

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

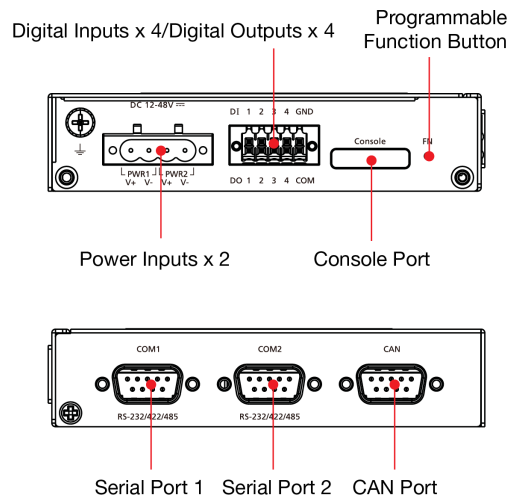
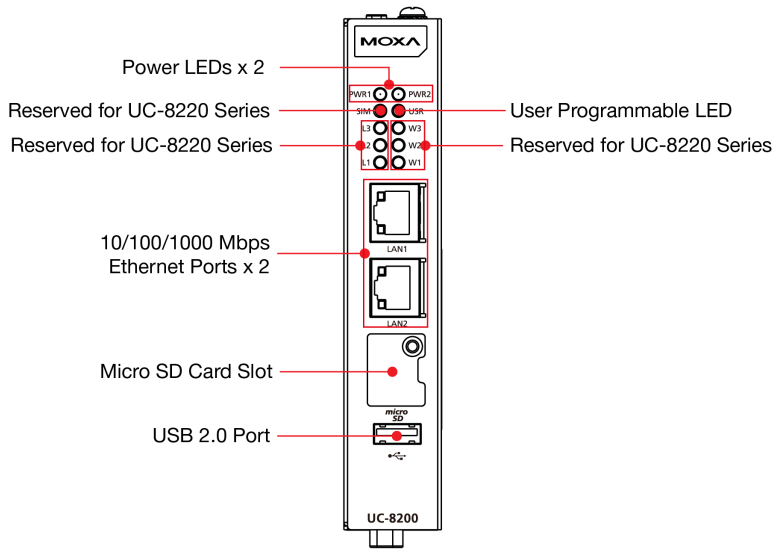
The UC-8200 computing platform is designed for embedded data acquisition applications. The computer comes with dual RS-232/422/485 serial ports, dual 10/100/1000 Mbps Ethernet ports, and one CAN port as well as dual Mini PCIe socket to support Wi-Fi/cellular modules. These versatile capabilities let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

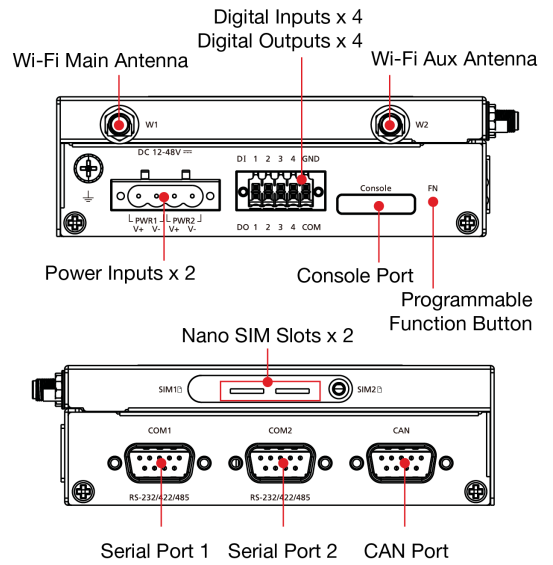
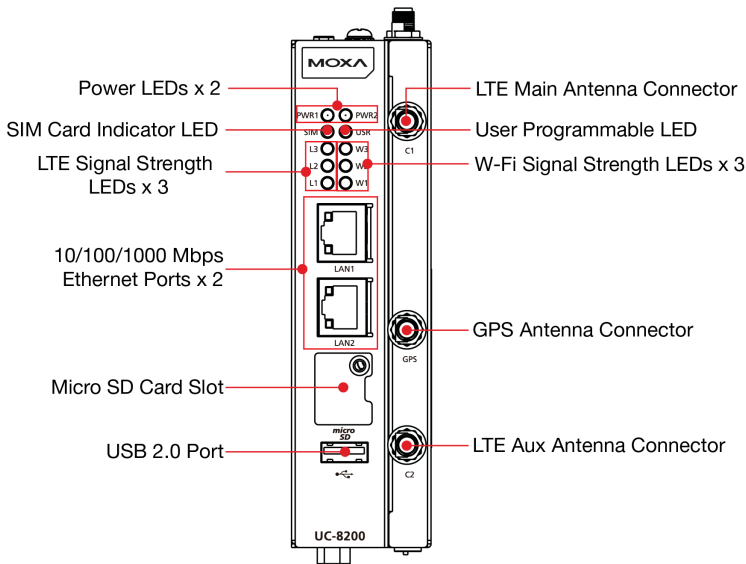
Wide temperature LTE-enabled models are available for extended temperature applications. All units are thoroughly tested in a testing chamber, guaranteeing that the LTE-enabled computing platforms are suitable for wide-temperature applications.

Appearance

UC-8210



UC-8220



Specifications

Computer

| | |
|-----------------------|--|
| CPU | Arm v7 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 |

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 |
| 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 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</p> <p>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)</p> <p>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)</p> |
| 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 |

| | |
|---------------------|--------------------------|
| 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 |

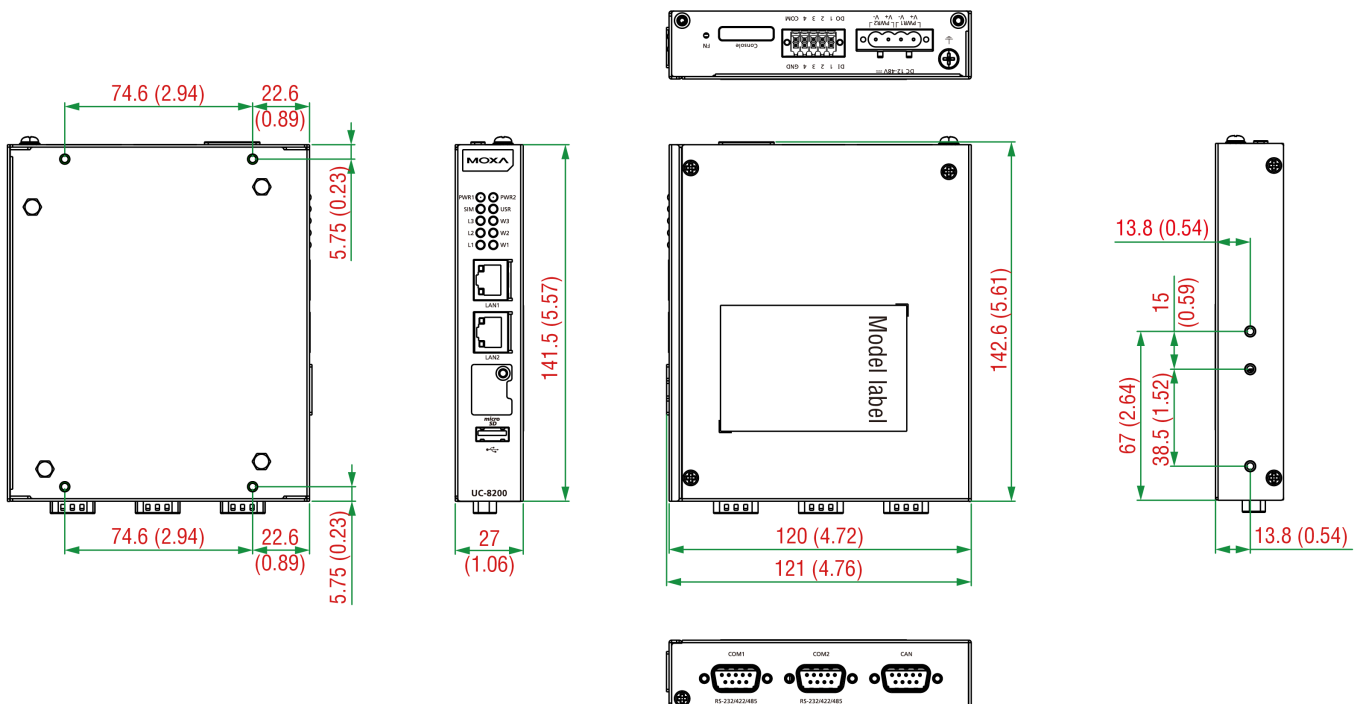
Package Contents

| | |
|------------------|---|
| 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

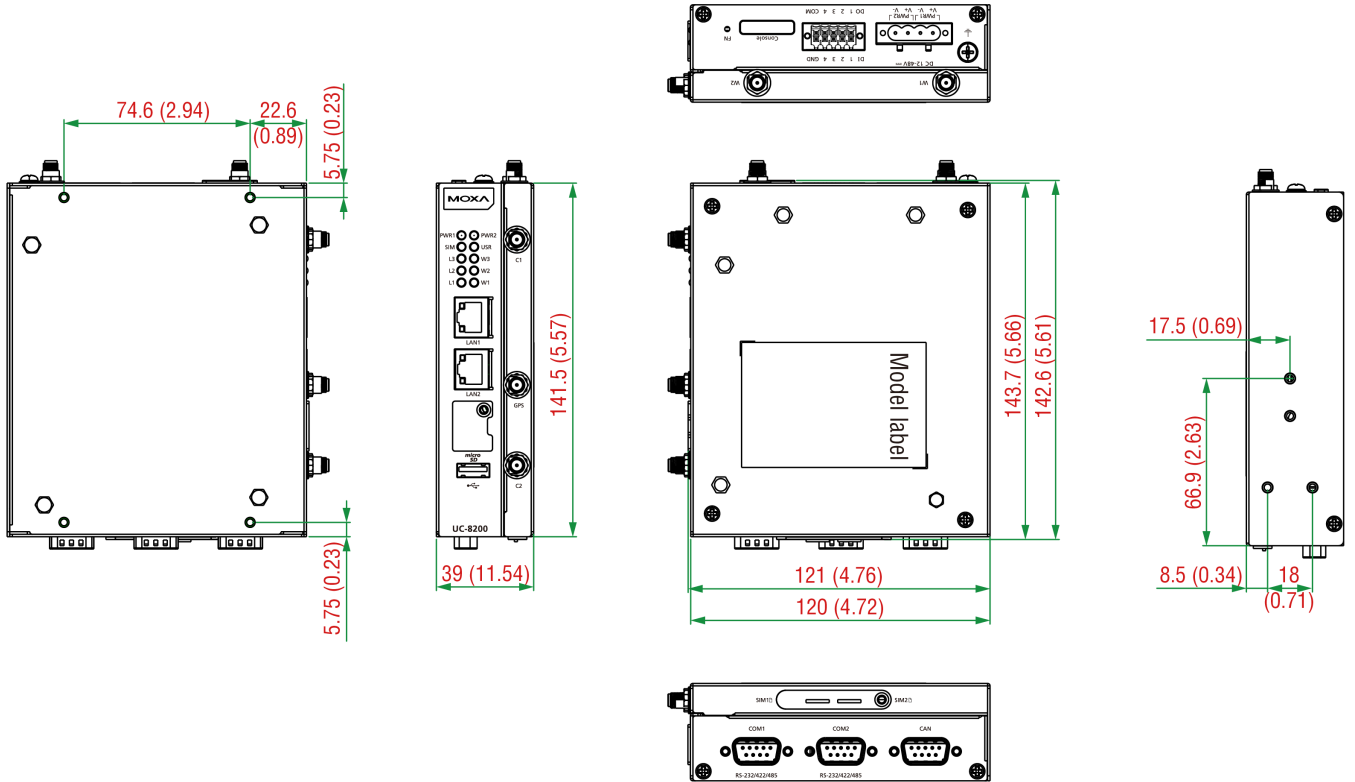
UC-8210

Unit: mm (inch)



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-24270-DT-S1 Power adapter, input voltage 90 to 264 VAC, output voltage 24 V with 2.5 A DC load

Power Cords

PWC-C7AU-2B-183 Power cord with Australian (AU) plug, 2.5A/250V, 1.83 m

PWC-C7CN-2B-183 Power cord with three-prong China (CN) plug, 2.5A/250V, 1.83 m

PWC-C7EU-2B-183 Power cord with Continental Europe (EU) plug, 2.5A/250V, 1.83 m

PWC-C7UK-2B-183 Power cord with United Kingdom (UK) plug, 2.5A/250V, 1.83 m

PWC-C7US-2B-183 Power cord with United States (US) plug, 10A/125V, 1.83 m

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-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 18, 2021.

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.