OCTAGON SYSTEMS
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- Embedded rugged computers
- –40° to 85° C
- Embedded operating systems
- COTS—high reliability

EPIC board has video, serial, parallel, Ethernet, USB, digital I/O & floppy on a single card

The XE–700 SBC is a low–power, 5th generation x86 workhorse for embedded applications. It is a high–performance single board computer (SBC) with a rich family of essential I/O functions. The XE–700 integrates video, serial ports, parallel port, Ethernet, digital I/O, and USB networking into a single card. Support for a floppy drive and two hard drives gives this card the versatility to adapt to any application. The XE–700 SBC is the solution for applications in transportation, security, military, communications, distributed control, point–of–sale, ticketing machines, weighing equipment, and other similar environments. The low–power requirements make it suitable for situations where battery life or heat dissipation is a concern.

The CPU provides enough computing power for virtually any embedded applications. It is fully compatible with most operating systems. Octagon Systems has developed OS Embedder™ kits with all the necessary drivers to get you quickly up and running with your preferred operating system. The built–in INT17 functions for DOS provide easy access to the enhanced features such as watchdog timer, read/writes to serial EEPROM, and user jumper.

Rugged, reliable service at wide temperature range

Our products are designed and manufactured under a quality management system that is ISO 9001–2000 certified. The XE–700 will withstand high shock and vibration, and operates in temperature ranges from –40° to +80° C. This rugged single board computer will provide years of reliable service in the most challenging environments.

OS Embedder kits available



Reduce the cost of development. Be first to market. The XE–700 SBC is fully compatible with Windows CE.net, Linux 2.6 and DOS. Octagon has developed OS Embedder kits with all the necessary drivers to get you quickly up and running with your required operating system. We are your single hardware and software source with free technical support.



Kits provide everything you need for fast, easy implementation of the operating system of your choice.

- XE–700 CPU
- Cables
- Drivers
- Sample programs
- Documentation
- Free technical support

Features

System :

- 32–bit STPC Atlas CPU, 5th generation x86
- 66/133 MHz clock speed, switch selectable
- PC–compatible DMA controllers, interrupt controllers, and timers
- Fully compatible with Windows CE.net, Linux and DOS
- Phoenix BIOS with fast boot and industrial extensions
- Fully compatible with Windows XPe, Linux
- 512 KB SMT flash contains BIOSs
- 64 MB SDRAM, surface mounted (32 MB option)
- 64 Kbyte storage available in non–volatile flash for user, 1024 words available in serial EEPROM
- CPU supervisor includes watchdog timer with 1, 10 or 60 seconds timeout, software controlled.

Drives:

- Standard EIDE interface supports two devices (CD–ROM, hard drive, EIDE flash drives, other EIDE devices)
- CompactFlash on primary IDE controller, accepts Type I or Type II devices, for third EIDE device
- Floppy interface supports one floppy drive

I/O:

- PS/2 mouse and keyboard (requires custom cable)
- On–board video controller for CRT or TFT flat panels
- Dedicated digital I/O, 24 lines
- Four serial ports; 16C550 compatible; one 8–wire RS–232, one 4–wire RS–232, two 4–wire RS–232/422/485; 16–byte FIFO buffered, ESD protected
- Parallel port supports unidirectional, bidirectional, ECP, and EPP modes
- Two USB ports, 1.1 compliant
- PC/104 16–bit ISA bus
- Ethernet 10/100 Base–T, supporting IEEE 802.3 standard

.

User interface:

- 9–, 12–, and 18–bit TFT flat panel, with resolutions to 1024 x 1024
- CRT resolution up to 1280 x 1024
- Simultaneous mode operations for viewing CRT & flat panel at same time
- PS/2 keyboard and mouse
- Serial console through COM1 to host computer.

Mounting:

- Panel mounted with standoffs
- Accepts PC/104 cards.

Other:

- AT battery port for real time clock (no battery necessary for operation)
- Size 115 mm x 165 mm x 20 mm (4.53″ x 6.50″ x 0.80″); EPIC* form factor
- Power 5V ±0.25V, 1.6 Amps maximum
- –40° to 85° C operating range.

HW Ordering information

#6583 XE–700 CPU, 133 MHz
#7085 XE–700 CPU, 133 MHz, w/integrated conductive cooling system
#6835 XE–700 User Manual

OS Embedder kitordering information

#6988 XE–700 Linux OS Embedder™ kit
#7184 XE–700 DOS OS Embedder kit

epic™ Platform for Industiral COmputers™

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Technical description

Busses

PCI Bus: 33 MHz, 32–bit, rev. 2.1 specification
ISA Bus: 8.33 MHz

System

CPU: 32–bit STPC Atlas CPU, 5th generation x86. It has a switch–selectable clock speed 66/133 MHz. The Atlas contains the complete x86 core, along with a host of functions typically implemented with external components (see diagram on page 5). Video is implemented with a UMA graphics/video chipset. The Atlas is 100 percent object code compatible with the Intel x86 microprocessors.

Operating System: Fully compatible with Windows CE.net, Linux and DOS. Octagon has developed OS Embedder™ kits for Linux and DOS with all the necessary drivers to get you quickly up and running.

BIOS: Phoenix AT BIOS is fully PC–AT compatible. It supports all the on–board PC peripherals. The BIOS also has additional Octagon BIOS extensions for watchdog timer, serial EEPROM and user jumper.

SDRAM: Comes with 64 MB SDRAM soldered on board (32 MB option).

Watchdog timer: Provides a fail–safe against program crashes or processor lockups. It has a programmable timeout period of 1, 10 or 60 seconds. The watchdog is enabled in BIOS SETUP and then automatically initiated on power–up. INT17 calls are used to set the timeout period, strobe, and disable the watchdog timer from your application. If the timer expires, it performs a hardware reset.

Drives

EIDE: Supports a CompactFlash on the primary IDE channel. For the secondary channel there is an industry–standard 44–pin, 2 mm connector for EIDE devices such as hard drives, EIDE flash drives or CR–ROMs. For those hard drives that use a 40–pin connector Octagon has a 44–pin to 40–pin adapter cable. An EIDE cable connects to the XE–700 connector and provides two connectors for the devices. The individual devices have a switch to designate them as a master or a slave device. The IDE channels are ATA–4 compliant.

CompactFlash: Socket accepts Type I or II devices. CompactFlash is connected to the primary IDE channel and appears as an IDE device

I/O

Keyboard/mouse: Supports a PS/2 keyboard and mouse. Neither required for operation.

USB: Two 1.1 compliant USB ports are supported by the Atlas CPU.USB 1.1 provides transmission up to 1.2 Mbps.

Ethernet: An Intel 82551ER (82559 compatible) chip provides one 10/100 Base–T Ethernet port and supports the IEEE 802.3 Ethernet standard. The Ethernet controller IC chip provides an 8K x 16 SRAM buffer, and powers two LEDs for link and traffic status. The interface terminates at the standard 8–position, RJ–45 phone jack.

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PC/104 interface: A 16–bit interface on the 8.33 MHz ISA Bus. Up to four cards can be stacked on this connector.

Digital I/O: Provides 24 lines of digital I/O to interface with logic devices, switch inputs, LEDs, and industry– standard opto module racks. All lines can be individually programmed as inputs or outputs. Octagon has a variety of opto modules and termination boards for easy access for field wiring.

COM1 through COM4: Four 16C550–compatible serial channels are provided. One channel is an 8–wire interface, the other three channels are 4–wire interfaces. All channels are full duplex, asynchronous RS–232C interfaces with a double 16–bit FIFO buffer. The baud rate is programmable with rates from 9600 bps to 115.2 Kbps. The ports provide backdrive protection as well as ESD protection according to IEC 1000, level 3; contact discharge of ±6 KV, and air–gap discharge of ±8 KV.

COM3/4 can be configured in BIOS Setup as a 4–wire RS–422/232/485 interface. RS–422 and RS–485 use differential signaling to communicate between devices. Differential signaling reduces the effects of environmental noise, allowing communication over distances up to 1200 meters.

The RS–232C COM ports terminate in a 20–pin cable; RS–422/485 terminate in a separate 5–pin connector. Octagon has cables to route these connectors to industry–standard interfaces.

User interface

Monitors: The Atlas CPU supports CRTs with resolutions to 1024 x 768, and 18–bit TFT flat panels with resolutions up to 1280 x 1024.

Serial console: You can establish communication with the XE–700 SBC using a host computer as a serial console. COM1 of the XE–700 SBC is connected to a COM port on the host PC. A program such as SmartLINK or Hyperterminal on the host PC directly communicates to the XE–700 SBC. This allows you to download programs or configure the XE–700 SBC.

Custom cables

These cables provide industry–standard interfaces:

COM VTC–20F cable: Connects to the 20–pin COM1/2 or COM3/4 ports and provides two DB–9 female connectors. A VTC–20M provides two DB–9 male connectors.

RS–422/485 cable, 0.100 mm: Connects to the 5–pin header and provides a standard DB–9 interface for RS–422/485.

VTC–9F cable, 2 mm: Provides a standard 15–pin VGA interface.

44–pin to 40–pin IDE cable: Converts the 44–pin IDE header to a 40–pin IDE header.

Two–port USB cable: Converts the 10–pin header for USB 1,2 into two standard 1.1 USB interfaces.

PS/2 keyboard/mouse cable: Connects to an 8–pin header for keyboard connector. A "Y" adapter allows for a mouse.

Mounting

You can panel mount the XE–700 using eight #4–40 standoff and screws (not provided). The XE–700 User's Manual shows the center–to–center mounting hole dimensions.

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FUNCTIONAL DIAGRAM

