

HELIX PC/104 SBC with DMP Vortex86DX3 SoC Targets Rugged, Low Price, Low Power Applications

Sunnyvale, California — May 10, 2016 — 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 compact, rugged **HELIX** PC/104 single board computer based on the DMP Vortex86DX3 system-on-chip (SoC) processor.

The Helix SBC is targeted for low price, low performance applications. It offers low to mid-range CPU performance, more than double that of the AMD LX800. Helios is a low cost SBC offering high feature density in a compact size and providing optional integrated high-quality data acquisition circuitry, PCIe MiniCard I/O expansion, and rugged construction. With a long processor lifetime of ten years or more, Helix is ideal for applications needing a stable, low cost SBC platform with many years of availability.

Two standard Helix models are available off-the-shelf; one aimed low-cost basic applications and the other targeting data acquisition applications. The data acquisition model expands on the features of the basic model by adding a complete data acquisition circuit as well as other I/O. A variety of customization options are also available allowing customers to match the specific needs of their application with on-board features of the Helix SBC.

Using an expanded PC/104 form factor measuring 102 x 102 mm (4.0 x 4.0 in), Helix's 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, Helix includes a wide range of system I/O plus optional on-board data acquisition, meeting the majority of today's connectivity requirements in a single board.

Helix PC/104 SBCs combine the 1GHz DMP Vortex86DX3 dual core SoC with a wealth of PC I/O and on-board data acquisition circuitry at a competitive price. VGA and LVDS displays are supported and the available PC I/O includes up to 6 USB 2.0 ports, 2 RS-232/422/485 and 2 RS-232 ports, 1 10/100Mbps Ethernet port, 1 Gigabit Ethernet port, and 1 SATA port that supports both on-board SATA DOM and off-board SATA devices.

The optional integrated data acquisition circuitry includes 16 16-bit A/D channels with 100KHz sample rate, 4 16-bit D/A channels with voltage outputs, and 11 additional programmable digital I/O lines for a total of 27 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.

Helix SBCs are highly customizable to better fit specific application needs. The rugged SBC's customization options include:

- 2GB on-board RAM instead of 1GB on D model
- 1 CANbus 2.0 port
- mSATA interface shared with the PCIe MiniCard socket
- Latching connectors instead of pin headers for increased ruggedness
- Replace configuration jumpers with 0 ohm resistors
- Conformal coating
- Custom BIOS & custom FPGA code



Helix supports stackable I/O expansion with PC/104 (ISA) I/O modules and also provides a PCIe MiniCard 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.

The Helix SBC was designed with rugged applications in mind. With an operating temperature of -40°C to +85°C and memory soldered on board, Helix is an excellent choice for rugged applications including industrial, medical, on-vehicle and military. Aries is also available in Diamond's off-the-shelf and highly configurable Octavio™ systems.

- 1.0GHz DMP Vortex86DX3 dual core system-on-chip processor
- Up to 2GB DDR3 memory soldered on board
- On-board I/O:
 - 1 10/100Mbps Ethernet port
 - 1 Gigabit Ethernet port
 - 3 USB 2.0 ports on D model, 6 USB 2.0 ports on A model
 - 2 RS-232/422/485 ports and 2 RS-232 ports
 - 1 SATA port for on-board SATA DOM or external device
 - 24-bit dual channel LVDS LCD and VGA display support
 - High definition audio with Realtek ALC892 CODEC
 - 16 programmable digital I/O lines
- Professional quality data acquisition circuit option:
 - 16 16-bit analog inputs with 100KHz sample rate
 - 2048 sample on-board FIFO with programmable threshold
 - 4 16-bit analog outputs
 - Additional 11 programmable digital I/O lines
 - 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 (ISA) stackable I/O expansion and PCIe MiniCard socket
- Enhanced PC/104 form factor (102 x 102 mm / 4.0 x 4.0 in)
- Rugged design, highly resistant to shock and vibration
- -40°C to +85°C (-40°F to +185°F) operating temperature

Pricing

Two standard models of the Helix PC/104 single board computer are available one with the full data acquisition circuitry and one only digital I/O. Single unit pricing starts at US\$425 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 customization options.

MEDIA RESOURCES

- [Helix SBC webpage](#)
- [Helix SBC datasheet](#) (pdf)
- [Helix 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).

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