AWK-3131A-RTGシリーズ

鉄道車両向けの屋内シングル無線、802.11n AP/クライアント、IP30保護等級

機能とメリット

- IEEE 802.11a/b/g/n準拠
- M12耐振動コネクタ
- SC光ファイバ接続
- 効率的にネットワークトラフィックを管理するQoS（WMM）およびVLAN
- コントローラベースTurbo Roaming（50ミリ秒未満）[1]
- EN 50155全必須検査項目に準拠[2]
- -40～75°Cの環境に対しての広温度モデルが利用可能

認証

EN 50155 EN 50121-4

製品紹介

AWK-3131A-RTG 2-in-1産業AP/クライアントデバイスは、車両と地上インフラ間通信用に特別に設計されており、列車が120 km/hの速度に達しても確実に動作することができます。AWK-3131A-RTGは、EN 50155仕様の一部に準拠しており、動作温度、入力電圧、サージ、ESD、および振動をカバーしているため、AWK-3131A-RTGがさまざまな産業用アプリケーションに適しています。AWK-3131A-RTGは、DINレールによるマウントまたは配電ボックスに簡単に取り付けられ、DINレールによるマウント機能、広い動作温度範囲およびLEDインジケータ付きIP30保護等級の筐体により、あらゆる鉄道車両アプリケーション向けに便利で信頼性の高いソリューションを提供します。

先進的なセキュリティ

- 64ビットおよび128ビットWEP（Wired Equivalent Privacy）
- SSIDブロードキャストの有効化/無効化
- WPA/WPA2（Wi-Fi Protected Access）および802.11iに対応
- IEEE802.1X/RADIUSに対応
- アクセス制御用の強力なフィルター

列車 - 地上間アプリケーション向けに設計

- クライアントベースのTurbo Roamingハンドオーバータイム（3チャネルとWPA2で150ミリ秒未満）
- コントローラベースのTurbo Roamingハンドオーバータイム（WAC-1001またはWAC-2004と使用する場合のみ、3チャネルとWPA2で50ミリ秒未満）
- 異なる取り付け構造とアンテナタイプに対する複数のローミングパラメータ

仕様

WLAN Interface

WLAN Standards	802.11a/b/g/n 802.11i Wireless Security
Modulation Type	DSSS OFDM 802.11b: CCK @ 11/5.5 Mbps 802.11b: DQPSK @ 2 Mbps 802.11b: DBPSK @ 1 Mbps 802.11a/g: 64QAM @ 54/48 Mbps

1. Turbo Roaming Recovery Timeは、干渉のない20 MHz RFチャネル、WPA2-PSKセキュリティ、およびデフォルトのTurbo Roamingパラメータで設定されたAPに全体にわたり、最適化された条件で記録されたテスト結果の平均です。 クライアントは、100 Kbpsのトラフィック負荷で3チャネルローミングが設定されています。他の条件もまた、ローミング性能に影響を及ぼす可能性があります。Turbo Roamingパラメータ設定の詳細については、製品マニュアルを参照してください。
2. 本製品は、EN 50155標準規格で定められた鉄道車両アプリケーションに適しています。詳細については、こちらをクリックしてください：www.moxa.com/doc/specs/EN_50155_Compliance.pdf

	802.11a/g: 16QAM @ 36/24 Mbps 802.11a/g: QPSK @ 18/12 Mbps 802.11a/g: BPSK @ 9/6 Mbps 802.11n: 64QAM @ 300 Mbps to BPSK @ 6.5 Mbps
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)[3] 5.500 to 5.700 GHz (8 channels) excluding 5.600 to 5.640 GHz[3] 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)[3] 5.500 to 5.700 GHz (11 channels)[3]
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)[3] 5.500 to 5.700 GHz (11 channels)[3]
Wireless Security	SSID broadcast enable/disable WEP encryption (64-bit and 128-bit) WPA/WPA2-Personal WPA/WPA2-Enterprise (IEEE 802.1X/RADIUS, TKIP, AES)
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 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

3. 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.

	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[4]
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

4. 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.

	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[5]
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	QMA

5. 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.

Ethernet Interface

PoE Ports (10/100BaseT(X), M12 D-coded 4-pin female connector)	1, AWK-3131A-M12-RTG only
Standards	IEEE 802.3 for 10BaseT IEEE 802.3u for 100BaseT(X) IEEE 802.3af for PoE IEEE 802.1Q for VLAN Tagging
10/100BaseT(X) Ports (M12 D-coded 4-pin female connector)	1, 10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection (AWK-3131A-M12-RTG only)
100BaseFX Ports (single-mode SC connector)	1, AWK-3131A-SSC-RTG only
Optical Fiber	

	100BaseFX
Wavelength	1310 nm
Max. TX	0 dBm
Min. TX	-5 dBm
RX Sensitivity	-34 dBm
Link Budget	29 dBm
Typical Distance	40 km

Ethernet Software Features

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

Firewall

Filter	MAC/IP Protocol/Port-based

Serial Interface

Console Port	RS-232 (RJ45-type)

LED Interface

LED Indicators	PWR1, PWR2, PoE*, FAULT, STATE, SIGNAL, CLIENT, WLAN, LAN (AWK-3131A-M12- RTG only),100M (AWK-3131A-SSC-RTG only) *PoE is only available for the AWK-3131A-M12-RTG

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)

Power Parameters

Input Current	AWK-3131A-M12-RTG: 0.85 A @ 12 VDC, 0.22 A @ 48 VDC AWK-3131A-SSC-RTG: 1.0 A @ 12 VDC, 0.27 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	AWK-3131A-M12-RTG: Maximum 10.5 W AWK-3131A-SSC-RTG: Maximum 13 W
Reverse Polarity Protection	Supported

Environmental Limits

Operating Temperature	-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 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
Railway	EN 50155, EN 50121-4
Railway Fire Protection	EN 45545-2
Radio	EN 301 489-1/17, EN 300 328, EN 301 893, MIC, FCC ID SLE-WAPN008, SRRC, NCC, IDA
Safety	UL 60950-1, IEC 60950-1, EN 60950-1 (LVD)

MTBF

Time	AWK-3131A-M12-RTG: 552,454 hrs AWK-3131A-SSC-RTG: 528,478 hrs
Standards	Telcordia SR332

Warranty

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

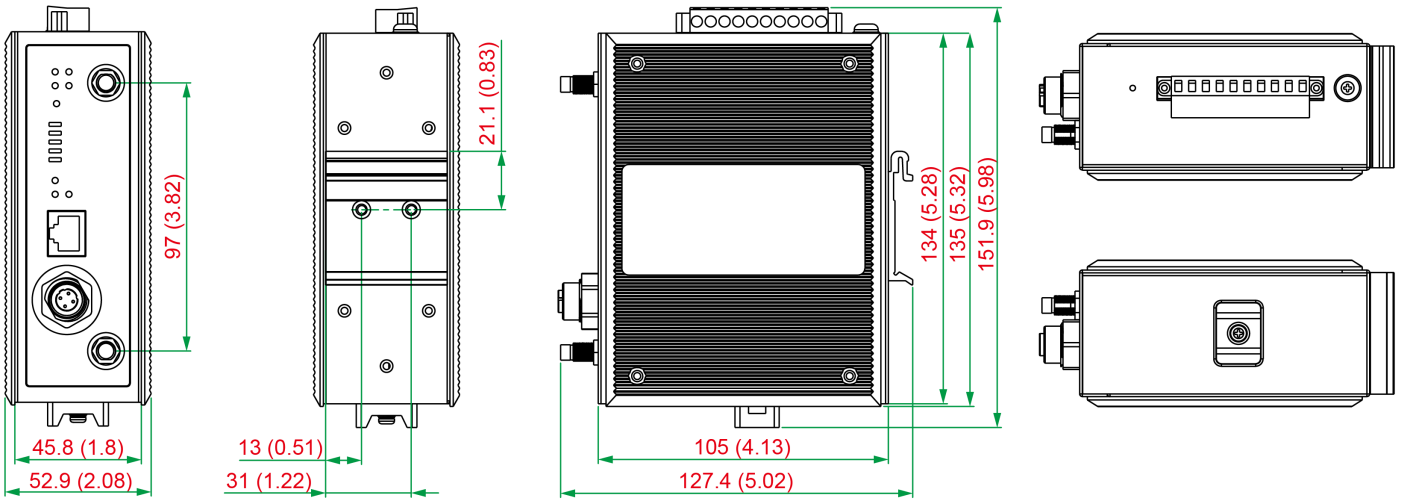
Package Contents

Device	1 x AWK-3131A-RTG wireless AP/client
Installation Kit	1 x DIN-rail kit 2 x cap, plastic, for RJ45 port 1 plastic protective cap for fiber port (AWK-3131A-SSC-RTG only) 1 x cable holder with screw
Documentation	1 x quick installation guide 1 x warranty card

寸法

AWK-3131A-M12-RTG Models

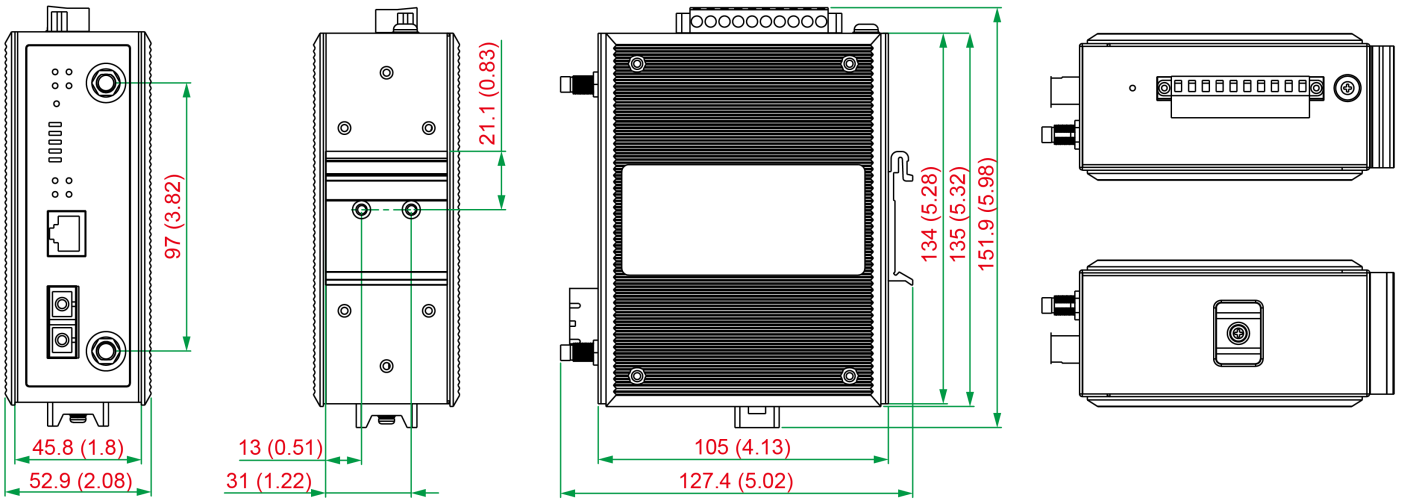
単位：mm（インチ）



前面図　背面図　側面図　上面図と底面図

AWK-3131A-SCC-RTG Models

単位：mm（インチ）



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注文情報

Model Name	Band	Connector	Conformal Coating
AWK-3131A-M12-RTG-EU-T	EU	M12	–
AWK-3131A-M12-RTG-US-T	US	M12	–
AWK-3131A-M12-RTG-JP-T	JP	M12	–
AWK-3131A-M12-RTG-EU-CT-T	EU	M12	P
AWK-3131A-M12-RTG-US-CT-T	US	M12	P
AWK-3131A-M12-RTG-JP-CT-T	JP	M12	P
AWK-3131A-SSC-RTG-EU-T	EU	Single-mode SC	–
AWK-3131A-SSC-RTG-US-T	US	Single-mode SC	–
AWK-3131A-SSC-RTG-JP-T	JP	Single-mode SC	–
AWK-3131A-SSC-RTG-EU-CT-T	EU	Single-mode SC	P
AWK-3131A-SSC-RTG-US-CT-T	US	Single-mode SC	P
AWK-3131A-SSC-RTG-JP-CT-T	JP	Single-mode SC	P

アクセサリー（別売）

Wall-Mounting Kits

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