

OCTAVIO-ATHM SYSTEMS

COMPACT, RUGGED, HIGH-PERFORMANCE EMBEDDED APPLICATION SERVERS



- Based on low-power, highly integrated PC/104 SBC
- Fully featured, including Ethernet, CRT support, 4 USB ports, 2 RS-232 ports, 2 RS-232/485 ports, PS/2 keyboard and mouse
- Integrated data acquisition featuring 16-bit A/D with autocalibration, 12-bit D/A, DIO, and counter/timers
- Extremely rugged, with soldered DRAM and fanless -40°C to +85°C operating temperature
- Compact standalone or wall mount enclosure

DESCRIPTION

Octavio-ATHM embedded application servers are compact, rugged systems aimed at a wide variety of data acquisition and control applications. The systems are based Diamond's field-proven Athena II PC/104-expandable single board computer, which combines a 500MHz VIA Mark CoreFusion CPU and peripheral interface functions along with Diamond's industry-leading high-accuracy data acquisition circuitry.

Octavio-ATHM comes with 256MB of soldered DRAM for increased resistance to shock and vibration. It also has a 512MB or 4GB solid state IDE flashdisk pre-loaded with Linux 2.6.23 and Diamond's Universal Driver data acquisition programming software, leaving ample room for your application on the flashdisk.

Standard system I/O includes a 10/100BaseT Ethernet port, four USB 1.1 ports, two RS-232 ports, two RS-232/452 serial ports, and PS/2 keyboard and mouse interfaces.

The system can drive VGA displays at resolutions up to 1600x1200. Its advanced graphics capabilities are based on an integrated S3 Savage 4 video controller, which implements hardware 2D / 3D acceleration with full internal AGP 4x level performance. Audio features include an integrated AC'97 digital audio controller and codec.

SYSTEM SPECIFICATIONS

Processor	500MHz VIA Mark CoreFusion CPU
Chipset	VT8606 (Mark internal) + 82C686B
Memory	256MB soldered DRAM
Operating System	Linux 2.6.23
System Software	Universal Driver 6.02
Display Type	VGA CRT monitor
CRT Resolution	1600 x 1200 maximum
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	Integrated 512MB or 4GB IDE flashdisk
Keyboard / Mouse	PS/2
Input Power	5V DC ±5%
Power Consumption	10W maximum
Operating Temp	-40°C to +85°C
Dimensions (L X W X H)	5.5 x 5.75 x 1.7 in. (138 x 145 x 43 mm) Height varies by selected enclosure
Weight	30.4 oz / 861.8g
RoHS	Compliant

DATA ACQUISITION SUBSYSTEM

When ordered with its optional data acquisition (DAQ) subsystem, Octavio-ATHM provides an extensive set of A/D, D/A, digital I/O, and counter/timer features. A/D functions include 16 16-bit analog inputs with 100KHz sample rate, backed by a 2048-sample FIFO with programmable threshold. Programmable A/D input ranges from +/-10v to 0-1.25v are supported. The DAQ subsystem also incorporates four 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.

The optional DAQ subsystem also includes 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.

ENCLOSURE

Octavio-ATHM's enclosure was designed to eliminate most internal cables, resulting in enhanced ruggedness and reliability in both fixed and mobile environments.

All of the system's standard interfaces are accessible on the front of the enclosure via industry standard connectors, which are mounted on a panel I/O board. The panel board also accommodates I/O from selected PC/104 add-on modules. The system is highly shock and vibration tolerant, and can operate over -40°C to +85°C.

CUSTOMIZATION

Custom versions of Octavio-ATHM are also available. Contact your Diamond Systems Sales Representative for a custom quote.

Customization options include:

- Add integrated 80GB hard disk drive
- Integrate any of Diamond's PC/104 I/O modules (height of enclosure may change)
- Substitute QNX for Linux operating system

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
Analog Calibration	Autocalibration
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

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
OCTAVIO-P-F-D-S-R	Octavio-ATHM Embedded Application Server {Please select from the options below}
P = A5A	Athena II SBC with 500MHz CPU and DAQ
A5N	Athena II SBC with 500MHz CPU, no DAQ
F = AL512	512MB flashdisk with Linux pre-loaded
AL4G	4GB flashdisk with Linux pre-loaded
D = 00	No integrated DC/DC power supply
LP	25 Watt integrated DC/DC power supply
J5	50 Watt integrated DC/DC power supply {Options LP or J5 require S=30 or greater}
S = 17	1.7 inch enclosure height
30	3 inch enclosure height
50	5 inch enclosure height
70	7 inch enclosure height
R = 00	No DIN rail adapter
DR	Add DIN rail adapter

OCTAVIO-HLV SYSTEMS



COMPACT, RUGGED, LOW-POWER EMBEDDED APPLICATION SERVERS



- Based on low power, mid-performance PC/104 SBC
- Fully featured, including support for four USB 2.0 ports, four serial ports, 10/100Base-T Ethernet, IDE hard drive, flashdisk, and VGA CRT display
- Integrated data acquisition featuring 16-bit A/D with autocalibration, 12-bit D/A, DIO, and counter/timers
- Extremely rugged, with soldered DRAM and fanless -40°C to +85°C operating temperature
- Compact standalone or wall mount enclosure

DESCRIPTION

Octavio-HLV embedded application servers are compact, rugged systems aimed at a wide variety of data acquisition and control applications. The systems are based Diamond's field-proven Helios PC/104 single board computer, which combines an 800MHz Vortex86DX CPU and integrated peripheral interface functions along with Diamond's industry-leading high-accuracy data acquisition circuitry.

Octavio-HLV comes with 256MB of soldered DRAM for increased resistance to shock and vibration. It also has a 128MB or 1GB solid state IDE flashdisk pre-loaded with Linux 2.6.23 and Diamond's Universal Driver data acquisition programming software, leaving ample room for your application on the flashdisk.

Standard system I/O includes VGA graphics, a 10/100Base-T Ethernet interface, four USB 2.0 ports, two RS-232 serial ports, two RS-232/422/485 ports, and PS/2 keyboard and mouse interfaces.

DATA ACQUISITION SUBSYSTEM

When ordered with its optional data acquisition (DAQ) subsystem, Octavio-HLV provides 16 16-bit A/D inputs with 100KHz sample rate, 4 12-bit D/A outputs, 40 digital I/O lines, and 2 counter/timers. Multi-range autocalibration on both A/D and D/A ensures maximum accuracy over time and temperature.

SYSTEM SPECIFICATIONS

Processor	800MHz Vortex86DX CPU
Memory	256MB soldered DRAM
Operating System	Linux 2.6.23
System Software	Universal Driver 6.02
Display Type	VGA monitor
CRT Resolution	1280 x 1024 maximum
USB Ports	4 USB 2.0
Serial Ports	2 RS-232 2 RS-232/422/485
Networking	10/100Base-T Ethernet
Mass Storage	Integrated 128MB or 1GB IDE flashdisk
Keyboard / Mouse	PS/2
Input Power	5VDC ±5%
Power Consumption	5W
Operating Temp	-40°C to +85°C
Dimensions (L X W X H)	5.5 x 5.75 x 1.7 in. (138 x 145 x 43 mm) Height varies by selected enclosure
Weight	30.4 oz / 863.4g
RoHS	Compliant

ENCLOSURE

Octavio-ATHM's enclosure was designed to eliminate most internal cables, resulting in enhanced ruggedness and reliability in both fixed and mobile environments.

All of the system's standard interfaces are accessible on the front of the enclosure via industry standard connectors, which are mounted on a panel I/O board. The panel board also accommodates I/O from selected PC/104 add-on modules. The system is highly shock and vibration tolerant, and can operate fan-less over -40°C to +85°C.

CUSTOMIZATION

Custom versions of Octavio-HLV are also available. Contact your Diamond Systems Sales Representative for a custom quote.

Customization options include:

- Add integrated 80GB hard disk drive
- Integrate any of Diamond's PC/104 I/O modules (height of enclosure may change)
- Windows CE instead of Linux OS pre-loaded

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
OCTAVIO-P-F-D-S-R	Octavio-HLV Embedded Application Server {Please select from the options below}
P = H8A	Helios SBC with 800MHz CPU and DAQ
H8D	Helios SBC with 800MHz CPU, no DAQ
F = HL128	128MB flashdisk with Linux pre-loaded
HL1G	1GB flashdisk with Linux pre-loaded
D = 00	No integrated DC/DC power supply
LP	25 Watt integrated DC/DC power supply
J5	50 Watt integrated DC/DC power supply {Options LP or J5 require S=30 or greater}
S = 17	1.7 inch enclosure height
30	3 inch enclosure height
50	5 inch enclosure height
70	7 inch enclosure height
R = 00	No DIN rail adapter
DR	Add DIN rail adapter

DATA ACQUISITION SPECIFICATIONS

ANALOG INPUTS	
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	100KHz
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
ANALOG OUTPUTS	
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	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