

# AWK-3131A Series

Industrial IEEE 802.11a/b/g/n wireless AP/bridge/client



### Features and Benefits

- IEEE 802.11a/b/g/n AP/bridge/client support
- Easy setup and deployment with AeroMag
- Millisecond-level Client-based Turbo Roaming<sup>1</sup>
- Complete redundancy with AeroLink Protection
- Integrated antenna and power isolation
- -40 to 75°C operating temperature range (-T models)
- 5 GHz DFS channel support

### Certifications



## Introduction

The AWK-3131A 3-in-1 industrial wireless AP/bridge/client meets the growing need for faster data transmission speeds by supporting IEEE 802.11n technology with a net data rate of up to 300 Mbps. The AWK-3131A 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-3131A can be powered via PoE to make deployment easier. The AWK-3131A can operate on either the 2.4 or 5 GHz bands and is backwards-compatible with existing 802.11 a/b/g deployments to future-proof your wireless investments.

### Advanced 802.11n Industrial Wireless Solution

- 802.11a/b/g/n compliant AP/bridge/client for flexible deployment
- Software optimized for long-distance wireless communication with up to 1 km line of sight and external high-gain antenna (available only on 5 GHz)
- Supports 60 clients connected concurrently
- DFS channel support allows a wider range of 5 GHz channel selection to avoid interference from existing wireless infrastructure

### Advanced Wireless Technology

- AeroMag supports error-free setup of your industrial applications' fundamental WLAN settings
- Seamless roaming with client-based Turbo Roaming<sup>1</sup> for < 150 ms roaming recovery time between APs (Client Mode)
- Supports AeroLink Protection for creating a redundant wireless link (< 300 ms recovery time) between APs and their clients

### Industrial Ruggedness

- Integrated antenna and power isolation designed to provide 500 V insulation protection against external electrical interference
- Hazardous location wireless communication with Class I Div. II and ATEX Zone 2 certifications
- -40 to 75°C wide operating temperature models (-T) provided for smooth wireless communication in harsh environments

## Specifications

#### WLAN Interface

|   |  |
|---|--|
| WLAN Standards                                    | 802.11a/b/g/n<br>802.11i Wireless Security |
| Modulation Type                                   | DSSS<br>MIMO-OFDM<br>OFDM                  |
| Frequency Band for US (20 MHz operating channels) | 2.412 to 2.462 GHz (11 channels)           |

1. The Turbo Roaming recovery time indicated herein is an average of test results documented, in optimized conditions, across APs configured with interference-free 20-MHz RF channels, WPA2-PSK security, and default Turbo Roaming parameters. The clients are configured with 3-channel roaming at 100 Kbps traffic load. Other conditions may also impact roaming performance. For more information about Turbo Roaming parameter settings, refer to the product manual.

|   | 5.180 to 5.240 GHz (4 channels)<br>5.260 to 5.320 GHz (4 channels) <sup>2</sup><br>5.500 to 5.700 GHz (11 channels) <sup>2</sup><br>5.745 to 5.825 GHz (5 channels)   |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
|---|---|--------|--------|----|----|---------|--------|--------|--------|----------------|--------|--------|--------|----------------|--------|--------|--------|-----------------|--------|--------|--------|----------------|--------|---|---|
| Frequency Band for EU (20 MHz operating channels) | 2.412 to 2.472 GHz (13 channels)<br>5.180 to 5.240 GHz (4 channels)<br>5.260 to 5.320 GHz (4 channels) <sup>2</sup><br>5.500 to 5.700 GHz (11 channels) <sup>2</sup>  |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Frequency Band for JP (20 MHz operating channels) | 2.412 to 2.484 GHz (14 channels)<br>5.180 to 5.240 GHz (4 channels)<br>5.260 to 5.320 GHz (4 channels) <sup>2</sup><br>5.500 to 5.700 GHz (11 channels) <sup>2</sup>  |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Wireless Security                                 | WEP encryption (64-bit and 128-bit)<br>WPA/WPA2-Enterprise (IEEE 802.1X/RADIUS, TKIP, AES)<br>WPA/WPA2-Personal   |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Transmission Rate                                 | 802.11b: 1 to 11 Mbps<br>802.11a/g: 6 to 54 Mbps<br>802.11n: 6.5 to 300 Mbps  |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Transmitter Power for 802.11a                     | 23±1.5 dBm @ 6 to 24 Mbps<br>21±1.5 dBm @ 36 Mbps<br>20±1.5 dBm @ 48 Mbps<br>18±1.5 dBm @ 54 Mbps   |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Transmitter Power for 802.11b                     | 26±1.5 dBm @ 1 Mbps<br>26±1.5 dBm @ 2 Mbps<br>26±1.5 dBm @ 5.5 Mbps<br>25±1.5 dBm @ 11 Mbps   |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Transmitter Power for 802.11g                     | 23±1.5 dBm @ 6 to 24 Mbps<br>21±1.5 dBm @ 36 Mbps<br>19±1.5 dBm @ 48 Mbps<br>18±1.5 dBm @ 54 Mbps   |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Transmitter Power for 802.11n (2.4 GHz)           | 23±1.5 dBm @ MCS0/8 20 MHz<br>18±1.5 dBm @ MCS7/15 20 MHz<br>23±1.5 dBm @ MCS0/8 40 MHz<br>17±1.5 dBm @ MCS7/15 40 MHz  |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Transmitter Power for 802.11n (5 GHz)             | 23±1.5 dBm @ MCS0/8 20 MHz<br>18±1.5 dBm @ MCS7/15 20 MHz<br>23±1.5 dBm @ MCS0/8 40 MHz<br>17±1.5 dBm @ MCS7/15 40 MHz  |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Transmitter Power                                 | <table border="1"> <thead> <tr> <th></th> <th>US</th> <th>EU</th> <th>JP</th> </tr> </thead> <tbody> <tr> <td>2.4 GHz</td> <td>26 dBm</td> <td>18 dBm</td> <td>18 dBm</td> </tr> <tr> <td>5 GHz (UNII-1)</td> <td>23 dBm</td> <td>21 dBm</td> <td>21 dBm</td> </tr> <tr> <td>5 GHz (UNII-2)</td> <td>23 dBm</td> <td>21 dBm</td> <td>21 dBm</td> </tr> <tr> <td>5 GHz (UNII-2e)</td> <td>23 dBm</td> <td>23 dBm</td> <td>23 dBm</td> </tr> <tr> <td>5 GHz (UNII-3)</td> <td>23 dBm</td> <td>-</td> <td>-</td> </tr> </tbody> </table> <p>Note: Based on regional regulations, the maximum transmission power allowed on the UNII bands is restricted in the firmware, as indicated above.</p> |        | US     | EU | JP | 2.4 GHz | 26 dBm | 18 dBm | 18 dBm | 5 GHz (UNII-1) | 23 dBm | 21 dBm | 21 dBm | 5 GHz (UNII-2) | 23 dBm | 21 dBm | 21 dBm | 5 GHz (UNII-2e) | 23 dBm | 23 dBm | 23 dBm | 5 GHz (UNII-3) | 23 dBm | - | - |
|   | US  | EU     | JP     |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| 2.4 GHz   | 26 dBm  | 18 dBm | 18 dBm |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| 5 GHz (UNII-1)                                    | 23 dBm  | 21 dBm | 21 dBm |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| 5 GHz (UNII-2)                                    | 23 dBm  | 21 dBm | 21 dBm |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| 5 GHz (UNII-2e)                                   | 23 dBm  | 23 dBm | 23 dBm |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| 5 GHz (UNII-3)                                    | 23 dBm  | -      | -      |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Receiver Sensitivity for 802.11a                  | -90 dBm @ 6 Mbps<br>-88 dBm @ 9 Mbps<br>-88 dBm @ 12 Mbps<br>-85 dBm @ 18 Mbps<br>-81 dBm @ 24 Mbps   |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |

2. 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.

|   |   |
|---|---|
|   | -78 dBm @ 36 Mbps<br>-74 dBm @ 48 Mbps<br>-72 dBm @ 54 Mbps   |
| Receiver Sensitivity for 802.11b                | -93 dBm @ 1 Mbps<br>-93 dBm @ 2 Mbps<br>-93 dBm @ 5.5 Mbps<br>-88 dBm @ 11 Mbps   |
| Receiver Sensitivity for 802.11g                | -88 dBm @ 6 Mbps<br>-86 dBm @ 9 Mbps<br>-85 dBm @ 12 Mbps<br>-85 dBm @ 18 Mbps<br>-85 dBm @ 24 Mbps<br>-82 dBm @ 36 Mbps<br>-78 dBm @ 48 Mbps<br>-74 dBm @ 54 Mbps  |
| Receiver Sensitivity for 802.11n (2.4 GHz)      | -70 dBm @ MCS7 20 MHz<br>-69 dBm @ MCS15 20 MHz<br>-67 dBm @ MCS7 40 MHz<br>-67 dBm @ MCS15 40 MHz  |
| Receiver Sensitivity for 802.11n (5 GHz)        | -69 dBm @ MCS7 20 MHz<br>-71 dBm @ MCS15 20 MHz<br>-63 dBm @ MCS7 40 MHz<br>-68 dBm @ MCS15 40 MHz  |
| WLAN Operation Mode                             | Access point, Client, Client-Router, Master, Slave, Sniffer   |
| Antenna   | External, 2/2 dBi, Omni-directional   |
| Antenna Connectors                              | 2 RP-SMA female   |
| <b>Ethernet Interface</b>                       |   |
| PoE Ports (10/100/1000BaseT(X), RJ45 connector) | 1   |
| Standards                                       | IEEE 802.1D-2004 for Spanning Tree Protocol<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1w for Rapid Spanning Tree Protocol<br>IEEE 802.1X for authentication<br>IEEE 802.3 for 10BaseT<br>IEEE 802.3ab for 1000BaseT(X)<br>IEEE 802.3af for PoE<br>IEEE 802.3u for 100BaseT(X) |
| <b>Ethernet Software Features</b>               |   |
| Management                                      | DHCP Server/Client, DNS, HTTP, IPv4, LLDP, Proxy ARP, SMTP, SNMPv1/v2c/v3, Syslog, TCP/IP, Telnet, UDP, Wireless Search Utility, VLAN, MXview, MXconfig   |
| Redundancy Protocols                            | RSTP, STP   |
| Security  | HTTPS/SSL, RADIUS, SSH  |
| Time Management                                 | SNTP Client   |
| Unicast Routing                                 | Static Route  |
| <b>Firewall</b>                                 |   |
| Filter  | ICMP, MAC address, IP protocol, Port-based  |
| <b>Serial Interface</b>                         |   |
| Console Port                                    | RS-232, 8-pin RJ45  |
| <b>LED Interface</b>                            |   |
| LED Indicators                                  | PWR1, PWR2, PoE, FAULT, STATE, SIGNAL, WLAN, LAN  |

## Input/Output Interface

|                        |  |
|------------------------|--|
| Digital Inputs         | 2<br>Max. input current: 8 mA<br>+13 to +30 V for state 1<br>+3 to -30 V for state 0 |
| Alarm Contact Channels | Relay output with current carrying capacity of 1 A @ 24 VDC                          |
| Buttons                | Reset button   |

## Physical Characteristics

|              |  |
|--------------|--|
| Housing      | Metal  |
| IP Rating    | IP30   |
| Dimensions   | 52.7 x 135 x 105 mm (2.08 x 5.32 x 4.13 in)          |
| Weight       | 860 g (1.9 lb)                                       |
| Installation | DIN-rail mounting, Wall mounting (with optional kit) |

## Power Parameters

|                             |   |
|-----------------------------|---|
| Input Current               | 0.6 A @ 12 VDC, 0.15 A @ 48 VDC                                 |
| Input Voltage               | 12 to 48 VDC, Redundant dual inputs, 48 VDC Power-over-Ethernet |
| Power Connector             | 1 removable 10-contact terminal block(s)                        |
| Power Consumption           | 7.2 W (max.)  |
| Reverse Polarity Protection | Supported   |

## Environmental Limits

|  |  |
|--|--|
| Operating Temperature                  | Standard Models: -25 to 60°C (-13 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F) |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F)   |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)  |

## Standards and Certifications

|                     |   |
|---------------------|---|
| EMC                 | EN 61000-6-2/-6-4   |
| EMI                 | CISPR 32, FCC Part 15B Class B  |
| EMS                 | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 3 V<br>IEC 61000-4-8 PFMF |
| Hazardous Locations | ATEX, Class I Division 2, IECEx   |
| Radio               | ANATEL, EN 300 328, EN 301 489-1/17, EN 301 893, FCC ID SLE-WAPN008, MIC, NCC, RCM, SRRC, WPC, KC, RCM  |
| Safety              | EN 60950-1, UL 60950-1  |
| Vibration           | IEC 60068-2-6   |
| MTBF                |   |
| Time                | 570,854 hrs   |
| Standards           | Telcordia SR332   |

## Warranty

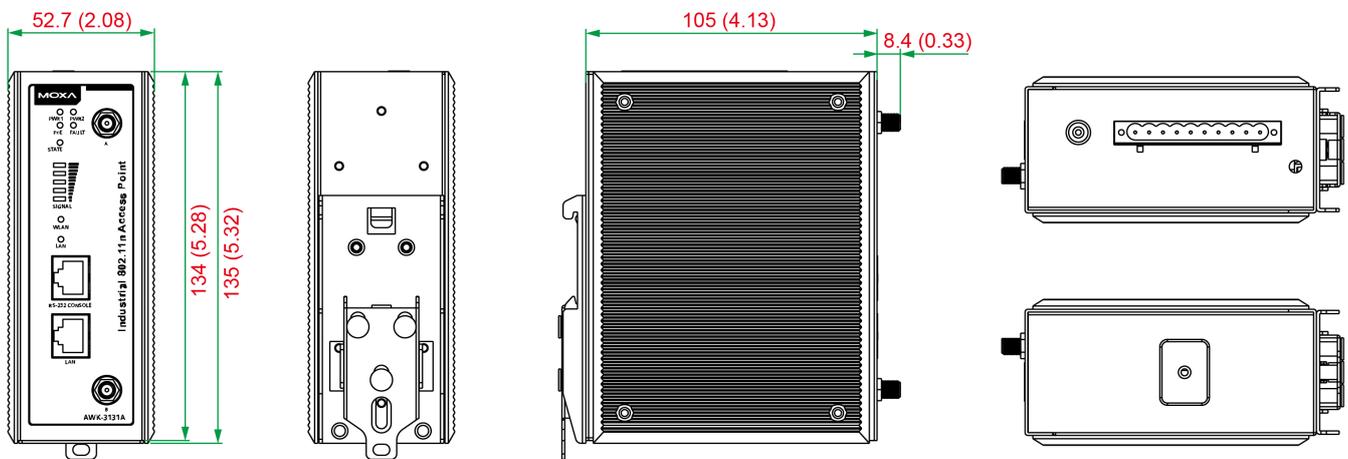
|                 |  |
|-----------------|--|
| Warranty Period | 5 years  |
| Details         | See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a> |

## Package Contents

|                  |  |
|------------------|--|
| Device           | 1 x AWK-3131A Series wireless AP/bridge/client                                     |
| Installation Kit | 2 x cap, plastic, for RJ45 port<br>1 x DIN-rail kit<br>1 x cable holder with screw |
| Antenna          | 2 x 2.4/5 GHz antenna  |
| Documentation    | 1 x quick installation guide<br>1 x warranty card                                  |

## Dimensions

Unit: mm (inch)



Front View

Rear View

Side View

Top and Bottom Views

## Ordering Information

| Model Name     | Band | Standards     | Operating Temp. |
|----------------|------|---------------|-----------------|
| AWK-3131A-EU   | EU   | 802.11a/b/g/n | -25 to 60°C     |
| AWK-3131A-EU-T | EU   | 802.11a/b/g/n | -40 to 75°C     |
| AWK-3131A-JP   | JP   | 802.11a/b/g/n | -25 to 60°C     |
| AWK-3131A-JP-T | JP   | 802.11a/b/g/n | -40 to 75°C     |
| AWK-3131A-US   | US   | 802.11a/b/g/n | -25 to 60°C     |
| AWK-3131A-US-T | US   | 802.11a/b/g/n | -40 to 75°C     |

## Accessories (sold separately)

### Antennas

|                  |   |
|------------------|---|
| ANT-WDB-ANF-0407 | 2.4/5 GHz, omni-directional antenna, 4/7 dBi, N-type (male)           |
| ANT-WDB-ANF-0609 | 2.4/5 GHz, omni-directional antenna, 6/9 dBi, N-type (female)         |
| ANT-WDB-ANM-0306 | 2.4/5 GHz, omni-directional antenna, 3/6 dBi, N-type (male)           |
| ANT-WDB-ANM-0407 | 2.4/5 GHz, dual-band omni-directional antenna, 4/7 dBi, N-type (male) |

|                         |  |
|-------------------------|--|
| ANT-WDB-ANM-0502        | 2.4/5 GHz, omni-directional antenna, 5/2 dBi, N-type (male)                  |
| ANT-WDB-ANM-0609        | 2.4/5 GHz, omni-directional antenna, 6/9 dBi, N-type (male)                  |
| ANT-WDB-ARM-02          | 2.4/5 GHz, omni-directional rubber duck antenna, 2 dBi, RP-SMA (male)        |
| ANT-WDB-ARM-0202        | 2.4/5 GHz, panel antenna, 2/2 dBi, RP-SMA (male)                             |
| ANT-WDB-PNF-1518        | 2.4/5 GHz, panel antenna, 15/18 dBi, N-type (female)                         |
| MAT-WDB-CA-RM-2-0205    | 2.4/5 GHz, ceiling antenna, 2/5 dBi, MIMO 2x2, RP-SMA-type (male)            |
| MAT-WDB-DA-RM-2-0203-1m | 2.4/5 GHz, desktop antenna, 2/3 dBi, MIMO 2x2, RP-SMA-type (male), 1 m cable |
| MAT-WDB-PA-NF-2-0708    | 2.4/5 GHz, panel antenna, 7/8 dBi, MIMO 2x2, N-type (female)                 |
| ANT-WSB5-ANF-12         | 5 GHz, omni-directional antenna, 12 dBi, N-type (female)                     |
| ANT-WSB5-PNF-18         | 5 GHz, directional panel antenna, 18 dBi, N-type (female)                    |
| ANT-WSB-ANF-09          | 2.4 GHz, omni-directional antenna, 9 dBi, N-type (female)                    |
| ANT-WSB-PNF-12          | 2.4 GHz, directional panel antenna, 12dBi, N-type (female)                   |
| ANT-WSB-PNF-18          | 2.4 GHz, directional panel antenna, 18 dBi, N-type (female)                  |
| ANT-WSB-AHRM-05-1.5m    | 2.4 GHz, omni-directional/dipole antenna, 5 dBi, RP-SMA (male), 1.5 m cable  |

## Wireless Antenna Cables

|                   |  |
|-------------------|--|
| A-CRF-RFRM-R4-150 | RF magnetic stand, RP-SMA (male) to RP-SMA (female), RG-174/U cable, 1.5 m |
| A-CRF-RFRM-S2-60  | SS402 cable, RP-SMA (male) to RP-SMA (female)                              |
| A-CRF-RMNM-L1-600 | N-type (male) to RP SMA (male), LMR-195 Lite cable, 6 m                    |
| A-CRF-RMNM-L1-900 | N-type (male) to RP SMA (male), LMR-195 Lite cable, 9 m                    |
| A-CRF-RMNM-L1-300 | N-type (male) to RP SMA (male), LMR-195 Lite cable, 3 m                    |
| CRF-N0117SA-3M    | N-type (male) to RP SMA (male), CFD200 cable, 3 m                          |

## Surge Arrestors

|              |  |
|--------------|--|
| A-SA-NMNF-01 | Surge arrester, N-type (female) to N-type (male)   |
| A-SA-NFNF-01 | Surge arrester, N-type (female) to N-type (female) |

## Wireless Terminating Resistors

|             |   |
|-------------|---|
| A-TRM-50-NM | Terminating Resistor, 50 ohm, RP-SMA Male |
|-------------|---|

## Wireless Adapters

|                         |   |
|-------------------------|---|
| A-ADP-RJ458P-DB9F-ABC01 | DB9 female to RJ45 connector for the ABC-01 |
|-------------------------|---|

## Wall-Mounting Kits

|          |   |
|----------|---|
| WK-51-01 | Wall-mounting kit, 2 plates, 6 screws, 51.6 x 67 x 2 mm |
|----------|---|