

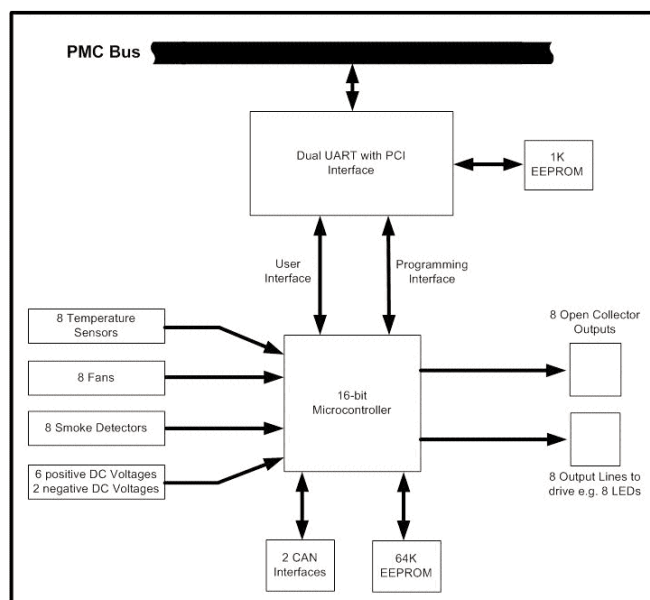
► Environmental Monitoring and Control Adapter

The Environmental Monitoring and Control (EMAC) Adapter provides a compact solution for monitoring the health of a system's internal environment, including power supplies, temperatures, smoke detectors and cooling fan operation. Eight open collector and eight digital output lines are also provided for the control of the monitored system.

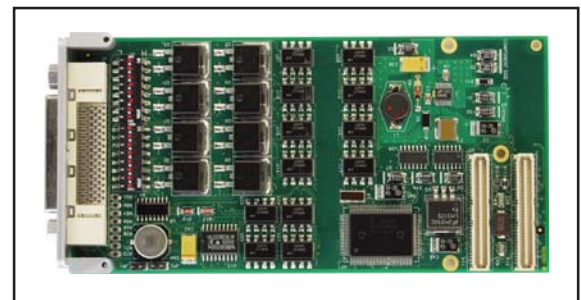
The adapter is available in the following industry standard compliant formfactors :

- PMC
 - Air-cooled PMC adapter with frontpanel I/O (IEEE Std 1386.1-2001)
 - Conduction-Cooled PMC (CCPMC) adapter with backplane I/O (ANSI/VITA 20-2001)
- PC/104-Plus (PC/104-Plus v2.0)

A standalone EMAC unit (based on the board-level EMAC Adapter) is also available. In the standalone form, the EMAC communicates to its host via an RS-232 serial link.



EMAC Architecture



EMAC PMC

Features

- The EMAC PMC and CCPMC Adapters employ a PCI-based dual channel, industry standard 16550 compatible UART
- The EMAC PC/104-Plus Adapter employs both a PCI and an ISA-based dual channel UART. Either of these can be configured to interface with the EMAC functions, the other UART providing two additional COM ports to the user
- Equipped with a Watchdog Timer to restart the EMAC PMC Adapter in case of software failure
- The firmware is field upgradeable

Functions

- **Monitoring**

Power Supply Voltages

Up to six positive and two negative DC (Direct Current) voltages can be monitored via a 10-bit analogue-to-digital converter. The EMAC PMC Adapter is configured to monitor -12 V, +5 V, +12 V and +24 V by default, but can be modified to measure a wider range of DC voltages.

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Temperature

Up to eight DS18S20 or DS18B20 temperature sensors can be monitored at any time. Power to the sensors is supplied by the EMAC PMC Adapter.

Fan Speed

The rotation speed of up to eight cooling fans can be monitored at any time. The EMAC PMC Adapter is able to connect to an open collector signal output or a TTL compatible output of a cooling fan sensor equipped with Pulse Width Modulated (PWM) outputs. The output signal of each cooling fan is isolated by a photocoupler.

Smoke Detectors

The status of up to eight smoke detectors can be monitored at any time by the EMAC PMC Adapter. The output signal of each smoke detector is isolated by a photocoupler.

- **Controlling**

Eight outputs to drive, for example, LEDs. Eight open collector outputs can sink 24 V @ 1,6 A each to control, for example warning lamps and alarms or for other functions. The default configurations are :

Power Warning : When any one of the power modules exceeds the user-specified operating temperature.

Temperature Warning : When any one of the temperature sensors indicates temperatures outside the user-specified range.

Voltage Warning : When any one of the power modules operates outside the user-specified voltage limits.

User Warning : Any function can be implemented in firmware on request.

Specifications	
Bus Interface	32-bit, 33/66 MHz Electrically : PCI Rev.2.3, 3,3 V and 5,0 V signalling
I/O Addresses	Automatically assigned to the slot by PCI Rev. 2.3 Plug-and-Play
EEPROM	1 K EEPROM for board PCI ID (Plug-and-Play) and configuration options. 64 K EEPROM for configuration and user parameters, accessed via the embedded firmware
Interrupt	PCI INT A
I/O Interface	Various frontpanel (PMC and PC/104+) and rear connector (PMC and CCPMC Jn4) pin assignments
Data Rate	4 800 baud to 38,4 kbaud (9 600 baud standard)
CAN Interface	Two Controller Area Network (CAN) interfaces provided, conforming to CAN Specification Version 2.0 Part A and B, with a maximum bit rate of 1 MHz
Power	5,0 V @ 0,60 A (PCI / ISA supply) 6,0 V to 60,0 V @ 0,45 A (external supply)
Software	The EMAC uses an industry standard UART to the user. As such, no specific driver is required for most Operating Systems. VxWorks source code to locate the device in PCI spates and obtain a pointer to the UART is supplied as an example



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Characteristics		
Formfactor	Dimensions	Weight
PMC (IEEE Std 1386.1-2001)	149,00 mm x 74,00 mm, conforming to CMC envelope	92 ± 10 g
CCPMC (ANSI/VITA 20-2001)	143,65 mm x 74,00 mm, conforming to VITA 20 envelope	80 ± 10 g
PC/104-Plus (PC/104-Plus v2.0)	95,9 mm x 90,2 mm x 23,8 mm	100 ± 10 g

Reliability			
MTBF	Figures according to MIL-HDBK-217F, Parts Stress Method		
	Ground, Mobile Naval, Sheltered Airborne, Inhabited Cargo	T _a = 45 C T _a = 40 C T _a = 55 C	30 000 hours 40 000 hours 30 000 hours

Environmental Specifications			
	Commercial Grade	Industrial Grade	Conduction-Cooled/Ruggedised Grade
Temperature - Operating - Storage	0 C to +55 C -40 C to +85 C	-15 C to +75 C -40 C to +85 C	-40 C to + 85 C -55 C to +125 C
Humidity	0% - 90%	0% - 95%	0% - 95%
Shock	N/A	30 g peak for 11 ms	40 g peak for 11 ms
Vibration - Sine - Random	2 g (peak) 10 Hz to 100 Hz 0,04 g ² /Hz at 15 Hz to 2 kHz	10 g (peak) 5 Hz to 2 kHz 0,1 g ² /Hz at 15 Hz to 2 kHz	10 g (peak) 5 Hz to 2 kHz 0,1 g ² /Hz at 15 Hz to 2 kHz

Part Selector			
Part Designation	Formfactor	Grade	I/O Option
CCII/EMAC/PMC/FP/COM	PMC	Commercial	Frontpanel or Backplane I/O
CCII/EMAC/PMC/FP/IND	PMC	Industrial	Frontpanel or Backplane I/O
CCII/EMAC/PMC/FP/RGD	PMC	Ruggedised	Frontpanel or Backplane I/O
CCII/EMAC/PMC/BP/CC	CCPMC	Conduction-Cooled	Backplane I/O
CCII/EMAC/PC104/FP/COM	PC/104-Plus	Commercial	Frontpanel I/O
CCII/EMAC/PC104/FP/IND	PC/104-Plus	Industrial	Frontpanel I/O
CCII/EMAC/PC104/FP/RGD	PC/104-Plus	Ruggedised	Frontpanel I/O