MERCATOR II PC/104-Plus Module with Quad 10/100 Ethernet and Digital I/O

DIAMOND SYSTEMS

4 PCI-based 10/100 Ethernet ports

Pin header Ethernet connections

Ethernet activity LEDs for each port

24 digital I/O lines on ISA bus

Rugged design for harsh environments

Operating temperature -40ºC to +85ºC

Fully PC/104-*Plus* compliant mechanical design

Multiple assembly options: 1 or 2 Ethernet ports, with or without digital I/O

◆ Description

The Mercator II PC/104-*Plus* module integrates 4 PCI-based 10/100 Ethernet ports with 24 user-configurable digital I/O lines in the compact and rugged PC/104 format. This 2-in-1 combination of Ethernet and digital I/O can help lower the size and cost of your embedded system by eliminating one additional board from your PC/104 stack.

The Ethernet ports are driven by two dual Micrel KSZ8842 Mac + Phy PCI controller chips, two ports per chip, and are NE2000 compatible. Each chip has a unique MAC address; therefore, only two Ethernet ports are visible to the end user for active communication. The other two ports work in switch fashion to enable daisy chaining of networks with one port on the chip as an uplink to a network while the other port provides active communication on the network.

The 24 digital I/O lines are based on an 82C55 chip and feature programmable direction in 4- and 8-bit groups. All I/O lines contain user-configurable 10K ohm pull-up resistors for convenience.

Extended temperature capability (-40ºC to +85ºC) enables the board to operate in environments with extreme temperature swings, such as vehicles or outdoor installations. In addition, the board may be custom-configured with 0-ohm resistors in place of jumper blocks for increased ruggedness in high-vibration environments.
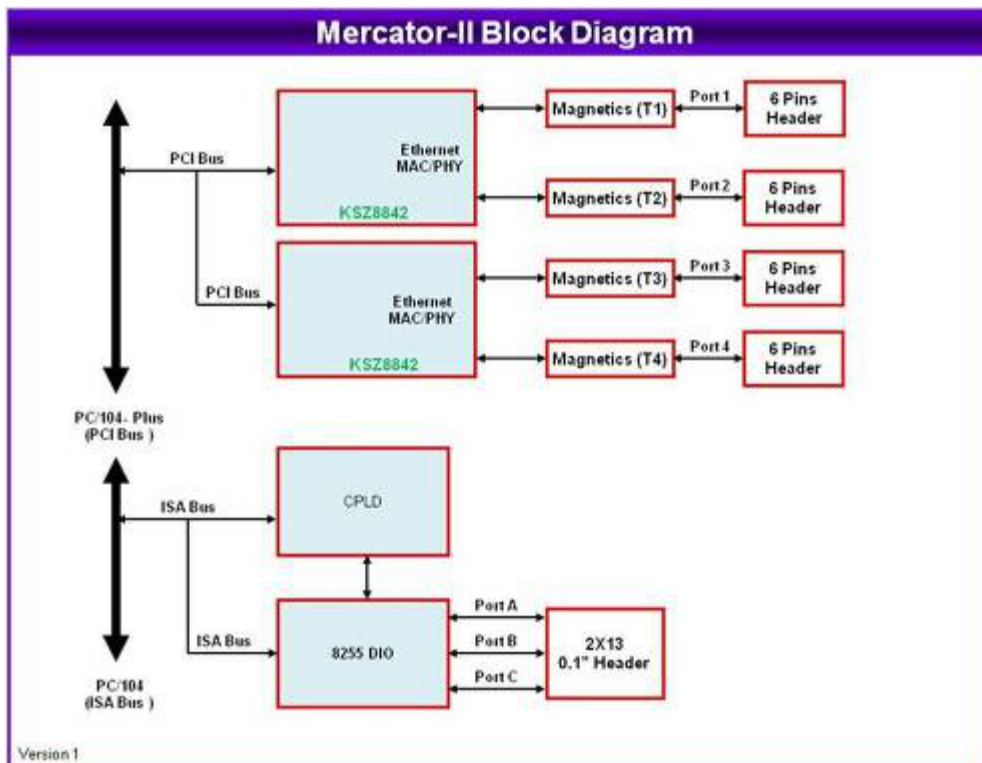
Diamond Systems offers appropriate mating cables for your convenience. Cable number C-PRZ-02 provides a panel-mountable RJ-45 connector for the Ethernet, and cable number C-26-18 is a 26-conductor ribbon cable for the digital I/O.

◆ Configuration Options

Several features are configurable using either a dual-row 2mm size jumper block or a switch. Provision is made on the board for zero-ohm resistors to replace jumpers to enable a hard-wired configuration.

- Digital I/O base address (8 address options with 3 jumpers)
- Digital I/O configuration: pull-up enabled or disabled
- PCI slot selection for each Ethernet port

◆ Block Diagram

◆ I/O Headers

Ethernet Pin Header

This pin header is a locking 1x6 position right-angle header. The pinout is compatible with Diamond Systems' cable number C-PRZ-02, which provides a panel-mountable RJ-45 jack.

1	Common
2	RX-
3	Common
4	RX+
5	TX-
6	TX+

Digital I/O

The digital I/O is provided on a 26-pin (2x13) pin header with the following pinout.

C7	**1**	**2**	C6
C5	**3**	**4**	C4
C3	**5**	**6**	C2
C1	**7**	**8**	C0

B7	**9**	**10**	B6
B5	**11**	**12**	B4
B3	**13**	**14**	B2
B1	**15**	**16**	B0
A7	**17**	**18**	A6
A5	**19**	**20**	A4
A3	**21**	**22**	A2
A1	**23**	**24**	A0
+5V	**25**	**26**	Ground

◆ Digital I/O Configuration

The following I/O addresses are selected with jumpers or 0-ohm resistors. All addresses are in hex.

A	B	C	Address
In	In	In	200-203
Out	In	In	240-243
In	Out	In	280-283
Out	Out	In	2C0-2C3
In	In	Out	300-303
Out	In	Out	340-343
In	Out	Out	380-383
Out	Out	Out	3C0-3C3

◆ Specifications

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Ethernet	
Number of Ethernet ports	4
Protocol	IEEE 802.3 10Base-T and 100Base-TX compatible
Maximum data rate	100Mbps
Digital I/O	
Number of I/O lines	24
Direction	Programmable: Ports A and B individually programmable for all input or all output. Port C programmable in 4-bit groups for input or output
Input voltage	Low: -0.5V min, 0.8V max High: 2.0V min, 5.5V max
Output voltage	Low 0.0V min, 0.4V max High 3.0V min, Vcc - 0.4V max
Output current	2.5mA max, each line
Pull-up resistors	10KΩ pull-up
General	
I/O headers	
Ethernet ports	6-pin straight male headers
Digital I/O	26-pin (2x13) .025" square pin header on .1" centers
Mating cables	

Ethernet ports	Cable number C-PRZ-02
Digital I/O	Cable number C-26-18
Dimensions	3.55" x 3.775" (PC/104-Plus standard)
Power supply	+5VDC 10%
Operating temperature	-40ºC to +85ºC
Operating humidity	5% to 95% noncondensing
PC/104-Plus bus	Both ISA and PCI stackthrough headers installed

◆ Ordering Information

◆ Specifications

Mercator II		
available models:		
MRC-424-XT	PC/104-Plus Quad 10/100Mbps Ethernet Module with 24 Digital I/O, extended temperature	Min Order Quantity
Please login or signup for an online quote request.		