

AirWorks AWK-1121/1127 User's Manual

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AirWorks AWK-1121/1127 User's Manual

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Introduction

The AirWorks AWK-1121/1127 enables wireless users to access network resources wirelessly. The AWK-1121/1127 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**
- **Functional Design**
 - LED Indicators
 - Beeper
 - Reset Button

Overview

The AWK-1121/1127 Client is ideal for applications that are hard to wire, too expensive to wire, or use mobile equipment that connects to a TCP/IP network. The AWK-1121/1127 can 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. Installation is easy, with either DIN-Rail mounting or wall mounting in distribution boxes. The DIN-Rail/wall mounting capability, wide operating temperature range, and IP30 housing with LED indicators make the AWK-1121/1127 a convenient yet reliable solution for any industrial wireless application.

Package Checklist

Moxa's AWK-1121/1127 is shipped with the following items. If any of these items is missing or damaged, please contact your customer service representative for assistance.

- AWK-1121/1127
- Swivel-type antenna (2dBi, RP-SMA, 2.4&5GHz)
- Quick Installation Guide
- Software CD
- Moxa Product Warranty Card
- Resistive terminator
- Protective cap

NOTE The above items come with the standard AWK-1121/1127 model, but the package contents may vary for customized versions.

Product Features

- IEEE802.11a/b/g compliant
- Dedicated client
- Advanced wireless security:
 - 64-bit and 128-bit WEP/WPA/WPA2
 - SSID Hiding/IEEE 802.1X/RADIUS
 - Packet access control & filtering
- Turbo Roaming enables rapid handover (client based)
- ABC-01 for configuration import/export
- Dedicated antenna selection
- Free firmware update for more advanced functions
- RS-232 console management
- Wide -40 to 75°C operating temperature range (-T model)
- Redundant 24 VDC power inputs or IEEE802.3af Power over Ethernet (PoE model)
- DIN-Rail or wall mounting
- IP30 protected high-strength metal housing

Product Specifications

WLAN Interface

Standards:

IEEE 802.11a/b/g for Wireless LAN
 IEEE 802.11i for Wireless Security
 IEEE 802.3u for 10/100BaseT(X)
 IEEE 802.3af for Power-over-Ethernet (PoE model)

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 @ 11 Mbps
- 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps

Operating Channels (central frequency):

US:

2.412 to 2.462 GHz (11 channels)

5.18 to 5.24 GHz (4 channels)

EU:

2.412 to 2.472 GHz (13 channels)

5.18 to 5.24 GHz (4 channels)

JP:

2.412 to 2.472 GHz (13 channels, OFDM)

2.412 to 2.484 GHz (14 channels, DSSS)

5.18 to 5.24 GHz (4 channels for W52)

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

TX Transmit Power:

802.11b:

Typ. 18±1.5 dBm @ 1 to 11 Mbps

802.11g:

Typ. 18±1.5 dBm @ 6 to 24 Mbps, Typ. 17±1.5 dBm @ 36 Mbps, Typ. 16±1.5 dBm @ 48 Mbps, Typ. 16±1.5 dBm @ 54 Mbps

802.11a:

Typ. 18±1.5 dBm @ 6 to 24 Mbps, Typ. 16±1.5 dBm @ 36 Mbps, Typ. 15±1.5 dBm @ 48 Mbps, Typ. 14±1.5 dBm @ 54 Mbps

RX Sensitivity:

802.11b:

-97 dBm @ 1 Mbps, -94 dBm @ 2 Mbps, -92 dBm @ 5.5 Mbps, -90 dBm @ 11 Mbps

802.11g:

-88 dBm @ 6 to 24 Mbps, -85 dBm @ 36 Mbps, -75 dBm @ 48 Mbps, -70 dBm @ 54 Mbps

802.11a:

-88 dBm @ 6 to 24 Mbps, -85 dBm @ 36 Mbps, -75 dBm @ 48 Mbps, -70 dBm @ 54 Mbps

Protocol Support

General Protocols: DNS, HTTP, HTTPS, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE, DHCP

Interface

Default Antenna: 2 dBi dual-band omni-directional antenna, RP-SMA (male)

Connector for External Antennas: RP-SMA (female)

LAN Ports: 1, 10/100BaseT(X), auto negotiation speed (RJ45-type)

Serial Port: 1, RS-232/422/485, DB9 male connector (AWK-1127 only)

Console: RS-232 (RJ45-type)

LED Indicators: PWR, FAULT, STATE, signal strength, WLAN, LAN

Weight: 400 g (AWK-1121), 410 g (AWK-1127)

Dimensions:

AWK-1121: 50 x 115 x 70 mm (2.0 x 4.5 x 2.8 in)

AWK-1127: 50 x 127 x 70 mm (2.0 x 5.0 x 2.8 in)

Installation: DIN-Rail mounting, wall mounting (with optional kit)

Serial Communication Parameters (AWK-1127 Only)

Data Bits: 5, 6, 7, 8

Stop Bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: RTS/CTS, XON/XOFF

Baudrate: 50 bps to 921.6 Kbps

Serial Data Log: 256 KB

Serial Signals (AWK-1127 Only)

RS-232: DSR, RTS, GND, TxD, RxD, DCD, CTS, DTR

RS-422: Tx+, Tx-, Rx+, Rx-, GND

RS-485 (2-wire): Data+, Data- and GND

RS-485 (4-wire): Tx+, Rx+, Tx-, Rx+ and GND

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 or 48 VDC Power-over-Ethernet (IEEE 802.3af compliant, PoE model only)

Connector: 4-pin removable terminal block

Power Consumption:

- 0.16 to 0.55 A @ 12 to 48 VDC
- 0.28 A @ 24 VDC

Reverse Polarity Protection: Present

Regulatory Approvals

Safety: EN60950-1, UL60950-1

Radio: EN 300 328, EN 301 893, DSPR (Japan)

EMC: EN 301 489-1/-17, FCC Part 15, EN 55022/55024

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

Warranty

Warranty Period: 5 years

Details: See www.moxa.com/warranty



ATTENTION

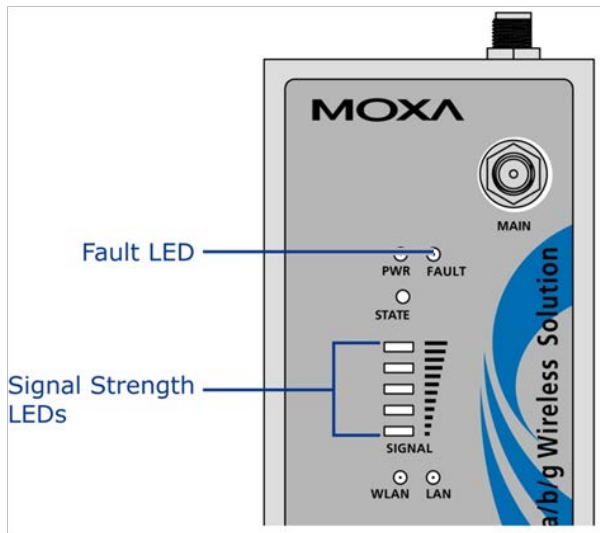
- The AWK-1121/1127 is NOT a portable mobile device and should be located at least 20 cm away from the human body.
- The AWK-1121/1127 is NOT designed for the general public. A well-trained technician should be enlisted to ensure safe deployment of AWK-1121/1127 units, and to establish a wireless network.

Functional Design

LED Indicators

The LEDs on the front panel of the AWK-1121/1127 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-1121/1127 cannot retrieve the IP address from a DHCP server or if there is an IP conflict, the **FAULT** LED will blink at one second intervals. The **SIGNAL** LEDs indicate signal strength.



ATTENTION

The **FAULT**, **SIGNAL**, **STATE** and **WLAN** LEDs lighting up simultaneously and blinking at one second intervals indicates that the system has failed to boot. This may be due to improper operation or an uncontrollable factor, such as an unexpected shutdown during firmware update. Instructions on how to recover the firmware can be found in Appendix B in the “Firmware Recovery” section.

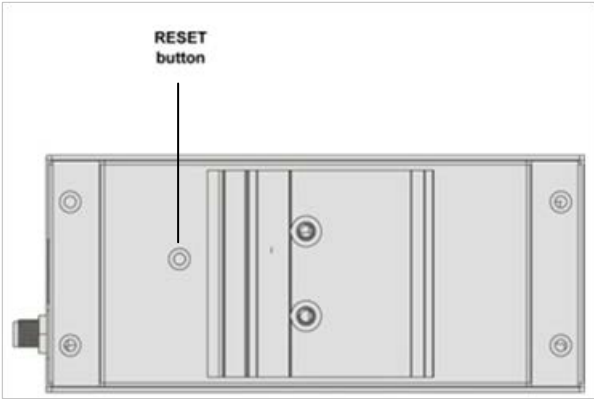
Beeper

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

Reset Button

The **RESET** button is located on the back panel of the AWK-1121/1127. You can reboot the AWK-1121/1127 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 defaults:** Hold the RESET button down for **more than** 5 seconds until the **STATE** LED starts blinking green. Release the button to reset the AWK-1121/1127.



2

Getting Started

This chapter explains how to install Moxa's AirWorks AWK-1121/1127 for the first time, and quickly set up your wireless network and test whether the connection is running well. The function guide 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**
- ❑ **Function Map**

First-time Installation and Configuration

Before installing the AWK-1121/1127, 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-1121/1127 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-1121/1127 may be powered by a DC power input or PoE (Power over Ethernet, PoE model only).

- **Step 2: Connect the AWK-1121/1127 to a notebook or PC.**

Since the AWK-1121/1127 supports MDI/MDI-X auto-sensing, either a straight-through or crossover cable may be used to connect to a computer. The LAN port LED indicator will light up when a connection is established.

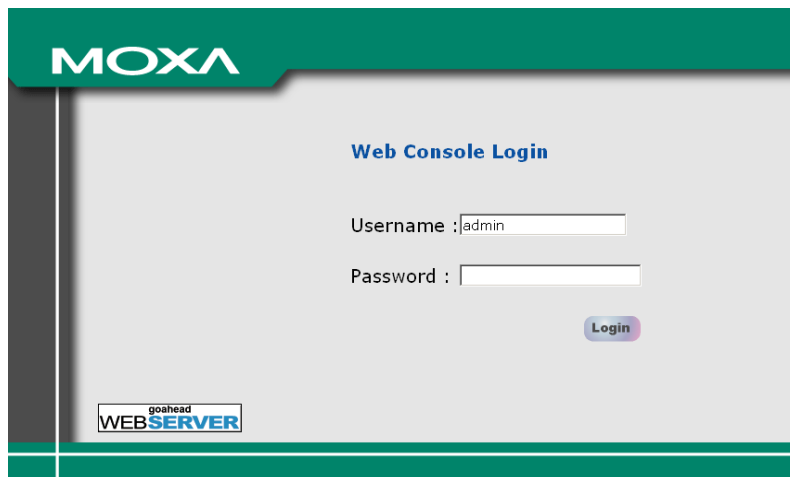
- **Step 3: Set up the computer's IP address.**

Choose an IP address on the same subnet as the AWK-1121/1127. Since the AWK-1121/1127'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 Defaults** and click the **Activate** button, the AWK-1121/1127 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-1121/1127**

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:



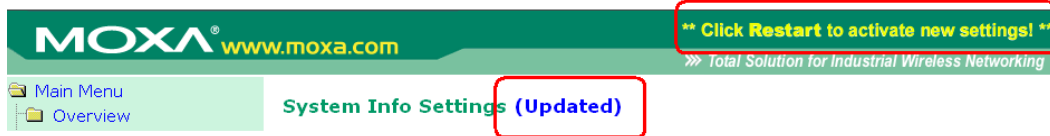
NOTE Default user name and password:

User Name: **admin**

Password: **root**

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 will refresh (**Updated**) will appear on the page and a blinking reminder 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-1121/1127 to complete the reboot procedure.

- **Step 5: Test communications.**

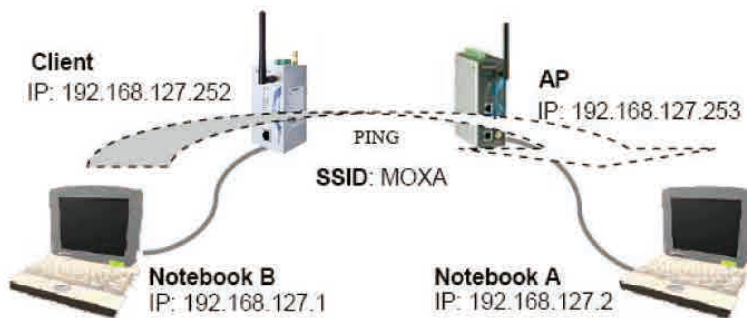
The following section describes one test method that can be used to verify a network connection has been established.

Communication Testing

After installing the AWK-1121/1127 a simple test may be run against an AP to make sure the AWK-1121/1127 has properly established a wireless connection and is functioning normally. In the example below, an AWK-3121 is used as the primary access point.

How to Test an AWK-1121/1127 for Network Connectivity

Connect an AP-configured AWK-3121 (or another access point) to Notebook A. Connect an AWK-1121/1127 to Notebook B. Configure the AWK-1121/1127 and AWK-3121 for the same SSID, and set their IP addresses as below.

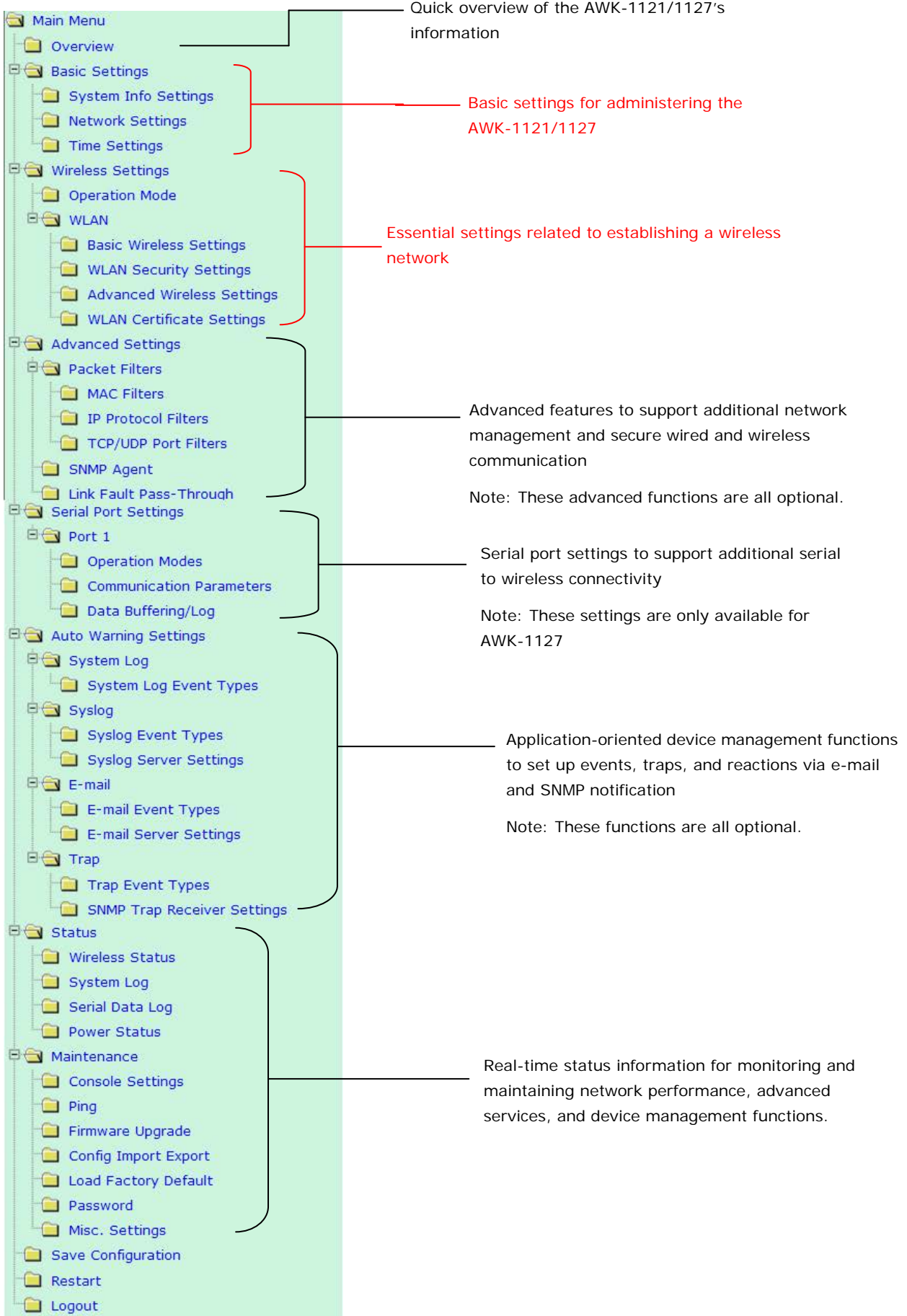


After setting up the testing environment, open a DOS window on notebook B. At the prompt, type:

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, be sure to first 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-1121/1127 and make it easy to establish and maintain your wireless network.

The following topics are covered in this chapter:

❑ Web Browser Configuration

❑ Overview

❑ Basic Settings

- System Info Settings
- Network Settings
- Time Settings

❑ Wireless Settings

- Operation Mode
- WLAN

❑ Advanced Settings

- Packet Filters
- SNMP Agent
- Link Fault Pass-Through

❑ Serial Port Settings (AWK-1127 Only)

- Operation Modes
- Communication Parameters
- Data Buffering/Log

❑ Auto Warning Settings

- System Log
- Syslog
- E-mail
- Trap

❑ Status

- Wireless Status
- System Log
- Serial Data Log
- Power Status

❑ Maintenance

- Console Settings
- Ping
- Firmware Upgrade
- Config Import/Export
- Loading Factory Defaults
- Password
- Misc. Settings

❑ Save Configuration

❑ Restart

❑ Logout

Web Browser Configuration

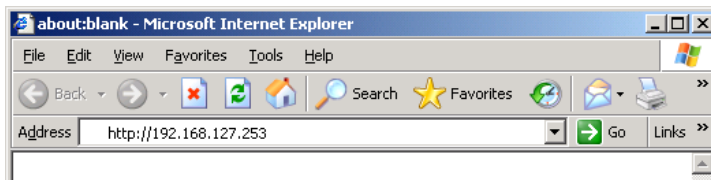
Moxa AWK-1121/1127's web browser interface provides a convenient way to modify its configuration and access the built-in monitoring and network administration functions. The recommended web browser is Microsoft® Internet Explorer with JVM (Java Virtual Machine) installed.

NOTE To use the AWK-1121/1127's management and monitoring functions from a PC host connected to the same LAN as the AWK-1121/1127, you must make sure that the PC host and the AWK-1121/1127 are on the same logical subnet. Similarly, if the AWK-1121/1127 is configured for other VLAN settings, you must make sure your PC host is on the management VLAN.

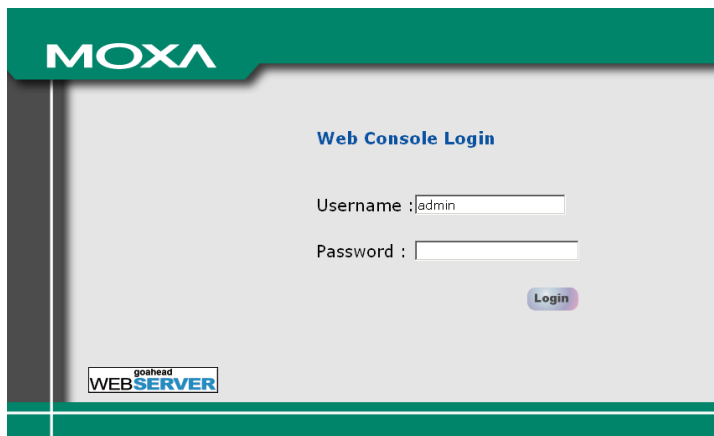
The Moxa AWK-1121/1127's default IP is **192.168.127.253**.

Follow these steps to access the AWK-1121/1127's web-based console management interface.

1. Open your web browser (e.g., Internet Explorer) and type the AWK-1121/1127's IP address in the address field. Press **Enter** to establish the connection.



2. The Web Console Login page will open. Enter the password (default Username = **admin**; default Password = **root**) and then click **Login** to continue.



3. You may need 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-1121/1127 are both shown in the title bar of the web page. This information can be used to help you identify multiple AWK-1121/1127 units.
4. Use the menu tree on the left side of the window to open the function pages to access each of the AWK-1121/1127's functions.



In the following paragraphs, we describe each AWK-1121/1127 management function in detail. A quick overview is available in this manual in the “Function Map” section of Chapter 2.

NOTE The model name of the AWK-1121/1127 is shown as AWK-1121/1127-XX, where XX indicates the country code. The country code indicates the AWK-1121/1127 version and which bandwidth it uses. We use **AWK-1121/1127-EU** as an example in the following figures. (The country code and model name that appears on your computer screen may be different than the one shown here.)

NOTE For security reasons, you will need to log back into the AWK-1121/1127 after a 5-minute time-out.

Overview

The **Overview** page summarizes the AWK-1121/1127’s current status. The information is categorized into several groups: **System Info**, **Device Info**, and **802.11 Info**.

Overview	
All information on this page are active values.	
System Info	
Model name	AWK-1121-EU
Device name	AWK-1121_4041
Serial No.	4041
System up time	0 days 00h:15m:19s
Firmware version	1.0 Build 12011714
Device Info	
Device MAC address	00:90:E8:00:03:46
IP address	192.168.127.253
Subnet mask	255.255.255.0
Gateway	
802.11 Info	
Country code	EU
Operation mode	Client
Channel	Not connected
RF type	B/G Mixed
SSID	MOXA

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

Wireless Status	
<input checked="" type="checkbox"/> Auto refresh	
Show status of	WLAN (SSID: MOXA) ▾
802.11 info	
Operation mode	Client
Channel	Not connected
RF type	B/G Mixed
SSID	MOXA
Security mode	OPEN
Current BSSID	N/A
Signal strength	▬▬▬▬ (-96dBm)
Transmission rate	N/A
Transmission power	Full

Basic Settings

The Basic Settings group includes the most commonly used settings required by administrators to maintain and control the AWK-1121/1127.

System Info Settings

System Info labels (especially **Device name**) are displayed and included on the **Overview** page, in SNMP information, and in alarm emails. Giving descriptive, unique labels to items under **System Info** makes it easier to identify the different AWK-1121/1127 units connected to your network.

System Info Settings

Device name

Device location

Device description

Device contact information

Device name

Setting	Description	Factory Default
Max. 31 of characters	This option is useful for specifying the role or application of different AWK-1121/1127 units.	AWK-1121/1127_<Serial No. of this AWK-1121/1127>

Device location

Setting	Description	Factory Default
Max. of 31 characters	Specifies the location of different AWK-1121/1127 units.	None

Device description

Setting	Description	Factory Default
Max. of 31 characters	Use this space to record a more detailed description of the AWK-1121/1127	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-1121/1127.	None

Network Settings

The Network Settings configuration panel allows you to modify the usual TCP/IP network parameters. An explanation of each configuration item is given below.

Network Settings

IP configuration

IP address

Subnet mask

Gateway

Primary DNS server

Secondary DNS server

IP configuration

Setting	Description	Factory Default
DHCP	The AWK-1121/1127's IP address will be assigned automatically by the network's DHCP server	Static
Static	Set up the AWK-1121/1127's IP address manually.	

IP address

Setting	Description	Factory Default
AWK-1121/1127's IP address	Identifies the AWK-1121/1127 on a TCP/IP network.	192.168.127.253

Subnet mask

Setting	Description	Factory Default
AWK-1121/1127's subnet mask	Identifies the type of network to which the AWK-1121/1127 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-1121/1127'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-1121/1127'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

Time Settings

The AWK-1121/1127 has a time calibration function based on information from an NTP server or user specified Date and Time information. Functions such as Auto warning can add real-time information to the message.

Time Settings

Date (YYYY/MM/DD) Time (HH:MM:SS)
 Current local time 2009 / 01 / 23 16 : 58 : 19

Time zone (GMT-06:00)Central Time (US & Canada)
 Enable
 Daylight saving time
 Starts at Apr. 1st Sun. 00 : 00 (HH:MM)
 Stops at Oct. last Sun. 00 : 00 (HH:MM)
 Time offset +01:00

Time server 1 time.nist.gov
 Time server 2
 Query period 600 (600~9999 seconds)

The **Current local time** shows the AWK-1121/1127'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 will appear to indicate that the change is complete. Local time settings will be immediately activated in the system without running Save and Restart.

NOTE The AWK-1121/1127 has a built-in real time clock (RTC). We strongly recommend that users update the **Local time** for the AWK-1121/1127 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. <i>Use 24-hour format: yyyy/mm/dd hh:mm:ss</i>	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 (also know as DST or summer time) involves advancing clocks (usually 1 hour) during the summer time to provide an extra hour of daylight in the afternoon.	Disabled

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

Query period

Setting	Description	Factory Default
Query period time (1 to 9999 seconds)	This parameter determines how often the time is updated from the NTP server.	600 (seconds)

Wireless Settings

The essential settings for wireless networks are presented in this function group. Settings must be properly set before establishing your wireless network. Familiarize yourself with the following terms before starting the configuration process:

The AWK-1121/1127 as a client can be used as an Ethernet-to-wireless (or LAN-to-WLAN) network adaptor. For example, a notebook computer equipped with an Ethernet adaptor but no wireless card can be connected to this device with an Ethernet cable to provide wireless connectivity to another AP.

NOTE Although it is more convenient to use dynamic bridging, there is a limitation—the AP 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-1121/1127 is a dedicated WLAN client, so its only operation mode is client. Other client-based operation modes may be added in the future firmware releases.

Operation Mode

Wireless enable Enable Disable

Operation mode Client ▼

Submit

Wireless Enable

Setting	Description	Factory Default
Enable/Disable	The RF (Radio Frequency) module can be manually turned on or off. Note: This function is only available for firmware version 1.2 and above.	Enable

Operation Mode

Setting	Description	Factory Default
Client	The AWK-1121/1127 only operates as a wireless client.	Client

WLAN

Basic Wireless Settings

The “WLAN Basic Setting Selection” panel is used to edit SSIDs and set the RF type. The RF type selection will configure the AWK-1121/1127 to either the 2.4GHz or 5GHz frequency band. An SSID is a unique identifier that wireless networking devices use to establish and maintain wireless connectivity. Set the SSID parameter to match that of the APs you wish to connect to, so that the AWK-1121/1127 will associate with network defined by the SSID.

Basic Wireless Settings

Operation mode Client

RF type B/G Mixed ▼

SSID MOXA Site Survey

Submit

NOTE Click the “Site Survey” 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 Wireless Settings page.

Basic Wireless Settings

Operation mode: Client

RF type: B/G Mixed

SSID: MOXA

Buttons: Submit, Site Survey

Click the **Refresh** button to re-scan and update the table.

Site Survey

No.	SSID	MAC address	Channel	Mode	Signal
1	Home	00-18-84-81-CD-9A	1	BSS/WEP	■■■■
2	FON_AP	00-18-84-81-CD-99	1	BSS/OPEN	■■■■
3	default	00-15-F2-A2-07-6A	1	BSS/OPEN	■■■■
4	BLW-54PM	00-90-CC-D6-B5-20	6	BSS/WEP	■■■■
5	BLW-54PM	00-90-CC-D6-BC-EC	6	BSS/OPEN	■■■■
6	ZyXEL	00-19-CB-41-48-9A	11	BSS/WEP	■■■■
7		00-16-01-8C-11-7F	11	BSS/OPEN	■■■■
8	HJ-Wireless	00-16-01-ED-D0-61	2	BSS/WEP	■■■■
9	default	00-40-05-56-9D-B1	8	BSS/WEP	■■■■
10	hpsetup	52-BC-90-E2-84-14	10	Ad Hoc/OPEN	■■■■

Buttons: Refresh, Close

RF type

Setting	Description	Factory Default
A	Supports IEEE802.11a standard only	B/G Mixed
B	Supports IEEE802.11b standard only	
G	Supports IEEE802.11g standard only	
B/G Mixed	Supports both of IEEE802.11b/g standards, but 802.11g can be slowed down when 802.11b clients are on the network	

SSID

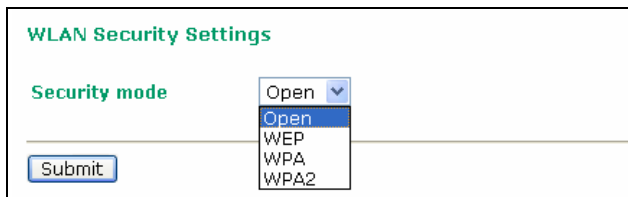
Setting	Description	Factory Default
Max. of 31 characters	The SSID must be identical to the target AP for the client and AP to be able to communicate with each other.	MOXA

NOTE The AWK-1121/1127-JP (for Japanese frequency bands) connects only APs with broadcast (i.e: not hidden) SSIDs, in all IEEE802.11a channels and IEEE802.11g channels 1 to 11. The AWK-1121/1127-EU (for European frequency bands) only connects APs with hidden SSIDs in all IEEE802.11b/g channels.

WLAN Security Settings

The AWK-1121/1127 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-1121/1127 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 IEEE802.1X. The AWK-1121/1127 can support three EAP methods: EAP-TLS, EAP-TTLS, and EAP-PEAP.



Security mode

Setting	Description	Factory Default
Open	No authentication	Open
WEP	Static WEP is used	
WPA	Fully supports IEEE802.11i with "TKIP/AES + 802.1X"	
WPA2	Fully supports IEEE802.11i with "TKIP/AES + 802.1X"	

Open

For security reasons, you should **NOT** set security mode to Open (or "Open System"), since authentication and data encryption are **NOT** performed in Open (or "Open System") mode.

WEP

According to the IEEE802.11 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 as 64/128 bits, which is actually a 40/104-bit secret key with a 24-bit initialization vector. The AWK-1121/1127 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 104-bit key has 26 hex characters.

WLAN Security Settings

Security mode:

Authentication type:

Key type:

Key length:

key index:

WEP key 1:

WEP key 2:

WEP key 3:

WEP key 4:

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	1

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 represent 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-1121/1127 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 8of 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: MOXA_1121

Security mode: WPA2

WPA type: Personal

Encryption method: TKIP

EAPOL version: TKIP

Passphrase: AES

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	TKIP
AES	Advance Encryption System is enabled	

EAPOL Version

Setting	Description	Factory Default
1	EAPOL version 1 was standardized in the 2001 version of 802.1X, which is much more commonly implemented.	1
2	EAPOL version 2 was specified in 802.1X-2004.	

Passphrase

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

WPA/WPA2-Enterprise

When used as a client, the AWK-1121/1127 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_1121

Security mode: WPA2

WPA type: Enterprise

Encryption method: TKIP

EAPOL version: 1

EAP protocol: TLS

Certificate issued to

Certificate issued by

Certificate expiration date

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 Wireless Settings** → **WLAN Certificate Settings** to import your WLAN certificate and enable EAP-TLS on the client end.

WLAN Security Settings	
SSID	MOXA_1121
Security mode	WPA2
WPA type	Enterprise
Encryption method	TKIP
EAPOL version	1
EAP protocol	TLS
Certificate issued to	
Certificate issued by	
Certificate expiration date	

- **Certificate issued to:** Shows the certificate user
- **Certificate issued by:** Shows the certificate issuer
- **Certificate expiration date:** Indicates when the certificate has expired

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-1121/1127 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 may 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: MOXA_1121
 Security mode: WPA2
 WPA type: Enterprise
 Encryption method: TKIP
 EAPOL version: 1
 EAP protocol: TTLS
 TTLS inner authentication: MS-CHAP-V2
 Anonymous name:
 User name:
 Password:

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-1121/1127 provides **MS-CHAP-V2** merely as an EAP method for inner authentication.

WLAN Security Settings

SSID: MOXA_1121
 Security mode: WPA2
 WPA type: Enterprise
 Encryption method: AES
 EAPOL version: 1
 EAP protocol: PEAP
 Inner EAP protocol: MS-CHAP-V2
 Anonymous name:
 User name:
 Password:

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 Wireless Settings

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

Advanced Wireless Settings

Transmission rate

Transmission power

Fragmentation threshold (256~2346)

RTS threshold (256~2346)

Noise protection

Antenna

WMM

Transmission Rate

Setting	Description	Factory Default
Auto	The AWK-1121/1127 senses and adjusts the data rate automatically	Auto
Available rates	Users can manually select a target transmission data rate	

Transmission Power**RF type = B/G mixed (Channel 1 ~ 14)**

Setting	Description	Factory Default
Auto	Equivalent to full Tx power	Full
Full	Equivalent to maximum Tx power	
High	-4 dB of full Tx power	
Medium	-8 dB of full Tx power	
Low	-12 dB of full Tx power	

NOTE Tx power at "Full"

- US model: 17 dB
- EU model: 16 dB
- JP model: 18 dB

RF type = A (Channel 36 ~ 48)

Setting	Description	Factory Default
Auto	Equivalent to full Tx power	Full
Full	Equivalent to full Tx power	
High	-4 dB of full Tx power	
Medium	-8 dB of full Tx power	
Low	-12 dB of full Tx power	

NOTE Tx power at "Full"

- US model: 14 dB
- EU model: 16 dB
- JP model: 14 dB

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.

Noise protection

Setting	Description	Factory Default
Enable/Disable	Adjusts the interference coping capability of the wireless signal. This option should be enabled for communication distance under 500 meters, and should be disabled for communication distances over 500 meters.	Disable

Antenna

Setting	Description	Factory Default
MAIN	The MAIN antenna is used for wireless communication.	Main
AUX	The AUX antenna is used for wireless communication.	

Note: For installation flexibility, either the MAIN antenna (on the front panel) or the AUX antenna (on the top panel) may be selected for use. Make sure the antenna connection matches the antenna configured in the AWK-1121/1127 interface.

To protect the connectors and RF module, all radio ports should be terminated by either an antenna or a terminator. The use of the resistive terminator for terminating the unused antenna port is strongly recommended.

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.	Disable

Turbo Roaming (to be supported in firmware version 1.2)

Setting	Description	Factory Default
Enable/Disable	Moxa's Turbo Roaming can enable rapid handover when the AWK-1121/1127, as a client, roams among a group of APs.	Disable

When Turbo Roaming is enabled, the RF type, AP alive check, and Scan channels will be shown as follows. RF type shows the current **RF type** that this client is using. **AP alive check** will check if the AP connection is still available. When this function is enabled, a check will be done every 10 ms. You can set up **Scan channels** for the APs among which this client is going to roam. There are three Scan channels available. Note that the **Scan channels** may need to be modified when the **RF type** is changed. (For example, channel 36 is not available in **B, G, or B/G Mix** mode.)

Turbo roaming	<input checked="" type="checkbox"/> Enable
RF type	A
AP alive check	Disable ▾
Scan channels	36 ▾
	Not scanning ▾
	Not scanning ▾

WLAN Certification Settings

When EAP-TLS is used, a WLAN Certificate will be required at the client end to support WPA/WPA2-Enterprise. The AWK-1121/1127 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

- Current status
- Certificate issued to
- Certificate issued by
- Certificate expiration date

Current Status displays information for the current WLAN certificate, which has been imported into the AWK-1121/1127. 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 status**. If it fails, you may need to return to step 1 to set the password correctly and then import the certificate file again.

WLAN Certificate Settings

- Current status
- Certificate issued to
- Certificate issued by
- Certificate expiration date

- Certificate private password
- Select certificate/key file

Submit

NOTE The WLAN certificate will remain after the AWK-1121/1127 reboots. Even though it is expired, it can still be seen on the **Current status**.

Advanced Settings

Several advanced functions are available to increase the functionality of your AWK-1121/1127 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. Moreover, the AWK-1121/1127 supports SNMP, making network management easier.

Packet Filters

The AWK-1121/1127 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 Filter

The AWK-1121/1127's MAC filter is a policy-based filter that can allow or filter out IP-based packets with specified MAC addresses. The AWK-1121/1127 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

Enable

Policy

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"/>

Enable

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

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 Filter

The AWK-1121/1127'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-1121/1127 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, netmask 255.255.255.255" refers to a sole IP address, while "IP address 192.168.1.1, netmask 255.255.255.0" refers to the range of IP addresses from 192.168.1.1 to 192.168.254. Remember to check the **Active** check box for each entity to activate the setting.

IP Protocol Filters

Enable

Policy

No	<input type="checkbox"/> Active	Protocol	Source IP	Source netmask	Destination IP	Destination netmask
1	<input type="checkbox"/>	All				
2	<input type="checkbox"/>	All				
3	<input type="checkbox"/>	All				

Enable

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

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 Filter

The AWK-1121/1127’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-1121/1127 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

Enable

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"/>

Enable

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

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-1121/1127 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.

The AWK-1121/1127’s MIB can be found in the software CD and supports reading the attributes via SNMP. (Only *get* method is supported.)

SNMP security modes and security levels supported by the AWK-1121/1127 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	Yes	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

Enable
Remote management
Read community
Write community
SNMP agent version
Admin authentication type
Admin privacy type
Privacy key
Private MIB information
Device object ID

Enable

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 accesses 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 Authentication
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 type (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 the AWK-1121/1127's enterprise value. It is fixed.

Link Fault Pass-Through

This function means if Ethernet port is link down, wireless connection will be forced to disconnect. Once Ethernet link is recovered, AWK-1121/1127 will try to connect to AP.

If wireless is disconnected, AWK-1121/1127 restarts auto-negotiation on Ethernet port but always stays in the link failure state. Once the wireless connection is recovered, AWK-1121/1127 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/Slave mode only)

Link Fault Pass-Through Enable Disable

Link Fault Pass-Through

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

Serial Port Settings (AWK-1127 Only)

The AWK-1127 not only is capable of bring Ethernet devices onto the WLAN network, it also has a serial port for additional connectivity for serial devices. The AWK support various useful serial operation modes to make connecting to your serial devices much simpler.

Operation Modes

The Operation Modes page for the serial port is where you can configure the serial port operation mode and related settings.

Operation Modes

Serial Operation Mode

Port 1

Application
 Mode
 alive check time

Application

This field specifies what kind application you will be using for this serial port. Depending on the application, different operation modes and related settings will be displayed.

Setting	Description	Factory Default
Disable	This serial port will be disabled.	Disable
Device Control	This serial port will be used to control a device using legacy software installed on a Windows, Linux, or UNIX system. Drivers will need to be installed that will allow your software to communicate with the device as if it were physically attached to a local COM or TTY port. You may select between RealCOM and RFC2217 operation modes.	
Socket	This serial port will be used for a TCP or UDP socket-based application. You may select between TCP Client, TCP Server, and UDP operation modes.	

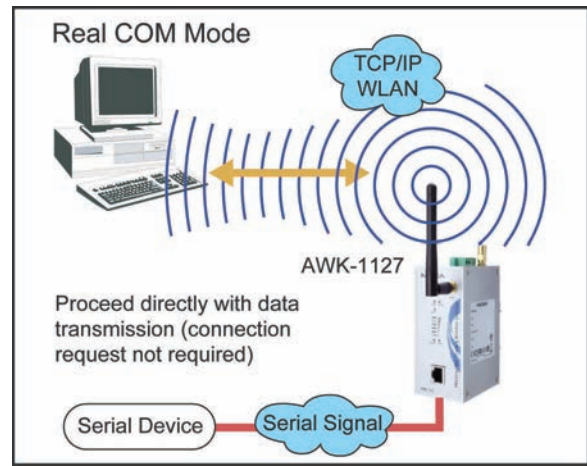
Mode

Along with Application, this field specifies the serial port’s operation mode, or how it will interact with network devices. Depending on how Application is configured, different options are available for Mode. Depending on how Mode is configured, additional settings will be available for configuration.

Setting	Description	Factory Default
RealCOM	This serial port will operate in RealCOM mode.	(depends on Application)
RFC2217	This serial port will operate in RFC2217 mode.	
TCP Server	This serial port will operate in TCP Server mode.	
TCP Client	This serial port will operate in TCP Client mode.	
UDP	This serial port will operate in UDP mode.	

RealCOM Mode

RealCOM mode is designed to work with AWK drivers that are installed on a network host. COM drivers are provided for Windows systems, and TTY drivers are provided for Linux and UNIX systems. The driver establishes a transparent connection to the attached serial device by mapping a local serial port to the AWK-1127 serial port. RealCOM mode supports up to four simultaneous connections, so multiple hosts can collect data from the attached device at the same time.



ATTENTION

RealCOM drivers are installed and configured through OnCell Windows Driver Manager.

RealCOM mode allows you to continue using your serial communications software to access devices that are now attached to your AWK-1127. On the host, the AWK RealCOM driver automatically intercepts data sent to the COM port, packs it into a TCP/IP packet, and redirects it to the network. At the other end of the connection, the AWK-1127 accepts the Ethernet frame, unpacks the TCP/IP packet, and sends the serial data to the appropriate device.



ATTENTION

In RealCOM mode, two hosts can have simultaneous access control over the AWK-1127 serial port.

Operation Modes

Port 1

Application Device Control ▾
Mode RealCOM ▾
TCP alive check time 7 (0 - 99 min)
Max connection 2 ▾
Ignore jammed IP Enable Disable
Allow driver control Enable Disable
Connection goes down RTS always low always High
 DTR always low always High

Data Packing

Packing length 0 (0 - 1024)
Delimiter 1 0A (Hex) Enable
Delimiter 2 A0 (Hex) Enable
Delimiter process Do Nothing ▾ (Processed only when Packing length is 0)
Force transmit 0 (0 - 65535 ms)

When **Mode** is set to RealCOM on a serial port's **Operation Modes** page, you will be able to configure additional settings such as **TCP alive check time**, **Max connection**, and **Ignore jammed IP**.

TCP Alive Check Time

Setting	Description	Factory Default
0 to 99 min.	This field specifies how long the AWK-1127 will wait for a response to "keep alive" packets before closing the TCP connection. The AWK-1127 checks connection status by sending periodic "keep alive" packets. 0: The TCP connection will remain open even if there is no response to the "keep alive" packets. 1 to 99: If the remote host does not respond to the packet within the specified time, the AWK-1127 will force the existing TCP connection to close.	7 min.

Max Connection

This field specifies the maximum number of connections that will be accepted by the serial port.

Setting	Description	Factory Default
1 or 2	1: Only one specific host can access this serial port, and the RealCOM driver on that host will have full control over the port. 2: This serial port will allow the two connections to be opened simultaneously. With simultaneous connections, the RealCOM driver will only provide a pure data tunnel with no control ability. The serial communication will be determined by the AWK-1127 rather than by your application program. Application software that is based on the RealCOM driver will receive a driver response of "success" when using any of the Win32 API functions. The AWK-1127 will send data only to the RealCOM driver on the host. Data received from hosts will be sent to the attached serial device on a first-in- first-out basis.	1



ATTENTION

When **Max connection** is 2, the serial port's communication settings (i.e., baudrate, parity, data bits, etc.) will be determined by the AWK-1127. Any host that opens the COM port connection must use identical serial communication settings.

Ignore Jammed IP

This field specifies how an unresponsive IP address is handled when there are simultaneous connections to the serial port.

Setting	Description	Factory Default
Disable	All transmission will be suspended if one IP address becomes unresponsive. Transmission will only resume when all hosts have responded.	Disable
Enable	Data transmission to the other hosts will not be suspended if one IP address becomes unresponsive.	

Allow Driver Control

This field specifies how the port will proceed if driver control commands are received from multiple hosts that are connected to the port.

Setting	Description	Factory Default
Disable	Driver control commands will be ignored.	Disable
Enable	Control commands will be accepted, with the most recent command received taking precedence.	

Connection Goes Down

This field specifies what happens to the RTS and DTR signals when the Ethernet connection goes down. For some applications, serial devices need to know the Ethernet link status through RTS or DTR signals sent through the serial port.

Setting	Description	Factory Default
always low	The selected signal will change to low when the Ethernet connection goes down.	always high
always high	The selected signal will remain high when the Ethernet connection goes down.	

Packet Length

This field specifies the maximum amount of data that is allowed to accumulate in the serial port buffer before sending.

Setting	Description	Factory Default
0 to 1024	0: Packet length is disregarded and data in the buffer will be sent as specified by the delimiter settings or when the buffer is full. 1 to 1024: Data in the buffer will be sent as soon it reaches the specified length.	0

Delimiter 1 and 2

These fields are used to define special delimiter character(s) for data packing. Enable Delimiter 1 to control data packing with a single character; enable both Delimiter 1 and 2 to control data packing with two characters received in sequence.

Setting	Description	Factory Default
Enable	When these fields are enabled, serial data will accumulate in the serial port's buffer until the buffer is full or until the specified delimiter character(s) are received. For example, the carriage return character could be used as a delimiter in order to transmit each sentence or paragraph in a separate packet. Data will be packed according to Delimiter process. Delimiters must be incorporated into the data stream at the software or device level. The Delimiter value can be set ranging from 00 to FF.	Unchecked



ATTENTION

When **Delimiter 1** is enabled, **Packet length** must be set to 0.

Delimiter Process

This field specifies how data is packed when delimiter characters are received. This field has no effect if Delimiter 1 is not enabled.

Setting	Description	Factory Default
Do Nothing	Data accumulated in the serial port's buffer will be packed, including delimiters.	Do Nothing
Delimiter + 1	One additional character must be received before the data in the serial port's buffer is packed.	
Delimiter + 2	Two additional characters must be received before the data in the serial port's buffer is packed.	
Strip Delimiter	Data accumulated in the serial port's buffer will be packed, but the delimiter character(s) will be stripped from the data.	

Force Transmit

This field controls data packing by the amount of time that elapses between bits of data. When using this field, make sure that Inactivity time is disabled or set to a larger value. Otherwise the connection may be closed before the data in the buffer can be transmitted.

Setting	Description	Factory Default
0 to 65535	0: If serial data is received, setting this value to 0 means no data will be buffered and all data will be transmitted immediately as received. 1 to 65535: If serial data is not received for the specified amount of time, the data that is currently in the buffer will be packed for network transmission. The optimal force transmit time depends on your application, but it must be at least larger than one character interval within the specified baudrate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is 8.3 ms, so the force transmit time to be larger than 8.3 ms.	0 ms

RFC2217 Mode

RFC2217 mode is similar to RealCOM mode, since it relies on a driver to transparently map a virtual COM port on a host computer to a serial port on the AWK-1127. The RFC2217 standard defines general COM port control

options based on the Telnet protocol and supports one connection at a time. Third party drivers supporting RFC2217 are widely available on the Internet and can be used to implement virtual COM mapping.

Operation Modes

Serial Operation Mode

Port 1

Application: Device Control

Mode: RFC2217

alive check time: 7 (0 - 99 min)

TCP port: 4001

Data Packing

Packing length: 0 (0 - 1024)

Delimiter 1: 00 (Hex) Enable

Delimiter 2: 00 (Hex) Enable

Delimiter: Do Nothing (Processed only when Packing length is 0)

Force transmit: 0 (0 - 65535 ms)

When **Mode** is set to RFC2217 on a serial port's **Operation Modes** page, you will be able to configure additional settings such as **TCP alive check time**, **TCP port**, and **Packet length**.

TCP Alive Check Time

Setting	Description	Factory Default
0 to 99 min.	This field specifies how long the AWK will wait for a response to "keep alive" packets before closing the TCP connection. The AWK-1127 checks connection status by sending periodic "keep alive" packets. 0: The TCP connection will remain open even if there is no response to the "keep alive" packets. 1 to 99: If the remote host does not respond to the packet within the specified time, the AWK-1127 will force the existing TCP connection to close.	7 min.

TCP Port

Setting	Description	Factory Default
0 to 9999	This field specifies the TCP port number that the serial port will use to listen to connections, and that other devices must use to contact the serial port.	4001

Packet Length

Setting	Description	Factory Default
0 to 1024	This field specifies the maximum amount of data that is allowed to accumulate in the serial port buffer before sending. 0: Packet length is disregarded and data in the buffer will be sent as specified by the delimiter settings or when the buffer is full. 1 to 1024: Data in the buffer will be sent as soon it reaches the specified length.	0

Delimiter 1 and 2

Setting	Description	Factory Default
Enable	When these fields are enabled, serial data will accumulate in the serial port's buffer until the buffer is full or until the specified delimiter character(s) are received. For example, the	Unchecked

	<p>carriage return character could be used as a delimiter in order to transmit each sentence or paragraph in a separate packet. Data will be packed according to Delimiter process. Delimiters must be incorporated into the data stream at the software or device level. The Delimiter value can be set ranging from 00 to FF.</p>	
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ATTENTION

When **Delimiter 1** is enabled, **Packet length** must be set to 0.

Delimiter Process

This field specifies how data is packed when delimiter characters are received. This field has no effect if Delimiter 1 is not enabled.

Setting	Description	Factory Default
Do Nothing	Data accumulated in the serial port's buffer will be packed, including delimiters.	Do Nothing
Delimiter + 1	One additional character must be received before the data in the serial port's buffer is packed.	
Delimiter + 2	Two additional characters must be received before the data in the serial port's buffer is packed.	
Strip Delimiter	Data accumulated in the serial port's buffer will be packed, but the delimiter character(s) will be stripped from the data.	

Force Transmit

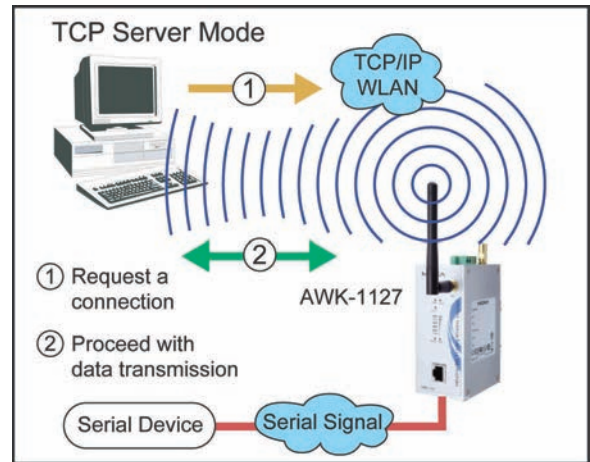
Setting	Description	Factory Default
0 to 65535	<p>This field controls data packing by the amount of time that elapses between bits of data. When using this field, make sure that Inactivity time is disabled or set to a larger value. Otherwise the connection may be closed before the data in the buffer can be transmitted.</p> <p>0: If serial data is received, setting this value to 0 means no data will be buffered and all data will be transmitted immediately as received.</p> <p>1 to 65535: If serial data is not received for the specified amount of time, the data that is currently in the buffer will be packed for network transmission. The optimal force transmit time depends on your application, but it must be at least larger than one character interval within the specified baudrate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is 8.3 ms, so the force transmit time to be larger than 8.3 ms.</p>	0 ms

TCP Server Mode

In TCP Server mode, the AWK-1127 serial port is assigned an IP:port address that is unique on your TCP/IP network. It waits for the host computer to establish a connection to the attached serial device. This operation mode also supports up to four simultaneous connections, so multiple hosts can collect data from the attached device at the same time.

Data transmission proceeds as follows:

1. A host requests a connection to the AWK-1127 serial port.
2. Once the connection is established, data can be transmitted in both directions—from the host to the device, and from the device to the host.



Operation Modes

Serial Operation Mode

Port 1

Application
Mode
alive check time (0 - 99 min)
Max connection
Ignore jammed IP Enable Disable
Allow driver control Enable Disable
TCP port
Cmd port
Connection goes down
 RTS always low always High
 DTR always low always High

Data Packing

Packing length (0 - 1024)
Delimiter 1 (Hex) Enable
Delimiter 2 (Hex) Enable
Delimiter (Processed only when Packing length is 0)
Force transmit (0 - 65535 ms)

When **Mode** is set to **TCP Server** on a serial port's **Operation Modes** page, you will be able to configure additional settings such as **TCP alive check time**, **Inactivity time**, and **Max connection**.

TCP Alive Check Time

Setting	Description	Factory Default
0 to 99 min.	<p>This field specifies how long the AWK-1127 will wait for a response to "keep alive" packets before closing the TCP connection. The AWK-1127 checks connection status by sending periodic "keep alive" packets.</p> <p>0: The TCP connection will remain open even if there is no response to the "keep alive" packets.</p> <p>1 to 99: If the remote host does not respond to the packet within the specified time, the AWK will force the existing TCP connection to close.</p>	7 min.

Inactivity Time

Setting	Description	Factory Default
0 to 65535 ms	<p>This field specifies the time limit for keeping the connection open if no data flows to or from the serial device.</p> <p>0: The connection will remain open even if data is never received. For many applications, the serial device may be idle for long periods of time, so 0 is an appropriate setting.</p> <p>1 to 65535: If there is no activity for the specified time, the connection will be closed. When adjusting this field, make sure that it is greater than the Force transmit time. Otherwise, the TCP connection may be closed before data in the buffer can be transmitted.</p>	0 ms

Max Connection

Setting	Description	Factory Default
1 to 2	<p>This field specifies the maximum number of connections that will be accepted by the serial port.</p> <p>1: Only a single host may open the TCP connection to the serial port.</p> <p>2: This serial port will allow the specified number of connections to be opened simultaneously. When multiple connections are established, serial data will be duplicated and sent to all connected hosts. Data from hosts will be sent to the attached serial device on a first-in-first-out basis.</p>	1

Ignore Jammed IP

This field specifies how an unresponsive IP address is handled when there are simultaneous connections to the serial port.

Setting	Description	Factory Default
Disable	All transmission will be suspended if one IP address becomes unresponsive. Transmission will only resume when all hosts have responded.	Disable
Enable	Data transmission to the other hosts will not be suspended if one IP address becomes unresponsive.	

Allow Driver Control

This field specifies how the port will proceed if driver control commands are received from multiple hosts that are connected to the port.

Setting	Description	Factory Default
Disable	Driver control commands will be ignored.	Disable
Enable	Control commands will be accepted, with the most recent command received taking precedence.	

TCP Port

Setting	Description	Factory Default
0 to 9999	This field specifies the TCP port number that the serial port will use to listen to connections, and that other devices must use to contact the serial port.	4001

Cmd Port

Setting	Description	Factory Default
0 to 9999	This field specifies the TCP port number for listening to SSDK commands from the host.	966

Connection Goes Down

This field specifies what happens to the RTS and DTR signals when the Ethernet connection goes down. For some applications, serial devices need to know the Ethernet link status through RTS or DTR signals sent through the serial port.

Setting	Description	Factory Default
always low	The selected signal will change to low when the Ethernet connection goes down.	always high
always high	The selected signal will remain high when the Ethernet connection goes down.	

Packet Length

Setting	Description	Factory Default
0 to 1024	This field specifies the maximum amount of data that is allowed to accumulate in the serial port buffer before sending. 0: Packet length is disregarded and data in the buffer will be sent as specified by the delimiter settings or when the buffer is full. 1 to 1024: Data in the buffer will be sent as soon it reaches the specified length.	0

Delimiter 1 and 2

Setting	Description	Factory Default
Enable	These fields are used to define special delimiter character(s) for data packing. Enable Delimiter 1 to control data packing with a single character; enable both Delimiter 1 and 2 to control data packing with two characters received in sequence. When these fields are enabled, serial data will accumulate in the serial port's buffer until the buffer is full or until the specified delimiter character(s) are received. For example, the carriage return character could be used as a delimiter in order to transmit each sentence or paragraph in a separate packet. Data will be packed according to Delimiter process. Delimiters must be incorporated into the data stream at the software or device level.	Unchecked

**ATTENTION**

When **Delimiter 1** is enabled, **Packet length** must be set to 0.

Delimiter Process

This field specifies how data is packed when delimiter characters are received. This field has no effect if Delimiter 1 is not enabled.

Setting	Description	Factory Default
Do Nothing	Data accumulated in the serial port's buffer will be packed, including delimiters.	Do Nothing
Delimiter + 1	One additional character must be received before the data in the serial port's buffer is packed.	
Delimiter + 2	Two additional characters must be received before the data in the serial port's buffer is packed.	
Strip Delimiter	Data accumulated in the serial port's buffer will be packed, but the delimiter character(s) will be stripped from the data.	

Force Transmit

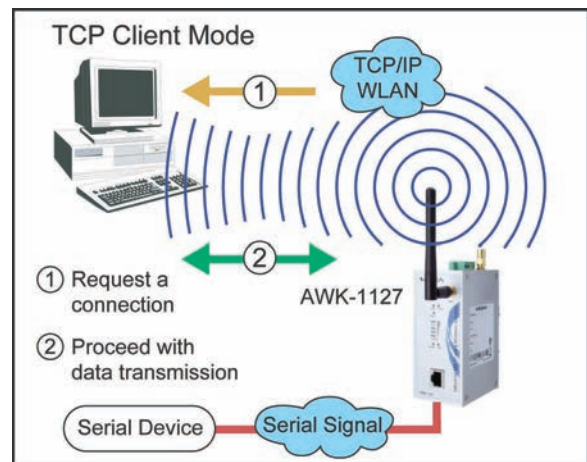
Setting	Description	Factory Default
0 to 65535	<p>This field controls data packing by the amount of time that elapses between bits of data. When using this field, make sure that Inactivity time is disabled or set to a larger value. Otherwise the connection may be closed before the data in the buffer can be transmitted.</p> <p>0: If serial data is received, setting this value to 0 means no data will be buffered and all data will be transmitted immediately as received.</p> <p>1 to 65535: If serial data is not received for the specified amount of time, the data that is currently in the buffer will be packed for network transmission. The optimal force transmit time depends on your application, but it must be at least larger than one character interval within the specified baudrate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is 8.3 ms, so the force transmit time to be larger than 8.3 ms.</p>	0 ms

TCP Client Mode

In TCP Client mode, the AWK-1127 actively establishes a TCP connection to a specific network host when data is received from the attached serial device. After the data has been transferred, the AWK-1127 can automatically disconnect from the host computer through the **Inactivity time** settings.

Data transmission proceeds as follows:

1. The AWK-1127 requests a connection from the host.
2. The connection is established and data can be transmitted in both directions between the host and device.



Operation Modes

Serial Operation Mode

Port 1

Application:

Mode:

alive check time: (0 - 99 min)

Inactivity time: (0 - 65535 ms)

Ignore jammed IP: Enable Disable

Allow driver control: Enable Disable

Destination address 1: Port:

Destination address 2: Port:

Destination address 3: Port:

Destination address 4: Port:

Designated local port 1:

Designated local port 2:

Designated local port 3:

Designated local port 4:

Connection control:

Data Packing

Packing length: (0 - 1024)

Delimiter 1: (Hex) Enable

Delimiter 2: (Hex) Enable

Delimiter: (Processed only when Packing length is 0)

Force transmit: (0 - 65535 ms)

When **Mode** is set to **TCP Client** on a serial port's **Operation Modes** page, you will be able to configure additional settings such as **TCP alive check time**, **Inactivity time**, and **Ignore jammed IP**.

TCP Alive Check Time

Setting	Description	Factory Default
0 to 99 min.	<p>This field specifies how long the AWK-1127 will wait for a response to "keep alive" packets before closing the TCP connection. The AWK-1127 checks connection status by sending periodic "keep alive" packets.</p> <p>0: The TCP connection will remain open even if there is no response to the "keep alive" packets.</p> <p>1 to 99: If the remote host does not respond to the packet within the specified time, the AWK-1127 will force the existing TCP connection to close.</p>	7 min.

Inactivity Time

Setting	Description	Factory Default
0 to 65535 ms	<p>This field specifies the time limit for keeping the connection open if no data flows to or from the serial device.</p> <p>0: The connection will remain open even if data is never received. For many applications, the serial device may be idle for long periods of time, so 0 is an appropriate setting.</p> <p>1 to 65535: If there is no activity for the specified time, the connection will be closed. When adjusting this field, make sure that it is greater than the Force transmit time. Otherwise, the TCP connection may be closed before data in the buffer can be transmitted. Connection Control must be set to "Any character/Inactivity time" for this setting to have effect.</p>	0 ms

Ignore Jammed IP

Setting	Description	Factory Default
Disable	All transmission will be suspended if one IP address becomes unresponsive. Transmission will only resume when all hosts have responded.	Disable
Enable	Data transmission to the other hosts will not be suspended if one IP address becomes unresponsive.	

This field specifies how an unresponsive IP address is handled when there are simultaneous connections to the serial port.

Destination Address 1 to 4

Setting	Description	Factory Default
IP address and port (e.g., "192.168.1.1" and "4001")	This field specifies the remote host(s) that will access the attached device. At least one destination must be provided. This field supports the use of domain names and names defined in the host table.	IP Address: Empty Port: 4001

**ATTENTION**

In TCP Client mode, up to 4 connections can be established between the serial port and TCP hosts. The connection speed or throughput may be low if any one of the four connections is slow, since the one slow connection will slow down the other 3 connections.

Designated Local Port 1 to 4

Setting	Description	Factory Default
1 to 65535	This field specifies the TCP port number that will be used for data transmission with the serial port.	0

Connection Control

This field specifies how connections to the device are established and closed.

Setting	Description	Factory Default
Startup/None	The connection will be opened as the AWK-1127 starts up. The connection will only be closed manually.	Startup/None
Any Character/None	The connection will be opened as soon as a character is received from the attached device. The connection will only be closed manually.	
Any Character/ Inactivity Time	The connection will be opened as soon as a character is received from the attached device. The connection will be closed if no data is received for the time specified in Inactivity time.	
DSR On/DSR Off	The TCP connection is opened when the DSR signal is on, and closed when the DSR signal is off.	
DSR On/None	The TCP connection is opened when the DSR signal is on. The connection will only be closed manually.	
DCD On/DCD Off	The TCP connection is opened when the DCD signal is on, and closed when the DCD signal is off.	
DCD On/None	The TCP connection is opened when the DCD signal is on. The connection will only be closed manually.	

Packet Length

Setting	Description	Factory Default
0 to 1024	<p>This field specifies the maximum amount of data that is allowed to accumulate in the serial port buffer before sending.</p> <p>0: Packet length is disregarded and data in the buffer will be sent as specified by the delimiter settings or when the buffer is full.</p> <p>1 to 1024: Data in the buffer will be sent as soon it reaches the specified length.</p>	0

Delimiter 1 and 2

Setting	Description	Factory Default
Enable	<p>These fields are used to define special delimiter character(s) for data packing. Enable Delimiter 1 to control data packing with a single character; enable both Delimiter 1 and 2 to control data packing with two characters received in sequence.</p> <p>When these fields are enabled, serial data will accumulate in the serial port's buffer until the buffer is full or until the specified delimiter character(s) are received. For example, the carriage return character could be used as a delimiter in order to transmit each sentence or paragraph in a separate packet. Data will be packed according to Delimiter process.</p> <p>Delimiters must be incorporated into the data stream at the software or device level.</p>	Unchecked



ATTENTION

When **Delimiter 1** is enabled, **Packet length** must be set to 0.

Delimiter Process

This field specifies how data is packed when delimiter characters are received. This field has no effect if Delimiter 1 is not enabled.

Setting	Description	Factory Default
Do Nothing	Data accumulated in the serial port's buffer will be packed, including delimiters.	Do Nothing
Delimiter + 1	One additional character must be received before the data in the serial port's buffer is packed.	
Delimiter + 2	Two additional characters must be received before the data in the serial port's buffer is packed.	
Strip Delimiter	Data accumulated in the serial port's buffer will be packed, but the delimiter character(s) will be stripped from the data.	

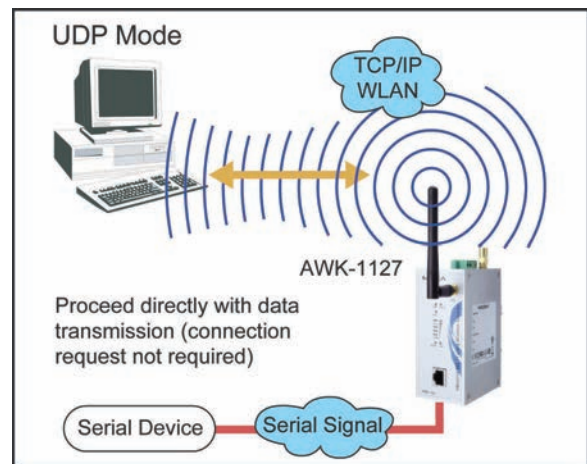
Force Transmit

Setting	Description	Factory Default
0 to 65535	<p>This field controls data packing by the amount of time that elapses between bits of data. When using this field, make sure that Inactivity time is disabled or set to a larger value. Otherwise the connection may be closed before the data in the buffer can be transmitted.</p>	0 ms

	<p>0: If serial data is received, setting this value to 0 means no data will be buffered and all data will be transmitted immediately as received.</p> <p>1 to 65535: If serial data is not received for the specified amount of time, the data that is currently in the buffer will be packed for network transmission. The optimal force transmit time depends on your application, but it must be at least larger than one character interval within the specified baudrate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is 8.3 ms, so the force transmit time to be larger than 8.3 ms.</p>	
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UDP Mode

UDP is similar to TCP but is faster and more efficient. Data can be broadcast to or received from multiple network hosts. However, UDP does not support verification of data and would not be suitable for applications where data integrity is critical. It is ideal for message display applications.



Operation Modes

Serial Operation Mode

Port 1

Application Mode	Socket			
Mode	UDP			
Destination IP address 1	Begin	<input type="text"/>	End	<input type="text"/> Port <input type="text"/> 4001
Destination IP address 2	Begin	<input type="text"/>	End	<input type="text"/> Port <input type="text"/> 4001
Destination IP address 3	Begin	<input type="text"/>	End	<input type="text"/> Port <input type="text"/> 4001
Destination IP address 4	Begin	<input type="text"/>	End	<input type="text"/> Port <input type="text"/> 4001
Local listen port		<input type="text"/> 4001		

Data Packing

Packing length	<input type="text"/> 0	(0 - 1024)
Delimiter 1	<input type="text"/> 00	(Hex) <input type="checkbox"/> Enable
Delimiter 2	<input type="text"/> 00	(Hex) <input type="checkbox"/> Enable
Delimiter	<input type="text"/> Do Nothing	(Processed only when Packing length is 0)
Force transmit	<input type="text"/> 0	(0 - 65535 ms)

When **Mode** is set to **UDP** on a serial port's **Operation Modes** page, you will be able to configure additional settings such as **Destination address 1** through **4**, **Local listen port**, and **Packet length**.

Destination Address 1 to 4

Setting	Description	Factory Default
IP address range and port (e.g., "192.168.1.1" to "192.168.1.64" and "4001")	In UDP mode, you may specify up to 4 ranges of IP addresses for the serial port to connect to. At least one destination range must be provided. The maximum selectable IP address range is 64 addresses. However, you can enter multicast addresses in the Begin field, in the form xxx.xxx.xxx.255. For example, enter "192.127.168.255" to allow the AWK-1127 to broadcast UDP packets.	Begin: Empty End: Empty Port: 4001

Local Listen Port

Setting	Description	Factory Default
0 to 9999	This field specifies the UDP port that the AWK-1127 listens to and that other devices must use to contact the attached serial device.	4001

Packet Length

Setting	Description	Factory Default
0 to 1024	This field specifies the maximum amount of data that is allowed to accumulate in the serial port buffer before sending. 0: Packet length is disregarded and data in the buffer will be sent as specified by the delimiter settings or when the buffer is full. 1 to 1024: Data in the buffer will be sent as soon it reaches the specified length.	0

Delimiter 1 and 2

Setting	Description	Factory Default
Enable	When these fields are enabled, serial data will accumulate in the serial port's buffer until the buffer is full or until the specified delimiter character(s) are received. For example, the carriage return character could be used as a delimiter in order to transmit each sentence or paragraph in a separate packet. Data will be packed according to Delimiter process. Delimiters must be incorporated into the data stream at the software or device level. The Delimiter value can be set ranging from 00 to FF.	Unchecked

**ATTENTION**

When **Delimiter 1** is enabled, **Packet length** must be set to 0.

Delimiter Process

This field specifies how data is packed when delimiter characters are received. This field has no effect if Delimiter 1 is not enabled.

Setting	Description	Factory Default
Do Nothing	Data accumulated in the serial port's buffer will be packed, including delimiters.	Do Nothing

Delimiter + 1	One additional character must be received before the data in the serial port's buffer is packed.	
Delimiter + 2	Two additional characters must be received before the data in the serial port's buffer is packed.	
Strip Delimiter	Data accumulated in the serial port's buffer will be packed, but the delimiter character(s) will be stripped from the data.	

Force Transmit

Setting	Description	Factory Default
0 to 65535	<p>This field controls data packing by the amount of time that elapses between bits of data. When using this field, make sure that Inactivity time is disabled or set to a larger value. Otherwise the connection may be closed before the data in the buffer can be transmitted.</p> <p>0: If serial data is received, setting this value to 0 means no data will be buffered and all data will be transmitted immediately as received.</p> <p>1 to 65535: If serial data is not received for the specified amount of time, the data that is currently in the buffer will be packed for network transmission. The optimal force transmit time depends on your application, but it must be at least larger than one character interval within the specified baudrate. For example, assume that the serial port is set to 1200 bps, 8 data bits, 1 stop bit, and no parity. In this case, the total number of bits needed to send a character is 10 bits, and the time required to transfer one character is 8.3 ms, so the force transmit time to be larger than 8.3 ms.</p>	0 ms

Communication Parameters

The **Communication Parameters** page for the serial port is where serial communication settings are specified, such as **Baud rate**, **Data bits**, and **Stop bits**.

Communication Parameters

Port

Port alias

Serial Parameters

Baud rate

Data bits

Stop bits

Parity

Flow control

FIFO Enable Disable

Interface

The **Communication Parameters** page for the serial port is where serial communication settings are specified, such as **Baud rate**, **Data bits**, and **Stop bits**.

Port Alias

Setting	Description	Factory Default
free text (e.g., "Secondary console connection")	This is an optional free text field to help you differentiate one serial port from another. It does not affect operation of the AWK-1127.	

**ATTENTION**

Serial communication settings should match the attached serial device. Check the communication settings in the user's manual for your serial device.

Baud Rate

Setting	Description	Factory Default
50, 75, 110, 134, 150, 300, 600, 1200, 1800, 2400, 4800, 7200, 9600, 19200, 38400, 57600, 115200, 230400, 460800, 921600	This field specifies the baudrate for the serial port. 50 to 921600: The serial port will operate at the specified baudrate	115200

Data Bits

Setting	Description	Factory Default
5, 6, 7, 8	This field specifies the number of data bits used to encode each character of data.	8

Stop Bits

Setting	Description	Factory Default
1, 1.5, 2	This field specifies the number of stop bits used for each character frame.	1

Parity

Setting	Description	Factory Default
None, Odd, Even, Space, Mark	This field specifies the type of parity bit used for each character frame.	None

Flow Control

Setting	Description	Factory Default
None, RTS/CTS, XON/XOFF, DTR/DSR	This field specifies the type of flow control used by the serial port.	RTS/CTS

FIFO

Setting	Description	Factory Default
Enable, Disable	This field specifies whether the serial port will use the built-in FIFO. A 128-byte FIFO is provided to each serial port for both Tx and Rx directions. To prevent data loss during serial communication, this should be set to Disable if the attached serial device does not have a FIFO.	Enable

Interface

Setting	Description	Factory Default
RS-232, RS-422, RS-485 2-wire, RS-485 4-wire	This field specifies the type of interface the serial port will use.	RS-232

Data Buffering/Log

Data Buffering/Log

Port 1

Port buffering (256K) Enable Disable

Serial data logging (256K) Enable Disable

On the serial port's **Data Buffering/Log** page, you can enable or disable **Port buffering** and **Serial data logging**.

Port Buffering

Setting	Description	Factory Default
Enable, Disable	This field specifies whether the serial port will use port buffering when the network connection (Ethernet or WLAN) is down. Port buffering can be used in RealCOM mode, TCP Server mode, and TCP Client mode. For other modes, the port buffering settings will have no effect.	Disable

Serial Data Logging

Setting	Description	Factory Default
Enable, Disable	This field specifies whether data logs for the serial port will be stored on system RAM. Each serial port is allotted 256 KB for data logging. The data log is not saved when the AWK-1127 is powered off.	Disable

Auto Warning Settings

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-1121/1127 supports different approaches to warn engineers automatically, such as SNMP trap or e-mail.

System Log

System Log Event Types

Detailed information for grouped events is shown in the following table. You can check the box for "Enable Log" to enable groups of events. All values are enabled (checked) by default. The log for system events can be seen in Status → System Log.

System Log Event Types

Event Group	Enable Log
System-related events	<input checked="" type="checkbox"/>
Network-related events	<input checked="" type="checkbox"/>
Config-related events	<input checked="" type="checkbox"/>
Power events	<input checked="" type="checkbox"/>

Submit

System-related events	Event is triggered when...
System restart (warm start)	The AWK-1121/1127 is rebooted, such as when its settings are changed (IP address, subnet mask, etc.).
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).
WLAN connected to AP	The AWK-1121/1127 is associated with an AP.
WLAN disconnected	The AWK-1121/1127 is disassociated from an AP.
Config-related events	Event is triggered when...
Configuration Changed	A configuration item has been changed.
Configuration file import via Web Console	The configuration file is imported to the AWK-1121/1127.
Console authentication failure	An incorrect password is entered.
Firmware upgraded	The AWK-1121/1127's firmware is updated.
Power events	Event is triggered when...
Power 1/2 transition (On -> Off)	The AWK-1121/1127 is powered down in PWR1/2.
PoE transition (On -> Off)	The AWK-1121/1127 is powered down in PoE (PoE model only).
Power 1/2 transition (Off -> On)	The AWK-1121/1127 is powered via PWR1/2.
PoE transition (Off -> On)	The AWK-1121/1127 is powered via PoE (PoE model only).

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

Detailed information for grouped events is shown in the following table. You can check the box for "Enable Log" to enable groups of events. All values are enabled (checked) by default. Details for each event group can be found on the table "System Log Event Types", just above, on page 3-40.

Event Group	Enable Log
System-related events	<input checked="" type="checkbox"/>
Network-related events	<input checked="" type="checkbox"/>
Config-related events	<input checked="" type="checkbox"/>
Power events	<input checked="" type="checkbox"/>

Submit

Syslog Server Settings

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

Syslog Server Settings

Syslog server 1

Syslog port

Syslog server 2

Syslog port

Syslog server 3

Syslog port

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

E-mail

E-mail Event Types

Check the box for **Active** to enable the event items. All default values are deactivated (unchecked). Details for each event item can be found on the "System Log Event Types" table on page 3-40.

E-mail Event Types

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

E-mail Server Settings

You can set up to 4 e-mail addresses to receive alarm emails from the AWK-1121/1127. 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)

User name

Password

From e-mail address

To e-mail address 1

To e-mail address 2

To e-mail address 3

To e-mail address 4

Mail server (SMTP)

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

User name & Password

Setting	Description	Factory Default
Max. 63 chars	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	<input type="checkbox"/> Active
Cold start	<input type="checkbox"/>
Warm start	<input type="checkbox"/>
Power 1 transition (On-->Off)	<input type="checkbox"/>
Power 1 transition (Off-->On)	<input type="checkbox"/>
Power 2 transition (On-->Off)	<input type="checkbox"/>
Power 2 transition (Off-->On)	<input type="checkbox"/>
PoE transition (On-->Off)	<input type="checkbox"/>
PoE transition (Off-->On)	<input type="checkbox"/>
Configuration changed	<input type="checkbox"/>
Console authentication failure	<input type="checkbox"/>
LAN link on	<input type="checkbox"/>
LAN link off	<input type="checkbox"/>

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

1st Trap community

2nd Trap version V1 ▾

2nd Trap server IP/name

2nd Trap community

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 Status

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

It is helpful to use the continuously updated information on this page, such as **Signal strength**, to monitor the signal strength of the AWK-1121/1127.

Wireless Status

Auto refresh

Show status of WLAN (SSID: MOXA) ▾

802.11 Info

Operation mode	Client
Channel	Not connected
RF type	B/G Mixed
SSID	MOXA
MAC	00:90:E8:00:03:46
Security mode	OPEN
Current BSSID	N/A
Signal strength	▬▬▬▬ (-96dBm)
Transmission rate	N/A
Transmission power	Full

System Log

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 Log

```
( 116) 2008/06/18,20h:46m:50s Power 1 transition (Off -> On)
( 117) 2008/06/18,20h:46m:50s LAN link on
( 118) 2008/06/18,21h:17m:01s System restart
( 119) 2008/06/18,21h:17m:10s Power 1 transition (Off -> On)
( 120) 2008/06/18,21h:17m:10s LAN link on
( 121) 2008/06/18,21h:19m:55s System restart
( 122) 2008/06/18,21h:20m:04s Power 1 transition (Off -> On)
( 123) 2008/06/18,21h:20m:04s LAN link on
( 124) 2008/06/18,21h:20m:21s Client 00:13:CE:E1:EE:EF joined
( 125) 2008/06/18,21h:21m:31s Client 00:13:CE:E1:EE:EF joined
( 126) 2008/06/18,21h:26m:05s System restart
( 127) 2008/06/18,21h:26m:14s Power 1 transition (Off -> On)
( 128) 2008/06/18,21h:26m:14s LAN link on
( 129) 2008/06/18,21h:26m:18s Client 00:13:CE:E1:EE:EF joined
( 130) 2008/06/18,21h:26m:33s Client 00:13:CE:E1:EE:EF joined
( 131) 2008/06/18,21h:27m:22s Client 00:13:CE:E1:EE:EF leaved
( 132) 2008/06/18,21h:28m:22s Client 00:13:CE:E1:EE:EF joined
( 133) 2008/06/18,21h:28m:51s Client 00:13:CE:E1:EE:EF joined
```

Export Log Clear Log Refresh

Serial Data Log

Data logs for the serial port can be viewed in ASCII or HEX format. After selecting the serial port and format, you may click Select all to select the entire log if you wish to copy and paste the contents into a text file.

Serial Data Log

Select port Port1 [ASCII][HEX]

Select all Clear Log Refresh

Power Status

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

Power Status

Auto refresh

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

Maintenance

Maintenance functions provide the administrator with tools to manage the AWK-1121/1127 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.

Ping

Destination

If the node and access path are available, you will see that all packets were successfully transmitted with no loss. Otherwise, some, or even all, packets may get lost, as shown in the following figure.

Ping

Destination

PING 192.168.127.2 (192.168.127.2): 56 data bytes

--- 192.168.127.2 ping statistics ---

4 packets transmitted, 0 packets received, 100% packet loss

Firmware Upgrade

The AWK-1121/1127 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-1121/1127 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-1121/1127 will reboot itself.

When upgrading your firmware, the AWK-1121/1127's other functions are forbidden.

Firmware Upgrade

Select update image



ATTENTION

Please make sure the power source is stable when you upgrade your firmware. An unexpected power breakup may damage your AWK-1121/1127.

Config Import/Export

You can back up or restore the AWK-1121/1127's configuration with **Config Import/Export**.

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

Config Import

Select configuration file

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

Config Export

You can also do automated device back ups or setup restoration using Moxa's dedicated configuration import-export accessory, the **ABC-01** (HW Rev. 1.1 support only).

ABC-01 Import

ABC-01 Export

To download the configuration to the AWK device:

1. Turn off the AWK device.
2. Plug in the ABC-01 to the AWK's console, via the RS-232 port.
3. Turn on the AWK device.
4. The AWK device will automatically detect the ABC-01 during the boot process, and will automatically download the configuration file from the ABC-01 to the AWK. Once the configuration downloads, then-if the configuration format is correct-the AWK will emit three short beeps and continue the boot 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.

Loading Factory Defaults

Use this function to reset the AWK-1121/1127 and roll all settings back to the factory default values. You can also reset the hardware by pressing the reset button on the rear panel of the AWK-1121/1127.

Load Factory Default

Reset to Factory Default

Click **Activate** to reset all settings, including the console password, to the factory default values.

The system will be restarted immediately.

Password

You can change the administration password for each of the AWK-1121/1127’s console managers by using the **Password** function. Before you set up a new password, you must input the current password and reenter the new password for confirmation. For your security, do not use the default password **root**, and remember to change the administration password regularly.

Password

Current password

New password

Confirm password

Misc. Settings

Additional settings to help you manage your AWK-1121/1127, are available on this page.

Misc. Settings

Reset button Always enable Disable 'restore to default function' after 60 sec

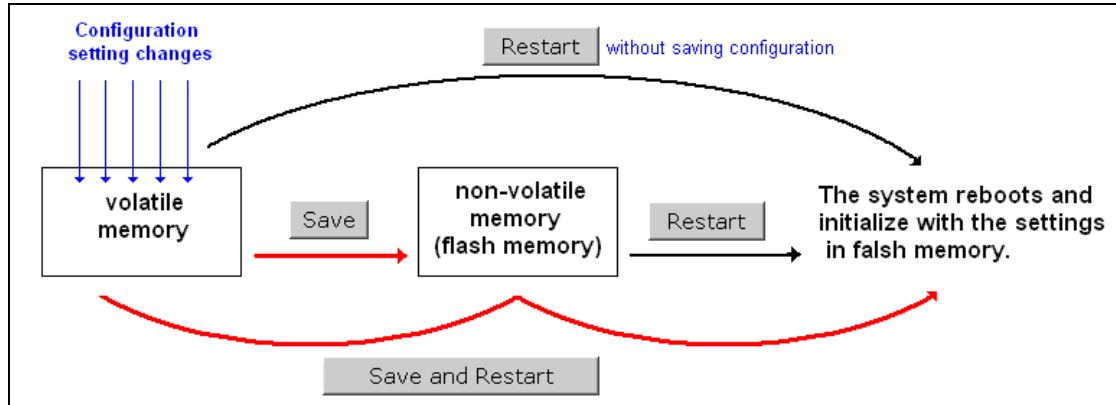
Reset button

Setting	Description	Factory Default
Always enabled	The AWK-1121/1127’s Reset button works normally.	Always enabled
Disabled 60 sec after boot-up	The AWK-1121/1127’s “reset to defaults” function will go inactive 60 seconds after the AWK-1121/1127 finishes booting up.	

Save Configuration

The following figure shows how the AWK-1121/1127 stores the setting changes into volatile and non-volatile memory. All data stored in volatile memory will disappear when the AWK-1121/1127 is shutdown or rebooted unless they are saved in non-volatile memory. Because the AWK-1121/1127 starts up and initializes with the settings stored in flash memory, all new changes must be saved to flash memory before restarting the AWK-1121/1127.

This also means that new changes will not take effect unless you press the "Save and Restart" button.



After you click on **Save Configuration** in the left menu box, the following screen will appear. Click **Save** if you wish to update the configuration settings in the flash memory at this time. Alternatively, you may 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

If you have submitted any configuration changes, you must save the changes and restart the server before they take effect. Click **Save** to save the changes in the AWK-3121-US's memory. Click **Restart** to activae new settings in the navigation panel.

Restart

If you submitted configuration changes, you will find a blinking string in the upper right corner of the screen. After making all your changes, click the **Restart** function in the left menu box. One of two different screens will appear.

If you made changes recently but did not save, you will be given two options. Clicking the **Restart** button here will reboot the AWK-1121/1127 directly, and all setting changes will be ignored. Clicking the **Save and Restart** button will apply all setting changes and then reboot the AWK-1121/1127.

Restart

!!! Warning !!!

Click "**Restart**" to discard changes and reboot AWK-1121-EU directly.

Click "**Save and Restart**" to apply all setting changes and reboot AWK-1121-EU.

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 !!!****Clicking Restart will disconnect all Ethernet connections and reboot AWK-1121-EU.**

You will not be able to run any of the AWK-1121/1127'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** button to default Login page.

Software Installation and Configuration

The following topics are covered in this chapter:

- **Overview**
- **AWK Search Utility**
 - Installing AWK Search Utility
 - Configuring the AWK Search Utility
- **OnCell Windows Driver Manager**
 - Installing OnCell Windows Driver Manager
 - Using OnCell Windows Driver Manager
- **Moxa OnCell Linux Real TTY Driver**
 - Basic Procedure
 - Hardware Setup
 - Installing Linux Real TTY Driver Files
 - Mapping TTY Ports
 - Removing Mapped TTY Ports
 - Removing Linux Driver Files
- **Moxa OnCell UNIX Fixed TTY Driver**
 - Installing the UNIX Driver
 - Configuring the UNIX Driver

Overview

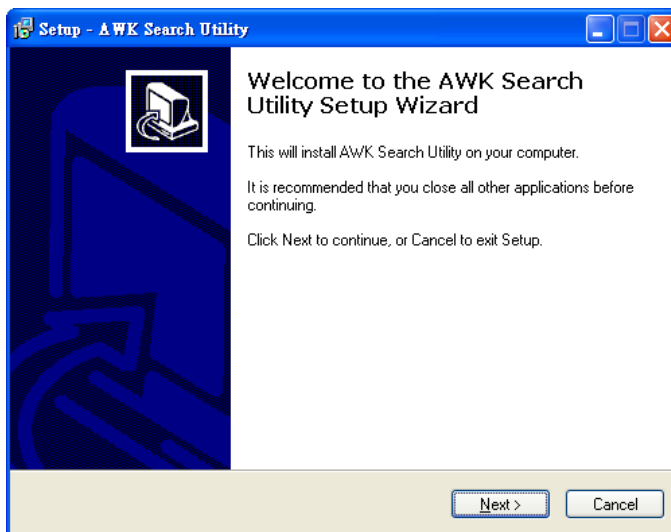
The Documentation & Software CD included with your AWK-1121/1127 is designed to make the installation and configuration procedure easy and straightforward. This auto-run CD includes AWK Search Utility (to broadcast search for all AWK's accessible over the network), the AWK-1121/1127 User's Manual, and Quick Installation Guide.

AWK Search Utility

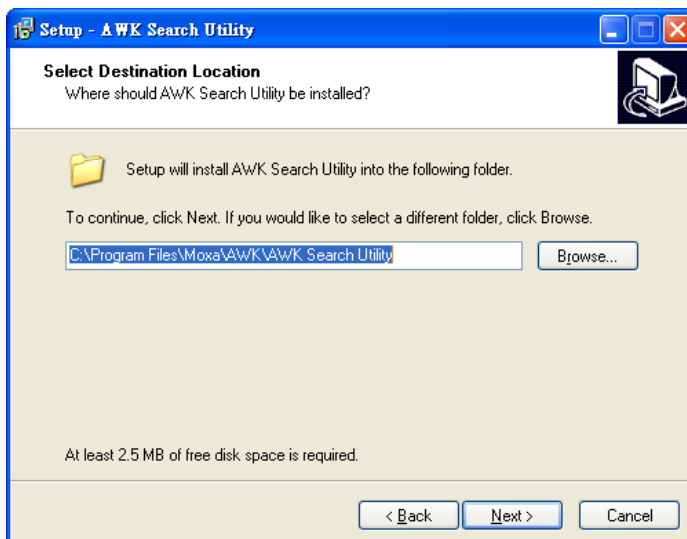
Installing AWK Search Utility

Click the **INSTALL UTILITY** button in the AWK Installation CD auto-run window to install AWK Search Utility. Once the program starts running, click **Yes** to proceed.

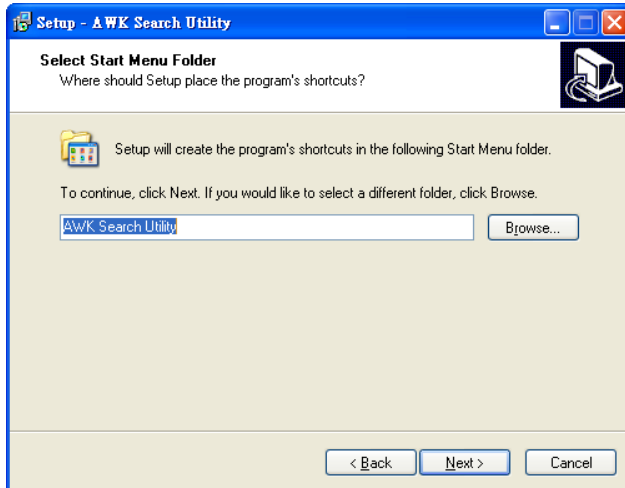
1. Click **Next** when the **Welcome** screen opens to proceed with the installation.



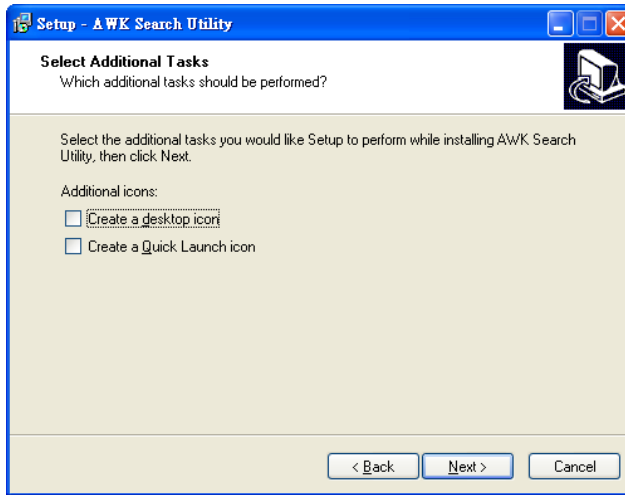
2. Click **Next** to install program files to the default directory, or click **Browse** to select an alternate location.



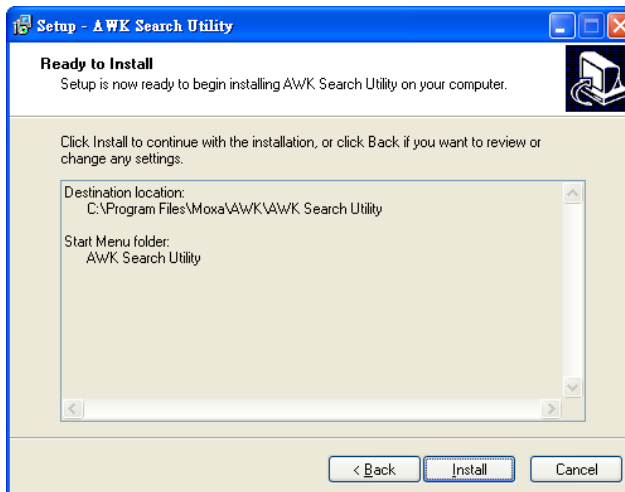
1. Click **Next** to create the program's shortcut files to the default directory, or click **Browse** to select an alternate location.



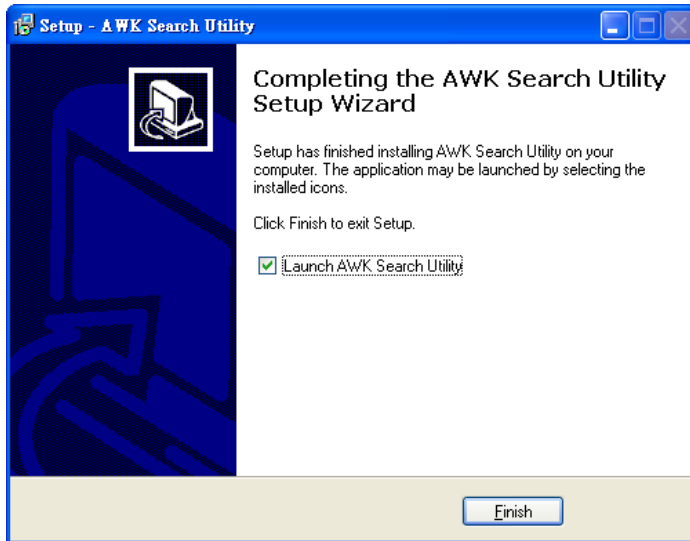
2. Click **Next** to select additional tasks.



3. The installer then displays a summary of the installation options.



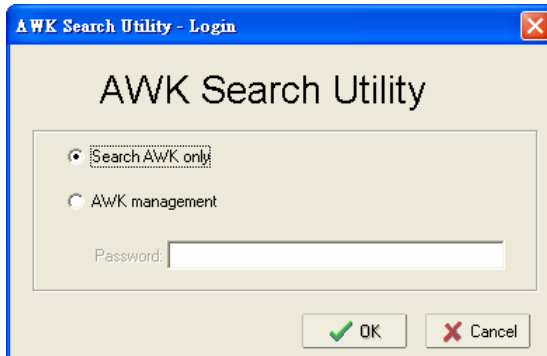
4. Click **Install** to begin the installation. The setup window will report the progress of the installation. To change the installation settings, click **Back** and navigate to the previous screen.
5. Click **Finish** to complete the installation of AWK Search Utility.



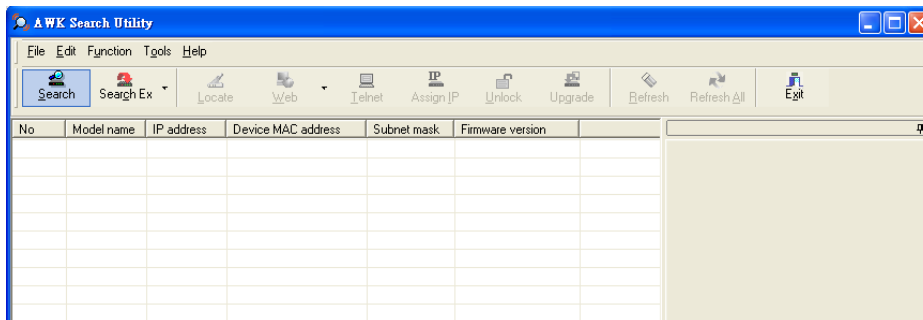
Configuring the AWK Search Utility

The Broadcast Search function is used to locate all AWK-1121/1127 APs that are connected to the same LAN as your computer. After locating an AWK-1121/1127, 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-1121/1127 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.

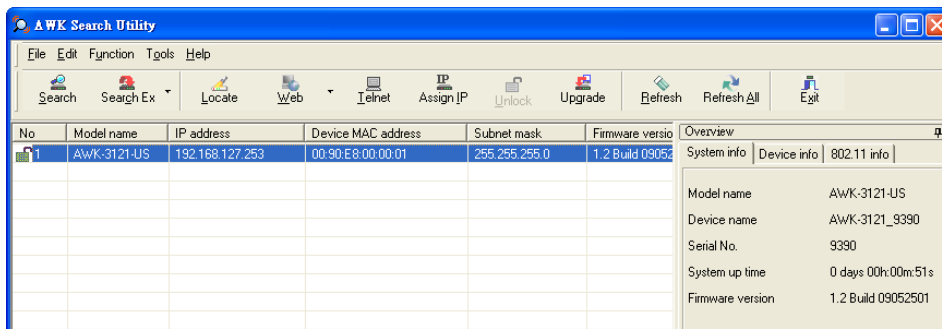
1. Start the **AWK Search Utility** program. When the Login page appears, select the "Search AWK only" option to search for AWKs and to view each AWK's configuration. Select the "AWK management" option to assign IPs, upgrade firmware, and locate devices.



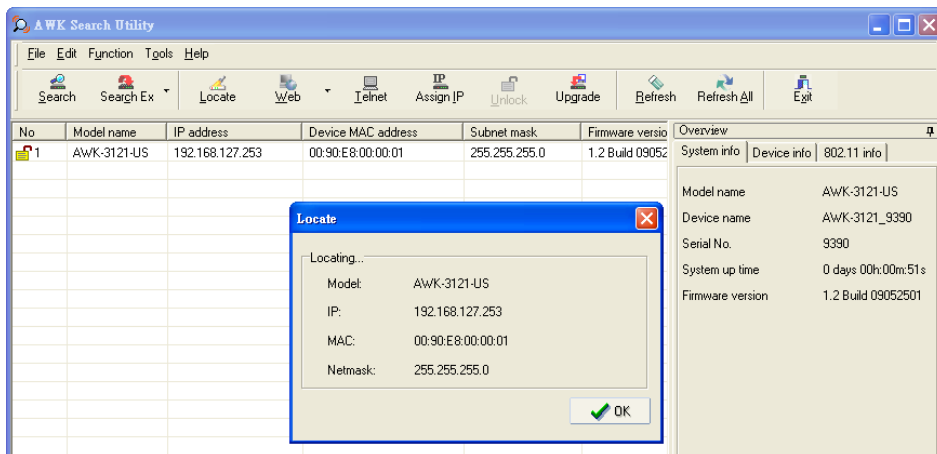
2. Open the AWK Search Utility and then click the **Search** icon.



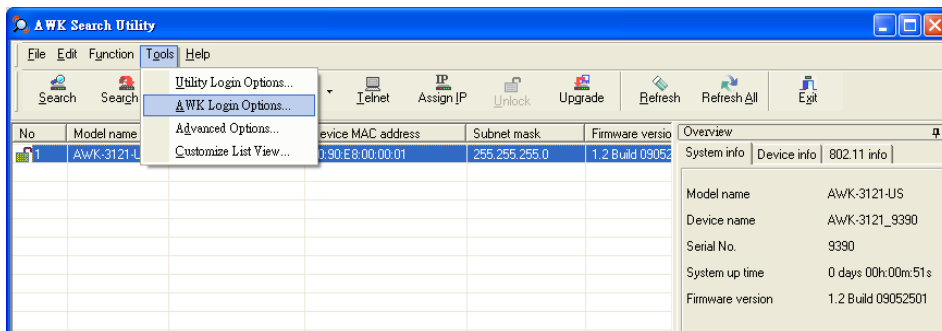
- The "Searching" window indicates the progress of the search. When the search is complete, all AWKs that were located will be displayed in the AWK Search Utility window.



- 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 → AWK login Options** to manage and unlock additional AWKs.

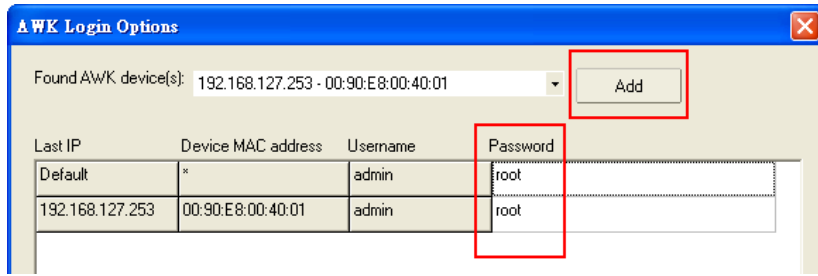


- Use the scroll down list to select the MAC addresses of those AWKs you would like to manage, and then click **Add**. Key in the password for the AWK device and then click **OK** to save. If you return to the search page and search for the AWK again, you will find that the AWK will unlock automatically.

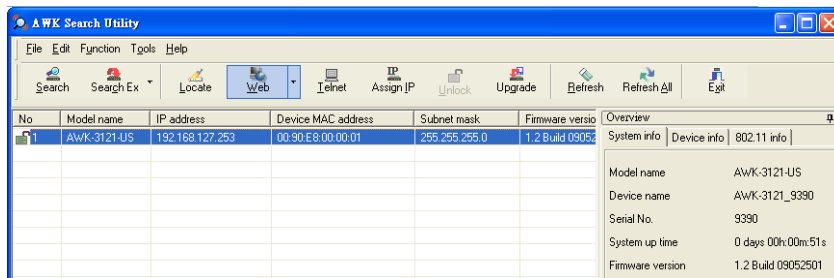


ATTENTION

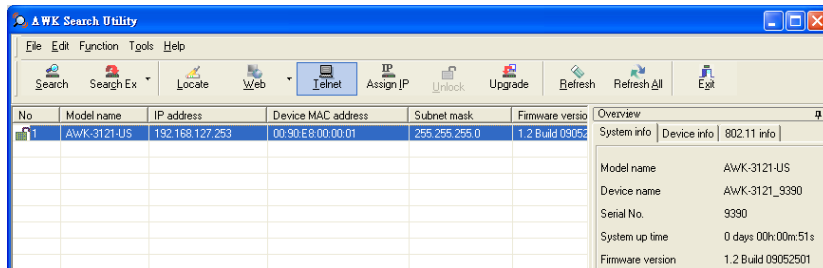
For security purposes, we suggest you can change the AWK search utility login password instead of using the default.



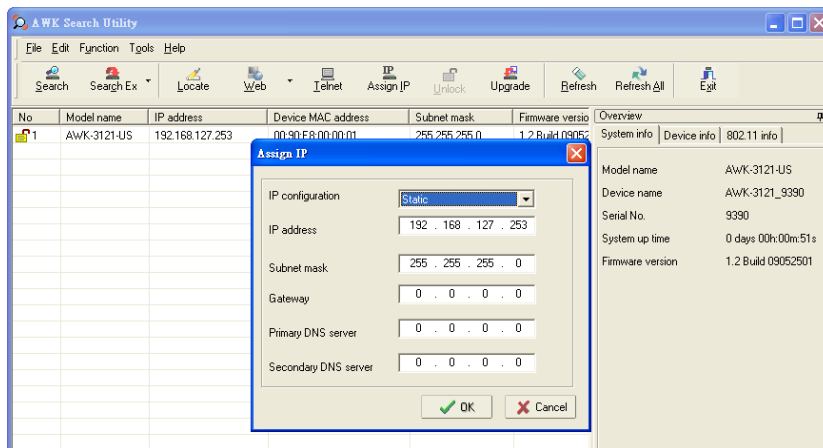
To modify the configuration of the highlighted AWK, click on the Web icon to open the web console. This will take you to the web console, where you can make all configuration changes. Refer to Chapter 3, “Using the Web Console,” for information on how to use the web console.



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



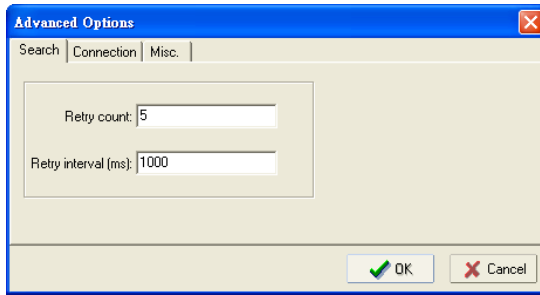
Click **Assign IP** to change the IP setting.



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

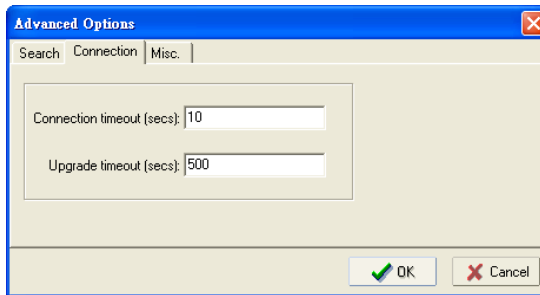
Search

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



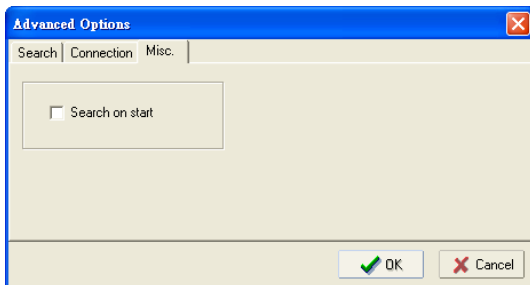
Connection

- **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.



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 AWK search Utility.



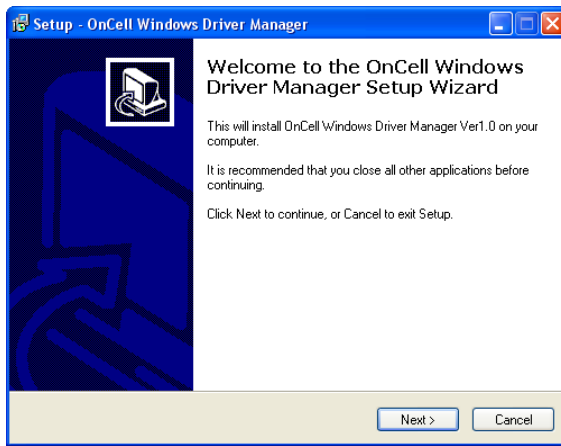
OnCell Windows Driver Manager

The AWK-1127 uses the same RealCom serial driver as Moxa’s OnCell cellular gateways. The below section describes how to use the OnCell Windows Driver Manager to create a virtual COM port for the AWK-1127 in RealCom mode.

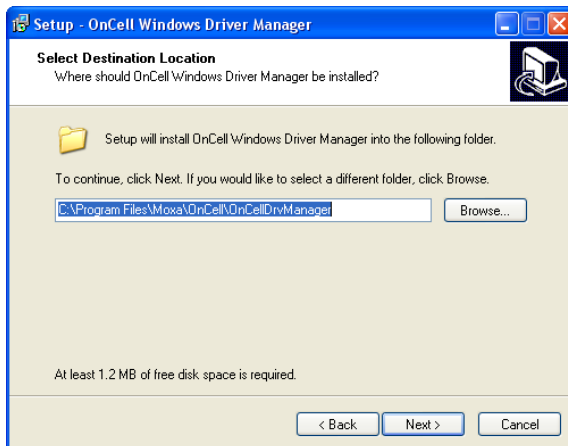
Installing OnCell Windows Driver Manager

OnCell Windows Driver Manager is intended for use with AWK-1127 serial ports that are set to RealCOM mode. The software manages the installation of drivers that allow you to map unused COM ports on your PC to serial ports on the AWK-1127. These drivers are designed for use with Windows 98/ME/NT/2000/XP/2003/Vista/2008. When the drivers are installed and configured, devices that are attached to serial ports on the AWK-1127 will be treated as if they were attached to your PC’s own COM ports.

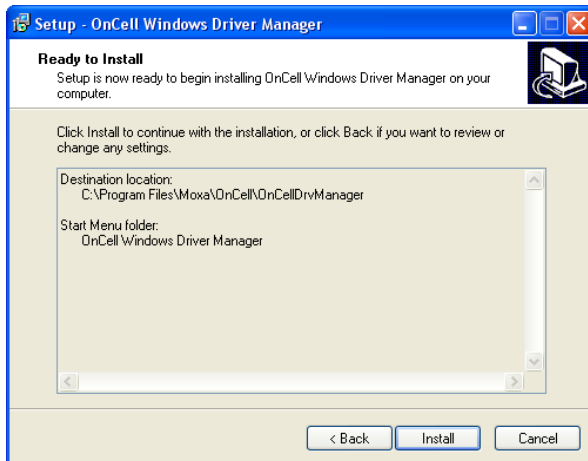
1. Click the **INSTALL COM Driver** button in the OnCell Installation CD auto-run window to install the OnCell Windows Driver. Once the installation program starts running, click **Yes** to proceed.
2. Click **Next** when the Welcome screen opens, to proceed with the installation.



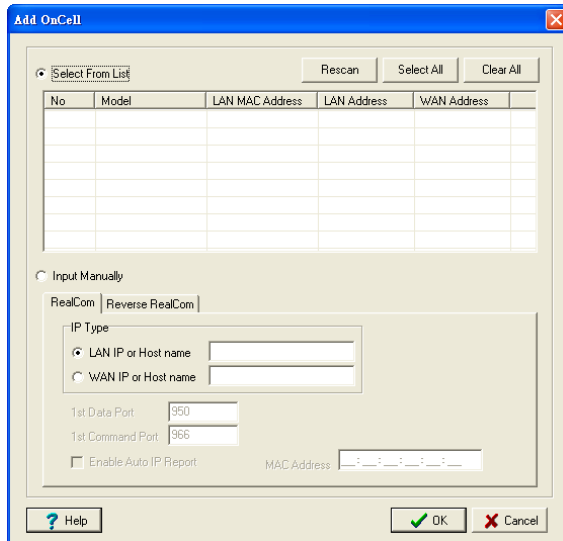
Click **Next** to install program files to the default directory, or click **Browse** to select an alternate location.



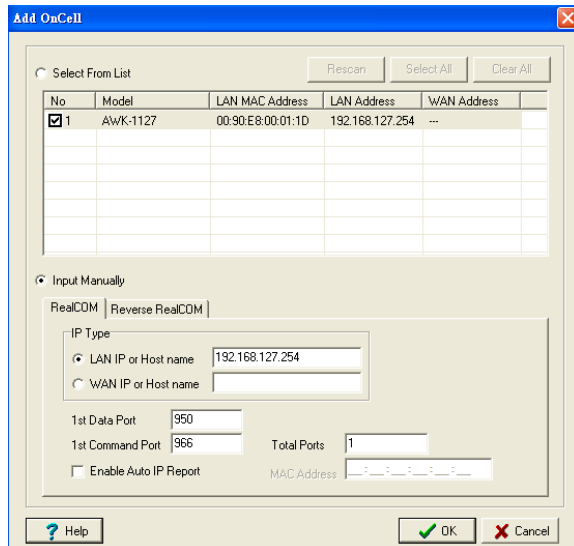
- 3. Click **Next** to install the program's shortcuts in the appropriate Start Menu folder.
- 4. Click **Next** to proceed with the installation. The installer then displays a summary of the installation options.



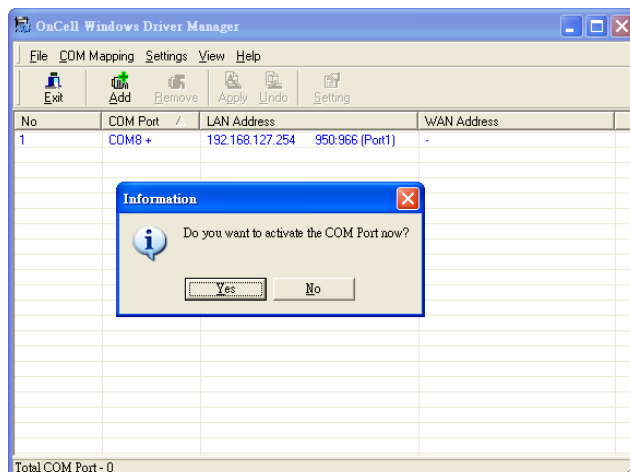
- 5. Click **Install** to begin the installation. The setup window will report the progress of the installation. To change the installation settings, click **Back** and navigate to the previous screen. On Windows XP, the installer will display a message that the software has not passed Windows Logo testing. This is shown as follows:



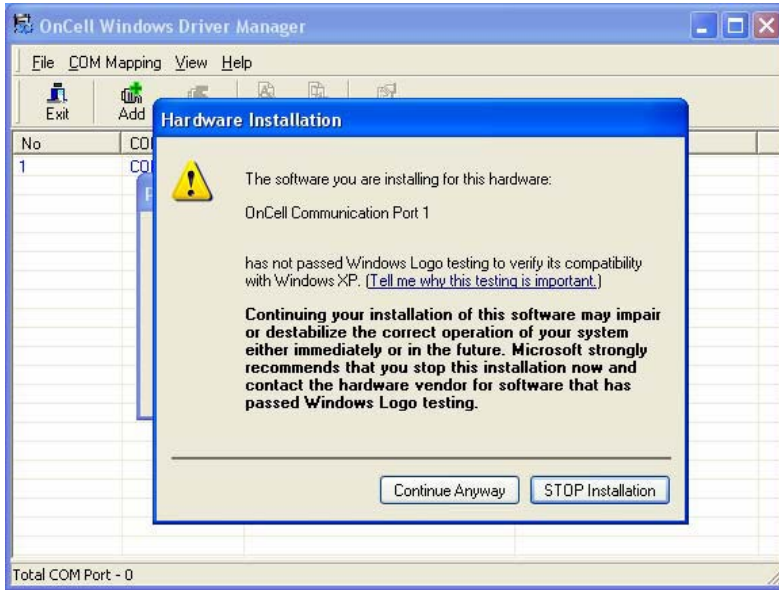
Alternatively, for RealCOM mode, you can select **Input Manually** and then manually enter the AWK-1127 's IP Type. To do this, select LAN type, followed by **1st Data Port**, and **1st Command Port** for the COM ports that will be mapped to. Click **OK** to proceed to the next step. Note that the **Add OnCell** page supports FQDN (Fully Qualified Domain Name), in which case the IP address will be filled in automatically.



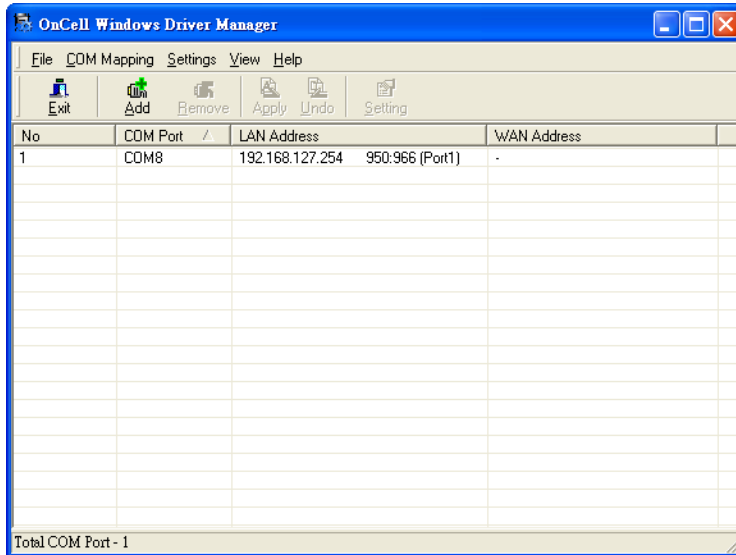
- COM ports and their mappings will appear in blue until they are activated. Activating the COM ports saves the information in the host system registry and makes the COM port available for use. The host computer will not have the ability to use the COM port until the COM ports are activated. Click **Yes** to activate the COM ports at this time, or click **Cancel** to activate the COM ports later.



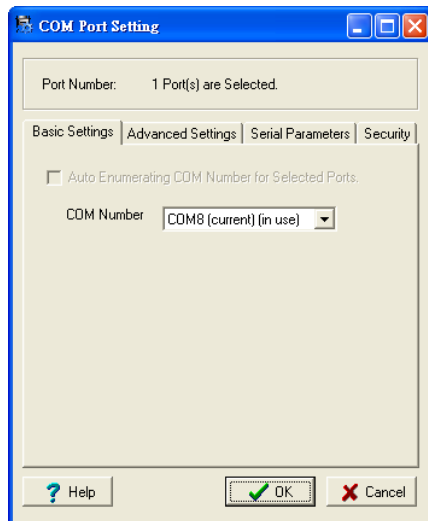
- When using Windows XP, a message is displayed during the activation of each port, indicating that the software has not passed Windows Logo certification. Click **Continue Anyway** to proceed.



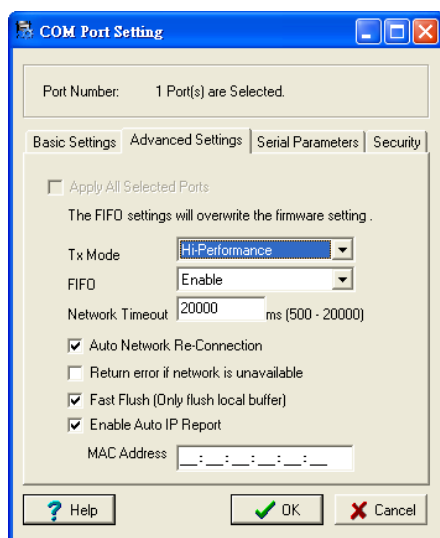
- Ports that have been activated will appear in black.



- Click on the created COM port to select it. Then right click to select Basic Setting tab. On the **Basic Setting** tab, use the **COM Number** drop-down list to select a COM number to be assigned to the AWK-1127's serial port that is being configured. Note that ports that are "in use" will be labeled accordingly.



8. Click the **Advanced Setting** tab to modify Tx Mode, FIFO, Fast Flush, and other parameters.



Tx Mode

Hi-Performance is the default for Tx mode. After the driver sends data to the AWK-1127, the driver immediately issues a “Tx Empty” response to the program. Under **Classical** mode, the driver will not send the “Tx Empty” response until after confirmation is received from the AWK-1127’s serial port. This causes lower throughput. Classical mode is recommended if you want to ensure that all data is sent out before further processing.

FIFO

If FIFO is **Disabled**, the AWK-1127 will transmit one byte at a time when the Tx FIFO becomes empty, and an Rx interrupt will be generated for each incoming byte. This will result in a faster response and lower throughput.

Network Timeout

You can use this option to prevent blocking if the target OnCell is unavailable.

Auto Network Re-Connection

With this option enabled, the driver will repeatedly attempt to re-establish the TCP connection if the AWK-1127 does not respond to background “check alive” packets.

Return error if network is unavailable

If this option is disabled, the driver will not return any error even when a connection cannot be established to the AWK-1127. With this option enabled, calling the Win32 Comm function will result in the error return code “STATUS_NETWORK_UNREACHABLE” when a connection cannot be established to the AWK-1127. This usually means that your host’s network connection is down, perhaps due to a cable being disconnected.

However, if you can reach other network devices, it may be that the AWK-1127 is not powered on or is disconnected. Note that **Auto Network Re-Connection** must be enabled in order to use this function.

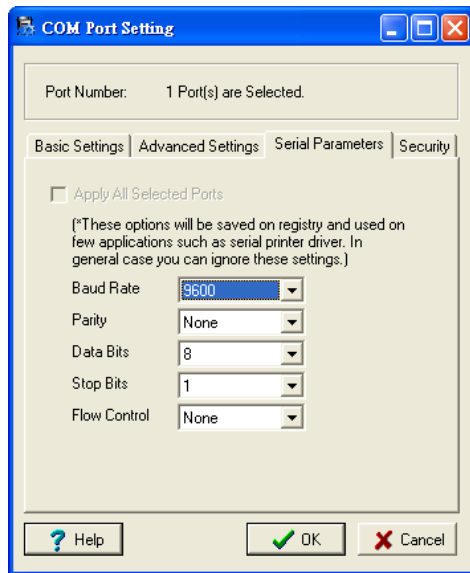
Fast Flush (only flushes the local buffer)

For some applications, the user’s program will use the Win32 “PurgeComm()” function before it reads or writes data. After a program uses this PurgeComm() function, the OnCell driver continues to query the OnCell’s firmware several times to make sure no data is queued in the OnCell firmware buffer, rather than just flushing the local buffer. This design is used to satisfy some special considerations. However, it may take more time (about several hundred milliseconds) than a native COM1 due to the additional time spent communicating across the Ethernet. This is why PurgeComm() works significantly faster with native COM ports on the PC than with mapped COM ports on the AWK-1127 . In order to accommodate other applications that require a faster response time, the new OnCell driver implements a new Fast Flush option. By default, this function is enabled.

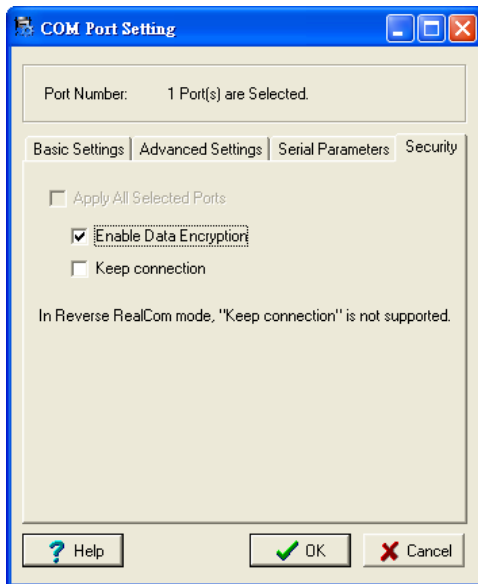
If you have disabled Fast Flush and find that COM ports mapped to the AWK-1127 perform markedly slower than when using a native COM port, try to verify if “PurgeComm()” functions are used in your application. If so, try enabling the Fast Flush function and see if there is a significant improvement in performance.

Auto IP Report: The functions applies to OnCell Series only and does not apply to the AWK-1127.

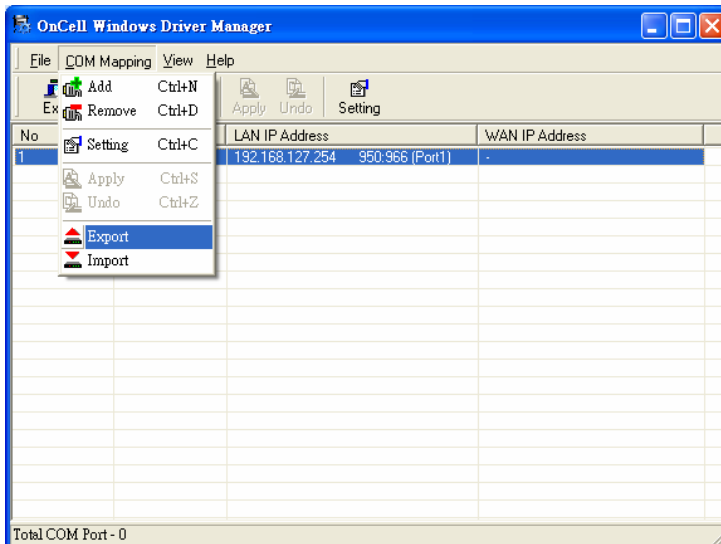
9. The **Serial Parameters** tab in the following figure show the default settings when the AWK-1127 is powered on. However, the program can redefine the serial parameters to different values after the program opens the port with Win32 API.



10. Click the **Security** tab to configure security settings. Select the **Enable Data Encryption** option to enable data to be encrypted when transmitted over the COM ports. After selecting the encryption option, select the **Keep connection** option to start encrypting COM port communications immediately without restarting the COM ports. (If your application opens and closes COM ports frequently and the AWK-1127 is only for one host, you can enable this option to speed up the opening/closing time. However, this will result in your host tying up the COM port so that other hosts cannot use it.).



- To save the configuration to a text file, select **Export** from the **COM Mapping** menu. You will then be able to import this configuration file to another host and use the same COM Mapping settings in the other host.



Moxa OnCell Linux Real TTY Driver

The AWK-1127 uses the same Real TTY serial driver as Moxa’s OnCell cellular gateways. The below section describes how to use the OnCell Linux Real TTY Driver to map a virtual tty port for the AWK-1127.

Basic Procedure

To map an AWK-1127 serial port to a Linux host’s tty port, follow these instructions:

- Set up the AWK-1127. After verifying that the IP configuration works and you can access the AWK-1127 (by using ping, telnet, etc.), configure the desired serial port on the AWK-1127 to RealCOM mode.
- Install the Linux Real TTY driver files on the host.
- Map the AWK-1127 serial port to the host’s tty port.

Hardware Setup

Before proceeding with the software installation, make sure you have completed the hardware installation. Note that the default IP address for the LAN interface of AWK-1127 is **192.168.127.253**.

NOTE After installing the hardware, you must configure the operation mode of the serial port on your AWK-1127 to RealCOM mode.

Installing Linux Real TTY Driver Files

1. Obtain the driver file from the included CD-ROM or the Moxa website, at <http://www.moxa.com>.
2. Log in to the console as a super user (root).
3. Execute **cd /** to go to the root directory.
4. Copy the driver file **moxa_oncell_realty.tgz** to the **/** directory.
5. Execute **tar xvzf moxa_oncell_realty.tgz** to extract all files into the system.
6. Execute **/tmp/oncell_realty/mxinst**.
For RedHat AS/ES/WS and Fedora Core1, append an extra argument as follows:
/tmp/oncell_realty/mxinst SP1
The shell script will install the driver files automatically.
7. After installing the driver, you will be able to see several files in the **/usr/lib/oncell_realty/driver** folder:
 - > **mxaddsvr** (Add Server, mapping tty port)
 - > **mxdelsvr** (Delete Server, un-mapping tty port)
 - > **mxloadsvr** (Reload Server)
 - > **mxmknod** (Create device node/tty port)
 - > **mxrmnod** (Remove device node/tty port)
 - > **mxuninst** (Remove tty port and driver files)
 At this point, you will be ready to map the AWK-1127 serial port to the system tty port.

Mapping TTY Ports

Make sure that you set the operation mode of the desired AWK-1127 serial port to RealCOM mode. After logging in as a super user, enter the directory **/usr/lib/oncell_realty/driver** and then execute **mxaddsvr** to map the target OnCell serial port to the host tty ports. The syntax of **mxaddsvr** is as follows:

```
mxaddsvr [OnCell IP Address] [Total Ports] ([Data port] [Cmd port])
```

The **mxaddsvr** command performs the following actions:

1. Modifies **oncellreald.cf**.
2. Creates tty ports in directory **/dev** with major & minor number configured in **oncellreald.cf**.
3. Restarts the driver.

Mapping tty ports automatically

To map tty ports automatically, you may execute **mxaddsvr** with just the IP address and number of ports, as in the following example:

```
# cd /usr/lib/oncell_realty/driver  
# ./mxaddsvr 192.168.3.4 1
```

In this example, one tty port will be added, with IP 192.168.3.4, with data port 950 and command port 966.

Mapping tty ports manually

To map tty ports manually, you may execute **mxaddsvr** and manually specify the data and command ports, as in the following example:

```
# cd /usr/lib/oncell_realtty/driver
# ./mxaddsvr 192.168.3.4 1 4001 966
```

In this example, one tty port will be added, with IP 192.168.3.4, with data port 4001 and command port 966.

Removing Mapped TTY Ports

After logging in as root, enter the directory **/usr/lib/oncell_realtty/driver** and then execute **mxdelsvr** to delete a server. The syntax of **mxdelsvr** is:

```
mxdelsvr [IP Address]
```

Example:

```
# cd /usr/lib/oncell_realtty/driver
# ./mxdelsvr 192.168.3.4
```

The following actions are performed when executing **mxdelsvr**:

1. Modify **oncellreald.cf**.
2. Remove the relevant tty ports in directory **/dev**.
3. Restart the driver.

If the IP address is not provided in the command line, the program will list the installed servers and total ports on the screen. You will need to choose a server from the list for deletion.

Removing Linux Driver Files

A utility is included that will remove all driver files, mapped tty ports, and unload the driver. To do this, you only need to enter the directory **/usr/lib/oncell_realtty/driver**, then execute **mxuninst** to uninstall the driver. This program will perform the following actions:

1. Unload the driver.
2. Delete all files and directories in **/usr/lib/moxa_oncell**
3. Delete directory **/usr/lib/moxa_oncell**
4. Modify the system initializing script file.

Moxa OnCell UNIX Fixed TTY Driver

Installing the UNIX Driver

1. Log in to UNIX and create a directory for the Moxa TTY. To create a directory named **/usr/etc**, execute the command:

```
# mkdir -p /usr/etc
```

2. Copy **moxa_oncell_fixedtty.tar** to the directory you created. If you created the **/usr/etc** directory above, you would execute the following commands:

```
# cp moxa_oncell_fixedtty.tar /usr/etc
# cd /usr/etc
```

3. Extract the source files from the tar file by executing the command:

```
# tar xvf moxa_oncell_fixedtty.tar
```

The following files will be extracted:

```

README.TXT
oncellttyd.c      --- source code
oncellttyd.cf    --- an empty configuration file
Makefile        --- makefile
VERSION.TXT     --- fixed tty driver version
FAQ.TXT

```

4. Compile and Link

For SCO UNIX:

```
# make sco
```

For UnixWare 7:

```
# make svr5
```

For UnixWare 2.1.x, SVR4.2:

```
# make svr42
```

Configuring the UNIX Driver

Modify the configuration

The configuration used by the **oncellttyd** program is defined in the text file **oncellttyd.cf**, which is in the same directory that contains the program **oncellttyd**. You may use *vi*, or any text editor to modify the file, as follows:

```
ttyp1 192.168.1.1 950
```

For more configuration information, view the file **oncellttyd.cf**, which contains detailed descriptions of the various configuration parameters.

NOTE	The "Device Name" depends on the OS. See the Device Naming Rule section in README.TXT for more information.
-------------	---

To start the **oncellttyd** daemon after system bootup, add an entry into **/etc/inittab**, with the tty name you configured in **oncellttyd.cf**, as in the following example:

```
ts:2:respawn:/usr/etc/oncell_fixedtty/oncellttyd -t 1
```

Device naming rule

For UnixWare 7, UnixWare 2.1.x, and SVR4.2, use:

```
pts/[n]
```

For all other UNIX operating systems, use:

```
ttyp[n]
```

Starting moxattyd

Execute the command **init q** or reboot your UNIX operating system.

Adding an additional server

1. Modify the text file **oncellttyd.cf** to add an additional server. User may use *vi* or any text editor to modify the file. For more configuration information, look at the file **oncellttyd.cf**, which contains detailed descriptions of the various configuration parameters.

2. Find the process ID (PID) of the program **oncellttyd**.

```
# ps -ef | grep oncellttyd
```

3. Update configuration of oncellttyd program.

```
# kill -USR1 [PID]
```

(e.g., if oncellttyd PID = 404, kill -USR1 404)

This completes the process of adding an additional server.

Other Console Considerations

This chapter explains how to access the AWK-1121/1127 for the first time. In addition to HTTP access, there are four ways to access AWK-1121/1127: 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-1121/1127 to a PC's COM port, can be used if you do not know the AWK-1121/1127's IP address. The other consoles can be used to access the AWK-1121/1127 over an Ethernet LAN, or over the Internet.

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**

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-1121/1127 to a PC's COM port, can be used if you do not know the AWK-1121/1127's IP address. It is also convenient to use serial console configurations when you cannot access the AWK-1121/1127 over Ethernet LAN, such as in the case of LAN cable disconnections or broadcast storming over the LAN.



ATTENTION

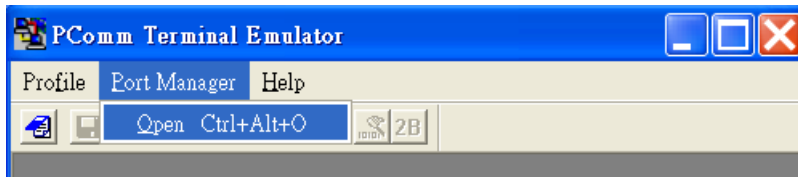
Do not use the RS-232 console manager when the AWK-1121/1127 is powered at reversed voltage (ex. -48VDC), even though reverse voltage protection is supported. If you need to connect the RS-232 console at reversed voltage, Moxa's TCC-82 isolator is your best solution.

NOTE

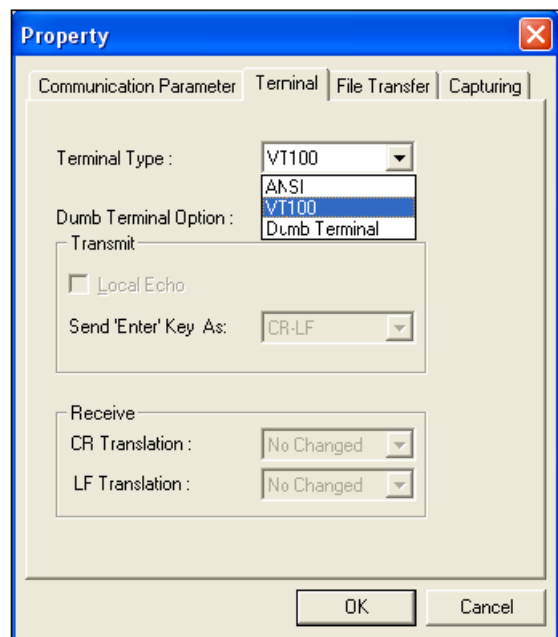
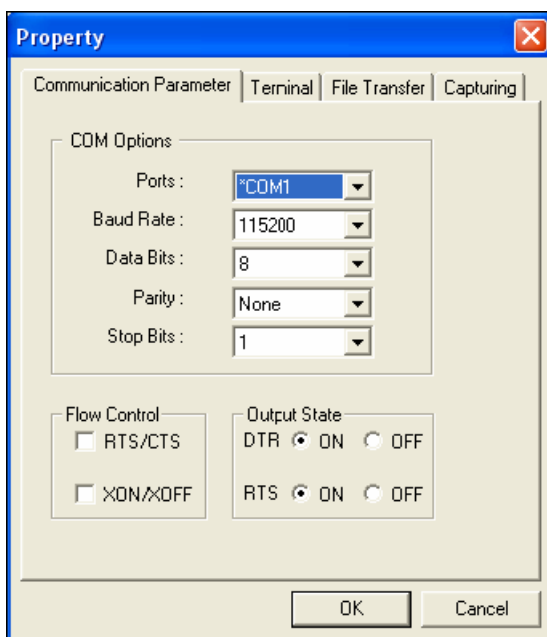
We recommend using **Moxa PComm (Lite)** Terminal Emulator, which can be downloaded free of charge from Moxa's website.

Before running PComm Terminal Emulator, use an RJ45 to DB9-F (or RJ45 to DB25-F) cable to connect the AWK-1121/1127'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.



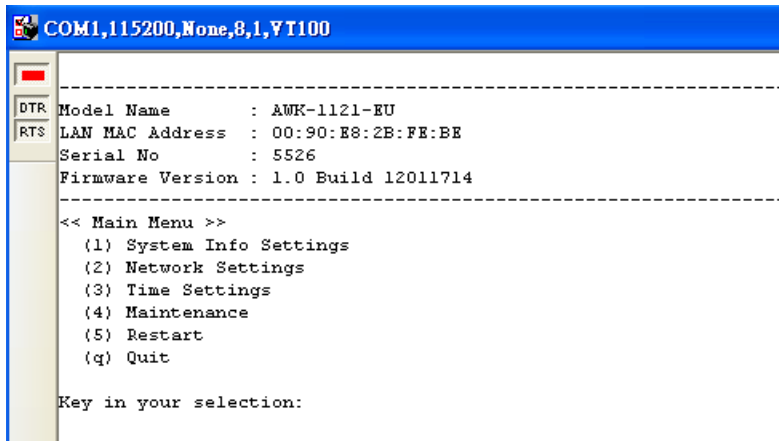
3. The **Communication Parameter** page of the Property window opens. Select the appropriate COM port for Console Connection, **115200** for Baud Rate, **8** for Data Bits, **None** for Parity, and **1** for Stop Bits. Click on the **Terminal** tab, and select **VT100 (or ANSI)** for Terminal Type. Click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




- The Console login screen will appear. Log into the RS-232 console with the login name (default: **admin**) and password (default: **root**, if no new password is set).



- The AWK-1121/1127's device information and Main Menu will be displayed. Please follow the description on screen and select the administration option you wish 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.

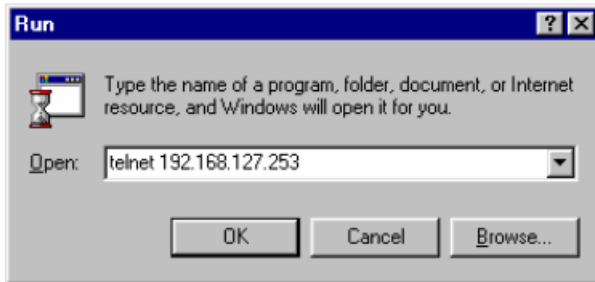
Configuration by Telnet and SSH Consoles

You may use Telnet or SSH client to access the AWK-1121/1127 and manage the console over a network. To access the AWK-1121/1127's functions over the network from a PC host that is connected to the same LAN as the AWK-1121/1127, you need to make sure that the PC host and the AWK-1121/1127 are on the same logical subnet. To do this, check your PC host's IP address and subnet mask.

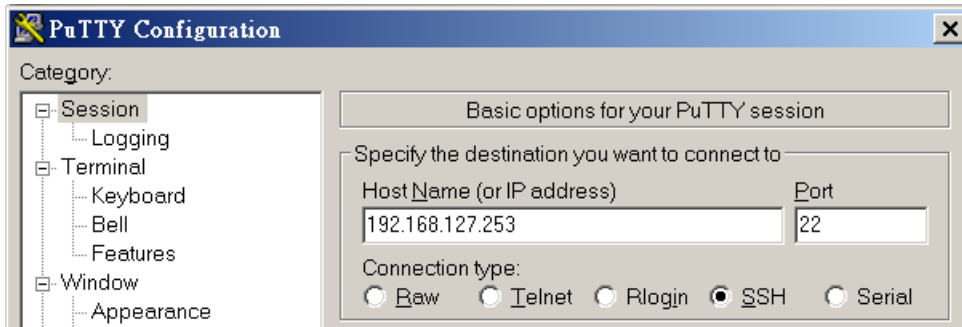
NOTE The AWK-1121/1127's default IP address is **192.168.127.253** and the default subnet mask is **255.255.255.0** (for a Class C network). If you do not set these values properly, please check the network settings of your PC host and then change the IP address to 192.168.127.xxx and subnet mask to 255.255.255.0.

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

1. From Windows Desktop, run **Start → Run**, and then use Telnet to access the AWK-1121/1127's IP address from the Windows Run window (you may also issue the telnet command from the MS-DOS prompt).



2. When using SSH client (ex. PuTTY), please run the client program (ex. putty.exe) and then input the AWK-1121/1127's IP address, specifying **22** for the SSH connection port.



3. The Console login screen will appear. Please refer to the previous paragraph "RS-232 Console Configuration" and for login and administration.

Configuration by Web Browser with HTTPS/SSL

To secure your HTTP access, the AWK-1121/1127 supports HTTPS/SSL encryption for all HTTP traffic. Perform the following steps to access the AWK-1121/1127's web browser interface via HTTPS/SSL.

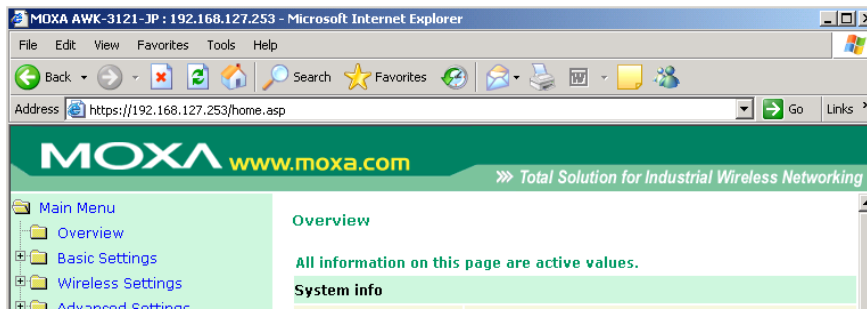
1. Open your web browser and type `https://<AWK-1121/1127's IP address>` in the address field. Press **Enter** to establish the connection.



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

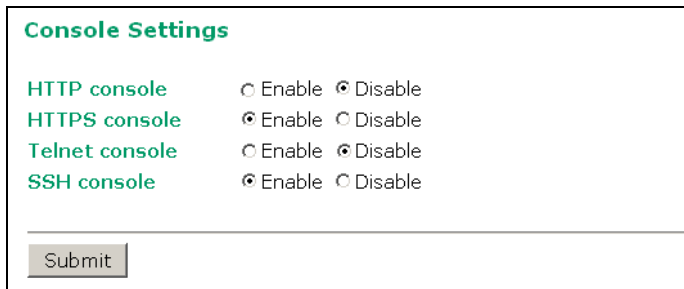


3. Select **Yes** to accept the certificate issued by Moxa IW and then enter the AWK-1121/1127's web browser interface secured via HTTPS/SSL. (You can see the protocol in URL is **https**.) Then you can use the menu tree on the left side of the window to open the function pages to access each of AWK-1121/1127's functions.



Disabling Telnet and Browser Access

If you are connecting the AWK-1121/1127 to a public network but do not intend to use its management functions over the network, then we suggest disabling both Telnet Console and Web Configuration. Please run **Maintenance → Console Settings** to disable them, as shown in the following figure.



A

References

This chapter provides more detailed information about wireless-related technologies. The information in this chapter can help you administer your AWK-1121/1127s and plan your industrial wireless network better.

The following topics are covered in this appendix:

- **Fragment**
- **RTS threshold**

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

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

The following topics are covered in this appendix:

- **About This User's Manual**
- **DoC (Declaration of Conformity)**
 - Federal Communication Commission Interference Statement
 - R&TTE Compliance Statement
- **Firmware Recovery**

About This User’s Manual

This manual is mainly designed for, but not limited to, the following hardware and firmware for the AWK-1121/1127:

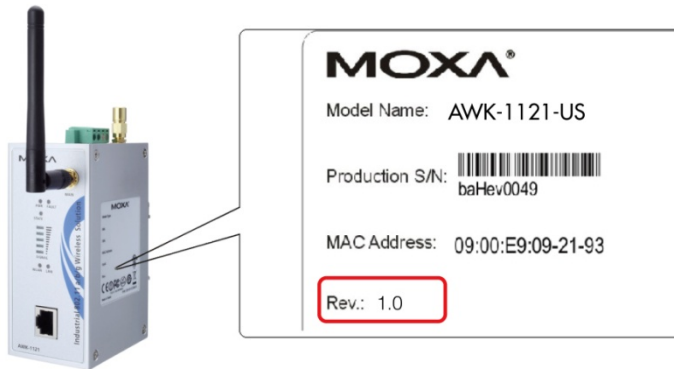
- Hardware Rev: **1.0**
- Firmware Ver: **1.0**

You are strongly recommended to visit Moxa’s website (<http://www.moxa.com>) and find the latest product datasheet, firmware, QIG (Quick Installation Guide), UM (User’s Manual) and related information.



NOTE

You can find out the hardware revision number of AWK-1121/1127 on the side label.



The firmware version number can be seen on the **Overview** page, as follow:

Overview	
All information on this page are active values.	
System Info	
Model name	AWK-1121-EU
Device name	AWK-1121_4041
Serial No.	4041
System up time	0 days 00h:15m:19s
Firmware version	1.0 Build 12011714
Device Info	
Device MAC address	00:90:E8:00:03:46
IP address	192.168.127.253
Subnet mask	255.255.255.0
Gateway	
802.11 Info	
Country code	EU
Operation mode	Client
Channel	Not connected
RF type	B/G Mixed
SSID	MOXA

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, may 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.

<p>NOTE The availability of some specific channels and / or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.</p>
--

R&TTE Compliance Statement

Moxa declares that the apparatus AWK-1121/1127 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.

Firmware Recovery

When the LEDs of **FAULT**, **Signal Strength**, **CLIENT**, **BRIDGE** and **WLAN** all light up simultaneously and blink at one-second interval, it means the system booting has failed. It may result from some wrong operation or uncontrollable issues, such as an unexpected shutdown during firmware update. The AWK-1121/1127 is designed to help administrators recover such damage and resume system operation rapidly. You can refer to the following instructions to recover the firmware:

Connect to the AWK-1121/1127's RS-232 console with **115200bps and N-8-1**. You will see the following message shown on the terminal emulator every one second.

```
Section userdisk Cksum error = 0xa5feadde --> 0x658c5051
Press Ctrl-C to enter Firmware Recovering Process.....
Press Ctrl-C to enter Firmware Recovering Process.....
Press Ctrl-C to enter Firmware Recovering Process.....
Press Ctrl-C to enter Firmware Recovering Process.....
Press Ctrl-C to enter Firmware Recovering Process.....
Press Ctrl-C to enter Firmware Recovering Process.....
Press Ctrl-C to enter Firmware Recovering Process.....
Press Ctrl-C to enter Firmware Recovering Process.....
```

Press **Ctrl - C** and the following message will appear.

```
Press Ctrl-C to enter Firavare Recovering Process.....
.....
IP address of AWK-1121 : 0.0.0.0
IP address of TFTP server : 0.0.0.0
.....
1. Start to firavare upgrade using the above network setting imadiately.
2. Change the network settings.
Enter your selection : (1-2,enter for abort): █
```

Enter **2** to change the network setting. Specify where the AWK-1121/1127's firmware file on the TFTP server and press **y** to write the settings into flash memory.

```
.....
IP address of AWK-1121 : 0.0.0.0
IP address of TFTP server : 0.0.0.0
.....
1. Start to firavare upgrade using the above network setting imadiately.
2. Change the network settings.
Enter your selection : (1-2,enter for abort): 2

IP address of AWK-1121 : 192.168.1.2
IP address of TFTP server : 192.168.1.1
Update RedBoot non-volatile configuration - continue (y/n)? y
```

AWK-1121/1127 restarts, and the "Press Ctrl-C to enter Firmware Recovery Process..." message will reappear. Press **Ctrl-C** to enter the menu and select **1** to start the firmware upgrade process.

```
Press Ctrl-C to enter Firavare Recovering Process.....
.....
IP address of AWK-1121 : 192.168.1.2
IP address of TFTP server : 192.168.1.1
.....
1. Start to firavare upgrade using the above network setting imadiately.
2. Change the network settings.
Enter your selection : (1-2,enter for abort): 1
```

Select **0** in the sub-menu to load the firmware image via LAN, and then enter the file name of the firmware to start the firmware recovery.

```
.....
Load method select :
0. Load from LAN
1. Load from serial with Xmodem
q. Abort select.
.....
Please select item : 0
Please input load image name..
Default file name : AWK-1121.rom
User Input file name : AWK-1121_1.0.rom
```