

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 Roaming¹
- Complete redundancy with AeroLink Protection
- Easy network setup with Network Address Translation (NAT)
- Integrated antenna and power isolation
- -40 to 75°C wide 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 802.11a/b/g deployments to future-proof your wireless investments. The Wireless add-on for the MXview network management utility visualizes the AWK's invisible wireless connections to ensure wall-to-wall Wi-Fi connectivity.

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 Roaming¹ 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

Wireless Network Management With MXview Wireless

- Dynamic topology view shows the status of wireless links and connection changes at a glance
- Visual, interactive roaming playback function to review the roaming history of clients
- Detailed device information and performance indicator charts for individual AP and client devices

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.

Specifications

WLAN Interface

WLAN Standards	802.11a/b/g/n 802.11i Wireless Security			
Modulation Type	DSSS OFDM MIMO-OFDM			
Frequency Band for US (20 MHz operating channels)	2.412 to 2.462 GHz (11 channels) 5.180 to 5.240 GHz (4 channels) 5.260 to 5.320 GHz (4 channels) ² 5.500 to 5.700 GHz (11 channels) ² 5.745 to 5.825 GHz (5 channels)			
Frequency Band for EU (20 MHz operating channels)	2.412 to 2.472 GHz (13 channels) 5.180 to 5.240 GHz (4 channels) 5.260 to 5.320 GHz (4 channels) ² 5.500 to 5.700 GHz (11 channels) ²			
Frequency Band for JP (20 MHz operating channels)	2.412 to 2.484 GHz (14 channels) 5.180 to 5.240 GHz (4 channels) 5.260 to 5.320 GHz (4 channels) ² 5.500 to 5.700 GHz (11 channels) ²			
Wireless Security	WEP encryption (64-bit and 128-bit) WPA/WPA2-Enterprise (IEEE 802.1X/RADIUS, TKIP, AES) WPA/WPA2-Personal			
Transmission Rate	802.11b: 1 to 11 Mbps 802.11a/g: 6 to 54 Mbps 802.11n: 6.5 to 300 Mbps			
Transmitter Power for 802.11a	23±1.5 dBm @ 6 to 24 Mbps 21±1.5 dBm @ 36 Mbps 20±1.5 dBm @ 48 Mbps 18±1.5 dBm @ 54 Mbps			
Transmitter Power for 802.11n (5 GHz)	23±1.5 dBm @ MCS0/8 20 MHz 18±1.5 dBm @ MCS7/15 20 MHz 23±1.5 dBm @ MCS0/8 40 MHz 17±1.5 dBm @ MCS7/15 40 MHz			
Transmitter Power for 802.11b	26±1.5 dBm @ 1 Mbps 26±1.5 dBm @ 2 Mbps 26±1.5 dBm @ 5.5 Mbps 25±1.5 dBm @ 11 Mbps			
Transmitter Power for 802.11g	23±1.5 dBm @ 6 to 24 Mbps 21±1.5 dBm @ 36 Mbps 19±1.5 dBm @ 48 Mbps 18±1.5 dBm @ 54 Mbps			
Transmitter Power for 802.11n (2.4 GHz)	23±1.5 dBm @ MCS0/8 20 MHz 18±1.5 dBm @ MCS7/15 20 MHz 23±1.5 dBm @ MCS0/8 40 MHz 17±1.5 dBm @ MCS7/15 40 MHz			
Transmitter Power		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

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.

	<table><tr><th></th><th>US</th><th>EU</th><th>JP</th></tr><tr><td>5 GHz (UNII-3)</td><td>23 dBm</td><td>–</td><td>–</td></tr></table> Note: Based on regional regulations, the maximum transmission power allowed on the UNII bands is restricted in the firmware, as indicated above.		US	EU	JP	5 GHz (UNII-3)	23 dBm	–	–
	US	EU	JP						
5 GHz (UNII-3)	23 dBm	–	–						
Receiver Sensitivity for 802.11a (measured at 5.680 GHz)	Typ. -90 @ 6 Mbps Typ. -88 @ 9 Mbps Typ. -88 @ 12 Mbps Typ. -85 @ 18 Mbps Typ. -81 @ 24 Mbps Typ. -78 @ 36 Mbps Typ. -74 @ 48 Mbps Typ. -72 @ 54 Mbps Note: Due to a limitation in the receiver sensitivity performance for channels 153 and 161, it is recommended to avoid using these channels in your critical applications.								
Receiver Sensitivity for 802.11n (5 GHz; measured at 5.680 GHz)	Typ. -69 dBm @ MCS7 20 MHz Typ. -71 dBm @ MCS15 20 MHz Typ. -63 dBm @ MCS7 40 MHz Typ. -68 dBm @ MCS15 40 MHz Note: Due to a limitation in the receiver sensitivity performance for channels 153 and 161, it is recommended to avoid using these channels in your critical applications.								
Receiver Sensitivity for 802.11b (measured at 2.437 GHz)	Typ. -93 dBm @ 1 Mbps Typ. -93 dBm @ 2 Mbps Typ. -93 dBm @ 5.5 Mbps Typ. -88 dBm @ 11 Mbps								
Receiver Sensitivity for 802.11g (measured at 2.437 GHz)	Typ. -88 dBm @ 6 Mbps Typ. -86 dBm @ 9 Mbps Typ. -85 dBm @ 12 Mbps Typ. -85 dBm @ 18 Mbps Typ. -85 dBm @ 24 Mbps Typ. -82 dBm @ 36 Mbps Typ. -78 dBm @ 48 Mbps Typ. -74 dBm @ 54 Mbps								
Receiver Sensitivity for 802.11n (2.4 GHz; measured at 2.437 GHz)	Typ. -70 dBm @ MCS7 20 MHz Typ. -69 dBm @ MCS15 20 MHz Typ. -67 dBm @ MCS7 40 MHz Typ. -67 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								
Ethernet Interface									
Standards	IEEE 802.3 for 10BaseT IEEE 802.3u for 100BaseT(X) IEEE 802.3ab for 1000BaseT(X) IEEE 802.3at for PoE IEEE 802.1Q for VLAN Tagging IEEE 802.1X for authentication IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol								
PoE Ports (10/100/1000BaseT(X), RJ45 connector)	1								
Ethernet Software Features									
Management	DHCP Server/Client, DNS, HTTP, IPv4, LLDP, Proxy ARP, SMTP, SNMPv1/v2c/v3, Syslog, TCP/IP, Telnet, UDP, VLAN, Wireless Search Utility, MXview, MXview Wireless, MXconfig								
Routing	Port forwarding, Static Route, NAT								

Redundancy Protocols	RSTP, STP
Security	HTTPS/SSL, RADIUS, SSH
Time Management	SNTP Client
Firewall	
Filter	ICMP, MAC address, IP protocol, Port-based
Serial Interface	
Console Port	RS-232, 8-pin RJ45
LED Interface	
LED Indicators	PWR1, PWR2, PoE, FAULT, STATE, SIGNAL, WLAN, LAN
Input/Output Interface	
Digital Inputs	2 Max. input current: 8 mA +13 to +30 V for state 1 +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) 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 A
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m

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-ONM-0707	07 dBi at 2.4 GHz and 07 dBi at 5 GHz, N-type (male), dual-band omnidirectional antenna
ANT-WDB-ANM-0306	3 dBi at 2.4 GHz or 6 dBi at 5 GHz, N-type (male), omnidirectional antenna
ANT-WDB-ONF-0709	7 dBi at 2.4 GHz or 9 dBi at 5 GHz, N-type (female), dual-band, omnidirectional antenna
ANT-WDB-ANM-0502	5 dBi at 2.4 GHz or 2 dBi at 5 GHz, N-type (male), omnidirectional antenna
ANT-WDB-ARM-02	2 dBi at 2.4 GHz or 2 dBi at 5 GHz, RP-SMA (male) omnidirectional rubber-duck antenna
ANT-WDB-ARM-0202	2 dBi at 2.4 GHz or 2 dBi at 5 GHz, RP-SMA (male), dual-band, omnidirectional antenna
ANT-WDB-PNF-1011	10 dBi at 2.4 GHz and 11 dBi at 5 GHz, N-type (female), dual-band directional antenna
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-PNF-16	16 dBi at 5 GHz, N-type (female), single-band directional antenna
ANT-WSB-PNF-12-02	12 dBi at 2.4 GHz, N-type (female), single-band directional antenna
ANT-WSB-AHRM-05-1.5m	5 dBi at 2.4 GHz, RP-SMA (male), omnidirectional/dipole antenna, 1.5 m cable

Wireless Antenna Cables

A-CRF-RFRM-J1-60	RP-SMA (male) to RP-SMA (female) with JSF-141 cable, 0.6m
A-CRF-RFRM-R4-150	RF magnetic base, RP-SMA (male) to RP-SMA (female) RG-174/U cable, 1.5 m
A-CRF-RMNM-L1-300	N-type (male) to RP SMA (male) LMR-195 Lite cable, 3 m
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

Surge Arrestors

A-SA-NFNF-02	0 to 6 GHz, N-type (female) to N-type (female) surge arrester
A-SA-NMNF-02	0 to 6 GHz, N-type (male) to N-type (female) surge arrester

Wireless Adapters

A-ADP-RJ458P-DB9F-ABC01	DB9 female to RJ45 connector for the ABC-01 Series
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Wireless Terminating Resistors

A-TRM-50-NM	50-ohm termination resistor with N-type male connector
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Wall-Mounting Kits

WK-51-01	Wall mounting kit with 2 plates (51.6 x 67 x 2 mm) and 6 screws
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