

# AIG-300 Series

Advanced IIoT Gateways with Arm® Cortex™-A7 dual-core 1 GHz processor, 1 CAN port, 4 DIs, 4 DOs, ThingsPro Edge software, -40 to 70°C operating temperature



## Features and Benefits

- Simplifies data acquisition and device management via the ThingsPro Edge software
- Seamless integration with ThingsPro Edge and Azure IoT Edge enables easy, reliable, yet secure cloud connectivity
- Supports easy device-provisioning with the ThingsPro Proxy utility
- Provides robust OTA function to prevent system failure during software upgrades
- Equipped with secure boot to prevent malicious software-injection attacks

## Certifications

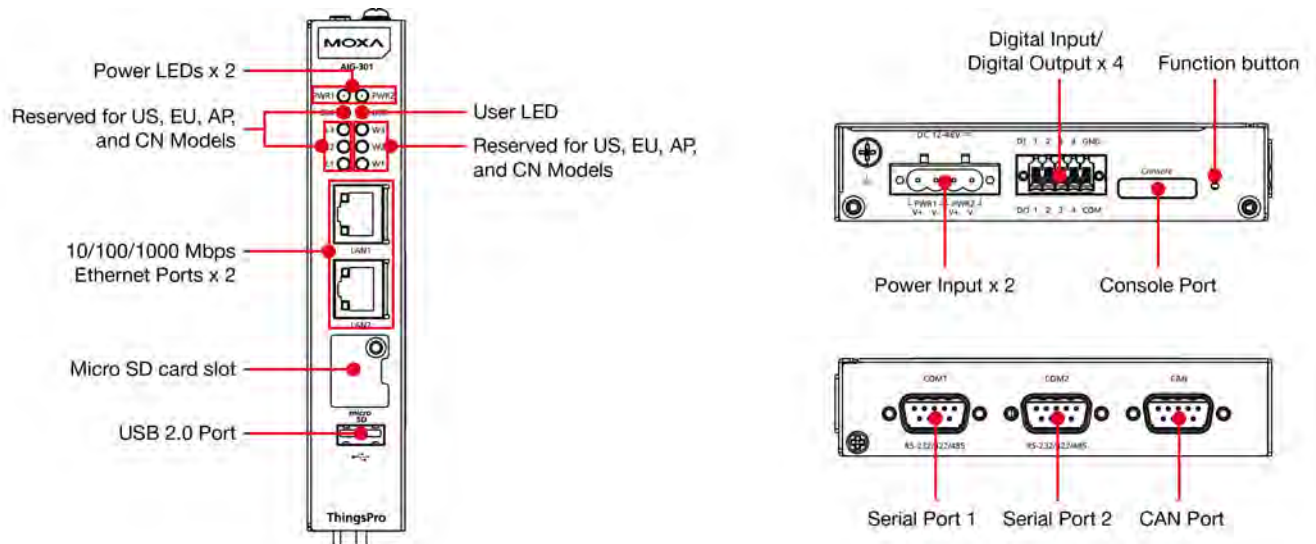


## Introduction

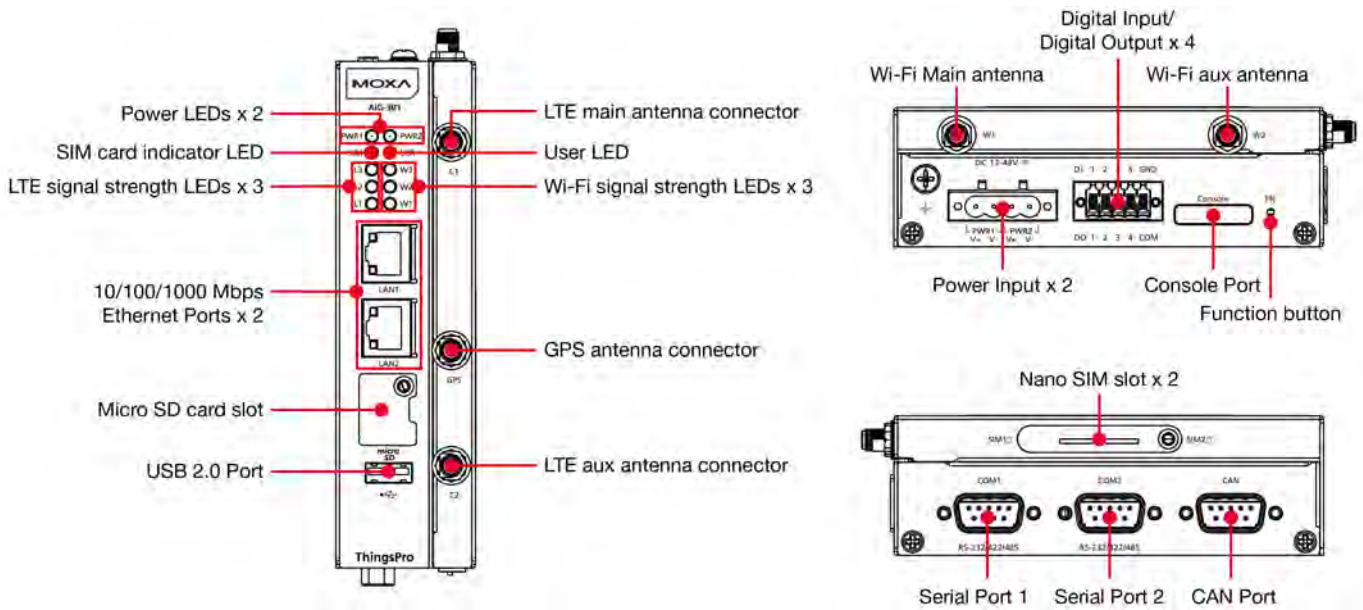
The AIG-301 Series advanced IIoT gateways are designed for Industrial IoT applications, especially for distributed and unmanned sites in harsh operating environments. ThingsPro Edge and Azure IoT Edge software are preloaded and seamlessly integrated with the AIG-301 Series to enable easy, reliable, yet secure sensor-to-cloud connectivity for data acquisition and device management using the Azure Cloud solution. With the use of the ThingsPro Proxy utility, the device provisioning process is easier than ever. Thanks to the robust OTA function, you never have to worry about system failure during software upgrades. With the secure boot function enabled, you can enable the booting process of AIG-301 Series to prevent malicious software injection.

## Appearance

### AIG-301-T-AZU-LX



## AIG-301 US, EU, AP, and CN Models



## Specifications

### Computer

|                       |  |
|-----------------------|--|
| CPU                   | Armv7 Cortex-A7 dual-core 1 GHz              |
| DRAM                  | 2 GB DDR3L                                   |
| Storage Pre-installed | 16 GB eMMC GB eMMC                           |
| Pre-installed OS      | Moxa Industrial Linux (Debian 9, Kernel 4.4) |

### Computer Interface

|                            |  |
|----------------------------|--|
| TPM                        | TPM v2.0   |
| Ethernet Ports             | Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 2   |
| Serial Ports               | RS-232/422/485 ports x 2, software selectable (DB9 male)   |
| CAN Ports                  | CAN 2.0 A/B x 1 (DB9 male)   |
| Digital Input              | DIs x 4  |
| Digital Output             | DOs x 4  |
| USB 2.0                    | USB 2.0 hosts x 1, type-A connectors   |
| Wi-Fi Antenna Connector    | RP-SMA x 2 (excluding AIG-301-AZU-LX/T-AZU-LX models)  |
| Cellular Antenna Connector | SMA x SMA x 2 (excluding AIG-301-AZU-LX/T-AZU-LX models)   |
| GPS Antenna Connector      | SMA x SMA x 1 (excluding AIG-301-AZU-LX/T-AZU-LX models)   |
| Expansion Slots            | mPCIe slot x 1: AIG-301-US-AZU-LX/T-US-AZU-LX, AIG-301-EU-AZU-LX/T-EU-AZU-LX, AIG-301-AP-AZU-LX/T-AP-AZU-LX<br>mPCIe slot x 2: AIG-301-CN-AZU-LX/T-CN-AZU-LX |
| SIM Format                 | Nano (AIG-301-US-AZU-LX/T-US-AZU-LX, AIG-301-EU-AZU-LX/T-EU-AZU-LX, AIG-301-AP-AZU-LX/T-AP-AZU-LX)   |
| Number of SIMs             | 2  |
| Buttons                    | Programmable button  |

## Ethernet Interface

|                               |                   |
|-------------------------------|-------------------|
| Magnetic Isolation Protection | 1.5 kV (built-in) |
|-------------------------------|-------------------|

## Serial Interface

|              |  |
|--------------|--|
| Console Port | 1 x 4-pin header   |
| Connector    | DB9 female   |
| Baudrate     | 300 bps to 921.6 kbps  |
| Data Bits    | 5, 6, 7, 8   |
| Flow Control | ADDC® (automatic data direction control) for RS-485, RTS/CTS, XON/XOFF |
| Parity       | None, Even, Odd, Space, Mark   |
| Stop Bits    | 1, 1.5, 2  |
| Isolation    | N/A  |

## Serial Signals

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

## CAN Interface

|                      |  |
|----------------------|--|
| No. of Ports         | 1  |
| Connector            | DB9 male                                     |
| Baudrate             | 10 to 1000 kbps                              |
| Industrial Protocols | CAN 2.0A, CAN 2.0B                           |
| Signals              | CAN_H, CAN_L, CAN_GND, CAN_SHLD, CAN_V+, GND |
| Isolation            | 2 kV (built-in)                              |

## Digital Inputs

|                         |                                     |
|-------------------------|-------------------------------------|
| Connector               | Spring-type Euroblock terminal      |
| Dry Contact             | Off: open<br>On: short to GND       |
| Wet Contact (DI to COM) | On: 10 to 30 VDC<br>Off: 0 to 3 VDC |
| Isolation               | 3K VDC                              |
| Sensor Type             | Wet contact (NPN)<br>Dry contact    |

## Digital Outputs

|                |  |
|----------------|--|
| Connector      | Spring-type Euroblock terminal           |
| Current Rating | 200 mA per channel                       |
| I/O Type       | Sink                                     |
| Voltage        | 24 VDC nominal, open collector to 30 VDC |

## Cellular Interface

|                    |  |
|--------------------|--|
| Cellular Standards | LTE CAT-4  |
| Band Options (US)  | LTE Band 2 (1900 MHz) / LTE Band 4 (1700 MHz) / LTE Band 5 (850 MHz) / LTE Band 13 (700 MHz) / LTE Band 17 (700 MHz)<br>UMTS/HSPA 850 MHz / 1900 MHz<br>Carrier Approval: Verizon, AT&T          |
| Band Options (EU)  | LTE Band 1 (2100 MHz) / LTE Band 3 (1800 MHz) / LTE Band 5 (850 MHz) / LTE Band 7 (2600 MHz) / LTE Band 8 (900 MHz) / LTE Band 20 (800 MHz)<br>UMTS/HSPA 850 MHz / 900 MHz / 1900 MHz / 2100 MHz |
| Band Option (APAC) | LTE Band 1 (2100 MHz) / LTE Band 3 (1800 MHz) / LTE Band 5 (850 MHz) / LTE Band 7 (2600 MHz) / LTE Band 8 (900 MHz) / LTE Band 28 (700 MHz)<br>UMTS/HSPA 850 MHz / 900 MHz / 1900 MHz / 2100 MHz |

## GPS Interface

|                |  |
|----------------|--|
| Receiver Types | 72-channel u-blox M8 engine<br>GPS/GLONASS/Galileo |
| Accuracy       | Position: 2.5 m CEP<br>SBAS: 2.0 m CEP             |
| Acquisition    | Aided starts: 3 sec<br>Cold starts: 26 sec         |
| Sensitivity    | Cold starts: -148 dBm<br>Tracking: -164 dBm        |

## LED Indicators

|                          |   |
|--------------------------|---|
| System                   | Power x 2<br>User x 1<br>SIM card indicator x 1 |
| Wireless Signal Strength | Cellular/Wi-Fi x 6                              |

## ThingsPro Software

|                              |     |
|------------------------------|-----|
| ThingsPro Proxy Utility      | Yes |
| Azure IoT Edge Preintegrated | Yes |
| ThingsPro Edge Preloaded     | Yes |

## Power Parameters

|                     |  |
|---------------------|--|
| No. of Power Inputs | Redundant dual inputs  |
| Input Voltage       | 12 to 48 VDC   |
| Power Consumption   | 4.8 W (AIG-301-AZU-LX/T-AZU-LX)<br>6.0 W (AIG-301-CN-AZU-LX/T-CN-AZU-LX)<br>8.4 W (AIG-301-US-AZU-LX/T-US-AZU-LX, AIG-301-EU-AZU-LX/T-EU-AZU-LX, AIG-301-AP-AZU-LX/T-AP-AZU-LX)                              |
| Input Current       | 0.4 A @ 12 VDC (AIG-301-AZU-LX/T-AZU-LX)<br>0.5 A @ 12 VDC (AIG-301-CN-AZU-LX/T-CN-AZU-LX)<br>0.7 A @ 12 VDC (AIG-301-US-AZU-LX/T-US-AZU-LX, AIG-301-EU-AZU-LX/T-EU-AZULX,<br>AIG-301-AP-AZU-LX/T-AP-AZU-LX) |

## Reliability

|                          |                               |
|--------------------------|-------------------------------|
| Automatic Reboot Trigger | External WDT (watchdog timer) |
|--------------------------|-------------------------------|

## Physical Characteristics

|              |  |
|--------------|--|
| Housing      | SECC<br>Metal  |
| Installation | DIN-rail mounting, Wall mounting (with optional kit)   |
| IP Rating    | IP30   |
| Dimensions   | 141.5 x 120 x 27 mm (5.7 x 4.72 x 1.06 in) (AIG-301-AZU-LX/T-AZU-LX)<br>141.5 x 120 x 39 mm (5.7 x 4.72 x 1.54 in) (AIG-301-US-AZU-LX/T-US-AZU-LX, AIG-301-EU-AZU-LX/T-EU-AZU-LX, AIG-301-AP-AZU-LX/T-AP-AZU-LX, AIG-301-CN-AZU-LX/TCN-AZU-LX) |
| Weight       | 560 g (1.23 lb) (AIG-301-AZU-LX/T-AZU-LX)<br>745 g (1.64 lb) (AIG-301-CN-AZU-LX/T-CN-AZU-LX)<br>750 g (1.65 lb) (AIG-301-US-AZU-LX/T-US-AZU-LX, AIG-301-EU-AZU-LX/T-EU-AZU-LX, AIG-301-AP-AZU-LX/T-AP-AZU-LX)                                  |

## Environmental Limits

|  |   |
|--|---|
| Ambient Relative Humidity              | 5 to 95% (non-condensing)   |
| Operating Temperature                  | Standard Temp. Models:<br>-20 to 70°C (-4 to 158°F) (AIG-301-US-AZU-LX, AIG-301-EU-AZU-LX, AIG-301-AP-AZULX, AIG-301-CN-AZU-LX)<br>-20 to 85°C (-4 to 185°F) (AIG-301-AZU-LX)<br>Wide Temp. Models:<br>-40 to 70°C (-40 to 158°F) (AIG-301-T-US-AZU-LX, AIG-301-T-EU-AZU-LX, AIG-301-T-AP-AZU-LX, AIG-301-T-CN-AZU-LX)<br>-40 to 85°C (-40 to 185°F) (AIG-301-T-AZU-LX) |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F)  |
| Shock                                  | IEC 60068-2-27  |
| Vibration                              | 2 Grms @ IEC 60068-2-64, random wave, 5-500 Hz, 1 hr per axis (without USB devices attached)  |

## Standards and Certifications

|                     |  |
|---------------------|--|
| Safety              | UL 62368-1, EN 62368-1   |
| EMC                 | EN 55032/35, EN 61000-6-2/-6-4   |
| EMI                 | CISPR 32, FCC Part 15B Class A   |
| EMS                 | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 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 61000-4-6 CS: 10 V<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-5 Surge: Power: 0.5 kV; Signal: 1 kV |
| Green Product       | RoHS, CRoHS, WEEE  |
| Hazardous Locations | Class I Division 2, ATEX (AIG-301-T-US-AZU-LX, AIG-301-T-EU-AZU-LX, AIG-301-T-AP-AZU-LX, AIG-301-T-AZU-LX)   |
| <b>MTBF</b>         |  |
| Time                | 683,818 hrs (AIG-301-US-AZU-LX/T-US-AZU-LX, AIG-301-EU-AZU-LX/T-EU-AZU-LX, AIG-301-AP-AZU-LX/T-AP-AZU-LX)<br>794,092 hrs (AIG-301-AZU-LX/T-AZU-LX)   |
| Standards           | Telcordia (Bellcore) Standard TR/SR  |

## Warranty

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

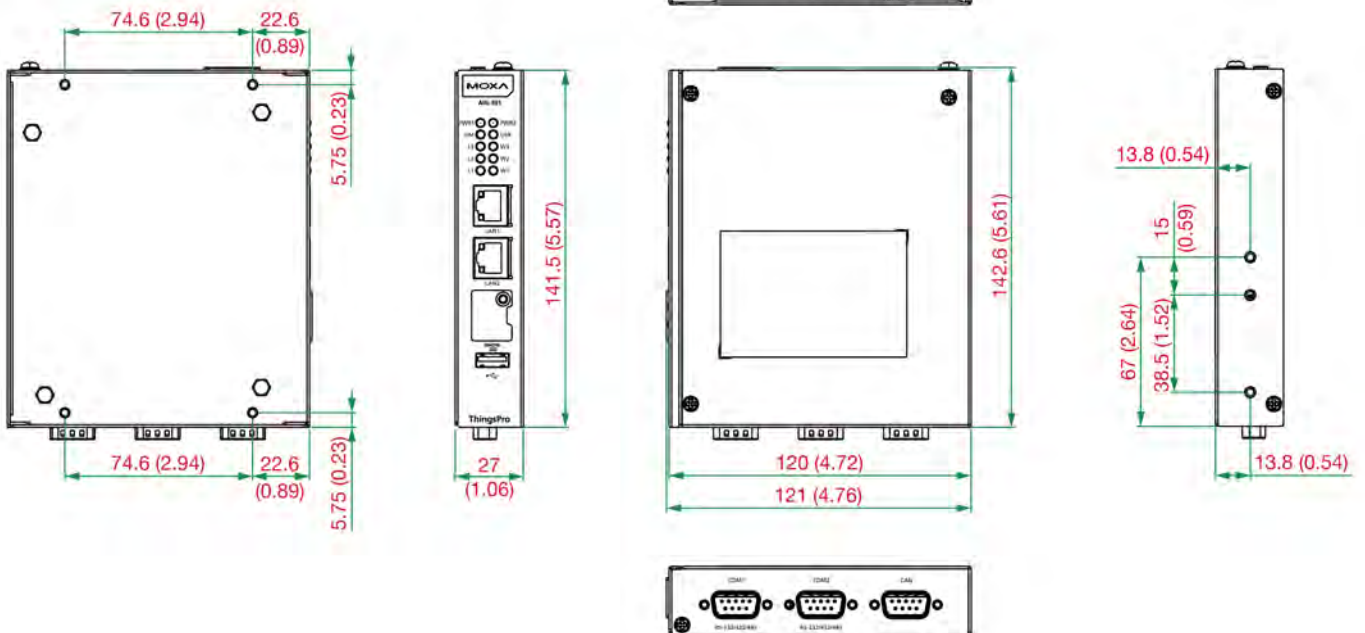
## Package Contents

|                  |   |
|------------------|---|
| Device           | 1 x AIG-300 Series computer                       |
| Documentation    | 1 x quick installation guide<br>1 x warranty card |
| Installation Kit | 1 x DIN-rail kit (preinstalled)<br>1 x power jack |

## Dimensions

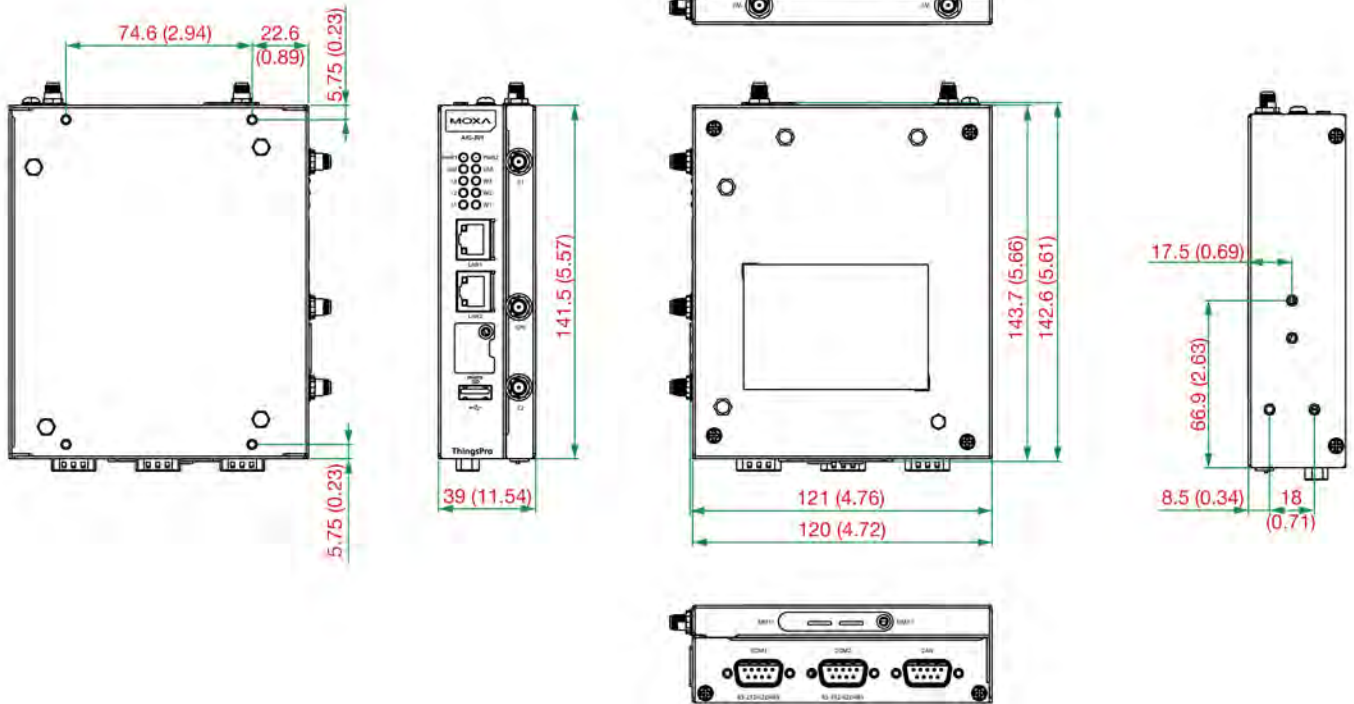
### AIG-301-T-AZU-LX

Unit: mm (inch)



## AIG-301 US, EU, AP, and CN Models

Unit: mm (inch)



## Ordering Information

| Model Name          | CPU             | RAM  | Storage | TPM      | mPCIe Slot 1 for LTE Module           | mPCIe Slot 2 for Wi-Fi Module | Operating Temperature |
|---------------------|-----------------|------|---------|----------|---------------------------------------|-------------------------------|-----------------------|
| AIG-301-AZU-LX      | 1 GHz Dual Core | 2 GB | 16 GB   | Built-in | -                                     | -                             | -20 to 85°C           |
| AIG-301-T-AZU-LX    | 1 GHz Dual Core | 2 GB | 16 GB   | Built-in | -                                     | -                             | -40 to 85°C           |
| AIG-301-CN-AZU-LX   | 1 GHz Dual Core | 2 GB | 16 GB   | Built-in | Reserved                              | Reserved                      | -20 to 70°C           |
| AIG-301-T-CN-AZU-LX | 1 GHz Dual Core | 2 GB | 16 GB   | Built-in | Reserved                              | Reserved                      | -40 to 70°C           |
| AIG-301-US-AZU-LX   | 1 GHz Dual Core | 2 GB | 16 GB   | Built-in | US region LTE module preinstalled     | Reserved                      | -20 to 70°C           |
| AIG-301-T-US-AZU-LX | 1 GHz Dual Core | 2 GB | 16 GB   | Built-in | US region LTE module preinstalled     | Reserved                      | -40 to 70°C           |
| AIG-301-EU-AZU-LX   | 1 GHz Dual Core | 2 GB | 16 GB   | Built-in | Europe region LTE module preinstalled | Reserved                      | -20 to 70°C           |
| AIG-301-T-EU-AZU-LX | 1 GHz Dual Core | 2 GB | 16 GB   | Built-in | Europe region LTE module preinstalled | Reserved                      | -40 to 70°C           |
| AIG-301-AP-AZU-LX   | 1 GHz Dual Core | 2 GB | 16 GB   | Built-in | APAC region LTE module preinstalled   | Reserved                      | -20 to 70°C           |
| AIG-301-T-AP-AZU-LX | 1 GHz Dual Core | 2 GB | 16 GB   | Built-in | APAC region LTE module preinstalled   | Reserved                      | -40 to 70°C           |

## Accessories (sold separately)

### Power Wiring

|                 |  |
|-----------------|--|
| CBL-PJTB-10     | Non-locking barrel plug to bare-wire cable |
| Mini DB9F-to-TB | DB9 female to terminal block connector     |

### Cables

|                     |   |
|---------------------|---|
| CBL-F9DPF1x4-BK-100 | Console cable with 4-pin connector, 1 m |
|---------------------|---|

### Wi-Fi Wireless Modules

|                   |   |
|-------------------|---|
| UC-8200-WLAN22-AC | Wireless package for UC-8200 V2.0 or later with Wi-Fi module, 2 screws, 2 spacers, 1 heat sink, 1 pad |
|-------------------|---|

### Antennas

|                           |  |
|---------------------------|--|
| ANT-LTEUS-ASM-01          | GSM/GPRS/EDGE/UMTS/HSPA/LTE, 1 dBi, omnidirectional rubber-duck antenna                                |
| ANT-LTE-ASM-04 BK         | 704 to 960/1710 to 2620 MHz, LTE omnidirectional stick antenna, 4.5 dBi                                |
| ANT-LTE-OSM-03-3m BK      | 700-2700 MHz, multiband antenna, specifically designed for 2G, 3G, and 4G applications, 3 m cable      |
| ANT-LTE-ASM-05 BK         | 704-960/1710-2620 MHz, LTE stick antenna, 5 dBi  |
| ANT-LTE-OSM-06-3m BK MIMO | Multiband antenna with screw-fastened mounting option for 700-2700/2400-2500/5150-5850 MHz frequencies |
| ANT-WDB-ARM-0202          | 2 dBi at 2.4 GHz or 2 dBi at 5 GHz, RP-SMA (male), dual-band, omnidirectional antenna                  |
| ANT-GPS-OSM-03-3m BK      | 3 dBi at 1575.42 MHz, SMA (male), omnidirectional magnetic-base passive GPS antenna, 3 m cable         |
| ANT-GPS-CSM-03-3m         | 3 dBi at 1575.42 MHz, SMA (male), directional passive GPS antenna, 3 m cable                           |
| ANT-GPS-OSM-05-3M         | 26 dBi at 1575.42 MHz, SMA (male), omnidirectional active GPS antenna, 3 m cable                       |

### Wall-Mounting Kits

|                           |  |
|---------------------------|--|
| UC-8200 Wall-mounting Kit | Wall-mounting kit for UC-8200 with 4 M3 screws |
|---------------------------|--|

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