AWK-1137C Series

Industrial 802.11a/b/g/n wireless client



Features and Benefits

- IEEE 802.11a/b/g/n compliant client
- Comprehensive interfaces with one serial port and two Ethernet LAN ports
- Millisecond-level Client-based Turbo Roaming[1]
- Easy setup and deployment with AeroMag
- 2x2 MIMO future-proof technology
- Easy network setup with Network Address Translation (NAT)
- Integrated robust antenna and power isolation
- Anti-vibration design
- Compact size for your industrial applications

Certifications

Introduction

The AWK-1137C is an ideal client solution for industrial wireless mobile applications. It enables WLAN connections for both Ethernet and serial devices, and is compliant with industrial standards and approvals covering operating temperature, power input voltage, surge, ESD, and vibration. The AWK-1137C 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.

Industrial Ruggedness

- Integrated antenna and power isolation designed to provide 500 V insulation protection against external electrical interference
- -40 to 75°C wide operating temperature models (-T) available for smooth wireless communication in harsh environments

Mobility-oriented Design

- Client-based Turbo Roaming[1] for < 150 ms roaming recovery time between APs
- MIMO technology to ensure transmitting and receiving capability while on the move
- Anti-vibration performance (with reference to IEC 60068-2-6)

Easy Integration

- Semi-automatically configurable to reduce deployment cost
- AeroMag support for error-free setup of your industrial applications' basic WLAN settings
- Various communication interfaces for connecting to different types of devices
- One-to-many NAT to simplify your machine setup

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 18±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 22±1.5 dBm @ 36 Mbps 20±1.5 dBm @ 48 Mbps 19±1.5 dBm @ 54 Mbps
Transmitter Power for 802.11n (2.4 GHz)	23±1.5 dBm @ MCS0/8 20 MHz 17±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	23 dBm	23 dBm
5 GHz (UNII-2)	23 dBm	23 dBm	23 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.

	US	EU	JP
5 GHz (UNII-3)	23 dBm	–	–

Note: Based on regional regulations, the maximum transmission power allowed on the UNII bands is restricted in the firmware, as indicated above.

Receiver Sensitivity for 802.11a (measured at 5.680 GHz)	Typ. -90 @ 6 Mbps Typ. -88 @ 9 Mbps Typ. -87 @ 12 Mbps Typ. -85 @ 18 Mbps Typ. -81 @ 24 Mbps Typ. -78 @ 36 Mbps Typ. -74 @ 48 Mbps Typ. -73 @ 54 Mbps Note[3]
Receiver Sensitivity for 802.11n (5 GHz; measured at 5.680 GHz)	Typ. -69 dBm @ MCS7 20 MHz Typ. -70 dBm @ MCS15 20 MHz Typ. -64 dBm @ MCS7 40 MHz Typ. -66 dBm @ MCS15 40 MHz Note[3]
Receiver Sensitivity for 802.11b (measured at 2.437 GHz)	Typ. -89 dBm @ 1 Mbps Typ. -89 dBm @ 2 Mbps Typ. -89 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. -88 dBm @ 9 Mbps Typ. -88 dBm @ 12 Mbps Typ. -87 dBm @ 18 Mbps Typ. -84 dBm @ 24 Mbps Typ. -81 dBm @ 36 Mbps Typ. -77 dBm @ 48 Mbps Typ. -75 dBm @ 54 Mbps
Receiver Sensitivity for 802.11n (2.4 GHz; measured at 2.437 GHz)	Typ. -70 dBm @ MCS7 20 MHz Typ. -70 dBm @ MCS15 20 MHz Typ. -64 dBm @ MCS7 40 MHz Typ. -65 dBm @ MCS15 40 MHz
WLAN Operation Mode	Client, Client-Router, Slave, Sniffer
Antenna	External, 2/2 dBi, Omni-directional
Antenna Connectors	2 RP-SMA female

Ethernet Interface

10/100BaseT(X) Ports (RJ45 connector)	2
Standards	IEEE 802.3 for 10BaseT IEEE 802.3u for 100BaseT(X) IEEE 802.1Q for VLAN Tagging

Ethernet Software Features

Management	DHCP Server/Client, HTTP, IPv4, LLDP, SMTP, SNMPv1/v2c/v3, Syslog, TCP/IP, Telnet, UDP, Proxy ARP, VLAN, Wireless Search Utility, MXview, MXview Wireless, MXconfig
Routing	Port forwarding, Static Route, NAT
Security	HTTPS/SSL, RADIUS, SSH
Time Management	NTP Client, SNTP Client

3. 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.

Firewall

Filter	ICMP, MAC address, IP protocol, Port-based

Serial Interface

Connector	DB9 male
Serial Standards	RS-232, RS-422/485, RS-232/422/485
Operation Modes	Disabled, Real COM, RFC2217, TCP Client, TCP Server, UDP
Data Bits	5, 6, 7, 8
Stop Bits	1, 1.5, 2
Parity	None, Even, Odd, Space, Mark
Flow Control	None, RTS/CTS, XON/XOFF
Baudrate	75 bps to 921.6 kbps
Serial Data Log	256 KB

Serial Signals

RS-232	TxD, RxD, RTS, CTS, DCD, GND, DTR, DSR
RS-422	Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w	Data+, Data-, GND
RS-485-4w	Tx+, Tx-, Rx+, Rx-, GND

LED Interface

LED Indicators	SYS, LAN1, LAN2, WLAN, Serial

Input/Output Interface

Buttons	Reset button

Physical Characteristics

Housing	Metal
IP Rating	IP30
Dimensions	77.1 x 115.5 x 26 mm (3.04 x 4.55 x 1.02 in)
Weight	470 g (1.03 lb)
Installation	DIN-rail mounting, Wall mounting (with optional kit)

Power Parameters

Input Voltage	9 to 30 VDC
Power Connector	1 removable 3-contact terminal block(s)
Power Consumption	11.7 W (max.)
Reverse Polarity Protection	Supported

Environmental Limits

Operating Temperature	Standard Models: 0 to 60°C (32 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, EN 55032/24
EMI	CISPR 22, 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: 10 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Radio	EN 300 328, EN 301 489-1/17, EN 301 893, FCC ID SLE-1137C, ANATEL, MIC, NCC, SRRC, WPC, KC, RCM
Road Vehicles	E mark E1
Safety	EN 60950-1, UL 60950-1
Vibration	IEC 60068-2-6

MTBF

Time	1,125,942 hrs
Standards	Telcordia SR332

Warranty

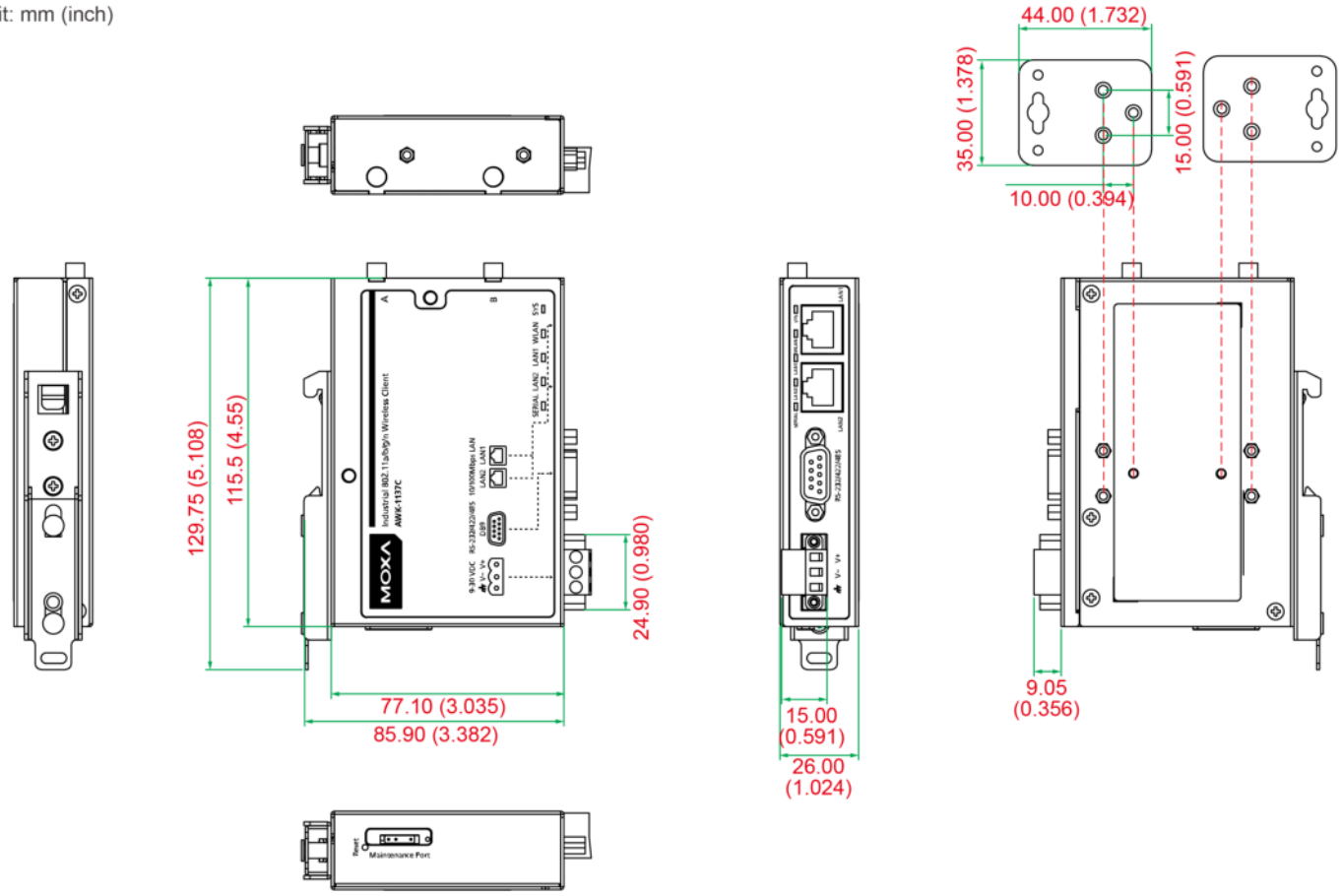
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x AWK-1137C Series wireless client
Installation Kit	1 x DIN-rail kit
Antenna	2 x 2.4/5 GHz antenna
Documentation	1 x quick installation guide 1 x warranty card

Dimensions

Unit: mm (inch)



Ordering Information

Model Name	Band	Standards	Operating Temp.
AWK-1137C-EU	EU	802.11a/b/g/n	0 to 60°C
AWK-1137C-EU-T	EU	802.11a/b/g/n	-40 to 75°C
AWK-1137C-JP	JP	802.11a/b/g/n	0 to 60°C
AWK-1137C-JP-T	JP	802.11a/b/g/n	-40 to 75°C
AWK-1137C-US	US	802.11a/b/g/n	0 to 60°C
AWK-1137C-US-T	US	802.11a/b/g/n	-40 to 75°C

Accessories (sold separately)

Antennas

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-0306	3 dBi at 2.4 GHz or 6 dBI at 5 GHz, N-type (male), omnidirectional antenna
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-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

Wireless Terminating Resistors

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

Wall-Mounting Kits

WK-35-01	Wall-mounting kit with 2 plates (35 x 44 x 2.5 mm) and 6 screws

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