

EM-1240 Series

RISC-based ready-to-run embedded core module with 4 serial ports, dual LANs, SD, μ Clinux



- > MOXA ART ARM9 32-bit 192 MHz processor
- > 16 MB RAM, 8 MB flash on-board
- > 4 software-selectable RS-232/422/485 serial ports
- > Dual 10/100 Mbps Ethernet for network redundancy
- > RS-232 serial console port supporting PPP
- > Ready-to-run μ Clinux Kernel 2.6 platform
- > SD signals supported for external SD socket connection
- > Built-in RTC, buzzer
- > 10 GPIOs reserved for system integration
- > Full-function development kit for quick evaluation and application development
- > -40 to 75°C wide temperature model available

The certification logos shown here apply to some or all of the products in this section. For details, see "Regulatory Approvals" under "Specifications" below.



Overview

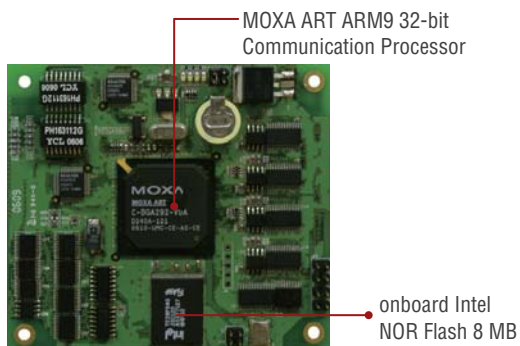
The EM-1240 embedded module features 4 RS-232/422/485 serial ports, dual Ethernet ports and an SD socket for external storage expansion. The module has a compact design that can be easily integrated with related industrial applications, such as gas stations, vending machines, and ticketing machines, 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.

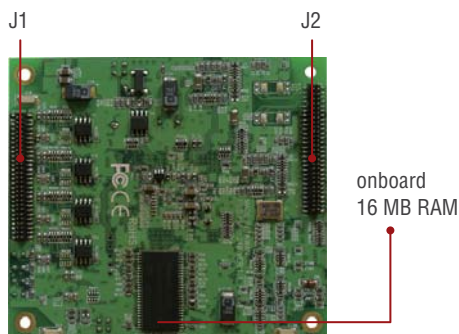
In addition, the wide temperature EM-1240-T model is also available to provide a reliable solution for any harsh environment.

Appearance

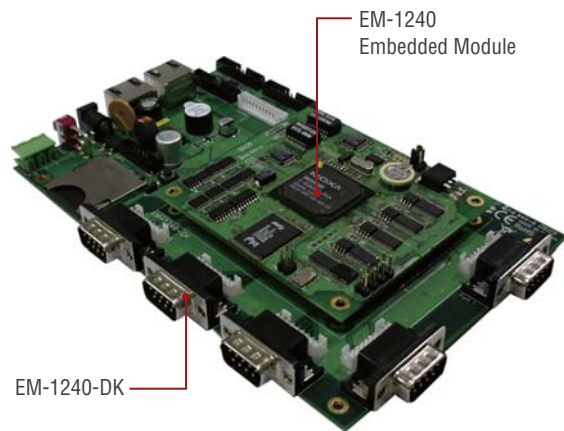
Embedded Module—Top View



Embedded Module—Bottom View



Development Kit Appearance



: Hardware Specifications

Computer

CPU: MOXA ART ARM9 32-bit 192 MHz processor
OS (pre-installed): Embedded µClinux (kernel 2.6.19)
DRAM: 16 MB onboard (32 MB for ODM)
Flash: 8 MB onboard (16 MB for ODM)

Storage

Storage Expansion: SD signals for external Secure Digital (SD) socket connection

Ethernet Interface

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

Magnetic Isolation Protection: 1.5 KV built-in

Serial Interface

Serial Standards: 4 RS-232/422/485 ports, software-selectable

ESD Protection: 15 KV for all signals

Console Port: RS-232 (all signals), RJ45 connector, supports PPP

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 non-standard 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 4, RxD x 4

Physical Characteristics

Weight:

EM-1240 Module: 50 g
 EM-1240 Development Kit: 200 g

Dimensions:

EM-1240 Module: 90 x 80 mm (3.54 x 3.15 in)
 EM-1240 Development Kit: 177 x 115 mm (6.97 x 4.53 in)

Module Interface: Two 2 x 28 pin-headers (1.27 x 1.27 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)

Operating Humidity: 5 to 95% RH

Storage Temperature:

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

Power Requirements

Input Voltage: 3.3 VDC

Power Consumption: 2.5 W (740 mA @ 3.3 VDC)

Regulatory Approvals

EMC: CE (EN55022 Class A, EN61000-3-2 Class A, EN61000-3-3, EN55024), FCC (Part 15 Subpart B, CISPR 22 Class A)

Reliability

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

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

Warranty

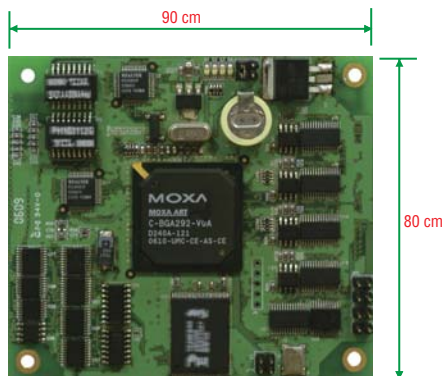
Warranty Period: 5 years

Details: See www.moxa.com/warranty

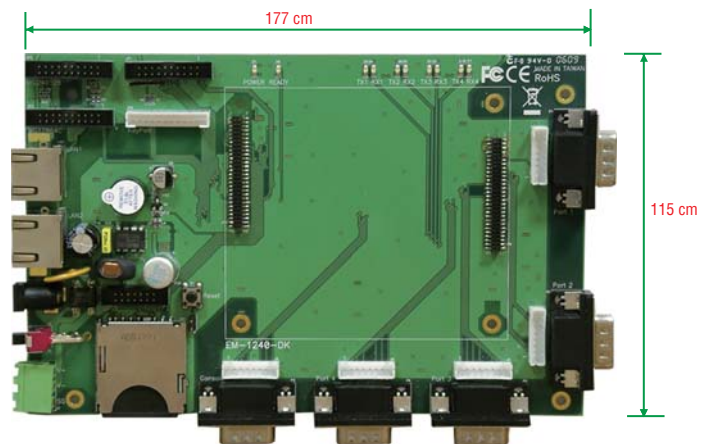
Note: The Hardware Specifications apply to the embedded computer unit itself, but not to accessories. In particular, the wide temperature specification does not apply to accessories such as the power adaptor and cables.

Dimensions

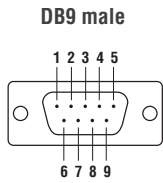
EM-1240 Embedded Module



EM-1240-DK

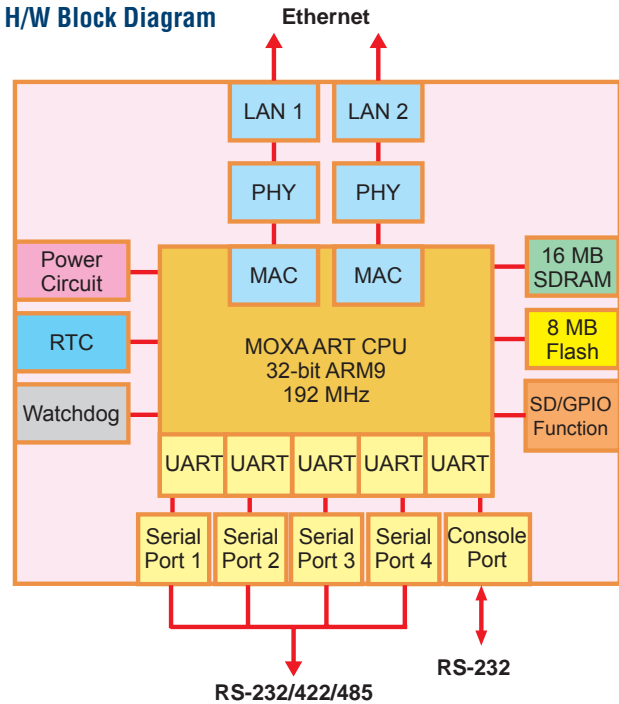


Pin Assignment



PIN	RS-232	RS-422/485-4w	RS-485-2w
1	DCD	TxD-(A)	-
2	RxD	TxD+(B)	-
3	TxD	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	Data-(A)
5	GND	GND	GND
6	DSR	-	-
7	RTS	-	-
8	CTS	-	-

H/W Block Diagram



Software Specifications

µClinux

Kernel Version: 2.6.19

Protocol Stack: ARP, ICMP, IPV4, TCP, UDP, FTP, Telnet, SNMP V1, HTTP, CHAP, PAP, DHCP, NTP, NFS V2, SMTP, Telnet, PPP, PPPoE

File System: JFFS2, root file system (read only), and user directory (read/write)

System Utilities: msh, busybox, tinylogin, telnet, ftp

pppd: Dial in/out over serial port daemon, including PPPoE (Point-to-Point over Ethernet)

- snmpd:** SNMP V1 Agent daemon
- telnetd:** Telnet server daemon
- inetd:** TCP server manager program
- ftpd:** FTP server program
- boa:** Web server daemon
- ntpd:** Network Time Protocol client utility
- Tool Chain:**
 - Arm-elf-gcc: C/C++ PC Cross Compiler
 - µClibc: POSIX standard C library

Ordering Information

Available Modules

EM-1240-LX: RISC-based embedded core module with 4 serial ports, dual LANs, SD, µClinux OS, -10 to 60°C operating temperature

EM-1240-T-LX: RISC-based embedded core module with 4 serial ports, dual LANs, SD, µClinux, -40 to 75°C operating temperature

Development Kits (must be purchased separately)

EM-1240 Development Kit: Includes the EM-1240-DK snap-on testing board with built-in RJ45 LAN ports and DB9 male serial ports

Package Checklist (module)

- EM-1240-LX or EM-1240-T-LX embedded module

Package Checklist (Development Kit)

- EM-1240 embedded module
- EM-1240-DK, the carrier board for the EM-1240 module
- Universal power adaptor set
- Ethernet cable: RJ45 to RJ45 cross-over cable, 100 cm
- DB9 female to terminal block adaptor
- Terminal block (300V, 15A)
- Universal power adaptor set
- Document and Software CD
- Quick Installation Guide (printed)
- Warranty Card