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MOXA UC-1200A Series Arm Based 64 Bit Computers User Manual

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Contents

Introduction

The UC-1200A computing platform is designed for embedded data-acquisition applications. The UC-1200A is built around an Armv8 Cortex-A53 dual-core 1-GHz processor and comes with two RS-232/422/485 serial ports, two 10/100/1000 Mbps Ethernet ports, and a Mini PCIe socket to support cellular modules. These versatile communication capabilities let users efficiently adapt the UC-1200A to a variety of complex communications solutions.

Package Checklist

Before installing the UC-1200A computer, verify that the package contains the following items:

- UC-1200A embedded computer
- 3 round stickers to prevent tampering of screws
- Quick installation guide (printed)
- Warranty card

⚠️ **IMPORTANT**

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

Product Features

- Armv8 Cortex-A53 dual-core 1 GHz processor
- 2 auto-sensing 10/100/1000 Mbps Ethernet ports
- Rich programmable LEDs and a programmable button for easy installation and maintenance
- -40 to 60°C operating temperature range
- Long-term Linux support until 2031; includes bug fixes and security patches
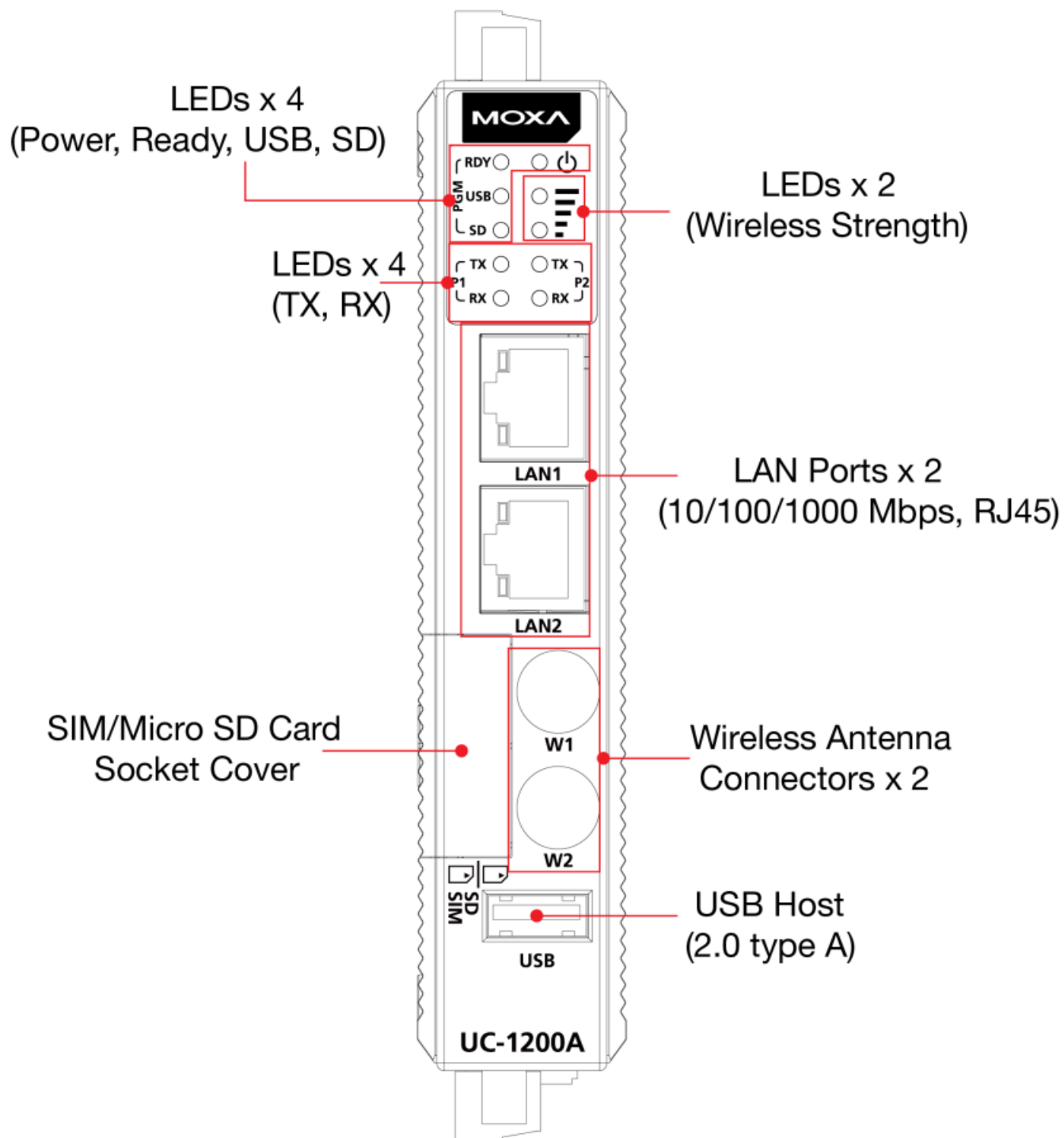
Product Specifications

✏️ **NOTE**

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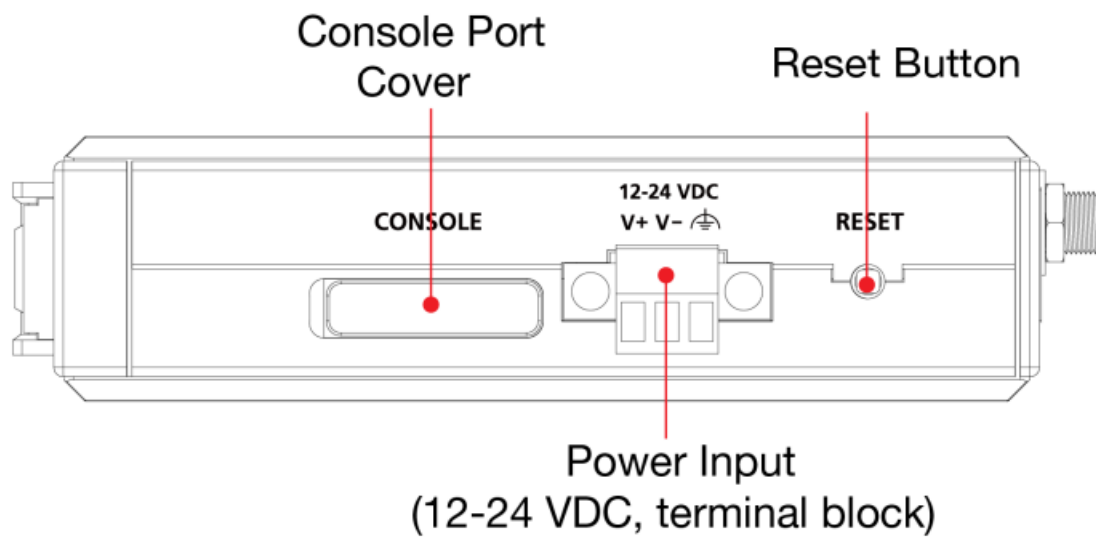
Hardware Introduction

The UC-1200A 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-1200A computers come 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.
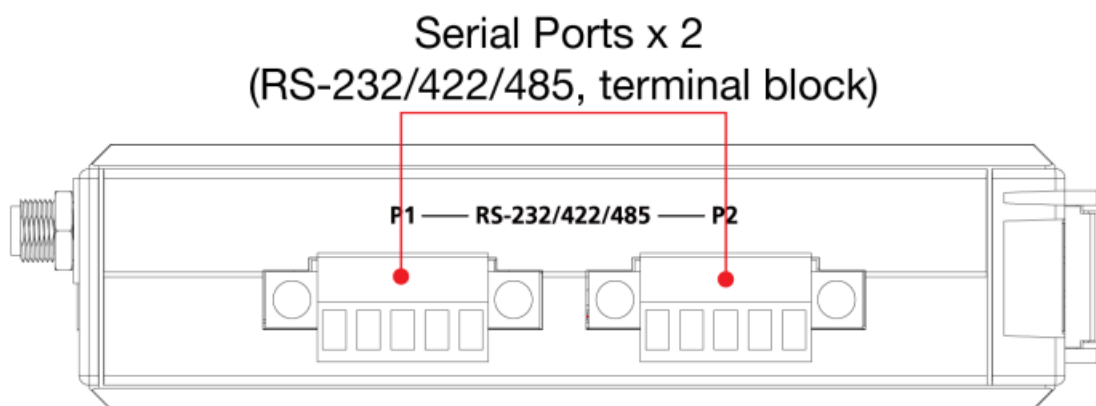
Appearance

Front View

LEDs x 4
(Power, Ready, USB, SD)

RDY
PGM USB
SD

LEDs x 2
(Wireless Strength)

LEDs x 4
(TX, RX)

P1 TX RX
P2 TX RX

LAN1

LAN Ports x 2
(10/100/1000 Mbps, RJ45)

LAN2

SIM/Micro SD Card
Socket Cover

W1

W2

Wireless Antenna
Connectors x 2

SD
SIM

USB

USB Host
(2.0 type A)

UC-1200A

Top View

Console Port Cover

Reset Button

CONSOLE

12-24 VDC
V+ V– ⏚

RESET

Power Input
(12-24 VDC, terminal block)

Bottom View

Serial Ports x 2
(RS-232/422/485, terminal block)

P1 —— RS-232/422/485 —— P2

Dimensions

Unit: mm (inch)

9 (0.35)

27 (1.06)

7 (0.28)

105.2 (4.14)

101 (3.98)

50.3 (1.98)

128 (5.04)

35.4 (1.40)

UC-1200A

9 (0.35)

LED Indicators

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

LED	Status	Function
Power	Green	Power is ON
	OFF	Power is OFF
SW Ready/Programmable	Yellow	System is ON and working normally
	OFF	System is not ready
USB/Programmable	Green	USB device is connected and working normally
	OFF	USB device is not connected
SD/Programmable	Green	Micro SD card inserted and working normally
	OFF	Micro SD card is not detected
Wireless Signal Strength/Programmable	Yellow	The number of glowing LEDs indicates the signal strength: 2 (Yellow + Yellow) Excellent 1 (Yellow): Poor 1 (Yellow Blinking, heartbeat): Very poor
	OFF	Wireless module is not detected
Serial Tx	Green	**Steady ON:** Serial 1/2 working normally **Blinking:** Serial 1/2 transmitting normally
	OFF	Serial 1/2 is not used.
Serial Rx	Yellow	**Steady ON:** Serial 1/2 working normally **Blinking:** Serial 1/2 receiving normally.
	OFF	Serial 1/2 not in use
LAN	Green	**Steady ON:** 10/100M link established **Blinking:** Receiving or transmitting data
	Yellow	**Steady ON:** 1000M link established **Blinking:** Receiving or transmitting data
	OFF	No Ethernet connection

Reset Button

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

Reset to Default

The UC-1200A 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 Reset 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-1200A'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. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Installation Options

DIN-rail Mounting

To mount the UC-1200A onto the DIN rail, pull out the bottom slider, latch the unit onto the DIN rail, and push the slider back in.
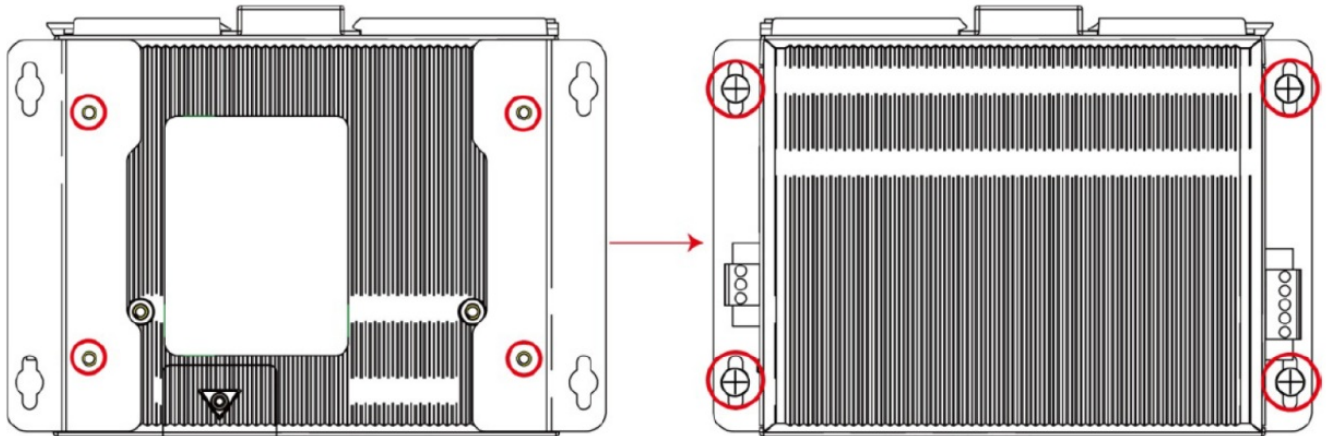

DIN-rail Mounting Kit
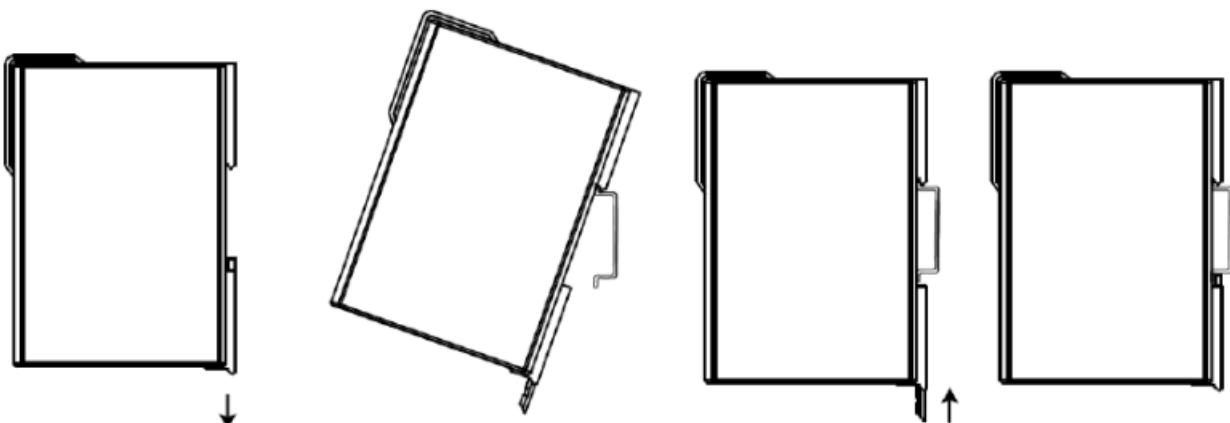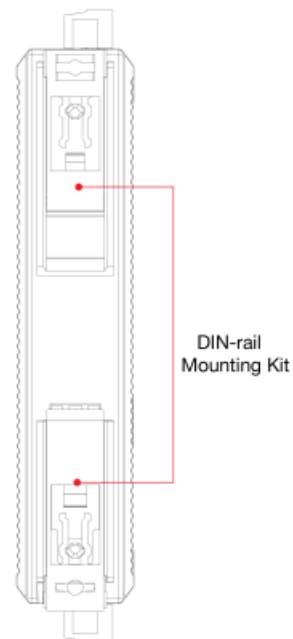
Wall Mounting (optional)

The UC-1200A can be mounted on to a wall using a wall-mounting kit as shown in the following illustrations:

Step 1:
Use four screws (M3 x 4 mm) to fasten the wall mounting brackets on the left panel of the computer.

Step 2:
Use another four screws (M3 x 6 mm) to mount the computer on a wall or a cabinet.

✏️ **NOTE**

The optional wall-mounting kit is not included in the product box and should be purchased separately.

Placing the Round Stickers on the Screws

Three round stickers are included in the product package. Stick one of them on to an external screw as indicated in the figure below to help detect unauthorized access and tampering.
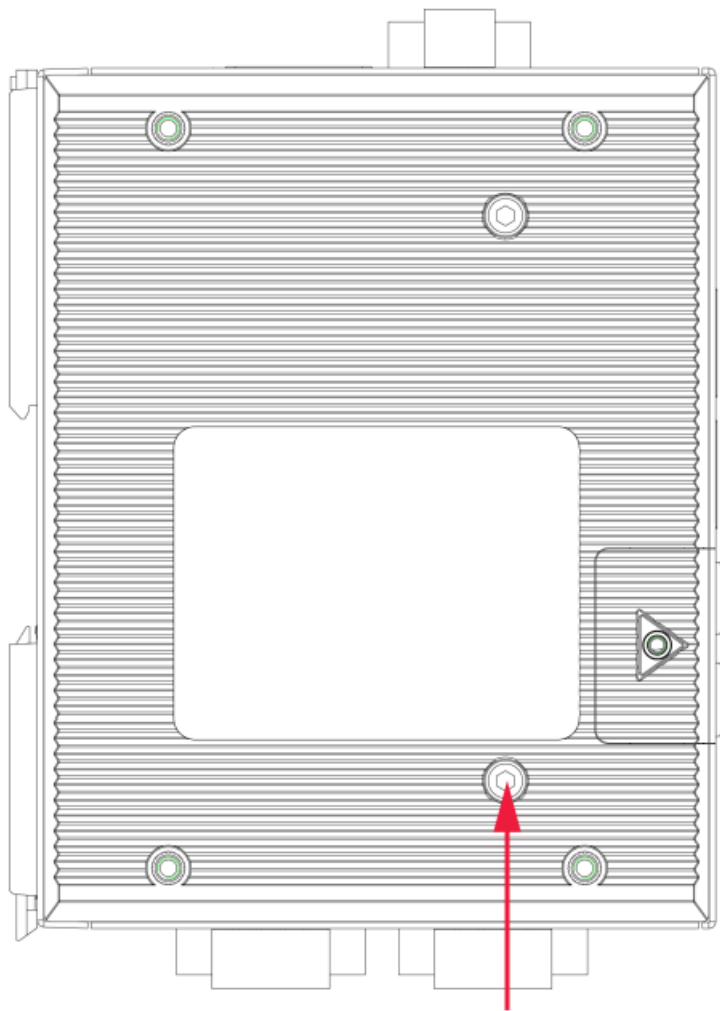
sticker

To place the sticker, do the following:

1. Use a cloth to clean the surface of the screw with a 75% alcohol solution.
2. Use a tweezer to place the sticker on the screw.
3. Press the sticker down on to the screw for at least 15 seconds with a pressure of about 15 psi (pound/square inch)
4. Keep the device at room temperature for 24 hours before deploying it.

✎ **NOTE**

- Place the sticker carefully on the screw because it is thin and fragile.
- The ideal environment to store the stickers is at 22°C (72°F) and less than 50% relative humidity.
- Keep the extra two stickers in a safe place so that only authorized persons can access them

Hardware Connection Description

In this chapter, we describe how to connect the UC-1200A to a network and various devices.

Connecting the Power

Connect the 12 to 24 VDC power line to the terminal block, which is connector to the UC-1200A 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.
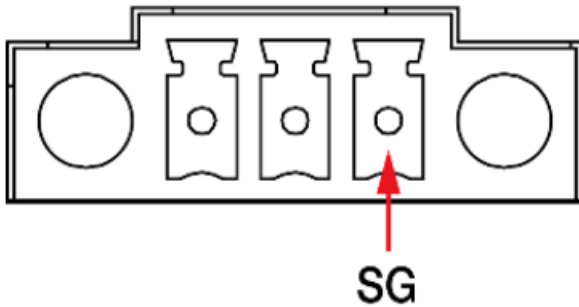
⚠️ **ATTENTION**

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

Wiring Requirements

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 to the Network

The Ethernet ports are located on the front panel of the UC-1200A computers. The pin assignments for the Ethernet port are shown in the following figure. If you are using your own cable, ensure that the pin assignments of the Ethernet cable connector match the pin assignments on the Ethernet port.
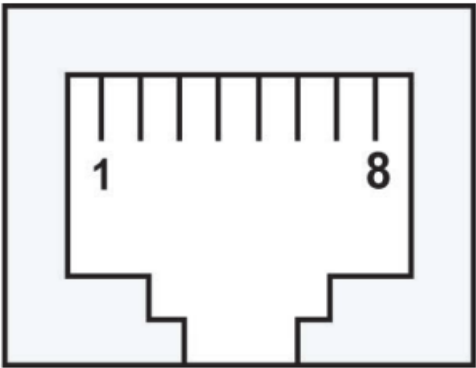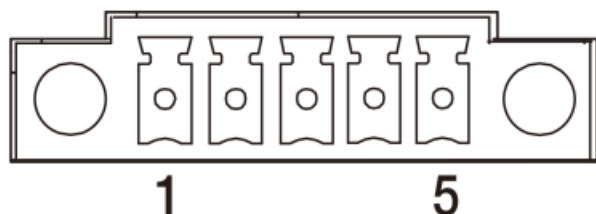

10/100 Mbps

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

1000 Mbps

Pin	Definition
1	TRD(0)+
2	TRD(0)-
3	TRD(1)+
4	TRD(2)+
5	TRD(2)-
6	TRD(1)-
7	TRD(3)+
8	TRD(3)-

Connecting to Serial Ports

The two serial ports (P1 and P2) use terminal connectors. Each port can be configured by software for RS232, RS-422, or RS-485 mode. The pin assignments for the ports are shown in the following figure:

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

Connecting to a USB Device

The UC-1200A computers come with a USB port located on the lower part of the front panel for connecting to a device with a USB interface. The USB port uses a type A connector. By default, the USB storage connected to

this interface is mounted at **/mnt/usbstorage**.

Inserting the Micro SD Card and SIM Card

The UC-1200A comes with a Micro SD socket for storage expansion and a SIM card socket for cellular communication. The Micro SD card/SIM card sockets are located on the lower part of the front panel. To install the cards, remove the screw and the protection cover to access the sockets, and then insert the Micro SD card or the SIM card into the sockets. You will hear a click when the cards are in place. To remove the cards, push the cards in before releasing them.
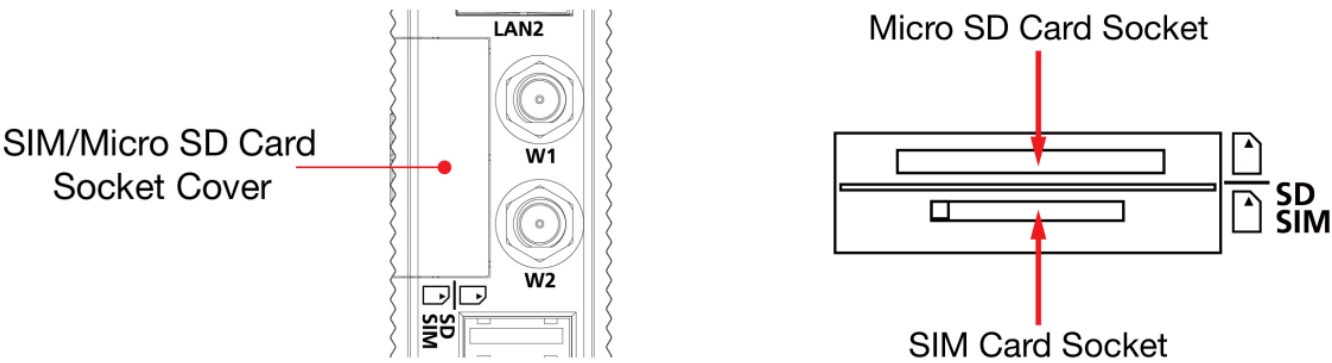
Connecting to the Console Port

The console port is an RS-232 port that can be connected to 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

The UC-1200A provides a Mini PCIe socket for installing a wireless module. User can purchase "A-CRF-SMIF-100" which is an SMA connector accessory package.
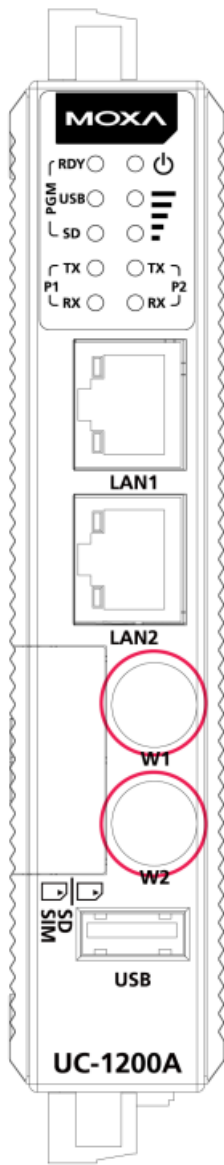
Regulatory Approval Statements

 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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

This device and its antenna must not be co located or operating in conjunction with any other antenna or transmitter.

$C \in$ European Community

The radiated output power of the Wireless Device is below the Innovation, Science and Economic Development Canada (ISED) radio frequency exposure limits. The Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized.
This device has also been evaluated and shown compliant with the ISED RF Exposure limits under mobile exposure conditions. (antennas are greater than 20cm from a person's body).

⚠ 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.

CUSTOMER SUPPORT

UC-1200A Series Hardware User Manual
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.
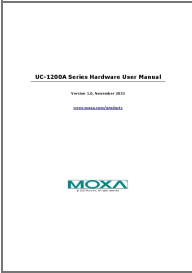
Technical Support Contact Information
www.moxa.com/support

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Documents / Resources

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References

- ⊶ [**Moxa - Products**](#)
- ⊶ [**Moxa - Support**](#)
- ⊶ [**Moxa - Your Trusted Partner in Automation**](#)
- [**User Manual**](#)