

ARIES™ PC/104-Plus SBCs with Intel E3800 Bay Trail Processor Target Rugged, I/O-Rich, High Performance Applications

Nuremberg, Germany — February 24, 2015 — Today at Embedded World 2015, Diamond Systems Corporation, a leading global supplier of compact, rugged, I/O-rich embedded computing solutions for real-world applications in a broad range of markets, unveiled its rugged, highly integrated **ARIES** PC/104-Plus single board computer based on the Intel E3800 “Bay Trail” processor family. Highlights of the Aries SBC include excellent CPU performance / power consumption ratio, high feature density in a compact size, integrated high-quality data acquisition, versatile I/O expansion, conduction cooling for improved high temperature performance, and rugged construction.

Designed in the PC/104-Plus form factor with wings (114 x 102 mm / 4.5 x 4.0 in), Aries’ full rectangular shape provides more coastline for I/O connectors, enabling an unmatched level of feature integration onto a single board its size. In this compact form factor, Aries includes a wide range of display capabilities, system I/O, plus data acquisition, meeting the majority of today’s connectivity requirements in a single board.

Aries PC/104-Plus SBCs combine the excellent performance of the Bay Trail processor family, a wealth of PC I/O, and on-board data acquisition circuitry at a competitive price. Available configurations include the E3845 1.91GHz quad core processor and the E3826 1.46GHz dual core processor, with choice of 2GB or 4GB soldered memory. Dual independent displays are supported, with connections for dual channel 24-bit LVDS LCD, VGA, DisplayPort, and HDMI. Available PC I/O includes 3 USB 2.0 ports (1 can operate as USB 3.0), 4 RS-232/422/485 ports with fully programmable configuration, dual Gigabit Ethernet, and a SATA port that supports both on-board SATA DOM and off-board SATA devices.

The optional integrated data acquisition includes 16 16-bit A/D channels with 250KHz sample rate, 4 16-bit D/A channels with voltage and current outputs, a programmable waveform generator, and 22 programmable digital I/O lines, all supported by Diamond’s free, industry-leading Universal Driver™ data acquisition programming library. An interactive, easy to use graphical control panel for Windows and Linux is provided to control all data acquisition features.

Aries supports stackable I/O expansion with PC/104 (ISA) and PC/104-Plus (ISA + PCI) I/O modules. Aries also provides a dual-use PCIe MiniCard / mSATA socket for additional I/O expansion. PCIe MiniCard I/O modules featuring WiFi, Ethernet, analog I/O, digital I/O, and CAN are available from Diamond Systems and other vendors, enabling compact expandability without increasing the total height of the system.

Aries’ built-in heat spreader efficiently removes heat from the SBC directly to the system enclosure and helps keep the interior cooler for improved reliability. The novel bottom-side mounting configuration of the heat spreader provides a convenient mounting system for the board. It also simplifies the installation of topside I/O expansion modules by eliminating interference or airflow problems that can occur with traditional heat sinks. A heat sink accessory option can be installed to use Aries in a traditional heat sink style installation.

The Aries SBC family was designed with rugged applications in mind. With an operating temperature of -40°C to +85°C, memory soldered on board, an integrated heat spreader thermal solution, 50% thicker PCB, and latching I/O connectors, Aries is a perfect fit for rugged applications including industrial, medical, on-vehicle and military. Aries is also available in Diamond’s off-the-shelf hardened and highly configurable Raptor™ systems for extremely rugged mission critical applications.



- 1.91GHz Intel quad core E3845 or 1.46GHz Intel dual core E3826 CPU
- 2GB or 4GB 1333MHz DDR3 memory soldered on board
- On-board I/O:
 - 2 Gigabit Ethernet ports
 - 3 USB 2.0 ports (1 can operate as USB 3.0)
 - 4 RS-232/422/485 ports, fully programmable configuration (no jumpers)
 - 1 SATA port for on-board SATA DOM or external device
 - Dual independent display support for dual channel 24-bit LVDS LCD, VGA, DisplayPort, and HDMI
 - High definition audio with Realtek ALC892 CODEC
- Professional quality data acquisition circuit option:
 - 16 16-bit analog inputs with autocalibration and 250KHz sample rate
 - 4 16-bit analog outputs with autocalibration and voltage / current outputs
 - 22 programmable digital I/O lines
 - 4-channel waveform generator
 - 4 24-bit pulse width modulators
 - 8 32-bit programmable counter/timers
 - Programming library and graphical control panel software for Windows and Linux
- PC/104-Plus (ISA & PCI) stackable I/O expansion and PCIe MiniCard socket
- PC/104-Plus form factor with wings (114 x 102 mm / 4.5 x 4.0 in)
- Rugged design with 50% thicker PCB and latching I/O connectors
- -40°C to +85°C (-40°F to +185°F) operating temperature

Pricing

Several models of the Aries PC/104-Plus single board computer are available offering a choice of CPU to match varying application price and performance targets. Single unit pricing starts at US\$750 without on-board data acquisition. Complete Development Kits, software development kits, and a cable kit are all available to accelerate your development effort. Contact Diamond Systems at sales@diamondsystems.com for quantity pricing and special-order options.

MEDIA RESOURCES

- [Aries SBC webpage](#)
- [Aries SBC datasheet](#) (pdf)
- [Aries SBC photo](#) (jpg)

About Diamond Systems

Founded in 1989 and based in Mountain View, California, Diamond Systems Corporation is a leading global provider of compact, rugged, board- and system-level real world embedded computing solutions to companies in a broad range of markets, including transportation, energy, aerospace, defense, manufacturing, medical, and research. The company is renowned as an innovator of embedded I/O standards and technologies; it originated the FeaturePak I/O modules standard, was an early adopter of PC/104 module technology, and holds a patent for a unique analog I/O autocalibration technique.

Diamond's extensive product line includes compact, highly integrated single-board computers (SBCs); an extensive line of expansion modules for analog and digital I/O, wired and wireless communications, GPS, solid-state disk, and power supply functions; and complete system-level solutions. In support of performance-critical embedded application requirements, these products are engineered to operate reliably over wide operating temperature ranges, such as -40°C to $+85^{\circ}\text{C}$, and at high levels of shock and vibration. Additionally, the company offers a comprehensive hardware, software, and system integration and customization services.

For further information, please visit www.diamondsystems.com or call +1-800-367-2104 (USA).

DIAMOND SYSTEMS MEDIA CONTACT:

David Fastenau
Director of Marketing
dfastenau@diamondsystems.com
Direct: +1-650-810-2514