

EM-1220 Series

RISC ready-to-run embedded core modules with 2 serial ports, dual LANs, SD



- > MOXA ART ARM9 32-bit 192 MHz processor
- > 16 MB RAM, 8 MB flash disk onboard
- > 2 software-selectable RS-232/422/485 serial ports
- > Dual 10/100 Mbps Ethernet ports for network redundancy
- > SD signals supported for external SD socket connection
- > Built-in RTC, buzzer
- > 10 GPIOs reserved for system integration
- > Ready-to-run μ Clinux Kernel 2.6 platform
- > Full-function development kit for quick evaluation and application development
- > -40 to 75°C wide temperature models available



Overview

The EM-1220 embedded module features 2 RS-232/422/485 serial ports, dual Ethernet ports, and an SD socket for external storage expansion. The module has a compact design that can be easily integrated with industrial applications such as gas stations, vending machines, and ticketing machines, and offers a powerful serial communication capability for better system integration. Programmers

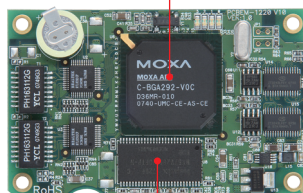
will find that the pre-installed, ready-to-run μ Clinux platform and the full-function development kit make it easy to develop software and build a reliable communication base for industrial automation applications. In addition, a wide temperature model is also available to provide a reliable solution for harsh environments.

Appearance

EM-1220 Embedded Module

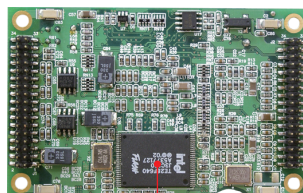
Top View

MOXA ART ARM9 32-bit
Communication Processor



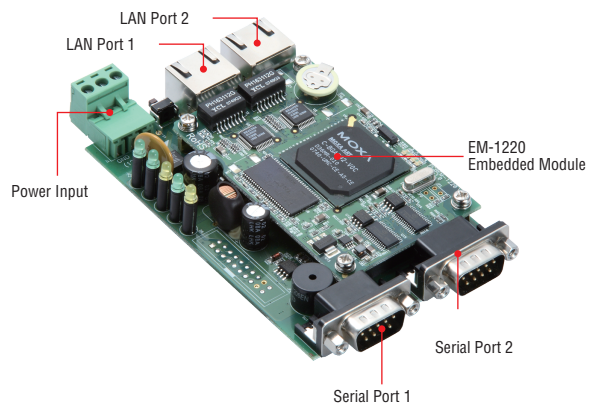
Onboard 16 MB RAM

Bottom View



Onboard Intel NOR
Flash 8 MB

Development Kit



Hardware Specifications

Computer

CPU: MOXA ART ARM9 32-bit, 192 MHz

DRAM: SDRAM, 16 MB

Flash: NOR Flash, 8 MB

OS (pre-installed): Linux

Storage

Storage Expansion: SD sockets x 1

Ethernet Interface

LAN: Auto-sensing 10/100 Mbps ports (RJ45) x 2

Magnetic Isolation Protection: 1.5 kV built-in

Serial Interface

Serial Standards: RS-232/422/485 x 2, software-selectable

ESD Protection: 15 kV for all signals

Console Port: TTL signal, 4-pin pin header output

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: TxD, RxD, DTR, DSR, RTS, CTS, DCD, GND

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

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

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

LEDs

System: Ready

LAN: 10M/Link x 2, 100M/Link x 2

Serial: TxD x 2, RxD x 2

Physical Characteristics

Weight:

• EM-1220 Module: 40 g (0.09 lb)

• EM-1220 Development Kit: 120 g (0.27 lb)

Dimensions:

• EM-1220 Module: 80 x 50 mm (3.15 x 1.97 in)

• EM-1220 Development Kit: 117 x 70 mm (4.61 x 2.76 in)

Module Interface: Two 2-by-17 pin-headers (2.5 x 2.5 mm pitch)

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)

Power Requirements

Input Voltage: 3.3 VDC

Input Current: 625 mA @ 3.3 VDC

Power Consumption: 2.1 W

Standards and Certifications

EMC: EN 55022 Class A, EN 61000-3-2 Class A, EN 61000-3-3, EN

55024, FCC Part 15 Subpart B Class A

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: 405,735 hrs

Standard: Telcordia (Bellcore) Standard

Warranty

Warranty Period: 5 years

Details: See www.moxa.com/warranty

Note: The Hardware Specifications apply to the embedded computer unit itself, but not to accessories. In particular, the wide temperature specification does not apply to accessories such as the power adapter and cables.

Software Specifications

µClinix

OS: µClinix 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

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.

Application Development Software:

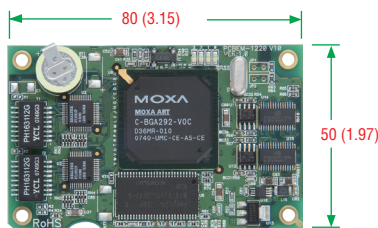
• Moxa API Library (Watchdog timer, Moxa serial I/O control)

• arm-elf-gcc: C/C++ cross-compiler

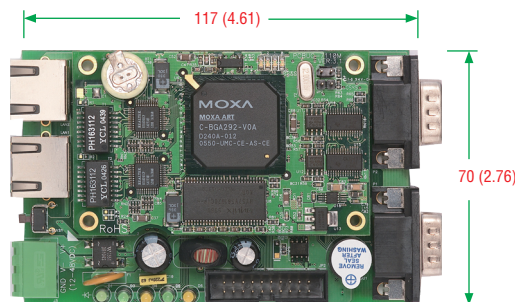
• µCLibc: POSIX standard C library

Dimensions

EM-1220



EM-1220-DK



Unit: mm (inch)

Ordering Information

Available Modules

EM-1220-LX: RISC-based embedded core module with 2 serial ports, dual LANs, SD, µClinux, -10 to 60°C operating temperature

EM-1220-T-LX: RISC-based embedded core module with 2 serial ports, dual LANs, SD, µClinux, -40 to 75°C operating temperature

Development Kits (can be purchased separately)

EM-1220 Development Kit: Includes the EM-1220-DK snap-on testing board with built-in RJ45 LAN ports and DB9 male serial ports

Package Checklist (modules)

- EM-1220 module

Package Checklist (development kits)

- EM-1220 module
- EM-1220-DK, the carrier board for the EM-1220 module
- 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)
- Ethernet cable: RJ45-to-RJ45 cross-over cable, 100 cm
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card