

# AWK-5232-RCC Series

## Industrial IEEE 802.11a/b/g/n dual-radio wireless AP/bridge/client



- > Designed specifically for rail carriage-to-carriage communication
- > IEEE 802.11a/b/g/n compliant
- > Dual-radio design: 2.4 GHz and/or 5 GHz RF bands
- > Redundant power inputs and PoE+
- > Up to 300 Mbps data rate
- > M12 anti-vibration connectors
- > MIMO technology increases data throughput and range
- > Complies with a portion of EN 50155 specifications
- > -40 to 75°C operating temperature range



### Introduction

The AWK-5232-RCC series industrial 802.11n wireless AP/bridge/client is an ideal wireless solution for applications such as onboard passenger infotainment systems and inter-carriage wireless backbone networks. It provides a faster data rate, wider range, and a noticeably stronger signal at a distance than the 802.11g model. With two independent RF modules, the AWK-5232-RCC series supports a great variety of wireless configurations and applications. The auto carriage connection (ACC) feature provides simple deployment and increases the reliability of wireless carriage backbone networks. The AWK-5232-RCC series is also optimized for passenger Wi-Fi services and complies with a portion of EN 50155 specifications, covering operating temperature, power input voltage, surge, ESD, and vibration, making the switches suitable for a variety of industrial applications. The AWK-5232-RCC's two DC power inputs increases the power supply reliability, and it can also be powered via PoE+ for easier deployment.

### Higher Data Rate and Greater Bandwidth

- High-speed wireless connectivity with up to 300 Mbps data rate
- MIMO technology improves data throughput via multiplexed, smart antenna transmissions and receptions
- Channel bonding technology for increased throughput or channel redundancy

### Redundancy to Increase System Reliability

- Dual DC power inputs and PoE+
- Immunity against disconnection caused by radio interference

### Specifications for Rail Onboard Applications

- Auto Carriage Connection (ACC)
- Maximum WPA2/802.11i security
- Client isolation
- Multicast traffic rate control

### 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 802.3at 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)

##### 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

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

#### TX Transmit Power:

802.11b:

1 to 11 Mbps: Typ. 18 dBm ( $\pm 1.5$  dBm)

802.11g:

6 to 24 Mbps: Typ. 18 dBm ( $\pm 1.5$  dBm)

36 to 48 Mbps: Typ. 17 dBm ( $\pm 1.5$  dBm)

54 Mbps: Typ. 15 dBm ( $\pm 1.5$  dBm)

802.11a:

6 to 24 Mbps: Typ. 17 dBm ( $\pm 1.5$  dBm)

36 to 48 Mbps: Typ. 16 dBm ( $\pm 1.5$  dBm)

54 Mbps: Typ. 14 dBm ( $\pm 1.5$  dBm)

#### TX Transmit Power MIMO (per connector):

802.11a/n (20/40 MHz):

MCS15 20 MHz: Typ. 13 dBm ( $\pm 1.5$  dBm)

MCS15 40 MHz: Typ. 12 dBm ( $\pm 1.5$  dBm)

802.11g/n (20 MHz):

MCS15 20 MHz: Typ. 14 dBm ( $\pm 1.5$  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

#### 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, SNMP, TCP, UDP, RADIUS, SNMP, PPPoE, DHCP

**AP-only Protocols:** ARP, BOOTP, DHCP, STP/RSTP (IEEE 802.1D/w)

#### Interface

**Connector for External Antennas:** QMA (female)

**M12 Ports:** 2, 10/100/1000BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection

**Console Port:** RS-232 (RJ45-type)

**Reset:** Present

**LED Indicators:** PWR1, PWR2, PoE+, FAULT, STATE, WLAN1, WLAN2, LAN1, LAN2

**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:** 1.2 kg

**Dimensions:** 74.55 x 135 x 105 mm (2.94 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 802.3at compliant)

**Connector:** 10-pin removable terminal block

##### Power Consumption:

24.5 watts (max.)

12 to 48 VDC, 1.5 A (max.)

**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, TELEC, FCC ID SLE-WAPN001

**Rail Traffic:** EN 50155\*, EN 50121-1/4

\*Complies with a portion of EN 50155 specifications. Please contact Moxa or a Moxa distributor for details.

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

#### Reliability

**MTBF (mean time between failures):** 350,643 hrs

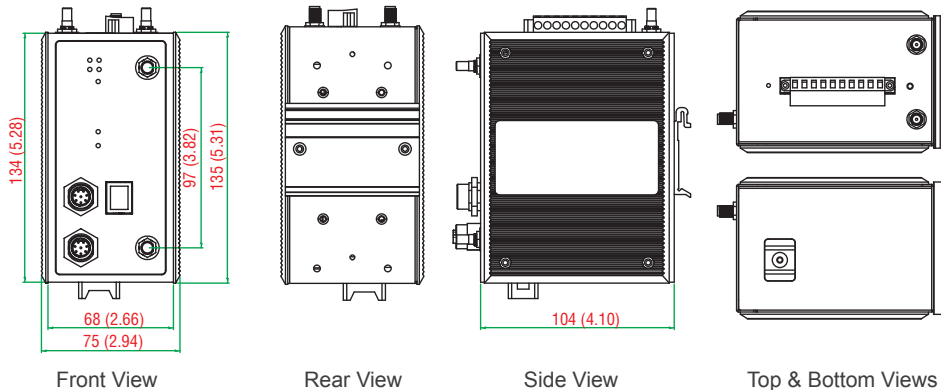
#### Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

#### Dimensions

Unit: mm (inch)



## Ordering Information

Available Models				Port Interface		Antenna Interface	
Model Name	Standard Temperature (-25 to 60°C)	Wide Temperature (-40 to 75°C)	Conformal Coating	2, 10/100/1000BaseT(X)		RP-SMA	QMA
				RJ45	M12		
AWK-5232-M12-RCC							
AWK-5232-M12-RCC-US-CT	✓	–	✓	–	✓	–	✓
AWK-5232-M12-RCC-EU-CT	✓	–	✓	–	✓	–	✓
AWK-5232-M12-RCC-US-CT-T	–	✓	✓	–	✓	–	✓
AWK-5232-M12-RCC-EU-CT-T	–	✓	✓	–	✓	–	✓
AWK-5232-M12-RCC-US	✓	–	–	–	✓	–	✓
AWK-5232-M12-RCC-EU	✓	–	–	–	✓	–	✓
AWK-5232-M12-RCC-US-T	–	✓	–	–	✓	–	✓
AWK-5222-M12-RCC-EU-T	–	✓	–	–	✓	–	✓

Note:  
 US: USA band  
 EU: Europe band  
 CT: conformal coating

### Package Checklist

- AWK-5232-RCC wireless AP/bridge/client
- DIN-rail kit
- 2 plastic RJ45 protective caps for console ports
- 1 plastic M12-female protective cap
- Cable holder with 1 screw
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card