

POSEIDON

2.0GHz EPIC SBC WITH DATA ACQUISITION



- Low power, high performance PC/104-Plus expandable SBC to 2.0GHz with 400MHz FSB
- Fully featured, including Gigabit Ethernet, CRT and LVDS support, USB 2.0, 4 serial ports and S-ATA/IDE
- Optional data acquisition featuring 32 16-bit A/D with auto-autocalibration, 4 12-bit D/A, 24 DIO and 2 counter/timers
- Extremely rugged, with soldered RAM and -40°C to +75°C operating temperature

DESCRIPTION

Poseidon is a high performance EPIC form factor single board computer (SBC) combining state of the art CPU and peripheral technology with Diamond Systems renowned high accuracy data acquisition circuitry on a single board. Poseidon utilizes the VIA C7® and VIA Eden® ULV processors operating at speeds up to 2.0GHz along with VIA's advanced CX700 single chip digital media chipset.

Poseidon incorporates advanced features such as a 400MHz Front Side Bus (FSB), four USB 2.0 ports, S-ATA hard drive interface and advanced 2D / 3D graphics with AGP 8x level performance and integral MPEG-2 hardware acceleration. The dual graphics display engines on Poseidon support Dual Independent Display functionality with simultaneous CRT and LVDS flat panel displays (up to dual channel 24-bit). Poseidon also provides an Intel 82541 Gigabit Ethernet controller, four RS-232 serial ports (two have RS-422/485 multiprotocol capability) and legacy keyboard / mouse and IDE hard drive interfaces.

Poseidon's optional integrated data acquisition section has 32 analog inputs with 16-bit A/D and 250KHz sample rate, 4 12-bit analog outputs with 100KHz waveform output capability, 24 digital I/O lines, and 2 counter/timers. It supports both interrupt and DMA A/D transfers, and it uses an enhanced 1,024-sample FIFO with programmable threshold for maximum flexibility and data reliability.

CPU SPECIFICATIONS

| | | |
|------------------------------------|---|----------------------------|
| Processor | 1.0GHz VIA Eden | 2.0GHz VIA C7 |
| Power Consumption (maximum) | 24W with DAQ 22 w/o DAQ | 31W with DAQ 29 w/o DAQ |
| Cooling | Heat sink, no fan | Heat sink + fan |
| Op. Temperature | -40°C to +75°C | |
| Chipset | VIA CX700 | |
| FSB | 400MHz | |
| Memory | 512MB to 1GB 533MHz DDR2 | |
| Bus Interface | PC/104-Plus (ISA + PCI) | |
| Display Type | CRT and / or 24-bit dual channel LVDS flat panel | |
| CRT Resolution | 2048 x 1536 | |
| Flat panel Resolution | UXGA 1600 x 1200 | |
| Video Memory | 128MB UMA | |
| USB Ports | (4) USB 2.0 | |
| Serial Ports | (2) RS-232, (2) RS-232/422/485 | |
| Networking | Gigabit Ethernet | |
| Mass Storage LFC | (1) S-ATA, (1) IDE UDMA 100, Flashdisk interface | |
| Keyboard / Mouse | PS/2 | |
| Audio | MC '97, Line-in, Line-Out, Mic Amplified speaker interface | |
| Dimensions | 4.528" x 6.496" (115mm x 165mm) | |
| Weight | 8.6 oz | 9.0 oz |
| Input power | 5v ±5% | |

The analog circuitry utilizes Diamond Systems' patented Automatic Autocalibration technology to calibrate its A/D and D/A circuits automatically whenever required, without user intervention. This means you get analog I/O performance with the maximum possible accuracy over the full operating temperature range of the product without doing anything at all.

Diamond Systems' free Universal Driver programming software for Linux, Windows 98/2000/XP/CE.NET, DOS, QNX, and VxWorks is included.

Poseidon is extremely rugged, featuring 512MB or 1GB of soldered DDR2 DRAM, optional hardwired jumpers and latching connectors for increased resistance to shock and vibration. Poseidon has an operating temperature range of -40°C to +75°C without a fan. Conformal coating is available as an extra cost option.

DEVELOPMENT KIT

A development kit is available with all the hardware you need to get started on your embedded design project. The kit contains a Poseidon SBC, flashdisk module, cable kit, panel I/O board, AC adapter and software CD.

TRANSITION CABLES OR PC-STYLE CONNECTORS

To enhance the use of Poseidon in harsh environments requiring outstanding resistance to shock and vibration, Poseidon is engineered with all on-board I/O brought to pin headers within the I/O zones identified in the EPIC specification. I/O that can utilize PC-style connectors is placed such that a small I/O Panel Board can be utilized to instantly convert Poseidon to PC-style connectors for use in a traditional enclosure.

ORDERING INFORMATION

| Part No. | Description |
|---------------------|---|
| PSDE10-512N | Poseidon SBC, 1.0GHz VIA Eden ULV, 512MB RAM |
| PSDE10-512A | Poseidon SBC, 1.0GHz VIA Eden ULV, 512MB RAM, Data Acquisition |
| PSDC20-1024N | Poseidon SBC, 2.0GHz VIA C7, 1GB RAM |
| PSDC20-1024A | Poseidon SBC, 2.0GHz VIA C7, 1GB RAM, Data Acquisition |
| DK-PSDE10-02 | Poseidon 1GHz Development Kit with PSDE10-512A, cables & flashdisk |
| DK-PSDC20-02 | Poseidon 2GHz Development Kit with PSDC20-1024A, cables & flashdisk |

DATA ACQUISITION SPECIFICATIONS

| ANALOG INPUTS | |
|--------------------------------|--|
| Number of inputs | 32 single-ended, 16 differential, or 16 SE + 8 DI; user selectable |
| A/D resolution | 16 bits |
| Input ranges | ±10V, ±5V, ±2.5V, ±1.25V, ±0.625V, 0-10V, 0-5V, 0-2.5V, 0-1.25V, 0-.625V |
| Max Sample Rate | 250KHz |
| Protection | ±35V on any analog input without damage |
| Nonlinearity | ±3LSB, no missing codes |
| On-board FIFO | 1024 samples, programmable threshold |
| A/D and D/A Calibration | Automatic using on-board microcontroller and temp sensor |
| ANALOG OUTPUTS | |
| Number of outputs | 4, 12-bit resolution |
| Output ranges | ±5V, ±10V, 0-5V, 0-10V |
| Output current | ±5mA max per channel |
| Settling time | 6µS max to 0.01% |
| Relative accuracy | ±1 LSB |
| Nonlinearity | ±1 LSB, monotonic |
| Reset | Reset to zero-scale or mid-scale (jumper selectable) |
| Waveform buffer | 1,024 samples |
| DIGITAL I/O | |
| No. of I/O lines | 24 programmable direction |
| Input voltage | Logic 0: 0.0V min, 0.8V max Logic 1: 2.0V min, 5.0V max |
| Input current | ±1µA max |
| Output voltage | Logic 0: 0.0V min, 0.33V max Logic 1: 2.4V min, 5.0V max |
| Output current | Logic 0: 64mA max per line Logic 1: -15mA max per line |
| COUNTER / TIMERS | |
| A/D Pacer clock | 32-bit down counter (2 82C54 counters cascaded) |
| Clock source | 10MHz on-board clock or external signal |
| General purpose | 16-bit down counter (1 82C54 counter) |

FOR MORE INFORMATION

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