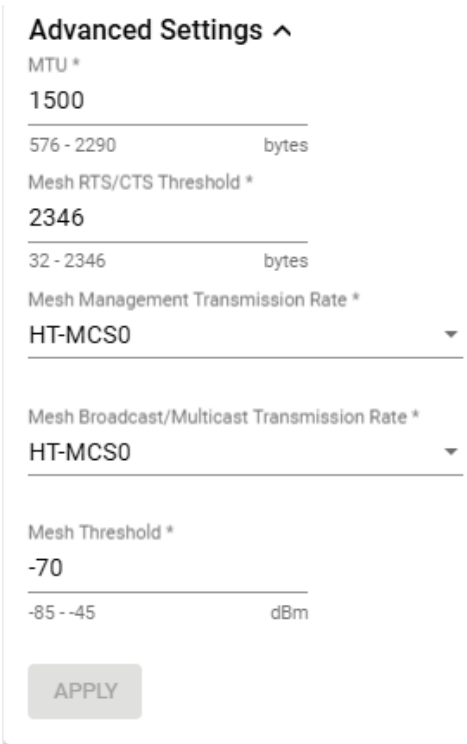
| Setting | Description | Factory Default |
|---|---|---|
| 0 to 40 | Specify the Non-SRG self OBSS-PD threshold offset (in dB). This defines the tolerance level for the device. | 0 |

***SR Non-SRG OBSS-PD Maximum***

| Setting | Description | Factory Default |
|---|---|---|
| -82 to -62 | Specify the maximum RSSI (in dBm) for OBSS-PD that client devices associated with this AP can use when enabling spatial reuse. | -82 |

When finished, click **APPLY**.

## Mesh Mode Settings




***MTU***

| Setting | Description | Factory Default |
|---|---|---|
| 576 to 2290 bytes | Configure the Maximum Transmission Unit (MTU) size (in bytes) depending on the application traffic type. Configuring a larger MTU value results in a lower packet count (less network congestion) over the wireless network when transmitting applications generate large data packets. | 1500 |

***Mesh RTS/CTS Threshold***

| Setting | Description | Factory Default |
|---|---|---|
| 32 to 2346 bytes | Specify the RTS/CTS threshold for the Mesh SSID. | 2346 |

***Mesh Management Transmission Rate***

| Setting | Description | Factory Default |
|---|---|---|
| VHT-MCS0-NSS1 to VHT-MCS7-NSS2 | Set the management transmission rate for the AWK in Mesh mode. | VHT-MCS0-NSS1 |

***Mesh Broadcast/Multicast Data Transmission Rate***

| Setting | Description | Factory Default |
|---|---|---|
| VHT-MCS0-NSS1 to VHT-MCS7-NSS2 | Set the broadcast/multicast data transmission rate for the AWK in Mesh mode. | VHT-MCS0-NSS1 |

***Mesh Threshold***

| Setting | Description | Factory Default |
|---|---|---|
| -85 to -45 dBm | Specify the signal strength threshold for the Mesh network. | -70 |

**NOTE**

The Mesh Threshold setting is only available if the device is in the Portal role.

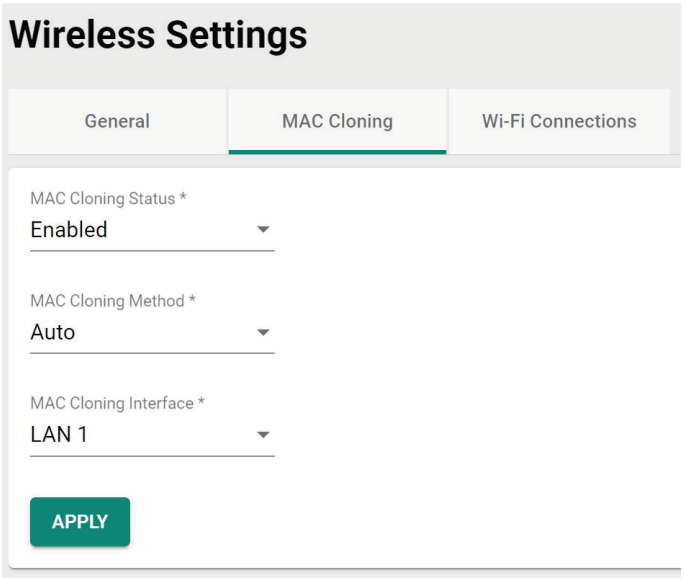
**NOTE**

The Broadcast/Multicast Data Transmission Rate and Mesh Management Transmission Rate RF Type settings are not supported for VHT-MCS9-NSS1.

When finished, click **APPLY**.

## MAC Cloning Settings (Client Mode Only)

Enabling this feature allows the AWK client to copy the MAC address of the equipment connected to the LAN. This overcomes the limitation of the IP-Bridged behavior in a MAC-sensitive network (MAC-based communication or MAC-authenticated network).




Configure the following settings:

***MAC Cloning Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the MAC Cloning function. | Disabled |

***MAC Cloning Method***

| Setting | Description | Factory Default |
|---|---|---|
| Auto | The AWK client copies the MAC address of the device connected to the LAN if only one device is connected to AWK. | Auto |
| Static | The AWK client shares the assigned MAC address with multiple devices connected to the LAN. This allows for multiple devices to connect to the AWK via the LAN and only one of them needs to be assigned a MAC address. | |

***MAC Cloning Interface***

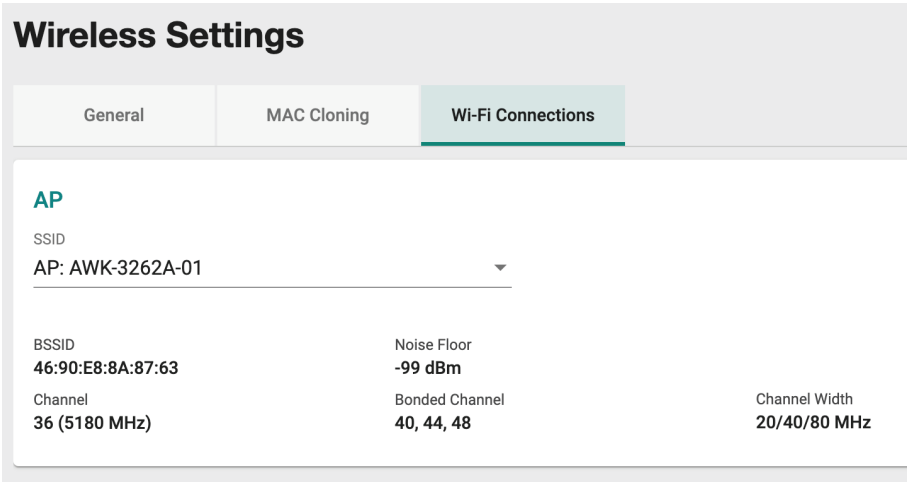
| Setting | Description | Factory Default |
|---|---|---|
| LAN 1 (AWK-1161C) | If the MAC Cloning Method is set to Auto, select the LAN port the device is connected to.<br>If set to Static, select the LAN port and specify the MAC address of the connected device to copy. | LAN 1 |
| LAN 1 to 2 (AWK-3262A, AWK-4262A) | | |
| LAN 1 to 5 (AWK-1165C) | | |

When finished, click **APPLY**.

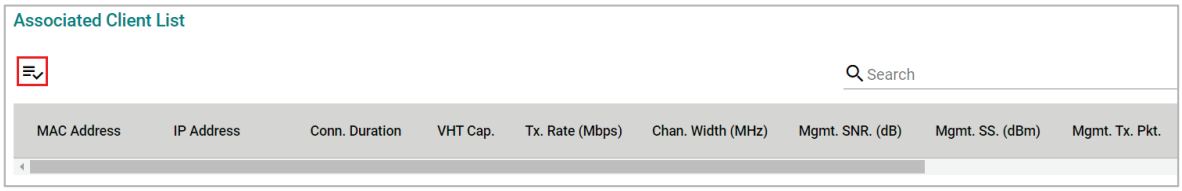
## Wi-Fi Connection Status

To view the Wi-Fi connection status, click **Wi-Fi Connections** tab. The information on this screen depends on the active operation mode.

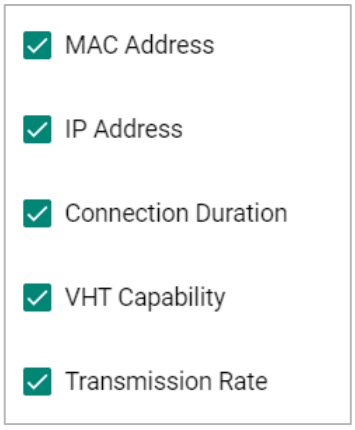
**AP mode**




Select the SSID from the drop-down list to view its current status. In AP Mode, you can also view the client list to see all the connected client devices.

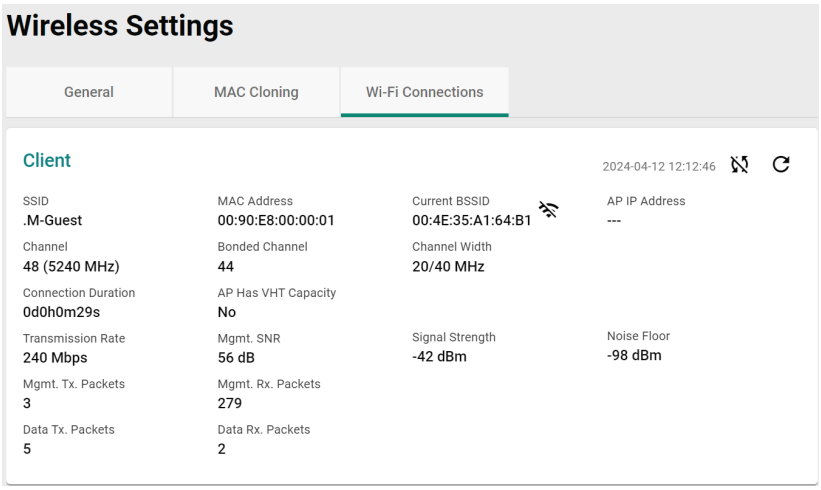



Click the **Filter** icon to select the information items that you want to show.



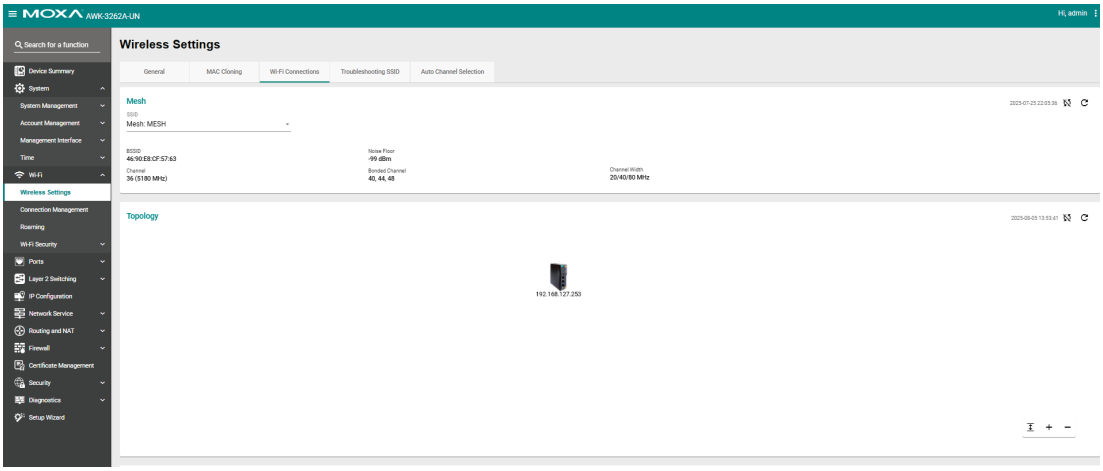
### Client, Client-router, Slave mode

For the Client, Client-router, and Slave operation modes, this view displays the SSID the device is associated with, and the properties of the connection.




### Mesh mode

For Mesh operation mode, this view shows the visual mesh topology including the mesh portal and node connections. This view is only available if the device is acting as the mesh portal. The topology can be automatically or manually refreshed using the corresponding buttons in the top-right corner of the Topology window.

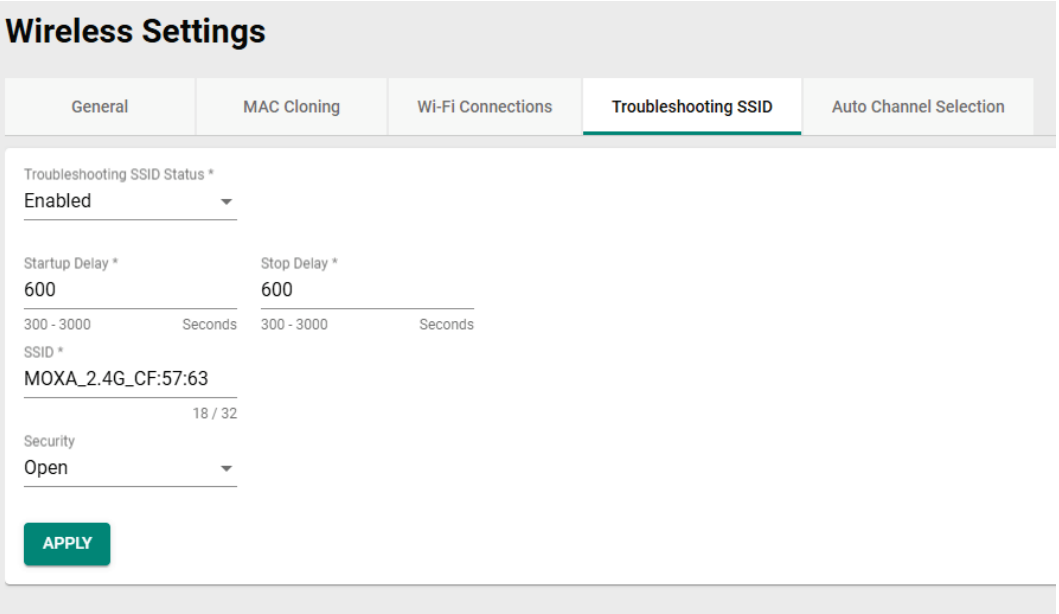



## Troubleshooting SSID

To configure troubleshooting SSID settings, click the **Wi-Fi Connections** tab. When operating in a client-based mode, this feature allows the AWK to activate a temporary management SSID when it loses its connection to the AP. Administrators can wirelessly access this SSID for troubleshooting purposes.

**NOTE**

This function is not available if the device is operating in AP, Master, or Mesh Portal mode.




Configure the following files:

***Troubleshooting SSID Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the troubleshooting SSID. | Enabled |

***Startup Delay***

| Setting | Description | Factory Default |
|---|---|---|
| 300 to 3000 | Specify the start delay (in seconds), which determines how long the device will wait before enabling the troubleshooting SSID after losing its connection to the AP. | 600 |

***Stop Delay***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Specify the start delay (in seconds), which determines how long the device will wait before disabling the troubleshooting SSID after reconnecting to the AP. | 600 |

***SSID***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 32 characters | Enter a name for the troubleshooting SSID. | Moxa_2.4G/5G_[Last 6 digit of device MAC uppercase] |

***Security***

| Setting | Description | Factory Default |
|---|---|---|
| Open | Disable security for the SSID. This is not recommended. | Merge |
| WPA2 | Use WPA2 authentication. This mode supports IEEE 802.11i with TKIP/AES and 802.1X encryption. | |

***Passphrase***

If the **Security** mode is set to **WPA2**, configure the passphrase.

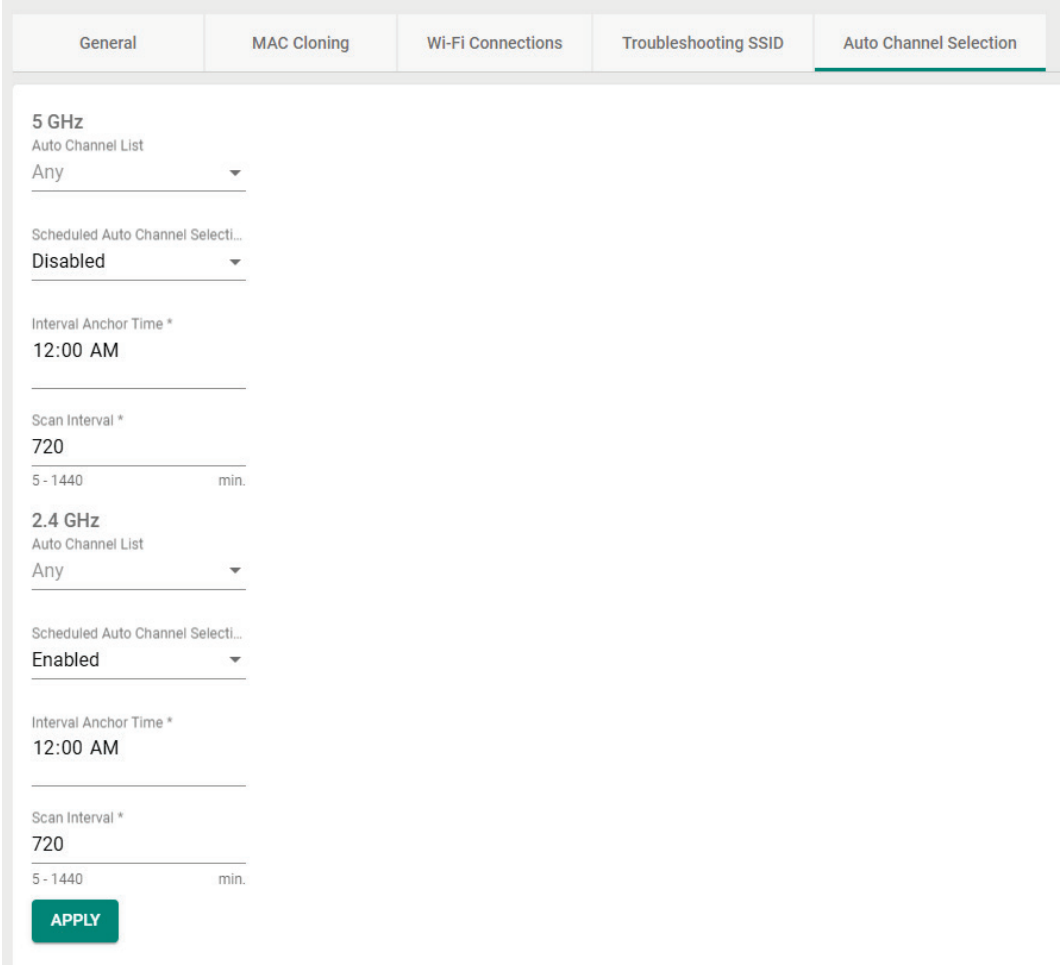
| Setting | Description | Factory Default |
|---|---|---|
| 8 to 63 characters | Enter the passphrase. This is the master key to generate keys for encryption and decryption. The passphrase cannot contain the following special characters: ` ' " \| ; & $<br>Check **Show Password** to display the password in clear text. | None |

When finished, click **APPLY**.

## Auto Channel Selection

To configure Auto Channel Selection (ACS) settings, click the **Auto Channel Selection** tab. This feature allows the device to automatically scan and select the optimal operating channel based on real-time channel analysis. This helps both minimize interference and enhance wireless performance. ACS can be triggered using one of the following methods:

- **On boot-up**: If enabled in the RF settings, ACS will run automatically when the device boots up. Refer to **RF Settings**.
- **On schedule**: ACS can be scheduled to run automatically at a specified interval and anchor time for periodic re-evaluation of channel conditions.
- **Manual**: Manually trigger a channel scan. Refer to **Manual Auto Channel Selection**.




Configure the following settings:

> **NOTE**
>
> These settings are identical for the 2.4 and 5 GHz wireless bands but can be configured independently for each band.

***Auto Channel List***

| Setting | Description | Factory Default |
|---|---|---|
| 2.4/5 GHz channel list | Select which channels to include in the scan for the respective wireless band. | None |

***Scheduled Auto Channel Selection***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable scheduled Auto Channel Selection. If enabled, the device will scan for optimal channels periodically based on the specified anchor time and scan interval. | Enabled |

***Interval Anchor Time***

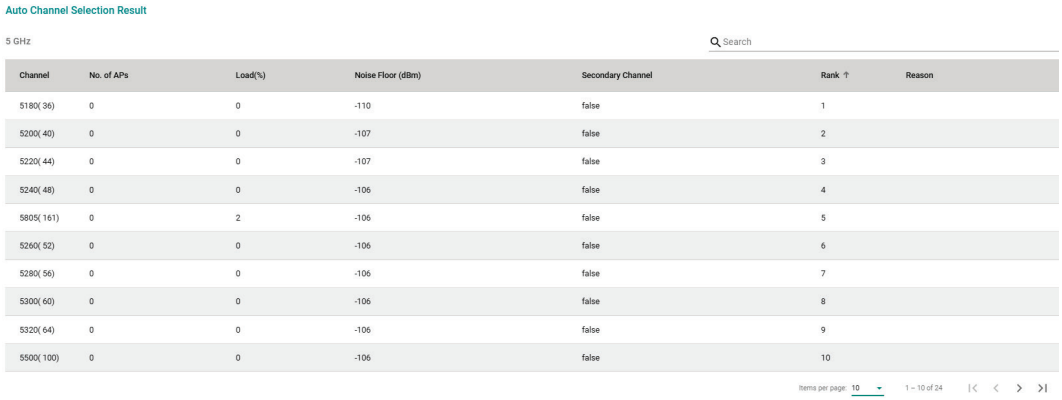
| Setting | Description | Factory Default |
|---|---|---|
| hh, mm | Specify the time of day (in AM/PM format) the system will perform the scheduled auto channel scan. | 00:00 |

***Scan Interval***

| Setting | Description | Factory Default |
|---|---|---|
| 5 to 1440 | Specify the auto channel scan interval (in minutes). | 720 |

When finished, click **APPLY**.

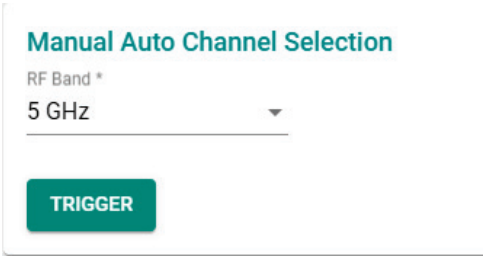
The result of the latest auto channel scan for each wireless band will be shown in the **Auto Channel Selection Result** table at the bottom of the page.




| Metric | Description |
|---|---|
| Channel | The channel frequency and number. |
| No. of APs | The number of APs detected on the channel at the time of the scan. |
| Load(%) | Indicates the channel load during the scan. The scan duration is approximately 330 ms per channel. |
| Noise Floor(dBm) | The noise floor level (in dBm) on the channel. |
| Secondary Channel | Indicates whether the channel is a secondary channel. A secondary channel is an additional frequency band to augment a primary band. While this increases the channel's total bandwidth, it is more prone to interference due to overlap. |
| Rank | Indicates the interference level on the channel. A higher rank indicates less interference. |
| Reason | Describes the reason the channel was excluded. The following reasons can be given:<br>SC: Secondary channel.<br>HN: High noise.<br>CL: High channel load. |

## Manual Auto Channel Selection

From the **Manual Auto Channel Selection section**, you can manually perform an auto channel scan.

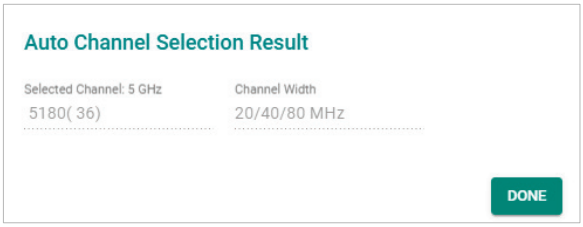


***RF Band***

| Setting | Description | Factory Default |
|---|---|---|
| 5 GHz | Scan channels on the 5 GHz band. | 5 GHz |
| 2.4 GHz | Scan channels on the 2.4 GHz band. | |
| 5 GHz & 2.4 GHz | Scan channels on the 5 and 2.4 GHz bands. | |

When finished, click **TRIGGER**.

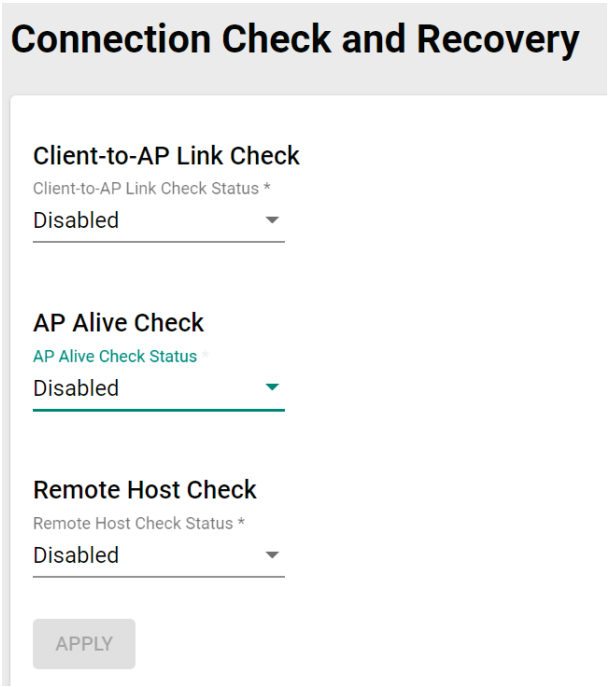
After the scan is finished, a result window will show with the selected channel and width.




# Connection Management

## Connection Check and Recovery (Client/Slave/Client-router Mode Only)

The **Connection Check and Recovery** tab contains Wi-Fi connectivity tools to define conditions of normal operational criteria and enable recovery attempts without human intervention. Click **Connection Check and Recovery** under **Wi-Fi** in the function tree to access this screen.

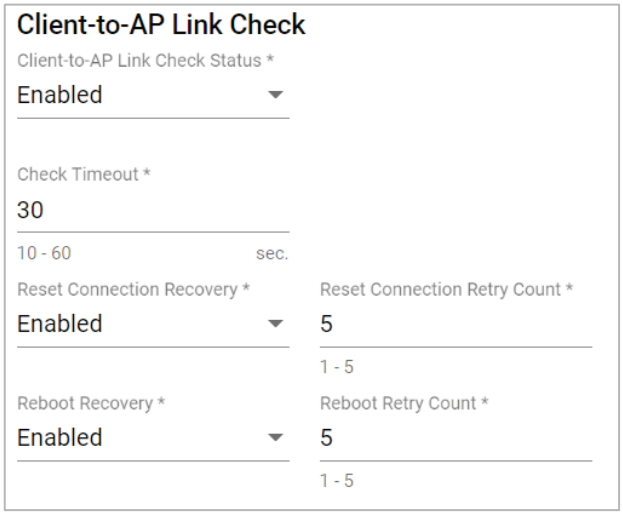



### Client-to-AP Link Check

When enabled, this recovery mechanism is triggered when the connection to the AP is lost. When disconnected, the device will reset the Wi-Fi interface in an attempt to recover the connection to the AP. If the connection cannot be recovered after the specified number of retries, the client will reboot and check the connectivity status again.

**NOTE**

Remote Host Check is only supported in client-based modes and mesh mode (in Node role only). While this function can be configured in AP and Master mode, the function will not do anything.




Configure the following settings:

***Client-to-AP Link Check Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the Client-to-AP Link Check function. | Disabled |

***Check Timeout***

| Setting | Description | Factory Default |
|---|---|---|
| 10 to 60 (sec.) | Specify the check timeout interval. | 30 |

***Reset Connection Recovery***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the Reset Connection Recovery function. | Enabled |

***Reset Connection Retry Count***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 5 | Specify the maximum number of times the device will reset the Wi-Fi interface to attempt to recover the connection. | 5 |

***Reboot Recovery***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable Reboot Recovery function. | Disabled |

***Reboot Retry Count***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 5 | Specify the maximum number of times the device will reboot to attempt to recover the connection. | 5 |

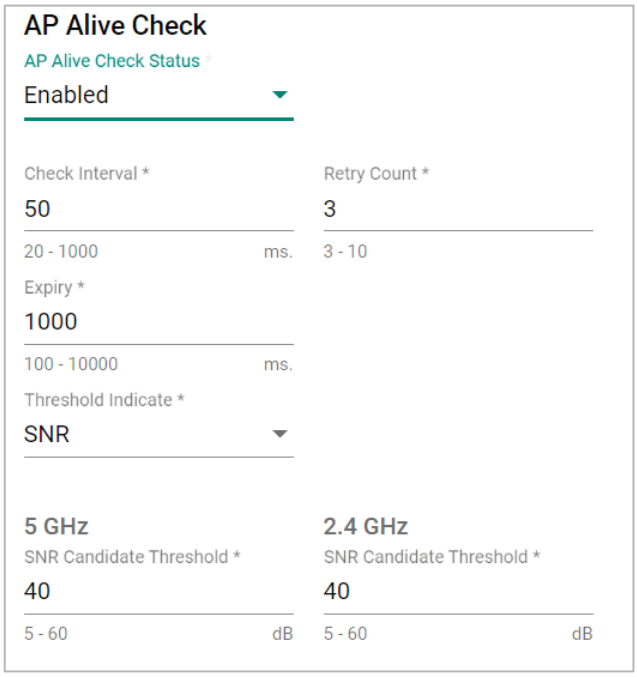
When finished, click **APPLY** to save your settings.

## AP Alive Check

This is a recovery mechanism which checks whether it is still possible to receive data frame from the connected AP. When the timeout is triggered, the client will send a null data packet to probe the AP it is connected to. If the AP does not respond after the specified number of retries, the client will begin scan for other AP candidates in order to recover network communications as quickly as possible.

### NOTE

Remote Host Check is only supported in client-based modes. While this function can be configured in Mesh, AP, and Master mode, the function will not do anything.




Configure the following settings:

***AP Alive Check Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the AP Alive Check function. | Disabled |

***Check Interval***

| Setting | Description | Factory Default |
|---|---|---|
| 20 to 1000 (ms) | Specify the interval at which the device will probe the AP. | 50 |

***Retry Count***

| Setting | Description | Factory Default |
|---|---|---|
| 3 to 10 | Specify the maximum number of times the device will probe the AP. | 3 |

***Expiry***

| Setting | Description | Factory Default |
|---|---|---|
| 100 to 10000 (ms.) | Specify the connection expiration interval (in ms). If exceeded, the client will consider the AP unreachable or unresponsive, and will trigger the recovery mechanism. | 1000 |

***Threshold Indicate***

| Setting | Description | Factory Default |
|---|---|---|
| SNR | Use SNR as the threshold indicator. | SNR |
| Signal Strength | Use signal strength as the threshold indicator. | |

***5 GHz: SNR Candidate Threshold (for SNR)***

| Setting | Description | Factory Default |
|---|---|---|
| 5 to 60 (dB) | Specify the SNR roaming threshold. | 40 |

***2.4 GHz: SNR Candidate Threshold (for SNR)***

| Setting | Description | Factory Default |
|---|---|---|
| 5 to 60 (dB) | Specify the SNR roaming threshold. | 40 |

***5 GHz: Signal Strength Candidate Threshold (for Signal Strength)***

| Setting | Description | Factory Default |
|---|---|---|
| -100 to -35 (dBm) | Specify the signal strength roaming threshold. | -65 |

***2.4 GHz: Signal Strength Candidate Threshold (for Signal Strength)***

| Setting | Description | Factory Default |
|---|---|---|
| -100 to -35 (dBm) | Specify the signal strength roaming threshold. | -65 |

## NOTE

The SNR and signal strength thresholds are used to determine when the AWK will start looking for a better AP to associate with. If the current connection quality to the AP (based on SNR or signal strength) is lower than the specified threshold value, the client will start looking for other suitable wireless devices.

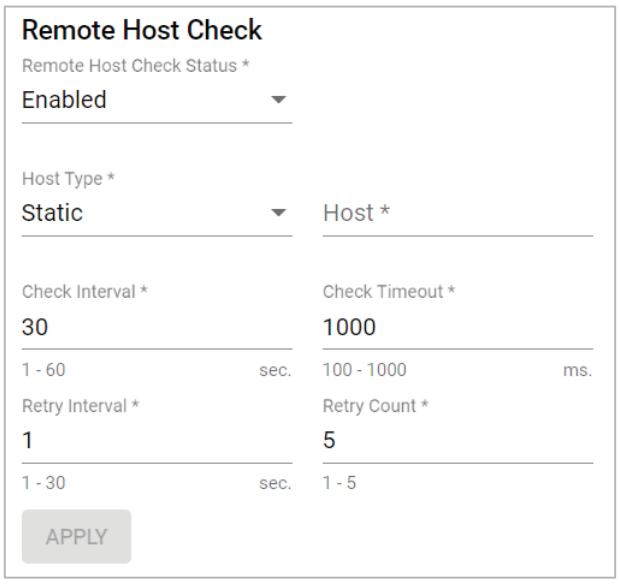
When finished, click **APPLY**.

## Remote Host Check

When enabled, this recovery mechanism is triggered when IP traffic fails to reach the configured remote host. The mechanism works by checking if the remote host is reachable at the defined check interval. If the host is still unreachable after the specified number of retries, the client will disconnect from the current AP and will attempt to associate with another AP.

## NOTE

Remote Host Check is only supported in client-based modes. While this function can be configured in Mesh, AP, and Master mode, the function will not do anything.




Configure the following settings.

***Remote Host Check Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the Remote Host Check function. | Disabled |

***Host Type***

| Setting | Description | Factory Default |
|---|---|---|
| Static | Use Static as the host type. | Static |
| Dynamic | Use Dynamic as the host type. | |

***Host (for Static Host Type only)***

| Setting | Description | Factory Default |
|---|---|---|
| Host name | Specify the host name. | None |

***Check Interval***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 60 (sec.) | Specify the interval at which the client will check the connection to the host. | 30 |

***Check Timeout***

| Setting | Description | Factory Default |
|---|---|---|
| 100 to 10000 (ms) | Specify the connection expiration interval (in ms). If exceeded, the client will consider the remote host unreachable or unresponsive and will trigger the recovery mechanism. | 1000 |

***Retry Interval***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 30 (sec.) | Specify the interval at which the device will check the host again after a failed attempt. | 1 |

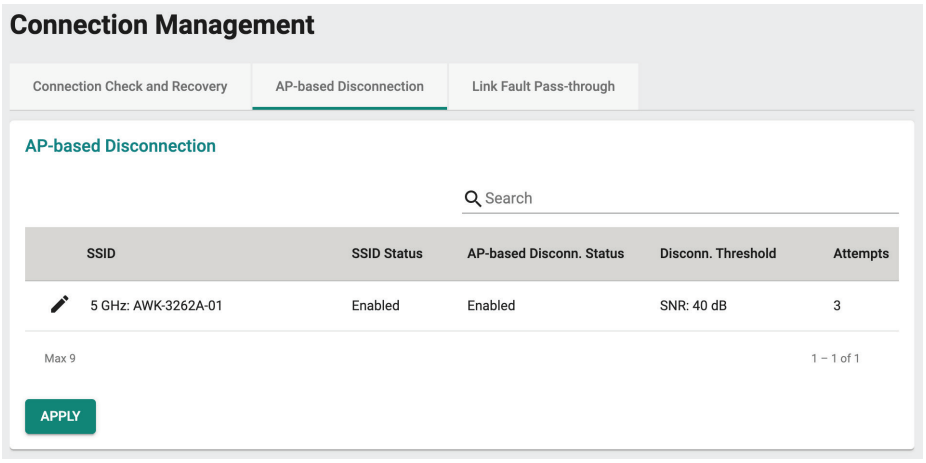
***Retry Count***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 5 | Specify the maximum number of times the device will check the host. | 5 |

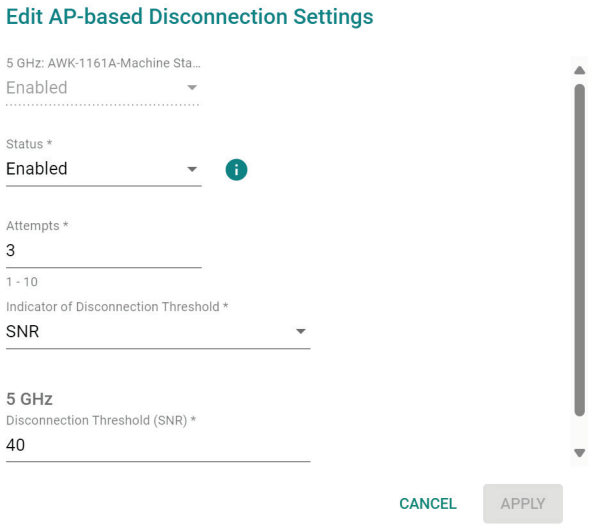
When finished, click **APPLY**.

## AP-based Disconnection (AP/Master Mode Only)

The **AP-based Disconnection** tab contains Wi-Fi connectivity tools to configure the signal strength conditions for clients to meet normal operational communication requirements. Additionally, this screen allows users to enable the AP-based disconnection mechanism to disconnect legacy clients without roaming logic in order to encourage these clients to automatically associate to another AP with a stronger signal when falling below the set threshold. Click the **AP-based Disconnection** tab under **Wi-Fi > Connection Management** in the function tree to access this screen.




This tab displays all configured SSID profiles on the device. Click the pencil icon next to an SSID to edit the disconnection criteria for legacy clients.




***Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the AP-based Disconnection mechanism. | Disabled |

***Attempts***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 10 | Specify the number of check attempts, with a 1 second interval between each check. If a client's SNR or signal strength falls below the set threshold consecutively for the specified number of attempts, the AP will disconnect the client. | 3 |

***Indicator of Disconnection Threshold***

| Setting | Description | Factory Default |
|---|---|---|
| SNR/Signal Strength | Select the threshold type for the disconnection mechanism. | SNR |

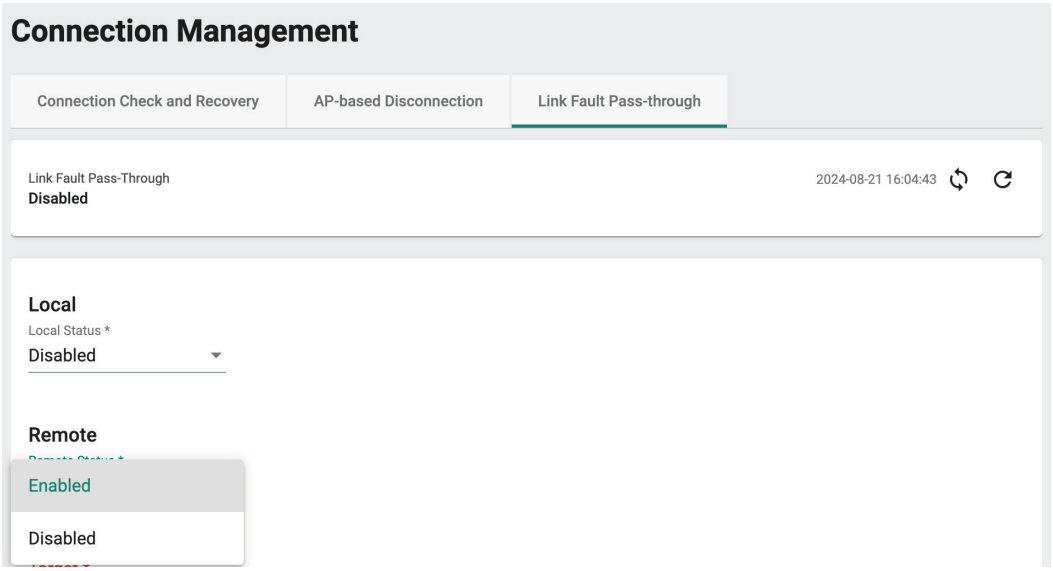
***Disconnection Threshold***

| Setting | Description | Factory Default |
|---|---|---|
| 5 to 60 dB for SNR/<br>-100 to -35 dBm for Signal Strength | Specify the threshold criteria for identifying poor client signal. When the client signal quality falls below the configured threshold, the AP will begin to check the client's signal. If a client's SNR or signal strength falls below the set threshold consecutively for the specified number of attempts, the AP will disconnect the client. | 40 dB for SNR<br>-65 dBm for Signal Strength |

When finished, click **APPLY**.

## Link Fault Pass-through

The Link Fault Pass-through feature helps detect wired link faults on the device's local Ethernet interface, or in uplink paths to a wired remote host. If a link fault is detected, the AWK AP will automatically disable its AP or Master SSID service to prevent wireless clients from associating and connecting to an AP that cannot successfully link to the designated application or service on the wired LAN network.




***Local Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable Link Fault Pass-through for local Ethernet interfaces. | Disabled |

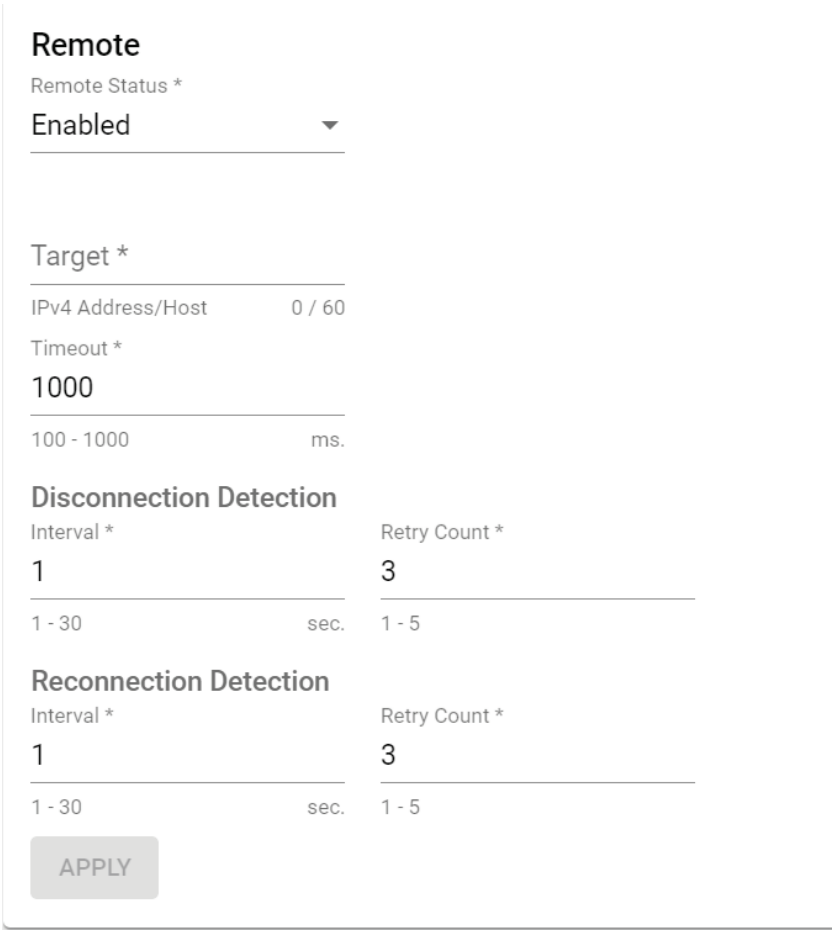
***LAN Port***

| Setting | Description | Factory Default |
|---|---|---|
| LAN port | Select the LAN interface to monitor. | LAN 1 |

***Remote Status***

Enabling Fault Link Pass-through for remote links will cause the AWK to ping the target remote host at the specified interval to determine the status of the wired connection to the host.

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable Link Fault Pass-through for links to remote hosts. | Disabled |




***Target***

| Setting | Description | Factory Default |
|---|---|---|
| IP address or hostname | Specify the IP address or hostname of the remote host to monitor. | None |

***Timeout***

| Setting | Description | Factory Default |
|---|---|---|
| 100 to 1000 ms | Specify the duration (in ms) the AWK will wait before considering the host unresponsive. | 1000 |

***Disconnection Detection***

The Disconnection Detection parameters determine the detection interval and retry count criteria for the AWK to deem the target remote host unreachable, triggering the shutdown of SSID service. The detection frequency may depend on the nature of the application and should be adjusted accordingly.

***Interval***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 30 sec | Specify the interval (in seconds) at which the AWK will ping the target host. | 1 |

***Retry Count***

| Setting | Description | Factory Default |
|---|---|---|
| 3 | Specify the number of times the AWK will retry to ping the host if no response is received. | 3 |

***Reconnection Detection***

The Reconnection Detection parameters determine the detection interval and retry count criteria for the AWK to check if the link to the remote has been restored. If the link is deemed restored, the AWK will re-activate the SSID services for wireless clients attempting to connect to the AP.

***Interval***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 30 sec | Specify the interval (in seconds) at which the AWK will ping the target host. | 1 |

***Retry Count***

| Setting | Description | Factory Default |
|---|---|---|
| 3 | Specify the number of times the AWK will retry to ping the host if no response is received. | 3 |

When finished, click **APPLY**.

**NOTE**

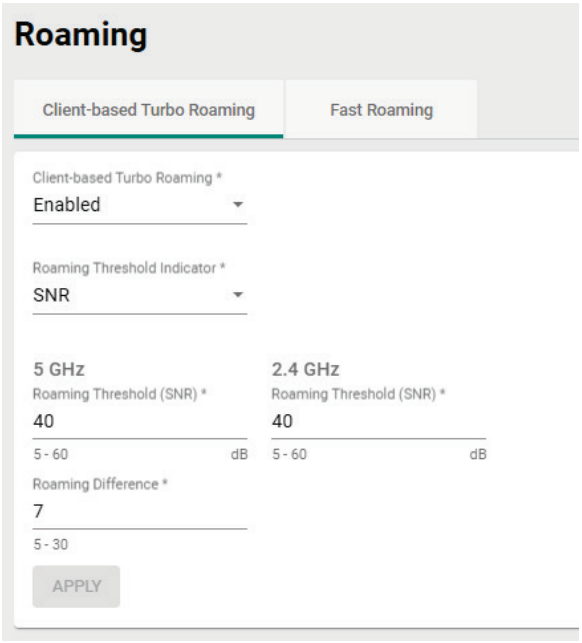
If this function is enabled in Mesh mode, it is only supported when the device is in the Portal role.

# Roaming

The **Roaming** page lets you enable or disable Client-based Turbo Roaming and Fast Roaming (802.11k/v) settings for the AP and Master modes. Click **Roaming** under **Wi-Fi** in the function tree to access this screen.

## Client-based Turbo Roaming (Client/Slave/Client-router Mode Only)

The **Client-based Turbo Roaming** section is to enable and configure Turbo Roaming parameters for client-based modes. Click the **Client-based Turbo Roaming** tab to access this screen.




Configure the following settings:

***Client-based Turbo Roaming***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the Client-based Turbo Roaming function. | Disabled |

***Indicator of Roaming Threshold***

| Setting | Description | Factory Default |
|---|---|---|
| SNR | Use SNR as the roaming threshold indicator. | SNR |
| Signal Strength | Use signal strength as the roaming threshold indicator. | |

***5 GHz: Roaming Threshold (for SNR)***

| Setting | Description | Factory Default |
|---|---|---|
| 5 to 60 (dB) | Specify the SNR roaming threshold. If the current connection quality is below this threshold, the client will start looking better signal AP to associate with. | 40 |

***2.4 GHz: Roaming Threshold (for SNR)***

| Setting | Description | Factory Default |
|---|---|---|
| 5 to 60 (dB) | Specify the SNR roaming threshold. If the current connection quality is below this threshold, the client will start looking better signal AP to associate with. | 40 |

***5 GHz: Roaming Threshold (for Signal Strength)***

| Setting | Description | Factory Default |
|---|---|---|
| -100 to -35 (dBm) | Specify the signal strength roaming threshold. If the current connection quality is below this threshold, the client will start looking better signal AP to associate with. | -65 |

***2.4 GHz: Roaming Threshold (for Signal Strength)***

| Setting | Description | Factory Default |
|---|---|---|
| -100 to -35 (dBm) | Specify the signal strength roaming threshold. If the current connection quality is below this threshold, the client will start looking better signal AP to associate with. | -65 |

***Roaming Difference***

| Setting | Description | Factory Default |
|---|---|---|
| 5 to 30 | Specify the roaming difference value. | 7 |

## NOTE

The Roaming Threshold determines when clients will start background scanning for other candidate APs with a stronger signal. Once the AWK starts background scanning, the client will compare the connection quality of the current and candidate AP. If the difference is larger than the specified Roaming Difference, the client will roam to the new AP.

## NOTE

While the AWK is scanning the background, it will allocate 1/3 of its RF resources to search for candidate APs based on the channel plan configured on the Wi-Fi > Wireless Settings page. The maximum background scanning time required is proportional to the number of channels checked in channel plan.

## NOTE

Once the background scan successfully identifies a candidate AP, the device will roam. The typical Turbo Roaming handover time of < 150 ms is an average of all documented test results, in optimized conditions, across APs configured with interference-free RF channels, and default Turbo Roaming parameters. The clients were configured with 3-channel roaming at 100 Kbps traffic load. Other conditions and factors may affect actual roaming performance.

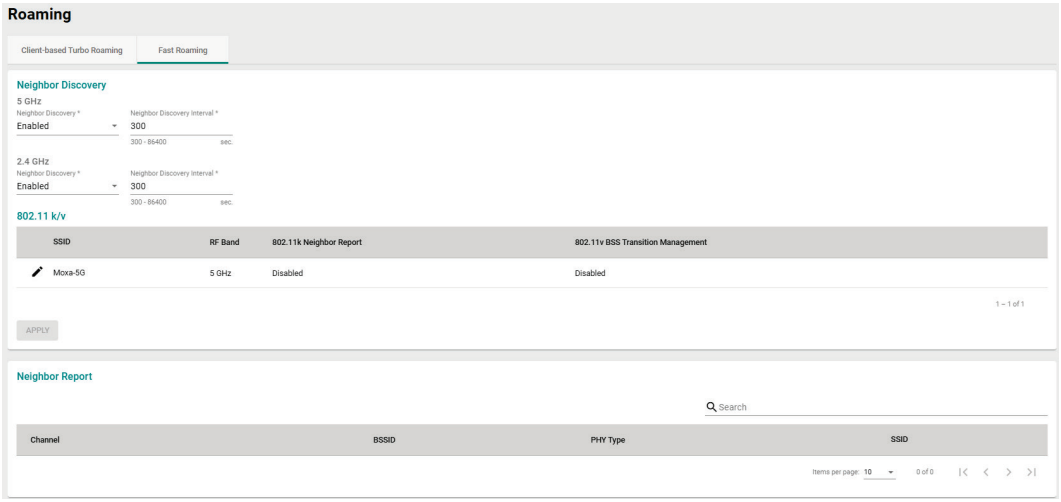
## NOTE

As key renewal is automatic for WPA3 encryption, using Turbo Roaming with WPA3 will result in a one-time increased handover time of approximately 200 ms during the roaming process when the key renewal takes place.

When finished, click **APPLY**.

# Fast Roaming (AP/Master Mode Only)

The **Fast Roaming** section is to enable and configure Fast Roaming (892.11k/v) parameters for access point-based modes. Click the **Fast Roaming** tab to access this screen.




## Neighbor Discovery

The Neighbor Discovery feature enables the AWK to perform periodic background scans on the 2.4 GHz and 5 GHz bands. This allows the AWK to detect neighbor APs and collect essential roaming-related information without interrupting normal wireless communication.

***Neighbor Discovery: 5 GHz/2.4 GHz***

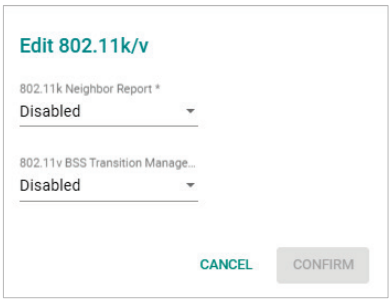
| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable Neighbor Discovery feature for the respective wireless band. | Disabled |

***Neighbor Discovery Interval: 5 GHz/2.4 GHz***

| Setting | Description | Factory Default |
|---|---|---|
| 300 to 86400 | Specify the Neighbor Discovery interval (in seconds). | 43200 |

## 802.11 k/v

Click the **Edit** icon of the SSID you want to configure 802.11k Neighbor Report and 802.11v BSS Transition Management feature for.




***802.11k Neighbor Report***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the 802.11 k Neighbor Report feature. If enabled, clients can request the AP to scan neighboring APs to determine the most optimal AP to roam to. | Disabled |

***802.11v BSS Transition Management***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the 802.11v BSS Transition Management feature. If enabled, the AP will monitor the network and signal status and request clients to roam if a more suitable AP is identified. | Disabled |

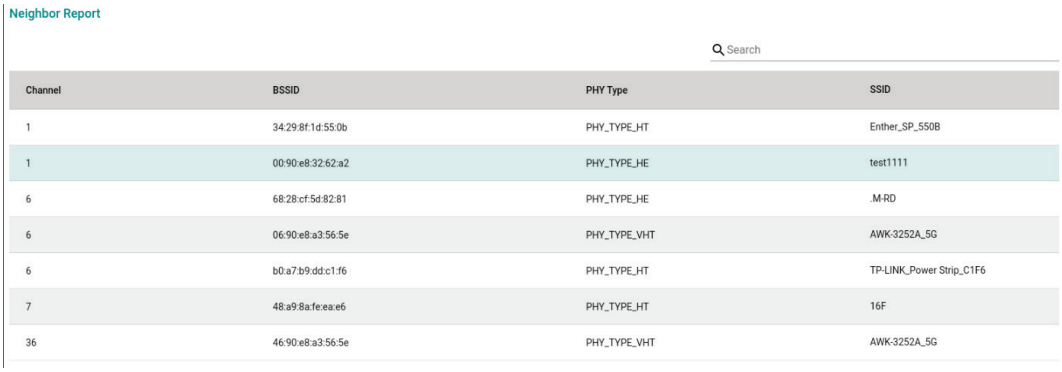
## NOTE

The 802.11 k Neighbor Report and 802.11 v BSS Transition Management features can only be enabled if Neighbor Discovery is enabled.

When finished, click **Apply**.

### Neighbor Report

The Neighbor Report table shows the result of the most-recent neighbor report.




| Metric | Description |
|---|---|
| Channel | Indicates the neighbor's operating channel. |
| BSSID | Indicates the BSSID of the neighbor. |
| PHY Type | Indicates the supported PHY type of the neighbor. |
| SSID | Indicates the SSID of the neighbor BSS. |

# Wi-Fi Security

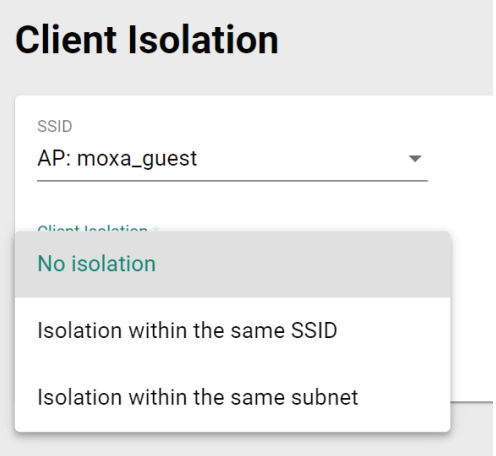
The **Wi-Fi Security** page lets you configure the Client Isolation and Wi-Fi Access Control List functions to manage access to the AWK device. Click **Wi-Fi Security** under **Wi-Fi** in the function tree to access this screen.

## Client Isolation (AP Mode Only)

The AWK Series supports client isolation functionality for AP-based operation modes to provide an additional layer of security for connected client devices.

For configured virtual access points, select the SSID you wish to enable client isolation for. Client isolation can be either enforced based on SSID where clients connecting to the same SSID on the AP are isolated from each other; or enforced by subnet where clients connecting to the same subnet as the configured SSID will be isolated from each other.

By default, client isolation is not enforced.



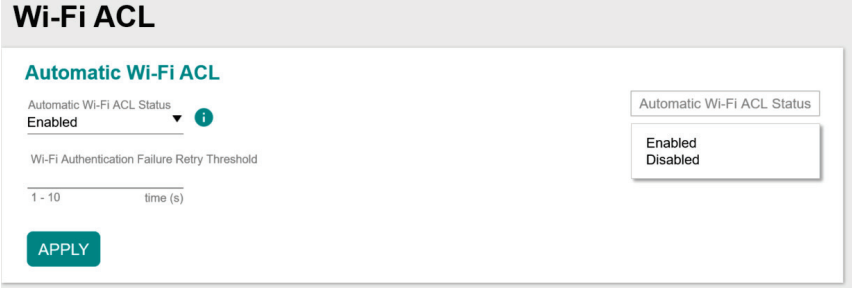

## Wi-Fi ACL

The AWK Series supports Wi-Fi ACL filtering for both AP and client-based operation modes. Depending on the active operation mode, Wi-Fi ACL has two purposes. For AP-based operation modes, it blocks rogue client devices attempting to exhaust the Wi-Fi interface's resources. For client-based operation modes, it designates the list of authorized APs for the client to connect to.

There are two types of Wi-Fi ACL, Static or Automatic Wi-Fi ACL. Which type to use depends on the type of unwanted device to filter out through the Wi-Fi interface.

### Automatic Wi-Fi ACL (AP/Master Mode Only)

Automatic Wi-Fi ACL will attempt to authenticate incoming device connections based on a specified number of tries. If the device fails all attempts, the AWK will automatically add this device to the list and block all future authentication requests from that device.




***Automatic Wi-Fi ACL Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable Automatic Wi-Fi ACL. | Disabled |

***Wi-Fi Authentication Failure Retry Threshold***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 10 | Specify the number of client authentication attempts. If the client consecutively fails the specified number of authentication checks, it will consider the client (client or AP) as a rogue device. Automatic Wi-Fi ACL will add the rogue device to the ACL and will block subsequent authentication attempts by this device in the future. | Empty |

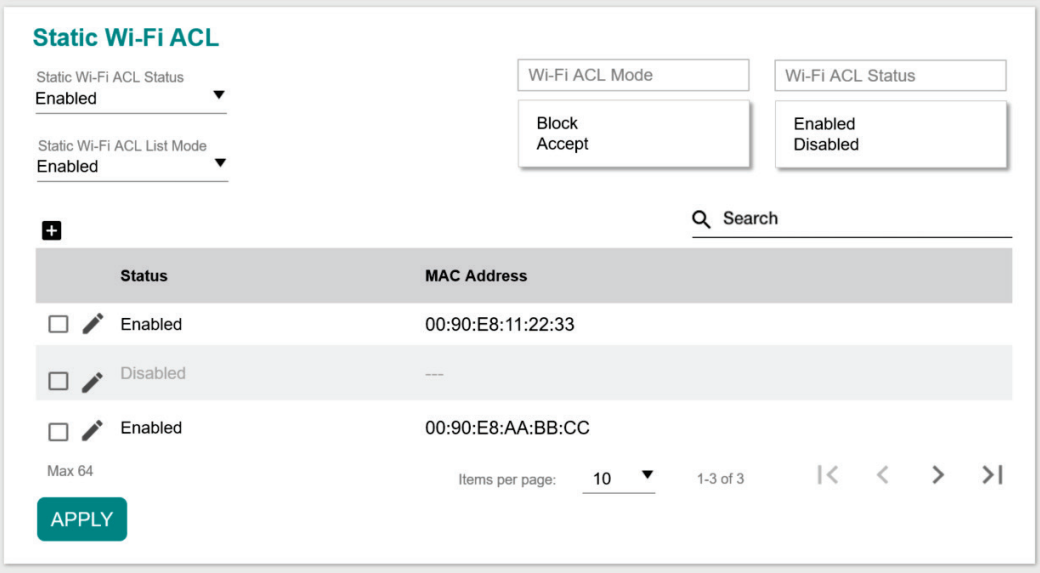
**NOTE**

Only management accounts with "Network" authority can manually remove or unlock devices blocked via Automatic Wi-Fi ACL.

When finished, click **APPLY**.

### Static Wi-Fi ACL

Static Wi-Fi ACL allows users to manually add devices to the list by MAC address and set the access policy for all entries, either to allow or reject connections from the devices in the list.




***Static Wi-Fi ACL Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable Static Wi-Fi ACL. | Disabled |

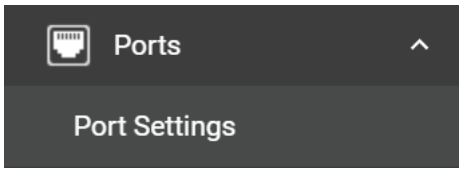
***Static Wi-Fi ACL List Mode***

| Setting | Description | Factory Default |
|---|---|---|
| Block/Accept | Choose to either block or accept connections from the MAC addresses in the Static Wi-Fi ACL table. | Empty |

When finished, click **APPLY**.

# Ports

From the **Ports** section, you can configure **Port Settings**.



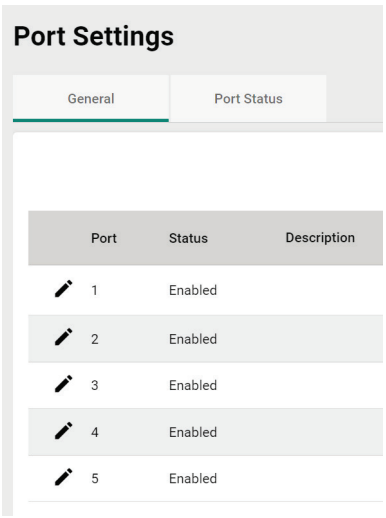

# Port Settings

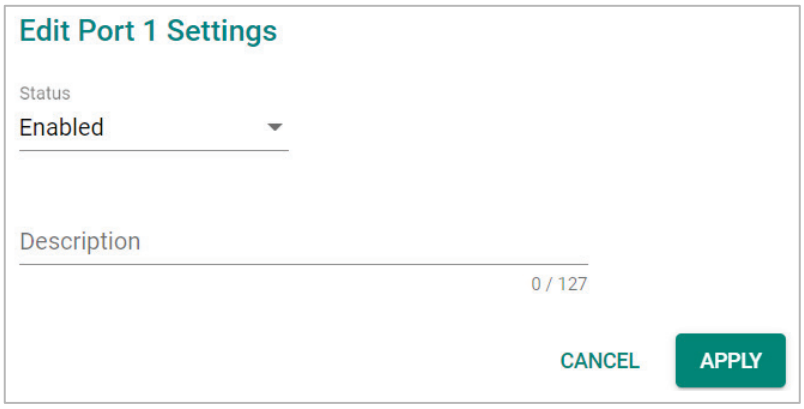
The **Ports Settings** page is used to configure the physical LAN network ports on the device. Click **Port Settings** under **Ports** in the function tree to access this screen.

## General Settings

Click **General** tab to access this page.

Click the **Edit** icon of a port to configure port settings.




Configure the following settings:

***Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the port. | Enabled |

## ATTENTION

The AWK-1161C and AWK-1161A Series only has one LAN port (LAN1). If this port is disabled, the device will become inaccessible. The port can only be re-enabled via the console port or by resetting the device to factory default settings using the reset button.

***Description***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 127 characters | Enter a description for the port. | None |

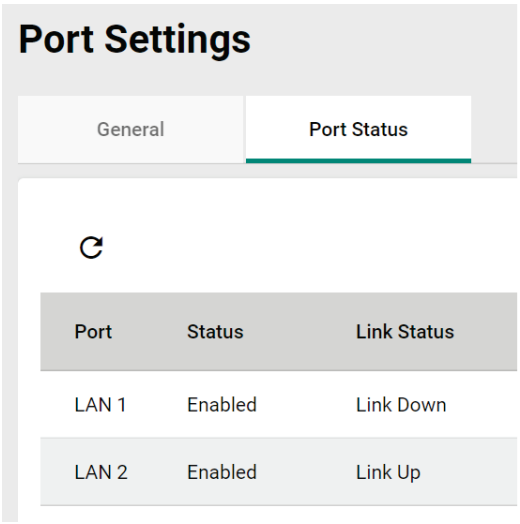
When finished, click **APPLY**.

## ATTENTION

When more than one LAN ports is enabled, only one LAN port should be used as an uplink. The other LAN ports may be used to connect other Ethernet based devices such as IP cameras. Be careful NOT to connect more than one LAN port as uplinks to a switch simultaneously to prevent switching loops.

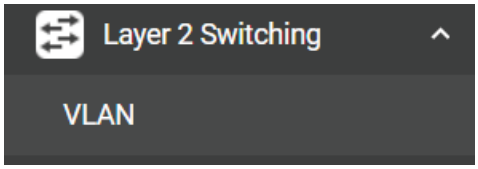
## Status Check

Click the **Port Status** tab to check the current port and port link status.




# Layer 2 Switching

This section describes how to configure the VLAN settings for the AWK.




## VLAN

### The Virtual LAN (VLAN) Concept

#### What is a VLAN?

A virtual LAN, commonly known as a VLAN, is a group of hosts with a common set of requirements that communicate as if they were connected to the same broadcast domain, regardless of their physical location. A VLAN has the same attributes as a physical LAN, but it allows for end stations to be grouped together even if they are not located on the same network switch. Network reconfiguration can be done through software instead of physically relocating devices.

VLANs now extend as far as the reach of the access point signal. Clients can be segmented into wireless sub-networks via SSID and VLAN assignment. A Client can access the network by connecting to an AP configured to support its assigned SSID/VLAN.

#### Benefits of VLANs

VLANs are used to conveniently, efficiently, and easily manage your network in the following ways:

- Manage additions, relocations, and changes from a single point of contact
- Define and monitor groups
- Reduce broadcast and multicast traffic to unnecessary destinations
- Improve network performance and reduce latency
- Increase security
- Secure network restricts members to resources on their own VLAN
- Clients roam without compromising security

#### VLAN Workgroups and Traffic Management

The AP assigns clients to a VLAN based on a Network Name (SSID). The AP can support up to 9 SSIDs per radio interface, with a unique VLAN configurable per SSID.

The AP matches packets transmitted or received to a network name with the associated VLAN. Traffic received by a VLAN is only sent on the wireless interface associated with that same VLAN. This eliminates unnecessary traffic on the wireless LAN, conserving bandwidth and maximizing throughput.

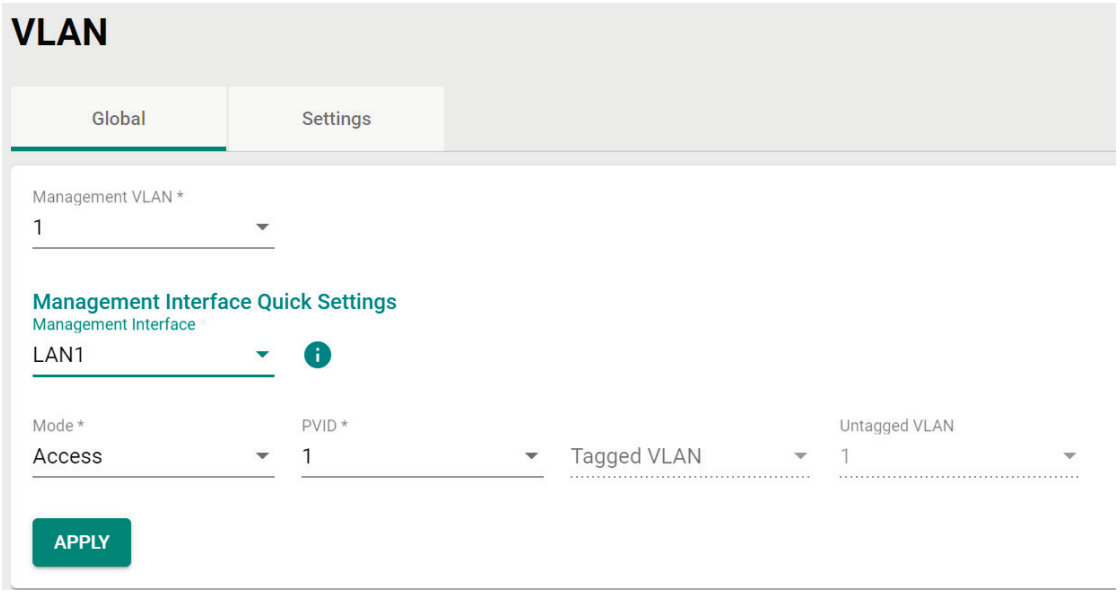
In addition to enhancing wireless traffic management, the VLAN-capable AP supports easy assignment of wireless users to workgroups. In a typical scenario, each user VLAN represents a department workgroup; for example, one VLAN could be used for a marketing department and the other for a human resource department.

In this scenario, the AP would assign every packet it accepted to a VLAN. Each packet would then be identified as marketing or human resource, depending on which wireless client received it. The AP would insert VLAN headers or "tags" with identifiers into the packets transmitted on the wired backbone to a network switch.

Finally, the switch would be configured to route packets from the marketing department to the appropriate corporate resources such as printers and servers. Packets from the human resource department could be restricted to a gateway that allowed access to only the Internet. A member of the human resource department could send and receive e-mail and access the Internet but would be prevented from accessing servers or hosts on the local corporate network.

## Global Settings

The **Global Settings** paged is used to configure the management VLAN and interface. Click the **Global** tab to access this screen.




Configure the following settings:

***Management VLAN ID***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 4094 | Specify the management VLAN of this AWK.<br>By default, there is only VLAN ID 1. Additional VLAN IDs will need to be created first before they can be selected. | 1 |

### Management Interface Quick Settings

***Management Interface***

| Setting | Description | Factory Default |
|---|---|---|
| Interface | Select the management VLAN interface. | None |

***Mode***

| Setting | Description | Factory Default |
|---|---|---|
| Access | Access mode is used if the port is connected to a single device, without tags. | Access |
| Hybrid | Hybrid mode is used if the port is connected to another Access 802.1Q VLAN-aware switch or another LAN that combines tagged and untagged devices. | |

***PVID***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 4094 | Set the default VLAN ID for untagged devices connected to the port. | 1 |

***Tagged VLAN***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 4094 | If the port type is set to Trunk or Hybrid, specify the VLAN ID for tagged devices that connect to this port. | None |

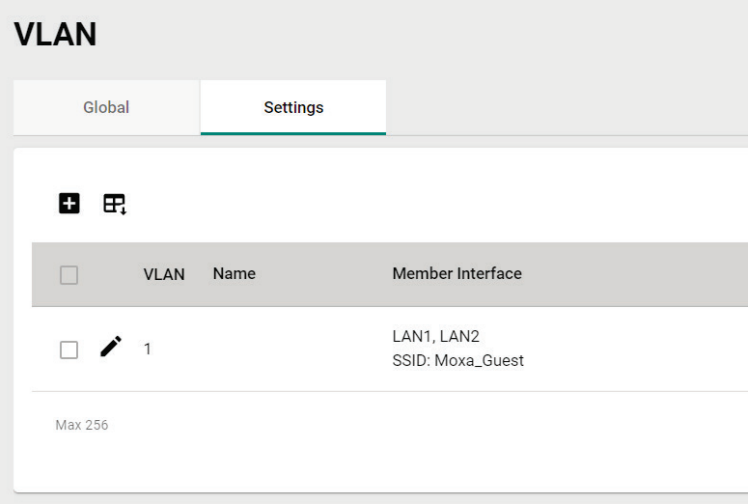
***Untagged VLAN***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 4094 | If the port type is set to Hybrid, specify the VLAN ID for tagged devices that connect to this port and the tags that need to be removed in egress packets. | Dependent on the selected PVID |

When finished, click **APPLY**.

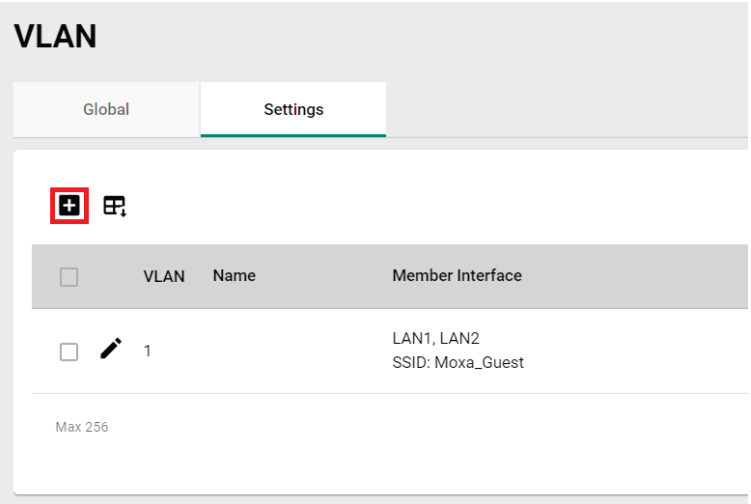
## VLAN Settings

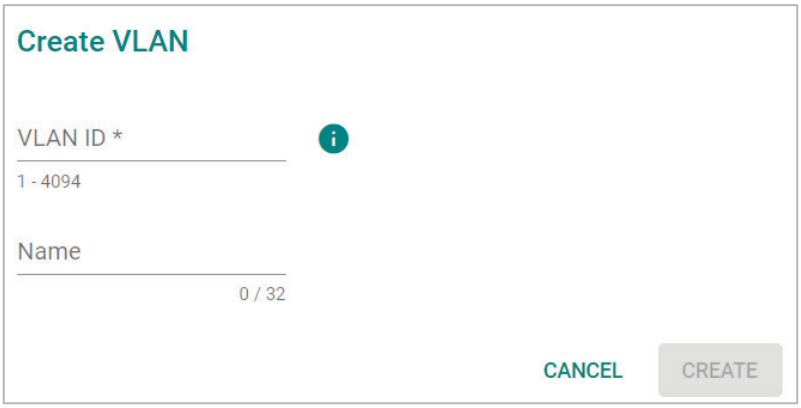
From the **Settings** tab, you can create, edit, and delete VLANs. Click the **Settings** tab to access this screen.




### Create a New VLAN ID

To add a new VLAN ID, click the **Add** icon.



Configure the following settings:

***VLAN ID***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 4094 | Enter the VLAN ID. | None |

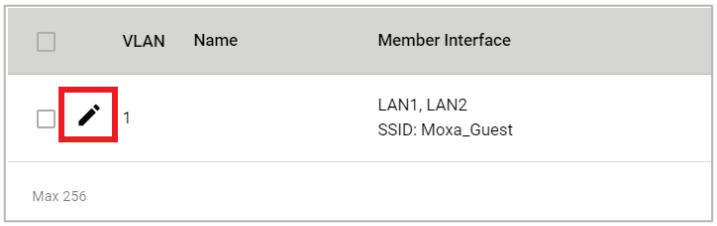
***Name***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 32 characters | Enter a name for the VLAN. | None |

When finished, click **CREATE**.

## Edit an Existing VLAN ID

To edit an existing VLAN ID, click the **Edit** icon next to the VLAN you want to edit.




Configure the following settings:

### NOTE

Once created, the VLAN ID cannot be changed. Only the VLAN name can be edited.

To modify a VLAN ID and VLAN name combination, delete the entry and create a new entry with the desired VLAN ID and name.

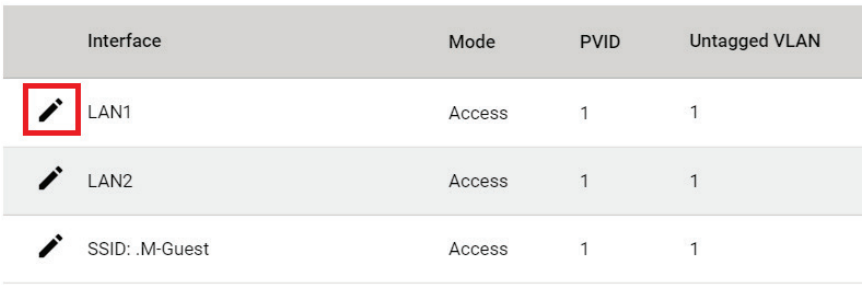
***Name***

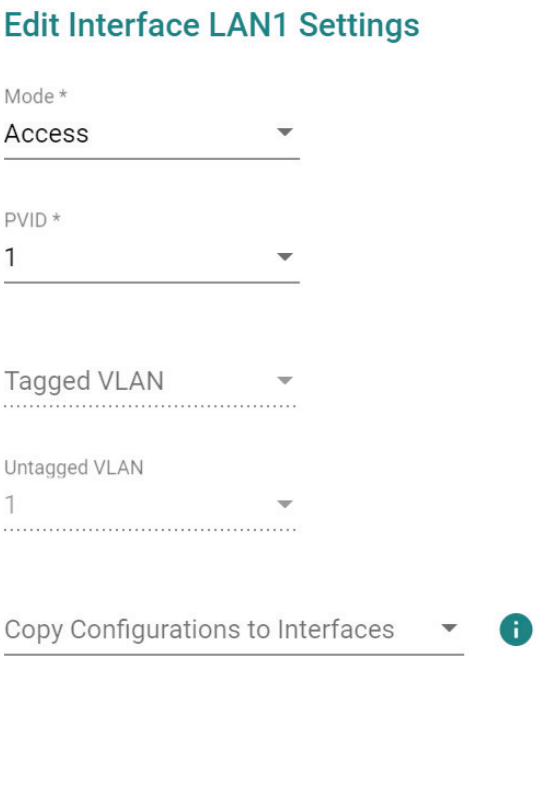
| Setting | Description | Factory Default |
|---|---|---|
| 0 to 32 characters | Enter a name for the VLAN ID. | None |

When finished, click **APPLY**.

## Edit VLAN Interface Settings

To edit the VLAN interface settings, click the **Edit** icon next to the interface you want to edit.






Configure the following settings.

***Mode***

| Setting | Description | Factory Default |
|---|---|---|
| Access | Access mode is used if the port is connected to a single device, without tags. | Access |
| Hybrid | Hybrid mode is used if the port is connected to another Access 802.1Q VLAN-aware switch or another LAN that combines tagged and untagged devices. | |

***PVID***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 4094 | Set the default VLAN ID for untagged devices connected to the port. | 1 |

***Tagged VLAN***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 4094 | If the port type is set to Hybrid, specify the VLAN ID for tagged devices that connect to this port. | None |

***Untagged VLAN***

| Setting | Description | Factory Default |
|---|---|---|
| VID range from 1 to 4094 | If the port type is set to Hybrid, specify the VLAN ID for tagged devices that connect to this port and the tags that need to be removed in egress packets. | 1 |

***Copy Configurations to Interfaces***

| Setting | Description | Factory Default |
|---|---|---|
| Interface | Select the interface to copy the configuration of this interface to. | None |

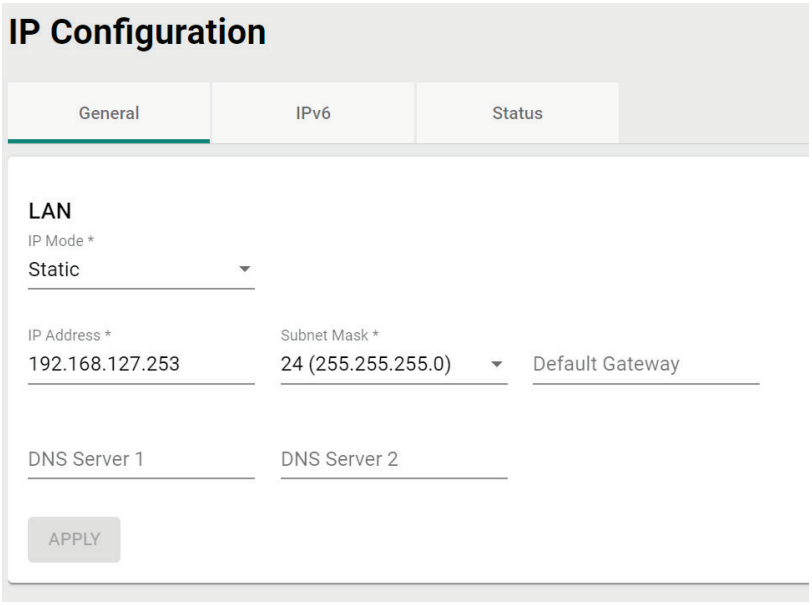
When finished, click **APPLY**.

# IP Configuration

The **IP Configuration** section is used to configure the device's basic IP configuration. Click **IP Configuration** in the function tree.

## General Settings

The **General** tab lets you configure the device's basic network information. Click the **General** tab to access this screen.




Configure the following settings.

***IP Mode***

| Setting | Description | Factory Default |
|---|---|---|
| DHCP | The AWK is assigned an IP address automatically by the network's DHCP server. | Static |
| Static | Manually configure up the AWK's IP address. | |

***IP Address***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Enter the AWK's IP address. | 192.168.127.253 |

***Subnet mask***

| Setting | Description | Factory Default |
|---|---|---|
| Subnet mask | Select the subnet mask. This is used to identify the type of network the AWK is connected to (e.g., 255.255.0.0 for a Class B network, or 255.255.255.0 for a Class C network). | 24 (255.255.255.0) |

***Default Gateway***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Enter the IP address of the router that connects the LAN to an outside network. | None |

***DNS Server 1 and DNS Server 2***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Enter the primary and secondary DNS server address. After entering the DNS server's IP address, you can input the AWK's URL (e.g., http://ap11.abc.com) in your browser's address field instead of entering the IP address. The Secondary DNS server will be used if the Primary DNS server fails to connect. | None |

When finished, click **APPLY**.

# IPv6

In addition to other benefits, IPv6 offers a significantly larger addressing pool compared to IPv4. IPv6 addresses are represented as eight groups of four hexadecimal digits each, separated by colons. The full representation may be shortened; for example, 2001:0db8:0000:0000:0000:8a2e:0370:7334 becomes 2001:db8::8a2e:370:7334.

The AWK Wi-Fi 6 Series (AWK-1160A/C, AWK-3262A, AWK-4262A) support an IPv4 and IPv6 dual stack design, allowing the device to configure both an IPv4 and IPv6 address. This feature also allows the AWK to communicate with other nodes on the LAN or the Internet using either IPv4 or IPv6. The DNS protocol is used by both IP protocols to resolve fully qualified domain names and IP addresses, but dual stack requires that the resolving DNS server can resolve both types of addresses.

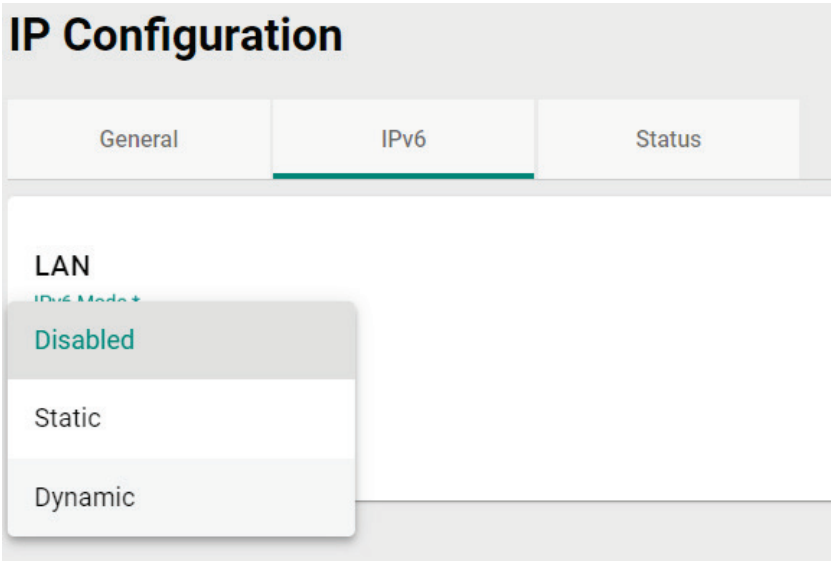
The IPv6 configuration options vary depending on the model and operation mode configured on the AWK Wi-Fi 6 Series device.

- **LAN**: All operation modes except Client-router mode.
- **WAN**: Client-router mode only.

Refer to the following sections for more information on the available modes for each option.

## IPv6 LAN Options

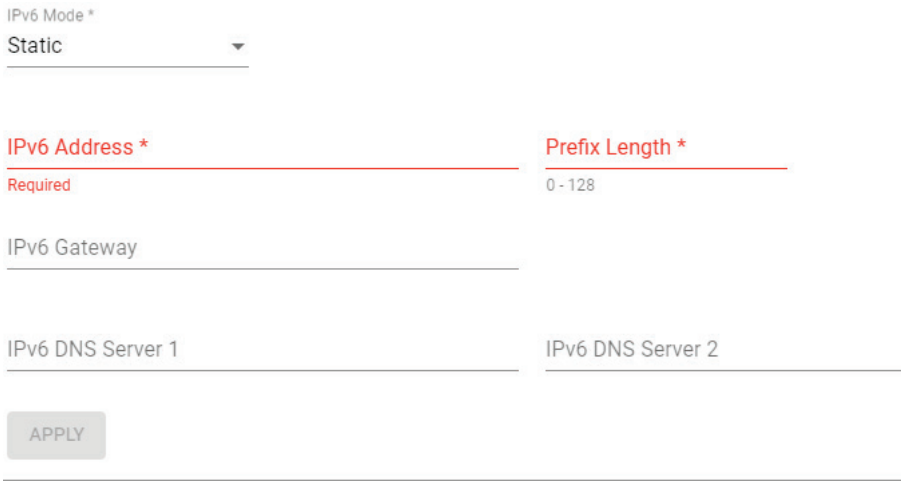
In all operation modes except Client-router mode, the AWK acts as a bridge device that receives and transmits data within the same network segment.




***IPv6 Mode***

| Setting | Description | Factory Default |
|---|---|---|
| Disabled | Disable IPv6 functionality. | Disabled |
| Static | Manually configure the device's IPv6 address information. requires manual configuration. | |
| Dynamic | Automatically acquire the IPv6 address and DNS server information from an upstream IPv6 DHCP server on the network. | |

If **IPv6 Mode** is set to **Static**, configure the following options:




***IPv6 Address***

| Setting | Description | Factory Default |
|---|---|---|
| IPv6 address | Specify the IPv6 in the format of the eight groups of four hexadecimal digits, For example: 2001:b011:20e0:cb8:211:32ff:fe88:1d16 | None |

***Prefix Length***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 128 characters | Specify the IPv6 Prefix Length, between 0 to 128 characters. This is equivalent to the IPv4 subnet mask. | None |

***IPv6 Gateway***

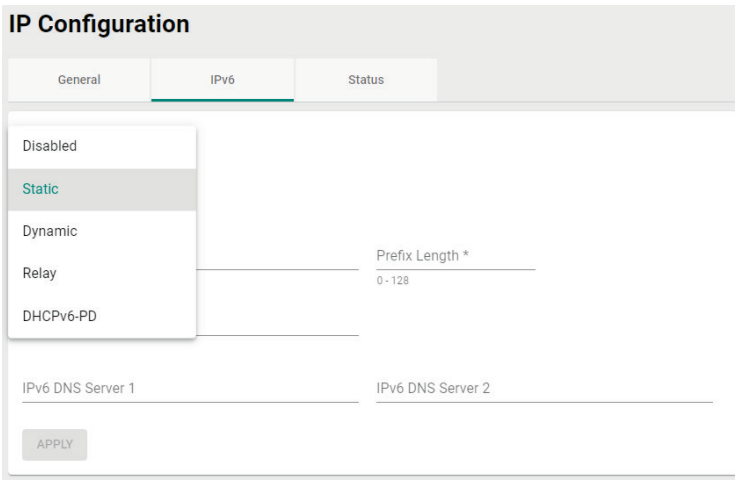
| Setting | Description | Factory Default |
|---|---|---|
| IPv6 gateway address | Specify the IPv6 gateway address, if applicable. | None |

***IPv6 DNS Server 1/2***

| Setting | Description | Factory Default |
|---|---|---|
| DNS server address | Specify the address of the primary and secondary IPv6 DNS server. | None |

## IPv6 WAN Options

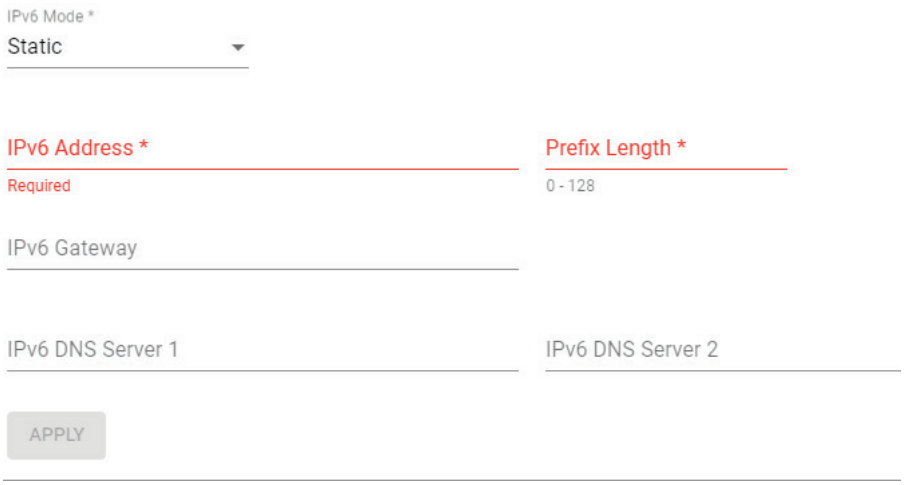
When operating in Client-router mode, the AWK acts as a router interfacing between two different network segments. Note that, except for Static, all WAN options require the admin to first configure the LAN IPv6 address in the Client operation mode and then switch back to Client-router mode in order to apply settings for the Dynamic, Relay, and DHCPv6-PD options.



***IPv6 Mode***

| Setting | Description | Factory Default |
|---|---|---|
| Disabled | Disable IPv6 functionality. | Disabled |
| Static | Manually configure the device's IPv6 address information. requires manual configuration. | |
| Dynamic | Automatically acquire the IPv6 address and DNS server information from an upstream IPv6 DHCP server on the network. | |
| Relay | Configure the AWK as an IPv6 client and relay agent that can relay DHCPv6 requests from LAN-connected IPv6 clients to an upstream DHCPv6 Server. In this mode, the AWK automatically acquires its IPv6 address and DNS server information from an upstream IPv6 DHCP server on the network. | |
| DHCPv6-PD | Configure the AWK as an IPv6 client and prefix delegator that can automatically delegate IPv6 prefixes and assign IP addresses to connected devices based on the DHCPv6 Server configuration. In this mode, the AWK automatically acquires its IPv6 address and DNS server information from an upstream IPv6 DHCP server on the network. | |

If **IPv6 Mode** is set to **Static**, configure the following options:




***IPv6 Address***

| Setting | Description | Factory Default |
|---|---|---|
| IPv6 address | Specify the IPv6 in the format of the eight groups of four hexadecimal digits, For example: 2001:b011:20e0:cb8:211:32ff:fe88:1d16 | None |

***Prefix Length***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 128 characters | Specify the IPv6 Prefix Length, between 0 to 128 characters. This is equivalent to the IPv4 subnet mask. | None |

***IPv6 Gateway***

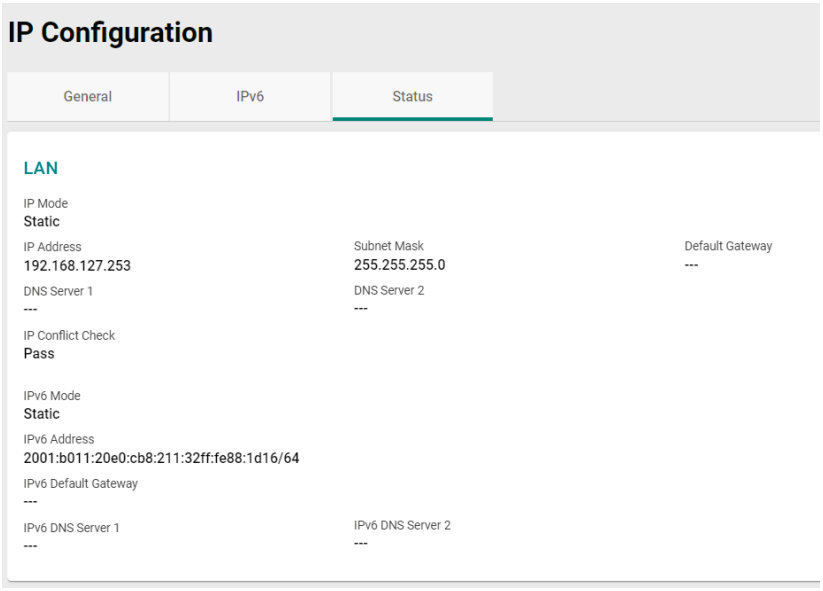
| Setting | Description | Factory Default |
|---|---|---|
| IPv6 gateway address | Specify the IPv6 gateway address, if applicable. | None |

***IPv6 DNS Server 1/2***

| Setting | Description | Factory Default |
|---|---|---|
| DNS server address | Specify the address of the primary and secondary IPv6 DNS server. | None |

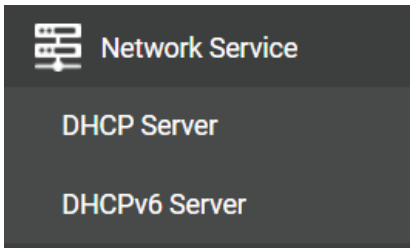
## IP Configuration Status

To view the status of the current IP configuration, click the **Status** tab.




# Network Service

From the **Network Service** section, you can configure **DHCP Server** and **DHCPv6 Server** settings.




## DHCP Server

The **DHCP Server** section is used for configuring a local DHCP server for IP provisioning to connected devices. DHCP Server is only available for AP/Master/Client-router operation modes. If the device is in Client-router mode, the DHCP service applies to LAN interfaces for wired connected devices.

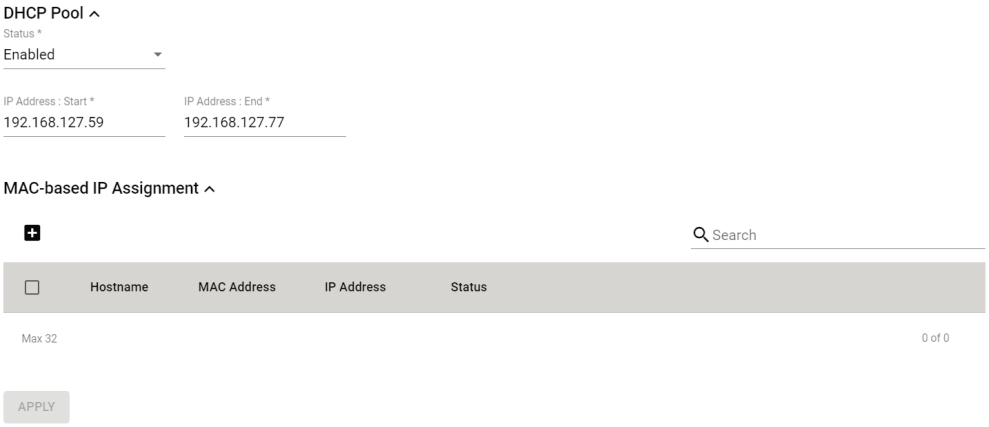
IP addresses can be assigned in one of two ways:

- Dynamic: The DHCP server automatically assigns IP addresses to devices from a configured IP address range.
- Static: Users manually map an IP address to a specific MAC address.

If necessary, users can use a mixed provisioning model with both dynamic DHCP pool and MAC-based IP assignment. In a mixed DHCP mode environment, the system will first check if the device is listed in the MAC-based IP assignment table. If no matching entry is found, the system will assign an IP address from the configured DHCP IP pool.

### NOTE

Due to a functional limitation, if the device's own IP is acquired through DHCP, the DHCP Server feature cannot be enabled on the device.

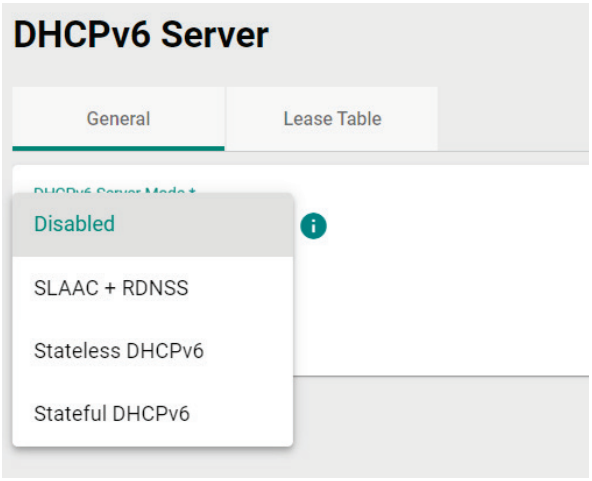



# DHCPv6 Server

## General

The DHCPv6 Server feature allows the device to assign IPv6 address to connected devices.

If the AWK's IPv6 settings were manually configured or obtained via DHCPv6-PD, the AWK can provision IPv6 addresses to connected devices downstream of the AWK's LAN ports in one of three supported modes.




***DHCPv6 Server Mode***

| Setting | Description | Factory Default |
|---|---|---|
| Disabled | Disable the DHCPv6 server function. | Disabled |
| SLAAC + RDNSS | Connected devices or IPv6 clients issue a Router Solicitation (RS) and interpret the IPv6 Prefix, Default Gateway, DNS address from the Router Advertisement (RA) to compose their IPv6 address parameters by combining the prefix with a self-generated host ID. | |
| Stateless DHCPv6 | Connected devices or IPv6 clients issue Router a Solicitation (RS) and interpret the IPv6 Prefix, Default Gateway from the Router Advertisement (RA) to compose their IPv6 address parameters by combining the prefix with a self-generated host ID. Subsequently it issues a DHCP Solicit and interprets the DHCPv6 Advertise to extract the DNS address. | |

| | | |
|---|---|---|
| Stateful DHCPv6 | Connected devices or IPv6 clients issue a Router Solicitation (RS) and interpret the Default Gateway address from the Router Advertisement (RA). Subsequently, it issues a DHCP Solicit / Request and interprets the DHCPv6 Advertise / Reply respectively to extract the DNS address and issued IPv6 address. The benefit of the Stateful DHCPv6 option is the state of all issued IPv6 address can be monitored and managed in the DHCPv6 Server. | |

***Lease Time***

| Setting | Description | Factory Default |
|---|---|---|
| 2 to 14400 | Specify the valid duration (in minutes) of issued IPv6 addresses. | 1440 |

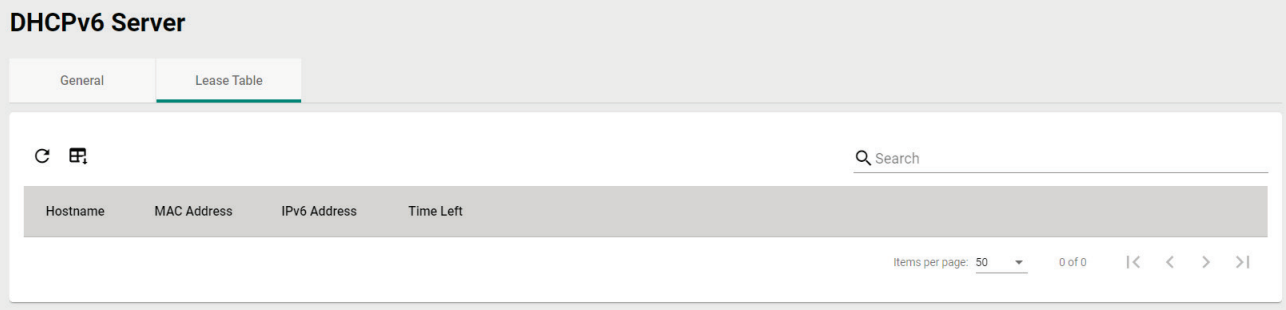
***DNS Server 1/2***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Specify the IP address of the first and second DNS server. | None |

If **Stateful DHCPv6** is selected, configure the IPv6-to-MAC mapping. Click the **Add** icon to add a new entry.


## Lease Table

The **Lease Table** page shows the IPv6 addresses assigned by the DHCPv6 Server.

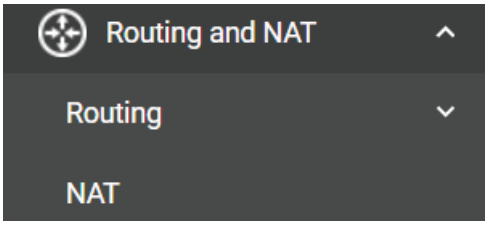



Click the **Refresh** icon to refresh the table.

Click the **Export** button to export the table.

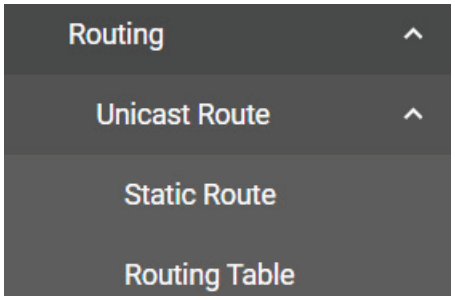
# Routing and NAT

From the **Routing and NAT** section you can configure **Routing** and **NAT** settings.



# Routing

The **Routing** section is used for managing static routes and checking the routing table.



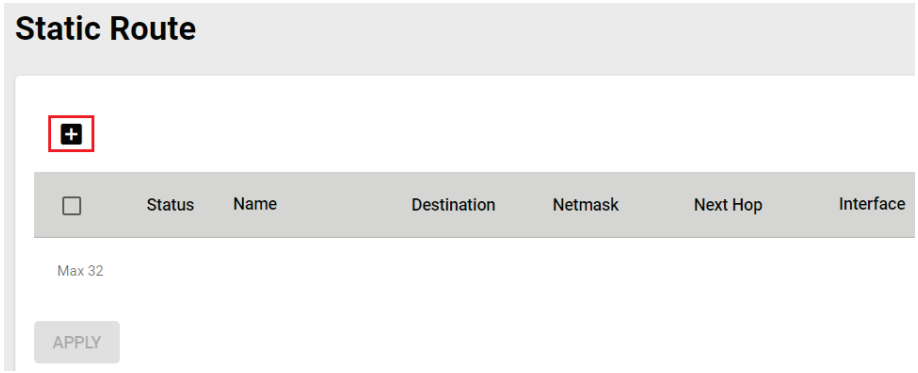

## Unicast Route

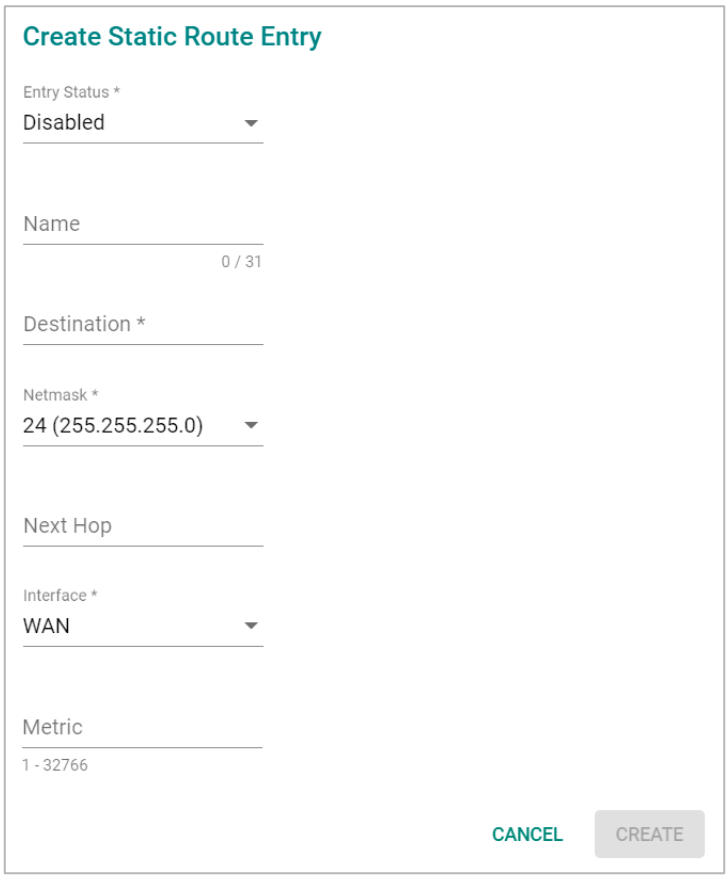
### Static Route Settings

You can create, edit, and delete static route entries from the **Static Route** page. Click **Static Route** under **Routing > Unicast Route** in the function tree.

#### Create a New Static Route

Click the **Add** icon to create a new entry.






Configure the following settings:

***Entry Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the static route entry. | Disabled |

***Name***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 31 characters | Enter a name for the static route entry. | None |

***Destination***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Specify the destination IP address. | None |

***Netmask***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Specify the subnet mask for this IP address. | 24 (255.255.255.0) |

***Next Hop***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Specify the next gateway IP address. This IP address should be in the same subnet as the specified interface. | None |

***Interface***

| Setting | Description | Factory Default |
|---|---|---|
| Interface | Select the network interface for this route. | WAN |

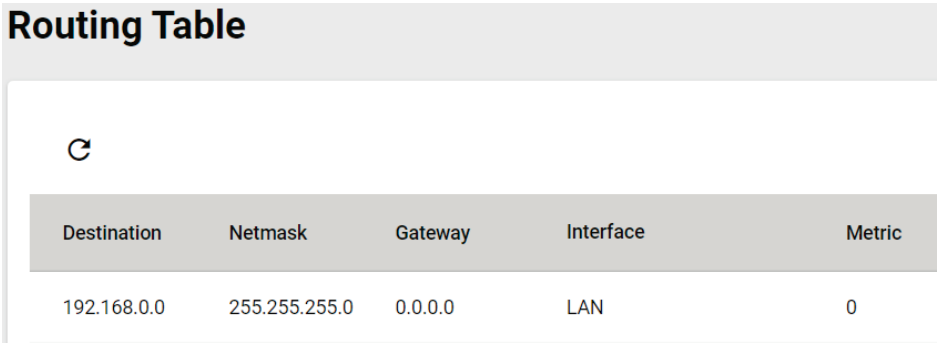
***Metric***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 32766 | Specify the cost metric this route. Routes with a lower metric value take priority over routes with a higher cost. | None |

When finished, click **CREATE**.

## Routing Table

To view the current routing table, click **Routing Table** under **Routing > Unicast Route** in the function tree.

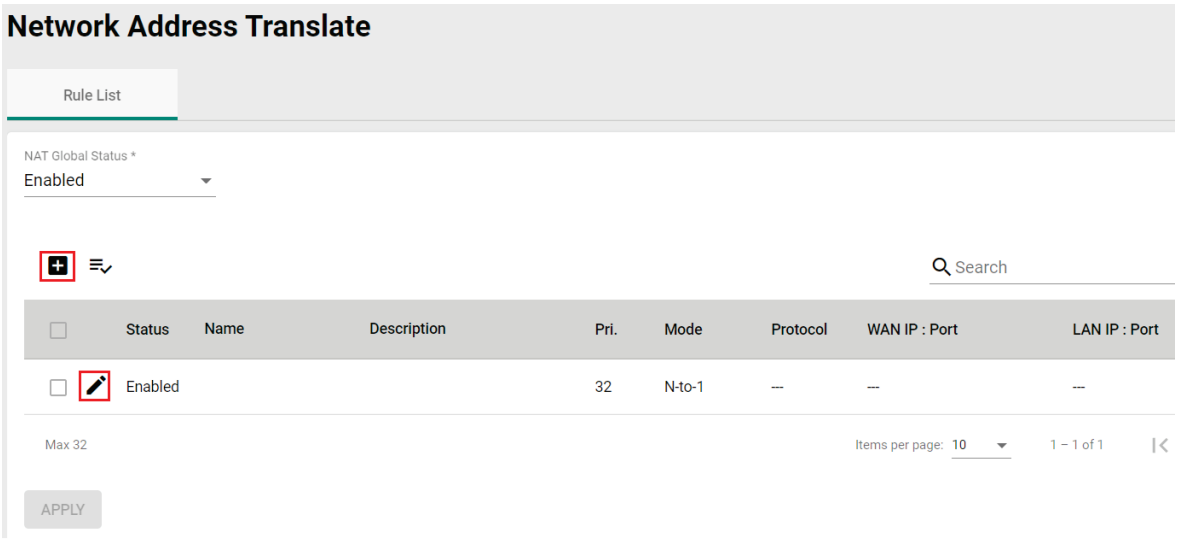


# NAT (Client-router Mode Only)

The AWK Series supports Network Address Translation (NAT) and Port Forwarding in Client-router operation mode. This feature translates the outgoing communication from private IPs to external IPs (WAN IP).

## Network Address Translate

The **NAT** page lets you enable NAT functionality and manage NAT rules. Click **NAT** in the function tree.



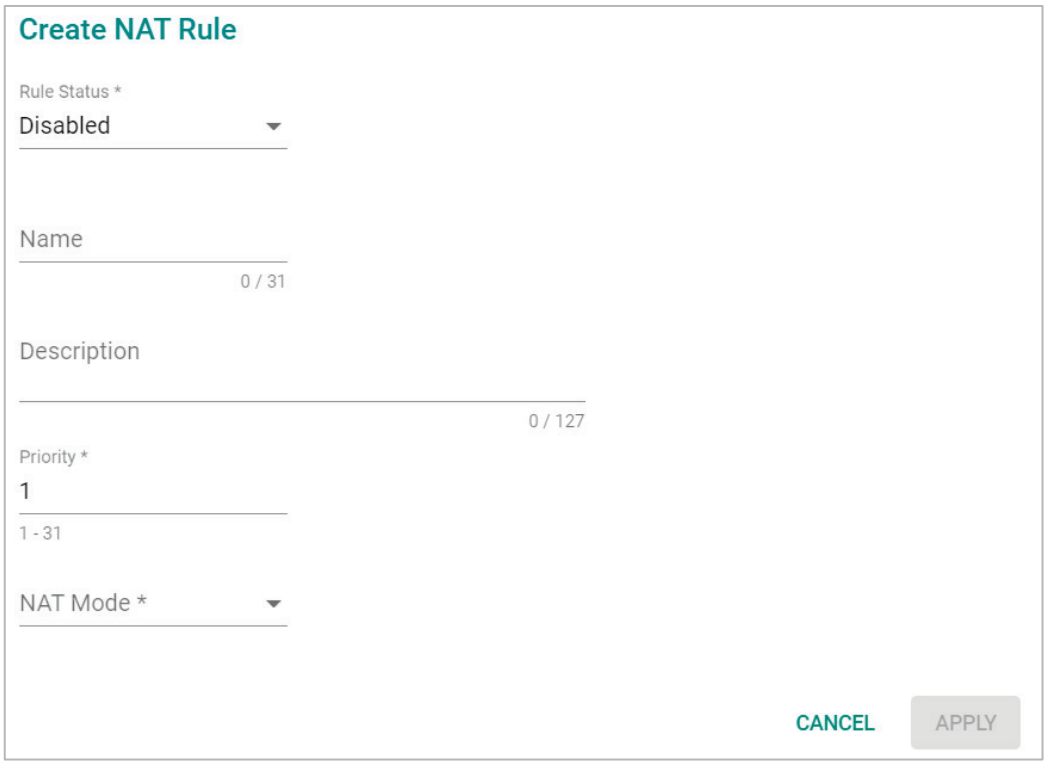

Configure the following setting:

***NAT Global Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the NAT function. | Enabled |

## Add a New NAT Rule

To add a new NAT rule, click the **Add** icon.




Configure the following settings:

***Rule Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the NAT rule. | Disabled |

***Name***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 31 characters | Enter a name for this rule. | None |

***Description***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 127 characters | Enter a description for this rule. | None |

***Priority***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 31 | Specify the priority for this rule. | 1 |

***NAT Mode***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 1 | Set the NAT mode to 1-to-1. | None |
| PAT | Set the NAT mode to PAT (Port Address Translation). | |

***Mapping Type (1 to 1 Mode only)***

| Setting | Description | Factory Default |
|---|---|---|
| Single to Single | Set the mapping type to Single to Single. | Single to Single |
| Range to Range | Set the mapping type to Range to Range. | |
| Subnet to Subnet | Set the mapping type to Subnet to Subnet. | |

***Mapping Type (PAT Mode only)***

| Setting | Description | Factory Default |
|---|---|---|
| Single Port | Set the mapping type to Single Port. | Single Port |
| Multiple Ports | Set the mapping type to Multiple Ports. | |

***Protocol (PAT Mode only)***

| Setting | Description | Factory Default |
|---|---|---|
| TCP/UDP | Specify the protocol. | TCP, UDP |

***WAN***

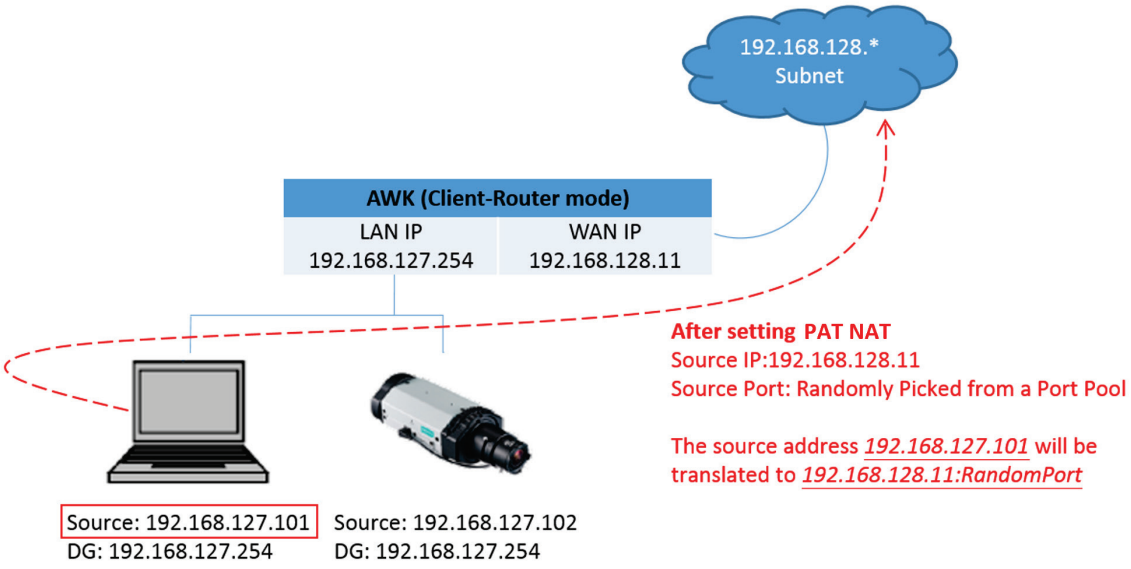
| Setting | Description | Factory Default |
|---|---|---|
| IP address | For 1-to-1 mode only. Specify the IP address for the WAN. | None |
| 0 to 65535 | For PAT mode only. Specify the TCP or UDP port number for the WAN. | None |

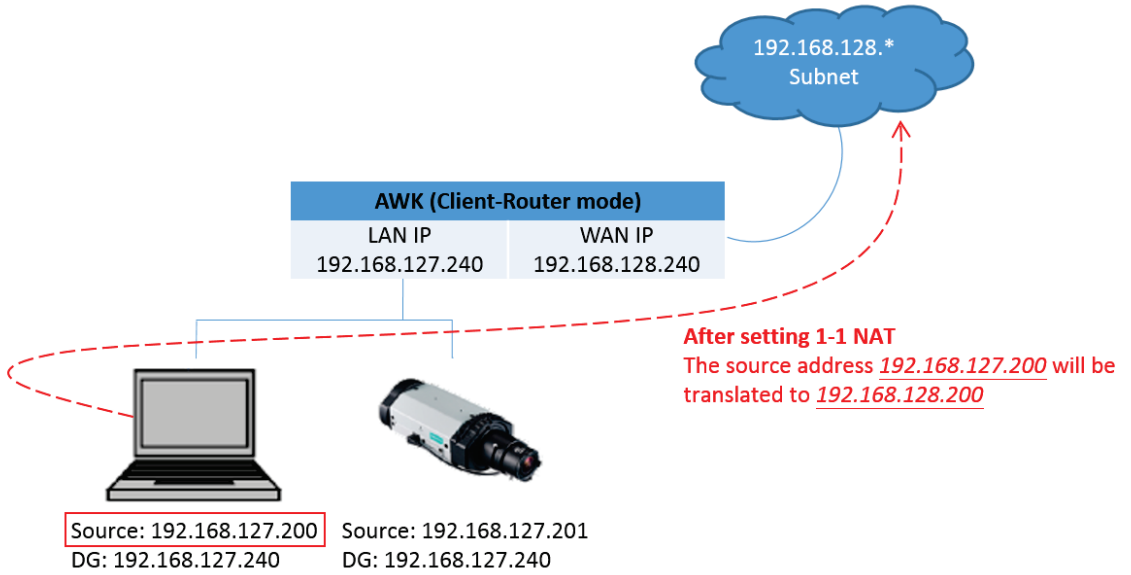
***LAN***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Specify the LAN IP address. | None |
| 0 to 65535 | For PAT mode only. Specify the LAN TCP or UDP port number. | None |

Click **APPLY** to create the new NAT rule.

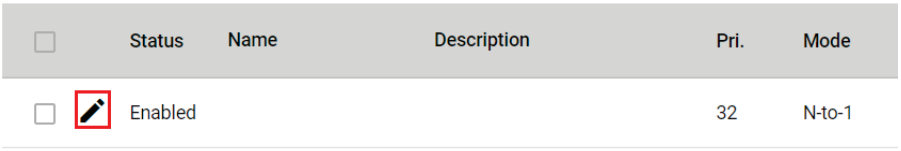
For **1 to 1 NAT Mode** and **PAT Mode**, refer to the following figure illustrations.

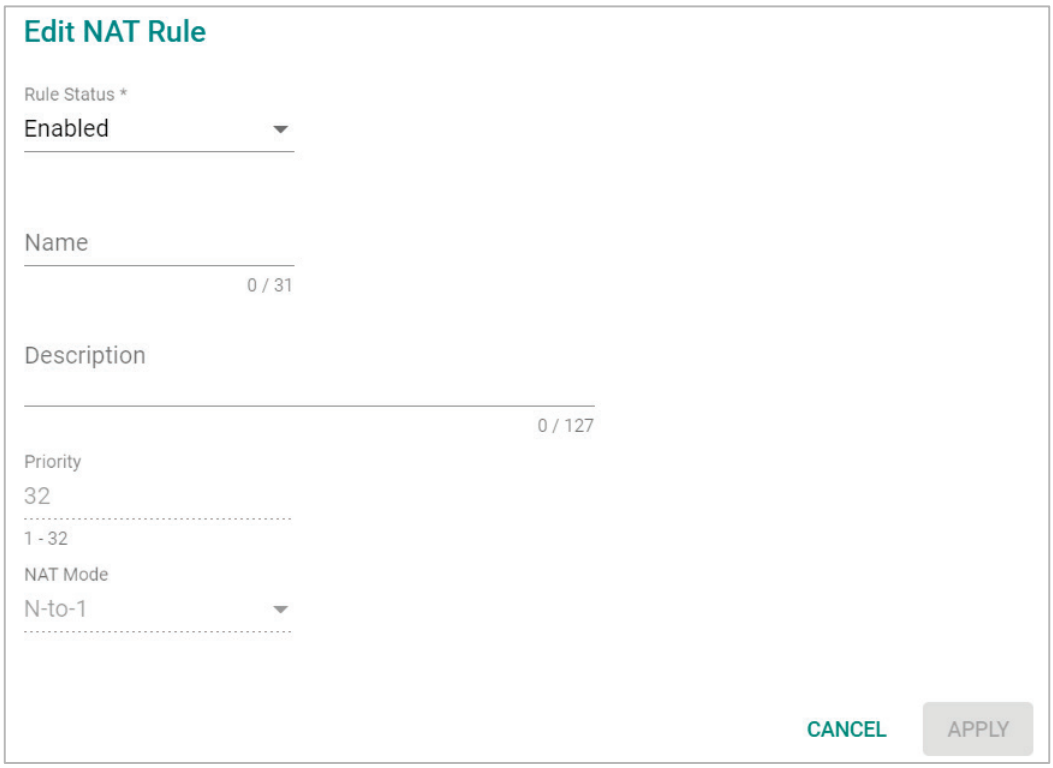


## Edit an Existing NAT Rule

To edit an existing NAT rule, click the **Edit** icon next to the rule you want to edit.
Refer to **Create a New NAT Rule** for more information about each setting.

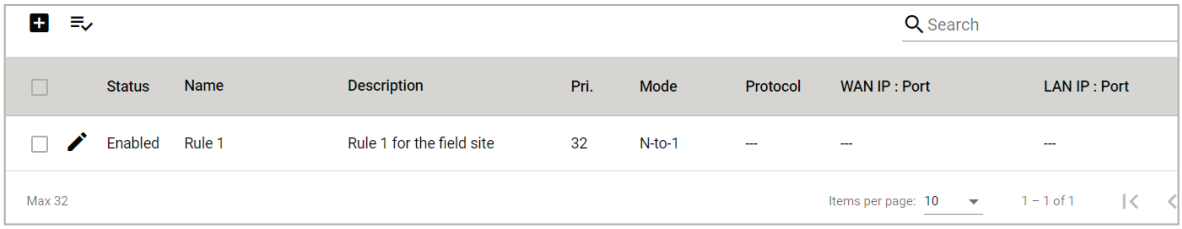


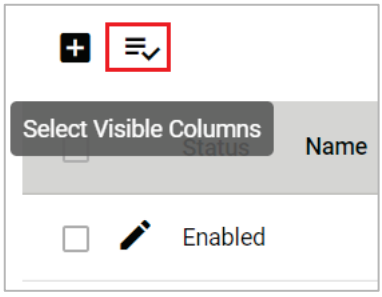

When finished, click **APPLY**.

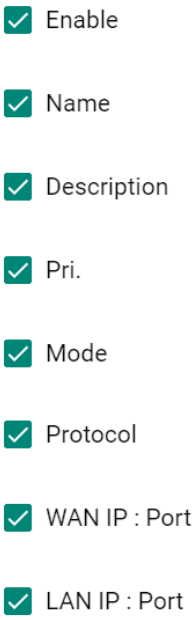
## View the NAT Rule Status

You can view the status of all NAT rules from the NAT rule list page.

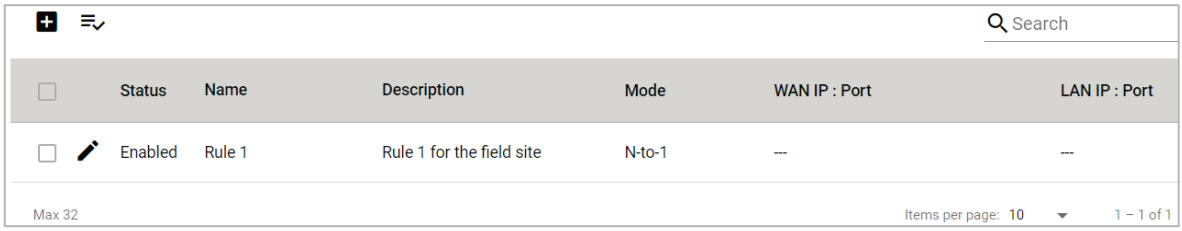



You select what information you want to view by clicking **Select Visible Columns** icon and checking the corresponding check boxes.



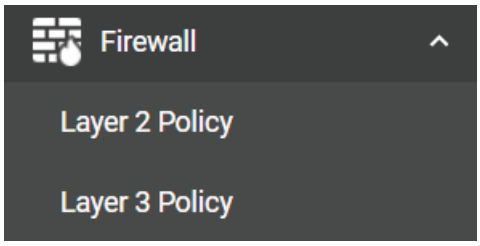




Only information for the selected items will be shown.



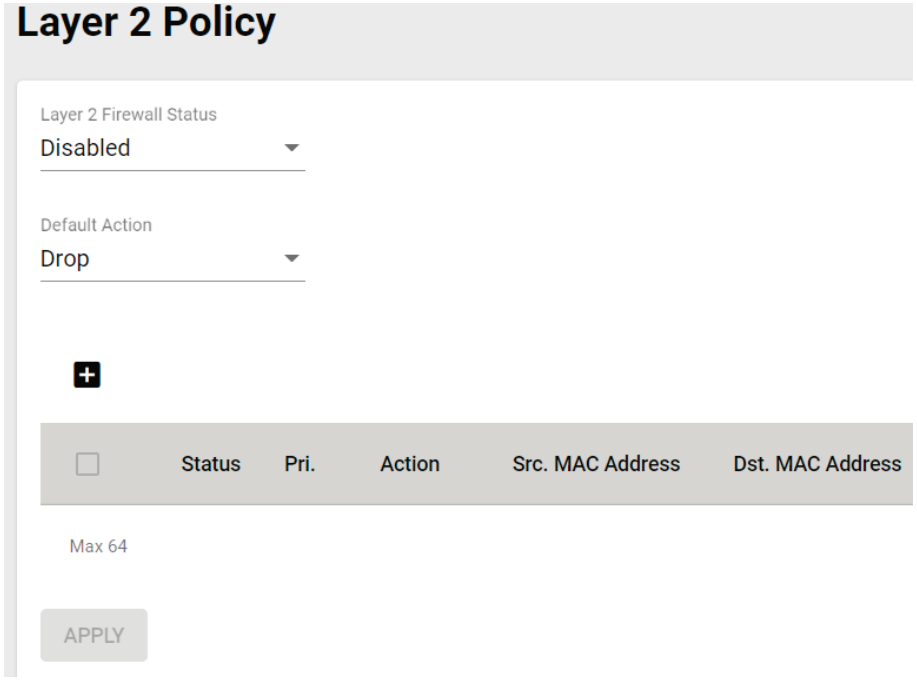
# Firewall

The **Firewall** section contains the **Layer 2 Policy** and **Layer 3 Policy** configuration pages.




## Layer 2 Policy

From the **Layer 2 Policy** screen, you can manage the L2 firewall policy and create, edit, and delete policy rules. Click **Layer 2 Policy** under **Firewall** in the function tree to access this screen.




Configure the following settings:

***Layer 2 Firewall Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the Layer 2 firewall function. | Disabled |

***Default Action***

| Setting | Description | Factory Default |
|---|---|---|
| Accept | Accept all packets that do not match any policy rule. | Drop |
| Drop | Drop all packets that do not match any policy rule. | |

**ATTENTION**

Be careful when configuring the packet filtering function:

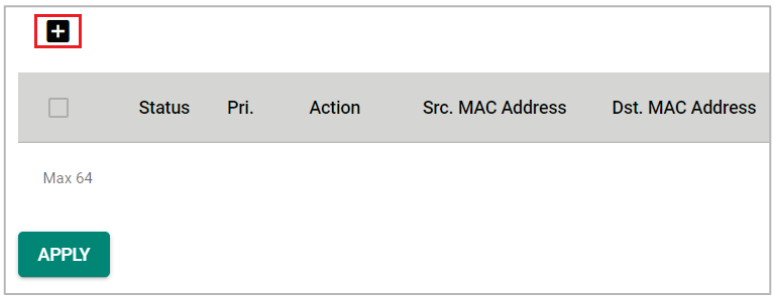
If the default action is set to **Drop** and **all rules are disabled, all packets will be denied**.

If the default action is set to **Accept** and **all rules are disabled, all packets will be allowed**.

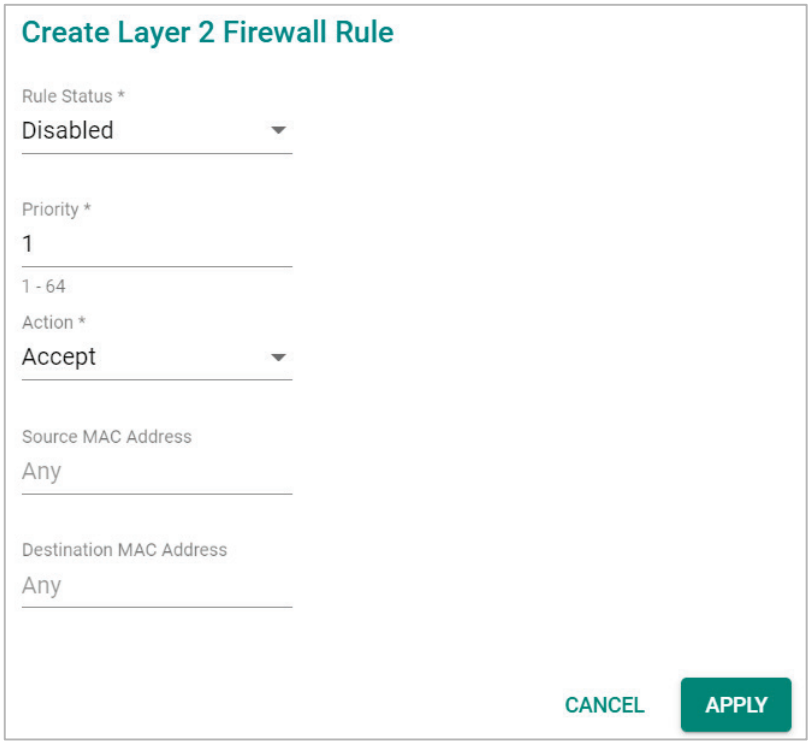
When finished, click **APPLY** to save your changes.

## Add a New Layer 2 Firewall Rule

To add a new Layer 2 firewall rule, click the **Add** icon.




Configure the following settings:




***Rule Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the Layer 2 firewall rule. | Disabled |

***Priority***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 64 | Specify the priority for this rule. A lower number represents a higher priority. Rules with a higher priority will be checked and enforced first. | 1 |

***Default Action***

| Setting | Description | Factory Default |
|---|---|---|
| Accept | Packets that match the policy rule will be allowed. | Accept |
| Drop | Packets that match the policy rule will be denied. | |

### ATTENTION

Be careful when configuring the packet filtering function:

If the default action is set to **Drop** and **all rules are disabled, all packets will be allowed**.

If the default action is set to **Accept** and **all rules are disabled, all packets will be denied**.

***Source MAC Address***

| Setting | Description | Factory Default |
|---|---|---|
| MAC address | Enter the source MAC address. | Any |

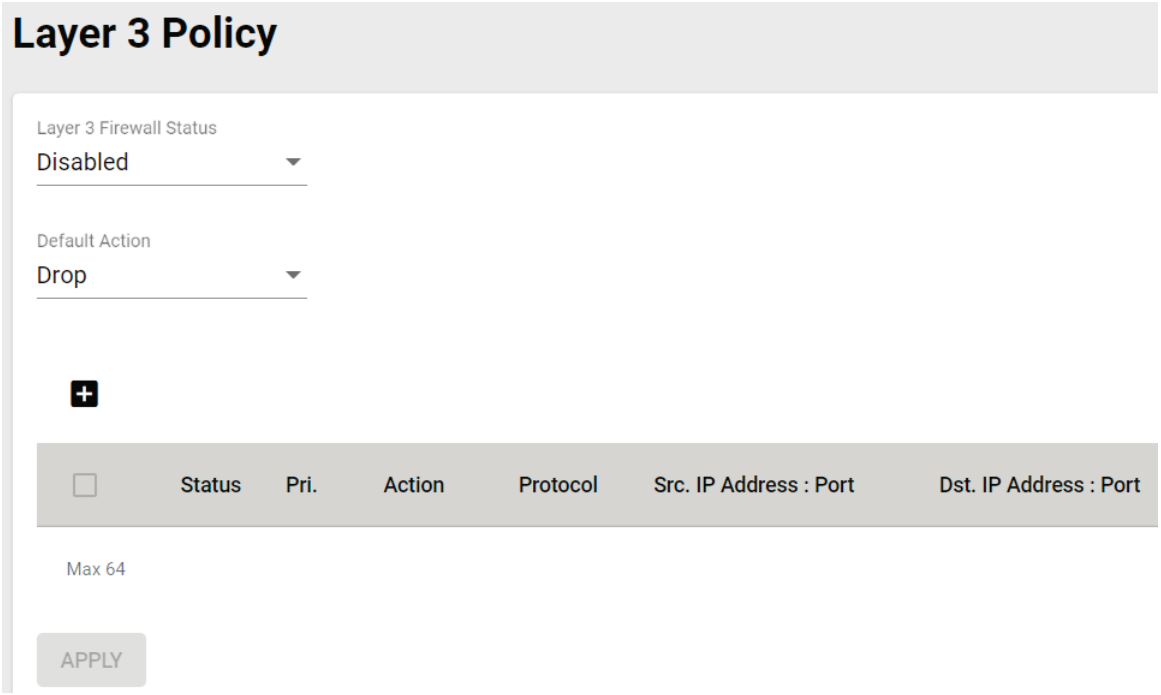
***Destination MAC Address***

| Setting | Description | Factory Default |
|---|---|---|
| MAC address | Enter the destination MAC address. | Any |

When finished, click **APPLY**.

# Layer 3 Policy

From the **Layer 3 Policy** screen, you can manage the L3 firewall policy and create, edit, and delete policy rules. Click **Layer 3 Policy** under **Firewall** in the function tree to access this screen.




Configure the following settings.

***Layer 3 Firewall Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the Layer 3 firewall function. | Disabled |

***Default Action***

| Setting | Description | Factory Default |
|---|---|---|
| Accept | Packets that match the policy rule will be allowed. | Drop |
| Drop | Packets that match the policy rule will be denied. | |

**ATTENTION**

Be careful when configuring the packet filtering function:

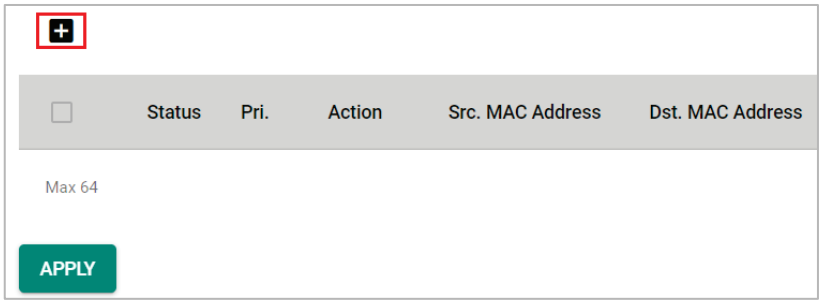
If the default action is set to **Drop** and **all rules are disabled, all packets will be allowed**.

If the default action is set to **Accept** and **all rules are disabled, all packets will be denied**.

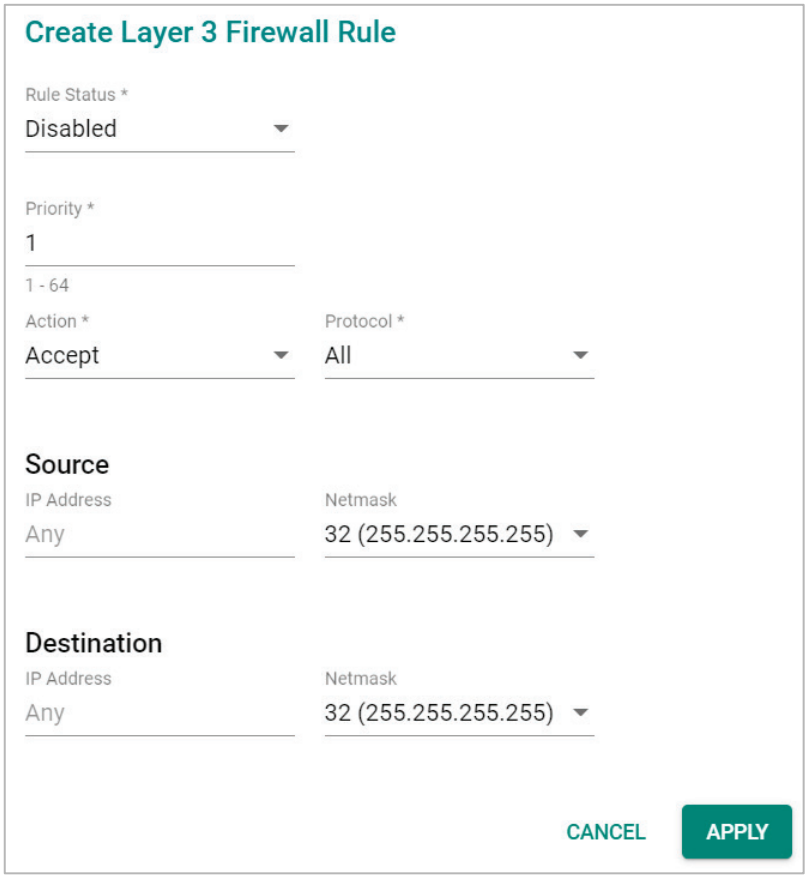
When finished, click **APPLY**.

## Add a New Layer 3 Firewall Rule

To add a new Layer 3 firewall rule, click the **Add** icon.




Configure the following settings:




***Rule Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the Layer 3 firewall rule. | Disabled |

***Priority***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 64 | Specify the priority for this rule. | 1 |

***Default Action***

| Setting | Description | Factory Default |
|---|---|---|
| Accept | Packets that match the policy rule will be allowed. | Accept |
| Drop | Packets that match the policy rule will be denied. | |

***Protocol***

| Setting | Description | Factory Default |
|---|---|---|
| All | Filter all protocol traffic. | All |
| ICMP | Only filter for ICMP protocol traffic. | |
| TCP | Only filter for TCP protocol traffic. | |
| UDP | Only filter for UDP protocol traffic. | |

The AWK's IP protocol filter is a policy-based filter that can allow or filter out IP-based packets with specified IP protocol and source/destination IP addresses.

The AWK provides 64 entities for setting IP protocol and source/destination IP addresses in your filtering policy. Four IP protocols are available: **All, ICMP, TCP,** and **UDP**. You must specify either the Source IP or the Destination IP. By combining IP addresses and netmasks, you can specify a single IP address or a range of IP addresses to accept or drop. For example, "IP address 192.168.1.1 and netmask 255.255.255.255" refers to the sole IP address 192.168.1.1. "IP address 192.168.1.1 and netmask 255.255.255.0" refers to the range of IP addresses from 192.168.1.1 to 192.168.255.

### Source

***IP Address***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Specify the source IP address. | Any |

***Netmask***

| Setting | Description | Factory Default |
|---|---|---|
| Netmask | Select the subnet mask | 32 (255.255.255.255) |

***Port Range***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 65535 | If the Protocol is set to TCP or UDP, specify the port range. | None |

### Destination

***IP Address***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Specify the destination IP address. | Any |

***Netmask***

| Setting | Description | Factory Default |
|---|---|---|
| Netmask | Specify the subnet mask. | 32 (255.255.255.255) |

***Port Range***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 65535 | If the Protocol is set to TCP or UDP, specify the port range. | None |

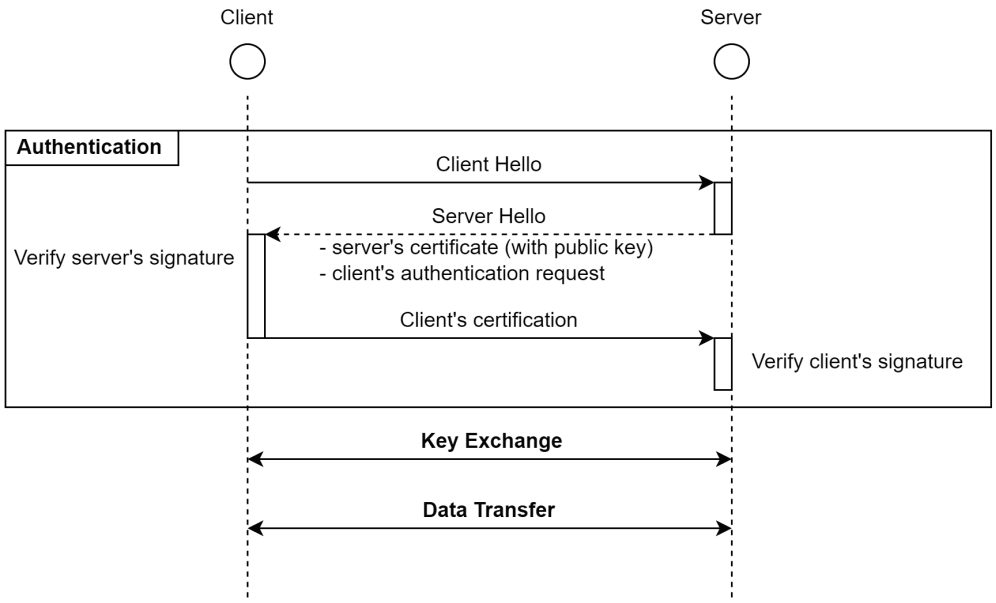
When finished, click **APPLY**.

# Certificate Management

The **Certificate Management** page provides a holistic presentation of all the configuration features that support certificate-based authentication. From this dashboard table, administrators can easily review and edit device or Server CA certificates without having to navigate to the individual feature's configuration page, simplifying and speeding up certificate management tasks.

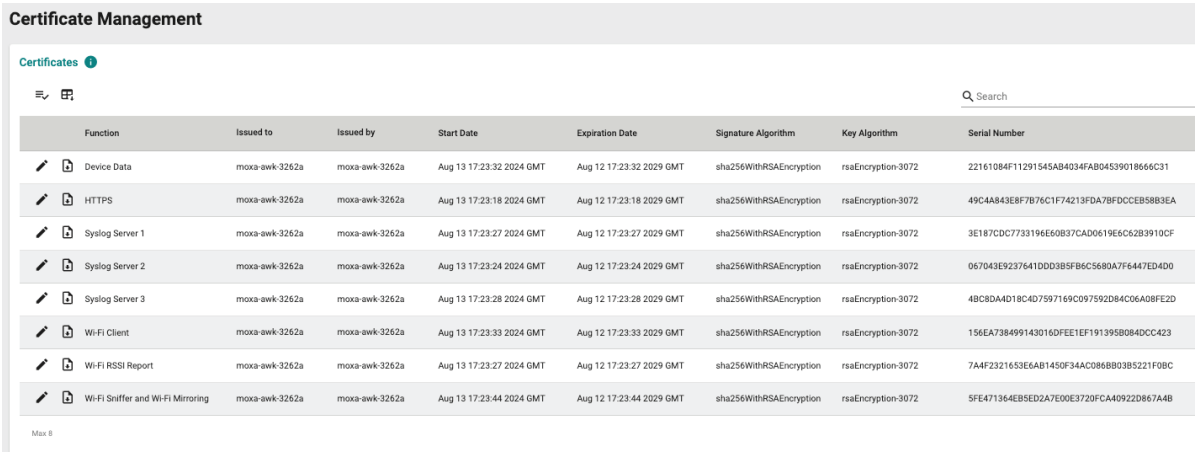
For example, administrators can update the certificate and key of Syslog Server 1 through the **Certificate Management** page, instead of having to navigate to **Diagnostics > Event Logs and Notifications > Syslog > Authentication** to perform the same task.

## Basic Concept of SSL




# Device Certificate

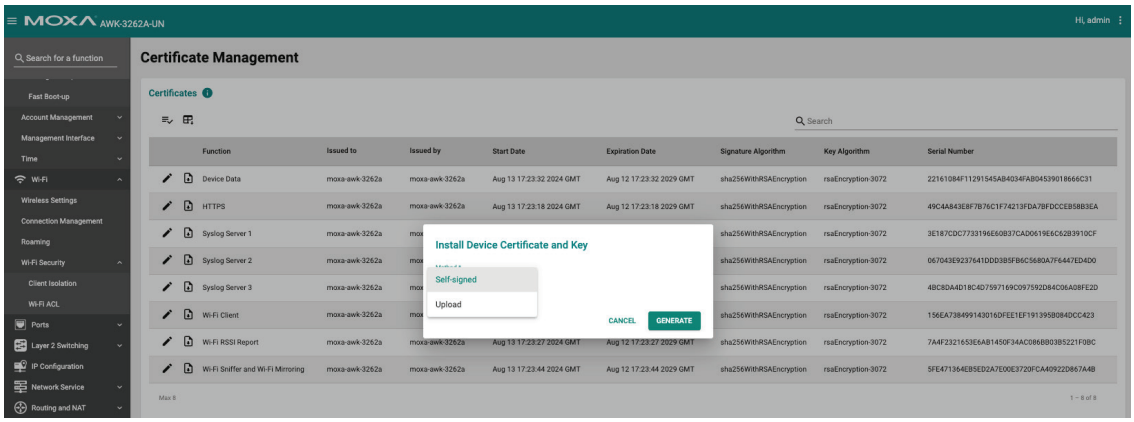
The **Device Certificate** table shows the current certificate for the listed functions. The AWK Series supports different certificates for different functions to increase security and minimize the potential risk in the event a certificate is compromised.




| Table Field Name | Description |
|---|---|
| Function | The list of certificate-based authentication functions:<br>Data Transferring<br>HTTPS<br>RSSI Report<br>Syslog Server 1/2/3<br>Wi-Fi Client<br>Wi-Fi Sniffer and Wi-Fi Mirroring |
| Issue To | The entity the certificate was issued to. |
| Issue By | The entity the certificate was issued by. |

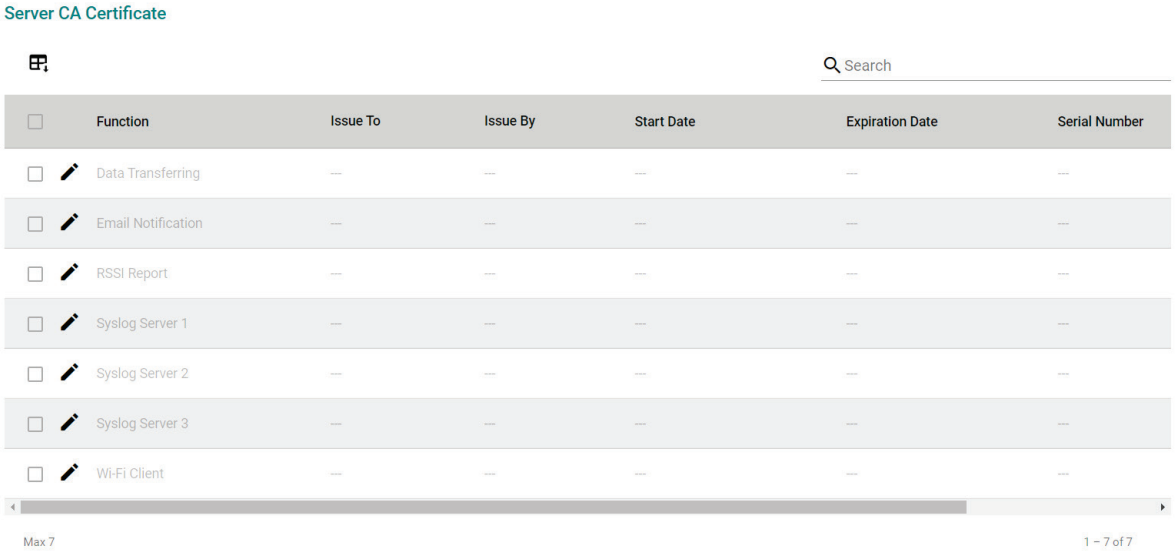
| Table Field Name | Description |
|---|---|
| Start Date | The valid start date of the certificate. |
| Expiration Date | The expiration date of the certificate. |
| Serial Number | The unique serial number of the certificate. |

By default, the certificates applied on the device are self-signed by the AWK device. It is recommended to update the self-signed certificate or upload a certificate issued by a trusted certificate authority (CA) for any functions that will be actively used.




# Server CA Certificate

From the **Server CA Certificate** screen, administrators can upload third-party trusted CA certificates which are used to verify the authenticity of received server certificates during the signature verification process of the listed applications.



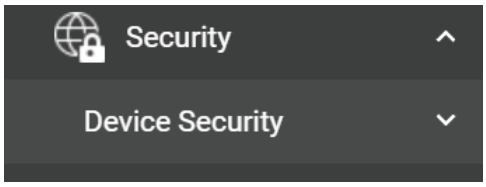

## ATTENTION

The AWK Series device will automatically check and issue a warning message if the uploaded certificate has expired or was not issued by a trusted CA. Please note that the device will not automatically connect to public key infrastructure (PKI) to verify whether the uploaded certificate has been revoked or not. It is

highly recommended to take additional measures to manually confirm the validity of the certificate (i.e. valid and not revoked) before uploading it to the device.

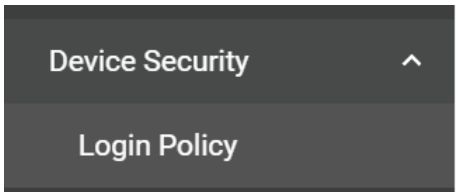
# Security

The **Security** section lets you configure **Device Security** settings.



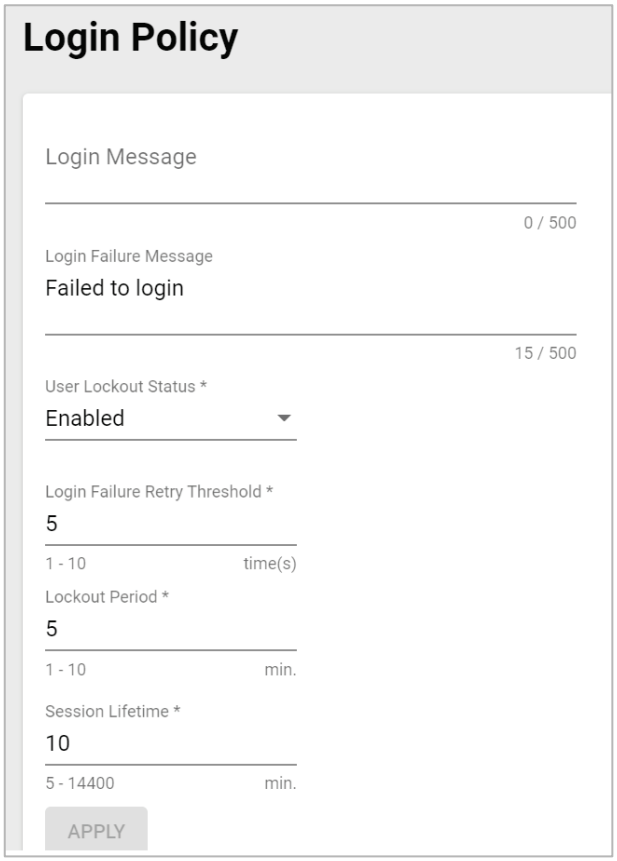

## Device Security

This section describes how to configure the settings for **Login Policy**.




### Login Policy

On the **Login Policy** page, you can configure login messages and login security functions. Click **Login Policy** under **Security > Device Security** in the function tree to access this screen.




Configure the following settings:

***Login Message***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 500 characters | Enter the message that will be displayed on the login screen when accessing the device. | None |

***Login Failure Message***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 500 characters | Enter the message that will be displayed when users fail to log in. | Failed to login |

***User Lockout Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the lockout function when a user fails to log in. | Enabled |

***Login Failure Retry Threshold***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 10 | Specify the maximum number of times a user can attempt to log in again after a failed attempt. | 5 |

***Lockout Period***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 10 (min.) | Specify the duration (in minutes) the user will be unable to log in for after exceeding the number of allowed retries. | 5 |

***Session Lifetime***

| Setting | Description | Factory Default |
|---|---|---|
| 5 to 1440 (min.) | Specify how long a user can be inactive for before being automatically logged out and be required to log in again. | 10 |

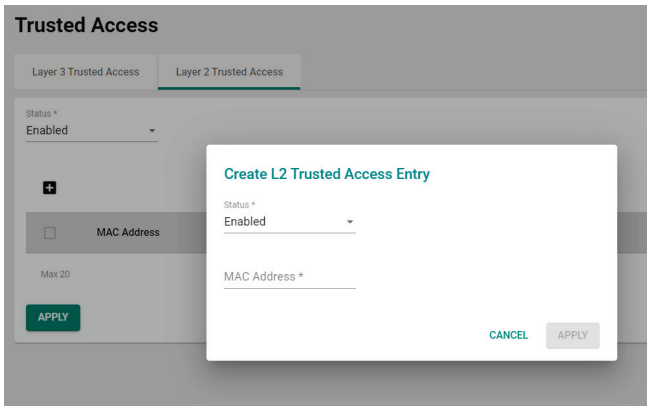
When finished, click **APPLY**.

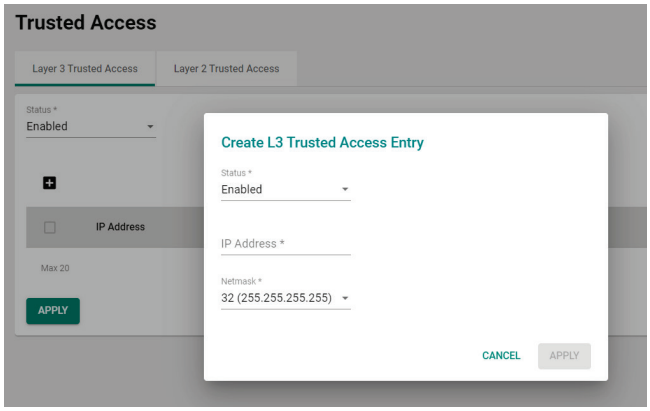
## Trusted Access

In order to prevent DoS attacks, the Layer 2 and Layer 3 Trusted Access features allow authorized users to designate the MAC or IP addresses respectively that are allowed to access this device. When configured and enabled, the Trusted Access list will only allow the specified IP or MAC addresses access to the corresponding interfaces, databases, or services.

Trusted Access applies to the following interfaces, databases, and services:

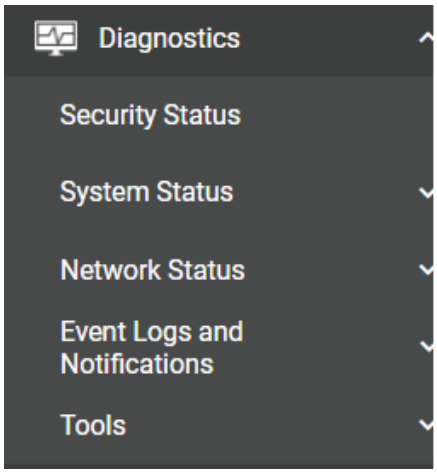
- User interfaces: HTTP/HTTPS, SSH/Telnet, SNMP, New Moxa Command.
- Event logs and notifications: Syslog, Email notifications, SNMP Trap/Inform.
- Services: DHCP Server, Wi-Fi Sniffer, Mirroring with Remote Type.



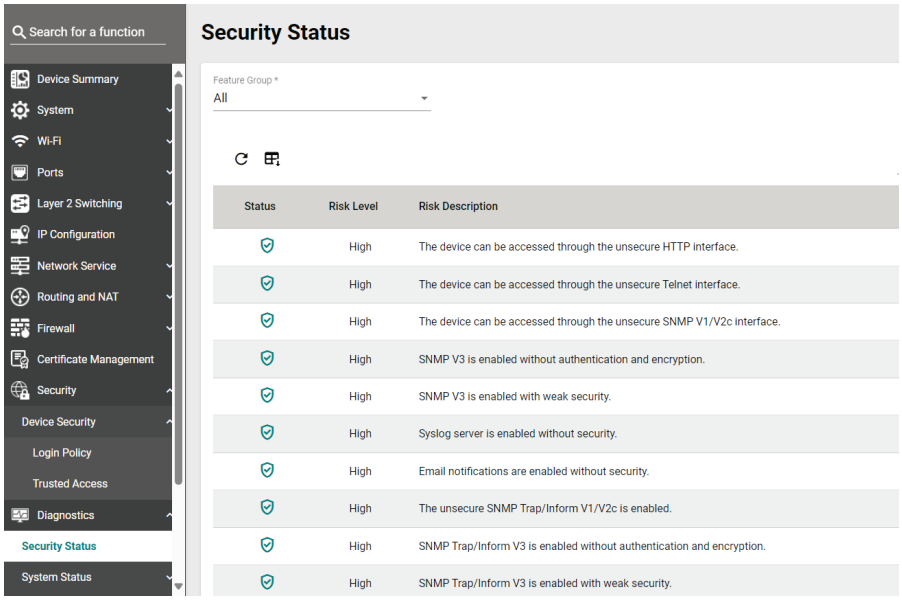

# Diagnostics

The **Diagnostics** section is used for monitoring and troubleshooting and includes the **System Status, Network Status, Event Logs and Notifications**, and **Tools** pages.




# Security Status

The Security Status screen consolidates the security status of all active interfaces of the device. This table serves as a review tool to ensure that the device's configuration meets the desired IEC-62443 Security Level (SL) profile. If any of the configuration risks do not meet your organization's security policy, check the description, and navigate to the corresponding configuration page to address the issue. If the identified risk cannot be directly mitigated through the AWK Series' configuration, such as an active unsecure protocol to support legacy devices, consider consulting a qualified security expert to implement additional measures to mitigate the risk.

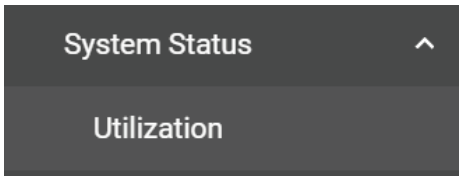



| Field | Description |
|---|---|
| Status | The representative icons indicate if there are any risks that require mitigating action, and the corresponding severity of the risk. Risks that have been addressed will be marked with a checkmark. |
| Risk Level | The device categorizes risks into three tiers:<br>**Low**: Risks vulnerable to exploitation per circumstances defined in SL3 and above.<br>**Medium**: Risks vulnerable to exploitation per circumstances defined in SL2.<br>**High**: Risks vulnerable to exploitation per circumstances defined in SL1. |
| Risk Description | Additional details describing the risk to provide administrators with context for taking the appropriate hardening action. |

# System Status

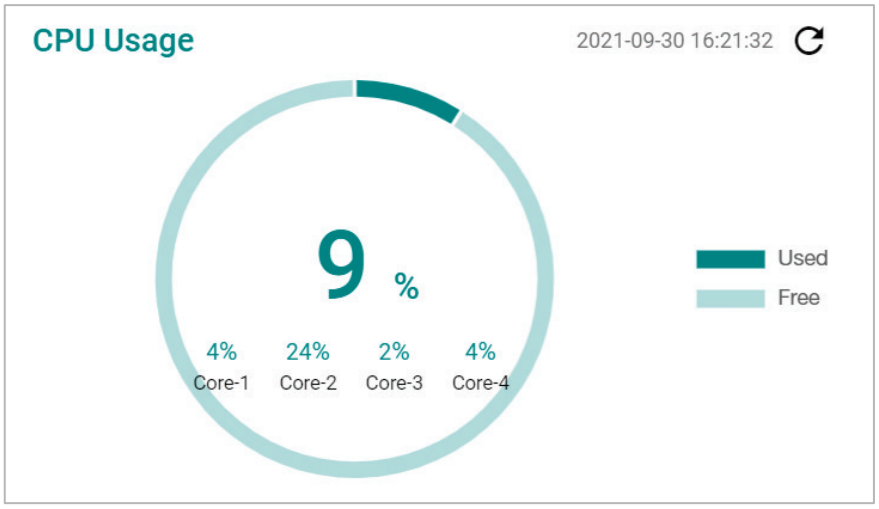
## Utilization

The **Utilization** screens features widgets and charts showing the real-time resource usage of the AWK. Click **Utilization** under **Diagnostics > System** Status in the function tree to access this screen.



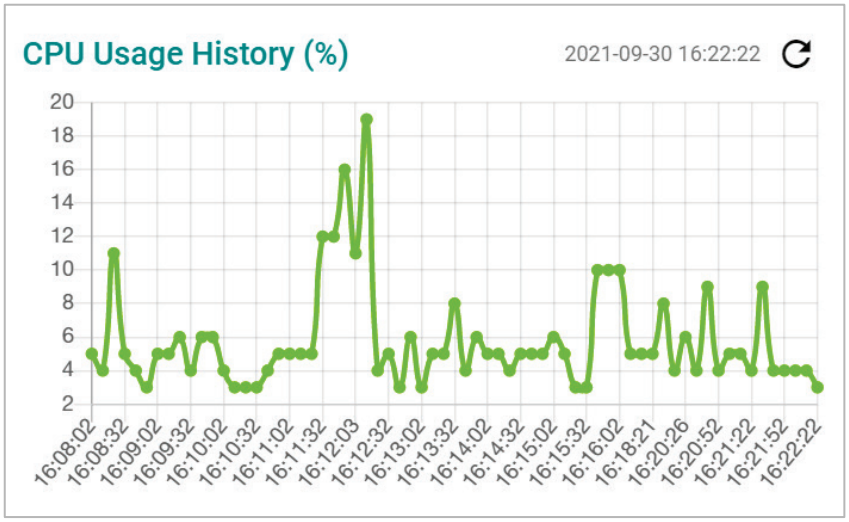

### CPU Usage

This widget shows the current CPU usage.



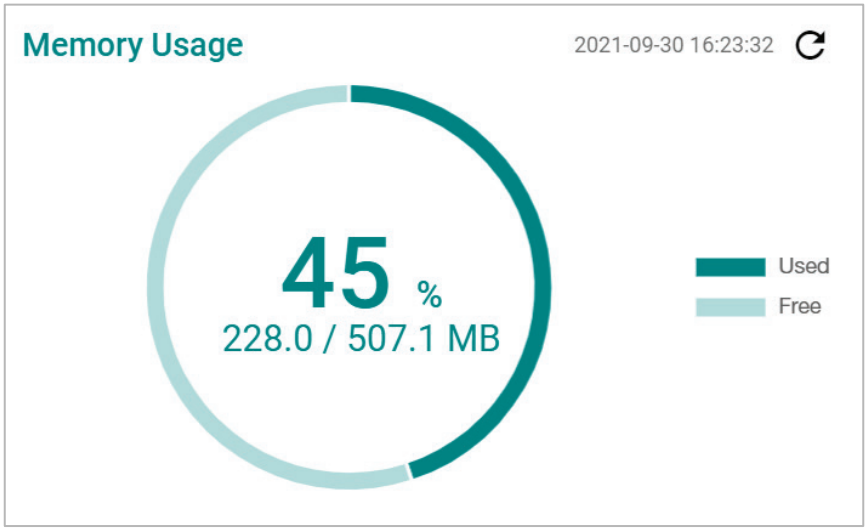

### CPU Usage History

The graph shows the CPU usage history.



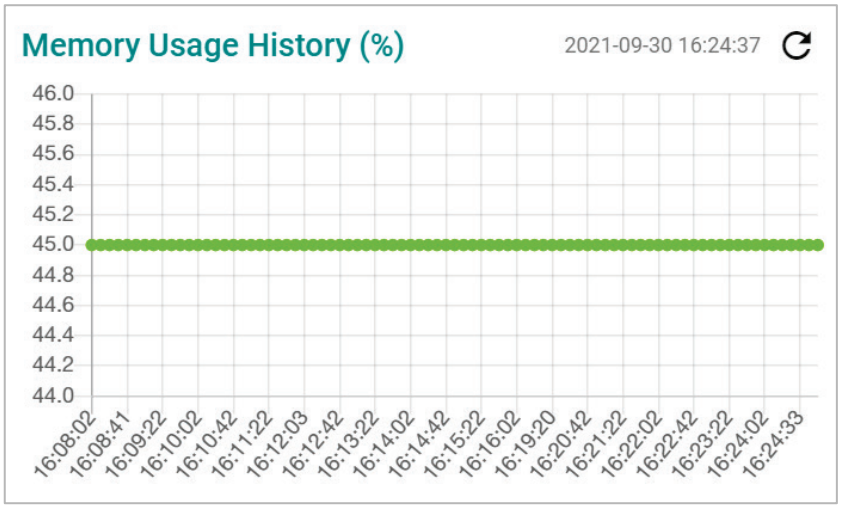
## Memory Usage

This widget shows the current memory usage.



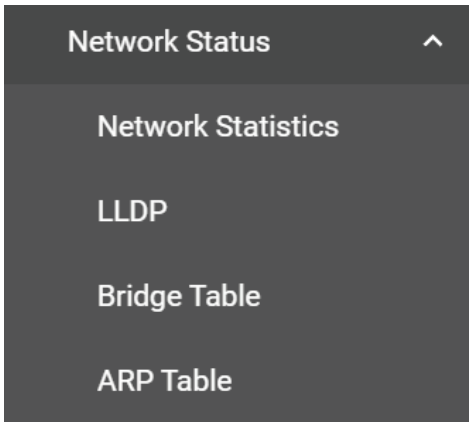

## Memory Usage History

This graph shows the memory usage history.



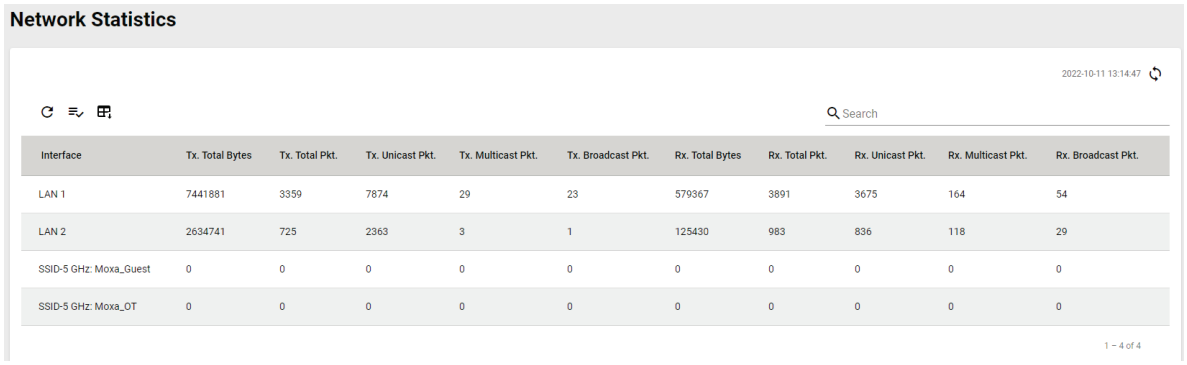
# Network Status

The **Network Status** section contains the **Network Statistics, LLDP, Bridge Table,** and **ARP Table** pages.




## Network Statistics

The **Network Statistics** page shows real-time data for all interfaces. Click **Network Statistic**s under **Diagnostics > Network Status** in the function tree to access this page.



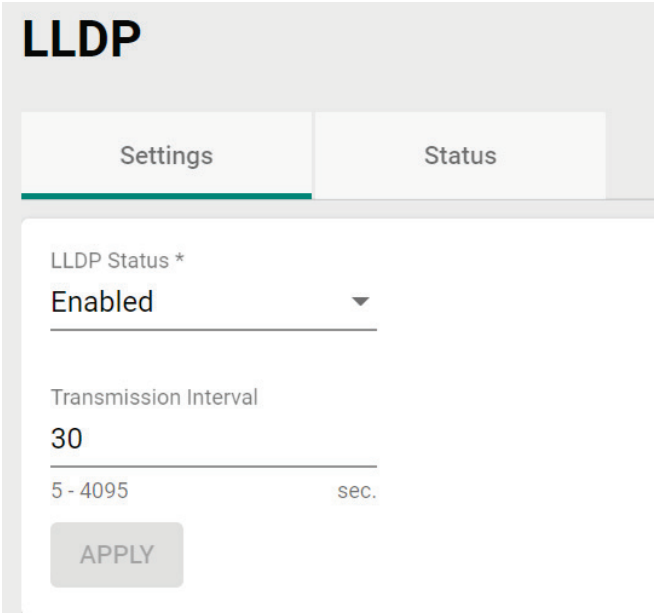

## LLDP

LLDP is an OSI Layer 2 protocol defined by IEEE 802.11AB. LLDP standardizes the self-identification advertisement method, and allows each networking device, such as a Moxa managed switch or access point, to periodically send its system and configuration information to its neighbors. Because of this, all LLDP devices are kept informed of each other's status and configurations. With SNMP, this information can be used to generate network visualization.

From the web interface, you can enable or disable LLDP, and set the LLDP transmit interval. In addition, you can view the neighbor-list, which is reported by its network neighbors.

## LLDP Settings

Click the **Settings** tab to enable or disable LLDP and set the transmission interval.




Configure the following settings:

***LLDP Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable LLDP. | Enabled |

***Transmission Interval***

| Setting | Description | Factory Default |
|---|---|---|
| 5 to 4095 (sec.) | Specify the transmission interval at which LLDP messages are sent. | 30 |

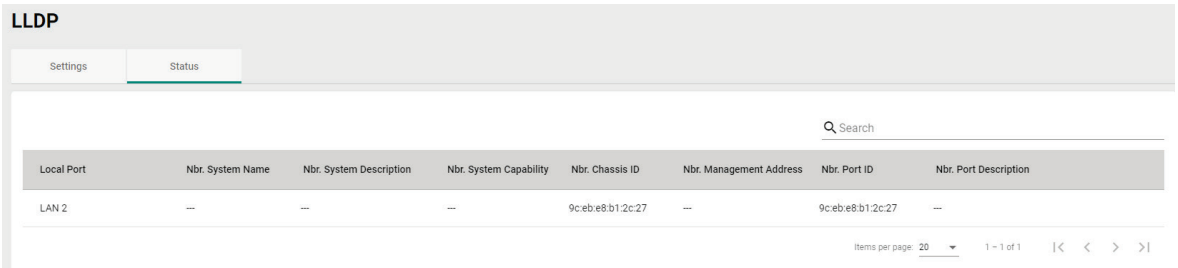
### NOTE

The LLDP protocol transmits data in clear text and discloses the device model name.

When finished, click **APPLY**.

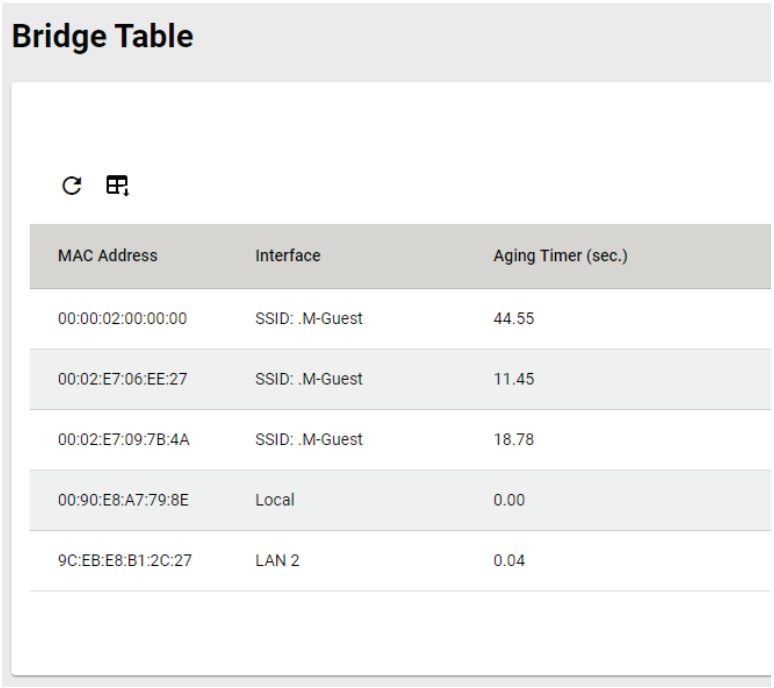
## LLDP Status

Click the **Status** tab to view the LLDP status.



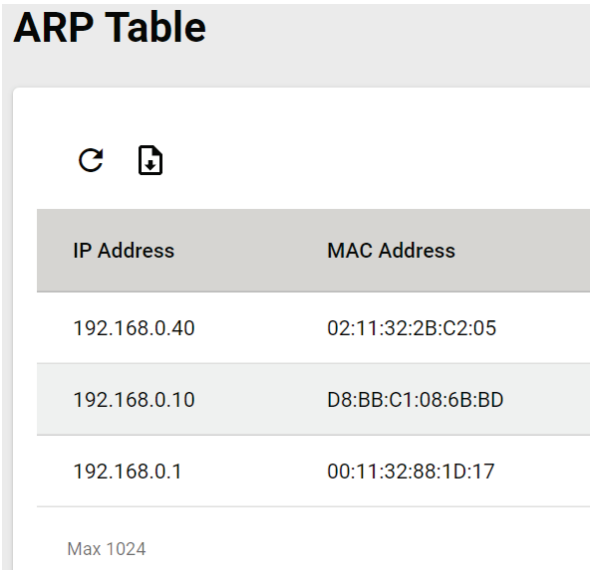
## Bridge Table

The **Bridge Table** page provides more detailed bridging information. Click **Bridge Table** under **Diagnostics > Network Status** in the function tree to access this screen.



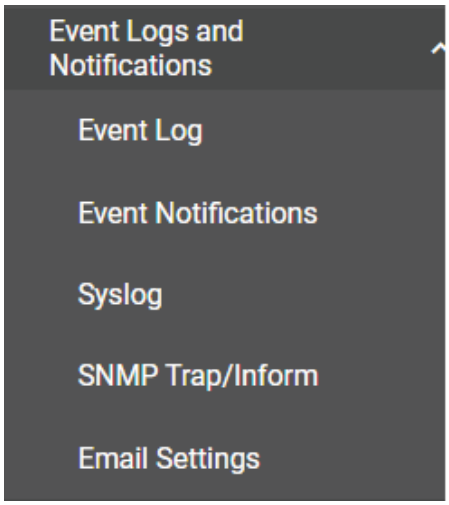
### ARP Table

The **ARP Table** page shows all ARP entries. Click **ARP Table** under **Diagnostics > Network Status** in the function tree to access this screen.




## Event Logs and Notifications

The **Event Logs and Notifications** section is used to configure event and notification settings and includes the **Event Log, Notifications, Syslog, SNMP Trap/Inform, Email Settings,** and **Relay Alarm Cut-off** pages.

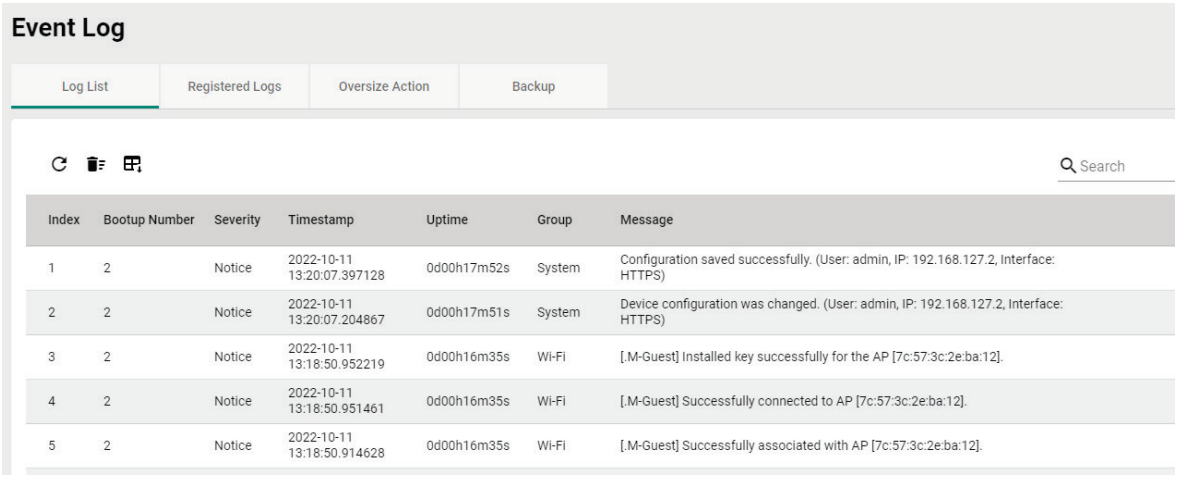



### Event Log

From the **Event Log** page, you can view the current log list, configure the log oversize action, and back up the event log. Click **Event Log** under **Diagnostics > Event Logs** and Notifications in the function menu to access this page.

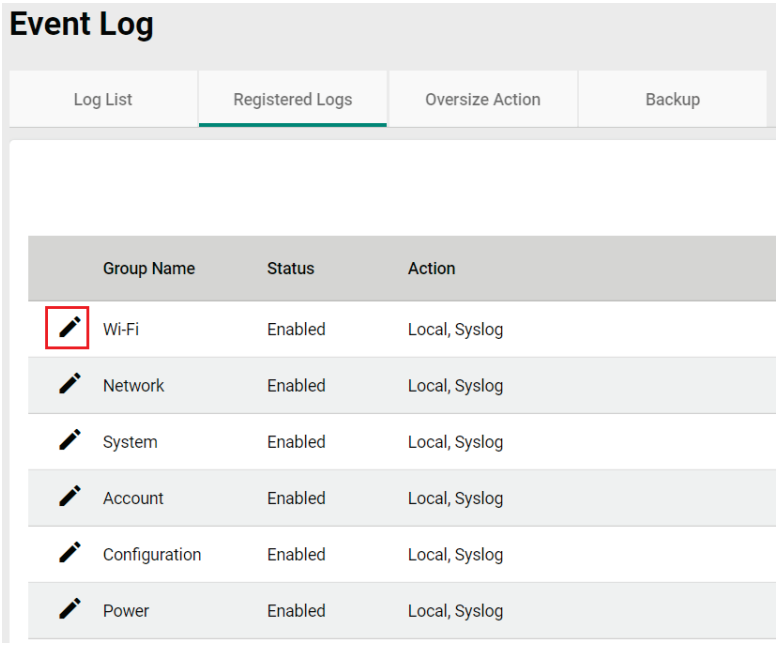
## Log List

Click the **Log List** tab to view a list of all logged events.

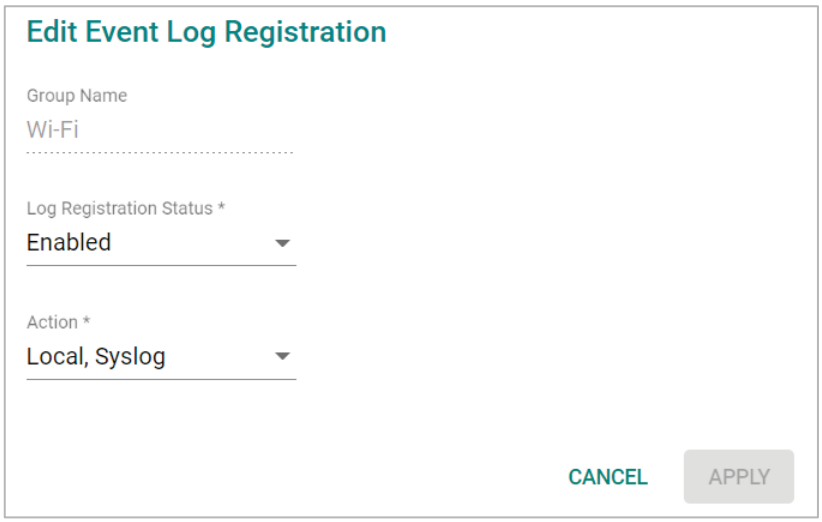



## Registered Logs

Click the **Registered Logs** tab to view and edit event log groups.




To edit an event log group, click the **Edit** icon next to the group you want to edit.




Configure the following settings:

***Log Registration Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the log group. If disabled, events associated with this group will not be logged. | Enabled |

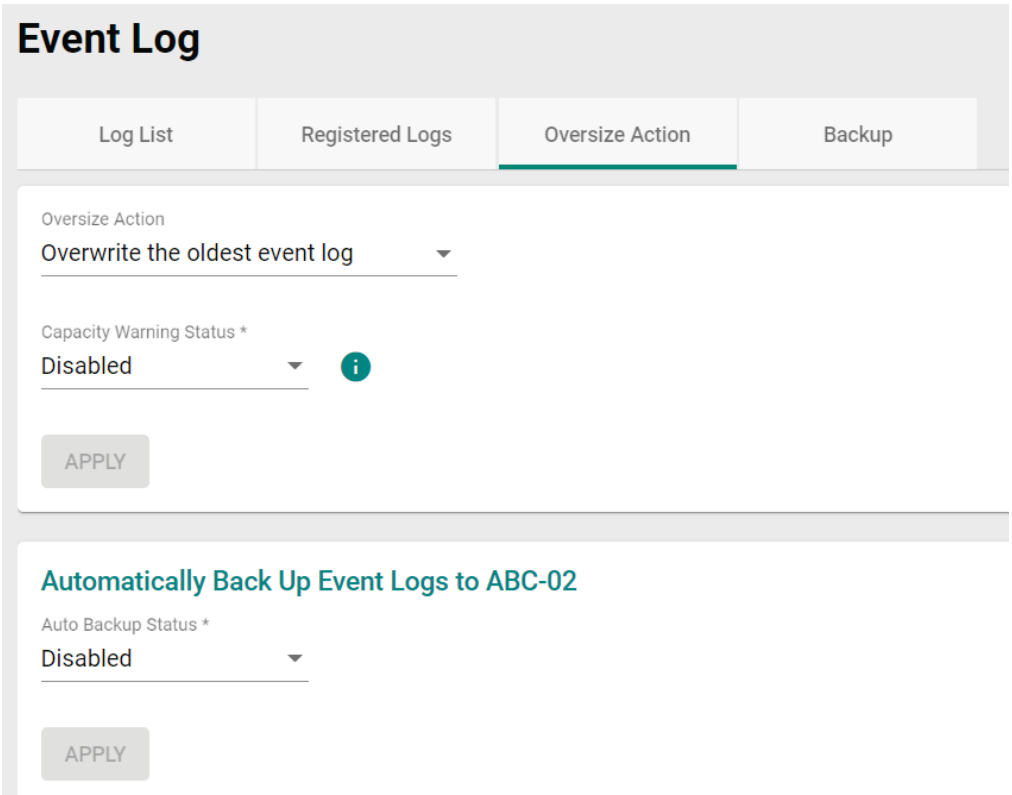
***Action***

| Setting | Description | Factory Default |
|---|---|---|
| Local | Save the event logs locally. | Local, Syslog |
| Syslog | Send the event logs to a Syslog server. | |

When finished, click **APPLY**.

## Oversize Action

From the **Oversize Action** page, you can configure what happens when the log capacity has been reached. Click the **Oversize Action** tab to access this screen.



Configure the following settings:

***Oversize-Action***

| Setting | Description | Factory Default |
|---|---|---|
| Overwrite the oldest event log | Overwrite the oldest event log. | Overwrite the oldest event log |
| Stop recording event log | Stop recording new event logs. | |

***Capacity Warning***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable event log capacity warnings. | Disabled |

When finished, click **APPLY**.

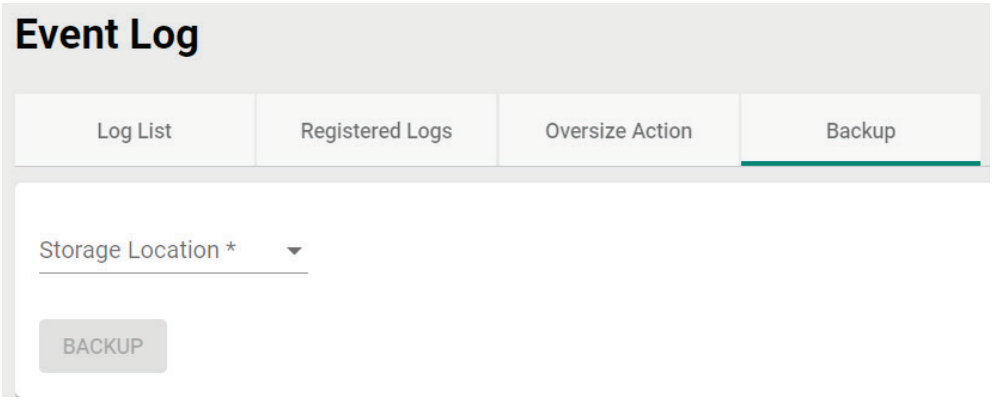
***Auto Backup Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable automatic event log backups to an ABC-02. | Disabled |

When finished, click **APPLY**.

## Backup

Click **Backup** tab to select the storage location.




***Storage Location***

| Setting | Description | Factory Default |
|---|---|---|
| Local | Back up the event log to the local storage on the AWK device. | None |
| TFTP | Back up the event log via TFTP. | |
| SFTP | Back up the event log via SFTP. | |
| ABC-02 | Back up the event log to an ABC-02 USB tool. | |

***Server IP Address (for TFTP only)***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Enter the IP address of the TFTP server. | None |

***File Name (for TFTP only)***

| Setting | Description | Factory Default |
|---|---|---|
| Input the backup file name | Enter the file name of the event log backup. | None |

***Server IP Address (for SFTP only)***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Enter the IP address of the SFTP server. | None |

***Pathname (for SFTP only)***

| Setting | Description | Factory Default |
|---|---|---|
| Pathname | Specify the file path on the SFTP server for storing the event log backup. | None |

***Account (for SFTP only)***

| Setting | Description | Factory Default |
|---|---|---|
| Account name | Enter the SFTP server account name. | None |

***Password (for SFTP only)***

| Setting | Description | Factory Default |
|---|---|---|
| Password | Enter the SFTP server account password. | None |

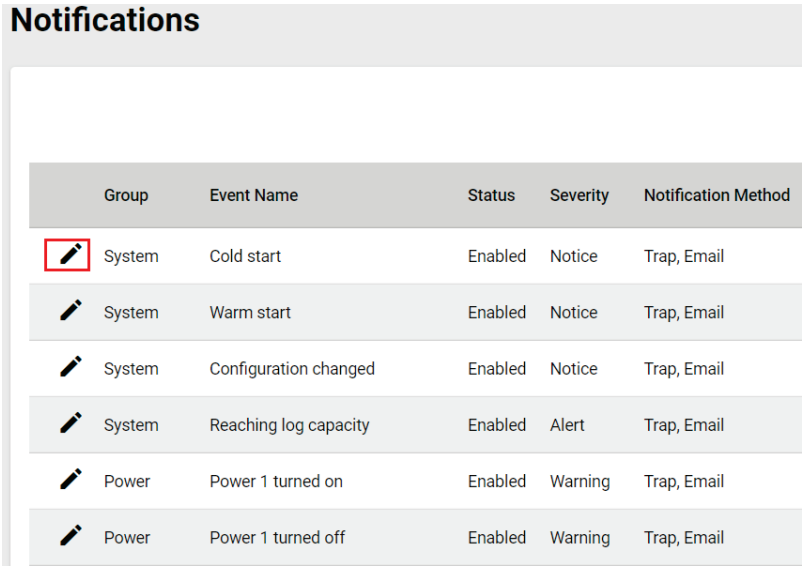
***Select Folder (for ABC-02 only)***

| Setting | Description | Factory Default |
|---|---|---|
| Folder | Select the folder on the ABC-02 to store the event log backup in. | None |

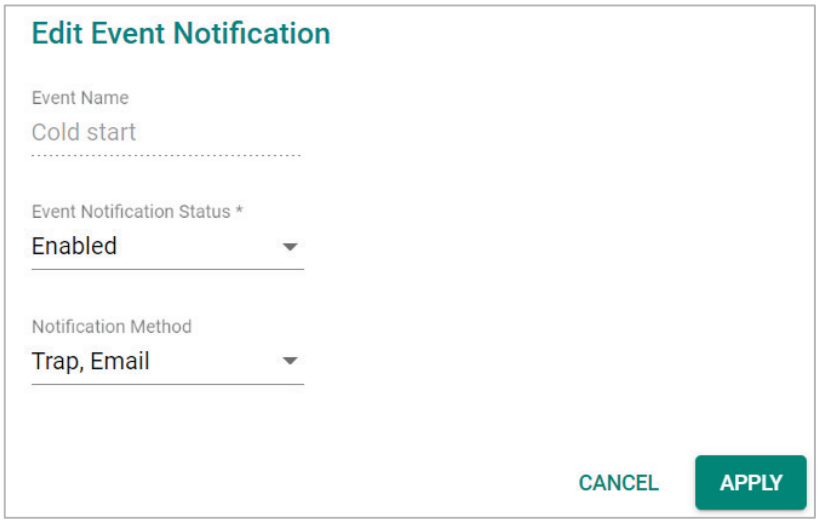
When finished, click **BACKUP**.

## Notifications

You can configure the notification settings for individual event types. Click **Notifications** under **Diagnostics > Event Logs and Notifications** in the function tree to access this screen.




To edit the notification settings, click the **Edit** icon next to the event you want to edit.



Configure the following settings:

***Event Notification Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable notifications for this event. | Enabled |

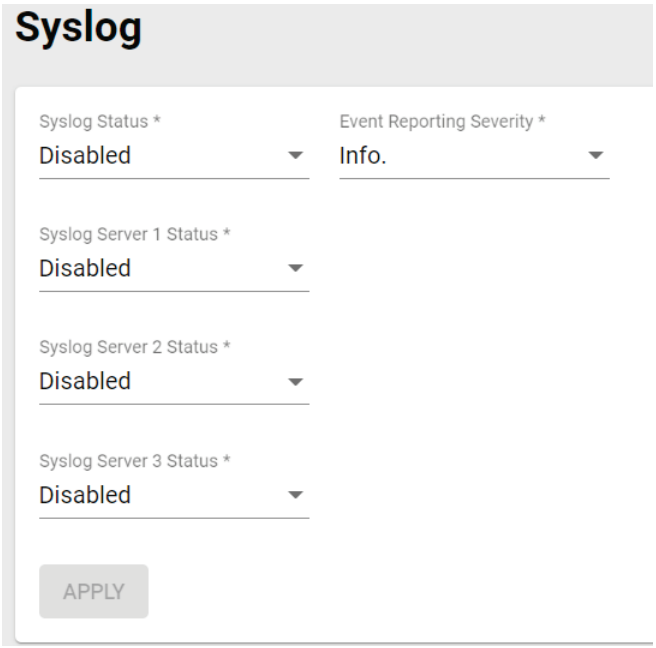
***Notification Method***

| Setting | Description | Factory Default |
|---|---|---|
| Trap | Send notifications through SNMP Trap. | Trap/Email |
| Email | Send notifications through email. | |
| Relay | Use a relay for sending notifications. This option is only available for specific event groups. | |

When finished, click **APPLY**.

## Syslog

You can set up one or more Syslog servers to store event logs. Click **Syslog** under **Diagnostics > Event Logs and Notifications** in the function tree to access this screen.




Configure the following settings:

***Syslog Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable logging events to a syslog server. | Disabled |

***Event Reporting Severity***

| Setting | Description | Factory Default |
|---|---|---|
| Emerg. | Specify the syslog severity as Emergency. | Info. |
| Alert | Specify the syslog severity as Alert. | |
| Crit. | Specify the syslog severity as Critical. | |
| Error | Specify the syslog severity as Error. | |
| Warning | Specify the syslog severity as Warning | |
| Notice | Specify the syslog severity as Notice. | |
| Info. | Specify the syslog severity as Information. | |

***Syslog Server 1 Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the first syslog server. | Disabled |

***Syslog Server 2 Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the second syslog server. | Disabled |

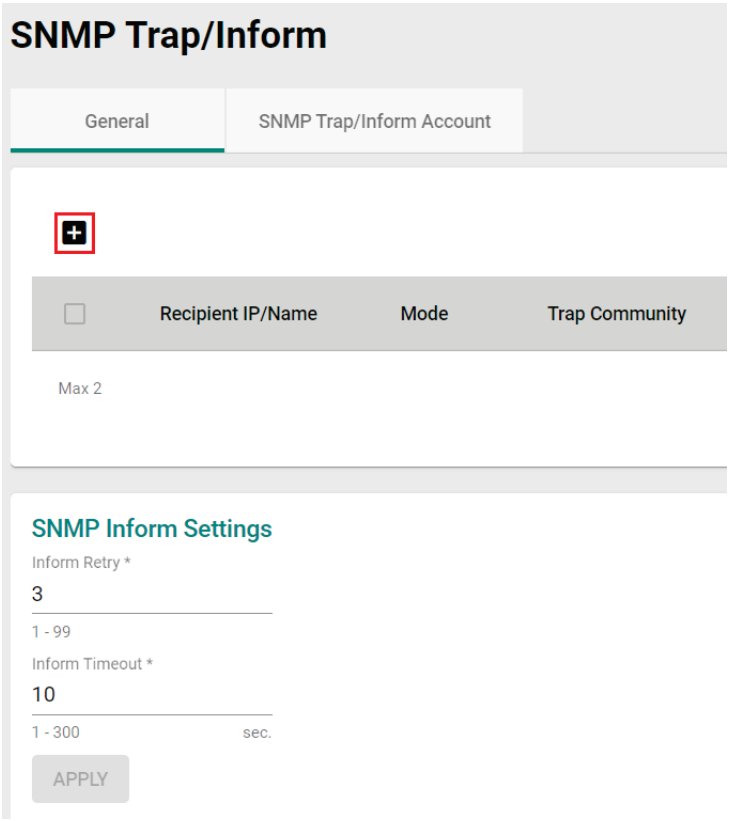
***Syslog Server 3 Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable the third syslog server. | Disabled |

When finished, click **APPLY**.

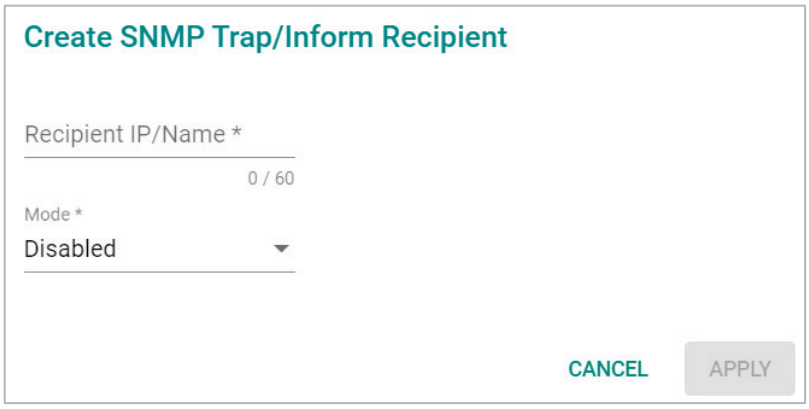
## SNMP Trap/Inform

The **SNMP Trap/Inform** section is used for setting up SNMP Traps and Inform triggers for events. Click **SNM Trap/Inform** under **Diagnostics > Event Logs and Notifications** in the function tree to access this page.



## General Settings

From the **General** tab, you can manage SNMP Trap/Inform recipients. Click the **General** tab to access this screen. Click the **Add** icon to create a new entry.




Configure the following settings:

***Recipient IP/Name***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 60 characters or IP address | Enter the name or IP of the recipient. | None |

***Mode***

| Setting | Description | Factory Default |
|---|---|---|
| Disabled | Disable the SNMP Trap/Inform function. | Disabled |
| Trap V1 | Set the trap version to Trap V1. | |
| Trap V2c | Set the trap version to Trap v2c. | |
| Inform V2c | Set the inform version to Inform V2c. | |
| Trap V3 | Set the trap version to Trap V3. | |
| Inform V3 | Set the inform version to Inform V3. | |

When finished, click **APPLY**.

## SNMP Inform Settings

From the SNMP Inform Settings screen, users can make sure SNMP Inform notice packets are sent and received reliably. Users can specify the number of times the system will try to send an inform notice until receiving confirmation from the SNMP Server. Configure the following settings.

***Inform Retry***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 99 | Specify the maximum number of Inform retries. | 3 |

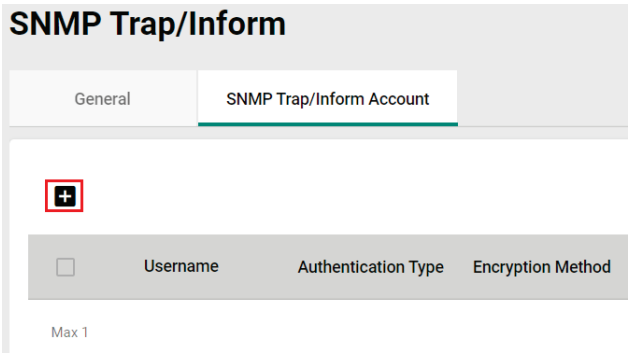
***Timeout***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 300 | Specify the Inform timeout value. | 10 |

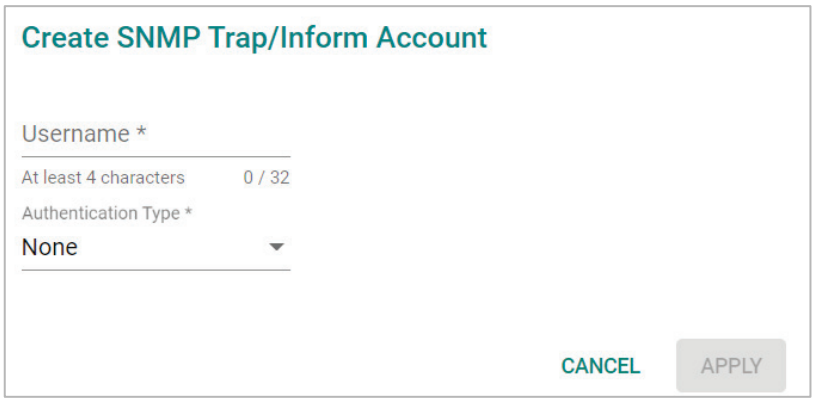
When finished, click **APPLY**.

## SNMP Trap/Inform Account Settings

From the **SNMP Trap/Inform Account** tab, you can manage SNMP Trap/Inform accounts. Click the **SNMP Trap/Inform Account** tab to access this screen. Click the **Add** icon to create a new entry.




Configure the following settings:




***Username***

| Setting | Description | Factory Default |
|---|---|---|
| At least 4 characters, (max. 32 characters) | Enter a username for the account. | None |

***Authentication type***

| Setting | Description | Factory Default |
|---|---|---|
| None | Do not use any authentication mechanism. | None |
| MD5 | Use MD5 as the authentication type. | |
| SHA | Use SHA as the authentication type. | |

***Authentication Password (when the Authentication type is set to MD5 or SHA)***

| Setting | Description | Factory Default |
|---|---|---|
| 8 to 64 characters | Enter the authentication password. | None |

***Encryption Method (when the Authentication type is set to MD5 or SHA)***

| Setting | Description | Factory Default |
|---|---|---|
| None | Do not use any encryption. | None |
| DES | DES is the encryption method. | |
| AES | AES is the encryption method. | |

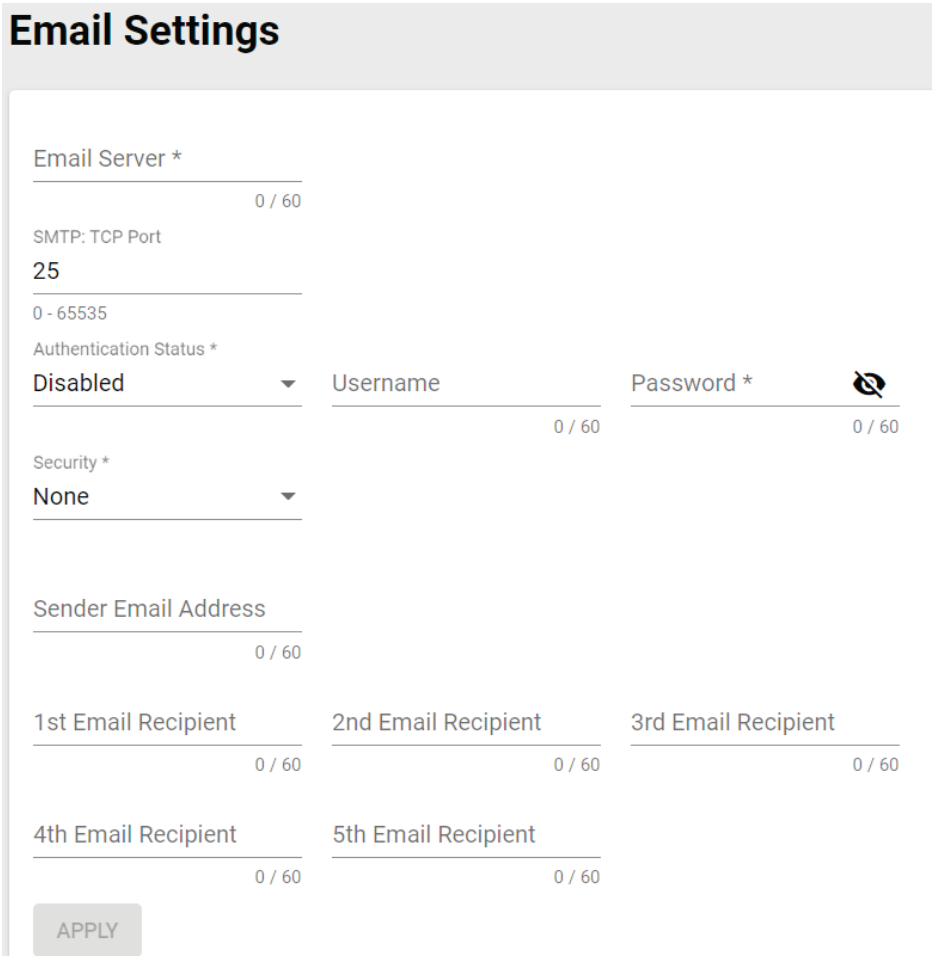
***Encryption Key (when DES and AES is selected)***

| Setting | Description | Factory Default |
|---|---|---|
| 8 to 64 characters | Enter the encryption key. | None |

When finished, click **APPLY**.

## Email Settings

The **Email Settings** page is used to configure email settings for notifications, including the email server, sender, and recipients. Click **Email Settings** under **Diagnostics > Event Logs and Notifications** in the function tree to access this screen.




Configure the following settings.

***Email Server***

| Setting | Description | Factory Default |
|---|---|---|
| IP address or URL | The IP address or URL of the email server. | None |

***SMTP: TCP Port***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 65535 | The TCP port number of the email server. | 25 |

***Authentication Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable authentication for the email server. | Disabled |

***Username***

| Setting | Description | Factory Default |
|---|---|---|
| Max. 60 characters | Enter the email user account. | None |

***Password***

| Setting | Description | Factory Default |
|---|---|---|
| Max. of 60 characters | Enter the email user password | None |

***Security***

| Setting | Description | Factory Default |
|---|---|---|
| None | Do not use any security method. | None |
| STARTTLS | Use STARTTLS as the security method. | |
| SSL/TLS | Use SSL/TLS as the security method. | |

***Sender Email Address***

| Setting | Description | Factory Default |
|---|---|---|
| Max. 60 characters | Enter the sender's email address. | None |

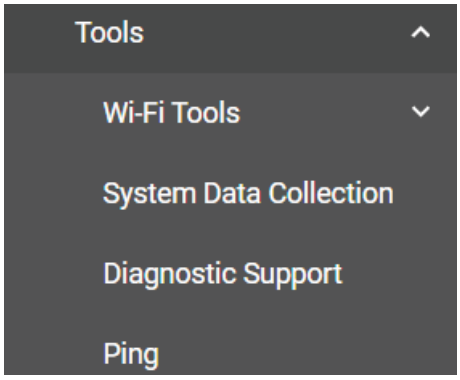
***1st to 5th Email Addresses***

| Setting | Description | Factory Default |
|---|---|---|
| Max. 60 characters | Enter the recipient's email address. You can set up to five recipient email addresses to receive alert emails from the AWK device. | None |

When finished, click **APPLY**.

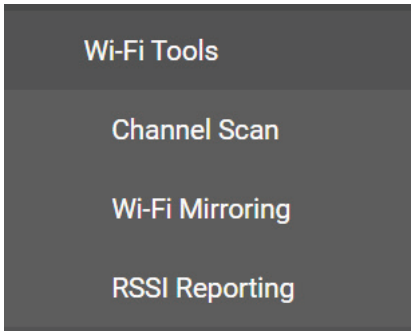
# Tools

The Tools section contains several diagnostics and troubleshooting tools for the AWK, including **Wi-Fi Tools, System Data Collection, Diagnostic Support,** and **Ping**.




## Wi-Fi Tools

Under **Wi-Fi Tools** are the **Channel Scan, Wi-Fi Mirroring**, and **RSSI Reporting** functions.




### Channel Scan

The Channel Scan function is used to analyze the selected RF band for available channels. Click **Channel Scan** under **Diagnostics > Tools > Wi-Fi Tools** in the function tree to access this screen.

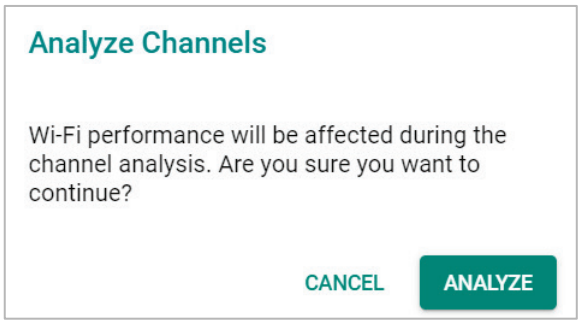

Configure the following setting:

***RF Band***

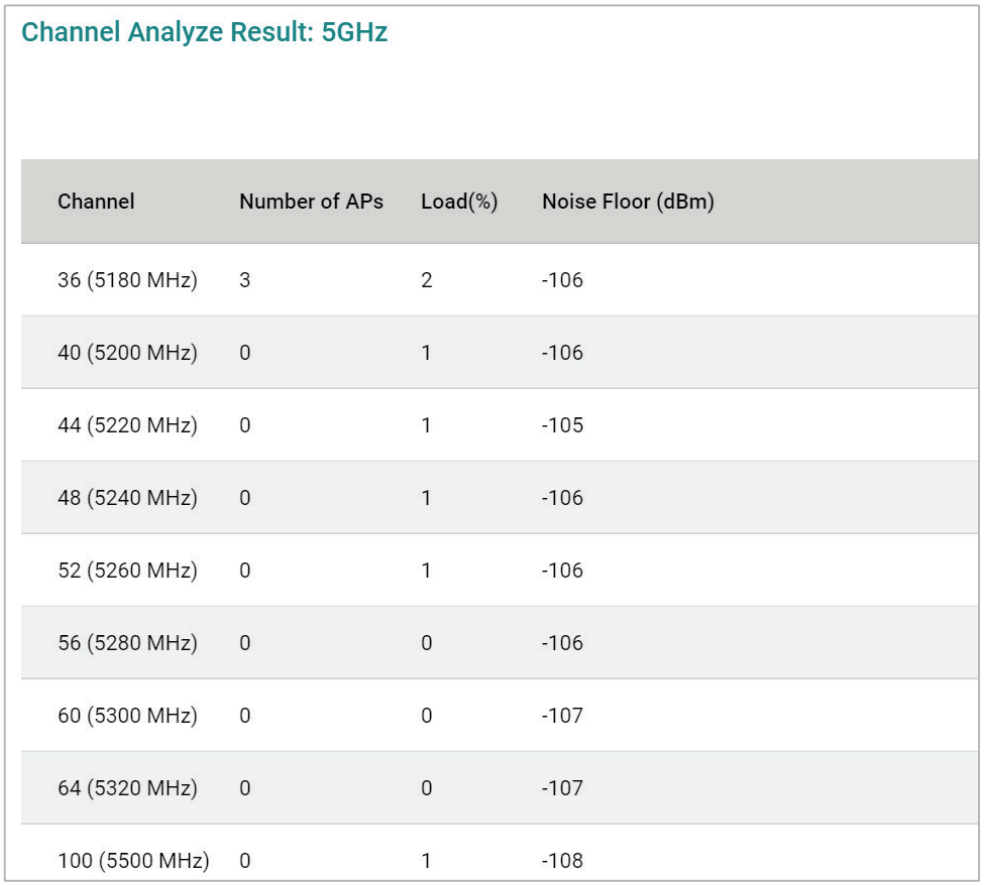
| Setting | Description | Factory Default |
|---|---|---|
| 5 GHz | Scan the 5 GHz RF band. | None |
| 2.4 GHz | Scan the 2.4 GHz RF band. | |
| 5 GHz & 2.4 GHz | Scan both 5 GHz and 2.4 GHz RF bands. | |

When finished, click **ANALYZE**.

When prompted, click **ANALYZE** again.



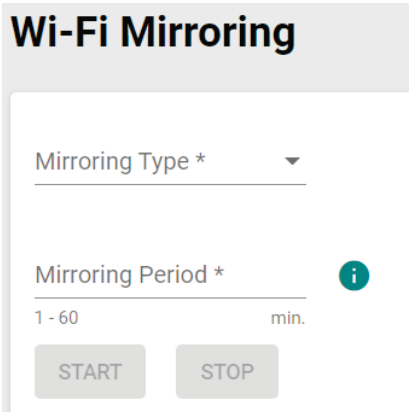

The result of the scan will be shown in the table at the bottom of the page. The Load(%) metric indicates the time the channel was used (in percentage) during the scan. The scan duration is approximately 330 ms for each channel.




| Channel | Number of APs | Load(%) | Noise Floor (dBm) |
|---|---|---|---|
| 36 (5180 MHz) | 3 | 2 | -106 |
| 40 (5200 MHz) | 0 | 1 | -106 |
| 44 (5220 MHz) | 0 | 1 | -105 |
| 48 (5240 MHz) | 0 | 1 | -106 |
| 52 (5260 MHz) | 0 | 1 | -106 |
| 56 (5280 MHz) | 0 | 0 | -106 |
| 60 (5300 MHz) | 0 | 0 | -107 |
| 64 (5320 MHz) | 0 | 0 | -107 |
| 100 (5500 MHz) | 0 | 1 | -108 |

## Wi-Fi Mirroring

Wi-Fi Mirroring lets you copy the traffic of wireless traffic for analysis and troubleshooting purposes. Click **Wi-Fi Mirroring** under **Diagnostics > Tools > Wi-Fi Tools** in the function tree to access this screen.




Configure the following settings.

***Mirroring Type***

| Setting | Description | Factory Default |
|---|---|---|
| Local | Select Local to mirror traffic to the local storage on the device. | None |
| Remote | Select Remote to have the AWK act as a server to be used with capturing tool such as Wireshark to capture the mirror traffic. | |

***Mirroring Period (Local Type only)***

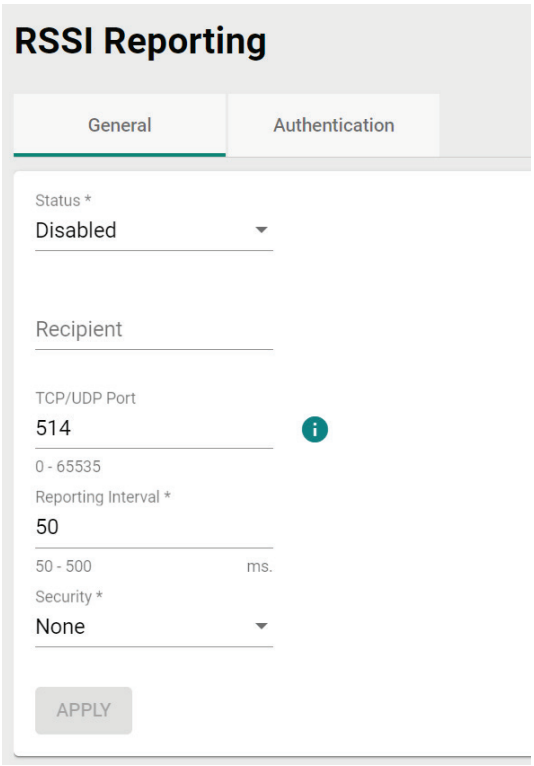
| Setting | Description | Factory Default |
|---|---|---|
| 1 to 60 (min.) | Specify how long the device will mirror wireless traffic. | None |

When finished, click **START** to start mirroring, and **STOP** to stop mirroring.

The result of the mirroring will be shown below. If you selected Local as the mirroring type, click **DOWNLOAD** to download the result to your local machine.

## RSSI Reporting

RSSI Reporting sends out the AP's SNR or detected Signal Strength over Syslog to a designated recipient host for monitoring. This data is used to analyze if the configured Turbo Roaming Threshold and Roaming Difference values are suitable for the current network environment. Click **RSSI Reporting** under **Diagnostics > Tools > Wi-Fi Tools** in the function tree to access this screen.




***Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable RSSI Reporting. | Disabled |

***Recipient***

| Setting | Description | Factory Default |
|---|---|---|
| Host IP/Domain name | Specify the Syslog server host IP or domain name that will receive the RSSI report data. | Empty |

***TCP/UDP Port***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 65535 | Specify the designated Syslog server communication port to receive the RSSI report data on. | None |

***Reporting Interval***

| Setting | Description | Factory Default |
|---|---|---|
| 50 to 500 ms | Specify the interval (in ms) at which RSSI report data is generated and sent to the Syslog server. | None |

***Security***

| Setting | Description | Factory Default |
|---|---|---|
| None/TLS | Specify whether the generated RSSI report data needs to be TLS encrypted or not. | None |

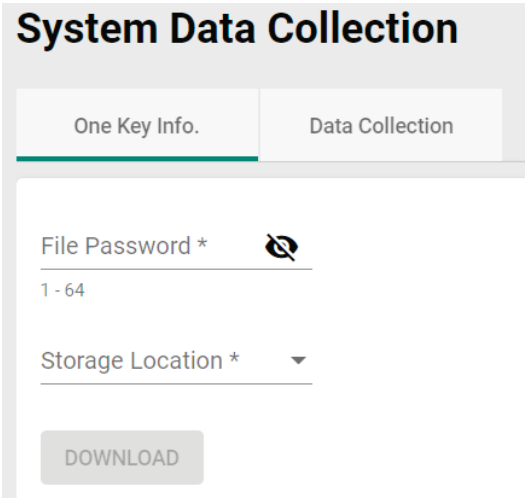
When finished, click **APPLY**.

# System Data Collection

The **System Data Collection** section contains the **One Key Information** and **Data Collection** functions.

## Download One Key Information

Using the **One Key Info** function, all running configuration files, event logs, and CLI status will be saved as a compressed ZIP file and stored on the selected medium. Click the **One Key Info**. Tab to access this screen.




Configure the following settings:

***File Password***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 64 characters | Enter the password for the file. This password will be required to open the compressed file. | None |

***Storage Location***

| Setting | Description | Factory Default |
|---|---|---|
| Local | The file will be downloaded to the local storage on the AWK. | None |
| TFTP | The file will be downloaded to a TFTP server. | |
| SFTP | The file will be downloaded to an SFTP server. | |
| ABC-02 | The file will be downloaded to the connected ABC-02 USB. | |

***Server IP Address (for TFTP only)***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Enter the IP address of the TFTP server. | None |

***Server IP Address (for SFTP only)***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Enter the IP address of the SFTP server. | None |

***Server Account (for SFTP only)***

| Setting | Description | Factory Default |
|---|---|---|
| Account name | Enter the account name of the SFTP server. | None |

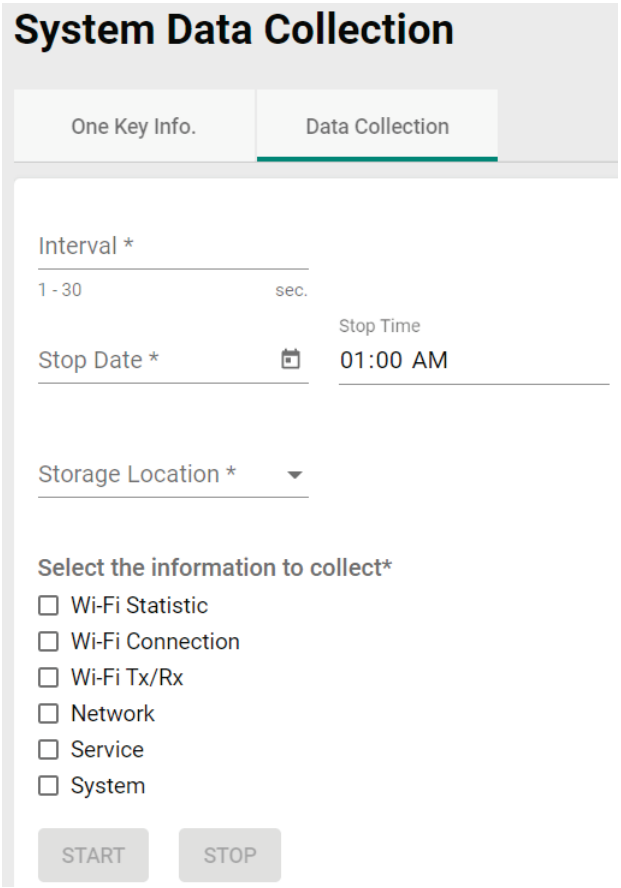
***Server Password (for SFTP only)***

| Setting | Description | Factory Default |
|---|---|---|
| Account password | Enter the account password of the SFTP server. | None |

When finished, click **DOWNLOAD** to download the file.

## Data Collection

The **Data Collection** function is used to gather selected system information at specific intervals. Click the **Data Collection** tab to access this screen.




Configure the following settings:

***Interval***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 30 (sec.) | Specify the interval at which the AWK will collect information. | None |

***Stop Date***

| Setting | Description | Factory Default |
|---|---|---|
| Date | Specify the date the device will stop collecting information. | None |

***Stop Time***

| Setting | Description | Factory Default |
|---|---|---|
| Time | Specify the time the device will stop collecting information. | 01:00 AM |

***Storage Location***

| Setting | Description | Factory Default |
|---|---|---|
| Local | The file will be downloaded to the local storage on the AWK. | None |
| TFTP | The file will be downloaded to a TFTP server. | |
| SFTP | The file will be downloaded to an SFTP server. | |
| ABC-02 | The file will be downloaded to the connected ABC-02 USB. | |

***Server IP Address (for TFTP only)***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Enter the IP address of the TFTP server. | None |

***Server IP Address (for SFTP only)***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Enter the IP address of the SFTP server. | None |

***Server Account (for SFTP only)***

| Setting | Description | Factory Default |
|---|---|---|
| Account name | Enter the account name of the SFTP server. | None |

***Server Password (for SFTP only)***

| Setting | Description | Factory Default |
|---|---|---|
| Account password | Enter the account password of the SFTP server. | None |

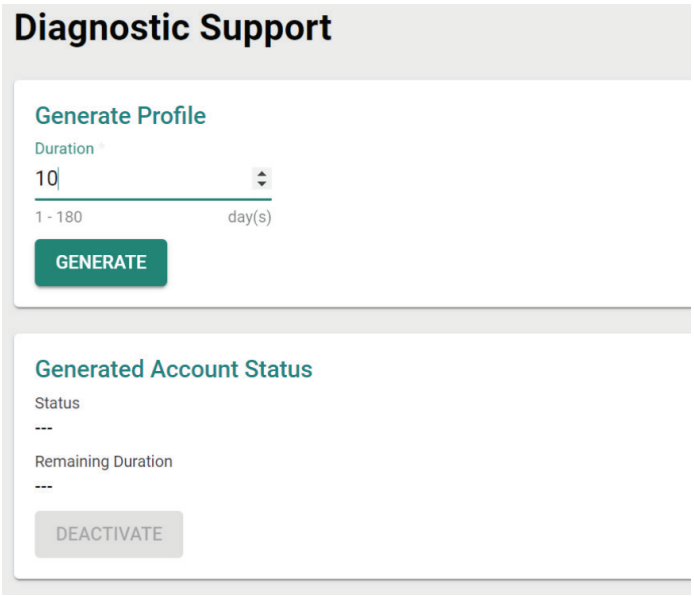
***Select the information to collect***

| Setting | Description | Factory Default |
|---|---|---|
| Wi-Fi Statistic | Select the types of information you want to collect. | None |
| Wi-Fi Connection | | |
| Wi-Fi Tx/Rx | | |
| Network | | |
| Service | | |
| System | | |

When finished, click **START** to begin collecting information, and **STOP** to end.

## Diagnostic Support

This feature allows an authorized user to generate an engineering account for Moxa support staff to access and troubleshoot the AWK Series. Click **Diagnostic Support** under **Diagnostics > Tools** in the function tree to access this screen.




***Duration***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 180 (days) | Specify how long the diagnostics account will be active for. | None |

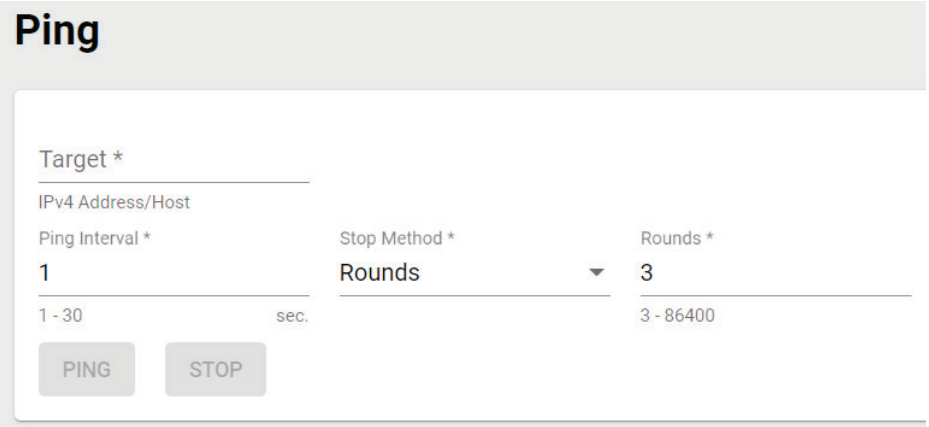
You can check the account status at any time in the bottom section of the screen. Click **DEACTIVATE** to immediately terminate a generated diagnostics account.

### NOTE

Only provide generated diagnostics account credentials to authorized Moxa support personnel.

## Ping

The **Ping** function is used to check the connection to a remote host. Click **Ping** under **Diagnostics > Tools** in the function tree to access this screen.




Configure the following settings:

***Target***

| Setting | Description | Factory Default |
|---|---|---|
| IP address/hostname | Enter the IP address or hostname you want to ping. | None |

***Ping Interval***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 30 (sec.) | Specify the interval at which the AWK will ping the host. | 1 |

***Stop Method***

| Setting | Description | Factory Default |
|---|---|---|
| Rounds | Specify Rounds as the stop method. | Rounds |
| Timestamps | Specify Timestamps as the stop method. | |

***Rounds (for Rounds Method only)***

| Setting | Description | Factory Default |
|---|---|---|
| 3 to 86400 | Specify the round value. | 3 |

***End Date (for Timestamps Method only)***

| Setting | Description | Factory Default |
|---|---|---|
| Date | Specify the date when to stop pinging the IP address or hostname. | None |

***End Time (for Timestamps Method only)***

| Setting | Description | Factory Default |
|---|---|---|
| Time | Specify the time to stop pinging the IP address or hostname. | 01:00 AM |

When finished, click **PING** to begin pinging, or **STOP** to send.

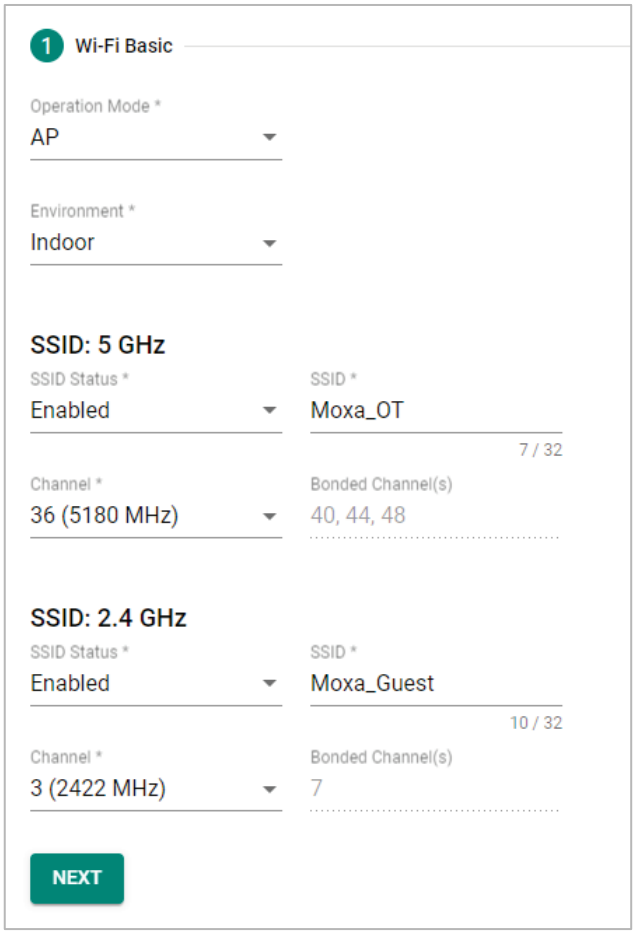
# Setup Wizard

The **Setup Wizard** allows users to perform basic device configurations to get the AWK running quickly.

Click **Setup Wizard** in the function tree to start the Wizard, then follow the on-screen instructions. There are three configuration tabs: **Wi-Fi Basic, Wi-Fi Security,** and **System**. While the Wizard will start from the **Wi-Fi Basic** section by default, you can go to any other tab at any time.

# Wi-Fi Basic

Configure the following settings:




***Operation Mode***

| Setting | Description | Factory Default |
|---|---|---|
| Disabled | Disable the operation mode. | Disabled |
| AP | Specify the operation mode as AP. Refer to **AP Mode Settings**. | |
| Master | Specify the operation mode as Master. Refer to **Master Mode Settings**. | |
| Mesh | Specify the operation mode as Mesh. Refer to **Mesh Mode Settings**. | |
| Client | Specify the operation mode as Client. Refer to **Client Mode Settings**. | |
| Client-router | Specify the operation mode as Client-router. Refer to **Client-router Mode Settings**. | |
| Slave | Specify the operation mode as Slave. Refer to **Slave Mode Settings**. | |

***Environment***

| Setting | Description | Factory Default |
|---|---|---|
| Indoor | Set the application environment to indoor. Available channels vary depending on the selection. | Indoor |
| Outdoor | Set the application environment to outdoor. Available channels vary depending on the selection. | |

## SSID: 2.4 GHZ

***SSID Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disable | Enable or disable the SSID. | Disabled |

***SSID***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 32 characters | Enter a name for the SSID. | None |

***Channel (AP, Master, Master Mode Only)***

| Setting | Description | Factory Default |
|---|---|---|
| 1 (2412 MHz) to 11 (2462 MHz) | Select the channel from the drop-down list. Each channel supports different frequencies. | 6 (2437 MHz) |

***Bonded Channel (AP, Master, Mesh Mode Only)***

| Setting | Description | Factory Default |
|---|---|---|
| 10 (read only) | The bonded channel used by the AP will be shown here if channel width is set to 20/40 MHz. | None |

## SSID: 5 GHZ

***SSID Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disable | Enable or disable the SSID. | Disabled |

***SSID***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 32 characters | Enter a name for the SSID. | None |

***RF Band (Client, Client-router, Slave Mode Only)***

| Setting | Description | Factory Default |
|---|---|---|
| 5 GHz | Select 5 GHz as the RF band. | 5 GHz |
| 2.4 GHz | Select 2.4 GHz as the RF band. | |
| 5 GHz & 2.4 GHz | Select both 5 GHz and 2.4 GHz as the RF bands. | |

***5 GHz Channel Plan (Client, Client-router, Slave Mode Only)***

| Setting | Description | Factory Default |
|---|---|---|
| Channel | Select the channel for the 5 GHz band. | Any |

***Channel (AP, Master, Mesh Mode Only)***

| Setting | Description | Factory Default |
|---|---|---|
| 36 (5180 MHz) to 165 (5825 MHz) | Select the channel from the drop-down list. Each channel supports different frequencies. | 36 (5180 MHz) |

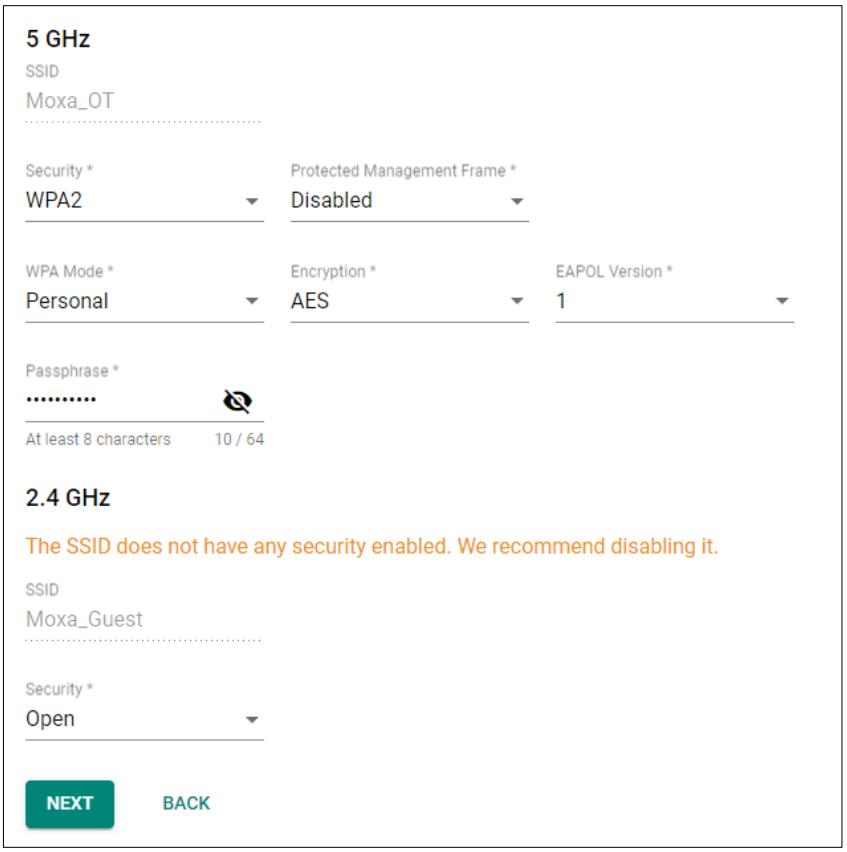
***Bonded Channel (AP, Master, Mesh Mode Only)***

| Setting | Description | Factory Default |
|---|---|---|
| 40/44/48 (read only) | The bonded channel used by the AP will be shown here if channel width is set to 36 (5180 GHz). | None |

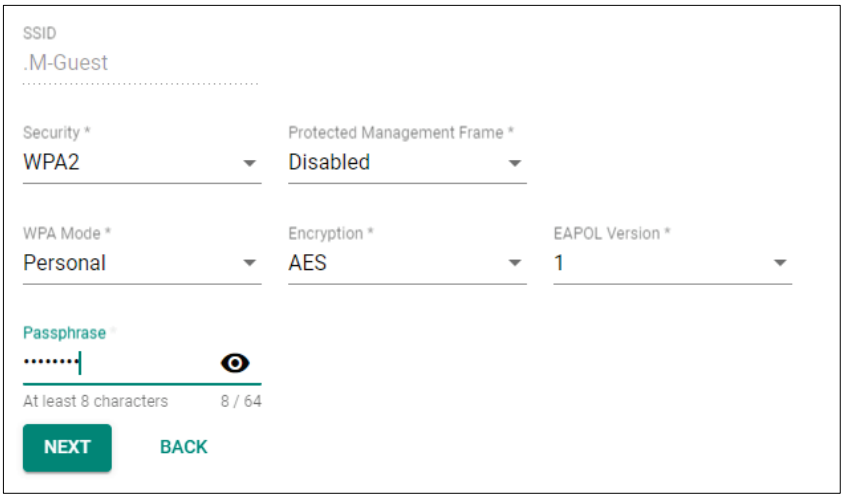
When finished, click **NEXT**.

# Wi-Fi Security

### AP/Master/Mesh Mode




### Client/Client-router/Slave Mode



***SSID***

| Setting | Description | Factory Default |
|---|---|---|
| SSID (read only) | Shows the name for the SSID. | None |

***Security***

| Setting | Description | Factory Default |
|---|---|---|
| Open | Disable security on the SSID. This is not recommended. | Open |
| WPA | Use WPA authentication. | |
| WPA2 | Use WPA2 authentication. This mode supports IEEE 802.11i with TKIP/AES + 802.1X encryption. | |
| WPA3 | Use WPA3 authentication. This mode supports SAE (Simultaneous Authentication of Equals) to avoid network attacks, such as KRACK. | |
| WPA/WPA2 Mixed | Use WPA/WPA2 Mixed authentication. This allows both WPA and WPA2 clients to connect to the AWK. | |
| WPA2/WPA3 Mixed | Use WPA/WPA3 Mixed authentication. This allows both WPA2 and WPA3 clients to connect to the AWK. | |

When using any security mode except **Open**, configure the following settings:

***Protected Management Frame***

| Setting | Description | Factory Default |
|---|---|---|
| Disabled | Disable the protected management frame. This option is not available when using WAP3. | Disabled |
| 802.11w | Use 802.11w protocol as the protected management frame. | |

***WPA type***

| Setting | Description | Factory Default |
|---|---|---|
| Personal | Use WPA, WPA2, and WPA3 with a Pre-shared Key (PSK). | Personal |
| Enterprise | Use WPA, WPA2, and WPA3 with EAP security. | |

***Primary/Secondary RADIUS Server IP (for Enterprise mode only)***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Specify the RADIUS authentication server for EAP. | None |

***Primary/Secondary RADIUS Port (for Enterprise mode only)***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 65535 | Specify RADIUS server port number. | 1812 |

***Primary/ Secondary RADIUS Shared Key (for Enterprise mode only)***

| Setting | Description | Factory Default |
|---|---|---|
| 0 to 128 characters | Enter the secret key shared for communication between AP and the RADIUS server. The key cannot contain the following special characters: ` ' " \| ; & $ | None |

***Encryption***

| Setting | Description | Factory Default |
|---|---|---|
| AES | Use Advance Encryption System (AES) encryption. | TKIP/AES Mixed |
| TKIP/AES Mixed* | Use TKIP/AES Mixed encryption. This option provides a TKIP broadcast key and TKIP+AES unicast key to support legacy AP clients. This option is rarely used and is not available when using WAP3. | |

**This option is available for legacy mode in AP/Master only and does not support AES-enabled clients.*

***EAPOL Version***

| Setting | Description | Factory Default |
|---|---|---|
| 1 | Use EAPOL Version 1 as the security authentication method. | 1 |
| 2 | Use EAPOL Version 2 as the security authentication method. | |

***Passphrase (for Personal mode only)***

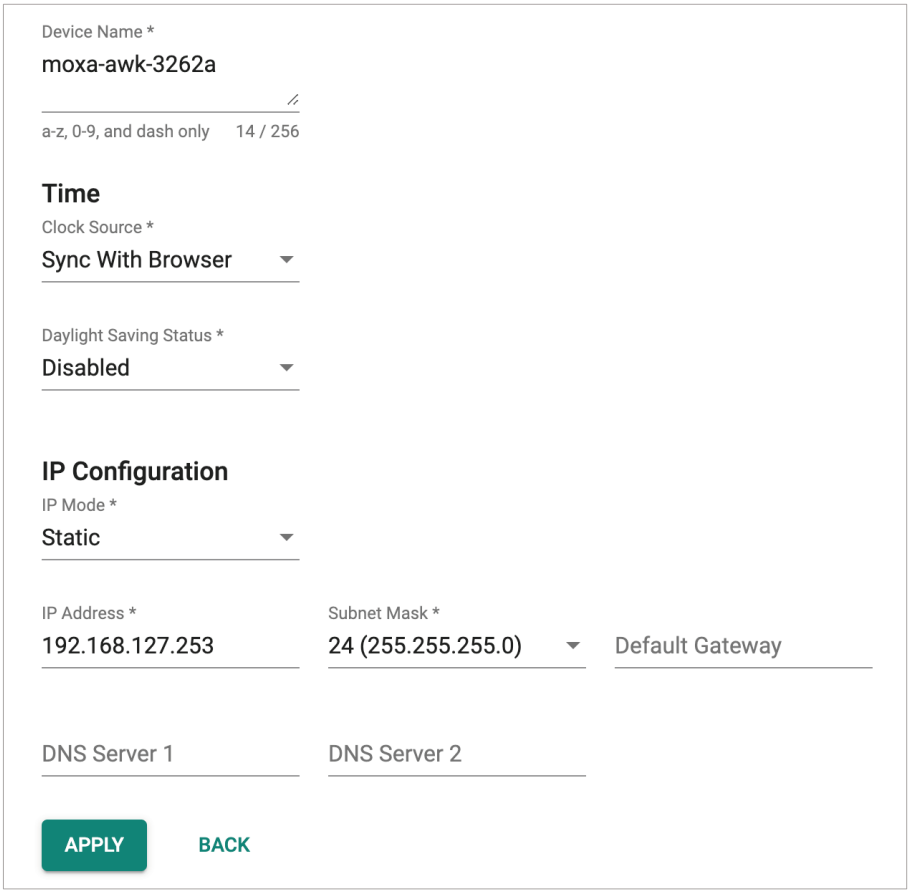
| Setting | Description | Factory Default |
|---|---|---|
| 8 to 63 characters | Enter the passphrase. This is the master key to generate keys for encryption and decryption. The passphrase cannot contain the following special characters: ` ' " \| ; & $<br>Check **Show Password** to display the password in clear text. | None |

***EAP Protocol (for Enterprise mode only)***

| Setting | Description | Factory Default |
|---|---|---|
| TLS | Use EAP-TLS to validate the connection. This option allows the user to upload a TLS certificate to perform the identity check. | TLS |
| TTLS | Use TTLS to validate the connection. This option requires users to also specify the Anonymous Name, Username, and Password. | |
| PEAP | Use PEAP to validate the connection. This option requires users to also specify the Anonymous Name, Username, and Password. | |

When finished, click **NEXT**.

# System



***Device Name***

| Setting | Description | Factory Default |
|---|---|---|
| 1 to 255 characters | Enter a name for the device. This is useful for differentiating between the roles or applications of different units. Note that the device name cannot be empty and must comply with the following naming rules:<br>• Only supports letters (a-z), numbers (0-9), and special character dash (-)<br>• Cannot contain any spaces<br>• Cannot start with dash (-)<br>• Cannot end with dash (-)<br>• When used in a PROFINET environment, cannot start with the prefix "port-x" where "x" equals 0 to 9. There is no validity check to identify incorrect name formats. | moxa-awk-3262a |

## Time

***Clock Source***

| Setting | Description | Factory Default |
|---|---|---|
| Sync From Browser | Synchronize the system clock with the browser's clock. | Sync From Browser |
| NTP | Set the clock source to NTP. This will sync the system clock with an external NTP server. | |

***Time Server 1 (for Clock Source is NTP)***

| Setting | Description | Factory Default |
|---|---|---|
| NTP time server | Specify the IP or domain address of the primary NTP server to use (e.g., 192.168.1.1, time.stdtime.gov.tw, or time.nist.gov). | None |

***Time Server 2 (for Clock Source is NTP)***

| Setting | Description | Factory Default |
|---|---|---|
| NTP time server | Specify the IP or domain address of the secondary NTP server. The secondary NTP server acts as a backup in case the device fails to connect to the first NTP server. | None |

***Time Zone***

| Setting | Description | Factory Default |
|---|---|---|
| Time zone | Select a time zone. | UTC+00:00 |

***Daylight Saving Time Status***

| Setting | Description | Factory Default |
|---|---|---|
| Enabled/Disabled | Enable or disable Daylight Saving Time. | Disabled |

***Offset***

| Setting | Description | Factory Default |
|---|---|---|
| User-specified value | Specify the offset value for Daylight Saving Time. | 00:00 |

***Start***

| Setting | Description | Factory Default |
|---|---|---|
| User-specified date | Specify the date that Daylight Saving Time begins. | None |

***End***

| Setting | Description | Factory Default |
|---|---|---|
| User-specified date | Specify the date that Daylight Saving Time ends. | None |

## IP Configuration

***IP Mode***

| Setting | Description | Factory Default |
|---|---|---|
| DHCP | The AWK is assigned an IP address automatically by the network's DHCP server. | Static |
| Static | Manually configure up the AWK's IP address. | |

***IP Address (for Static mode only)***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Enter the AWK's IP address. | 192.168.127.253 |

***Subnet Mask (for Static mode only)***

| Setting | Description | Factory Default |
|---|---|---|
| Subnet mask | Select the subnet mask. This is used to identify the type of network the AWK is connected to (e.g., 255.255.0.0 for a Class B network, or 255.255.255.0 for a Class C network). | 24 (255.255.255.0) |

***Default Gateway (for Static mode only)***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Enter the IP address of the router that connects the LAN to an outside network. | None |

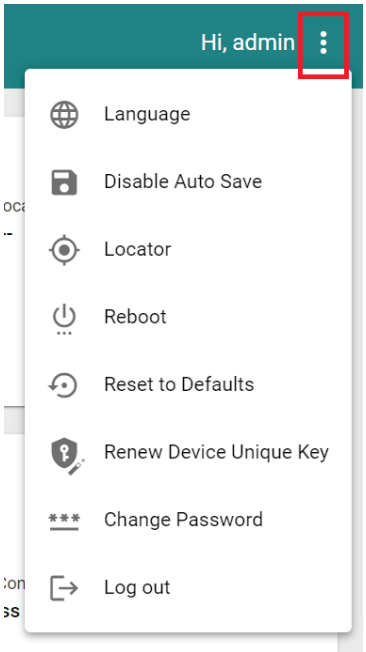
***DNS Server 1 and DNS Server 2 (for Static mode only)***

| Setting | Description | Factory Default |
|---|---|---|
| IP address | Enter the primary and secondary DNS server address. After entering the DNS server's IP address, you can input the AWK's URL (e.g., http://ap11.abc.com) in your browser's address field instead of entering the IP address. The Secondary DNS server will be used if the Primary DNS server fails to connect. | None |

When finished, click **APPLY**.

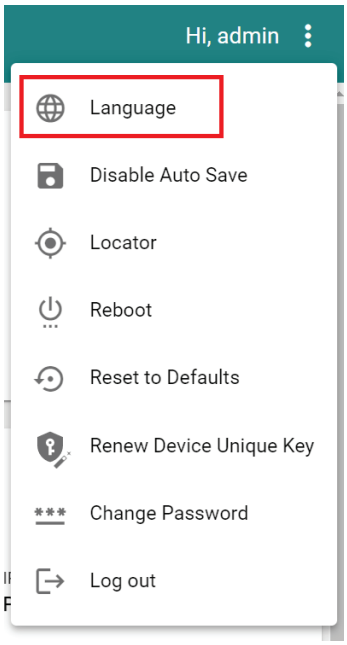
# Maintenance and Tools

The user tools and functions are located at the top-right of the interface. Click the three-dot icon in the upper right corner of the page to open the user menu.




## Language

The AWK Series v1.1 firmware and above support language localization. Administrators can select the display language of the web interface from the drop-down menu. The AWK supports the following languages: English, Simplified Chinese, Traditional Chinese, and Japanese. The default is English.

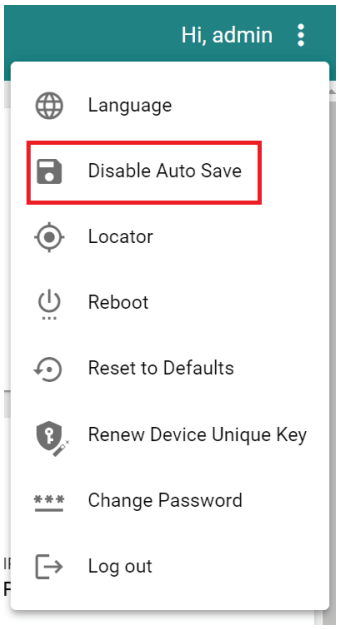



**NOTE**

Language options are only available for the web interface. The CLI only supports English.

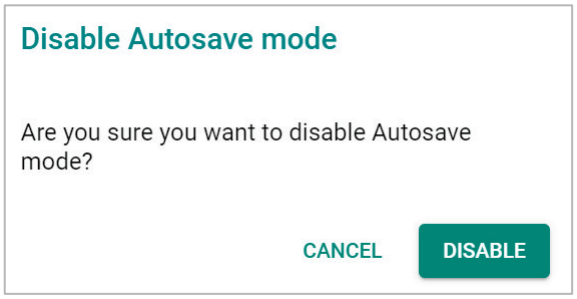
## Disable Auto Save

**Auto Save** will automatically save the configuration changes to the startup configuration. All parameters will be effective immediately when applied, even if the AWK is restarted. If **Auto Save** is disabled, all parameters will be temporarily stored in the running configuration (memory). To make any changes take effect, you will need to save the running-configuration to the startup configuration after applying the changes.



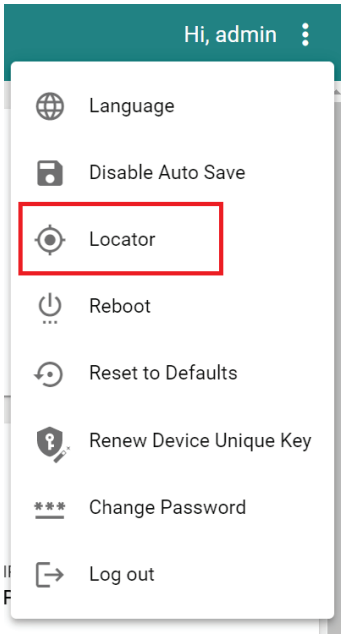
When **Disable Auto Save** is active, only the running configuration is saved. Disconnecting the power or performing a warm start will undo any running changes. When **Auto Save** is enabled, the startup configurations will be saved on the AWK.

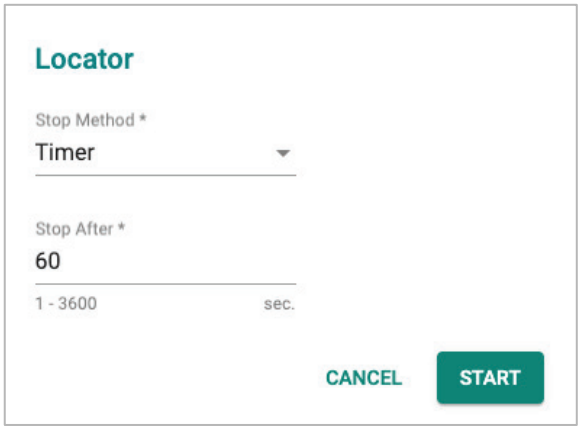
To disable the **Auto Save** function, click **Disable Auto Save** in the menu. When prompted, click **DISABLE** to disable the function.




# Locator

Clicking **Locator** will trigger the wireless and SYSTEM LEDs to start flashing green at a 4 Hz interval for one minute (default) alongside an audible beeper. This feature is useful for locating the physical device in a field site.



***Stop Mechanism***

| Setting | Description | Factory Default |
|---|---|---|
| Timer | Use a timer to stop the locator LEDs from blinking. | Timer |
| Manually | Stop the locator LEDs manually. | |

***Duration***

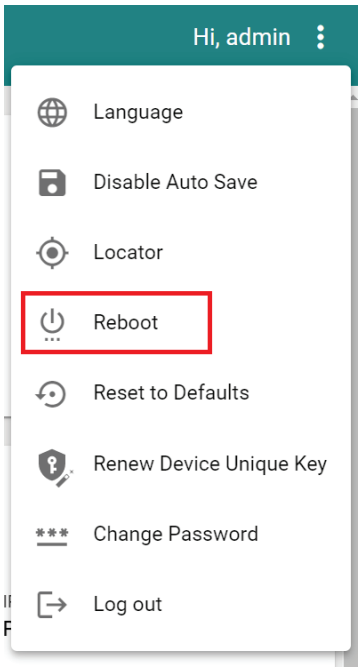
| Setting | Description | Factory Default |
|---|---|---|
| 1 to 3600 (sec.) | Specify the duration the LEDs will be blinking for. | 60 |

When finished, click **START** to activate the LEDs.

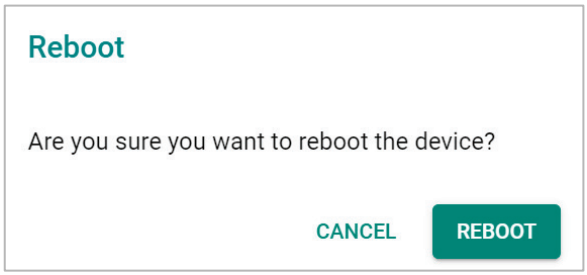
***LEDs triggered: WLAN, SYSTEM***

# Reboot

To reboot the AWK, click **Reboot**.

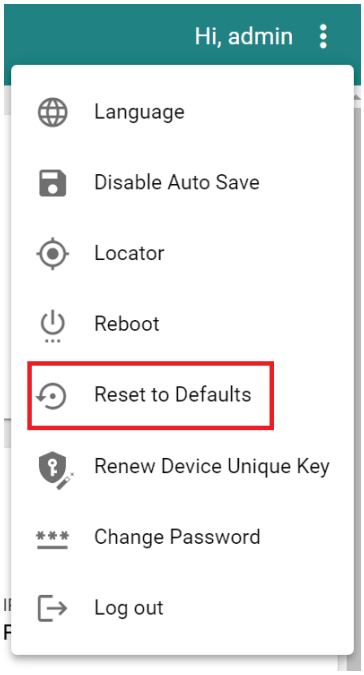



When prompted, click **REBOOT** to reboot the AWK.

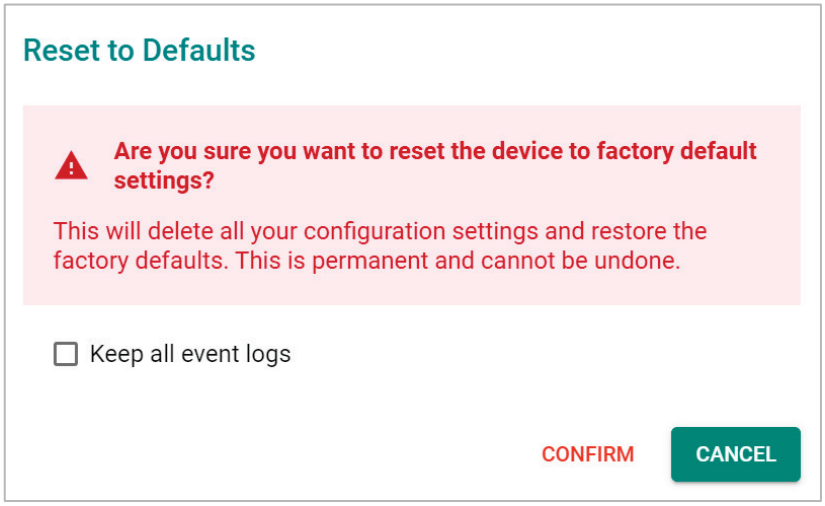



# Reset to Defaults

To reset the AWK to the factory default settings, click **Reset to Defaults**.




When prompted, check **Keep all event logs** if you want to keep the event history, then click **CONFIRM**.




## WARNING

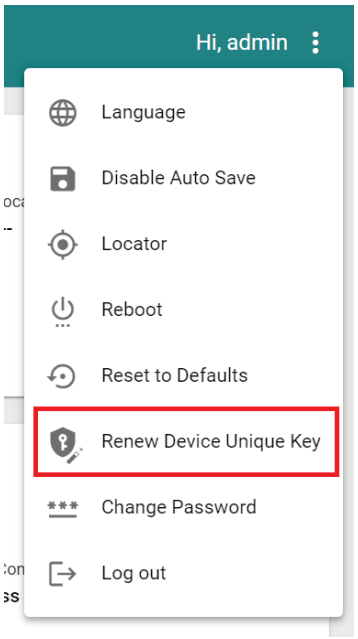
Resetting the AWK to the factory default settings will permanently delete all your configuration settings. This is permanent and cannot be undone.

# Renew Device Unique Key

The AWK Series has a built-in device unique key. This unique key is used to encrypt the following sensitive information stored on the device:

- Configurations
- Certifications
- Encryption/decryption keys (for firmware decryption, diagnostic support encryption, etc.)

To improve device security, administrators can renew the device unique key from the maintenance list.

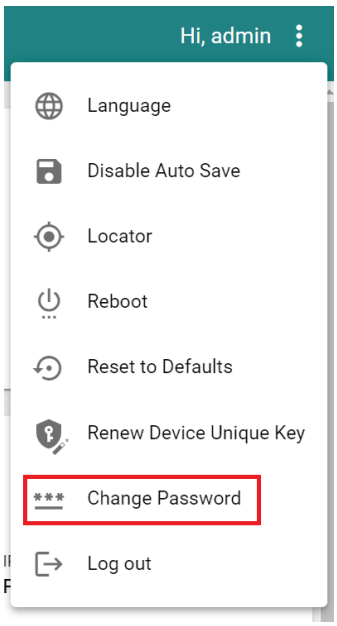



**WARNING**

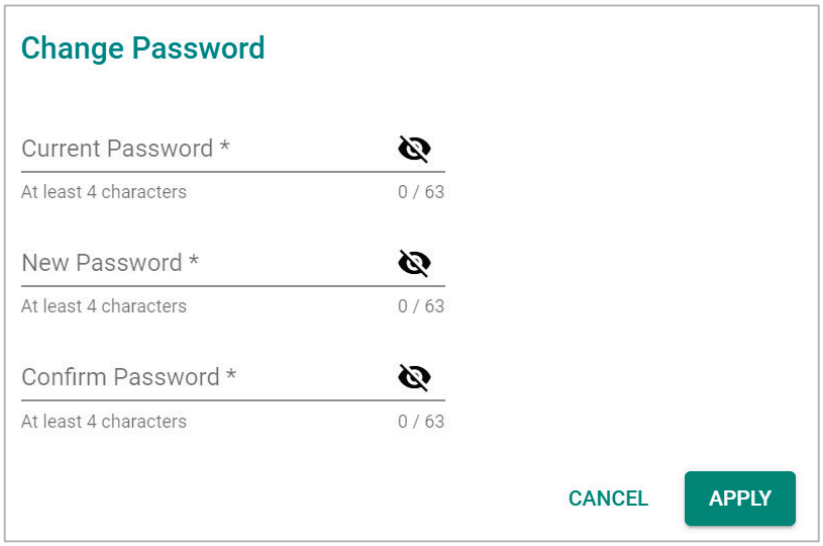
When triggered, the system will take 12 to 15 seconds to renew the device unique key and will then reboot to activate the renewed device unique key. Please do not power off the device during this process.

# Change Password

Click **Change Password** to change the password of the AWK.




Configure the following settings:




***Current Password***

| Setting | Description | Factory Default |
|---|---|---|
| 4 to 63 characters | Enter the current password. | None |

***New Password***

| Setting | Description | Factory Default |
|---|---|---|
| 4 to 63 characters | Enter the new password. | None |

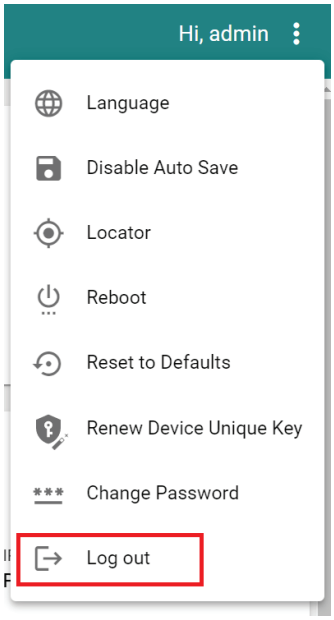
***Confirm Password***

| Setting | Description | Factory Default |
|---|---|---|
| 4 to 63 characters | Enter the new password again. | None |

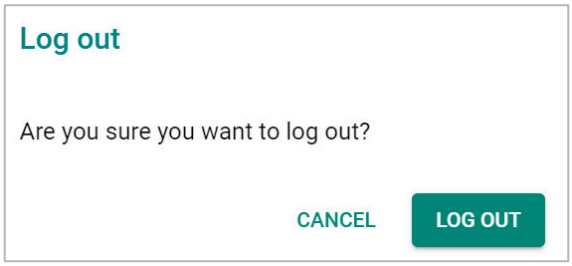
When finished, click **APPLY** to change the password.

# Log Out

To log out of the AWK, click **Log out**.




When prompted, click **LOG OUT** to log out of the AWK.



# A. Supporting Information

This chapter presents additional information about this product. You can also learn how to contact Moxa for technical support.

# Device Recovery

In event the device is not working properly, including configuration changes not applying, the first troubleshooting action is to perform a power cycle. This is done by removing and reconnecting the power and verifying if the situation is resolved.

If power cycle does not solve the issue, the next step is to perform a reset to factory default setting. Refer to **Reset Device**.

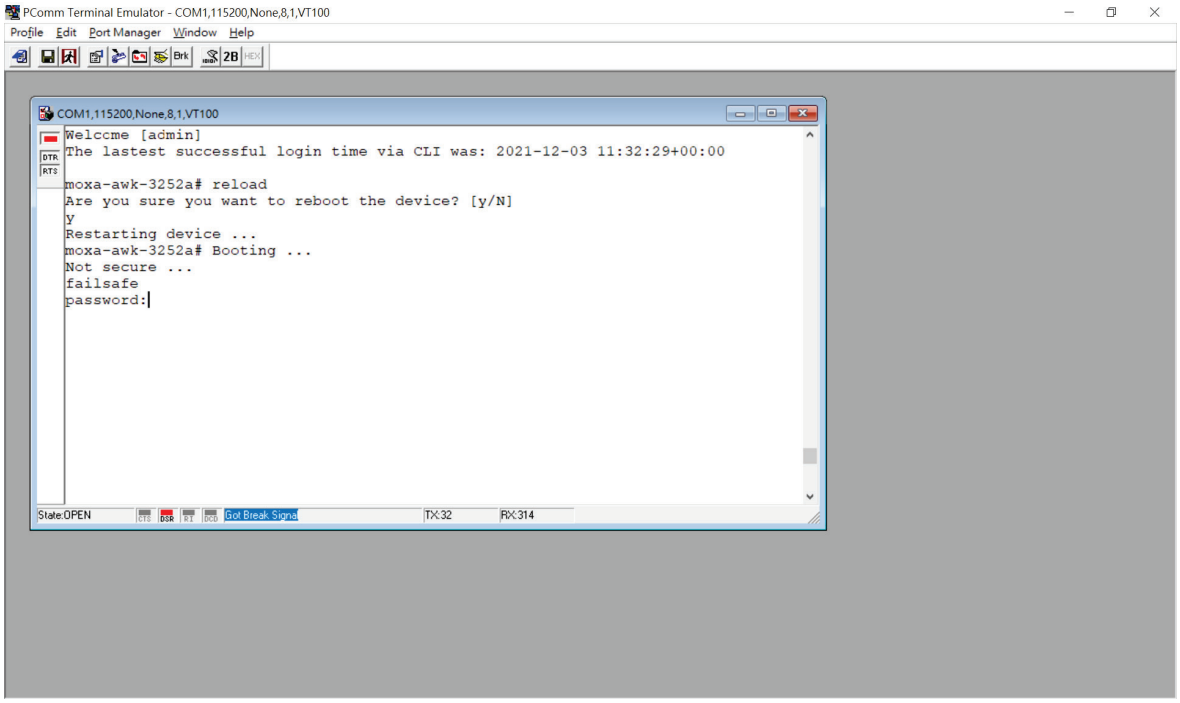
If you cannot access the web interface, and/or the Reset button is disabled, you can attempt to reset the device via the serial console's CLI FailSafe mode.

**NOTE**

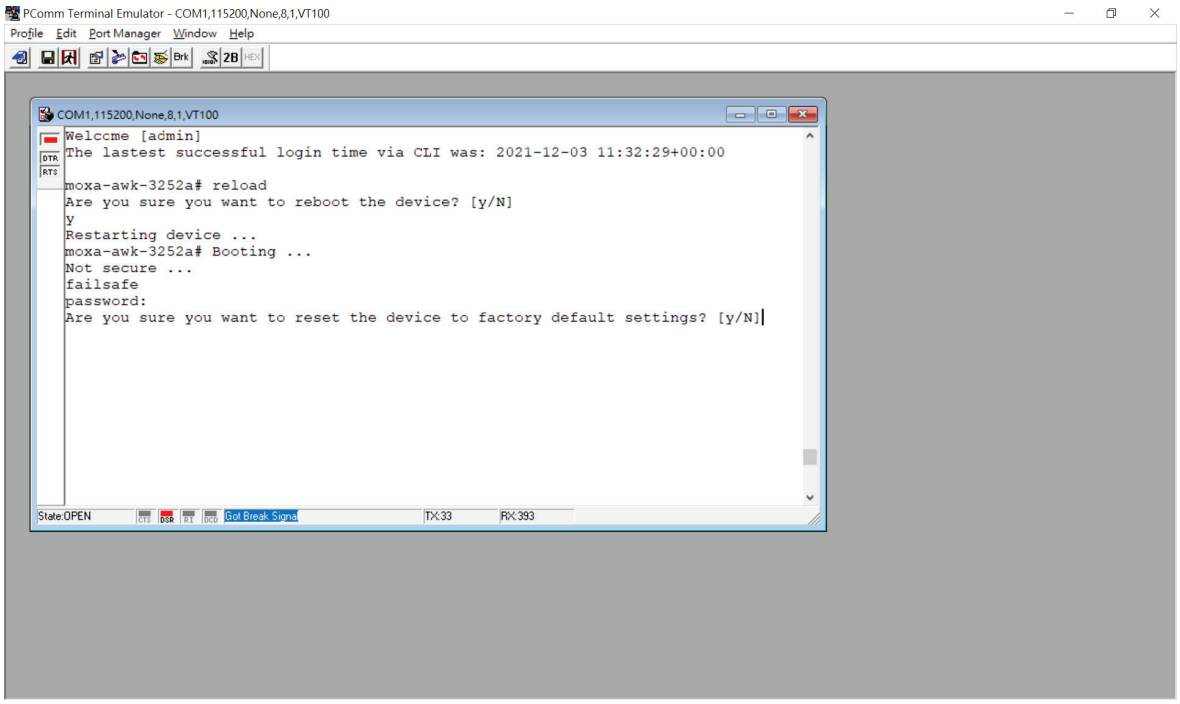
The admin password is required to authorize the FailSafe function.

Follow the instructions in the **Accessing the Serial Consoles** section to access the serial console CLI interface and enter the "reload" command to reboot the device.

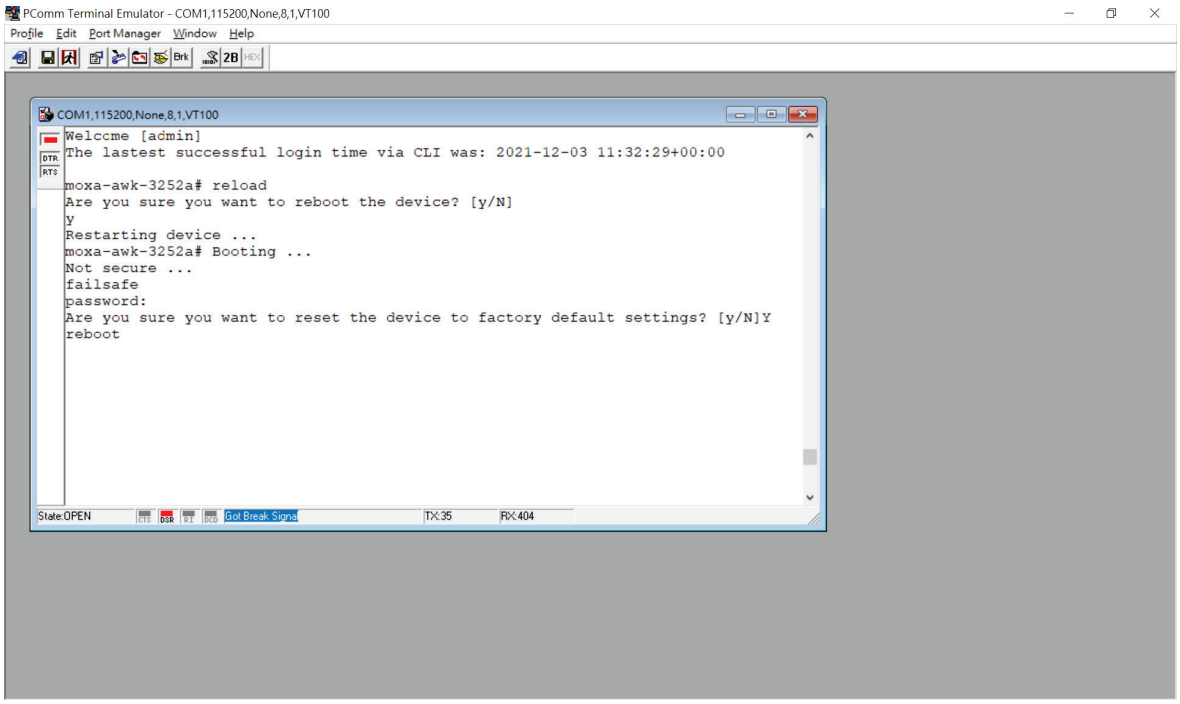
When the terminal is showing "Restarting device … [device]# Booting …", enter the "failsafe" command.



FailSafe mode will be triggered, and you will be prompted to confirm if you want to reset the device back to factory default settings.




Enter **Y** to make the device initiate a reset to factory default settings.




When the command line prompt displays the login prompt, it means the device was successfully reset to factory default settings.

# B. Accessing the Serial Consoles

This chapter explains how to access the AWK Series. In addition to HTTP/HTTPS access, the AWK Series can also be accessed through the serial console and Telnet/SSH console. The serial console connection method, which requires a serial cable to connect the AWK Series to a PC's COM port, can be used if you do not know the AWK Series' IP address. The other consoles can be used to access the AWK Series over an Ethernet LAN, or over the Internet.

## RS-232 Console Configuration (115200, None, 8, 1, VT100)

The serial console connection method, which requires a serial cable to connect the AWK Series to a PC's COM port, can be used if you do not know the AWK Series' IP address. It is also convenient to use serial console configurations when you cannot access the AWK Series over Ethernet LAN.

**ATTENTION**

Do not use the RS-232 console manager when the AWK Series is powered at reversed voltage (ex. -48 VDC), even though reverse voltage protection is supported.

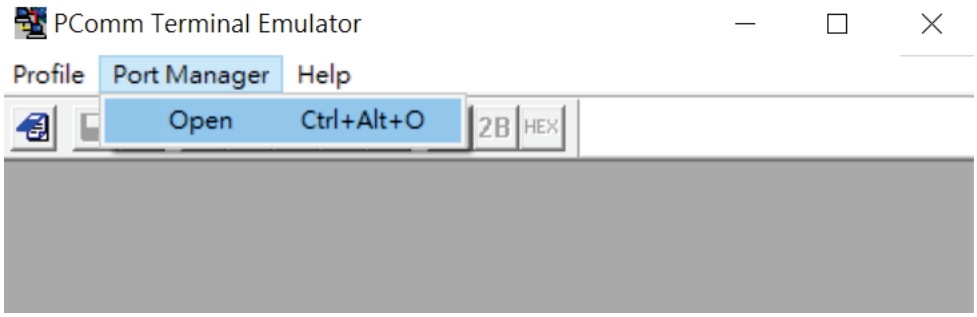
If you need to connect the RS-232 console at reversed voltage, we highly recommend using an isolator, such as the Moxa TCC-82 isolator.

**NOTE**

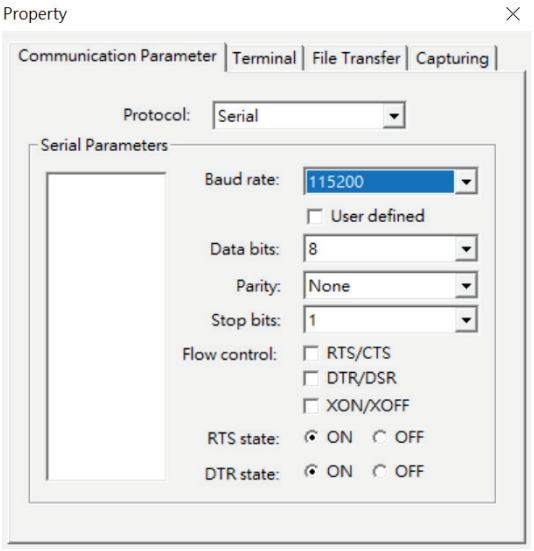
We recommend using **Moxa PComm (Lite)** Terminal Emulator, which can be downloaded free of charge from Moxa's website.

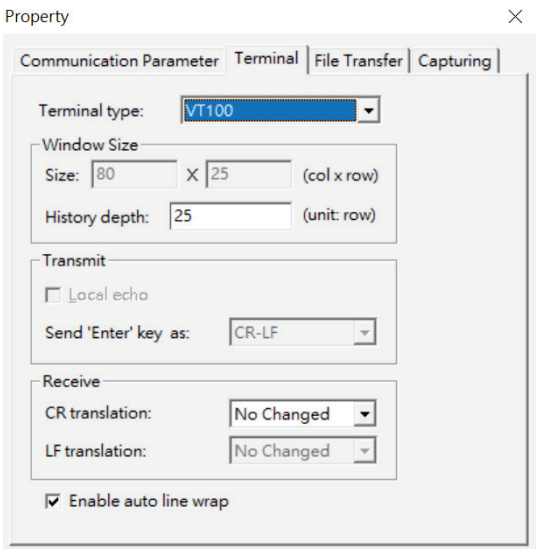
Before running PComm Terminal Emulator, use an RJ45-to-DB9-F (or RJ45-to-DB25-F) cable to connect the AWK Series' RS-232 console port to your PC's COM port (generally COM1 or COM2, depending on how your system is set up). After installing PComm Terminal Emulator, perform the following steps to access the RS-232 console utility.

1. From Windows desktop, open the Start menu and run **PComm Terminal Emulator** in the PComm (Lite) group.
2. Select **Open** under **Port Manager** to open a new connection.

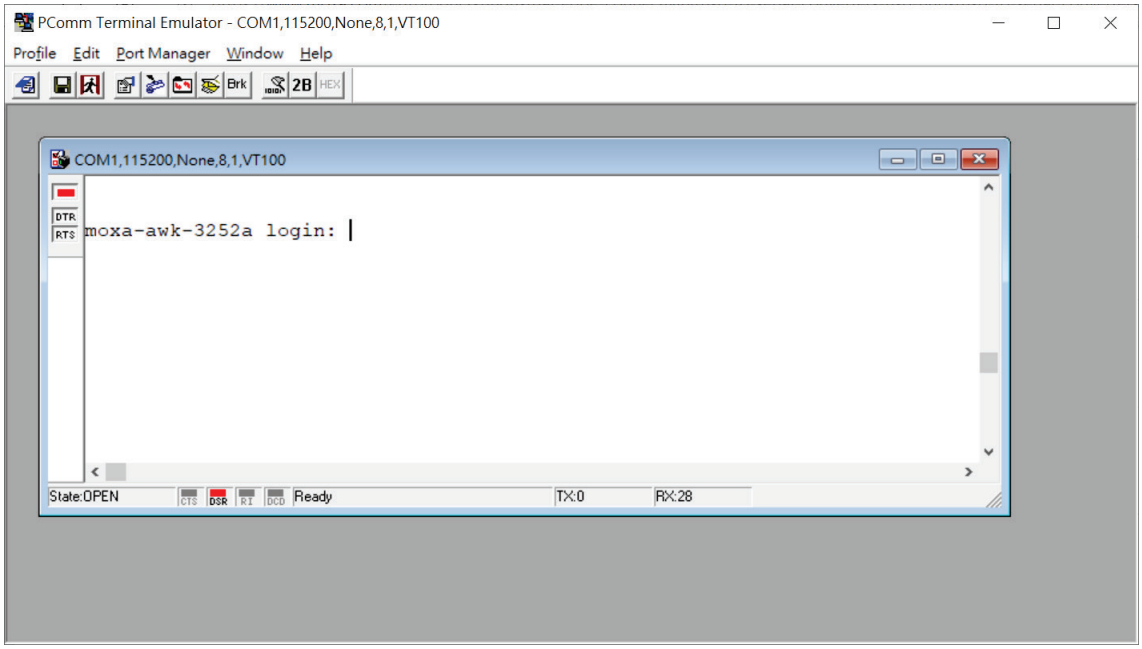


The **Communication Parameter** page of the Property window opens. Select the appropriate COM port for the Console Connection, **115200** for Baud Rate, **8** for Data Bits, **None** for Parity, and **1** for Stop Bits. Click on the **Terminal** tab and select **VT100 (or ANSI)** for Terminal Type. Click **OK** to continue.

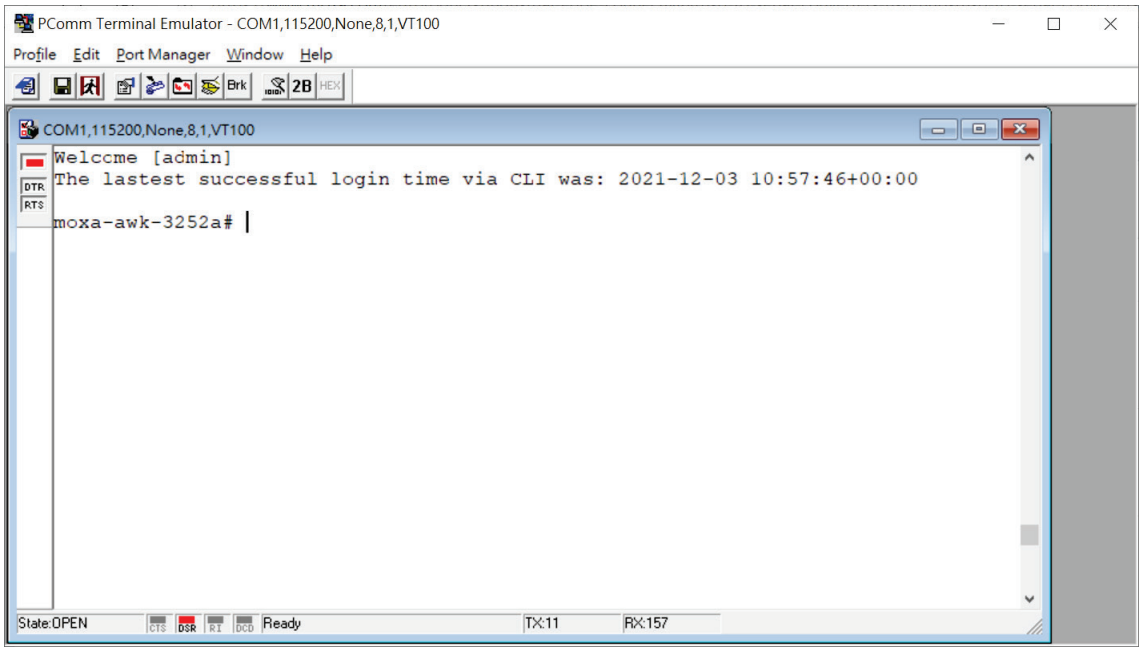



3. The Console login screen will appear. Log into the RS-232 console with the device's account and password.



4. The AWK Series device's CLI interface will be displayed. Refer to the device's CLI User's Manual for more information and instructions on how to use the command line interface.




**NOTE**

To modify the appearance of the PComm Terminal Emulator window, select **Edit > Font** and then choose the desired formatting options.

**ATTENTION**

If you unplug the RS-232 cable or trigger **DTR**, you will be disconnected and logged out for network security reasons. You will need to log in again to resume operations.

# Configuration by Telnet and SSH Consoles

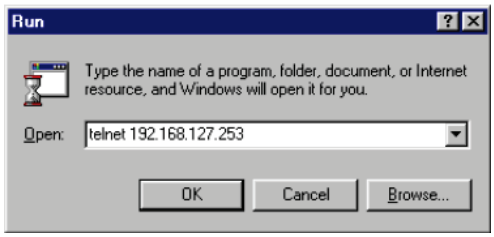
You can use a Telnet or SSH client to access the AWK Series and manage the console over a network. To access the AWK Series' functions over the network from a PC host that is connected to the same LAN as the AWK Series, you need to make sure that the PC host and the AWK Series are on the same logical subnet. To do this, check your PC host's IP address and subnet mask.

**NOTE**

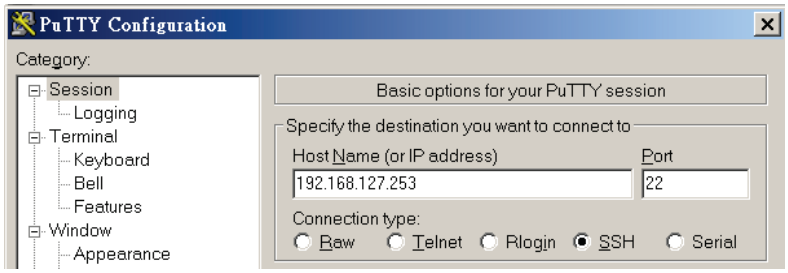
The AWK Series' default IP address is **192.168.127.253** and the default subnet mask is **255.255.255.0** (for a Class C network). To configure the AWK Series remotely over a LAN network, set the PC host's IP address to 192.168.127.xxx and subnet mask to 255.255.255.0.

Follow the steps below to access the console utility via Telnet or SSH client:

1. From Windows Desktop, run **Start > Run**, and type *telnet (AWK IP address)* in the Run window and click **OK**. The AWK's default IP address is 192.168.127.253.




2. When using an SSH client (e.g. PuTTY), run the software and enter the AWK devce's IP address as the Host Name along with port **22**, and select **SSH** as the connection type.




3. The Console login screen will appear. Please refer to the previous paragraph "RS-232 Console Configuration" and for login and administration.

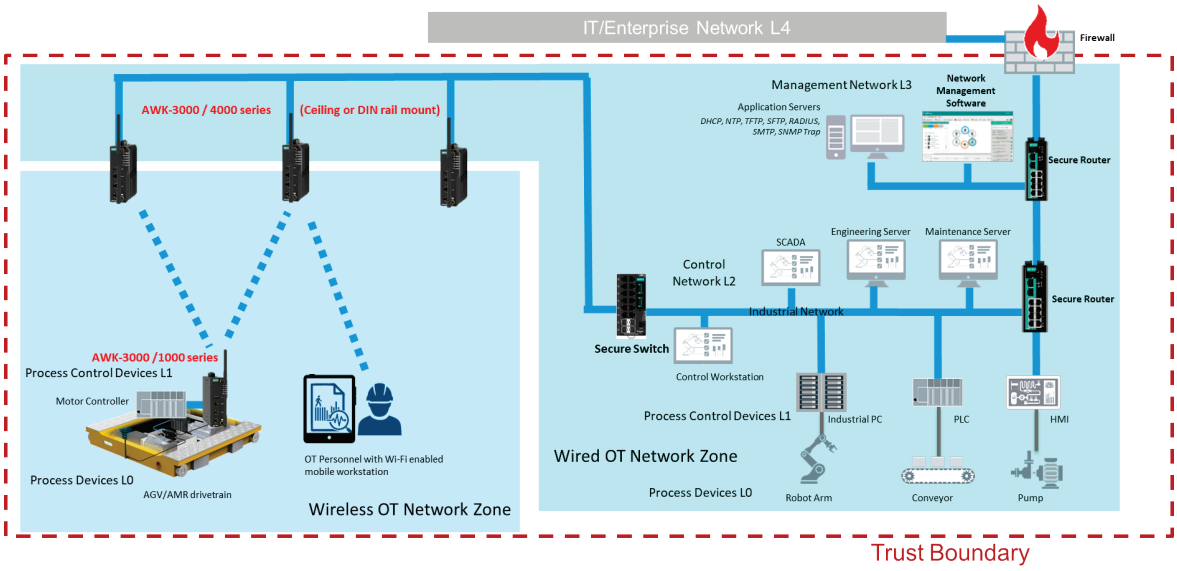
# C. Security Guidelines

This appendix provides security practices for installing, operating, maintaining, and decommissioning the device. Moxa strongly recommends that our customers follow these guidelines to enhance network and equipment security.

# Installation

## Physical Installation

1. To comply with IEC 62443 requirements, the AWK Series device MUST be installed within an access-controlled area, where only authorized personnel have physical access to the AWK Series device.
2. To comply with IEC 62443 requirements, the device MUST NOT be directly connected to the Internet, which means the AWK Series device MUST be installed within a security perimeter with firewall. Additionally, the various application service servers such as DHCP, NTP, RADIUS, … etc. shall be securely configured with proper authentication within the security perimeter with firewall protection as illustrated in the image below:




3. Always configure the AWK Series device to comply with your organization's network and security requirements before physical installation. Do not physically install devices that are unconfigured or have an unknown configuration state to avoid unnecessary risks. Please follow the instructions in the Quick Installation Guide, which is included in the package, to ensure you install the device correctly in your environment.
4. The AWK Series has anti-tamper labels visible on the enclosures covering assembly screws. Any tampering to open the mechanical enclosure to access electrical circuit boards will result in the fracturing of anti-tamper labels. This allows an administrator to immediately tell if the device's hardware integrity has been compromised.
5. Ports that are not in use should be deactivated. Please refer to Hardware Interface and Ports to review the status of each I/O port and disable any unused ports.
6. The AWK Series devices are industrial WLAN infrastructure components serving as the underlying fabric to support automation processes. These devices are not an integral part of process automation logic and therefore do not support nor are they suitable for any deterministic process control outputs.

## Account Management

Follow these best practices when setting up an account:

1. Each account should be assigned the correct privileges: Only allow the minimum number of people to have admin privilege so they can perform device configuration or modifications, while other users should only have the minimum required access privilege needed to fulfill their corresponding role. The AWK Series supports both local account authentication and remote centralized authentication mechanisms such as RADIUS.
2. Password protection has two means of enforcement: Password Lifetime and Password Complexity. We recommend to:
   a. Review whether the password lifetime needs to be adjusted according to your organization's policies.
   b. Review whether the configured password complexity options enabled on the AWK Series system (refer to Create a New Account) is sufficient according to your organization's policies. If not, modify the password complexity requirements to meet your organization's security guidelines.
3. Enforce regulations that ensure only trusted hosts can access the device. Refer to the Trusted Access section for more information and instructions.

## Vulnerable Protocols

1. For network security reasons, we strongly recommend that you change the default port numbers, such as the TCP port number for HTTP, HTTPS, Telnet, and SSH, for protocols that are in use. Ports that are not in use but are still accessible, pose a security risk and should be disabled. Refer to the Management Interface section for more information and instructions.
   Below is the list of default port numbers for each protocol used by all external interfaces.

| Browser | Protocol Type | Default Port |
|---|---|---|
| TCP | HTTP | 80 |
| | HTTPS | 443 |
| | Telnet | 23 |
| | SSH | 22 |
| UDP | SNMP | 161 |
| | Moxa Service | 40404 |

2. In order to avoid malicious actors from snooping confidential information, users should always apply encryption-based communication protocols such as HTTPS instead of HTTP, SSH instead of Telnet, SFTP instead of TFTP, SNMPv3 instead of SNMPv1/v2c etc. In addition, the maximum number of sessions should be kept to an absolute minimum. Refer to the Management Interface section for more information and instructions.
3. Users should generate the SSL certificate for the device before commissioning HTTPS or SSH applications. Please refer to the Certificate Management section for more information and instructions.
4. The HTTP, SNMPv1v2, and Telnet protocols are insecure and by default DISABLED. We recommend to always use secure alternatives such as HTTPS, SNMPv3, or SSL to protect your communications. If unsecure protocols need to be used with legacy devices, please consult a qualified security expert to evaluate and implement additional protection measures to prevent any potential security risks.
5. In order to ensure that the device configurations are adequately protected prior to deployment, it is recommended to review the security status of the device. Refer to the Security Status section for an overview of the device's current security conditions. If any of the identified risks require mitigating action, navigate to the corresponding setup page to address the issue, or consult a qualified security expert to evaluate and implement additional protection measures to prevent any potential security risks.

# Operation

1. For security reasons, The AWK Series does not support TLS v1.0/ v1.1. The AWK Series supports the TLS v1.2 cryptographic algorithm to protect your HTTPS/SSH applications. Please ensure that your web

browser is updated to a version that supports TLS v1.2:

| Browser | Version |
|---|---|
| Microsoft Edge | All versions |
| Mozilla Firefox | V11 and above |
| Chrome | V38 and above |
| Apple Safari | V7 and above for OS X 10,9 (Mavericks) and above |

Reference: https://support.globalsign.com/ssl/general-ssl/tls-protocol-compatibility#Browsers.

2. The device supports event logs and syslog for SIEM integration:
   a. Event log: Due to limited storage capacity, the event log can only accommodate a maximum of 10,000 entries. Administrators can set a warning for a pre-defined threshold. We recommend that users regularly back up system event logs. Please refer to the Event Log section for more information and instructions.
   b. Syslog: The device supports syslog and advanced secure TLS-based syslog for centralized SIEM integration. Please refer to the Syslog section for more information and instructions.
3. The device can provide information for control system inventory:
   a. SNMPv1, v2c, v3: We recommend administrators use SNMPv3 with authentication and encryption to manage the network. Please refer to the MIB file for the detailed OID structure.
   b. Telnet/SSH: We recommend that administrators use SSH with authentication and encryption to retrieve device properties.
   c. HTTP/HTTPS: We recommend that administrators use HTTPS with an internally renewed certificate or imported certificate that has been issued by a Certificate Authority (CA) to configure the device.
4. Denial of Service protection: We recommend enabling Trusted Access, Wi-Fi ACL, L2/L3 firewalls to mitigate the risk of DoS attack attempts.
5. Periodically regenerate the SSH and SSL certificates: Even though the device supports up-to-date cipher suites to ensure sufficient complexity, we strongly recommend users to frequently renew their SSH key and SSL certificate in case the key is compromised. Please refer to the Certificate Management section for more information and instructions.

# Defense-in-depth Strategy

1. The defense-in-depth strategy is a security approach to protect systems from various types of attacks by using multiple independent defense mechanisms. This strategy involves incorporating multiple layers of security to protect the product against potential attacks and vulnerabilities at various stages of its design, development, and use.
2. It is important to understand that no single protection measure can guarantee complete security. That's why the defense-in-depth approach makes it difficult for attackers to exploit one weakness to attack the product or the network as a whole. By implementing a defense-in-depth approach, attackers must overcome multiple security layers undetected, making breaches increasingly difficult.
3. Refer to the following table for measures you can leverage to create a defense-in-depth security environment on the AWK Series.

| Security Function | Description | Type | Implementation |
|---|---|---|---|
| Account Management | Reduces human error by enforcing access privileges | Administrative Control | Admin/User role settings |
| Syslog Logging | Logs operations and anomalies | Administrative Control | Supports remote syslog server |
| Web/CLI Login Authentication | Prevents unauthorized user access to the device | Administrative Control | Web/CLI Login Authentication |
| Device Certificate & Authentication | Prevent man-in-the-middle (MITM) attacks | Logical/Technical Control | Supports TLS v1.2, SNMPv3 |
| Signed Firmware Validation | Prevents unauthorized firmware uploads | Logical/Technical Control | Signature verification ensures firmware validity |

| Security Function | Description | Type | Implementation |
|---|---|---|---|
| Critical Service Access Control | Restricts internal services such as DHCP/NTP | Logical/Technical Control | Configuration is restricted to authorized internal users, external access is blocked |
| Wireless Security Mechanisms | Controls AP/Client behavior and access | Logical/Technical Control | WPA2/WPA3, 802.1X, MAC filter |
| Trusted Access | Limits access by IP/Port/Protocol | Logical/Technical Control | Layer 2/3 ACL to manage device access |
| Physical Security | Prevents unauthorized physical access | Physical Control | Install the device in cabinets with strict access control and surveillance |

# Maintenance

1. Perform firmware upgrades frequently to enhance features, deploy security patches, or fix bugs. Periodically check the official product website or Moxa security advisory updates at https://www.moxa.com/en/support/product-support/security-advisory/security-advisories-all.
2. Periodically, or after each maintenance session, back up the running system configuration to be able to restore the device back to the latest stable, secure state if necessary. The device supports password encryption and signature authentication for backup files to protect the system configuration files from being tampered with,
3. Examine event logs frequently to detect any anomalies.
4. Periodically, or after each maintenance session, check the Security Status overview to review and confirm the current device's security conditions.
5. To report vulnerabilities for Moxa products, please email your findings to PSIRT@moxa.com.

# Decommission

1. Power off the device to be decommissioned and dismount it from its physical installation location.
2. Identify the serial number or device name and locate (if applicable) any configuration backup files or certificates generated by the device to be decommissioned and ensure the deletion of these files.
3. To avoid any sensitive information such as the organization's information, account passwords, or certificates from being leaked, always reset the device to the factory default settings before decommissioning the device.

# D. Service Authority Table

This appendix lists the required authority for each feature or service. The purpose of this table is to help administrators review and decide the appropriate account privileges and role to assign to user accounts.

| Authority | Admin | Engineer | User |
|---|---|---|---|
| Account System | Yes | No | No |
| Auditor System | Yes | Yes | No |
| Advanced Diagnostics | Yes | Yes | No |
| Diagnostics | Yes | Yes | Yes |
| Network Configuration | Yes | Yes | No |
| Status Monitoring | Yes | Yes | Yes |
| System Backup | Yes | No | No |
| System Management | Yes | Yes | No |

| Configuration Section | Authority Required |
|---|---|
| Device Summary | Status Monitoring |
| **System** | |
| **System Management** | |
| System Information | System Management |
| Firmware Upgrade | System Management |
| Configuration Backup and Restore | System Backup |
| **Account Management** | |
| User Account | (Refer to breakdown below) |
| Settings | Account System |
| Session Management | System Management |
| Password Policy | Account System |
| **Management Interface** | |
| User Interface | System Management |
| Hardware Interface | System Management |
| SNMP | (Refer to breakdown below) |
| SNMP | System Management |
| SNMP Account List | Account System |
| **Time** | |
| System Time | System Management |
| **Wi-Fi** | |
| Wireless Settings | (Refer to breakdown below) |
| General | Network |
| MAC Cloning | Network |
| Status | Status Monitoring |
| Connection Management | Network |
| Roaming | Network |
| Wi-Fi Security | Network |
| **Ports** | |
| Port Settings | (Refer to breakdown below) |
| General | Network |
| Port Status | Status Monitoring |
| **Layer 2 Switching** | |
| VLAN | Network |
| **IP Configuration** | |
| General | System Management |
| Status | Status Monitoring |
| **Network Service** | |
| DHCP Server | Network |

| Configuration Section | Authority Required |
|---|---|
| **Routing and Nat** | |
| **Routing** | |
| **Unicast Route** | |
| Static Route | Network |
| Routing Table | Status Monitoring |
| **NAT** | |
| Rule List | Network |
| **Firewall** | |
| Layer 2 Policy | Network |
| Layer 3 Policy | Network |
| Certificate Management | System Management, Auditor System, System Backup, Status Monitoring, Diagnostics, Advanced Diagnostic, or Network Configuration |
| **Security** | |
| **Device Security** | |
| Login Policy | System Management |
| Trusted Access | System Management |
| **Diagnostics** | |
| Security Status | Status Monitoring |
| **Network Status** | |
| Network Statistics | Status Monitoring |
| LLDP | (Refer to breakdown below) |
| Settings | Network |
| Status | Status Monitoring |
| Bridge Table | Status Monitoring |
| ARP Table | Status Monitoring |
| **Event Logs and Notifications** | |
| Event Log | (Refer to breakdown below) |
| Log List | Status Monitoring |
| Registered Logs | Auditor System |
| Oversize Action | Auditor System |
| Backup | Status Monitoring |
| Event Notifications | Auditor System |
| Syslog | Auditor System |
| General | Auditor System |
| Authentication | Auditor System |
| SNMP Trap/Inform | Auditor System |
| General | Auditor System |
| SNMP Trap/Inform Account | Auditor System |
| Email Settings | Auditor System |
| General | Auditor System |
| Authentication | Auditor System |
| Relay Alarm Cut-off | Auditor System |
| **Tools** | |
| **Wi-Fi Tools** | |
| Channel Scan | Advanced Diagnostic |
| Wi-Fi Mirroring | Diagnostic |
| General | Diagnostic |
| Authentication | Diagnostic |
| RSSI Reporting | Diagnostic |
| System Data Collection | Diagnostic |
| Diagnostic Support | Advanced Diagnostic |
| Ping | Diagnostic |
| Setup Wizard | Network and System Management |
| **Maintenance Bar** | |
| Language | Basic |
| Disable/Disable Auto Save | System Management |
| Locator | Diagnostic |

| Configuration Section | Authority Required |
|---|---|
| Reboot | System Management |
| Reset Device | System Management |
| Renew Device Unique Key | System Management |
| Change Password | Basic |
| Log Out | Basic |