Quad Port 10/100/1000 Ethernet XMC Adaptor, Rugged Conduction-Cooled

RoHS
2002/95/EC

APPLICATIONS

The XM 510/x24-RC is a high performance ruggedized conduction-cooled quad Gigabit copper interface Ethernet adaptor. The XM 510/x24-RC is suitable for use with XMC Host Boards including VME and CompactPCI®. The board is designed for applications that require high-speed data throughput and lower-latency communications, such as high-speed image transfer, fast industrial control operations and telecommunications. This board is rear I/O plug compatible with the XM 510/x24 and XM 510/x24-RA families.

HIGHLIGHTS

- Ruggedized XMC Graphics Adaptor:
  - conduction-cooled to ANSI/VITA 20-2001 (R2005)
  - conformally coated
  - -40°C to +85°C operating temperature
- 4 x high performance Gigabit Ethernet interfaces:
  - 10Base-T/100Base-Tx/1000Base-T
  - RJ45 connectors
  - onboard Ethernet magnetics
  - 1000Mbps with CAT5e/6 cabling
  - speed and status indicators
- XMC (Switched Mezzanine Card) format:
  - single size CMC (Common Mezzanine Card)
  - up to x4 PCI Express® interface
- Rear I/O via either a PMC Pn4 connector or XMC Pn6 connector

- Extended temperature versions available:
  - -25°C to +70°C (E-Series)
  - -40°C to +85°C (K-Series, includes humidity sealant)
- Ruggedized air-cooled version (RA-Series) planned:
  - -40°C to +75°C, conformally coated
  - see separate XM 510/x24-RA datasheet
- Non-ruggedized air-cooled versions available:
  - see XM 510/x24 datasheet
  - rear plug compatible with ruggedized versions
  - useful for bench development
  - use in commercial (non-rugged) applications
- Software support for Linux®, VxWorks®, Windows® 2000, Windows® XP, Windows® XP Embedded and QNX®
- For use with ruggedized VME, VXS, CompactPCI, and other XMC host boards

Ruggedized XMC Graphics Adaptor
- conduction-cooled to ANSI/VITA 20-2001 (R2005)
- conformally coated
- non-ruggedized version also available:-
  → see XM 510/x24 datasheet
- air-cooled version also planned:-
  → see XM 510/x24-RA datasheet

Gigabit Ethernet Interfaces
- 4 x 1000Base-T/100Base-Tx/10Base-T
- factory build options for:-
  → 4 x Ethernet via PMC Pn4 or XMC Pn6 connector
- onboard Ethernet magnetics
- implemented by 2 x Intel® 82575EB Gigabit Ethernet controllers:-
  → supports IEEE 802.3ab for 1000Base-T over Category 5e/6 UTP (Unshielded Twisted Pair) Cable
  → supports IEEE 802.3/802.3u for 10Base-T/100Base-Tx over Category 5 UTP cable
  → supports Jumbo frames
- individual MAC and frame Controllers supporting the following features:-
  → 8 Kbyte transmit and receive FIFOs for each port
  → 48 Kbyte per-port packet buffer
  → transmit and receive IP, TCP and UDP checksum off-loading
  → transmit TCP segmentation
  → automatic retransmission
  → automatic receive stripping and transmit padding (individually programmable)
  → automatic runt frame rejection
- physical interfaces (PHY) implemented by the Intel 82575EB devices internally supporting:-
  → 1000Base-T/100Base-Tx/10Base-T auto-negotiation
  → automatic polarity and MDI/MDI-X selection
  → full and half duplex operation
- onboard status LEDs and LED signals via optional XMC Pn6 connector

XMC Interface
- complies with PCI Express Protocol Specification 2.0 including:-
  → x4 PCI Express® interface
  → trains down to x2 or x1
- PCI Express switch provides expansion from single x4 port to 2 x4 ports connecting to the Ethernet controllers

BIOS EPROM
- 8-bit wide 128 Kbyte SPI Flash EPROM with PXE BIOS Firmware:-
  → one per Ethernet controller
- in-circuit programmable

Rear I/O via Pn4 PMC or Pn6 XMC (including LED signals on Pn6)

XMC (PCI Express)
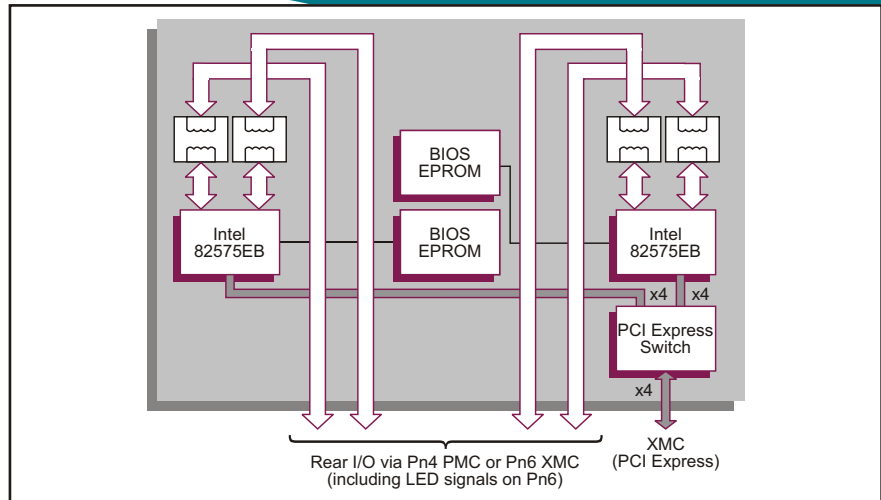
Software
- support for Linux®, VxWorks®, Windows® 2000, Windows® XP, Windows® XP Embedded and QNX®

Electrical Specification
- +5V@2.0A or +12v@0.8A (maximum with quad 1000Base-T operating)
- voltages ±5%
- 3.3V and -12V not utilized

Environmental Specification
- operating temperature VITA 47 Class CC4
- storage temperature VITA 47 Class C4
- operating altitude -1,000 to 50,000 feet (-305 to 15,240 meters)
- 5% to 95% Relative Humidity, non condensing (operating/storage)
- ruggedized and commercial air-cooled versions, see separate datasheets:-
  → rear plug compatible
  → air-cooled: XM 510/x24-RA (planned)
  → commercial: XM 510/x24 (available)

Mechanical Specification
- single size CMC (Common Mezzanine Card) 74mm x 149mm
- 10mm height stack module
- operating shock - VITA 47 Class OS2
- operating vibration - VITA 47 Class V3

ORDERING INFORMATION

Order Number	Product Description (Hardware)
XM 510/124-30RC	Conduction-cooled Quad Port Gig Ethernet XMC Adaptor, 4 x rear panel outputs (with Ethernet magnetics) via XMC Pn6 rear I/O connector
XM 510/224-30RC	Conduction-cooled Quad Port Gig Ethernet XMC Adaptor, 4 x rear panel outputs (with Ethernet magnetics) via PMC Pn4 rear I/O connector

For commercial or ruggedized air-cooled versions, see separate datasheets or contact your local sales office