

Diamond Systems

Poseidon SBC

Frequently Asked Questions

Q. Aren't VIA Eden older processors that have recently gone end-of-life?

A. VIA Eden processors are currently in their 4th generation. Unfortunately, there are naming conflicts between the generations and it is difficult to tell them apart unless the full name of the products are used in technical material. The current generation of Via Eden is called Via Eden ESP. These CPUs run from 300MHz to 1.0GHz. The slower speed versions use a core called Samuel2 and are built on a .15um process. From 733MHz on up, the current Eden ESP CPUs use a core called Nehemiah and are built on a .13um process. These current Eden ESP CPUs will go end-of-life over the next 18 months.

The new Via Eden processors are simply called VIA Eden or VIA Eden ULV. These are built around a core called Esther using a 90nm process. These new VIA Eden CPUs were introduced in early 2006 and have just started to become available. They are built at an IBM facility in the USA. These new Eden and Eden ULV CPUs are used on the Poseidon SBC.

Q. Aren't VIA processors less powerful than Intel Pentium M and Celeron M processors at the same clock speed?

A. VIA uses a different cache architecture and a different microarchitecture that makes it difficult to compare processors without specific benchmark data. With regard to cache, VIA processors have significantly more L1 cache (128KB vs 32KB) which directly feeds the processor. Intel processors have significantly more L2 cache (up to 2MB for Pentium M vs 128KB for VIA, 512KB for Celeron M vs. 128KB for VIA). Industry experts differ with regard to the impact of L2 cache on system performance. Comparison of the microarchitectures is even more difficult. Fundamentally, there is no substitute for evaluating the performance of both CPU technologies in your application. While the VIA CPUs may have somewhat lower throughput, they consume significantly less power and are more economical to purchase. VIA claims an advantage over Pentium M and Celeron M in terms of performance per watt of power consumed.

Q. How does the "new" VIA Eden processor differ from the old VIA Eden processor found on a number of single board computers such as the Diamond Systems Athena and Hercules? How do we keep these straight?

A. VIA has adjusted their naming conventions to keep all these different Eden processors separate, but the industry may typically use shortened versions of the names that will increase confusion. The "old" VIA Eden processor (those used on the Diamond Systems Athena and Hercules boards) are now formally know as VIA Eden ESP. These fall into two categories. VIA Eden ESP 0.15um are built with the Samuel2 core and run from

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300MHz to 600MHz. Via Eden ESP 0.13um are built with the Nehemiah core and run from 667MHz to 1.0GHz. Both use front side bus technology up to 133MHz and work with the popular Twister-T chipset. Via has announced last shipment dates for both VIA Eden ESP processor families (0.13um and 0.15um). Just to be complete, the VIA Eden ESP 0.13um processors are also offered in an ultra small package (15mm x 15mm) and known as the VIA Eden-N.

The “new” VIA Eden processors used on the Poseidon are known as VIA Eden and VIA Eden ULV. Both are built around the new Esther core and use the new, small nanoBGA2 package. Both utilize a 400MHz FSB and require new chipset support – either the VIA CN700, CN900 or CX700. Both are built on a 90nm process by IBM in the USA. The new VIA Eden runs from 400MHz to 1.2GHz. The VIA Eden ULV runs at either 1.0GHz or 1.5GHz. The difference between the new VIA Eden and VIA Eden ULV is in power consumption measured by TDP (thermal design power). For example, the 1.0GHz Via Eden has a TDP rating of 5w. The 1.0GHz VIA Eden *ULV* has an amazing TDP rating of 3.5w. Detailed information about the VIA Eden processors may be found at <http://www.viatech.com/en/products/processors/eden/>.

Q. What’s the difference between the VIA Eden and VIA C7 processor chips?

A. The VIA Eden, VIA Eden ULV and VIA C7 processors all utilize the same Esther core and the same physical package / pin out. Hence the three are interchangeable on a board. All are built on the same 90nm process by IBM. There may be differences in the core voltage input that make for some differences in the power supply circuit. The main difference in selection of the processor is performance (clock speed) and power consumption / heat dissipation which translates into whether passive or active cooling is required. VIA Eden processors operate from 400MHz to 1.2GHz with TDP ratings ranging from 2.5W to 7W. VIA Eden ULV processor operate at 1.0GHz or 1.5GHz with TDP ratings of 3.5w and 7.5w respectively. The VIA C7 is available at 1.5GHz, 1.8GHz and 2.0GHz with TDP ratings of 12w, 15w and 20w respectively. For example, at 1.5GHz, the VIA Eden ULV is rated at 7.5w while the 1.5GHz VIA C7 is rated with twice the TDP level - 15w. In general, the low voltage, low power processors are priced at a premium over their standard voltage, higher power consumption counterparts. Detailed information about the VIA C7 processors may be found at <http://www.viatech.com/en/products/processors/c7/>.

Q. The VIA CX700 chipset doesn’t have ISA support. How is Diamond Systems able to provide PC/104-Plus bus expansion on Poseidon?

A. For the last several years, all new chipsets from VIA and Intel have dropped support for the ISA bus. Fortunately, the PC/104 community has had access to a bridge technology that allows the ISA bus to be “created” by bridging from the PCI bus. When properly implemented, the bridge chip is invisible and it appears to software that the system has a native ISA bus. Until recently, the available bridge chips were all quite large, however, making them impractical for small form factor CPU boards. However, in 2005, one bridge chip manufacturer, ITE, released a bridge chip in a very small 12mm x 12mm

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BGA package. Diamond Systems uses the ITE8888G bridge chip on the Poseidon board to generate the PC/104 (ISA) bus.

Q. Are there any restrictions or limitations on the capabilities of the PC/104-Plus support?

A. No

Q. Is Poseidon SBC available without the data acquisition circuitry?

A. Yes. Poseidon is current available in four flavors. 1.0GHz VIA Eden ULV with 256MB RAM or 2.0GHz VIA C7 with 512MB RAM. Each of these two versions are available with or without data acquisition.

Q. Can I get more than 512MB DRAM on Poseidon SBC?

A. 1GB RAM is available by special order only. Minimum shipment quantities and minimum annual volume may apply.

Q. If I only need the 24 programmable digital I/O capability of Poseidon SBC, can I depopulate the analog I/O section?

A. Yes

Q. Are any of the other clock speeds for VIA Eden, VIA Eden ULV or VIA C7 available with Poseidon SBC?

A. Yes, starting at 400MHz. Other clock speeds are available on special order. Minimum shipment and annual volume requirements may apply.

Q. How can I use Poseidon SBC with PC-style connectors? Do I need to connect transition cables to each of the pin headers?

A. Poseidon was designed for use in rugged, harsh environments. All I/O on Poseidon is routed to keyed pin headers. I/O that is typically put on a PC-style connector, such as a VGA monitor or USB device requires a transition cable from the pin header on Poseidon to the PC-style connector for bulkhead mounting on an enclosure. Since Poseidon has a substantial amount of I/O that routes to PC-style connectors on commercial motherboards, Diamond Systems has organized the Poseidon pin headers in such a way that all I/O typically found on PC-style connectors is grouped together. Diamond Systems makes a Panel Board available for Poseidon which mounts on the edge of the Poseidon board, connects to the group of pin headers, and provides PC-style connectors for each supported function. Functions supported by the Poseidon Panel Board (PPB) include: VGA monitor DB15, four Type A USB2.0 connectors, an RJ45 connector for Ethernet, two DB9 connectors for serial ports COM1 and COM2, audio interface (Line

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In, Line Out, Mic In), Mini-DIN connectors for PS/2 keyboard and PS/2 mouse, reset button, power LED and alternate DC power input.

Q. Are the VIA CPUs truly compatible with popular operating systems like Windows XP and Linux? What software can I use with Poseidon SBC?

A. Absolutely. There are tens of thousands of systems with Via CPUs running everything from Windows XP and Windows CE to Linux. Diamond Systems supports the use of Windows 98 / 2000 / XP, Windows CE, Linux, and QNX on Poseidon.

Q. Are there any Diamond Systems PC/104 I/O boards that will not work with Poseidon SBC?

A. No

Q. Does Poseidon SBC support both 5v and 3.3v PC/104-Plus expansion cards?

A. Yes. The signal voltage level is jumper selectable.

Q. If I only want to run over 0°C to 60°C, do I still need a fan with the 2.0GHz VIA C7 CPU?

A. As with all CPU products at Diamond Systems, this specification would be subject to testing and qualification by Diamond engineers.

Q. Can I get Dual Independent Display with two flat panels or two CRTs?

A. The advanced UniChrome Pro graphics controller on the Poseidon board has two independent display engines. Each engine uses its own frame buffer and maintains its own resolution. However, the two display engines are each linked to a specific set of logic to support specific video devices. One display engine supports analog RGB (CRT) and TV-out functionality (TV-out is not implemented on Poseidon). The second video engine is connected to an LVDS/DVI transmitter. Hence, the board does not have support for two CRT devices or two LVDS flat panel devices. However, the board does support a CRT device AND an LVDS flat panel device. Each of these two devices may display completely different images with different resolution and color depth. This functionality is supported by Windows 98, Windows ME and Windows XP.

Q. What flat panel technologies are supported by Poseidon SBC?

A. Poseidon supports LVDS flat panel technology. The LVDS flat panel can be up to 24-bits in depth, single or dual channel.