

# UC-3100 Series

Arm Cortex-A8 1 GHz IloT gateway with built-in LTE Cat. 1 and Wi-Fi modules



## Features and Benefits

- Armv7 Cortex-A8 1000 MHz processor
- Integrated Wi-Fi 802.11a/b/g/n and LTE Cat. 1 for the US, EU, and APAC regions
- Bluetooth 4.2 support
- LTE-ready computer with Verizon/AT&T certification and industrial-grade CE/FCC/UL certifications
- Industrial CAN 2.0 A/B protocols supported
- -40 to 70°C operating temperature range
- Meets the EN 61000-6-2 and EN 61000-6-4 standards for industrial EMC applications
- Long-term Linux support until 2027; includes bug fixes and security patches

## Certifications



## Introduction

Moxa's UC-3100 Series computers can be used as smart gateways in the field for data pre-processing and transmission, as well as for other embedded data-acquisition applications. The series includes a diverse set of models, each supporting different wireless options and protocols. The UC-3100's advanced heat dissipation design makes it suitable for use in temperatures ranging from -40 to 70°C. In fact, the Wi-Fi and LTE connections can be used simultaneously in both cold and hot environments, allowing you to maximize the data pre-processing and data transmission capabilities of your applications in most harsh environments.

The UC-3100 is more than just a hardware solution. In order to offer a better user experience with a Moxa Arm-based computer, the UC-3100 supports the following software features, allowing you to use the most suitable configuration for your application.

- High VPN performance; more than 70 Mbps Ethernet throughput with AES-256 encryption
- Robust file system to prevent the system from being bricked due to a firmware upgrade failure
- Real COM mode to provide a control interface to Moxa's NPort products

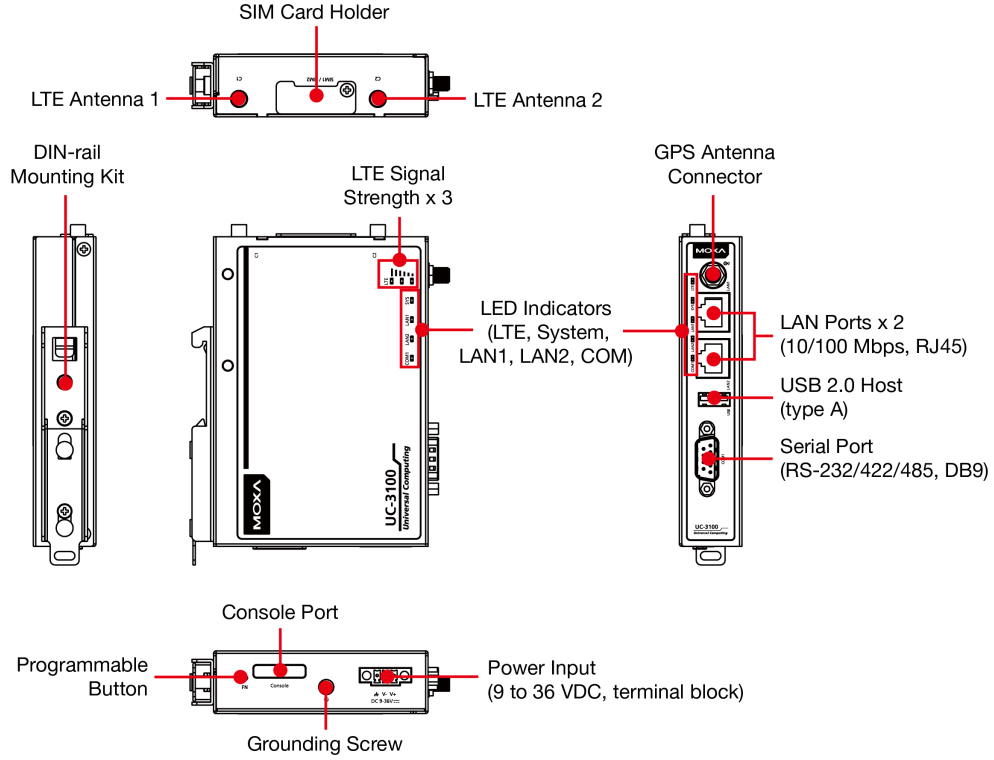
In addition, Moxa provides 10 years of Linux OS support. With a new version of the Debian repository released on an average every 2 to 3 years, you can create a reliable solution that will be supported now and long into the future.

## Applications

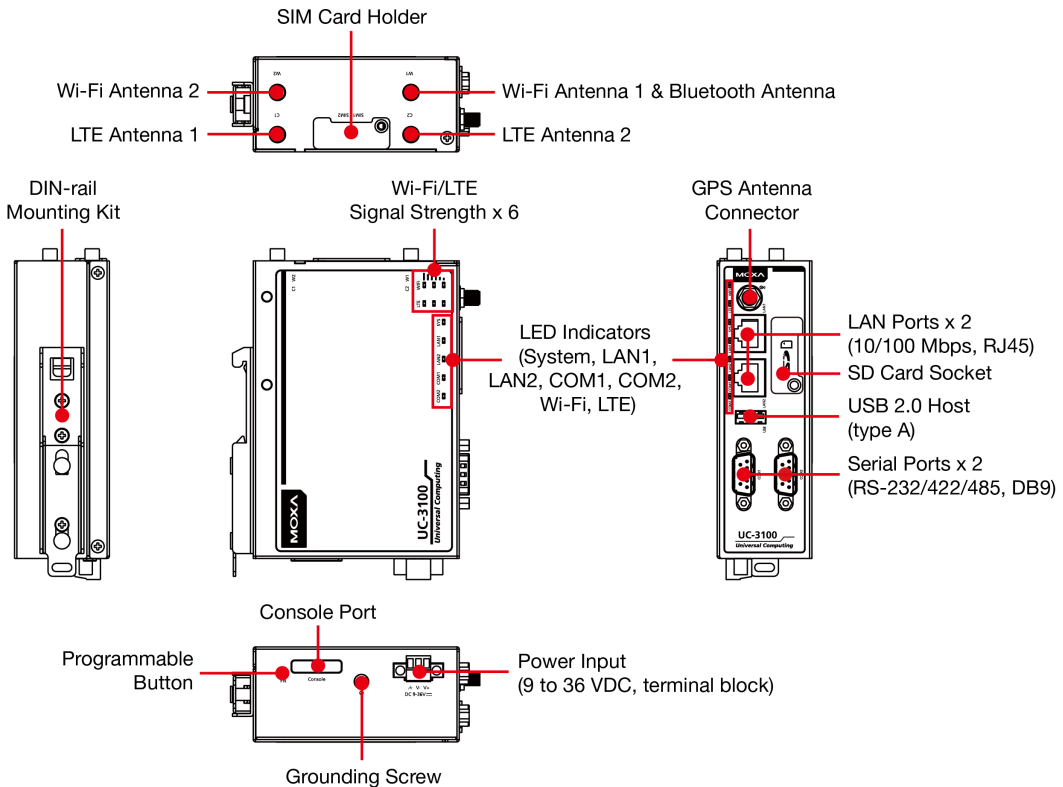
- Remote Terminal Unit (RTU)
- Data acquisition
- M2M communication (smart gateway)
- Digital signage
- Factory automation
- In-vehicle monitor/data logger (transportation)
- Programmable router
- Energy usage optimization
- Predictive maintenance
- Asset management

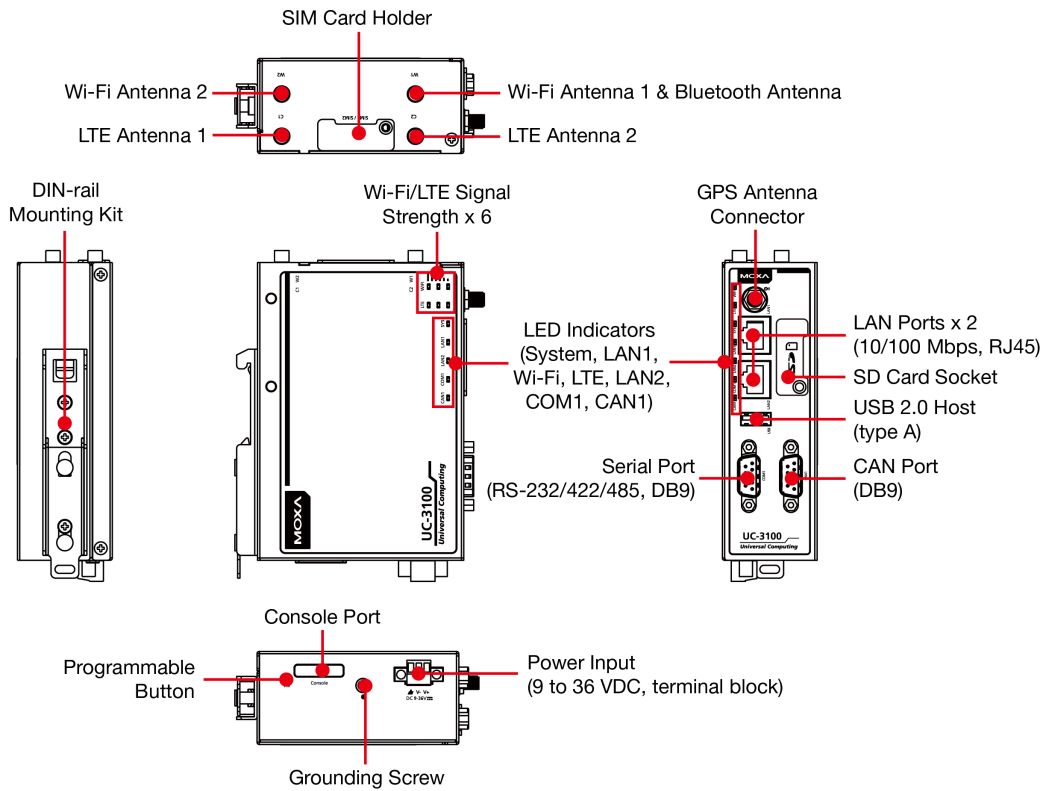
# Appearance

## UC-3101



## UC-3111





## Specifications

### Computer

|                       |   |
|-----------------------|---|
| DRAM                  | 1 GB DDR3   |
| Supported OS          | Linux Debian 9 kernel 4.4 (Moxa Industrial Linux)<br>See <a href="http://www.moxa.com/MIL">www.moxa.com/MIL</a> |
| Storage Pre-installed | 8 GB eMMC   |
| Storage Slot          | UC-3111/3121: SD slots x 1  |

### Computer Interface

|                            |   |
|----------------------------|---|
| TPM                        | TPM v2.0  |
| Ethernet Ports             | Auto-sensing 10/100 Mbps ports (RJ45 connector) x 2   |
| Serial Ports               | UC-3101/3121: RS-232/422/485 ports x 1, software-selectable (DB9)<br>UC-3111: RS-232/422/485 ports x 2, software-selectable (DB9) |
| USB 2.0                    | USB 2.0 hosts x 1, type-A connectors  |
| Cellular Antenna Connector | SMA x 2   |
| SIM Format                 | Nano  |
| Number of SIMs             | 2   |
| GPS Antenna Connector      | SMA x 1   |
| Wi-Fi Antenna Connector    | RP-SMA x 2 for UC-3111/UC-3121 only   |
| Console Port               | RS-232 (TxD, RxD, GND), 4-pin header output (115200, n, 8, 1)   |

### Ethernet Interface

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

## Cellular Interface

|              |  |
|--------------|--|
| Band Options | <p><b>US Models:</b><br/>           LTE Bands: Band 2 (1900 MHz) / Band 4 (1700 MHz) / Band 5 (850 MHz) / Band 12 (700 MHz) / Band 13 (700 MHz) / Band 14 (700 MHz) / Band 66 (1700 MHz) / Band 71 (600 MHz)<br/>           UMTS Bands: 2 (1900 MHz) / Band 4 (1700 MHz) / Band 5 (850 MHz)<br/>           Carrier Approval: Verizon, AT&amp;T</p> <p><b>EU Models:</b><br/>           LTE Bands: Band 1 (2100 MHz) / Band 3 (1800 MHz) / Band 7 (2600 MHz) / Band 8 (900 MHz) / Band 20 (800 MHz) / Band 28A (700 MHz)<br/>           UMTS Bands: Band 1 (2100 MHz) / Band 3 (1800 MHz) / Band 8 (900 MHz)</p> <p><b>AP Models:</b><br/>           LTE Bands: Band 1 (2100 MHz) / 3 (1800 MHz) / Band 5 (850 MHz) / Band 8 (900 MHz) / Band 9 (1700 MHz) / Band 18 (850 MHz) / Band 19 (850 MHz) / Band 26 (850 MHz) / Band 28 (700 MHz)<br/>           UMTS Bands: 1 (2100 MHz) / Band 5 (850 MHz) / Band 6 (800 MHz) / Band 8 (900 MHz) / Band 19 (800 MHz)</p> |
|--------------|--|

## WLAN Interface

|                |   |
|----------------|---|
| WLAN Standards | 802.11a/b/g/n: UC-3111-T-LX and UC-3121-T-LX models<br>Bluetooth 4.2 compliance: UC-3111-T-LX and UC-3121-T-LX models |
| Frequency Band | 2.4 GHz/5 GHz: UC-3111-T-LX and UC-3121-T-LX models   |

## Serial Interface

|           |                              |
|-----------|------------------------------|
| Data Bits | 5, 6, 7, 8                   |
| Parity    | None, Even, Odd, Space, Mark |
| Stop Bits | 1, 1.5, 2                    |
| Baudrate  | 50 bps to 921.60 kbps        |

## 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

|           |   |
|-----------|---|
| Baudrate  | UC-3121-T-US-LX: 10 to 1000 kbps<br>UC-3121-T-EU-LX: 10 to 1000 kbps<br>UC-3121-T-AP-LX: 10 to 1000 kbps  |
| Connector | UC-3121-T-US-LX: DB9 male<br>UC-3121-T-EU-LX: DB9 male<br>UC-3121-T-AP-LX: DB9 male   |
| Isolation | UC-3121-T-US-LX: 2 kV (built-in)<br>UC-3121-T-EU-LX: 2 kV (built-in)<br>UC-3121-T-AP-LX: 2 kV (built-in)  |
| Signals   | UC-3121-T-US-LX: CAN_H, CAN_L, CAN_GND, CAN_SHLD, CAN_V+, GND<br>UC-3121-T-EU-LX: CAN_H, CAN_L, CAN_GND, CAN_SHLD, CAN_V+, GND<br>UC-3121-T-AP-LX: CAN_H, CAN_L, CAN_GND, CAN_SHLD, CAN_V+, GND |

## LED Indicators

|        |  |
|--------|--|
| System | Power x 1  |
| CAN    | UC-3121-T-US-LX: 1 per port (Tx, Rx)<br>UC-3121-T-EU-LX: 1 per port (Tx, Rx) |

|  |  |
|--|--|
|  | UC-3121-T-AP-LX: 1 per port (Tx, Rx)   |
| Serial                                 | 1 per port (Tx, Rx)  |
| LAN                                    | 1 per port (10/100 Mbps)   |
| Wireless Signal Strength               | UC-3101: 3 x cellular<br>UC-3111/UC-3121: 3 x cellular and 3 x Wi-Fi   |
| <b>Power Parameters</b>                |  |
| Power Consumption                      | UC-3101: 6 W (max.)<br>UC-3111/UC-3121: 8 W (max.)   |
| Input Current                          | 500 mA @ 12 VDC  |
| Input Voltage                          | 9 to 36 VDC  |
| <b>Physical Characteristics</b>        |  |
| Housing                                | Metal  |
| Installation                           | DIN-rail mounting<br>Wall mounting (with optional kit)   |
| Dimensions (without ears)              | 128.5 x 89.1 x 26 mm (5.06 x 3.51 x 1.02 in) for UC-3101<br>128.5 x 89.1 x 41 mm (5.06 x 3.51 x 1.61 in) for UC-3111/UC-3121   |
| Weight                                 | Product only: 550 g (1.22 lb)  |
| <b>Environmental Limits</b>            |  |
| Operating Temperature                  | -40 to 70°C (-40 to 158°F)   |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F)   |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)  |
| Vibration                              | 5 Grms @ IEC 60068-2-64, random wave, 5-500 Hz, 1 hr per axis (without USB devices attached)   |
| Shock                                  | IEC 60068-2-27   |
| <b>Standards and Certifications</b>    |  |
| EMC                                    | EN 61000-6-2/-6-4<br>EN 55032/24   |
| EMI                                    | CISPR 22, 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 61000-4-5 Surge: Power: 0.5 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 10 V<br>IEC 61000-4-8 PFMF |
| Carrier Approvals                      | UC-3101-T-US-LX: Verizon<br>UC-3101-T-US-LX: AT&T<br>UC-3111-T-US-LX: Verizon<br>UC-3111-T-US-LX: AT&T<br>UC-3121-T-US-LX: AT&T<br>UC-3121-T-US-LX: Verizon  |
| Cellular Standards                     | EN 301511<br>EN 301908-1<br>EN 62311(MPE SAR)<br>EN 301489-1/-52<br>EN 301489-1/17   |

|                     |  |
|---------------------|--|
| Radio Frequency     | FCC<br>PTCRB<br>RCM                                    |
| Safety              | IEC 60950-1<br>UL 60950-1<br>IEC 62368-1<br>UL 62368-1 |
| WLAN Standards      | EN 301489-1-17<br>EN 300328<br>EN 301893               |
| Green Product       | RoHS, CRoHS, WEEE                                      |
| Hazardous Locations | Class I Division 2<br>ATEX                             |

#### MTBF

|           |  |
|-----------|--|
| Time      | UC-3101-T-US-LX: 702,846 hrs<br>UC-3101-T-EU-LX: 585,775 hrs<br>UC-3101-T-AP-LX: 585,775 hrs<br>UC-3111-T-US-LX: 465,569 hrs<br>UC-3111-T-EU-LX: 416,081 hrs<br>UC-3111-T-AP-LX: 416,081 hrs<br>UC-3121-T-US-LX: 474,796 hrs<br>UC-3121-T-EU-LX: 428,931 hrs<br>UC-3121-T-AP-LX: 428,931 hrs |
| Standards | Telcordia (Bellcore) Standard  |

#### Warranty

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

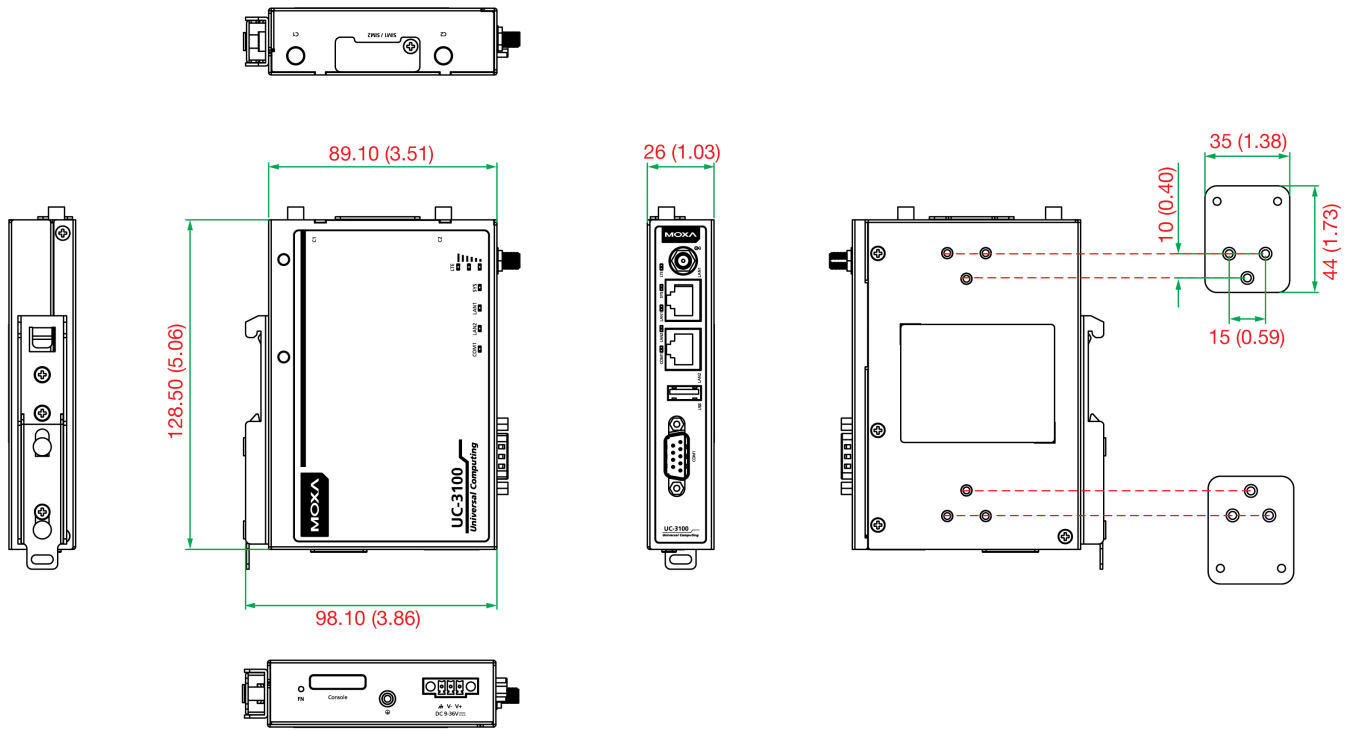
#### Package Contents

|               |   |
|---------------|---|
| Device        | 1 x UC-3100 Series computer                       |
| Cable         | 1 x terminal block to power jack converter        |
| Documentation | 1 x quick installation guide<br>1 x warranty card |

# Dimensions

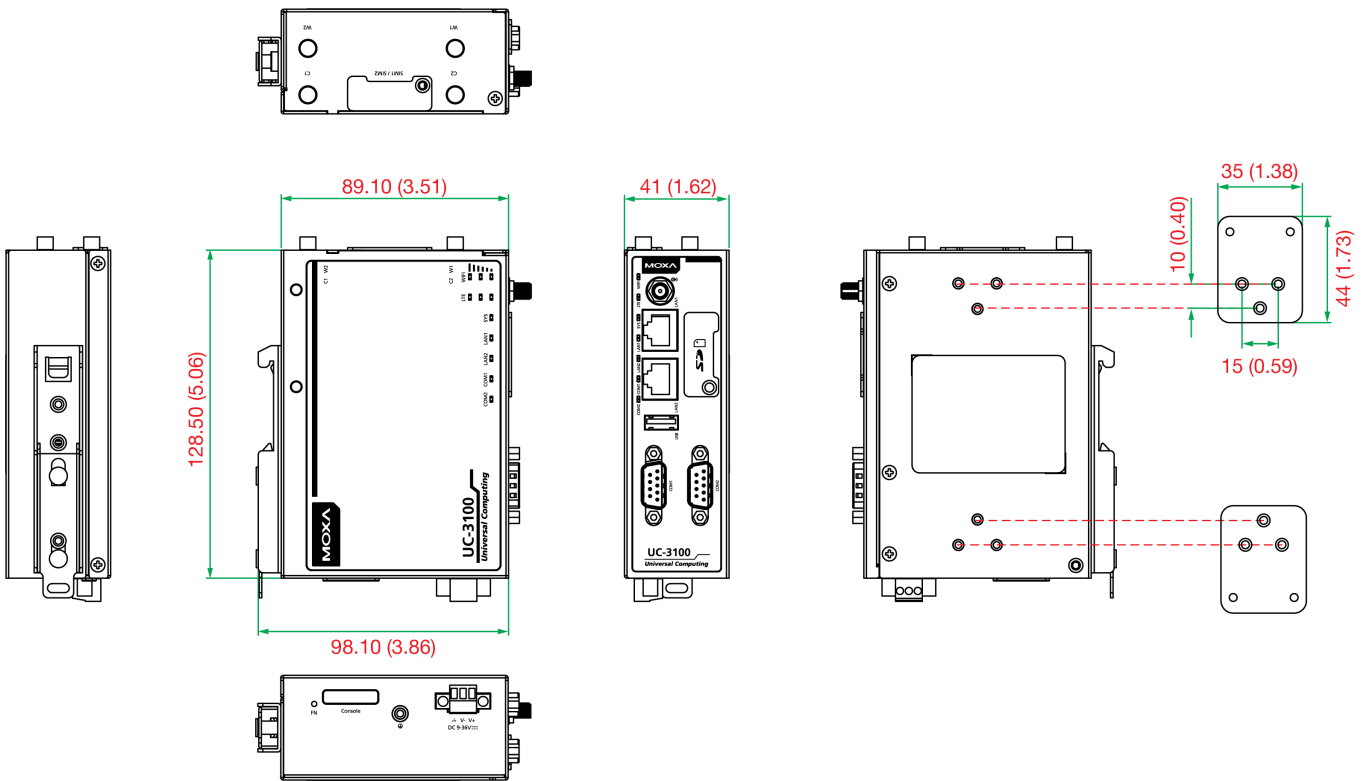
## UC-3101

Unit: mm (inch)



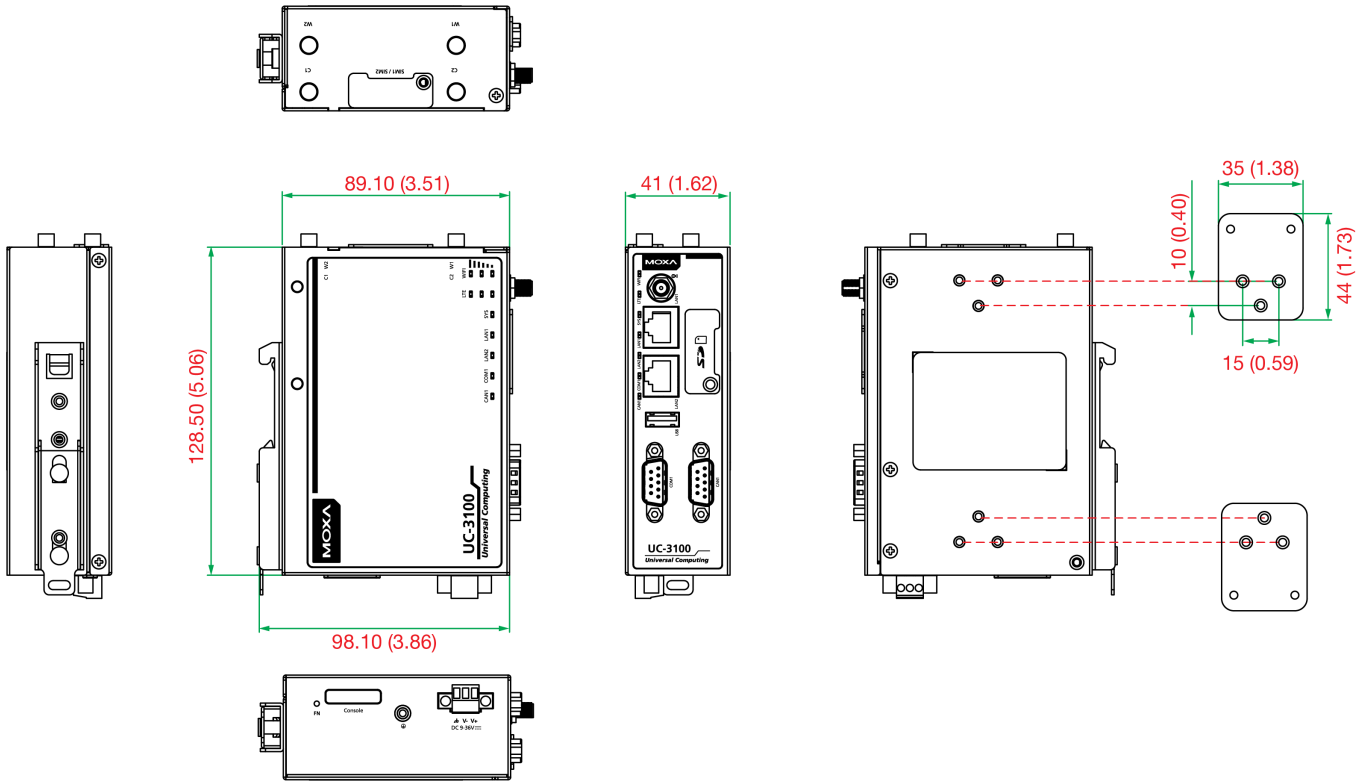
## UC-3111

Unit: mm (inch)



# UC-3121

Unit: mm (inch)



## Ordering Information

| Model Name      | Carrier Approval | CPU   | SD Slot | RAM  | eMMC | Serial | TPM 2.0 | CAN | LTE    | Wi-Fi | BLT |
|-----------------|------------------|-------|---------|------|------|--------|---------|-----|--------|-------|-----|
| UC-3101-T-US-LX | AT&T, Verizon    | 1 GHz | -       | 1 GB | 8 GB | 1      | ✓       | -   | Cat. 1 | -     | -   |
| UC-3111-T-US-LX | AT&T, Verizon    | 1 GHz | 1       | 1 GB | 8 GB | 2      | ✓       | -   | Cat. 1 | ✓     | ✓   |
| UC-3121-T-US-LX | AT&T, Verizon    | 1 GHz | 1       | 1 GB | 8 GB | 1      | ✓       | 1   | Cat. 1 | ✓     | ✓   |
| UC-3101-T-EU-LX | -                | 1 GHz | -       | 1 GB | 8 GB | 1      | ✓       | -   | Cat. 1 | -     | -   |
| UC-3111-T-EU-LX | -                | 1 GHz | 1       | 1 GB | 8 GB | 2      | ✓       | -   | Cat. 1 | ✓     | ✓   |
| UC-3121-T-EU-LX | -                | 1 GHz | 1       | 1 GB | 8 GB | 1      | ✓       | 1   | Cat. 1 | ✓     | ✓   |
| UC-3101-T-AP-LX | -                | 1 GHz | -       | 1 GB | 8 GB | 1      | ✓       | -   | Cat. 1 | -     | -   |
| UC-3111-T-AP-LX | -                | 1 GHz | 1       | 1 GB | 8 GB | 2      | ✓       | -   | Cat. 1 | ✓     | ✓   |
| UC-3121-T-AP-LX | -                | 1 GHz | 1       | 1 GB | 8 GB | 1      | ✓       | 1   | Cat. 1 | ✓     | ✓   |

## Accessories (sold separately)

### Power Adapters

|                   |  |
|-------------------|--|
| PWR-12150-CN-SA-T | Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, China (CN) plug, -40 to 75°C operating temperature |
|-------------------|--|



|                     |  |
|---------------------|--|
| PWR-12150-EU-SA-T   | Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, Continental Europe (EU) plug, -40 to 75°C operating temperature    |
| PWR-12150-UK-SA-T   | Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, United Kingdom (UK) plug, -40 to 75°C operating temperature        |
| PWR-12150-AU-SA-T   | Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, Australia (AU) plug, -40 to 75°C operating temperature             |
| PWR-12150-USJP-SA-T | Locking barrel plug, 12 VDC 1.5 A, 100 to 240 VAC, United States/Japan (US/JP) plug, -40 to 75°C operating temperature |

#### Cables

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

#### DIN-Rail Mounting Kits

|                      |                          |
|----------------------|--------------------------|
| UC-3100 DIN-Rail Kit | DIN-rail kit with screws |
|----------------------|--------------------------|

#### Wall-Mounting Kits

|                           |                               |
|---------------------------|-------------------------------|
| UC-3100 Wall-Mounting Kit | Wall-mounting kit with screws |
|---------------------------|-------------------------------|

#### Antennas

|                     |  |
|---------------------|--|
| ANT-LTE-ASM-02      | GPRS/EDGE/UMTS/HSPA/LTE, omni-directional rubber duck antenna, 2 dBi   |
| ANT-WDB-ARM-02      | 2.4/5 GHz, omni-directional rubber duck antenna, 2 dBi, RP-SMA (male)  |
| ANT-LTEUS-ASM-01    | GSM/GPRS/EDGE/UMTS/HSPA/LTE, omni-directional rubber duck antenna, 1 dBi   |
| UC-3100 Antenna Set | 4 dBi at 1575 MHz to 1610 MHz, SMA (male), active GPS/GLONASS, adhesive-type antenna with 20-cm cable; 2 x 4 dBi at 2.4 GHz or 5 dBi at 5 GHz, RP-SMA (female), omnidirectional antennas; 2 x 1.5 dBi 698 to 960 MHz or 1710 to 2700 MHz, SMA (male), LTE, swivel-type omnidirectional portable antennas |

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