AWK-3131A-RCC Series

Wi-Fi 4 (802.11n) railway onboard IP30 wireless AP/clients

Features and Benefits

- Wireless inter-carriage connections with Auto Carriage Connection (ACC)
- Supports up to 60 concurrent device connections and client isolation
- Seamless data offloading with sub-150 ms client-based Turbo Roaming

Certifications

EN 50155 EN 50121-4 cULus LISTED

Introduction

The AWK-3131A-RCC Series is a range of IP30-rated Wi-Fi 4 (802.11n) AP/clients designed for railway onboard use, providing a reliable wireless solution for dedicated applications such as inter-carriage backbone networks and onboard passenger infotainment systems. The Auto Carriage Connection (ACC) feature simplifies deployment and enhances the reliability of wireless carriage backbone networks. Optimized for passenger Wi-Fi services, the AWK-3131A-RCC Series supports up to 60 client connections and data rates of up to 300 Mbps. In addition, these devices can be powered via PoE for easier installation and flexible deployment.

Specifications

WLAN Interface

WLAN Standards	2.4 GHz: 802.11b/g/n with 64 QAM support, 20/40 MHz 5 GHz: 802.11a/n with 64 QAM support, 20/40 MHz
Frequency Band for US (20 MHz operating channels)	AWK-3131A-RCC-US models: 2.412 to 2.462 GHz (11 channels) 5.180 to 5.240 GHz (4 channels) 5.260 to 5.320 GHz (4 channels)[1] 5.500 to 5.700 GHz (8 channels) excluding 5.600 to 5.640 GHz[2] 5.745 to 5.825 GHz (5 channels)
Frequency Band for EU (20 MHz operating channels)	AWK-3131A-RCC-EU models only: 2.412 to 2.472 GHz (13 channels) 5.180 to 5.240 GHz (4 channels) 5.260 to 5.320 GHz (4 channels)[1] 5.500 to 5.700 GHz (11 channels)[1]
Frequency Band for JP (20 MHz operating channels)	AWK-3131A-RCC-JP models only: 2.412 to 2.484 GHz (14 channels) 5.180 to 5.240 GHz (4 channels) 5.260 to 5.320 GHz (4 channels)[1] 5.500 to 5.700 GHz (11 channels)[1]
Wireless Security	SSID broadcast enable/disable, 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

1. 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.
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.

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 20 MHz, 20±1.5 dBm @ MCS1 20 MHz, 20±1.5 dBm @ MCS2 20 MHz, 20±1.5 dBm @ MCS3 20 MHz, 19±1.5 dBm @ MCS4 20 MHz, 18±1.5 dBm @ MCS5 20 MHz, 18±1.5 dBm @ MCS6 20 MHz, 18±1.5 dBm @ MCS7 20 MHz, 23±1.5 dBm @ MCS8 20 MHz, 20±1.5 dBm @ MCS9 20 MHz, 20±1.5 dBm @ MCS10 20 MHz, 20±1.5 dBm @ MCS11 20 MHz, 19±1.5 dBm @ MCS12 20 MHz, 19±1.5 dBm @ MCS13 20 MHz, 18±1.5 dBm @ MCS14 20 MHz, 18±1.5 dBm @ MCS15 20 MHz, 23±1.5 dBm @ MCS0 40 MHz, 20±1.5 dBm @ MCS1 40 MHz, 20±1.5 dBm @ MCS2 40 MHz, 20±1.5 dBm @ MCS3 40 MHz, 19±1.5 dBm @ MCS4 40 MHz, 18±1.5 dBm @ MCS5 40 MHz, 18±1.5 dBm @ MCS6 40 MHz, 18±1.5 dBm @ MCS7 40 MHz, 23±1.5 dBm @ MCS8 40 MHz, 20±1.5 dBm @ MCS9 40 MHz, 20±1.5 dBm @ MCS10 40 MHz, 20±1.5 dBm @ MCS11 40 MHz, 19±1.5 dBm @ MCS12 40 MHz, 19±1.5 dBm @ MCS13 40 MHz, 18±1.5 dBm @ MCS14 40 MHz, 18±1.5 dBm @ MCS15 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 20 MHz, 21±1.5 dBm @ MCS1 20 MHz, 21±1.5 dBm @ MCS2 20 MHz, 21±1.5 dBm @ MCS3 20 MHz, 20±1.5 dBm @ MCS4 20 MHz, 19±1.5 dBm @ MCS5 20 MHz, 18±1.5 dBm @ MCS6 20 MHz, 18±1.5 dBm @ MCS7 20 MHz, 23±1.5 dBm @ MCS8 20 MHz, 21±1.5 dBm @ MCS9 20 MHz, 21±1.5 dBm @ MCS10 20 MHz, 21±1.5 dBm @ MCS11 20 MHz, 20±1.5 dBm @ MCS12 20 MHz, 19±1.5 dBm @ MCS13 20 MHz, 18±1.5 dBm @ MCS14 20 MHz, 18±1.5 dBm @ MCS15 20 MHz, 23±1.5 dBm @ MCS0 40 MHz, 20±1.5 dBm @ MCS1 40 MHz, 20±1.5 dBm @ MCS2 40 MHz, 20±1.5 dBm @ MCS3 40 MHz, 19±1.5 dBm @ MCS4 40 MHz, 19±1.5 dBm @ MCS5 40 MHz, 18±1.5 dBm @ MCS6 40 MHz, 17±1.5 dBm @ MCS7 40 MHz, 23±1.5 dBm @ MCS8 40 MHz, 20±1.5 dBm @ MCS9 40 MHz, 20±1.5 dBm @ MCS10 40 MHz, 20±1.5 dBm @ MCS11 40 MHz, 20±1.5 dBm @ MCS12 40 MHz, 19±1.5 dBm @ MCS13 40 MHz, 18±1.5 dBm @ MCS14 40 MHz, 17±1.5 dBm @ MCS15 40 MHz
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. -74 @ 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. -88 dBm @ MCS0 20 MHz, Typ. -85 dBm @ MCS1 20 MHz, Typ. -82 dBm @ MCS2 20 MHz, Typ. -79 dBm @ MCS3 20 MHz, Typ. -76 dBm @ MCS4 20 MHz, Typ. -71 dBm @ MCS5 20 MHz, Typ. -70 dBm @ MCS6 20 MHz, Typ. -69 dBm @ MCS7 20 MHz, Typ. -95 dBm @ MCS8 20 MHz, Typ. -91 dBm @ MCS9 20 MHz, Typ. -87 dBm @ MCS10 20 MHz, Typ. -80 dBm @ MCS11 20 MHz, Typ. -78 dBm @ MCS12 20 MHz, Typ. -74 dBm @ MCS13 20 MHz, Typ. -72 dBm @ MCS14 20 MHz, Typ. -71 dBm @ MCS15 20 MHz, Typ. -84 dBm @ MCS0 40 MHz, Typ. -81 dBm @ MCS1 40 MHz, Typ. -77 dBm @ MCS2 40 MHz, Typ. -75 dBm @ MCS3 40 MHz, Typ. -71 dBm @ MCS4 40 MHz, Typ. -67 dBm @ MCS5 40 MHz, Typ. -64 dBm @ MCS6 40 MHz, Typ. -63 dBm @ MCS7 40 MHz, Typ. -90 dBm @ MCS8 40 MHz, Typ. -85 dBm @ MCS9 40 MHz, Typ. -82 dBm @ MCS10 40 MHz, Typ. -81 dBm @ MCS11 40 MHz, Typ. -77 dBm @ MCS12 40 MHz, Typ. -73 dBm @ MCS13 40 MHz, Typ. -71 dBm @ MCS14 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. -89 dBm @ MCS0 20 MHz, Typ. -85 dBm @ MCS1 20 MHz, Typ. -85 dBm @ MCS2 20 MHz, Typ. -82 dBm @ MCS3 20 MHz, Typ. -78 dBm @ MCS4 20 MHz, Typ. -74 dBm @ MCS5 20 MHz, Typ. -72 dBm @ MCS6 20 MHz, Typ. -70 dBm @ MCS7 20 MHz, Typ. -95 dBm @ MCS8 20 MHz, Typ. -90 dBm @ MCS9 20 MHz, Typ. -87 dBm @ MCS10 20 MHz, Typ. -83 dBm @ MCS11 20 MHz, Typ. -80 dBm @ MCS12 20 MHz, Typ. -74 dBm @ MCS13 20 MHz, Typ. -71 dBm @ MCS14 20 MHz, Typ. -69 dBm @ MCS15 20 MHz, Typ. -87 dBm @ MCS0 40 MHz, Typ. -83 dBm @ MCS1 40 MHz, Typ. -83 dBm @ MCS2 40 MHz, Typ. -80 dBm @ MCS3 40 MHz, Typ. -76 dBm @ MCS4 40 MHz, Typ. -73 dBm @ MCS5 40 MHz, Typ. -69 dBm @ MCS6 40 MHz, Typ. -67 dBm @ MCS7 40 MHz, Typ. -93 dBm @ MCS8 40 MHz, Typ. -88 dBm @ MCS9 40 MHz, Typ. -85 dBm @ MCS10 40 MHz,

	Typ. -82 dBm @ MCS11 40 MHz, Typ. -78 dBm @ MCS12 40 MHz, Typ. -73 dBm @ MCS13 40 MHz, Typ. -69 dBm @ MCS14 40 MHz, Typ. -67 dBm @ MCS15 40 MHz
WLAN Operation Mode	Access point, Client, Client-Router, Sniffer
Antenna Connectors	2 x QMA

Ethernet Interface

Standards	IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X), IEEE 802.3ab for 1000BaseT, IEEE 802.3af for PoE, IEEE 802.1Q for VLAN Tagging
10/100/1000BaseT(X) Ports (M12 A-coded 8-pin female connector)	1 Supports IEEE 802.3af PoE

Ethernet Software Features

Management	SNMPv1/v2c/v3, Proxy ARP, ARP, DNS, HTTP, HTTPS, ICMP, TCP/IP, UDP, RADIUS, DHCP, BOOTP
Security	RADIUS
Time Management	SNTP

Firewall

Filter	IP protocol, Port-based, MAC address

Serial Interface

Console Port	RS-232 (RJ45-type)

LED Interface

LED Indicators	PWR1, PWR2, PoE, FAULT, STATE, SIGNAL, Client, WLAN, LAN

Input/Output Interface

Digital Inputs	2, +13 to +30 V for state 1, +3 to -30 V for state 0, Max. input current: 8 mA
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	52.9 x 151.9 x 127.4 mm (2.08 x 5.98 x 5.02 in)
Weight	850 g (1.87 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit)
Protection	-CT models: PCB conformal coating

Power Parameters

Input Current	0.67 A @ 12 VDC, 0.17 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	8.03 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 55032/24
EMI	CISPR 32, FCC Part 15B Class B
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m, IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV, IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV, IEC 61000-4-6 CS: 10 V, IEC 61000-4-8 PFMF
Railway	EN 50155, EN 50121-4
Railway Fire Protection	EN 45545-2
Radio	EN 300 328, EN 301 893, MIC, FCC ID SLE-WAPN008, IDA
Safety	UL 60950-1, IEC 60950-1, EN 60950-1 (LVD)

MTBF

Time	742,649 hrs
Standards	Telcordia Standard SR-332

Warranty

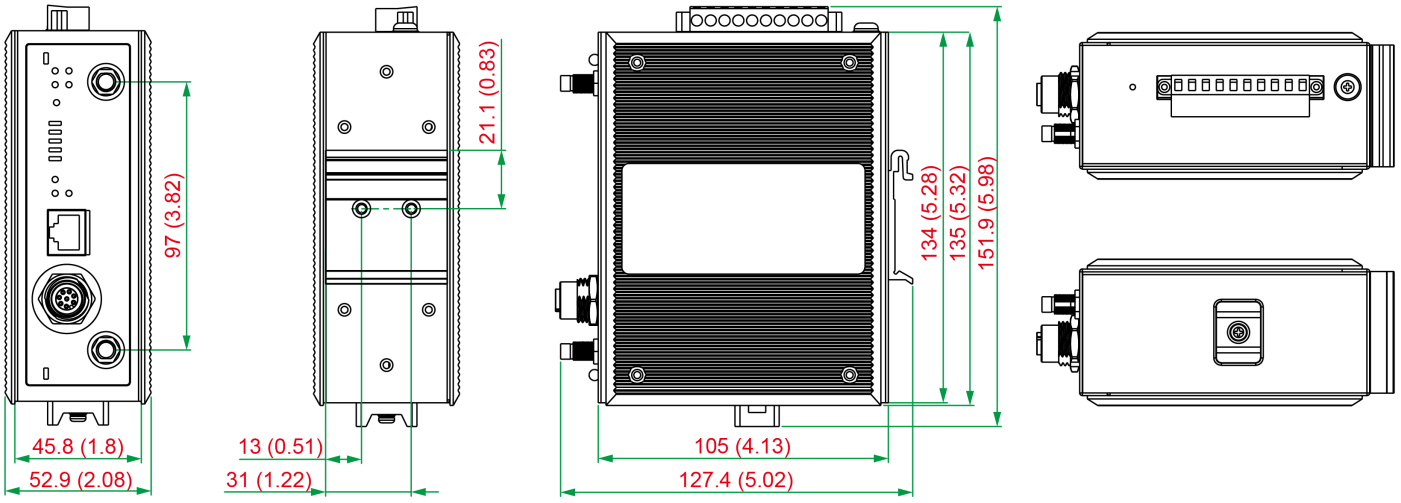
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x AWK-3131A-M12-RCC wireless AP/client
Installation Kit	1 x DIN-rail kit, 2 x cap, plastic, for RJ45 port, 1 x cable holder with screw
Documentation	1 x quick installation guide, 1 x warranty card

Dimensions

Unit: mm (inch)



Front View | Rear View | Side View | Top and Bottom Views

Ordering Information

Model Name	Band	Operating Temperature (-40 to 75°C)	Conformal Coating
AWK-3131A-M12-RCC-US	US	-25 to 60°C	–
AWK-3131A-M12-RCC-EU	EU	-25 to 60°C	–
AWK-3131A-M12-RCC-JP	JP	-25 to 60°C	–
AWK-3131A-M12-RCC-US-T	US	-40 to 75°C	–
AWK-3131A-M12-RCC-EU-T	EU	-40 to 75°C	–
AWK-3131A-M12-RCC-JP-T	JP	-40 to 75°C	–
AWK-3131A-M12-RCC-US-CT	US	-25 to 60°C	✓
AWK-3131A-M12-RCC-EU-CT	EU	-25 to 60°C	✓
AWK-3131A-M12-RCC-JP-CT	JP	-25 to 60°C	✓
AWK-3131A-M12-RCC-US-CT-T	US	-40 to 75°C	✓
AWK-3131A-M12-RCC-EU-CT-T	EU	-40 to 75°C	✓
AWK-3131A-M12-RCC-JP-CT-T	JP	-40 to 75°C	✓

Accessories (sold separately)

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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