

# EM-1240 New

## RISC-based Ready-to-Run Embedded Core Module with 4 Serial Ports, Dual LANs, SD, $\mu$ Clinux



### Features

- > MOXA ART ARM9 32-bit 192 MHz processor
- > On-board 16 MB RAM, 8 MB flash disk
- > 4 software-selectable RS-232/422/485 serial ports
- > Dual 10/100 Mbps Ethernet for network redundancy
- > RS-232 serial console port supports PPP
- > Ready-to-run  $\mu$ 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



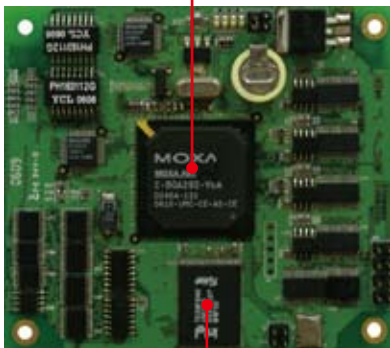
### Overview

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  $\mu$ Clinux platform and the full-function development kit make it easy to develop software and build a reliable communication base for industrial automation applications.

### Appearance

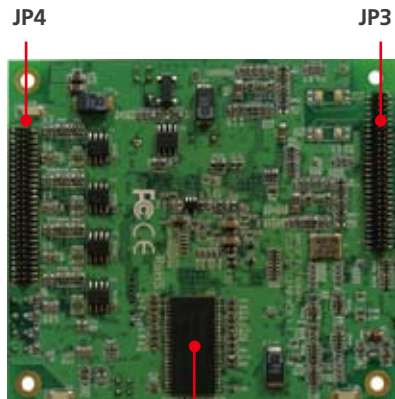
Top View

MOXA ART ARM9 32-bit Communication Processor



onboard Intel NOR Flash 8 MB

Bottom View



onboard 16 MB RAM

## Hardware Specifications

### System

- CPU:** MOXA ART ARM9 32-bit 192 MHz processor
- DRAM:** 16 MB onboard (optional 32 MB for ODM)
- Flash:** 8 MB onboard (optional 16 MB for ODM)
- Storage Expansion:** SD signals for external Secure Digital (SD) socket connection
- Console Port:** RS-232 x 1, full signal, supports PPP
- Other:** RTC, buzzer, Watchdog Timer
- OS:** Built-in embedded  $\mu$ Linux Kernel 2.6.9

### Network Communication

- LAN:** Auto-sensing 10/100 Mbps x 2
- Protection:** Built-in 1.5 KV magnetic isolation protection

### Serial Communication

- Serial Port:** RS-232/422/485 x 4, software-selectable
- Protection:** Built-in 15 KV ESD protection for all signals
- Data bits:** 5, 6, 7, 8
- Stop bits:** 1, 1.5, 2
- Parity:** None, Even, Odd, Space, Mark
- Flow Control:** RTS/CTS, XON/XOFF, RS-485 ADDC™
- Speed:** 50 bps to 921.6 Kbps, supports Any Baudrate

### LEDs

- System:** Ready x 1
- LAN:** 10M/Link x 2, 100M/Link x 2
- Serial:** TxD x 4, RxD x 4

### Power Requirements

- Power Input:** External 5 VDC through pin header

### Mechanical

- Dimensions (W x L):**  
EM-1240: 90 x 80 mm  
EM-1240 Development Kit: 177 x 115 mm
- Weight:** EM-1240: 50 g, EM-1240-Development Kit: 200 g
- Module Interface:** Two 2 x 28 pin-headers;  
pitch: 1.27 x 1.27 mm

### Environmental

- Operating Temperature:** -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

### Regulatory Approvals

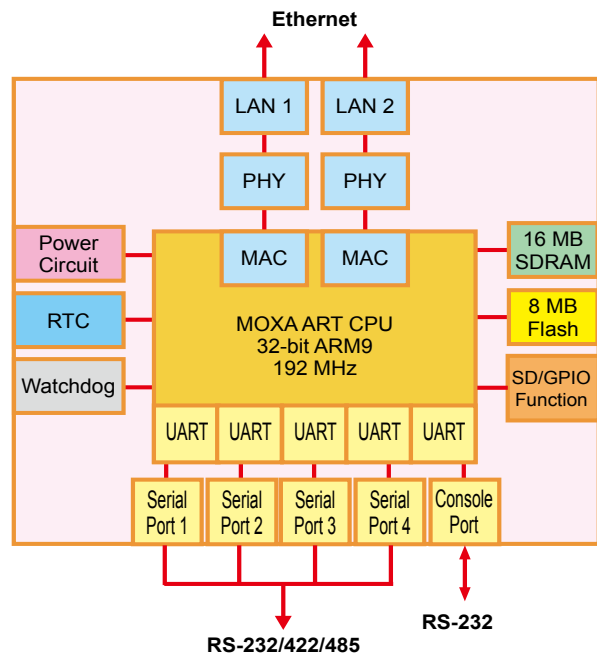
- EMC:** FCC Part 15, CISPR 22 Class A  
CE Class A: EN55022 Class A, EN61000-3-2 Class A,  
EN61000-3-3, EN55024

**Warranty:** 5 years

## Software Specifications

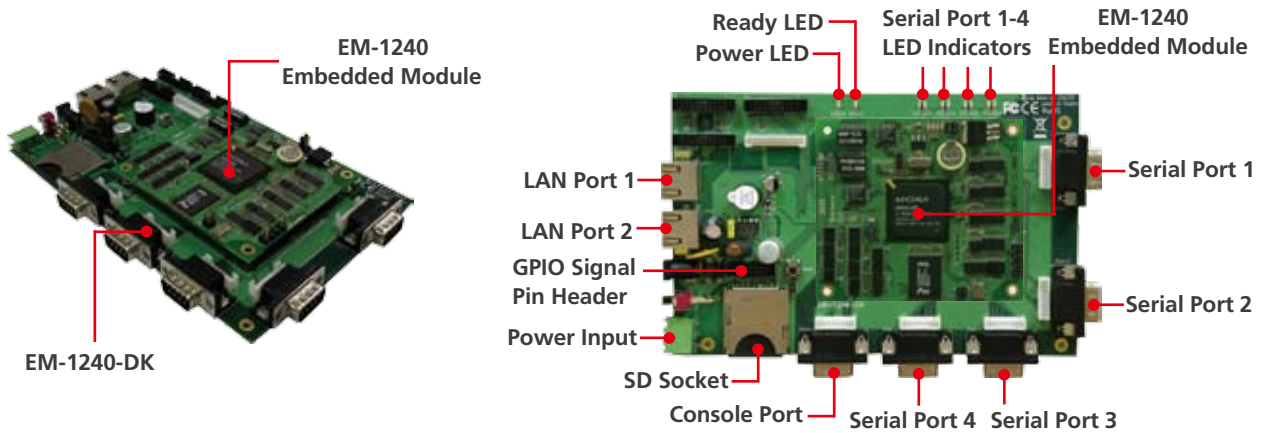
- Kernel Version:**  $\mu$ Linux Kernel 2.6.9
- Protocol Stack:** ARP, ICMP, IPV4, TCP, UDP, FTP, Telnet, SNMP V1/V2c, HTTP, CHAP, PAP, DHCP, NTP, NFS V2/V3, SMTP, Telnet, PPP, PPPoE
- File System:** JFFS2 for Kernel, Root File System (Read Only) and User Director (Read / Write)
- Msh:** Minix shell command
- pppd:** Dial in/out over serial port daemon, including PPPoE (Point-to-Point over Ethernet)
- Snmpd:** SNMP V1 Agent daemon
- Busybox:** Linux normal command utility
- Tinylogin:** login and user manager utility
- Telnetd:** Telnet server daemon
- Telnet:** Telnet client daemon
- Inetd:** TCP server manager program
- ftpd:** FTP server program
- ftp:** FTP client program
- Boa:** Web server daemon
- ntpd:** Network Time Protocol client utility
- Tool Chain:** (supports both Linux and Windows)  
Arm-elf-gcc: C/C++ PC Cross Compiler,  
 $\mu$ Clibc: POSIX standard C library
- UC Finder:** UC's LAN IP broadcast searching utility for Windows and Linux

### H/W Block Diagram



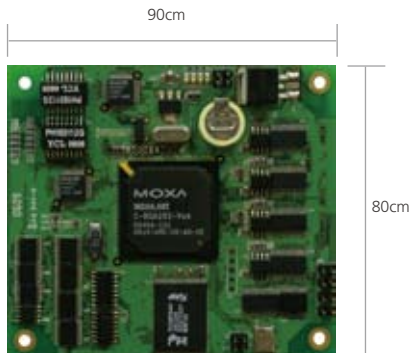
EM-1240

## Development Kit Appearance



## Dimensions

EM-1240 Embedded Module

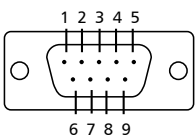


EM-1240-DK



## Pin Assignment

### Male DB9



PIN	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxD(-)	TxD(-)	---
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	---	---	---

## Items included with the EM-1240 Development Kit

- EM-1240 Embedded Module
- EM-1240-DK, the carrier board for the EM-1240 Development Kit
- Quick Installation Guide
- Document & Software CD
- Cross-over Ethernet cable
- Female DB9 to Terminal Block converter
- Terminal Block (300V, 15A)
- Universal Power Adaptor Set
- Product Warranty Statement

## Ordering Information

**EM-1240-LX** New  
RISC-based Ready-to-Run Embedded Core Module with 4 Serial Ports, Dual LANs, SD, µClinux OS

**EM-1240-LX Development Kit** New  
EM-1240-LX Development Kit