Your Industrial Ethernet Solutions for Control and Automation

Product Catalog

MTL Instruments

MOXA®

Industrial Wireless Ethernet

Industrial Wireless Ethernet

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Getting un-Wired with IEEE 802.11

Introduction

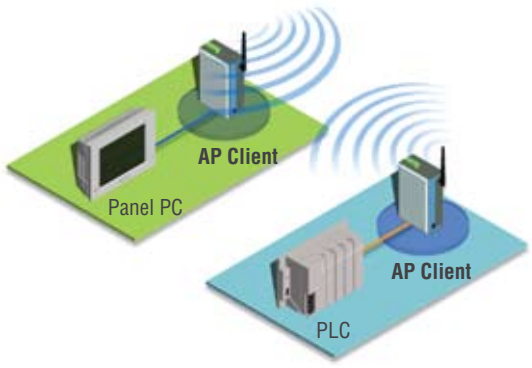
Are you ready for the convenience that comes from sending your Ethernet packets over the air instead of through a wire? Wireless is not for everyone, but if your application uses mobile equipment that is controlled over a TCP/IP network, or the cost of installing wire conduits at your work site is prohibitive, then consider setting up a wireless local area network (WLAN). The IEEE 802.11 standard specifies a way to use radio frequency (RF) technology to send Ethernet packets over the air. Applications that include TCP/IP will run on 802.11-compliant WLANs the same as they do over Ethernet. By common agreement between regulatory agencies around the world (FCC, ETSI, etc.), a WLAN transmits over unlicensed spectrums, with only minor variations from country to country.

802.11 Specifications

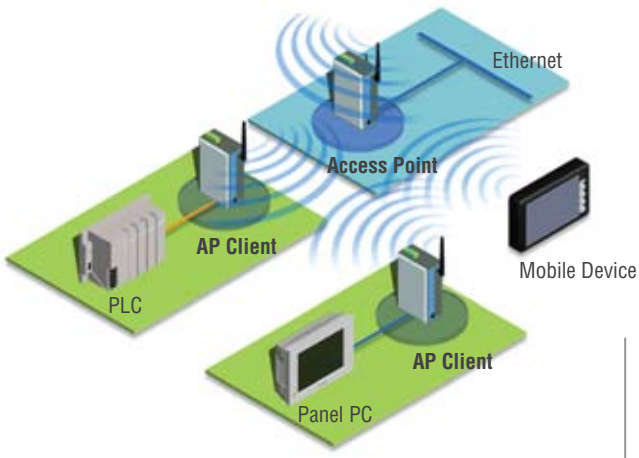
	802.11a	802.11b	802.11g
Approval Date	September 1999	September 1999	June 2003
Compatibility	IEEE 802.11a compliant	IEEE 802.11b compliant	IEEE 802.11b/g compliant
Number of Channels	8 non-overlapping (4 in some countries)	3 non-overlapping	3 non-overlapping
Data Rates	54, 48, 36, 24, 18, 12, 9, 6 Mbps	54, 48, 36, 24, 18, 12, 9, 6 Mbps	54, 48, 36, 24, 18, 12, 9, 6 Mbps
Wireless Medium	Orthogonal Frequency Division Multiplexing (OFDM), 5 GHz	Direct Sequence Spread Spectrum (DSSS), 2.4 GHz	Orthogonal Frequency Division Multiplexing (OFDM), 2.4 GHz

Typical Wireless Network Configurations

A wireless LAN is configured for either Ad-hoc mode or Infrastructure mode. In Ad-hoc mode, stations use peer-to-peer transmission to send information from station to station, without requiring an AP (Access Point) to connect to a wired network. This is the easiest and least expensive way to set up a wireless network. Alternatively, Infrastructure mode requires using an AP. The AP can be used by itself to set up a WLAN, or can be used to connect the WLAN to a wired network. In either case, all wireless communication goes through the AP.



Ad-hoc Mode



Infrastructure Mode

Benefits of Using Wireless Technology

What makes wireless networking a natural choice for many networking requirements?

Flexibility: Wireless networks work anywhere, anytime.

Easy Deployment: Wireless networks are ideal for those hard to wire areas.

High Performance: Wireless networks have the bandwidth and safeguards needed to keep essential applications running continuously.

Cost Effective: Wireless networks can be installed quickly, and help reduce the cost of cabling and maintenance.

Moxa's Wireless Solutions for Industrial Markets

One of the biggest concerns raised by potential users of WLAN technology is safety. Since data is transmitted by radio waves, how can users guarantee the confidentiality of their information? To provide secure transmission over wireless networks, Moxa provides WPA (Wi-Fi Protected Access) and WPA2 security specifications to overcome weaknesses in Wired Equivalent Privacy (WEP). In addition, Moxa's wireless products incorporate several important features to meet the stringent demands of industrial applications, including redundant power inputs, operating temperature ranges of either 0 to 60°C or -40 to 75°C (T models) and DIN-Rail mounting capability. The enhanced reliability of these products makes them a great choice for your wireless industrial applications.

WPA (Wi-Fi Protected Access)

Moxa's wireless products support the WPA/WPA2 standards proposed by the Wi-Fi Alliance (http://www.wi-fi.org). Both WPA-PSK (Pre-Shared Key) mode and full WPA mode are supported. WPA includes TKIP (Temporal Key Integrity Protocol) and IEEE 802.1X, and replaces WEP by providing better WLAN security.

WLAN Security

Security Protocols	Features	Status
WEP (Wired Equivalent Privacy)	• Data encryption with RC4 • User-name/password authentication not provided	Standard
TKIP (Temporary Key Integration Protocol)	• Enhanced WEP with extended WEP IV length • Packet Integration Check	Available
802.1X	• Uses EAP (Extensible Authentication Protocol) for port-based authentication • Supports RADIUS, Kerberos, and other authentication services	Available
WPA (Wi-Fi Protected Access)	• TKIP, 802.1X, MIC (Message Integration Check) • Supports RADIUS for authentication • Backward upgradeable to all systems	Available
802.11i (WPA2)	• WPA+AES cipher	Available in AWK-3121, AWK-1200-AP

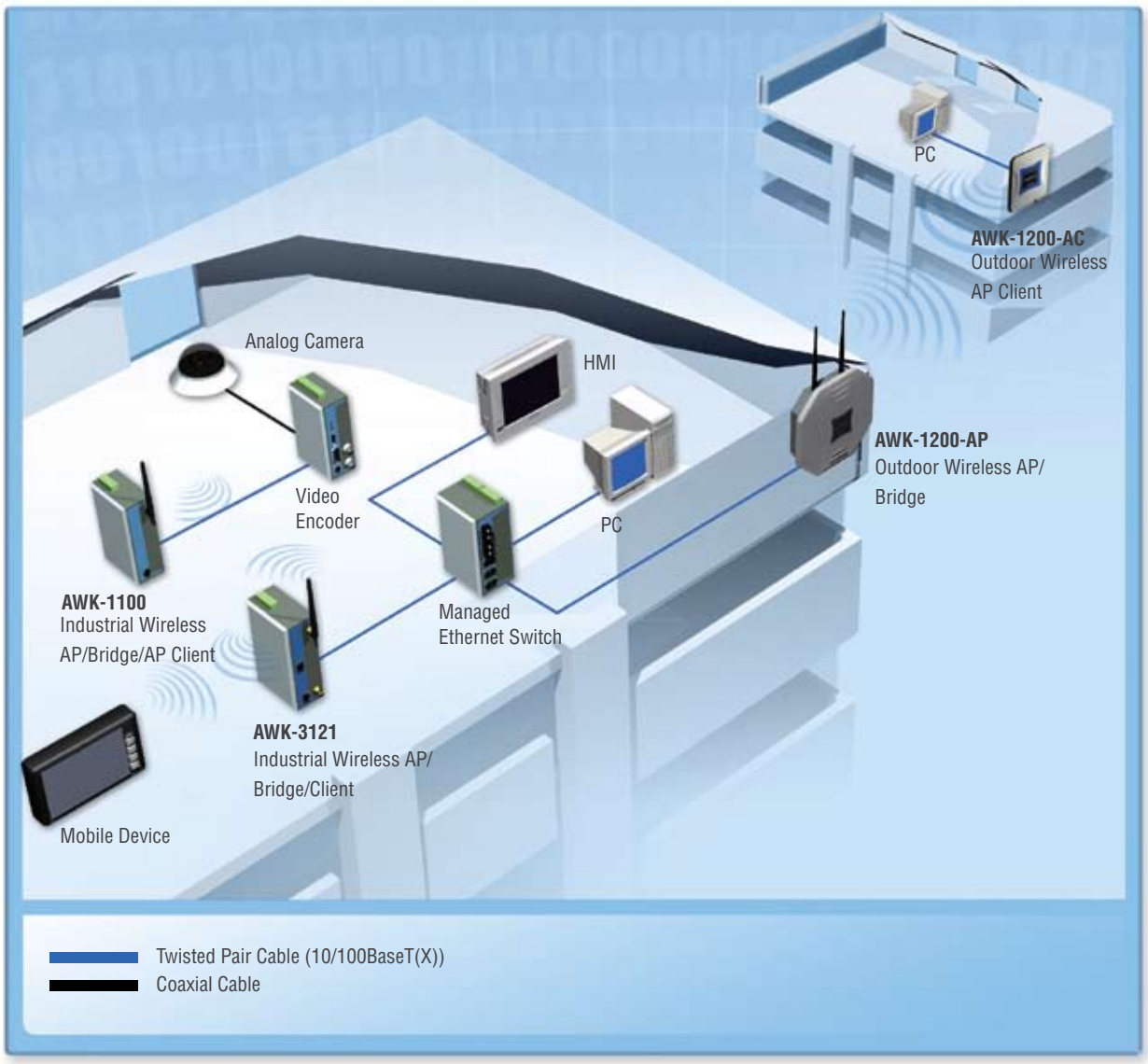
IEEE 802.1X/RADIUS

When configured for AP/Bridge mode, Moxa's wireless products authenticate wireless users and distribute encryption keys dynamically with IEEE 802.1X Port-based Network Access Control and RADIUS (Remote Authentication Dial-In User Service). The following authentication methods are supported: EAP-MD5, EAP-TLS, EAP-TTLS, and PEAP.

Redundant Power Inputs

The AWK-3121/1100 provides two power inputs that can be connected simultaneously to live DC power sources. If one of the power inputs fails, the other live source acts as a backup to provide the AWK-3121 and AWK-1100's power needs automatically.

Typical Industrial Application of Wireless Ethernet



Comparison Chart for Wireless Ethernet Products

	Security					Features						
Model	64-bit and 128-bit WEP Encryption	WPA	WPA2	IEEE 802.1X	Hide SSID	IP Rating	Standard	Operating Temperature	Power Redundancy	DIN-Rail Mounting	Wall Mounting	Mast Mounting
AWK-3121	√	√	√	√	√	IP30	802.11a/b/g	0 to 60°C, -40 to 75°C (T model)	√	√	√	
AWK-1200-AP	√	√	√	√	√	IP68	802.11b/g	-20 to 70°C			√	√
AWK-1200-AC	√	√		√	√	IP67	802.11b/g	-20 to 70°C			√	√
AWK-1100	√	√		√	√	IP30	802.11b/g	0 to 60°C	√	√	√	

AWK-3121 Series

Preliminary

Industrial IEEE 802.11a/b/g wireless Access Point/Bridge/Client

- IEEE 802.11a/b/g compliant
- Power input by redundant 24 VDC power inputs or Power-over-Ethernet
- Powerful security with WPA/WPA2/802.1X/MAC address filtering
- DIN-Rail or wall mounting ability
- IP30 protected high-strength metal case

CE FC

Introduction

Are your industrial applications hard to wire, or are your wiring costs out of control? Are you already using mobile equipment that connects over a TCP/IP network? If so, then what you need is the AWK-3121 Access Point/Bridge/Client. The AWK-3121 is rated to operate at temperatures ranging from 0 to 60°C for standard models and -40 to 75°C for extended temperature models, and is rugged enough for any harsh industrial environment. Installation is easy, with either DIN-Rail mounting or distribution boxes. The DIN-Rail mounting ability, wide operating temperature range, and IP30 case with LED indicators make the AWK-3121 a convenient yet reliable solution for any industrial wireless application.

Advanced security

- 64-bit and 128-bit WEP (Wired Equivalent Privacy)
- Enable/disable SSID broadcasts
- MAC-address-based access control
- IEEE 802.1X/RADIUS
- WPA (Wi-Fi Protected Access)/WPA2

Useful utilities and remote configuration

- Firmware upgrade from TFTP or HTTP
- Console/Web-based management
- SNMP and UPnP supported
- Configuration backup and reset

Specifications

WLAN

Standards:
IEEE 802.11a/b/g for Wireless LAN,
IEEE 802.3u for 10/100BaseT(X),
IEEE 802.3af for Power-over-Ethernet,
IEEE 802.1D for Spanning Tree Protocol,
IEEE 802.1w for Rapid STP
Modulation:
802.11b: DBPSK, DQPSK, CCK
802.11g: OFDM with BPSK, QPSK, 16QAM, 64QAM
802.11a: OFDM with BPSK, QPSK, 16QAM, 64QAM
Data Rate and Modulation:
OFDM @ 54 Mbps, CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, DBSK @ 1 Mbps
Operating Channels:
US:
2.412 to 2.462 GHz; 11 channels
5.15 to 5.35, 5.725 to 5.825 GHz; 12 channels
EU:
2.412 to 2.472 GHz; 13 channels
5.15 to 5.35 GHz; 8 channels
5.47 to 5.725 GHz; 11 channels
JP:
2.412 to 2.472 GHz; 13 channels, OFDM
2.412 to 2.484 GHz; 14 channels, CCK
5.15 to 5.35 GHz; 8 channels (W52, W53)
5.47 to 5.725 GHz; 11 channels (W56)
Security:
64-bit and 128-bit WEP encryption, WPA/WPA2 (IEEE 802.1X/RADIUS and TKIP)
Data Rates:
802.11b support rates: 1Mbps, 2Mbps, 5.5Mbps, 11Mbps
802.11a/g support rates: 6Mbps, 9Mbps, 12Mbps,18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbp
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. 16 dBm (+/- 1.5 dBm);
54 Mbps: Typ. 15 dBm (+/- 1.5 dBm)
802.11a: 6 to 24 Mbps: Typ. 16 dBm (+/- 1.5 dBm);
36 to 48 Mbps: Typ. 14 dBm (+/- 1.5 dBm);
54 Mbps: Typ. 13dBm (+/- 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

Interface

Antenna: 2 dBi dual-band, omni-directional antenna

Connector: RP-SMA (female)

RJ45 Port: 10/100BaseT(X) auto negotiation speed

LED Indicators: PWR1, PWR2, PoE, FAULT, STATE, CLIENT MODE, BRIDGE MODE, WLAN

Console: RS-232 (RJ45)

Alarm Contact: 1 relay output with current carrying capacity of 1A @ 24 VDC

Digital Inputs: 2 inputs, electrically isolated from the electronics

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

Power Requirements

Input Voltage: ±12 to 48 VDC, redundant dual DC power inputs or 48 VDC Power-over-Ethernet (IEEE 802.3af)

Connection: 10-pin removable terminal block

Reverse Polarity Protection: Present

Physical Characteristics

Casing: IP30 protection, metal case

Dimensions (W x H x D): 53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in.)

Installation: DIN-Rail mounting, wall mounting (optional kit)

Environmental Limits

Operating Temperature: 0 to 60°C (32 to 140°F),
-40 to 75°C (-40 to 167°F) for T models

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5% to 95% (non-condensing)

Regulatory Approvals

Safety: EN60950, UL60950-1, UL508, UL2043 (Pending)

Hazardous Location:
UL/cUL Class I, Division 2, Groups A, B, C and D (Pending);
ATEX Class I, Zone 2, Ex nC IIC (Pending)

Radio: EN300 328, ARIB STD-33/66 (Japan)

EMC: EN301 489-1/-17

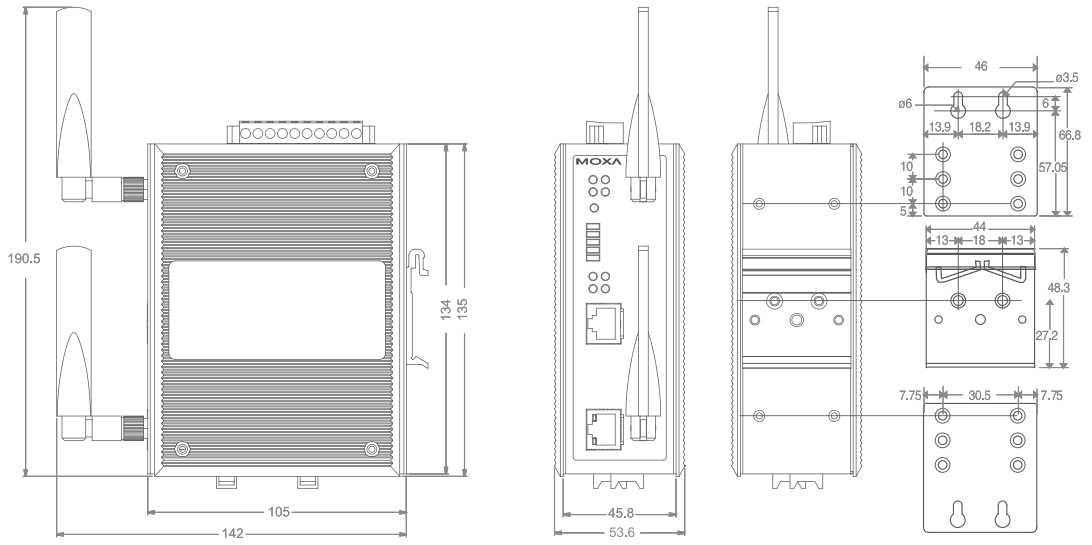
EMI: FCC Part 15

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

Warranty

5 years (see www.moxa.com/warranty for details)

Dimensions (unit = mm)



Side View DIN-Rail Kit Front View Rear View Mounting Kit

Ordering Information

- **AWK-3121-US:** IEEE 802.11a/b/g wireless AP/Bridge/Client, US band, 0 to 60°C
- **AWK-3121-EU:** IEEE 802.11a/b/g wireless AP/Bridge/Client, EU band, 0 to 60°C
- **AWK-3121-JP:** IEEE 802.11a/b/g wireless AP/Bridge/Client, JP band, 0 to 60°C
- **AWK-3121-US-T:** IEEE 802.11a/b/g wireless AP/Bridge/Client, US band, -40 to 75°C
- **AWK-3121-EU-T:** IEEE 802.11a/b/g wireless AP/Bridge/Client, EU band, -40 to 75°C
- **AWK-3121-JP-T:** IEEE 802.11a/b/g wireless AP/Bridge/Client, JP band, -40 to 75°C

Optional Accessories

- **ABC-01:** Industrial RS-232 RJ45-based automatic backup configurator
- **DR-4524:** 45W/2A DIN-Rail 24 VDC power supply with universal 85 to 264 VAC input
- **DR-75-24:** 75W/3.2A DIN-Rail 24 VDC power supply with universal 85 to 264 VAC input
- **DR-120-24:** 120W/5A DIN-Rail 24 VDC power supply with 88 to 132 VAC/176 to 264 VAC input by switch
- **WK-46:** Wall mounting kit
- **RK-4U:** 4U-high 19" rack mounting kit

AWK-1200 Series

IEEE 802.11g/b wireless Access Point/Bridge and AP Client for outdoors

- IP68 rated wireless Access Point/Bridge and IP67 rated wireless AP Client
- Point-to-point, point-to-multipoint wireless connectivity
- WEP/WPA/WPA2/IEEE 802.1X authenticator supported
- -20 to 70°C operating temperature range

Introduction

The AWK-1200 Access Point/Bridge or AP Client is ideal for applications that are hard to wire, too expensive to wire, or use mobile equipment that connects to a TCP/IP network. The AWK-1200 series is rated to operate at temperatures ranging from -20 to 70°C, and its weatherproof design allows you to set up a WLAN, or extend existing wired networks to outdoor locations. In addition, the AWK-1200 series has a detachable antenna design, which gives you the flexibility of choosing your own special-purpose antennas instead of using the standard models. You also don't need to worry about finding a power supply in outdoor environments, since the AWK-1200's PoE (Power-over-Ethernet) design makes it easy to deploy.

Advanced security capability

- 64-bit and 128-bit WEP (Wired Equivalent Privacy)
- Enable/disable SSID broadcasts
- MAC-address-based access control
- IEEE 802.1X/RADIUS
- WPA/WPA2

Useful utilities and remote configuration

- Firmware upgrade from HTTP
- Web-based management
- SNMP supported
- Configuration backup and reset to factory default

Specifications

WLAN

Standards:
IEEE 802.11g/b for Wireless LAN,
IEEE 802.3u for 10/100BaseT(X)

Frequency Range:
2.4-2.4835 GHz, Direct Sequence Spread Spectrum (DSSS)

Data Rate & Modulation:
OFDM @ 54 Mbps, CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, and DBSK @ 1 Mbps

Operating Channels:
USA: 1-11 (US)
Europe: 1-13 (EU)
Japan: 1-14 (JP)

Security:
For AWK-1200-AP:
WEP, WPA, WPA2, IEEE 802.1X, MAC address filtering, Hide SSID, Layer 2 Isolation
For AWK-1200-AC:
64-bit and 128-bit WEP encryption, WPA

Data Rates:
1 Mpbs, 2 Mbps, 5.5 Mbps, 6 Mbps, 9 Mbps, 11 Mbps, 12 Mbps, 18 Mbps, 24 Mbps, 36 Mbps, 48 Mbps, 54 Mbps

Transmit Power:
Typ. 17 dBm @ 1, 2, 5.5 and 11 Mbps, 17 dBm @ 6 Mbps, 14 dBm @ 54 Mbps

RX Sensitivity:
802.11b:
-89 dBm @ 11 Mbps
802.11g:
-65 dBm @ 54 Mbps, -66 dBm @ 48 Mbps,
-70 dBm @ 36 Mbps, -74 dBm @ 24 Mbps,
-77 dBm @ 18 Mbps, -79 dBm @ 12 Mbps,
-81 dBm @ 9 Mbps, -82 dBm @ 6 Mbps

Software Features

Protocols: HTTP, DHCP, TCP/IP, RADIUS, DNS, NetBIOS, AppleTalk, and IPX/SPX
Configuration: Web-based management
Client OS Support: Windows 95/98/2000/ME/NT/XP, Unix, and Macintosh

Interface

Antenna: 5dBi External (AWK-1200-AP),
9dBi Internal (AWK-1200-AC)
Connector: N-type female connector (AWK-1200-AP only)
RJ45 Port: 10/100BaseT(X) auto negotiation speed

Power Requirements

Input Voltage: Active Ethernet, 48 VDC
Input Current (@ 48 VDC, PoE): AWK-1200-AP: 0.38A
AWK-1200-AC: 0.375A

Physical Characteristics

Casing: IP68 (AWK-1200-AP), IP67 (AWK-1200-AC)
Dimensions (W x H x D):
AWK-1200-AP: 284.4 x 254.3 x 77.5 mm (11.20 x 10.01 x 3.05 in.)
AWK-1200-AC: 165.8 x 195.8 x 60.3 mm (6.53 x 7.71 x 2.37 in.)
Weight:
AWK-1200-AP: 3100 g
AWK-1200-AC: 600 g
Installation: Wall mounting, mast mounting

Environmental Limits

Operating Temperature: -20 to 70°C (-4 to 158°F)
Storage Temperature: -40 to 80°C (-40 to 176°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Regulatory Approvals

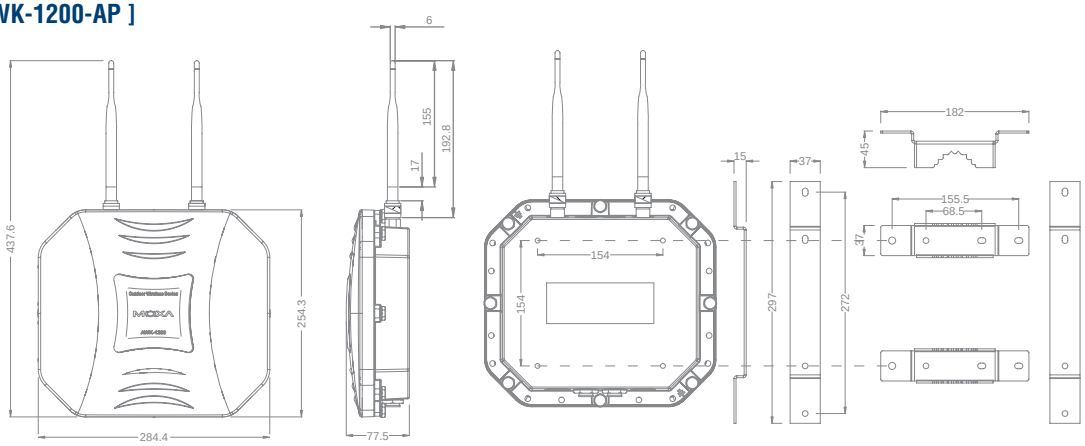
Safety: EN60950-1: 2001, UL60950-1
Radio: EN300 328
EMC: EN301 489-1/-17
EMI: FCC Part 15C
MTBF: over 200,000 hrs
Database: GB, GC (Ground Benign, Controlled) 25°C

Warranty

5 years (see www.moxa.com/warranty for details)

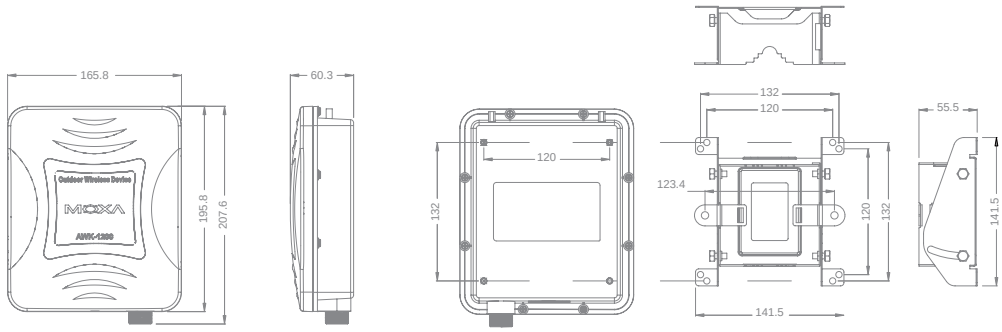
Dimensions (unit = mm)

[AWK-1200-AP]



Front View | Side View | Rear View | Mounting Kit

[AWK-1200-AC]



Front View | Side View | Rear View | Mounting Kit

Ordering Information

- **AWK-1200-AP-US:** IEEE 802.11g/b IP68 wireless AP/Bridge, US band, -20 to 70°C
- **AWK-1200-AP-EU:** IEEE 802.11g/b IP68 wireless AP/Bridge, Euro band, -20 to 70°C
- **AWK-1200-AP-JP:** IEEE 802.11g/b IP68 wireless AP/Bridge, Japan band, -20 to 70°C
- **AWK-1200-AC-US:** IEEE 802.11g/b IP67 wireless AP Client, US band, -20 to 70°C
- **AWK-1200-AC-EU:** IEEE 802.11g/b IP67 wireless AP Client, Euro band, -20 to 70°C
- **AWK-1200-AC-JP:** IEEE 802.11g/b IP67 wireless AP Client, Japan band, -20 to 70°C

AWK-1100 Series

Industrial IEEE 802.11g/b wireless Access Point/Bridge/AP Client

- IEEE 802.11g/b compliant
- Power input by redundant 24 VDC power inputs or Power-over-Ethernet
- Powerful security with WPA/802.1X/MAC address filtering
- DIN-Rail or panel mounting ability
- IP30 protected high-strength metal case

Introduction

Are your industrial applications hard to wire, or are your wiring costs out of control? Are you already using mobile equipment that connects over a TCP/IP network? If so, then the AWK-1100 Access Point/Bridge/AP Client could be what you're looking for. The AWK-1100 is rated to operate at temperatures ranging from 0 to 60°C, and is rugged enough for any harsh industrial environment. Installation is easy with either DIN-Rail mounting or distribution boxes. The DIN-Rail mounting ability, wide operating temperature range, and IP30 case with LED indicators make AWK-1100 a convenient yet reliable solution for any industrial wireless application.

Advanced security capability

- 64-bit and 128-bit WEP (Wired Equivalent Privacy)
- Enable/disable SSID broadcasts
- MAC-address-based access control
- IEEE 802.1X/RADIUS
- WPA (Wi-Fi Protected Access)

Useful utilities and remote configuration

- Firmware upgrade from TFTP or HTTP
- Web-based management
- SNMP and UPnP supported
- Configuration backup and reset

Specifications

WLAN

Standards:
IEEE 802.11g/b for Wireless LAN,
IEEE 802.3u 10/100BaseT(X) for Ethernet LAN,
IEEE 802.3af for Power-over-Ethernet

Frequency Range:
2.4-2.4835 GHz, Direct Sequence Spread Spectrum (DSSS)

Data Rate & Modulation:
OFDM @ 54 Mbps, CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, and DBSK @ 1 Mbps

Operating Channels:
USA: 1-11 (US)
Europe: 1-13 (EU)
Japan: 1-14 (JP)

Security:
64-bit and 128-bit WEP encryption, WPA (IEEE 802.1X/RADIUS and TKIP)

Data Rates:
1 Mpbs, 2 Mbps, 5.5 Mbps, 6 Mbps, 9 Mbps, 11 Mbps, 12 Mbps, 18 Mbps, 24 Mbps, 36 Mbps, 48 Mbps, 54 Mbps

Transmit Power:
Typ. +18 dBm (+/- 1.5 dBm) @ 11Mbps, +14 dBm (+/- 1.5 dBm) @ 54Mbps

RX Sensitivity:
802.11b:
-81 dBm @ 11 Mbps, -85 dBm @ 5.5 Mbps,
-86 dBm @ 2 Mbps, -87 dBm @ 1 Mbps
802.11g:
-68 dBm @ 54 Mbps, -70 dBm @ 48 Mbps,
-74 dBm @ 36 Mbps, -78 dBm @ 24 Mbps,
-81 dBm @ 18 Mbps, -84 dBm @ 12 Mbps,
-85 dBm @ 9 Mbps, -86 dBm @ 6 Mbps

Software Features

Protocols: HTTP, DHCP, TCP/IP, RADIUS

Configuration: Web-based management

Client OS Support: Windows 95/98/2000/ME/NT/XP, Unix, and Macintosh

Interface

Antenna: 2 dBi omni-directional antenna

Connector: RP-SMA connector

RJ45 Port: 10/100BaseT(X) auto negotiation speed

LED Indicators: PWR1, PWR2, WLAN, LAN (Link/ACT)

Power Requirements

Input Voltage: 12 to 45 VDC, redundant dual DC power inputs or 48 VDC Power-over-Ethernet (IEEE 802.3af)

Input Current (@ 24 V): 0.3 A

Overload Current Protection: 1.6 A

Connection: Removable terminal block

Reverse Polarity Protection: Present

Physical Characteristics

Casing: IP30 protection, metal case

Dimensions (W x H x D): 53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in.)

Weight: 800 g

Installation: DIN-Rail mounting, wall mounting (optional kit)

Environmental Limits

Operating Temperature: 0 to 60°C (32 to 140°F)

Storage Temperature: -20 to 70°C (-4 to 158°F)

Ambient Relative Humidity: 5% to 95% (non-condensing)

Regulatory Approvals

Safety: EN60950-1, UL60950-1

Hazardous Location:

UL/cUL Class I, Division 2, Groups A, B, C, and D (Pending);
ATEX Class I, Zone 2, Ex nC IIC (Pending)

Radio: EN300 328

EMC: EN301 489-1/-17

EMI: FCC Part 15C

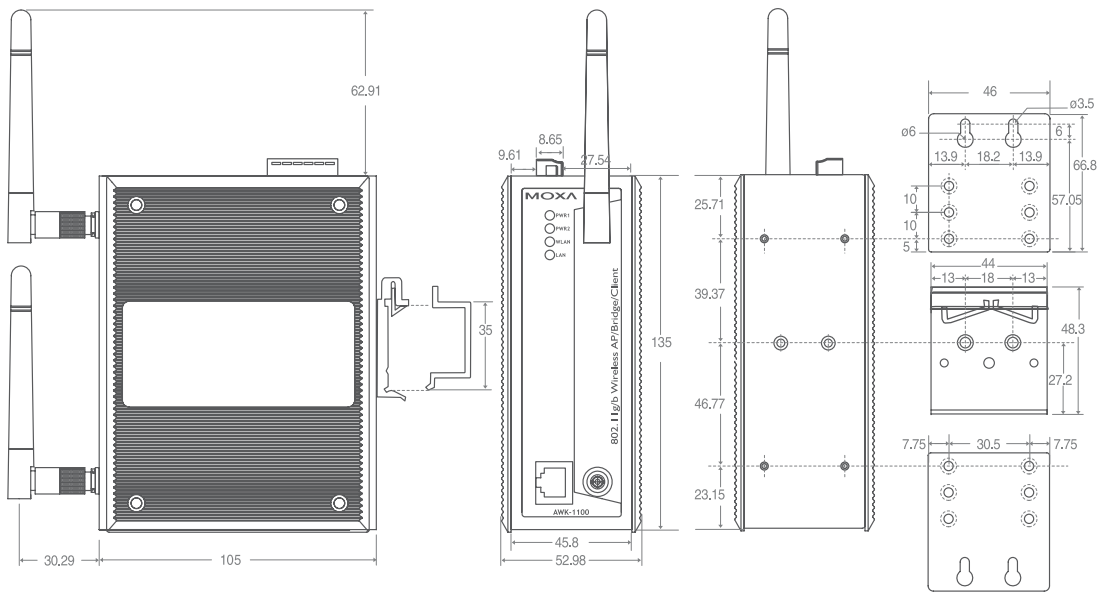
MTBF: 200,000 hrs
Database: MIL-HDBK-217F, GB 25°C

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

Warranty

5 years (see www.moxa.com/warranty for details)

Dimensions (unit = mm)



Side View DIN-Rail Kit Front View Rear View Mounting Kit

Ordering Information

- **AWK-1100-US:** IEEE 802.11g/b wireless AP/Bridge/AP Client, US band, 0 to 60°C
- **AWK-1100-EU:** IEEE 802.11g/b wireless AP/Bridge/AP Client, Euro band, 0 to 60°C
- **AWK-1100-JP:** IEEE 802.11g/b wireless AP/Bridge/AP Client, Japan band, 0 to 60°C

Optional Accessories

- **DR-4524:** 45W/2A DIN-Rail 24 VDC power supply with universal 85 to 264 VAC input
- **DR-75-24:** 75W/3.2A DIN-Rail 24 VDC power supply with universal 85 to 264 VAC input
- **DR-120-24:** 120W/5A DIN-Rail 24 VDC power supply with 88 to 132 VAC/176 to 264 VAC input by switch
- **WK-46:** Wall mounting kit
- **RK-4U:** 4U-high 19" rack mounting kit

Antennas and Accessories

IEEE 802.11a/b/g 2.4 & 5 GHz Dual-band Antenna

ANT-WDB-O-2

Frequency Range: 2.4-2.5 GHz & 4.9-5.8 GHz
Antenna Peak Gain: 2 dBi (typical)
Antenna Average Gain: 1 dBi (typical)
Impedance: 50 ohms
HPBW/Horizontal: 360°
HPBW/Vertical: 80°
Polarization: Linear, Vertical
V.S.W.R: < 2
Power Handling: 2W (cw)
Connector: RP-SMA (male)

IEEE 802.11b/g 2.4 GHz Antennas

ANT-WSB-O-02

Frequency Range: 2.4-2.5 GHz
Antenna Type: 1/4 Dipole Sleeve
Antenna Gain: 2 dBi (typical)
Impedance: 50 ohms nominal
Polarization: Linear
Type of Radiation: Toroidal
V.S.W.R: < 2
Connector: RP-SMA (male)
Antenna Profile: 108 mm length
Cable Length: 150 mm

ANT-WSB-O-5-150

Frequency Range: 2.4-2.5 GHz
Antenna Type: 1/4λ Dipole Sleeve
Antenna Gain: 5 dBi (typical)
Impedance: 50 ohms nominal
Polarization: Vertical
V.S.W.R: < 2
Connector: RP-SMA (male)

ANT-1-O-09

Frequency Range: 2.4-2.5 GHz
Antenna Type: Omni-directional
Antenna Gain: 9 dBi
Impedance: 50 ohms
Polarization: Vertical
Radiation Angle: 360° horizontal, 12° vertical
SWR (Standing Wave Ratio): ≤ 1.5:1
Connector: N-Female
Dimensions (H): 390 mm (15.35 in.)
Weight: 370 g
Installation: U-bolt installation kit

ANT-1-D-12

Frequency Range: 2.4-2.5 GHz
Antenna Type: Directional, Flat Panel
Antenna Gain: 12 dBi
Impedance: 50 ohms
Polarization: Vertical
Radiation Angle: 50° horizontal, 30° vertical
SWR (Standing Wave Ratio): ≤ 1.5:1
Connector: N-Female
Dimensions (W x H x D): 90 x 275 x 30 mm (3.54 x 10.83 x 1.18 in.)
Weight: 500 g
Installation: Wall mounting, swivel mounting kit (optional kit)

Ordering Information

- **ANT-WDB-O-2:** IEEE 802.11a/b/g 2.4 & 5 GHz dual-band antenna, RP-SMA (female) connector
- **ANT-WSB-O-02:** IEEE 802.11b/g 2.4 GHz, omni-directional antenna, RP-SMA (female) connector
- **ANT-WSB-O-5-150:** IEEE 802.11b/g 2.4 GHz, omni-directional antenna, RP-SMA (female) connector, with 150mm cable
- **ANT-1-O-09:** 2.4 GHz, omni-directional, 9 dBi antenna, N-Female connector
- **ANT-1-D-12:** 2.4 GHz, directional, 12 dBi antenna, N-Female connector
- **CRF-N0117SA-3M:** CFD200 cable, N-Male to RP SMA Male connector, 3 meters (for AWK-3121 and AWK-1100 only)

*This cable is necessary for the devices, which have RP-SMA connector, to connect with optional antenna.

- **CRF-N0429N-3M:** CFD400 cable, N-Male to N-Male connector, 3 meters (for AWK-1200-AP only)

*This cable is necessary for AWK-1200-AP to connect with optional antenna.

Optional Accessories

- **HA-1002SU:** Swivel mounting kit, swivel angle 90° horizontal, 40° vertical

*Supports ANT-1-D-12 by adjusting the angle for use with different wireless applications.