

MOXA®

AWK-1165C
Series Industrial
DIN-Rail WLAN
Access Point



MOXA AWK-1165C Series Industrial DIN-Rail WLAN Access Point Instruction Manual

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MOXA AWK-1165C Series Industrial DIN-Rail WLAN Access Point



Product Information

The AWK-1165C Series is an entry-level 5-port industrial IEEE 802.11ax wireless client designed for advanced industrial wireless solutions. It offers advanced wireless technology and industrial ruggedness for reliable performance in industrial environments.

Product Usage Instructions

Wireless Configuration

1. Connect the AWK-1165C to a power source and turn it on.
2. Access the device's web interface using a browser and configure the wireless settings.
3. Select the appropriate WLAN standards and frequency bands based on your requirements.
4. Set up wireless security protocols such as WEP encryption or WPA/WPA2/WPA3.

Transmitter and Receiver Settings

Adjust the transmitter power and receiver sensitivity settings based on your network requirements and environmental conditions. Refer to the product manual for detailed instructions on optimizing these settings.

DFS Channel Support

If using the device in AP mode, be aware of DFS channel support. The device will automatically switch channels when a radar signal is detected. Allow a 60-second availability check period after channel switching before normal service resumes.

Features and Benefits

- High-speed IEEE 802.11ax Wi-Fi
- Selectable dual-band Wi-Fi with data rates up to 1,201 Mbps

- Latest WPA3 encryption for enhanced wireless network security
- Universal (UN) models with configurable country or region code for more flexible deployment
- Easy network setup with Network Address Translation (NAT)
- Millisecond-level Client-based Turbo Roaming¹
- Built-in 2.4 GHz and 5 GHz band pass filter for more reliable wireless connections
- -40 to 75°C wide operating temperature range (-T models)
- Integrated antenna isolation

Certifications



Introduction

The AWK-1165C Series industrial wireless client is designed to meet the growing need for efficient data transmissions in high-density deployments scenarios through IEEE 802.11ax (Wi-Fi 6) technology. The AWK-1165C is compliant with industrial standards and approvals covering operating temperature, power input voltage, surge, ESD, and vibration. The compact form factor with DIN-rail or optional wall mounting easily fits into industrial machines or control cabinets, offering reliable wireless connectivity. The AWK-1165C can operate on the 2.4 or 5 GHz band and is backwards compatible with existing 802.11a/b/g/n/ac deployments to future-proof your wireless investments.

Advanced 802.11ac Industrial Wireless Solution

- 802.11ax Wi-Fi 6 compliant client backwards compatible with Wi-Fi 4/ Wi-Fi 5 for flexible deployment
- DFS channel support allows a wider range of 5 GHz channel selection to avoid interference from existing wireless infrastructure
- Wi-Fi 6 OFDMA (Orthogonal Frequency-Division Multiple Access) technology enables concurrent communication with multiple clients for improved network efficiency
- Wi-Fi 6 TWT (Target Wake Time) technology facilitates better scheduling and longer device battery life

Advanced Wireless Technology

Seamless roaming with client-based Turbo Roaming¹ for < 150 ms roaming recovery time between APs

Industrial Ruggedness

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

Specifications

WLAN Interface

WLAN Standards	2.4 GHz: 802.11ax with 1024 QAM support, 20/40 MHz 5 GHz: 802.11ax with 1024 QAM support, 20/40/80 MHz
Frequency Band for US (20 MHz operating channels)	<ul style="list-style-type: none"> • AWK-1165C-US models only: • 2.412 to 2.462 GHz (11 channels) • 5.180 to 5.240 GHz (4 channels)

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.

	<ul style="list-style-type: none"> • 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 UN (20 MHz operating channels)	<ul style="list-style-type: none"> • AWK-1165C-UN 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)² • 5.500 to 5.700 GHz (11 channels)² 5.745 to 5.825 GHz (5 channels) <p>Available channels change depending on the selected country or region code.</p>
Wireless Security	<ul style="list-style-type: none"> • WEP encryption (64-bit and 128-bit) • WPA/WPA2/WPA3-Enterprise (IEEE 802.1X/RADIUS, TKIP, AES) • WPA/WPA2/WPA3-Personal
Transmission Rate	<ul style="list-style-type: none"> • 2.4 GHz: Up to 573.5 Mbps • 5 GHz: Up to 1,201 Mbps
Transmitter Power for 802.11a (Dual Chain)	<ul style="list-style-type: none"> • 18±1.5 dBm @ 6 Mbps • 18±1.5 dBm @ 54 Mbps

Transmitter Power for 802.11n (5 GHz, Dual Chain)	<ul style="list-style-type: none"> • 18 ± 1.5 dBm @ MCS0 20 MHz • 18 ± 1.5 dBm @ MCS7 20 MHz • 18 ± 1.5 dBm @ MCS0 40 MHz • 18 ± 1.5 dBm @ MCS7 40 MHz
Transmitter Power for 802.11ac (Dual Chain)	<ul style="list-style-type: none"> • 18 ± 1.5 dBm @ MCS0 20 MHz • 18 ± 1.5 dBm @ MCS8 20 MHz • 18 ± 1.5 dBm @ MCS0 40 MHz • 18 ± 1.5 dBm @ MCS9 40 MHz • 18 ± 1.5 dBm @ MCS0 80 MHz • 18 ± 1.5 dBm @ MCS9 80 MHz
Transmitter Power for 802.11ax (Dual Chain)	<ul style="list-style-type: none"> • 18 ± 1.5 dBm @ MCS0 20 MHz • 17 ± 1.5 dBm @ MCS11 20 MHz • 18 ± 1.5 dBm @ MCS0 40 MHz • 17 ± 1.5 dBm @ MCS11 40 MHz • 18 ± 1.5 dBm @ MCS0 80 MHz • 17 ± 1.5 dBm @ MCS11 80 MHz
Transmitter Power for 802.11b (Dual Chain)	<ul style="list-style-type: none"> • 18 ± 1.5 dBm @ 1 Mbps • 18 ± 1.5 dBm @ 11 Mbps
Transmitter Power for 802.11g (Dual Chain)	<ul style="list-style-type: none"> • 18 ± 1.5 dBm @ 6 Mbps • 18 ± 1.5 dBm @ 54 Mbps
Transmitter Power for 802.11n (2.4 GHz, Dual Chain)	<ul style="list-style-type: none"> • 18 ± 1.5 dBm @ MCS0 20 MHz • 18 ± 1.5 dBm @ MCS7 20 MHz • 18 ± 1.5 dBm @ MCS0 40 MHz • 18 ± 1.5 dBm @ MCS7 40 MHz
Transmitter Power for 802.11ac (2.4 GHz, Dual Chain)	<ul style="list-style-type: none"> • 18 ± 1.5 dBm @ MCS0 20 MHz • 18 ± 1.5 dBm @ MCS8 20 MHz • 18 ± 1.5 dBm @ MCS0 40 MHz • 18 ± 1.5 dBm @ MCS7 40 MHz

Transmitter Power for 802.11ax (2.4 GHz, Dual Chain)	<ul style="list-style-type: none"> • 18±1.5 dBm @ MCS0 20 MHz • 18±1.5 dBm @ MCS11 20 MHz • 18±1.5 dBm @ MCS0 40 MHz • 18±1.5 dBm @ MCS11 40 MHz
Receiver Sensitivity for 802.11a (measured at 5.680 GHz)	<ul style="list-style-type: none"> • Typ. -88 @ 6 Mbps • Typ. -72 @ 54 Mbps

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.

Receiver Sensitivity for 802.11n (5 GHz; measured at 5.680 GHz)	Typ. -88 dBm @ MCS0 20 MHz Typ. -68 dBm @ MCS7 20 MHz Typ. -84 dBm @ MCS0 40 MHz Typ. -66 dBm @ MCS7 40 MHz
Receiver Sensitivity for 802.11ac (5 GHz)	Typ. -88 dBm @ MCS0 20 MHz Typ. -65 dBm @ MCS8 20 MHz Typ. -85 dBm @ MCS0 40 MHz Typ. -60 dBm @ MCS9 40 MHz Typ. -81 dBm @ MCS0 80 MHz Typ. -55 dBm @ MCS9 80 MHz
Receiver Sensitivity for 802.11ax (5 GHz)	Typ. -88 dBm @ MCS0 20 MHz Typ. -59 dBm @ MCS11 20 MHz Typ. -85 dBm @ MCS0 40 MHz Typ. -56 dBm @ MCS11 40 MHz Typ. -81 dBm @ MCS0 80 MHz Typ. -52 dBm @ MCS11 80 MHz
Receiver Sensitivity for 802.11b (measured at 2.437 GHz)	<ul style="list-style-type: none"> • Typ. -96 dBm @ 1 Mbps • Typ. -88 dBm @ 11 Mbps
Receiver Sensitivity for 802.11g (measured at 2.437 GHz)	<ul style="list-style-type: none"> • Typ. -90 dBm @ 6 Mbps • Typ. -74 dBm @ 54 Mbps
Receiver Sensitivity for 802.11n (2.4 GHz; measured at 2.437 GHz)	Typ. -90 dBm @ MCS0 20 MHz Typ. -70 dBm @ MCS7 20 MHz Typ. -87 dBm @ MCS0 40 MHz Typ. -69 dBm @ MCS7 40 MHz
Receiver Sensitivity for 802.11ac (2.4 GHz)	Typ. -90 dBm @ MCS0 20 MHz Typ. -66 dBm @ MCS6 20 MHz Typ. -87 dBm @ MCS0 40 MHz Typ. -63 dBm @ MCS9 40 MHz
Receiver Sensitivity for 802.11ax (2.4 GHz)	Typ. -90 dBm @ MCS0 20 MHz Typ. -59 dBm @ MCS11 20 MHz Typ. -87 dBm @ MCS0 40 MHz Typ. -56 dBm @ MCS11 40 MHz
WLAN Operation Mode	<ul style="list-style-type: none"> • Client • Client-Router Slave • Sniffer
Antenna	External, 2/2 dBi Omni-directional
Antenna Connectors	2 RP-SMA female

Ethernet Interface

Standards	<ul style="list-style-type: none">• IEEE 802.3 for 10BaseT IEEE 802.3u for 100BaseT(X)• IEEE 802.3ab for 1000BaseT(X)• IEEE 802.3az for Energy-Efficient Ethernet IEEE 802.1Q for VLAN Tagging• IEEE 802.1X for authentication
10/100/1000BaseT(X) Ports (RJ45 connector)	5

Ethernet Software Features

Management	<ul style="list-style-type: none">• DHCP Server DHCP Client DNS• HTTP IPv4 LLDP SMTP• SNMPv1/v2c/v3 Syslog• TCP/IP• Telnet UDP VLAN• MXconfig
Routing	Port forwarding Static Route NAT
Security	<ul style="list-style-type: none">• HTTPS/SSL RADIUS SSH• Certificate Management
Time Management	SNTP Client

Firewall

Filter	<ul style="list-style-type: none">• ICMP• MAC address IP protocol Port-based Wi-Fi ACL
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Serial Interface

Console Port	<ul style="list-style-type: none">• RS-232• 8-pin RJ45
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USB Interface

Storage Port	USB Type A
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LED Interface

LED Indicators	PWR, WLAN, SYSTEM
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Input/Output Interface

Buttons	Reset button
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Physical Characteristics

Housing	Metal
IP Rating	IP30
Dimensions	<ul style="list-style-type: none"> • AWK-1165C models: 60 x 100 x 53 mm (2.36 x 3.94 x 2.09 in) • AWK-1165C-T models: 60 x 100 x 66 mm (2.36 x 3.94 x 2.60 in)
Weight	<ul style="list-style-type: none"> • AWK-1165C models: 428.5 g (0.94 lb) • AWK-1165C-T models: 516.5 g (1.14 lb)
Installation	<ul style="list-style-type: none"> • DIN-rail mounting • Wall mounting (with optional kit)

Power Parameters

Input Current	9 to 30 VDC, 1.57 to 0.47 A
Input Voltage	9 to 30 VDC

Power Connector	1 removable 3-contact terminal block(s)
Power Consumption	14 W (max.)

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 61000-6-2/-6-4 EN 55032/35
EMI	CISPR 32, FCC Part 15B Class A
EMS	<ul style="list-style-type: none">• 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/m• IEC 61000-4-8 PFMF: 30 A/m
Road Vehicles	E mark E1
Safety	IEC 62368-1 UL 62368-1
Vibration	IEC 60068-2-6
Radio	EN 300 328, EN 301 489-1/17, EN 301 893, ANATEL, FCC, MIC, N CC, RCM, SRRC, WPC, KC, NBTC, IC

MTBF

Time	4,002,106 hrs
Standards	Telcordia SR332

Warranty

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

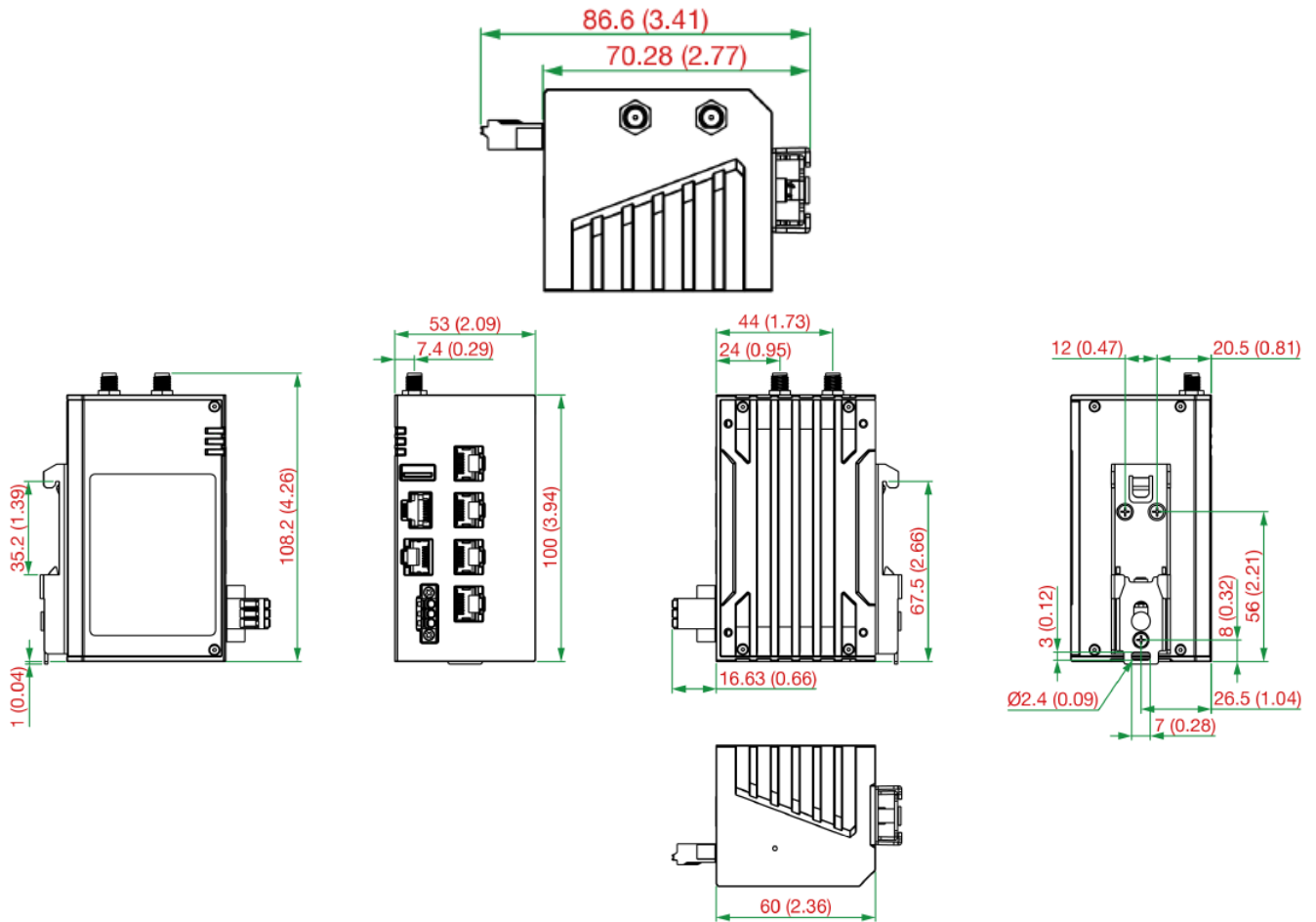
Package Contents

Device	1 x AWK-1165C 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

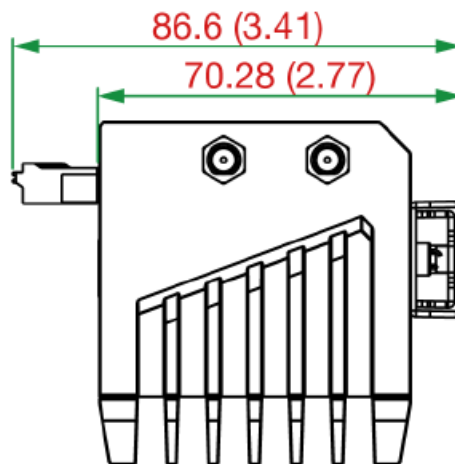
Standard Models

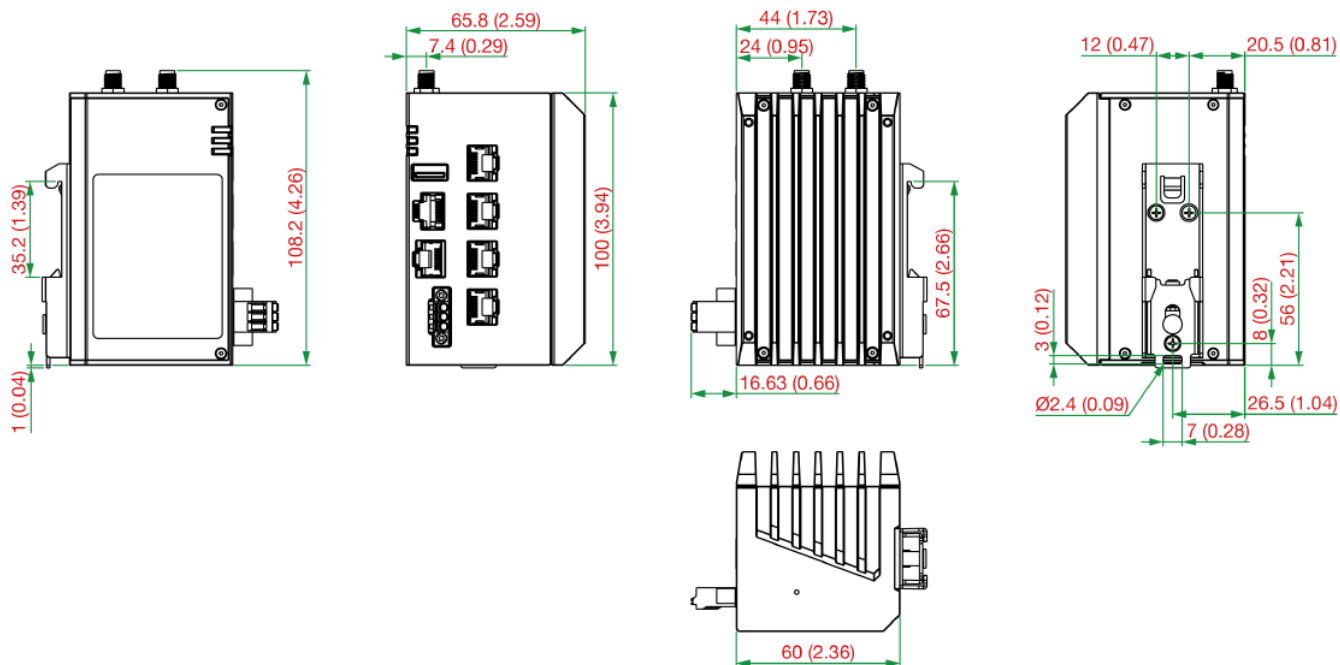
Unit: mm (inch)



Wide Temperature (-T) Models

Unit: mm (inch)





Ordering Information

Model Name	Band	Standards	Operating Temp.
AWK-1165C-UN	UN	802.11ax (Wi-Fi 6)	-25 to 60°C
AWK-1165C-UN-T	UN	802.11ax (Wi-Fi 6)	-40 to 75°C
AWK-1165C-US	US	802.11ax (Wi-Fi 6)	-25 to 60°C
AWK-1165C-US-T	US	802.11ax (Wi-Fi 6)	-40 to 75°C

Accessories (sold separately)

Antennas

ANT-WSB-PNF-12-02	12 dBi at 2.4 GHz, N-type (female), single-band directional antenna
ANT-WSB5-PNF-16	16 dBi at 5 GHz, N-type (female), single-band directional 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-PNF-1011	10 dBi at 2.4 GHz and 11 dBi at 5 GHz, N-type (female), dual-band directional antenna
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-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-WSB-AHRM-05-1.5m	5 dBi at 2.4 GHz, RP-SMA (male), omnidirectional/dipole antenna, 1.5 m cable
MAT-WDB-CA-RM-2-0205	2.4/5 GHz, ceiling antenna, 2/5 dBi, MIMO 2×2, RP-SMA-type (male)

MAT-WDB-DA-RM-2-0203-1 m	2.4/5 GHz, desktop antenna, 2/3 dBi, MIMO 2×2, RP-SMA-type (male), 1 m cable
MAT-WDB-PA-NF-2-0708	2.4/5 GHz, panel antenna, 7/8 dBi, MIMO 2×2, N-type (female)
ANT-WDB-ANM-0502	5 dBi at 2.4 GHz or 2 dBi at 5 GHz, N-type (male), omnidirectional antenna

Wireless Antenna Cables

A-CRF-RFRM-R4-150	Wireless antenna cable with RP-SMA (female) to RP-SMA (male) connectors, magnetic base, RG-174 type, 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-NMNF-02	0 to 6 GHz, N-type (male) to N-type (female) surge arrester
A-SA-NFNF-02	0 to 6 GHz, N-type (female) to N-type (female) surge arrester

Wireless Terminating Resistors

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

WK-56-01	Wall-mounting kit with 2 plates (56 x 33.3 x 2 mm) and 4 screws
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FAQ

- **Q: What are the default wireless security options available on the AWK-1165C?**
 - A: The default wireless security options include WEP encryption, WPA/WPA2/WPA3-Enterprise, and WPA/WPA2/WPA3-Personal.
- **Q: How can I optimize the transmission rate of the AWK-1165C?**
 - A: To optimize the transmission rate, ensure that you are using compatible WLAN standards and frequency bands. Additionally, minimizing interference and adjusting transmitter power settings can help improve the transmission rate.

Documents / Resources

	MOXA AWK-1165C Series Industrial DIN-Rail WLAN Access Point [pdf] Instruction Manual AWK-1165C-US, AWK-1165C-UN, AWK-1165C Series Industrial DIN-Rail WLAN Access Point, AWK-1165C Series, Industrial DIN-Rail WLAN Access Point, DIN-Rail WLAN Access Point, WLAN Access Point, Access Point, Point
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References

- [User Manual](#)

[Manuals+](#), [Privacy Policy](#)

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