# AWK-4131 Series

Industrial IEEE 802.11a/b/g/n IP68 wireless AP/bridge/client

> IEEE 802.11a/b/g/n compliant
> One M12/SFP Gigabit combo port
> Up to 300 Mbps data rate
> M12 anti-vibration connector
> Compliant with essential sections of EN 50155
> MIMO technology increases data throughput and range
> Rugged IP68-rated housing and -40 to 75°C operating temperature

EN 50155   EN 50121   c(UL)us LISTED   CE   FC
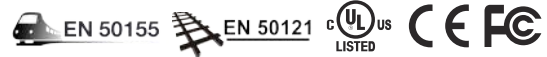
: Introduction

The AWK-4131 is a 3-in-1 industrial wireless AP/bridge/client that meets the growing need for faster data transmission speeds and wider coverage by supporting IEEE 802.11n technology with a net data rate of up to 300 Mbps. The AWK-4131 is compliant with the essential sections of EN 50155, covering operating temperature, power input voltage, surge, ESD and vibration. With a wide -40 to 75°C operating temperature and dust-tight/weatherproof IP68-rated design, the AWK-4131 allows you to extend existing wired networks to outdoor locations. The AWK-4131 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.

Higher Data Rate and Greater Bandwidth

• High-speed wireless connectivity with up to 300 Mbps data rate
• MIMO technology to improve the capacity of multiple data stream transmits and receives
• Increased channel width with channel bonding technology

Industrial and Outdoor Features for Critical Environments

• Industrial-grade QoS and VLAN for efficient data traffic management
• IP68-rated metal housing and -40 to 75°C wide operating temperature
• PoE and dual DC power inputs
• Integrated DI/DO for on-site monitoring and warnings

: 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 @ 11 Mbps
• 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps
• 802.11n: 64QAM @ 300 bps to BPSK @ 6.5 Mbps (multiple rates supported)
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
802.11n: 6.5 to 300 Mbps (multiple rates supported)
TX Transmit Power:
802.11b:
1 to 11 Mbps: Typ. 18 dBm (± 1.5 dBm)
802.11g:
6 to 24 Mbps: Typ. 18 dBm (± 1.5 dBm)
36 to 48 Mbps: Typ. 17 dBm (± 1.5 dBm)
54 Mbps: Typ. 15 dBm (± 1.5 dBm)
802.11a:
6 to 24 Mbps: Typ. 17 dBm (± 1.5 dBm)
36 to 48 Mbps: Typ. 16 dBm (± 1.5 dBm)
54 Mbps: Typ. 14 dBm (± 1.5 dBm)
TX Transmit Power MIMO:
802.11a/n (20/40 MHz):
MCS15 20 MHz: Typ. 13 dBm (± 1.5 dBm)
MCS15 40 MHz: Typ. 12 dBm (± 1.5 dBm)
802.11g/n (20 MHz):

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MCS15 20 MHz: Typ. 14 dBm (± 1.5 dBm)
RX Sensitivity:
802.11b:
-92 dBm @ 1 Mbps, -90 dBm @ 2 Mbps, -88 dBm @ 5.5 Mbps, -84 dBm @ 11 Mbps
802.11g:
-87 dBm @ 6 Mbps, -86 dBm @ 9 Mbps, -85 dBm @ 12 Mbps, -82 dBm @ 18 Mbps, -80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps, -72 dBm @ 48 Mbps, -70 dBm @ 54 Mbps
802.11a:
-87 dBm @ 6 Mbps, -86 dBm @ 9 Mbps, -85 dBm @ 12 Mbps, -82 dBm @ 18 Mbps,
-80 dBm @ 24 Mbps, -76 dBm @ 36 Mbps, -72 dBm @ 48 Mbps, -70 dBm @ 54 Mbps
RX Sensitivity MIMO:
802.11a/n:
-68 dBm @ MCS15 40 MHz, -69 dBm @ MCS15 20 MHz, -70 dBm @ MCS7 40 MHz, -71 dBm @ MCS7 20 MHz
802.11g/n:
-69 dBm @ MCS15 20 MHz, -71 dBm @ MCS7 20 MHz

Protocol Support
General Protocols: Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE, DHCP
AP-only Protocols: ARP, BOOTP, DHCP, dynamic VLAN-Tags for 802.1X-Clients, STP/RSTP (IEEE 802.1D/w)

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)
Fiber Ports: 1, 1000BaseSFP slot
M12 Ports: 1, 10/100/1000BaseT(X), auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection (M12 female type)
Console Port: RS-232 (waterproof RJ45-type)
LED Indicators: PWR, FAULT, STATE, WLAN, LAN

Alarm Contact (digital output, M12 male connector): 1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Inputs (M12 connector, male): 2 electrically isolated inputs
• +13 to +30 V for state "1"
• +3 to -30 V for state "0"
• Max. input current: 8 mA

Physical Characteristics
Housing: Metal, IP68 protection
Weight: 1.8 kg
Dimensions: 224 x 147.7 x 64.5 mm (8.82 x 5.82 x 2.54 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 100% (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)
*Compliant with EN 50155 on 24 VDC
Connector: M12 connector with A-coding
Power Consumption: 12 to 48 VDC, 890mA (max.)
Reverse Polarity Protection: Present

Standards and Certifications
Safety: UL 60950-1, EN 60950-1
EMC: EN 301 489-1/17, FCC Part 15 Subpart B, EN 55022/55024
Radio: EN 300 328, EN 301 893, DSPR (Japan)
Rail Traffic: EN 50155, EN 50121-1/4
Note: Please check Moxa's website for the most up-to-date certification status.
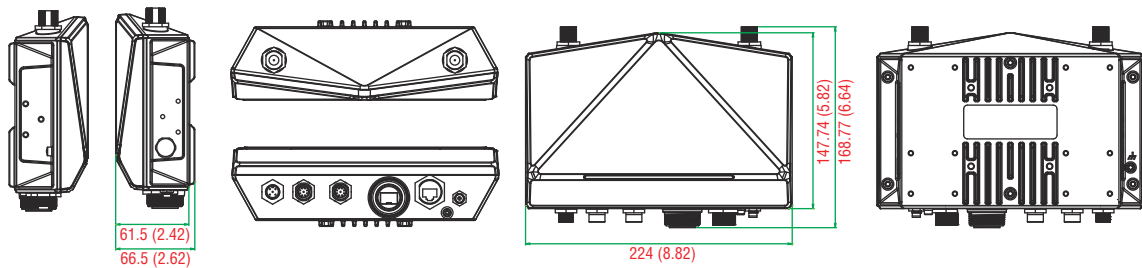
Reliability
MTBF (mean time between failures): 367,406 hrs

Warranty
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)

61.5 (2.42)
66.5 (2.62)
147.74 (5.82)
168.77 (6.64)
224 (8.82)

Side Views   Top & Bottom Views   Front View   Rear View

Ordering Information

Available Models
AWK-4131-M12-US-T: IEEE 802.11a/b/g/n IP68 wireless AP/bridge/client, M12 Connector, US band, -40 to 75°C operating temperature
AWK-4131-M12-EU-T: IEEE 802.11a/b/g/n IP68 wireless AP/bridge/client, M12 Connector, EU band, -40 to 75°C operating temperature
AWK-4131-M12-JP-T: IEEE 802.11a/b/g/n IP68 wireless AP/bridge/client, M12 Connector, 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-4131-M12 wireless AP/bridge/client
• 2 dual-band omni-directional antennas (5/2 dBi, N-type male, 2.4/5 GHz)
• Wall mounting kit (includes 2 supports)
• Field-installable power plug
• Field-installable Ethernet plug
• Metal cap to cover M12 male DI/O connector
• Metal caps to cover RJ45 connectors
• Metal cap to cover SFP connector
• Documentation and software CD
• Quick installation guide (printed)
• Warranty card

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