PC/104 Summary

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PC/104 Summary



PC/104 gets its name from the popular desktop personal computers initially designed by IBM called the PC, and from the number of pins used to connect the cards together (104). PC/104 cards are much smaller than ISA-bus cards found in PC's and stack together which eliminates the need for a motherboard, backplane, and/or card cage. Power requirements and signal drive are reduced to meet the needs of an embedded system. Because PC/104 is essentially a PC with a different form factor, most of the program development tools used for PC's can be used for a PC/104 system. This reduces the cost of purchasing new tools and also greatly reduces the learning curve for programmers and hardware designers.

The PC/104 form factor was developed by Ampro Computers in California in the late 1980's. The specification was published in 1992 in order to enhance popularity. Now over 150 vendors manufacture PC/104 compatible products including controller cards, software, and accesories.

- Description of the PC/104 configuration used by UNAVCO
- How to install RedHat LINUX 5.2 on the PC/104
- Click here to see some Pictures - rev 1a
- Click here to see some Pictures - rev 1b

Specifications and Features of Different Components of PC/104 in

Use at UNAVCO

Processor

The PCM-586 is a small high-performance, embeddable computer system on a single PC/104 form factor board. It features the ACC Micro 2089 plus the AMD 5x86 running at 133 MHz. It can be populated with up to 64 Megabytes of factory installed SMT DRAM. Its full PC/AT hardware, and industry standard AWARD BIOS, assure full hardware and software compatibility with PC software and operating systems. The PCM-586 includes on board interfaces for floppy disks, IDE fixed disks, parallel printer, and two serial channels with RS-232, RS-422, or RS-485 capability on either or both channels. A full 16-bit PC/104 expansion bus is provided for further expansion to an entire industry of add-on peripherals including high-speed VGA controllers, sound and speech modules, SCSI controllers, Analog I/O modules, and literally hundreds of other options available from WinSystems and a variety of other vendors.

Features



High Integration 133MHz 5x86 Processor Board
PC/104 Sized Module
Up to 32 Megabytes of ruggedized SMT DRAM
Onboard Solid State Disk support for EPROM, SRAM, or FLASH
Industry Standard AWARD BIOS with POST
Two PC Compatible Serial Ports with optional RS-422/RS-485 support
Standard Parallel Printer Port
Watchdog Timer with Powerfail/Reset
Onboard 16-bit IDE Interface
Onboard Dual Floppy Disk Controller
Standard AT Keyboard Support
Real-Time Clock with Battery Backup
Status and Hard Disk LED's
+ 5 Volt Only Operation

PC/104 Processor Specifications

VGA Monitor

The PCM-FPVGA is a third generation CRT/Flat Panel VGA controller module. It supports standard VGA CRT output as well as a variety of Flat Panel Displays using optional Flat Panel Adapter (FPA) modules. Other options include Multi_Video display capability, PC Video Input, and NTSC video output.

Features



PC/104 CRT/Flat Panel VGA Controller
Uses C & T 65540 High Performance Video Controller
Supports CRT outputs of up to 1024 * 768 with 256 colors
High Performance zero wait-state writes
Supports True-Color and Hi-color displays of up to 640 * 480
Optional Multi-Video Support
Optional NTSC Video Output
Optional PC Video overlay capability
SMARTMAP intelligent color to gray scale conversion
Full IBM VGA compatible
Optional FPA adapter modules for Flat Panel use

PC/104 VGA Specifications

DC to DC Inverter

The PCM-DC/DC is available in a variety of models ranging from single 5 volt models to triple voltage output models including +12V and -12V. Each of these models provides input reverse polarity protection and fused inputs. The outputs are short circuit protected and provide full regulation with no minimum load requirement.

Features



PC/104 Bus DC/DC Power supply
Wide input ranges for nominal 12V, 24V, and 48V inputs
Input polarity reversal protection
Fused Input line
Triple output voltages of +5, +12, and -12 Volts
Voltage Status LED's
Output short circuit protection
Wide operating temperature range

PC/104 DC/DC Specifications

Serial Ports

The LPM/MCM-COM4A is a 4 channel serial 8250 compatible PC/104 Module based on the Startech 16C554. It is ideally suited for applications that require exact PC compatible hardware to the register level. Each channel is factory configured for RS-232 usage, but by installing optional line driver IC's each channel may be individually configured for RS-422 ir RS-485 modes. Versatile interrupt routing allows for individual or shared interrupts. Eight I/O mapping options allow for a total of up to 26 COM port addresses in a PC style system.

Features



Quad 8250 Compatible UARTS
Asynchronous Data rates to 115Kbps
Optional RS-422/RS-485 usuage on any or all channels
I/O Mapping PLD for COM1 through COM26 selection
+5 Volt only operation
Shared interrupt capable with interrupt ID register
Software programmable FIFO up to 16 bytes deep

PC/104 Serial Port Specifications

Ethernet BNC

The PCM-NE2000-BNC is a PC/104 Ethernet adapter which is software compatible with the Novell NE2000 ISA bus Ethernet card. This compatibility allows the use of a wealth of driver software existing for the NE2000. Nearly all network software vendors and real-time O/S vendors support the NE2000 architecture directly or with drivers they supply themselves. The PCM-NE2000-BNC can be configured either by using the onboard jumper block or can be used in a software-configured "jumperless" mode.

Features



NE2000 Compatible PC/104 Ethernet Controller
Uses National AT/LANTIC™ High Integration Controller

802.3 Ethernet Compliant with 10BASE2 Support
+5 Volt only Operation
Can be configured via jumpers or jumperless through configuration software
Onboard EEPROM stores configuration information
Boot ROM socket for Diskless Network access

Ethernet BNC Specifications

Memory

Designed to replace traditional rotating disk drives, SanDisk FlashDrives are embedded solid-state data storage systems for mobile computing and the industrial work place. The 1.8 inch FlashDrives are compatible with 1.8 inch form factor hard disk drives. The 2.5 and 3.5 inch FlashDrives are compatible with 2.5 and 3.5 inch form factor disk drives. These FlashDrives, and all SanDisk FlashDrives, feature an extremely light weight, low profile form factor with 32 megabytes (MB) to 1.2 gigabytes (GB) capacity. SanDisk FlashDrives fit into standard disk drive bays, use the industry standard IDE interface and connect to the host system via the same ribbon cable used to connect standard disk drives. No additional device drives are necessary.

Features



Up to 1.2 GB of solid-state storage
Fully MS-DOS compatible
Very low power
Very rugged
Very low weight
Noiseless
Very high performance
3.3V or 5V interface
Block size of 512 bytes
Supports automatic power management as well as ATA power down commands and sleep mode over the interface
Automatic error correction and retry capabilities

Sophisticated defect management system

PC/104 Memory Specifications

UPS Power Supply

Features

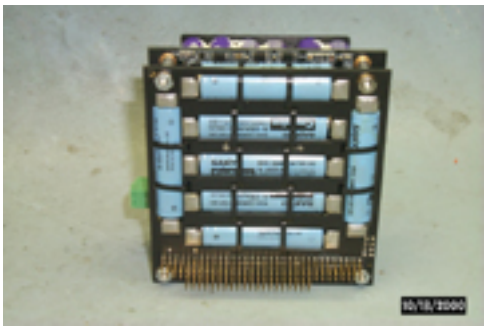


60 Watt Output
6 to 40 VDC input range
Reverse input protection
+5V, +12V, -5V & -12V outputs
High power smart charging
UPS operation with battery pack
Multistage charging SLA, NiCd, NiMh
SMBus Level 3 compatible charger for Lilon
PC/104 compliant, highly compact
Temperature range: -40 to +85 (deg Celsius) operation

UPS Specifications

Battery Pack for UPS power supply

Features



Nickel Cadmium batteries
7AA x 0.6A hr. with digital temperature sensor
3.78" x 3.5" x 0.592" (L x W x H)
Weight: 7.78 oz / 220.45 grams
Temperature range: -20 to +60 C

Relevant Links

- What is PC104
- How PC104 Technology can work for you
- Index to PC104 boards
- PC104 Supplier Link Page
- Real Time Devices USA
- Embedded applications of GPS
- PC104 Technical Information

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