

UC-4400A Series

Arm Cortex-A53 quad-core 64-bit computers with LTE/5G and Wi-Fi 6E capabilities



Features and Benefits

- Arm Cortex-A53 quad-core 1.6 GHz processor
- Integrated 5G Sub-6GHz NR module with dual SIM and AT&T approval
- 2 auto-sensing 10/100/1000 Mbps Ethernet ports
- CANbus and serial port with 2-kV isolation protection
- Moxa Industrial Linux with 10-year superior long-term support
- Wi-Fi 6E and 4G LTE Cat.4 support with optional accessory
- Dual SIM slots
- CE/FCC/UL certifications
- Ready for ISA/IEC 62443-4-2 SL2 certification
- -40 to 75°C operating temperature range (-40 to 70°C with cellular module enabled)

Certifications



Introduction

The UC-4400A computing platform is designed for embedded data-acquisition applications. The computer comes with up to four RS-232/422/485 serial ports, dual 10/100/1000 Mbps Ethernet ports, and up to 2 CAN ports as well as a Mini PCIe and M.2 E socket to support LTE Cat. 4 and Wi-Fi 6E modules. These versatile capabilities let users efficiently adapt the UC-4400A to a variety of complex communications solutions.

The UC-4400A is built around a Arm Cortex-A53 quad-core processor that has been optimized for use in energy monitoring systems, but is widely applicable to a variety of industrial solutions. With flexible interfacing options, this tiny, embedded computer is a reliable and secure gateway for data acquisition and data processing at field sites as well as a useful communications platform for many other large-scale deployments.

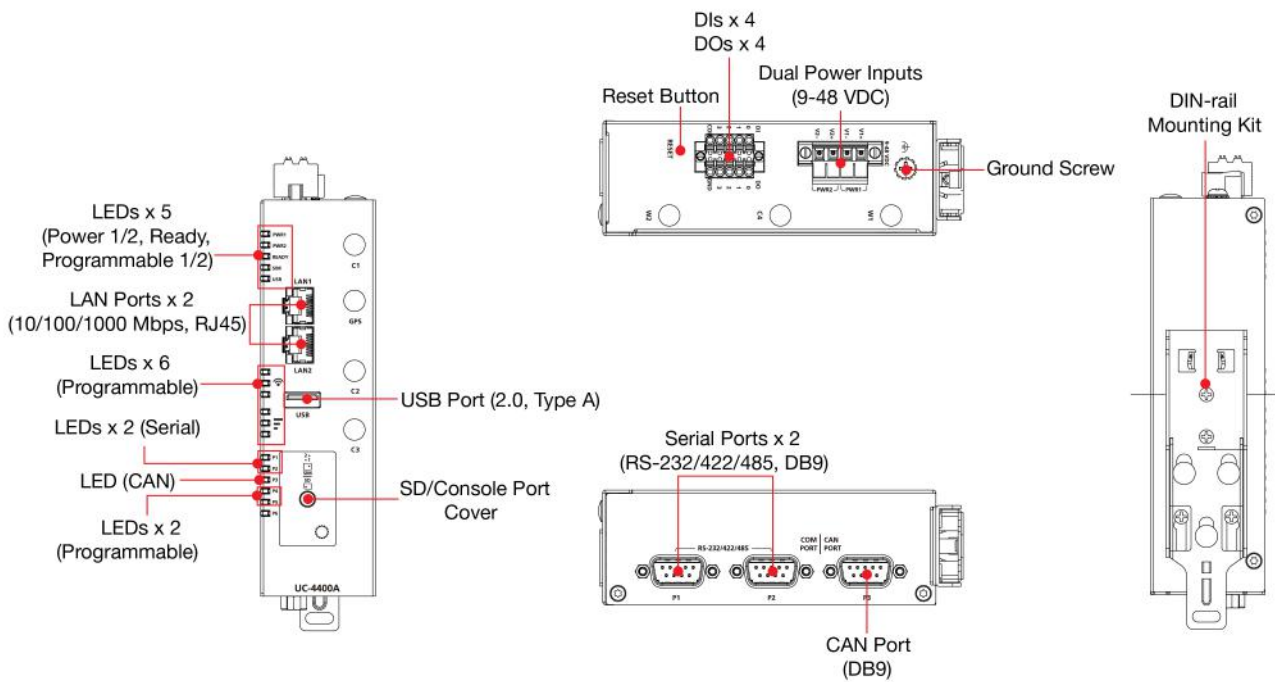
Wide temperature cellular-enabled models are available for extended-temperature applications. All units are thoroughly tested in a testing chamber, guaranteeing that the cellular-enabled computing platforms are suitable for wide-temperature applications.

Applications

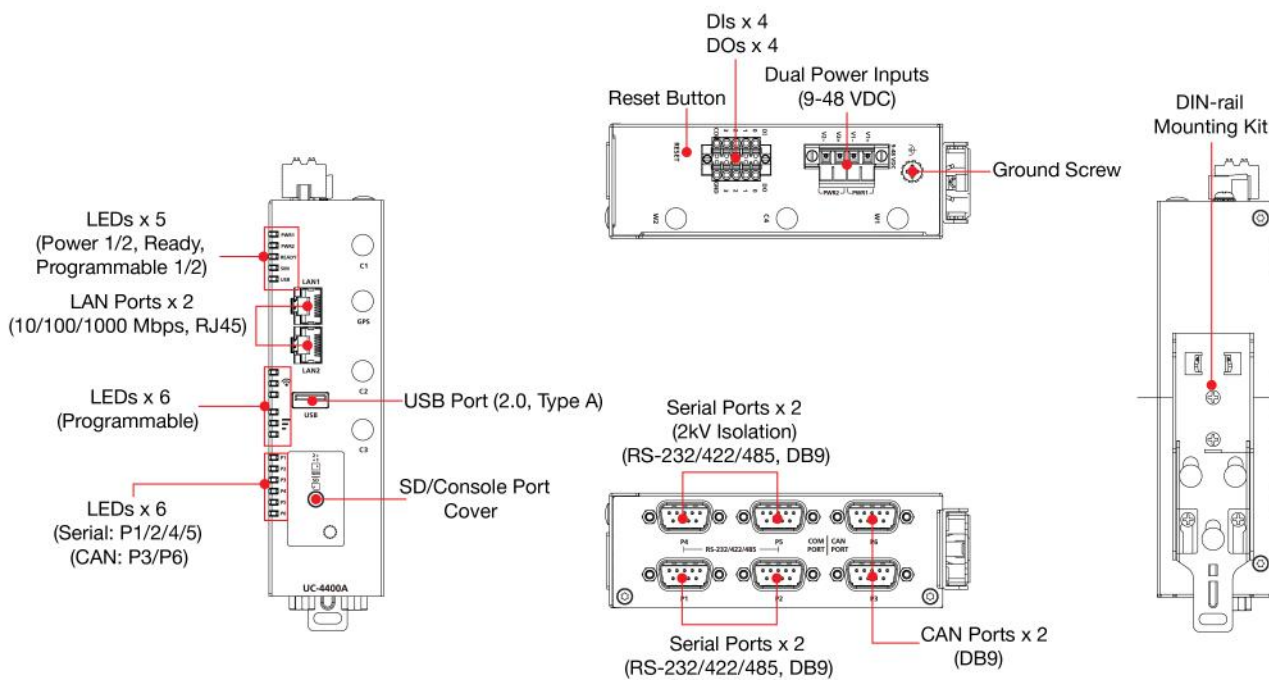
- Solar/wind energy
- Battery Energy Storage
- EV Charging Infrastructure
- Facility monitoring
- Machine monitoring
- Oil & Gas
- Water & Wastewater
- Intelligent transportation system
- Various IIoT gateway applications

Appearance

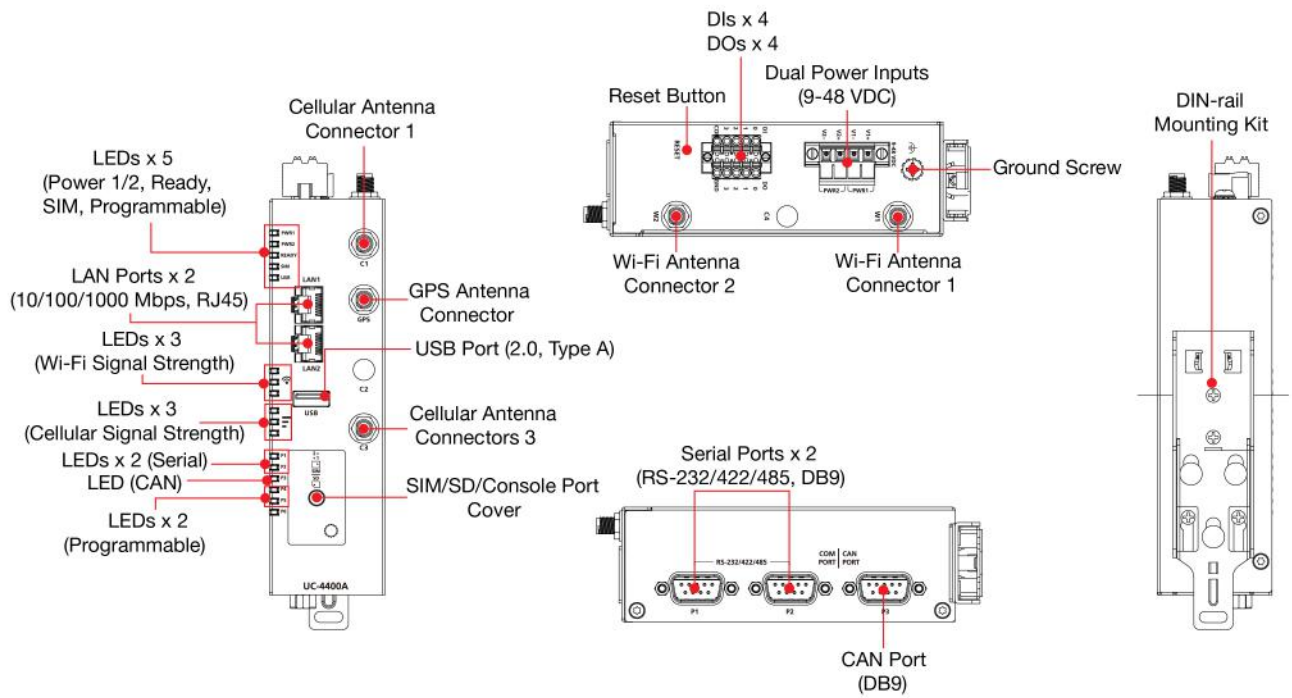
UC-4410A Models



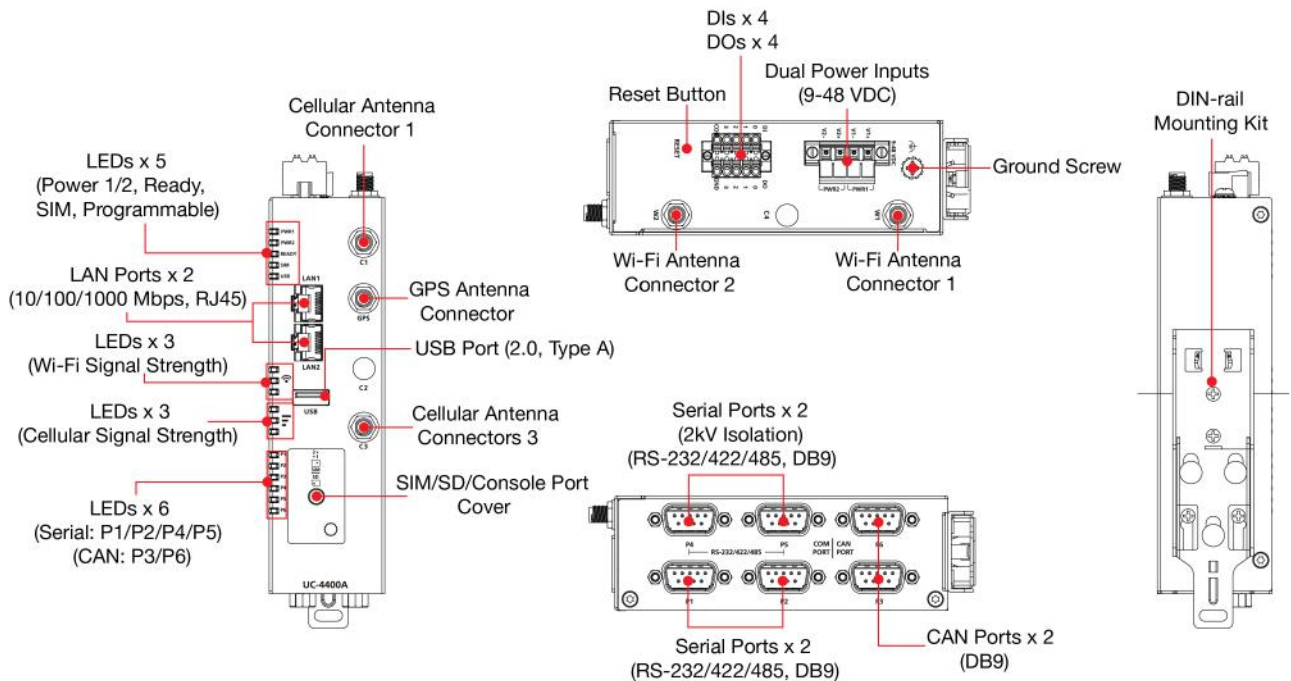
UC-4414A Models



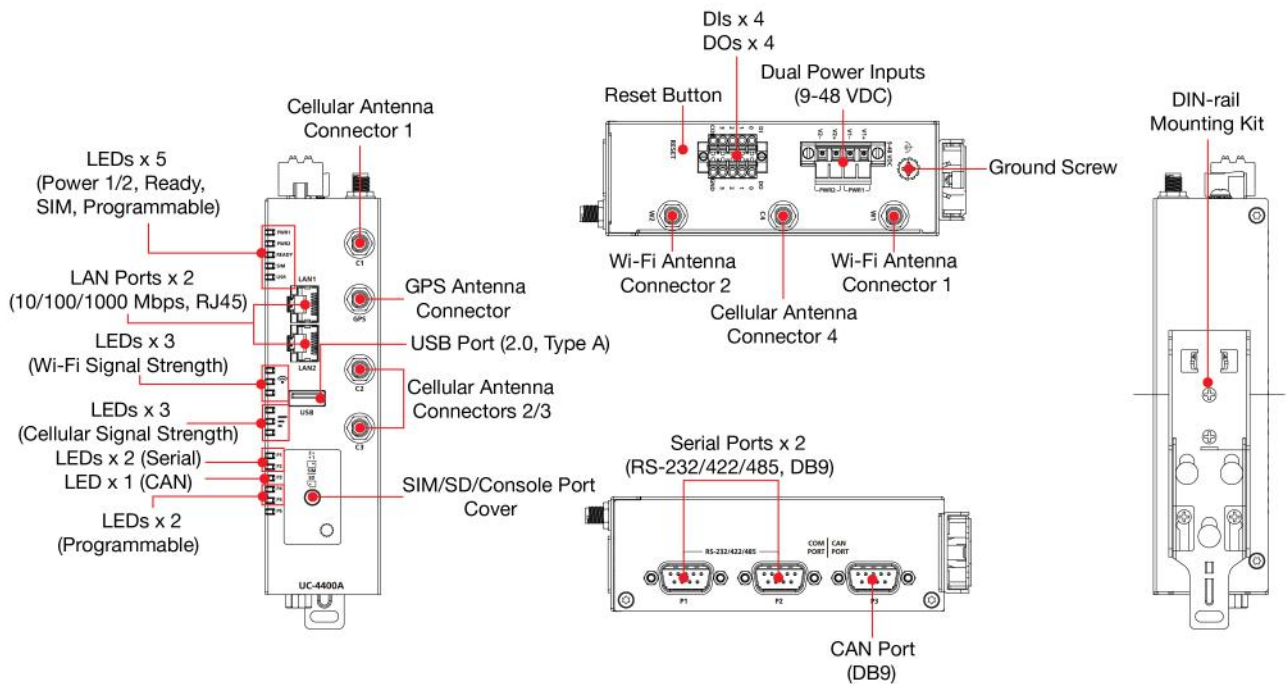
UC-4430A Models



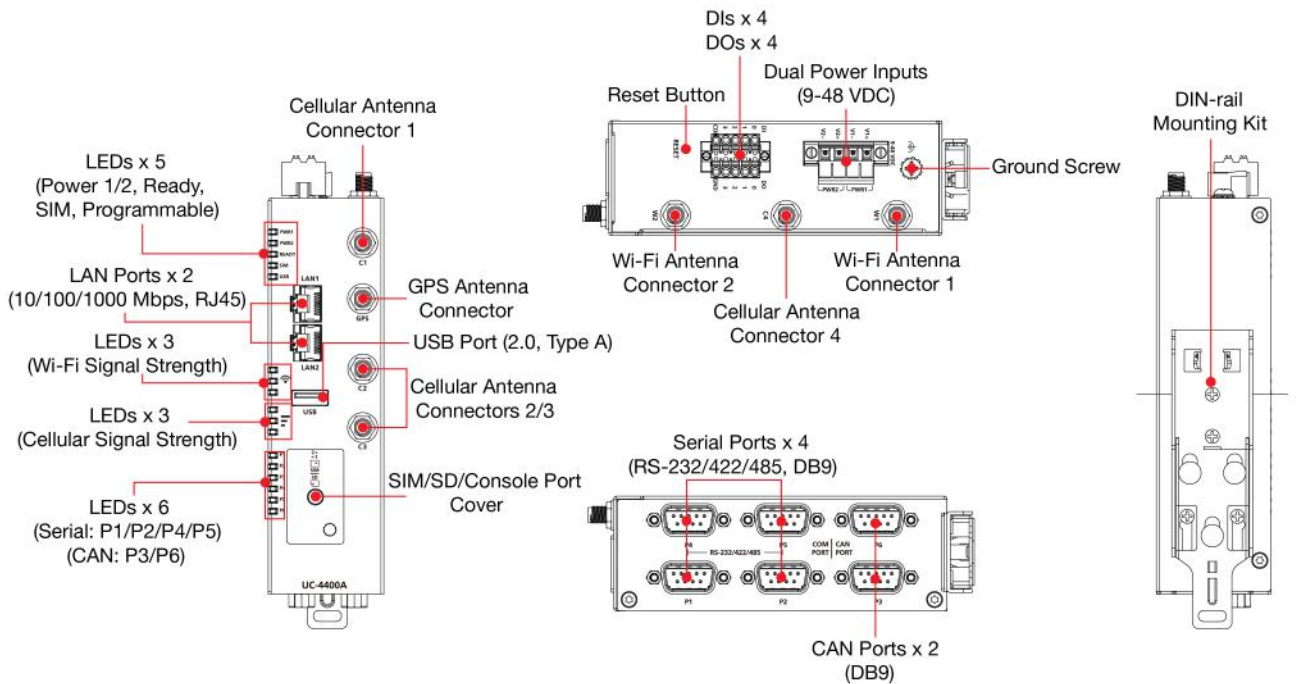
UC-4434A Models



UC-4450A Models



UC-4454A Models



Specifications

Computer

CPU	Arm Cortex-A53 quad-core 1.6 GHz
DRAM	4 GB LPDDR4
Supported OS	Moxa Industrial Linux 3 (Debian 11, kernel 5.10), 2031 EOL See www.moxa.com/MIL

Storage Pre-installed	16 GB eMMC
Expansion Slots	microSD socket x 1

Computer Interface

Ethernet Ports	Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 2
Serial Ports	UC-4414/UC-4434/UC-4454 models: RS-232/422/485 ports x 4 (software-selectable, DB9 male connector) UC-4410/UC-4430/UC-4450 models: RS-232/422/485 ports x 2 (software-selectable, DB9 male connector)
CAN Ports	UC-4414/UC-4434/UC-4454 models: CAN 2.0 A/B x 2 (DB9 male) UC-4410/UC-4430/UC-4450 models: CAN 2.0 A/B x 1 (DB9 male)
Digital Input	DIs x 4
Digital Output	DOs x 4
USB 2.0	USB 2.0 hosts x 1, type-A connectors
Wi-Fi Antenna Connector	UC-4430/ UC-4434/UC-4450/UC-4454 models: RP-SMA x 2
Cellular Antenna Connector	UC-4450/UC-4454 models: SMA x 4 UC-4430/ UC-4434 models: SMA x 2
GPS Antenna Connector	UC-4430/ UC-4434/UC-4450/UC-4454 models: SMA x 1
Console Port	RS-232 (TxD, RxD, GND), 3-pin header output (115200, n, 8, 1)
Expansion Slots	UC-4430/ UC-4434/UC-4450/UC-4454 models: M.2 E-key slot x 1 (for Wi-Fi) UC-4430/ UC-4434 models: mPCIe slot x 1 (for LTE)
SIM Format	UC-4430/ UC-4434/UC-4450/UC-4454 models: Nano
Number of SIMs	UC-4430/ UC-4434/UC-4450/UC-4454 models: 2
Buttons	Programmable button
TPM	TPM v2.0

Ethernet Interface

Magnetic Isolation Protection	1.5 kV (built-in)
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Serial Interface

No. of Ports	UC-4414/UC-4434/UC-4454 models: 4 UC-4410/UC-4430/UC-4450 models: 2
Baudrate	50 bps to 921.60 kbps
Data Bits	5, 6, 7, 8
Stop Bits	1, 1.5, 2
Parity	None, Even, Odd, Space, Mark
Flow Control	RTS/CTS, XON/XOFF ADDC (automatic data direction control) for RS-485 RTS Toggle (RS-232 only)

Isolation	UC-4414/4434 models: 2 kV (P4 and P5 ports)
Console Port	1 x 3-pin header to DB9 console port

Serial Signals

RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422	Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w	Data+, Data-, GND
RS-485-4w	Tx+, Tx-, Rx+, Rx-, GND

CAN Interface

No. of Ports	UC-4414/UC-4434/UC-4454 models: 2 UC-4410/UC-4430/UC-4450 models: 1
Baudrate	10 to 1000 kbps
Connector	DB9 male
Industrial Protocols	CAN 2.0A CAN 2.0B
Isolation	2 kV (built-in)
Signals	CAN_H, CAN_L, CAN_GND, CAN_SHLD, CAN_V+, GND

Digital Inputs

Digital Input Channels	DIs x 4
Connector	Screw-fastened Euroblock terminal
Sensor Type	Wet contact (NPN) Dry contact
Dry Contact	Logic 1: Open Logic 0: Close to GND
Wet Contact (COM to DI)	Logic 1: 0 to 3 VDC Logic 0: 10 to 30 VDC
Isolation	3K VDC

Digital Outputs

Digital Output Channels	DOs x 4
Connector	Screw-fastened Euroblock terminal
Current Rating	200 mA per channel
I/O Type	Sink
Voltage	0 to 30 VDC

Cellular Interface

5G NR Bands	5G NSA and SA bands: n1 (FDD 2100) MHz n2 (FDD 1900) MHz n3 (FDD 1800) MHz n5 (FDD 850) MHz n7 (FDD 2600) MHz n8 (FDD 900) MHz n20 (FDD 800) MHz n25 (FDD 1900) MHz n28 (FDD 700) MHz n29 (SDL 700) MHz n40 (TDD 2300) MHz n41 (TDD 2500) MHz n48 (TDD 3600) MHz n66 (FDD 1700 / AWS-3) MHz n71 (FDD 600) MHz n75 (SDL 1500) MHz n77 (TDD 3700) MHz n78 (TDD 3500) MHz n79 (TDD 4500) MHz
LTE Bands	B1 (FDD 2100) MHz B2 (FDD 1900) MHz B3 (FDD 1800) MHz B4 (FDD 1700 / AWS) MHz B5 (FDD 850) MHz B7 (FDD 2600) MHz B8 (FDD 900) MHz B12 (FDD 700ac) MHz B13 (FDD 700c) MHz B14 (FDD 700PS) MHz B17 (FDD 700bc) MHz B18 (FDD 800) MHz B19 (FDD 800) MHz B20 (FDD 800DD) MHz B25 (FDD 1900) MHz B26 (FDD 850) MHz B28 (FDD 700) MHz B29 (SDL 700) MHz B30 (FDD 2300) MHz B32 (SDL 1500) MHz B34 (TDD 2000) MHz B38 (TDD 2600) MHz B39 (TDD 1900) MHz B40 (TDD 2300) MHz B41 (TDD 2500) MHz B42 (TDD 3500) MHz B43 (TDD 3600) MHz B46 (TDD 5200) MHz B48 (TDD 3600) MHz B66 (FDD 1700 / AWS-3) MHz B71 (FDD 600) MHz
UMT Bands	B1 (2100) MHz B2 (1900) MHz B3 (1800) MHz B4 (AWS) B5 (850) MHz B6 (800) MHz B8 (900) MHz B19 (800) MHz

GPS Interface

Frequency Range	Wide-band GNSS: 1559 to 1606 MHz (recommended) GPS: BW NB GPS 2.046 MHz (centered at 1575.42 MHz) GLONASS: BW 8.3 MHz approx. (1597.05 to 1606 MHz) BeiDou: 4.092 MHz BW (1559.05 to 1563.14 MHz) Galileo: 4.092 MHz BW (centered at 1575.42 MHz)
Antenna Types Supported	Active antenna (default) Passive antenna

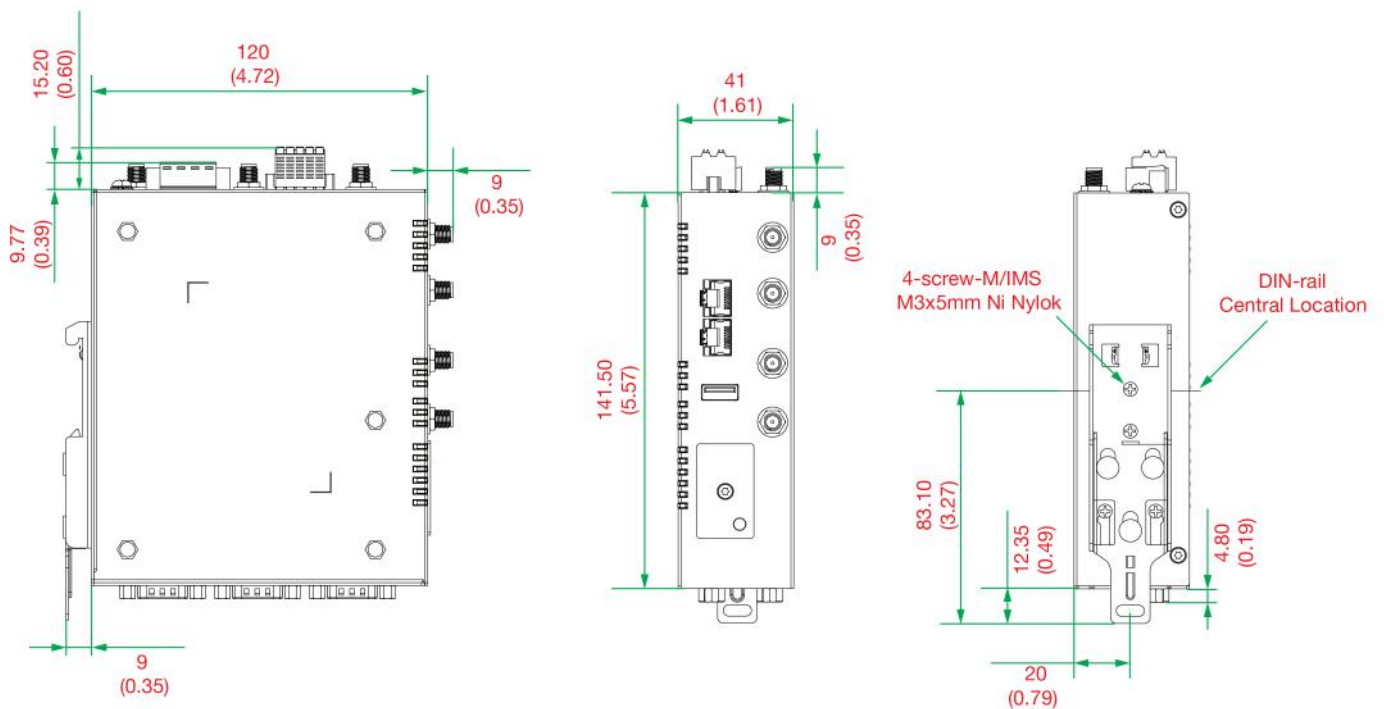
Time to First Fix (TTFF)	Hot start: 1 s Warm start: 27 s Cold start: 28 s
Sensitivity	Cold starts: -146 dBm Tracking: -161 dBm Acquisition: -148 dBm
Update Rate	Minimum 1 Hz
WLAN Interface	
WLAN Standards	802.11a/b/g/n/ac/ax (requires purchase of optional Wi-Fi accessory)
Frequency Band	2.4 GHz / 6 GHz 2.4 GHz / 5 GHz
Security Functions	
Hardware-based Security	TPM 2.0 Hardware Root of Trust Secure Boot
Intrusion Detection	Host-based Intrusion Detection
Security Tools	Security Diagnostic Tool Security Event Auditing Secure Update
Disk Protection	LUKS Disk Encryption
Recovery	One-step recovery to the last known secure state Dual-system design with automatic fallback
Reliability	Network Keep Alive Network Failover and Failback
LED Indicators	
System	Power x 2 READY (device bootup) x 1 SIM card indicator x 1
LAN	2 ports, 1 per port (10/100/1000 Mbps)
Serial	UC-4414/UC-4434/UC-4454 models: 1 LED per port for 4 serial ports UC-4410/UC-4430/UC-4450 models: 1 LED per port for 2 serial ports
CAN	UC-4414/UC-4434/UC-4454 models: 1 LED per port for 2 CAN ports UC-4410/UC-4430/UC-4450 models: 1 LED per port for 1 CAN port
Wireless Signal Strength	Cellular x 3 Wi-Fi x 3
User Programmable	1
Power Parameters	
No. of Power Inputs	Redundant dual inputs
Input Voltage	9 to 48 VDC
Input Current	UC-4410/UC-4414 models: 1.53 A @ 9 VDC, 0.21 A @ 48 VDC UC-4430/ UC-4434 models: 2.10 A @ 9 VDC, 0.27 A @ 48 VDC (with LTE accessory) UC-4450/ UC-4454 models: 2.13 A @ 9 VDC, 0.30 A @ 48 VDC
Power Consumption	UC-4410/UC-4414 models: 10 W @ 95% CPU loading

	UC-4430/UC-4434 models: 13 W (with LTE) @ 95% CPU loading UC-4450/UC-4454 models: 14.4 W @ 95% CPU loading
Power Connector	Screw-fastened Euroblock terminal
Reverse Polarity Protection	Supported
Reliability	
Automatic Reboot Trigger	External RTC (real-time clock)
Alert Tools	External WDT (watchdog timer)
Physical Characteristics	
Housing	Metal SECC
IP Rating	IP30
Dimensions	141.5 x 120 x 41 mm (5.57 x 4.72 x 1.62 in)
Weight	750 g (1.7 lb)
Installation	DIN-rail mounting Wall mounting (with optional kit)
Environmental Limits	
Operating Temperature	With Wi-Fi: -30 to 70°C (-22 to 158°F) With Cellular: -40 to 70°C (-40 to 158°F) Non-wireless Operation: -40 to 75°C (-40 to 167°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Standards and Certifications	
EMC	EN 55032/35 EN 61000-6-2/-6-4 UKCA RCM UC-441/443 models: KC UC-441 models: BSMI
EMI	FCC Part 15B Class A ICES-003 Class A EN 55032 Class A EN 61000-6-4 Class A
EMS	IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 1 kV; Signal: 1 kV IEC 61000-4-5 Surge: Power: line-to-line 2 kV, Signal: line-to-ground 4 kV IEC 61000-4-6 CS: 150 kHz to 80 MHz; Signal: 10 V IEC 61000-4-8 PFMF
Radio Frequency	UC-445 models: FCC CE (RED) ISED RCM NCC
Carrier Approvals	UC-445 models: AT&T Verizon

	Expected completion Q1, 2025 PTCRB
International Approval	FCC CE ISED UKCA RCM UC-441/443 models: KC UC-441 models: BSMI UC-445 models: NCC (Q1, 2025)
Safety	IEC 62368-1 EN 62368-1 UL 62368-1 UC-441 models: BSMI
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-64 2 grms @ 5 to 500 Hz, random wave, 1 hr per axis (without USB devices attached)
Green Product	RoHS, CRoHS, WEEE
MTBF	
Time	UC-4410A-T: 1,311,070 hrs UC-4414A-I-T: 1,097,567 hrs UC-4430A-T: 1,161,321 hrs UC-4434A-I-T: 813,255 hrs UC-4450A-T-5G: 982,234 hrs UC-4454A-T-5G: 892,697 hrs
Standards	Telcordia (Bellcore) Standard TR/SR
Warranty	
Warranty Period	5 years
Details	See www.moxa.com/warranty
Package Contents	
Device	1 x UC-4400A Series computer
Documentation	1 x quick installation guide 1 x warranty card

Dimensions

Unit: mm (inch)



Ordering Information

Model Name	Operating System	CPU	Serial Ports	CAN Ports	M.2 E-key Slot	M.2 B-key Slot	mPCIe	Operating Temperature
UC-4410A-T	Default: MIL3 Standard Order MIL3 Secure through UC-4400A (CTO)	Arm Cortex-A53 quad-core 1.6 GHz	2	1	–	–	–	-40 to 75°C
UC-4414A-I-T	Default: MIL3 Standard Order MIL3 Secure through UC-4400A (CTO)	Arm Cortex-A53 quad-core 1.6 GHz	4 (2 with isolation protection)	2	–	–	–	-40 to 75°C
UC-4430A-T	Default: MIL3 Standard Order MIL3 Secure through UC-4400A (CTO)	Arm Cortex-A53 quad-core 1.6 GHz	2	1	Reserved for Wi-Fi 6E	–	Reserved for LTE	-40 to 70°C
UC-4434A-I-T	Default: MIL3 Standard Order MIL3 Secure through UC-4400A (CTO)	Arm Cortex-A53 quad-core 1.6 GHz	4 (2 with isolation protection)	2	Reserved for Wi-Fi 6E	–	Reserved for LTE	-40 to 70°C
UC-4450A-T-5G	Default: MIL3 Standard Order MIL3 Secure through UC-4400A (CTO)	Arm Cortex-A53 quad-core 1.6 GHz	2	1	Reserved for Wi-Fi 6E	5G Sub-6GHz NR module	–	-40 to 70°C
UC-4454A-T-5G	Default: MIL3 Standard Order MIL3 Secure through UC-4400A (CTO)	Arm Cortex-A53 quad-core 1.6 GHz	4	2	Reserved for Wi-Fi 6E	5G Sub-6GHz NR module	–	-40 to 70°C

Accessories (sold separately)

Power Adapters

PWR-12150-CN-SA-T	Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, CN plug, -40 to 75°C operating temperature
PWR-12150-EU-SA-T	Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, EU plug, -40 to 75°C operating temperature
PWR-12150-UK-SA-T	Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, UK plug, -40 to 75°C operating temperature
PWR-12150-AU-SA-T	Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, AU plug, -40 to 75°C operating temperature

PWR-12150-USJP-SA-T	Locking barrel plug, 12 VDC 1.5 A, 100 to 240 VAC, US/JP plug, -40 to 75°C operating temperature
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Cables

CBL-F9DPF1x4-BK-100	Console cable with 4-pin connector, 1 m
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Wall-Mounting Kits

UC-4400A Wall-mounting Kit	Wall-mounting kit with 2 plates (44.8 x 99 x 5.7 mm each) and 5 M3 x 5 mm screws for the UC-4400A Series
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Wireless Packages

UC-4400A-LTE-CAT4-WW	LTE package with a Telit LE910C4-WWxD LTE Cat. 4 mPCIe card for global coverage, 2 thermal pads, 2 heat sinks, 3 M2.5 x 5 mm screws for UC-443xA models
UC-4400A-WLAN22-AX	Wi-Fi 6E package with an EMWICOM WMX7205-1 Wi-Fi 6E M.2 card, 2 thermal pads, 2 heat sinks, 2 M2.5 x 5 mm screws for UC-443xA/445xA models

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