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Find the *WinSystems PCM-586-133-16M* at our website: *Click HERE*

WinSystems®
PC/104 MODULE

PCM-586
5x86
Single Board Computer

FEATURES

- 133 MHz 5x86 PC/104 single board computer
- PC-AT software compatible
- Runs DOS and Windows CE/3.1/95/98/NT
- Up to 32Mbytes of surface mounted EDO DRAM
- Solid state disk socket supports onboard bootable 32-pin DIP PE-ROM, SRAM or (EP)ROM
- Supports Flash Disk (DOC2000 and DOC2800)
- Industry standard BIOS with POST
- 16-bit PC/104 bus expansion connector
- Two serial ports; COM1 and COM2 with RS-232, optional RS-422/485 for both channels
- EPP/ECP-compatible printer port (LPT)
- Onboard 16-bit IDE hard disk interface
- Onboard floppy disk controller
- AT-compatible keyboard controller
- PS/2 Mouse port
- Standard PC/AT interrupt controllers, DMA controllers and counter timers
- Real-time clock with battery backup
- Watchdog timer and power fail reset
- Status and hard disk activity LEDs
- Speaker port
- Small size: 3.6 x 3.8 inches (90mm x 96mm)
- +5 volt only operation
- Operational temperature: -40° to +70° Celsius



WinSystems' PCM-586 is a compact, 5x86-compatible single board computer (SBC). It provides PC-AT power, performance and compatibility for space- and budget-limited industrial applications. Even though the board is PC-AT compatible, it will operate without disks, keyboard or a monitor.

The PCM-586 is well suited for portable and mobile products because of its small size, onboard Floating Point Unit, +5V operation, and vast amount of software tools, utilities, and operating systems support.

The PCM-586 can operate as a standalone SBC or expanded with PC/104 modules to meet a system's hardware configuration requirements.

FUNCTIONAL CAPABILITY

Processor - The PCM-586 CPU operates at 133 MHz. It includes a high-performance, 80-bit floating point processor (FPU) for math intensive applications. The AMD5x86 CPU also includes 16KB of onboard cache. The core logic is based upon the Auctor 2089 which includes the DRAM controller, bus interface, the AT peripheral core logic, two COM channels, FDC and IDE controllers, keyboard and mouse controllers, and printer port on a single highly integrated chip.

Memory - Up to 32Mbytes of surface mounted EDO Dynamic RAM is populated on the board with options of either 4MB, 16MB or 32MB. These parts are soldered directly onto the board to improve reliability for applications subject to shock and vibration.

The PCM-586 is shipped from the factory with an industry standard BIOS installed in a 128KB Flash PEROM. At reset, the BIOS is shadowed into the DRAM so that it will execute faster.

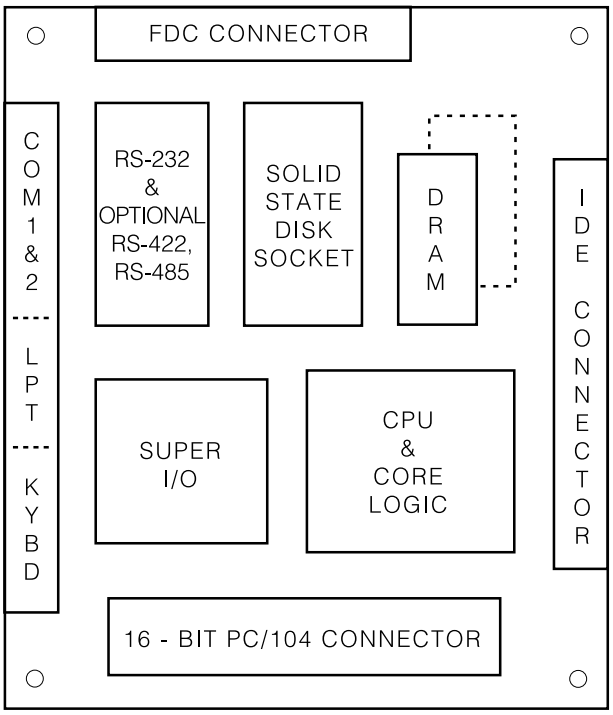
Solid State Disks (SSD) - A user can substitute onboard semiconductor devices for applications where the environment is too harsh for mechanical hard disks or floppy disk drives while offering significant speed advantages.

The 32-pin socket can support a 512K x 8 EPROM, SRAM, or Atmel Flash (PEROM), a 1M x 8 EPROM, or a M-Systems' DiskOnChip2000.

WinSystems provides an installable device driver called USSD.SYS for use with MS-DOS and ROM-DOS operating systems. The driver supports both PEROMs (+5V Flash) and SRAMs.

ROMDISK - A diskette imaging program called MKDISK is provided to simplify the creation of a bootable ROMDISK made from a floppy diskette. Since the

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PCM-586 BLOCK DIAGRAM

bootable ROMDISK is an exact image of a bootable floppy diskette, all testing and debugging can be accomplished by using a floppy drive. Once the application is ready for ROM, it is a simple matter to use the MKDISK utility to create the EPROMs necessary for a bootable ROMDISK equivalent of the functioning floppy.

Flash Disk Support - A 32-pin, M-Systems' DiskOnChip2000 is also supported as a higher density, cost-effective, SSD option. Capacities are 8 to 288 megabytes which are available in either commercial or industrial temperature ranges.

A single device provides a capacity from 8 to 288 MByte and it includes an integrated flash file system. The file system provides hard disk read/write compatibility, automatic bad block management, and wear leveling. It works in a variety of operating system environments such as DOS, Windows CE/95/98/NT, pSOS+, QNX, Linux and even non-O/S environments as well.

Direct Memory Access (DMA) - Seven, 8237-compatible DMA channels are supported with Channel 0 dedicated to the DRAM refresh and Channel 2 dedicated to the floppy disk controller. The other channels are wired to the PC/104 connector.

3.5" and 5.25" Floppy Disk Support - Up to 2 floppy disk drives are supported by the on board controller which provides access via a standard 34-pin connector.

16-Bit IDE Hard Disk Interface - A 40-pin header connector handles all command, data, and status I/O lines to an industry standard IDE interface. A status LED provides a visual status during data transfers.

The IDE interface can be cabled directly to WinSystems' PCM-CFLASH. This is a PC/104 adapter module that supports removable CompactFlash cards while offering hard disk software compatibility.

Serial Communications - A dual 16C550-compatible port provides two independent, double-buffered, full-duplex, asynchronous serial channels. Each channel has a 16-byte FIFO for the transmit and receive channels. The ports are mapped at COM1 and COM2 respectively which offers software compatibility with PC-type driver programs.

Independent control of transmit, receive, line status and data set interrupts are on both channels. Each channel is setup to provide internal diagnostics such as loopback and echo mode on the data stream. The unit contains two independent on-chip software programmable baud rate generators selectable from 50 through 115.2 K bits per second. Individual modem handshake control signals are supported for both channels.

RS-232 interface levels are supported on both channels. The RS-232 drivers have an on-chip charge pump to generate the plus and minus voltages so that the PCM-586 only requires +5 volts to operate.

CBL-247-1 COM1 & COM2 RS-232 Pin-Out

Pin	Flow	Signal
1	IN	Data Carrier Detect (DCD)
2	IN	Receive Data (RxD)
3	OUT	Transmit Data (TxD)
4	OUT	Data Terminal Ready (DTR)
5	—	Signal Ground (GND)
6	IN	Data Set Ready (DSR)
7	OUT	Request To Send (RTS)
8	IN	Clear To Send (CTS)
9	IN	Ring Indicator (RI)

Optionally, both RS-422 or RS-485 electrical levels can be supported on both COM1 and COM2 by removing the RS-232 transceivers and installing the optional CK-75176 chip kit. The RS-422/485 configuration provides separate balanced transmit and receive signal pairs. For RS-485 multi-drop lines, one signal pair can be used for "party line" network structures.

Both serial channels are configured as Data Terminal Equipment (DTE) and wired to a 50-pin connector at the edge of the board. WinSystems offers the optional CBL-247-1 which adapts each serial channel to 9-pin male "D" connectors with PC-AT compatibility.

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Line Printer Port - The PCM-586 provides for a Centronics-type parallel printer port. Its configuration register allows the port to be programmed in either a PS/2 type bidirectional parallel port, Enhanced Parallel Port (EPP), or Extended Capabilities Port (ECP) modes.

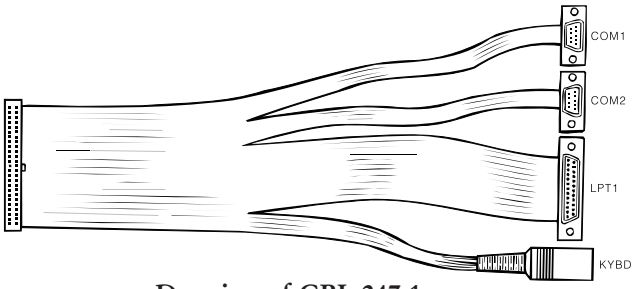
The printer port mapped at LPT1 (278-27F hex). The parallel signal lines are wired to J2, the 50-pin right angle connector. WinSystems' CBL-247-1 Multi-I/O cable adapts the signals from the PCM-586 to a 25-pin female "D" socket connector with strain relief.

Keyboard Controller - An integrated 80C42 equivalent keyboard controller supports a PC/AT-type keyboard. It is accessed via the CBL-247-1 cable.

CBL-247-1 Keyboard Female Connector Pin-Out

Pin	Signal
1	Keyboard Clock
2	Keyboard Data
3	N/C
4	Ground
5	+5 volts

I/O Connector - WinSystems offers a Multi-I/O connector for the COM1, COM2, LPT1 and keyboard. These four ports are combined into one 50-pin header at the top of the board. The CBL-247-1 is a 1 foot adapter cable that offers a more convenient termination. COM1 and COM2 are 9-pin male "D" with strain relief. LPT1 is a 25-pin "D" female socket with strain relief. The keyboard is a standard 5-pin DIN connector.



Drawing of CBL-247-1

PS/2 Mouse Input - A PS/2-compatible mouse controller is on the PCM-586. Its input is accessible through a 5-pin connector on the board's edge. WinSystems offers an optional CBL-225-1 adapter cable to interface to the PS/2 mouse connector.

Interrupts - Two 82C59A compatible interrupt controllers accept inputs from the onboard peripherals and the PC/104 Bus for a total of twelve selectable interrupt sources.

Timers - Three, independent 82C54 compatible 16-bit timers are supported. Channel 0 is wired to interrupt Channel 0, Channel 1 generates the DRAM refresh using DMA Channel 0, and Channel 2 is used by the speaker port.

Real-Time Clock/Calendar - A Dallas Semiconductor DS12885 real-time clock is used as the AT-compatible clock/calendar. It supports a number of features including periodic and alarm interrupt capabilities. In addition to the time and date keeping functions, the system configuration is kept in CMOS RAM contained within the clock section.

Watchdog Timer - A software/hardware enabled, retriggerable watchdog timer is provided. This timer must be updated at least once every 1.5 seconds otherwise a failure is assumed and the board will be reset. This circuit is important for use in remote and unattended applications.

Reset - A precision voltage comparator monitors the +5 volt status. Upon detection of an out-of-tolerance condition, the board is reset. This action is critically important in order to detect brown-out or power fail conditions. The reset circuit also ensures that the power is nominal before executing a power-on reset. This circuit also inhibits the processor's memory write line, preventing invalid data from being written to battery backed static RAMs or EEPROMs during power fluctuations.

Battery Back-up - A 350 mAH battery supplies the PCM-586 board with standby power for either or both SRAM memory sockets, the real-time clock and CMOS set-up RAM.

A power supervisory circuit contains the voltage sensing circuit and an internal power switch to route the battery or stand-by voltage to the circuits selected for backup. The battery automatically switches ON when the Vcc of the systems drops below the battery voltage and back OFF again when Vcc returns to normal.

Speaker - An 3-pin header is provided for the speaker output. An optional ADP-SPEAKER board is available from WinSystems that includes an amplifier and speaker for remote mounting.

PC/104 Bus -The PCM-586 board is populated with either a 16-bit, stackthrough or non-stackthrough, PC/104 Bus connector. A "-ST" suffix identifies the board if it has a stackthrough connector installed.

The PC/104 connector allows multiple PC/104 modules to easily plug together without requiring a backplane. Video, analog I/O, digital I/O, modems, LANs, or other special purpose cards can be installed to meet the applications' hardware requirements.

Power - Power is brought into the board through an 8-pin connector. The ±12 volts is wired directly to the PC/104 connector and is not used by the PCM-586.

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SOFTWARE SUPPORT

The PCM-586 is designed to be PC-AT software compatible. This means that it will work with a host of operating systems software, executives, development tools and utilities to quickly create software for embedded systems. It works with ROM-DOS, MS-DOS, Linux, Windows NT and Windows 3.1/95/98/CE as well as other popular real-time operating systems such as QNX, VxWorks and RTXC that require a "PC/AT" hardware environment.

An Award, industry standard BIOS is supplied that provides configuration flexibility, performance and AT compatibility. It supports both 720KB and 1.44MB 3.5 inch and 360KB and 1.2MB 5.25 inch floppy disk drives, AT-compatible keyboards, and other standard BIOS features. Additionally, it supports a remote serial console allowing the PCM-586 to be set and the system run through the COM1 or COM2 ports without the need for a keyboard or display.

Software Developers Kit (SDK) - WinSystems offers the SDK2-PCM-104 software developers kit to supply the necessary hardware, software and cables to begin program development with the PCM-586 board. It consists of Microsoft DOS 6.x, CBL-247-1 Multi-I/O cable, a 2GB or larger hard disk plus controller cable, an 1.44MB high density 3.5 inch floppy disk plus controller cable, speaker/amplifier and triple output power supply housed in a black anodized enclosure.

ROM-DOS Developers Kit (RDK) - WinSystems also offers several different Flash-based developers kits for those applications that do not need rotational media during development. When you order a PCM-586 along with the RDK of your choice, WinSystems will jumper the CPU, program and install the Flash part to your PCM-586. The RDK includes a PS-50W-1, PCM-POST, Flash memory, ROM-DOS, cables and utility software.

SPECIFICATIONS

Electrical

PCM-586 CPU Clock: 133 MHz
PC/104 Interface: 16-bit, stackthrough or non-stackthrough
Serial Interface: 2 Serial channels with RS-232 levels RS-422/485 optional using the CK-75176 kit.
LPT Interface: Bidirectional Centronics type
IDE Interface: 16-bit, supports 2 drives
Floppy Disk Interface: BIOS supports one or two 360K/720K/1.2M/1.44M drives
Vcc=+5V +5% @ 1.2A typ: PCM-586-133

System Memory

Addressing: 32 Megabytes
Capacity: 4, 16, or 32MB of EDO DRAM

Solid State Disk

Capacity: One 32-pin memory socket supports up to 512KB SRAM or Atmel Flash, 1MB EPROM, or up to a 288MB DiskOnChip2000

Mechanical

Dimensions: 3.6" x 3.8" (90 mm x 96 mm)
Jumpers 0.025" square posts

Connectors

Serial, Parallel, Keyboard:	50-pin 0.100" grid
Floppy Disk Interface:	34-pin 0.100" grid
IDE Interface:	40-pin 0.100" grid
PS/2 mouse:	5-pin in-line Molex
PC/104 Bus:	64-pin 0.100" socket
	40-pin 0.100" socket
Power:	8-pin in-line Molex
Speaker:	3-pin header

Environmental

Operating Temperature: -40° to +70°C
Non-condensing relative humidity: 5% to 95%

ORDERING INFORMATION

PCM-586--133--4M	4MB, 133 MHz, PC/104 SBC
PCM-586--133-4M-ST	Stackthrough configuration
PCM-586--133-16M	16MB, 133 MHz, PC/104 SBC
PCM-586--133-16M-ST	Stackthrough configuration
PCM-586--133-32M	32MB, 133 MHz, PC/104 SBC
PCM-586--133-32M-ST	Stackthrough configuration
PCM-CFLASH	CompactFlash adapter
SDK2-PCM-104	Software Developers Kit
RDK-PCM-271-XF	ROM-DOS Developers Kit
FLASH-MD2000	DOC2000 Flash Memory (8 - 288MB available, contact the factory)
CBL-174-1	Power cable for the board
CBL-225-1	PS/2 Mouse adapter cable
CBL-247-1	1 ft., Multi-I/O adapter cable
CK-75176-2	RS-422/485 chip kit for 1 channel

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