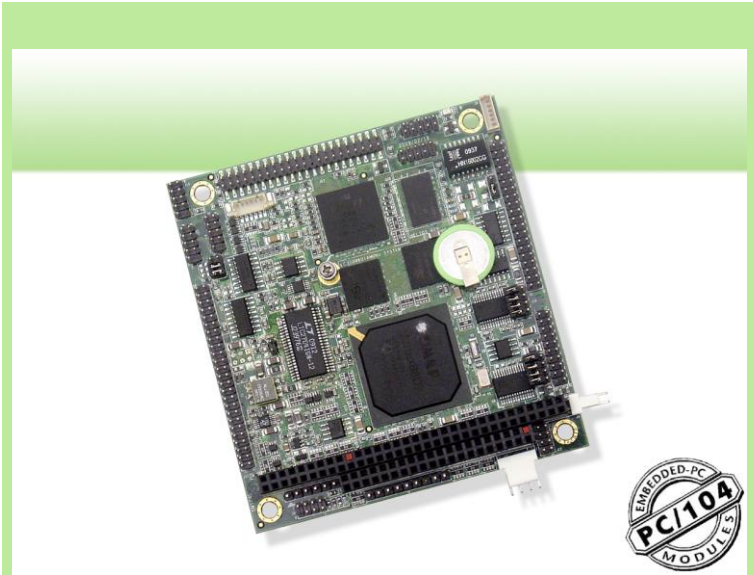


HELIOS



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



- ◆ Low-power, mid-range PC/104-expandable SBC
- ◆ Based on 800/300MHz Vortex86DX/SX CPU
- ◆ 2-in-1 design (CPU + DAQ) reduces size and cost, increases ruggedness and reliability
- ◆ 256MB or 128MB 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 featuring 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 Vortex86 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.

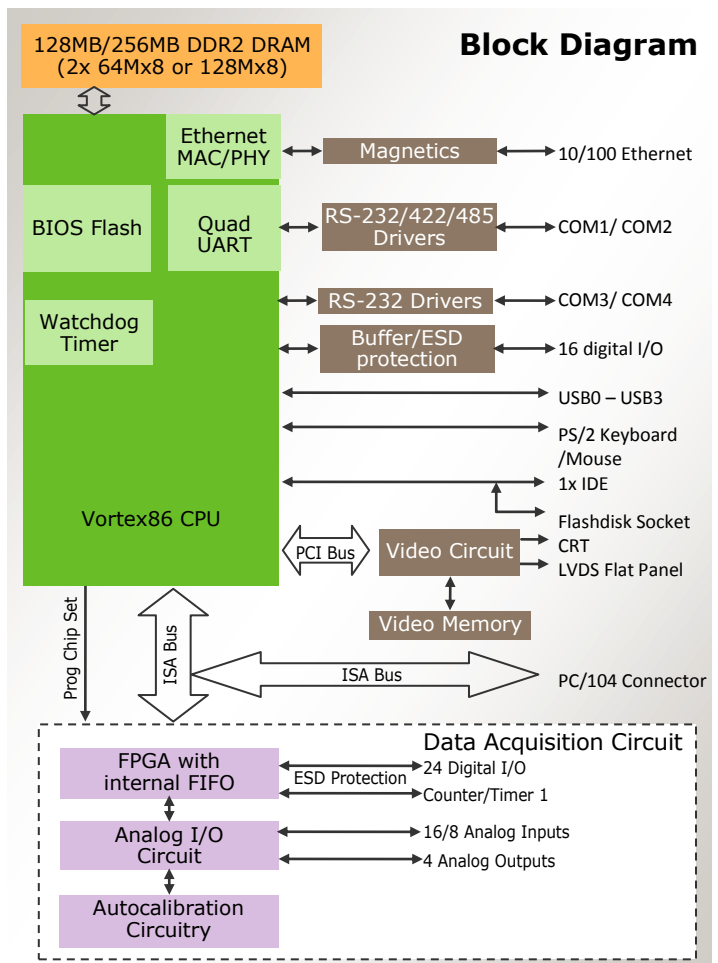
Rugged Design

Helios was designed with rugged applications in mind. From an operating temperature of -40°C to +85°C, to its soldered SDRAM, Helios thrives in the most 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 cable and provides a rugged, compact, wide-temperature box PC ready for application download and deployment.

Octavio-HLV
Embedded Application Server



Helios: PC/104 Single Board Computer



CPU Specifications

Processor	Vortex86SX/DX at 300 or 800MHz	
Cooling	Heat sink, fan-less	
Memory	128MB or 256MB DDR2 DRAM	
Bootable flash drive	On-board 2MB bootable flash drive with FreeDOS installed	
Expansion bus	PC/104 (ISA)	
Display type	VGA CRT and LVDS LCD	
Display resolution	1280X1024 maximum	
USB ports	4 USB 2.0	
Serial ports	2 RS-232/422/485, 2 RS-232	
Networking	10/100Base-T Ethernet	
Mass storage	1 IDE UDMA-100 port Flashdisk interface	
Keyboard/Mouse	PS/2	
Audio	Speaker out	
Input power	5V ±5%	
Power consumption	800MHz: 5.4W	300MHz: 3.5W
Operating temperature	-40°C to +85°C (-40°F to +185°F)	
Dimensions	3.55" x 3.78" (90mm x 96mm)	
Weight	DV: 2.5oz / 71g	AV: 3.1oz / 88g
RoHS	Compliant	

Data Acquisition Specifications

ANALOG	
Number of inputs	16 single-ended or 8 differential, user selectable
A/D resolution	16 bits
Input ranges	±10V, ±5V, ±2.5V, ±1.25V, 0-10V, 0-5V, 0-2.5V programmable
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 and D/A calibration	Autocalibration with software support
Number of outputs	4, 12-bit resolution
Output ranges	±5V, ±10V, 0-5V, 0-10V
Output current	±5mA max per channel
Settling time	10µs max to 0.012%
Relative accuracy	±2 LSB
Nonlinearity	±2 LSB, monotonic
Reset	Reset to zero-scale or mid-scale (jumper selectable)
DIGITAL I/O	
Number of I/O lines	DV Models: 16 lines AV Models: 40 lines
Input voltage	Logic 0: -0.5V min, 0.8V max Logic 1: 2.0V min, 5.5V max
Input current	±3µA max
Output voltage	Logic 0: 0.0V min, 0.4V max Logic 1: 2.4V min, 3.3V max
Output current	Logic 0: 12mA max per line Logic 1: -8mA max per line
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

Data Acquisition

Helios's integrated data acquisition circuit includes 16 16-bit analog inputs with 250KHz maximum sample rate, four 12-bit analog outputs, 40 digital I/O lines, and two counter/timers. It uses an enhanced 2048-sample FIFO with programmable threshold for maximum flexibility and data reliability.

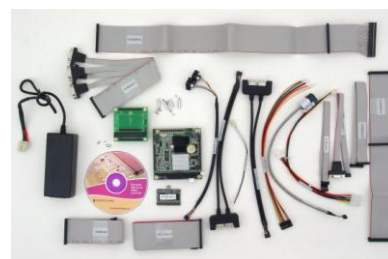
The analog circuitry utilizes Diamond's industry-leading autocalibration technology to maximize both A/D and D/A conversion accuracy. This means you get analog I/O performance with the best possible accuracy over the full operating temperature range of the product.

Software Support

Helios runs Linux, Windows CE, and DOS. All necessary drivers are shipped with the product. Diamond's free industry-leading Universal Driver software provides a C programming library for the integrated data acquisition circuit. It includes demo programs and example code for each supported OS to assist in rapid application development.

Development Kit

A complete Helios Development Kit, DK-HLV800A-01, is available with all 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.



Helios Development Kit

Ordering Information

HLV800-256AV	Helios SBC, 800MHz Vortex86DX, 256MB RAM, full data acquisition, VGA/LCD video
HLV800-256DV	Helios SBC, 800MHz Vortex86DX, 256MB RAM, digital I/O, VGA/LCD video
HLV300-128DV	Helios SBC, 300MHz Vortex86SX, 128MB RAM, digital I/O, VGA/LCD video
DK-HLV800A-01	Helios Development Kit with HLV800-256AV SBC, cables and Linux software
SDK-HLV-LNX	Helios Linux Software Development Kit
SDK-HLV-WCE	Helios Windows CE Software Development Kit
C-HLV-KIT	Helios Cable Kit for all on-board I/O
OCTAVIO-H8A-HL128-00-17-00	Octavio-HLV Embedded Application Server: 800MHz Helios SBC with data acquisition, 128MB Linux flashdisk, 1.7" enclosure