UC-8112-ME-T-LX1

Communication-centric RISC computing platform

> ARMv7 Cortex-A8 1000 MHz processor
> Dual auto-sensing 10/100 Mbps Ethernet ports
> SD socket for storage expansion
> Programmable LEDs and a programmable button for easy installation and maintenance
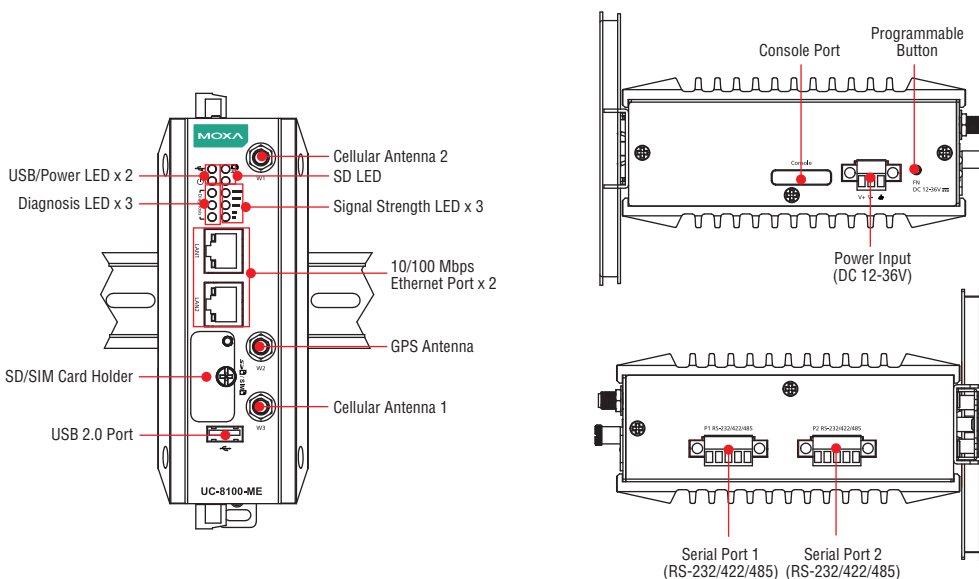> Debian ARM 8 open platform
> Cybersecurity

Overview

The UC-8112-ME-T-LX1 computing platform is designed for embedded data acquisition applications. The computer comes with two RS-232/422/485 serial ports and dual 10/100 Mbps Ethernet LAN. These versatile communication capabilities let users efficiently adapt the UC-8112-ME-T-LX1 to a variety of complex communications solutions.

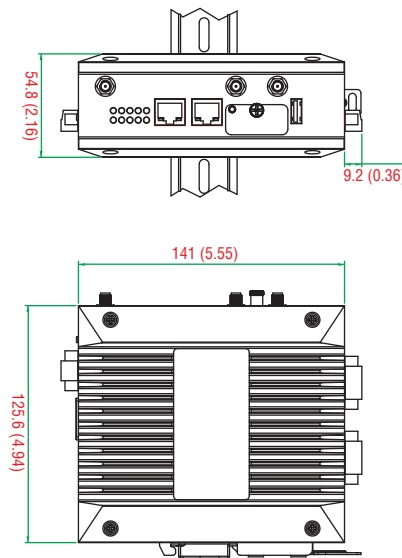The UC-8112-ME-T-LX1 is built around a Cortex-A8 RISC processor

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 communication platform for many other large-scale deployments.

Appearance

- USB/Power LED x 2
- Diagnosis LED x 3
- Cellular Antenna 2
- SD LED
- Signal Strength LED x 3
- 10/100 Mbps Ethernet Port x 2
- SD/SIM Card Holder
- GPS Antenna
- USB 2.0 Port
- Cellular Antenna 1

- Console Port
- Programmable Button
- Power Input (DC 12-36V)
- Serial Port 1 (RS-232/422/485)
- Serial Port 2 (RS-232/422/485)

Dimensions

Unit: mm (inch)

54.8 (2.16)

9.2 (0.36)

141 (5.55)

125.6 (4.94)

Hardware Specifications

Computer
CPU: ARMv7 Cortex-A8 1000 MHz
USB: USB 2.0 host x 1 (type A connector)
DRAM: 512 MB DDR3 SDRAM
OS (pre-installed): Debian ARM 8 (Kernel 4.1)

Storage
Storage Expansion:
• SDHC/SDXC socket for storage expansion
• 4 GB eMMC flash with OS pre-installed

Ethernet Interface
LAN: 2 auto-sensing 10/100 Mbps ports (RJ45)
Magnetic Isolation Protection: 1.5 kV built-in

Serial Interface
Serial Standards: 2 RS-232/422/485 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, ADDC® (automatic data direction control) for RS-485
Baudrate: 921600 bps (max.)

Serial Signals
RS-232: TxD, RxD, RTS, CTS, GND
RS-422: TxD+, TxD-, RxD+, RxD-, GND
RS-485-4w: TxD+, TxD-, RxD+, RxD-, GND
RS-485-2w: Data+, Data-, GND

LEDs
System: Power x 1, USB x 1, SD x 1, signal strength x 3
LAN: 10M/100M on connector
Programmable: Diagnosis x 3

Switches and Buttons
Push Button: Initially configured to return a diagnostic report, and to reset the device to factory defaults

Physical Characteristics
Housing: SECC + Al 5052
Weight: 550 g (1.22 lb)
Dimensions: 141 x 119.9 x 36 mm (5.56 x 4.72 x 1.42 x in)
Mounting: DIN rail

Environmental Limits
Operating Temperature:
Wide Temp. Models: -40 to 85°C (-40 to 185°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)
Anti-Vibration: 2 Grms @ IEC 60068-2-64, random wave, 5-500 Hz, 1 hr per axis (without any USB devices attached)
Anti-Shock: 20 g @ IEC 60068-2-27, half sine wave, 30 ms

Power Requirements
Input Voltage: 12 to 36 VDC (3-pin terminal block, V+, V-, SG)
Input Current: 500 mA @ 12 VDC
Power Consumption: 6 W (without external USB device attached)

Standards and Certifications
Safety: UL 60950-1
EMC: EN 55032/24
EMI: CISPR 32, FCC Part 15B Class A
EMS:
IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz, 20 V/m
IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV
IEC 61000-4-5 Surge: DC Power: 1 kV; Signal: 1 kV
IEC 61000-4-6 CS: 10 V
IEC 61000-4-8 PFMF: 300 A/m, 60 s
Green Product: RoHS, CRoHS, WEEE

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

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

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⋮ Software Specifications

Linux

OS: Debian ARM 8
Web Server (Apache): Allows you to create and manage web sites; supports PHP and XML
Terminal Server (SSH): Provides secure encrypted communications between two untrusted hosts over an unsecure network
Kernel: GNU/Linux 4.1
System Shell: DASH (default), BASH
Text Editor: vim, nano
Internet Protocol Suite: TCP, UDP, IPv4, IPv6, SNMPv2, ICMP, ARP, HTTP, CHAP, PAP, DHCP, NTP, NFS, SSH, PPP, SFTP, RSYNC, SSL
Programming Language Support: PHP, Perl, Python
Internet Security Suite: OpenVPN, IPTables
Cryptographic Hardware Accelerators: AES, SHA, OpenSSL
Self Diagnosis: Check status of system and hardware component via software method
Linux Board Support Packages (BSP):
• GCC C/C++ cross development tool chain
• Bootloader/ Kernel/ filesystem

Cybersecurity:
• SUDO Mechanism: Sudo (short for super-user do) is a program designed to let system administrators allow some users to execute certain commands as the root user (or another user). The root user account is disabled by default. The basic philosophy is to give as few privileges as possible but still allow people to get their work.
• Security Update of Existing Software Packages: All software packages installed on the UC-8100-ME-T can be automatically updated using Debian Linux's Advanced Packaging Tool (APT) server or Moxa's server.
• USB Protection: Provides a mechanism for disabling USB function to avoid USB stick malware attacks.
• SD Write Protection: Provides a mechanism for disabling write permission to the SD memory card plugged in directly into the card slot, or which is part of an extended storage system.

⋮ Ordering Information

Model	CPU	RAM	Serial	Ethernet	SD Card Slot	USB	Operating Temperature
UC-8112-ME-T-LX1	1 Ghz	512 MB	2	2	1 (1 GB SD pre-installed)	1	-40 to 85°C

Package Checklist

• UC-8112-ME-T-LX1 embedded computer
• Power jack
• DIN-rail kit (pre-installed)
• Quick installation guide (printed)
• Warranty card

⋮ Optional Accessories (can be purchased separately)

Power Adapters, Power Cords, Console Cables

Model Name	Package Contents	Description
PWR-24250-DT-S1	• Power Adapter x 1	Power adapter for testing and system development indoors under ambient temperature conditions (input: 100 to 240 VAC, 50 to 60 Hz, 1.5 A; output: 24 VDC, 2.5 A, 60 W)
PWC-C7EU-2B-183	• Power Cord x 1	10A/250V Continental European (EU) power cord, 183 cm