

EM-2260 Series

RISC-based embedded core modules with 4 serial ports, 8 DI/DO, dual LANs, VGA, CompactFlash, USB



- > Cirrus Logic EP9315 ARM9 CPU, 200 MHz
- > 128 MB RAM on-board, 32 MB flash disk
- > Graphical interface for external VGA output connection
- > 2 KV optically isolated RS-232/422/485 serial ports
- > Dual 10/100 Mbps Ethernet for network redundancy
- > 8 DI and 8 DO channels
- > Supports CompactFlash and USB 2.0 hosts
- > Ready-to-run WinCE 6.0 or Linux platform
- > Full-function development kit for quick evaluation and application development

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-2260 embedded module features 4 RS-232/422/485 serial ports, dual Ethernet ports, an EIDE interface for designing an external storage connection, such as a CompactFlash socket and USB port signals. The module has a compact design that is easily integrated with a variety of industrial applications, including gas stations, vending machines, and ticketing machines, and offers a powerful serial communication capability for better system integration. Programmers will find the pre-installed, ready-to-run Windows CE 6.0 platform and full-function development kit a great benefit to developing software and building reliable communication bases for industrial automation applications.

The EM-2260 embedded module uses the Cirrus Logic EP9315 ARM9, 32-bit, 200 MHz RISC CPU. This powerful computing engine supports several useful communication functions, but will not generate a lot of heat. The built-in 32 MB NOR Flash ROM and 128 MB SDRAM

give you enough memory to run your application software directly on the EM-2260. With its built-in VGA output interface, the EM-2260 is suitable for use with SCADA systems in industrial applications, such as manufacturing automation, production line process monitoring, and mining automation, that require VGA and HMI features.

The EM-2260 comes pre-installed with either the open standard Linux OS, or the more common WinCE OS. Software written for a desktop PC can be easily ported to the EM-2260 platform by using a common compiler, without needing to modify the code, and the software you develop for your own applications can be stored in the EM-2260's flash memory.

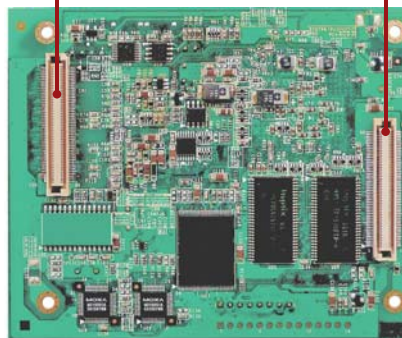
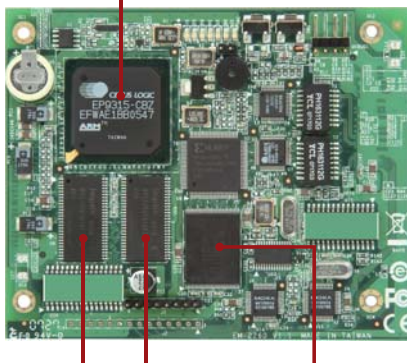
The EM-2260 Development Kit provides users with a handy tool for first time evaluation to test the functionality of the embedded core module. It has several peripherals built-in, including RS-232/422/485 ports and digital input and output, making it suitable for developing a variety of industrial applications.

Appearance

Cirrus Logic EP9315 ARM9 CPU

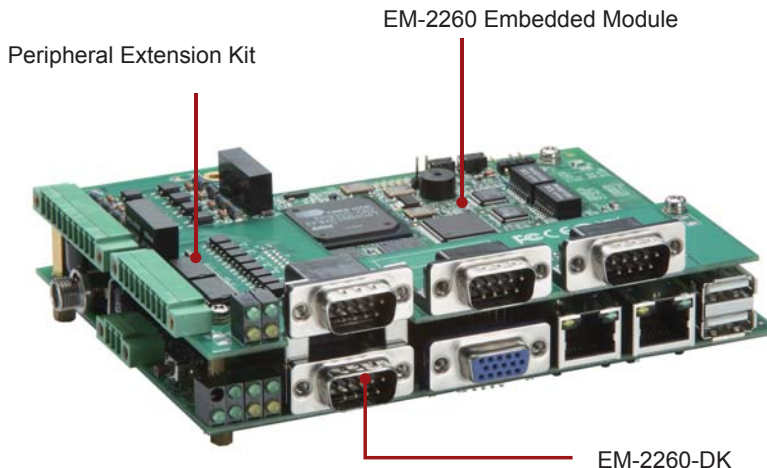
CN1

CN2



onboard 128 MB RAM onboard 32 MB Flash

EM-2260 Embedded Module



Hardware Specifications

Computer

CPU: Cirrus Logik EP9315 ARM9 CPU, 200 MHz
OS (pre-installed): Windows CE 6.0 or Linux
DRAM: 128 MB onboard (optional 256 MB)
Flash: 32 MB

Storage

Storage Expansion: EIDE interface for connecting up to 2 external devices

Display

Graphics Controller: EP9315 internal graphics accelerator engine with TTL graphical signal support
Display Memory: Dynamic video memory (shares system memory)
Resolution: 1024 x 768, 8 bits

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
Console Port: RS-232 (TxD, RxD, GND), 4-pin pin header output (115200, n, 8, 1)

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

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

Digital Input

Input Channels: 8
Input Voltage: 3.3 V, CMOS level

Digital Output

Output Channels: 8
Digital Output Levels: 3.3 V, CMOS level

Reset Button: Supports "Reset to Factory Default"

Physical Characteristics

Weight: 70 g
Dimensions: 106 x 87 mm (4.17 x 3.43 in)

Environmental Limits

Operating Temperature: -10 to 60°C (14 to 140°F)
Operating Humidity: 5 to 95% RH
Storage Temperature: -20 to 80°C (-4 to 176°F)

Power Requirements

Input Voltage: 12 VDC
Power Consumption: 5.8 W (480 mA @ 12 VDC)

Regulatory Approvals

EMC: CE (Class A), FCC
Green Product: RoHS, WEEE

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

Software Specifications

Linux

Kernel Version: 2.6.23

Protocol Stack: ARP, PPP, CHAP, PAP, IPv4, ICMP, TCP, UDP, DHCP, FTP, SNMP V1, HTTP, NTP, NFS, SMTP, SSH 1.0/2.0, SSL, Telnet, PPPoE, OpenVPN

File System: JFFS2, NFS, Ext2, Ext3, VFAT/FAT

System Utilities: bash, tinylogin, telnet, ftp, smtpclient, scp, busybox

telnetd: telnet server daemon

sshd: secure shell server

Apache: web server daemon

openvpn: virtual private network

pppd: dial in/out over serial port daemon

snmpd: snmpd agent daemon

inetd: TCP server manager program

openssl: open SSL

Linux Tool Chain:

- GCC (V3.3.2): C/C++ PC Cross Compiler
- GDB (V5.3): Source level debug server
- Blibc (V2.2.5): POSIX standard C library

Windows Embedded CE 6.0

System Utilities: Windows command shell, telnet, ftp, web-based administration manager

File System: FAT (on-board flash)

Protocol Stack: TCP, UDP, IPv4, SNMP V2, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SNTP, Telnet, FTP, PPP

Telnet Server: Allows remote administration through a standard Telnet client

FTP Server: Used for transferring files to and from remote computer systems over a network.

File Server: Microsoft® Windows® CE functionality enables clients to access files and other resources over the network.

Web Server (HTTPD): Includes ASP, ISAPI Secure Socket Layer support, SSL 2, SSL 3, and Transport Layer Security (TLS/SSL 3.1) public key-based protocols, and Web Administration ISAPI extensions.

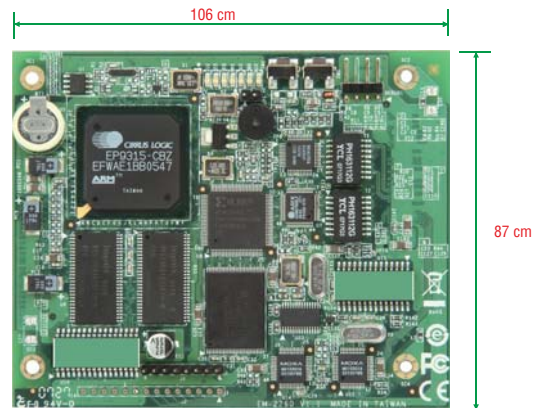
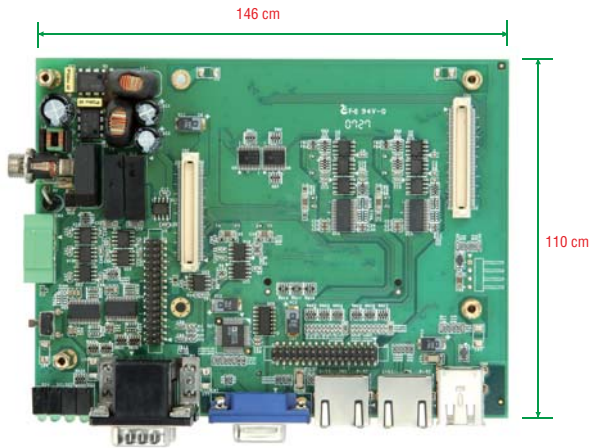
Dial-up Networking Service: RAS client API and PPP, with support for Extensible Authentication Protocol (EAP) and RAS scripting.

Watchdog Service: CPU hardware function for resetting CPU in a user specified time interval. Activated by Moxa library function.

Application Development Software:

- Moxa WinCE 6.0 SDK
- C Libraries and Run-times
- Component Services (COM and DCOM)
- Microsoft® .NET Compact Framework 2.0 with SP2
- XML, including DOM, XQL, XPATH, XSLT, SAX
- SOAP Toolkit
- Winsock 2.2

Dimensions



Ordering Information

Available Modules

EM-2260-CE: RISC-based embedded core module with 4 serial ports, 8 DI and 8 DO channels, dual LANs, VGA, CompactFlash, USB, WinCE 6.0 OS

EM-2260-LX: RISC-based embedded core module with 4 serial ports, 8 DI and 8 DO channels, dual LANs, VGA, CompactFlash, USB, Linux OS

Development Kits (must be purchased separately)

EM-2260-CE Development Kit: Includes the EM-2260-CE module and EM-2260-DK carrier board for testing and application development

EM-2260-LX Development Kit: Includes the EM-2260-LX module and EM-2260-DK carrier board for testing and application development

Package Checklist (modules)

- EM-2260-CE or EM-2260-LX embedded module

Package Checklist (development kits)

- EM-2260 embedded module
- EM-2260-DK, the carrier board for the EM-2260 module
- Universal power adaptor set
- Ethernet cable: RJ45 to RJ45 cross-over cable, 100 cm
- Document and Software CD
- Quick Installation Guide (printed)
- Warranty Card