

AWK-1131A

Quick Installation Guide

Moxa AirWorks

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Technical Support Contact Information **www.moxa.com/support**

Moxa Americas:

Toll-free: 1-888-669-2872

Tel: 1-714-528-6777

Fax: 1-714-528-6778

Moxa China (Shanghai office):

Toll-free: 800-820-5036

Tel: +86-21-5258-9955

Fax: +86-21-5258-5505

Moxa Europe:

Tel: +49-89-3 70 03 99-0

Fax: +49-89-3 70 03 99-99

Moxa Asia-Pacific:

Tel: +886-2-8919-1230

Fax: +886-2-8919-1231

Moxa India:

Tel: +91-80-4172-9088

Fax: +91-80-4132-1045

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P/N: 1802011310016



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Overview

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

Hardware Setup

This section covers the hardware setup for the AWK-1131A.

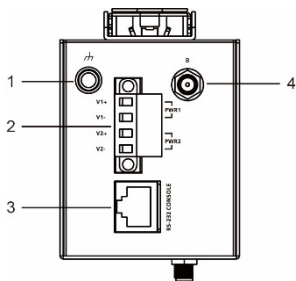
Package Checklist

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

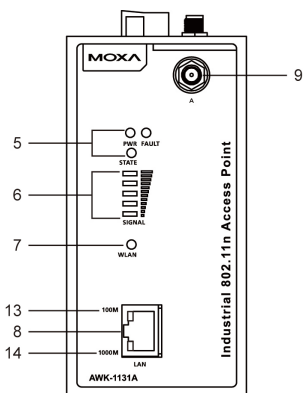
- 1 AWK-1131A
- 2 dual-band omni-directional antennas, 2 dBi, RP-SMA (male)
- 1 quick installation guide (printed)
- 1 warranty card
- 1 plastic RJ45 protective cap for console port

Panel Layout of the AWK-1131A

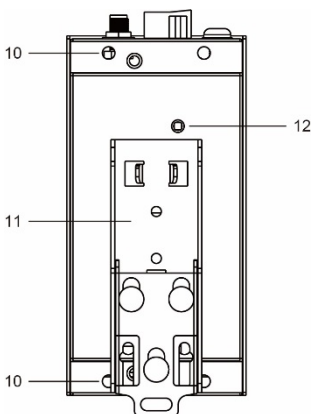
Top Panel View



Front Panel View



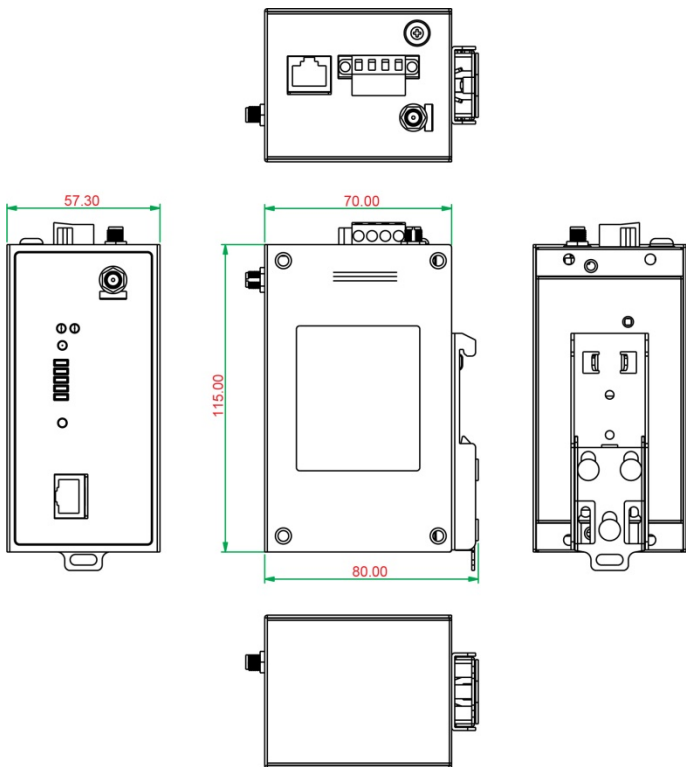
Rear Panel View



1. Grounding screw (M5)
2. Terminal block for PWR1 and PWR2
3. RS-232 console port
4. Antenna B port
5. System LEDs: PWR, FAULT, and STATE LEDs
6. LEDs for signal strength
7. WLAN LEDs
8. 10/100/1000BaseT(X) RJ45 Port
9. Antenna A port
10. Screw hole for wall-mounting kit
11. DIN-rail mounting kit
12. Reset button
13. 10/100M LED
14. 1000M LED

Mounting Dimensions

Unit = mm

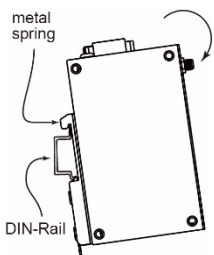


DIN-Rail Mounting

When shipped, the metal DIN-rail mounting kit is fixed to the back panel of the AWK-1131A. Mount the AWK-1131A on a corrosion-free mounting rail that adheres to the EN 60715 standard.

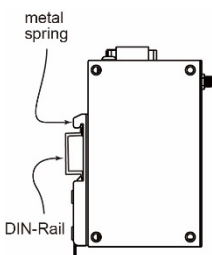
STEP 1:

Insert the upper lip of the DIN-rail kit into the mounting rail.



STEP 2:

Press the AWK-1131A towards the mounting rail until it snaps into place.



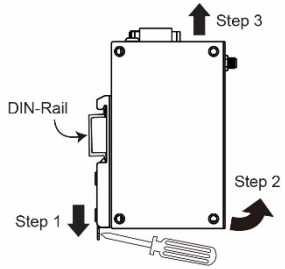
To remove the AWK-1131A from the DIN rail, do the following:

STEP 1:

Pull down the latch on the DIN-rail kit with a screwdriver.

STEP 2 & 3:

Slightly pull the AWK-1131A forward and lift it up to remove it from the mounting rail.

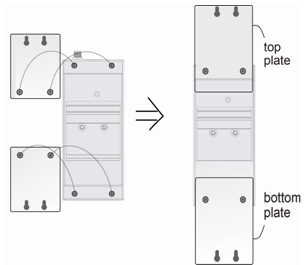


Wall Mounting (optional)

For some applications, it may be more convenient to mount the AWK-1131A to a wall, as illustrated below.

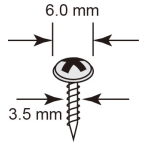
STEP 1:

Remove the aluminum DIN-rail attachment plate from the AWK-1131A, and then attach the wall mount plates with M3 screws, as shown in the adjacent diagrams.



STEP 2:

Mounting the AWK-1131A to a wall requires 4 screws. Use the AWK-1131A device, with wall mount plates attached, as a guide to mark the correct locations of the 4 screws. The heads of the screws should be less than 6.0 mm in diameter, and the shafts should be less than 3.5 mm in diameter, as shown in the figure at the right.

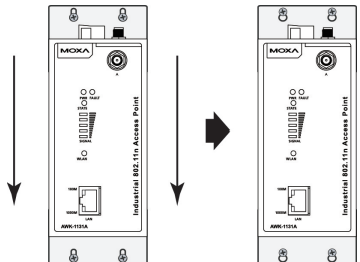


Do not drive the screws in all the way—leave a space of about 2 mm to allow room for sliding the wall mount panel between the wall and the screws.

NOTE Test the screw head and shank size by inserting the screws into one of the keyhole shaped apertures of the wall-mounting plates before attaching the plate to the wall.

STEP 3:

Once the screws are fixed into the wall, insert the four screw heads through the large opening of the keyhole-shaped apertures, and then slide the AWK-1131A downwards, as indicated to the right. Tighten the four screws for added stability.





WARNING

- This equipment is intended to be used in a Restricted Access Location, such as a dedicated computer room where only authorized service personnel or users can gain access. Such personnel must be instructed about the fact that the metal chassis of the equipment is extremely hot and may cause burns.
- Service personnel or users have to pay special attention and take special precautions before handling this equipment.
- Only authorized, well-trained professionals should be allowed to access the restricted access location. Access should be controlled by the authority responsible for the location with lock and key or a security identity system.
- **External metal parts are hot!!** Pay special attention or use special protection before handling the equipment.

Wiring Requirements



WARNING

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your Moxa AWK-1131A.

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowed for each wire size. If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

You should also pay attention to the following items:

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

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

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



ATTENTION

This product is intended to be supplied by a Listed Power Unit marked "Class 2" or "LPS" and rated O/P: 6.96 W.



ATTENTION

Make sure the external power adaptor (includes power cords and plug assemblies) provided with the unit is certified and suitable for use in your country.

Grounding the Moxa AWK-1131A

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.

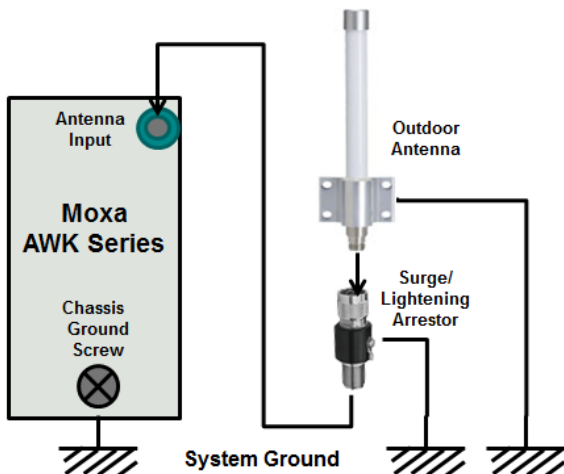


ATTENTION

This product is intended to be mounted on to a well-grounded mounting surface, such as a metal panel. The potential difference between any two grounding points must be zero. If the potential difference is NOT zero, the product could be permanently damaged.

Installations with Cable Extended Antennas for Outdoor Applications

If the antenna or the AWK device is installed outdoors or in an open-air setting, proper lightning protection is required to prevent direct lightning strikes on the AWK device. In order to prevent coupling currents from nearby lightning strikes, a lightning arrester should be installed as part of your antenna system. Ground the device, antenna, as well as the arrester properly to provide maximum outdoor protection for the device.

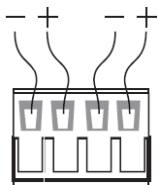


Arrester Accessories

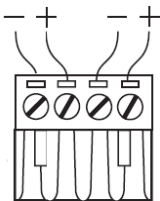
- **SA-NMNF-01:** Surge arrester, N-type (male) to N-type (female)
- **SA-NFNF-01:** Surge arrester, N-type (female) to N-type (female)

Wiring the Redundant Power Inputs

The 4-contact terminal block connector on the AWK-1131A's top panel is used for the AWK-1131A's two DC inputs. The top and front views of the terminal block connector are shown here.



Top View



Front View

STEP 1: Insert the negative/positive DC wires into the V-/V+ terminals.

STEP 2: To keep the DC wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.

STEP 3: Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on the AWK-1131A's top panel.

NOTE Input Terminal Block (CN1) is suitable for a wire size range of 12-28 AWG (3.31-0.0804 mm²) and a torque value of 4.5 lb-in (0.51 Nm).



ATTENTION

If the AWK-1131A is connected to a motor or other similar type of equipment, be sure to use power isolation protection. Before connecting the AWK-1131A to the DC power inputs, make sure the DC power source voltage is stable.

Communication Connections

10/100BaseT(X) Ethernet Port Connection

The 10/100BaseT(X) ports located on the AWK-1131A's front panel are used to connect to Ethernet-enabled devices. Below we show pinouts for both MDI (NIC-type) ports and MDI-X (HUB/Switch-type) ports.

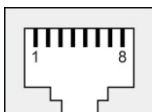
MDI Port Pinouts

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
6	Rx-

MDI-X Port Pinouts

Pin	Signal
1	Rx+
2	Rx-
3	Tx+
6	Tx-

8-pin RJ45

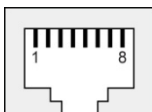


1000BaseT Ethernet Port Connection

1000BaseT data is transmitted on differential TRD+/- signal pairs over copper wires.

MDI/MDI-X Port Pinouts

Pin	Signal
1	TRD(0)+
2	TRD(0)-
3	TRD(1)+
4	TRD(2)+
5	TRD(2)-
6	TRD(1)-
7	TRD(3)+
8	TRD(3)-

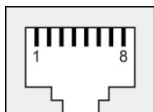


RS-232 Connection

The AWK-1131A has one RS-232 (8-pin RJ45) console port located on the top panel. Use either an RJ45-to-DB9 or RJ45-to-DB25 cable to connect the Moxa AWK-1131A's console port to your PC's COM port. You may then use a console terminal program to access the AWK-1131A for console configuration.

Console Pinouts for 10-pin or 8-pin RJ45

10-Pin	Description	8-Pin
1	-	
2	DSR	1
3	-	2
4	GND	3
5	TxD	4
6	RxD	5
7	-	6
8	-	7
9	DTR	8
10	-	



NOTE The pin numbers for both 8-pin and 10-pin RJ45 connectors (and ports) are typically not labeled on the connector (or port). Refer to the pinout diagram above for details.

LED Indicators

The front panel of the Moxa AWK-1131A contains several LED indicators. The function of each LED is described in the table below.

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

Specifications

Input Current	0.56 A @ 12 VDC, 0.14 A @ 48 VDC
Input Voltage	12 to 48 VDC, redundant dual DC power inputs
Power Consumption	6.96 W
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)



ATTENTION

The AWK-1131A is **NOT** a portable mobile device and should be located at least 20 cm away from the human body. The AWK-1131A is **NOT** designed for the general public. A well-trained technician is required to deploy the AWK-1131A units and safely establish a wireless network.



ATTENTION

This device complies with Part 15 of the FCC rules.

Operation is subject to the following conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.



ATTENTION

Do not locate the antenna near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits. When installing the antenna, take extreme care not to come into contact with such circuits, because they may cause serious injury or death. For proper installation and grounding of the antenna, refer to national and local codes (for example, U.S.: NFPA 70; National Electrical Code, Article 810; Canada: Canadian Electrical Code, Section 54).

NOTE For installation flexibility, either the A antenna (on the front panel) or the B antenna (on the top panel) may be selected for using. Make sure the antenna connection matches the antenna configured in the AWK-1131A web interface.

To protect the connectors and RF module, all radio ports should be terminated by either an antenna or a terminator. We strongly recommend using resistive terminators for terminating the unused antenna ports.



ATTENTION

"Publication Number: 443999 Rule Parts: 15E". FCC. October 5, 2009. "Devices must be professionally installed when operating in the 5470–5725 MHz band".

Software Setup

This section covers the software setup for the AWK-1131A.

How to Access the AWK

Before installing the AWK device (AWK), make sure that all items in the package checklist are included in the product box. You will also need access to a notebook computer or PC equipped with an Ethernet port.

- **Step 1: Select a suitable power source and plug in the AWK.**

The AWK can be powered by DC power ranging from **12 VDC to 48 VDC** or by a **PoE PSE** via an Ethernet connection.

- **Step 2: Connect the AWK to the notebook or PC via the AWK's LAN port.**

The LED indicator on the AWK's LAN port will light up when a connection is established.



NOTE If you are using an Ethernet-to-USB adapter, follow the instructions in the user's manual provided with the adapter.

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

Choose an IP address for the computer that is on the same subnet as the AWK. Since the AWK's default IP address is **192.168.127.253**, and the subnet mask is **255.255.255.0**, set the IP address to **192.168.127.xxx**, where xxx is a value between 1 and 252.

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

Open your computer's web browser and type **http://192.168.127.253** in the address field to access the AWK's homepage. Log in using the following default username and password:

Default Username: **admin**

Default Password: **moxa**

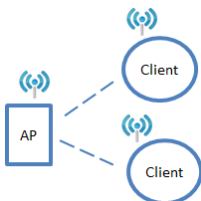
Click the **Login** button to access the homepage of the AWK device.

First-Time Quick Configuration

After successfully accessing the AWK, refer to the appropriate subsection below to quickly set up a wireless network.

NOTE You must ensure that there are no IP address conflicts when you configure more than one AWK on the same subnet.

Point-to-Multipoint Scenario (AP/Client Mode)



Configuring the AWK as an AP

- Step 1: Set the operation mode of the AWK to AP mode.**

Go to **Wireless LAN Setup** → **Operation Mode** and select AP.

Operation Mode

Wireless enable Enable Disable

Operation mode AP ▼

NOTE The default operation mode for the AWK is AP.

- Step 2: Set up your own SSID.**

Go to **Wireless LAN Setup** → **WLAN** → **Basic WLAN Setup** and click **Edit** to set the SSID for your AWK device.

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

Basic WLAN Setup

Operation mode AP

RF type B/G/N Mixed ▼

Channel 6 ▼

Channel width 20 MHz ▼

SSID MOXA

SSID broadcast Enable Disable

NOTE The default SSID is MOXA.

- Step 3: Set the RF type and Channel for the AWK.**

Go to **Wireless LAN Setup** → **WLAN** → **Basic WLAN Setup**.

We recommend that you choose the RF type 5 GHz for a relative clean medium with minimum interference.

The screenshot shows the 'Basic WLAN Setup' form. The 'RF type' dropdown menu is open, displaying options: B/G/N Mixed, 2.4GHz, B, G, B/G Mixed, G/N Mixed, B/G/N Mixed, N Only (2.4GHz), 5GHz, A, A/N Mixed, and N Only (5GHz). The '5GHz' option is highlighted with a blue background, and the 'N Only (5GHz)' option is highlighted with a red background. Other fields like 'Channel', 'Channel width', 'SSID', and 'SSID broadcast' are visible but not selected.

For the **Channel** setting, we recommend that you choose a channel other than the default channel to avoid interference.

The screenshot shows the 'Basic WLAN Setup' form. The 'Channel' dropdown menu is open, displaying the option '36', which is highlighted with a red background. Other fields like 'Operation mode', 'RF type', 'Channel width', 'SSID', and 'SSID broadcast' are visible.

Click **Submit** to apply the changes, and restart the AWK in AP mode to complete the configuration process.

Configuring the AWK as a Client

- Step 1: Set the operation mode of the AWK to Client mode.**

Go to **Wireless LAN Setup** → **Operation Mode**, set the operation mode to Client, and then click **Submit** to apply the change.

Operation Mode

Wireless enable

Enable Disable

Operation mode

The screenshot shows the 'Operation mode' dropdown menu with options: AP, AP, Client, and Sniffer. The 'Client' option is highlighted with a red background.

Submit

- Step 2: Link to an existing SSID.**

Go to **Wireless LAN Setup** → **WLAN** → **Basic WLAN Setup** and click **Site Survey** to select an existing SSID, or directly enter an existing SSID in the text field.

The screenshot shows the 'Basic WLAN Setup' form. The 'Operation mode' is set to 'Client'. The 'SSID' field contains 'MOXA' and the 'Site Survey' button is highlighted with a red background. Other fields like 'RF type' and 'Channel width' are visible.

- **Step 3: Set the RF type and Channel settings for the AWK.**
On the **Wireless LAN Setup** → **WLAN** → **Basic WLAN Setup** page, edit the RF type and Channel settings.

Basic WLAN Setup	
Operation mode	Client
RF type	B/G/N Mixed ▼
Channel width	20 MHz ▼
SSID	MOXA <input type="button" value="Site Survey"/>
<input type="button" value="Submit"/>	

Click **Submit** to apply the changes, and restart the AWK in client mode to complete the configuration process.