AWK-1131A
Quick Installation Guide

Moxa AirWorks

Third Edition, July 2015

P/N: 1802011310012

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.

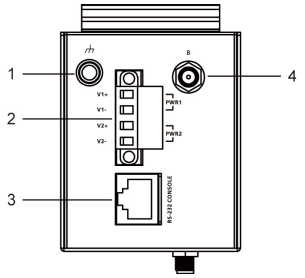
Package Checklist

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.

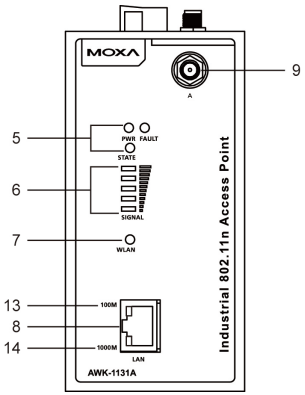
- 1 AWK-1131A
- 2 dual-band omni-directional antennas, 2 dBi, RP-SMA (male)
- 1 quick installation guide
- 1 document and software CD
- 1 Moxa product warranty booklet
- 1 plastic RJ45 protective cap for console port

Panel Layout of the AWK-1131A

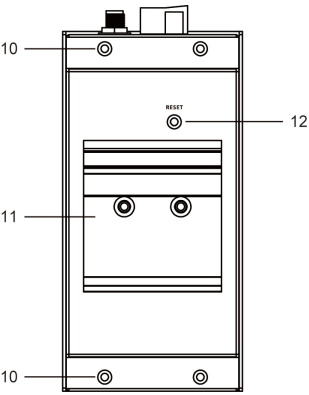
Top Panel View



Front Panel View

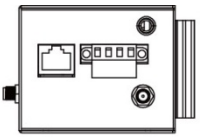


Rear Panel View

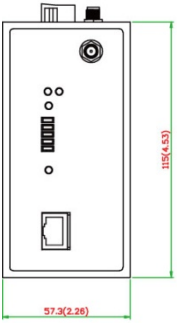


1. Grounding screw (M5)
2. Terminal block for PWR1 and PWR2
3. RS-232 console port
4. Antenna B port
5. System LEDs: PWR, FAULT, and STATE LEDs
6. LEDs for signal strength
7. WLAN LEDs
8. 10/100/1000BaseT(X) RJ45 Port
9. Antenna A port
10. Screw hole for wall mounting kit
11. DIN-Rail mounting kit
12.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

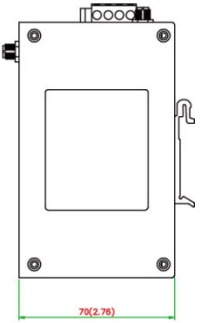
Mounting Dimensions



Top View



Front View



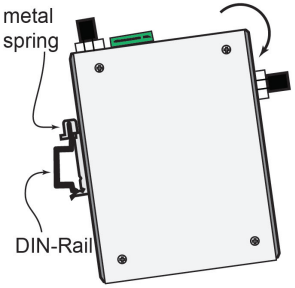
Side View

Unit = mm (inch)

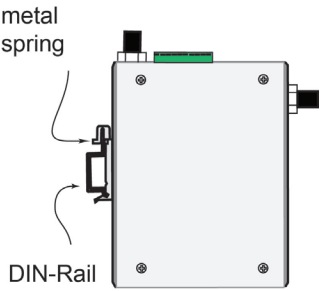
DIN-Rail Mounting

The aluminum DIN-Rail attachment plate should be fixed to the back panel of the AWK-1131A when you take it out of the box. If you need to reattach the DIN-Rail attachment plate to the AWK-1131A, make sure the stiff metal spring is situated towards the top, as shown in the figures below.

STEP 1:
Insert the top of the DIN-Rail into the slot just below the stiff metal spring.



STEP 2:
The DIN-Rail attachment unit will snap into place as shown below.

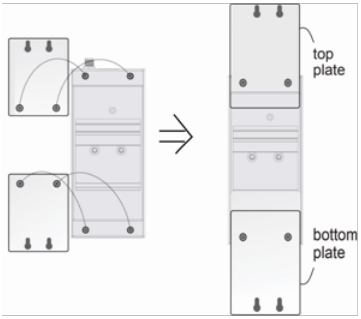


To remove the AWK-1131A from the DIN-Rail, simply reverse Steps 1 and 2.

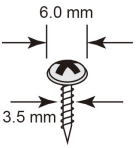
Wall Mounting (optional)

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.



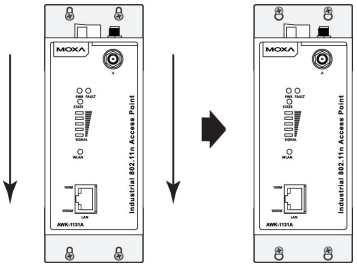
STEP 2:
Mounting the AWK-1131A to a wall requires 4 screws. Use the AWK-1131A device, with wall mount plates attached, as a guide to mark the correct locations of the 4 screws. The heads of the screws should be less than 6.0 mm in diameter, and the shafts should be less than 3.5 mm in diameter, as shown in the figure at the right.



Do not screw 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 screw into one of the keyhole shaped apertures of the Wall Mounting Plates before it is screwed into 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.



Wiring Requirements

WARNING

Safety First!

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

WARNING

Safety First!

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: 6.72W (12V/0.56A to 48V/0.14A), 25°C.

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

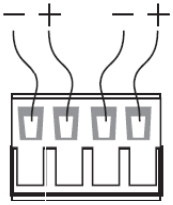
Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.

ATTENTION

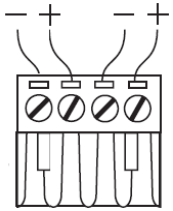
This product is intended to be mounted to a well-grounded mounting surface, such as a metal panel.

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.

ATTENTION

Before connecting the AWK-1131A to the DC power inputs, make sure the DC power source voltage is stable.

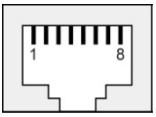
Communication Connections

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		MDI-X Port Pinouts	
Pin	**Signal**	**Pin**	**Signal**
1	Tx+	1	Rx+
2	Tx-	2	Rx-
3	Rx+	3	Tx+
6	Rx-	6	Tx-

8-pin RJ45

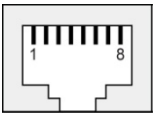


1000BaseT Ethernet Port Connection

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)-

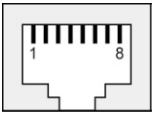


RS-232 Connection

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	RTS	2
4	GND	3
5	TxD	4
6	RxD	5
7	DCD	6
8	CTS	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 to see how RJ45 pins are numbered.

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)			
PWR1	Green	On	Power is being supplied from power input 1.
		Off	Power is **not** being supplied from power input 1.
PWR2	Green	On	Power is being supplied from power input 2.
		Off	Power is **not** being supplied from power input 2.
FAULT	Red	Blink (fast)	Cannot get an IP address from the DHCP server (interval: 0.5 sec)
		Blink (slow)	IP address conflict (interval: 1 sec)
		Off	Error condition does not exist.
STATE	Green/ Red	Green	Software Ready
		Green Blink	The AWK has been located by AWK Search Utility. (interval: 1sec)
		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.
		Blink	WLAN data communication is run in Client mode
		Off	WLAN is not in Client Mode or AWK has not established a link with an AP.
	Amber	On	WLAN function is in AP mode.
		Blink	WLAN's data communication is run 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 1000Mbps link is **active**.
		Blink	Data is being transmitted at 1000 Mbps
		Off	TP port's 1000Mbps link is **inactive**.
10/100M	Amber	On	TP port's 10/100Mbps link is **active**.
		Blink	Data is being transmitted at 10/100 Mbps
		Off	TP port's 10/100Mbps link is **inactive**.

Specifications

WLAN Interface	
Standards	IEEE 802.11a/b/g/n for Wireless LAN IEEE 802.11i for Wireless Security IEEE 802.3 for 10BaseT IEEE 802.3u for 100BaseTX IEEE 802.3ab for 1000BaseT
Spread Spectrum and Modulation (typical)	DSSS with DBPSK, DQPSK, CCK OFDM with BPSK, QPSK, 16QAM, 64QAM 802.11b: • CCK @ 11/5.5 Mbps • DQPSK @ 2 Mbps • DBPSK @ 1 Mbps 802.11a/g: • 64QAM @ 54/48 Mbps • 16QAM @ 36/24 Mbps • QPSK @ 18/12 Mbps • BPSK @ 9/6 Mbps 802.11n: • 64QAM @ 300 Mbps to BPSK @ 6.5 Mbps (multiple rates supported)
Operating Channels (central frequency)	US: • 2.412 to 2.462 GHz (11 channels) • 5.180 to 5.240 (4 channels) • 5.260 to 5.320 (4 channels)* • 5.500 to 5.700 GHz (8 channels - excludes 5.600 to 5.640 GHz)* • 5.745 to 5.825 GHz (5 channels) EU: • 2.412 to 2.472 GHz (13 channels) • 5.180 to 5.240 (4 channels) • 5.260 to 5.320 (4 channels)* • 5.500 to 5.700 GHz (11 channels)* JP: • 2.412 to 2.484 GHz (14 channels, DSSS) • 5.180 to 5.240 (4 channels) • 5.260 to 5.320 (4 channels)* • 5.500 to 5.700 GHz (11 channels)* *DFS (Dynamic Frequency Selection) channel support: In AP mode, when a radar signal is detected, the device will automatically switch to another channel. However according to regulations, after switching channels, a 60-second availability check period is required before starting the service.
Security	• SSID broadcast enable/disable • Firewall for MAC/IP/Protocol/Port-based filtering • 64-bit and 128-bit WEP encryption • WPA/WPA2-Personal and Enterprise (IEEE 802.1X/RADIUS, TKIP and AES)
Transmission Rates	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: 6.5 to 300 Mbps (multiple rates supported)

TX Transmit Power	802.11b: • Typ. 23±1.5 dBm @ 1 Mbps • Typ. 23±1.5 dBm @ 2 Mbps • Typ. 20±1.5 dBm @ 5.5 Mbps • Typ. 19±1.5 dBm @ 11 Mbps 802.11g: • Typ. 20±1.5 dBm @ 6 to 24 Mbps • Typ. 19±1.5 dBm @ 36 Mbps, • Typ. 18±1.5 dBm @ 48 Mbps • Typ. 17±1.5 dBm @ 54 Mbps 802.11n (2.4 GHz): • Typ. 20±1.5 dBm @ MCS0/8 20 MHz • Typ. 16±1.5 dBm @ MCS7/15 20 MHz • Typ. 20±1.5 dBm @ MCS0/8 40 MHz • Typ. 16±1.5 dBm @ MCS7/15 40 MHz 802.11a: • Typ. 20±1.5 dBm @ 6 to 24 Mbps • Typ. 19±1.5 dBm @ 36 Mbps • Typ. 16±1.5 dBm @ 48 Mbps • Typ. 15±1.5 dBm @ 54 Mbps 802.11n (5 GHz): • Typ. 19±1.5 dBm @ MCS0/8 20 MHz • Typ. 14±1.5 dBm @ MCS7/15 20 MHz • Typ. 18±1.5 dBm @ MCS0/8 40 MHz • Typ. 14±1.5 dBm @ MCS7/15 40 MHz
RX Receive Sensitivity	• 802.11b: -90 dBm @ 1 Mbps, -88 dBm @ 2 Mbps, -86 dBm @ 5.5 Mbps, -84 dBm @ 11 Mbps • 802.11g: -85 dBm @ 6 Mbps, -84 dBm @ 9 Mbps, -83 dBm @ 12 Mbps, -82 dBm @ 18 Mbps, -80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps, -70 dBm @ 48 Mbps, -70 dBm @ 54 Mbps • 802.11n (2.4 GHz): -70 dBm @ MCS7 20 MHz, -68 dBm @ MCS15 20 MHz, -65 dBm @ MCS7 40MHz, -63 dBm @ MCS15 40 MHz • 802.11a: -92 dBm @ 6 Mbps, -89 dBm @ 9 Mbps, -85 dBm @ 12 Mbps, -82 dBm @ 18 Mbps, -80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps, -74 dBm @ 48 Mbps, -72 dBm @ 54 Mbps • 802.11n (5 GHz): -70 dBm @ MCS7 20MHz, -67 dBm @ MCS15 20 MHz, -68 dBm @ MCS7 40MHz, -66 dBm @ MCS15 40 MHz
Protocol Support	
General Protocols	Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE, DHCP,LLDP
Interface	
Default Antennas	2 dual-band omni-directional antennas, 2 dBi, RP-SMA (male)

Connector for External Antennas	RP-SMA (female)
RJ45 Ports	1, 10/100/1000BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
Console Port	RS-232 (RJ45-type)
Reset	Present
LED Indicators	PWR1, PWR2, FAULT, STATE, SIGNAL, WLAN, 10/100/1000 (RJ45 port)
Physical Characteristics	
Housing	Metal, providing IP30 protection
Weight	480 g
Dimensions	58 x 115 x 70 mm (2.28 x 4.53 x 2.76 in)
Installation	DIN-Rail mounting, wall mounting (with optional kit)
Environmental Limits	
Operating Temperature	Standard Models: 0 to 60°C (32 to 140°F) Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5% to 95% (non-condensing)
Power Requirements	
Input Voltage	12 to 48 VDC, redundant dual DC power inputs
Connector	4-pin removable terminal block
Power Consumption	6.72W (12V/0.56A to 48V/0.14A), 25°C
Reverse Polarity Protection	Present
Standards and Certifications	
Safety	UL 60950-1, EN 60950-1
EMC	EMI: CISPR 22, FCC Part 15B Class B EMS: EN 55022/55024 IEC 61000-4-2 ESD: Contact 8 kV; Air 15 kv IEC 61000-4-3 RS: 10 V/m (80 MHz to 1 GHz) IEC 61000-4-4 EFT: Power 2 kV; Signal 1 kV IEC 61000-4-5 Surge: Power 2 kV; Signal 1 kV IEC 61000-4-6 CS: 3 V IEC 61000-4-8
Radio	EN 301 489-1/17, EN 300 328, EN 301 893, TELEC, FCC ID SLE-WAPN005
Note: Please check Moxa's website for the most up-to-date certification status.	
Reliability	
MTBF	810,022 hrs
Warranty	
Warranty Period	5 years
Details	See www.moxa.com/support/warranty.aspx

ATTENTION

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

ATTENTION

Use the antennas correctly: The 2.4 GHz antennas are needed when the AWK-1131A operates in IEEE 802.11b/g/n. The 5 GHz antennas are needed for IEEE802.11a/n. Make sure your antenna installation is within a safety area, which is covered by a lightning protection or surge arrest system.

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. Please refer to national and local codes (for example, U.S.:NFPA 70, National Electrical Code, Artical810, 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 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.

ATTENTION

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

Technical Support Contact Information
www.moxa.com/support

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