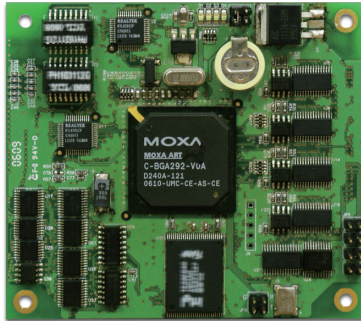


# EM-1240 Series

***RISC ready-to-run embedded core modules with 4 serial ports, dual LANs, SD***



- > MOXA ART ARM9 32-bit 192 MHz processor
- > 16 MB RAM, 8 MB flash disk onboard
- > 4 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 µClinux 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-1240 embedded module features 4 RS-232/422/485 serial ports, dual Ethernet ports, and an SD socket for external storage expansion. The modules have a compact design that can be easily integrated with industrial applications such as gas stations, vending machines, and ticketing machines, and offer a powerful serial communication capability for better system integration. Programmers

will find that the pre-installed, ready-to-run µClinux 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-1240 Embedded Module

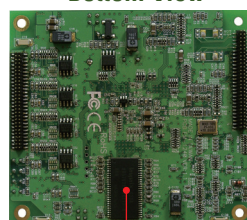
#### EM-1240 Embedded Module

##### Top View



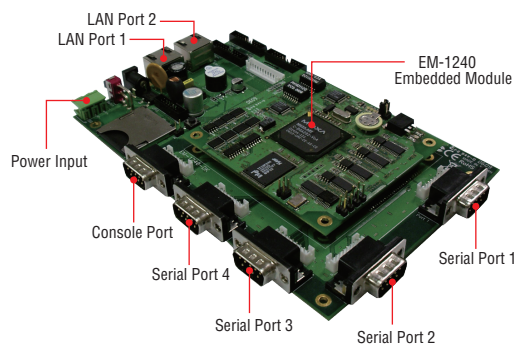
Onboard Intel NOR Flash 8 MB

##### Bottom View



onboard Flash 16 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 4, software-selectable

**ESD Protection:** 15 kV for all signals

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

### 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-1240 Module: 50 g (0.11 lb)

• EM-1240 Development Kit: 200 g (0.44 lb)

#### 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)

#### 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:** 5 VDC

**Input Current:** 500 mA @ 5 VDC

**Power Consumption:** 2.5 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

### 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:** 385,419 hrs

**Standard:** Telcordia (Bellcore) Standard

### Warranty

**Warranty Period:** 5 years

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

### µClinux

**OS:** µClinux 2.6.19

**File System:** JFFS2

**Internet Protocol Suite:** ARP, ICMP, IPV4, TCP, UDP, FTP, Telnet, SNMP V1, HTTP, CHAP, PAP, DHCP, NTP, NFS V2, SMTP, Telnet, 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)

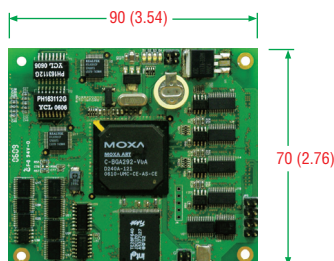
• arm-elf-gcc: C/C++ cross-compiler

• µClibc: POSIX standard C library

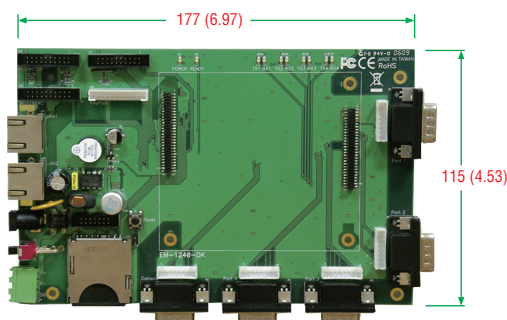
### Dimensions

Unit: mm (inch)

EM-1240



EM-1240-DK



## 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 (can 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 (modules)

- EM-1240 module

### Package Checklist (development kits)

- EM-1240 module
- EM-1240-DK, the carrier board for the EM-1240 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