

## HELIOS PC/104 Low-Power SBC with Vortex86DX CPU and Data Acquisition



**Helios with heat sink and flashdisk installed**



**Helios DV model with DIO**

### FEATURES

#### CPU Features

- Vortex86DX CPU at 1GHz or 800MHz
- 256MB of soldered DRAM
- On-board 2MB bootable flash drive with FreeDOS installed
- 4 USB 2.0 ports
- 2 RS-232, 2 RS-232/422/485 serial ports
- 10/100Base-T Ethernet
- 1 IDE UDMA-100 port
- Flashdisk interface
- CRT and LVDS LCD
- PC/104 ISA expansion bus
- 40°C to +85°C operation

#### Data Acquisition

- 16 wide-range analog inputs, +/-10V down to 0-1.25V
- 16-bit A/D resolution
- Single-channel, multi-channel round robin, and multi-channel scan sampling
- 250KHz maximum sample rate
- 2048 A/D sample FIFO with programmable threshold
- Interrupt-based A/D data transfer with FIFO support
- Programmable input ranges
- 4 wide-range analog outputs with simultaneous update capability
- 12-bit D/A resolution
- Multi-range autocalibration for highest accuracy
- 40 digital I/O lines with programmable direction
- 16-bit and 24-bit counter/timers
- Field-upgradeable logic circuit for performance upgrades or custom designs

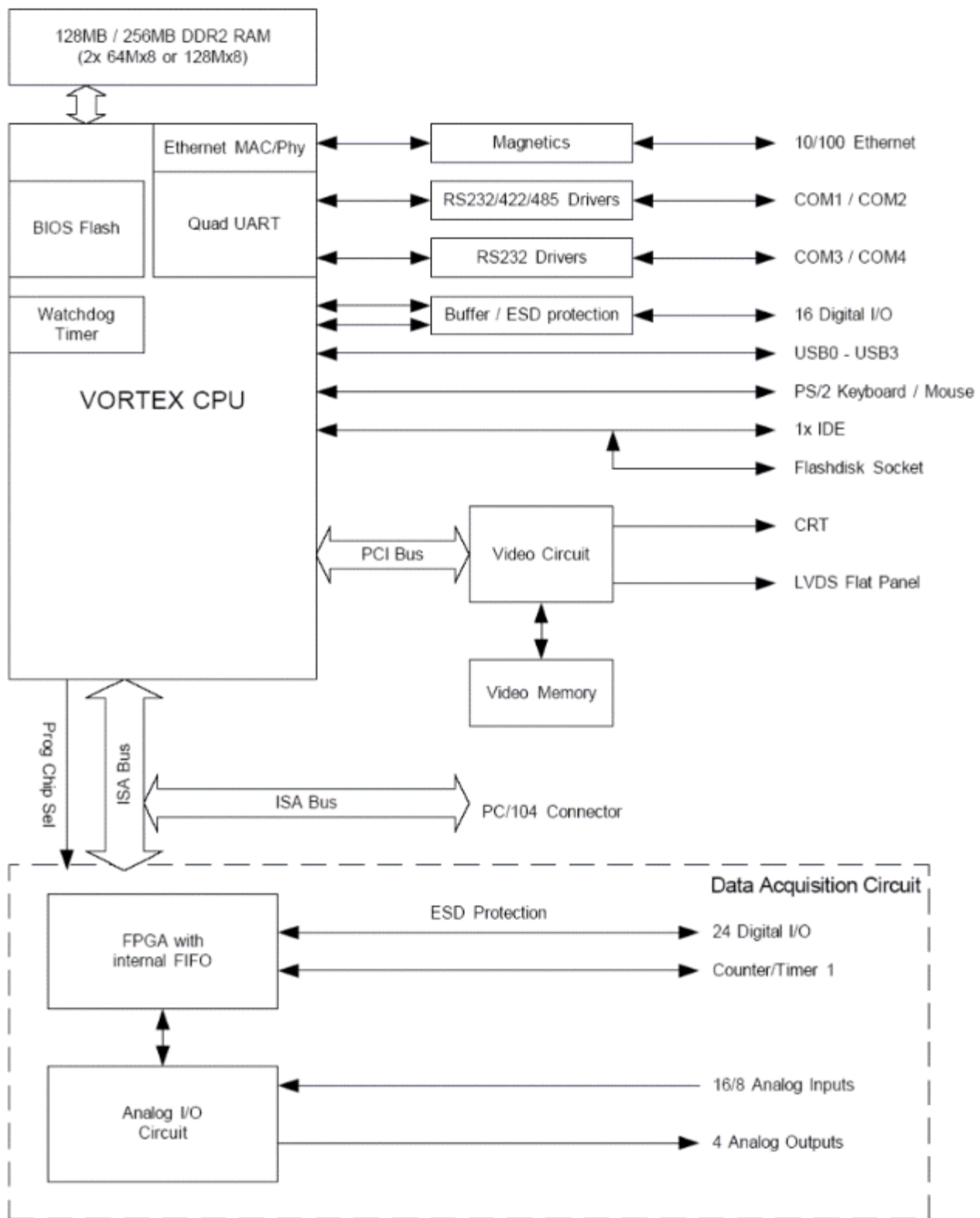
Helios is a low power, mid-range performance PC/104 form factor single board computer combining a highly integrated CPU with Diamond Systems' renowned high-accuracy data acquisition circuitry on a single board, reducing size and cost while increasing ruggedness. Helios utilizes a Vortex integrated single chip CPU operating at 800MHz or 1GHz, and 256MB of DRAM soldered on-board.

Helios incorporates advanced features such as four USB 2.0 ports, an IDE hard drive interface, mounting capability for a solid state flashdisk up to 4GB, and CRT/LVDS LCD graphics. Helios also provides a 10/100Base-T Ethernet interface, two RS-232 serial ports, two RS-232/422/485 serial ports and legacy keyboard and mouse interfaces.

Helios includes an on-board 2MB bootable flash drive with FreeDOS installed. This flash drive offers additional cost savings for DOS applications, since no additional storage medium is required. It also enables you to quickly verify Helios's operation. Just connect keyboard, monitor, and power, and Helios boots up to DOS so you can verify proper working condition as well as test the various features on the single board computer.

Helios is extremely rugged, featuring on-board soldered DRAM and -40°C to +85°C fan-less operation. Optional hardwired jumpers and latching connectors are available for increased resistance to shock and vibration. Conformal coating is available as an extra cost option.

### **System Block Diagram**



◆ **Cable kit for Helios**

The Helios cable kit includes cables for Helios input and output. Many cables are also available individually.



C-HLV-KIT includes the following cables:

No.	Qty	Cable	Description	Drawing
1	1	6981004	IDE, 44 conductor 2mm ribbon cable	<a href="#">Show</a>
2	1	6981006	Output power cable	<a href="#">Show</a>
3	1	6981009	Power I/O cable	<a href="#">Show</a>
4	2	6981082	Dual USB 2.0 type A	<a href="#">Show</a>
5	1	6981083	Keyboard/Mouse, 2mm 2x4 crimp to 2x Mini-DIN-6	<a href="#">Show</a>
6	1	6981084	VGA, 2x5 2mm latching to DD15F	<a href="#">Show</a>
7	1	6981161	RJ45PNL-CRIMP2x5 2mm, 12"	<a href="#">Show</a>
8	1	6981163	CRIMP50xIDC50F IDC50F, 21 0.1"x2MMx2MM Data Acquisition	<a href="#">Show</a>
9	1	6981164	Cable, IDC20F to IDC20F, 2mm pitch, 12" length	<a href="#">Show</a>
10	1	6981166	IDC40F 2mm-DB9Mx4, 12" Serial Ports 1-4	<a href="#">Show</a>
11	1	6981169	Ribbon cable for GPIO, A/D, and misc	<a href="#">Show</a>
12	1	6981180	External Battery	<a href="#">Show</a>

### ◆ Helios Development Kits

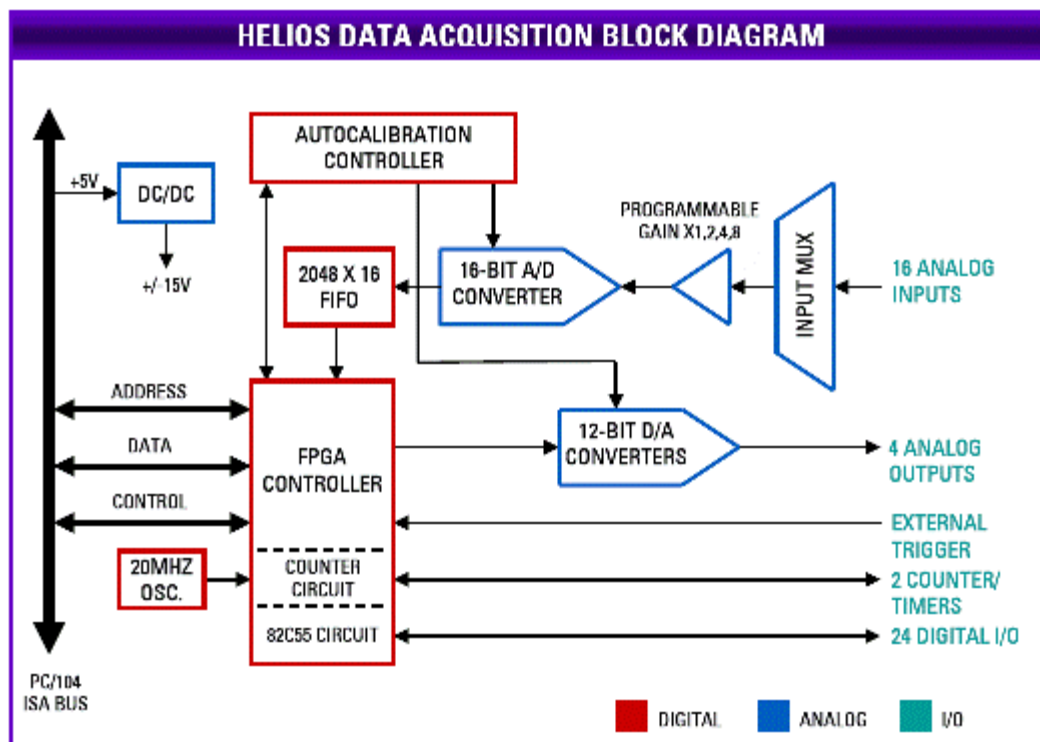
A Helios System Development Kit (DK-HLV800A-01) is available with all the components you need to get started on your embedded design project. The kit contains a Helios 800MHz SBC with 256MB of RAM and integrated data acquisition, 128MB flashdisk module with a bootable Linux image installed, cable kit, and software CD.

A software development kit for Linux is also available. The **Helios Linux Kit** (SDK-HLV-LNX) contains a 256MB flashdisk with a bootable linux image pre-loaded, a software CD with the linux tool chain and a backup image, and documentation.

### ◆ Integrated Data Acquisition

Helios includes a complete autocalibrating jumperless analog and digital I/O circuit similar to our top-of-the-line PC/104 analog I/O board. It contains 16 analog inputs with 16-bit resolution and 250KHz sample rate, backed by a 2048 sample FIFO with programmable threshold. Programmable input

ranges from a wide-range  $\pm 10V$  down to 0-1.25V are provided. The analog circuitry also includes 4 D/A channels with 12-bit resolution and jumperless output range selection and simultaneous update capability. On the digital side, Helios provides 40 digital I/O lines with programmable direction, as well as two counter/timers for A/D sample rate control, pulse counting, frequency generation, or other applications. Its advanced control logic has more features and flexibility to fit almost any application, such as internal/external A/D clock source, scan and single-sample modes, and our exclusive programmable FIFO threshold that lets you tune the board's performance to your application. The data acquisition circuit is fully supported by our Universal Driver software for a wide range of operating systems.



## ◆ Specifications

## ◆ Models and Accessories

Helios		
available models:		
HLV1000-256AV	Helios SBC, 1GHz Vortex86DX, 256MB RAM, full data acquisition, VGA/LCD video	Available
HLV1000-256DV	Helios SBC, 1GHz Vortex86DX, 256MB RAM, digital I/O, VGA/LCD video	Available
HLV800-256AV	Helios SBC, 800MHz Vortex86DX, 256MB RAM, full data acquisition, VGA/LCD video	Available
HLV800-256DV	Helios SBC, 800MHz Vortex86DX, 256MB RAM, digital I/O, VGA/LCD video	Available
DK-HLV800A-01	Helios Development Kit with HLV800-256AV SBC, cables and software	Available
C-HLV-KIT	Helios Cable Kit	Available

Please [login](#) or [signup](#) for an online quote request.

Cables and accessories	
available models:	
<b>C-HLV-KIT</b>	C-HLV-KIT cable kit
<b>6981004</b>	IDE, 44 conductor 2mm ribbon cable
<b>6981006</b>	Output power cable

<b>6981009</b>	Power I/O cable
<b>6981082</b>	Dual USB 2.0 type A
<b>6981083</b>	Keyboard/Mouse, 2mm 2x4 crimp to 2x Mini-DIN-6
<b>6981084</b>	VGA, 2x5 2mm latching to DD15F
<b>6981161</b>	RJ45PNL-CRIMP2x5 2mm, 12"
<b>6981163</b>	CRIMP50xIDC50FxIDC50F, 21 0.1"x2MMx2MM Data Acquisition
<b>6981164</b>	Cable, IDC20F to IDC20F, 2mm pitch, 12" length
<b>6981166</b>	IDC40F 2mm-DB9Mx4, 12" Serial Ports 1-4
<b>6981169</b>	Ribbon cable for GPIO, A/D, and misc
<b>6981180</b>	External Battery

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