

MOXA®
UC-4400A Series
Arm Based
Computers



MOXA UC-4400A Series Arm Based Computers User Manual

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MOXA UC-4400A Series Arm Based Computers



Product Usage Instructions

- Notify your sales representative if any items are missing or damaged.
- The UC-4400A Series is designed for versatile communication solutions with its multiple serial ports and Ethernet LAN ports.
- Refer to the latest specifications on [Moxa's website](#) for detailed information.

FAQ

- **Q: Where can I find technical support contact information?**
 - **A:** You can find technical support contact details on the Moxa website or in the user manual under the Technical Support Contact Information section.

UC-4400A Series Hardware User's Manual

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Introduction

The UC-4400A Series computing platform is designed for embedded data acquisition applications. The UC-4400A computers come with two or four RS-232/422/485 serial ports and dual 10/100/1000 Mbps Ethernet LAN ports, as well as M.2 and Mini PCIe sockets to support cellular and Wi-Fi modules. These versatile communication capabilities let users efficiently adapt the UC-4400A Series to a variety of complex communications solutions. The following topics are covered in this chapter:

Package Checklist

Before installing a UC-4400A computer, verify that the package contains the following items:

- 1 x UC-4400A Series embedded computer
- 1 x Quick installation guide (printed)
- 1 x Warranty card (printed)

NOTE

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

Product Features

- Arm Cortex-A53 quad-core 1.6 GHz with 4GB RAM
- Ready for ISA/IEC 62443-4-2 Security Level 2 certification with Moxa Industrial Linux 3 Secure
- Moxa Industrial Linux with 10-year superior long-term support
- Integrated 5G Sub-6GHz NR module with dual SIM and AT&T certification
- Industrial-grade CE/ FCC/UL certifications
- Optional Wi-Fi 6E and 4G LTE Cat.4 accessory
- 2 auto-sensing 10/100/1000 Mbps Ethernet ports
- CAN bus and serial port with 2 kV isolation protection
- microSD socket for storage expansion
- -40 to 75°C wide temperature range and -40 to 70°C with cellular enabled

Product Specifications

NOTE

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

Hardware Introduction

The UC-4400A 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-4400A 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

- UC-4410A-T
- UC-4414A-I-T
- UC-4430A-I
- UC-4434A-I-T
- UC-4450A-T-5G
- UC-4454A-T-5g

Dimensions

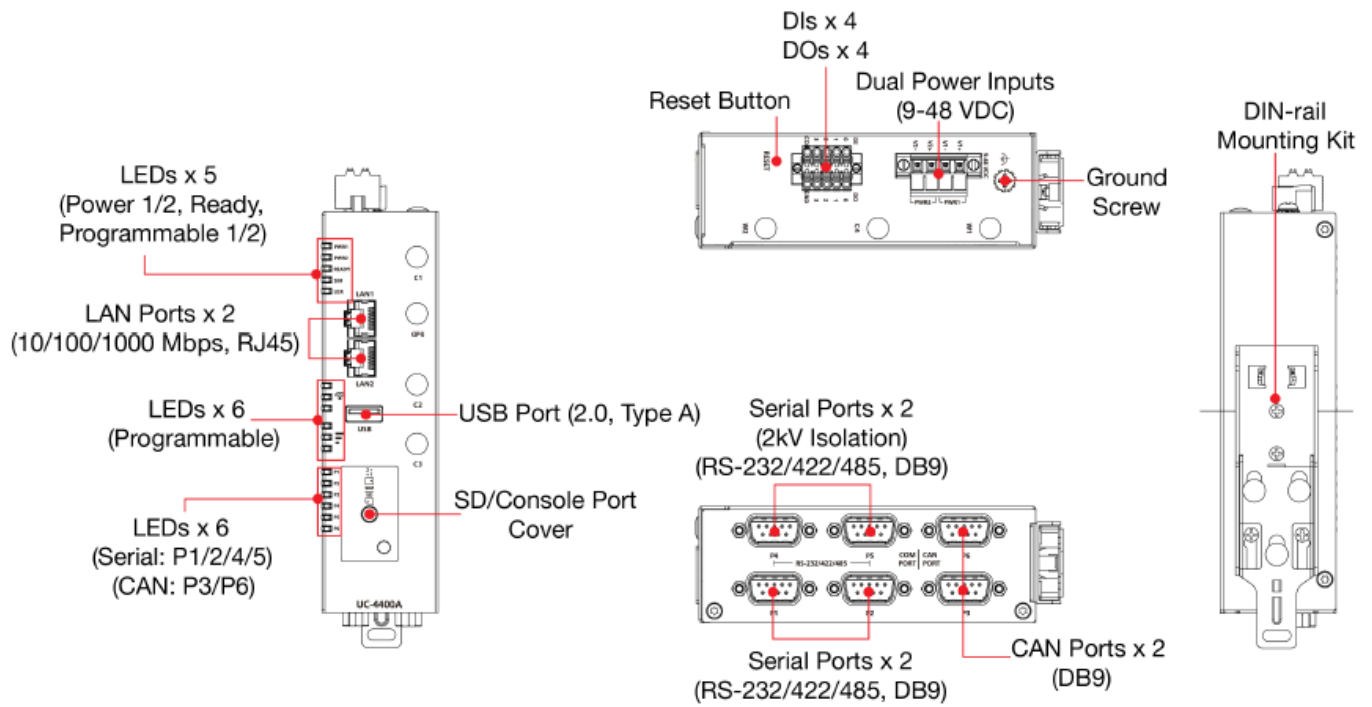
- UC-4410A-T
- UC-4414A-I-T
- UC-4430A-I
- UC-4434A-I-T
- UC-4450A-T-5G
- UC-4454A-T-5g

LED Indicators

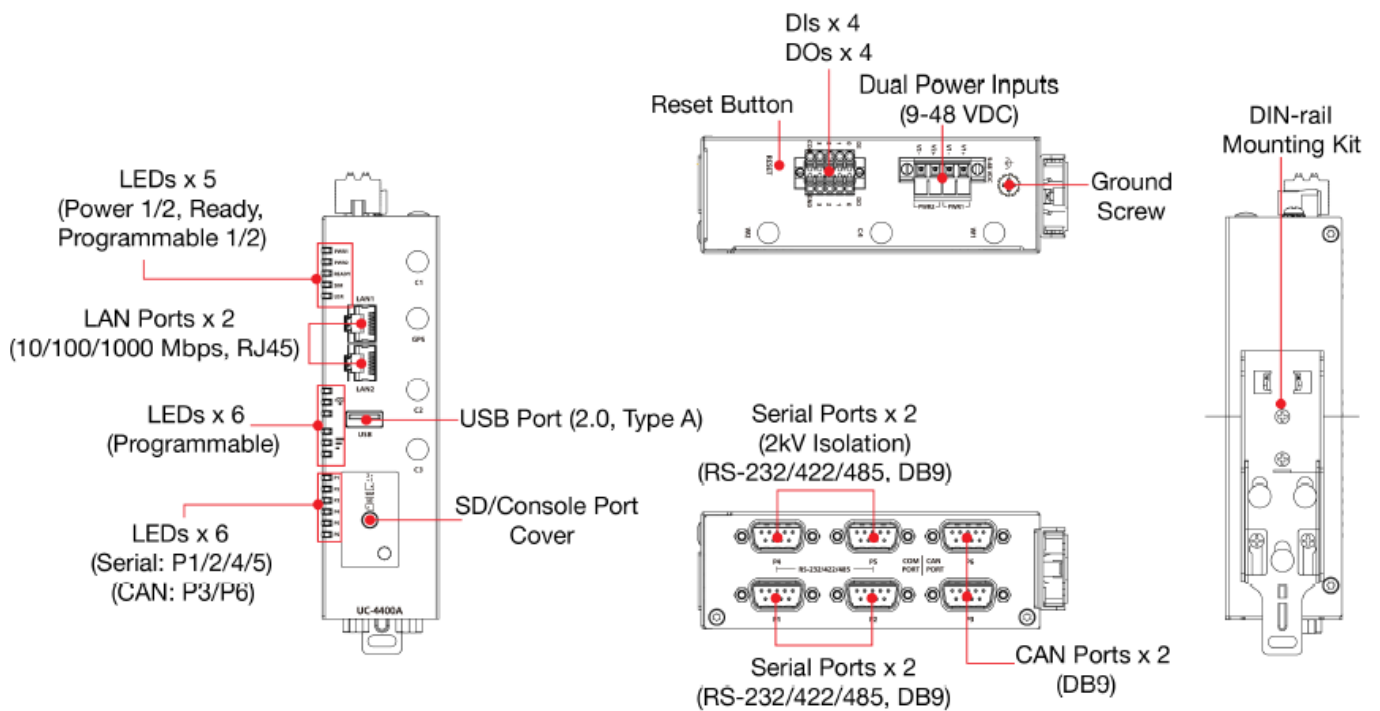
- Real-time Clock
- Installation Options
- DIN-rail Mounting
- Wall Mounting (optional)

Appearance

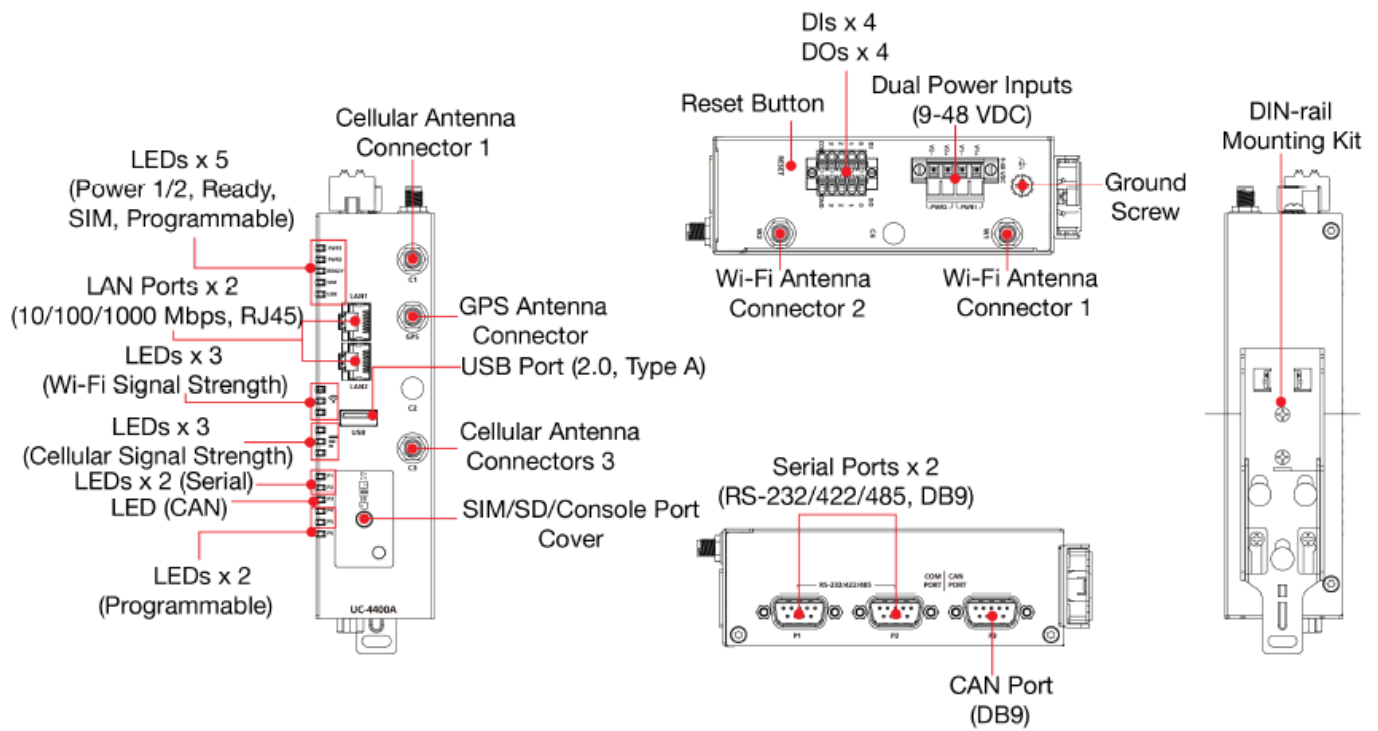
UC-4410A-T



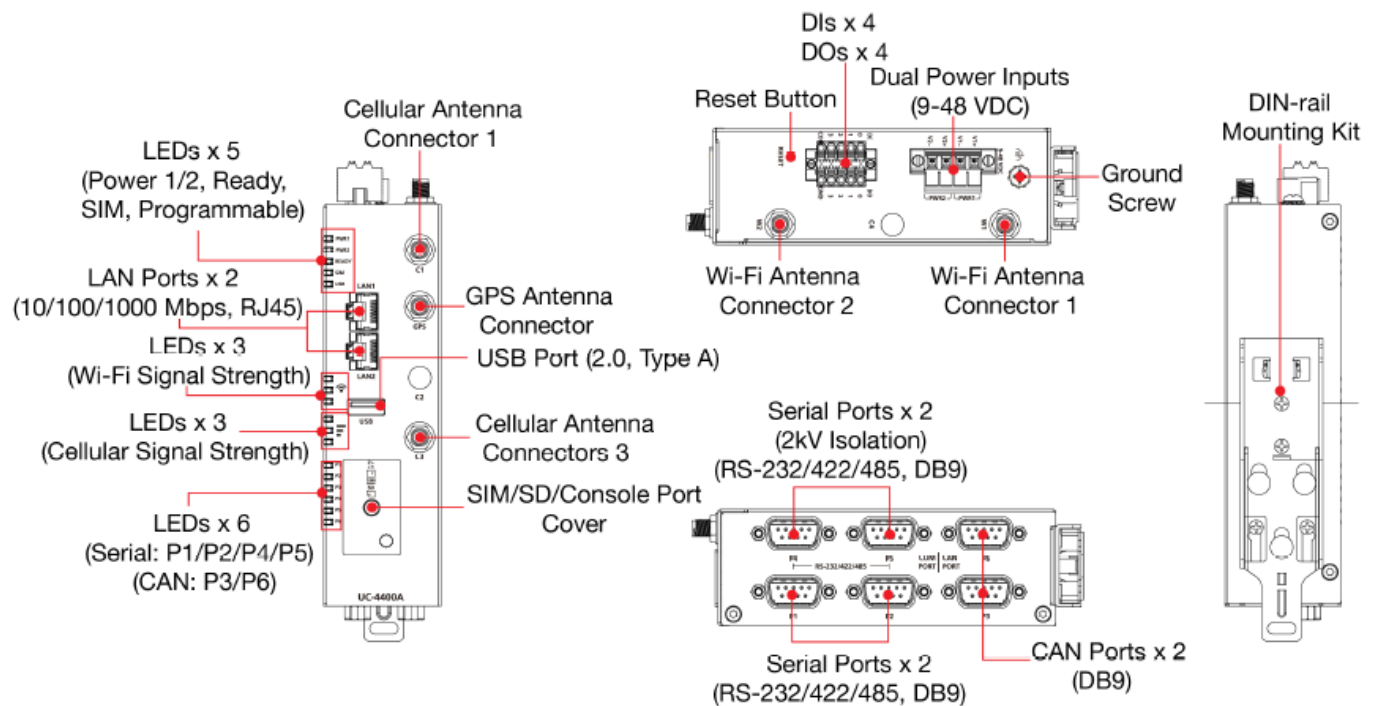
UC-4414A-I-T



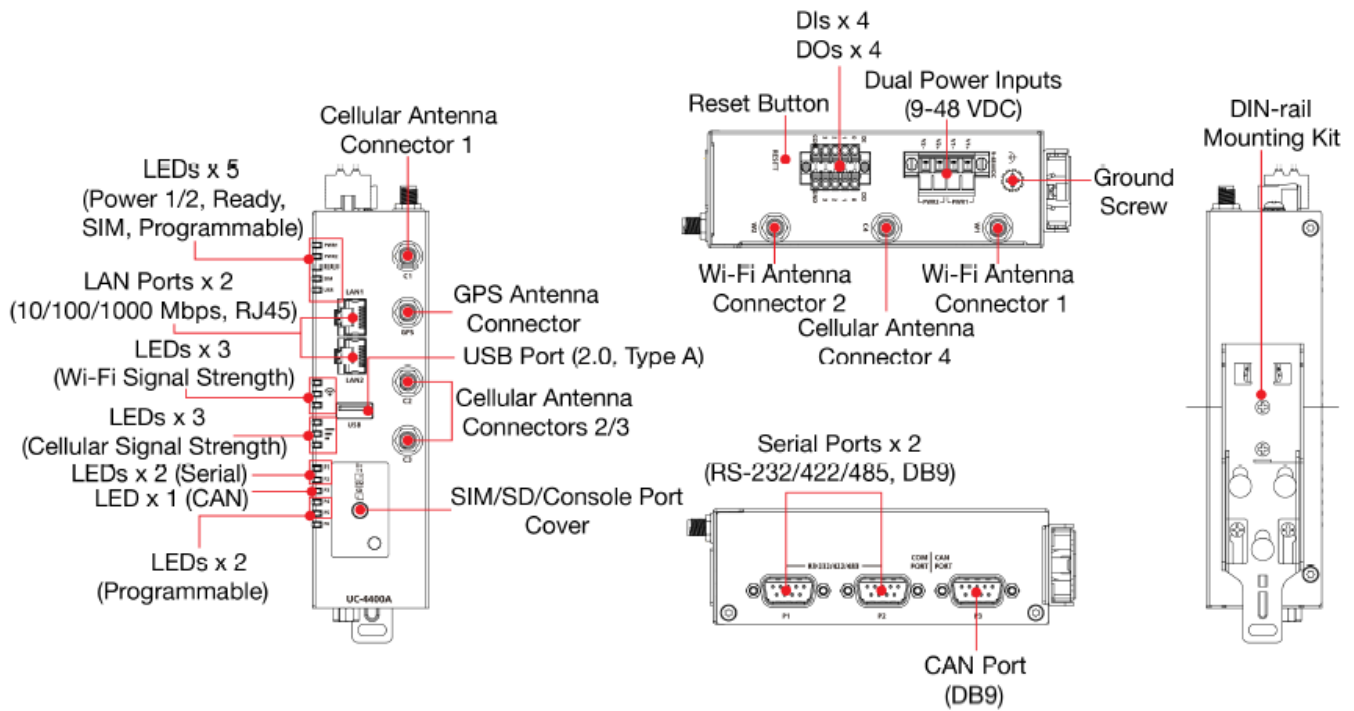
UC-4430A-I



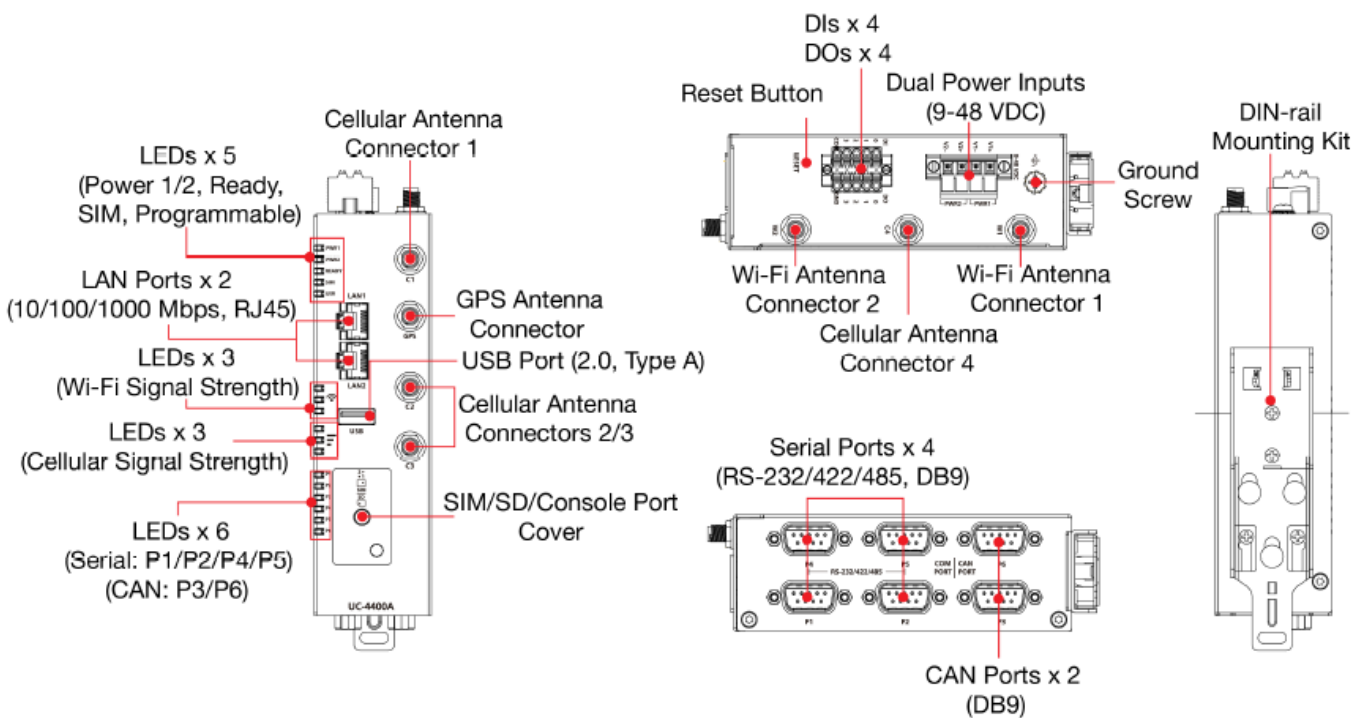
UC-4434A-I-T



UC-4450A-T-5G



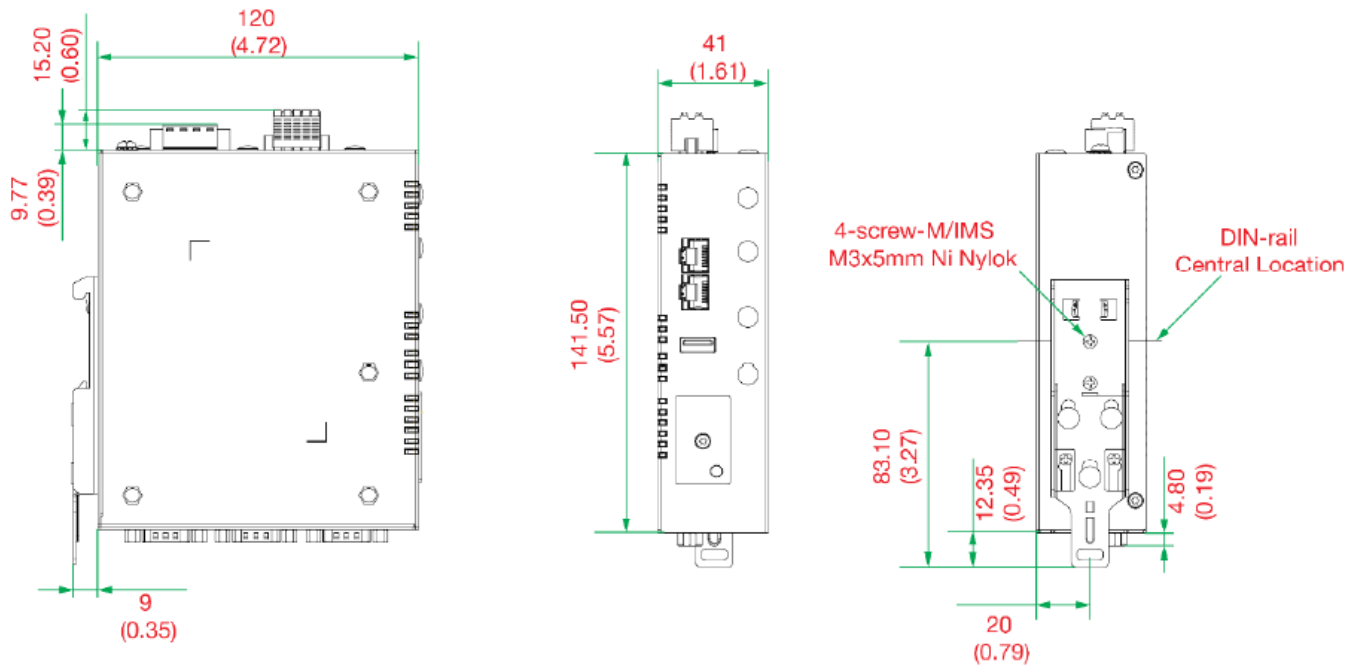
UC-4454A-T-5G



Dimensions

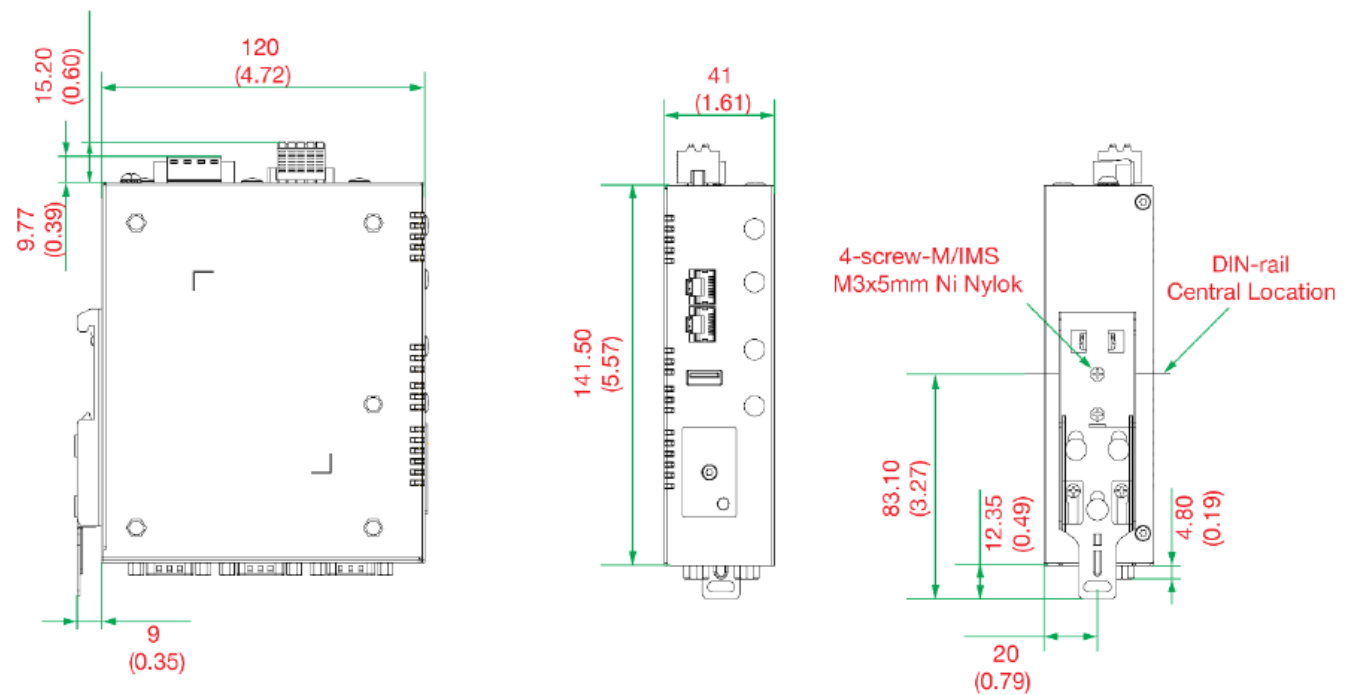
UC-4410A-T

Unit: mm (inch)



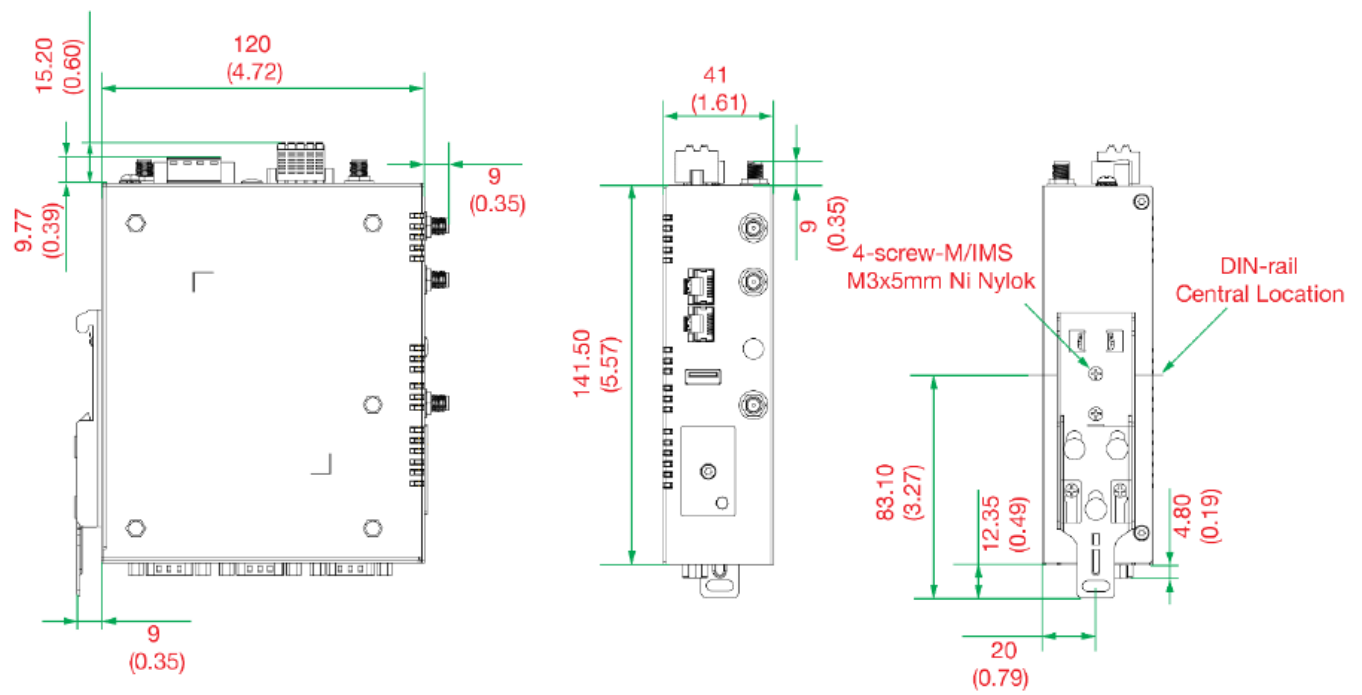
UC-4414A-I-T

Unit: mm (inch)



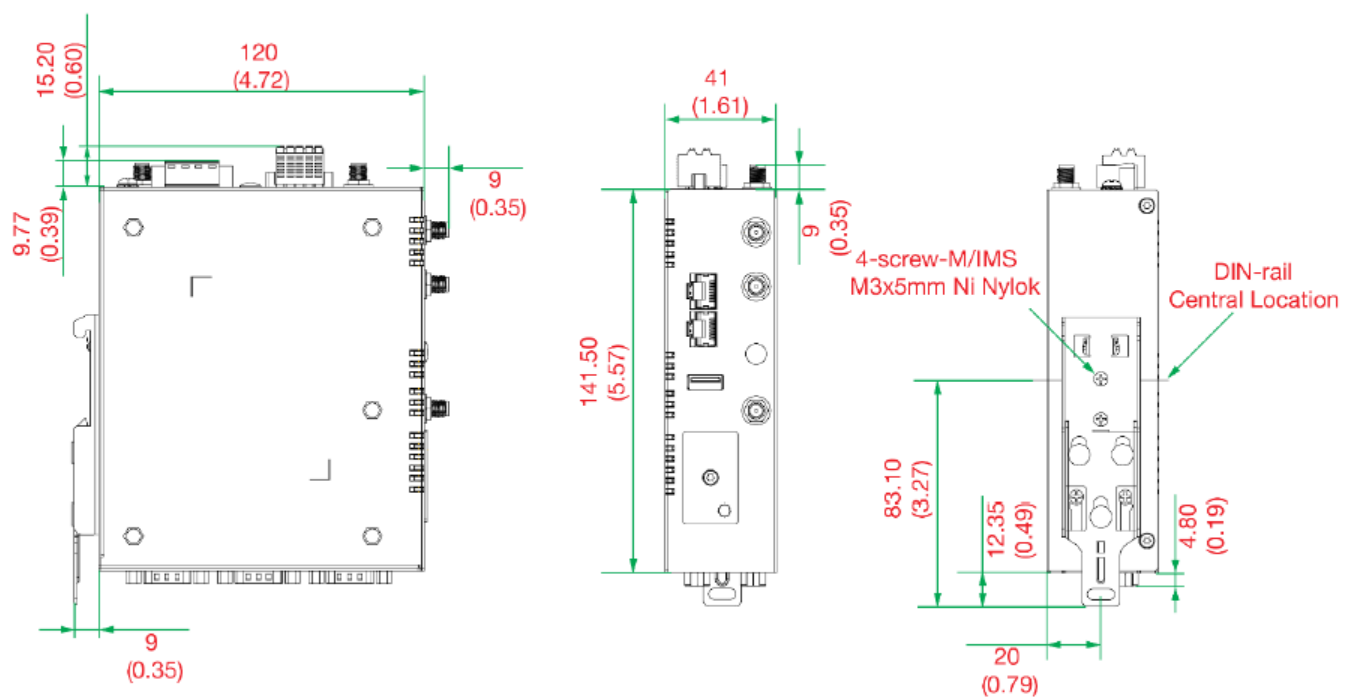
UC-4430A-T

Unit: mm (inch)



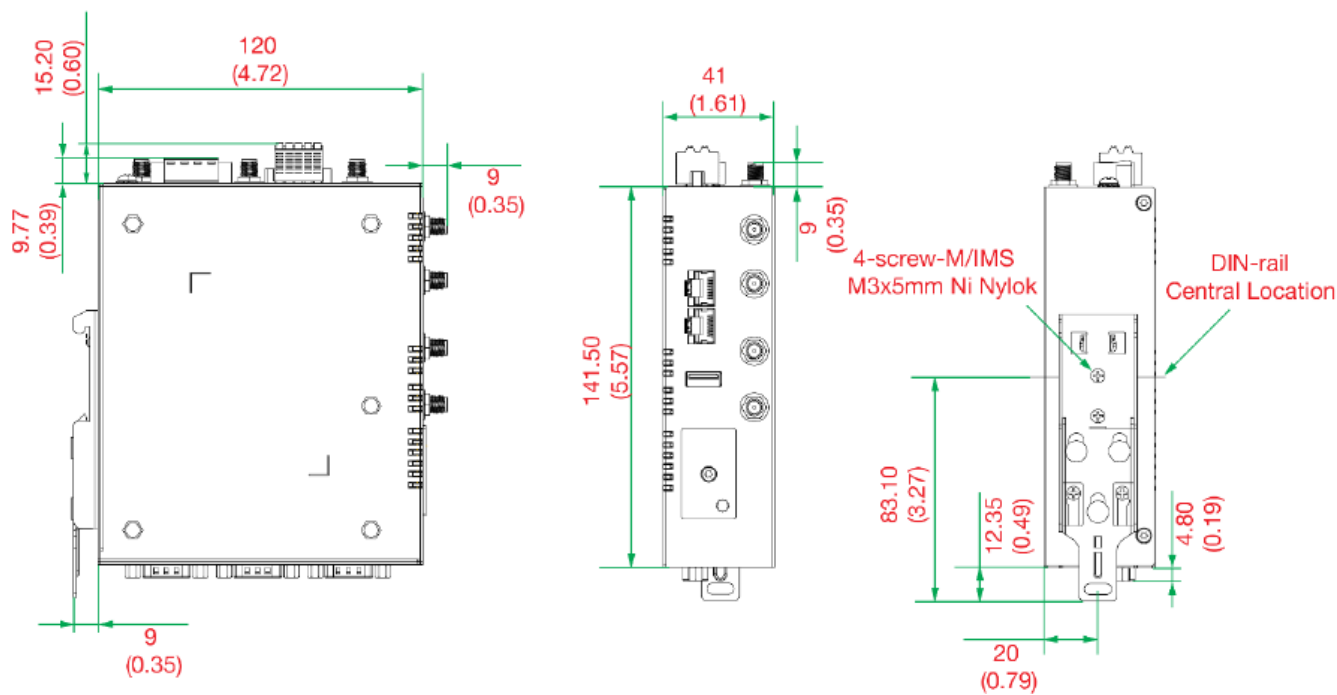
UC-4434A-I-T

Unit: mm (inch)



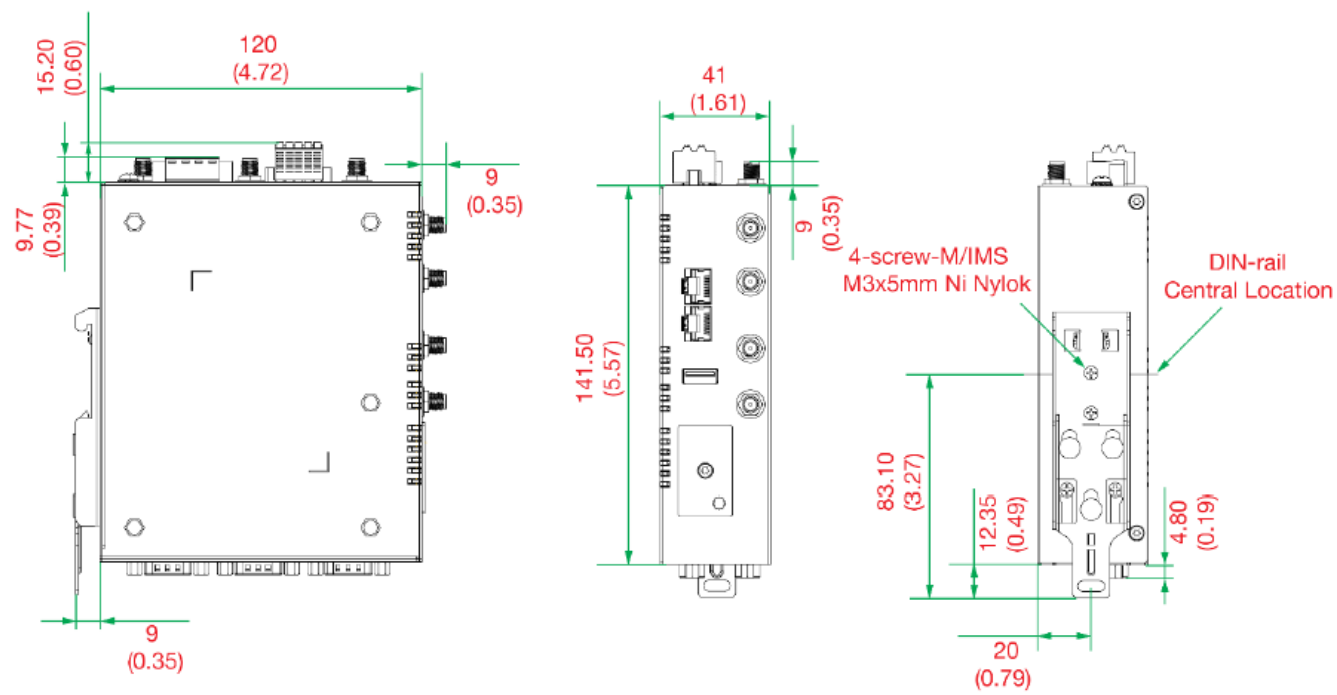
UC-4450A-T-5G

Unit: mm (inch)



UC-4454A-T-5G



Unit: mm (inch)



LED Indicators

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

LED Name	Status	Function
	Green	Power is on

PWR1/PWR2	Off	No power
READY	Green	Steady on: The device has successfully booted and all services are initialized
		Blinking: The device is in the process of booting up
	Red	Device boot failure, which occurs if any service fails to initialize
	Off	The device remains in the bootloader stage and has not yet booted into the kernel
SIM	Green	SIM2 is the active slot, with a functional SIM card inserted
	Yellow	SIM1 is the active slot, with a functional SIM card inserted
USR	Green/ Yellow	User programmable
 (Cellular Signal Strength)	Green	Three LEDs steady on: Good or excellent Two LEDs steady on: Fair One LED steady on: Poor One LED blinking: Very poor
	Off	Disconnected
 (Wi-Fi Signal Strength)	Green	Three LED steady: 61% to 100% Two LED steady: 41% to 60% One LED steady: 21% to 40% One LED blinking: 0% to 20%
	Off	Disconnected
LAN1/LAN 2 (RJ45 connector)	Green	Steady ON: 10M/100M link established Blinking: Receive or transmitting data
	Yellow	Steady ON: 1000M link established Blinking: Receive or transmitting data
	Off	No Ethernet connection
P1/P2 (Serial Port)	Green	Blinking: Serial port is transmitting data
	Yellow	Blinking: Serial port is receiving data
	Off	The serial port is not transmitting or receiving data

P4/P5 (Serial ports only available on the UC-4414A/34A/54A models)	Green	Blinking: Serial port is transmitting data
	Yellow	Blinking: Serial port is receiving data
	Off	The serial port is not transmitting or receiving data
P3 (CAN port)	Light Yellow	Blinking: The CAN port is transmitting data
	Yellow	Blinking: The CAN port is receiving data
	Off	CAN port is not transmitting or receiving data
P6 (CAN port only available on the UC-4414A/34A/54A models)	Light Yellow	Blinking: The CAN port is transmitting data
	Yellow	Blinking: The CAN port is receiving data
	Off	CAN port is not transmitting or receiving data

Real-time Clock

- The UC-4400A'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.

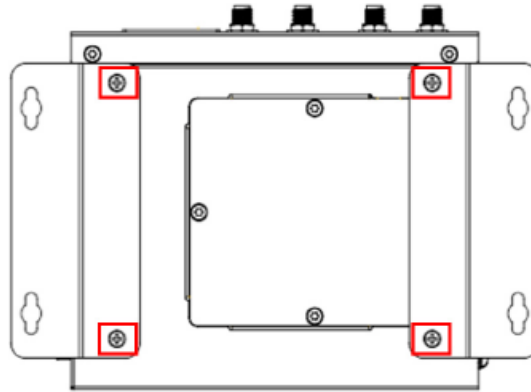
Installation Options

DIN-rail Mounting

The aluminum DIN-rail attachment plate is already attached to the product's casing. To mount the UC-4400A onto a DIN rail, make sure that the stiff metal spring is facing upwards and follow these steps.

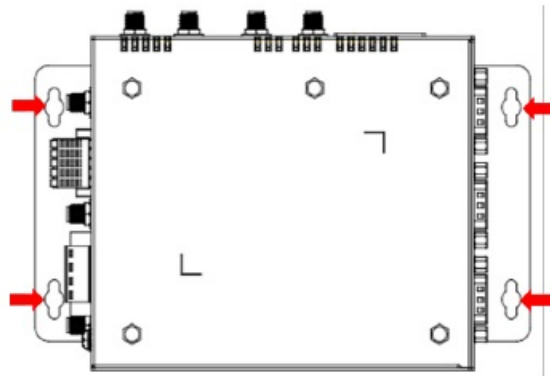
1. Pull down the slider of the DIN-rail bracket located at the back of the unit.
2. Insert the top of the DIN rail into the slot just below the upper hook of the DIN rail bracket.
3. Latch the unit firmly on to the DIN rail as shown in the illustrations below.
4. Once the computer is mounted properly,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

- Use the four screws (M3 x 5 mm) in the package to fasten the wall-mounting brackets to the computer.



Step 2

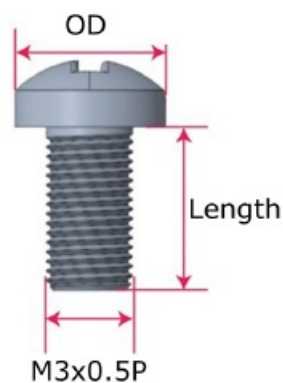
- Use another four screws (M3 x 6 mm) to mount the computer onto a wall or in a cabinet.



Recommended Fastening torque: 4.5 ± 0.5 kgf-cm.

The additional four screws in Step 2 are not included in the wall-mounting kit package and must be purchased separately. The specifications of the additional screws required are as follows:

- Head Type: Pan/Doom
- Head Diameter $5.2 \text{ mm} < \text{OD} < 7.0 \text{ mm}$
- Length $> 6 \text{ mm}$
- Thread Size: M3 x 0.5P



NOTE

- Test the screw head and shank size by inserting the screws into one of the keyhole-shaped apertures of the

wall-mounting plates before attaching the plate to the wall.

- Do not drive the screws in all the way—leave a space of about 2 mm to allow room for sliding the wall mount panel between the wall and the screws.

Hardware Connection Description

In this chapter, we describe how to connect the UC-4400A to a network and various devices. The following topics are covered in this chapter:

- Wiring Requirements
 - Connecting the Power
 - Grounding the Unit
- Connecting the Network
- Connecting a USB Device
- Connecting Serial Ports
- Connecting the Digital Inputs and Digital Outputs

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!

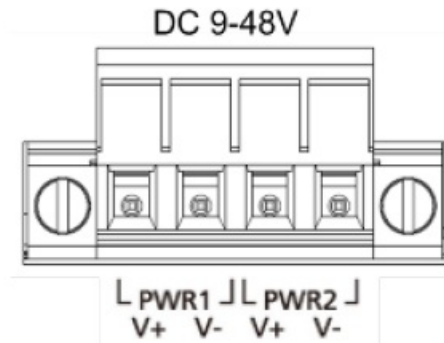
- Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.
- If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

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

- Connect the power jack (in the package) to the UC-4400A Series' DC terminal block (located on the top panel), and then connect the power adapter.
- It takes about 10 to 30 seconds for the system to boot up.
- Once the system is ready, the Power LED will light up. All models support dual power inputs for redundancy.



WARNING

The wiring for the input terminal block should be installed by a skilled person. The wire type should be copper (Cu), the wire size should be 14 AWG to 16 AWG (2.08 to 1.31 mm²), and a torque of 0.19 n-m should be used for V+, V-, and GND connections. The wire size of the power input and earthing conductor should be the same.

WARNING

This product is intended to be supplied by a UL-listed Power Unit marked LPS (Limited Power Source). The ratings for the different models in the series are as follows:

- UC-4410A and UC-4414A: 9 VDC (1.53 A min) to 48 VDC (0.21 A min) and Tma = 75°C (min)
- UC-4430A and UC-4434A: 9 VDC (2.11 A min) to 48 VDC (0.27 A min) and Tma = 70°C (min)
- UC-4450A and UC-4454A: 9 VDC (2.13 A min) to 48 VDC (0.3 A min) and Tma = 70°C (min)

If you need further information or assistance, contact a Moxa representative.

WARNING

EXPLOSION HAZARD!

- Do not disconnect equipment unless the power has been removed or the area is known to be non-hazardous.

ATTENTION

Altitude Requirement

This product and the listed power supply (LPS) adapter(s) used with it are UL-certified for operation at 2,000 meters. Although the product is tested at 5,000 meters, it is not UL-certified for this altitude. For reliable performance of the product in high-altitude installations of over 2,000 meters (e.g., 5,000 meters), use a suitable adapter that is tested and certified at the altitude (i.e., 5,000 meters).

Grounding the Unit

There is a grounding connector located on the top panel of the computer. Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Note that this product is intended to be mounted on a

well-grounded mounting surface, such as a metal panel.
The power cord adapter should be connected to a socket outlet with an earthing connection.

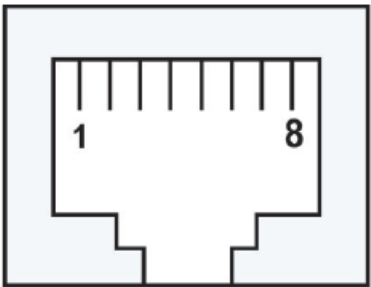


ATTENTION

This product is intended to be mounted to a well-grounded mounting surface such as a metal panel. Use the green-and-yellow cable type minimum with American Wire Gauge (AWG) 14 (2.5 mm²) for grounding.

Connecting the Network

The two Ethernet ports are located on the front panel of the UC-4400A 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	10/100 Mbps	1000 Mbps
1	Tx+	TRD(0)+
2	Tx-	TRD(0)-
3	Rx+	TRD(1)+
4	–	TRD(2)+
5	–	TRD(2)-
6	Rx-	TRD(1)-
7	–	TRD(3)+
8	–	TRD(3)-

Connecting a USB Device

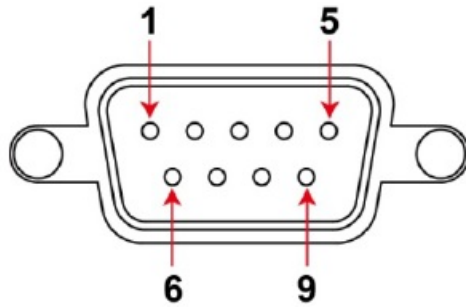
The UC-4400A Series computers come with a USB port located at the lower part of the front panel, allowing users to connect to a device with a USB interface. The USB port uses a type A connector. By default, the USB storage is mounted at /mnt/USB storage.

NOTE

The peripheral devices installed are recommended to be placed at least 25 mm from the UC-4400.

Connecting Serial Ports

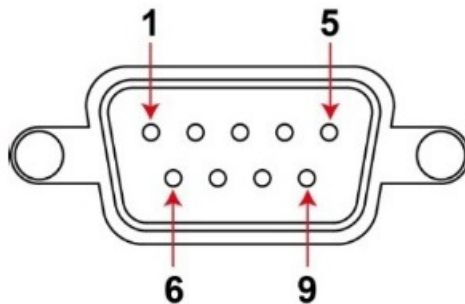
- The four serial ports (P1, P2, P4, P5) use DB9 connectors. Each port can be configured by software for RS-232, RS-422, or RS-485. The pin assignments for the ports are shown in the following table:



Pin	RS-232	RS-422/ RS-485	RS-485 2w
1	DCD	TxD-(A)	–
2	RxD	TxD+(B)	–
3	TxD	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	Data-(A)
5	GND	GND	GND
6	DSR	–	–
7	RTS	–	–
8	CTS	–	–

Connecting a CAN Port

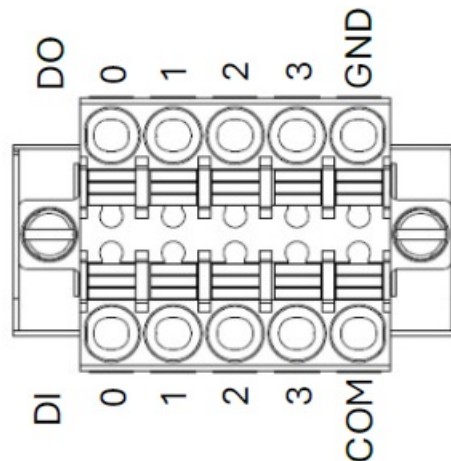
One or two (P3, P6) CAN ports with DB9 interfaces are located on the bottom panel. The pin assignment is shown in the following table:



Pin	Definition
1	–
2	CAN_L
3	CAN_GND
4	–
5	(CAN_SHLD)
6	(GND)
7	CAN_H
8	–
9	(CAN_V+)

Connecting the Digital Inputs and Digital Outputs

- There are four digital inputs and four digital outputs on the top panel. Refer to the figure on the left for detailed pin definitions.



Inserting the SIM Card

The UC-4430A-T, UC-4434A-I-T, UC-4450A-T-5G, and UC-4454A-T-5G computers come with a nano-SIM card slot that can install two SIM cards for cellular communication.

To install the SIM card, do the following:

Step 1

- Remove the screw securing the SIM card holder cover on the front panel of the computer.



Step 2

- The SIM card tray can hold two SIM cards, one on each side.



- Install the first SIM card in the SIM1 slot and the second SIM card on the opposite side of the tray.



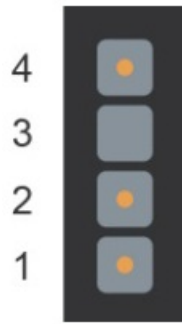
- To remove the SIM card tray, press the tray inwards, then release it to eject the tray. You can then pull out the tray.

Inserting a MicroSD Card

The UC-4400A comes with a microSD socket for storage expansion. The microSD socket is located on the lower part of the front panel. To install the card, remove the screw and the protection cover to access the socket, and then insert the microSD 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.

Connecting the Console Port

The console port is an RS-232 port located on the lower part of the front panel. To install the card, remove the screw and the protection cover to access the console port. You can connect a 4-pin pin header cable and use the port for debugging issues or system image upgrades.



Pin	Signal
1	TxD
2	RxD
3	NC
4	GND

Installing the Antennas

- UC-4450A and UC-4454A models come with four cellular antenna connectors (C1 to C4) on the front and top panels.
- UC-4430A and UC-4434A come with two cellular antenna connectors (C1 and C3) on the front panel.
- UC-4434, UC-4430, UC-4454, and UC-4450 models have two Wi-Fi antenna connectors (W1 and W2) on the top panel. Both come with RP-SMA female connectors.



- In addition, a GPS antenna connector is provided for the GPS module. All cellular and GPS connectors are of type SMA female.



FCC Statement

Regulatory Approval Statements

This equipment has been tested and found to comply with the limits for a Class A digital device, according 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 under 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 user will be required to correct the interference at his 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 20cm between the radiator & your body. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

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.

IC Statement

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 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).

Technical Support Contact Information

- www.moxa.com/support
- www.moxa.com/product

- Toll-free: 1-[888-669-2872](tel:888-669-2872) Tel: +1-[714-528-6777](tel:714-528-6777) Fax: +1-[714-528-6778](tel:714-528-6778)

Moxa Europe

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Moxa India

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Moxa China (Shanghai office)

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- Tel: +886-2-8919-1230 Fax: +886-2-8919-1231

Documents / Resources

	<p>MOXA UC-4400A Series Arm Based Computers [pdf] User Manual UC-4434A-I-T, UC-4400A, UC-4400A Series Arm Based Computers, UC-4400A Series, Arm Based Computers, Based Computers, Computers</p>
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References

- [User Manual](#)

Manuals+, Privacy Policy

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