UC-2200A Series

Arm Cortex-A53 dual-core 64-bit 1 GHz Industrial Computers with built-in LTE Cat. 4 module, -40 to 70°C operating temperature

Features and Benefits

- Armv8 Cortex-A53 dual-core 1 GHz processor
- 2 auto-sensing 10/100/1000 Mbps Ethernet ports
- Rich set of programmable LEDs and a programmable button for easy installation and maintenance
- LTE-ready computer with Verizon/AT&T certification and industrial-grade CE/FCC/UL certifications
- -40 to 70°C operating temperature range
- Moxa Industrial Linux with 10-year superior long-term support
- Compliance with IEC 62443-4-2 Security Level 2 requirements

Certifications

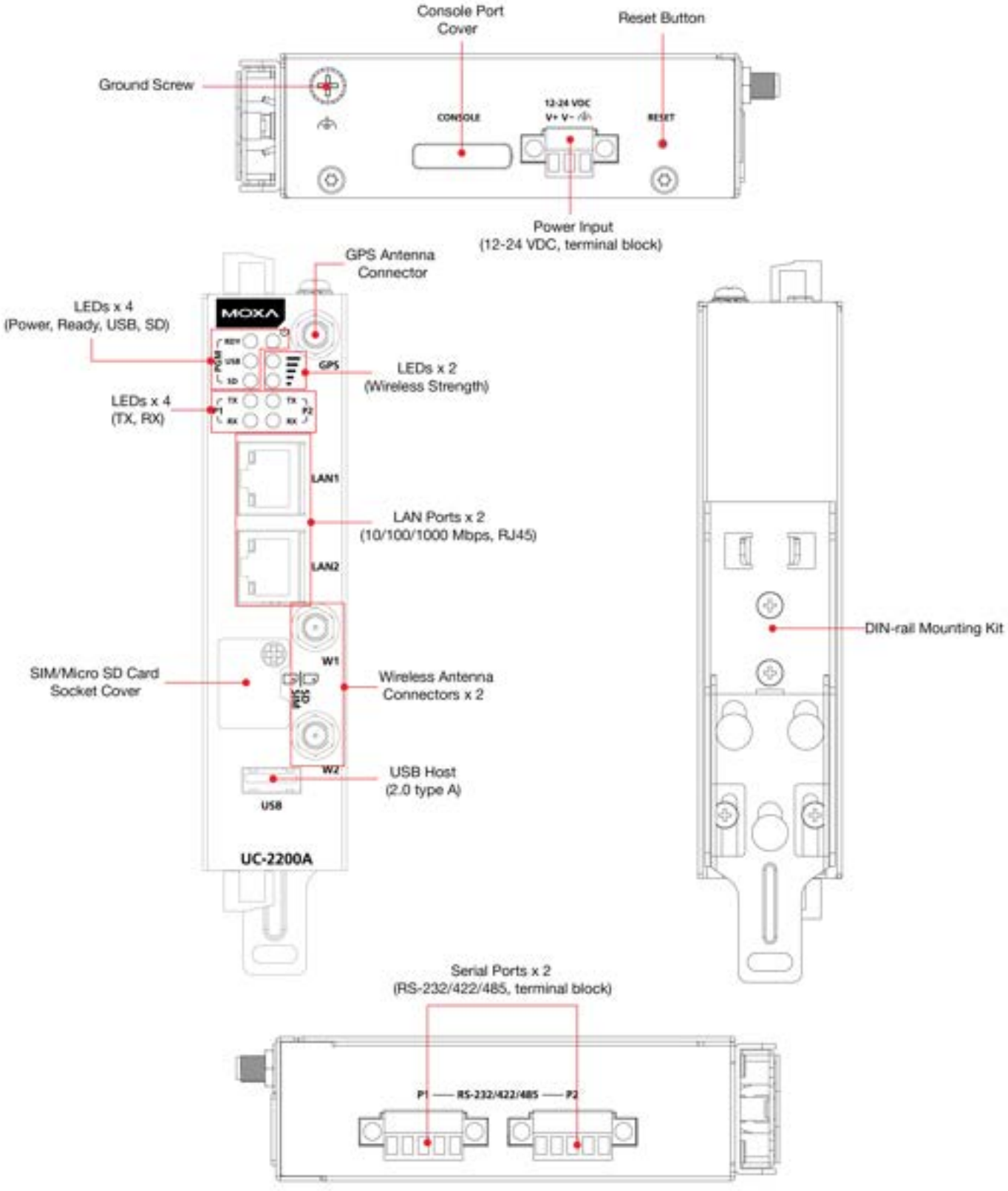
Introduction

The UC-2200A computing platform is designed for embedded data acquisition applications. The computer comes with dual RS-232/422/485 serial ports and dual 10/100/1000 Mbps Ethernet ports, as well as a Mini PCIe socket to support a wireless module. These versatile capabilities let users efficiently adapt the UC-2200A to a variety of complex communications solutions.

The UC-2200A is built around a Cortex-A53 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 processing at field sites as well as a useful communications platform for many other large-scale deployments.

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

Appearance


Console Port Cover
Reset Button
Ground Screw
CONSOLE
12-24 VDC
V+ V-
RESET
Power Input
(12-24 VDC, terminal block)
GPS Antenna Connector
LEDs x 4
(Power, Ready, USB, SD)
LEDs x 2
(Wireless Strength)
LEDs x 4
(TX, RX)
LAN1
LAN2
LAN Ports x 2
(10/100/1000 Mbps, RJ45)
DIN-rail Mounting Kit
SIM/Micro SD Card
Socket Cover
W1
Wireless Antenna
Connectors x 2
W2
USB Host
(2.0 type A)
USB
UC-2200A
Serial Ports x 2
(RS-232/422/485, terminal block)
P1 — RS-232/422/485 — P2

Specifications

Computer

CPU	Armv8 Cortex-A53 dual-core 1GHz
DRAM	2 GB DDR4
Pre-installed OS	Moxa Industrial Linux (Debian 11, kernel 5.10), 2031 EOL See www.moxa.com/MIL
Storage Pre-installed	16 GB eMMC
Storage Slot	micro SD slots x 1

Computer Interface

Ethernet Ports	Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 2
Serial Channels	RS-232/422/485 ports x 2 (software-selectable, terminal-block connector)
USB 2.0	USB 2.0 hosts x 1, type-A connectors
Console Port	RS-232 (TxD, RxD, GND), 4-pin header output (115200, n, 8, 1)
Expansion Slots	mPCIe slots x 1
Number of SIMs	1
SIM Format	Nano
Buttons	Reset button
TPM	TPM v2.0

Ethernet Interface

Ethernet Ports	Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 2
Magnetic Isolation Protection	1.5 kV (built-in)

Serial Interface

Baudrate	300 bps to 921.6 kbps
Data Bits	5, 6, 7, 8
Parity	None, Even, Odd, Space, Mark
Stop Bits	1, 1.5, 2
Flow Control	RTS/CTS XON/XOFF Automatic Data Direction Control (ADDC) for RS-485 RTS Toggle (RS-232 only)

Serial Signals

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

Cellular Interface

Cellular Standards	LTE Cat. 4
Band Options	UC-2222A-T-US: LTE Band 2 (1900 MHz) / LTE Band 4 (1700 MHz) / LTE Band 5 (850 MHz) / LTE Band 12 (700 MHz) / Band 13 (700 MHz) / Band 14 (700 MHz) / Band 66 (1700 MHz) / Band 71 (600 MHz) UMTS/HSPA B5 (850 MHz) / B4 (1700 MHz) / B2 (1900 MHz) Carrier Approvals: Verizon, AT&T UC-2222A-T-EU: LTE Band 1 (2100 MHz) / LTE Band 3 (1800 MHz) / Band 7 (2600 MHz) / LTE Band 8 (900 MHz) / LTE Band 20 (800 MHz)/ LTE Band 28A (700 MHz) UMTS/HSPA B8 (900 MHz) / B3 (1800 MHz) / B1 (2100 MHz) GSM DCS (1800 MHz) / GSM 900 (900 MHz) UC-2222A-T-AP: LTE Band 1 (2100 MHz) / LTE Band 3 (1800 MHz) / LTE Band 5 (850 MHz) / LTE Band 8 (900 MHz) / LTE Band 9 (1800 MHz) / LTE Band 18 (800 MHz) / LTE Band 19 (800 MHz) / LTE Band 26 (850 MHz) / LTE Band 28 (700 MHz) UMTS/HSPA B19 (800 MHz) / B8 (900 MHz) / B6 (850 MHz) / B5 (850 MHz) / B1 (2100 MHz)

GPS Interface

Receiver Types	GPS, GLONASS, BeiDou, Galileo, QZSS
Accuracy	Position: 2.0 m @CEP50
Time to First Fix (TTFF)	Hot start: 1.1 s Warm start: 22.1 s Cold start: 29.9 s
Sensitivity	Acquisition: -147 dBm Cold starts: -145 dBm Tracking: -160 dBm
Update Rate	1 Hz

LED Indicators

System	Power x 1 SW ready (programmable) USB (programmable) x 1 micro SD slot (programmable) x 1 Serial Ports: TX x 2, RX x 2
Wireless Signal Strength	Cellular x 2, programmable Disconnected: None Very Poor Signal: 1 LED (blinking) Poor Signal: 1 LED Good Signal: 2 LEDs

Power Parameters

Input Current	UC-2222A-T: 600 mA @ 12 VDC 300 mA @ 24 VDC UC-2222A-T-US/EU/AP: 900 mA @ 12 VDC 450 mA @ 24 VDC
Input Voltage	12 to 24 VDC
Power Consumption	Models Without Built-in LTE: 4.5 W (without external USB device) 7.2 W (with external USB device attached) Models With Built-in LTE: 7.8 W (without external USB device) 10.5 W (with external USB device)

Reliability

Alert Tools	External RTC (real-time clock)
Automatic Reboot Trigger	External WDT (watchdog timer)

Physical Characteristics

Housing	Metal SECC
IP Rating	IP30
Dimensions	102 x 32 x 128 mm (4.20 x 1.26 x 5.04 in)
Weight	546 g (1.2 lb)
Installation	DIN-rail mounting Wall mounting (with optional kit)

Environmental Limits

Operating Temperature	UC-2222A-T: -40 to 75°C (-40 to 167°F) UC-2222A-T-US/EU/AP (with LTE module): -40 to 70°C (-40 to 158°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Shock	IEC 60068-2-27
Vibration	2 Grms @ IEC 60068-2-64, random wave, 5-500 Hz, 1 hr per axis (without USB devices attached)

Standards and Certifications

EMC	EN 55032/35 EN 61000-6-2/-6-4 UKCA RCM KC 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 61000-4-3 RS: 1.4 GHz to 6 GHz: 3 V/m IEC 61000-4-4 EFT: Power: 1 kV; Signal: 1 kV IEC 61000-4-5 L-PE: 1 kV ; L –L: 0.5 kV; Signal: 1 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Cybersecurity	EN 18031-1
Safety	EN 62368-1 UL 62368-1
Hazardous Locations	ATEX Class I Division 2
International Approval	UKCA RCM FCC CE NCC ISED

	KC BSMI
Radio Frequency	FCC UC-2222A-T-EU: CE (RED) UC-2222A-T-AP: RCM, NCC
Carrier Approvals	AT&T Verizon PTCRB
Green Product	RoHS, CRoHS, WEEE

MTBF

Time	UC-2222A-T: 924,676 hrs UC-2222A-T-US: 865,122 hrs UC-2222A-T-EU: 866,622 hrs UC-2222A-T-AP: 870,393 hrs
Standards	Telcordia (Bellcore) Standard TR/SR

Warranty

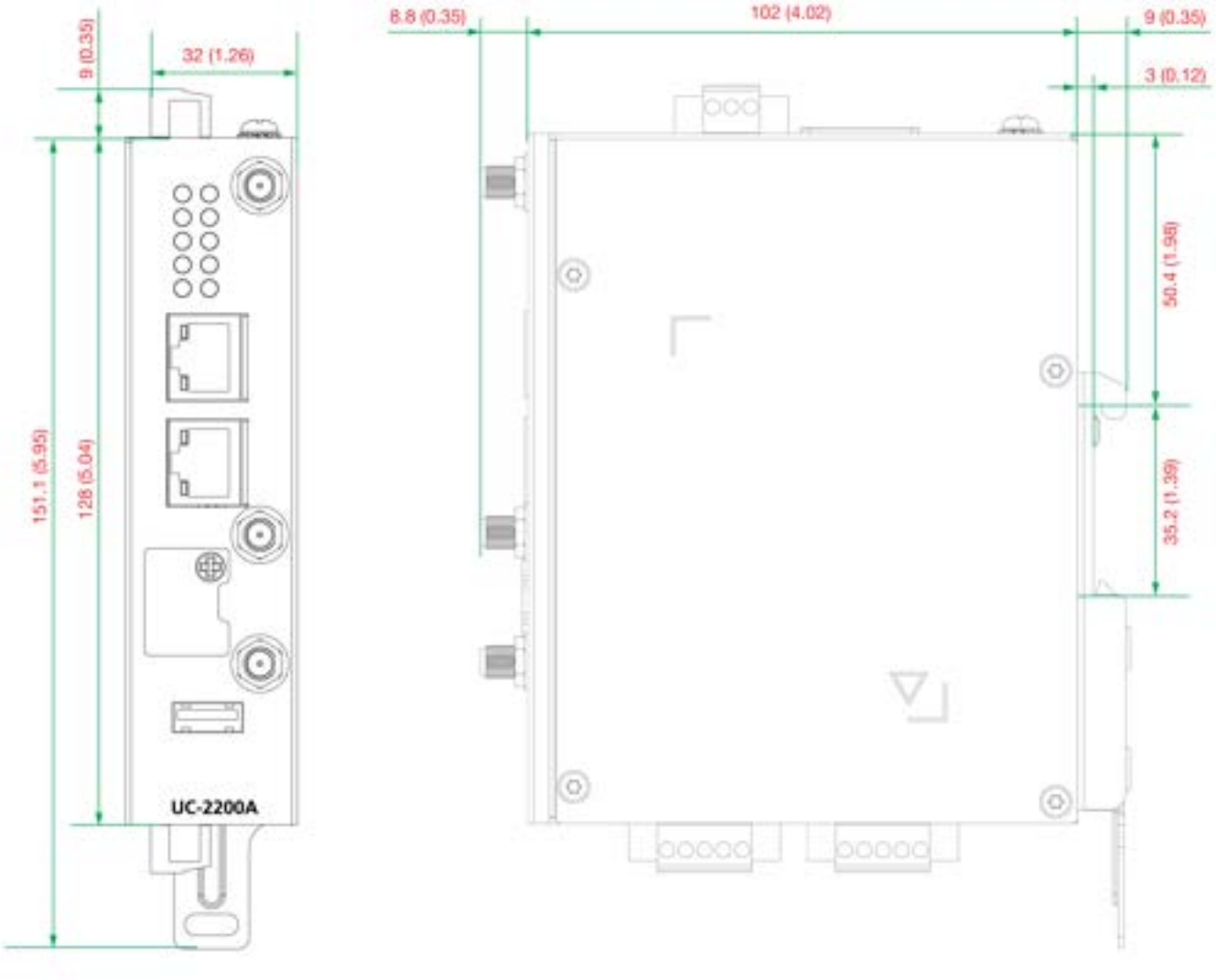
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x UC-2200A Series computer
Documentation	1 x quick installation guide 1 x warranty card

Dimensions

Unit: mm (inch)



Ordering Information

Model Name	CPU	OS	mPCIe Slot	Operating Temperature
UC-2222A-T	Armv8 Cortex-A53, dual core, 1 GHz	Default: MIL3 Standard Order MIL3 Secure with UC-2200A (CTO)	mPCIe slot x 1, reserved for wireless module	-40 to 75°C
UC-2222A-T-EU	Armv8 Cortex-A53, dual core, 1 GHz	Default: MIL3 Standard Order MIL3 Secure with UC-2200A (CTO)	mPCIe slot x 1, European region LTE Cat. 4 module preinstalled	-40 to 70°C
UC-2222A-T-AP	Armv8 Cortex-A53, dual core, 1 GHz	Default: MIL3 Standard Order MIL3 Secure with UC-2200A (CTO)	mPCIe slot x 1, APAC region LTE Cat. 4 module preinstalled	-40 to 70°C
UC-2222A-T-US	Armv8 Cortex-A53, dual core, 1 GHz	Default: MIL3 Standard Order MIL3 Secure with UC-2200A (CTO)	mPCIe slot x 1, U.S. region LTE Cat. 4 module preinstalled	-40 to 70°C

Accessories (sold separately)

Power Adapters

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
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-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-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

Cables

CBL-F9DPF1x4-BK-100	Console cable with 4-pin connector, 1 m
CBL-PJTB-10	Non-locking barrel plug to bare-wire cable

Wireless Packages

WP-MOD-W-SparkLAN-Wi-Fi 5	Wireless package for MIL3 supported UC computers with Wi-Fi 5 mPCIe card, 2 antenna cables, 2 thermal pads, 1 heatsink, 2 M2 x 3 mm screws (attach Wi-Fi bracket to PCB), 3 M3 x 6 mm screws (attach heatsink to PCB)

Antennas

ANT-WDB-ARM-0202	2 dBi at 2.4 GHz or 2 dBi at 5 GHz, RP-SMA (male), dual-band, omnidirectional antenna
ANT-LTE-ASM-05 BK	704-960/1710-2620 MHz, LTE stick antenna, 5 dBi
ANT-LTEUS-ASM-01	GSM/GPRS/EDGE/UMTS/HSPA/LTE, 1 dBi, omnidirectional rubber-duck antenna
ANT-LTE-OSM-06-3m BK MIMO	Multiband antenna with screw-fastened mounting option for 700-2700/2400-2500/5150-5850 MHz frequencies
ANT-5G-OSM-04	4 dBi LTE/5G NR dipole antenna with SMA (male) connector
ANT-GPS-CSM-04-3m BK	20 dBi at 1575 to 1605 MHz, SMA (male), right-hand circular polarization (RHCP), active GPS antenna, 3-meter cable

Wireless Antenna Cables

A-CRF-SMIF-100	Wireless antenna cable package with 2 100-cm cables (SMA connectors)

Wall-Mounting Kits

WK-33-01	Wall-mounting kit with 2 plates (98.6 x 33.8 x 5 mm), 4 TMS M3 4-mm screws

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