

# AWK-4131A Series

## Outdoor industrial IEEE 802.11a/b/g/n wireless AP/bridge/client



- > 2x2 MIMO 802.11a/b/g/n AP/bridge/client
- > Seamless roaming with Client-Based Turbo Roaming
- > Wireless redundancy with AeroLink Protection
- > Rugged industrial design with integrated antenna and power isolation
- > IP68-rated weatherproof housing designed for outdoor applications and -40 to 75°C operating temperatures
- > Avoid wireless congestion with 5 GHz DFS channel support



### Introduction

The AWK-4131A IP68 outdoor industrial AP/bridge/client meets the growing need for faster data transmission speeds by supporting 802.11n technology and allowing 2X2 MIMO communication with a net data rate of up to 300 Mbps. The AWK-4131A is compliant with 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, and the AWK-4131A can be powered via PoE to make deployment easier. The AWK-4131A 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 investments in wireless networks.

#### Advanced 802.11n Industrial Wireless Solution

- 802.11a/b/g/n compliant AP/bridge/client for flexible deployment
- Software optimized for long distance (LoS, 1 km) wireless communication with external high-gain antenna (available on 5 GHz)

- Supports 60 clients connected concurrently
- DFS channel support allows a wider range of 5 GHz channel selection to avoid existing wireless infrastructure and interference

#### Advanced Wireless Technology for Mission-Critical Applications

- Seamless roaming with Client-based Turbo Roaming for < 150 ms roaming recovery time between APs (Client mode)
- Supports AeroLink Protection for creating a redundant wireless link (< 300 ms recovery time) between AP and clients (Client mode)

#### Industrial Ruggedness

- Integrated antenna and power isolation designed to provide 500 V insulation protection against external electrical interference
- IP68 rated metal casing for complete ingress protection for any outdoor weather
- -40 to 75°C wide operating temperature provided for smooth wireless communication in harsh environments

### Specifications

#### WLAN Interface

##### Standards:

- IEEE 802.11a/b/g/n for Wireless LAN
- IEEE 802.11i for Wireless Security
- IEEE 802.3 for 10BaseT
- IEEE 802.3u for 100BaseT(X)
- IEEE 802.3ab for 1000BaseT
- IEEE 802.3af for Power-over-Ethernet
- IEEE 802.1D for Spanning Tree Protocol
- IEEE 802.1w for Rapid STP
- IEEE 802.1Q for VLAN

##### Spread Spectrum and Modulation (typical):

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

#### Operating Channels (central frequency):

##### US:

- 2.412 to 2.462 GHz (11 channels)
- 5.180 to 5.240 GHz (4 channels)
- 5.260 to 5.320 GHz (4 channels)\*
- 5.500 to 5.700 GHz (8 channels, excluding 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 GHz (4 channels)\*
- 5.260 to 5.320 GHz (4 channels)
- 5.500 to 5.700 GHz (11 channels)\*

##### JP:

- 2.412 to 2.484 GHz (14 channels)
- 5.180 to 5.240 GHz (4 channels)
- 5.260 to 5.320 GHz (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)

**Transmitter Power:**

802.11b:  
 Typ. 26±1.5 dBm @ 1 Mbps, Typ. 26±1.5 dBm @ 2 Mbps  
 Typ. 26±1.5 dBm @ 5.5 Mbps, Typ. 25±1.5 dBm @ 11 Mbps  
 802.11g:  
 Typ. 23±1.5 dBm @ 6 to 24 Mbps, Typ. 22±1.5 dBm @ 36 Mbps  
 Typ. 20±1.5 dBm @ 48 Mbps, Typ. 19±1.5 dBm @ 54 Mbps  
 802.11n (2.4 GHz):  
 Typ. 23±1.5 dBm @ MCS0/8 20 MHz,  
 Typ. 18±1.5 dBm @ MCS7/15 20 MHz  
 Typ. 23±1.5 dBm @ MCS0/8 40 MHz,  
 Typ. 17±1.5 dBm @ MCS7/15 40 MHz  
 802.11a:  
 Typ. 23±1.5 dBm @ 6 to 24 Mbps, Typ. 21±1.5 dBm @ 36 Mbps  
 Typ. 20±1.5 dBm @ 48 Mbps, Typ. 18±1.5 dBm @ 54 Mbps  
 802.11n (5 GHz):  
 Typ. 23±1.5 dBm @ MCS0/8 20 MHz,  
 Typ. 18±1.5 dBm @ MCS7/15 20 MHz  
 Typ. 23±1.5 dBm @ MCS0/8 40 MHz,  
 Typ. 18±1.5 dBm @ MCS7/15 40 MHz

Note: Based on regional regulations, the maximum transmission power allowed on the UNII bands is restricted in the firmware, as per the following list:

	US	EU	JP
2.4 GHz	20 dBm	20 dBm	20 dBm
5 GHz (UNII-1)	17 dBm	20 dBm	20 dBm
5 GHz (UNII-2)	20 dBm	20 dBm	20 dBm
5 GHz (UNII-2e)	20 dBm	20 dBm	20 dBm
5 GHz (UNII-3)	20 dBm	20 dBm	20 dBm

**Receiver Sensitivity:**

802.11b:  
 -93 dBm @ 1 Mbps, -93 dBm @ 2 Mbps  
 -93 dBm @ 5.5 Mbps, -88 dBm @ 11 Mbps  
 802.11g:  
 -88 dBm @ 6 Mbps, -86 dBm @ 9 Mbps  
 -85 dBm @ 12 Mbps, -85 dBm @ 18 Mbps  
 -85 dBm @ 24 Mbps, -82 dBm @ 36 Mbps  
 -78 dBm @ 48 Mbps, -74 dBm @ 54 Mbps  
 802.11n (2.4 GHz):  
 -70 dBm @ MCS7 20 MHz, -69 dBm @ MCS15 20 MHz  
 -67 dBm @ MCS7 40 MHz, -67 dBm @ MCS15 40 MHz  
 802.11a:  
 -90 dBm @ 6 Mbps, -88 dBm @ 9 Mbps  
 -88 dBm @ 12 Mbps, -85 dBm @ 18 Mbps  
 -81 dBm @ 24 Mbps, -78 dBm @ 36 Mbps  
 -74 dBm @ 48 Mbps, -72 dBm @ 54 Mbps  
 802.11n (5 GHz):  
 -69 dBm @ MCS7 20 MHz, -71 dBm @ MCS15 20 MHz  
 -63 dBm @ MCS7 40 MHz, -68 dBm @ MCS15 40 MHz

**Protocol Support**

**General Protocols:** Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNMP, TCP, UDP, RADIUS, SNMP, DHCP, VLAN, STP/RSTP

**Interface**

**Default Antennas:** 2 dual-band omni-directional antennas, 5 dBi at 2.4 GHz, 2 dBi at 5 GHz, N-type (male)

**Connector for External Antennas:** N-Type (female), 500 V insulation

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

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

**Reset:** Present

**LED Indicators:** PWR, FAULT, STATE, WLAN, LAN

**Alarm Contact (digital output):** 8-pin M12 A-coded connector (female), 1 relay output with current carrying capacity of 1 A @ 24 VDC

**Digital Inputs:** 8-pin M12 A-coded connector (female), 2 electrically isolated inputs

- +13 to +30 V for state “1”
- +3 to -30 V for state “0”
- Max. input current: 8 mA

**Management**

**Device Management:** Wireless Search Utility, MXconfig, SNMP

**Network Monitoring:** MXview

**Physical Characteristics**

**Housing:** Metal, IP68 protection

**Weight:** 1400 g (3.09 lb)

**Dimensions:** 224 x 147.7 x 66.5 mm (8.82 x 5.82 x 2.62 in)

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

**Environmental Limits**

**Operating Temperature:** -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)

**Input Current:** 0.64 A @ 12 VDC; 0.16 A @ 48 VDC

**Connector:** 5-pin M12 A-coded connector (male), 500 V insulation

**Power Consumption:** 7.68 W

**Reverse Polarity Protection:** Present

**Standards and Certifications**

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

**EMC:** EN 61000-6-2/6-4

**EMI:** CISPR 22, FCC Part 15B Class B

**EMS:**

IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV

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

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

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

IEC 61000-4-6 CS: 10 V

IEC 61000-4-8

**Radio:** EN 301 489-1/17, EN 300 328, EN 301 893, TELEC, FCC ID SLE-WAPN008

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

**MTBF (mean time between failures)**

**Time:** 440,764 hrs

**Standard:** Telcordia SR332

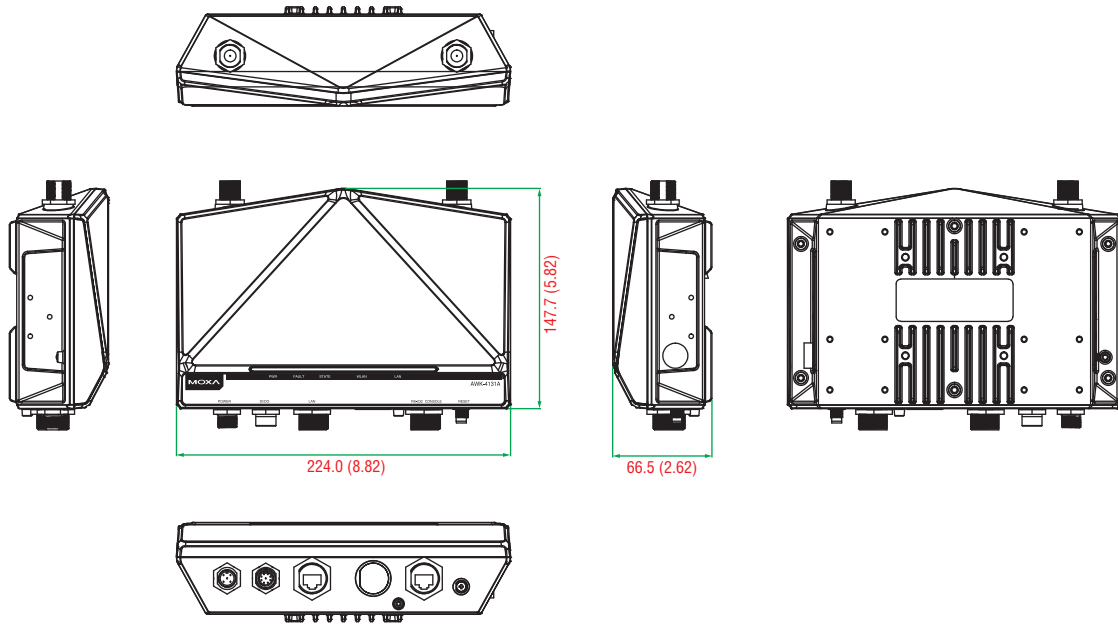
**Warranty**

**Warranty Period:** 5 years

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

**Dimensions**

Unit: mm (inch)



Side View

Front, Top, and Rear Views

Side View

Bottom View

**Ordering Information**

**Available Models**

**AWK-4131A-US-T:** IEEE 802.11a/b/g/n IP68 wireless AP/bridge/client, US band, -40 to 75°C operating temperature

**AWK-4131A-EU-T:** IEEE 802.11a/b/g/n IP68 wireless AP/bridge/client, EU band, -40 to 75°C operating temperature

**AWK-4131A-JP-T:** IEEE 802.11a/b/g/n IP68 wireless AP/bridge/client, JP band, -40 to 75°C operating temperature

*Note:* Please visit Moxa's website for a complete list of optional wireless accessories and antennas available for Moxa's wireless products.

**Package Checklist**

- AWK-4131A wireless AP/bridge/client
- 2 2.4/5 GHz antennas: ANT-WDB-ANM-0502
- Wall-mounting kit (includes 2 supports)
- Field-installable power plug
- Field-installable RJ45 plug
- Metal cap to cover RJ45 connector
- Metal cap to cover M12-female connector
- Transparent plastic sticks for field-installable plugs
- Quick installation guide (printed)
- Warranty card