AWK-3131-RCC Series

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

> Designed specifically for rail carriage-to-carriage communication
> IEEE 802.11a/b/g/n compliant
> Up to 300 Mbps data rate
> MIMO technology increases data throughput and range
> Compliant with EN 50155
> M12 anti-vibration connectors
> -40 to 75°C operating temperature range (T models)

EN 50155   EN 50121   c(UL)us LISTED   CE   FC

802.11

: Introduction

The AWK-3131-RCC series are 3-in-1 industrial AP/bridge/client devices designed specifically for rail carriage-to-carriage communication and can provide up to 300 Mbps with IEEE 802.11n technology. The AWK-3131-RCC is compliant with the essential sections of EN 50155, covering operating temperature, power input voltage, surge, ESD, and vibration. The AWK-3131-RCC has two DC power inputs to provide power redundancy, can operate on either the 2.4 or 5 GHz band, and is backwards-compatible with existing 802.11a/b/g deployments. The AWK-3131-RCC can also be powered via PoE to make deployment easier.

Improved Higher Data Rate and Bandwidth

• High-speed wireless connectivity with up to 300 Mbps data rate
• MIMO technology to improve the capability of transmitting and receiving multiple data streams
• Increased channel width with channel bonding technology

Specifications for Industrial-grade Applications

• Industrial-grade QoS and VLAN for efficient data traffic management
• 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/n for Wireless LAN
IEEE 802.11i for Wireless Security
IEEE 802.3 for 10BaseT
IEEE 802.3u for 100BaseT(X)
IEEE 802.3ab for 1000BaseT
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
• 802.11n: 64QAM @ 300 Mbps to BPSK @ 6.5 Mbps (multiple rates supported)

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)

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
802.11n: 6.5 to 300 Mbps (multiple rates supported)

TX 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. 17 dBm (± 1.5 dBm)
54 Mbps: Typ. 15 dBm (± 1.5 dBm)
802.11a:
6 to 24 Mbps: Typ. 17 dBm (± 1.5 dBm)
36 to 48 Mbps: Typ. 16 dBm (± 1.5 dBm)
54 Mbps: Typ. 14 dBm (± 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

TX Transmit Power MIMO:
802.11a/n (20/40 MHz):
MCS15 20 MHz: Typ. 13 dBm (± 1.5 dBm)
802.11g/n (20 MHz):
MCS15 20 MHz: Typ. 14 dBm (± 1.5 dBm)

MOXA®

RX Sensitivity MIMO:
802.11a/n:
-68 dBm @ MCS15 40 MHz,
-69 dBm @ MCS15 20 MHz,
-70 dBm @ MCS7 40 MHz,
-71 dBm @ MCS7 20 MHz
802.11g/n:
-69 dBm @ MCS15 20 MHz,
-71 dBm @ MCS7 20 MHz

Protocol Support
General Protocols: Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE, DHCP
AP-only Protocols: ARP, BOOTP, DHCP, STP/RSTP (IEEE 802.1D/w)

Interface
Connector for External Antennas:
AWK-3131-M12-RCC: QMA (female)
M12 Ports: 1, 10/100/1000BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
Console Port: RS-232 (RJ45-type)
LED Indicators: PWR1, PWR2, PoE, FAULT, STATE, signal strength, WLAN, LAN
Alarm Contact (digital output): 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

Physical Characteristics
Housing: Metal, IP30 protection

Weight: 970 g
Dimensions: 53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in)
Installation: DIN-Rail mounting (standard), wall mounting (optional)

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
Connector: 10-pin removable terminal block
Power Consumption: 12 to 48 VDC, 700 mA
Reverse Polarity Protection: Present

Standards and Certifications
Safety: UL 60950-1, EN 60950-1
EMC: EN 301 489-1/17, FCC Part 15 Subpart B, EN 55022/55024
Radio: EN 300 328, EN 301 893
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):
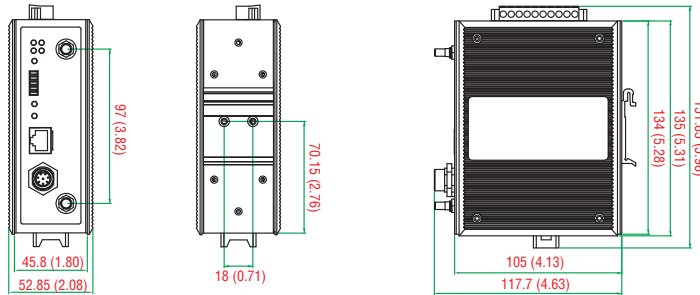AWK-3131-M12: 407,416 hrs

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

Dimensions

AWK-3131-M12-RCC

Unit: mm (inch)

Front and Rear Views

Side View

Ordering Information

Available Model			Port Interface	Antenna Interface		Conformal Coating
Model Name	Standard Temperature (-25 to 60°C)	Wide Temperature (-40 to 75°C)	M12 10/100/1000BaseT(X)	RP-SMA	QMA	
AWK-3131-M12-RCC						
AWK-3131-M12-RCC-US	✓	–	✓	–	✓	–
AWK-3131-M12-RCC-EU	✓	–	✓	–	✓	–
AWK-3131-M12-RCC-US-T	–	✓	✓	–	✓	–
AWK-3131-M12-RCC-EU-T	–	✓	✓	–	✓	–
AWK-3131-M12-RCC-US-CT	✓	–	✓	–	✓	✓
AWK-3131-M12-RCC-EU-CT	✓	–	✓	–	✓	✓
AWK-3131-M12-RCC-US-CT-T	–	✓	✓	–	✓	✓
AWK-3131-M12-RCC-EU-CT-T	–	✓	✓	–	✓	✓

Note:
US: USA band
EU: Europe band

Package Checklist
• AWK-3131-RCC wireless AP/bridge/client
• Cable holder with one screw
• 2 plastic RJ45 protective caps for console port
• DIN-rail kit
• Documentation and software CD
• Quick installation guide (printed)
• Warranty card