HERCULES II

EBX SBC WITH DATA ACQUISITION AND DC/DC POWER SUPPLY

DIAMOND SYSTEMS
C O R P O R A T I O N
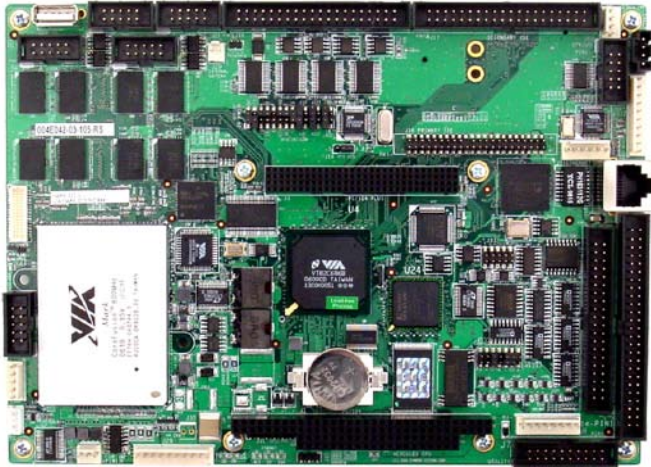
- Low power, Pentium III class, 800MHz PC/104-Plus expandable SBC

- Fully featured, including Ethernet, CRT and flat panel support, USB 2.0, 4 serial ports and IDE

- Optional data acquisition featuring 32 16-bit A/D with autocalibration, 4 12-bit D/A, 40 DIO and two counter/timers

- 5-28V DC power supply with 40W output power

- Extremely rugged, with soldered RAM and fanless -40°C to +85°C operating temperature

DESCRIPTION

Hercules II is a high performance, third generation EBX form factor single board computer combining high integration CPU and peripheral technology with Diamond Systems' renowned high accuracy data acquisition circuitry and a DC/DC power supply on a single board. Hercules II utilizes the new VIA ultra low power Mark CoreFusion™ CPU operating at 800MHz.

The highly integrated Mark CPU incorporates VIA's proven Nehemiah CPU core along with a feature-rich Northbridge in a single package. The Mark CPU provides full support for legacy devices such as PS/2 keyboard and mouse and full support for the ISA bus.

System I/O includes 10/100BaseT Ethernet, 4 RS232 ports, two with RS422/485 capability, 4 USB 1.1 ports, 4 USB 2.0 ports, dual IDE controllers supporting a CompactFlash drive, and PS/2 keyboard and mouse support. Hercules II also offers an advanced video controller with hardware 2D / 3D acceleration and AGP 4x level performance. The board supports both CRT and LVDS flat panel displays. Audio features include an integrated AC'97 sound controller and codec with amplified speaker output.

Hercules II includes a top of the line autocalibrating analog and digital I/O circuit. It has 32 16-bit analog inputs and 250KHz sample rate, back by a 2K-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.

CPU SPECIFICATIONS

Processor	800MHz VIA Mark CoreFusion CPU
Chipset	VT8606(Mark internal) + 82C686B
Memory	256MB or 512MB
Bus Interface	PC/104-*Plus* (ISA + PCI)
Display Type	CRT and / or 18-bit LVDS flat panel
CRT Resolution	1600x 1200
Flat panel Resolution	UXGA 1600 x 1200
Video Memory	32MB UMA
USB Ports	(4) USB 2.0, (4) USB 1.1
Serial Ports	(2) RS232, (2) RS232/422/485
Networking	10/100 Ethernet
Mass Storage Interface	(2) IDE UDMA 100, Flashdisk and CompactFlash interfaces
Keyboard / Mouse	PS/2
Audio	AC '97, Line-in, Line-Out, Mic
	Amplified speaker interface
Input power	5-28VDC
Power Consumption	12W
Cooling	Heat sink, no fan
Op. Temperature	-40°C to +85°C
Dimensions	8.00" x 5.75" (203mm x 146mm)
Weight	TBD

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.

On the digital side, Hercules II 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 the features and flexibility to fit almost any application, such as internal / external A/D clock source, scan and single-sample modes, and Diamond Systems' exclusive programmable FIFO threshold that lets you tune the board's performance to your application

Diamond Systems' free Universal Driver programming software for Linux, Windows 98/2000/XP/CE.NET, DOS, QNX, and VxWorks is included.

The built-in DC/DC power supply enables Hercules II to be used in a wide range of applications without requiring a separate add-on power module. The on-board supply has 40 watts of output power, enough to power the CPU as well as peripherals and add-on boards. The standard input range of 5-28VDC means that Hercules is compatible with a standard off-the-shelf 5v supply as well as a vehicle, battery or industrial power source. An optional 20-48VDC input range is also available. The on-board supply has ACPI compatibility for intelligent power management.

Hercules II is extremely rugged, featuring 256MB or 512MB of soldered SDRAM, optional hardwired jumpers and latching connectors for increased resistance to shock and vibration. Hercules II has an operating temperature range of -40°C to +85°C without a fan. Conformal coating is available as an extra cost option.

DEVELOPMENT KIT

A development kit is available with all the hardware youneed to get started on your embedded design project. The kit contains a Hercules II board, flashdisk module, cable kit, I/O panel board and software CD.

ORDERING INFORMATION

Part No.	Description
HRC800-5N256	Hercules II SBC, 256MB RAM, Digital I/O
HRC800-5A512	Hercules II SBC, 512MB RAM, Full Data Acquisition
DK-HRC-01	Hercules II Development Kit
C-HRCEBX-Kit	Hercules II Cable Kit

DATA ACQUISITION SPECIFICATIONS

# analog Inputs	32, 16-bit A/D resolution
Max Sample Rate	250KHz total
Input modes	Single-ended, differential
Input ranges	±10V, ±5V, ±2.5V, ±1.25V , 0-10V, 0-5V, 0-2.5V, 0-1.25V,
Accuracy	<±2LSB after autocalibration
On-board FIFO	2048 samples, programmable threshold
Analog Calibration	Autocalibration
# analog outputs	4, 12-bit D/A resolution
Output ranges	±5V, ±10V, 0-5V, 0-10V
Settling time	7µS to ±0.01%
Output current	±5mA max, 2kΩ min load
# DIO lines	40 lines, 5v logic compatible
DIO direction	Programmable in 8-bit ports
DIO output current	0: 12mA max; 1: -4mA max
Counter / timers	1 24-bit A/D sample rate control; 1 16-bit general purpose

POWER SUPPLY SPECIFICATIONS

Input Voltage	5-28VDC standard, 20-48VDC optional
Output power	40W total, 30W available
Power consumption	12W
Output voltages	+5V, +3.3V (on PCI bus)
Switched outputs	+5V, +12V, +3.3V

FOR MORE INFORMATION

Diamond Systems Corporation
1255 Terra Bella Avenue
Mountain View, CA 94043
Tel: 650-810-2500
Fax: 650-810-2525
techinfo@diamondsystems.com