DY-4 SPMC-221-0000

Ethernet PMC Module

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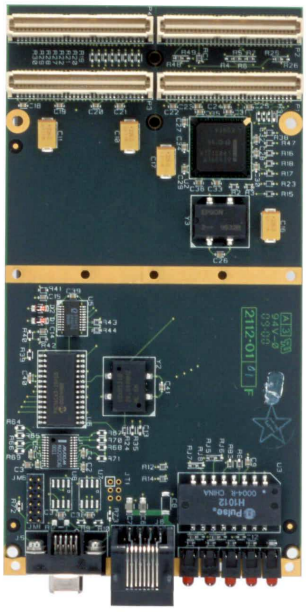
PMC ENET-01

Ethernet and EIA-232 PMC Module

Features

- One 10/100 BaseTX (twisted pair) Ethernet™ port
- IEEE 802.3u Auto-Negotiation support
- One EIA-232 serial port Serial port supported only on CHAMP-AV and CHAMP-C6
- Front panel RJ-45 and Micro-D connectors
- Rear panel I/O also provided
- 33MHz, 32-bit PCI interface
- Stacker option (PPMC compliant host)
- Status LEDs
- VxWorks device driver
- Available in a range of ruggedization

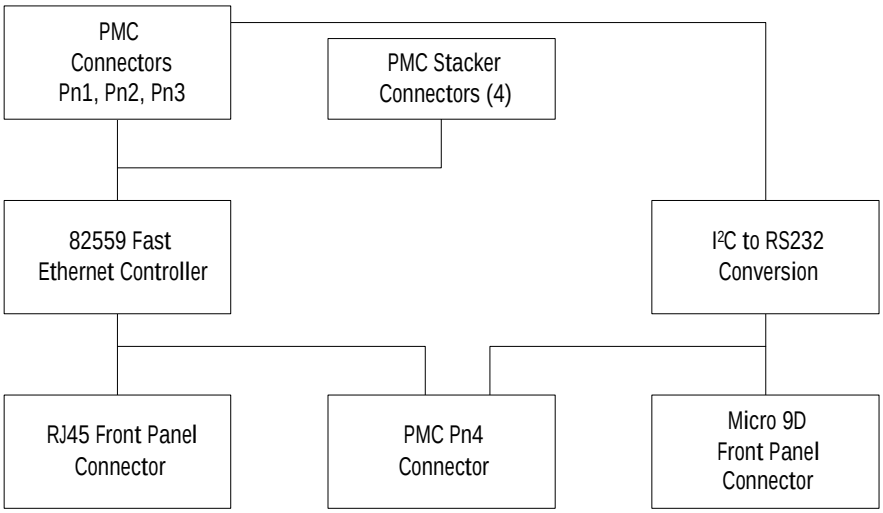


Description

The PMC ENET-01 is a PMC module which provides one 10/100 BaseTX (twisted pair) Ethernet™ port and one EIA-232 serial port. The module may be used to add these interfaces to the CHAMP-AV and CHAMP-C6 DSP cards, for development of software with VxWorks or other tools that take advantage of Ethernet. The module is also suitable for deployment in commerical and rugged systems. This PMC card can be used in a 3.3V or 5.0V PCI signaling environment and is designed to operate in air-cooled or conduction-cooled applications and can be ordered with front or rear panel connections. The front panel option uses a standard RJ45 for Ethernet and a Micro DB9 for the RS232 port. The stacking option causes the module to intrude into the adjacent slot in a development chassis (ie. 2 backplane slots). Using this option allows the user to develop application code without sacrificing a PMC slot for Ethernet and serial ports during development. Without the stacking connectors the PMC module is compliant with all PMC specifications.

The PMC ENET-01 takes advantage of the Intel 82559ER integrated MAC/PHY Ethernet device that is capable of operating in 10Base-T or 100Base-TX modes. The 82559ER has IEEE 802.3u Auto-Negotiation support that allows 10 or 100 Mbps data rates. This device resides on the PCI bus and uses INTB# on the PMC connector. The PMC ENET-01 card forces the PCI bus to operate at 33 MHz.

Figure 1: PMC ENET-01 Block Diagram



The PMC ENET-01 card makes use of the IOPlus I2C port (On CHAMP-AV and CHAMP-C6 boards) that is routed to four reserved pins on the PMC Pn2 connector. This is a two-wire, multi-master interface. Its use as an intermediate bus is transparent to the user application. However, applications should be aware that the I2C bus is used and should not alter the state of the I2C control registers or its interrupt vectors. An I2C controller chip on the PMC ENET-01 converts the I2C data stream from the IOPlus and generates signals that are converted to RS232 signal levels. On the air-cooled version, these signals are routed to the Micro DB9 connector on the front panel. The conduction- cooled version provides rear panel I/O that allows the signals to be routed to the Pn4 PMC connector for VME P2 or P0 backplane connectivity

The baud rate of the serial port is fixed on the PMC ENET-01 by jumper settings that are sensed at power-up. The VxWorks serial device driver is programmed to accept any baud rate and modem control commands, and return 9600 baud should an application try and read the baud rate (the I2C interface parameters are not software reprogrammable). Six jumpers are used on the PMC ENET-01 to set various operating modes and baud rates and are defined in the CHAMP User's Manual.

Note that the serial port on the conduction-cooled version is rated for card edge temperatures up to 60°C.

Five LEDs are visible for Ethernet link status and serial port status and are defined below:

- LED1: Ethernet Activity — LED is on when transmit or receive activity is detected
- LED2: Link Integrity — LED is on when link integrity is valid in 10 or 100 Mbps mode
- LED3: Ethernet Speed — LED is on when 100 Mbps is detected, off in 10 Mbps mode
- LED4: Serial Port Status — LED is reserved and is not available to the user
- LED5: Serial Port Status — LED is reserved and is not available to the user

The PMC ENET-01 is designed to allow two PMC cards to reside in one PMC slot. The PMC ENET-01 has a "stacking" capability that uses 4 extra PMC connectors on the top of the card to extend the PCI and user-defined signals to an additional PMC. The board is designed to be PPMC compliant, which allows two PCI devices to reside on the same PMC card. The stacker option routes separate BR#, BG#, IDSEL, and INTA# signals to the extra PMC connectors. This gives the user the ability to use the PMC ENET-01 while developing code without giving up a PMC slot. Note that not all base-boards support PPMC compliance which is required to use the stacking option. Software Support The PMC-ENET-01 is supported by the VxWorks BSP that is available for the CHAMP-AV and CHAMP-C6 DSP boards. The driver is supported for use on the 8240 (IOPlus) processor.

Table 1: Specifications

RUGGEDIZATION LEVELS*		
SPMC card	Available in level 0	
DPMC card	Available in level 100 (/rs-232 serial port limited to 65^{0}C operation	
POWER REQUIREMENTS		
+3.3V +5.0V	0.2A Typical 0.2A Typical	
DIMENSIONS		
	Size	**Weight**
SPMC card	per IEEE 1386.1	<150 g (<0.33 lb.)
DPMC card	per IEEE 1386.1 (VITA 20-199x)	<160 g (<0.35 lb.)

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