



MOXA UC-3100 Series Wireless Arm Based Computers User Manual

[Home](#) » [MOXA](#) » MOXA UC-3100 Series Wireless Arm Based Computers User Manual 

Contents

- [1 MOXA UC-3100 Series Wireless Arm Based Computers](#)
- [2 Introduction](#)
- [3 Overview](#)
- [4 Model Description](#)
- [5 Package Checklist](#)
- [6 Product Features](#)
- [7 Hardware Specifications](#)
- [8 Hardware Introduction](#)
- [9 Appearance](#)
 - [9.1 Dimensions \[units: mm \(in\)\]](#)
- [10 LED Indicators](#)
- [11 Monitoring the Function Button \(FN Button\) Action Using the SYS LED](#)
- [12 Real-time Clock](#)
- [13 Placement Options](#)
- [14 Hardware Connection Description](#)
- [15 Wiring Requirements](#)
- [16 Connector Description](#)
- [17 Regulatory Approval Statements](#)
- [18 Documents / Resources](#)
- [19 Related Posts](#)



MOXA UC-3100 Series Wireless Arm Based Computers



The software described in this manual is furnished under a license agreement and may be used only in accordance with the terms of that agreement.

Copyright Notice

© 2022 Moxa Inc. All rights reserved.

Trademarks

- The MOXA logo is a registered trademark of Moxa Inc.
- All other trademarks or registered marks in this manual belong to their respective manufacturers.

Disclaimer

- Information in this document is subject to change without notice and does not represent a commitment on the part of Moxa.
- Moxa provides this document as is, without warranty of any kind, either expressed or implied, including, but not limited to, its particular purpose. Moxa reserves the right to make improvements and/or changes to this manual, or to the products and/or the programs described in this manual, at any time.
- Information provided in this manual is intended to be accurate and reliable. However, Moxa assumes no responsibility for its use, or for any infringements on the rights of third parties that may result from its use.
- This product might include unintentional technical or typographical errors. Changes are periodically made to the information herein to correct such errors, and these changes are incorporated into new editions of the publication.

Technical Support Contact Information

www.moxa.com/support

- **Moxa Americas**
 - **Toll-free:** 1-888-669-2872
 - **Tel:** +1-714-528-6777

- **Fax:** +1-714-528-6778
- **Moxa China (Shanghai office)**
 - **Toll-free:** 800-820-5036
 - **Tel:** +86-21-5258-9955
 - **Fax:** +86-21-5258-5505
- **Moxa Europe**
 - **Tel:** +49-89-3 70 03 99-0
 - **Fax:** +49-89-3 70 03 99-99
- **Moxa Asia-Pacific**
 - **Tel:** +886-2-8919-1230
 - **Fax:** +886-2-8919-1231
- **Moxa India**
 - **Tel:** +91-80-4172-9088
 - **Fax:** +91-80-4132-1045

Introduction

The UC-3100 Series computing platform is designed for embedded data acquisition applications. The computer comes with two RS- 232/422/485 serial ports and dual auto-sensing 10/100 Mbps Ethernet LAN ports. These versatile communication capabilities let users efficiently adapt the UC-3100 to a variety of complex communications solutions.

The following topics are covered in this chapter:

- Overview
- Model Description
- Package Checklist
- Product Features
- Hardware Specifications

Overview

- Moxa UC-3100 Series computers can be used as edge-field smart gateways for data pre-processing and transmission, as well as for other embedded data acquisition applications. The UC-3100 Series includes three 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 your “data pre-processing” and “data transmission” capability in most harsh environments.

Model Description

| Region | Model Name | Carrier Approval | Wi-Fi | BLT | CAN | SD | Serial |
|--------|-----------------|--------------------------|-------|-----|-----|----|--------|
| US | UC-3101-T-US-LX | Verizon, AT&T, T- Mobile | – | – | – | – | 1 |
| | UC-3111-T-US-LX | | P | P | – | P | 2 |
| | UC-3121-T-US-LX | | | P | 1 | P | 1 |
| EU | UC-3101-T-EU-LX | – | – | – | – | – | 1 |
| | UC-3111-T-EU-LX | | P | P | – | P | 2 |
| | UC-3121-T-EU-LX | | | P | 1 | P | 1 |
| APAC | UC-3101-T-AP-LX | – | – | – | – | – | 1 |
| | UC-3111-T-AP-LX | | P | P | – | P | 2 |
| | UC-3121-T-AP-LX | | | P | 1 | P | 1 |

Package Checklist

Before installing the UC-3100, verify that the package contains the following items:

- 1 x UC-3100 Arm-based computer
- 1 x DIN-rail mounting kit (preinstalled)
- 1 x Power jack
- 1 x 3-pin terminal block for power
- 1 x CBL-4PINDB9F-100: 4-pin pin header to DB9 female console port cable, 100 cm
- 1 x Quick installation guide (printed)
- 1 x Warranty card

NOTE: Notify your sales representative if any of the above items are missing or damaged.

Product Features

- 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 for UC-3111-T-LX and UC-3121-T-LX models
- Industrial CAN 2.0 A/B protocol supported
- -40 to 70°C system operating temperature
- Meets the EN 61000-6-2 and EN 61000-6-4 standards for industrial EMC applications
- Ready-to-run Debian 9 with 10-year long-term support

Hardware Specifications

NOTE: The latest specifications for Moxa's products can be found at <https://www.moxa.com>.

Hardware Introduction

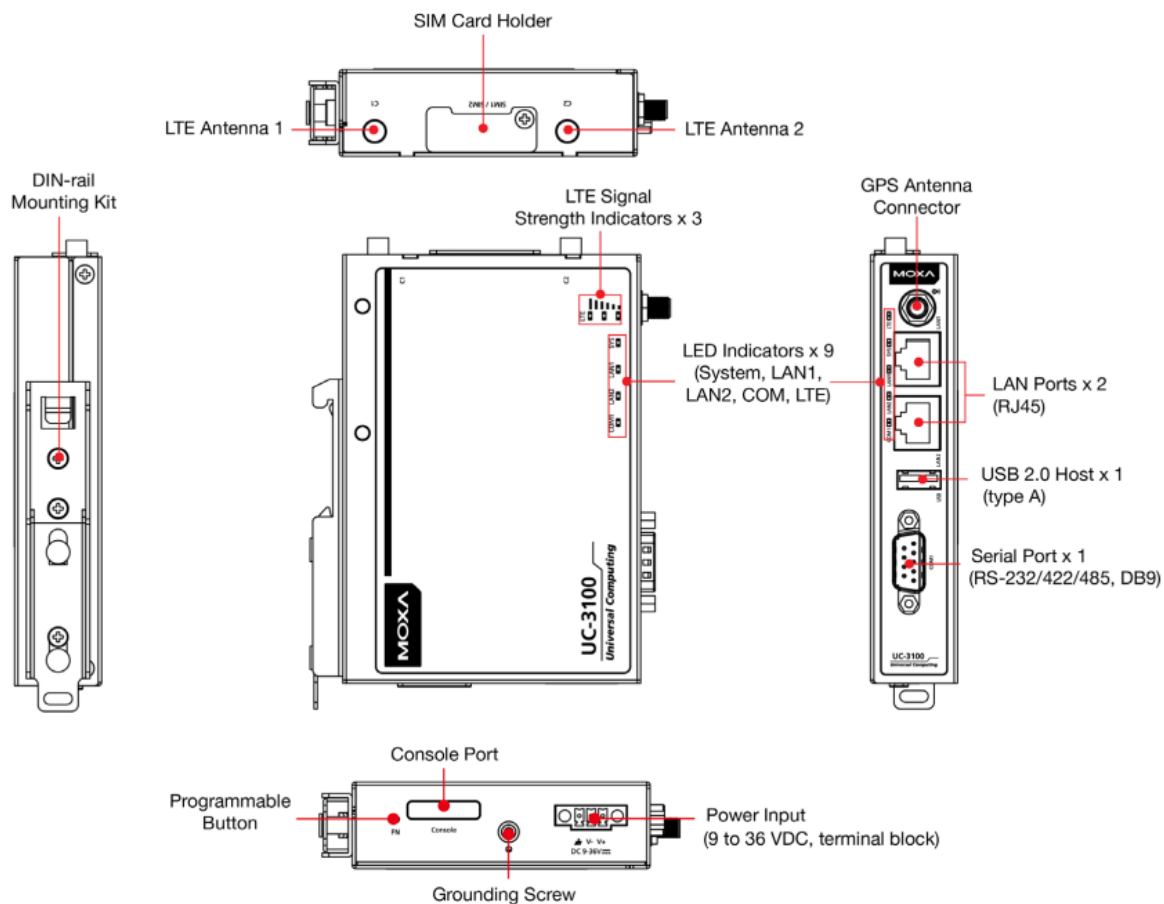
The UC-3100 embedded computers are compact and rugged making them suitable for industrial applications. The LED indicators help in monitoring performance and troubleshooting issues. The multiple ports provided on the computer can be used to connect to a variety of devices. The UC-3100 comes with a reliable and stable hardware platform that lets you devote the bulk of your time to application development. In this chapter, we provide basic information about the embedded computer's hardware and its various components.

The following topics are covered in this chapter:

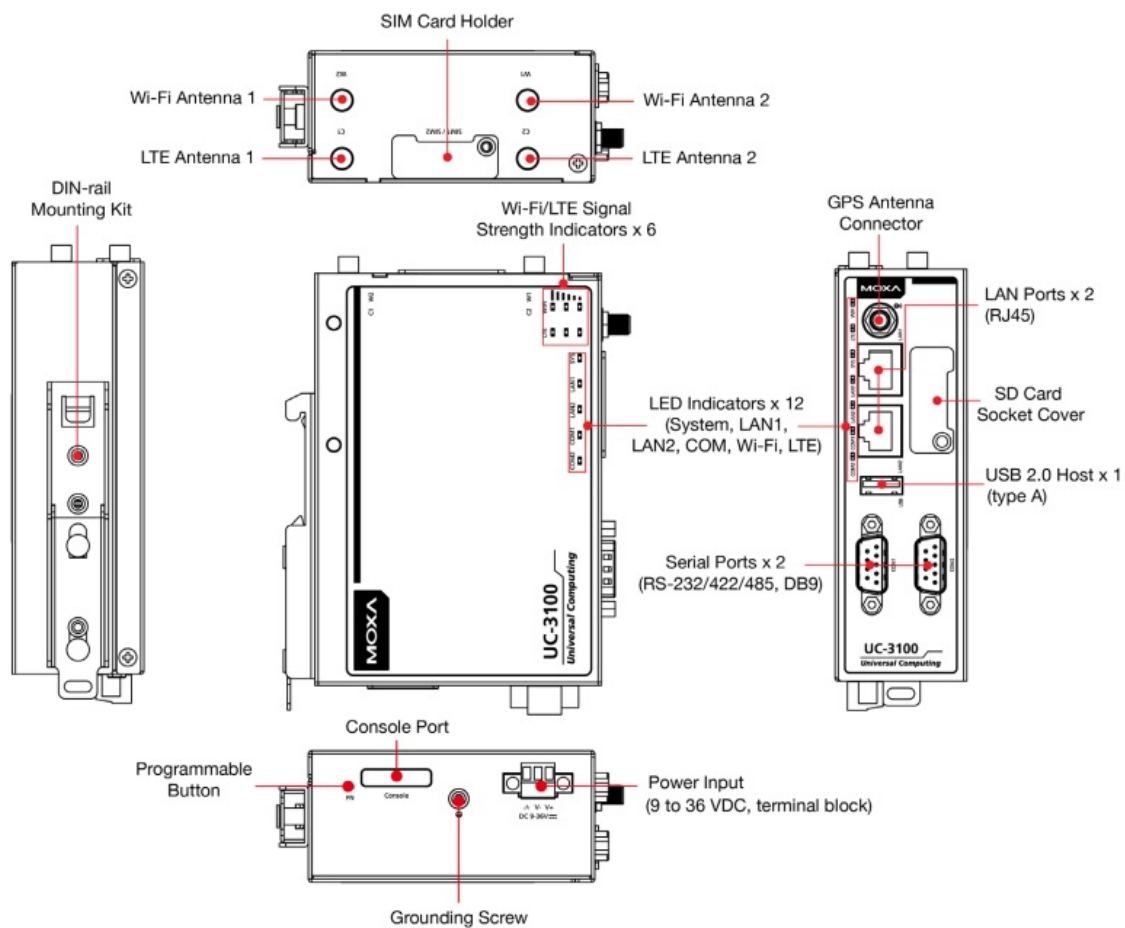
- Appearance
- LED Indicators
- Monitoring the Function Button (FN Button) Action Using the SYS LED
- Reset to Factory Default
- Real-time Clock
- Placement Options

Appearance

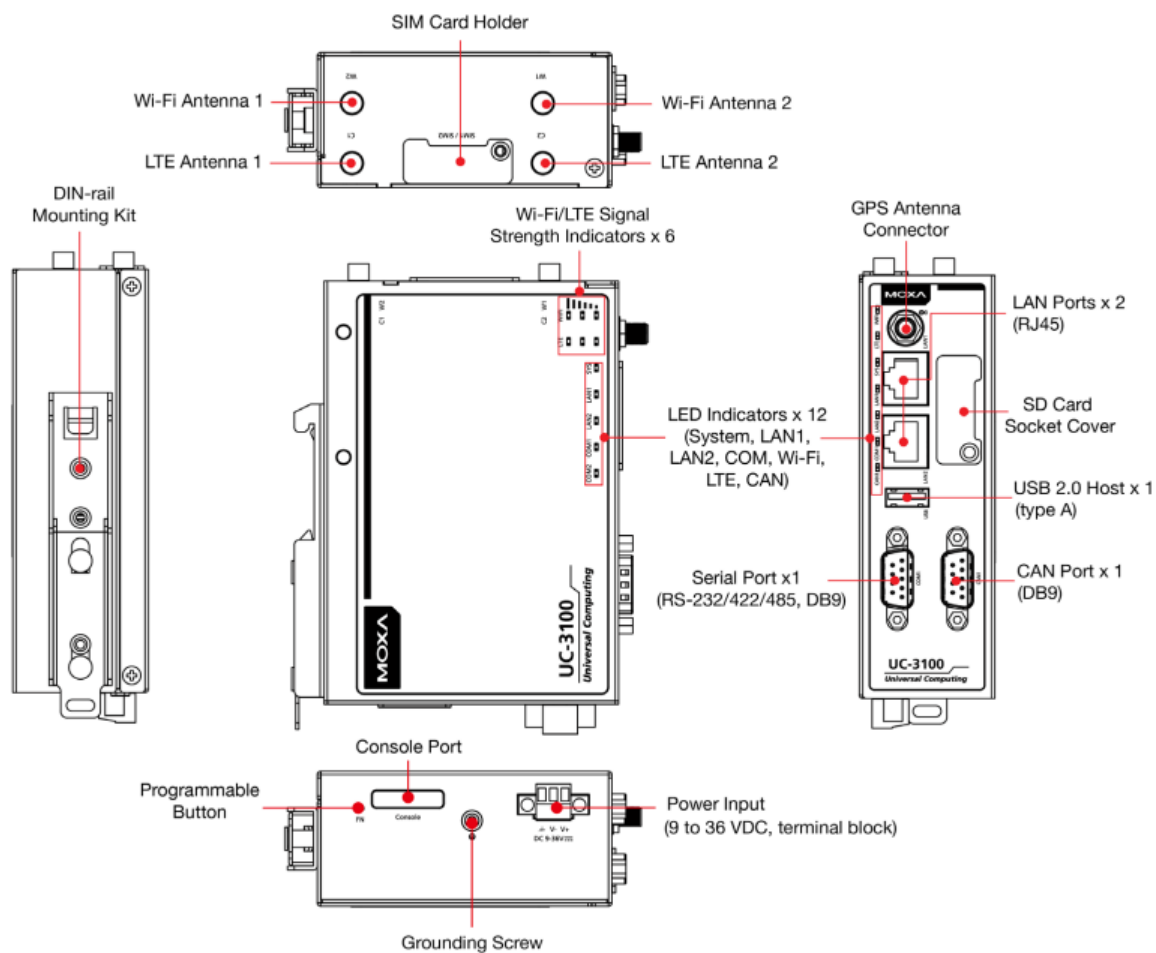
UC-3101



UC-3111

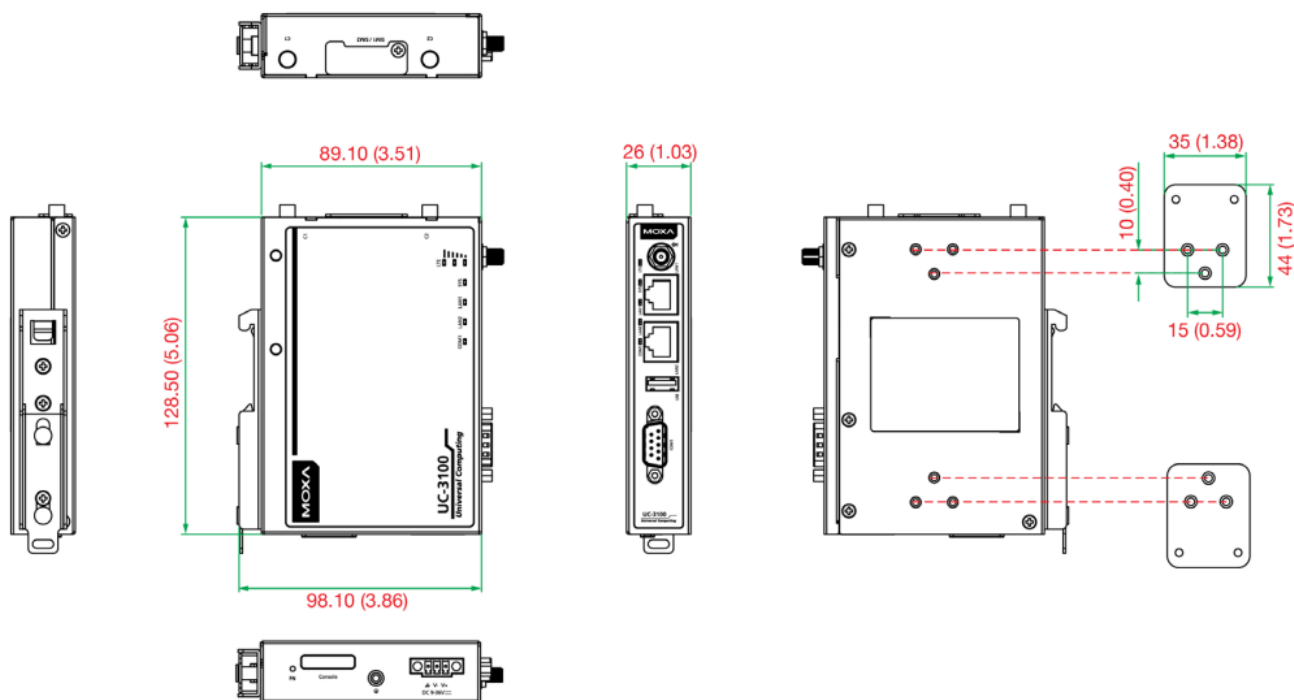


UC-3121

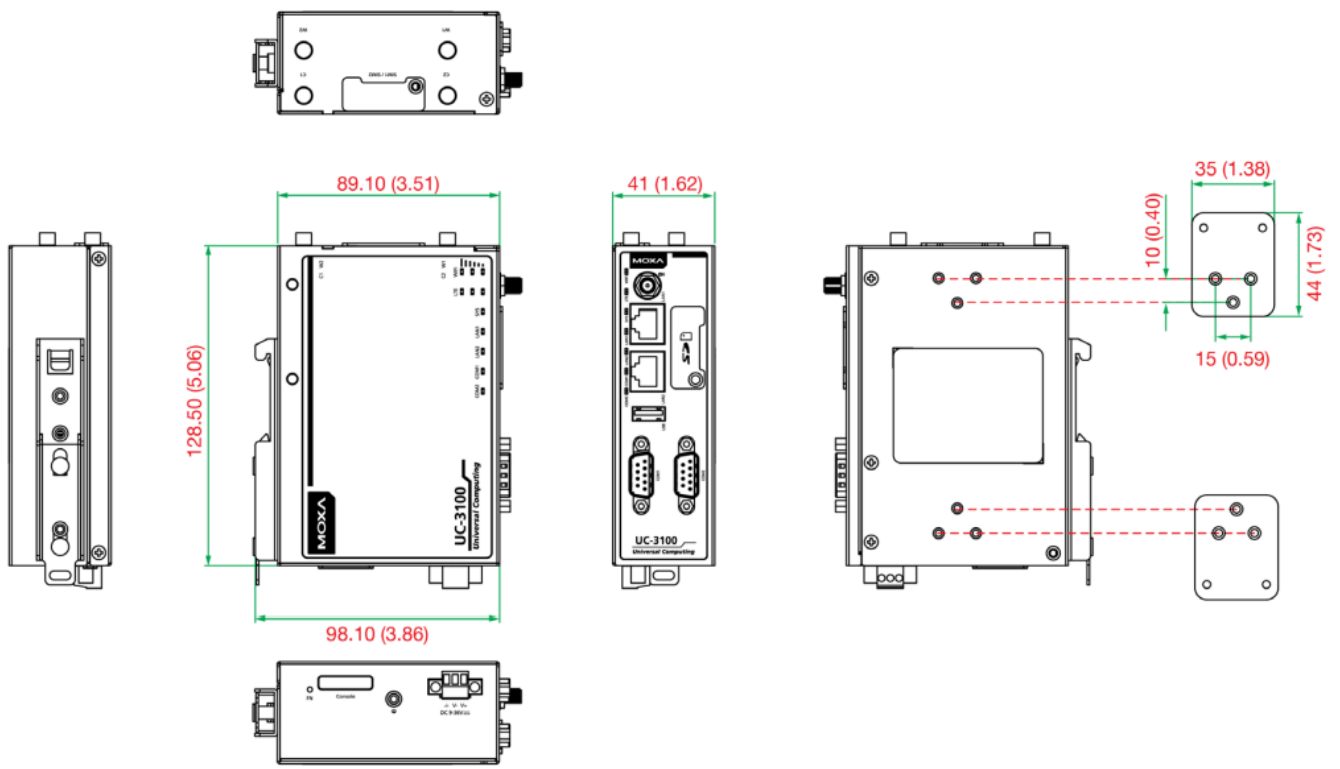


Dimensions [units: mm (in)]

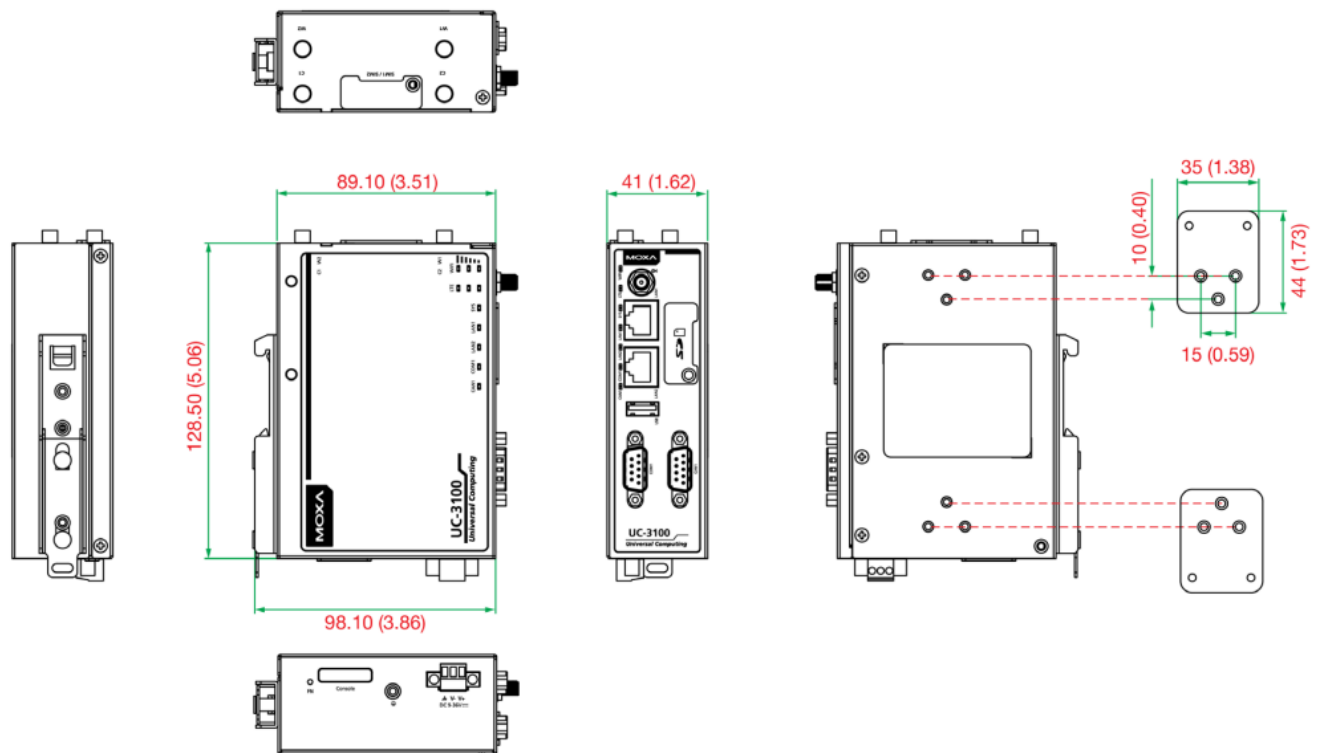
UC-3101



UC-3111



UC-3111



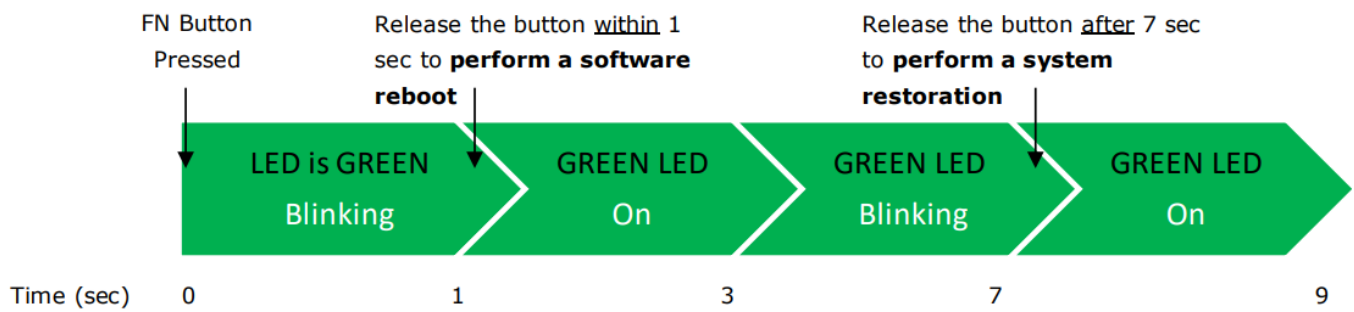
LED Indicators

Refer to the following table for information about each LED.

| LED Name | Status | Function | Notes |
|---------------------|--------|---|---|
| SYS | Green | Power is on | Refer to the <i>Monitoring the Function Button (FN Button) Action Using the SYS LED</i> section for more details. |
| | Red | FN button is pressed | |
| | Off | Power is off | |
| LAN1/ LAN2 | Green | 10/100 Mbps Ethernet mode | |
| | Off | Ethernet port is not active | |
| COM1/ COM2/ CAN1 | Orange | Serial/CAN port is transmitting or receiving data | |
| | Off | Serial/CAN port is not active | |
| Wi-Fi | Green | Wi-Fi connection has been established | Client mode: 3 levels with signal strength 1 LED is on: Poor signal quality 2 LEDs are on: Good signal quality All 3 LEDs are on: Excellent signal quality |
| | | | AP mode: All 3 LEDs blinking at the same time |
| | Off | Wi-Fi interface is not active | |
| LTE | Green | Cellular connection has been established | 3 levels with signal strength 1 LED is on: Poor signal quality 2 LEDs are on: Good signal quality All 3 LEDs are on: Excellent signal quality |
| | Off | Cellular interface is not active | |

Monitoring the Function Button (FN Button) Action Using the SYS LED

The FN button is used to perform software reboot or to perform firmware restoration. Pay attention to the SYS LED indicator and release the FN button at the appropriate time to enter the correct mode to either reboot your device or restore your device to the default configuration.



The mapping of the action on the FN button with the behavior of the SYS LED and the resulting system status is given below:

| System Status | FN Button Action | SYS LED behavior |
|---------------|--------------------------------|---|
| Reboot | Press and release within 1 sec | Green, blinking until the FN button is released |
| Restore | Press and hold for over 7 sec | |

Reset to Factory Default

For details on resetting your device to factory default values, refer to the Function Button and LED Indicators section.

ATTENTION

- Reset to Default will erase all the data stored on the boot storage
- Please back up your files before resetting the system to the factory default configuration. All the data stored in the UC-3100's boot storage will be erased when it is reset to the factory default configuration.

Real-time Clock

The real-time clock in the UC-3100 is powered by a lithium battery. We strongly recommend that you do not replace the lithium battery without the help of a Moxa support engineer. If you need to change the battery, contact the Moxa RMA service team.

WARNING

There is a risk of explosion if the battery is replaced with an incorrect battery type.

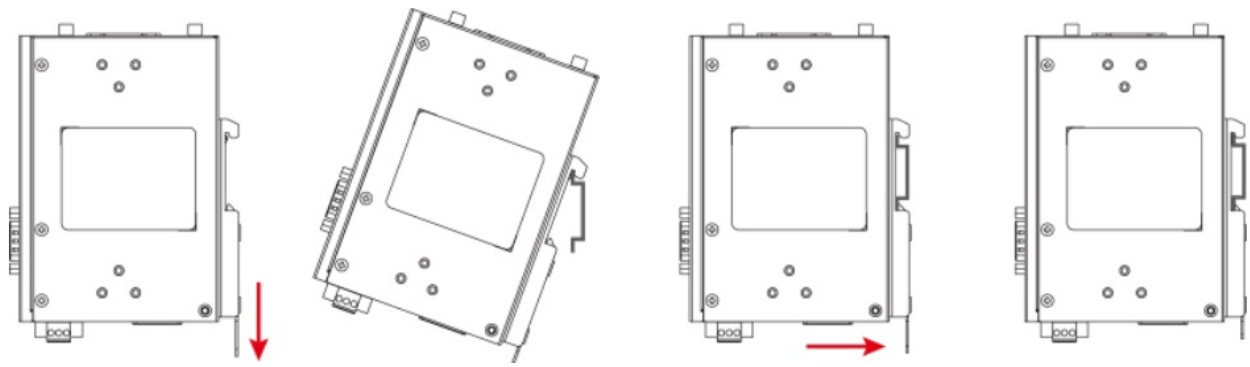
Placement Options

The UC-3100 computer can be mounted on to a DIN rail or on a wall. The DIN-rail mounting kit is attached by default. To order a wall-mounting kit, contact a Moxa sales representative.

DIN-rail Mounting

To mount the UC-3100 on to a DIN rail, do the following:

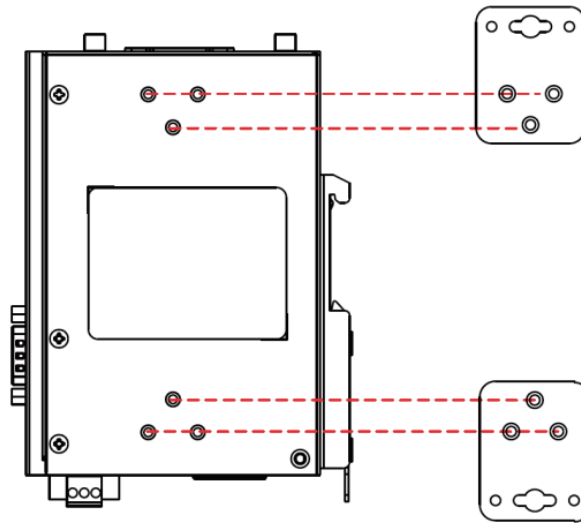
1. Pull down the slider of the DIN-rail bracket located at the back of the unit
2. Insert the top of the DIN rail into the slot just below the upper hook of the DIN-rail bracket.
3. Latch the unit firmly on to the DIN rail as shown in the illustrations below.
4. Once the computer is mounted properly, you will hear a click and the slider will rebound back into place automatically.



Wall Mounting (optional)

The UC-3100 can also be wall mounted. The wall-mounting kit needs to be purchased separately. Refer to datasheet for more information.

1. Fasten the wall-mounting kit to the UC-3100 as shown below:



2. Use two screws to mount the UC-3100 on to a wall.

ATTENTION

The wall-mounting kit is not included in the package and must be purchased separately.

Hardware Connection Description

- This section describes how to connect the UC-3100 to a network and connect various devices to the UC-3100.
- The following topics are covered in this chapter:
 - **Wiring Requirements**
 - Connector Description

Wiring Requirements

In this section, we describe how to connect various devices to the embedded computer. You must pay attention to the following common safety precautions, before proceeding with the installation of any electronic device:

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.

NOTE: Do not run the wires for signal or communication and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.

- You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separate.
- We strongly advise that you label wiring to all devices in the system for easy identification.

ATTENTION

- **Safety First!**

Be sure to disconnect the power cord before installing and/or wiring the computer.

- **Electrical Current Caution!**

- Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.
- If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

- **Temperature Caution!**

Be careful when handling the unit. When the unit is plugged in, the internal components generate heat, and consequently the outer casing may be hot to touch by hand.

Connector Description

Power Connector

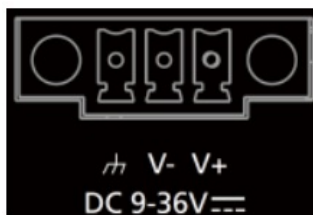
Connect the power jack (in the package) to the UC-3100's DC terminal block (located on the bottom panel), and then connect the power adapter. It takes several seconds for the system to boot up. Once the system is ready, the SYS LED will light up.

Grounding the UC-3100

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). There are two ways to connect the UC-3100 grounding wire to the ground.

1. Through the SG (Shielded Ground, sometimes called Protected Ground):

The SG contact is the left-most contact in the 3-pin power terminal block connector when viewed from the angle shown here. When you connect to the SG contact, the noise will be routed through the PCB and the PCB copper pillar to the metal chassis.



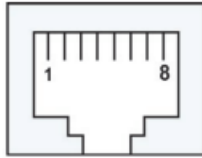
2. Through the GS (Grounding Screw):

The GS is located between the console port and the power connector. When you connect to the GS wire, the noise is routed directly from the metal chassis.



Ethernet Port

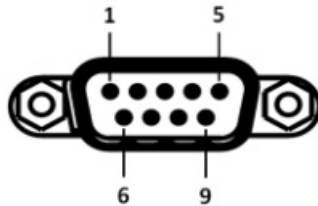
The 10/100 Mbps Ethernet port uses the RJ45 connector. The pin assignment of the port is shown below:



| Pin | Signal |
|-----|--------|
| 1 | ETx+ |
| 2 | ETx- |
| 3 | ERx+ |
| 4 | — |
| 5 | — |
| 6 | ERx- |
| 7 | — |
| 8 | — |

Serial Port

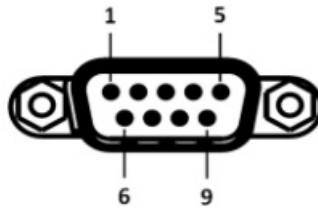
The serial port uses the DB9 male connector. It can be configured by software for the RS-232, RS-422, or RS-485 mode. The pin assignment of the port is shown below:



| Pin | RS-232 | RS-422 | RS-485 |
|-----|--------|---------|----------|
| 1 | DCD | TxD-(A) | — |
| 2 | RxD | TxD+(A) | — |
| 3 | TxD | RxD+(B) | Data+(B) |
| 4 | DTR | RxD-(A) | Data-(A) |
| 5 | GND | GND | GND |
| 6 | DSR | — | — |
| 7 | TRS | — | — |
| 8 | CTS | — | — |
| 9 | — | — | — |

CAN Port (UC-3121 only)

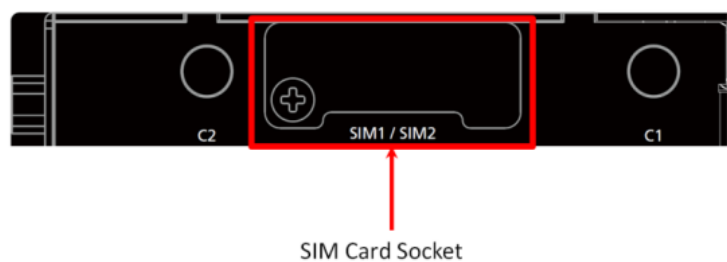
The UC-3121 comes with a CAN port which uses the DB9 male connector and is compatible with the CAN 2.0A/B standard. The pin assignment of the port is shown below:



| Pin | Signal Name |
|-----|-------------|
| 1 | – |
| 2 | CAN_L |
| 3 | CAN_GND |
| 4 | – |
| 5 | CAN_SHLD |
| 6 | GND |
| 7 | CAN_H |
| 8 | – |
| 9 | CAN_V+ |

SIM Card Socket

The UC-3100 comes with two nano-SIM card sockets for cellular communication. The nano-SIM card sockets are located on the same side as the antenna panel. To install the cards, remove the screw and the protection cover to access the sockets, and then insert the nano-SIM cards into the sockets directly. You will hear a click when the cards are in place. The left socket is for SIM 1 and the right socket is for SIM 2. To remove the cards, push the cards in before releasing them.



RF Connectors

The UC-3100 comes with RF connectors to the following interfaces.

Wi-Fi

The UC-3100 comes with a built-in Wi-Fi module (UC-3111 and UC-3121 only). You must connect the antenna to the RP-SMA connector before you can use the Wi-Fi function. The W1 and W2 connectors are interfaces to the Wi-Fi module.

Bluetooth

The UC-3100 comes with a built-in Bluetooth module (UC-3111 and UC-3121 only). You must connect the antenna to the RP-SMA connector before you can use the Bluetooth function. The W1 connector is the interface to the Bluetooth module.

Cellular

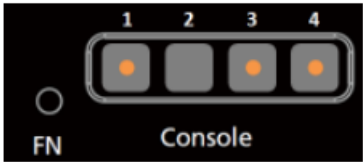
- The UC-3100 comes with a built-in cellular module. You must connect the antenna to the SMA connector before you can use the cellular function. The C1 and C2 connectors are interfaces to the cellular module.
- For additional details refer to the UC-3100 datasheet.

SD Card Socket (UC-3111 and UC-3121 only)

The UC-3111 comes with a SD-card socket for storage expansion. The SD card socket is located next to the Ethernet port. To install the SD card, remove the screw and the protection cover to access the socket, and then insert the SD card into the socket. You will hear a click when the card is in place. To remove the card, push the card in before releasing it.

Console Port

The console port is an RS-232 port that you can connect to with a 4-pin pin header cable (in the package). You can use this port for debugging or firmware upgrade.



| Pin | Signal |
|-----|--------|
| 1 | GND |
| 2 | NC |
| 3 | RxD |
| 4 | TxD |

USB

The USB port is a type-A USB 2.0 version port, which can be connected with a USB storage device or other type-A USB compatible devices.

Regulatory Approval Statements

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference,
2. this device must accept any interference received, including interference that may cause undesired operation.

Class A: FCC Warning! This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the users will be required to correct the interference at their own expense.


European Community

WARNING

This is a class A product. In a domestic environment this product may cause radio interference in which case the

user may be required to take adequate measures.

Documents / Resources

| | |
|---|---|
|  | <p>MOXA UC-3100 Series Wireless Arm Based Computers [pdf] User Manual</p> <p>UC-3100 Series, Wireless Arm Based Computers, UC-3100 Series Wireless Arm Based Computers, Arm Based Computers, Computers</p> |
|---|---|

Manuals+