MOXA®

UC-7112 Plus/7112/7110 Quick Installation Guide

Third Edition, May 2007

1. Overview

The MOXA UC-7112 Plus, UC-7112, and UC-7110 are mini size RISC-based ready-to-run embedded computers that feature dual 10/100 Mbps Ethernet ports and two RS-232/422/485 serial ports in a built-in µClinux ARM9 box. In addition, the UC-7112 provides an internal SD socket for storage expansion, to offer high performance communication and unlimited storage in a super compact, palm-size box. The UC-7112 Plus, UC-7112, and UC-7110 are the right solutions for embedded applications that use a lot of memory, but that must be housed in a small physical space without sacrificing performance.

2. Package Checklist

Before installing the UC-7112 Plus/7112/7110, verify that the package contains the following items:

- 1 UC-7112 Plus, UC-7112, or UC-7110
- Quick Installation Guide
- Document & Software CD
- Cross-over Ethernet cable: RJ45 to RJ45, 100 cm
- Console port cable: CBL-4PINDB9F-100
  (4-pin header to female DB9 cable, 100 cm)
- Universal Power Adaptor
- Product Warranty Statement

Optional Accessories

- DK-35A   DIN-Rail Mounting Kit (35 mm)

NOTE: Please notify your sales representative if any of the above items are missing or damaged.
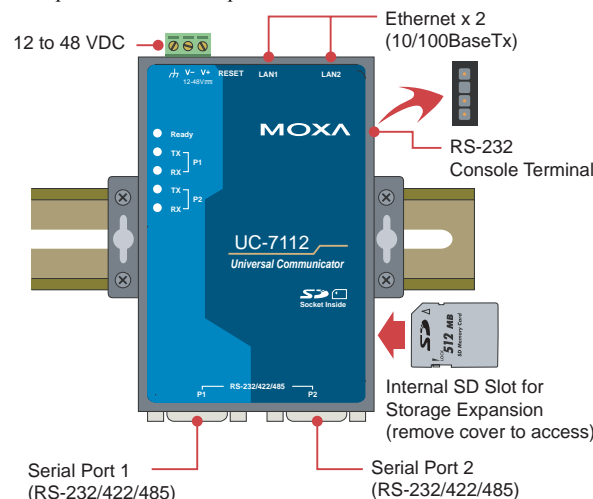
3. Hardware Introduction

LED Indicators

The following LED indicators are located on the top panel of the UC-7112 Plus/7112/7110.

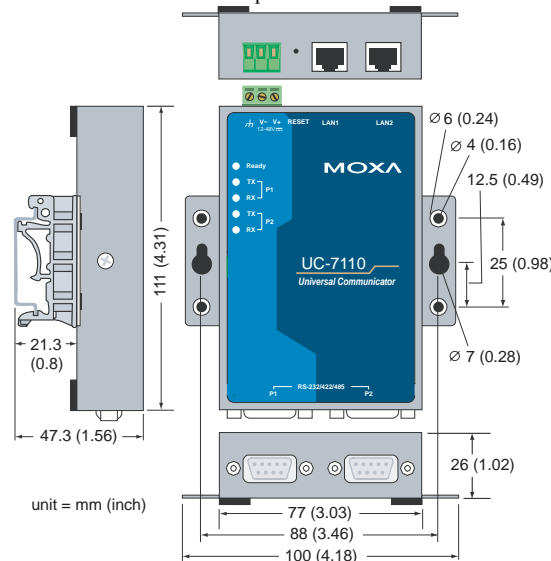| LED Name	LED Color	LED Function
Ready	Green	Power is on and functioning normally.
P1/P2 (Tx)	Green	Serial port 1 or 2 is transmitting data.
	Off	Serial port 1 or 2 is not transmitting data.
P1/P2 (Rx)	Yellow	Serial port 1 or 2 is receiving data.
	Off	Serial port 1 or 2 is not receiving data.

P/N: 1802071100112

UC-7112 Plus/7112/7110 Top View

The top view of the UC-7112 is shown in the following figure. The UC-7110 looks similar, except for the "SD Socket Inside" description on the panel and the SD expansion function.


12 to 48 VDC
Ethernet x 2 (10/100BaseTx)
RS-232 Console Terminal
Internal SD Slot for Storage Expansion (remove cover to access)
Serial Port 1 (RS-232/422/485)
Serial Port 2 (RS-232/422/485)

UC-7112 Plus/7112/7110 Dimensions

The dimensions of the three products are shown in the following figure.

∅ 6 (0.24)
∅ 4 (0.16)
12.5 (0.49)
25 (0.98)
∅ 7 (0.28)
111 (4.31)
21.3 (0.8)
47.3 (1.56)
26 (1.02)
77 (3.03)
88 (3.46)
100 (4.18)
unit = mm (inch)

4. Hardware Installation Procedure

STEP 1: Remove the UC from the box and attach the power adaptor.

STEP 2: Connect the UC's serial console cable to your PC's RS-232 COM port for initial setup through the console terminal.

STEP 3: Connect the UC to a network. Use a standard straight-through Ethernet cable to connect to a hub or switch. When setting up or testing the UC, you might find it convenient to connect directly to your computer's Ethernet port. In this case, use a cross-over Ethernet cable.

STEP 4: **Install Secure Digital (SD) Memory Card (UC-7112 only)**
To install an additional SD card, you must first remove the UC-7112's outer cover to access the slot. The internal SD socket is located at the back side of the UC-7112 on the bottom board; you can find the SD socket on the right, a little lower than the cover screw. Plug the SD card directly into the socket. To remove the card, press it in first, and then remove your finger. The card will pop out enough to allow you to remove it.

STEP 5: **Placement Options**
In addition to placing the UC on a desktop or other horizontal surface, you may also make use of the DIN-Rail or Wall Mount options, as illustrated here.

Wall Mount
DIN-Rail
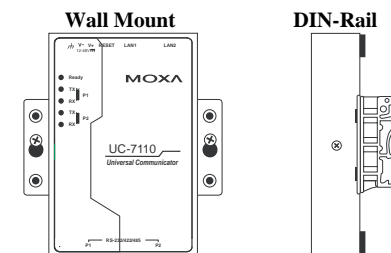
5. Software Installation Procedure

STEP 1: Insert the UC's CD-ROM into your Windows or Linux PC, and then use Acrobat Reader to read the UC-7112/7110 Series User's Manual.

STEP 2: Install the UC's tool chain, which is on the CD-ROM. The tool chain consists of the following components:

1. UC Finder: Broadcast search for the UC's IP address on your LAN. The UC supports both Windows and Linux environments.

2. Cross Compiler: Arm-elf-gcc for µClinux platforms (UC-7112/7110), and Arm-linux-gcc for embedded Linux platform (UC-7112 Plus). Both options are C/C++ PC cross compilers, which are gcc compilers that run on an x86 PC, but create an execution file for Arm-based platforms, such as the UC-7112/7110.

3. GNU C Library: The GNU standard POSIX C Library is supported for both the UC-7112 Plus's Linux platform, and the UC-7112/7110's uClinux platform. Glibc is for Linux and µClibc is for uClinux, which is an abbreviation for

"microcontroller C library." µClibc was created to support µClinux, a Linux port for MMU-less microcontrollers, such as the ARM9 installed in the UC-7112/7110. For more information, visit http://www.uclibc.org.

STEP 3: Edit source code on a Linux PC.

STEP 4: Use the Cross Compiler to compile the source code, and then use FTP to download the program to the UC.

STEP 5: Run your program.

6. System Commands

busybox: Linux / µClinux normal command utility collection

File manager

cp	copy file
ls	list file
ln	make symbolic link file
mount	mount and check file system
rm	delete file
chmod	change file owner & group & user
chown	change file owner
chgrp	change file group
sync	sync file system; save system file buffer to hardware
mv	move file
pwd	display active file directly
df	list active file system space
du	estimate file space usage
mkdir	make new directory
rmdir	delete directory
head	print the first 10 lines of each file to standard output
tail	print the last 10 lines of each file to standard output
touch	update the access and modification times of each file to the current time

Editor

vi	text editor
cat	dump file context
grep	print lines matching a pattern
cut	remove sections from each line of files
find	search for files in a directory hierarchy
more	dump file by one page
test	test if file exists or not
echo	echo string

Process

kill	kill process
killall	kill process by name
ps	report process status
sleep	suspend command on time (seconds)

Network

|	
ping	ping to test network
route	routing table manager
netstat	display network status
ifconfig	set network IP address
tracerout	trace route
tftp	tftp protocol
telnet	user interface to TELNET protocol
ftp	file transfer protocol
iptables-restore	restore iptables configuration file to network
iptables	iptables command
iptables-save	save recent iptables configuration to file

Other

dmesg	dump kernel log message
stty	set serial port
mknod	make device node
free	display system memory usage
date	print or set the system date and time
env	run a program in a modified environment
clear	clear the terminal screen
reboot	reboot / power off/on the server
halt	halt the server
gzip, gunzip, zcat	compress or expand files
hostname	show system's host name
tar	tar archiving utility

MOXA special utilities

cat /etc/version	show user directory version
upramdisk	mount ramdisk
downramdisk	unmount ramdisk
kversion	show kernel version
fsversion	show the root file system (firmware) version
setinterface	set UART interfaces program

7. Pin Assignments

DB9 Male
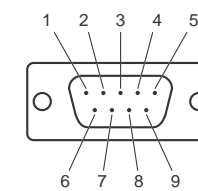
Pin	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	---
2	RxD	TxDB(+)	TxDB(+)	---
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	---	---	---
7	RTS	---	---	---
8	CTS	---	---	---

Serial Console Port

Pin	Signal
4	GND
3	NC*
2	RxD
1	TxD

*NC=Not Connected

8. Environmental Specifications

Power requirements	12 to 48 VDC
Operating temp.	-10 to 60°C (14 to 140°F), 5 to 95% RH
Storage Temperature	-20 to 80°C (-4 to 176°F), 5 to 95% RH
Serial protection	15 KV ESD for serial port
Magnetic isolation	1.5 KV for Ethernet
Regulatory approvals	FCC Class A, CE Class A, UL, cUL, TÜV
Warranty	5 years

MOXA®