ATHENA II

PC/104 EXPANDABLE SBC WITH ETHERNET, VIDEO, USB, AUDIO AND DATA ACQUISITION

- Low power, Pentium III class, 500MHz or 800MHz PC/104 expandable SBC
- Fully featured including Ethernet, CRT and flat panel support, 4 USB ports, 4 RS-232 ports (2 with RS-232/485), audio and IDE
- Optional data acquisition featuring 16 16-bit A/D with autocalibration, 4 12-bit D/A, 24 DIO and two counter/timers
- Extremely rugged, with soldered DRAM and fan-less -40°C to +85°C operating temperature

DESCRIPTION

Athena II is a high performance, third generation PC/104 expandable single board computer combining high integration CPU and peripheral technology with Diamond Systems' renowned high accuracy data acquisition circuitry on a single board. Athena II utilizes the new VIA ultra low power Mark CoreFusion™ CPU, operating at 500MHz or 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 legacy ISA bus.

System I/O includes a 10/100BaseT Ethernet port, four RS232 ports, four USB 1.1 ports, Ultra DMA IDE controller with support for two drives, and PS/2 keyboard and mouse support. Athena II contains an integrated S3 Savage 4 video controller providing hardware 2D / 3D acceleration with full internal AGP 4x level performance. The board supports both CRT and LVDS flat panel displays. Audio features include an integrated AC97 digital audio controller and codec.

Athena II features 256MB of soldered DRAM for increased resistance to shock and vibration. Athena II includes an autocalibrating analog and digital I/O circuit. It has 16 16-bit analog inputs with 100KHz sample rate, backed by a 2048-sample FIFO with programmable

CPU SPECIFICATIONS

Processor	VIA Mark CoreFusion CPU operating at 500MHz or 800MHz
Chipset	VT8606(Mark internal) + 82C686B
Memory	256MB
Bus Interface	PC/104 (ISA)
Display Type	CRT and / or 18-bit LVDS flat panel
CRT Resolution	1600 x 1200
Flat panel Resolution	UXGA 1600 x 1200
Video Memory	32MB UMA
USB Ports	(4) USB 1.1
Serial Ports	(2) RS-232, (2) RS-232/485
Networking	10/100 Ethernet
Mass Storage Interface	IDE UDMA 33 with Flashdisk interfaces
Keyboard / Mouse	PS/2
Audio	AC '97, line-in, line-Out, mic
Input power	5V DC ±5%
Power Consumption	10W
Operating Temperature	-40°C to +85°C most models -40°C to +70°C two models
Shock	IEC68-2-27
Vibration	MIL-STD-810E 514.4
Dimensions	4.175" x 4.475" (106mm x 114mm)
Weight	133g without heatsink
RoHS	Compliant

threshold. Programmable input ranges from a wide-range +/-10v down to 0-1.25v are provided. The analog circuitry also includes 4 D/A channels with 12-bit resolution 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.

On the digital side, Athena II provides 24 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 and DOS is included. Athena II is extremely rugged, featuring 256MB of soldered SDRAM, optional hardwired jumpers and latching connectors for increased resistance to shock and vibration. All Athena II SBCs have a fan-less operating temperature range of -40°C to +85°C except models ATHM800-256NLP and ATHM800-256ALP which have a fan-less operating temperature range of -40°C to +70°C. Conformal coating is available as an extra cost option.

ORDERING INFORMATION

Part No.	Description
ATHM500-256N	Athena II SBC, 500MHz, 256MB RAM
ATHM500-256A	Athena II SBC, 500MHz, 256MB RAM, data acquisition
ATHM800-256N	Athena II SBC, 800MHz, 256MB RAM
ATHM800-256A	Athena II SBC, 800MHz, 256MB RAM, data acquisition
ATHM800-256NLP	Athena II SBC, 800MHz, 256MB RAM, low profile heat sink
ATHM800-256ALP	Athena II SBC, 800MHz, 256MB RAM, data acquisition, low profile heat sink
DK-ATHM500A-01	Athena II Development Kit with ATHM500-256A SBC
DK-ATHM800A-01	Athena II Development Kit with ATHM800-256A SBC
C-ATH-Kit	Athena Cable Kit

DATA ACQUISITION SPECIFICATIONS

ANALOG INPUTS	
Inputs / resolution	16, 16-bit A/D resolution
Max Sample Rate	100KHz 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	
Outputs / resolution	4 outputs, 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
DIGITAL I/O	
Lines	24 lines, 5V logic compatible
Direction	Programmable in 8-bit ports
Output current	0: 12mA max; 1: -4mA max
COUNTER TIMERS	
Counter / timers	1 24-bit A/D sample rate control; 1 16-bit general purpose

DEVELOPMENT KIT

A development kit is available with all the hardware you need to get started on your embedded design project. The kit contains an Athena II SBC with data acquisition, FlashDisk module, cable kit, panel I/O board and software on CD.

FOR MORE INFORMATION

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