UC-8100A-ME-T Series Hardware User's Manual

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www.moxa.com/product

UC-8100A-ME-T Series Hardware User's Manual

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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 Europe
Tel: +49-89-3 70 03 99-0
Fax: +49-89-3 70 03 99-99

Moxa India
Tel: +91-80-4172-9088
Fax: +91-80-4132-1045

Moxa China (Shanghai office)
Toll-free: 800-820-5036
Tel: +86-21-5258-9955
Fax: +86-21-5258-5505

Moxa Asia-Pacific
Tel: +886-2-8919-1230
Fax: +886-2-8919-1231

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Introduction

The UC-8100A-ME-T computing platform is designed for embedded data-acquisition applications. The UC-8100A-ME-T platform comes with two RS-232/422/485 serial ports and dual 10/100 Mbps Ethernet LAN ports, as well as a miniPCIe slot to support cellular modules. These versatile communication capabilities let users efficiently adapt the UC-8100A-ME-T to a variety of complex communications solutions.

The following topics are covered in this chapter:

❒ **Model Descriptions**
❒ **Package Checklist**
❒ **Product Features**
❒ **Product Specifications**

Model Descriptions

The UC-8100A-ME-T Series includes the following models:

- **UC-8112A-ME-T-LX**: Industrial computing platform with 2 serial ports, 2 Ethernet ports, SD socket, -40 to 85°C operating temperature range
- **UC-8112A-ME-T-LX-US**: Industrial computing platform with 2 serial ports, 2 Ethernet ports, SD socket, US region LTE built-in,-40 to 70°C operating temperature range
- **UC-8112A-ME-T-LX-EU**: Industrial computing platform with 2 serial ports, 2 Ethernet ports, SD socket, Europe region LTE built-in,-40 to 70°C operating temperature range
- **UC-8112A-ME-T-LX-AP**: Industrial computing platform with 2 serial ports, 2 Ethernet ports, SD socket, APAC region LTE built-in,-40 to 70°C operating temperature range

Package Checklist

Before installing a UC-8100A-ME-T computer, verify that the package contains the following items:

- UC-8100A-ME-T Series computer
- Console cable
- Power jack
- Quick Installation Guide (printed)
- Warranty card

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

NOTE The console cable and power jack can be found beneath the molded pulp cushioning inside the product box.

Product Features

- Armv7 Cortex-A8 1 GHz processor
- 2 auto-sensing 10/100 Mbps Ethernet ports
- SD socket for storage expansion
- Programmable LEDs and a programmable button for easy installation and maintenance
- Mini PCIe socket for cellular module
- Debian 9 open platform
- -40 to 70°C wide temperature range with LTE enabled

Product Specifications

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

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Hardware Introduction

The UC-8100A-ME-T embedded computers are compact and rugged, making them suitable for industrial applications. The LED indicators allow you to monitor device performance and quickly identify issues, and the multiple ports can be used to connect a variety of devices. The UC-8100A-ME-T Series 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.
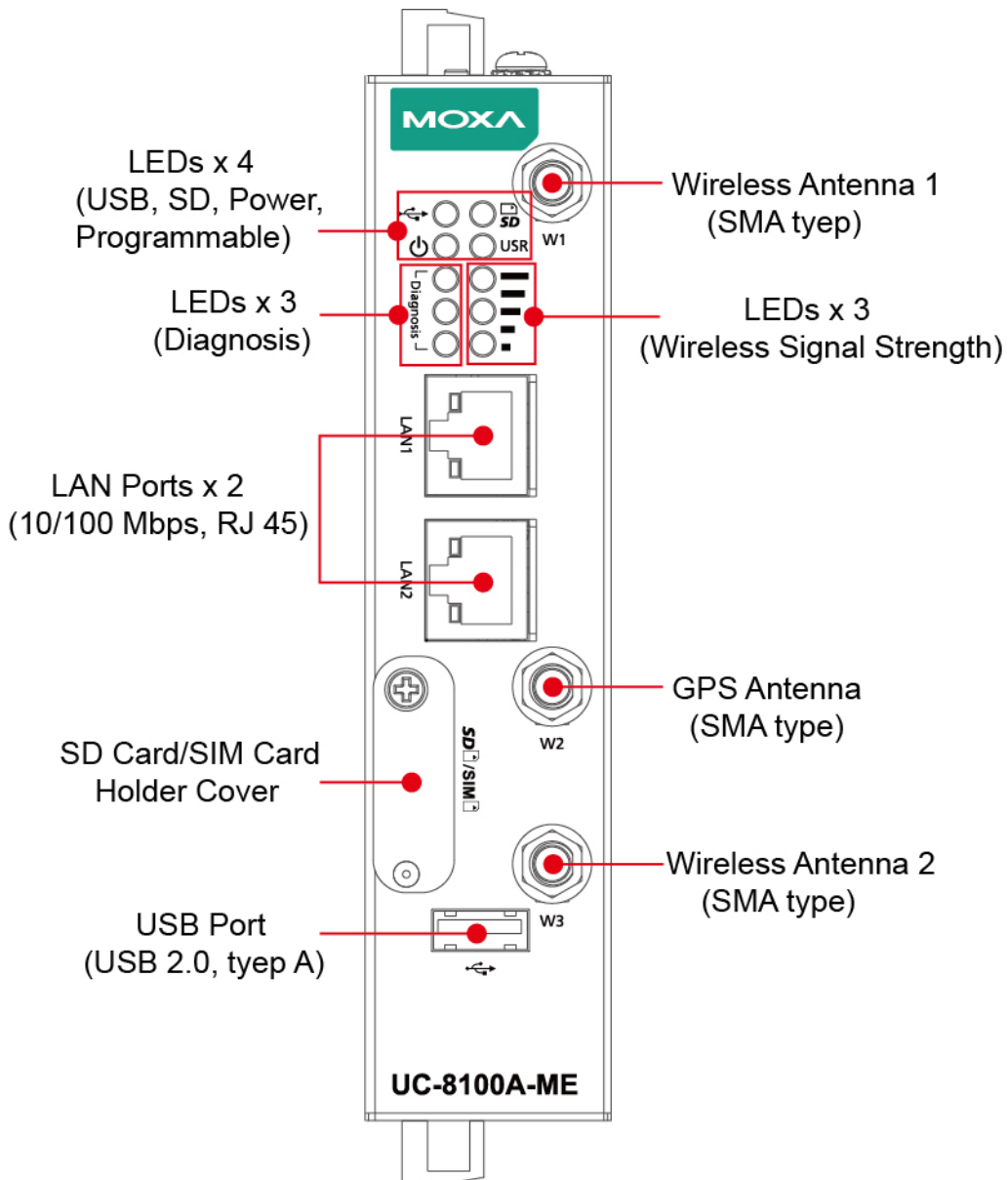
The following topics are covered in this chapter:

❐ **Appearance**
❐ **Dimensions**
❐ **LED Indicators**
❐ **Reboot**
❐ **Reset to Default**
❐ **Real-time Clock**
❐ **Installation Options**
  ➢ DIN-rail Mounting
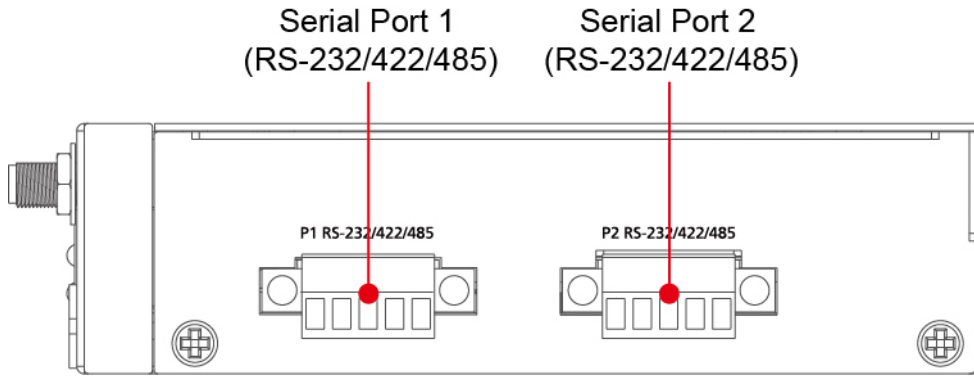 ➢ Optional Wall Mounting
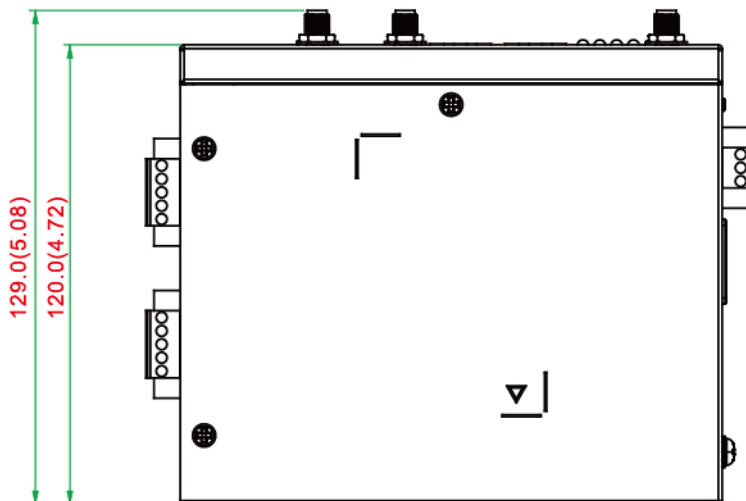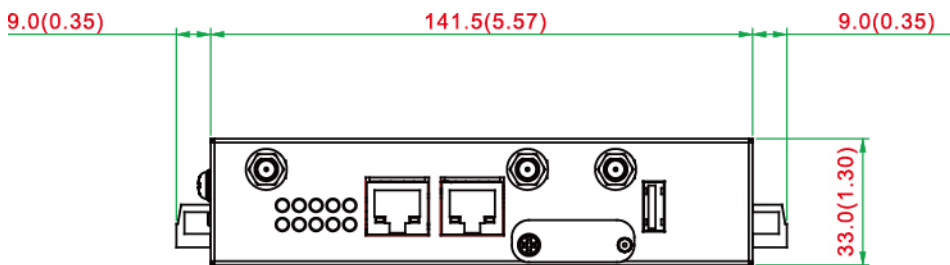
Appearance

Top View
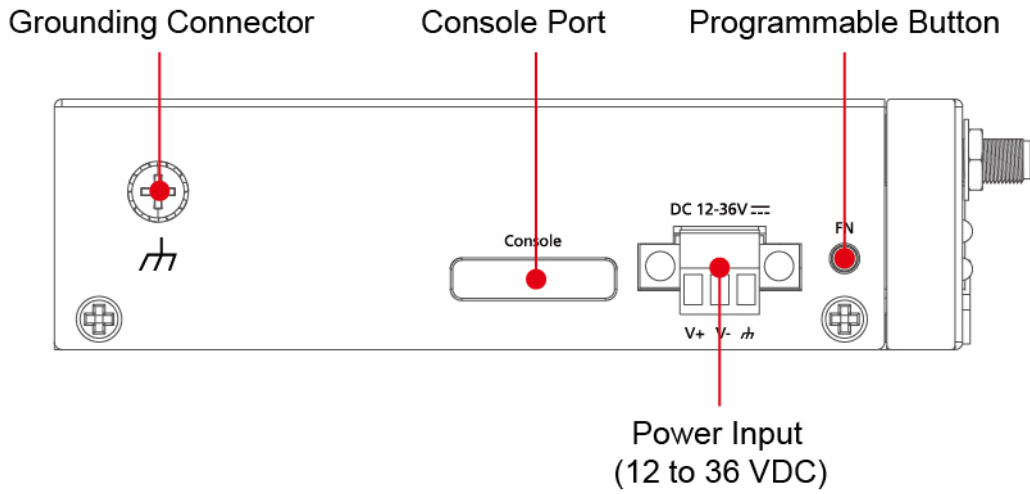
Front View

Bottom View

Dimensions

Unit: mm (in)

LED Indicators

The function of each LED is described in the table below:

LED Name		Color	Function	
	USB	Green	Steady On	USB device is connected and working normally.
			Off	USB device is not connected.
	SD	Green	Steady On	SD Card inserted and working normally.
			Off	SD card is not detected.
	Power	Green	Power is on and the computer is working normally.	
		Off	Power is off.	
	LAN1/ LAN 2 (RJ45 connector)	Green	Steady On	100 Mbps Ethernet link
			Blinking	Data transmission in progress
		Yellow	Steady On	10 Mbps Ethernet link
			Blinking	Data transmission in progress
		Off	Ethernet is not connected.	
	Wireless Signal Strength	Green Yellow Red	The number of glowing LEDs indicates the signal strength. 3 (Green + Yellow + Red): Excellent 2 (Yellow + Red): Good 1 (Red): Poor	
		Off	Wireless module is not detected.	
USR	User-defined	Green	This LED can be defined by users. For details, refer to *Hardware User's Manual*.	
	Programmable diagnostic LEDs	Green Yellow Red	These three LEDs are programmable. For details, refer to the "*Default Programmable Button Operation*" section in the *Hardware User's Manual*.	

Reboot

To reboot the computer, press the programmable button for 1 second.

Reset to Default

The UC-8100A-ME-T is also provided with a **Reset to Default** function which can reset the operating system back to the factory default status. Press and hold the **programmable** button between 7 to 9 seconds to reset the computer to the factory default settings. When the reset button is held down, the **Ready** LED will blink once every second. The **Ready** LED will become steady when you hold the button continuously for 7 to 9 seconds. Release the button within this period to load the factory default settings.

Real-time Clock

The UC-8100A-ME-T's real time clock is powered by a non-chargeable battery. We strongly recommend that you do not replace the lithium battery without help from a qualified 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 type.

Installation Options

DIN-rail Mounting

The aluminum DIN-rail attachment plate is already attached to the product's casing. To mount the UC-8100A-ME-T on to a DIN rail, make sure that the stiff metal spring is facing upwards and follow these steps.

1. Pull down the bottom 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. Push the slider back into place.
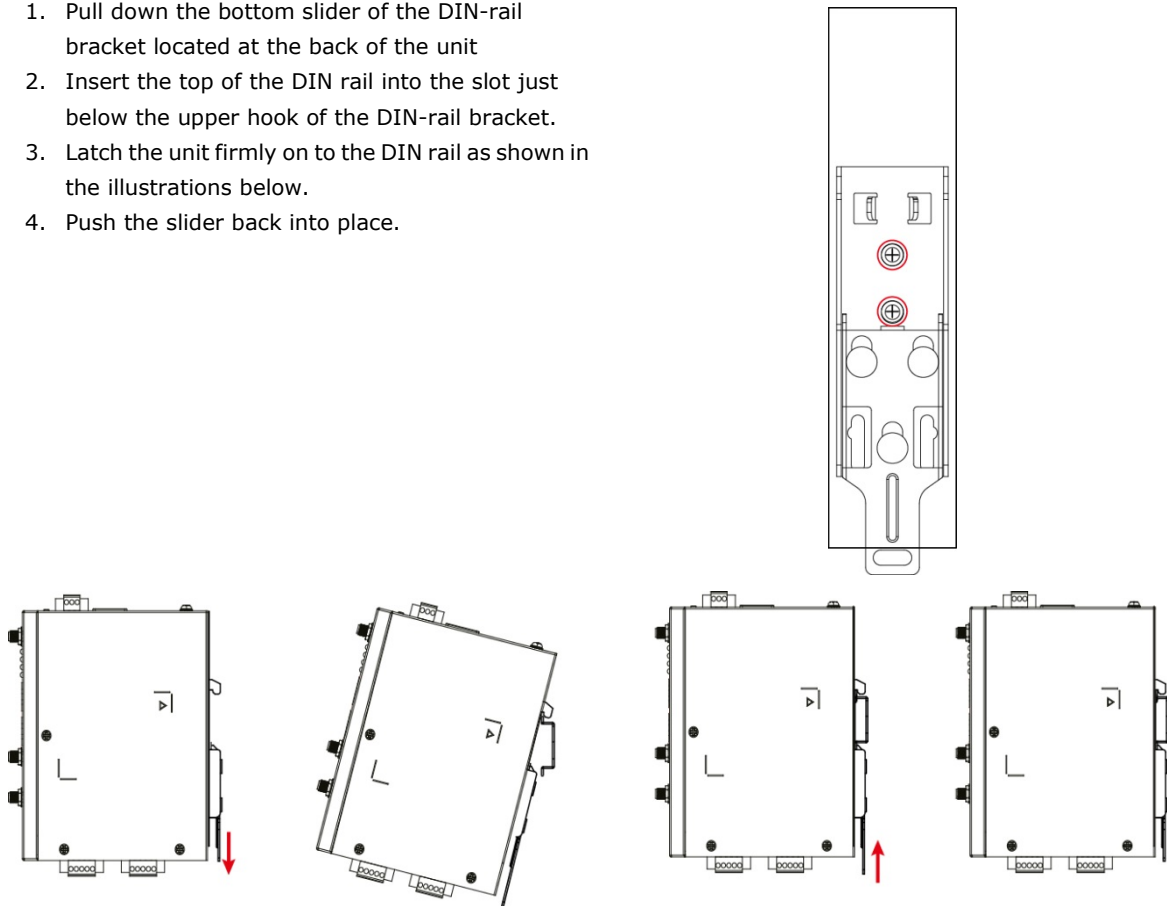
Optional Wall Mounting

The UC-8100A-ME-T can be mounted on to a wall using a wall-mounting kit as shown in the following illustrations.

Step 1

Use four screws to fasten the wall-mounting brackets on the left panel of the computer.
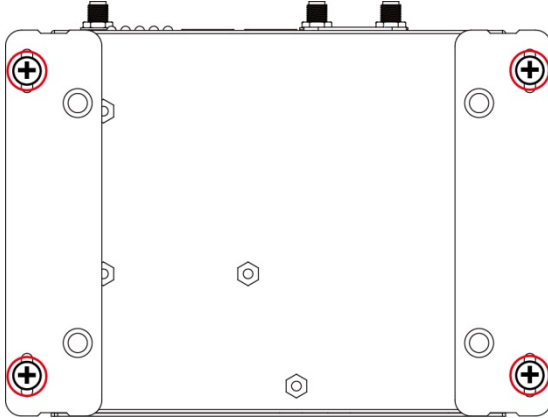
Step 2

Use another four screws to mount the computer on a wall or a cabinet.
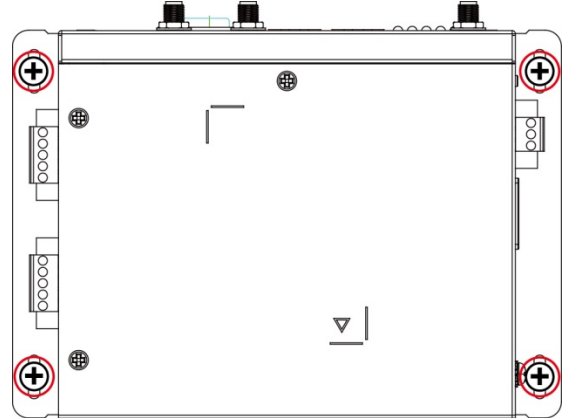
The optional wall-mounting kit is not included in the product box and should be purchased separately.

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Hardware Connection Description

In this chapter, we describe how to connect the UC-8100A-ME-T to a network and various devices.

The following topics are covered in this chapter:

❑ **Wiring Requirements**
  ➢ Connecting the Power
  ➢ Grounding the Unit
❑ **Connecting to the Network**
❑ **Connecting to a USB Device**
❑ **Connecting to Serial Ports**
❑ **Inserting the SD Card and SIM Card**
❑ **Connecting to the Console Port**
❑ **Connecting the Antennas**

Wiring Requirements

In this section, we describe how to connect various devices to the embedded computer. Be sure to read and follow these 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 signal or communication wiring 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.
- When necessary, it is strongly advised that you label wiring to all devices in the system.

ATTENTION

Safety First!

Be sure to disconnect the power cord before doing installations and/or wiring.

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.
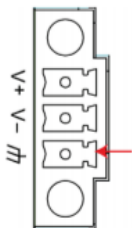
If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

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 feel hot to the touch.

Connecting the Power

Terminal Block

Connect the 12 to 36 VDC power line to the terminal block, which is connector to the UC-8100A-ME-T Series computer. If the power is supplied properly, the "Power" LED will glow a solid green light. The power input location and pin definition are shown in the adjacent diagram.

SG: The Shielded Ground (sometimes called Protected Ground) contact is the bottom contact of the 3-pin power terminal block connector when viewed from the angle shown here. Connect the SG wire to an appropriate grounded metal surface.

Grounding the Unit

There is another grounding connector on the top panel of the computer. Use this connector to connect a well-grounded mounting surface, such as a metal panel.


ATTENTION

A shielded power cord is required to meet FCC emission limits and also to prevent interference with nearby radio and television reception. It is essential that only the supplied power cord be used.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

Connecting to the Network

The Ethernet ports are located on the front panel of the UC-8100A-ME-T computers. The pin assignments for the Ethernet port are shown in the following figure. If you are using your own cable, make sure that the pin assignments on the Ethernet cable connector match the pin assignments on the Ethernet port.
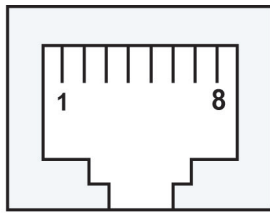

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
4	–
5	–
6	Rx-
7	–
8	–

Connecting to a USB Device

The UC-8100A-ME-T Series computers come with a USB port located at the lower part of the front panel, allowing users to connect to a device with an USB interface. The USB port uses a type A connector. By default, the USB storage is mounted at **/mnt/usbstorage.**

Connecting to Serial Ports

The two serial ports (P1 and P2) use terminal connectors. Each port can be configured by software for RS-232, RS-422, or RS-485. The pin assignments for the ports are shown in the following table:

P1 RS-232/422/485
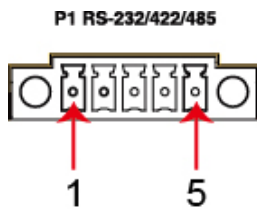
Pin	RS-232	RS-422	RS-485
1	TXD	TXD+	–
2	RXD	TXD-	–
3	RTS	RXD+	D+
4	CTS	RXD-	D-
5	GND	GND	GND

Inserting the SD Card and SIM Card

The UC-8100A-ME-T comes with an SD socket for storage expansion, and a SIM card socket for cellular communication. The SD card/SIM card sockets are located at the lower part on the front panel. To install the cards, remove the screw and the protection cover to access the sockets, and then insert the SD card or the SIM card into the sockets directly. You will hear a click when the cards are in place. To remove the cards, push the cards in before releasing them.
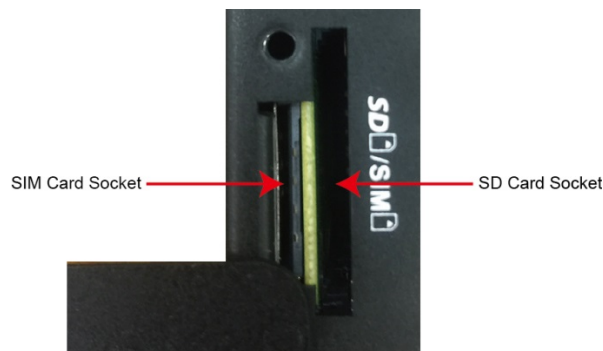
Connecting to the Console Port

The console port is an RS-232 port that can be connected to with a 4-pin pin header cable. You can use this port for debugging or firmware upgrade.

Pin	Signal
1	TxD
2	RxD
3	NC
4	GND

Connecting the Antennas

There are three antenna connectors on the front panel of the UC-8100A-ME-T. W1 and W3 are for cellular modules, and W2 is for GPS module; all are SMA type. Connect the antennas on these connectors.

A

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, and (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.