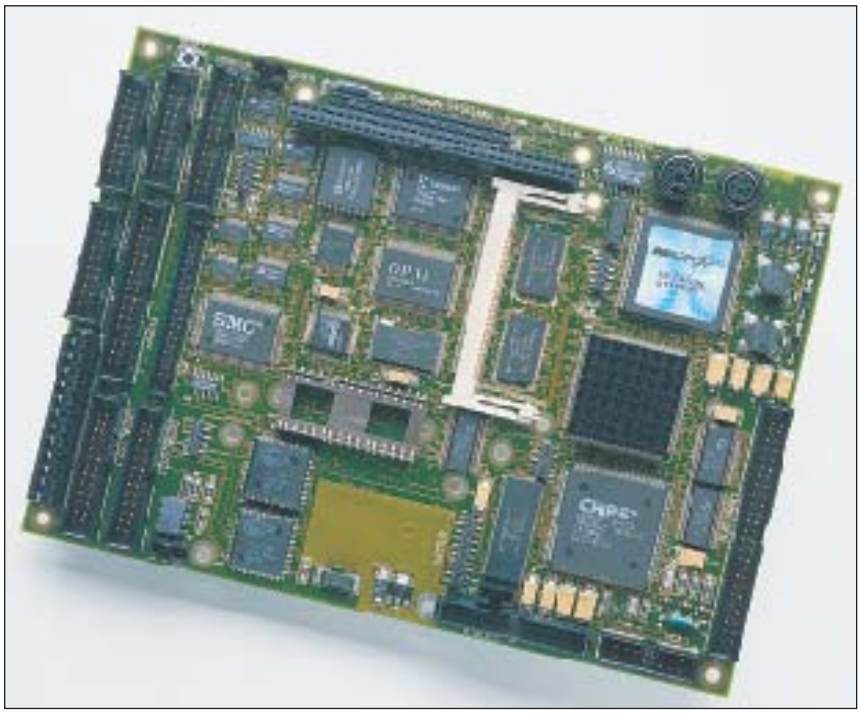
INDUSTRIAL I/O AND GPS CAPABILITY



The PC–510 is loaded with industrial I/O and GPS capability.

Description

The PC–510 is designed for a broad range of applications, including industrial control, communications, GPS, mobile, and portable applications requiring embedded PC compatibility. The PC–510 is targeted for OEM applications, because the on–card features allow you to "customize" it for your particular application. This simplifies the design process and reduces costs. And, you can run DOS, Windows NT, QNX and other real time applications in the mobile or industrial arena.

The PC–510 includes the 133 MHz, 5x86 CPU. According to AMD, this chip has the same processing power as the 75 MHz Pentium®. The 3.3V operation and power management work together to keep power consumption at a minimum.

Rugged DRAM expansion

The PC–510 uses the reliable DIMM connector together with mechanical restraints that prevent memory module movement during shock and vibration. It uses EDO DRAM that executes about 20 percent faster than conventional DRAM. The standard model contains 1 MB and will accept modules from 4 to 32 MB.

PC–510 MOBILE INDUSTRIAL COMPUTER

FEATURES

- ❍ 5x86 133 MHz CPU
- ❍ Up to 48 MB EDO DRAM
- ❍ DOS 7.1 in flash
- ❍ Windows® NT, QNX® compatible
- ❍ 2.5 MB of solid–state disk memory
- ❍ Flash file system
- ❍ Advanced power management
- ❍ Six serial ports
- ❍ 48 lines of digital I/O
- ❍ GPS interface
- ❍ Bidirectional parallel port
- ❍ Floppy & hard disk ports
- ❍ 2 MB video RAM
- ❍ SVGA flat panel interface
- ❍ Watchdog timer
- ❍ Opto–isolated interrupts
- ❍ Locking I/O connectors
- ❍ PC/104 interface
- ❍ 5V operation
- ❍ MTBF 13.6 years

Shock, vibration, and dirt–proof, solid–state disks

SSD0 is a 32–pin DIP socket that supports M–Systems' DiskOnChip from 1 to 32 MB, flash, SRAM, and EPROM to 512K. SSD2 is a surface mount, 2–MB flash that contains the BIOS, DOS, flash file system and other utilities. 1,856K is available for user programs.

Flash file system emulates hard disk

The Phoenix PICO FA™ lets your program sees the flash as a logical DOS drive. Automatic wear leveling increases the life of the flash memories by a factor of 10.

Phoenix BIOS

Octagon has teamed up with Phoenix Technologies to offer a full–featured BIOS with industrial extensions. Much of the on–card industrial I/O can be accessed through simple BIOS calls, eliminating the tedious task of writing your own drivers.

The advanced power management features of the BIOS can be used to reduce power consumption up to 60 percent. Other functions include:

- ❍ Suspend/resume via opto input or software interrupt
- ❍ Wake–up via interrupts, keyboard or COM2
- ❍ Divide CPU clock
- ❍ Contextual save program to disk.

SETUP in EEPROM

To improve system reliability SETUP information is stored both in the normal battery–backed RAM and EEPROM. Applications always use the battery–backed SRAM. On powerup the EEPROM information is automatically copied into the SRAM so that the system will initialize properly even if the battery has failed.

Self–diagnostics simplify testing

The PC–510 has built–in diagnostic software that can verify on–card I/O and memory functions. Should there be a problem, a bi–color LED will flash a sequence identifying the problem. A test fixture, monitor and keyboard are not required.

SVGA GUI has graphics accelerator

The high performance graphics system is based on the C&T 65550 video controller. It supports CRT, LCD, EL and plasma displays. It contains a graphics accelerator and has a connector for PC video to support full motion, video overlay. The 2 MB of video memory support high resolution, display modes and simultaneous CRT and flat panel operation.

Flat panel display support

The PC–510 supports most LCD, EL and plasma panels. It has a 12V connector for powering the backlights used on some displays. It also supports the 3.3V logic required on the newer and future displays. The PC–510 has a variable bias source required for some flat panels. Contact Octagon Customer Service and request the document FLATPNL.DOC for a current list of flat panel displays supported.

Six serial ports eliminate add–on cards

The six serial ports connect to a variety of external devices and eliminate the need for a PC/104 add–on:

- ❍ COM1–4 have RS–232 interface
- ❍ COM5 jumperable for RS–232 or GPS module interface
- ❍ COM6 jumperable for RS–232 or RS–485 for low–cost networking.

All COM ports are programmable to 115K baud and are 16C550 compatible. The 16–byte FIFO buffers on each channel significantly reduce processor overhead.

48 lines of digital I/O

The 48 lines of digital I/O are bit–programmable as inputs or outputs. They are logic level compatible and can sink and source 15 mA. The connector pinout is compatible with Octagon MPB series opto module racks.

GPS interface

For mobile computing applications, the PC–510 contains an electrical and mechanical interface to the Rockwell Jupiter GPS module. Most other GPS modules can also use the same electrical interface.

Opto-isolated interrupts

Real time applications often need hardware interrupts. The PC–510 has two that are optically isolated for safety and may be located up to 50 ft. from the card.

Advanced hardware protection

The desktop PC circuitry found on some industrial computers is usually not appropriate in non–office environments. The PC–510 adds the following protective hardware features:

- ❍ Serial ports exceed the IEC–1000 standard at ±8 kV
- ❍ Serial ports have back–drive protection
- ❍ Parallel port back–drive protected
- ❍ 5V power protected against overvoltage transients and reverse voltage
- ❍ Flat panel interface buffers
- ❍ Opto–isolation on the serial ports.

PC/104 expansion

The 8– and 16–bit PC/104 connector accepts up to three PC/104 modules for system expansion. Even though the PC–510 requires +5V, the ±12V lines are brought from the power connector to the PC/104 connector.

Watchdog timer resets system automatically

The watchdog timer resets the system if the program should stop unexpectedly or enter a nonexiting loop. The watchdog is enabled in software and has a time–out of 1.6 sec. Operation is controlled through a BIOS call.

HALT accelerated life testing improves reliability

During the design phase all cards are subjected to rigorous HALT (Highly Accelerated Life Testing) to help us design and manufacture highly reliable products. The process simultaneously subjects an operating product to multi–axial vibration and rapid temperature cycling. HALT testing lets us validate the MTBF calculation.

Third-party solutions

Octagon is working closely with third–party software and hardware providers to provide maximum compatibility with these products. Some of these cooperative solutions include:

- ❍ QNX real time operating system with bootable SSD support
- ❍ M–Systems DiskOnChip
- ❍ SMC Ethernet drivers
- ❍ Adaptec SCSI drivers
- ❍ Flat panel drivers for several manufacturers.

TECHNICAL SPECIFICATIONS

CPU
5x86, 133 MHz, 3.3V

EDO DRAM
1 MB surface mount with 32 MB DIMM module expansion.

FLASH MEMORY
2 MB flash contains system software and formatted as hard disk. 1,538K available for user programs.

SOLID STATE DISK
32–pin, DIP socket accepts 128K or 512K SRAM, or 512K EPROM, or 512K flash, or 1–32 MB DiskOnChip.

SERIAL I/O
Six ports, 16C550 compatible with 16–byte FIFO buffers on inputs and outputs. COM1–4 are RS–232 with full PC compatibility. COM5 is RS–232 or TTL compatible, and COM6 is RS–232/485 compatible.

DIGITAL I/O
48 lines of bit programmable I/O. TTL compatible, sinks and sources 15 mA. Pull–up/pull–down capability.

GPS INTERFACE
Mechanical and electrical interface for Rockwell Jupiter GPS interface.

PRINTER PORT
Bidirectional; supports current IEEE 1284, EPP/ECP modes, 24 mA of drive.

KEYBOARD AND MOUSE
PS–2 type connectors support AT keyboard and pointing devices.

BATTERY
Connector for AT standard 3.6V, lithium battery.

SPEAKER
Supports standard AT speaker with compatible connector.

EXTERNAL INTERRUPTS
Two interrupt inputs accept four to five 6V inputs. 300 VDC isolation from card circuitry and 100 VDC isolation between channels.

EXPANSION BUS
8– and 16–bit PC/104 interface.

POWER REQUIREMENTS
+5V, ±0.2V, 1.6A, max.
650 mA, max. in suspend mode
±12V supplied to PC/104 connector only. Not required by PC–510.

SIZE
5.75 in. x 8.00 in. (EBX outline). Max. component height 1.0 in.

WEIGHT
8.6 oz, 244 gr.

ENVIRONMENTAL
–40° to 70° C, operating
–50° to 90° C, nonoperating
5% to 95% RH, noncondensing
–300 to 20,000 ft. altitude

ORDERING INFORMATION

#4650	PC–510 with manual
#4658	DVK PC–510 DEV KIT, includes:
	#4866 VTC–20F serial cable
	#2470 Null modem adapter
	#4865 VGA–12 cable
	#1257 CMA–26–24 cable
	#4080 Hard drive cable
	#3447 PC SmartLink™
#3186	AT Battery
#4583	4– MB, EDO DIMM memory module
#4584	8– MB, EDO DIMM memory module
#4582	16– MB, EDO DIMM memory module

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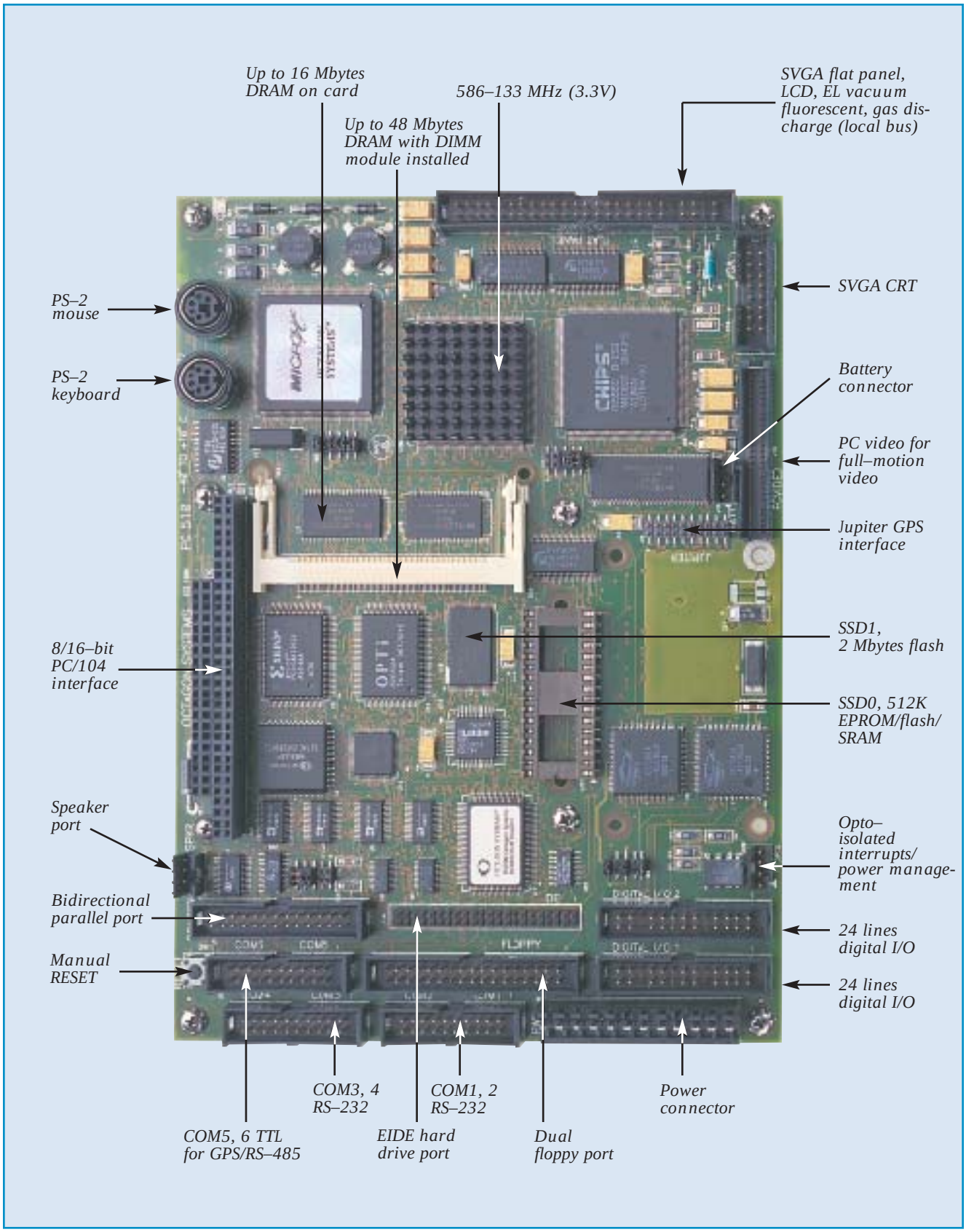

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