OCTAGON SYSTEMS
• 7403 Church Ranch Blvd. • Westminster CO 80021–5490 • USA •
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- Embedded rugged computers
- –40° to 85° C
- Embedded operating systems
- COTS—high reliability



XMB–S CORE™—fanless mobile server with I/O expansion

The XMB–S CORE is a unique computer/server system designed to be both rugged and versatile. It is a part of Octagon's growing family of CORE SYSTEMS™ that address reliability in harsh environments. The XMB–S design fully integrates the electrical, thermal and mechanical components into a complete system with no compromise to any one segment. The Pentium platform operates equally well under a Windows® or Linux environment. It runs fanless over the extended temperature range. The built–in, mobile power supply operates over a four–to–one input range with solid protection from transients and reverse voltage.

Reduce costs, save development time

With ever increasing time–to–market pressures, you are often forced to start with an off–the–shelf solution that best fits the I/O and performance requirements of your project. All too often, this is only the beginning of a long and costly design cycle. Adding the last bits of hardware and software can bring unexpected incompatibilities, cabling costs and packaging problems.

The XMB–S was designed to bypass most of these issues. Using a stock XMB–S, prototypes can be developed in days to weeks rather than months. Using a stock CORE unit, you can avoid the high NRE and long lead times associated with custom products, while getting what you need, on–time and on–budget. More importantly, software developed for the XMB–S can be used over and over again to develop families of products. All you do is change the optional I/O and install new drivers. OEMs can rapidly provide proof–of–concept systems to prospective orders to help close sales.

Once a prototype is proven, contact Octagon for a quote to deliver your "custom" product on–time, tested, with your logo on a splash screen and with your software installed. We can even drop–ship it anywhere in the world in packaging with your company name on it.

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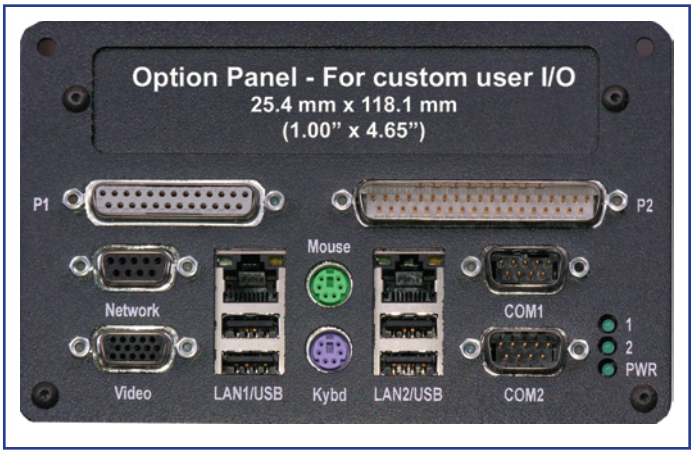

Expansion options

As a stand–alone, rugged system, the XMB–S contains a rich mix of I/O that will satisfy many applications, without modification. If you need additional functionality, only a few steps are needed to seamlessly integrate the new functions into the XMB–S. For example:

1) Choose a PC/104 GPS card from a number of vendors and plug it into the internal PC/104 sockets.
2) Drill or punch the option panel for an antenna connector.
3) Install a GPS driver into the OS.

Upgrading units already in the field is done by sending out a kit that includes the GPS card, the finished option panel, and software upgrade. Remove the original option panel, install the kit and upgrade the software—easy, simple for technical or nontechnical customers.

Quick, simple on–board expandability

The XMB–S has several built–in expansion options without modifying the option panel. The P1 socket (DB–25) on the front panel normally connects directly to the 24–line digital I/O port. It can easily be redirected to a PC/104 card if the I/O is to be opto–isolated or operate at higher voltages. The P2 socket (DB–37) on the front panel is available to bring out 37 lines of custom I/O via a ribbon cable. The ribbon cable can be split to be routed to more than one PC/104 card. The network connector is a DB–9 and is often used in conjunction with an internal CAN bus card.

Mass data storage

The XMB–S includes 1 GB of industrial grade, error–correcting CompactFlash. This can be increased to 16 GB or more, as it becomes available. The system also supports USB drives, CD–ROMs, internal hard drives and internal solid–state drives. The latter will operate over the entire temperature range and withstand the full shock and vibration specification.

Power supply

Power supplies in mobile systems are often the weakest component. Modern CPU systems require five or more different voltages, supplied in a specified sequence, and mobile systems are rife with voltage transients, both negative and positive. Octagon has leveraged its 20 years of experience to develop a world–class power supply specifically for mobile applications.

It operates reliably from 8–42V, over the full –40° to 85° C temperature range. The two–stage positive transient suppression is able to absorb 12 kW jolts. The unit is diode–protected for reverse battery. The output has overload protection. The power supply also protects against a common failure that occurs when starting an engine at low temperatures: The advanced brown–out protection prevents the restart supply sequencing from getting scrambled, causing CPU lockup or supply failure.

Processor subsystem:

- CPU: 1 GHz, low power, Pentium compatible
- SDRAM: 512 MB, industrial temperature, SDRAM
- CompactFlash: 1 GB, industrial temperature, error–correcting
- BIOS: General Software with Octagon industrial extensions in 512K flash

Included I/O and functionality:

- Mini PCI socket for GPS, WiFi, radio, etc.
- Dual Ethernet 10 Base–T, 100 Base–TX
- Four USB ports, 2.0 compliant, 1.1 compatible
- LVDS supports flat panels to 1600 x 1200 x 18 while the VGA supports CRTs and flat panels, to 1920 x 1440 x 24
- Two serial ports: RS–232/422/485
- EIDE port supports two drives
- 24 digital I/O lines, 15 mA sink/source, bit–programmable, TTL levels
- PS/2 keyboard and mouse
- PC/104 and PC/104–*Plus*, two modules maximum
- Watchdog: Programmable to 1, 10 or 60 seconds.

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Indicators:

- Power LED
- Two user–programmable LEDs

Mobile power suppy:

- Input voltage range: 8–36 VDC, 1.1A max. @ 26 VDC
- Inrush: <20A for 20 mS typical @ 26 VDC
- Transient protection: Two–stage, 12 kW peak transient absorption. 100V positive peak for 100 mS
- Reverse voltage protection: Sufficient to open an external, 15A automotive fuse at –40° C
- Advanced brown–out protection: Precise shutdown and restart of power supply voltage to eliminate CPU lockup and power supply misstarts
- Conducted emissions: Internal filter components minimize conducted emissions
- Battery connection: Military grade MS3102

Environmental:

- Ambient air temperature: –40° C to 55° C. Brief excursions outside this range are tolerated. Maximum temperature may be limited by customer added components. Derate the maximum temperature by 2 degrees per watt of dissipation of customer installed components. External air flow and vertical mounting improve the temperature rating.
- Temperature sensor: The CPU case and the internal air temperature can be read using the supplied software.
- Shock: 30G per MIL–STD 202G, method 213B, condition J
- Vibration: 5G per MIL–STD 214G, method 214A, condition A

Size:

- 106.7 mm high x 152.4 mm wide x 279.1 mm long (4.2″ x 6.0″ x 10.2″)

Option panel:

- The opening for the option panel is 25.4 mm x 118.1 mm (1.0″ x 4.65″).

Materials:

- 6063–T6 aluminum extrusion
- 5032–H32 aluminum end plate
- Standard inside finish—MIL–C–5541E Iridite, xclass 3, gold
- Standard outside finish—powder coat, Federal Standard 595B 26044 (dark blue–gray)
- FS 33446, FS 37875 and other colors are available in OEM quantities. Contact the Octagon Sales Dept. at 303–430–1500.

HW ordering information

#7031	XMB–S CORE, 512 MB industrial DRAM; 1 GB industrial, 4–bit, error–correcting CompactFlash
#7202	Standard mounting plate system
#7201	Shock and vibration damping system
#7129	Quick–release mounting system

Accessories ordering information

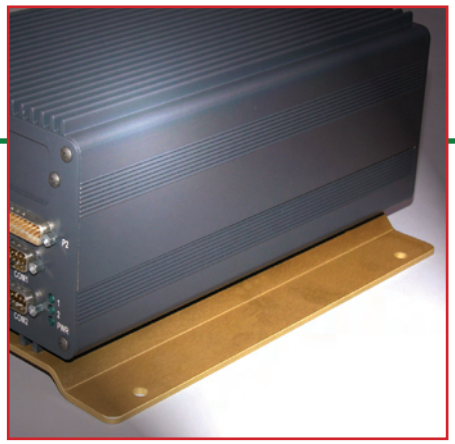
#4907267R	2 GB industrial, error–correcting CompactFlash

CORE SYSTEMS mounting options

Standard mounting plate for benign environments, photo 1

- Low–cost mounting for benign environments with low–stress vibration. Slotted holes are standard (photo shows round holes)

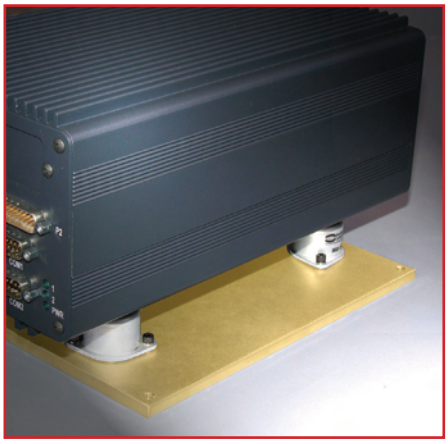
Photo 1



Shock and vibration dampening system, photo 2

- Designed for use in trains, buses, planes and other mobile applications, especially where shock and vibration is more or less constant. The military grade dampers preserve their characteristics over wide temperatures and provide limited three axis movement. The dampers are “fail safe” and will not separate even under severe shock.

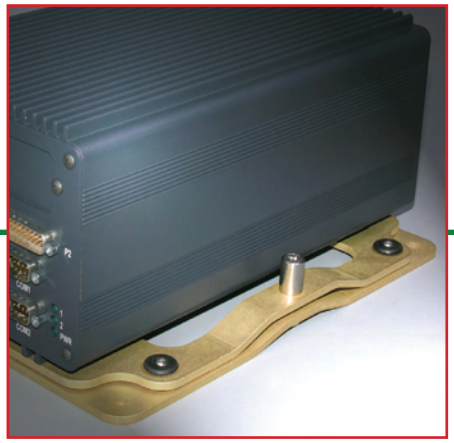
Photo 2



Quick–release mounting system, photo 3

- Provides a convenient way to quickly remove the XMB–S enclosure from a bulkhead or overhead location. Release is via two captive, Phillips–head screws. The system provides a small amount of vibration reduction.

Photo 3



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