COM-based SBCs with Intel Core i7 / Celeron Processors
Target Rugged, I/O-Rich, High Performance Applications

Mountain View, California — November 4, 2014 — Today 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 COM-based highly integrated Vega single board computer family. Highlights of the Vega family include interchangeable COM Express COMs for scalability and long product life, high feature density in a compact size, integrated high-quality data acquisition, expandable I/O, conduction cooled thermal solution for improved reliability, and rugged construction.

Designed in the COM Express Basic form factor (125 x 95mm / 4.92 x 3.74 in), the Vega family offers performance scalability with three COM Express processor options: 2.1GHz Intel Core i7-3612QE, 1.7GHz Intel Core i7-3517UE, and 1.4GHz Intel Celeron 827E CPU. The use of interchangeable COM Express modules helps extend product lifecycles or keep up with new market needs by making it easy to replace an obsolete CPU or increase processing performance simply by replacing the COM module. Vega is therefore an excellent choice for applications with expected lifetimes of 10 or more years.

Vega's two-board COM + baseboard construction yields the highest feature density possible in a given footprint. Vega utilizes a highly integrated baseboard with a wide range of I/O, including a full data acquisition circuit that normally calls for a separate I/O board. Standard PC-type I/O includes VGA and dual-channel LVDS display, 4 USB 2.0 ports, 4 RS-232/422/485 ports, dual Gigabit Ethernet, SATA, and HD audio. Vega SBCs also feature a 7-36V wide range high-efficiency power supply, making them compatible with most common vehicle and industrial power supply voltages.

The integrated data acquisition includes 16-bit A/D and D/A, digital I/O, and counter/timers, all supported by Diamond's free, industry-leading Universal Driver™ data acquisition programming library. An interactive graphical control panel for Windows and Linux is also provided to control all data acquisition features.

Vega SBCs support stackable I/O expansion with EMX I/O modules as well as a dual-use PCIe MiniCard / mSATA socket for additional I/O expansion. I/O modules featuring serial ports, Ethernet, analog I/O, digital I/O, CAN, and WiFi are available from Diamond and other vendors in the PCIe MiniCard form factor, providing low-cost, compact I/O expansion without increasing the total height of the system. For rugged applications, wide temperature mSATA disk modules in either SLC or MLC technologies are available with up to 64GB capacity.

EmbeddedXpress (EMX, www.emxbus.org) is an industry standard form factor for embedded computers that offers highly efficient and rugged stackable I/O expansion. EMX incorporates the best of previous stackable I/O systems and extends them to better fit today's technologies and customer needs. The EMX bus connector is compact and low cost, helping to improve overall product cost efficiency as well as feature density compared to other stackable I/O form factors on the market today. EMX supports all of today's most popular expansion buses while reserving sufficient pins for future definition, making it both applicable to today's needs and capable of supporting tomorrow's requirements.

Vega's 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 I/O expansion modules by eliminating interference or airflow problems that can occur with traditional heat sinks.

The Vega SBC family was designed with rugged applications in mind. With an operating temperature of -40°C to +85°C, an integrated heat spreader thermal solution, thicker PCB, and latching I/O connectors, Vega SBCs are a perfect fit for rugged applications including industrial, medical, on-vehicle and military. Vega SBCs are also available in off-the-shelf hardened and highly configurable systems for extremely rugged mission critical applications.

- High feature density integrates 5 PC/104 modules in a single board using the EMX Basic form factor
- CPU performance scalability with choice of COM Express COMs:
  - 2.1GHz Intel Core i7-3612QE
  - 1.7GHz Intel Core i7-3517UE
  - 1.4GHz Intel Celeron 827E CPU
- Up to 16GB 1.3MHz DDR3 memory via SO-DIMM
- On-board I/O:
  - 2 Gigabit Ethernet ports
  - 4 USB 2.0 ports; 4 RS-232/422/485 ports
  - 1 SATA port for hard drive
  - Dual channel LVDS LCD; VGA CRT display
  - mSATA & USB flashdisk sockets support up to 64GB SSD
  - High definition audio with Realtek ALC262 CODEC
- Professional quality data acquisition circuit:
  - 16 16-bit analog inputs with autocalibration
  - 8 16-bit analog outputs with autocalibration
  - 30 programmable digital I/O lines
  - 8-channel waveform generator
  - 4 24-bit pulse width modulators
  - 8 32-bit programmable counter/timers
- 7-36V DC/DC power supply on-board
- EMX (PCIe) stackable I/O expansion & PCIe MiniCard socket
- EmbeddedXpress Basic form factor with wings (4.92" x 3.74")
- -40°C to +85°C (-40°F to +185°F) operating temperature

Pricing

Several models of the Vega EMX single board computer are available offering a choice of COM Express COMs to match varying application price and performance targets. Single unit pricing starts at US$1,300. 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

- Vega SBC webpage
- Vega SBC datasheet (pdf)
- Vega SBC photo (jpg)
- Vega System webpage
- Vega System photo (jpg)
- EMX Standard webpage

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°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.

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