UC-3400A Series Hardware User Manual

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www.moxa.com/products

UC-3400A Series Hardware User Manual

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Technical Support Contact Information

www.moxa.com/support

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1. Introduction

Overview

Moxa's UC-3400A Series computers can be used as edge 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-3400A'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 data pre-processing and transmission capabilities of your applications in harsh operating environments. The UC-3400A comes equipped with Moxa Industrial Linux, a high-performance industrial-grade Linux distribution with long-term support that is developed by Moxa.

Package Checklist

Before installing the UC-3400A, verify that the package contains the following items:

- 1 x UC-3400A Arm-based computer
- 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.

Hardware Specifications

NOTE

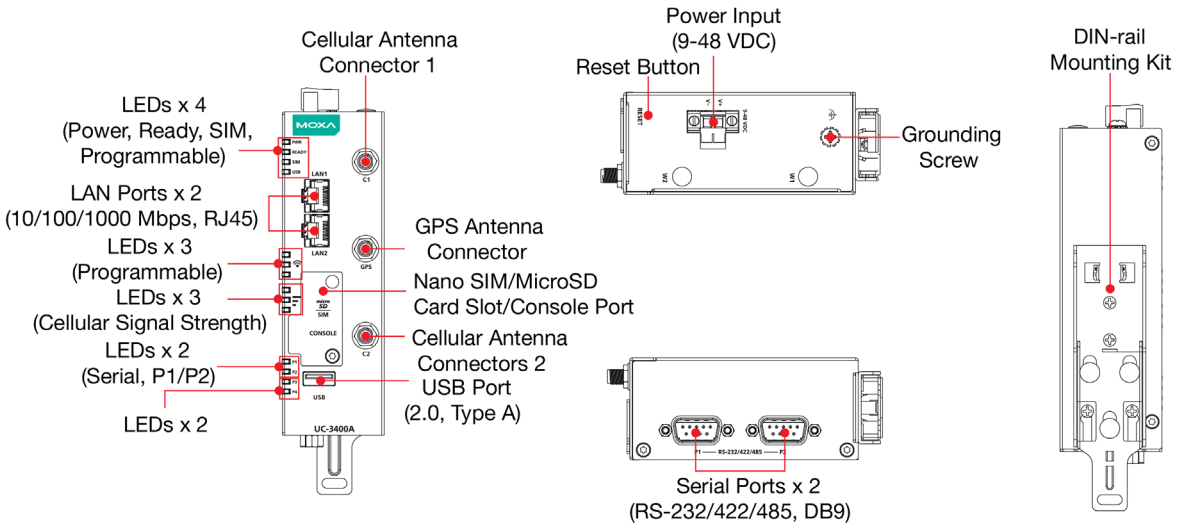
The latest specifications for Moxa's products can be found at https://www.moxa.com.

2. Hardware Introduction

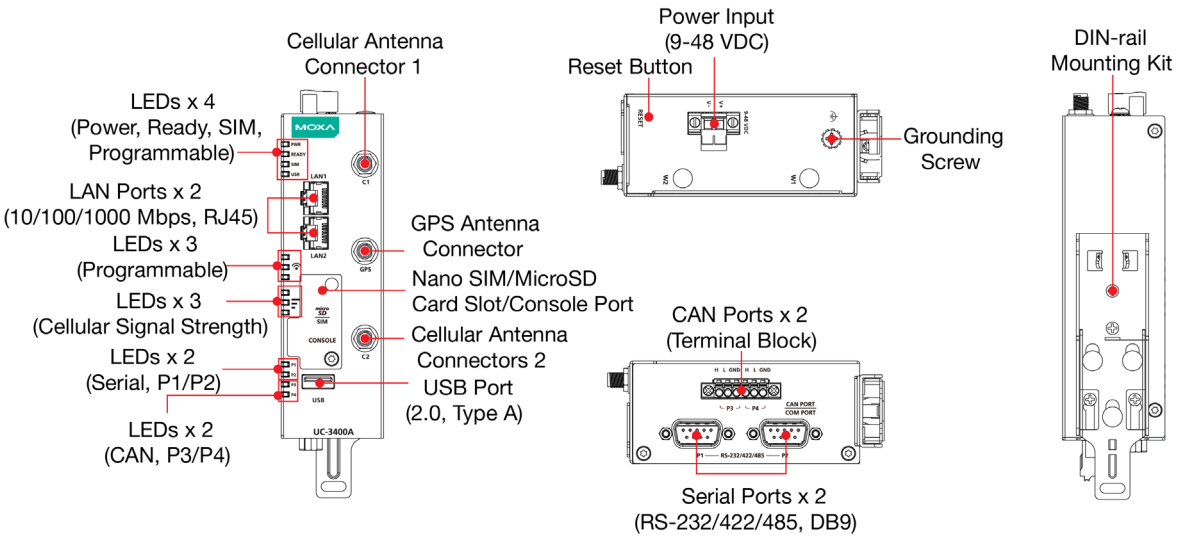
The UC-3400A embedded computers are compact and rugged making them suitable for industrial applications. The LED indicators help in monitoring performance and troubleshooting issues. The multiple ports provided on the computer can be used to connect to a variety of devices. The UC-3400A comes with a 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.

Appearance

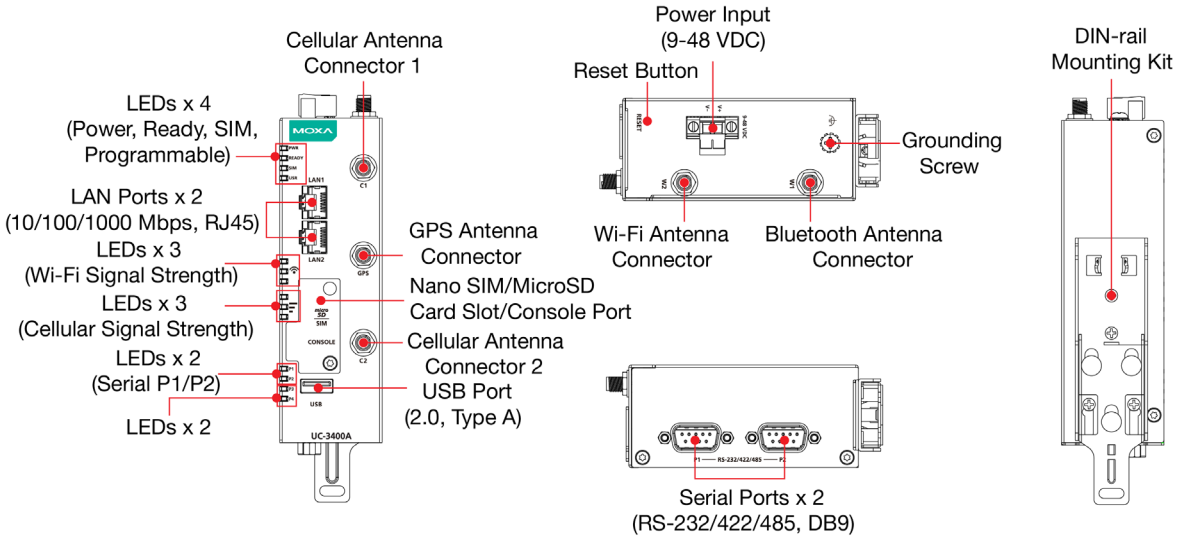
UC-3420A-T-LTE



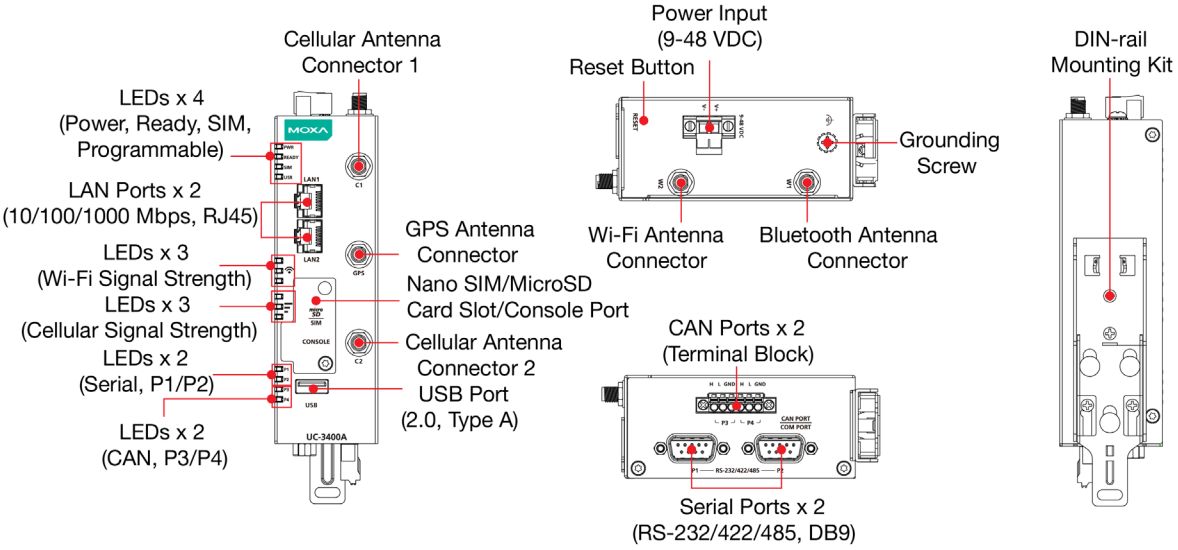
UC-3424A-T-LTE



UC-3430A-T-LTE-WiFi

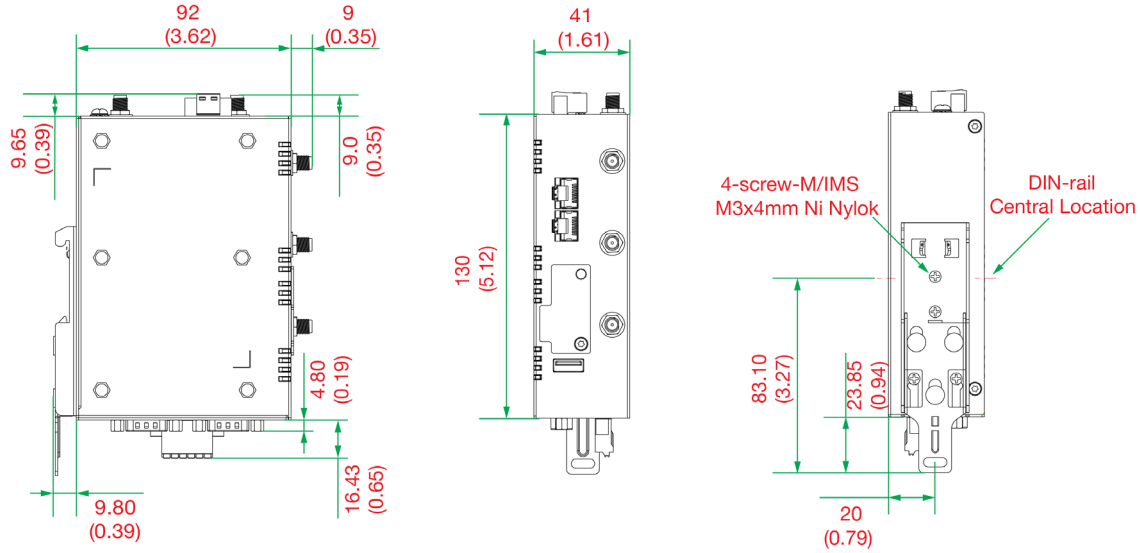


UC-3434A-T-LTE-WiFi



Dimensions

Unit: mm (inch)



LED Indicators

Refer to the following table for information about each LED.

LED Name	Color	Status	Function
PWR	Green	Steady on	Power is on
	Off		Power is off
READY	Green	Steady on	System is ready for use
		Blinking	System is booting up
	Red	Steady on	System initialization failed
	Off		System is still in the bootloader stage, kernel not up yet
SIM	Green	Steady on	SIM card inserted AND SIM2 is the active slot
	Yellow	Steady on	SIM card inserted AND SIM1 is the active slot
	Off		SIM card not detected
USR	Green/ Yellow	Steady on/blinking/off	User programmable
LAN1/ LAN2	Green	Steady	10/100 Mbps link established
		Blinking	Receiving or transmitting data
	Yellow	Steady	1000 Mbps link established
		Blinking	Receiving or transmitting data
	Off		Ethernet port is not active
(Wi-Fi Signal Strength)	Green	3 LEDs Steady on	Signal strength at 61% to 100%
		2 LEDs Steady on	Signal strength at 41% to 60%
		1 LED Steady on	Signal strength at 21% to 40%
		1 LED Blinking	Signal strength at 0% to 20%
	Off		No signal
	*For UC-3420 and UC-3424 models, the WI-FI signal strength LEDs are user programmable.		
(Cellular Signal Strength)	Green	3 LEDs Steady on	Signal is good
		2 LEDs Steady on	Signal is moderate/ok
		1 LED Steady on	Signal is poor
		Off	No signal
P1/P2 (Serial Port)	Green	Blinking	Serial port is transmitting data
	Yellow	Blinking	Serial port is receiving data
	Off		Serial port is not active
P3/P4 (CAN Port)	Light Yellow	Blinking	CAN port is transmitting data
	Yellow	Blinking	CAN port is receiving data
	Off		CAN port is not active

Real-time Clock

The real-time clock in the UC-3400A 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. Dispose of used batteries according to the manufacturer's instructions.

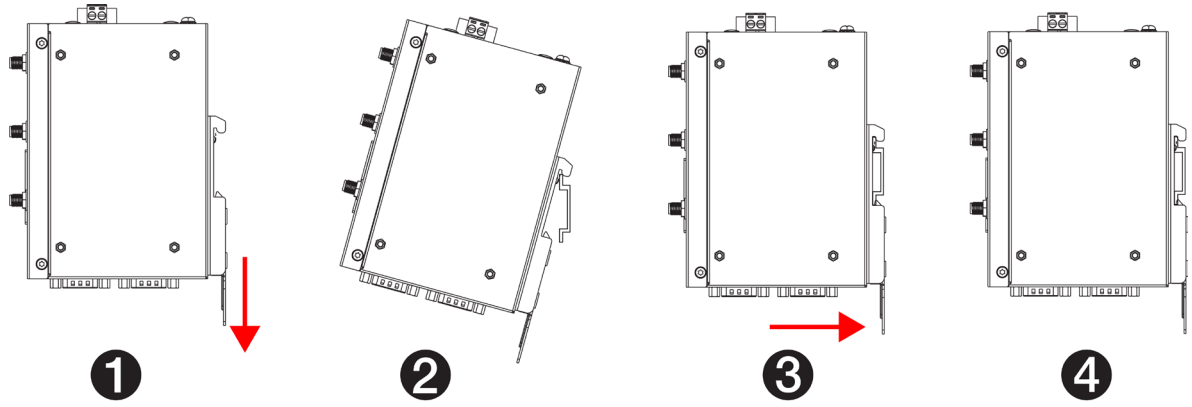
Placement Options

The UC-3400A 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-3400A on to a DIN rail, do the following:

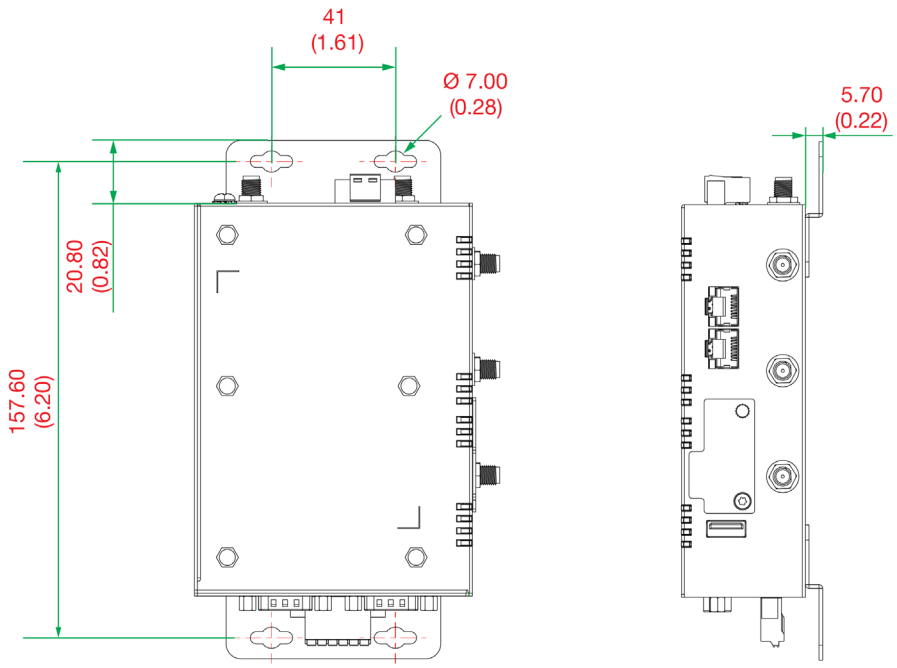
1. Pull down the slider of the DIN-rail bracket located at the back of the unit
2. Insert the top of the DIN rail into the slot just below the upper hook of the DIN-rail bracket.
3. Latch the unit firmly on to the DIN rail as shown in the illustrations below.
4. Once the computer is mounted properly,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



Wall Mounting (optional)

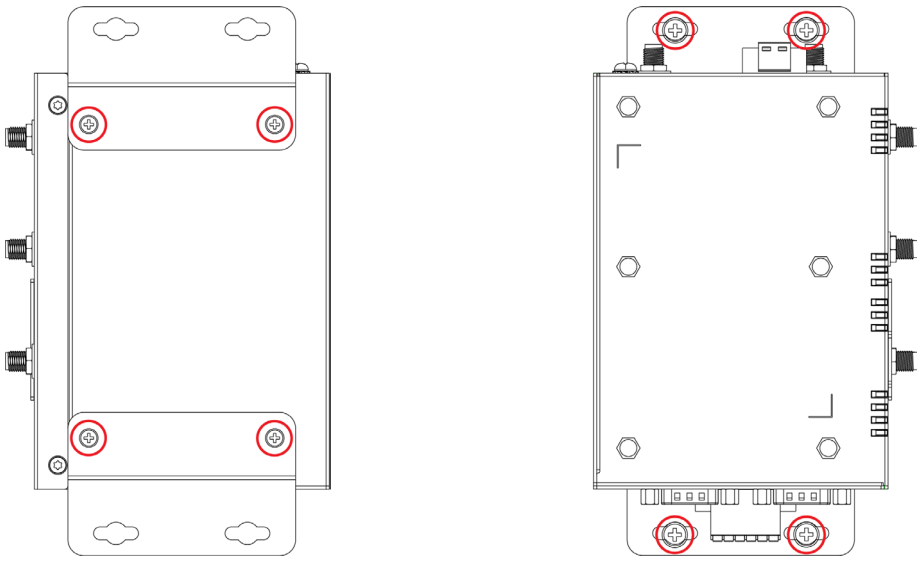
The UC-3400A can also be wall mounted. The wall-mounting kit needs to be purchased separately. Refer to the datasheet for information on the wall-mounting kit to be purchased. For the mounting dimensions, refer to the figure below:

Unit: mm (inch)



To mount the computer on to a wall, do the following:

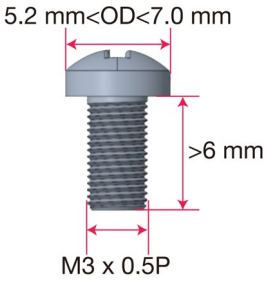
1. Attach two wall-mounting brackets with four M3 x 5 mm screws on the right side panel of the computer as indicated in the figure.
2. Use another four screws to fasten the computer on to a wall or a cabinet.



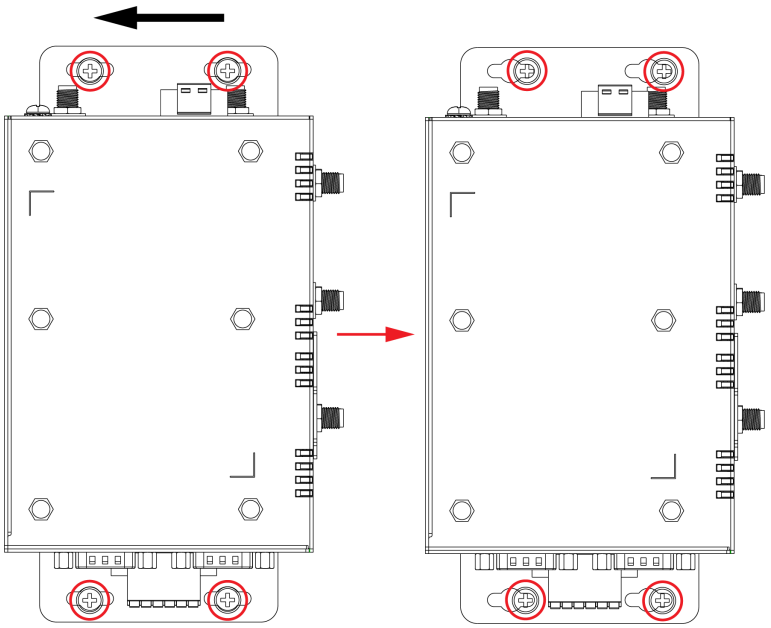
Recommended Torque: 4.5±0.5kgf-cm

The additional four screws are not included in the wall-mounting kit and must be purchased separately. Refer to the following specifications for the additional screws to be purchased.

Head Type: Pan/Doom
Head Diameter:
5.2 mm < Outer Diameter (OD) < 7.0 mm
Length: > 6 mm
Thread Size: M3 x 0.5P



3. Push the computer to the left to ensure the computer is securely fixed to the mounting surface.



3. Hardware Connection Description

This section describes how to connect the UC-3400A to a network and connect various devices to the UC-3400A as well as how to power it.

Wiring Requirements

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.

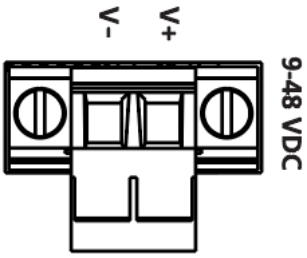
If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

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 to the terminal block located on the top panel, and then connect the power adapter to the power jack. Use a 12 to 24 AWG wire and secure the plug by screws with a minimum torque value 0.5 N-m (4.4253 lb-in).

After the power is connected, it takes about 10 to 30 seconds for the system to boot up. Once the system is ready, the READY LED will light up.

Attention

The wiring for the input terminal block must be done by a skilled person. The wire type should be copper (Cu).

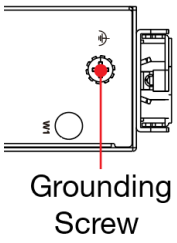
ATTENTION

The product is intended to be supplied by a UL Listed Power Unit marked "L.P.S." (or "Limited Power Source") and rated 9 to 48 VDC, 1.2 A (min.), Tma = 70°C. If you need further assistance with purchasing the power source, contact Moxa for further information.

If you are using a Class I adapter, the power cord must be connected to a socket-outlet with an earthing connection.

Grounding the UC-3400A

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI).



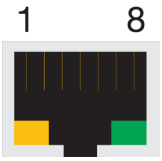
The grounding screw or GS (M4-type screw) is located on the top panel. When you connect to the GS wire, the noise is routed directly from the metal chassis to the ground point.

NOTE

The grounding wire must have a minimum diameter of 3.31 mm².

Ethernet Port

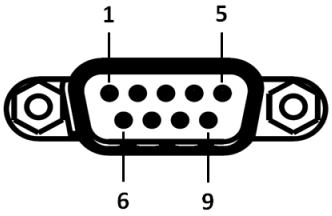
The 10/100/1000 Mbps Ethernet port uses the RJ45 connector. The pin assignment of the port is shown below:



Pin	10/100 Mbps	1000 Mbps
1	ETx+	TRD(0)+
2	ETx-	TRD(0)-
3	ERx+	TRD(1)+
4	–	TRD(2)+
5	–	TRD(2)-
6	ERx-	TRD(1)-
7	–	TRD(3)+
8	–	–

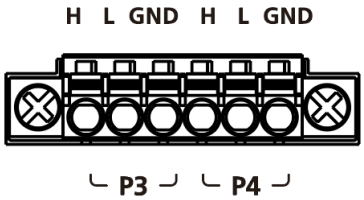
Serial Port

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



The UC-3424A and UC-3434A models come with two CAN ports, which use the terminal block connector and are compatible with the CAN 2.0A/B standard.

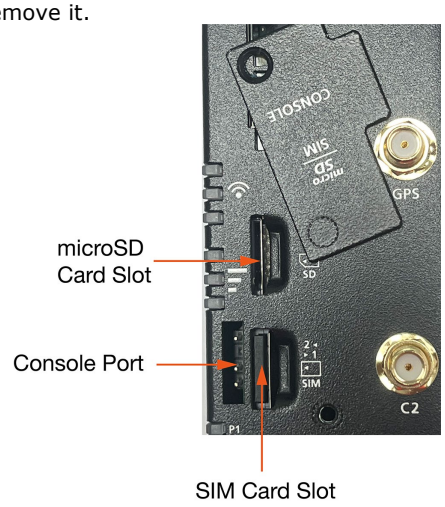
SIM Card Slot

The UC-3400A comes with a nano-SIM card slot, a console port, and a microSD slot on the front panel.

To install SIM cards, do the following:

1. Remove the screw on the slot cover.
   UC-3400A comes with a nano-SIM card slot.

2. Push the SIM card tray in and then pull it out to remove it.



ATTENTION

When the tray slot is open, ensure that LAN2 is not connected to the network.

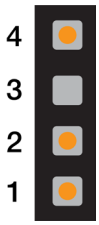
3. The SIM card tray can install two SIM cards, one on each side of the tray.

4. Install the SIM card in SIM1 slot.
   Install the other SIM card in SIM2 on the other side of the tray.

5. Insert the tray into the SIM card slot and secure the cover to the slots.
   To remove the SIM cards, push the tray in before releasing it.

Console Port

The console port located on the left side of the SIM card slot is a RS-232 port that can connect to a 4-pin pin header cable. You can use this port for debugging or firmware upgrade.



Pin	Signal
1	TXD
2	RXD
3	–
4	GND

microSD Slot

There is a microSD slot located above the SIM card slot. Insert the microSD card into the slot. To remove the card, push it in first and release it.

USB Port

The USB port is a type A USB 2.0 port, which can be used to connect to a type-A USB storage device.

NOTE

It is recommended that the peripheral devices installed should be placed at least 25 mm away from the UC-3400.

Connecting Antennas

The UC-3400A comes with antenna connectors for various interfaces.

Cellular

The UC-3400A models come with a built-in cellular module. Connect the antenna to the SMA connector with the cellular mark to enable the use of the cellular function.

GPS

The UC-3400A models come with a built-in GPS module. Connect the antenna to the SMA connector with the GPS mark to enable the use of the GPS function.

Wi-Fi

The UC-3430A-T-LTE-WiFi and UC-3434A-T-LTE-WiFi models come with a built-in Wi-Fi module. Connect the antenna to the RP-SMA connector marked **W2** to enable the use of the Wi-Fi function.

Bluetooth

The UC-3430A-T-LTE-WiFi and UC-3434A-T-LTE-WiFi models come with a built-in Bluetooth module. Connect the antenna to the RP-SMA **W1** connector to enable the use of the Bluetooth function.

For additional details, refer to the UC-3400A Series datasheet.

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.