

# UC-7101/7110/7112 Series

**RISC ready-to-run embedded computers with 1 or 2 serial ports, dual LANs, SD**



- > MOXA ART ARM9 32-bit 192 MHz processor
- > 16 or 32 MB RAM
- > 8 or 16 MB Flash ROM
- > Dual or single 10/100 Mbps Ethernet for network redundancy
- > 1 or 2 software-selectable RS-232/422/485 ports
- > 50 bps to 921.6 kbps baudrate (nonstandard baudrates supported)
- > SD socket for storage expansion
- > Built-in real-time clock (RTC) and buzzer
- > Pre-installed Linux Kernel 2.6 platform
- > -40 to 75°C wide-temperature models available



## Overview

The UC-7101/UC-7110/UC-7112 mini RISC-based communication platforms are ideal for embedded applications. The computers come with 1 or 2 RS-232/422/485 serial ports and single or dual 10/100 Mbps Ethernet LAN ports to provide users with a versatile communication platform.

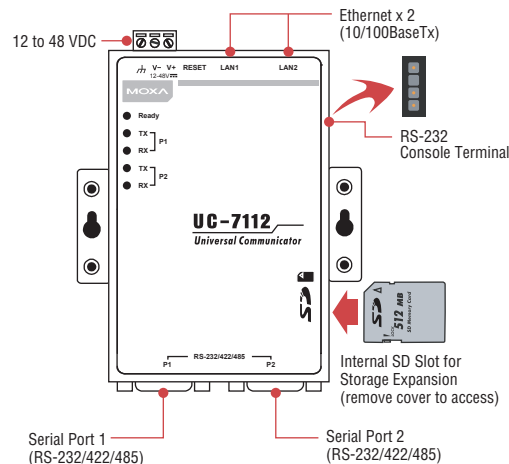
The UC-7101/UC-7110/UC-7112 platforms use the ARM9 RISC CPU. The architecture and modern semiconductor technology used in the ARM9 RISC CPU are designed to provide the CPU with a powerful computing engine and many useful communication functions, but without generating too much heat. The built-in 8 or 16 MB NOR Flash ROM and 16 or 32 MB SDRAM provide plenty of storage, and the SD socket (UC-7101 and UC-7112 only) provide users with flexible storage expansion to run applications that generate a lot of data.

The dual or single LAN ports built into the ARM9 make the UC-7101/7110/UC-7112 computers ideal communication platforms for data acquisition and protocol conversion applications, and the 1 or 2 RS-232/422/485 serial ports allow you to connect a variety of serial devices.

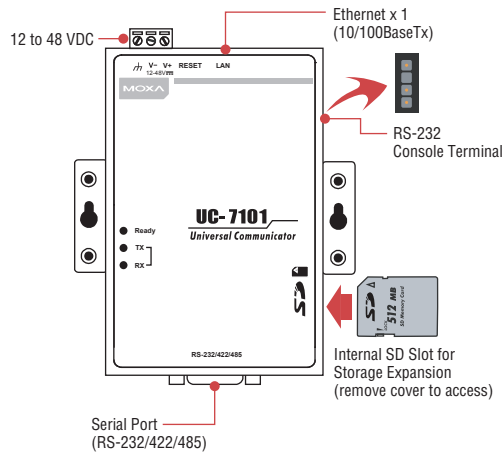
The pre-installed  $\mu$ CLinux or Linux operating system provides an open platform for software development. This means that software written for desktop PCs can be easily ported to a UC-7101, UC-7110, or UC-7112 embedded computer with a GNU cross compiler, eliminating the need to spend time modifying existing code. The operating system, device drivers, and your own software can all be stored in the UC-7101/UC-7110/UC-7112's flash memory.

## Appearance

### UC-7110/UC-7112



## UC-7101



## Hardware Specifications

### Computer

**CPU:** MOXA ART ARM9 32-bit RISC CPU, 192 MHz

### DRAM:

UC-7101/7110/7112: 16 MB

UC-7112 Plus: 32 MB

### Flash:

UC-7101/7110/7112: 8 MB

UC-7112 Plus: 16 MB

**OS (pre-installed):** µClinux or Linux

### Storage

**Storage Expansion:** SD slot (UC-7101, UC-7112, and UC-7112 Plus only)

### Ethernet Interface

**LAN:** Auto-sensing 10/100 Mbps (RJ45)

- UC-7101: 1 port
- UC-7110/7112/7112 Plus: 2 ports

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

### Serial Interface

**Serial Standards:** RS-232/422/485 software-selectable (DB9 male)

- UC-7101: 1 port
- UC-7110/7112: 2 ports

**ESD Protection:** 4 kV ESD for all signals

**Console Port:** RS-232 (Tx, Rx, GND)

- UC-7101: 4-pin pin header output
- UC-7110/7112: 3-wire pin-header

### Serial Communication Parameters

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

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

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

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

**Baudrate:** 50 bps to 921.6 kbps (supports nonstandard baudrates; see user's manual for details)

### Serial Signals

**RS-232:** Tx, Rx, DTR, DSR, RTS, CTS, DCD, GND

**RS-422:** Tx+, Tx-, Rx+, Rx-, GND

**RS-485-4w:** Tx+, Tx-, Rx+, Rx-, GND

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

### LEDs

**System:** Ready

**LAN:** LED located on the RJ45 connector

- UC-7101: 10M/Link x 1, 100M/Link x 1
- UC-7110/7112: 10M/Link x 2, 100M/Link x 2

### Serial:

- UC-7101: Tx, Rx x 1
- UC-7110/7112: Tx, Rx x 2

### Physical Characteristics

**Housing:** Aluminum (1 mm)

### Weight:

- UC-7101: 130 g (0.29 lb)
- UC-7110/7112: 190 g (0.42 lb)

### Dimensions:

- UC-7101: 67 x 22 x 100.4 mm (2.64 x 0.87 x 3.95 in)
- UC-7110/7112: 77 x 111 x 26 mm (3.03 x 4.37 x 1.02 in)

**Mounting:** DIN rail, wall

### Environmental Limits

#### Operating Temperature:

Standard Models: -10 to 60°C (14 to 140°F)  
Wide Temp. Models: -40 to 75°C (-40 to 167°F)

#### Storage Temperature:

Standard Models: -20 to 80°C (-4 to 176°F)  
Wide Temp. Models: -40 to 85°C (-40 to 185°F)

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

**Anti-Vibration:** 1 Grms @ IEC-68-2-6, sine wave (resonance search), 5-500 Hz, 1 Oct/min, 1 cycle, 13 min 17 sec per axis (UC-7101/7110 only)

### Power Requirements

**Input Voltage:** 12 to 48 VDC

#### Input Current:

- 170 mA @ 24 VDC
- 340 mA @ 12 VDC

**Power Consumption:** 4.5 W

### Standards and Certifications

#### Safety:

- UC-7101: UL 60950, CSA-C22.2 No. 60950-1, EN 60950-1
- UC-7110/7112: UL 60950-1, CSA C22.2 No. 60950-1-03, EN 60950-1

**EMC:** EN 55032 Class A, EN 61000-3-2 Class A, EN 61000-3-3, EN 55024, FCC Part 15 Subpart B Class A, DNV

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

### Reliability

**Alert Tools:** Built-in buzzer and RTC (real-time clock)

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

## MTBF (mean time between failures)

### Time:

UC-7101: 514,973 hrs  
 UC-7110: 149,414 hrs  
 UC-7112 Plus: 148,980 hrs  
 UC-7112: 148,980 hrs

### Standard:

UC-7101: Telcordia (Bellcore) Standard  
 UC-7110: MIL-HDBK-217F  
 UC-7112 Plus: Bellcore-SR332  
 UC-7112: MIL-HDBK-217F

## Warranty

**Warranty Period:** 5 years

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

**Note:** These hardware specifications describe the embedded computer unit itself, but not its official accessories. In particular, the wide temperature specification does not apply to accessories such as power adapters and cables.

## Software Specifications

### Linux (UC-7112-LX Plus only)

**OS:** Linux 2.6.38

**File System:** JFFS2, NFS, Ext2, Ext3, Ext4, VFAT/FAT

**Internet Protocol Suite:** TCP, UDP, IPv4, IPv6, SNMP v1/v2c, ICMP, ARP, HTTP, CHAP, PAP, DHCP, NTP, NFS, SMTP, Telnet, FTP, TFTP, PPP, PPPoE, SSH 1.0/2.0, SSL

**Internet Security:** OpenVPN, IPTables Firewall, OpenSSL

**Terminal Server (SSH):** Provides secure encrypted communications between two untrusted hosts over an unsecure network

**Dial-up Networking:** PPP Daemon (pppd) for Linux that uses the PPP protocol and allows Unix machines to connect to the Internet as PPP servers or clients, through dialup. The PPP Daemon Works with chat, dip, and diald programs among others, and supports the IP, TCP, UDP, and IPX for Linux (Novell) protocols.

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

**Moxa Package Management System (MPKG):** Provides package management system which you can install/uninstall software utilities or libraries.

**IP Bonding:** Linux standard bonding driver provides a method for aggregating multiple network interfaces into a single logical "bonded" interface.

**Net-SNMP:** Support v1 and v2c.

**Cryptographic Hardware Accelerator:** Supports DES-ECB, DES-CBC, DES-EDE3, AES-ECB, and AES-CBC algorithms

**Debian:** Debian 5 lenny port provided

### Application Development Software:

- Moxa API Library (Moxa serial I/O control, Moxa DI/DO API, Moxa buzzer API)
- GNU C/C++ cross-compiler
- GNU C library

### µClinux

**OS:** µClinux 2.6.19

**File System:** JFFS2

**Internet Protocol Suite:** TCP, UDP, IPv4, SNMPv1, ICMP, ARP, HTTP, CHAP, PAP, DHCP, NTP, NFS, SMTP, Telnet, FTP, TFTP, PPP, PPPoE

**Web Server (Boa):** Allows you to create and manage web sites

**Terminal Server (Telnet):** Provides telnet communications between two hosts over the network

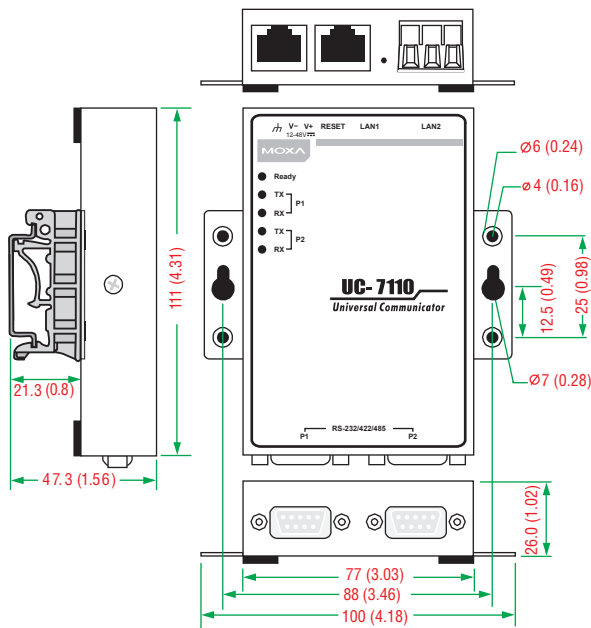
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### Application Development Software:

- Moxa API Library (Watchdog timer, Moxa serial I/O control)
- arm-elf-gcc: C/C++ cross-compiler
- µClibc: POSIX standard C library

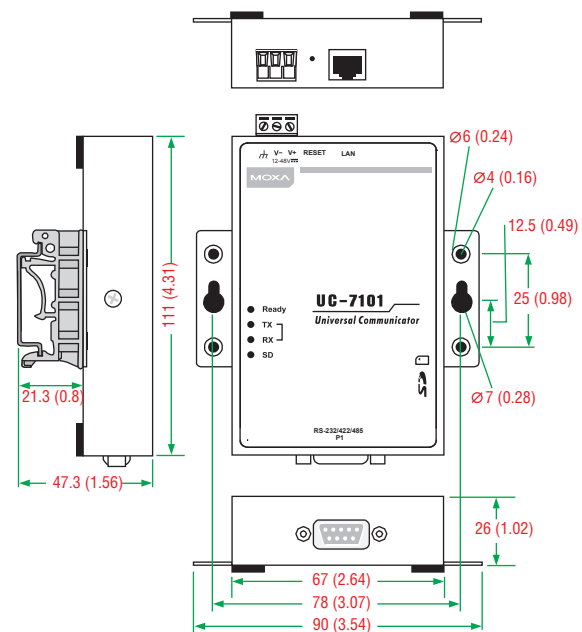
## Dimensions

### UC-7110/UC-7112



### UC-7101

Unit: mm (inch)



Model Name	Serial Ports	LAN Ports	Storage	OS		Wide Temp.
	RS-232/422/485	10/100 Mbps	SD	uClinux	Linux	
UC-7101	1	1	✓	✓	-	✓
UC-7110	2	2	-	✓	-	✓
UC-7112	2	2	✓	✓	✓	-

## Ordering Information

### Available Models

**UC-7101-LX:** Mini RISC-based embedded computer with 1 serial port, LAN,  $\mu$ Clinux OS, -10 to 60°C operating temperature

**UC-7110-LX:** Mini RISC-based embedded computer with 2 serial ports, dual LANs,  $\mu$ Clinux OS, -10 to 60°C operating temperature

**UC-7112-LX:** Mini RISC-based embedded computer with 2 serial ports, dual LANs, SD,  $\mu$ Clinux 2.6 OS, -10 to 60°C operating temperature

**UC-7112-LX Plus:** Mini RISC-based embedded computer with 2 serial ports, dual LANs, SD, Linux 2.6 OS, -10 to 60°C operating temperature

**UC-7101-T-LX:** Mini RISC-based embedded computer with 1 serial port, LAN,  $\mu$ Clinux OS, -40 to 75°C operating temperature

**UC-7110-T-LX:** Mini RISC-based embedded computer with 2 serial ports, dual LANs,  $\mu$ Clinux OS, -40 to 75°C operating temperature

### Package Checklist

- UC-7101 or UC-7110 or UC-7112 embedded computer
- Ethernet cable: RJ45-to-RJ45 cross-over cable, 100 cm
- CBL-4PINDB9F-100: 4-pin pin header to DB9 female console port cable, 100 cm
- Universal power adapter (including terminal block to power jack converter)
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card