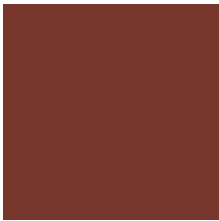
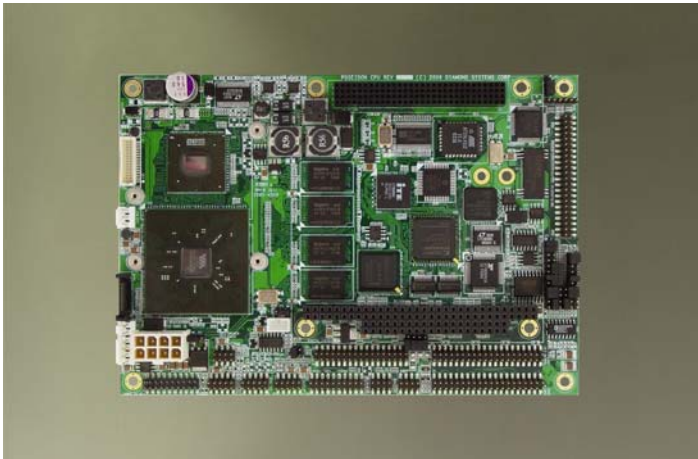




PRODUCT CATALOG 2009

Embedded
Computing
Solutions



DIAMOND SYSTEMS CORPORATION

TABLE OF CONTENTS

Key Benefits and Services	3
Single Board Computers (SBCs)	4
PC/104 SBCs.....	5
EBX & EPIC SBCs.....	7
EPIC SBCs with ETX COMs	8
ETX-Based Solutions.....	9
SBC Accessories and Cables.....	10
PC/104 I/O Overview	11
Analog I/O.....	12
Analog Output & Digital I/O.....	13
Serial Communications.....	14
Relays & Networking	15
Power Supplies	16
Batteries & PC/104 Accessories	17
Software Development Kits	18
Enclosures.....	19

Diamond Systems is a leading supplier of small form factor embedded computing solutions including highly integrated single board computers with on-board data acquisition, a wide range of PC/104 I/O modules, and product variants customized to meet your specific application needs. We offer a broad range of high quality, innovative off-the-shelf products, as well as customization services designed to deliver a solution meeting your exact requirements.

Single Board Computers

Diamond Systems' range of single board computers combine a wealth of I/O, state-of-the-art CPUs, low power consumption, extended temperature and Diamond Systems' patented data acquisition circuitry all on a single board. You can select from PC/104, EPIC, EBX and custom form factor SBCs with CPU speeds of up to 2GHz and advanced I/O such as Gigabit Ethernet, USB 2.0 and S-ATA.

PC/104 I/O Modules

Diamond Systems is first to bring cost effective ETX solutions to applications with high I/O content. We offer the most accurate A/D solution in the industry with a selection of data acquisition modules implementing our patented autocalibrating A/D technology.

ETX Baseboard Solutions

Diamond Systems is the first to bring cost effective, ETX baseboard solutions to both high and medium volume applications. Combining the benefits of off-the-shelf technology with a solution designed to meet your specific needs, our custom baseboard program can get you to market faster at a lower cost.

Customization and Integration Services

Diamond Systems offers customization and integration services designed to deliver solutions that meet your application needs. Whether you need minor variations to an off-the-shelf product such as conformal coating or latching connectors, or a full custom design, we can meet your specifications.

For more detailed information or a price quote on any of the products listed in this catalog, please visit our web site at www.diamondsystems.com.



Diamond Systems Corporation
1255 Terra Bella Avenue
Mountain View, CA 94043 USA
T: (650) 810-2500
F: (650) 810-2525
techinfo@diamondsystems.com
www.diamondsystems.com

© Copyright 2009 Diamond Systems Corporation. All rights reserved. Printed in USA. All trademarks and logos are copyright their respective owners.



RUGGED DESIGN

Diamond Systems' products are designed from the ground up to meet the challenges of harsh and hostile environments. These include the extreme cold found in airborne systems, extreme heat in desert locations, or the vibration found in a diesel locomotive.

Extended Temperature Operation

Diamond Systems' products are fully tested and guaranteed for performance over extended temperature ranges, the majority rated for -40°C to $+85^{\circ}\text{C}$.



Environmental Test Chamber

Cable-free Enclosures

Our Pandora and Triton enclosures improve ruggedness by greatly reducing a common source of failure—interconnecting cables. Our panel I/O boards connect directly to the SBC, bringing the I/O to the outside of the enclosure with industry standard connectors.

AUTOCALIBRATION

Every analog circuit exhibits fluctuations in performance due to changes in temperature. Today's complex A/D circuits may exhibit errors that become significant in comparison to the signal being measured. The problem becomes even worse with products which are rated for operation over a wide temperature range of -40°C to $+85^{\circ}\text{C}$.

Autocalibration solves these problems by enabling the board to be calibrated under software control at any time. No physical access is required, so the process can be done as often as desired, limiting any effects of temperature changes on the system. Diamond Systems' patented Universal Driver software provides built-in

Fan-less Operation

Rotating parts such as fans and hard disks are one of the most common sources of failure in embedded systems. Many of our SBCs are available in fan-less versions for increased reliability.

Solid State Flashdisk Storage

Our SBCs support solid state flashdisks for improved reliability and lighter weight. Working like a hard drive but with no moving parts, the flashdisk is installed on the SBC's IDE connector, and held firmly in place with a mounting screw.

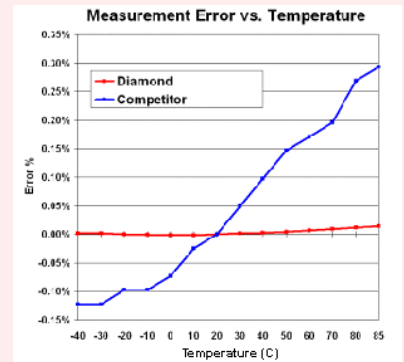


Flashdisk: Bottom View

Soldered-on Memory

Most of our SBCs feature soldered-on memory to improve reliability by preventing memory modules from becoming dislodged or occasional memory errors due to vibration.

autocalibration code with a simple function call to enable quick and easy calibration and ensure accurate measurements at all times.



CUSTOMIZATION SERVICES

Even with Diamond Systems' extensive offering of off-the-shelf single board computers and PC/104 I/O modules, some applications have unique requirements that cannot be met by off-the-shelf products. Diamond Systems specializes in customizing SBC and I/O solutions for specific application needs.

Customization of our off-the-shelf products can include:

- Changing connectors to fit your application requirements
- Depopulating unneeded components for lower cost / lower power consumption
- Hardwired configuration to remove jumpers and improve resistance to shock and vibration
- Conformal coating to resist effects from moisture
- Burn-in or temperature testing to verify performance and reliability

HIGH INTEGRATION

Diamond Systems offers the functionality of multiple PC/104 modules on a single board computer, ranging from our 2-in-1 designs to our 6-in-1 highly integrated Neptune EPIC SBC.



CPU
Data Acquisition



CPU
Data Acquisition
Power Supply



CPU
Data Acquisition
Power Supply
Opto I/O
Serial I/O
Ethernet

SINGLE BOARD COMPUTERS

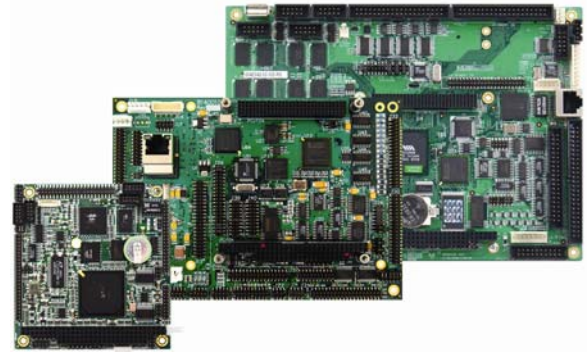
CPU Plus Data Acquisition On A Single Board

Diamond Systems provides a broad range of single board computers (SBCs) to meet a variety of embedded computing requirements. Diamond Systems' SBCs span the performance range from a 300MHz Vortex86SX to a 2.0GHz Pentium M equivalent with up to 1GB of RAM. As shown in the Feature Guides below, Diamond's SBCs support a variety of features including high performance I/O such as USB 2.0, Gigabit Ethernet and S-ATA mass storage interfaces.

A unique characteristic of Diamond Systems' SBCs is the combination of CPU, PC I/O and data acquisition circuitry on a single board. This high integration saves the cost of additional boards, reduces space and weight, and reduces inter-board interconnects to improve reliability. Data acquisition capabilities on these SBCs range up to 32 16-bit analog inputs, 4 12-bit analog outputs and a minimum of 24 digital I/O lines.

Diamond Systems single board computers encompass three industry standard form factors (PC/104, EBX and EPIC) as well as custom form factors. Each board supports PC/104 or PC/104-Plus bus expansion. A unique panel I/O board is available for our PC/104 and EPIC SBCs, replacing most cables with PC-style connectors for easy

system assembly. Diamond Systems also offers a family of enclosures for easy construction of a complete embedded computing system.



PC/104

90 x 96 mm
86.4 cm²
3.55 x 3.775 in
13.4 in²

EPIC

115 x 165 mm
189.8 cm²
4.528 x 6.496 in
29.4 in²

EBX

146 x 203 mm
296.4 cm²
5.75 x 8.0 in
46.0 in²

SINGLE BOARD COMPUTER CPU FEATURES

Product	Form Factor	Processor	Speed (MHz)	Memory (MB)	Video	Audio	RS-232	RS-232 422/485	Ethernet	USB	Expansion	Keybd Mouse	Mass Storage	CF	FD	Input Voltage	XT
Hercules II	EBX	VIA Mark	800	512	✓	✓	2	2	10/100	4 v1.1 4 v2.0	PC/104-Plus	✓	2 UDMA 100	✓	✓	5-28VDC	-20°C to +85°C
Neptune	EPIC	Model Specific	Up to 1.4 GHz	Up to 1GB	✓	✓	2	4	10/100 GIGABIT	4 v2.0	PC/104-Plus	✓	2 UDMA 100 1 S-ATA Opt.	✓	✓	5, 7-28VDC	-30°C to +85°C
Poseidon	EPIC	VIA C7 VIA ULV EDEN	2.0GHz 1.0GHz	Up to 1GB	✓	✓	2	2	GIGABIT	4 v2.0	PC/104-Plus	✓	1 S-ATA 1 UDMA 100		✓	5VDC	-40°C to +85°C
Athena II	4.2" X 4.5"	VIA Mark CoreFusion	500 800	256	✓	✓	2	2	10/100	4 v1.1	PC/104	✓	1 UDMA 33		✓	5VDC	-40°C to +85°C
Helios	PC/104	Vortex86DX/SX	300 800	128 256	✓		2	2	10/100	4 v2.0	PC/104	✓	1 UDMA 100	✓	✓	5VDC	-40°C to +85°C
Rhodeus	PC/104	AMD Geode LX800	500	256, 512 1024	✓		1	1	10/100	2 v2.0	PC/104	✓	1 UDMA 33	✓		5V	-20°C to +70°C
Pegasus	PC/104-Plus	AMD Geode LX800	500	256	✓		1	1	10/100	4 v2.0	PC/104-Plus	✓	1 UDMA 33	✓	✓	5VDC	-40°C to +85°C

SINGLE BOARD COMPUTER DATA ACQUISITION FEATURES

Product	Analog Inputs									Analog Outputs				Misc.	
	#SE	#DI	RES	BIP	UNI	PROG	MAX	AUTOCAL	FIFO	#OUT	#RES	BIP	UNI	#DIO	CLK
Hercules II	32	16	16	4	4	✓	250	✓	2048	4	12	2	2	40 I/O	✓
Neptune	32	16	16	4	4	✓	250	✓	1024	4	12	2	2	24 I/O	✓
Poseidon	32	16	16	5	5	✓	250	AUTO*	1024	4	12	2	2	24 I/O	✓
Athena II	16	8	16	4	4	✓	100	✓	2048	4	12	2	2	24 I/O	✓
Helios	16	8	16	4	3	✓	100	✓	512	4	12	2	2	40 I/O	✓

SE Single-ended analog inputs
DI Differential analog inputs
RES A/D or D/A resolution in bits
BIP Bipolar ranges (for example ±5V)
UNI Unipolar ranges (for example 0-5V)

PROG Programmable gain
MAX Max A/D sample rate in KHz
AUTOCAL Automatic calibration of A/D and D/A circuitry
FIFO A/D sample FIFO buffer on board

I/O Programmable direction digital I/O
CLK A/D pacer clock on board
XT -40 to +85°C operating temperature
CF CompactFlash support
FD IDE Flashdisk support (See page 10)



ATHENA II

Compact 500-800MHz 2-in-1 PC/104 SBC With Integrated Data Acquisition

CPU Features

- VIA Mark Processor at 500MHz or 800MHz
- 256MB memory soldered on-board
- 10/100Base-T Ethernet
- Flat panel, CRT, & LCD display support
- IDE port with UDMA-33 capability
- 4 RS-232 serial ports
- 4 USB 1.1 ports
- PS/2 keyboard/mouse ports
- Real-time clock & Watchdog timer
- PC/104 ISA expansion bus
- 10W power consumption
- -40°C to +85°C fan-less operating temperature

Data Acquisition Features

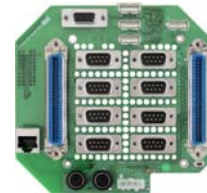
- 16 analog inputs, 16-bit A/D
- 100KHz max sampling rate
- Interrupt-based A/D sampling with 2048 FIFO
- 4 analog outputs, 12-bit D/A
- Autocalibration
- 24 programmable digital I/O



Tall Heatsink



Short Heatsink



Panel I/O Board for Athena II SBC

Athena II is a compact, high performance PC/104 expandable single board computer integrating a Pentium III-level CPU with Diamond Systems' renowned high accuracy data acquisition circuitry on a single board. Athena II is built around a low power VIA Mark CPU and 256MB RAM with a broad set of system I/O. The Athena II data acquisition circuitry has 16 16-bit analog inputs with a 100KHz sample rate, backed by a 2048 sample FIFO along with 4 12-bit D/A channels. Autocalibration on both A/D and D/A ensures maximum accuracy over time and temperature. Athena II is extremely rugged, featuring soldered SDRAM, optional hardwired jumpers for increased resistance to shock and vibration and an operating temperature range of -40°C to +85°C without a fan. ATHM800-256ALP/NLP models have an operating temperature of -40°C to +70°C.

Available Models:

ATHM500-256A	500MHz, 256MB RAM, data acquisition
ATHM500-256N	500MHz, 256MB RAM, no data acquisition
ATHM800-256A	800MHz, 256MB RAM, data acquisition, high profile heatsink
ATHM800-256N	800MHz, 256MB RAM, no data acquisition, high profile heatsink
ATHM800-256ALP	800MHz, 256MB RAM, data acquisition, low profile heatsink
ATHM800-256NLP	800MHz, 256MB RAM, no data acquisition, low profile heatsink
DK-ATHM800A-01	800MHz Athena II SBC, cables, Linux flashdisk and AC adapter
DK-ATHM500A-01	500MHz Athena II SBC
C-ATH-KIT	Athena II cable kit

HELIOS

300MHz - 800MHz 2-in-1 PC/104 SBC With Integrated Data Acquisition And Video

CPU Features

- Vortex86DX/SX CPU running up to 800MHz
- 128MB or 256MB of soldered DRAM
- 4 USB 2.0 ports
- 2 RS-232, 2 RS-232/422/485 serial ports
- 10/100Base-T Ethernet
- 1 IDE UDMA-100 port
- Solid State Flashdisk interface
- CRT and LVDS LCD
- PC/104 ISA expansion bus
- 3.5W - 5W power consumption
- -40°C to +85°C fan-less operating temperature

Data Acquisition Features

- 16 analog inputs, 16-bit A/D
- 100KHz max sampling rate
- Interrupt-based A/D sampling with 2048 FIFO
- 4 analog outputs, 12-bit D/A
- Autocalibration
- 24 programmable digital I/O



Panel I/O Board for Helios SBC

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 300MHz or 800MHz and 128MB or 256MB of DRAM soldered on-board. Helios is extremely rugged, featuring -40°C to +85°C fan-less operation. The Vortex 86DX supports floating point whereas the SX model does not.

Available Models:

HLV800-256AV	800MHz Vortex86DX, 256MB RAM, full data acq., VGA/LCD video
HLV800-256DV	800MHz Vortex86DX, 256MB RAM, digital I/O, VGA/LCD video
HLV300-128DV	300MHz Vortex86SX, 128MB RAM, digital I/O, VGA/LCD video
DK-HLV800-01	Helios Development Kit with HLV800-256AV SBC, cables and software
C-HLV-KIT	Helios Cable Kit



PEGASUS

Rugged, Low Power 500 MHz AMD LX800 PC/104-Plus SBC

- AMD Geode LX800 Processor fan-less at 500MHz
- 256MB SDRAM on-board
- 10/100Base-T Ethernet
- 1 x Ultra DMA 33 IDE support
- 2GB on-board solid state IDE flashdisk
- Type II CompactFlash socket
- Supports CRT and 18/24 bit TTL
- 4 USB 2.0 Ports
- 2 Serial Ports (1 RS-232, 1 RS-232/422/485)
- PC/104-Plus (ISA + PCI) bus expansion
- 5W power consumption
- -40°C to +85°C operating temperature



Pegasus is a rugged, fan-less PC/104-Plus SBC which features the AMD Geode LX800 low power consumption processor running at 500MHz. It has 256MB of high speed DDR SDRAM soldered on-board. Pegasus offers the advantage of an optional on-board single-chip 2GB solid state disk, for reduced weight and cost and increased reliability. Pegasus offers fully integrated PC functionality with low power consumption which allows Pegasus to operate in harsh environments where the airflow for heat dissipation is restricted and heatsinks or fans are unacceptable. Its ruggedability gives it the power to perform round-the-clock in unattended environments.

Available Models:

PGS800-256-2G	500MHz LX800, 256MB on-board DRAM, 2GB on-board IDE flashdisk
PGS800-256	500MHz LX800, 256MB on-board DRAM
C-PGS-KIT	Pegasus Cable Kit



RHODEUS

Low Power 500MHz AMD LX800 PC/104 SBC With CRT/LCD, LAN And CompactFlash

- AMD Geode LX800 Processor at 500MHz
- 200-pin DDR SO-DIMM up to 1 GB SDRAM
- 10/100Base-T Ethernet
- 1 x Ultra DMA 33 IDE support
- Type II CompactFlash Socket
- Support CRT and 18/24 bit TTL
- 2 USB 2.0 Ports
- 2 Serial Ports (1 RS-232, 1 RS-232/422/485)
- PC/104 ISA expansion bus
- 5W power consumption
- -20°C to +70°C operating temperature



Rhodeus is a low-cost fan-less PC/104 SBC which features the AMD Geode LX800 low power consumption processor running at 500MHz. It uses high speed DDR SDRAM providing maximum capacity at 1GB. Rhodeus offers fully integrated PC functionality with small size, low power consumption, and low cost.

Available Models:

RDS800-LC	Rhodeus-LC SBC, 500MHz LX800, 0MB RAM
MEM-256-04	256MB DDR SO-DIMM SDRAM
MEM-512-04	512MB DDR SO-DIMM SDRAM
MEM-1024-04	1024MB DDR SO-DIMM SDRAM
C-RDS-KIT	Rhodeus Cable Kit





HERCULES II

800MHz 3-in-1 EBX SBC With Integrated Data Acquisition And DC/DC Power Supply

CPU Features

- 800MHz VIA Mark CoreFusion CPU
- 512MB SDRAM soldered on-board
- VGA 1920x1440 max resolution
- LCD supports up to 1400x1050
- AC97 audio
- 10/100Base-T Ethernet
- UDMA-100 IDE support
- IDE flashdisk module socket
- Type II CompactFlash socket
- 4 USB 2.0 ports; 4 USB 1.1 ports
- 2 fixed RS-232, 2 selectable RS-232/422/485
- PS/2 keyboard and mouse
- PC/104-Plus ISA and PCI expansion
- 12W power consumption
- -20°C to +70°C or -40°C to +85°C operating temperature



Data Acquisition Features

- 32 16-bit analog inputs & 250KHz sample rate
- 2048 AD sample FIFO
- 4 12-bit analog outputs
- 40 digital I/O lines with programmable direction

DC/DC Power Supply Features

- 5-28VDC input range standard
- 40 watts output power

Hercules II is a highly integrated EBX form factor single board computer integrating a Pentium III-level CPU with Diamond Systems' renowned high accuracy data acquisition circuitry and a DC/DC power supply on a single board. Hercules II is built around an 800MHz low power VIA Mark CPU and 512MB RAM with a broad set of system I/O. The Hercules II data acquisition section has 32 16-bit analog inputs with a 250KHz sample rate and backed by a 2K-sample FIFO along with 4 12-bit D/A channels.

Available Models:

HRC800-5A512	800MHz Via Mark, 512MB RAM, full data acquisition, 5-28VDC power supply, -40°C to +85°C
HRC800-5A512E	800MHz Via Mark, 512MB RAM, full data acquisition, 5-28VDC power supply, -20°C to +70°C
HRC800-5N512	800MHz VIA Mark CPU, 512MB RAM, digital I/O, 5-28VDC power supply, -40°C to +85°C
HRC800-5N512E	800MHz VIA Mark CPU, 512MB RAM, digital I/O, 5-28VDC power supply, -20°C to +70°C
C-HRCEBX-KIT	Hercules II SBC Cable Kit
DK-HRCEBX-02	Hercules II SBC Development Kit

POSEIDON

1.0-2.0GHZ 2-in-1 EPIC SBC With Integrated Data Acquisition

CPU Features

- 1.0GHZ VIA Eden ULV CPU or 2.0GHZ VIA C7 CPU
- Up to 1GB DDR2 RAM soldered on-board
- 400MHz Front Side Bus
- 10/100/1000Base-T (Gigabit) Ethernet
- Advanced 2D/3D graphics engine
- CRT and LVDS support
- 4 USB 2.0 ports
- 4 RS-232 ports, 2 with RS-422/485
- PS/2 Keyboard / Mouse ports
- S-ATA and UDMA-100 IDE
- PC/104-Plus expansion
- 22W - 31W power consumption
- -40°C to +75°C fan-less operating temperature



Panel I/O Board for Poseidon II SBC

Data Acquisition Features

- 32 16-bit analog inputs
- 250KHz sampling rate
- Auto-autocalibration
- 4 analog outputs, 12-bit D/A
- 24 programmable digital I/O lines



Poseidon is a high performance EPIC form factor single board computer combining a state of the art CPU and peripheral technology with Diamond Systems' renowned high accuracy data acquisition circuitry on a single board. Poseidon utilizes the Via C7 and VIA Eden ULV processors operating at speeds up to 2.0GHz with up to 1GB RAM and a 400MHz FSB. Poseidon's optional data acquisition section has 32 16-bit analog inputs with a 250KHz sample rate along with 4 12-bit D/A channels. Diamond Systems' patented automatic autocalibration on both A/D and D/A ensures maximum accuracy over time and temperature without user intervention.

Available Models:

PSDC20-1024A	2.0GHz VIA C7 with fan, 1024MB RAM, data acquisition
PSDC20-1024N	2.0GHz VIA C7 with fan, 1024MB RAM, no data acquisition
PSDE10-512A	1.0GHz VIA Eden ULV fan-less, 512MB RAM, data acquisition
PSDE10-512N	1.0GHz VIA Eden ULV fan-less, 512MB RAM, no data acquisition
DK-PSDC20-02	Poseidon Development Kit with PSDC20-1024A SBC
DK-PSDE10-02	Poseidon Development Kit with PSDE10-512A SBC
C-PSD-KIT	Poseidon Cable Kit
PNL-PSD-KIT	Panel I/O board for Poseidon includes panel I/O board, mounting hardware, and additional cables



NEPTUNE

Highly Integrated 6-in-1 EPIC SBC With Interchangeable ETX CPU Modules

CPU Features

- 6-in-1 design reduces size and weight, increases reliability
- Ultra high integration PC/104-Plus expandable EPIC SBC
- CPUs ranging from low power 500MHz AMD LX800 to high performance 1.4 GHz Pentium M
- 10/100 Base-T and Gigabit Ethernet
- CRT and LVDS support
- 4 USB ports
- 6 serial ports (4 with RS-232/422/485 capability)
- S-ATA and/or IDE depending on CPU module
- Up to 40W power consumption
- Selected models available with extended -30°C to +85°C operating temperature

Data Acquisition Features

- 32 16-bit A/D with autocalibration
- 4 12-bit D/A
- 24 programmable digital I/O lines
- 8 optically isolated digital inputs
- 8 optically isolated digital outputs
- 2 counter/timers
- 5, 7-28V DC power supply with 40W output power and ATX function

Benefits of an ETX-based Solution

- Smaller size with higher functional density
- Scalable CPU performance to fit your application and budget
- CPU obsolescence protection via plug compatible ETX CPU modules
- Rugged, embedded single board system
- Single vendor solution

Available ETX CPU Modules

- AMD LX800 at 500MHz
- Intel Pentium M at 1.4GHz



Neptune: top view



Neptune ETX: bottom view



Panel I/O Board for Neptune SBC

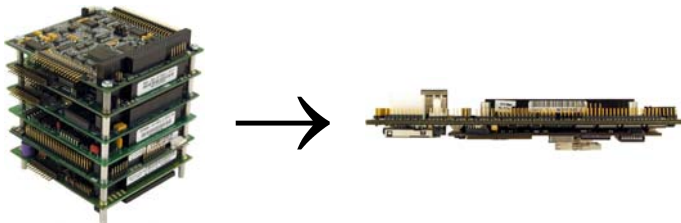
Neptune represents a new concept in small form factor embedded SBCs. An off-the-shelf ETX CPU module is installed on a standard format I/O baseboard to provide a scalable design with higher integration than a typical SBC. You can select from a range of ETX CPU modules to tailor Neptune's price and performance to fit your application needs and budget. Each configuration provides the same I/O features and physical format, so you can easily exchange CPU module to upgrade performance or protect against obsolescence.

The ETX CPU module mounts on the bottom side of the SBC to allow direct connection to the enclosure wall for improved thermal management. This configuration also enables more I/O circuitry to be included on the board. The result is an efficient, cost-effective, reliable, and compact embedded SBC rich in I/O. Neptune is the first 6-in-1 embedded SBC, integrating processor, system I/O, data acquisition, and a DC/DC power supply onto a single board in a compact EPIC form factor.

PC/104-Plus expansion enables you to add still more I/O or features if needed, and the built-in 5, 7-28V input DC/DC power supply provides flexibility in integrating the SBC into your system. Extended temperature models are available.

Available Models:

NPT-LX8A-1GA	500MHz LX800 CPU, 1GB RAM, on-board data acquisition
NPT-LX8A-1GN	500MHz LX800 CPU, 1GB RAM, no data acquisition
NPT-LX8A-512A	500MHz LX800 CPU, 512MB RAM, on-board data acquisition
NPT-LX8A-512N	500MHz LX800 CPU, 512MB RAM, no data acquisition
NPT-PM14-1GA	1.4GHz Pentium M 738 CPU, 1GB RAM, on-board data acquisition
NPT-PM14-1GN	1.4GHz Pentium M 738 CPU, 1GB RAM, no data acquisition
NPT-PM14-512A	1.4GHz Pentium M 738 CPU, 512MB RAM, on-board data acquisition
NPT-PM14-512N	1.4GHz Pentium M 738 CPU, 512MB RAM, no data acquisition
DK-NPTLX8-01	Neptune LX8A Development Kit: SBC with data acquisition, cables, FlashDisk with Linux, docs and software
DK-NPTPM14-01	Neptune PM14A Development Kit: SBC with data acquisition, cables, FlashDisk with Linux, docs and software
DK-LNX-NPT	Linux Development Kit with 512MB flash disk
C-NPT-KIT	Neptune Cable Kit



High integration reduces a stack of 6 boards to a single SBC

ETX-BASED SOLUTIONS

Off-The-Shelf Or Custom I/O For Your ETX System



Custom Computing Solutions Without The Risk

Diamond Systems can provide you with a low-risk customized application-specific computing solution. The resulting solution consists of an ETX baseboard populated with the required I/O coupled with an ETX CPU module with the processing power needed to drive the application. Our solutions are based on proven Diamond Systems' engineering building blocks which are designed into applications around the world today.

Benefits of an ETX-based Solution

- Rapid time to market
- Lower development cost
- Lower total system cost
- Smaller size with higher functional density
- Wide choice of processor performance levels
- CPU obsolescence protection via plug compatible ETX CPU modules
- Designed to your physical specifications
- Rugged, embedded single board system
- Single vendor solution



ETX Baseboard with application specific I/O

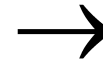


ETX CPU Off-the-shelf

Get your embedded computing solution to market now!

Diamond Systems combines its industry leading industrial I/O expertise with off-the-shelf ETX CPU modules to offer low-risk application-specific single board computer solutions tuned to fit customer requirements.

A highly integrated ETX-based custom design can reduce a stack of PC/104 I/O modules into a single board computer!

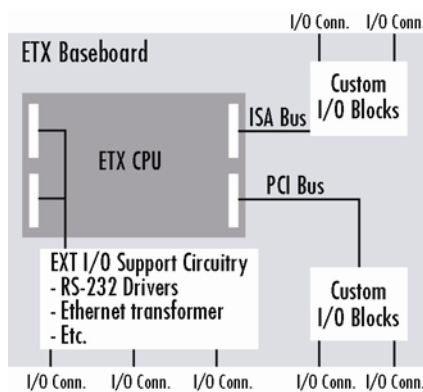


Diamond Systems' development approach reduces your design risk by using state-of-the-art functional design blocks, allowing us the flexibility to produce a solution that meets your specifications in less time and at a lower development cost.

Consultative Process

- Customer Requirements Document
- Consultation with Diamond Systems' Design Team
- Diamond Systems Proposal
- Joint Proposal Review
- Final Proposal

Timeframes are dependent on the complexity of the design. From Specification to Verified Prototype is approximately 10-14 weeks.



Off-the-shelf technology / capabilities

- Analog I/O
- Counters & Timers
- DC/DC Power Supply
- Digital I/O
- Drivers & BIOS
- Ethernet
- FPGA & Logic Design

- GPS & Wireless
- Relays & Opto-isolation
- Operating System Support
- Program Management
- Serial I/O
- System Integration
- USB 2.0

Diamond Systems is a part of your extended R&D Team!

Working with us is like bringing an R&D partner on-board. Together we will engage in a consultative relationship to agree on a proposal, define specifications, build prototypes and begin production. Whether your application requires a simple product variant or demands a full custom design, Diamond Systems will work with you to quickly and efficiently produce a solution to fit your embedded computing application. We will work together in a phased project approach, beginning with a Definition Phase, followed by a Design Phase, Prototype Phase and then full production.

SBC ACCESSORIES

Mass Storage Options And Cables

Diamond Systems' **SBC Accessories** speed up and simplify your system design. These include three convenient ways to add mass storage to your system.

IDE Flashdisk

- Solid state IDE Flashdisk with 128MB to 4GB capacity
- Rugged bolt-on installation; mounting hardware included
- Requires no additional space on PC/104 stack or in enclosure
- Dimensions: 1.78" x 1.24"
- -40°C to +85°C operating temperature



Flashdisk Module

Rugged, compact and convenient solid state IDE flashdisk modules mount directly on an IDE connector and bolt to the board for increased resistance to shock and vibration.

PC/104 HDD Mount

- Mounts a 2.5" hard drive directly on the PC/104 stack
- Top or bottom stack position
- Mounting hardware and IDE cable included
- Dimensions: 3.55" x 3.775"



ACC-HDDMOUNT
PC/104 Mounting Board

The third mass storage option, ACC-HDDMOUNT, consists of a PC/104 board and mounting hardware to incorporate a 2.5" hard disk drive directly in the PC/104 stack. The HDD itself is cabled to a 44-pin IDE connector on the SBC.

CompactFlash Adapter Kit

- Works with type I and II CompactFlash
- Enables remote placement for greater flexibility in enclosure design
- Ejector latch for easy media removal
- Dimensions: 2.95" x 2.76"
- -40°C to +85°C operating temperature



ACC-CFEXT
CompactFlash
Adapter Board

The CompactFlash Adapter Kit, ACC-CFEXT, enables incorporation of a CompactFlash socket in your system remote from the SBC itself. The adapter connects to any IDE connector on the board via a ribbon cable.

Cable Kits

- Cable kits are available for all SBCs
- Cables convert pin headers to PC-style connectors
- Included with SBC development kits
- May be ordered individually



Helios Cable Kit

Cable kits providing access to all I/O features are available for each Diamond Systems' SBC. Cables convert pin headers on the SBC to PCstyle connectors such as RJ-45 for Ethernet or DB-9 for serial ports. Each SBC Development Kit includes a cable kit. Cables may also be ordered individually.

Available Cable Kits:

C-ATH-KIT	Athena II Cable Kit
C-HLV-KIT	Helios Cable Kit
C-HRCEBX-KIT	Hercules II Cable Kit
C-NPT-KIT	Neptune Cable Kit
C-PGS-KIT	Pegasus Cable Kit
C-PSD-KIT	Poseidon Cable Kit
C-RDS-KIT	Rhodeus Cable Kit

PC/104 I/O For Every Application

Analog, Digital, Serial, Networking

PC/104 is a widely used industry standard for both processor boards and I/O cards in embedded computing applications. PC/104 shrinks ISA and PCI bus cards to 3.55" x 3.775" (90mm x 96mm) and implements a rugged, stacking architecture that eliminates backplanes and provides superior resistance to shock and vibration. PC/104 has been adopted by the EBX and EPIC form factor standards as well as custom CPU boards.

Diamond Systems has been a leading supplier of PC/104 I/O cards since the initial release of the PC/104 standard in 1992. Our extensive product line includes the following product categories:



- Analog Input/Output
- Digital I/O and Counter/Timers
- Serial Communications
- Multi-function Networking
- Opto I/O
- Power supplies
- Relays

Page #	Product	# Analog Inputs	A/D Res	# Analog Outputs	D/A Res	# DIO	# Counters
12	DMM-32DX-AT	32	16	4	12	24	2
12	DMM-32X-AT	32	16	4	12	8	2
12	DMM-16-AT	16	16	4	12	8	2
12	DMM-AT	16	12	2	12	8	2
12	DMM	16	12	2	12	8	2
13	RMM-412			4	12	24	
13	RMM-416			4	16	24	
13	RMM-812			8	12	24	
13	RMM-1612			16	12	24	

Page #	Product	# DIO	# Relays	# Counters	Networking
13	GPIO-MM	48		10	
13	GPIO-MM-12	48		10	
13	GPIO-MM-21	96			
13	Onyx-MM	48		3	
13	Onyx-MM-DIO	48			
15	Pearl-MM		16		
15	Opal-MM	8	8		
15	IR104-PBF	20	20		
15	JNMM-Combo				CAN (2), GPS
15	MRC-224	24			10/100 (2)

Page #	Product	RS-232	RS-422	RS-485	Max	Protocol Config.	Address Config.	Digital I/O	Extended Temp.
14	EMM-XT	2	2	2	115.2K	Jumper	Jumper		Yes
14	EMM-4M-XT	4	4	4	115.2k	Jumper	Jumper		Yes
14	EMM-8P-XT	8	8	8	460.8K	Software	Software	8 I/O	Yes
14	EMM-OPT4-XT	4	4	4	230.4K	Jumper	Jumper	24 I/O	Yes
14	EMM-DIO-XT	4			115.2K	Fixed	Jumper	48 I/O	Yes
14	EMM-8Plus-XT	8	8	8	1.8432M	Jumper	Software	8 I/O	Yes

DIAMOND-MM-32DX-AT

Analog I/O PC/104 Module with Advanced Automatic Autocalibration

- 32 16-bit A/D with 250KHz sample rate
- Programmable input ranges
- 1024 sample FIFO
- Patented auto-autocalibration of A/D and D/A for highest accuracy
- 4 12-bit D/A
- 24 programmable direction digital I/O lines
- Counter/timers for A/D control and general use
- Low noise design
- -40°C to +85°C operating temperature
- Universal Driver Software



DMM-32DX-AT is Diamond Systems' most advanced embedded A/D board. Using Diamond Systems' patented auto-autocalibration technology, DMM-32DX-AT provides analog measurements across its entire rated operating temperature range with maximum accuracy, ensuring reliable performance for critical applications. DMM-32DX-AT is supported by Diamond Systems' Universal Driver programming software for Linux, Windows 98 / 2000 / XP / CE, and DOS.

Available Models:
DMM-32DX-AT Analog I/O PC/104 Module With Auto-autocalibration

DIAMOND-MM-AT

16 Channel, 12-bit Analog I/O with Autocalibration

- 16 12-bit A/D with 100KHz sample rate
- Programmable input ranges
- 512 sample FIFO
- Autocalibration for high accuracy
- 2 12-bit D/A
- 8 digital inputs & 8 digital outputs
- Counter/timers for A/D control and general use
- Low noise design
- -40°C to +85°C operating temperature
- Universal Driver Software



Diamond-MM-AT analog I/O module offers autocalibration, programmable gain, A/D FIFO, and extended temperature operation to mid-range 12-bit analog I/O users. The board is supported by Diamond Systems' Universal Driver programming software for Linux, Windows 98 / 2000 / XP / CE, and DOS.

Available Models:
DMM-AT Autocalibrating 16-ch 12-bit A/D + 2-ch 12bit D/A

DIAMOND-MM-16-AT

16-channel, 16-bit Analog I/O with Autocalibration

- 16 16-bit A/D with 100KHz sample rate
- Programmable input ranges
- 512 sample FIFO
- Autocalibration of A/D and D/A for high accuracy
- 4 12-bit D/A
- 8 digital inputs & 8 digital outputs
- Counter/timers for A/D control and general use
- -40°C to +85°C operating temperature
- Universal Driver Software



Diamond-MM-16-AT features high performance and flexibility for a mid-range price. It has 16 single-ended / 8 differential analog inputs with both unipolar and bipolar input ranges and programmable gain. It has a maximum sampling rate of 100KHz, supported by a 512-sample FIFO. The A/D can be triggered with a software command, the on-board programmable timer, or an external signal. The board is supported by Diamond Systems' Universal Driver programming software for Linux, Windows 98 / 2000 / XP / CE, and DOS.

Available Models:
DMM-16-AT Autocalibrating 16-ch 16-bit A/D + 4-ch 12-bit D/A Extended Temperature
DMM-16-NA-AT Autocalibrating 16-ch 16-bit A/D only Extended Temperature

DIAMOND-MM

12-bit Analog I/O PC/104 Module

- 16 12-bit A/D with 100KHz sample rate and programmable input ranges and 512 FIFO
- 2 12-bit D/A
- 8 digital inputs & 8 digital outputs
- Counter/timers for A/D control and general use
- -40°C to +85°C operating temperature
- Universal Driver Software



Diamond-MM high accuracy 12-bit analog I/O PC/104 modules provides alternatives to meet the varying analog input needs of embedded systems. The DMM offers 16 analog inputs with a 100 KHz sample rate but without a sample FIFO. It provides two 12-bit analog outputs with jumper selectable output ranges, 2 counter/timers, and an operating temperature range from -40°C to +85°C. It supports interrupt A/D transfers and it offers 8 digital inputs and 8 digital outputs. It offers jumper selected input ranges and manual calibration with potentiometers. It is supported by Diamond Systems' Universal Driver programming software for Linux, Windows 98 / 2000 / XP / CE, and DOS.

Available Models:
DMM 16-ch 12-bit A/D + 2-ch 12bit D/A
DMM-XT 16-ch 12-bit A/D + 2-ch 12bit D/A Extended Temperature

RUBY-MM 412/812/1612

PC/104 12-Bit Analog Output Module with Digital I/O

- 4, 8, or 12 analog voltage outputs
- 12-bit D/A resolution
- Configurable output ranges including user-adjustable range
- 24 digital I/O lines using 82C55 IC
- -40°C to +85°C operating temperature
- Universal Driver software



The **Ruby-MM** family offers 4, 8, or 16 12-bit analog voltage outputs with multiple output ranges. Each bank of 8 outputs can be configured for a different range, including 0-5V, 0-10V, +/-5V, +/-10V, and user-adjustable. Individual or simultaneous channel update is supported. On-board analog power supplies and a precision on-board reference voltage ensure quiet, accurate performance. The board includes 24 digital I/O lines based on the 82C55IC, configured as 3 8-bit ports with programmable direction. All digital I/O lines feature 10K pull-up resistors.

Available Models:

RMM-412-XT	4 12-bit D/A + 24 digital I/O
RMM-812-XT	8 12-bit D/A + 24 digital I/O
RMM-1612-XT	16 12-bit D/A + 24 digital I/O

RUBY-MM-416

PC/104 16-Bit Analog Output Module with Digital I/O

- 4 analog voltage outputs
- 16-bit D/A resolution
- Configurable output ranges each channel
- 24 digital I/O lines using 82C55 IC
- -40°C to +85°C operating temperature
- Universal Driver software



The **Ruby-MM-416** offers 4 16-bit analog voltage outputs with output ranges selectable for each channel, including 0-10V, +/-5V, and +/-10V. Individual or simultaneous channel update is supported. On-board filtered analog power supplies and a precision on-board reference voltage ensure quiet, accurate performance. The board includes 24 digital I/O lines based on the 82C55IC, configured as 3 8-bit ports with programmable direction. All digital I/O lines feature 10K pull-up resistors.

Available Models:

RMM-416-XT	4 16-bit D/A + 24 digital I/O
------------	-------------------------------

DIGITAL I/O

GPIO-MM

PC/104 FPGA-Based Reconfigurable Digital I/O Module

- FPGA-based digital I/O module with reprogrammable feature sets: 64 digital I/O + 10 9513-style 16-bit counter/timers, 96 digital I/O, and custom designs
- 3 I/O connectors for a total of 100 I/O pins
- 2 programmable interrupts
- 8 diagnostic LEDs
- RAM-based field-reprogrammable FPGA with 200K gates
- 40 MHz on-board clock to drive digital logic
- -40°C to +85°C operating temperature
- Universal Driver software



GPIO-MM is based on a Xilinx Spartan 2 RAM-based FPGA with 200K gates, allowing multiple feature sets to be implemented on the same hardware platform. Several off the shelf personalities are available, and custom ones can be developed either by users with Xilinx tools or by Diamond as a customization service. The counter/timers are modeled after the high performance AMD9513 IC. They offer extreme flexibility, with programmable input sources and output waveforms, programmable up/down counting, one-shot vs. continuous counting, PWM function, and more. The digital I/O lines offer ESD protection and/or buffering for protection and improved performance.

Available Models:

GPIO-MM-XT	64 digital I/O + 10 16-bit counter/timers
GPIO-MM-12-XT	Same as GPIO-MM-XT, alternate pinout
GPIO-MM-21-XT	96 digital I/O

ONYX-MM

PC/104 Low Cost Digital I/O Module

- 48 digital I/O lines using 2x 82C55 IC
- Programmable I/O direction
- 10K pull-up resistors on all DIO lines
- 3 16-bit counter/timers using 82C54 IC
- Programmable and timer-driven interrupts
- -40°C to +85°C operating temperature
- Universal Driver software



The **Onyx-MM** family offers a low-cost solution for PC/104 digital I/O, using the popular 82C55 IC. The board contains 2 ICs with 3 8-bit programmable direction ports per IC. Model OMM-XT includes an 82C54 counter/timer IC featuring 3 16-bit counter/timers with one-shot, counting, timing, pulse output, and square wave generation features. Counters can be used to generate interrupts to run user-provided software at programmable intervals.

Available Models:

OMM-XT	48 digital I/O + 3 16-bit counter/timers
OMM-DIO-XT	48 digital I/O

EMERALD-MM

PC/104 4-Port RS-232/422/485 Module

- 4 serial ports, RS232/422/485 protocols
- Full handshake RS-232
- Jumper-selectable protocols, addresses and interrupts
- 16C554 UARTs with 16-byte FIFOs
- 115.2K max baud rate
- Build-in interrupt sharing
- -40°C to +85°C operating temperature
- Universal Driver software



The low-cost **Emerald-MM** offers 4 RS-232/422/485 ports with jumper-selectable protocol, address, and IRQ settings for each port. Wide temperature compatibility makes Emerald-MM suitable for use in outdoor and vehicle applications.

Available Models:

EMM-4M-XT 4 RS-232/422/485 Serial Ports,
PC/104

EMERALD-MM-8P

PC/104 8-Port RS-232/422/485 Module

- 8 RS-232/422/485 serial ports
- Full handshake RS-232
- Software selectable protocols, jumper selectable addresses and interrupts
- 16C654 UARTs with 64-byte FIFOs
- 460.8Kbps max baud rate
- 8 programmable digital I/O lines
- Interrupt sharing
- -40°C to +85°C operating temperature
- Universal Driver software



Emerald-MM-8P offers 8 RS-232/422/485 ports with programmable protocol, address, and IRQ settings for each port. An on-board EEPROM stores the configuration for automatic loading on power-up, and a software utility lets you configure the settings to fit your needs exactly. The larger FIFOs and higher operating speeds gives this board improved performance and reliability when multiple ports are operating simultaneously. Wide temperature compatibility makes Emerald-MM-8P suitable for use in outdoor and vehicle applications.

Available Models:

EMM-8P-XT 8 RS-232/422/485 Serial Ports,
PC/104

EMERALD-MM-8PLUS

PC/104-Plus 8-Port RS-232/422/485 Module

- 8 RS-232/422/485 serial ports
- Full handshake RS-232
- PC/104-Plus (PCI) interface
- Jumper selectable protocols
- Max baud rate 1.8432Mbps
- 8 programmable digital I/O lines
- -40°C to +85°C operating temperature
- Universal Driver software



Emerald-MM-8Plus offers 8 RS-232/422/485 ports in a PC/104-Plus module using the PCI bus for improved performance and higher speed. It offers programmable protocol, address, and IRQ settings for each port. An on-board EEPROM stores the configuration for automatic loading on power-up, and a software utility lets you configure the settings to fit your needs exactly. The larger FIFOs and super-fast baud rate capability (921.6Kbps for RS-232, 1.8432Mbps for RS-422/485) gives this board dramatically improved performance and reliability over ISA-based serial ports.

Available Models:

EMM-8Plus-XT 8 RS-232/422/485 Serial Ports,
PC/104-Plus

EMERALD-MM-OPTO

PC/104 2/4-Port Opto-Isolated RS-232/422/485 Module

- 2-4 Optoisolated serial ports, RS-232/422/485
- Jumper-selectable protocols, addresses and interrupts
- 16C2850 UARTs with 128-byte FIFOs
- 460.8Kbps max baud rate
- 24 digital I/O lines with programmable direction
- -40°C to +85°C operating temperature
- Universal Driver software



Emerald-MM-Opto provides an integrated, rugged, and reliable solution for PC/104 expandable embedded systems requiring serial communications in demanding applications. It offers 2 or 4 optically isolated serial ports with RS-232, RS-422, and RS-485 protocols, as well as 24 digital I/O lines, all on a single board.

Available Models:

EMM-OPT2-XT 2 Opto-isolated RS-232/422/485
EMM-OPT4-XT 4 Opto-isolated RS-232/422/485

EMERALD-MM-DIO

PC/104 4-Port RS-232 Module with 24 Digital I/O

- 2 boards in 1 saves space
- 4 RS-232 ports using 16C554 UART
- 16-byte FIFOs, up to 115.2kbps
- Jumper-selectable addresses and IRQs
- 48 programmable digital I/O
- Edge detection with interrupt on change of state
- -40°C to +85°C operating temperature
- Universal Driver software



The 2 in 1 design of this board helps saves space and improve ruggedness. The 4 RS-322 ports use the industry-standard 16C554 UART and can be configured for multiple address and IRQ settings. The novel digital I/O circuit has many advanced features, including bit by bit direction programmability. The DIO circuit can be configured to generate an interrupt upon a change in the inputs from a user-defined profile.

Available Models:

EMM-DIO-XT 4-ch RS-232 + 48 Digital I/O with Edge Detect Extended
Temperature

PEARL-MM

PC/104 16 Relay Module

- 16 SPDT / Form C relays (NC, NO, C contacts)
- Switching capacity 2A @ 30VDC
- Long lifetime – 100,000,000 operations
- 500V AC/DC isolation between signals and board
- Pin headers standard / optional screw terminals
- -40°C to +85°C operating temperature
- Universal Driver software



Pearl-MM offers 16 SPDT relays with normally closed, normally open, and common contacts for maximum flexibility. All relays are in the normally closed position on power-off and power-up. High reliability components and wide temperature operation make Pearl-MM a rugged solution for your application. I/O connections are with standard pin headers or optional fixed screw terminals.

Available Models:

- | | |
|-------|----------------------------|
| PMM-P | 16 relays, pin headers |
| PMM-S | 16 relays, screw terminals |

OPAL-MM

PC/104 Module With 8 Opto-Isolated Inputs + 8 Relays

- 8 SPDT / Form C relays (NC, NO, C contacts)
- Switching capacity 2A @ 30VDC
- 8 opto-isolated digital inputs
- Input range 3-24V AC and DC
- Long life relays – 10,000,000 operations
- 500V AC/DC isolation between signals and board
- -40°C to +85°C operating temperature
- Universal Driver software



Opal-MM offers both input and output with 8 SPDT relays and 8 opto-isolated digital inputs. The relays have normally closed, normally open, and common contacts for maximum flexibility. All relays are in the normally closed position on power-off and power-up. The opto-isolated inputs offer wide input voltage range and also work with AC signals. High reliability components and wide temperature operation make Pearl-MM a rugged solution for your application.

Available Models:

- | | |
|---------|---|
| OPMM-XT | 8 relays, 8 opto-isolated inputs, pin headers |
|---------|---|

IR104-PBF

PC/104 Module with 20 Opto-Isolated Inputs + 20 Relays

- 20 SPST / Form A relays (NO, C contacts)
- High switching capacity 5A @ 30VDC or 250VAC
- 20 opto-isolated digital inputs
- Input range 3-24V AC and DC
- Long life relays – 20,000,000 operations
- Detachable screw terminals for relays
- Pin header for opto inputs
- -25°C to +70°C operating temperature
- Universal Driver software



IR104-PBF offers high density with 20 SPST relays and 20 opto-isolated digital inputs. The relays have high switching capacity for heavy duty applications, and detachable screw terminals make connections and installation easier. The opto-isolated inputs offer wide input voltage range and also work with AC signals. High channel count, high capacity, and wide temperature operation make IR104-PBF a rugged solution for any application.

Available Models:

- | | |
|-----------|------------------------------------|
| IR104-PBF | 20 relays, 20 opto-isolated inputs |
|-----------|------------------------------------|

JANUS-MM

PC/104 CAN Module with GPS / Cellular Communications

- 2 opto-isolated CAN 2.0B interfaces
- Philips SJA1000 controllers
- Socket for Trimble GPS receiver
- Socket for Multitech GSM/CDMA SocketModem family
- Available as CAN only or with navigation/communication modules installed
- -40°C to +85°C operating temperature

JANUS-MM provides an integrated solution for vehicle, navigation, and asset tracking applications on a single PC/104 module. The CAN channels provide interface to the vehicle systems, while the GPS and SocketModem offer location identification and data communication via on-board RS-232 ports. GPS options include Trimble Lassen SKII 8-channel or Lassen iQ 12-channel receivers. Wireless modem options are provided by the MultiTech SocketModem family, including GSM/GPRS, CDMA, Bluetooth (special order), and even WiFi (special order). A separate I/O connector provides access to the GPS 1PPS timing signal and enables connection of backup GPS power for maintenance of the almanac and faster location fixing. Complete kits include antennas and transition cables.



Dual CAN PC/104 board



With GPS & wireless modem

Available Models:

- | | | | |
|---------------|----------------------------------|----------|---|
| JNMM-COMBO-XT | PC/104 dual CAN module | JNMM-DUO | Dual CAN + GPS + SocketModem |
| JNMM-GPS | Dual CAN + GPS installed | JNMM-DK | Development kit with choice of modules and antennas |
| JNMM-WSM | Dual CAN + SocketModem installed | | |

MERCATOR

PC/104-Plus Ethernet Module with Digital I/O

- 1 or 2 10/100Mbps Ethernet ports
- PCI interface for faster performance
- Pin header and RJ-45 connections
- 24 Digital I/O using 82C55 IC
- 40°C to +85°C operating temperature
- Universal Driver software



The 2-in-1 design of **Mercator** helps to reduce the size and cost of your PC/104 system. The single/dual 10/100Mbps Ethernet channels expand the networking capabilities of your system while the 24 digital I/O provide control and monitor interface capability. Wide temperature operation makes Mercator an excellent choice for vehicle and harsh environment applications.

Available Models:

- | | |
|------------|---|
| MRC-224-XT | Dual Port 10/100Mbps Ethernet + 24 Digital I/O PC/104-Plus Module |
|------------|---|

JUPITER-MM

PC/104 50 Watt DC/DC Power Supply Module

- 50 watts output power
- 5VDC / 10A max
- 12VDC / 2A max
- -12VDC / 1A max
- -5VDC / 150mA max
- 7-30VDC input range
- Screw terminal and PC/104 bus power distribution
- Shutdown control
- -40°C to +85°C operating temperature
- Universal Driver software



Jupiter-MM



Jupiter-MM-SIO

The **Jupiter-MM** family provides stable DC/DC power for PC/104 systems in industrial and vehicle applications. The compact all-SMT design enables a slimmer profile, ensuring compatibility in any position in the PC/104 stack. Transient protection, output short circuit protection, and wide operating temperature range make the Jupiter-MM family the perfect fit for harsh environment applications. The cascade circuit design converts the input voltage to +5VDC first, and all other voltages are derived from the +5V. This enables the full 50W power to be utilized on the +5V line if the other outputs are not needed. Power indicator LEDs provide a useful status report of supply operation. Also available: Jupiter-MM-SIO with integrated 2 RS-232/422/485 serial ports for increased functionality and reduced system size & weight.

Available Models:

- JMM-512 50 watts, +5V, +12V outputs
- JMM-512-V512 50 watts, +/-5V, +/-12V outputs
- JMM-SIO-XT 50 watts, +/-5V, +/-12V outputs, 2 RS-232/422/485 serial ports

JUPITER-MM-LP PC/104

25 Watt DC/DC Power Supply Module

- 25 watts output power
- Low cost DC/DC supply
- 25 watts output power
- 5VDC / 5A max
- 7-30VDC input range
- Screw terminal and PC/104 bus power distribution
- Shutdown control
- -40°C to +85°C operating temperature



The low-cost, light-weight **Jupiter-MM-LP** is the ideal choice for low-power vehicle-based PC/104 systems. Its 25W output power is more than enough to drive today's low-power processors like Atom, LX800, and Vortex. Jupiter-MM-LP meets the requirements of low power, low cost, light weight, and overall efficiency.

Available Models:

- JMM-LP-XT 25 watts, +5V output

HESC-104 PC/104 60 Watt DC/DC Power Supply With Battery Charger And UPS

- 60 Watts output power
- +/-5V, +/-12V outputs
- 6-40VDC input range
- Built-in battery charger for UPS operation
- Screw terminal and PC/104 bus power distribution
- Works with SLA and NiMH chemistries
- Optional RS-232 interface for control and monitoring
- -40°C to +85°C operating temperature

The **HESC-104** and **HESC-SER** PC/104 power supplies provide a power platform for remote systems with battery backup needs. The power supply will charge attached batteries of multiple types. It will switch over to battery power immediately upon loss of main input power, maintaining uninterrupted power for the main system. Battery charging is controlled by an on-board microcontroller with user-configurable charging parameters. PC/104 bus and serial port interface options are available. See next page for compatible batteries.

Available Models:

- HESC-104 60 watts, PC/104 bus interface
- HESC-SER 60 watts, RS-232 interface
- HE-HP 100 Watts output
- 104+DX 60 watts output, PC104-Plus interface
- HE104-512 50 watts output, PC/104 interface



HESC-104



HESC-SER



HE104+DX



HE104-DX



HE-HP

POWER SUPPLY SPECIFICATIONS

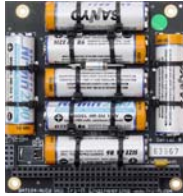
Model	HESC-104	HESC-SER	HE104-DX	HE104+DX	HE-HP
Power					
Input Voltage	6-40VDC	6-40VDC	6-40VDC	6-40VDC	6-40VDC
Max Output Power	60W	60W	60W	60W	100W
Max +3.3V Output				10A	
Max +5V Output	12A	12A	12A	12A	
Max +12V Output	2.5A	2.5A	2.5A	2.5A	2.5A
Max -5V Output	0.4A	0.4A	0.4A		
Max -12V Output	0.5A	0.5A	0.5A	0.5A	
Max Efficiency	95%	95%	95%	95%	95%
Soft Start	10ms on +5V output	10ms on +5V output			
Opto Inputs		8	20		
Input Voltage		3V-28VDC	3V-24V DC or AC		
Battery Charger					
Max Charge Current	4.0A	4.0A			
Charge Voltage	9.5-19.5V	10-35V			
Charger Control	PC/104 bus	Serial port			

PC/104 BATTERIES

Rechargeable Batteries In PC/104 Format For UPS Systems



BATT104-SLA25, 2.5h



BATT104-NiMH, 2.3Ah

- Sealed lead acid and Nickel metal hydride chemistries
- 2.3 to 4.5Ah capacity
- Works with HESC-104 smart charging DC/DC supplies
- -40°C to +85°C operating temperature

Use these batteries to create a battery-backed PC/104 system for remote applications like weather stations, buoys, and data collection systems. These batteries plug directly into the HESC-104 and HESC-SER PC/104

DC/DC power supplies to provide backup power in cases of power failure. The HESC series power supplies control the battery charging activity and automatically cut over to battery power during main power loss. Convenient PC/104 size simplifies the assembly and packaging of your PC/104 system.

Available Models:

BATT104-SLA25	2.5Ah, sealed lead acid
BATT104-SLA45	4.5Ah, sealed lead acid
BATT104-NiMH	2.3Ah, nickel metal hydride

PC/104 ACCESSORIES

Proto-104

PC/104 Prototype Board

- PC/104 format prototype board fits conveniently on board stack
- PC/104 connectors installed for easy bus interface
- Multiple +5V and Ground connections for user circuit power
- Grid of through holes for component mounting
- PC/104 spacers and pin headers included



The **Proto-104** provides a convenient way to add your accessory circuitry to your PC/104 system. The PC/104 format board with bus connectors installed plugs right onto your PC/104 system just like any other PC/104 board. Kit includes mounting hardware and pin headers for I/O connections.

STB-104

PC/104 screw terminal board

- PC/104 format board fits conveniently on board stack
- Angled screw terminals with elevator-style contacts for easy field wiring
- Accepts 12-28AWG solid or stranded wiring
- 50-pin connector for interface to most
- Diamond PC/104 I/O boards
- Second I/O connector provides bypass for I/O signals

MTG-104

PC/104 Mounting Kit

SPC104 is the standard PC/104 mounting spacer with 0.6" height and #4-40 threads. Male/female thread configuration enables continuous stacking. Made of aluminum with clear finish. Available in any quantity. MTG104 is a complete mounting kit including 4 spacers, 4 screws, and 4 nuts. One kit required per board.

SPC-104

PC/104 Spacers

- 0.6" long x 3/16 diameter x #4-40 thread, with male and female ends
- Clear aluminum material



CABLE KITS

Complete Cable Kits For CPU Boards

Kits contain cables for all CPU I/O features except LCD (available separately).



Available Models:

C-ATH-KIT	Athena CPU cable kit
C-HLV-KIT	Helios CPU cable kit
C-HRCEBX-KIT	Hercules CPU cable kit
C-NPT-KIT	Neptune CPU cable kit
C-PGS-KIT	Pegasus CPU cable kit
C-PSD-KIT	Poseidon CPU cable kit
C-RDS-KIT	Rhodeus CPU cable kit

H-104

PC/104 Headers

These PC/104 headers are available in both stackthrough (long pins) and non-stackthrough (short pins) format. Both 64-pin and 40-pin connectors are available. Connectors have gold plating on all contact areas.



Available Models:

H104-64-ST	64 pins, stackthrough
H104-64-NS	64 pins, non-stackthrough
H104-40-ST	40 pins, stackthrough
H104-40-NS	40 pins, non-stackthrough

PS-12V-01

AC Adapter For Embedded Computers

- Wide input range 90-240VAC 50-60Hz
- 12V / 4A output (check specs)
- Compatible with Hercules CPU board

PS-5V-04

AC Adapter For Embedded Computers

- Wide input range 90-240VAC 50-60Hz
- 5V / 6A output
- Compatible with all DSC 5V input CPU boards

SOFTWARE DEVELOPMENT KITS AND UNIVERSAL DRIVER SOFTWARE SPEED DEVELOPMENT TIME

Diamond Systems' outstanding array of software tools get application development started fast. Software Development Kits for popular embedded operating systems such as Linux and Windows CE, boot and run on Diamond Systems' SBCs out of the box. Diamond Systems' Universal Driver Software provides a common base for data acquisition software across our I/O boards. Taken together, Diamond Systems' Development Kits and Universal Driver Software provide you with powerful tools to start your application development immediately and complete your development on schedule.

Development Kits

Diamond Systems offers Software Development Kits which let you experience the operating system running on your SBC quickly with minimal or no configuration effort. Many kits also include software development tools to enable immediate application development. Availability of operating system software support is summarized here. Please refer to our web site for the latest software support information.

OPERATING SYSTEM SOFTWARE SUPPORT

SBC	DOS	Linux	Win CE	Win XP	Win XPe
Athena II	✓	✓		✓	✓
Helios	✓	✓ (BSP)	✓ (BSP)	✓	✓
Hercules II	✓	✓		✓	✓
Neptune	✓	✓ (BSP)	✓ (BSP)	✓	✓
Pegasus	✓	✓	✓	✓	✓
Poseidon	✓	✓	✓	✓	✓
Rhodeus		✓	✓	✓	✓

Windows CE.NET Development Kits

The Windows CE.NET software development kit includes a licensed CE.NET runtime system with internet access and demo programs for our SBC data acquisition circuitry. The CD includes the Windows CE development system evaluation version with embedded C++.

Available Models:

DK-WCE-128	Windows CE.NET Development Kit, 128MB Flashdisk
DK-WCE-32	Windows CE.NET Development Kit, 32MB Flashdisk
DK-WCE-64	Windows CE.NET Development Kit, 64MB Flashdisk

Linux Development Kits

Our Linux Development Kit offers you a pre-built and ready-to-use "Flash Linux" distribution with a file size of only 10MB and a super-low RAM requirement of only 5.5MB. Flash Linux is designed specifically to run on a solid-state flashdisk on any Diamond Systems' SBC. It enables you to build a completely solid-state Linux-powered embedded computer that boots in just 15 seconds. It includes the Minix file system and Lilo bootloader.

The Linux Development Kit comes in these versions:

- A CD-ROM version, containing our Flash Linux files and instructions for installation and duplication.
- A 128MB IDE Flashdisk Module that mounts directly onto the SBC, with Flash Linux pre-installed and ready to boot.
- A 80GB 2.5" Hard Drive with a full Linux distribution and the Flash Linux files. The Linux installation includes the latest Linux updates, saving you hours of downloading and installation time.
- A Combination Kit that includes all the above items.

Available Models:

DK-LINUX-FD32	32MB IDE flashdisk module with Flash Linux installed; includes CD-ROM and IDE accessory board
DK-LINUX-FD128	128MB IDE flashdisk module with Flash Linux installed; includes CD-ROM and IDE accessory board
DK-LINUX-HD80	80GB 2.5" hard drive with full Linux installation, Flash Linux CD, and HDDMount board
DK-LINUX-COM	80GB HDD with full Linux installation, FD-32 flashdisk module with Flash Linux, CD-ROM, and hardware accessories
DK-LINUX-O2	80GB 2.5" hard drive with full Linux installation, ready to connect and run
DK-LINUX-CD	CD-ROM containing Flash Linux files and instructions for installation and duplication
DK-LINUX-UPG	Upgrade Flash Linux Development Kit to latest version, CDROM

Universal Driver Software

Diamond Systems' Universal Driver software provides a powerful C language programming library for data acquisition and control. It contains a comprehensive set of functions that control the analog I/O, digital I/O, counter/timer, and interrupt features of the hardware. The Universal Driver is provided free with all our SBCs with integrated data acquisition and analog I/O boards. No other vendor offers you this level of software functionality for embedded systems data acquisition.

- Cross platform compatibility
- Multi-board operation up to 16 boards simultaneously
- Extensive interrupt handling features
- Example programs save time
- Comprehensive, easy-to-use documentation

PANDORA

Cable-Free Enclosure For PC/104 CPUs

- Compact, easy to assemble
- Eliminates most cables with convenient panel I/O board
- Wall mount rear panel
- Available in multiple lengths to fit additional boards and electronics

The **Pandora** enclosure system provides a convenient and rugged way to house your PC/104 system based on Diamond PC/104 CPUs. The PC/104 CPU mounts to a unique panel I/O board, which converts the pin headers on the CPU to industry-standard I/O connectors for most features. The entire assembly mounts to the front panel of the enclosure. The panel I/O boards even include extra built-in connectors to allow I/O from add-on boards to be brought out to the front panel without having to customize the enclosure. Multiple body lengths provide room for additional PC/104 boards, batteries, modems, etc. Select from 1.7" (fits CPU and panel I/O board only), 3.0" (fits CPU + up to 2 I/O boards), 5.0" (fits CPU + up to 4 I/O boards), 7.0", or 10".

Available Models:

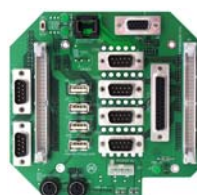
PB-EAP-xxx-K	Pandora enclosure for Athena CPU, includes PNL-EAP-01 panel I/O board
PB-HLV-xxx-K	Pandora enclosure for Helios CPU, includes PNL-HLV-01 panel I/O board
xxx	Specify 170, 300, 500, or 700



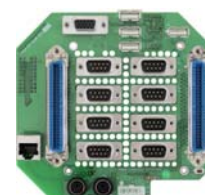
Unique panel board mounting method eliminates cables and mounts the entire system directly to the enclosure front panel



Pandora Enclosure



Panel I/O Board for Helios SBC



Panel I/O Board for Athena II SBC

CAN-TAINER/VERSA-TAINER

Rugged PC/104 And EBX Enclosure Systems

- Heavy duty .125" aluminum construction
- Shock & vibration protection system
- Available in lengths from 4" to 12"
- PC/104 and EBX mounting capability
- Multiple pre-formed end caps available

The **Can-Tainer** and **Versa-Tainer** are rugged PC/104 enclosure systems constructed of .125" aluminum and designed for hostile and mobile environments. They feature a dual system of shock and vibration isolation: The PC/104 modules are mounted axially in the enclosure with four internal rubber corner rails to absorb high-frequency vibrations, while the entire enclosure is mounted on the host platform with a thick rubber pad which absorbs low-frequency G-forces.

The Can-Tainer cross section measures 6.00" wide by 5.45" high (not including mounting pad) and is designed to mount PC/104 boards axially along the length of the enclosure body. The Versa-Tainer is a wider version that measures 7.1" wide by 5.7" high. The extra width accommodates EBX boards in addition to PC/104 boards, and it also provides additional room for cable runs along the sides. Both enclosures are available in multiple lengths.



Hercules II in a Versa-Tainer



Versa-Tainer

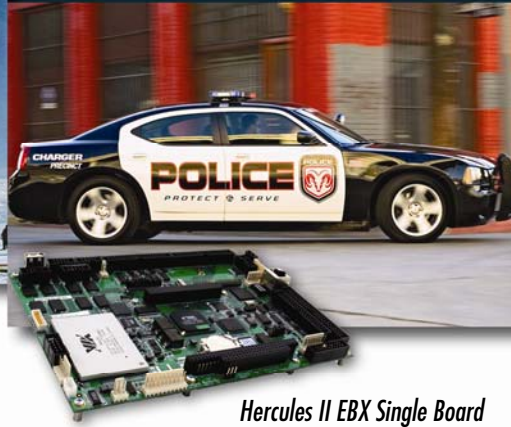


Available Models:

CT-x	Can-Tainer Kit
VT-X	Versa-Tainer Kit
x	Select 4, 5, 6, 8, 10, or 12 for desired length in inches



Emerald-MM-8 serial I/O module provides precision targeting of a solar telescope



Hercules II EBX Single Board Computer powers an on-vehicle digital video



GPIO-MM digital I/O module with custom programmed FPGA provides motion control to aim solar mirror arrays



Diamond-MM-32X-AT analog I/O module provides high accuracy data collection in-flight



Custom Single Board Computer designed to meet specific embedded control specifications



Athena II PC/104 Single Board Computer powers instrumentation data collection and analysis



1255 Terra Bella Avenue
 Mountain View, CA 94043, USA
 T: 800-367-2104
 T: 650-810-2500 (Outside of USA)
 F: 650-810-2525
 F: 650-618-2520 (Sales)
 www.diamondsystems.com

