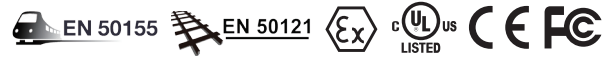


AWK-3121 Series

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



- > IEEE 802.11a/b/g compliant
- > QoS (WMM) and VLAN for efficient network traffic
- > Supports long-distance data transfer and 100 ms Turbo Roaming
- > Maximum security with WEP/WPA/WPA2/802.11X and powerful filters
- > Compliant with essential sections of EN 50155
- > M12 anti-vibration connectors (AWK-3121-M12)
- > -40 to 75°C operating temperature range (T models)



Introduction

The AWK-3121 AP/bridge/client is ideal for industrial hard to wire applications, keeping wireless costs under control, and integrating with existing mobile equipment. The AWK-3121 is compliant with the essential sections of EN 50155, covering operating temperature, power input voltage, surge, ESD and vibration. Installation is easy, with either DIN-Rail mounting or distribution boxes, and the DIN-Rail mounting capability, wide operating temperature range, and IP30 housing 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
- WPA/WPA2 (Wi-Fi Protected Access) and 802.11i support
- IEEE802.1X/RADIUS support
- Powerful filters for access control

Specifications for Industrial-grade Applications

- Redundant DC power inputs
- Long-distance data transmission over 10 km
- Integrated DI/DO for on-site monitoring and warnings
- Signal strength LEDs for easy deployment and antenna alignment

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 100BaseTX
- IEEE 802.3af for Power-over-Ethernet
- IEEE 802.1D for Spanning Tree Protocol
- IEEE 802.1w for Rapid STP

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 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

TX Transmit Power:

- 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:

- 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

Protocol Support

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

Interface

Default Antennas*: 2 dual-band omni-directional antennas, 2 dBi, RP-SMA (male)

*Only available with the AWK-3121 and AWK-3121-SSC models.

Connector for External Antennas:

AWK-3121 and AWK-3121-SSC: RP-SMA (female)

AWK-3121-M12: QMA (female)

RJ45 Ports: 1, 10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection (AWK-3121 only)

Fiber Ports: 1, 100BaseFX port (SC connector, AWK-3121 only)

M12 Ports: 1, 10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection (AWK-3121-M12 only)

Console Port: RS-232 (RJ45-type)

LED Indicators: PWR1, PWR2, PoE*, FAULT, STATE, signal strength, CLIENT MODE, BRIDGE MODE, WLAN, 10/100 (TP port), 100M (fiber port), LAN (M12 port)

*PoE is only available for the AWK-3121 and AWK-3121-M12

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

Digital Inputs: 2 electrically isolated inputs

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

Optical Fiber*

	100BaseFX
	Single Mode
Wavelength	1310 nm
Max. TX	0 dBm
Min. TX	-5 dBm
RX Sensitivity	-34 dBm
Link Budget	29 dB
Typical Distance	40 km ^a
Saturation	-3 dBm

* Only available for AWK-3121-SSC models

Physical Characteristics

Housing: Metal, providing IP30 protection

Weight: 850 g

Dimensions: 53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in)

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

Environmental Limits

Operating Temperature:

Standard Models: -25 to 60°C (-13 to 140°F)

Wide Temp. Models: -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)*

*Compliant with EN 50155 on 24 VDC

*PoE is only available for the AWK-3121 and AWK-3121-M12

Connector: 10-pin removable terminal block

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 (for AWK-3121 only)

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):

AWK-3121: 392,209 hrs

AWK-3121-M12: 480,831 hrs

AWK-3121-SSC: 445,913 hrs

Warranty

Warranty Period: 5 years

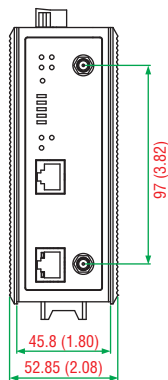
Details: See www.moxa.com/support/warranty.aspx

Dimensions

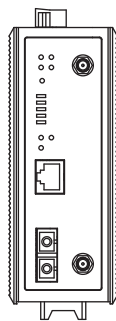
Unit: mm (inch)

AWK-3121

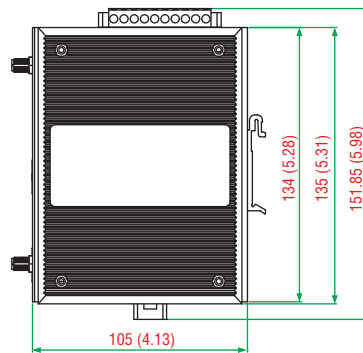
AWK-3121-SSC



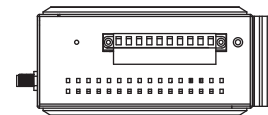
Front View



Front View



Side View

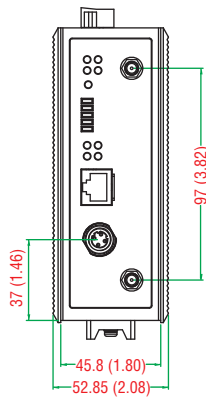


Top View

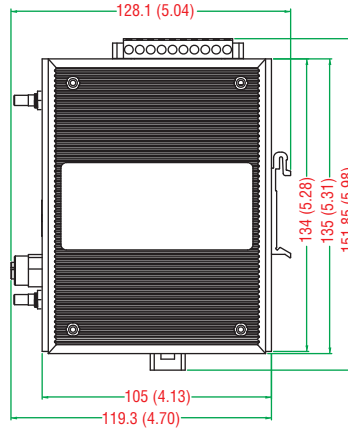
Dimensions

Unit: mm (inch)

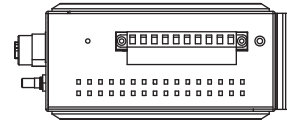
AWK-3121-M12



Front View



Side View



Top View

Ordering Information

Model Name	Available Models		Port Interface			Antenna Interface	
	Standard Temperature (0 to 60°C)	Wide Temperature (-40 to 75°C)	PoE, 10/100BaseT(X)		100BaseFX	RP-SMA	QMA
			RJ45	M12	Single-Mode SC Connector		
AWK-3121							
AWK-3121-US	✓	–	✓	–	–	✓	–
AWK-3121-EU	✓	–	✓	–	–	✓	–
AWK-3121-JP	✓	–	✓	–	–	✓	–
AWK-3121-US-T	–	✓	✓	–	–	✓	–
AWK-3121-EU-T	–	✓	✓	–	–	✓	–
AWK-3121-JP-T	–	✓	✓	–	–	✓	–
AWK-3121-M12							
AWK-3121-M12-US	✓	–	–	✓	–	–	✓
AWK-3121-M12-EU	✓	–	–	✓	–	–	✓
AWK-3121-M12-JP	✓	–	–	✓	–	–	✓
AWK-3121-M12-US-T	–	✓	–	✓	–	–	✓
AWK-3121-M12-EU-T	–	✓	–	✓	–	–	✓
AWK-3121-M12-JP-T	–	✓	–	✓	–	–	✓
AWK-3121-SSC							
AWK-3121-SSC-US	✓	–	–	–	✓	✓	–
AWK-3121-SSC-EU	✓	–	–	–	✓	✓	–
AWK-3121-SSC-JP	✓	–	–	–	✓	✓	–
AWK-3121-SSC-US-T	–	✓	–	–	✓	✓	–
AWK-3121-SSC-EU-T	–	✓	–	–	✓	✓	–
AWK-3121-SSC-JP-T	–	✓	–	–	✓	✓	–

Note:

US: USA band

EU: Europe band

JP: Japan band

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

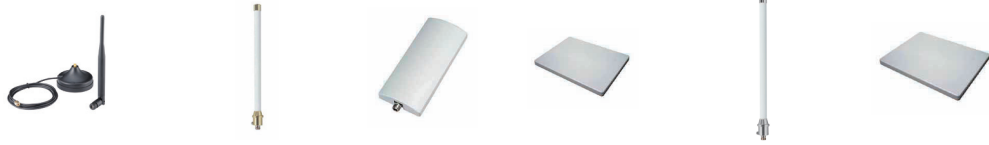
Package Checklist

- AWK-3121 wireless AP/bridge/client
- Cable holder with one screw
- 2 plastic RJ45 protective caps for console port
- 1 plastic protective cap for Fiber Port (AWK-3121-SSC only)
- DIN-Rail kit
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

* 2 dual-band omni-directional antennas (2 dBi, RP-SMA, 2.4/5 GHz)

Wireless Antenna Selection Guide

IEEE 802.11b/g 2.4 GHz Wireless Antennas **IEEE 802.11a 5 GHz Wireless Antennas**



	ANT-WSB-AHRM-05-1.5m	ANT-WSB-ANF-09	ANT-WSB-PNF-12	ANT-WSB-PNF-18	ANT-WSB5-ANF-12	ANT-WSB5-PNF-18
Frequency Range	2.4 to 2.5 GHz				5.1 to 5.9 GHz	
Antenna Type	$\lambda/4$ Dipole	Omni-directional	Directional, Panel	Directional, Panel	Omni-directional	Directional, Panel
Typical Antenna Gain	5 dBi	9 dBi	12 dBi	18 dBi	12 dBi	18 dBi
Description	2.4 GHz, omni-directional/dipole antenna, 5 dBi	2.4GHz, omni-directional antenna, 9 dBi, N-type (female)	2.4 GHz, panel antenna, 12 dBi, N-type (female)	2.4 GHz, panel antenna, 18 dBi, N-type (female)	5 GHz, omni-directional antenna, 12 dBi, N-type (female)	5 GHz, panel antenna, 18 dBi, N-type (female)
Impedance	50 ± 5 ohms	50 ± 5 ohms	50 ± 5 ohms	50 ± 5 ohms	50 ± 5 ohms	50 ± 5 ohms
Polarization	Vertical	Linear	Linear	Linear	Linear	Linear
HPBW/Horizontal	360°	360°	50°	30°	360°	10°
HPBW/Vertical	–	10°	30°	20°	6°	10°
V.S.W.R.	2.0	1 : 1.3 Max.	1 : 1.5 Max.	1 : 1.5 Max.	1 : 1.3 Max.	1 : 1.5 Max.
Power Handling	–	15 W Max.	10 W Max.	15 W Max.	10 W Max.	10 W Max.
Connector(s)	RP-SMA (male)	N-type (female)	N-type (female)	N-type (female)	N-type (female)	N-type (female)
Operating Temperature	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C
IP rating	–	IP65	IP65	IP65	IP65	IP65
Antenna Profile	–	420 mm length	215 x 90 x 30 mm	270 x 205 x 15 mm	420 mm length	270 x 205 x 15 mm
Weight	300 g	430 g	560 g	310 g	430 g	990 g
Related Products	AWK-1121/1127, AWK-3121, AWK-3121-SSC, AWK-3131, AWK-5222, AWK-5232, NPort W2150/2250 Plus, NPort W2004 AWK-1121/1127, AWK-3121, AWK-3131, AWK-4121, AWK-4131, AWK-5222, AWK-5232, AWK-6222, AWK-6232, NPort W2150/2250 Plus, NPort W2004					

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



	ANT-WDB-ANM-0502	ANT-WDB-ANM-0407	ANT-WDB-ANF-0407	ANT-WDB-ANM-0609	ANT-WDB-ANF-0609	ANT-WDB-PNF-1518
Frequency Range	2.4 to 2.5 / 5.1 to 5.9 GHz					
Antenna Type	Omni-directional	Omni-directional	Omni-directional	Omni-directional	Omni-directional	Directional, Panel
Typical Antenna Gain	2/5 dBi	4/7 dBi	4/7 dBi	6/9 dBi	6/9 dBi	15/18 dBi
Description	2.4/5 GHz, dual-band omni-directional antenna, 2/5 dBi, N-type (male)	2.4/5 GHz, dual-band omni-directional antenna, 4/7 dBi, N-type (male)	2.4/5 GHz, dual-band omni-directional antenna, 4/7 dBi, N-type (female)	2.4/5 GHz, dual-band omni-directional antenna, 6/9 dBi, N-type (male)	2.4/5 GHz, dual-band omni-directional antenna, 6/9 dBi, N-type (female)	2.4/5 GHz, dual-band panel antenna, 15/18 dBi, N-type (female)
Impedance	50 ± 5 ohms	50 ± 5 ohms	50 ± 5 ohms	50 ± 5 ohms	50 ± 5 ohms	50 ± 5 ohms
Polarization	Linear	Linear	Linear	Linear	Linear	Linear
HPBW/Horizontal	360°	360°	360°	360°	360°	50/10°
HPBW/Vertical	65°	10/8°	10/8°	10/8°	10/8°	30/10°
V.S.W.R.	1 : 2.0 Max.	1 : 1.5 Max.	1 : 1.5 Max.	1 : 1.5 Max.	1 : 1.5 Max.	1 : 1.5 Max.
Power Handling	2 W Max.	10 W Max.	10 W Max.	10 W Max.	10 W Max.	20 W Max.
Connector(s)	N-type (male)	N-type (male)	N-type (female)	N-type (male)	N-type (female)	N-type (female)
Operating Temperature	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C
IP rating	IP67	IP65	IP65	IP65	IP65	IP65
Antenna Profile	220 mm length	220 mm length	260 mm length	632 mm length	660 mm length	270 x 205 x 15 mm
Weight	72 g	115g	155 g	238 g	286 g	1020±10 g
Related Products	AWK-4121, AWK-4131, AWK-6222, AWK-6232		AWK-1121/1127, AWK-3121, AWK-3131, AWK-4121, AWK-4131, AWK-5222, AWK-5232, AWK-6222, NPort W2150/2250 Plus, NPort W2004		AWK-4121, AWK-4131, AWK-6222, AWK-6232 AWK-1121/1127, AWK-3121, AWK-3131, AWK-4121, AWK-4131, AWK-5222, AWK-5232, AWK-6222, AWK-6232, NPort W2150/2250 Plus, NPort W2004	

Wireless Accessories Selection Guide

Cables											
	CRF-N0117SA-3M	CRF-N0429N-3M	A-CRF-NMNM-LL4-300	A-CRF-NMNM-LL4-600	A-CRF-NMNM-LL4-900	A-CRF-RMNM-L1-300	A-CRF-RMNM-L1-600	A-CRF-RMNM-L1-900	A-CRF-RFRM-S1-060	A-CRF-QMAMNM-R2-50	A-CRF-RFQMAM-R2-50
	CFD200 cable, N-type (male) to RP SMA (male), 3 m	CFD400 cable, N-type (male) to N-type (male), 3 m	LMR-400 Lite cable, N-type (male) to N-type (male), 3 m	LMR-400 LITE cable, N-type (male) to N-type (male), 6 m	LMR-400 LITE cable, N-type (male) to N-type (male), 9 m	LMR-195 Lite cable, N-type (male) to RP SMA (male), 3 m	LMR-195 Lite cable, N-type (male) to RP SMA (male), 6 m	LMR-195 Lite cable, N-type (male) to RP SMA (male), 9 m	S141 cable, RP-SMA (male) to RP-SMA (female), 0.6 m	RG316 cable, QMA (male) to N-type (male)	RG316 cable, QMA (male) to RP-SMA (female)
Cable Type	CFD200	CFD400	LMR-400Lite	LMR-400 Lite	LMR-400 Lite	LMR-195 Lite	LMR-195 Lite	LMR-195 Lite	S141	RG316	RG316
Connector Type	N-type male to RP SMA male	N-type male to N-type male	N-type male to N-type male	N-type male to N-type male	N-type male to N-type male	N-type male to RP SMA male	N-type male to RP SMA male	N-type male to RP SMA male	RP-SMA male to RP-SMA female	QMA male to N-type male	QMA male to RP-SMA female
Cable Length	3 m	3 m	3 m	6 m	9 m	3 m	6 m	9 m	0.6 m	0.5 m	0.5 m
Outer Dimension	5 mm	10.3 mm	10.29 mm	10.29 mm	10.29 mm	4.95 mm	4.95 mm	4.95 mm	5 mm	2.54 mm	2.54 mm
Min. Bend Radius	12.7 mm	24.5 mm	25.4 mm	25.4 mm	25.4 mm	12.7 mm	12.7 mm	12.7 mm	12.7 mm	15 mm	15 mm
	55.4@2.5 GHz 86.5@5.8 GHz	22.2@2.5 GHz 35.5@5.8 GHz		22.2@2.5 GHz 35.5@5.8 GHz	22.2@2.5 GHz 35.5@5.8 GHz	62.4@2.5 GHz 98.1@5.8 GHz	62.4@2.5 GHz 98.1@5.8 GHz	62.4@2.5 GHz 98.1@5.8 GHz	75.4@3 GHz 98.4@5 GHz	206@2.4 GHz 345@6 GHz	206@2.4 GHz 345@6 GHz
Related Products	AWK-	AWK-4121, AWK-4131, AWK-6222, AWK-6232-M12				AWK-1121/1127, AWK-3121, AWK-3121-SSC, AWK-3131, AWK-5222, AWK-5232				AWK-3121-M12, AWK-3131-M12, AWK-5222-M12, AWK-5232-M12	

Termination Resistors



	A-TRM-50-NM	A-TRM-50-RM
Description	Termination resistor, 50 ohms, N-type (male)	Termination resistor, 50 ohms, RP-SMA (male)
Related Products	AWK-4121, AWK-4131, AWK-6222, AWK-6232	AWK-1121/1127, AWK-3121, AWK-3121-SSC, AWK-3131, AWK-5222, AWK-5232

Power Amplifiers



	A-WPA-2410gM-IDU	A-WPA-5410aM-IDU
Description	Wireless power amplifier	Wireless power amplifier
Signal Type	2.4 GHz band antenna (included)	5 GHz band antenna (included)
Connector Type	RP-SMA connector	RP-SMA connector
Power Output	1 W	1 W
Power Consumption	12 VDC	12 VDC
Power Cable	Power plug to power jack cable (included)	Power plug to power jack cable (included)
Dimensions	92 x 60 x 31 mm	92 x 60 x 31 mm
Related Accessories	<ul style="list-style-type: none"> N-type male to RP-SMA male cable RP-SMA male to RP-SMA female cable 	<ul style="list-style-type: none"> N-type male to RP-SMA male cable RP-SMA male to RP-SMA female cable
Related Products	AWK-1121/1127, AWK-3121, AWK-3121-SSC, AWK-3131, AWK-5222, AWK-5232	AWK-1121/1127, AWK-3121, AWK-3121-SSC, AWK-3131, AWK-5222, AWK-5232

Arrestors



	A-SA-NMNF-01
Frequency	0-6 GHz
Connector Type	N-type female to N-type male
Related Products	AWK-1121/1127, AWK-3121, AWK-3131, AWK-4121, AWK-4131, AWK-5222, AWK-6222

Adaptors



	A-ADP-RJ458P-DB9F-ABC01	A-ADP-QMAM-RF
Description	RJ45-to-DB9 adaptor for the ABC-01	QMA(male) to RP-SMA (female) adaptor for antenna
Related Products	All AWK series	AWK-3121-M12, AWK-3131-M12, AWK-5222-M12, AWK-5232-M12

Note: The actual product may vary in physical appearance, but the functionality will be the same.