UC-8200 Series

Arm Cortex-A7 dual-core 1 GHz IIoT gateways with built-in LTE Cat. 4, 1 mini PCIe expansion slot for a Wi-Fi module, 1 CAN port, 4 DIs, 4 DOs

Features and Benefits

- Armv7 Cortex-A7 dual-core 1 GHz

- Moxa Industrial Linux with 10-year superior long-term support

- LTE-ready computer with Verizon/AT&T certification and industrial-grade CE/FCC/UL certifications

- Dual-SIM slots

- 2 auto-sensing 10/100/1000 Mbps Ethernet ports

- Integrated LTE Cat. 4 module with US/EU/APAC band support

- 1 CAN port supports CAN 2.0A/B

- microSD socket for storage expansion

- Programmable LEDs and a programmable button for easy installation and maintenance

- -40 to 85°C wide temperature range and -40 to 70°C with LTE enabled

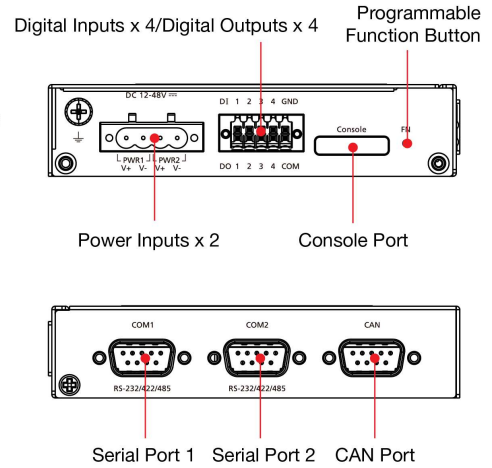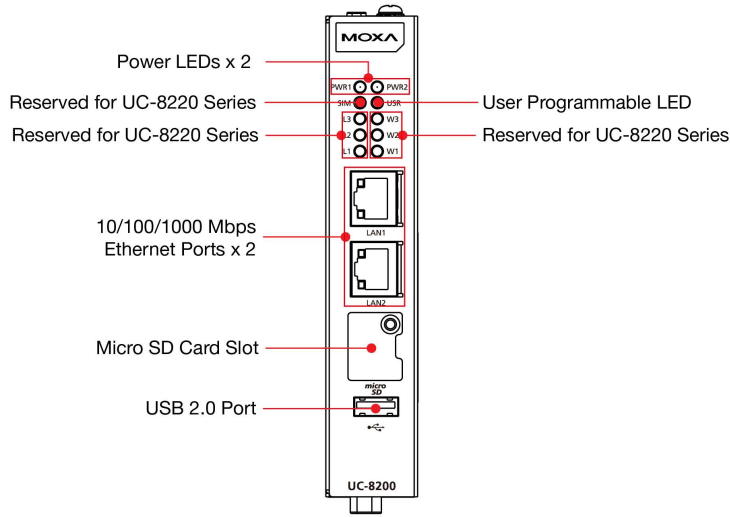## Certifications

Introduction

The UC-8200 computing platform is designed for embedded data acquisition applications. The computer comes with dual RS-232/422/485 serial ports, dual 10/100/1000 Mbps Ethernet ports, and one CAN port as well as dual Mini PCIe socket to support Wi-Fi/cellular modules. These versatile capabilities let users efficiently adapt the UC-8200 to a variety of complex communications solutions.

The UC-8200 is built around a Cortex-A7 dual 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 processing at field sites as well as a useful communications platform for many other large-scale deployments.
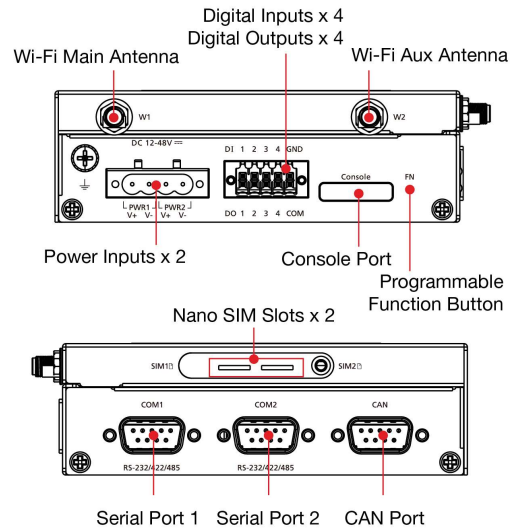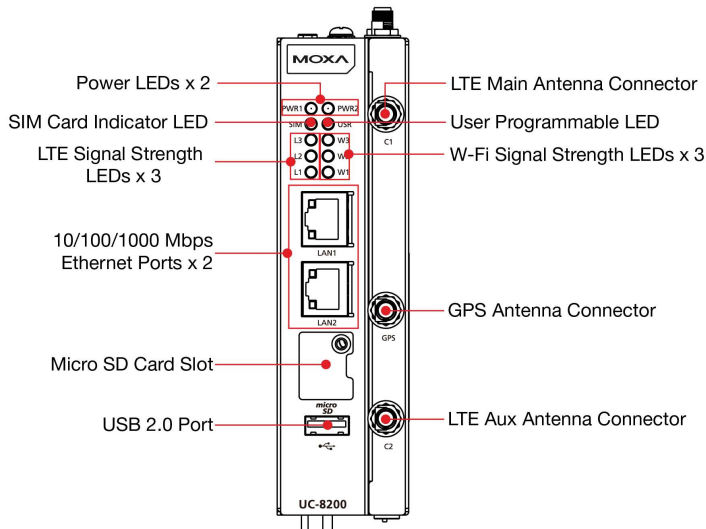
Wide temperature LTE-enabled models are available for extended temperature applications. All units are thoroughly tested in a testing chamber, guaranteeing that the LTE-enabled computing platforms are suitable for wide-temperature applications.

Appearance

UC-8210

Power LEDs x 2
Reserved for UC-8220 Series — User Programmable LED
Reserved for UC-8220 Series — Reserved for UC-8220 Series

10/100/1000 Mbps Ethernet Ports x 2

Micro SD Card Slot

USB 2.0 Port

Digital Inputs x 4/Digital Outputs x 4 — Programmable Function Button

Power Inputs x 2 — Console Port

Serial Port 1   Serial Port 2   CAN Port

UC-8220

Power LEDs x 2 — LTE Main Antenna Connector
SIM Card Indicator LED — User Programmable LED
LTE Signal Strength LEDs x 3 — W-Fi Signal Strength LEDs x 3

10/100/1000 Mbps Ethernet Ports x 2

Micro SD Card Slot — GPS Antenna Connector

USB 2.0 Port — LTE Aux Antenna Connector

Digital Inputs x 4
Digital Outputs x 4
Wi-Fi Main Antenna — Wi-Fi Aux Antenna

Power Inputs x 2 — Console Port
Programmable Function Button

Nano SIM Slots x 2

Serial Port 1   Serial Port 2   CAN Port

Specifications

Computer

CPU	Armv7 Cortex-A7 dual-core 1 GHz
DRAM	2 GB DDR3L
Storage Pre-installed	8 GB eMMC
Pre-installed OS	Moxa Industrial Linux (Debian 9, Kernel 4.4) See www.moxa.com/MIL
Expansion Slots	MicroSD (SD 3.0) socket x 1

www.moxa.com

Computer Interface

TPM	UC-8210-T-LX-S: TPM v2.0 UC-8220-T-LX-AP-S: TPM v2.0 UC-8220-T-LX-EU-S: TPM v2.0 UC-8220-T-LX-US-S: TPM v2.0
Ethernet Ports	Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 2
Serial Ports	RS-232/422/485 ports x 2, software selectable (DB9 male)
CAN Ports	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	RP-SMA x 2 (UC-8220 only)
Cellular Antenna Connector	SMA x 2 (UC-8220 only)
GPS Antenna Connector	SMA x 1 (UC-8220 only)
Expansion Slots	mPCIe slot x 2 (UC-8220-T-LX) mPCIe slot x 1 (UC-8220-T-LX US/EU/AP models)
SIM Format	Nano (UC-8220 only)
Number of SIMs	2 (UC-8220 only)
Buttons	Programmable button

Ethernet Interface

Magnetic Isolation Protection	1.5 kV (built-in)

Serial Interface

Console Port	1 x 4-pin header to DB9 console port
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

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	1
Connector	DB9 male
Baudrate	10 to 1000 kbps
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

Connector	Screw-fastened Euroblock terminal
Dry Contact	Off: open On: short to GND
Isolation	3K VDC
Sensor Type	Wet contact (NPN) Dry contact
Wet Contact (DI to COM)	On: 10 to 30 VDC Off: 0 to 3 VDC

Digital Outputs

Connector	Screw-fastened Euroblock terminal
Current Rating	200 mA per channel
I/O Type	Sink
Voltage	24 VDC nominal, open collector to 30 VDC

Cellular Interface

Cellular Standards	LTE CAT-4
Band Options	US model: LTE Bands: Band 2 (1900 MHz) / Band 4 (1700 MHz) / Band 5 (850 MHz) / Band 13 (700 MHz) / Band 14 (700 MHz) UMTS Bands: Band 2 (1900 MHz) / Band 5 (850 MHz) Carrier Approval: Verizon, AT&T EU model: LTE Bands: Band 1 (2100 MHz) / Band 3 (1800 MHz) / Band 5 (850 MHz) / Band 7 (2600 MHz) / Band 8 (900 MHz) / LTE Band 20 (800 MHz) UMTS Bands: Band 1 (2100 MHz) / Band 2 (1900 MHz) / Band 5 (850 MHz) / Band 8 (900 MHz) AP model: LTE Bands: Band 1 (2100 MHz) / Band 3 (1800 MHz) / Band 5 (850 MHz) / Band 7 (2600 MHz) / Band 8 (900 MHz) / Band 28 (700 MHz) UMTS Bands: Band 1 (2100 MHz) / Band 2 (1900 MHz) / Band 5 (850 MHz) / Band 8 (900 MHz)

GPS Interface

Receiver Types	72-channel u-blox M8 engine GPS/GLONASS/Galileo
Accuracy	Position: 2.5 m CEP SBAS: 2.0 m CEP
Acquisition	Aided starts: 3 sec Cold starts: 26 sec
Sensitivity	Cold starts: -148 dBm Tracking: -164 dBm
Time Pulse	0.25 Hz to 10 MHz

LED Indicators

System	Power x 2 Programmable x 1 SIM card indicator x 1
Wireless Signal Strength	Cellular/Wi-Fi x 6

Power Parameters

No. of Power Inputs	Redundant dual inputs
Input Voltage	12 to 48 VDC
Power Consumption	10 W
Input Current	0.8 A @ 12 VDC

Reliability

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

Physical Characteristics

Dimensions	141.5 x 120 x 39 mm (5.7 x 4.72 x 1.54 in) for UC-8220 141.5 x 120 x 27 mm (5.7 x 4.72 x 1.06 in) for UC-8210
Housing	SECC Metal
Installation	DIN-rail mounting, Wall mounting (with optional kit)
IP Rating	IP30
Weight	UC-8210: 560 g (1.23 lb) UC-8220: 750 g (1.65 lb)

Environmental Limits

Ambient Relative Humidity	5 to 95% (non-condensing)
Operating Temperature	UC-8210-T-LX: -40 to 85°C (-40 to 185°F) UC-8210-T-LX-S: -40 to 85°C (-40 to 185°F) UC-8220-T-LX: -40 to 70°C (-40 to 158°F) UC-8220-T-LX-US-S: -40 to 70°C (-40 to 158°F) UC-8220-T-LX-EU-S: -40 to 70°C (-40 to 158°F) UC-8220-T-LX-AP-S: -40 to 70°C (-40 to 158°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
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

Safety	UL 62368-1, EN 62368-1
EMC	EN 55032/35, EN 61000-6-2/-6-4
EMI	CISPR 32, FCC Part 15B 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: 2 kV; Signal: 1 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF IEC 61000-4-5 Surge: Power: 0.5 kV; Signal: 1 kV

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Hazardous Locations	Class I Division 2, ATEX
Carrier Approvals	Verizon AT&T
Green Product	RoHS, CRoHS, WEEE

MTBF

Time	UC-8210-T-LX: 716,739 hrs UC-8210-T-LX-S: 708,581 hrs UC-8220-T-LX: 650,836 hrs UC-8220-T-LX-US-S: 528,574 hrs UC-8220-T-LX-EU-S: 528,574 hrs UC-8220-T-LX-AP-S: 528,574 hrs
Standards	Telcordia (Bellcore) Standard TR/SR

Warranty

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

Package Contents

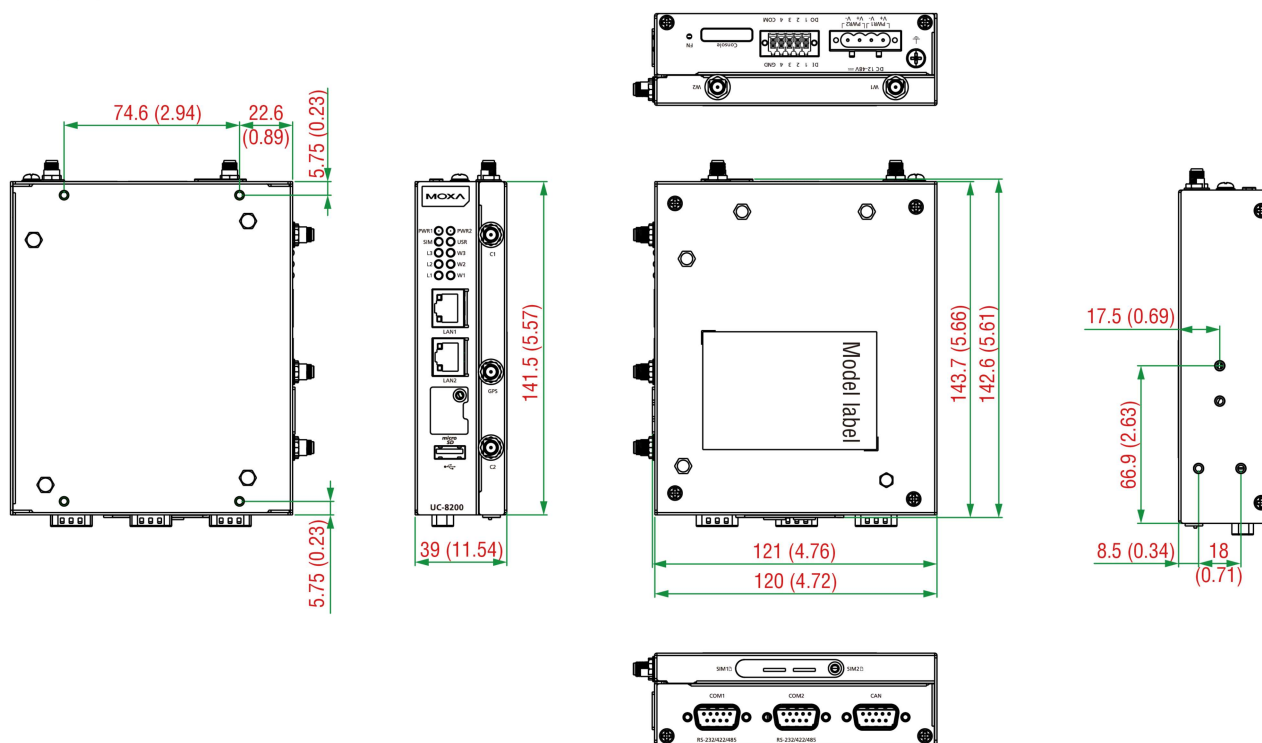| Device	1 x UC-8200 Series computer
Documentation	1 x quick installation guide 1 x warranty card
Installation Kit	1 x DIN-rail kit (preinstalled) 1 x power jack 6 x M2.5 mounting screws for the cellular module
Cable	1 x console cable

Dimensions

UC-8210

Unit: mm (inch)

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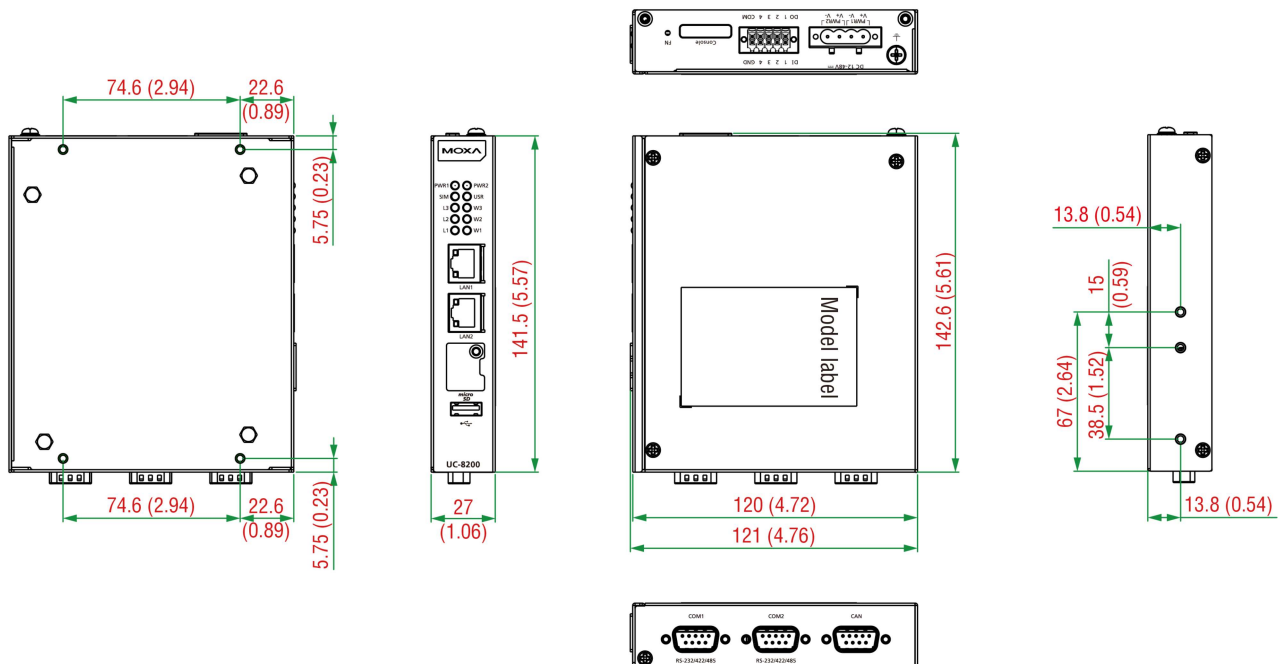
UC-8220

Unit: mm (inch)

Ordering Information

Model Name	CPU	RAM	Storage	TPM	mPCIe Slot 1 for LTE Module	mPCIe Slot 2 for Wi-Fi Module	Operating Temperature
UC-8210-T-LX	1 GHz Dual Core	2 GB	8 GB	–	–	–	-40 to 85°C
UC-8210-T-LX-S	1 GHz Dual Core	2 GB	8 GB	Built-in	–	–	-40 to 85°C
UC-8220-T-LX	1 GHz Dual Core	2 GB	8 GB	–	Reserved	Reserved	-40 to 70°C
UC-8220-T-LX-US-S	1 GHz Dual Core	2 GB	8 GB	Built-in	US region LTE module preinstalled	Reserved	-40 to 70°C
UC-8220-T-LX-EU-S	1 GHz Dual Core	2 GB	8 GB	Built-in	Europe region LTE module preinstalled	Reserved	-40 to 70°C
UC-8220-T-LX-AP-S	1 GHz Dual Core	2 GB	8 GB	Built-in	APAC region LTE module preinstalled	Reserved	-40 to 70°C

Accessories (sold separately)

Power Adapters

PWR-12150-EU-SA-T	Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, Continental Europe (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, United Kingdom (UK) plug, -40 to 75°C operating temperature
PWR-12150-USJP-SA-T	Locking barrel plug, 12 VDC 1.5 A, 100 to 240 VAC, United States/Japan (US/JP) plug, -40 to 75°C operating temperature
PWR-12150-AU-SA-T	Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, Australia (AU) plug, -40 to 75°C operating temperature
PWR-12150-CN-SA-T	Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, China (CN) plug, -40 to 75°C operating temperature

Power Wiring

CBL-PJTB-10	Non-locking barrel plug to bare-wire cable

Cables

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

Wi-Fi Wireless Modules

UC-8200 WiFi-AC	Wi-Fi package for UC-8200, includes Wi-Fi module, 6 screws, 1 heat sink, 1 pad

Antennas

ANT-LTEUS-ASM-01	GSM/GPRS/EDGE/UMTS/HSPA/LTE, omni-directional rubber duck antenna, 1 dBi
ANT-LTE-ASM-04 BK	704-960/1710-2620 MHz, LTE omni-directional stick antenna, 4.5 dBi
ANT-LTE-OSM-03-3m BK	700-2700 MHz, multi-band antenna, specifically designed for 2G, 3G, and 4G applications, 3 m cable
ANT-LTE-ASM-05 BK	704-960/1710-2620 MHz, LTE stick antenna, 5 dBi
ANT-LTE-OSM-06-3m BK MIMO	Multiband antenna with screw-fastened mounting option for 700-2700/2400-2500/5150-5850 MHz frequencies
ANT-WDB-ARM-0202	2.4/5 GHz, panel antenna, 2/2 dBi, RP-SMA (male)

DIN-Rail Mounting Kits

UC-8210 DIN-rail Mounting Kit	DIN-rail mounting kit for UC-8210 with 4 M3 screws
UC-8220 DIN-rail Mounting Kit	DIN-rail mounting kit for UC-8220 with 4 M3 screws

Wall-Mounting Kits

UC-8200 Wall-mounting Kit	Wall-mounting kit for UC-8200 with 4 M3 screws