HERCULES II

EBX Single Board Computer

800MHz VIA Mark CPU, Integrated Autocalibrating Data Acquisition, DC/DC Power Supply

2 in 1 CPU+DAQ

INDUSTRIAL EBX EMBEDDED COMPUTERS

- ◆ Low power, Pentium II class, expandable EBX SBC
- ◆ 2-in-1 design (CPU + DAQ) reduces size and cost, increases ruggedness and reliability
- ◆ VIA Mark processor running at 800MHz
- ◆ 256MB or 512MB memory soldered on-board
- ◆ Support for:
  - four USB 1.1 ports
  - two RS-232, two RS-232/422/485 ports
  - 10/100Mbps Ethernet
  - two IDE ports for hard drive, solid state flashdisk, and CompactFlash interfaces
  - VGA CRT or LVDS LCD display
- ◆ Built in 40W DC/DC power supply
- ◆ Optional data acquisition circuitry featuring multiplexed 32 channel 16-bit A/D with autocalibration, four 12-bit D/A, 40 digital I/O and two counter/timers
- ◆ PC/104-*Plus* expansion
- ◆ Extremely rugged with soldered RAM
- ◆ -40°C to +85°C (-40°F to +185°F) or -20°C to +71°C (-2°F to +160°F) operating temperature

Highly Integrated SBC

Hercules II combines all of the functionality of a single board computer, a complete analog and digital data acquisition circuit, and 40W DC/DC power supply into a single board, offering the most functionality available in the EBX form factor.

Price/Performance Advantage

The VIA Mark CoreFusion CPU offers an excellent balance of performance, reduced power consumption and price, making Hercules II an excellent choice for a wide variety of embedded computing applications.

Rugged Design

Hercules II was designed with rugged applications in mind. With an operating temperature of -40°C to +85°C, a high tolerance to shock and vibration, and on-board soldered SDRAM, Hercules II thrives in the harshest environments.

Outdoor and On-Vehicle Applications

Hercules II's rugged design and integrated 40W DC/DC power supply make it an excellent choice for outdoor or on-vehicle applications.

Block Diagram

Hercules II: EBX Single Board Computer

DIAMOND SYSTEMS
C O R P O R A T I O N
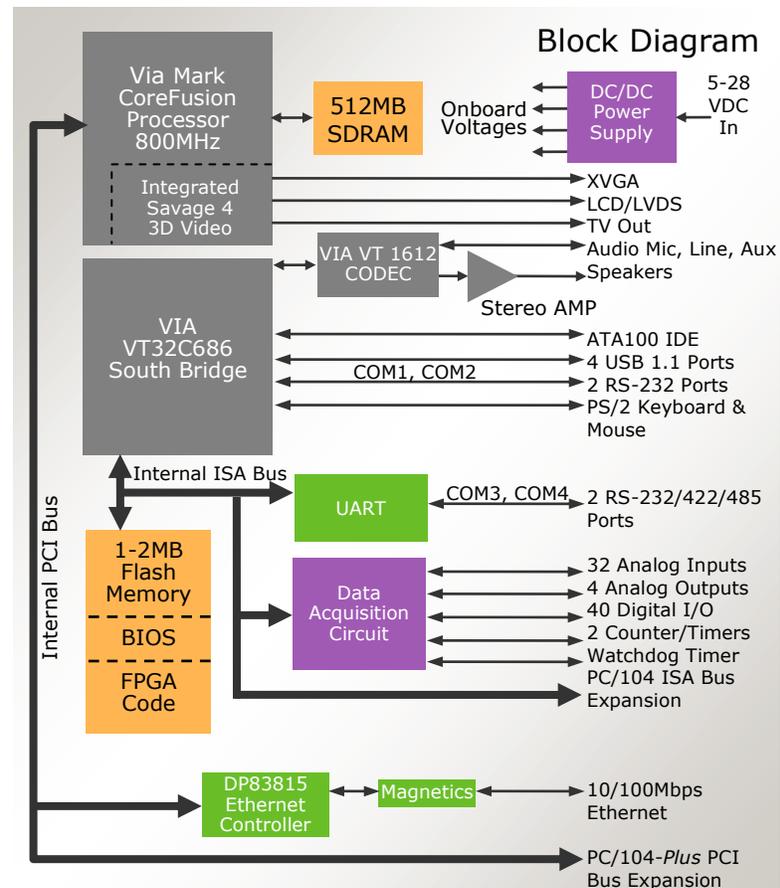
CPU Specifications

Processor	VIA Mark CoreFusion CPU at 800MHz
Cooling	Heat sink, fan-less
Memory	512MB or 256MB DRAM
Expansion bus	PC/104-*Plus* (ISA & PCI)
Display type	VGA CRT and/or LVDS LCD
Display resolution	1600 X 1200 maximum
USB ports	4 USB 1.1
Serial ports	2 RS-232; 2 RS-232/422/485
Networking	10/100Base-T Ethernet
Mass storage	2 IDE UDMA-100 ports Flashdisk & CompactFlash interfaces
Keyboard/Mouse	PS/2
Audio	AC'97, Line-in, Line-out, mic Amplified speaker interface
Input power	5-28VDC
Power consumption	16W
Operating temperature	-20°C to +71°C (-2°F to +160°F) or -40°C to +85°C (-40°F to +185°F)
Shock	IEC68-2-27
Vibration	MIL-STD-810E 514.4
Dimensions	8.00" x 5.75" (203mm x 146mm)
Weight	10oz / 285g
RoHS	Compliant

Data Acquisition Specifications

ANALOG	
Number of inputs	32 single-ended or 16 differential, user selectable
A/D resolution	16 bits
Input ranges	±10V, ±5V, ±2.5V, ±1.25V, 0-10V, 0-5V, 0-2.5V, 0-1.25V programmable
Max sample rate	250KHz
Nonlinearity	±2LSB, 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	7μS max to 0.01%

DIGITAL I/O	
Number of I/O lines	40 lines programmable
Output current	Logic 0: 12mA max per line Logic 1: -4mA 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

Hercules II Development Kit

Data Acquisition

Hercules II provides a top of the line autocalibrating analog and digital I/O circuit. It has 32 16-bit analog inputs and 250KHz sample rate, backed by a 2048-sample FIFO with programmable threshold. Programmable input ranges from a wide-range +/-10v down to 0-1.25v are provided. The analog circuitry also includes 4 12-bit D/A channels and jumper-selected output ranges. Multi-range autocalibration on both A/D and D/A ensures maximum accuracy over time and temperature and enables reliable, maintenance-free performance over the life of the board.

The analog circuitry utilizes Diamond Systems' industry-leading autocalibration technology to calibrate its A/D and D/A circuits. This means you get analog I/O performance with the maximum possible accuracy over the full operating temperature range of the product.

Software Support

Hercules II runs Linux, Windows XP, Windows Embedded Standard, QNX, and DOS. Linux, Windows Embedded Standard and QNX Software Development Kits are available with bootable images and drivers to get you started on your design project right out of the box. Diamond's free industry-leading Universal Driver software is also included. It provides a C programming library for the integrated data acquisition circuit, demo programs, and example code for each OS to assist in rapid application development.

Development Kit

A complete Development Kit, DK-HRCEBX-02, is available with all the components you need to get started on your embedded design project. The kit contains a Hercules II SBC, flashdisk with Linux pre-loaded, cable kit, AC adapter, and software CD.

Ordering Information

HRC800-5A512	Hercules II SBC, 800MHz VIA Mark, 512MB RAM, full DAQ, extended temperature
HRC800-5N512	Hercules II SBC, 800MHz VIA Mark, 512MB RAM, no DAQ, extended temperature
HRC800-5A512E	Hercules II SBC, 800MHz VIA Mark, 512MB RAM, full DAQ, enhanced temperature
HRC800-5N512E	Hercules II SBC, 800MHz VIA Mark, 512MB RAM, no DAQ, enhanced temperature
DK-HRCEBX-02	Hercules II Development Kit with HRC800-5A512 SBC, cables and Linux software
SDK-HRC-LNX	Hercules II Linux Software Development Kit
SDK-HRC-QNX	Hercules II QNX Software Development Kit
SDK-HRC-XPE	Hercules II Windows Embedded Standard Software Development Kit
C-HRCEBX-KIT	Hercules II Cable Kit for all on-board I/O