Helios™ PC/104 SBC

Rugged PC/104™ Single Board Computer featuring integrated data acquisition, Ethernet, and CRT/LCD video

Key Features
- Low-power PC/104-expandable SBC
- Vortex86DX CPU at 1GHz or 800MHz
- 2-in-1 design (CPU + DAQ) reduces size and cost, increases ruggedness, and enhances reliability
- 256MB soldered-on DRAM
- Comprehensive set of I/O interfaces:
  - four USB 2.0 ports
  - two RS-232/422/485 and two RS-232 serial ports
  - 10/100Mbps Ethernet
  - IDE port for hard drive or solid-state flashdisk
  - 2MB on-board flashdisk with FreeDOS pre-loaded
  - VGA CRT or LVDS LCD display
  - 16 digital I/O lines
- Optional data acquisition subsystem with multiplexed 16-channel, 16-bit A/D with autocalibration, four 12-bit D/A, 24 additional digital I/O, and two counter/timers
- PC/104 form factor with stackthrough PC/104 (ISA) bus
- Extremely rugged with soldered-on DRAM and -40°C to +85°C (-40°F to +185°F) operating temperature

Highly Integrated SBC
Helios™ combines all the functionality of a single board computer with a complete analog and digital data acquisition circuit into a single board, offering the most functionality available in the PC/104 form-factor.

Price/Performance Advantage
The Vortex86DX system-on-a-chip offers an excellent balance of performance, power consumption and price, making Helios an ideal choice for a wide variety of embedded computing applications.

Rugged Design
Helios was designed with rugged applications in mind. From its operating temperature of -40°C to +85°C to its soldered SDRAM, Helios thrives in extreme environments.

Fully Integrated Systems
Helios is available as a complete system, with your choice of operating system, in a specially-designed enclosure that eliminates all cables and provides a rugged, compact, wide-temperature box PC ready for application download and deployment.

Software Support
Helios runs Linux, Windows CE™, and DOS. All necessary drivers are shipped with the product. Diamond’s Universal Driver software provides a C programming library for the integrated data acquisition circuit, and it includes demos and sample code for each supported OS to assist in rapid application development.

Development Kit
A complete Helios Development Kit is available with all of the components you need to get started on your embedded design project. The kit contains a Helios SBC, flashdisk with Linux pre-loaded, cable kit, AC adapter, and software CD.

Octavio-HLV Embedded Application Server

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DATA ACQUISITION SPECIFICATIONS

ANALOG

- Number of Inputs: 16 single-ended or 8 differential, user selected
- A/D resolution: 16 bits
- Input ranges: ±10V, ±5V, ±2.5V, ±1.25V, 0-10V, 0-5V
- Max sample rate: 250KHz
- Protection: ±35V on any analog input without damage
- Nonlinearity: ±3LSB, no missing codes
- On-board FIFO: 2048 samples, programmable threshold
- A/D, D/A calibration: Autocalibration with software support

NUMBER OF OUTPUTS

- Number of outputs: 4, 12-bit resolution
- Output ranges: ±5V, ±10V, 0-5V, 0-10V
- Output current: ±5mA max per channel
- Settling time: 10mS max to 0.012%
- Relative accuracy: ± 2 LSB
- Nonlinearity: ±2 LSB, monotonic
- Reset: Reset to zero-scale or mid-scale (jumper)

DIGITAL (for standard 16 DIO lines)

- Number of I/O lines: Model AV: 40 lines
- Input voltage: Logic 0: 0V min, 0.8V max
- Input current: 1mA at 3.3V, -5mA at 0V
- Output voltage: Logic 0: 0.0V min, 0.55V max
- Output current: Logic 0: 64mA max at 0.55V

COUNTER/TIMERS

- A/D Pacer clock: 24-bit down counter
- Clock source: 10MHz on-board clock or external signal
- General purpose: 16-bit down counter