MOXA serial interface (FTI06020)

Hardware Installation Manual

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References

MOXA:
www.moxa.com

MOXA support documentation:
http://www.moxa.com/support/search_result.aspx?prod_id=197

Introduction

The hardware installation manual provides instructions for installing and monitoring the Moxa serial interface as used within FT NavVision®. The chapters and sections are organized in chronological order in which the specific components must be installed and monitored (where applicable).

About the installation manual

The hardware installation manual contains the following chapters:

- Chapter “Safety instructions” presents warning, caution and note information, which the user should pay attention to.
- Chapter “Receiving, unpacking and checking” contains instructions on how to receive, unpack or check the interface.
- Chapter “Installation and mounting” contains instructions on how to install and/or mount the interface.
- Chapter “Technical specifications” contains an overview of the main features and technical data.

Revision history

Revisions issued since publication.

Issue	Date	Revision	Reason
1.0	August 24, 2010		First release

Abbreviations list

AC	Alternating Current
CD ROM	Compact Disc Read-only Memory
CE	Conformité Européenne (placed on products to signify conformance with European Union regulations)
CPU	Central Processing Unit
CTS	Clear To Send
C-UL	Canadian UL
DB-9	D-sub miniature (electrical connector)
DC	Direct Current
DCD	Data Carrier Detect
DIN	Deutsches Institut für Normung
DSR	Data Set Ready
DTR	Data Terminal Ready
EMC	Electromagnetic Compatibility
ESD	Electrostatic Discharge
FCC	Federal Communications Controller
FT	Free Technics
GB	Gigabyte
GND	Ground
IP	Ingress Protection / Internet Protocol
KV	Kilovolt
LAN	Local Area Network
LED	Light Emitting Diode
MAC	Media Access Control
Mbps	Megabit per seconds
N/A	Not Applicable
RISC	Reduced Instruction Set Computer
RJ	Registered Jack
RMS	Root Mean Square
RS	Recommended Standard
RTC	Real Time Clock
RTS	Request to Send
Rx	Receive
RxD	Received Data
SD card	Secure Digital (non-volatile memory)
SRAM	Static Random Access Memory
TCP	Transmission Control Protocol
TÜV	Technischer Überwachungsverein
Tx	Transmit
TxD	Transmitted Data
UL	Underwriters Laboratories (safety certification organization)

Safety instructions

NOTE:
This section provides only a summary of the most important safety requirements and notes, which will be mentioned in the individual sections. To protect your health and prevent damage to the devices, it is essential to read and carefully follow the safety instructions.

The indications NOTE, CAUTION and WARNING have the following significance:

NOTE:
An operating procedure, practice or condition etc., which it is essential to emphasize.

CAUTION

An operating procedure, practise or condition etc., which, if not strictly observed, may damage or destroy equipment.

WARNING

An operating procedure, practise or condition etc., which, if not carefully observed may result in personal injury or loss of life.

1. Receiving, unpacking and checking

1.1 Procedure

NOTE:
Notify your sales representative if any of the items mentioned below are missing or damaged.

1. Remove the transport casing

2. Visually inspect the respective parts

3. Check that all items are included in accordance with the delivery documents.

4. Check for transport damages.
   In case of transport damage appropriate action must be taken against the latest carrier and the nearest certified dealer or representative should be informed.

5. Store the part in the original transport package in a dry and dust free place, if the unit is not to be installed immediately. Observe the environmental requirements stated in the specifications

2. Installation and mounting

2.1 Overview

The Moxa UC-7110 series of RISC-based communication platforms (see Figure 2-1) are ideal for your embedded applications. UC-7110 comes with two RS-232/422/485 serial ports and dual 10/100 Mbps Ethernet LAN ports to provide users with a versatile communication platform.

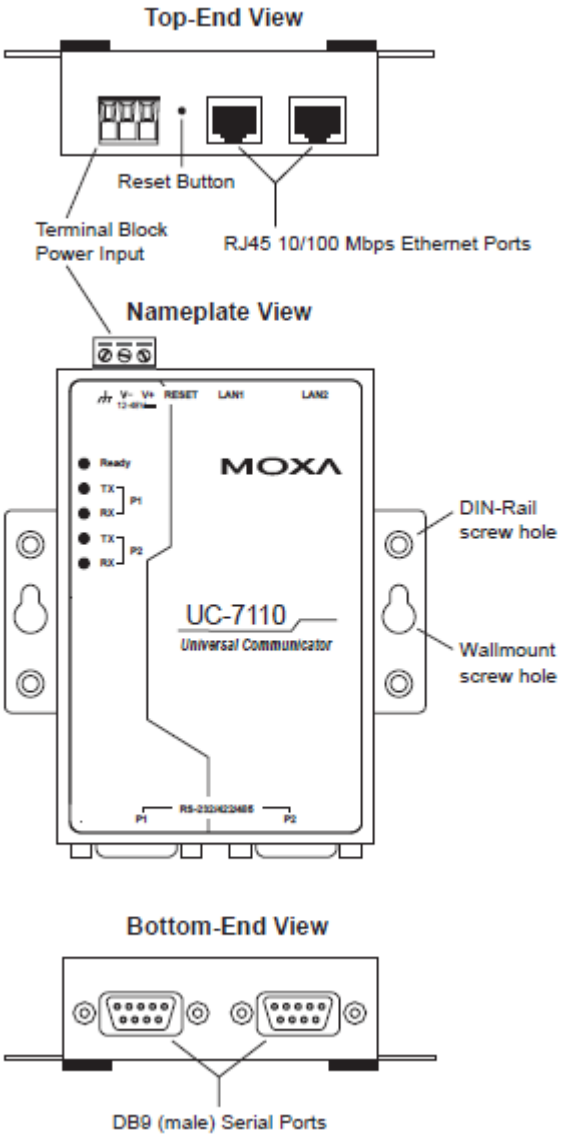


Figure 2-1: Overview (MOXA)

2.2 Hardware list

Component	Description
UC-7110 or UC-7112	Universal communicator with 2 serial ports, Dual Ethernet
CD-ROM	Documentation and Software
Cross-over Ethernet cable	RJ45 to RJ45 (100 cm)
Console port cable	CBL-4PINDB9F-100 4-pin header to DB9 (female) cable (100 cm)
Power adapter	
Optional	**Description**
DIN-rail mounting kit (35 mm)	DK-35A
SD card	Storage expansion (up to 1 GB additional memory space)

2.3 Wiring requirements

Please observe the following common safety precautions, before proceeding with the installation of any electronic device (see chapter 2.3.1).

NOTE:
Do not run signal or communication wiring and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross make sure the wires are perpendicular at the intersection point.
- Use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separate.
- It is advisable to label the wiring to all devices in the system.

2.3.1 Wiring safety instructions

WARNING

Be sure to disconnect the power cord before installing and/or wiring your UC-7110.

CAUTION

- **Only qualified personnel must carry out installation and startup.**
- **Calculate the maximum possible current in each power wire and common wire.**
- **Observe all electrical codes dictating the maximum current allowable for each wire size.**
- **If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.**

- **Be careful when handling UC-7110. When plugged in, UC-7110's internal components generate heat, and consequently the outer casing may feel hot to the touch.**

2.4 Dimensions

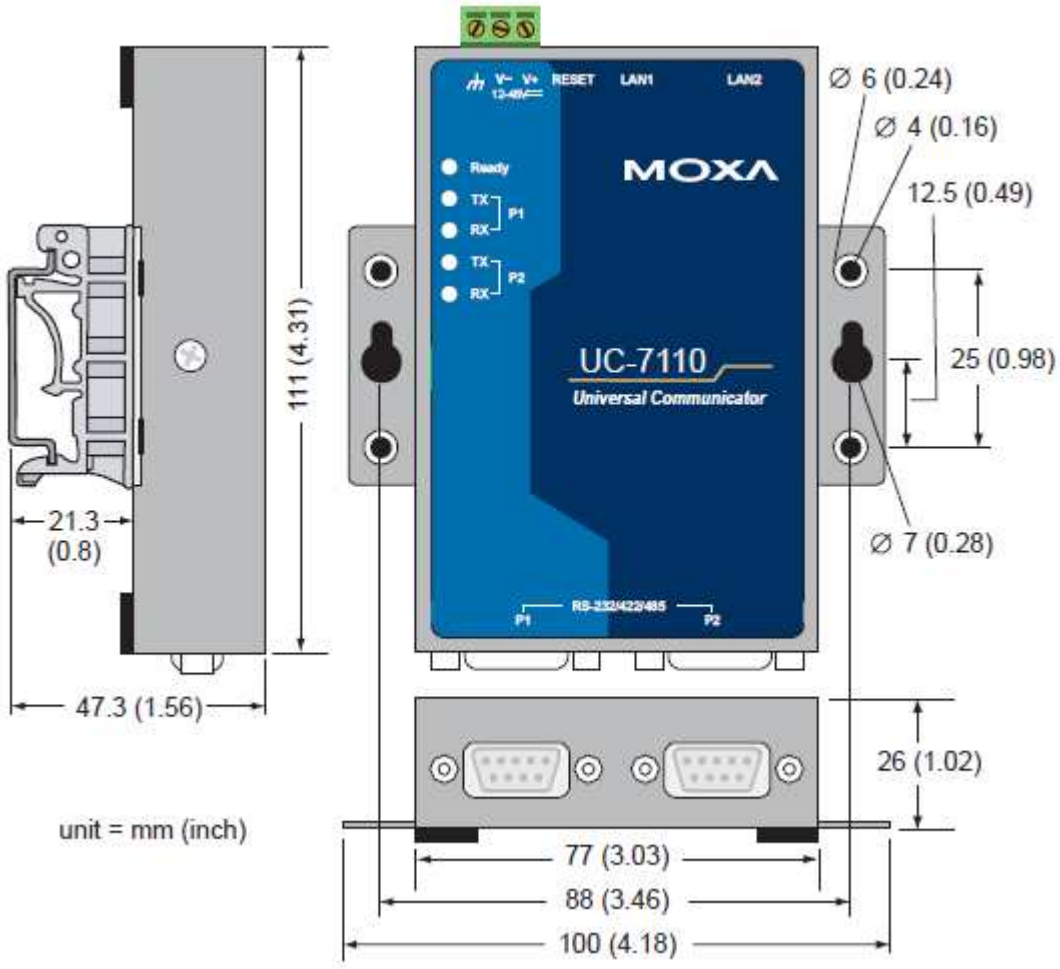


Figure 2-2: Dimensions (wall and DIN-rail)

2.5 LED indicators

LED name	LED colour	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

2.5.1 Connecting to the network

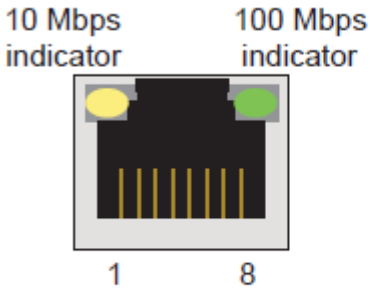
Connect one end of the Ethernet cable to UC-7110's 10/100M LAN1/LAN2 Ethernet port (see Figure 2-1) and the other end of the cable to the Ethernet network.

If the cable is properly connected, UC-7110 will indicate a valid connection to the Ethernet in the following ways:

- The top-right LED on the connector maintains a solid green colour when connected to a 100 Mbps Ethernet network (see Figure 2-3)
- The top-left LED on the connector maintains a solid orange color when connected to a 10 Mbps Ethernet network
- The LEDs will flash when Ethernet packets are being transmitted or received.

2.5.2 Pinouts

The 10/100 Mbps Ethernet LAN 1 and LAN 2 ports use 8-pin RJ45 connectors. Pinouts for these ports are given in the following diagram (see Figure 2-3).



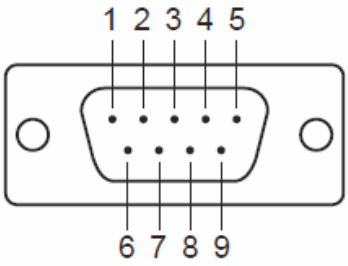
Pin	Signal
1	ETx+
2	ETx-
3	ERx+
4	---
5	---
6	ERx-
7	---
8	---

Figure 2-3: 8-pin RJ connector and pinouts

2.5.3 Connecting to a serial device

Connect the serial cable between UC-7110 and the serial device(s).
Serial ports P1 and P2 use male DB9 connectors, and can be configured for RS-232/422/485 by software. The pin assignments are shown in the following table:

DB9 Male Port



RS-232/422/485 Pinouts

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	---	---	---

Figure 2-4: Pin assignments (DB9 male port)

3. Technical specifications

Detail	Description
CPU	ARM9-based 32-bit RISC CPU, 166 Mhz
RAM	16 MB (12 MB of user programmable space)
Flash	8 MB (4 MB of user programmable space)
LAN	Auto-sensing 10/100 Mbps x 2
LAN protection	Built-in 1.5 KV magnetic isolation
Serial ports	The two RS-232/422/485 ports support: RS-232 signals: TxD, RxD, DTR, DSR, RTS, CTS, DCD, GND RS-422 signals: TxD+, TxD-, RxD+, RxD-, GND 4-wire RS-485 signals: TxD+, TxD-, RxD+, RxD-, GND 2-wire RS-485 signals: Data+, Data-, GND
Serial protection	15 KV ESD for all signals
Data bits	5, 6, 7, 8
Stop bits	1, 1.5, 2
Parity	None, even, odd, space, mark
Flow control	RTC/CTS, XON/XOFF
Speed	50 bps to 921.6 Kbps
Real time clock	Yes
Buzzer	Yes
Console port	RS-232, 3-wire (Tx, Rx, GND) (19200, n, 8, 1)
LEDs	Ready Serial Tx, Rx (2 of each) LAN 10/100 (one on each LAN connector)
Gross weight	190 g
Power input	12 – 48 VDC
Power consumption	290 mA @ 12 VDC
Operating temperature	-10 to +60℃ (5 to 95% RH)
Storage temperature	-20 to +80℃ (5 to 95% RH)
Serial protection	15 KV ESD for serial port
Regulatory approvals	EMC: FCC Class A, CE Class A Safety: UL, C-UL, TÜV
Warranty	5 years

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