

# AWK-4121 Series

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



- > IEEE 802.11a/b/g compliant
- > Redundant dual DC power inputs or PoE
- > QoS (WMM) and VLAN for efficient network traffic
- > Supports long-distance data transfer and 100 ms Turbo Roaming
- > Complies with a portion of EN 50155 specifications
- > Rugged IP68-rated housing and -40 to 75°C operating temperature



## Introduction

The AWK-4121 outdoor wireless AP/bridge/client is the ideal outdoor wireless solution for industrial applications that are hard to wire, too expensive to wire, or use mobile equipment that connect to a TCP/IP network. The AWK-4121's dust-tight/weatherproof design is IP68-rated, allowing you to extend existing wired networks to outdoor locations and critical environments. The two redundant DC power inputs increase the reliability of the power supply and can be powered via PoE for easier deployment. The AWK-4121 complies with a portion of EN 50155 specifications, covering operating temperature, power input voltage, surge, ESD, and vibration, making the switches suitable for a variety of industrial applications.

## Features for Critical Environments

- IP68-rated metal housing and -40 to 75°C wide operating temperature
- Anti-vibration M12 design and waterproof/dust-tight RJ45 connectors
- PoE and dual DC power inputs

## Specifications for Industrial-grade Applications

- Long-distance wireless transmission over 10 km
- Integrated DI/DO for on-site monitoring and warnings
- Status LED indicators for on-site monitoring and diagnosis

## Specifications

### WLAN Interface

#### Standards:

- IEEE 802.11a/b/g for Wireless LAN
- IEEE 802.11i for Wireless Security
- IEEE 802.3 for 10BaseT
- IEEE 802.3u for 100BaseT(X)
- 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

#### 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)

#### 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

#### TX Transmit Power (for hardware revision 1.1):

802.11b:

Typ. 23±1.5 dBm @ 1 to 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

802.11a:

Typ. 18±1.5 dBm @ 6 to 24 Mbps, Typ. 16±1.5 dBm @ 36 to 48 Mbps,

Typ. 15±1.5 dBm @ 54 Mbps

#### RX Sensitivity (for hardware revision 1.1):

802.11b:

-97 dBm @ 1 Mbps, -94 dBm @ 2 Mbps, -92 dBm @ 5.5 Mbps, -90

dBm @ 11 Mbps

802.11g:

-93 dBm @ 6 Mbps, -91 dBm @ 9 Mbps, -90 dBm @ 12 Mbps, -88

dBm @ 18 Mbps, -84 dBm @ 24 Mbps, -80 dBm @ 36 Mbps, -76 dBm

@ 48 Mbps, -74 dBm @ 54 Mbps

802.11a:

-90 dBm @ 6 Mbps, -89 dBm @ 9 Mbps, -89 dBm @ 12 Mbps, -85

dBm @ 18 Mbps, -83 dBm @ 24 Mbps, -79 dBm @ 36 Mbps, -75 dBm

@ 48 Mbps, -74 dBm @ 54 Mbps

**TX Transmit Power (for hardware revision 1.0):**

802.11b:  
Typ. 18±1.5 dBm @ 1 to 11 Mbps  
802.11g:  
Typ. 18±1.5 dBm @ 6 to 24 Mbps, Typ. 16±1.5 dBm @ 36 to 48 Mbps,  
Typ. 15±1.5 dBm @ 54 Mbps  
802.11a:  
Typ. 16±1.5 dBm @ 6 to 24 Mbps, Typ. 14±1.5 dBm @ 36 to 48 Mbps,  
Typ. 13±1.5 dBm @ 54 Mbps

**RX Sensitivity (for hardware revision 1.0):**

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

**Protocol Support**

**General Protocols:** Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNMP, TCP, UDP, RADIUS, SNMP, PPPoE, DHCP

**AP-only Protocols:** ARP, BOOTP, DHCP, 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)

**RJ45 Ports:** 1, 10/100BaseT(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, M12 female connector):** 1 relay output with current carrying capacity of 1 A @ 24 VDC

**Digital Inputs (M12 female connector):** 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:** 1.5 kg

**Dimensions:** 224 x 148 x 67 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 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)

**Connector:** M12 male connector with A-coding

**Power Consumption:** 12 to 48 VDC, 0.121 to 0.494 A

**Reverse Polarity Protection:** Present

**Standards and Certifications**

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

**Hazardous Location:** UL/cUL Class I Division 2, ATEX Zone 2

**EMC:** EN 301 489-1/17, FCC Part 15 Subpart B, EN 55022/55024

**Rail Traffic:** EN 50155\*

\*Complies with a portion of EN 50155 specifications. Please contact Moxa or a Moxa distributor for details.

**Radio:** EN 300 328, EN 301 893, TELEC

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

**Reliability**

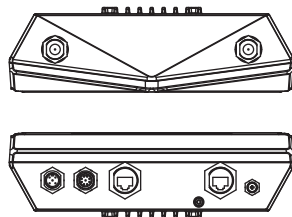
**MTBF (mean time between failures):** 364,564 hrs

**Warranty**

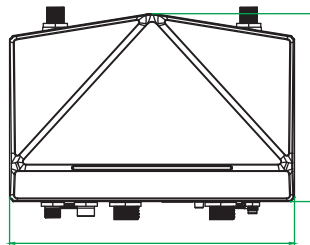
**Warranty Period:** 5 years

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

**Dimensions**



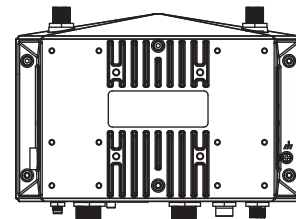
Top & Bottom Views



Front View



Side Views



Rear View

Unit: mm (inch)

**Ordering Information**

**Available Models**

**AWK-4121-US-T:** IEEE 802.11a/b/g IP68 wireless AP/bridge/client, US band, -40 to 75°C operating temperature

**AWK-4121-EU-T:** IEEE 802.11a/b/g IP68 wireless AP/bridge/client, EU band, -40 to 75°C operating temperature

**AWK-4121-JP-T:** IEEE 802.11a/b/g 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-4121 wireless AP/bridge/client
- 2 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 RJ45 plug
- Metal cap to cover M12-female connector
- Metal cap to cover RJ45 connector
- Transparent plastic sticks for field-installable plugs
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card