

# 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
- ISASecure IEC 62443-4-2 Security Level 2 certified with Moxa Industrial Linux 3 Secure
- 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
- -40 to 85°C wide temperature range and -40 to 70°C with LTE enabled

## Certifications



## Introduction

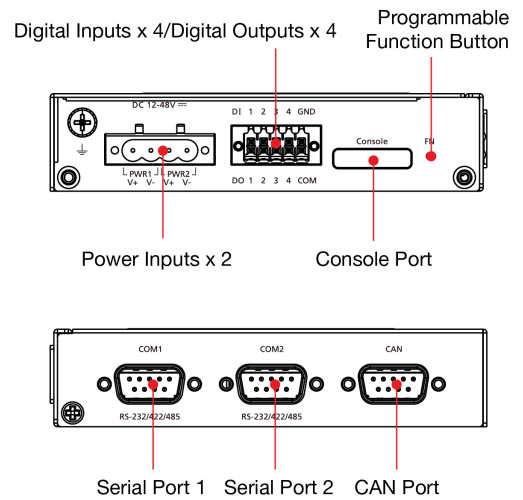
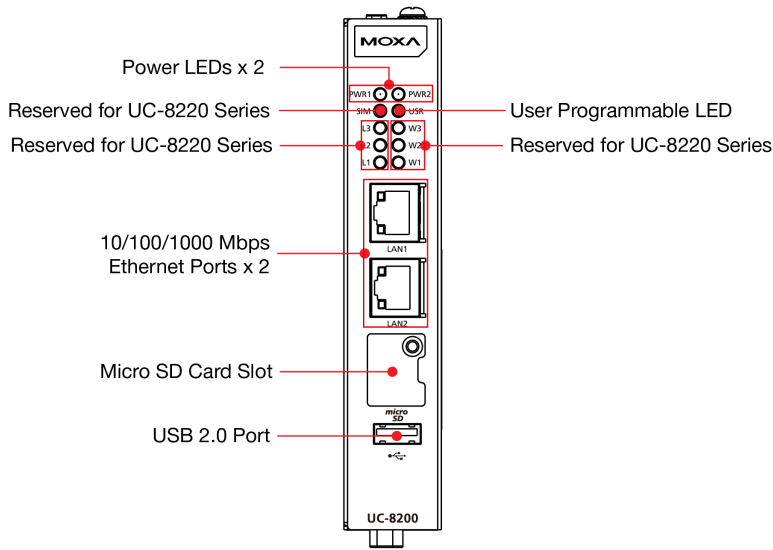
The UC-8200 computing platform is designed for embedded data acquisition applications. The computer comes with dual RS-232/422/485 serial ports, dual 10/100/1000 Mbps Ethernet ports, and one CAN port as well as dual Mini PCIe socket to support Wi-Fi/cellular modules. These versatile capabilities let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

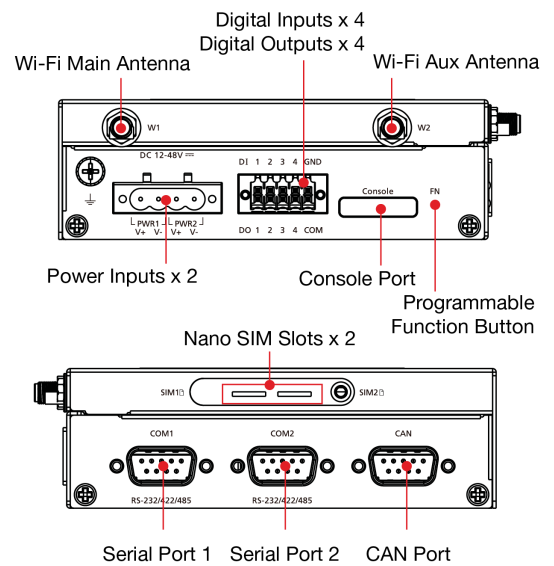
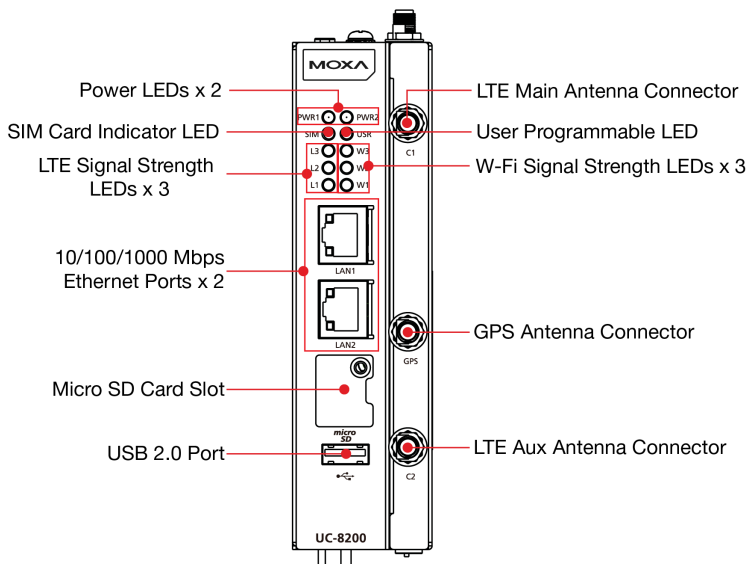
Wide temperature LTE-enabled models are available for extended temperature applications. All units are thoroughly tested in a testing chamber, guaranteeing that the LTE-enabled computing platforms are suitable for wide-temperature applications.

# Appearance

## UC-8210



## UC-8220



# 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) Moxa Industrial Linux 1 (Debian 9, kernel 4.4), 2027 EOL Moxa Industrial Linux 3 <sup>1</sup> (Debian 11, kernel 5.10), 2031 EOL See <a href="http://www.moxa.com/MIL">www.moxa.com/MIL</a>
Expansion Slots	MicroSD (SD 3.0) socket x 1

1. MIL3 OS is selectable via Moxa Computer Configuration System (CCS) for CTO models. For the model names, see the Ordering Information section of the datasheet PDF file.

## Computer Interface

TPM	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	UC-8220 Models: RP-SMA x 2
Cellular Antenna Connector	UC-8220 Models: SMA x 2
GPS Antenna Connector	UC-8220 Models: SMA x 1
Expansion Slots	UC-8220-T-LX: mPCIe slot x 2 UC-8220-T-LX US/EU/AP Models: mPCIe slot x 1
SIM Format	UC-8220 Models: Nano
Number of SIMs	UC-8220 Models: 2
Buttons	Programmable button

## Ethernet Interface

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

## 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

## 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	<p>US Models: LTE Band 2 (1900 MHz) / LTE Band 4 (1700 MHz) / LTE Band 5 (850 MHz) / LTE Band 13 (700 MHz) / LTE Band 17 (700 MHz) UMTS/HSPA 850 MHz / 1900 MHz Carrier Approval: Verizon, AT&amp;T</p> <p>EU Models: LTE Band 1 (2100 MHz) / LTE Band 3 (1800 MHz) / LTE Band 5 (850 MHz) / LTE Band 7 (2600 MHz) / LTE Band 8 (900 MHz) / LTE Band 20 (800 MHz) UMTS/HSPA 850 MHz / 900 MHz / 1900 MHz / 2100 MHz</p> <p>AP Models: LTE Band 1 (2100 MHz) / LTE Band 3 (1800 MHz) / LTE Band 5 (850 MHz) / LTE Band 7 (2600 MHz) / LTE Band 8 (900 MHz) / LTE Band 28 (700 MHz) UMTS/HSPA 850 MHz / 900 MHz / 1900 MHz / 2100 MHz</p>

GPS Interface	
Receiver Types	GPS/GLONASS/Galileo State-of-the-art GNSS solution
Accuracy	Position: 2.0 m @CEP50
Acquisition	Hot starts: 1.1 sec Cold starts: 29.94 sec
Sensitivity	Cold starts: -145 dBm Tracking: -160 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	UC-8220 Models: 141.5 x 120 x 39 mm (5.7 x 4.72 x 1.54 in) UC-8210 Models: 141.5 x 120 x 27 mm (5.7 x 4.72 x 1.06 in) 141.5 x 120 x 27 mm (5.7 x 4.72 x 1.06 in)
Housing	SECC Metal
Installation	DIN-rail mounting Wall mounting (with optional kit)
IP Rating	IP30
Weight	UC-8210 Models: 560 g (1.23 lb) UC-8220 Models: 750 g (1.65 lb)
Environmental Limits	
Operating Temperature	-40 to 70°C (-40 to 158°F)
Storage Temperature (package included)	-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

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
Industrial Cybersecurity	IEC 62443-4-1 IEC 62443-4-2
Hazardous Locations	Class I Division 2 ATEX
Carrier Approvals	Verizon AT&T
Green Product	RoHS, CRoHS, WEEE

## MTBF

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

## Warranty

Warranty Period	5 years
Details	See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a>

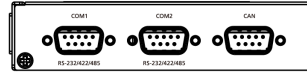
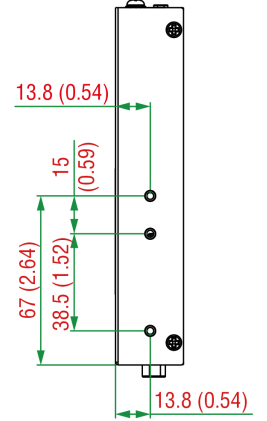
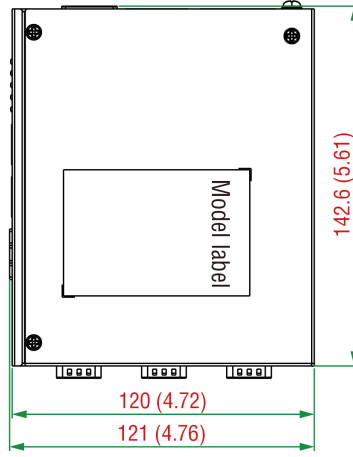
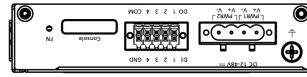
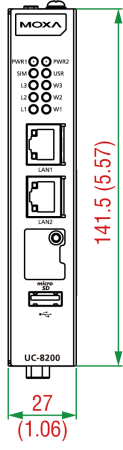
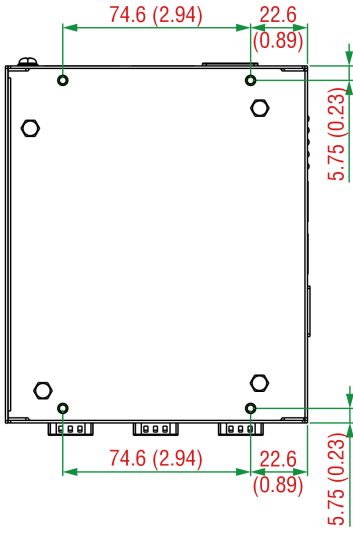
## Package Contents

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

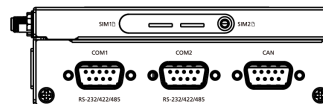
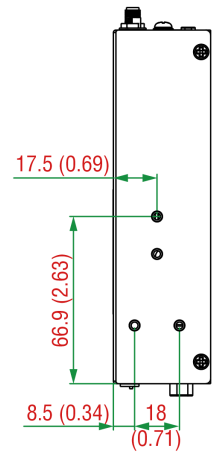
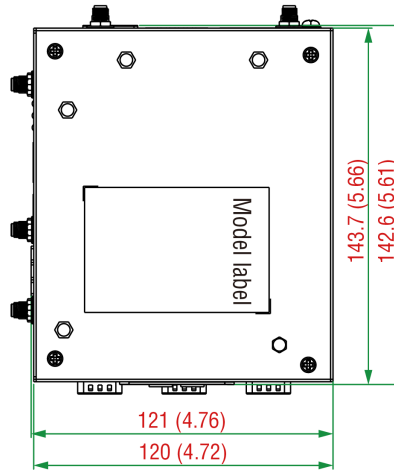
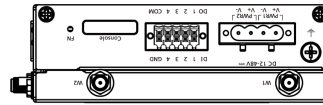
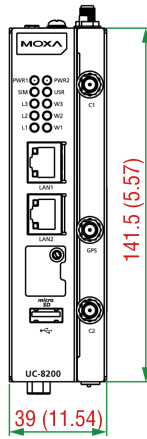
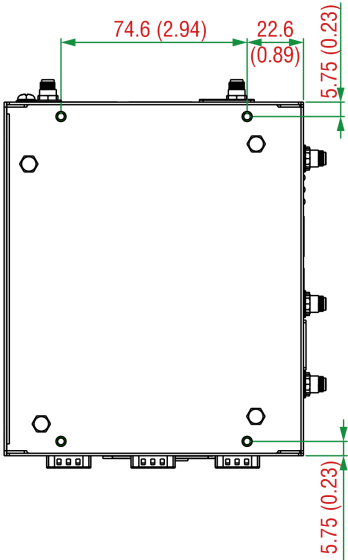
## UC-8210

Unit: mm (inch)



## UC-8220

Unit: mm (inch)



## Ordering Information

Model Name	Operating System	IEC 62443-4-2	CPU	TPM	mPCIe Slot 1 for LTE Module	mPCIe Slot 2 for Wi-Fi Module	Operating Temperature
UC-8210-T-LX-S	Default: MIL1 (Debian 9), 2027 EOL Order With Model UC-8210-T-LX-S (CTO): MIL3 (Debian 11) Secure/ Standard, 2031 EOL	With MIL3 Secure	1 GHz Dual Core	Built in	-	-	-40 to 85°C
UC-8220-T-LX	Default: MIL1 (Debian 9), 2027 EOL Order With Model UC-8220-T-LX (CTO): MIL3 (Debian 11) Secure/ Standard, 2031 EOL	With MIL3 Secure	1 GHz Dual Core	-	Reserved	Reserved	-40 to 70°C
UC-8220-T-LX-US-S	Default: MIL1 (Debian 9), 2027 EOL Order With Model UC-8220-T-LX-US-S (CTO): MIL3 (Debian 11) Secure/ Standard, 2031 EOL	With MIL3 Secure	1 GHz Dual Core	Built in	US region LTE module preinstalled	Reserved	-40 to 70°C
UC-8220-T-LX-EU-S	Default: MIL1 (Debian 9), 2027 EOL Order With Model UC-8220-T-LX-EU-S (CTO): MIL3 (Debian 11) Secure/ Standard, 2031 EOL	With MIL3 Secure	1 GHz Dual Core	Built in	Europe region LTE module preinstalled	Reserved	-40 to 70°C
UC-8220-T-LX-AP-S	Default: MIL1 (Debian 9), 2027 EOL Order With Model UC-8220-T-LX-AP-S (CTO): MIL3 (Debian 11) Secure/ Standard, 2031 EOL	With MIL3 Secure	1 GHz Dual Core	Built in	APAC region LTE module preinstalled	Reserved	-40 to 70°C
UC-8210-T-LX-S (CTO)	MIL3 (Debian 11) Secure or Standard, 2031 EOL	With MIL3 Secure	1 GHz Dual Core	Built in	-	-	-40 to 85°C
UC-8220-T-LX (CTO)	MIL3 (Debian 11) Secure or Standard, 2031 EOL	With MIL3 Secure	1 GHz Dual Core	-	Reserved	Reserved	-40 to 70°C
UC-8220-T-LX-US-S (CTO)	MIL3 (Debian 11) Secure or Standard, 2031 EOL	With MIL3 Secure	1 GHz Dual Core	Built in	US region LTE module preinstalled	Reserved	-40 to 70°C
UC-8220-T-LX-EU-S (CTO)	MIL3 (Debian 11) Secure or Standard, 2031 EOL	With MIL3 Secure	1 GHz Dual Core	Built in	Europe region LTE module preinstalled	Reserved	-40 to 70°C
UC-8220-T-LX- AP-S (CTO)	MIL3 (Debian 11) Secure or Standard, 2031 EOL	With MIL3 Secure	1 GHz Dual Core	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, 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-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-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-CN-SA-T	Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, 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-WLAN22-AC	Wireless package for UC-8200 V2.0 or later with Wi-Fi module, 2 screws, 2 spacers, 1 heat sink, 1 pad
-------------------	---



## Antennas

ANT-LTEUS-ASM-01	GSM/GPRS/EDGE/UMTS/HSPA/LTE, 1 dBi, omnidirectional rubber-duck antenna
ANT-LTE-ASM-04 BK	704 to 960/1710 to 2620 MHz, LTE omnidirectional stick antenna, 4.5 dBi
ANT-LTE-OSM-03-3m BK	700-2700 MHz, multiband 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 dBi at 2.4 GHz or 2 dBi at 5 GHz, RP-SMA (male), dual-band, omnidirectional antenna

## 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
---------------------------	--

© Moxa Inc. All rights reserved. Updated Jan 06, 2023.

This document and any portion thereof may not be reproduced or used in any manner whatsoever without the express written permission of Moxa Inc. Product specifications subject to change without notice. Visit our website for the most up-to-date product information.