

# UC-2100 Series

*Arm Cortex-A8 600 MHz palm-sized IIoT gateways with 1 mini PCIe expansion slot for a wireless module*



## Features and Benefits

- Armv7 Cortex-A8 600-1000 MHz processor
- Palm-sized form factor, 50 x 80 x 28 mm
- Moxa Industrial Linux with 10-year superior long-term support
- MXview support for centralized monitoring of devices and computing status
- Unified APIs and push-based communication for retrieving data only when needed
- 1 or 2 auto-sensing 10/100 Mbps Ethernet ports
- Gigabit Ethernet supported (UC-2112)
- Up to 2 software-selectable RS-232/422/485 ports supporting all signals
- Mini PCIe socket for Wi-Fi/cellular module (UC-2104)
- -40 to 75°C wide-temperature model available with hazardous locations certification

## Certifications



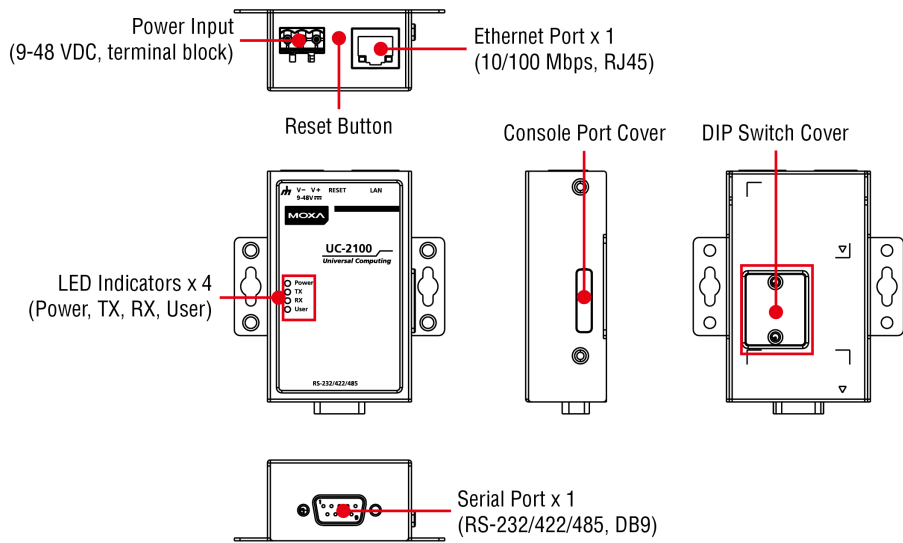
## Introduction

The UC-2100 Series computing platform is designed for embedded data acquisition and processing applications. The computer comes with up to two software selectable RS-232/422/485 full-signal serial ports and single or dual Ethernet ports. This palm-sized series of Arm-based computing platforms includes a variety of models for a wide range of interface requirements, such as single or dual serial and Ethernet ports, Gigabit Ethernet, and wireless connections. These versatile communication capabilities allow users to efficiently adapt the UC-2100 for a variety of complex communications solutions.

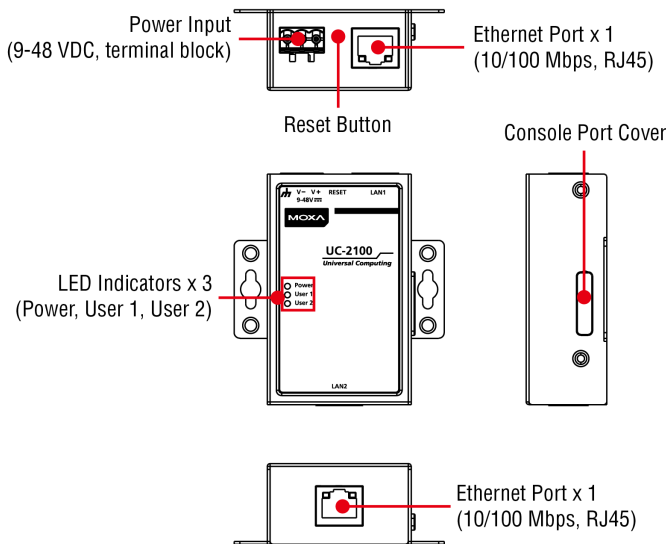
The UC-2100 Series has a built-in Cortex-A8 Arm-based processor that has been optimized for a variety of industrial solutions. With its flexible interface options, this tiny embedded computer is a reliable and secure gateway for data acquisition and processing at field sites and is a useful communication platform for many other large-scale deployments. Models designed for wide temperature applications are available for use in extreme environments such as those found in the oil and gas industry. Furthermore, all models use the Moxa Industrial Linux platform, which provides optimized software features and long-term support.

Appearance

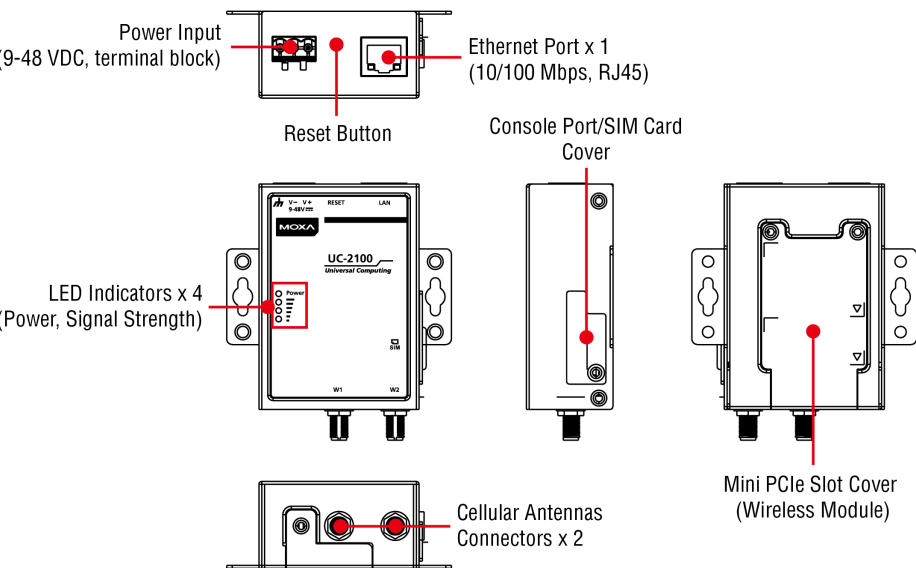
UC-2101



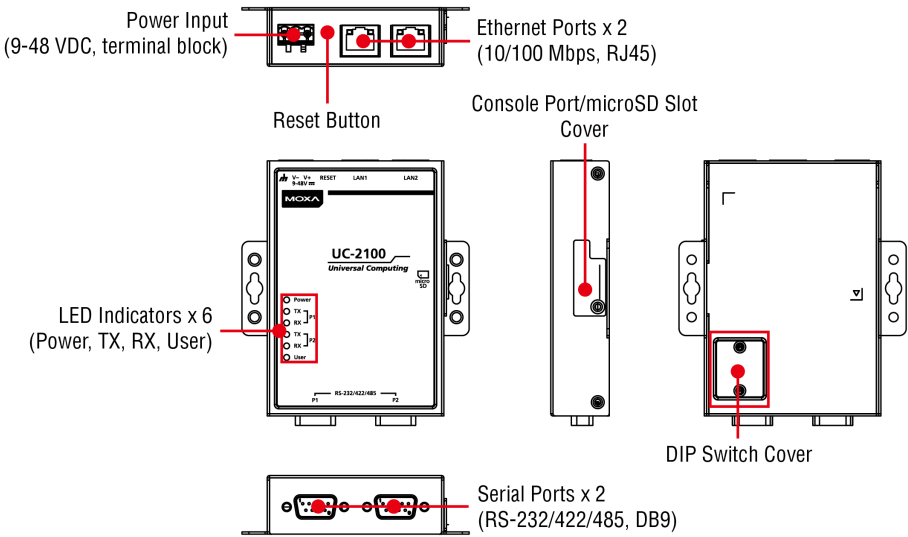
UC-2102



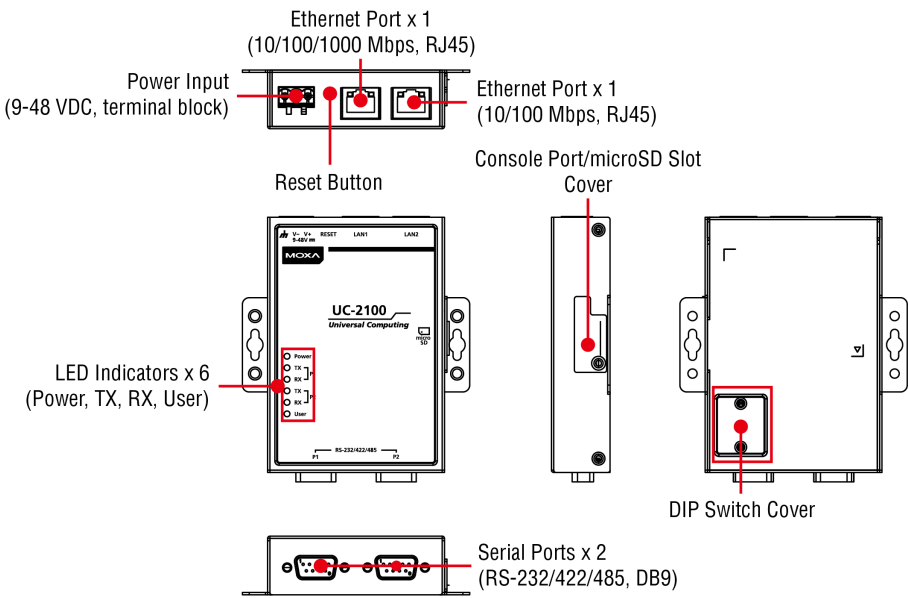
UC-2104



UC-2111



UC-2112



Specifications

|                  |                                                                                                                                                                                                                                      |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Computer         |                                                                                                                                                                                                                                      |
| CPU              | UC-2101-LX: Armv7 Cortex-A8 600 MHz<br>UC-2102-LX: Armv7 Cortex-A8 600 MHz<br>UC-2104-LX: Armv7 Cortex-A8 600 MHz<br>UC-2111-LX: Armv7 Cortex-A8 600 MHz<br>UC-2112-LX: Armv7 Cortex-A8 1 GHz<br>UC-2112-T-LX: Armv7 Cortex-A8 1 GHz |
| DRAM             | UC-2101-LX: 256 MB DDR3<br>UC-2102-LX: 256 MB DDR3<br>UC-2104-LX: 256 MB DDR3<br>UC-2111-LX: 512 MB DDR3<br>UC-2112-LX: 512 MB DDR3<br>UC-2112-T-LX: 512 MB DDR3                                                                     |
| Pre-installed OS | Moxa Industrial Linux (Debian 9, Kernel 4.4)<br>See <a href="http://www.moxa.com/MIL">www.moxa.com/MIL</a>                                                                                                                           |

|                       |                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------|
| Storage Pre-installed | 8 GB eMMC                                                                                            |
| Storage Slot          | UC-2111-LX: Micro SD slots x 1<br>UC-2112-LX: Micro SD slots x 1<br>UC-2112-T-LX: Micro SD slots x 1 |

## Computer Interface

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet Ports             | UC-2101-LX: Auto-sensing 10/100 Mbps ports (RJ45 connector) x 1<br>UC-2102-LX: Auto-sensing 10/100 Mbps ports (RJ45 connector) x 2<br>UC-2104-LX: Auto-sensing 10/100 Mbps ports (RJ45 connector) x 1<br>UC-2111-LX: Auto-sensing 10/100 Mbps ports (RJ45 connector) x 2<br>UC-2112-LX: Auto-sensing 10/100 Mbps ports (RJ45 connector) x 1, Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 1<br>UC-2112-T-LX: Auto-sensing 10/100 Mbps ports (RJ45 connector) x 1, Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 1 |
| Serial Ports               | UC-2101-LX: RS-232/422/485 ports x 1, software selectable (DB9 male)<br>UC-2111-LX: RS-232/422/485 ports x 2, software selectable (DB9 male)<br>UC-2112-LX: RS-232/422/485 ports x 2, software selectable (DB9 male)<br>UC-2112-T-LX: RS-232/422/485 ports x 2, software selectable (DB9 male)                                                                                                                                                                                                                                       |
| Console Port               | RS-232 (TxD, RxD, GND), 4-pin header output (115200, n, 8, 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Expansion Slots            | UC-2104-LX: mPCIe slot x 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Cellular Antenna Connector | UC-2104-LX: SMA x 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Number of SIMs             | UC-2104-LX: 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| SIM Format                 | UC-2104-LX: Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Buttons                    | Reset button, DIP switch for serial port configuration                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## Ethernet Interface

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

## Serial Interface

|                                   |                                                                                                  |
|-----------------------------------|--------------------------------------------------------------------------------------------------|
| Data Bits                         | 5, 6, 7, 8                                                                                       |
| Stop Bits                         | 1, 1.5, 2                                                                                        |
| Parity                            | None, Even, Odd, Space, Mark                                                                     |
| Flow Control                      | RTS/CTS, XON/XOFF, ADDC® (automatic data direction control) for RS-485, RTS Toggle (RS-232 only) |
| Baudrate                          | 50 bps to 921.6 kbps                                                                             |
| Pull High/Low Resistor for RS-485 | 1 kilo-ohm, 150 kilo-ohms                                                                        |
| ESD Protection                    | 4 kV, for all signals                                                                            |

## Serial Signals

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

## LED Indicators

|        |                          |
|--------|--------------------------|
| System | Power x 1                |
| LAN    | 2 per port (10/100 Mbps) |

|                          |                                                                                                                                            |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
|                          | UC-2112-LX, UC-2112-T-LX: 2 per port (10/100/1000 Mbps)                                                                                    |
| Serial                   | UC-2101-LX: 2 per port (Tx, Rx)<br>UC-2111-LX: 2 per port (Tx, Rx)<br>UC-2112-LX: 2 per port (Tx, Rx)<br>UC-2112-T-LX: 2 per port (Tx, Rx) |
| User Programmable        | UC-2101-LX: User x 1<br>UC-2102-LX: User x 2<br>UC-2111-LX: User x 1<br>UC-2112-LX: User x 1<br>UC-2112-T-LX: User x 1                     |
| Wireless Signal Strength | UC-2104-LX: Cellular/Wi-Fi x 3                                                                                                             |

## Physical Characteristics

|                           |                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Housing                   | Metal                                                                                                                                                                                                                                                                                                                                               |
| Installation              | Wall mounting, DIN-rail mounting (with optional kit)                                                                                                                                                                                                                                                                                                |
| Weight                    | UC-2101-LX: 190 g (0.42 lb)<br>UC-2102-LX: 190 g (0.42 lb)<br>UC-2104-LX: 220 g (0.49 lb)<br>UC-2111-LX: 290 g (0.64 lb)<br>UC-2112-LX: 290 g (0.64 lb)<br>UC-2112-T-LX: 290 g (0.64 lb)                                                                                                                                                            |
| Dimensions (with ears)    | UC-2101-LX: 73 x 80 x 28 mm (2.87 x 3.15 x 1.10 in)<br>UC-2102-LX: 73 x 80 x 28 mm (2.87 x 3.15 x 1.10 in)<br>UC-2104-LX: 80 x 80 x 30.8 mm (3.15 x 3.15 x 1.21 in)<br>UC-2111-LX: 99 x 111 x 25.5 mm (3.90 x 4.37 x 1.00 in)<br>UC-2112-LX: 99 x 111 x 25.5 mm (3.90 x 4.37 x 1.00 in)<br>UC-2112-T-LX: 99 x 111 x 25.5 mm (3.90 x 4.37 x 1.00 in) |
| Dimensions (without ears) | UC-2101-LX: 50 x 80 x 28 mm (1.97 x 3.15 x 1.10 in)<br>UC-2102-LX: 50 x 80 x 28 mm (1.97 x 3.15 x 1.10 in)<br>UC-2104-LX: 57 x 80 x 30.8 mm (2.24 x 3.15 x 1.21 in)<br>UC-2111-LX: 77 x 111 x 25.5 mm (3.03 x 4.37 x 1.00 in)<br>UC-2112-LX: 77 x 111 x 25.5 mm (3.03 x 4.37 x 1.00 in)<br>UC-2112-T-LX: 77 x 111 x 25.5 mm (3.03 x 4.37 x 1.00 in) |

## Environmental Limits

|                           |                                                                                                                                                                                                                                                       |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating Temperature     | UC-2101-LX: -10 to 60°C (14 to 140°F)<br>UC-2102-LX: -10 to 60°C (14 to 140°F)<br>UC-2104-LX: -10 to 70°C (14 to 158°F)<br>UC-2111-LX: -10 to 60°C (14 to 140°F)<br>UC-2112-LX: -10 to 60°C (14 to 140°F)<br>UC-2112-T-LX: -40 to 75°C (-40 to 167°F) |
| Storage Temperature       | UC-2101-LX: -20 to 70°C (-4 to 158°F)<br>UC-2102-LX: -20 to 70°C (-4 to 158°F)<br>UC-2104-LX: -20 to 70°C (-4 to 158°F)<br>UC-2111-LX: -20 to 70°C (-4 to 158°F)<br>UC-2112-LX: -20 to 70°C (-4 to 158°F)<br>UC-2112-T-LX: -40 to 85°C (-40 to 185°F) |
| Ambient Relative Humidity | 5 to 95% (non-condensing)                                                                                                                                                                                                                             |
| 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)                                                                                                                                                          |

## Power Parameters

|                   |                                  |
|-------------------|----------------------------------|
| Input Voltage     | 9 to 48 VDC                      |
| Input Current     | 0.45 A @ 9 VDC, 0.084 A @ 48 VDC |
| Power Consumption | 4 W                              |

## MTBF

|           |                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Time      | UC-2101-LX: 1,360,496 hrs<br>UC-2102-LX: 1,652,339 hrs<br>UC-2104-LX: 1,577,995 hrs<br>UC-2111-LX: 985,911 hrs<br>UC-2112-LX: 982,882 hrs<br>UC-2112-T-LX: 982,882 hrs |
| Standards | Telcordia (Bellcore) Standard TR/SR                                                                                                                                    |

## Reliability

|                          |                                |
|--------------------------|--------------------------------|
| Alert Tools              | External RTC (real-time clock) |
| Automatic Reboot Trigger | External WDT (watchdog timer)  |

## Standards and Certifications

|                     |                                                                                                                                                                                                                                              |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety              | IEC 60950-1, UL 60950-1                                                                                                                                                                                                                      |
| EMC                 | EN 55032/24                                                                                                                                                                                                                                  |
| 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: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 0.5 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 3 V<br>IEC 61000-4-8 PFMF |
| Hazardous Locations | UC-2112-LX, UC-2112-T-LX: Class I Division 2, ATEX Zone 2                                                                                                                                                                                    |
| Green Product       | RoHS, CRoHS, WEEE                                                                                                                                                                                                                            |

## Warranty

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

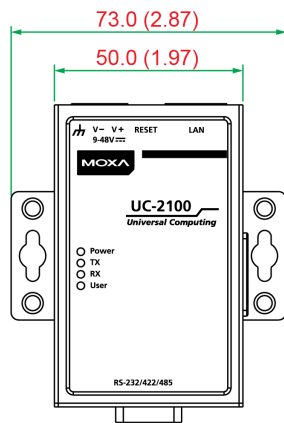
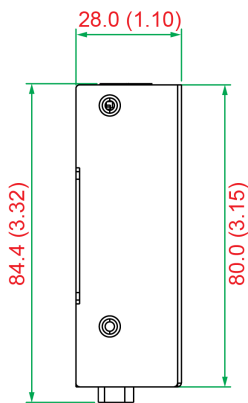
## Package Contents

|                  |                                                   |
|------------------|---------------------------------------------------|
| Device           | 1 x UC-2100 Series computer                       |
| Installation Kit | 1 x power jack                                    |
| Cable            | 1 x console cable                                 |
| Documentation    | 1 x quick installation guide<br>1 x warranty card |

## Dimensions

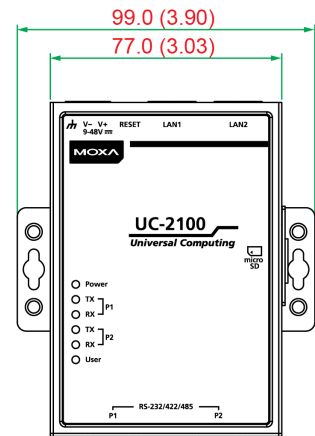
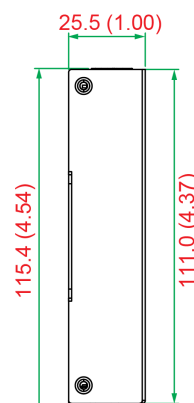
### UC-2101

Unit: mm (inch)



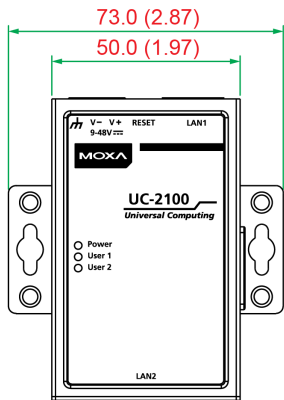
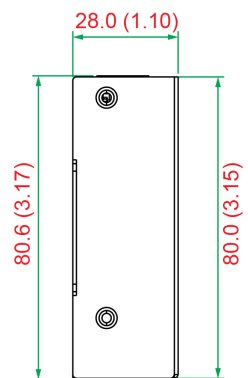
### UC-2111

Unit: mm (inch)



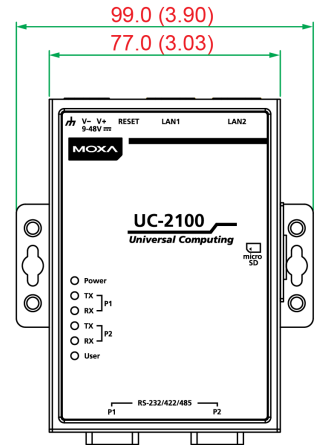
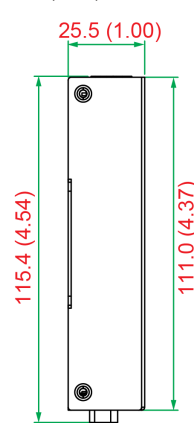
### UC-2102

Unit: mm (inch)



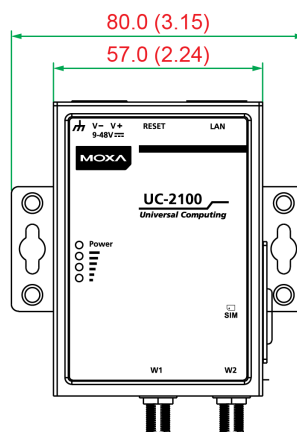
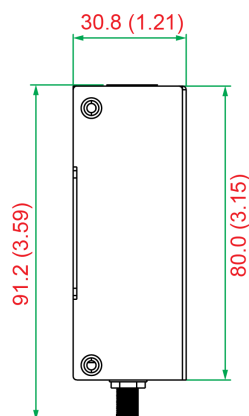
### UC-2112

Unit: mm (inch)



### UC-2104

Unit: mm (inch)



## Ordering Information

| Model Name | CPU     | RAM    | Storage | Serial | Ethernet | MicroSD | Mini PCIe | Operating Temp. |
|------------|---------|--------|---------|--------|----------|---------|-----------|-----------------|
| UC-2101-LX | 600 MHz | 256 MB | 8 GB    | 1      | 1        | —       | —         | -10 to 60°C     |
| UC-2102-LX | 600 MHz | 256 MB | 8 GB    | —      | 2        | —       | —         | -10 to 60°C     |

| Model Name   | CPU      | RAM    | Storage | Serial | Ethernet       | MicroSD | Mini PCIe | Operating Temp. |
|--------------|----------|--------|---------|--------|----------------|---------|-----------|-----------------|
| UC-2104-LX   | 600 MHz  | 256 MB | 8 GB    | –      | 1              | –       | 1         | -10 to 60°C     |
| UC-2111-LX   | 600 MHz  | 512 MB | 8 GB    | 2      | 2              | 1       | –         | -10 to 60°C     |
| UC-2112-LX   | 1000 MHz | 512 MB | 8 GB    | 2      | 2 (1 Giga LAN) | 1       | –         | -10 to 60°C     |
| UC-2112-T-LX | 1000 MHz | 512 MB | 8 GB    | 2      | 2 (1 Giga LAN) | 1       | –         | -40 to 75°C     |

## Accessories (sold separately)

### Power Adapters

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

### Cellular Wireless Modules

|                |                                                                                                                                |
|----------------|--------------------------------------------------------------------------------------------------------------------------------|
| UC-LTE-CAT1-AP | LTE cellular module with 2 M2 and 2 M2.5 mounting screws for APAC bands 1, 3, 5, 8, 9, 18(26), 19, 28                          |
| UC-LTE-CAT1-EU | LTE cellular module with 2 M2 and 2 M2.5 mounting screws for EMEA bands 1, 3, 7, 8, 20, 28A                                    |
| UC-LTE-CAT4-CN | LTE cellular module with 2 M2 and 2 M2.5 mounting screws for LTE (FDD) bands B1, B3, B8 and LTE (TDD) bands B39, B40, B41 (38) |

### Wi-Fi Wireless Modules

|             |                                                                             |
|-------------|-----------------------------------------------------------------------------|
| UC-WiFi-USB | 802.11 a/b/g/n/ac, 2.4/5 GHz Wi-Fi module with 2 each of M2 and M2.5 screws |
|-------------|-----------------------------------------------------------------------------|

### Antennas

|                           |                                                                                                        |
|---------------------------|--------------------------------------------------------------------------------------------------------|
| ANT-WDB-ARM-0202 plus ADP | 2.4/5 GHz omni-directional antenna, 2/2 dBi, RP-SMA-type (male) connector                              |
| ANT-LTE-OSM-03-3m BK      | 700-2700 MHz, multi-band antenna, specifically designed for 2G, 3G, and 4G applications, 3 m cable     |
| ANT-LTE-ASM-04 BK         | 704-960/1710-2620 MHz, LTE omni-directional stick antenna, 4.5 dBi                                     |
| 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 |
| A-ADP-SM-RF Golden        | SMA adapter for UC-2104 and UC-5100 Series                                                             |
| ANT-LTEUS-ASM-01          | GSM/GPRS/EDGE/UMTS/HSPA/LTE, omni-directional rubber duck antenna, 1 dBi                               |

### DIN-Rail Mounting Kits

|       |                              |
|-------|------------------------------|
| DK35A | DIN-rail mounting kit, 35 mm |
|-------|------------------------------|

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