

AWK-1165C Series

Entry-level 5-port industrial IEEE 802.11ax wireless clients



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 802.11ax 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

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| 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) | AWK-1165C-US models only: 2.412 to 2.462 GHz (11 channels) 5.180 to 5.240 GHz (4 channels) |

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.

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| | 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) | 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) Available channels change depending on the selected country or region code. |
| Wireless Security | WEP encryption (64-bit and 128-bit) WPA/WPA2/WPA3-Enterprise (IEEE 802.1X/RADIUS, TKIP, AES) WPA/WPA2/WPA3-Personal |
| Transmission Rate | 2.4 GHz: Up to 573.5 Mbps 5 GHz: Up to 1,201 Mbps |
| Transmitter Power for 802.11a (Dual Chain) | 21±1.5 dBm @ 6 Mbps 21±1.5 dBm @ 54 Mbps |
| Transmitter Power for 802.11n (5 GHz, Dual Chain) | 21±1.5 dBm @ MCS0 20 MHz 21±1.5 dBm @ MCS7 20 MHz 21±1.5 dBm @ MCS0 40 MHz 21±1.5 dBm @ MCS7 40 MHz |
| Transmitter Power for 802.11ac (Dual Chain) | 21±1.5 dBm @ MCS0 20 MHz 21±1.5 dBm @ MCS8 20 MHz 21±1.5 dBm @ MCS0 40 MHz 21±1.5 dBm @ MCS9 40 MHz 21±1.5 dBm @ MCS0 80 MHz 21±1.5 dBm @ MCS9 80 MHz |
| Transmitter Power for 802.11ax (Dual Chain) | 21±1.5 dBm @ MCS0 20 MHz 20±1.5 dBm @ MCS11 20 MHz 21±1.5 dBm @ MCS0 40 MHz 20±1.5 dBm @ MCS11 40 MHz 21±1.5 dBm @ MCS0 80 MHz 20±1.5 dBm @ MCS11 80 MHz |
| Transmitter Power for 802.11b (Dual Chain) | 21±1.5 dBm @ 1 Mbps 21±1.5 dBm @ 11 Mbps |
| Transmitter Power for 802.11g (Dual Chain) | 21±1.5 dBm @ 6 Mbps 21±1.5 dBm @ 54 Mbps |
| Transmitter Power for 802.11n (2.4 GHz, Dual Chain) | 21±1.5 dBm @ MCS0 20 MHz 21±1.5 dBm @ MCS7 20 MHz 21±1.5 dBm @ MCS0 40 MHz 21±1.5 dBm @ MCS7 40 MHz |
| Transmitter Power for 802.11ac (2.4 GHz, Dual Chain) | 21±1.5 dBm @ MCS0 20 MHz 21±1.5 dBm @ MCS8 20 MHz 21±1.5 dBm @ MCS0 40 MHz 21±1.5 dBm @ MCS7 40 MHz |
| Transmitter Power for 802.11ax (2.4 GHz, Dual Chain) | 21±1.5 dBm @ MCS0 20 MHz 21±1.5 dBm @ MCS11 20 MHz 21±1.5 dBm @ MCS0 40 MHz 21±1.5 dBm @ MCS11 40 MHz |
| Receiver Sensitivity for 802.11a (measured at 5.680 GHz) | Typ. -88 @ 6 Mbps Typ. -72 @ 54 Mbps |

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.

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| 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) | Typ. -96 dBm @ 1 Mbps Typ. -88 dBm @ 11 Mbps |
| Receiver Sensitivity for 802.11g (measured at 2.437 GHz) | 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 | Client Client-Router Slave Sniffer |
| Antenna | External, 2/2 dBi Omni-directional |
| Antenna Connectors | 2 RP-SMA female |
| Ethernet Interface | |
| Standards | 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

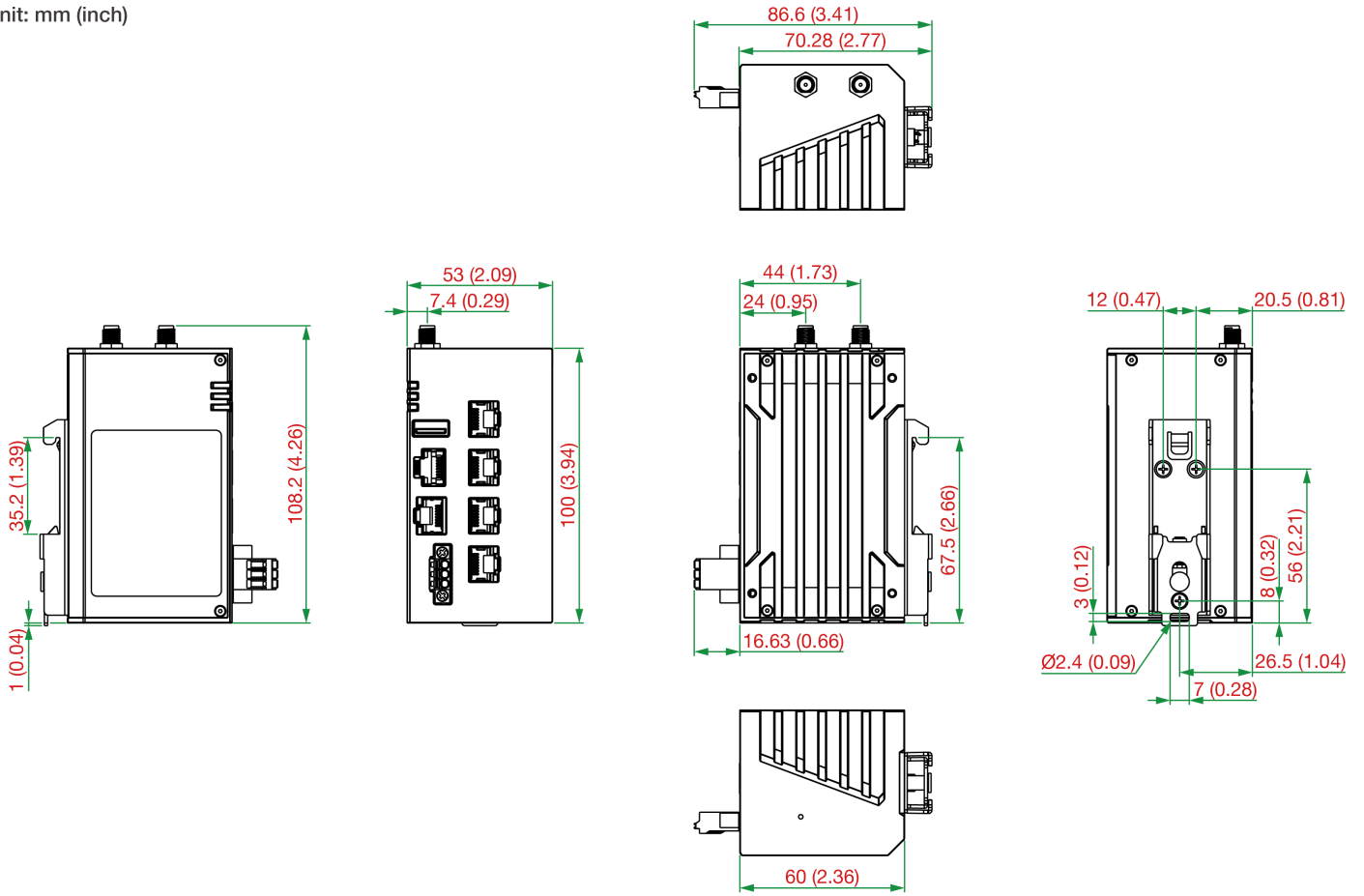
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|---------------------------------|---|
| Management | DHCP Server DHCP Client DNS HTTP IPv4 LLDP SMTP SNMPv1/v2c/v3 Syslog TCP/IP Telnet UDP VLAN MXconfig |
| Routing | Port forwarding Static Route NAT |
| Security | HTTPS/SSL RADIUS SSH Certificate Management |
| Time Management | SNTP Client |
| Firewall | |
| Filter | ICMP MAC address IP protocol Port-based Wi-Fi ACL |
| Serial Interface | |
| Console Port | RS-232 8-pin RJ45 |
| USB Interface | |
| Storage Port | USB Type A |
| LED Interface | |
| LED Indicators | PWR, WLAN, SYSTEM |
| Input/Output Interface | |
| Buttons | Reset button |
| Physical Characteristics | |
| Housing | Metal |
| IP Rating | IP30 |
| Dimensions | 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 | AWK-1165C models: 428.5 g (0.94 lb) AWK-1165C-T models: 516.5 g (1.14 lb) |
| Installation | 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 |

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| 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 | 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: 2 kV IEC 61000-4-6 CS: 10 V/m IEC 61000-4-8 PFMF: 30 A/m |
| Road Vehicles | E mark E1 |
| Medical | IEC 60601 |
| Safety | IEC 62368-1 UL 62368-1 |
| Vibration | IEC 60068-2-6 |
| Radio | EN 300 328, EN 301 489-1/17, EN 301 893, FCC, MIC, NCC, RCM, SRRC, WPC, KC, NBTC, IC |
| MTBF | |
| Time | 4,002,106 hrs |
| Standards | Telcordia Standard SR-332 |
| 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

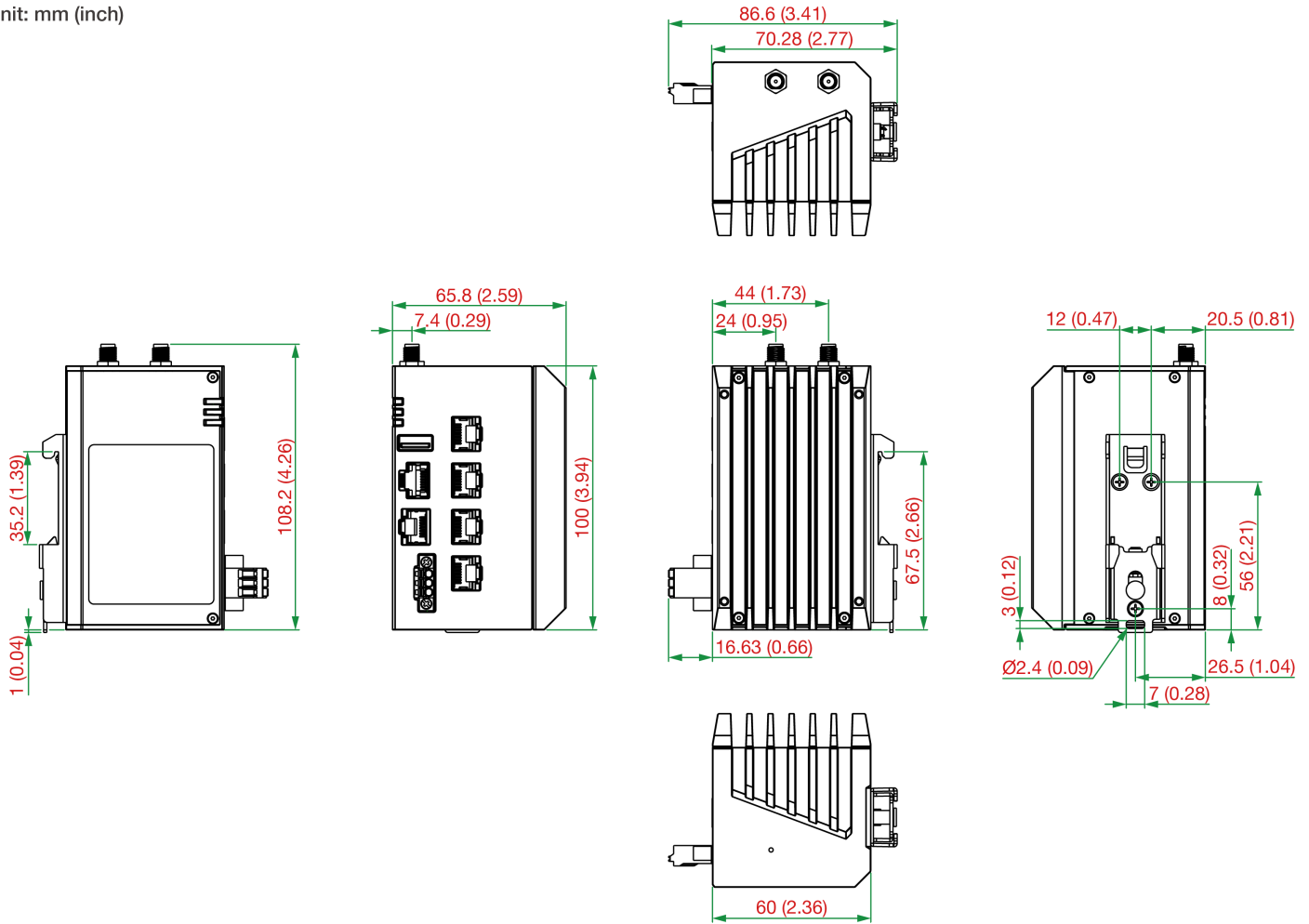
Standard Models

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

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|----------------------|---|
| 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 2x2, RP-SMA-type (male) |

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| 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-WDB-ANM-0502 | 5 dBi at 2.4 GHz or 2 dBi at 5 GHz, N-type (male), omnidirectional antenna |

Wireless Antenna Cables

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|-------------------|--|
| 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

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| 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

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

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