

# **AirWorks AWK-1131A User's Manual**

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# AirWorks AWK-1131A User's Manual

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## Introduction

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The AWK-1131A industrial a/b/g/n high speed wireless access point products are ideal wireless solutions for hard-to-wire applications that use mobile equipment connected over a TCP/IP network. The AWK-1131A is rated to operate at temperatures ranging from 0 to 60°C for standard models and -40 to 75°C for wide temperature models, and is rugged enough for any harsh industrial environment.

The following topics are covered in this chapter:

- ❑ **Overview**
- ❑ **Package Checklist**
- ❑ **Product Features**
- ❑ **Product Specifications**
- ❑ **Functional Design**
  - LAN Port
  - LED Indicators
  - Beeper
  - Reset Button

## Overview

The AWK-1131A industrial wireless AP/client meets the growing need for faster data transmission speeds by supporting IEEE 802.11n technology with a net data rate of up to 300 Mbps. The AWK-1131A is compliant with the industrial standards and approvals, covering operating temperature, power input voltage, surge, ESD and vibration. The two redundant DC power inputs increase the reliability of the power supply. The AWK-1131A can operate on either the 2.4 or 5 GHz bands and is backwards-compatible with existing 802.11a/b/g deployments to future-proof your wireless investments.

## Package Checklist

Moxa's AWK-1131A is shipped with the following items. If any of these items is missing or damaged, please contact your customer service representative for assistance.

- AWK-1131A wireless AP/client
- 2 2.4/5 GHz antennas: ANT-WDB-ARM-02
- DIN-rail kit
- 1 plastic RJ45 protective cap
- Quick installation guide (printed)
- Warranty card

**NOTE** The above items come with the standard AWK-1131A model, but the package contents might vary for customized versions.

## Product Features

- IEEE802.11a/b/g/n compliant
- Advanced wireless security
  - 64-bit and 128-bit WEP encryption, WPA /WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP, and AES)
  - SSID enable/disable
  - Packet access control & filtering
- Turbo Roaming for rapid handover (Client mode)
- ABC-01 for configuration import/export
- RS-232 console management
- DIN-rail mounting (standard) or wall mounting (optional)
- IP30-rated high-strength metal housing

# Product Specifications

## WLAN Interface

### Standards:

IEEE 802.11a/b/g/n for Wireless LAN  
IEEE 802.11i for Wireless Security  
IEEE 802.3 for 10BaseT  
IEEE 802.3u for 100BaseT(X)  
IEEE 802.3ab for 1000BaseT

### Spread Spectrum and Modulation (typical):

- DSSS with DBPSK, DQPSK, CCK
- OFDM with BPSK, QPSK, 16QAM, 64QAM
- 802.11b: CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, DBPSK @ 1 Mbps
- 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps
- 802.11n: 64QAM @ 300 Mbps to BPSK @ 6.5 Mbps (multiple rates supported)

### Operating Channels (central frequency):

US:

2.412 to 2.462 GHz (11 channels)  
5.180 to 5.240 GHz (4 channels)  
5.260 to 5.320 GHz (4 channels)\*  
5.500 to 5.700 GHz (11 channels)\*  
5.745 to 5.825 GHz (5 channels)

EU:

2.412 to 2.472 GHz (13 channels)  
5.180 to 5.240 GHz (4 channels)  
5.260 to 5.320 GHz (4 channels)\*  
5.500 to 5.700 GHz (11 channels)\*

JP:

2.412 to 2.484 GHz (14 channels, DSSS)  
5.180 to 5.240 GHz (4 channels)  
5.260 to 5.320 GHz (4 channels)\*  
5.500 to 5.700 GHz (11 channels)\*

KR:

2.412 to 2.472 GHz (13 channels)  
5.180 to 5.320 GHz (4 channels)  
5.260 to 5.320 GHz (4 channels)\*  
5.500 to 5.640 GHz (8 channels)\*

ANZ:

2.412 to 2.472 GHz (13 channels)  
5.180 to 5.320 GHz (4 channels)  
5.260 to 5.320 GHz (4 channels)\*  
5.500 to 5.720 GHz (9 channels- excludes 5.600 to 5.640 GHz)\*  
5.475 to 5.825 GHz (4 channels)

CN:

2.412 to 2.472 GHz (13 channels)  
5.180 to 5.320 GHz (4 channels)  
5.260 to 5.320 GHz (4 channels)\*  
5.745 to 5.825 GHz (5 channels)

\*DFS (Dynamic Frequency Selection) channel support - under AP mode, when radar signal is detected, device will automatically switch to another channel. However according to the regulation, after switching channel **60 seconds** of availability check period is required before starting service.

**Security:**

- SSID broadcast enable/disable
- Firewall for MAC/IP/Protocol/Port-based filtering
- 64-bit and 128-bit WEP encryption, WPA /WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP, and AES)

**Transmission Rates:**

802.11b: 1, 2, 5.5, 11 Mbps

802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps

802.11n: 6.5 to 300 Mbps (multiple rates supported)

**TX Transmit Power (per antenna port):**

802.11b:

- Typ. 23±1.5 dBm @ 1 Mbps, Typ. 23±1.5 dBm @ 2 Mbps,
- Typ. 20±1.5 dBm @ 5.5 Mbps, Typ. 19±1.5 dBm @ 11 Mbps

802.11g:

- Typ. 20±1.5 dBm @ 6 to 24 Mbps, Typ. 19±1.5 dBm @ 36 Mbps,
- Typ. 18±1.5 dBm @ 48 Mbps, Typ. 17±1.5 dBm @ 54 Mbps

802.11n (2.4 GHz):

- Typ. 20±1.5 dBm @ MCS0/8 20 MHz, Typ. 16±1.5 dBm @ MCS7/15 20 MHz
- Typ. 20±1.5 dBm @ MCS0/8 40 MHz, Typ. 16±1.5 dBm @ MCS7/15 40 MHz

802.11a:

- Typ. 20±1.5 dBm @ 6 to 24 Mbps, Typ. 19±1.5 dBm @ 36 Mbps,
- Typ. 16±1.5 dBm @ 48 Mbps, Typ. 15±1.5 dBm @ 54 Mbps

802.11n (5 GHz):

- Typ. 19±1.5 dBm @ MCS0/8 20 MHz, Typ. 14±1.5 dBm @ MCS7/15 20 MHz
- Typ. 18±1.5 dBm @ MCS0/8 40 MHz, Typ. 14±1.5 dBm @ MCS7/15 40 MHz

**Note: Based on regional regulations, the maximum transmission power allowed on the UNII bands is restricted in the firmware, as indicated below:**

	US	EU	JP	KR	CN	ANZ
<b>2.4 GHz</b>	20 dBm	20 dBm	20 dBm	20 dBm	20 dBm	20 dBm
<b>5 GHz (UNII-1)</b>	17 dBm	20 dBm	20 dBm	20 dBm	20 dBm	20 dBm
<b>5 GHz (UNII-2)</b>	20 dBm	20 dBm	20 dBm	20 dBm	20 dBm	20 dBm
<b>5 GHz (UNII-2e)</b>	20 dBm	20 dBm	20 dBm	20 dBm	20 dBm	20 dBm
<b>5 GHz (UNII-3)</b>	20 dBm	20 dBm	20 dBm	20 dBm	20 dBm	20 dBm

**RX Receive Sensitivity:**

802.11b:

- 90 dBm @ 1 Mbps, -88 dBm @ 2 Mbps,
- 86 dBm @ 5.5 Mbps, -84 dBm @ 11 Mbps

802.11g:

- 85 dBm @ 6 Mbps, -84 dBm @ 9 Mbps,
- 83 dBm @ 12 Mbps, -82 dBm @ 18 Mbps,
- 80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps,
- 70 dBm @ 48 Mbps, -70 dBm @ 54 Mbps

802.11n (2.4 GHz):

- 70 dBm @ MCS7 20 MHz, -68 dBm @ MCS15 20 MHz
- 65 dBm @ MCS7 40MHz, -63 dBm @ MCS15 40 MHz

802.11a:

- 92 dBm @ 6 Mbps, -89 dBm @ 9 Mbps,
- 85 dBm @ 12 Mbps, -82 dBm @ 18 Mbps,
- 80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps,
- 74 dBm @ 48 Mbps, -72 dBm @ 54 Mbps

802.11n (5 GHz):

- 70 dBm @ MCS7 20MHz, -67 dBm @ MCS15 20 MHz
- 68 dBm @ MCS7 40MHz, -66 dBm @ MCS15 40 MHz



## Protocol Support

**General Protocols:** Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNMP, TCP, UDP, RADIUS, DHCP, LLDP

## Interface

### Default Antennas:

2 dual-band omni-directional antennas, 2 dBi, RP-SMA (male)

**Connector for External Antennas:** RP-SMA (female)

**LAN Ports:** 1, RJ45, 10/100/1000BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection

**Console Port:** RS-232 (RJ45-type)

**Reset:** Present

**LED Indicators:** PWR, FAULT, STATE, SIGNAL\*, WLAN, 10/100/1000 (RJ45 port)

\*signal strength indicator

## Physical Characteristics

**Housing:** Metal, IP30 protection

**Weight:** 307 g (0.68 lb)

**Dimensions:** 58 x 115 x 70 mm (2.29 x 4.53 x 2.76 in)

**Installation:** DIN-rail mounting (standard), wall mounting (optional)

## Environmental Limits

### Operating Temperature:

Standard Models: 0 to 60°C (32 to 140°F)

Wide Temp. Models: -40 to 75°C (-40 to 167°F)

**Storage Temperature:** -40 to 85°C (-40 to 185°F)

**Ambient Relative Humidity:** 5% to 95% (non-condensing)

## Power Requirements

**Input Voltage:** 12 to 48 VDC, redundant dual DC power inputs

**Connector:** 4-pin removable terminal block, 500 V insulation

**Power Consumption:** 6.96 W

**Reverse Polarity Protection:** Present

## Standards and Certifications

**Safety:** UL 60950-1, EN 60950-1

**EMC:** EN 55032/55024

### EMS:

IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV

IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m

IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV

IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV

IEC 61000-4-6 CS: 3 V

IEC 61000-4-8

**Radio:** EN 301 489-1/17, EN 300 328, EN 301 893, TELEC, FCC ID SLE-WAPN008, KC, RCM, ANATEL, WPC, SRRC, IC ID, ICASA, FAC

**Note:** Please check Moxa's website for the most up-to-date certification status.

## Reliability

### MTBF (mean time between failures)

**Time:** 810,022 hrs

**Standard:** Telcordia SR332

## Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/support/warranty.aspx](http://www.moxa.com/support/warranty.aspx)

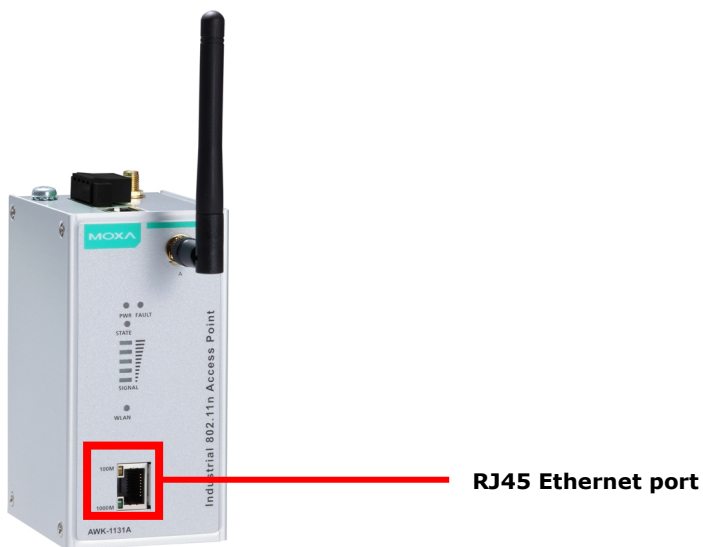
**ATTENTION**

- The AWK-1131A is NOT a portable mobile device and should be located at least 20 cm away from the human body.
- The AWK-1131A is NOT designed for the general public. A well-trained technician should be enlisted to ensure safe deployment of AWK-1131A units, and to establish a wireless network.

## Functional Design

### LAN Port

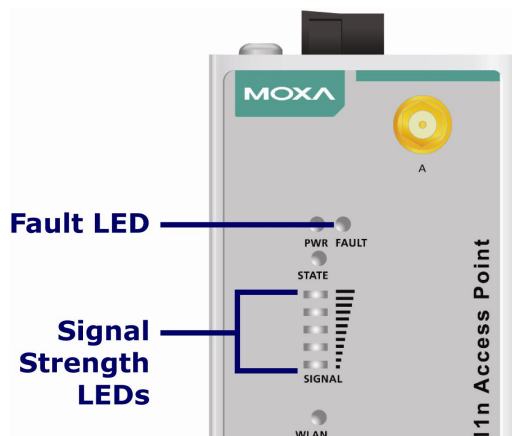
The AWK-1131A comes standard with 1 Gigabit port (Ethernet RJ45). The LAN LED will light up when the LAN cable is inserted.



### LED Indicators

The LEDs on the front panel of the AWK-1131A provide a quick and easy means of determining the current operational status and wireless settings.

The **FAULT** LED indicates system failures and user-configured events. If the AWK-1131A cannot retrieve the IP address from a DHCP server, the **FAULT** LED will blink at one second intervals. The **SIGNAL** LEDs indicate signal strength, and only operate in **Client** mode.



The following table summarizes how to read the device's wireless settings from the LED displays.

LED	Color	State	Description
<b>Front Panel LED Indicators (System)</b>			
PWR	Green	On	Power is being supplied from power input 1&2.
		Off	Power is not being supplied from power input 1&2.
FAULT	Red	Blinking (fast at 0.5-sec intervals)	Cannot get an IP address from the DHCP server
		Blinking (slow at 1-sec intervals)	IP address conflict
		Off	Error condition does not exist.
STATE	Green/ Red	Green	Software Ready
		Green/Blinking at 1-sec intervals	The AWK has been located by AWK Search Utility.
		Red	Booting error condition
SIGNAL (5 LEDs)	Green	On	Signal level(for Client mode only)
		Off	
WLAN	Green	On	WLAN function is in Client mode and AWK has established a link with an AP.
		Blinking	WLAN data communication is run in Client mode
		Off	WLAN is not in Client Mode or AWK has not established a link with an AP.
	Amber	On	WLAN function is in AP mode.
		Blinking	WLAN's data communication is run in AP mode
		Off	WLAN is not in use or not working properly
<b>TP Port(RJ45) LED Indicators (Port Interface)</b>			
1000M	Green	On	TP port's 1000Mbps link is active.
		Blinking	Data is being transmitted at 1000 Mbps
		Off	TP port's 1000Mbps link is inactive.
10/100M	Amber	On	TP port's 10/100Mbps link is active.
		Blinking	Data is being transmitted at 10/100 Mbps
		Off	TP port's 10/100Mbps link is inactive.



### ATTENTION

When the system fails to boot, the LEDs for **STATE** (Green), **FAULT**, and **WLAN** will all light up simultaneously and blink at one-second intervals. This might be due to improper operation or issues such as an unexpected shutdown while updating the firmware. To instruction on recovering the firmware, refer to the "Firmware Recovery" section in Chapter 6.

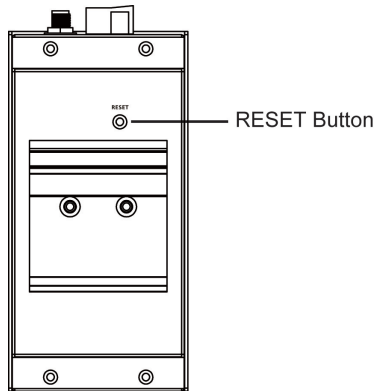
## Beeper

The beeper emits two short beeps when the system is ready.

## Reset Button

The **RESET** button is located on the rear panel of the AWK-1131A. You can reboot the AWK-1131A 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 the RESET button down for under 5 seconds and then release.
- **Reset to factory default:** Hold the RESET button down for *over* 5 seconds until the **STATE** LED starts blinking green. Release the button to reset the AWK-1131A.



## Getting Started

---

This chapter explains how to install Moxa's AirWorks AWK-1131A for the first time, and quickly set up your wireless network and test whether the connection is running well. The Function Map discussed in the third section provides a convenient means of determining which functions you need to use.

The following topics are covered in this chapter:

- ❑ **First-time Installation and Configuration**
- ❑ **Communication Testing**
- ❑ **Function Map**

# First-time Installation and Configuration

Before installing the AWK-1131A, make sure that all items in the Package Checklist are in the box. You will need access to a notebook computer or PC equipped with an Ethernet port. The AWK-1131A has a default IP address that must be used when connecting to the device for the first time.

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

The AWK-1131A can be powered by a DC power input. The AWK-1131A will use whichever power source you choose.

- **Step 2: Connect the AWK-1131A to a notebook or PC.**

Since the AWK-1131A supports MDI/MDI-X auto-sensing, you can use either a straight-through cable or crossover cable to connect the AWK-1131A to a computer. The LED indicator on the AWK-1131A's 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-1131A. Since the AWK-1131A's 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**.

**NOTE** After you select **Maintenance** → **Load Factory Default** and click the **Submit** button, the AWK-1131A will be reset to factory default settings and the IP address will be reset to **192.168.127.253**.

- **Step 4: Use the web-based manager to configure the AWK-1131A**

Open your computer's web browser and type **http://192.168.127.253** in the address field to access the homepage of the web-based Network Manager. Before the homepage opens, you will need to enter the user name and password as shown in the following figure. For first-time configuration, enter the default user name and password and then click on the **Login** button:



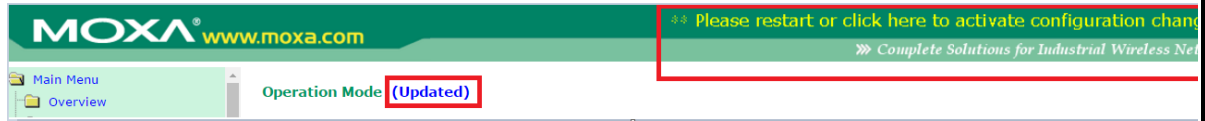
**NOTE** Default user name and password:

User Name: **admin**

Password: **moxa**

For security reasons, we strongly recommend changing the default password. To do so, select **Maintenance** → **Password**, and then follow the on-screen instructions to change the password.

**NOTE** After you click **Submit** to apply changes the web page is refreshed (indicated by an “**(Updated)**” status appearing next to the title) and a blinking reminder to restart the device of the new settings to take effect, will be shown on the upper-right corner of the web page:



To activate the changes click **Restart** and then **Save and Restart** after you change the settings. About 30 seconds are needed for the AWK-1131A to complete the reboot procedure.

- **Step 5: Select the AWK-1131A operation mode.**

By default, the AWK-1131A's operation mode is set to AP. You can change to Client mode in **Wireless LAN Setup** → **Operation Mode**. Detailed information about configuring the AWK-1131A's operation can be found in Chapter 3.

- **Step 6: Test communications.**

In the following sections we describe two test methods that can be used to ensure that a network connection has been established.

## Communication Testing

After installing the AWK-1131A you can run a sample test to make sure the AWK-1131A and wireless connection are functioning normally. Two testing methods are described below. Use the first method if you are using only one AWK-1131A device, and use the second method if you are using two or more AWK-1131A units.

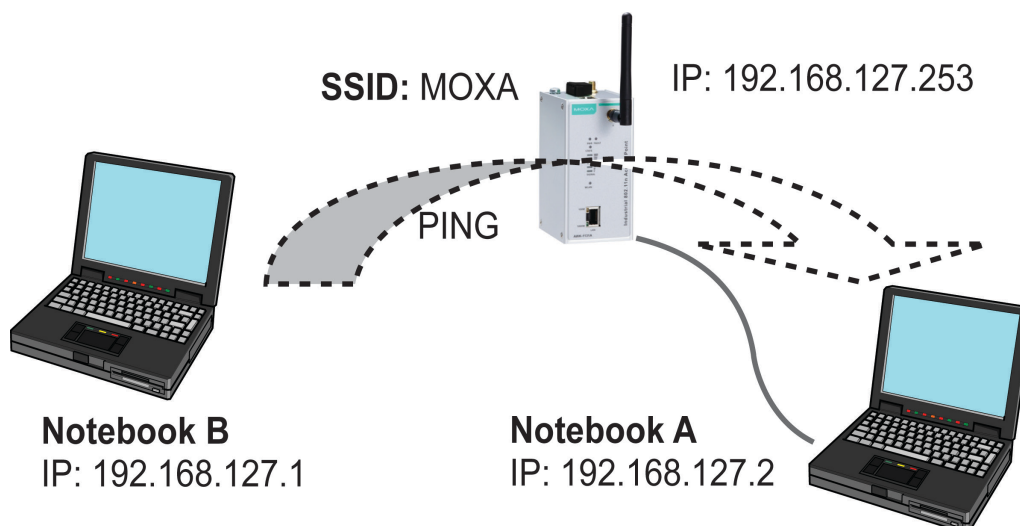
### How to Test One AWK-1131A

If you are only using one AWK-1131A, you will need a second notebook computer equipped with a WLAN card. Configure the WLAN card to connect to the AWK-1131A (NOTE: the default SSID is **MOXA**), 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-1131A.

After configuring the WLAN card, establish a wireless connection with the AWK-1131A and open a DOS window on Notebook B. At the prompt, type

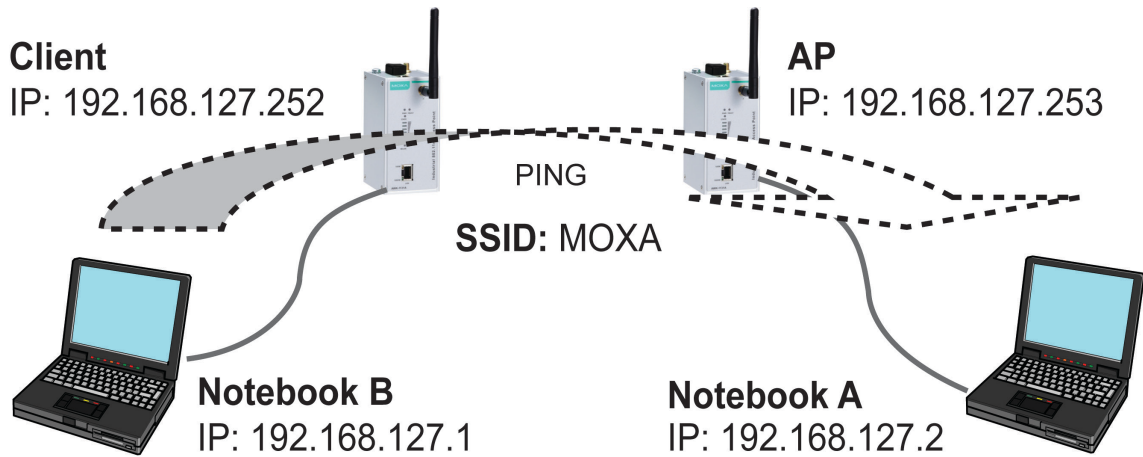
**ping** <IP address of notebook A>

and then press **Enter** (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 Two or More AWK-1131A Units

If you have two or more AWK-1131A units, you will need a second notebook computer (Notebook B) equipped with an Ethernet port. Use the default settings for the first AWK-1131A connected to notebook A and change the second or third AWK-1131A connected to notebook B to Client mode, and then configure the notebooks and AWK-1131A units properly.



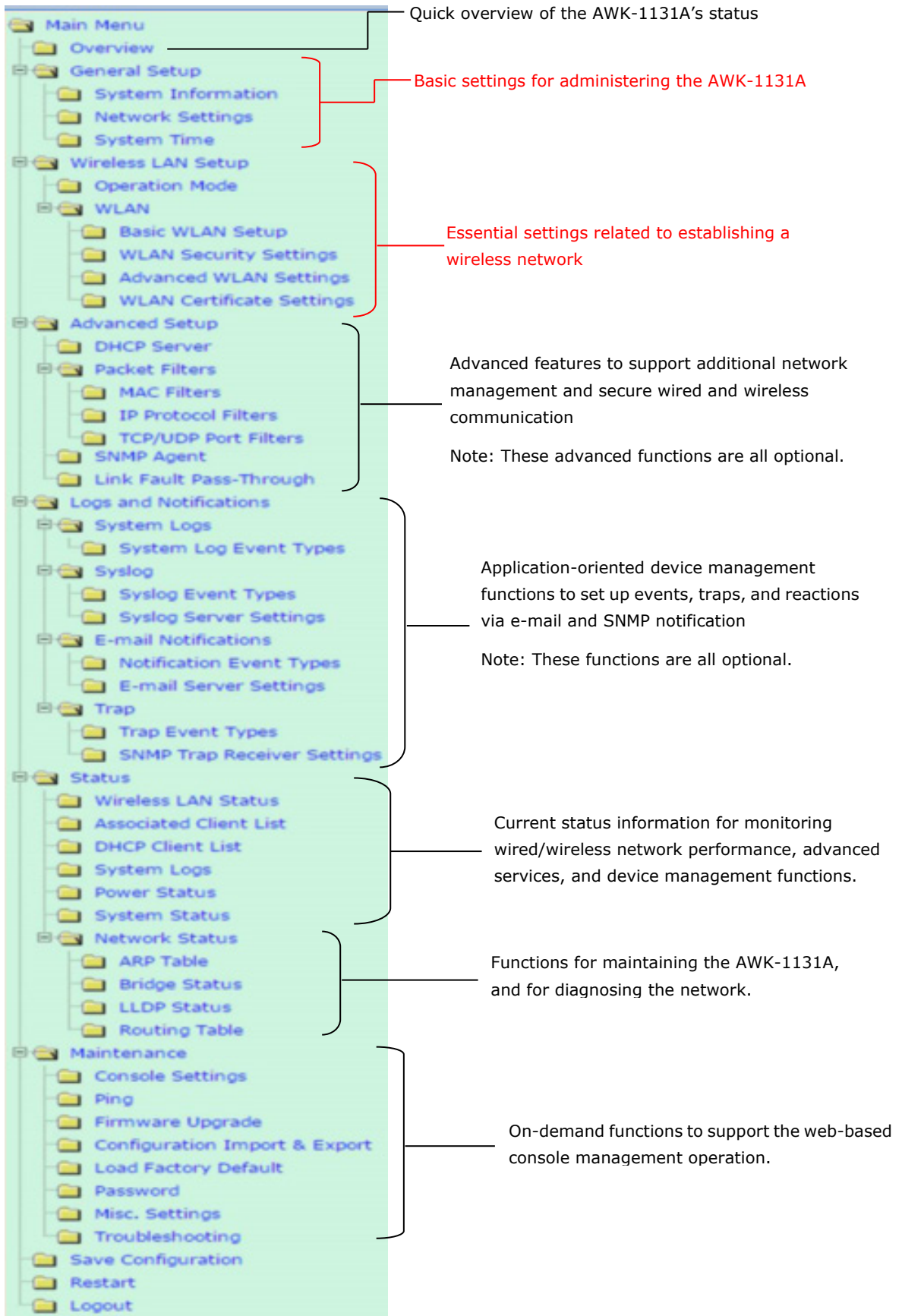
After setting up the testing environment, open a DOS window on notebook B. At the prompt, type:

```
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.



# Function Map



# Web Console Configuration

---

In this chapter, we explain all aspects of web-based console configuration. Moxa's easy-to-use management functions help you set up your AWK-1131A and make it easy to establish and maintain your wireless network.

The following topics are covered in this chapter:

- ❑ **Web Browser Configuration**
- ❑ **Overview**
- ❑ **General Setup**
  - System Information
  - Network Settings
  - System Time
- ❑ **Wireless LAN Setup**
  - Operation Mode
  - Basic WLAN Setup
  - WLAN Security Settings
  - Advanced WLAN Settings
  - WLAN Certificate Settings (for EAP-TLS in Client/Slave mode only)
- ❑ **Advanced Setup**
  - DHCP Server (for AP mode only)
  - Packet Filters
  - SNMP Agent
  - Link Fault Pass-Through (for Client mode only)
- ❑ **Logs and Notifications**
  - System Logs
  - Syslog
  - E-mail Notifications
  - Trap
- ❑ **Status**
  - Wireless LAN Status
  - Associated Client List (for AP/Master mode only)
  - DHCP Client List (for AP mode only)
  - System Logs
  - Power Status
  - System Status
  - Network Status
- ❑ **Maintenance**
  - Console Settings
  - Ping
  - Firmware Upgrade
  - Configuration Import and Export
  - Load Factory Default
  - Password
  - Misc. Settings
  - Troubleshooting
- ❑ **Save Configuration**
- ❑ **Restart**
- ❑ **Logout**

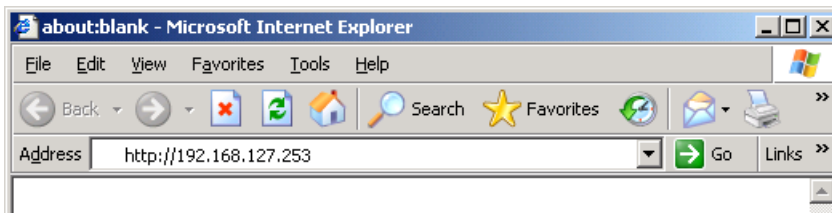
# Web Browser Configuration

Moxa AWK-1131A's web browser interface provides a convenient way to modify its configuration and access the built-in monitoring and network administration functions. The recommended web browser is Microsoft® Internet Explorer 7.0 or 8.0 with JVM (Java Virtual Machine) installed.

**NOTE** To use the AWK-1131A's management and monitoring functions from a PC host connected to the same LAN as the AWK-1131A, you must make sure that the PC host and the AWK-1131A are on the same logical subnet. The Moxa AWK-1131A's default IP is **192.168.127.253**.

Follow these steps to access the AWK-1131A's web-based console management interface.

1. Open your web browser (e.g., Internet Explorer) and type the AWK-1131A's IP address in the address field. Press **Enter** to establish the connection.



2. In the Web console Login page displayed, enter the password (default Username/password = **admin/moxa**) and then click **Login** to continue.



You might have to wait a few moments for the web page to download to your computer. Note that the Model name and IP address of your AWK-1131A are both shown in the title bar of the web page. This information can be used to help you identify multiple AWK-1131A units.

3. Use the menu tree on the left side of the window to open the function pages to access each of the AWK-1131A's functions.

**MOXA** www.moxa.com

**Overview**

This screen displays current active settings

**System Information**

Model name	AWK-1131A-US
Device name	AWK-1131A_1836
Serial No.	1836
System up time	0 days 00h:00m:30s
Firmware version	1.11 Build 16100315

**Device Information**

Device MAC address	00:90:E8:47:24:3B
IP address	192.168.127.253
Subnet mask	255.255.255.0
Gateway	

**802.11 Information**

Country code	US
Operation mode	AP
Channel	6
RF type	B/G/N Mixed
Channel width	N/A
SSID	MOXA

In the following paragraphs, we describe each AWK-1131A management function in detail. A quick overview is available in this manual in the "Function Map" section of Chapter 3.

**NOTE** The model name of the AWK-1131A is shown as AWK-1131A-XX, where XX indicates the country code. The country code indicates the AWK-1131A version and which frequencies it uses. We use **AWK-1131A-US** as an example in the following figures. (The country code and model name that appears on your computer screen might be different from the one shown here.)

## Overview

The **Overview** page summarizes the AWK-1131A's current status. The information is categorized into several groups: **System Information**, **Device Information** and **802.11 Information**.

### Overview

This screen displays current active settings

#### System Information

Model name	AWK-1131A-US
Device name	AWK-1131A_1836
Serial No.	1836
System up time	0 days 00h:00m:30s
Firmware version	1.11 Build 16100315

#### Device Information

Device MAC address	00:90:E8:47:24:3B
IP address	192.168.127.253
Subnet mask	255.255.255.0
Gateway	

#### 802.11 Information

Country code	US
Operation mode	AP
Channel	6
RF type	B/G/N Mixed
Channel width	N/A
SSID	MOXA

Click on **SSID** for more detailed 802.11 Information, as shown in the following figure.

### Wireless LAN Status

Auto Update

Show status of WLAN (SSID: MOXA) ▼

802.11 Information	
Operation mode	AP
Channel	6
Channel width	N/A
RF type	B/G/N Mixed
SSID	MOXA
MAC	06:90:E8:47:24:3B
Security mode	OPEN
Current BSSID	N/A
Signal strength	N/A
Signal strength (dBm)	-108 dBm
Noise floor	-108 dBm
SNR	N/A
Transmission Information	
Rate	Auto
Power	10 dBm
Outgoing Packets	
Total sent	0
Packets with error	0
Packets dropped	1512
Incoming Packets	
Total received	0
Packets with error	0
Packets dropped	0

**NOTE** The **802.11 Information** that is displayed might be different for different operation modes. For example, **Current BSSID**, **Signal strength**, and **SNR** are only available under Client operation modes.

## General Setup

The General Setup group includes the most commonly used settings required by administrators to maintain and control the AWK-1131A.

## System Information

The **System Information** items, especially **Device name** and **Device description**, are displayed and included on the **Overview** page, in SNMP information, and in alarm emails. Setting **System Information** items makes it easier to identify the different AWK-1131A units connected to your network.

### System Information

Device name	AWK-1131A_5714
Device location	
Device description	
Device contact information	

Submit

**Device name**

Setting	Description	Factory Default
Max. 31 of characters	This option is useful for specifying the role or application of different AWK-1131A units.	AWK-1131A_<Serial No. of this AWK-1131A>

**Device location**

Setting	Description	Factory Default
Max. of 31 characters	Specifies the location of different AWK-1131A units.	None

**Device description**

Setting	Description	Factory Default
Max. of 31 characters	Use this space to record a more detailed description of the AWK-1131A	None

**Device contact information**

Setting	Description	Factory Default
Max. of 31 characters	Provides information about whom to contact in order to resolve problems. Use this space to record contact information of the person responsible for maintaining this AWK-1131A.	None

## Network Settings

The Network Settings configuration panel allows you to modify the usual TCP/IP network parameters.

### Network Settings for AP/Client Operation Modes

**Network Settings**

**IP address assignment**

**IP address**

**Subnet mask**

**Gateway**

**Primary DNS server**

**Secondary DNS server**

**IP address assignment**

Setting	Description	Factory Default
DHCP	The AWK-1131A's IP address will be assigned automatically by the network's DHCP server	Static
Static	Set up the AWK-1131A's IP address manually.	

**IP address**

Setting	Description	Factory Default
AWK-1131A's IP address	Identifies the AWK-1131A on a TCP/IP network.	192.168.127.253

**Subnet mask**

Setting	Description	Factory Default
AWK-1131A's subnet mask	Identifies the type of network to which the AWK-1131A is connected (e.g., 255.255.0.0 for a Class B network, or 255.255.255.0 for a Class C network).	255.255.255.0

**Gateway**

Setting	Description	Factory Default
AWK-1131A's default gateway	The IP address of the router that connects the LAN to an outside network.	None

**Primary/ Secondary DNS server**

Setting	Description	Factory Default
IP address of the Primary/Secondary DNS server	The IP address of the DNS Server used by your network. After entering the DNS Server's IP address, you can input the AWK-1131A'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

## System Time

The AWK-1131A has a time calibration function based on information from an NTP server or user specified Date and Time information. Functions such as **Logs and Notifications** can add real-time information to the message.

**System Time**

<b>Current local time</b>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> <b>Date (YYYY/MM/DD)</b>  <input type="text" value="2015"/> / <input type="text" value="05"/> / <input type="text" value="29"/> </div> <div style="text-align: center;"> <b>Time (HH:MM:SS)</b>  <input type="text" value="08"/> : <input type="text" value="11"/> : <input type="text" value="54"/> </div> </div> <div style="text-align: right; margin-top: 5px;"><input type="button" value="Set Time"/></div>
<b>Time protocol</b>	Sntp
<b>Time zone</b>	(GMT)Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London ▾
<b>Daylight saving time</b>	<input type="checkbox"/> Enable
<b>Time server 1</b>	<input type="text" value="time.nist.gov"/>
<b>Time server 2</b>	<input type="text"/>
<b>Time sync interval</b>	<input type="text" value="600"/> (600~9999 seconds)
<input type="button" value="Submit"/>	

The **Current local time** shows the AWK-1131A's system time when you open this web page. You can click on the **Set Time** button to activate the updated date and time parameters. An "(Updated)" string is displayed, which indicates that the change is complete. Local system time will be immediately activated in the system without running Save and Restart.

**NOTE** The AWK-1131A has a built-in real-time clock (RTC). We strongly recommend that users update the **Current local time** for the AWK-1131A after the initial setup or a long-term shutdown, especially when the network does not have an Internet connection for accessing the NTP server or there is no NTP server on the LAN.

**Current local time**

Setting	Description	Factory Default
User adjustable time	The date and time parameters allow configuration of the local time, with immediate activation. Use 24-hour format: yyyy/mm/dd hh:mm:ss	None

**Time zone**

Setting	Description	Factory Default
User selectable time zone	The time zone setting allows conversion from GMT (Greenwich Mean Time) to local time.	GMT (Greenwich Mean Time)

**ATTENTION**

Changing the time zone will automatically adjust the **Current local time**. You should configure the **Time zone** before setting the **Current local time**.

**Daylight saving time**

Setting	Description	Factory Default
Enable/ Disable	Daylight saving time (DST or summer time) involves advancing clocks (usually 1 hour) during the summer time to provide an extra hour of daylight in the afternoon.	Disable

When **Daylight saving time** is enabled, the following parameters will be shown:

- **Starts at:** The date that daylight saving time begins.
- **Stops at:** The date that daylight saving time ends.
- **Time offset:** Indicates how many hours forward the clock should be advanced.

**Time server 1/2**

Setting	Description	Factory Default
IP/Name of Time Server 1/2	IP or Domain name of the NTP time server. The 2nd NTP server will be used if the 1st NTP server fails to connect.	time.nist.gov

**Time sync interval**

Setting	Description	Factory Default
Time interval for NTP server synchronization (600 to 9999 seconds)	This parameter determines how often the time is synchronized from the NTP server.	600 (seconds)

## Wireless LAN Setup

The AWK-1131A provides the AP/client mode for point-to-multipoint communication.

**AP/client:** The IP-Bridging mechanism is used to overcome limitations of the 802.11 standards. In this case, the MAC address of the devices connected to the client radio will be replaced with the client's MAC address. Under AP/client modes, communication problems might be encountered when you have a MAC authenticated system or MAC (Layer 2) based communication. In this case, you will need to change the network to use the master/slave operation mode.

**Sniffer:** In order to provide an easier way for our customers to analyze wireless traffic, the AWK-1131A supports a "Sniffer" mode to co-work with Wireshark packet sniffer software.

**NOTE** Although it is more convenient to use dynamic bridging, there is a limitation—the Client can only transmit IP-based packets between its wireless interface (WLAN) and Ethernet interface (LAN); other types of traffic (such as IPX and AppleTalk) are not forwarded.



# Operation Mode

The AWK-1131A supports three operation modes—AP, Client, and Sniffer—each of which plays a distinct role on the wireless network.

## Operation Mode

**Wireless enable**  Enable  Disable

**Operation mode** AP ▼  
AP  
Client  
Sniffer

### Wireless enable

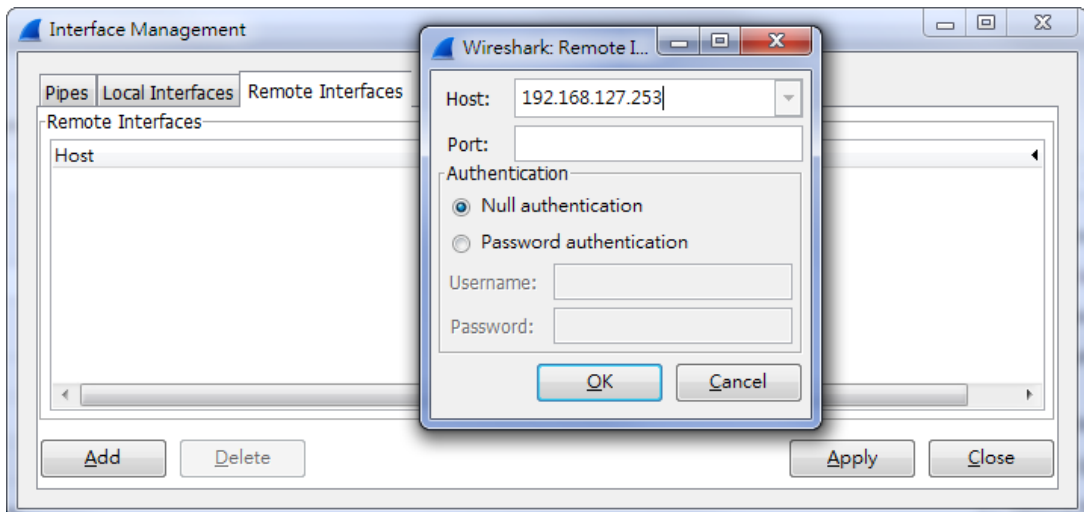
Setting	Description	Factory Default
Enable/Disable	The radio frequency (RF) module can be manually turned on or off.	Enable

### Operation mode

Setting	Description	Factory Default
AP	The AWK-1131A plays the role of a wireless access point	AP
Client	The AWK-1131A plays the role of wireless Client	
Sniffer	Turns the device into a remote Wireshark interface to capture 802.11 packets for analysis.	

### Sniffer mode instructions:

1. Set operation mode to Sniffer mode on the AWK-1131A and then save/reboot the device.
2. Connect the AWK-1131A to a laptop with Wireshark installed (v1.12.0 or later release) via Ethernet.
3. Add a remote interface by entering the IP address of the AWK-1131A.



Detailed Wireshark instructions can be found at:

[https://www.wireshark.org/docs/wsug\\_html\\_chunked/ChCapInterfaceRemoteSection.html](https://www.wireshark.org/docs/wsug_html_chunked/ChCapInterfaceRemoteSection.html)

4. Start capturing 802.11 wireless packets with Wireshark.

# Basic WLAN Setup

The "Basic WLAN Setup" panel is used to add and edit SSIDs. An SSID is a unique identifier that wireless networking devices use to establish and maintain wireless connectivity. Multiple access points on a network or sub-network can use the same SSIDs. You can configure your AWK to use up to 9 SSIDs, and configure each SSID differently. All of the SSIDs are active at the same time; that is, client devices can use any of the SSIDs to associate with the access point.

## Basic WLAN Setup (Multiple SSID)

Status	SSID	Operation Mode	Action
Active	MOXA	AP	<input type="button" value="Edit"/>

Click on **Add SSID** to create more SSIDs.

## Basic WLAN Setup (Multiple SSID)

Status	SSID	Operation Mode	Action
Active	MOXA	AP	<input type="button" value="Edit"/>
Inactive	<input type="text"/>	AP	<input type="button" value="Save"/> <input type="button" value="Cancel"/>

Click on **Edit** to assign different configuration settings to each SSID. The configuration panel appears as follows:

## Basic WLAN Setup

**Operation mode** AP

**RF type** B/G/N Mixed ▼

**Channel** 6 ▼

**Channel width** 20 MHz ▼

**SSID** MOXA















**SSID broadcast**  Enable  Disable

**NOTE** When you switch to **Client** mode, a **Site Survey** button will be available on the Basic WLAN Setup panel. Click this button to view information about available APs, as shown in the following figure. You can click on the SSID of an entity and bring the value of its SSID onto the SSID field of the Basic WLAN Setup page. Click the **Refresh** button to update the site-survey table.

### Basic WLAN Setup

**Operation mode** Client  
**RF type** B/G/N Mixed  
**Channel width** 20 MHz  
**SSID** MOXA

### Site Survey

No.	SSID	MAC Address	Channel	Mode	Signal/Noise Floor
1	MHQ-NB	FC:F5:28:CB:5D:AB	1	BSS/WPA2/Enterprise	 (-96dBm/-111dBm)
2	MHQ-Mobile	FE:F0:28:CB:5D:AB	1	BSS/WPA2/Enterprise	 (-96dBm/-111dBm)
3	MHQ-NB	FC:F5:28:CB:5D:93	1	BSS/WPA2/Enterprise	 (-96dBm/-111dBm)
5	MHQ-Mobile	FE:F0:28:CB:5D:93	1	BSS/WPA2/Enterprise	 (-97dBm/-111dBm)
6	51_FRED	06:90:E8:00:07:96	1	BSS/WPA2/PSK	 (-108dBm/-111dBm)
7	MHQ-NB	FC:F5:28:CB:39:02	1	BSS/WPA2/Enterprise	 (-108dBm/-111dBm)
9	MHQ-Mobile	FE:F0:28:CB:39:02	1	BSS/WPA2/Enterprise	 (-103dBm/-111dBm)
10	MHQ-NB	FC:F5:28:CB:5D:99	6	BSS/WPA2/Enterprise	 (-104dBm/-111dBm)
11	MHQ-Mobile	FE:F0:28:CB:5D:99	6	BSS/WPA2/Enterprise	 (-105dBm/-111dBm)
13	MHQ-NB	FC:F5:28:CB:5D:90	6	BSS/WPA2/Enterprise	 (-91dBm/-111dBm)
14	MHQ-Mobile	FE:F0:28:CB:5D:90	6	BSS/WPA2/Enterprise	 (-90dBm/-111dBm)
15	MHQ-NB	FC:F5:28:CB:5D:3F	6	BSS/WPA2/Enterprise	 (-83dBm/-111dBm)
17	MHQ-Mobile	FE:F0:28:CB:5D:3F	6	BSS/WPA2/Enterprise	 (-85dBm/-111dBm)
18	MHQ-NB	FC:F5:28:CB:5D:8D	6	BSS/WPA2/Enterprise	 (-104dBm/-111dBm)

### RF type

Setting	Description	Factory Default
<b>2.4 GHz</b>		
B	Only supports the IEEE 802.11b standard	B/G/N Mixed
G	Only supports the IEEE 802.11g standard	
B/G Mixed	Supports IEEE 802.11b/g standards, but 802.11g might operate at a slower speed when 802.11b clients are on the network	
G/N Mixed	Supports IEEE 802.11g/n standards, but 802.11n might operate at a slower speed when 802.11g clients are on the network	
B/G/N Mixed	Supports IEEE 802.11b/g/n standards, but 802.11g/n might operate at a slower speed when 802.11b clients are on the network	
N Only (2.4 GHz)	Only supports the 2.4 GHz IEEE 802.11n standard	

Setting	Description	Factory Default
<b>5 GHz</b>		
A	Only supports the IEEE 802.11a standard	
A/N Mixed	Supports IEEE 802.11a/n standards, but 802.11n might operate at a slower speed when 802.11a clients are on the network	
N Only (5 GHz)	Only supports the 5 GHz IEEE 802.11n standard	

**Channel (for AP mode only)**

Setting	Description	Factory Default
Available channels vary with RF type	This option is only adjustable when the AWK-1131A plays the role of wireless AP. If the device acts as a wireless client, it follows the channel of the associated access point	6 (in B/G/N Mixed mode)

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

Setting	Description	Factory Default
20 MHz	Select your channel width, If you are not sure which option to use, select 20/ 40 MHz (Auto)	20 MHz
20/40 MHz		

**Channel bonding**

Channel bonding shows the channel with which the AP will bond if **Channel width** is set to 20/40 MHz.

**SSID**

Setting	Description	Factory Default
Max. of 31 characters	The SSID of a client and the SSID of the AP must be identical for the client and AP to be able to communicate with each other.	MOXA

**SSID broadcast (for AP mode only)**

Setting	Description	Factory Default
Enable/ Disable	SSID can be broadcast or not	Enable

## WLAN Security Settings

The AWK-1131A provides four standardized wireless security modes: **Open**, **WEP** (Wired Equivalent Privacy), **WPA** (Wi-Fi Protected Access), and **WPA2**. Several security modes are available in the AWK-1131A by selecting **Security mode** and **WPA type**:

- **Open:** No authentication, no data encryption.
- **WEP:** Static WEP (Wired Equivalent Privacy) keys must be configured manually.
- **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 actually encrypt outgoing packets and decrypt incoming packets.
- **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. The AWK-1131A can support three EAP methods: EAP-TLS, EAP-TTLS, and EAP-PEAP.

**WLAN Security Settings**

SSID  
 Security mode

MOXA

Open  
 WEP  
 WPA  
 WPA2

**Security mode**

Setting	Description	Factory Default
Open	No authentication	Open
WEP	Static WEP is used	
WPA	WPA is used	
WPA2	Fully supports IEEE 802.11i with "TKIP/AES + 802.1X"	

**Open**

For security reasons, you should NOT set security mode to Open System because authentication and data encryption are not performed in Open System mode.

**WEP (only for legacy mode)**

**NOTE** Moxa includes WEP security mode only for legacy purposes. WEP is highly insecure and is considered fully deprecated by the Wi-Fi alliance. We do not recommend the use of WEP security under any circumstances.

According to the IEEE 802.11 standard, WEP can be used for authentication and data encryption to maintain confidentiality. Shared (or Shared Key) authentication type is used if WEP authentication and data encryption are both needed. Normally, Open (or Open System) authentication type is used when WEP data encryption is run with authentication.

When WEP is enabled as a security mode, the length of a key (so-called WEP seed) can be specified in

64/128 bits, which is actually a 40/104-bit secret key with a 24-bit initialization vector. The AWK-1131A provides 4 entities of WEP key settings that can be selected to use with *Key index*. The selected key setting specifies the key to be used as a *send-key* for encrypting traffic from the AP side to the wireless client side. All 4 WEP keys are used as *receive-keys* to decrypt traffic from the wireless client side to the AP side.

The WEP key can be presented in two *Key types*, HEX and ASCII. Each ASCII character has 8 bits, so a 40-bit (or 64-bit) WEP key contains 5 characters, and a 104-bit (or 128-bit) key has 13 characters. In hex, each character uses 4 bits, so a 40-bit key has 10 hex characters, and a 128-bit key has 26 characters.

**WLAN Security Settings**

SSID	MOXA
Security mode	WEP ▼
Authentication type	Open ▼
Key type	HEX ▼
Key length	64 bits ▼
Key index	1 ▼
WEP key 1	<input type="text"/>
WEP key 2	<input type="text"/>
WEP key 3	<input type="text"/>
WEP key 4	<input type="text"/>
<input type="button" value="Submit"/>	

**Authentication type**

Setting	Description	Factory Default
Open	Data encryption is enabled, but without authentication	Open
Shared	Data encryption and authentication are both enabled.	

**Key type**

Setting	Description	Factory Default
HEX	Specifies WEP keys in hex-decimal number form	HEX
ASCII	Specifies WEP keys in ASCII form	

**Key length**

Setting	Description	Factory Default
64 bits	Uses 40-bit secret keys with 24-bit initialization vector	64 bits
128 bits	Uses 104-bit secret key with 24-bit initialization vector	

**Key index**

Setting	Description	Factory Default
1-4	Specifies which WEP key is used	Open

**WEP key 1-4**

Setting	Description	Factory Default
ASCII type: 64 bits: 5 chars 128 bits: 13chars HEX type: 64 bits: 10 hex chars 128 bits: 26 hex chars	A string that can be used as a WEP seed for the RC4 encryption engine.	None

**WPA/WPA2-Personal**

WPA (Wi-Fi Protected Access) and WPA2 provide significant improvements over the WEP encryption method. WPA is a security standard based on 802.11i draft 3, while WPA2 is based on the fully ratified version of 802.11i. The initial vector is transmitted, encrypted, and enhanced with its 48 bits, twice as long as WEP. The key is regularly changed so that true session is secured.

Even though AES encryption is only included in the WPA2 standard, it is widely available in the WPA security mode of some wireless APs and clients as well. The AWK-1131A also supports AES algorithms in WPA and WPA2 for better compatibility.

Personal versions of WPA/WPA2, also known as WPA/WPA-PSK (*Pre-Shared Key*), provide a simple way of encrypting a wireless connection for high confidentiality. A *passphrase* is used as a basis for encryption methods (or cipher types) in a WLAN connection. The passphrases should be complicated and as long as possible. There must be at least 8 ASCII characters in the Passphrase, and it could go up to 63. For security reasons, this passphrase should only be disclosed to users who need it, and it should be changed regularly.

**WLAN Security Settings**

**SSID**   
**Security mode**   
**WPA type**   
**Encryption method**   
**EAPOL version**   
**Passphrase**   
**Key renewal**  (60~86400 seconds)

---

**WPA type**

Setting	Description	Factory Default
Personal	Provides Pre-Shared Key-enabled WPA and WPA2	Personal
Enterprise	Provides enterprise-level security for WPA and WPA2	

**Encryption method**

Setting	Description	Factory Default
TKIP**	Temporal Key Integrity Protocol is enabled	AES
AES	Advance Encryption System is enabled	
Mixed*	Provides TKIP broadcast key and TKIP+AES unicast key for some legacy AP clients. This option is rarely used.	

\*\* This option is only available with 802.11a/b/g standard

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

**Passphrase**

Setting	Description	Factory Default
8 to 63 characters	Master key to generate keys for encryption and decryption	None

**Key renewal (for AP/Master mode only)**

Setting	Description	Factory Default
60 to 86400 seconds (1 minute to 1 day)	Specifies the time period of group key renewal	3600 (seconds)

**NOTE** The *key renewal* value dictates how often the wireless AP encryption keys should be changed. The security level is generally higher if you set the key renewal value to a shorter number, which forces the encryption keys to be changed more frequently. The default value is 3600 seconds (6 minutes). Longer time periods can be considered if the line is not very busy.

**WPA/WPA2-Enterprise (for AP/Master mode)**

By setting **WPA type** to **Enterprise**, you can use *EAP (Extensible Authentication Protocol)*, a framework authentication protocol used by 802.1X to provide network authentication. In these Enterprise-level security modes, a back-end RADIUS (Remote Authentication Dial-In User Service) server is needed if IEEE 802.1X functionality is enabled in WPA/WPA2. The IEEE 802.1X protocol also offers the possibility of carrying out an efficient connection authentication on a large-scale network. It is not necessary to exchange keys or passphrases.

**WLAN Security Settings**

**SSID** MOXA  
**Security mode** WPA ▼  
**WPA type** Enterprise ▼  
**Encryption method** AES ▼  
**EAPOL version** 1 ▼  
**Primary RADIUS server IP**   
**Primary RADIUS server port** 1812  
**Primary RADIUS shared key**   
**Secondary RADIUS server IP**   
**Secondary RADIUS server port** 1812  
**Secondary RADIUS shared key**   
**Key renewal** 3600 (60~86400 seconds)

**WPA type**

Setting	Description	Factory Default
Personal	Provides Pre-Shared Key-enabled WPA and WPA2	Personal
Enterprise	Provides enterprise-level security for WPA and WPA2	

**Encryption method**

Setting	Description	Factory Default
TKIP**	Temporal Key Integrity Protocol is enabled	AES
AES	Advance Encryption System is enabled	
Mixed*	Provides TKIP broadcast key and TKIP+AES unicast key for some legacy AP clients. This option is rarely used.	

\*\* This option is only available with 802.11a/b/g standard

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

**Primary/Secondary RADIUS server IP**

Setting	Description	Factory Default
The IP address of RADIUS server	Specifies the delegated RADIUS server for EAP	None

**Primary/Secondary RADIUS port**

Setting	Description	Factory Default
Port number	Specifies the port number of the delegated RADIUS server	1812

**Primary/ Secondary RADIUS shared key**

Setting	Description	Factory Default
Max. of 31 characters	The secret key shared between AP and RADIUS server	None

**Key renewal**

Setting	Description	Factory Default
60 to 86400 seconds (1 minute to 1 year)	Specifies the time period of group key renewal	3600 (seconds)

**WPA/WPA2-Enterprise (for Client)**

When used as a client, the AWK-1131A can support three EAP methods (or **EAP protocols**): **EAP-TLS**, **EAP-TTLS**, and **EAP-PEAP**, corresponding to WPA/WPA2-Enterprise settings on the AP side.

**WLAN Security Settings**

**SSID** MOXA  
**Security mode** WPA2 ▼  
**WPA type** Enterprise ▼  
**Encryption method** TKIP ▼  
**EAPOL version** 1 ▼  
**EAP protocol** TLS ▼  
**Certificate issued to** TLS  
**Certificate issued by** TTLS  
**Certificate expiration date** PEAP

**Encryption method**

Setting	Description	Factory Default
TKIP**	Temporal Key Integrity Protocol is enabled	TKIP
AES	Advance Encryption System is enabled	

\*\*This option is only available with 802.11a/b/g standard.

**EAP protocol**

Setting	Description	Factory Default
TLS	Specifies Transport Layer Security protocol	TLS
TTLS	Specifies Tunneled Transport Layer Security	
PEAP	Specifies Protected Extensible Authentication Protocol, or Protected EAP	

Before choosing the EAP protocol for your WPA/WPA2-Enterprise settings on the client end, please contact the network administrator to make sure the system supports the protocol on the AP end. Detailed information on these three popular EAP protocols is presented in the following sections.



## EAP-TLS

TLS is the standards-based successor to Secure Socket Layer (SSL). It can establish a trusted communication channel over a distrusted network. TLS provides mutual authentication through certificate exchange. EAP-TLS is also secure to use. You are required to submit a digital certificate to the authentication server for validation, but the authentication server must also supply a certificate.

You can use **Basic WLAN Setup** → **WLAN Certificate Settings** to import your WLAN certificate and enable EAP-TLS on the client end.

### WLAN Security Settings

SSID	MOXA
Security mode	WPA2 ▼
WPA type	Enterprise ▼
Encryption method	TKIP ▼
EAPOL version	1 ▼
EAP protocol	TLS ▼
Certificate issued to	
Certificate issued by	
Certificate expiration date	

You can check the current certificate status in **Current Status** if it is available.

- **Certificate issued to:** Shows the certificate user
- **Certificate issued by:** Shows the certificate issuer
- **Certificate expiration date:** Indicates the expiration date of the certificate

## EAP-TTLS

It is usually much easier to re-use existing authentication systems, such as a Windows domain or Active Directory, LDAP directory, or Kerberos realm, rather than creating a parallel authentication system. As a result, TTLS (Tunneled TLS) and PEAP (Protected EAP) are used to support the use of so-called “legacy authentication methods.”

TTLS and PEAP work in a similar way. First, they establish a TLS tunnel (EAP-TLS for example), and validate whether the network is trustworthy with digital certificates on the authentication server. This step establishes a tunnel that protects the next step (or “inner” authentication), and consequently is sometimes referred to as “outer” authentication. The TLS tunnel is then used to encrypt an older authentication protocol that authenticates the user for the network.

As you can see, digital certificates are still needed for outer authentication in a simplified form. Only a small number of certificates are required, which can be generated by a small certificate authority. Certificate reduction makes TTLS and PEAP much more popular than EAP-TLS.

The AWK-1131A provides some non-cryptographic EAP methods, including **PAP**, **CHAP**, **MS-CHAP**, and **MS-CHAP-V2**. These EAP methods are not recommended for direct use on wireless networks. However, they might be useful as inner authentication methods with TTLS and PEAP.

Because the inner and outer authentications can use distinct user names in TTLS and PEAP, you can use an anonymous user name for the outer authentication, with the true user name only shown through the encrypted channel. Keep in mind that not all client software supports anonymous alteration. Confirm this with the network administrator before you enable identity hiding in TTLS and PEAP.

**WLAN Security Settings**

**SSID**  
**Security mode** MOXA  
 WPA2 ▾  
**WPA type** Enterprise ▾  
**Encryption method** TKIP ▾  
**EAPOL version** 1 ▾  
**EAP protocol** TTLS ▾  
**TTLS inner authentication** MS-CHAP-V2 ▾  
 PAP  
 CHAP  
 MS-CHAP  
 MS-CHAP-V2  
**Anonymous name** \_\_\_\_\_  
**User name** \_\_\_\_\_  
**Password** \_\_\_\_\_  
 Submit

**TTLS inner authentication**

Setting	Description	Factory Default
PAP	Password Authentication Protocol is used	MS-CHAP-V2
CHAP	Challenge Handshake Authentication Protocol is used	
MS-CHAP	Microsoft CHAP is used	
MS-CHAP-V2	Microsoft CHAP version 2 is used	

**Anonymous**

Setting	Description	Factory Default
Max. of 31 characters	A distinct name used for outer authentication	None

**User name & Password**

Setting	Description	Factory Default
	User name and password used in inner authentication	None

**PEAP**

There are a few differences in the TTLS and PEAP inner authentication procedures. TTLS uses the encrypted channel to exchange attribute-value pairs (AVPs), while PEAP uses the encrypted channel to start a second EAP exchange inside of the tunnel. The AWK-1131A provides **MS-CHAP-V2** merely as an EAP method for inner authentication.

**WLAN Security Settings**

**SSID**  
**Security mode** MOXA  
 WPA2 ▾  
**WPA type** Enterprise ▾  
**Encryption method** TKIP ▾  
**EAPOL version** 1 ▾  
**EAP protocol** PEAP ▾  
**Inner EAP protocol** MS-CHAP-V2 ▾  
 MS-CHAP-V2  
**Anonymous name** \_\_\_\_\_  
**User name** \_\_\_\_\_  
**Password** \_\_\_\_\_  
 Submit

**Inner EAP protocol**

Setting	Description	Factory Default
MS-CHAP-V2	Microsoft CHAP version 2 is used	MS-CHAP-V2

**Anonymous**

Setting	Description	Factory Default
Max. of 31 characters	A distinct name used for outer authentication	None

**User name & Password**

Setting	Description	Factory Default
	User name and password used in inner authentication	None

## Advanced WLAN Settings

Additional wireless-related parameters are presented in this section to help you set up your wireless network in detail.

### Advanced WLAN Settings

<b>Transmission rate</b>	<input type="text" value="Auto"/> ▼
<b>Minimum transmission rate</b>	<input type="text" value="0"/> (0~64Mbps, 0 to disable)
<b>Multicast rate</b>	<input type="text" value="6M"/> ▼
<b>Transmission power</b>	<input type="text" value="10 dBm"/> ▼
<b>Beacon interval</b>	<input type="text" value="100"/> (40~1000ms)
<b>DTIM interval</b>	<input type="text" value="1"/> (1~15)
<b>Inactive timeout</b>	<input type="text" value="60"/> (1~240 second)
<b>Fragmentation threshold</b>	<input type="text" value="2346"/> (256~2346)
<b>RTS threshold</b>	<input type="text" value="2346"/> (256~2346)
<b>Antenna</b>	<input type="text" value="Both"/> ▼
<b>WMM</b>	<input type="text" value="Enable"/> ▼
<b>MAC clone</b>	<input type="text" value="Disable"/> ▼

**Transmission rate**

Setting	Description	Factory Default
Auto	The AWK-1131A senses and adjusts the data rate automatically	Auto
Available rates	Users can manually select a target transmission data rate but does not support when RF type are G/N mixed, B/G/N mixed and A/N mixed.	

**Minimum transmission rate**

Setting	Description	Factory Default
0 to 64 Mbps (0 to disable)	By setting a minimum transmission rate, the AWK-1131A will avoid communicate with weak signal wireless links to maintain overall wireless performance and optimize the wireless frequency usage.	0 (Disable)

**Multicast rate**

Setting	Description	Factory Default
Available rates	You can set a fixed multicast rate for the transmission of broadcast and multicast packets on a per-radio basis. This parameter can be useful in an environment where multicast video streaming is occurring in the wireless medium, providing the wireless clients are capable of handling the configured rate	6M

**Transmission power**

Setting	Description	Factory Default
Available power	Users can manually select a target power to mask max output power. Because different transmission rates would have their own max output power, please reference product datasheet.	10 dBm

**Beacon interval (for AP/Master mode only)**

Setting	Description	Factory Default
Beacon Interval (40 to 1000 ms)	Indicates the frequency interval of the beacon	100 (ms)

**Inactive timeout (for AP mode only)**

Setting	Description	Factory Default
1 to 240 seconds	Specifies how long before access point starts sending out client alive packets	60 seconds

**DTIM interval (for AP/Master mode only)**

Setting	Description	Factory Default
Data Beacon Rate (1 to 15)	Indicates how often the AWK-1131A sends out a Delivery Traffic Indication Message	1

**Fragmentation threshold**

Setting	Description	Factory Default
Fragment Length (256 to 2346)	Specifies the maximum size a data packet before splitting and creating another new packet	2346

**RTS threshold**

Setting	Description	Factory Default
RTS/CTS Threshold (256 to 2346)	Determines how large a packet can be before the access point coordinates transmission and reception to ensure efficient communication	2346

**NOTE** You can refer to the related glossaries in Appendix A for detailed information about the above-mentioned settings. By setting these parameters properly, you can better tune the performance of your wireless network.

**Antenna**

Setting	Description	Factory Default
A/B/Both	Specifies the output antenna port. Setting "Antenna" to "Both" allows 2x2 MIMO communication under 802.11n and 2T2R* communication in legacy 802.11a/b/g modes.	Both

\*Note: 2T2R is different from 802.11n's multiple spatial data stream (2x2 MIMO), which doubles the throughput. 2T2R transmits/receives the same piece of data on both the antenna ports.

**WMM**

Setting	Description	Factory Default
Enable/Disable	WMM is a QoS standard for WLAN traffic. Voice and video data will be given priority bandwidth when enabled with WMM supported wireless clients. Note: WMM will always be enabled under 802.11n mode.	Enable

**Turbo Roaming (for Client mode only)**

Setting	Description	Factory Default
Enable/ Disable	Moxa's Turbo Roaming can enable rapid handover when the AWK-1131A, as a client, roams among a group of APs.	Disable

When Turbo Roaming is enabled, the following parameters will be shown:

- **Roaming threshold:** Determines when to start looking for new AP candidates. If the current connection quality (SNR or Signal Strength) is lower than the specified threshold, the AWK will start background scanning and look for next-hop candidates.

**NOTE** While the AWK is background scanning, the wireless performance will be reduced by 1/3 of its normal performance.

- **Roaming difference:** Determines if roaming should be executed. After background scan has been triggered, the roaming will only occur if the AP candidate(s) provide a better (Roaming difference) connection quality than the current connection. If multiple access points fulfill the criteria, the AWK will pick the best one to roam to.
- **Scan channels:** Pre-define communication and roaming channels.
- **AP alive check:** Allows the turbo roaming function to recover the network connection faster when an AP has a sudden disconnection (such as losing power).

**NOTE** Enabling this feature causes the AWK-1131A to send out alive check packets every 10 ms when there is no traffic; the high transmission frequency of small alive check packets could potentially affect your other wireless communications that use the same channel, so only enable this feature when you have full control of the designated radio channel.

- **AP candidate threshold:** After the "AP alive check" declares the current access point is no longer available, the surrounding access points must have good enough connection qualities (SNR/Signal Strength) in order to be qualified as AP candidates for association.

<b>Turbo Roaming</b>	<input checked="" type="checkbox"/> Enable
<b>RF type</b>	B/G/N Mixed
<b>Roaming threshold</b>	<input checked="" type="radio"/> SNR <input type="text" value="30"/> dB (5 ~ 40) <input type="radio"/> Signal Strength <input type="text" value="-75"/> dBm (-100 ~ -35)
<b>Roaming difference</b>	<input type="text" value="7"/> ( 5 ~ 20)
<b>Scan channels</b>	<input type="text" value="6"/> ▾ <input type="text" value="Not Scanning"/> ▾ <input type="text" value="Not Scanning"/> ▾
<b>AP alive check</b>	<input type="text" value="Enable"/> ▾
<b>AP candidate threshold</b>	<input checked="" type="radio"/> SNR <input type="text" value="20"/> dB (5 ~ 40) <input type="radio"/> Signal Strength <input type="text" value="-85"/> dBm (-100 ~ -35)

#### MAC clone (for Client mode only)

Setting	Description	Factory Default
Enable/Disable	Enabling this feature allows the AWK client to copy the MAC address of LAN connected equipment as its own. This overcomes the limitation of the IP-Bridged behavior in a MAC-sensitive network (MAC-based communication or MAC-authenticated network), such as PROFINET.  Limitation: Only ONE device is allowed to connect to the AWK client while this feature is enabled.	Disable

## WLAN Certificate Settings (for EAP-TLS in Client/Slave mode only)

When EAP-TLS is used, a WLAN Certificate will be required at the client end to support WPA/WPA2-Enterprise. The AWK-1131A can support the **PKCS #12**, also known as *Personal Information Exchange Syntax Standard*, certificate formats that define file formats commonly used to store private keys with accompanying public key certificates, protected with a password-based symmetric key.

### WLAN Certificate Settings

**Certificate private password**   
**Select certificate/key file**

---

Status	
<b>Certificate issued to</b>	
<b>Certificate issued by</b>	
<b>Certificate expiration date</b>	

**Current status** displays information for the current WLAN certificate, which has been imported into the AWK-1131A. Nothing will be shown if a certificate is not available.

**Certificate issued to:** Shows the certificate user

**Certificate issued by:** Shows the certificate issuer

**Certificate expiration date:** Indicates when the certificate has expired

You can import a new WLAN certificate in **Import WLAN Certificate** by following these steps, in order:

1. Input the corresponding password (or key) in the **Certificate private password** field and then click **Submit** to set the password.
2. The password will be displayed in the Certificate private password field. Click on the **Browse** button in **Select certificate/key file** and select the certificate file.
3. Click **Upload Certificate File** to import the certificate file. If the import succeeds, you can see the information uploaded in **Current Certificate**. If it fails, return to step 1 to set the password correctly and then import the certificate file again.

#### Step 1:

**Certificate private password**

#### Step 2:

**Select certificate/key file**

**NOTE** The WLAN certificate will remain after the AWK-1131A reboots. Even though it is expired, it can still be seen on the **Current Certificate**.

# Advanced Setup

Several advanced functions are available to increase the functionality of your AWK-1131A and wireless network system. The DHCP server helps you deploy wireless clients efficiently. Packet filters provide security mechanisms, such as firewalls, in different network layers. And, SNMP support can make network management easier.

## DHCP Server (for AP mode only)

DHCP (Dynamic Host Configuration Protocol) is a networking protocol that allows administrators to assign temporary IP addresses to network computers by "leasing" an IP address to a user for a limited amount of time, instead of assigning permanent IP addresses.

The AWK-1131A can act as a simplified DHCP server and easily assign IP addresses to your DHCP clients by responding to the DHCP requests from the client ends. The IP-related parameters you set on this page will also be sent to the client.

You can also assign a static IP address to a specific client by entering its MAC address. The AWK-1131A provides a **Static DHCP mapping** list with up to 16 entities. Be reminded to check the **Active** check box for each entity to activate the setting.

You can check the IP assignment status under **Status → DHCP Client List**.

### DHCP Server (For AP mode only)

DHCP server	Disable ▾
Default gateway	<input type="text"/>
Subnet mask	<input type="text"/>
Primary DNS server	<input type="text"/>
Secondary DNS server	<input type="text"/>
Start IP address	<input type="text"/>
Maximum number of users	<input type="text"/>
Client lease time	14400 (2~14400 minutes)

### Static DHCP Mapping

No.	<input type="checkbox"/> Active	IP Address	MAC Address
1	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
2	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
3	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
4	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
5	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
6	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>

### DHCP server

Setting	Description	Factory Default
Enable	Enables AWK-1131A as a DHCP server	Disable
Disable	Disable DHCP server function	

### Default gateway

Setting	Description	Factory Default
IP address of a default gateway	The IP address of the router that connects to an outside network	None

**Subnet mask**

Setting	Description	Factory Default
subnet mask	Identifies the type of sub-network (e.g., 255.255.0.0 for a Class B network, or 255.255.255.0 for a Class C network)	None

**Primary/ Secondary DNS server**

Setting	Description	Factory Default
IP address of Primary/ Secondary DNS server	The IP address of the DNS Server used by your network. After entering the DNS Server's IP address, you can use URL as well. The Secondary DNS server will be used if the Primary DNS server fails to connect.	None

**Start IP address**

Setting	Description	Factory Default
IP address	Indicates the IP address which AWK-1131A can start assigning	None

**Maximum number of users**

Setting	Description	Factory Default
1 to 999	Specifies how many IP address can be assigned continuously	None

**Client lease time**

Setting	Description	Factory Default
2 to 14400 minutes	The lease time for which an IP address is assigned. The IP address expires after the lease time is completed.	14400 minutes (10 days)

## Packet Filters

The AWK-1131A includes various filters for **IP-based** packets going through LAN and WLAN interfaces. You can set these filters as a firewall to help enhance network security.

### MAC Filters

The AWK-1131A's MAC filter is a policy-based filter that can allow or filter out IP-based packets with specified MAC addresses. The AWK-1131A provides 8 entities for setting MAC addresses in your filtering policy. Remember to check the **Active** check box for each entity to activate the setting.

**MAC Filters**

MAC filters Disable ▾

Policy Drop ▾

No	<input type="checkbox"/> Active	Name	MAC Address
1	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
2	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
3	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
4	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
5	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
6	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
7	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
8	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>

**MAC filters**

Setting	Description	Factory Default
Enable	Enables MAC filters	Disable
Disable	Disables MAC filters	



**Policy**

Setting	Description	Factory Default
Accept	Only the packets fitting the entities on list can be allowed.	Drop
Drop	Any packet fitting the entities on list will be denied.	



**ATTENTION**

Be careful when you enable the filter function:

**Drop** + "no entity on list is activated" = all packets are **allowed**

**Accept** + "no entity on list is activated" = all packets are **denied**

**IP Protocol Filters**

The AWK-1131A'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-1131A provides 8 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.

Remember to check the **Active** check box for each entity to activate the setting.

**IP Protocol Filters**

IP protocol filters

Disable ▾

Policy

Drop ▾

No	<input type="checkbox"/> Active	Protocol	Source IP	Source Netmask	Destination IP	Destination Netmask
1	<input type="checkbox"/>	All ▾	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2	<input type="checkbox"/>	All ▾	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
3	<input type="checkbox"/>	All ▾	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
4	<input type="checkbox"/>	All ▾	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
5	<input type="checkbox"/>	All ▾	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
6	<input type="checkbox"/>	All ▾	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
7	<input type="checkbox"/>	All ▾	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
8	<input type="checkbox"/>	All ▾	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Submit

**IP protocol filters**

Setting	Description	Factory Default
Enable	Enables IP protocol filters	Disable
Disable	Disables IP protocol filters	

**Policy**

Setting	Description	Factory Default
Accept	Only the packets fitting the entities on the list can be allowed	Drop
Drop	Any packet fitting the entities on the list will be denied	



**ATTENTION**

Be careful when you enable the filter function:

**Drop** + "no entity on list is activated" = all packets are **allowed**.

**Accept** + "no entity on list is activated" = all packets are **denied**.

## TCP/UDP Port Filters

The AWK-1131A's TCP/UDP port filter is a policy-based filter that can allow or filter out TCP/UDP-based packets with a specified source or destination port.

The AWK-1131A provides 8 entities for setting the range of source/destination ports of a specific protocol. In addition to selecting TCP or UDP protocol, you can set either the source port, destination port, or both. The end port can be left empty if only a single port is specified. Of course, the end port cannot be larger than the start port.

The **Application name** is a text string that describes the corresponding entity with up to 31 characters. Remember to check the **Active** check box for each entity to activate the setting.

### TCP/UDP Port Filters

#### TCP/UDP port filters

#### Policy



No	<input type="checkbox"/> Active	Source Port	Destination Port	Protocol	Application Name
1	<input type="checkbox"/>	<input type="text"/> ~ <input type="text"/>	<input type="text"/> ~ <input type="text"/>	TCP ▾	<input type="text"/>
2	<input type="checkbox"/>	<input type="text"/> ~ <input type="text"/>	<input type="text"/> ~ <input type="text"/>	TCP ▾	<input type="text"/>
3	<input type="checkbox"/>	<input type="text"/> ~ <input type="text"/>	<input type="text"/> ~ <input type="text"/>	TCP ▾	<input type="text"/>
4	<input type="checkbox"/>	<input type="text"/> ~ <input type="text"/>	<input type="text"/> ~ <input type="text"/>	TCP ▾	<input type="text"/>
5	<input type="checkbox"/>	<input type="text"/> ~ <input type="text"/>	<input type="text"/> ~ <input type="text"/>	TCP ▾	<input type="text"/>
6	<input type="checkbox"/>	<input type="text"/> ~ <input type="text"/>	<input type="text"/> ~ <input type="text"/>	TCP ▾	<input type="text"/>
7	<input type="checkbox"/>	<input type="text"/> ~ <input type="text"/>	<input type="text"/> ~ <input type="text"/>	TCP ▾	<input type="text"/>
8	<input type="checkbox"/>	<input type="text"/> ~ <input type="text"/>	<input type="text"/> ~ <input type="text"/>	TCP ▾	<input type="text"/>

### TCP/UDP port filters

Setting	Description	Factory Default
Enable	Enables TCP/UDP port filters	Disable
Disable	Disables TCP/UDP port filters	

### Policy

Setting	Description	Factory Default
Accept	Only the packets fitting the entities on list can be allowed.	Drop
Drop	Any packet fitting the entities on list will be denied.	



### ATTENTION

Be careful when you enable the filter function:

**Drop** + "no entity on list is activated" = all packets are **allowed**

**Accept** + "no entity on list is activated" = all packets are **denied**

## SNMP Agent

The AWK-1131A supports SNMP V1/V2c/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 community string *public/private* (default value). SNMP V3, which requires you to select an authentication level of MD5 or SHA, is the most secure protocol. You can also enable data encryption to enhance data security.

SNMP security modes and security levels supported by the AWK-1131A are shown in the following table. Select the security mode and level that will be used to communicate between the SNMP agent and manager.

Protocol Version	Setting on UI web page	Authentication Type	Data Encryption	Method
SNMP V1, V2c	V1, V2c Read Community	Community string	No	Use a community string match for authentication
	V1, V2c Write/Read Community	Community string	No	Use a community string match for authentication
SNMP V3	No-Auth	No	No	Use account with admin or user to access objects
	MD5 or SHA	Authentication based on MD5 or SHA	No	Provides 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	Provides authentication based on HMAC-MD5 or HMAC-SHA algorithms, and data encryption key. 8-character passwords and a data encryption key are the minimum requirements for authentication and encryption.

The following parameters can be configured on the **SNMP Agent** page. A more detailed explanation of each parameter is given below the following figure.

#### SNMP Agent

SNMP agent	Disable ▾
Remote management	Disable ▾
Read community	public
Write community	private
SNMP agent version	V1, V2c ▾
Admin authentication type	No Auth ▾
Admin encryption method	Disable ▾
Private key	
Private MIB information	
Device object ID	enterprise.8691.15.33

Submit

#### SNMP agent

Setting	Description	Factory Default
Enable	Enables SNMP agent	Disable
Disable	Disables SNMP agent	

#### Remote management

Setting	Description	Factory Default
Enable	Allow remote management via SNMP agent	Disable
Disable	Disallow remote management via SNMP agent	

#### Read community (for V1, V2c)

Setting	Description	Factory Default
V1, V2c Read Community	Use a community string match with a maximum of 31 characters for authentication. This means that the SNMP agent can access all objects with read-only permissions using this community string.	public

**Write community (for V1, V2c)**

Setting	Description	Factory Default
V1, V2c Read /Write Community	Use a community string match with a maximum of 31 characters for authentication. This means that the SNMP agent can access all objects with read/write permissions using this community string.	private

**SNMP agent version**

Setting	Description	Factory Default
V1, V2c, V3, or V1, V2c, or V3 only	Select the SNMP protocol version used to manage the switch.	V1, V2c

**Admin auth type (for V1, V2c, V3, and V3 only)**

Setting	Description	Factory Default
No Auth	Use admin account to access objects. No authentication	No Auth
MD5	Provide authentication based on the HMAC-MD5 algorithms. 8-character passwords are the minimum requirement for authentication.	
SHA	Provides authentication based on HMAC-SHA algorithms. 8-character passwords are the minimum requirement for authentication.	

**Admin private key (for V1, V2c, V3, and V3 only)**

Setting	Description	Factory Default
Disable	No data encryption	Disable
DES	DES-based data encryption	
AES	AES-based data encryption	

**Private Key**

A data encryption key is the minimum requirement for data encryption (maximum of 63 characters)

**Private MIB Information Device Object ID**

Also known as **OID**, this is AWK-1131A's enterprise value, which is a fixed value.

## Link Fault Pass-Through (for Client mode only)

This function means if Ethernet port is link down, wireless connection will be forced to disconnect. Once Ethernet link is recovered, AWK will try to connect to AP.

If wireless is disconnected, AWK restarts auto-negotiation on Ethernet port but always stays in the link failure state. Once the wireless connection is recovered, AWK will try to recover the Ethernet link.

System log will indicate the link fault pass through events in addition to the original link up/down events.

**Link Fault Pass-Through (For Client mode only)**

Link Fault Pass-Through

Enable  Disable

Submit

**Link Fault Pass-Through**

Setting	Description	Factory Default
Enable	Enables Link Fault Pass-Through	Disable
Disable	Disables Link Fault Pass-Through	

# Logs and Notifications

Since industrial-grade devices are often located at the endpoints of a system, these devices will not always know what is happening elsewhere on the network. This means that these devices, including wireless APs or clients, must provide system maintainers with real-time alarm messages. Even when system administrators are out of the control room for an extended period, they can still be informed of the status of devices almost instantaneously when exceptions occur.

In addition to logging these events, the AWK-1131A supports different approaches to warn engineers automatically, such as SNMP trap and e-mail.

## System Logs

### System Log Event Types

All the event group types are shown on this page. Select the event types (groups) that you want to enable by checking the **Enable logging** box next to the event types. By default, all event types are enabled (checked).

The system events log can be viewed at **Status → System Logs**.

### System Log Event Types

Event Type	Enable Logging
System-related events	<input checked="" type="checkbox"/> Active
Network-related events	<input checked="" type="checkbox"/> Active
Configuration-related events	<input checked="" type="checkbox"/> Active
Power events	<input checked="" type="checkbox"/> Active

System-related events	Event is triggered when...
System warm start	The AWK-1131A is rebooted, such as when its settings are changed (IP address, subnet mask, etc.).
System cold start	The AWK-1131A is rebooted by power down.
Watchdog triggers reboot	The AWK-1131A is rebooted by watchdog
Network-related events	Event is triggered when...
LAN link on	The LAN port is connected to a device or network.
LAN link off	The port is disconnected (e.g., the cable is pulled out, or the opposing device shuts down).
Client joined/ left (for AP/Master mode)	A wireless client is associated or disassociated.
WLAN connected to AP (for Client/Slave mode)	The AWK-1131A is associated with an AP.
WLAN disconnected (for Client/Slave mode)	The AWK-1131A is disassociated from an AP.
RSTP changed	The RSTP topology has changed
RSTP new root bridge ID	The RSTP changes its root bridge ID
Client Roaming from previous AP to current AP (for Client/Slave mode)	A client roams from a previous AP to the current AP if the signal strength of the current AP is greater than the previous AP by a certain value.
IP address conflict	The AWK-1131A has the same IP address as another device connected to the same subnet.
Link fault pass-through LAN/WLAN connected because of WLAN/LAN up	The WLAN/LAN link is up and the Link fault pass-through (LFPT) enables the LAN/WLAN functionality.

Link fault pass-through LAN/WLAN disconnected because of WLAN/LAN down	The WLAN/LAN link is down and the Link fault pass-through (LFPT) disables the LAN/WLAN functionality.
Channel availability check over DFS frequency (for AP/Master mode)	The channel availability check (CAC) is started on channel [channel] at [frequency] GHz for 60 sec./ The channel availability check (CAC) task has been completed on channel [channel] at [frequency] GHz./ A radar signal is detected on channel [channel] at [frequency] GHz.
AeroLink protection state	The AeroLink protection state changes. AeroLink states: Initialize (init)/ Discovery/ Idle/ Negotiation (nego)/ Back up/ Active/ Changed/ Undefined (undef)
<b>Configuration-related events</b>	<b>Event is triggered when...</b>
Configuration Changed	A configuration item has been changed.
Configuration file import via Web Console	The configuration file is imported to the AWK-1131A.
Console authentication failure	An incorrect password is entered.
Firmware upgraded	The AWK-1131A's firmware is updated.
Loaded the configuration from ABC-01	The configuration is successfully loaded/there is an error loading the configuration from ABC-01.
Saving configuration to ABC-01	The configuration is successfully saved/there is an error saving the configuration to ABC-01.
ABC-01 failure	AWK-1131A cannot detect an ABC-01 at the console port.
Configuration reset to default	The configuration is reset to factory default.
<b>Power events</b>	<b>Event is triggered when...</b>
Power 1/2 transition (On -> Off)	The AWK-1131A is powered down in PWR1/2.
PoE transition (On -> Off)	The AWK-1131A is powered down in PoE.
Power 1/2 transition (Off -> On)	The AWK-1131A is powered via PWR1/2.
PoE transition (Off -> On)	The AWK-1131A is powered via PoE.

## Syslog

This function provides the event logs for the Syslog server. The function supports up to three configurable Syslog servers and Syslog server UDP port numbers. When an event occurs, the event will be sent as a Syslog UDP packet to the specified Syslog servers.

### Syslog Event Types

The event type groups are shown on this page. Select the **Enable Logging** checkbox next to the event type to enable logging of the event. By default, all event types are enabled (checked).

#### Syslog Event Types

Event Type	Enable Logging
System-related events	<input checked="" type="checkbox"/> Active
Network-related events	<input checked="" type="checkbox"/> Active
Configuration-related events	<input checked="" type="checkbox"/> Active
Power events	<input checked="" type="checkbox"/> Active
RSSI report events	<input type="checkbox"/> Active

Submit

## Syslog Server Settings

You can configure the parameters for your Syslog servers in this page.

### Syslog Server Settings

Syslog server 1	<input type="text"/>
Syslog port	<input type="text" value="514"/>
Syslog server 2	<input type="text"/>
Syslog port	<input type="text" value="514"/>
Syslog server 3	<input type="text"/>
Syslog port	<input type="text" value="514"/>

### Syslog server 1/ 2/ 3

Setting	Description	Factory Default
IP address	Enter the IP address of the 1st/ 2nd/ 3rd Syslog Server	None

### Syslog port

Setting	Description	Factory Default
Port destination (1 to 65535)	Enter the UDP port of the corresponding Syslog server	514

**NOTE** **RSSI report events (Only for Client mode)** event type is useful for the site survey stage. However, this function increases the traffic load because it needs to use a special utility to retrieve the RSSI values in a tabular format. So, we recommend disabling this function during normal usage.

## E-mail Notifications

### Notification Event Types

Check the **Active** box next to the event type to enable the event type for email notification. By default, all event types are deactivated (unchecked).

### Notification Event Types

Event Type	Enable Notification
Cold start	<input type="checkbox"/> Active
Warm start	<input type="checkbox"/> Active
Power 1 transition (On-->Off)	<input type="checkbox"/> Active
Power 1 transition (Off-->On)	<input type="checkbox"/> Active
Power 2 transition (On-->Off)	<input type="checkbox"/> Active
Power 2 transition (Off-->On)	<input type="checkbox"/> Active
Configuration changed	<input type="checkbox"/> Active
Console authentication failure	<input type="checkbox"/> Active
LAN link on	<input type="checkbox"/> Active
LAN link off	<input type="checkbox"/> Active

## E-mail Server Settings

You can set up to 4 e-mail addresses to receive alarm emails from the AWK-1131A. The following parameters can be configured on the **E-mail Server Settings** page. In addition, a **Send Test Mail** button can be used to test whether the Mail server and e-mail addresses work well. More detailed explanations about these parameters are given after the following figure.

### E-mail Server Settings

Mail server (SMTP)	<input type="text"/>
User name	<input type="text"/>
Password	<input type="password"/>
From e-mail address	<input type="text"/>
To e-mail address 1	<input type="text"/>
To e-mail address 2	<input type="text"/>
To e-mail address 3	<input type="text"/>
To e-mail address 4	<input type="text"/>

### Mail server (SMTP)

Setting	Description	Factory Default
IP address	The IP Address of your email server.	None

### User name & Password

Setting	Description	Factory Default
	User name and password used in the SMTP server	None

### From e-mail address

Setting	Description	Factory Default
Max. 63 characters	Enter the administrator's e-mail address which will be shown in the "From" field of a warning e-mail.	None

### To E-mail address 1/ 2/ 3/ 4

Setting	Description	Factory Default
Max. 63 characters	Enter the receivers' e-mail addresses.	None

## Trap

Traps can be used to signal abnormal conditions (notifications) to a management station. This trap-driven notification can make your network more efficient.

Because a management station usually takes care of a large number of devices that have a large number of objects, it will be overloading for the management station to poll or send requests to query every object on every device. It would be better if the managed device agent could notify the management station by sending a message known as a trap for the event.



## Trap Event Types

### Trap Event Types

Event Type	Enable Notification
Cold start	<input type="checkbox"/> Active
Warm start	<input type="checkbox"/> Active
Power 1 transition (On-->Off)	<input type="checkbox"/> Active
Power 1 transition (Off-->On)	<input type="checkbox"/> Active
Power 2 transition (On-->Off)	<input type="checkbox"/> Active
Power 2 transition (Off-->On)	<input type="checkbox"/> Active
Configuration changed	<input type="checkbox"/> Active
Console authentication failure	<input type="checkbox"/> Active
LAN link on	<input type="checkbox"/> Active
LAN link off	<input type="checkbox"/> Active

## SNMP Trap Receiver Settings

SNMP traps are defined in SMIV1 MIBs (SNMPv1) and SMIV2 MIBs (SNMPv2c). The two styles are basically equivalent, and it is possible to convert between the two. You can set the parameters for SNMP trap receivers through the web page.

### SNMP Trap Receiver Settings

1st trap version	V1 ▾
1st trap server IP/name	<input type="text"/>
1st trap community	alert <input type="text"/>
2nd trap version	V1 ▾
2nd trap server IP/name	<input type="text"/>
2nd trap community	alert <input type="text"/>

### 1st / 2nd trap version

Setting	Description	Factory Default
V1	SNMP trap defined in SNMPv1	V1
V2	SNMP trap defined in SNMPv2	

### 1st / 2nd trap server IP/name

Setting	Description	Factory Default
IP address or host name	Enter the IP address or name of the trap server used by your network.	None

### 1st / 2nd trap community

Setting	Description	Factory Default
Max. of 31 characters	Use a community string match with a maximum of 31 characters for authentication.	Alert

# Status

## Wireless LAN Status

The status for **802.11 Information** parameters, such as Operation mode and Channel, are shown on the **Wireless Status** page. The status will refresh every 5 seconds if the **Auto Update** box is checked.

Certain values for **802.11 Information** might not be displayed based on the different operation modes selected. For example, the **Current BSSID**, **Signal strength**, and **SNR** parameters are not available in the AP mode.

It is helpful to use the continuously updated information on this page, such as **Signal strength**, **Noise floor**, and **SNR**, to monitor the signal strength of the AWK-1131A in Client mode.

### Wireless LAN Status

Auto Update

Show status of WLAN (SSID: MOXA) ▼

802.11 Information	
Operation mode	AP
Channel	6
Channel width	N/A
RF type	B/G/N Mixed
SSID	MOXA
MAC	06:90:E8:47:24:3B
Security mode	OPEN
Current BSSID	N/A
Signal strength	N/A
Signal strength (dBm)	-108 dBm
Noise floor	-108 dBm
SNR	N/A
Transmission Information	
Rate	Auto
Power	10 dBm
Outgoing Packets	
Total sent	0
Packets with error	0
Packets dropped	1512
Incoming Packets	
Total received	0
Packets with error	0
Packets dropped	0

## Associated Client List (for AP/Master mode only)

The Associated Client List shows all the clients that are currently associated with a particular AWK-1131A. This page provides useful information for easier network diagnosis:

**MAC Address:** Displays the associated client MAC address. If DHCP server is enabled on this AP/Master, the IP address will also be displayed.

**Connection Duration:** States how long the client has been connecting to this AP/Master.

**SNR:** States the Signal-Noise Ratio of the associated client. This is especially useful for identifying a weak signal client that is potentially reducing the overall wireless performance.

**Tx (Bytes/Pkts):** Records the AP-to-client traffic after a client is associated.

**Rx (Bytes/Pkts):** Records the client-to-AP traffic after a client is associated.

### Associated Client List

Show clients for WLAN (SSID: IW\_2.4GHz)

No	MAC Address	Connection Duration	SNR	Tx (Bytes)	Tx (pkts)	Rx (Bytes)	Rx (pkts)
1	ac:81:12:59:66:2f	0 days 04h:43m:49s	45	333651441	300506	106572118	235173
2	84:3a:4b:39:b7:5c	0 days 01h:16m:05s	50	1459894	3551	957998	3553
3	18:00:2d:44:bf:5d	0 days 00h:36m:33s	22	115818	502	223030	581
4	9c:4e:36:a6:98:08	0 days 00h:20m:05s	18	236663	820	192898	739

Refresh

## DHCP Client List (for AP mode only)

The DHCP Client List shows all the clients that require and have successfully received IP assignments. You can click the **Refresh** button to refresh the list.

### DHCP Client List

	MAC	IP
1.	01:5C:96:9D:29:77:71	192.168.41.229
2.	01:30:10:B3:72:72:7F	192.168.41.142
3.	01:9C:4E:36:A6:98:08	192.168.41.216
4.	01:B4:CE:F6:4E:CB:3C	192.168.41.146
5.	01:90:B6:86:75:A5:28	192.168.41.184
6.	01:8C:70:5A:49:FF:58	192.168.41.127
7.	01:68:09:27:CD:41:43	192.168.41.143
8.	01:5C:C5:D4:75:50:7B	192.168.41.140
9.	01:84:3A:4B:39:B7:5C	192.168.41.181
10.	01:A4:C3:61:03:F0:E2	192.168.41.137
11.	* 192.168.41.226	
12.	01:80:86:F2:B2:65:1F	192.168.41.222
13.	01:34:4D:F7:3A:23:FB	192.168.41.122
14.	01:30:75:12:A7:15:0E	192.168.41.139
15.	01:EC:85:2F:88:B3:6A	192.168.41.213
16.	01:30:75:12:F2:59:F9	192.168.41.125
17.	01:78:6C:1C:BF:51:0E	192.168.41.144
18.	01:AC:81:12:59:66:2F	192.168.41.156

Select All

Refresh

You can press **Select all** button to select all content in the list for further editing.

The screenshot shows the DHCP Client List table with a context menu open over the first row. The context menu options are Cut, Copy, Paste, Select All, and Print. The 'Select All' option is highlighted. Below the table are 'Select all' and 'Refresh' buttons.

## System Logs

Triggered events are recorded in System Log. You can export the log contents to an available viewer by clicking **Export Log**. You can use the **Clear Log** button to clear the log contents and the **Refresh** button to refresh the log.

### System Logs

```
( 983) 2015/05/28,04h:12m:54s System warm start, restarted by console
( 984) 2015/05/28,04h:19m:19s LAN link off
( 985) 2015/05/28,04h:19m:21s LAN link on
( 986) 2015/05/28,07h:45m:59s Configuration changed
( 987) 2015/05/28,07h:46m:23s Power 1 transition (Off -> On)
( 988) 2015/05/28,07h:46m:29s LAN link on
( 989) 2015/05/28,07h:46m:34s System warm start, restarted by console
( 990) 2015/05/28,08h:14m:07s LAN link off
( 991) 2015/05/28,08h:14m:09s LAN link on
( 992) 2015/05/28,08h:21m:55s Configuration changed
( 993) 2015/05/28,08h:22m:20s Power 1 transition (Off -> On)
( 994) 2015/05/28,08h:22m:26s WLAN disconnected, connect time(0sec), (reason 0)
( 995) 2015/05/28,08h:22m:26s LAN link on
( 996) 2015/05/28,08h:22m:29s System warm start, restarted by console
( 997) 2015/05/28,08h:24m:24s Configuration changed
( 998) 2015/05/28,08h:24m:49s Power 1 transition (Off -> On)
( 999) 2015/05/28,08h:24m:55s LAN link on
(1000) 2015/05/28,08h:24m:59s System warm start, restarted by console
```

Export Log Clear Log Refresh

## Power Status

The status of power inputs and digital inputs is shown on this web page. The status will refresh every 5 seconds if the **Auto Update** box is checked.

### Power Status

Auto Update

Input Status	On / Off
Power 1 status	On
Power 2 status	Off

## System Status

The system status section indicates the status of the device memory and CPU usage in the current device.

**NOTE** A CPU overload can result in a watchdog-triggered reboot of the system. Factors such as a high number of firewall rules (IP/MAC/Protocol filters) and traffic PPS (packet per second) contribute to the rise in CPU usage.

### System Status

Memory Info		
Total	(kB)	126724
Used	(kB)	48604
Free	(kB)	78120
CPU Info		
Usage	(%)	4.33

Refresh

## Network Status

The network status section indicates the network status of the device with respect to ARP, bridge status, LLDP, and the routing table.

### ARP Table

Address Resolution Protocol (ARP) Table - indicates the current IP to MAC address mapping for the device.

#### ARP Table

IP Address	MAC Address
192.168.127.18	F0:DE:F1:DD:A1:ED

Refresh

### Bridge Status

Indicates the current status of the network bridge on the device. The interfaces and the corresponding MAC addresses in this section are the entry points for ingress traffic.

#### Bridge Status

Interface	MAC Address
LAN	00:90:E8:22:B1:D9
ath01	00:90:E8:4E:9A:79
LAN	F0:DE:F1:DD:A1:ED

Refresh

## LLDP Status

Displays information on neighboring devices collected via LLDP (Link Layer Discovery Protocol).

### LLDP Status

Interface	Neighbor Information				
	System Name	ID	IP	Port	Port Description
LAN	AWK-3121_13496	00:90:E8:22:B1:D9 (MAC)	192.168.127.253	7 (LOCAL)	LAN
WLAN	AWK-3121_0777	00:90:E8:4E:9A:79 (MAC)	192.168.127.252	10 (LOCAL)	WLAN

## Routing Table

Displays the routing information for the current device.

### Routing Table

Destination	Gateway	Mask	Interface
192.168.127.0	*	255.255.255.0	*
default	192.168.127.251	0.0.0.0	*

## Maintenance

Maintenance functions provide the administrator with tools to manage the AWK-1131A and wired/wireless networks.

## Console Settings

You can enable or disable access permission for the following consoles: HTTP, HTTPS, Telnet, and SSH connections. For more security, we recommend you only allow access to the two secured consoles, HTTPS and SSH.

### Console Settings

**HTTP console**

Enable  Disable

**HTTPS console**

Enable  Disable

**Telnet console**

Enable  Disable

**SSH console**

Enable  Disable

## Ping

**Ping** helps to diagnose the integrity of wired or wireless networks. By inputting a node's IP address in the **Destination** field, you can use the **ping** command to make sure it exists and whether or not the access path is available.

If the node and access path are available, you will see that all packets were successfully transmitted with no loss.

### Ping

**Destination**

Otherwise, some, or even all, packets might get lost, as shown in the following figure.

### Ping

**Destination**

```
PING 192.168.41.233 (192.168.41.233): 56 data bytes
64 bytes from 192.168.41.233: seq=0 ttl=64 time=0.696 ms
64 bytes from 192.168.41.233: seq=1 ttl=64 time=0.548 ms
64 bytes from 192.168.41.233: seq=2 ttl=64 time=0.565 ms
64 bytes from 192.168.41.233: seq=3 ttl=64 time=0.567 ms
```

```
--- 192.168.41.233 ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 0.548/0.594/0.696 ms
```

## Firmware Upgrade

The AWK-1131A can be enhanced with more value-added functions by installing firmware upgrades. The latest firmware is available at Moxa's download center.

Before running a firmware upgrade, make sure the AWK-1131A is off-line. Click the **Browse** button to specify the firmware image file and click **Firmware Upgrade and Restart** to start the firmware upgrade. After the progress bar reaches 100%, the AWK-1131A will reboot itself.

When upgrading your firmware, the AWK-1131A's other functions are forbidden.

### Firmware Upgrade

**Select firmware file**



### ATTENTION

Please make sure the power source is stable when you upgrade your firmware. An unexpected power breakup might damage your AWK-1131A.

## Configuration Import and Export

You can back up and restore the AWK-1131A's configuration using the **Configuration Import & Export** function.

In the **Configuration Import** section, click **Browse** to specify the configuration file and click **Import Configuration** button to begin importing the configuration.

### Configuration Import & Export

#### Configuration Import

Select configuration file

Select file

Import Configuration

In the **Configuration Export** section, click the **Export Configuration** button and save the configuration file onto your local storage media. The configuration file is a text file and you can view and edit with a general text-editing tool.

#### Configuration Export

Export Configuration

You can also back up or restore the ABC-01 configuration using **Export Configuration** or **Import Configuration**.

#### ABC-01 Import

Import Configuration

#### ABC-01 Export

Export Configuration

The SNMP MIB file is also available from SNMP MIB File EXPORT.

#### SNMP MIB File Export

Export MIB

To download the configuration to the AWK:

1. Turn off the AWK.
2. Plug in the ABC-01 to the AWK's RS-232 console.
3. Turn on AWK.
4. AWK will detect the ABC-01 during the boot up process, and download the configuration from the ABC-01 to the AWK automatically. Once the configuration downloads and if configuration format is correct, the AWK will emit three short beeps and continue with the boot-up process.
5. Once the AWK has booted up successfully, it will emit the normal two beeps, and the ready LED will turn to solid green.



## Load Factory Default

Use this function to reset the AWK-1131A and rollback all settings to the factory default values. You can also reset the hardware by pressing the reset button on the top panel of the AWK-1131A.

### Load Factory Default

#### Reset to Factory Default

Click "**System Reset**" to reset all settings, including the console password, to the factory default values.

The system will be restarted immediately.

## Account Settings

To ensure that devices located at remote sites are secure from hackers, we recommend setting up a high-strength password the first time you configure the device.

### Password Policy

Minimum password length	<input type="text" value="4"/> (4 - 16 characters)
Password strength check	Disable ▾
Password validity	<input type="text" value="90"/> (0 - 365 days, 0 is disable)
Password retry count	<input type="text" value="5"/> (0 - 10, 0 is disable)
Lockout time	<input type="text" value="600"/> (60 - 3600 seconds)

### Account List

No.	Active	Account Name	User Level	HTTP/HTTPS	Telnet/SSH /Console	Moxa Services	Diagnostics	Action
1	<input checked="" type="checkbox"/>	admin	Admin ▾	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
2	<input type="checkbox"/>	<input type="text"/>	Admin ▾	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
3	<input type="checkbox"/>	<input type="text"/>	Admin ▾	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
4	<input type="checkbox"/>	<input type="text"/>	Admin ▾	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
5	<input type="checkbox"/>	<input type="text"/>	Admin ▾	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
6	<input type="checkbox"/>	<input type="text"/>	Admin ▾	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
7	<input type="checkbox"/>	<input type="text"/>	Admin ▾	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
8	<input type="checkbox"/>	<input type="text"/>	Admin ▾	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

\* Only characters allowed in the Account Name are alphabets, numerals, at sign (@), period (.), and underscore(\_).

Field	Description	Default setting
<b>Minimum password length</b>	By default, passwords can be between 4 and 16 characters. For improved security, we recommend changing the minimum password length to at least 8 characters the first time you configure the device.	4
<b>Password strength check</b>	Enable the password strength check option to ensure that users are required to select high-strength passwords.	Disable
<b>Password validity</b>	The number of days after which the password must be changed. Passwords should be updated regularly to protect against hackers.	90 days
<b>Password retry count</b>	The number of consecutive times a user can enter an incorrect password while logging in before the device's login function is locked.	5
<b>Lockout time</b>	The number of seconds the device's login function will be locked after n consecutive unsuccessful login attempts, where n = the password retry count.	600 seconds

Click **Edit** to create a new, or edit an existing, user account. The items shown below can be configured.

### Account Settings

**Active**

**User level**

**Account name**  (A-Z, a-z, 0-9, '@', '.', and '\_')

**New Password**

**Confirm Password**

- Your password must follow the password policy.
- The minimum password length is 4 characters.

### Accessible Access Portal

**HTTP/HTTPS**  Enable  Disable

**Telnet/SSH/Console**  Enable  Disable

**Moxa Service**  Enable  Disable

**Diagnostic**  Enable  Disable

Field	Description	Default Setting
<b>Active</b>	Select Enable to enable the user account.	Disable
<b>User level</b>	Administrator: Allows the user to access the Web UI, change the device's configuration, and use the device's import/export capability. User: Allows the user to access the Web UI, but the user will not be able to change the device's configuration or use the device's import/export capability.	Admin
<b>Account name</b>	The username of the account.	Admin
<b>New Password</b>	The password used to log in to the device.	moxa
<b>Confirm Password</b>	Retype the password. If the Confirm Password and New Password fields do not match, you will be asked to reenter the password.	N/A

## Change Password

Use the **Change Password** function to change the password of existing user accounts. First input the current password, and then type the new password in the **New password** and **Confirm password** input boxes.

Note: To maintain a higher level of network security, do not use the default password (moxa), and be sure to change all user account passwords regularly.

### Change Password

**Current password**

**New password**

**Confirm password**

- Your password must follow the password policy.
- The minimum password length is 4 characters.

**NOTE** If the Password-strength test option is enabled, you will be prompted to use passwords that adhere to the following password policy:

- The password must contain at least one digit: 0, 1, 2, ..., 9.
- The password must contain both upper and lower case letters: A, B, ..., Z, a, b, ..., z.
- The password must contain at least one of the following special characters: ~!@#%&^&-\_|;:.,<>[]{}.
- The password must have more characters than the minimum password length (default = 4).

## Misc. Settings

Additional settings to help you manage your AWK-1131A are available on this page.

### Misc. Settings

#### Reset button

Always Enable  Disable Factory Reset Function after 60 Seconds.

#### Reset button

Setting	Description	Factory Default
Always Enable	The AWK-1131A's Reset button works normally.	Always enable
Disable the Factory Reset Function after 60 Seconds	The AWK-1131A's reset to default function will be inactive 60 seconds after the AWK-1131A finishes booting up.	

## Troubleshooting

This feature allows you to quickly obtain the current system status and provide diagnostics information to Moxa engineers.

To export the current device information, click **Export**.

### Troubleshooting

#### Current device info

For cases where advanced troubleshooting is required, contact a Moxa engineer who can provide you with an encrypted script file. The encrypted script file can capture additional details on the system.

To run the script, browse to and select the script file using **Browse** and click **Run Script** after you have filled in the following details:

### Troubleshooting

#### Current device info

#### Diagnostics

##### Diagnostic script

##### Export diagnostic results

to a file  to a TFTP server

##### TFTP sever IP

##### Diagnostic script name

N/A

##### Last start time

N/A

##### Last end time

N/A

##### Diagnostic status

##### Diagnostic result

N/A

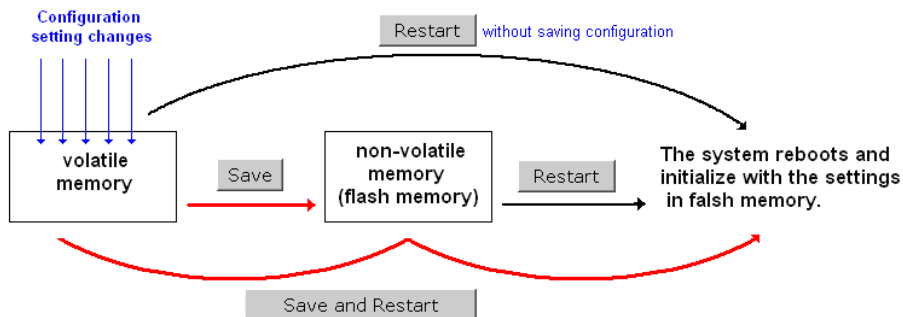
Setting	Description
<b>Diagnostic script</b>	Use the <b>Browse</b> button to select the Moxa diagnosis script file.
<b>Export diagnostic results</b>	Select if you want to export: <ul style="list-style-type: none"> <li>• <b>to a file</b></li> <li>• <b>to a TFTP server</b></li> </ul>
<b>TFTP server IP</b>	If you have selected the TFTP option, specify the IP address of the TFTP server.
<b>Diagnostic script name</b>	Displays the name of the script file
<b>Last start time</b>	Displays the start time of the last script execution

<b>Last end time</b>	Displays the end time of the last script execution
<b>Diagnostic status</b>	Displays the progress of the system diagnostics
<b>Diagnostic result</b>	Displays the result of the system diagnostics.  If you have selected the export <b>to a file</b> option, the system log is encrypted and packed into a file. The limit on the log file size is 1 MB. When the size of the log file reaches 1MB another file is created. A maximum of 5 files (5MB) will be kept for downloading. When the number of files exceeds five, the oldest file is deleted.

## Save Configuration

The following figure shows how the AWK-1131A stores the setting changes into volatile and non-volatile memory. All data stored in volatile memory will disappear when the AWK-1131A is shutdown or rebooted unless they are **y**. Because the AWK-1131A starts up and initializes with the settings stored in flash memory, all new changes must be saved to flash memory before restarting the AWK-1131A.

This also means the new changes will not work unless you run either the **Save Configuration** function or the **Restart** function.



After you click on **Save Configuration** in the left menu box, the following screen is displayed. Click **Save** if you want to update the configuration settings in the flash memory at this time. Alternatively, you can choose to run other functions and put off saving the configuration until later. However, the new setting changes will remain in the non-volatile memory until you save the configurations.

### Save Configuration

After you submit configuration changes, you must save the changes and restart the system to make the changes take effect. Click **Save** to save configuration changes in the system memory.

Save

### Network Settings After Reboot

Network Info	
LAN IP address	192.168.127.253
LAN subnet mask	255.255.255.0
LAN gateway	0.0.0.0

# Restart

You must restart the device for any changes in the configuration setting to take effect. If you have submitted configuration changes, you will find a blinking string in the upper right corner of the configuration screen. After making all your configuration changes, click the **Restart** function in the left menu box.

If you made changes recently but did not save, you will be given two options. Clicking the **Restart** button here will reboot the AWK-1131A directly, and all setting changes will be ignored. Clicking the **Save and Restart** button will apply all changes and then reboot the AWK-1131A.

## Restart

### !!! Warning !!!

Click "Restart" to discard configuration changes and restart the system.

Click "Save and Restart" to save configuration changes and restart the system.

## Network Settings After Reboot

### Network Info

LAN IP address	192.168.43.104
LAN subnet mask	255.255.252.0
LAN gateway	192.168.43.254

If you run the **Restart** function without changing any configurations or saving all your changes, you will see just one **Restart** button on your screen.

## Restart

### !!! Warning !!!

The system will restart immediately after you click "Restart". All Ethernet connections will be disconnected.

## Network Settings After Reboot

### Network Info

LAN IP address	192.168.43.104
LAN subnet mask	255.255.252.0
LAN gateway	192.168.43.254

You will not be able to run any of the AWK-1131A's functions while the system is rebooting.

# Logout

**Logout** helps users disconnect the current HTTP or HTTPS session and go to the Login page. For security reasons, we recommend you logout before quitting the console manager.

## Logout

Click **Logout** to log out of the web console.

# Software Installation and Configuration

---

The following topics are covered in this chapter:

- **Overview**
- **MXstudio**
- **Wireless Search Utility**
  - Installing Wireless Search Utility
  - Configuring Wireless Search Utility

## Overview

AWK can be managed using the MXstudio tool and Wireless Search Utility. Both the Wireless Search Utility and MXstudio can be downloaded from the Moxa website at [www.moxa.com](http://www.moxa.com).

## MXstudio

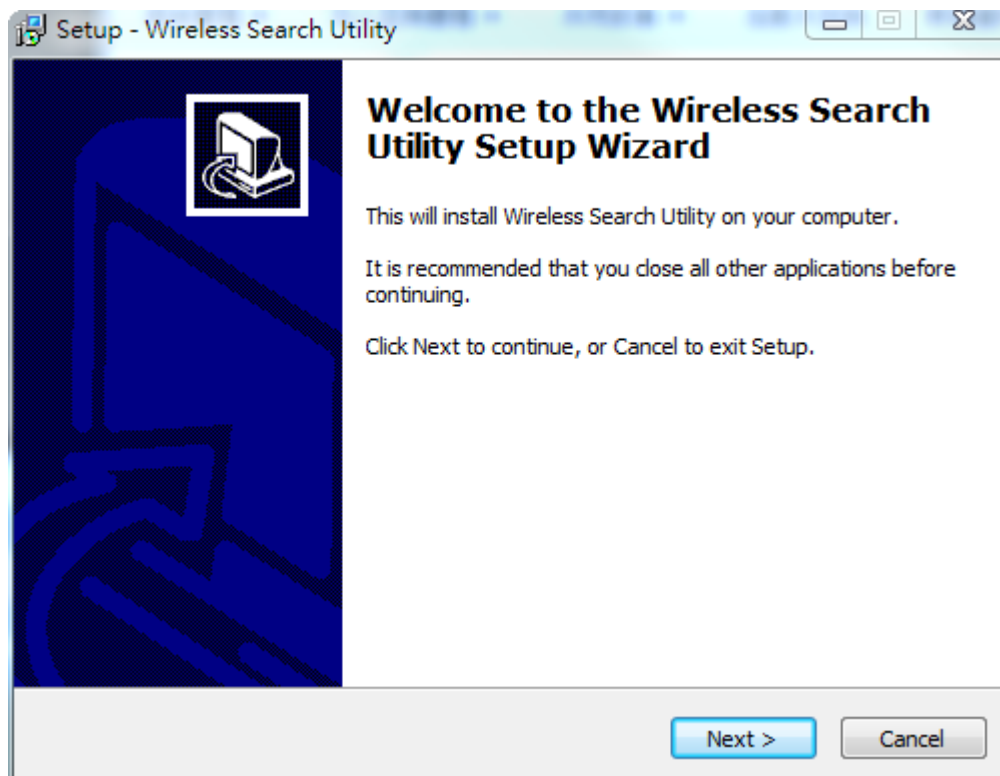
Please refer the *MXstudio User's Guide* for detailed instructions.

## Wireless Search Utility

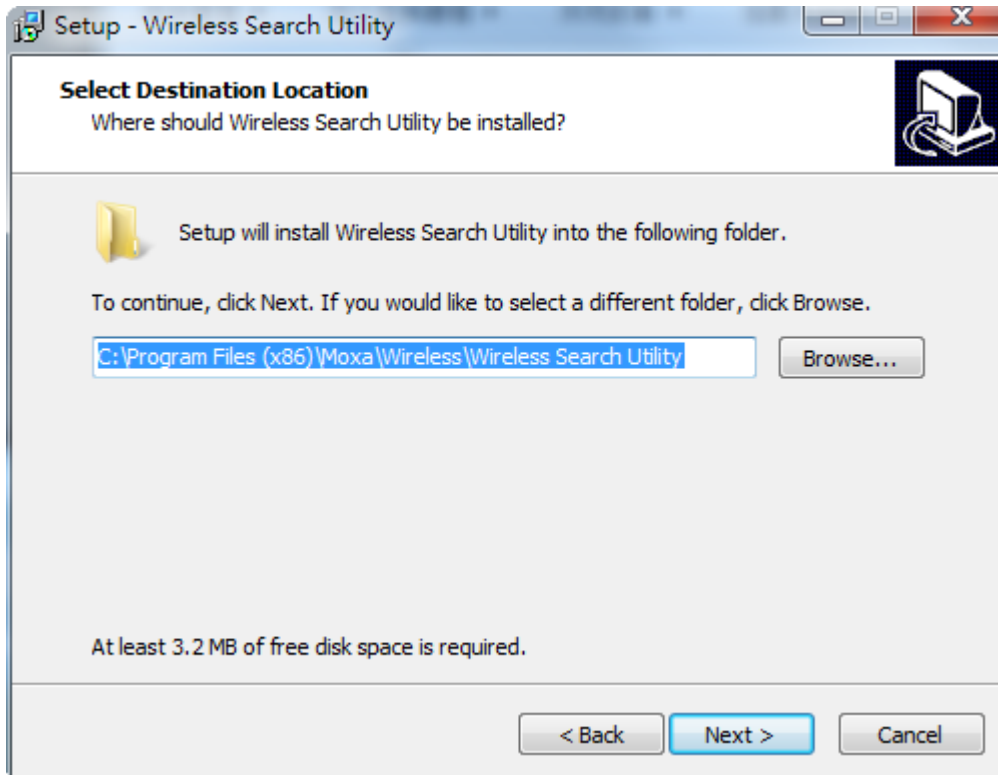
### Installing Wireless Search Utility

Once the Wireless Search Utility is downloaded, run the setup executable to start the installation.

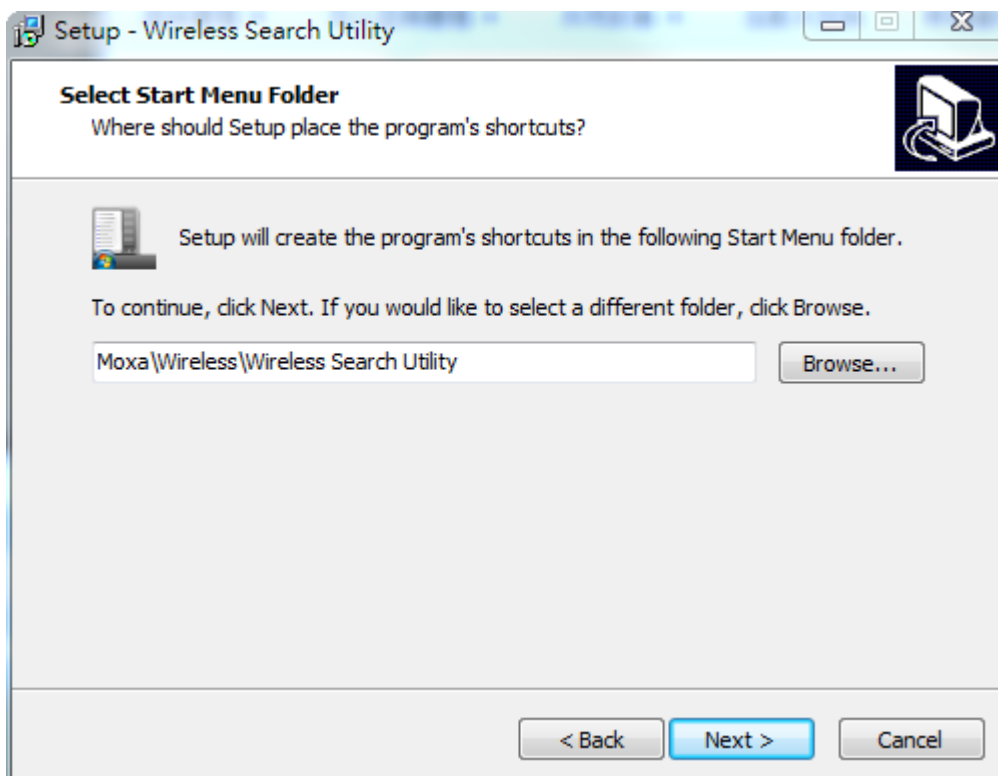
1. Click **Next** when the **Welcome** screen opens to proceed with the installation.



2. Click **Next** to install program files to the default directory, or click **Browse** to select an alternate location.

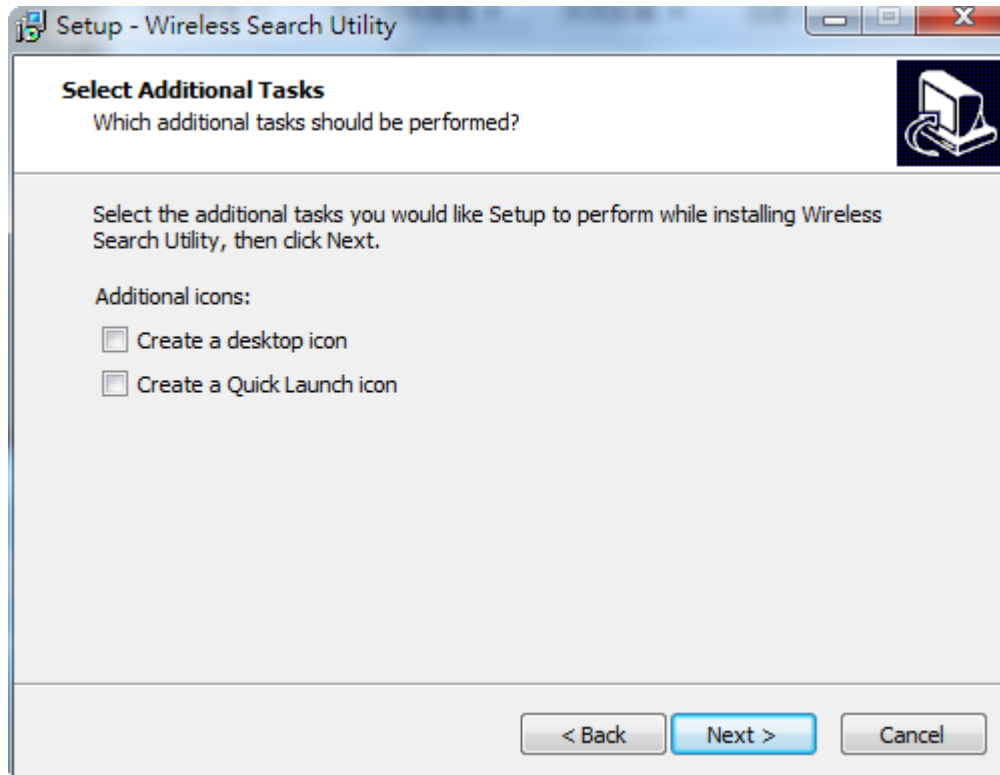


3. Click **Next** to create the program's shortcut files to the default directory, or click **Browse** to select an alternate location.

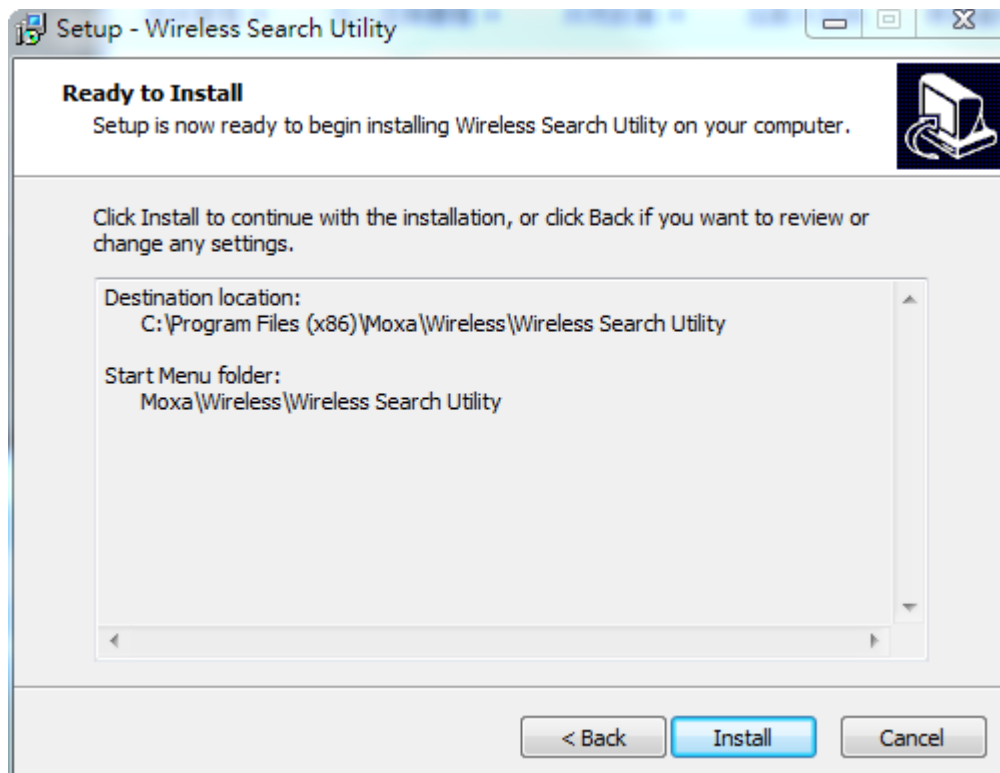




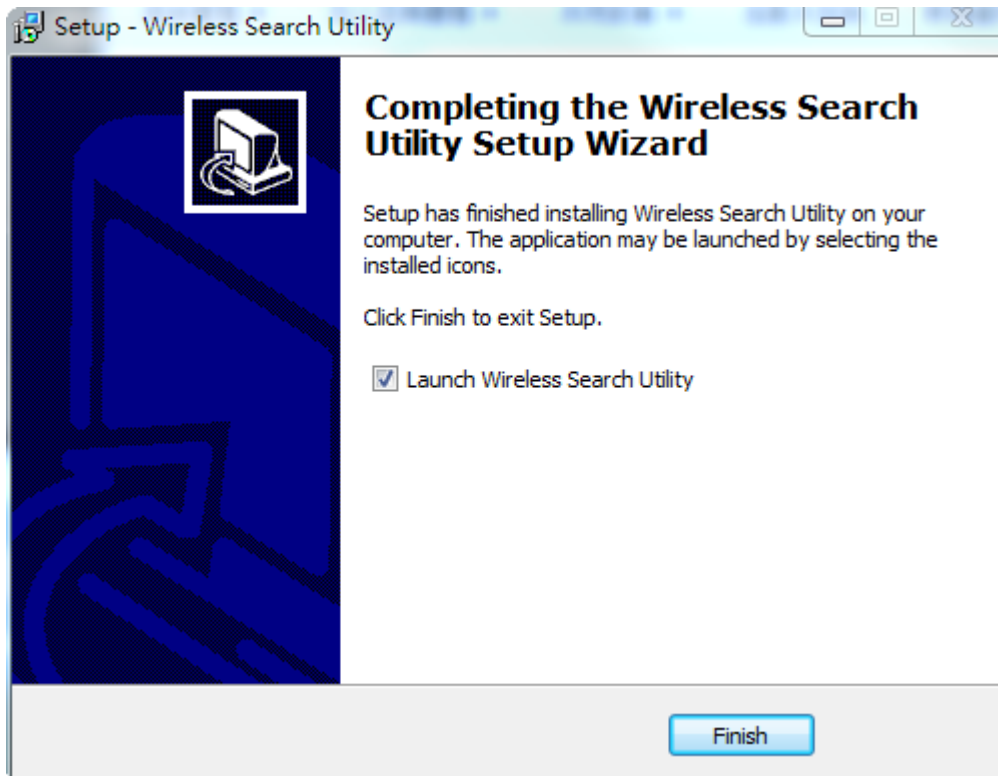
4. Click **Next** to select additional tasks.



5. Click **Next** to proceed with the installation. The installer then displays a summary of the installation options.



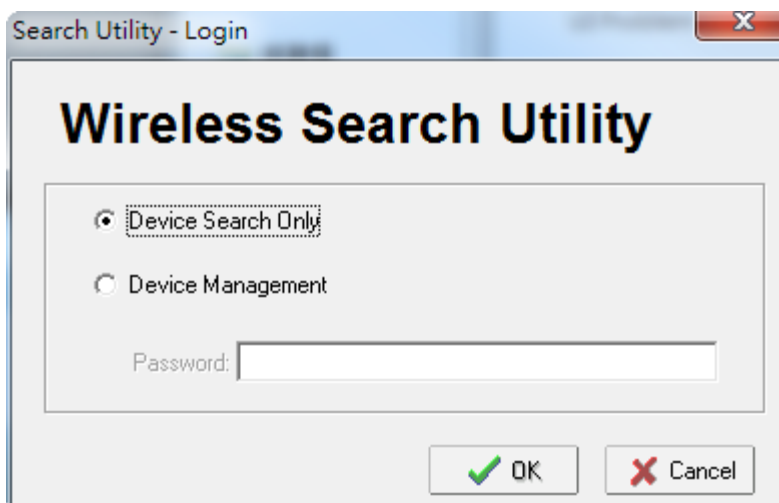
6. Click **Install** to begin the installation. The setup window will report the progress of the installation. To change the installation settings, click **Back** and navigate to the previous screen.
7. Click **Finish** to complete the installation of Wireless Search Utility.



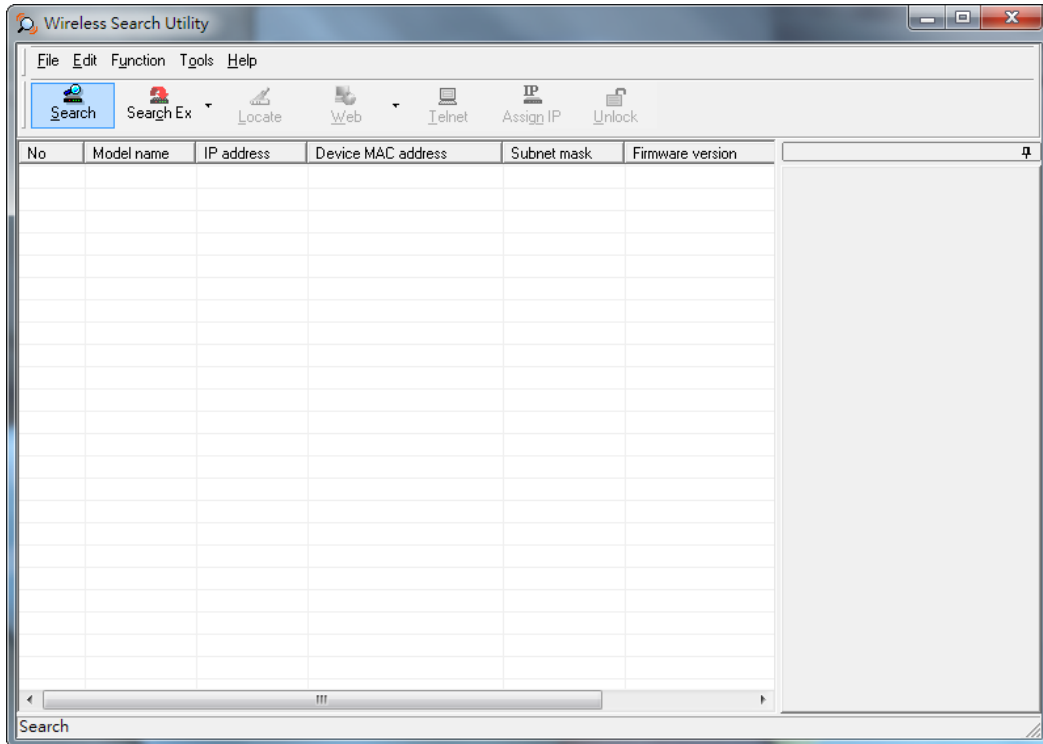
## Configuring Wireless Search Utility

The Broadcast Search function is used to locate all AWK-4131A APs that are connected to the same LAN as your computer. After locating an AWK-4131A, you will be able to change its IP address. Since the Broadcast Search function searches by TCP packet and not IP address, it doesn't matter if the AWK-4131A is configured as an AP or Client. In either case, APs and Clients connected to the LAN will be located, regardless of whether or not they are part of the same subnet as the host.

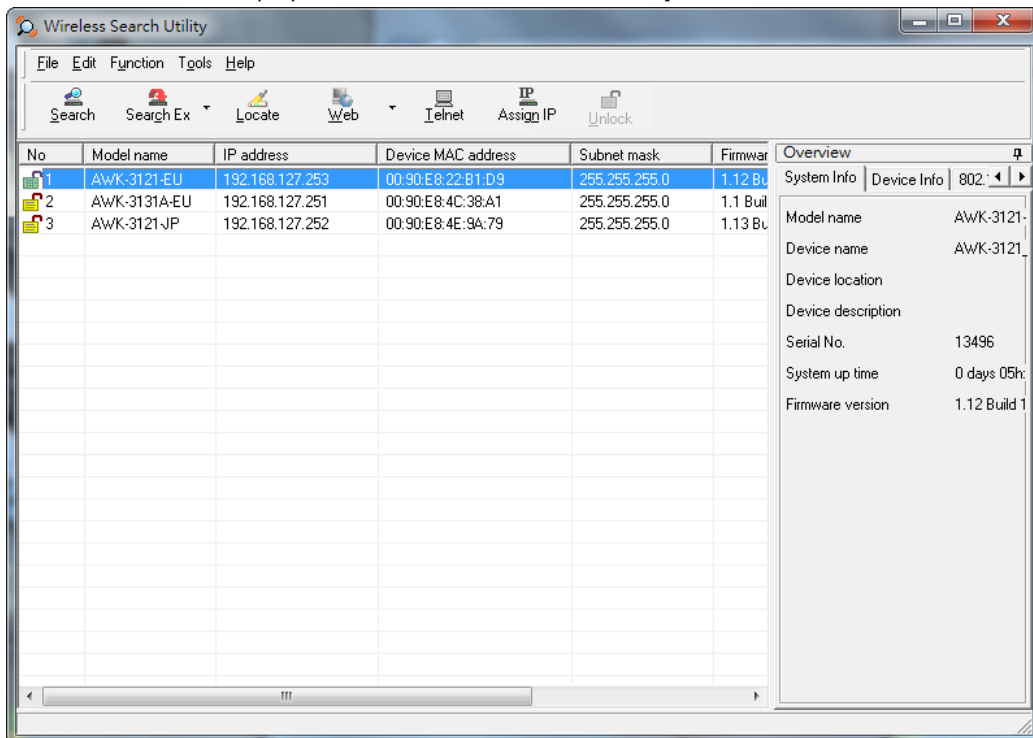
1. Start the **Wireless Search Utility** program. When the Login page appears, select the "Device Search only" option to search for devices and to view the configuration of each device. Select the "Device management" option to assign IPs, upgrade firmware, and locate devices.



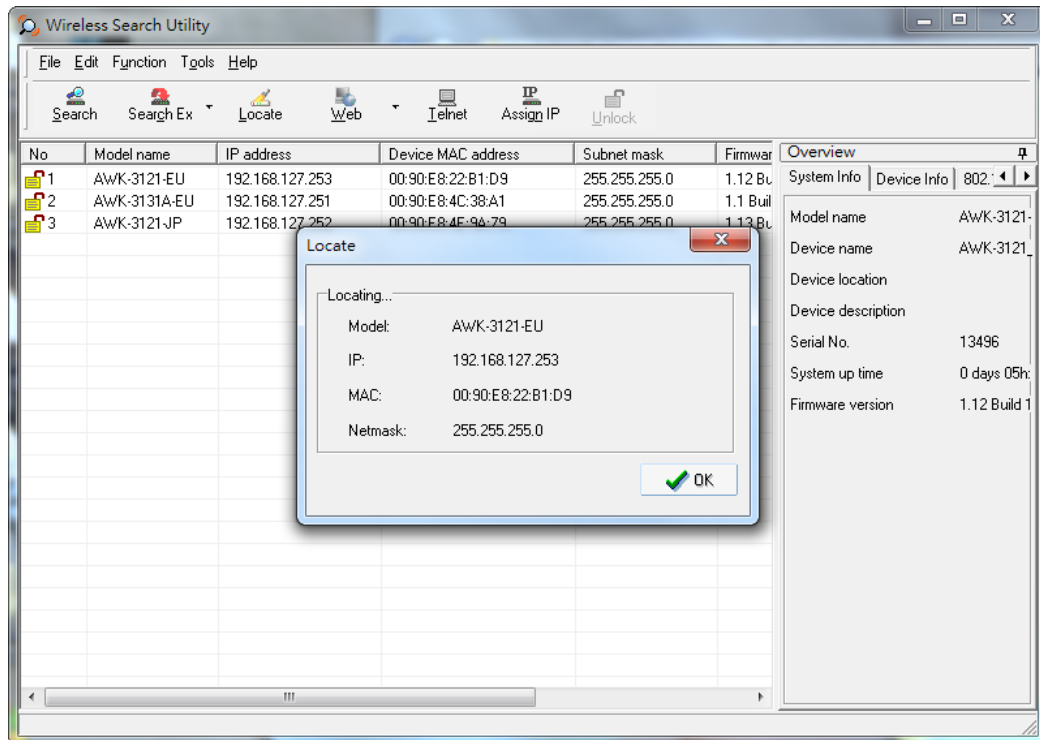
- Open the Wireless Search Utility and then click the **Search** icon.



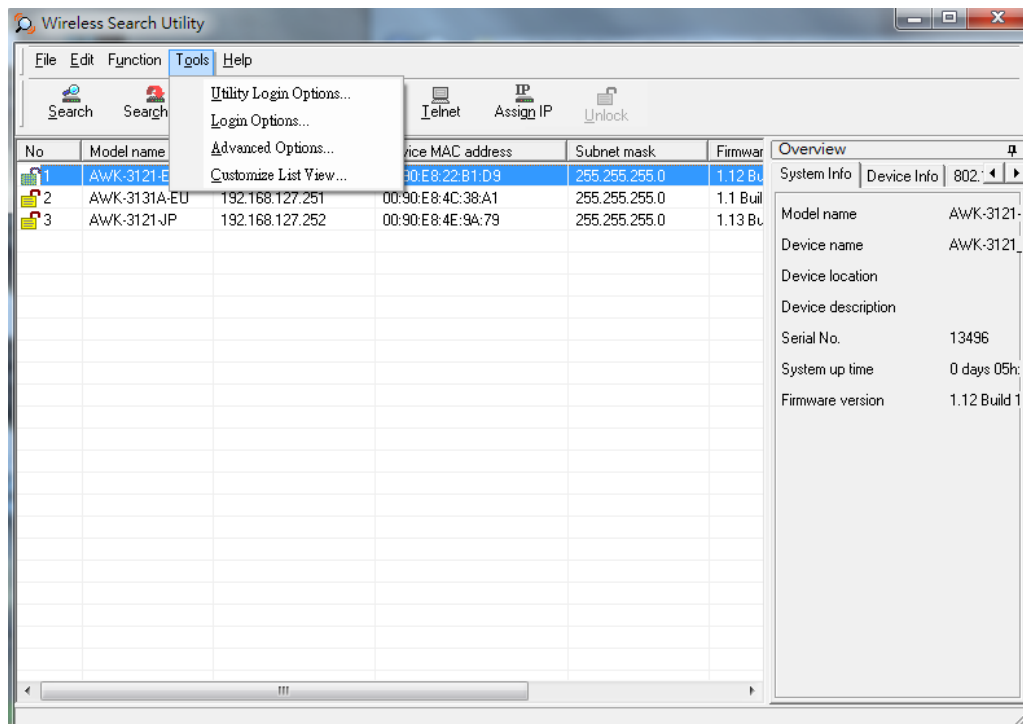
- The "Searching" window indicates the progress of the search. When the search is complete, all AWKs that were located will be displayed in the **Wireless Search Utility** window.



- Click **Locate** to cause the selected device to beep.



- Make sure your AWK is **unlocked** before using the search utility's icons setting. The AWK will unlock automatically if the password is set to the default. Otherwise you must enter the new password manually.
- Go to **Tools** → **Login Options** to manage and unlock additional AWKs.

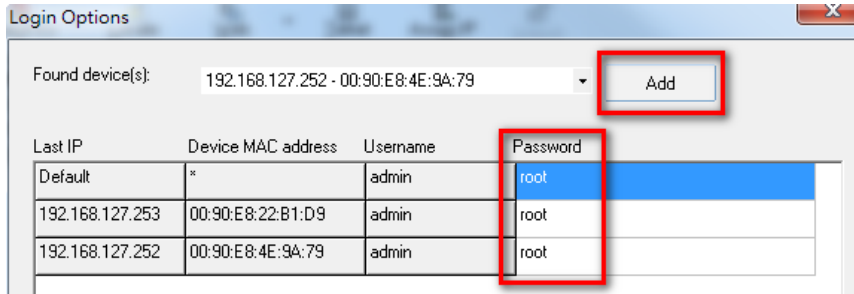


- Use the scroll down list to select the MAC addresses of those AWKs you would like to manage, and then click **Add**. Key in the password for the AWK device and then click **OK** to save. If you return to the search page and search for the AWK again, you will find that the AWK will unlock automatically.

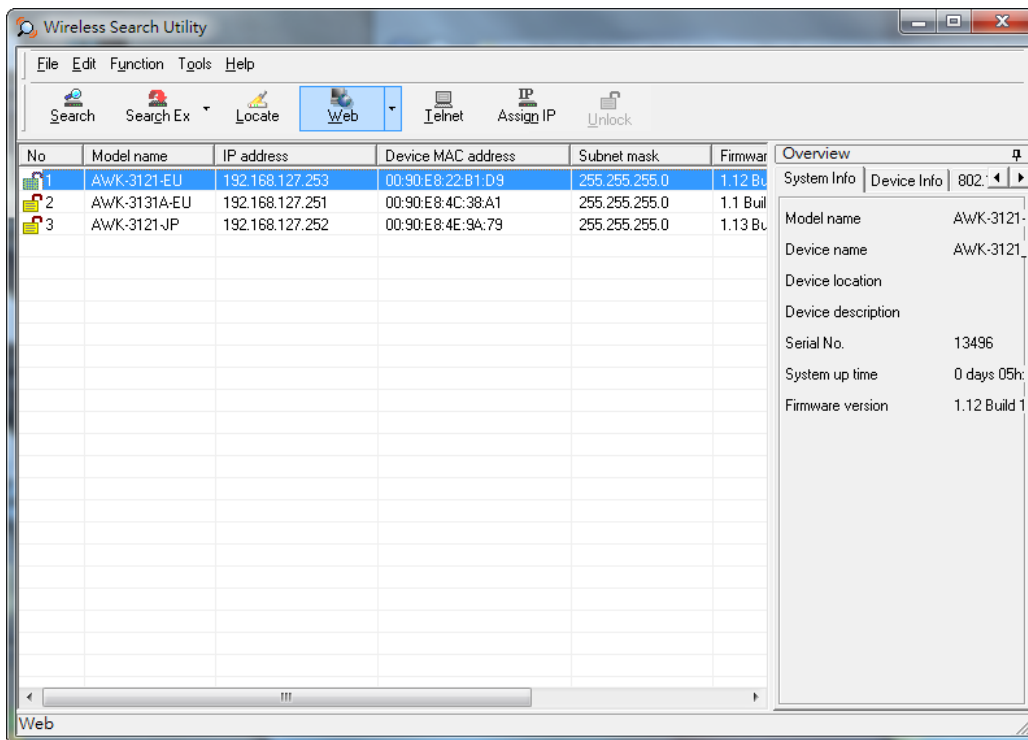


**ATTENTION**

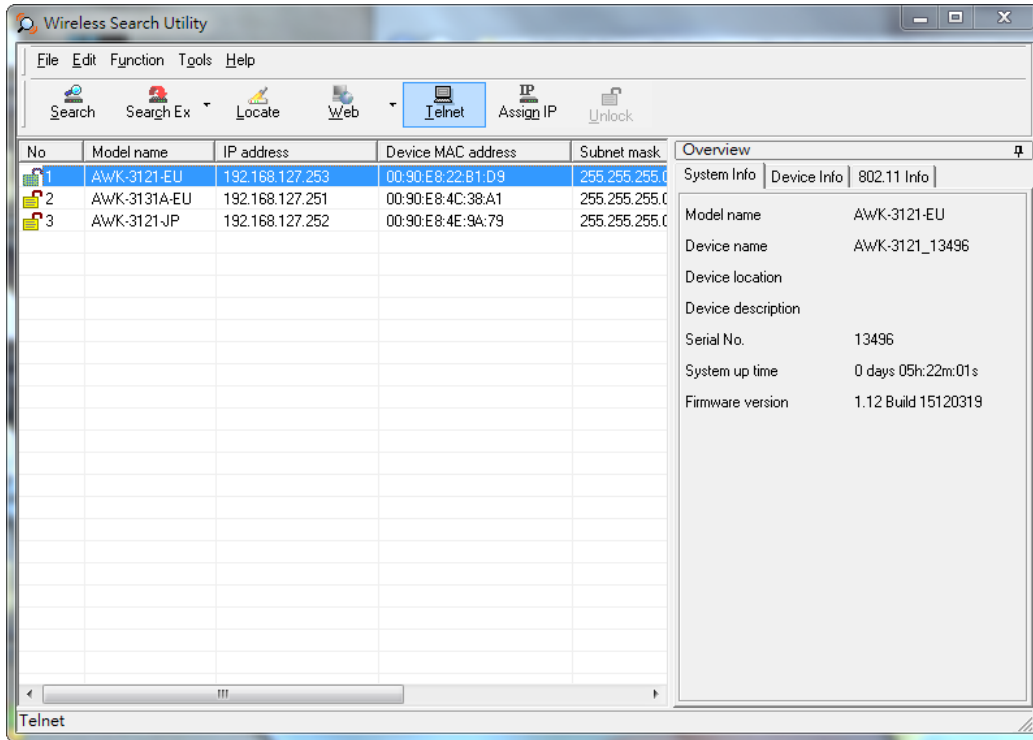
Change the default password to ensure a higher level of security. DO NOT continue to use the default password, **moxa** after the first login.



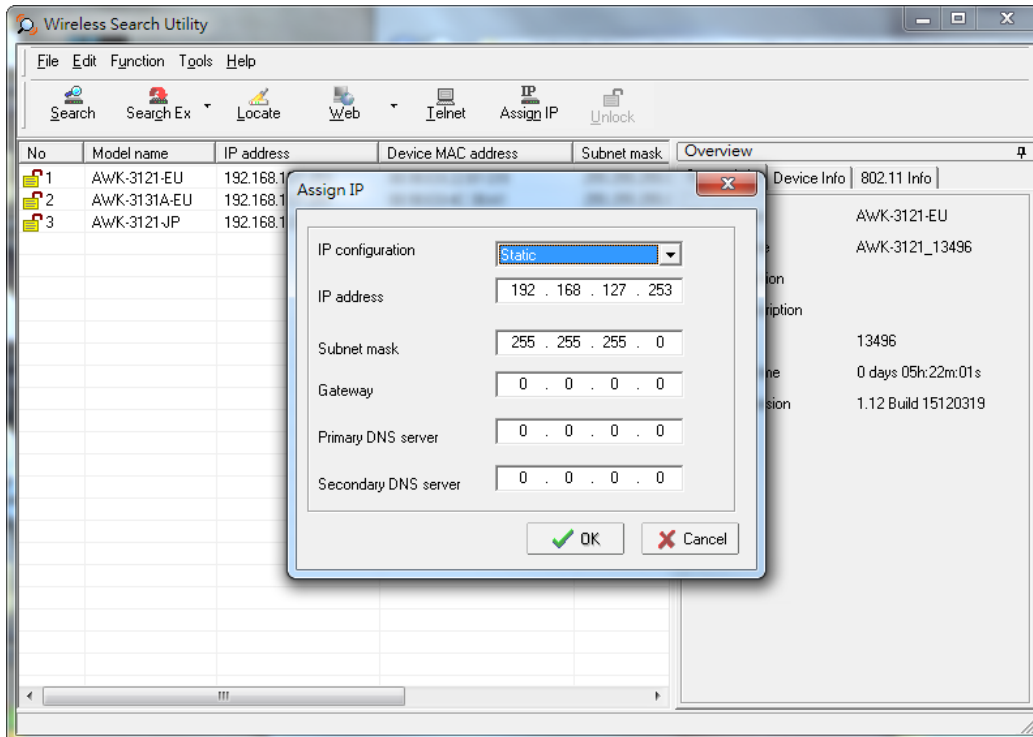
To modify the configuration of the highlighted AWK, click on the Web icon to open the web console. This will take you to the web console, where you can change the configuration of the AWK. Refer to *Chapter 3, Web Console Configuration* for information on how to use the web console.



Click on **Telnet** if you would like to use telnet to configure your AWKs.



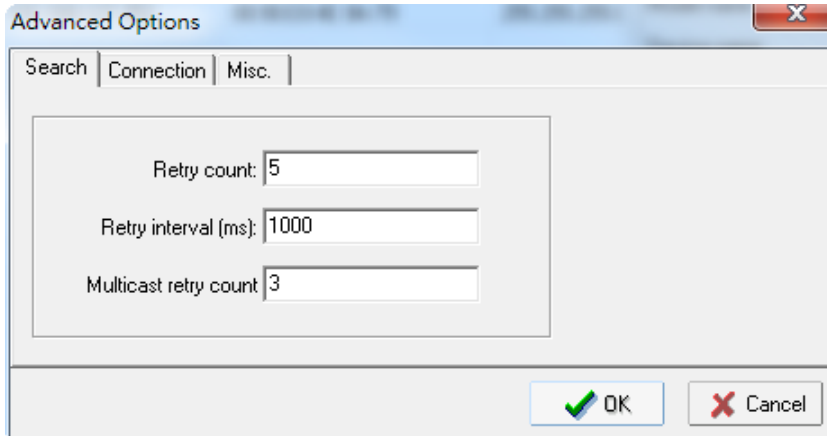
Click **Assign IP** to change the IP setting.



The three advanced options—**Search**, **Connection**, and **Miscellaneous**—are explained below:

### Search

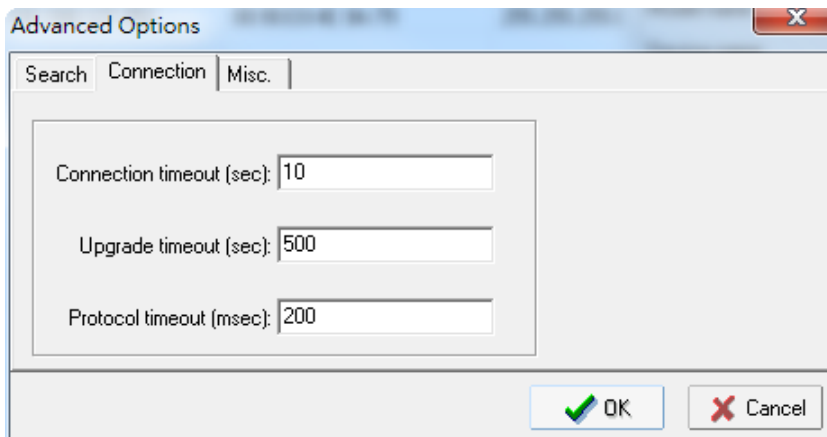
- **Retry count (default=5):** Indicates how many times the search will be retried automatically.
- **Retry interval (ms):** The time elapsed between retries.



The screenshot shows the 'Advanced Options' dialog box with the 'Search' tab selected. It contains three input fields: 'Retry count' set to 5, 'Retry interval (ms)' set to 1000, and 'Multicast retry count' set to 3. At the bottom right, there are 'OK' and 'Cancel' buttons.

### Connection

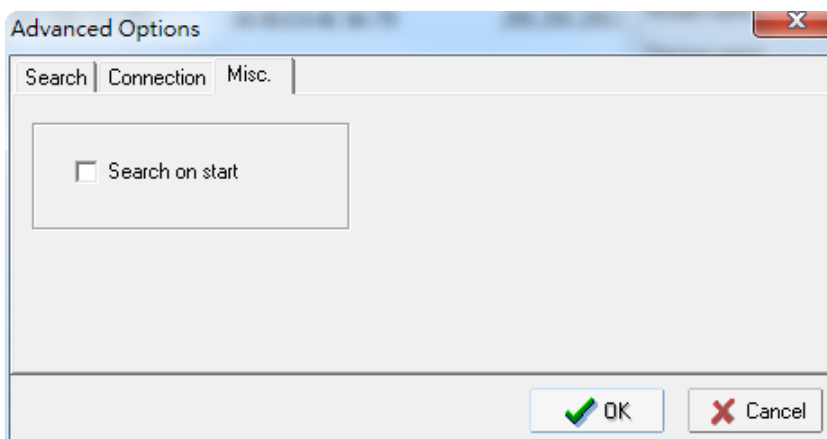
- **Connection timeout (secs):** Use this option to set the waiting time for the **Default Login, Locate, Assign IP, Upload Firmware, and Unlock** to complete.
- **Upgrade timeout (secs):** Use this option to set the waiting time for the connection to disconnect while the firmware is upgrading. Use this option to set the waiting time for the Firmware to write to flash.



The screenshot shows the 'Advanced Options' dialog box with the 'Connection' tab selected. It contains three input fields: 'Connection timeout (sec)' set to 10, 'Upgrade timeout (sec)' set to 500, and 'Protocol timeout (msec)' set to 200. At the bottom right, there are 'OK' and 'Cancel' buttons.

### Misc.

**Search on start:** Checkmark this box if you would like the search function to start searching for devices after you log in to the Wireless Search Utility.



The screenshot shows the 'Advanced Options' dialog box with the 'Misc.' tab selected. It contains a single checkbox labeled 'Search on start', which is currently unchecked. At the bottom right, there are 'OK' and 'Cancel' buttons.

## Additional Consoles

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The following topics are covered in this chapter:

- ❑ **RS-232 Console Configuration (115200, None, 8, 1, VT100)**
- ❑ **Configuration by Telnet and SSH Consoles**
- ❑ **Configuration by Web Browser with HTTPS/SSL**
- ❑ **Disabling Telnet and Browser Access**



## Overview

In addition to HTTP access, there are four ways to access AWK-1131A: serial console, Telnet console, SSH console, and HTTPS console. The serial console connection method, which requires using a short serial cable to connect the AWK-1131A to a PC's COM port, can be used if you do not know the AWK-1131A's IP address. The other consoles can be used to access the AWK-1131A over an Ethernet LAN, or over the Internet.

## RS-232 Console Configuration (115200, None, 8, 1, VT100)

The serial console connection method, which requires using a short serial cable to connect the AWK-1131A to a PC's COM port, can be used if you do not know the AWK-1131A's IP address. It is also convenient to use serial console configurations when you cannot access the AWK-1131A over Ethernet LAN, such as in the case of LAN cable disconnections or broadcast storming over the LAN.



### ATTENTION

Do not use the RS-232 console manager when the AWK-1131A is powered at reversed voltage (ex. -48VDC), even though reverse voltage protection is supported.

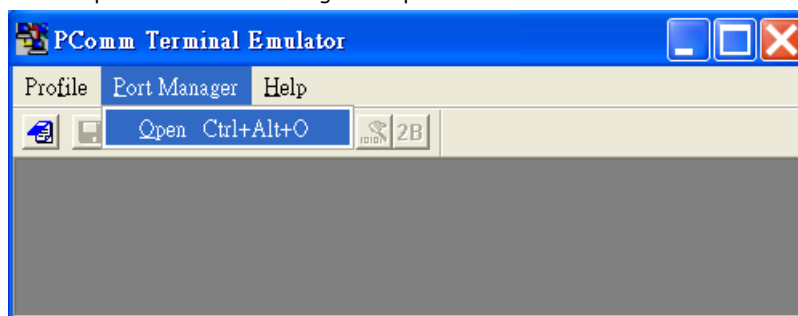
If you need to connect the RS-232 console at reversed voltage, Moxa's TCC-82 isolator is your best solution.

### NOTE

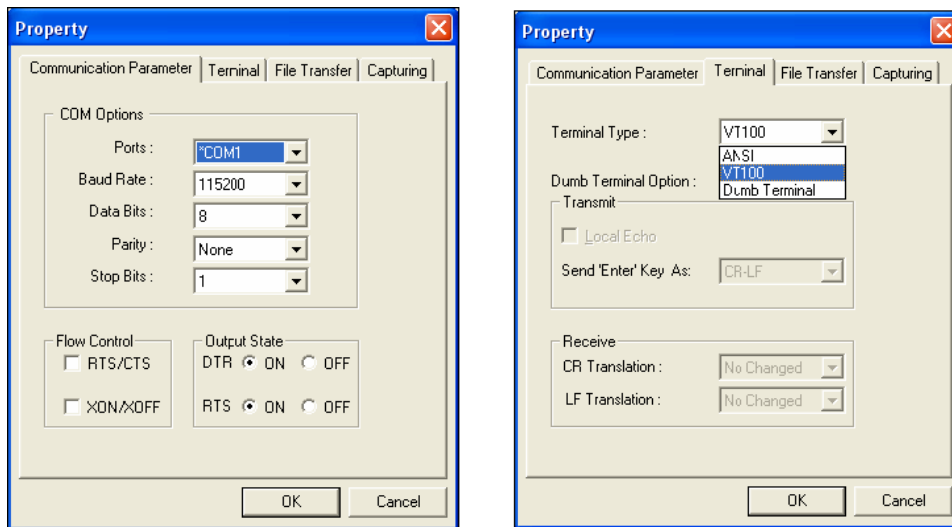
We recommend using **Moxa PComm (Lite)** Terminal Emulator, which can be downloaded free of charge from Moxa's website.

Before running PComm Terminal Emulator, use an RJ45 to DB9-F (or RJ45 to DB25-F) cable to connect the AWK-1131A's 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, take the following steps to access the RS-232 console utility.

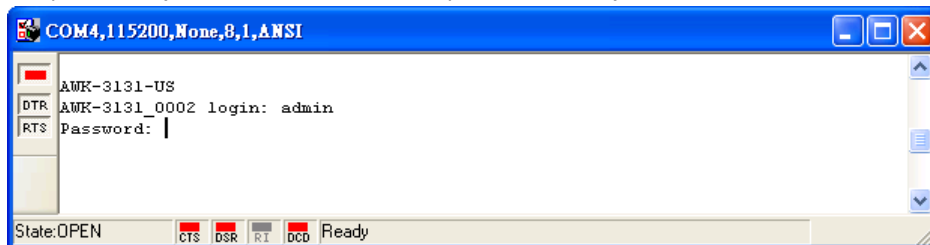
1. From the Windows desktop, open the Start menu and start **PComm Terminal Emulator** in the PComm (Lite) group.
2. Select Open under Port Manager to open a new connection.



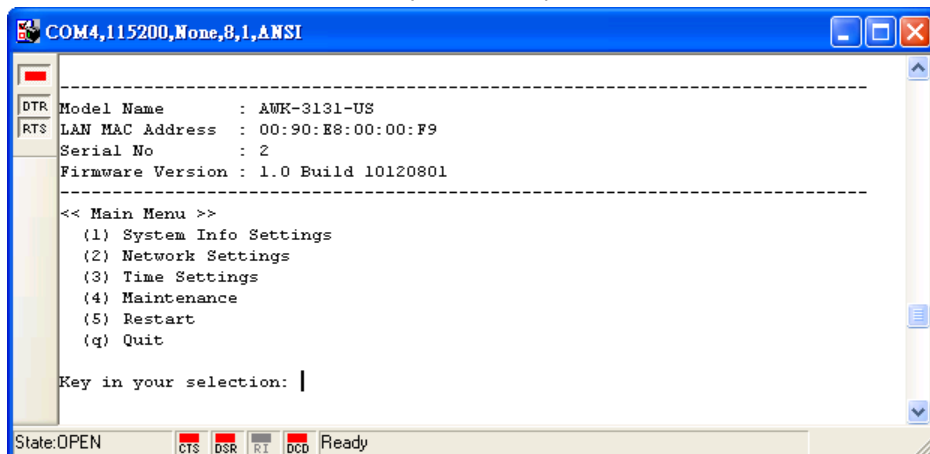
3. In the **Communication Parameter** tab of the **Property** window that opens, select the appropriate COM port for console connection using **115200** for Baud Rate, **8** for Data Bits, **None** for Parity, and **1** for Stop Bits. Click on the **Terminal** tab, and select **VT100 (or ANSI)** for Terminal Type. Click on **OK** to continue.



4. The console login screen is displayed. Log into the RS-232 console with the login name (default: **admin**) and password (default: **moxa**, if no new password is set).



5. The AWK-1131A's device information and Main Menu will be displayed. Follow the instructions on the screen to select the administration task that you want to perform.



**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**, a disconnection event will be evoked to enforce logout for network security. You will need to log in again to resume operation.

## Configuration by Telnet and SSH Consoles

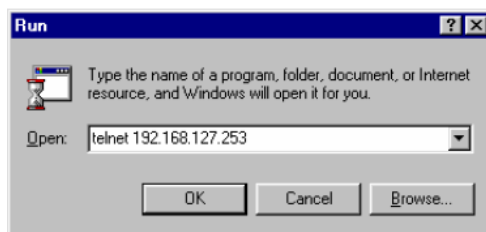
You can use Telnet or SSH client to access the AWK-1131A and manage the console over a network. To access the AWK-1131A's functions over the network from a PC host that is connected to the same LAN as the AWK-1131A, you need to make sure that the PC host and the AWK-1131A are on the same logical subnet. To do this, check your PC host's IP address and subnet mask.

**NOTE** The AWK-1131A's default IP address is **192.168.127.253** and the default subnet mask is **255.255.255.0** (for a Class C network). If you do not set these values properly, please check the network settings of your PC host and then change the IP address to 192.168.127.xxx and subnet mask to 255.255.255.0.

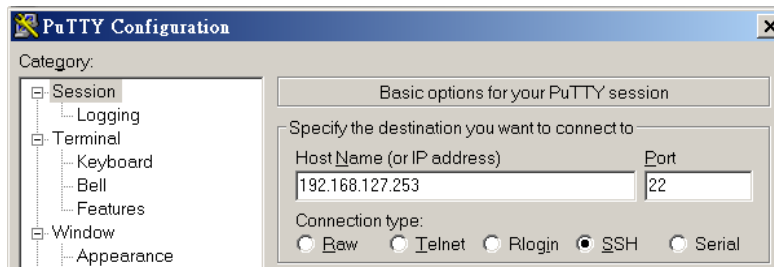
Follow the steps below to access the console utility via the Telnet command or using an SSH client.

1. Start the windows **Run** command (Windows start menu, type "run" and press Enter) and use the telnet command to access the IP address of your AWK-1131A.

Note: You can also issue the telnet command from the MS-DOS prompt.



If you are using an SSH client (ex. PuTTY), run the client program and then enter the IP address of your AWK-1131A, specifying **22** for the SSH connection port.



2. The console login screen is displayed. Refer to *RS-232 Console Configuration* (previous paragraph) for login and administration details.

## Configuration by Web Browser with HTTPS/SSL

To secure your HTTP access, the AWK-1131A supports HTTPS/SSL encryption for all HTTP traffic. Perform the following steps to access the AWK-1131A's web browser interface via HTTPS/SSL.

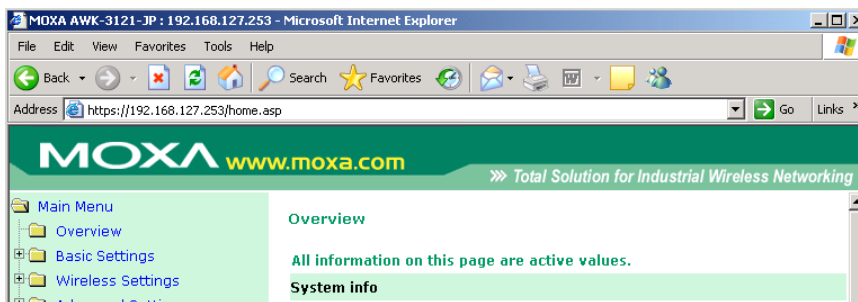
1. Open your web browser and type `https://<AWK-1131A's IP address>` in the address field. Press **Enter** to establish the connection.



- Warning messages will pop out to warn users that the security certificate was issued by a company they have not chosen to trust.



- Select **Yes** to accept the certificate issued by Moxa IW and then enter the AWK-1131A's web browser interface secured via HTTPS/SSL. (You can see the protocol in URL is **https**.) Then you can use the menu tree on the left side of the window to open the function pages to access each of AWK-1131A's functions.



## Disabling Telnet and Browser Access

If you are connecting the AWK-1131A to a public network but do not intend to use its management functions over the network, we suggest disabling the **Telnet console** and the Web consoles at **Maintenance** → **Console Settings**.

### Console Settings

- |                |   |  |
|----------------|---|--|
| HTTP console   | <input type="radio"/> Enable            | <input checked="" type="radio"/> Disable |
| HTTPS console  | <input checked="" type="radio"/> Enable | <input type="radio"/> Disable            |
| Telnet console | <input type="radio"/> Enable            | <input checked="" type="radio"/> Disable |
| SSH console    | <input checked="" type="radio"/> Enable | <input type="radio"/> Disable            |

Submit

# A

## References

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This chapter provides more detailed information about wireless-related technologies. The information in this chapter can help you administer your AWK-1131As and plan your industrial wireless network better.

The following topics are covered in this appendix:

- **Beacon**
- **DTIM**
- **Fragment**
- **RTS Threshold**

## Beacon

A beacon is a packet broadcast by the AP to keep the network synchronized. A beacon includes the wireless LAN service area, the AP address, the Broadcast destination address, a time stamp, Delivery Traffic Indicator Maps (DTIM), and the Traffic Indicator Message (TIM). Beacon Interval indicates the frequency interval of AP.

## DTIM

Delivery Traffic Indication Map (DTIM) is contained in beacon frames. It is used to indicate that broadcast and multicast frames buffered by the AP will be delivered shortly. Lower settings result in more efficient networking, while preventing your PC from dropping into power-saving sleep mode. Higher settings allow your PC to enter sleep mode, thus saving power.

## Fragment

A lower setting means smaller packets, which will create more packets for each transmission. If you have decreased this value and experience high packet error rates, you can increase it again, but it will likely decrease overall network performance. Only minor modifications of this value are recommended.

## RTS Threshold

RTS Threshold (256-2346) – This setting determines how large a packet can be before the access point coordinates transmission and reception to ensure efficient communication. This value should remain at its default setting of 2,346. When you encounter inconsistent data flow, only minor modifications are recommended.

# B

## Supporting Information

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This chapter presents additional information about this product. You can also learn how to contact Moxa for technical support.

The following topics are covered in this appendix:

- ❑ **Firmware Recovery**
- ❑ **DoC (Declaration of Conformity)**
  - Federal Communication Commission Interference Statement
- ❑ **R&TTE Compliance Statement**

# Firmware Recovery

When the LEDs that indicate **FAULT**, **Signal Strength** and **WLAN** all light up simultaneously and blink at one-second intervals, it means that the system boot up process has failed. This might result from some wrong operation or issues such as an unexpected shutdown during firmware update. The AWK-1131A is designed to help administrators recover from such damage and resume system operation rapidly.

First, connect to the AWK-1131A's RS-232 console with the settings 115200 bps and N-8-1. A message is displayed on the terminal emulator at one-second intervals as shown below:

```
please set-up TFTP server 192.168.127.1 contains awk1131a.rom for firmware recovery.
please set-up TFTP server 192.168.127.1 contains awk1131a.rom for firmware recovery.
please set-up TFTP server 192.168.127.1 contains awk1131a.rom for firmware recovery.
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please set-up TFTP server 192.168.127.1 contains awk1131a.rom for firmware recovery.
```

To recover the firmware, do the following:

1. Change the IP address of the laptop to 192.168.127.1.
2. Set up a TFTP server in your laptop.
3. Download AWK-1131A's firmware from Moxa Website
4. Change firmware file name to awk1131a.rom
5. Connect to the AWK-1131A's RJ45 Ethernet port

If the settings are correct, the following message is shown on the terminal emulator. The AWK-1131A will reboot when the firmware recovery process is complete.

```
Trying eth0
Using eth0 device
TFTP from server 192.168.127.1; our IP address is 192.168.127.253
Filename 'awk1131a.rom'.
Load address: 0x80060000
Loading: *#####
#####
#####
```



# DoC (Declaration of Conformity)

## Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, might cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**FCC Caution:** To assure continued compliance, (example – use only shielded interface cables when connecting to computer or peripheral devices). Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

### **FCC Radiation Exposure Statement**

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

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC 15.407(e): Within the 5.15-5.25 GHz band, U-NII devices will be restricted to indoor operations to reduce any potential for harmful interference to co-channel MSS operations.

# R&TTE Compliance Statement

Moxa declares that the apparatus AWK-1131A complies with the essential requirements and other relevant provisions of Directive 1999/5/EC.

This equipment complies with all the requirements of DIRECTIVE 1999/5/CE OF THE EUROPEAN PARLIAMENT AND THE COUNCIL OF 9 March 1999 on radio equipment and telecommunication terminal equipment and the mutual recognition of their conformity (R&TTE).

The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) as of April 8, 2000.

## **Safety**

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacturer must therefore be allowed at all times to ensure the safe use of the equipment.

## **EU Countries Intended for Use**

The ETSI version of this device is intended for home and office use in Austria, Belgium, Denmark, Finland, France (with Frequency channel restrictions), Germany, Greece, Ireland, Italy, Luxembourg, Portugal, Spain, Sweden, The Netherlands, and United Kingdom.

The ETSI version of this device is also authorized for use in EFTA member states Norway and Switzerland.

## **EU Countries Not Intended for Use**

None.

## **Potential Restrictive Use**

France: only channels 10, 11, 12, and 13.