

# UC-8100 Series

Preliminary

## Communication-centric RISC computing platform



- > ARMv7 Cortex-A8 300/600/1000 MHz processor
- > Dual auto-sensing 10/100 Mbps Ethernet ports
- > SD socket for storage expansion and OS installation
- > Rich programmable LEDs and a programmable button for easy installation and maintenance
- > Mini PCIe socket for cellular module
- > Debian ARM 7 open platform
- > Cyber security



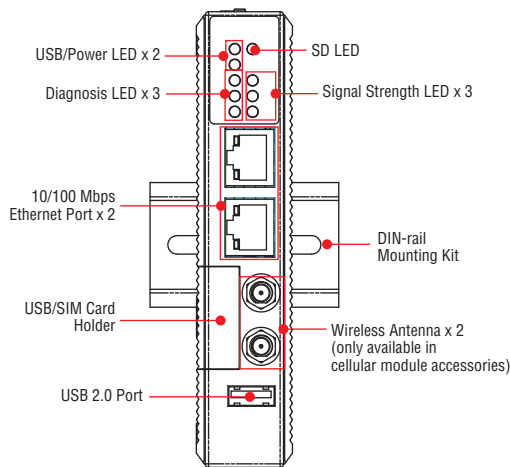
### Overview

The UC-8100 computing platform is designed for embedded data acquisition applications. The computer comes with up to two RS-422/485 serial ports and dual 10/100 Mbps Ethernet LAN ports, as well as a Mini PCIe socket to support cellular modules. These versatile communication capabilities let users efficiently adapt the UC-8110 to a variety of complex communications solutions.

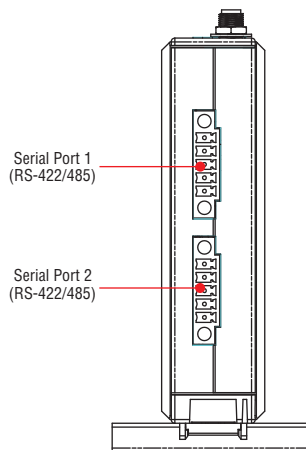
The UC-8100 is built around an Cortex-A8 RISC processor that has been optimized for use in energy monitoring systems, but is widely applicable to a variety of industrial solutions. With flexible interfacing options, this tiny embedded computer is a reliable and secure gateway for data acquisition and processing at field sites as well as a useful communications platform for many other large-scale deployments.

### Appearance

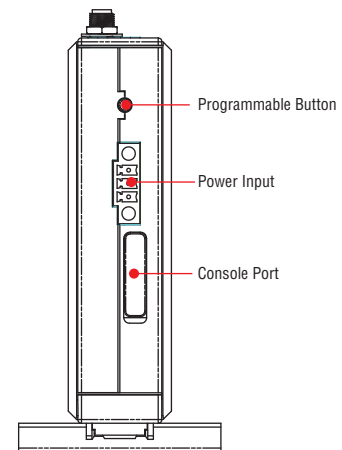
Front View



Top View

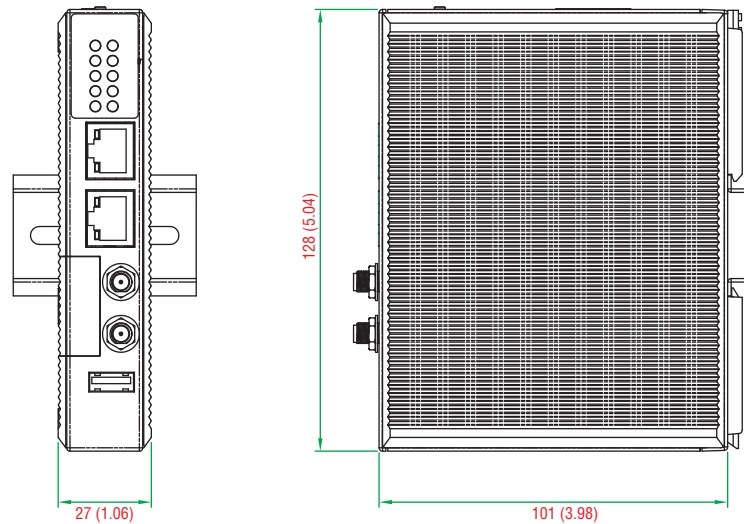


Bottom View



## Dimensions

Unit: mm (inch)



## Hardware Specifications

### Computer

**CPU:** ARMv7 Cortex-A8 300/600/1000 MHz  
**OS (pre-installed):** Debian ARM 7 (Kernel 3.2)  
**DRAM:** 256 MB DDR3 SDRAM (512 MB max.)  
**USB:** USB 2.0 host x 1 (type A connector)

### Storage

#### Storage Expansion:

- SD socket for storage expansion and OS installation, 1GB SD Card with OS pre-installed
- MicroSD socket available (UC-8112-LX only)

### Ethernet Interface

**LAN:** 2 auto-sensing 10/100 Mbps ports (RJ45)

**Magnetic Isolation Protection:** 1.5 KV built-in

### Serial Interface

**Serial Standards:** 1 or 2 RS-422/485 ports, software-selectable (5-pin terminal block connector)

**Console Port:** RS-232 (TxD, RxD, GND), 4-pin pin header output (115200, n, 8, 1)

### Serial Communication Parameters

**Data Bits:** 5, 6, 7, 8

**Stop Bits:** 1, 1.5, 2

**Parity:** None, Even, Odd, Space, Mark

**Flow Control:** XON/XOFF, ADCC® (automatic data direction control) for RS-485

**Baudrate:** Max. 115200 bps

### Serial Signals

**RS-422:** TxD+, TxD-, RxD+, RxD-, GND

**RS-485-4w:** TxD+, TxD-, RxD+, RxD-, GND

**RS-485-2w:** Data+, Data-, GND

### LEDs

**System:** Power

**LAN:** 10M/Link x 2, 100M/Link x 2 (on connector)

**Programmable:** Cellular, SD, USB, Diagnosis

### Switches and Buttons

**Programmable Button:** Initially configured to return a diagnostic report, and to reset the device to factory defaults

### Physical Characteristics

**Housing:** Polycarbonate plastic

**Weight:** 224 g

**Dimensions:** 101 x 27 x 128 mm (3.98 x 1.06 x 5.04 in)

**Mounting:** DIN rail, wall

### Environmental Limits

**Operating Temperature:** -10 to 60°C (14 to 140°F)

**Storage Temperature:** -20 to 80°C (-4 to 176°F)

**Ambient Relative Humidity:** 5 to 95% (non-condensing)

**Anti-vibration:** 2 g rms @ IEC-68-2-34, random wave, 5-500 Hz, 1 hr per axis (without any USB devices attached)

**Anti-shock:** 20 g @ IEC-68-2-27, half sine wave, 30 ms

### Power Requirements

**Input Voltage:** 12 to 24 VDC (3-pin terminal block, V+, V-, SG)

### Standards and Certifications

**Safety:** UL 60950-1, EN 60950-1, CCC (GB9254, GB17625.1)

**EMC:** EN55022 Class B, EN 55024-4-2, EN 55024-4-3, EN 55024-4-4, FCC Part 15 Subpart B Class A

**Radio:** EN 301 489-1, EN 301 489-7, EN 301 511

**Green Product:** RoHS, CRoHS, WEEE

### Reliability

**Alert Tools:** RTC (real-time clock)

**Automatic Reboot Trigger:** Built-in WDT (watchdog timer)

### Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

## Software Specifications

### Linux

**OS:** Debian ARM 7

**Kernel Version:** 3.2

**Internet Protocol Suite:** TCP, UDP, IPv4, IPv6, SNMPv2, ICMP, ARP, HTTP, CHAP, PAP, DHCP, NTP, NFS, SMTP, SSH, PPP, PPPoE

**Internet Security:** OpenVPN, iptables firewall

**Web Server (Apache):** Allows you to create and manage web sites; supports PHP and XML

**Terminal Server (SSH):** Provides secure encrypted communications between two un-trusted hosts over an insecure network

**Dial-up Networking:** PPP Daemon for Linux that allows Unix machines to connect to the Internet through dialup lines, using the PPP protocol, as a PPP server or client. Works with 'chat', 'dip', and 'diald', among (many) others. Supports IP, TCP, UDP, and (for Linux) IPX (Novell). (UC-8132-LX, UC-8162-LX and UC-8112-LX only)

**Watchdog:** Features a hardware function to trigger system reset in a user specified time interval (Moxa API provided)

## Cyber Security

**Secure Booting:** Mutual hash verification of the kernel and bootloader to prevent cold boot attacks

**Software Lock:** Protects software from execution on other machines

**Cryptographic hardware accelerators:** Built-in

**PM (Trust Platform Management):** UC-8112-LX only

## Ordering Information

Model	CPU	Serial	Ethernet	Mini PCIe Socket for Cellular Module	TPM	Micro SD Socket
UC-8131-LX	300 MHz	1	2	–	–	–
UC-8132-LX	300 MHz	2	2	✓	–	–
UC-8162-LX	600 MHz	2	2	✓	–	–
UC-8112-LX	1 GHz	2	2	✓	✓	✓

### Available Models

**UC-8131-LX:** RISC-based communication-centric computing platform with 300 MHz CPU, 2 Ethernet, 1 Serial Port, SD Socket, USB Port and Debian ARM 7

**UC-8132-LX:** RISC-based communication-centric computing platform with 300 MHz CPU, Mini PCIe Socket for Cellular, 2 Ethernet, 2 Serial Ports, SD Socket, USB Port and Debian ARM 7

**UC-8162-LX:** RISC-based communication-centric computing platform with 600 MHz CPU, Mini PCIe Socket for Cellular, 2 Ethernet, 2 Serial Ports, SD Socket, USB Port and Debian ARM 7

**UC-8112-LX:** RISC-based communication-centric computing platform with 1 GHz CPU, Mini PCIe Socket for Cellular, 2 Ethernet, 2 Serial Ports, SD Socket, USB Port, TPM, Micro SD Socket, and Debian ARM 7

### Optional Accessories (can be purchased separately)

**PWR-24250-DT-S1:** Power adapter

**PWC-C7US-2B-183:** Power cord with 2-pin connector, USA plug

**PWC-C7EU-2B-183:** Power cord with 2-pin connector, Euro plug

**PWC-C7UK-2B-183:** Power cord with 2-pin connector, British plug

**PWC-C7AU-2B-183:** Power cord with 2-pin connector, Australia plug

**PWC-C7CN-2B-183:** Power cord with 2-pin connector, China plug

### Package Checklist

- UC-8100 embedded computer
- 1 GB SD card with OS pre-installed
- Power jack
- Terminal block to power jack converter
- Terminal block to serial port converter
- Documentation and software CD or DVD
- Warranty card

**Optional Accessories** (can be purchased separately)**SD Card/Micro SD Card** (OS pre-installed)

Capacity	1 GB	2 GB	4 GB	8 GB	16 GB	32 GB
SD	✓	✓	✓	✓	✓	✓
Micro SD	–	✓	✓	✓	–	–

**Cellular Module(\*)**

Product	Target Region	Radio Technology	Peak Transmission Rate	Frequency Band			GPS
MC7354	North America (multi operator)	LTE DC HSPA+ HSPA+/GSM/ EDGE/ CDMA EVDO/1x	Downlink: 100 Mbps (Dependent on carrier network support) Uplink: 50 Mbps (Dependent on carrier network support)	LTE: 1900(B2), AWS(B4), 850(B5), 700(B13), 700(B17), 1900(B25)	UMTS/HSPA+: 2100(B1), 1900(B2), AWS(B4), 850(B5), 900(B8)  CDMA EVDO/1x: BC0, BC1, BC10	Quad-Band EDGE/GPRS/ GSM	✓
MC7304	Europe, Australia, New Zealand	LTE DC HSPA+ HSPA+/ GSM/EDGE	Downlink: 100 Mbps (Dependent on carrier network support) Uplink: 50 Mbps (Dependent on carrier network support)	LTE: DC HSPA+ HSPA+/ GSM/EDGE	UMTS/HSPA+: 2100(B1),1900(B2) 850(B5),800(B6), 900(B8)	Quad-Band EDGE/GPRS/ GSM	✓
MC9090	Worldwide	HSPA+/CDMA EDGE/GSM	Downlink: 14.4 Mbps (HSPA+) 3.1 Mbps (EVDO) Uplink: 5.76 Mbps (HSPA+) 1.8 Mbps (EVDO)	–	UMTS/HSPA+: 800/850/1900/2100 MHz  CDMA 1x EVDO Rev A: BC0,BC1	Quad-Band EDGE/GPRS/ GSM	✓
MC8090	Worldwide	HSPA+/EDGE/ GPRS/GSM	Downlink: 14.4 Mbps (HSPA+) Uplink: 5.76 Mbps (HSPA+)	–	UMTS/HSPA+ 800/850/1900/2100 MHz	Quad-Band EDGE/GPRS/ GSM	✓

(\*) Cellular and GPS antenna are included.

**Evaluation Kit**

Type	Computer Model	Accessories
UC-8131-LX Evaluation Kit	UC-8131-LX	1. Power adapter 2. Power cord 3. Console cable
UC-8132-LX Evaluation Kit	UC-8132-LX	
UC-8162-LX Evaluation Kit	UC-8162-LX	
UC-8112-LX Evaluation Kit	UC-8112-LX	

20