

# 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<sup>1</sup>
- 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.

### 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<sup>1</sup> 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

## Specifications

### WLAN Interface

|   |   |
|---|---|
| WLAN Standards                                    | 802.11a/b/g/n<br>802.11i Wireless Security                          |
| Modulation Type                                   | DSSS<br>OFDM<br>MIMO-OFDM   |
| Frequency Band for US (20 MHz operating channels) | 2.412 to 2.462 GHz (11 channels)<br>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.

|  | 5.260 to 5.320 GHz (4 channels) <sup>2</sup><br>5.500 to 5.700 GHz (11 channels) <sup>2</sup><br>5.745 to 5.825 GHz (5 channels)  |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
|--|---|--------|--------|----|----|---------|--------|--------|--------|----------------|--------|--------|--------|----------------|--------|--------|--------|-----------------|--------|--------|--------|----------------|--------|---|---|
| Frequency Band for EU (20 MHz operating channels)        | 2.412 to 2.472 GHz (13 channels)<br>5.180 to 5.240 GHz (4 channels)<br>5.260 to 5.320 GHz (4 channels) <sup>2</sup><br>5.500 to 5.700 GHz (11 channels) <sup>2</sup>  |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Frequency Band for JP (20 MHz operating channels)        | 2.412 to 2.484 GHz (14 channels)<br>5.180 to 5.240 GHz (4 channels)<br>5.260 to 5.320 GHz (4 channels) <sup>2</sup><br>5.500 to 5.700 GHz (11 channels) <sup>2</sup>  |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Wireless Security  | WEP encryption (64-bit and 128-bit)<br>WPA/WPA2-Enterprise (IEEE 802.1X/RADIUS, TKIP, AES)<br>WPA/WPA2-Personal   |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Transmission Rate  | 802.11b: 1 to 11 Mbps<br>802.11a/g: 6 to 54 Mbps<br>802.11n: 6.5 to 300 Mbps  |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Transmitter Power for 802.11a                            | 23±1.5 dBm @ 6 to 24 Mbps<br>21±1.5 dBm @ 36 Mbps<br>20±1.5 dBm @ 48 Mbps<br>18±1.5 dBm @ 54 Mbps   |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Transmitter Power for 802.11n (5 GHz)                    | 23±1.5 dBm @ MCS0/8 20 MHz<br>18±1.5 dBm @ MCS7/15 20 MHz<br>23±1.5 dBm @ MCS0/8 40 MHz<br>18±1.5 dBm @ MCS7/15 40 MHz  |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Transmitter Power for 802.11b                            | 26±1.5 dBm @ 1 Mbps<br>26±1.5 dBm @ 2 Mbps<br>26±1.5 dBm @ 5.5 Mbps<br>25±1.5 dBm @ 11 Mbps   |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Transmitter Power for 802.11g                            | 23±1.5 dBm @ 6 to 24 Mbps<br>22±1.5 dBm @ 36 Mbps<br>20±1.5 dBm @ 48 Mbps<br>19±1.5 dBm @ 54 Mbps   |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Transmitter Power for 802.11n (2.4 GHz)                  | 23±1.5 dBm @ MCS0/8 20 MHz<br>17±1.5 dBm @ MCS7/15 20 MHz<br>23±1.5 dBm @ MCS0/8 40 MHz<br>17±1.5 dBm @ MCS7/15 40 MHz  |        |        |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Transmitter Power  | <table border="1"> <thead> <tr> <th></th> <th>US</th> <th>EU</th> <th>JP</th> </tr> </thead> <tbody> <tr> <td>2.4 GHz</td> <td>26 dBm</td> <td>18 dBm</td> <td>18 dBm</td> </tr> <tr> <td>5 GHz (UNII-1)</td> <td>23 dBm</td> <td>23 dBm</td> <td>23 dBm</td> </tr> <tr> <td>5 GHz (UNII-2)</td> <td>23 dBm</td> <td>23 dBm</td> <td>23 dBm</td> </tr> <tr> <td>5 GHz (UNII-2e)</td> <td>23 dBm</td> <td>23 dBm</td> <td>23 dBm</td> </tr> <tr> <td>5 GHz (UNII-3)</td> <td>23 dBm</td> <td>-</td> <td>-</td> </tr> </tbody> </table> <p>Note: Based on regional regulations, the maximum transmission power allowed on the UNII bands is restricted in the firmware, as indicated above.</p> |        | 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 | 5 GHz (UNII-3) | 23 dBm | - | - |
|  | 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 |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| 5 GHz (UNII-3)   | 23 dBm  | -      | -      |    |    |         |        |        |        |                |        |        |        |                |        |        |        |                 |        |        |        |                |        |   |   |
| Receiver Sensitivity for 802.11a (measured at 5.680 GHz) | Typ. -90 @ 6 Mbps<br>Typ. -88 @ 9 Mbps<br>Typ. -87 @ 12 Mbps<br>Typ. -85 @ 18 Mbps<br>Typ. -81 @ 24 Mbps<br>Typ. -78 @ 36 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.

|   |  |
|---|--|
|   | Typ. -74 @ 48 Mbps<br>Typ. -73 @ 54 Mbps<br>Note <sup>3</sup>  |
| Receiver Sensitivity for 802.11n (5 GHz; measured at 5.680 GHz)   | Typ. -69 dBm @ MCS7 20 MHz<br>Typ. -70 dBm @ MCS15 20 MHz<br>Typ. -64 dBm @ MCS7 40 MHz<br>Typ. -66 dBm @ MCS15 40 MHz<br>Note <sup>3</sup>  |
| Receiver Sensitivity for 802.11b (measured at 2.437 GHz)          | Typ. -89 dBm @ 1 Mbps<br>Typ. -89 dBm @ 2 Mbps<br>Typ. -89 dBm @ 5.5 Mbps<br>Typ. -88 dBm @ 11 Mbps  |
| Receiver Sensitivity for 802.11g (measured at 2.437 GHz)          | Typ. -88 dBm @ 6 Mbps<br>Typ. -88 dBm @ 9 Mbps<br>Typ. -88 dBm @ 12 Mbps<br>Typ. -87 dBm @ 18 Mbps<br>Typ. -84 dBm @ 24 Mbps<br>Typ. -81 dBm @ 36 Mbps<br>Typ. -77 dBm @ 48 Mbps<br>Typ. -75 dBm @ 54 Mbps |
| Receiver Sensitivity for 802.11n (2.4 GHz; measured at 2.437 GHz) | Typ. -70 dBm @ MCS7 20 MHz<br>Typ. -70 dBm @ MCS15 20 MHz<br>Typ. -64 dBm @ MCS7 40 MHz<br>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  |
| <b>Ethernet Interface</b>   |  |
| 10/100BaseT(X) Ports (RJ45 connector)                             | 2  |
| Standards   | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X)<br>IEEE 802.1Q for VLAN Tagging  |
| <b>Ethernet Software Features</b>                                 |  |
| Management  | DHCP Server/Client, HTTP, IPv4, LLDP, SMTP, SNMPv1/v2c/v3, Syslog, TCP/IP, Telnet, UDP, Proxy ARP, VLAN, Wireless Search Utility, MXview, MXconfig   |
| Routing   | Port forwarding, Static Route, NAT   |
| Security  | HTTPS/SSL, RADIUS, SSH   |
| Time Management   | NTP Client, SNTP Client  |
| <b>Firewall</b>   |  |
| Filter  | ICMP, MAC address, IP protocol, Port-based   |
| <b>Serial Interface</b>   |  |
| 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  |

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.

|                 |                              |
|-----------------|------------------------------|
| 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)<br>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<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 10 V<br>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

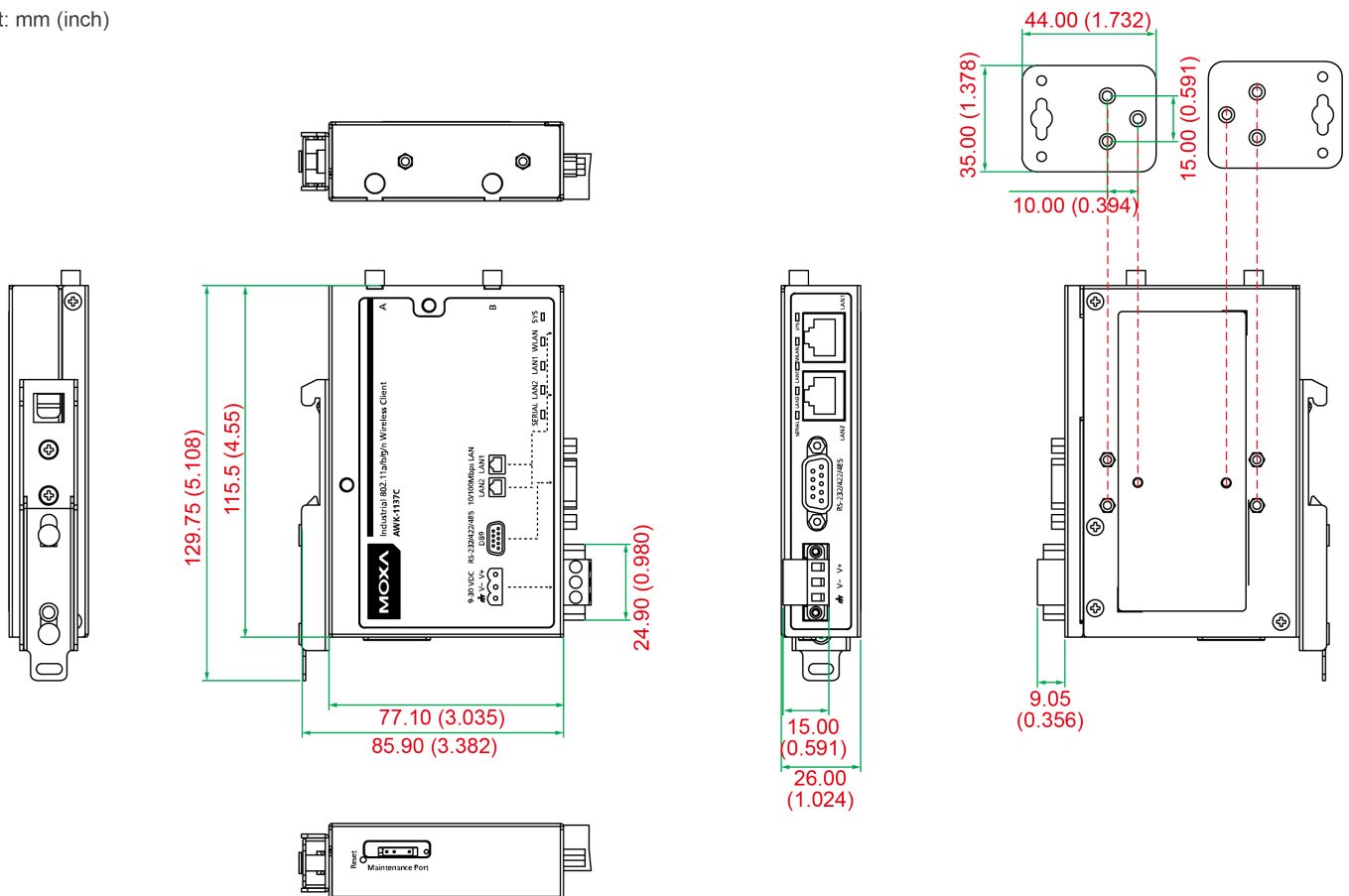
|                 |  |
|-----------------|--|
| Warranty Period | 5 years  |
| Details         | See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a> |

### 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<br>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-ANF-0407        | 2.4/5 GHz, omni-directional antenna, 4/7 dBi, N-type (female)                |
| ANT-WDB-ANF-0609        | 2.4/5 GHz, omni-directional antenna, 6/9 dBi, N-type (female)                |
| ANT-WDB-ANM-0306        | 2.4/5 GHz, omni-directional antenna, 3/6 dBi, N-type (male)                  |
| ANT-WDB-ANM-0407        | 2.4/5 GHz, dual-band omni-directional antenna, 4/7 dBi, N-type (male)        |
| ANT-WDB-ANM-0502        | 2.4/5 GHz, omni-directional antenna, 5/2 dBi, N-type (male)                  |
| ANT-WDB-ANM-0609        | 2.4/5 GHz, omni-directional antenna, 6/9 dBi, N-type (male)                  |
| ANT-WDB-ARM-02          | 2.4/5 GHz, omni-directional rubber duck antenna, 2 dBi, RP-SMA (male)        |
| ANT-WDB-ARM-0202        | 2.4/5 GHz, panel antenna, 2/2 dBi, RP-SMA (male)                             |
| ANT-WDB-PNF-1518        | 2.4/5 GHz, panel antenna, 15/18 dBi, N-type (female)                         |
| 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-ANF-12         | 5 GHz, omni-directional antenna, 12 dBi, N-type (female)                     |
| ANT-WSB5-PNF-18         | 5 GHz, directional panel antenna, 18 dBi, N-type (female)                    |
| ANT-WSB-ANF-09          | 2.4 GHz, omni-directional antenna, 9 dBi, N-type (female)                    |
| ANT-WSB-PNF-12          | 2.4 GHz, directional panel antenna, 12dBi, N-type (female)                   |
| ANT-WSB-PNF-18          | 2.4 GHz, directional panel antenna, 18 dBi, N-type (female)                  |
| ANT-WSB-AHRM-05-1.5m    | 2.4 GHz, omni-directional/dipole antenna, 5 dBi, RP-SMA (male), 1.5 m cable  |

### Wireless Antenna Cables

|                   |  |
|-------------------|--|
| A-CRF-RFRM-S2-60  | SS402 cable, RP-SMA (male) to RP-SMA (female)                              |
| A-CRF-RFRM-R4-150 | RF magnetic stand, 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                    |
| CRF-N0117SA-3M    | N-type (male) to RP SMA (male), CFD200 cable, 3 m                          |

### Surge Arrestors

|              |  |
|--------------|--|
| A-SA-NFNF-01 | Surge arrestor, N-type (female) to N-type (female) |
| A-SA-NMNF-01 | Surge arrestor, N-type (female) to N-type (male)   |

### Wireless Adapters

|                         |   |
|-------------------------|---|
| A-ADP-RJ458P-DB9F-ABC01 | DB9 female to RJ45 connector for the ABC-01 |
|-------------------------|---|

## Wireless Terminating Resistors

|             |   |
|-------------|---|
| A-TRM-50-NM | Terminating Resistor, 50 ohm, RP-SMA Male |
|-------------|---|

## Wall-Mounting Kits

|          |   |
|----------|---|
| WK-35-01 | Wall-mounting kit, 2 plates, 6 screws, 35 x 44 x 2.5 mm |
|----------|---|

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