

# AWK-1151C 系列

## 工業級 Wi-Fi 5 (802.11ac) 無線用戶端



### 特色與優點

- IEEE 802.11ac Wi-Fi 5 用戶端
- 可選購雙頻 Wi-Fi，資料傳輸速率最高可達 867 Mbps
- AP 獨立毫秒等級的用戶端 Turbo Roaming 快速漫遊<sup>1</sup>
- 尺寸小巧並容易安裝
- 透過網路位址轉譯 (NAT) 輕鬆設定網路
- 內建 2.4 GHz 和 5 GHz 帶通濾波器，可實現更可靠的無線連接
- 整合式天線隔離可防止外部電氣干擾
- -40 至 75°C 的寬廣操作溫度 (-T) 型號可在惡劣環境中提供順暢的無線通訊

### 認證



### 簡介

AWK-1151C 系列是專為單一行動設備提供穩定且無縫連接所設計的工業級無線用戶端設備。該系列非常適合在動態生產環境中，確保 AGV、機械手臂及其他行動機械的連線穩定性。

AWK-1151C 系列的核心效能源於用戶端 Turbo Roaming 快速漫遊技術，可在存取點之間實現毫秒級的切換。這消除了切換過程中的封包遺失，進而維持生產連續性並提升營運效率。為了實現最大的系統靈活性，其 AP 獨立設計確保能與任何品牌的 Wi-Fi 存取點達成無縫互操作性。

### 量身打造的工業級無線網路技術

- 基於用戶端的 Turbo Roaming 快速漫遊，達到 AP 獨立無縫漫遊的目的。<sup>1</sup> 在 AP 間的漫遊復原時間低於 150 毫秒
- 802.11r Turbo Roaming 快速漫遊可實現更快速、更可靠的 Wi-Fi 用戶端漫遊目標，並提升第三方互操作性
- DFS 頻道支援更廣泛的 5 GHz 頻道，避免現有無線基礎設施的干擾
- 可設定國家碼的通用 (UN) 型號，實現更靈活的全球部署
- 專用的 MXview Wireless 網路管理軟體，具備動態拓撲檢視、互動式漫遊歷史播放功能，以及詳細的設備資訊與效能指標圖表
- 最新的 WPA3 加密技術可增強無線網路安全性

### 工業合規性和認證

- 通過 CC-Link IE TSN 認證的時間敏感效能，可將無線設備整合至進階工廠自動化網路。
- 符合 EN 18031-1 標準，確保符合歐盟法規並強化抵禦網路威脅的保護能力

### 規格

#### WLAN Interface

|                                                   |                                                                                                             |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| WLAN Standards                                    | 2.4 GHz: 802.11b/g/n with 256 QAM support<br>5 GHz: 802.11a/n/ac Wave 2 with 256 QAM support<br>WMM for QoS |
| Frequency Band for US (20 MHz operating channels) | AWK-1151C-US models only:<br>2.412 to 2.462 GHz (11 channels)<br>5.180 to 5.240 GHz (4 channels)            |

1. 此處所指的 Turbo Roaming 快速漫遊復原時間是在最佳狀態下，配置無干擾 20 MHz RF 頻道、WPA2-PSK 安全性和預設的 Turbo Roaming 快速漫遊參數，所得到的測試結果平均值。用戶端設定為在 100 Kbps 流量負載下 3 個頻道漫遊。其他情況也有可能影響漫遊的效能。若想了解更多關於 Turbo Roaming 快速漫遊的參數設定，請參閱產品手冊。

|                                                                 |                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                 | 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 UN (20 MHz operating channels)               | AWK-1151C-UN models only:<br>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><br>5.745 to 5.825 GHz (5 channels)<br>Available channels change depending on the selected country or region code. |
| Wireless Security                                               | WPA/WPA2/WPA3-Enterprise (IEEE 802.1X/RADIUS, TKIP, AES)<br>WPA/WPA2/WPA3-Personal                                                                                                                                                                                                                                  |
| Wireless Roaming                                                | Turbo Roaming <sup>3</sup><br>802.11r                                                                                                                                                                                                                                                                               |
| Transmission Rate                                               | 2.4 GHz: Up to 400 Mbps<br>5 GHz: Up to 867 Mbps                                                                                                                                                                                                                                                                    |
| Transmitter Power for 802.11a (Dual Chain)                      | 25±1.5 dBm @ 6 Mbps<br>23±1.5 dBm @ 54 Mbps                                                                                                                                                                                                                                                                         |
| Transmitter Power for 802.11n (5 GHz, Dual Chain)               | 25±1.5 dBm @ MCS0 20 MHz<br>22±1.5 dBm @ MCS7 20 MHz<br>24±1.5 dBm @ MCS0 40 MHz<br>22±1.5 dBm @ MCS7 40 MHz                                                                                                                                                                                                        |
| Transmitter Power for 802.11ac (Dual Chain)                     | 25±1.5 dBm @ MCS0 20 MHz<br>22±1.5 dBm @ MCS8 20 MHz<br>24±1.5 dBm @ MCS0 40 MHz<br>21±1.5 dBm @ MCS9 40 MHz<br>23±1.5 dBm @ MCS0 80 MHz<br>20±1.5 dBm @ MCS9 80 MHz                                                                                                                                                |
| Transmitter Power for 802.11b (Dual Chain)                      | 29±1.5 dBm @ 1 Mbps<br>29±1.5 dBm @ 11 Mbps                                                                                                                                                                                                                                                                         |
| Transmitter Power for 802.11g (Dual Chain)                      | 29±1.5 dBm @ 6 Mbps<br>26±1.5 dBm @ 54 Mbps                                                                                                                                                                                                                                                                         |
| Transmitter Power for 802.11n (2.4 GHz, Dual Chain)             | 28±1.5 dBm @ MCS0 20 MHz<br>25±1.5 dBm @ MCS7 20 MHz<br>28±1.5 dBm @ MCS0 40 MHz<br>25±1.5 dBm @ MCS7 40 MHz                                                                                                                                                                                                        |
| Receiver Sensitivity for 802.11a (measured at 5.680 GHz)        | Typ. -89 @ 6 Mbps<br>Typ. -72 @ 54 Mbps                                                                                                                                                                                                                                                                             |
| Receiver Sensitivity for 802.11n (5 GHz; measured at 5.680 GHz) | Typ. -89 dBm @ MCS0 20 MHz<br>Typ. -69 dBm @ MCS7 20 MHz<br>Typ. -85 dBm @ MCS0 40 MHz<br>Typ. -66 dBm @ MCS7 40 MHz                                                                                                                                                                                                |
| Receiver Sensitivity for 802.11ac                               | Typ. -88 dBm @ MCS0 20 MHz<br>Typ. -65 dBm @ MCS8 20 MHz<br>Typ. -85 dBm @ MCS0 40 MHz<br>Typ. -60 dBm @ MCS9 40 MHz<br>Typ. -81 dBm @ MCS0 80 MHz<br>Typ. -55 dBm @ MCS9 80 MHz                                                                                                                                    |
| Receiver Sensitivity for 802.11b (measured at 2.437 GHz)        | Typ. -96 dBm @ 1 Mbps<br>Typ. -88 dBm @ 11 Mbps                                                                                                                                                                                                                                                                     |
| Receiver Sensitivity for 802.11g (measured at 2.437 GHz)        | Typ. -90 dBm @ 6 Mbps<br>Typ. -74 dBm @ 54 Mbps                                                                                                                                                                                                                                                                     |

- 支援 DFS (動態頻率選擇) 頻道：在 AP 模式下，當設備偵測到一個雷達信號，會自動切換到另一個頻道。然而，根據規定，當頻道切換後，若要重啟服務，需要 60 秒的可用性檢查期。
- 此處所指出的快速漫遊復原時間是在最佳化條件下記錄的平均測試結果，其中包含無干擾的 20 MHz RF 頻道、WPA2-PSK 安全性和預設快速漫遊參數。用戶端設定為在 100 Kbps 流量負載下 3 個頻道漫遊。其他情況也有可能會影響漫遊的效能。若想了解更多關於 Turbo Roaming 快速漫遊的參數設定，請參閱產品手冊。

|                                                                   |                                                                                                                      |
|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Receiver Sensitivity for 802.11n (2.4 GHz; measured at 2.437 GHz) | Typ. -90 dBm @ MCS0 20 MHz<br>Typ. -70 dBm @ MCS7 20 MHz<br>Typ. -87 dBm @ MCS0 40 MHz<br>Typ. -69 dBm @ MCS7 40 MHz |
| WLAN Operation Mode                                               | Client<br>Client-Router<br>Slave<br>Sniffer                                                                          |
| Antenna                                                           | External, 2/2 dBi<br>Omni-directional                                                                                |
| Antenna Connectors                                                | 2 RP-SMA female                                                                                                      |

#### Ethernet Interface

|                                            |                                                                                                                                                                                                        |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards                                  | IEEE 802.3 for 10BaseT<br>IEEE 802.3u for 100BaseT(X)<br>IEEE 802.3ab for 1000BaseT(X)<br>IEEE 802.3az for Energy-Efficient Ethernet<br>IEEE 802.1Q for VLAN Tagging<br>IEEE 802.1X for authentication |
| 10/100/1000BaseT(X) Ports (RJ45 connector) | 1                                                                                                                                                                                                      |

#### Ethernet Software Features

|                 |                                                                                                                                                                                                             |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Management      | DHCP Server<br>DHCP Client<br>DNS<br>HTTP<br>IPv4/IPv6<br>LLDP<br>SMTP<br>SNMPv1/v2c/v3<br>Syslog<br>TCP/IP<br>Telnet<br>UDP<br>VLAN<br>MXconfig<br>MXview One<br>MXview Wireless<br>Turbo Roaming Analyzer |
| Routing         | Port forwarding<br>Static Route<br>NAT                                                                                                                                                                      |
| Security        | HTTPS/SSL<br>RADIUS<br>SSH<br>Certificate Management                                                                                                                                                        |
| Time Management | SNTP Client                                                                                                                                                                                                 |

#### Firewall

|        |                                                                                   |
|--------|-----------------------------------------------------------------------------------|
| Filter | ICMP<br>MAC address<br>IP protocol<br>Port-based<br>Client Isolation<br>Wi-Fi ACL |
|--------|-----------------------------------------------------------------------------------|

#### Serial Interface

|              |                      |
|--------------|----------------------|
| Console Port | RS-232<br>8-pin RJ45 |
|--------------|----------------------|

## USB Interface

|              |                              |
|--------------|------------------------------|
| Storage Port | USB Type A (for ABC-02 only) |
|--------------|------------------------------|

## LED Interface

|                |                   |
|----------------|-------------------|
| LED Indicators | PWR, WLAN, SYSTEM |
|----------------|-------------------|

## Input/Output Interface

|         |              |
|---------|--------------|
| Buttons | Reset button |
|---------|--------------|

## Physical Characteristics

|              |                                                        |
|--------------|--------------------------------------------------------|
| Housing      | Metal                                                  |
| IP Rating    | IP30                                                   |
| Dimensions   | 100 x 130 x 22 mm (3.94 x 5.12 x 0.87 in)              |
| Weight       | 436 g (0.96 lb)                                        |
| Installation | DIN-rail mounting<br>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)<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<br>EN 55032/35                                                                                                                                                                                                                      |
| EMI           | CISPR 32, 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/m<br>IEC 61000-4-8 PFMF: 30 A/m |
| Cybersecurity | IEC 62443-4-2 Security Level 1<br>EN 18031-1                                                                                                                                                                                                          |
| Road Vehicles | E mark E1                                                                                                                                                                                                                                             |
| Safety        | IEC 62368-1<br>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      | 1,144,888 hrs             |
| Standards | Telcordia Standard SR-332 |

## Warranty

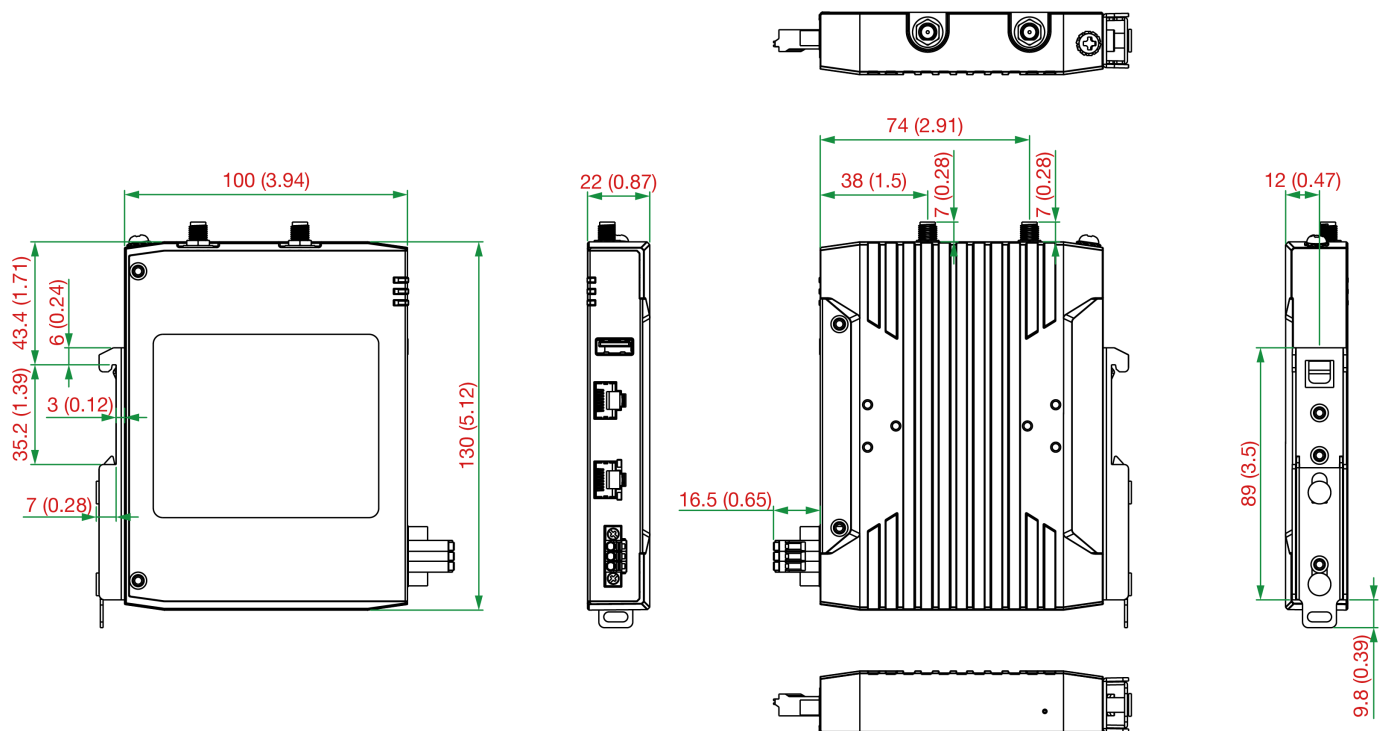
|                 |                                                                            |
|-----------------|----------------------------------------------------------------------------|
| Warranty Period | 5 years                                                                    |
| Details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

## Package Contents

|                  |                                                   |
|------------------|---------------------------------------------------|
| Device           | 1 x AWK-1151C 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 |

## 尺寸

單位：公釐（英吋）



## 訂購資訊

| Model Name     | Band | Standards               | Operating Temp. |
|----------------|------|-------------------------|-----------------|
| AWK-1151C-UN   | UN   | 802.11a/b/g/n/ac Wave 2 | -25 to 60°C     |
| AWK-1151C-UN-T | UN   | 802.11a/b/g/n/ac Wave 2 | -40 to 75°C     |
| AWK-1151C-US   | US   | 802.11a/b/g/n/ac Wave 2 | -25 to 60°C     |
| AWK-1151C-US-T | US   | 802.11a/b/g/n/ac Wave 2 | -40 to 75°C     |

## 配件 (選購)

### 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 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-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-R5-60  | Wireless antenna cable with RP-SMA (female) to RP-SMA (male) connectors, RG-402 type, 0.6 m                |
| 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 |
|-------------|--------------------------------------------------------|

### Cables

|                 |                                               |
|-----------------|-----------------------------------------------|
| CBL-RJ45F25-150 | 8-pin RJ45 to DB25 female serial cable, 1.5 m |
| CBL-RJ45F9-150  | 8-pin RJ45 to DB9 female serial cable, 1.5m   |

### Wall-Mounting Kits

|          |                                                                    |
|----------|--------------------------------------------------------------------|
| WK-35-05 | Wall-mounting kit with 2 plates (35 x 44 x 2.5 mm), 6 NYLOK screws |
|----------|--------------------------------------------------------------------|

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