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WHAT'S NEW AT DIAMOND SYSTEMS?

It's our pleasure to present Diamond Systems' 2011 product guide—packed with exciting new embedded products, services, and solutions. We're confident that our new offerings will advance our reputation as one of the embedded market's top providers of board-, subsystem-, and system-level products for companies requiring high quality, rugged, and reliable embedded solutions in a wide range of markets and applications.

Here are a few highlights of our recent product introductions and technology innovations:

- ◆ Support for Intel's newest embedded processors
- ◆ Introduction of "conduction cooled SBC" technology
- Continued leadership in embedded data acquisition I/O
- ◆ Increased focus on application-specific "perfect fit solutions"
- New FeaturePak[™], SUMIT[™], and PCIe/104[™]
 I/O products
- New SBC and embedded-ready subsystem products
- New rugged enclosures and application-ready systems

We look forward to serving you!



Founder and President

DIAMOND SYSTEMS

Diamond Systems is committed to open industry standards:

- Originator of the FeaturePak I/O module standard and founder of the FeaturePak Trade Association
- Founding member of the PC/104 Consortium
- Diamond Systems is a General Member of the Intel® Embedded Alliance

DIAMOND SYSTEMS

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Diamond Systems is a leading supplier of compact, rugged, wide-temperature embedded computing solutions for a wide range of applications in fixed and mobile environments.

BROAD PRODUCT LINE

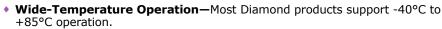
- Single Board Computers—An extensive line of compact, rugged single board computers (SBCs) based on a wide range of power/performance CPUs, ranging from DMP's Vortex86 to Intel's Core™ families. Form-factors include PC/104, EPIC, and EBX.
- Embedded-Ready Subsystems—A growing family of embedded-ready subsystem (ERS) products combine the high performance processing and leading-edge I/O of COMs with the modular flexibility of stackable single board computers—all within a compact, rugged, reliable, pre-integrated module.
- I/O and Power Supply Modules—Compact, rugged, wide temperature expansion modules offering analog and digital I/O, communications, GPS, and power supply functions. Supported form-factors include PC/104, PCI-104, SUMIT, and FeaturePak.
- Integrated Systems—A line of high quality, fully-integrated platforms for a wide variety of fixed and mobile applications.

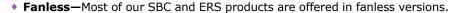
COMPACT, RUGGED, RELIABLE DESIGNS

Our board- and system-level embedded products feature compactness, ruggedness, and reduced power consumption. Distinguishing characteristics include:

• **High Integration**—Our "2-in-1" SBC and ERS products combine core computing capabilities with the equivalent functions of up to five I/O expansion modules.







- Solid-State Flashdisks—For enhanced reliability and reduced power consumption, size, and weight
- Soldered-on Memory and Rugged SO-DIMMs—Protects against the effects of shock and vibration.
- Cable-Free Enclosures—Our unique Pandora enclosure reduces the unreliability of interconnecting cables, by means of a panel I/O board that brings SBC I/O directly to external connectors.



Environmental Test Chamber





SATA flashdisk

USB flashdisk

CUSTOMIZATION AND INTEGRATION SERVICES

We offer a wide range of customization and integration services, including:

Software Services

At Diamond Systems, we're well aware that software is frequently the greatest development challenge in embedded system projects. That's why we provide a comprehensive suite of support software for all our single-board computers (SBCs) and I/O modules. Our Operating System Software Development Kits and Universal Driver Software (see page 25) helps ease the task of integrating the PC-compatible and data acquisition functions of our SBCs and I/O modules into your application. And when the need arises, our highly-skilled embedded software specialists can help you meet your project's precise requirements by modifying or enhancing SBC BSPs and I/O module drivers, porting our software to non-standard OS versions, incorporating third-party drivers, and more.

Ruggedization Services

- Conformal Coating—Greatly reduce the risk of board damage due to moisture, corrosion or fungus.
- Hardwired Configuration— Replaces jumper options with hard-wired settings for increased ruggedness.
- Burn-In Testing—Weeds out infant mortality by means of a fixed elevated temperature test.
- Extended Temperature Testing— Confirms each board's operating temperature range via 100% environmental testing.
- Custom BIOS Settings Board powers up with correct settings without battery backup.

Customization Services

- Component Depopulation Reduces board cost and power consumption.
- Modified I/O Connectors— Connectors can be changed to latching, vertical, or right angle to better fit your mechanical requirements.
- Modified Bus Connectors— PC/104 stackthrough connectors can be replaced with non-stackthrough versions, allowing a board to be mounted closer to the base of an enclosure
- Custom Enclosures—An enclosure can be tuned to your application's requirements, including body pieces and/or modified holes, cutouts, markings / silkscreens, and colors.
- Configuration Control Ensures you obtain the same version of your custom configuration for the life of your product.



Optimized Embedded Solutions for Real-World Applications

Diamond Systems understands your requirements are unique. Our consultative approach to embedded systems results in greater economy and functionality than traditional off-the-shelf solutions, while meeting your needs more precisely.

Traditional small form factor solutions, consisting of multiple vendors' boards in a tall stack, are often too large and expensive, and suffer from interoperability issues and reduced reliability. In contrast, Diamond's single board computers and embedded solutions reduce size and cost by offering higher integration and innovative design concepts such as CPU + I/O on a single board and conduction cooling for more efficient thermal dissipation.

We meet with you to understand your requirements, jointly discuss alternatives and techniques, and then define an optimized solution that meets your needs. The resulting product offers a perfect combination of features for your application, while minimizing size, cost, and assembly time.

PERFECT-FIT SOLUTIONS OFFER MULTIPLE BENEFITS

- Lowest size, weight, power, and cost
- Optimum combination of features
- Greatest feature density per unit volume
- Complete system solutions with enclosures or board stacks
- Wide array of core technologies
 - FeaturePak® PCIe-based ultra-small I/O module with zero-height expansion
 - Module "building blocks" and IP library
 - Data acquisition, FPGA, WiFi, CAN, SSD, serial, Ethernet
 - · High-speed and low-speed buses
- Program Management support
 - Standard product variants and full custom solutions
 - Extended lifecycle commitments
 - One-stop contact window for any issues

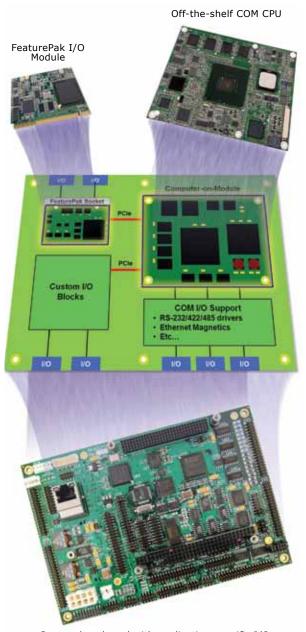




0101010101010101PERFECT FIT SOLUTIONS

Custom Embedded Solutions without the Risk

When your system requires a large amount of I/O, or when you are looking for reduced size or increased cost efficiency for a high volume application, Diamond Systems can provide you with a low-risk, perfect-fit, customized solution consisting of a COM baseboard that integrates all of your requirements onto a single board. Our solutions utilize off-the-shelf computer-onmodules, such as COM Express, ETX, and Qseven, for the CPU, while relying on our large library of proven technologies for the I/O. This building-block approach reduces risk and time to market by taking advantage of already-existing designs, support software, supply chain relationships, and even production test procedures. Using an off-the-shelf CPU module eliminates the largest element of risk, while allowing more effort to be devoted to the unique value-added portion of the system design. In addition, the COM-plus-baseboard approach reduces size, cost, and assembly time, while increasing reliability.



Custom baseboard with application-specific I/O





Application-specific COM baseboards significantly reduce total system size and cost by integrating all I/O onto a single board.

FeaturePak

BENEFITS OF A COM-BASED SOLUTION

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

OFF-THE-SHELF TECHNOLOGY/CAPABILITIES

- Industry-leading analog I/O
- Counters and Timers
- Digital I/O
- Serial I/O
- USB 2.0
- Ethernet
- FPGA and Logic Design
- GPS and Wireless
- Relays and Opto-isolation
- ISA, PCI, PCI Express, and FeaturePak expansion
- DC/DC Power Supplies
- Drivers and BIOS
- Operating System Support
- Program Management
- System Integration

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

Working with us is like bringing an R&D partner onboard. 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 to produce a solution that fits 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.



CONDUCTION COOLING OVERVIEW

Real-world embedded applications often require fanless, sealed enclosures to maximize reliability and protect electronics from moisture, dust, insects, and corrosion. However, the continually increasing performance requirements of these systems makes it ever-harder to remove the heat generated by CPUs and chipsets without resorting to fans and ventilation holes. The addition of multiple I/O expansion cards, WiFi radios, and other internal devices exacerbates the problem. Excessive internal heat buildup compromises system reliability and lowers MTBF. In extreme cases, it may even cause thermal runaway, resulting in undesirable reboots and shutdowns.

Due to the relatively low thermal conductivity of air, a common top-mounted heat sink is not a good solution for a single board computer (SBC) housed in a sealed enclosure, because the heat must transfer via convection through the air to the enclosure wall. Using a heat sink, the temperature differential between the silicon and the air outside the enclosure can easily exceed 30°C.

To remedy this situation, Diamond devised a new, innovative approach for cooling stackable SBCs. Borrowing a page from the computer-on-module (COM) playbook, products such as our Aurora SBC (page 8) and Magellan Embedded-Ready Subsystem (page 12) incorporate thin, flat heat spreaders into their bottom surfaces. The heat spreader mates directly with the system enclosure using four standardized mounting holes, providing a large, thermally efficient junction for relieving heat from the semiconductors. This technique reduces the temperature rise of the silicon by as much as 20°C, resulting in higher ambient operating temperature capability as well as higher reliability.

Diamond's conduction cooling approach locates the high-heat components of the SBC—especially CPUs and their chipsets—on the bottom of the module, in contrast to the customary top side selected on most stackable SBCs. This design allows I/O modules to be easily installed on top of the SBC without interfering with heat sinks or worrying about restricting airflow.

Conduction cooling enables stackable embedded computers to utilize higher performance processors and incorporate add-on I/O modules more easily, while enhancing system reliability.

THE NEED FOR CONDUCTION COOLING

Embedded systems in harsh environments often require fanless, sealed enclosures.

High performance processors and peripheral chips generate increased amounts of heat, requiring greater cooling capacity.

Traditional heat sink cooling is inefficient for these systems, because it relies on air to conduct heat away from the silicon.

System reliability and ambient operating temperature capability decrease as a result.

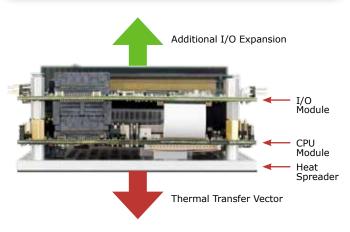
Tall heat sinks interfere with the ability to add peripheral modules to the system.

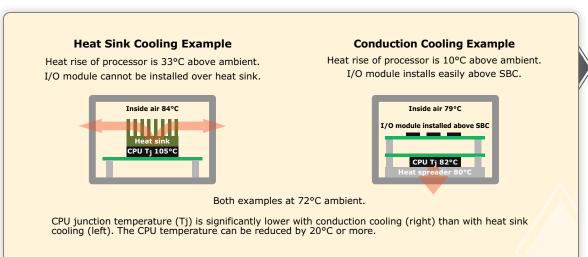
BENEFITS OF CONDUCTION COOLING

Conduction cooling provides a more efficient path for conducting heat away from processors and other components.

The direct-to-enclosure thermal path lowers the processor temperature by as much as 20°C and keeps the inside of the enclosure cooler for other electronics.

Elimination of top side heat sinks makes installation of peripheral modules easier.





SINGLE BOARD COMPUTERS AND EMBEDDED-READY SUBSYSTEMS

CPU, System I/O, and Data Acquisition on a Single Board

Diamond Systems provides an extensive line of single board computers (SBCs) and embedded-ready subsystems (ERS) to meet a wide variety of embedded computing requirements. Our SBC and ERS products range in performance from a 300MHz Vortex86SX to a 1.66GHz Core 2 Duo LV with up to 2GB of RAM, and provide high performance standard I/O interfaces, including USB 2.0, gigabit Ethernet, and SATA.

Additionally, our SBC and ERS products are unique in their inclusion of on-board, industry-leading data acquisition functions. This high level of integration saves the cost of additional boards, reduces overall space and weight, and improves reliability by eliminating unnecessary inter-board interconnects. Data acquisition capabilities on these products range up to 32 16-bit analog inputs, 4 12-bit analog outputs, and 40 digital I/O lines.

Our SBCs are implemented on industry standard form-factors, such as PC/104, PC/104-Plus, EPIC, and EBX, as well as on custom form-factors. Each SBC supports modular system expansion via PC/104, PCI-104, or SUMIT buses. Additionally, panel I/O boards are available for our PC/104 and EPIC SBCs, replacing most cables with PC-style connectors for easy system assembly and enhanced reliability.



Single Board Computer and Embedded-Ready Subsystem Features

Product	Form Factor	Processor	Speed (MHz)	Memory (MB)	Video		RS- 232	RS-232 422/485	Ethernet	USB	Expansion	Keybd Mouse	Mass Storage	CF	FD	Input Voltage	ХТ
Aurora	PC/104	Atom Z530P	1.6GHz	Up to 2GB	1		2	2	Gigabit	4 v2.0	SUMIT-A and PC/104	1	1 SATA		1	5VDC	-20°C to +71°C
Helios	PC/104	Vortex86DX	800	256	1		2	2	10/100	4 v2.0	PC/104	1	1 UDMA 100	1	1	5VDC	-40°C to +85°C
Helix	PC/104	Vortex86DX	800	256	1		2	2	10/100 (3)	4 v2.0	PC/104	1	1 UDMA 100	1	1	5VDC	-40°C to +85°C
Rhodeus	PC/104	AMD Geode LX800	500	Up to 1GB	1		1	1	10/100	2 v2.0	PC/104	1	1 UDMA 33	1	/	5VDC	-40°C to +85°C
Pegasus	PC/104- Plus	AMD Geode LX800	500	256	1		1	1	10/100	4 v2.0	PC/104-Plus	1	1 UDMA 33	1	1	5VDC	-40°C to +85°C
Poseidon	EPIC	VIA C7 VIA ULV EDEN	2.0GHz 1.0GHz	Up to 1GB	1	1	2	2	Gigabit	4 v2.0	PC/104-Plus	1	1 SATA 1 UDMA 100		1	5VDC	-40°C to +75°C
Neptune	EPIC	Atom or Core	Up to 1.66 GHz	Up to 2GB	✓	1	2	4	10/100, Gigabit	4 v2.0	PC/104-Plus	1	2 UDMA 100 1 SATA	1	1	5V, 7-28VDC	-40°C to +85°C
Pluto	ETX	Atom or Core	Up to 1.66GHz	Up to 2GB	1	✓	3	1	10/100 (2)	4 v2.0	PC/104-Plus	1	1 IDE, 2 SATA	1		5VDC	-40°C to +85°C
Magellan	COM Express	Atom or Core	Up to 1.6GHz	Up to 4GB	✓	1	2	2	Gigabit (2)	4 v2.0	PCI-104, SUMIT, FeaturePak	1	1 SATA		1	7-30VDC	-40°C to +85°C

Single Board Computer and Embedded-Ready Subsystem Data Acquisition Features

				Į.	Analog Inp	outs					Analog	Outputs		DIO Lines
Product	#SE	#DI	RES	BIP	UNI	PROG	MAX	AUTOCAL	FIFO	#OUT	#RES	BIP	UNI	#DIO
Helios	16	8	16	4	3	\checkmark	250	\checkmark	2048	4	12	2	2	40 I/O
Poseidon	32	16	16	5	5	\checkmark	250	AUTO*	1024	4	12	2	2	24 I/O
Neptune	32	16	16	4	4	\checkmark	250	√	2048	4	12	2	2	24 I/O

SE Single-ended analog inputs DI Differential analog inputs RES A/D or D/A resolution in bits BIP Bipolar ranges UNI Unipolar ranges 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

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

* Patented auto-autocal



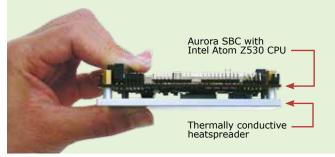
SINGLE BOARD COMPUTERS





Conduction-cooled 1.6GHz PC/104 SBC with SUMIT and PC/104 Expansion

- Compact, low-power, high-performance, stackable SBC
- Intel Atom Z530 CPU at 1.6GHz
- Up to 2GB rugged SO-DIMM DDR2 SDRAM
- Comprehensive set of I/O interfaces:
 - 4 USB 2.0 ports
 - 2 RS-232/422/485 and 2 RS-232 serial ports
 - Gigabit Ethernet
 - 1 SATA port
 - Socket for USB flashdisk up to 8GB
 - LVDS and SDVO display interfaces
 - PS/2 keyboard and mouse support
 - 8 digital I/O lines
 - Watchdog timer
- Optional on-board USB flashdisk
- PC/104-sized "SUMIT-ISM" form-factor
- PC/104 (ISA) and SUMIT-A (PCIe) stackable expansion
- -20°C to +71°C operating temperature





Aurora panel I/O board for Pandora enclosure (see page 23)



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



Rugged SO-DIMM SDRAM increases Aurora reliability. Standard SO-DIMM socket gives you a choice of standard or rugged memory!

Aurora is a rugged, single board computer (SBC) based on the 1.6GHz Intel Atom Z530P CPU and conforming to the compact, PC/104-sized, SUMIT-ISM form-factor.

The SBC supports up to 2GB of DDR2 SO-DIMM SDRAM and provides high-resolution LVDS and SDVO graphics interfaces. Additional I/O ports include SATA, USB, serial, digital I/O, and Gigabit Ethernet. Flexible system expansion is based on industry-standard, stackable PC/104 (ISA) and SUMIT-A (PCIe) modules. A location is also provided for an optional on-board USB flashdisk.

Available Models

AUR-Z530-16-0G Aurora SBC, 1.6GHz CPU, 0GB SDRAM

AUR-Z530-16-1G Aurora SBC, 1.6GHz CPU, 1GB SDRAM

AUR-Z530-16-2G Aurora SBC, 1.6GHz CPU, 2GB SDRAM

Aurora Development Kit with AUR-Z530-

DK-AUR-01 16-1G SBC, power supply, USB flashdisk with Linux pre-loaded, cable kit, and

documentation

MEM-1024R-05 1GB DDR2 Rugged SO-DIMM SDRAM

MEM-2048R-05 2GB DDR2 Rugged SO-DIMM SDRAM

SDK-AUR-LNX Aurora Linux Software Development Kit

SDK-AUR-XPE Aurora Windows XPe Software Dev. Kit

C-AUR-KIT Aurora Cable Kit for all on-board I/O

PNL-AUR-01 Aurora panel I/O board with mounting

hardware

ACC-VGA-03 SDVO-to-VGA adapter



The Pandora enclosure system provides a convenient and rugged way to house Aurora SBCs. Key features of Pandora include:

- Compact
- Rugged
- Pre-assembled
- Cable-free
- Wall-mountable or DIN-rail mountable rear panel

Aurora mounts to a unique panel I/O board, which converts pin-headers on the SBC to industry-standard I/O connectors for most features. The entire assembly mounts to the front panel of the enclosure.

Pandora is also usable with Diamond's Helios SBC



DIAMOND

SINGLE BOARD COMPUTERS

HELIOS

800MHz PC/104 SBC with Integrated Data Acquisition and Video







CPU Features

- Vortex86DX CPU at 800MHz
- 256MB of soldered-on DRAM
- 4 USB 2.0 ports
- 4 serial ports (2 RS-232, 2 RS-232/422/485)
- 10/100Base-T Ethernet
- 1 UDMA-100 IDE port
- 16 digital I/O lines
- 2MB on-board flashdisk with FreeDOS
- Solid-state flashdisk interface
- CRT and LVDS display support
- PC/104 (ISA) expansion bus
- ♦ +5V input
- -40°C to +85°C fanless operation

Data Acquisition Features

- 16 16-bit analog inputs
- 250KHz maximum sampling rate
- Interrupt-based A/D sampling with 2048 FIFO
- 4 12-bit analog outputs
- Autocalibration
- 24 additional programmable digital I/O lines

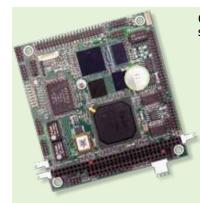
Available Model	S
HLV800-256AV	Helios SBC with data acquisition features
HLV800-256DV	Helios SBC without data acquisition features
DK-HLV800-01	Development kit with HLV-800-256AV, cables, software
C-HLV-KIT	Helios Cable Kit



800MHz PC/104 SBC with Integrated Ethernet Switch



9



Our new Helix SBC uses the same processor circuit as Helios but adds a different set of I/O in place of the data acquisition.

CPU Features

- Vortex86DX CPU at 800MHz
- 256MB of soldered-on DRAM
- 4 USB 2.0 ports
- 4 serial ports (2 RS-232, 2 RS-232/422/485)
- 10/100Base-T Ethernet
- 1 UDMA-100 IDE port
- 16 digital I/O lines
- 2MB on-board flashdisk with FreeDOS
- Solid-state flashdisk interface
- CRT and LVDS display support
- PC/104 (ISA) expansion bus
- -40°C to +85°C fanless operation

Additional I/O Features

- 2-port 10/100Base-T Ethernet switch plus one dedicated 10/100Base-T Ethernet port
- 7-14V DC/DC power supply

	Available Models	;
1	HLX800-256ED	Helix SBC with integrated Ethernet switch
	DK-HLX-01	Development kit with HLX-800-256ED, cables, software
	C-HLX-KIT	Helix 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 SO-DIMM socket, for up to 1GB DDR SDRAM
- 2 USB 2.0 ports
- 2 serial ports (1 RS-232, 1 RS-232/422/485)
- 10/100Base-T Ethernet
- ◆ 1 UDMA-33 IDE port

- Type II CF socket
- CRT and 18/24-bit LCD support
- PC/104 (ISA) expansion bus
- -20°C to +71°C or -40°C to +85°C fanless operation

Available Mode	
	Ιc

RDS800-LC	Rhodeus SBC with 0MB RAM, -20°C to +71°C
	operating temperature

RDS800-XT Rhodeus SBC with 0MB RAM, -40°C to +85°C operating temperature

C-RDS-KIT Rhodeus Cable Kit



PEGASUS

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



- AMD Geode LX800 processor at 500MHz
- 256MB soldered-on SDRAM
- 4 USB 2.0 Ports
- 2 Serial Ports (1 RS-232, 1 RS-232/422/485)
- 10/100Base-T Ethernet
- 1 UDMA-33 IDE port
- Type II CompactFlash socket
- CRT and 18/24-bit LCD support
- PC/104-Plus (ISA + PCI) expansion bus
- -40°C to +85°C fanless operation

Pegasus is a rugged, fanless PC/104-Plus SBC featuring the 500MHz AMD Geode LX800 processor with 256MB of soldered-on DDR SDRAM for reduced weight and cost and increased reliability. The SBC offers fully integrated embedded-PC functionality with low power consumption, which enables it to operate in harsh environments where the airflow for heat dissipation is restricted and heatsinks or fans are unacceptable. Pegasus's ruggedness enables it to perform around-the-clock in unattended environments.

Available Models

PGS800-256 500MHz CPU, 256MB on-board DRAM

C-PGS-KIT Pegasus Cable Kit

POSEIDON

1.0-2.0GHZ EPIC SBC With Integrated Data Acquisition

Poseidon panel I/O board







CPU Features

- VIA 1.0GHz Eden ULV or 2.0GHz C7 CPU
- Up to 1GB solderedon DDR2 DRAM
- 400MHz Front Side Bus
- 4 USB 2.0 ports
- 4 serial ports (2 RS-232, 2 RS-232/422/485)
- Gigabit Ethernet
- Advanced 2D/3D graphics engine
- CRT and LVDS display support
- SATA and UDMA-100 IDE ports
- PS/2 keyboard/mouse ports
- ♦ PC/104-Plus (ISA + PCI) expansion
- -40°C to +75°C fanless operating temperature

Data Acquisition Features

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

Poseidon is a high-performance EPIC form-factor single board computer combining state-of-the-art embedded-PC CPU and peripheral interface technologies with Diamond's industry-leading data acquisition circuitry on a single, rugged board. The SBC features VIA's 1.0GHz C7 or 2.0GHz Eden ULV processor, along with up to 1GB of DDR2 DRAM. Its optional built-in data acquisition subsystem provides 32 16-bit analog inputs with a 250KHz sample rate, plus four 12-bit D/A channels and 24 digital I/O lines. Diamond's patented automatic autocalibration on both A/D and D/A ensures maximum accuracy over time and temperature without user intervention. Additionally, Poseidon supports fanless -40°C to +75°C operation.

Available Models

Available 1-10	u Ci 3
PSDC20-1024A	2.0GHz VIA C7 with fan, 1024MB RAM, data acq.
PSDC20-1024N	2.0GHz VIA C7 with fan, 1024MB RAM, no data acq.
PSDE10-512A	1.0GHz VIA Eden ULV fanless, 512MB RAM, data acq.
PSDE10-512N	1.0GHz VIA Eden ULV fanless, 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-01	Panel I/O board for Poseidon



EMBEDDED-READY SUBSYSTEMS OVERVIEW

Fully Integrated Embedded Computing Platform Ready for Application Development

To satisfy the market's need for migrating legacy PC/104 stacks to higher-performance CPUs, Diamond invented the Embedded-Ready Subsystem (ERS). An ERS merges the best of both the SBC and COM worlds, by combining an off -the-shelf Application Layer, an off-the-shelf Computeron-Module (COM), and a thermally conductive baseplate.

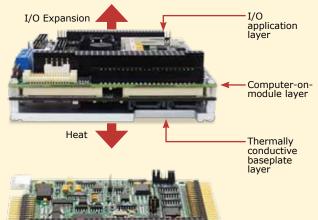
An Embedded-Ready Subsystem combines the high performance processing, leading-edge system I/O, and easy interchangeability of COMs with the modular expansion flexibility and off-the-shelf availability of stackable SBCs, all within a single compact, rugged, reliable, pre-integrated module. An ERS lets you take advantage of the latest COM products without having to develop a custom baseboard.

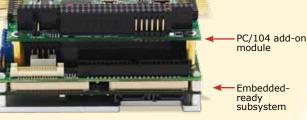
The ERS's integrated thermally-conductive baseplate provides an efficient cooling solution while simultaneously offering a convenient mounting platform that does not require disassembly in order to install the unit in the enclosure.

ERS Key Features

- Fully off-the-shelf solution; no hardware design required
- Scalable performance through interchangeable CPU
- Highly integrated boardset
- Expands easily with off-the-shelf I/O modules
- Multi-sourced components
- Upgradable to next-generation CPU and I/O technologies
- Integrated thermal management solution
- Standardized mounting across multiple formats

Embedded-Ready Subsystems integrate an I/O application layer, COM layer, and thermal layer into a compact subassembly





An ERS expands easily with PC/104 and other industry standard format I/O modules

NEPTUNE









Highly Integrated EPIC Embedded-Ready Subsystem with Interchangeable ETX CPUs, Integrated Data Acquisition, and DC/DC Power Supply

High Performance Embedded-PC Core

- CPUs range from Intel Atom to Core 2 Duo LV
- Up to 2GB DDR2 SO-DIMM SDRAM
- 10/100Base-T and Gigabit Ethernet
- CRT and LVDS display
- 4 USB 2.0 ports
- 6 serial ports (4 with RS-232/422/485 capability)
- SATA and IDE mass storage ports
- Stackable PC/104-Plus expansion
- On-board CompactFlash socket
- 7-28V DC/DC power supply
- -20°C to +71°C and -40°C to +85°C models available

Integrated Data Acquisition Subsystem

- ◆ 32 16-bit A/D channels with autocalibration
- 250KHz maximum sampling rate
- 4 12-bit D/A channels
- 24 programmable digital I/O lines
- 8 optically isolated digital inputs
- 8 optically isolated digital outputs
- 2 counter/timers
- Universal Driver software support



Available Models			
Model Number	CPU	RAM	DAQ
NPT-N270RK-xGA	1.6GHz Atom N270	1 or 2GB	Yes
NPT-N270RK-xGN	1.6GHz Atom N270	1 or 2GB	No
NPT-N270XT-xGA	1.6GHz Atom N270, wide temp	1 or 2GB	Yes
NPT-N270XT-xGN	1.6GHz Atom N270, wide temp	1 or 2GB	No
NPT-N450-xGA	1.6GHz Atom N450, wide temp	1 or 2GB	Yes
NPT-N450-xGN	1.6GHz Atom N450, wide temp	1 or 2GB	No
NPT-945RK-xGA	1.6GHz Core Duo L2400, wide temp	1 or 2GB	Yes
NPT-945RK-xGN	1.6GHz Core Duo L2400, wide temp	1 or 2GB	No
DK-NN450	Development Kit: NPT	-N450-1GA S	SBC
DK-N945RK	Development Kit: NPT-	-945RK-1GA	SBC
DK-NN270RK	Development Kit: NPT	-N270RK-1G	A SBC
C-NPT-KIT	Neptune Cable Kit		

Development kits include fully assembled ERS, cable kit, and bootable flashdisk with Linux.



EMBEDDED-READY SUBSYSTEMS

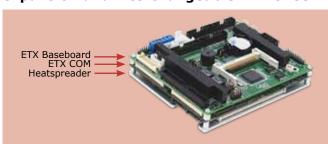
PLUTO 🤬







ETX form-factor Embedded-Ready Subsystem with PC/104-Plus expansion and interchangeable ETX CPUs



- Choice of Intel Atom or Core Duo LV CPUs
- Up to 2GB DDR2 SO-DIMM SDRAM
- Dual 10/100Base-T Ethernet
- CRT, LVDS, and TV Out display support
- 4 USB 2.0 ports
- 4 serial ports (1 with RS-232/422/485 capability)
- SATA and IDE mass storage ports
- On-board CompactFlash port
- Stackable PC/104-Plus expansion
- -20°C to +71°C and -40°C to +85°C models available

Pluto is a high performance, highly integrated embedded-ready subsystem that matches the footprint of the popular ETX computer-on-module (COM) standard. Pluto's CPU core consists of an ETX CPÚ module and heatspreader mounted on its bottom side, an approach that improves thermal management and increases the space available for I/O functions and connectors. This innovative design enables Pluto to integrate additional serial and Ethernet controllers, a complete set of peripheral interface header connectors, and stackable PC/104-Plus expansion—all within the compact ETX footprint.

Available Models						
Model Number	CPU	RAM	Heatspreader			
PLT-N270RK-xG	1.6GHz Atom N270, wide temp	1 or 2GB	Yes			
PLT-N450-xG	1.6GHz Atom N450, wide temp	1 or 2GB	Yes			
PLT-945RK-xG	1.6GHz Core Duo L2400, wide temp	1 or 2GB	Yes			
DK-PN450	Development Kit: PLT-	-N450-1	.GA			
DK-P945RK	Development Kit: PLT-945RK-1GA SBC					
DK-PN270RK	Development Kit: PLT-N270RK-1GA SBC					
C-PLT-KIT	Pluto Cable Kit					

MAGELLAN SSS

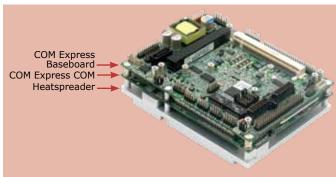








COM Express form-factor Embedded-Ready Subsystem with PCI-104, SUMIT, and FeaturePak expansion, plus interchangeable COM Express CPUs



- Choice of Intel Atom or Core 2 Duo CPUs
- Up to 4GB DDR2 SO-DIMM SDRAM (Core 2 Duo)
- 1GB soldered-on DDR2 SDRAM (Atom)
- Dual gigabit Ethernet
- CRT and LVDS display support
- 4 USB 2.0 ports
- 4 serial ports (2 with RS-232/422/485 capability)
- 1 SATA mass storage port
- On-board USB flashdisk option
- PCI-104, SUMIT, and FeaturePak expansion
- +12VDC input (LC models)
- +7-36VDC input (non-LC models)
- -40°C to +85°C extended operating temperature available

Magellan is a high performance, highly integrated embedded-ready subsystem in a COM Express computer-on-module (COM) footprint. Its CPU core consists of a COM Express CPU module and heatspreader mounted on its bottom side, resulting in optimal thermal management and increased space for I/O functions and connectors. This innovative design makes it possible for Magellan to integrate dual gigabit Ethernet LAN ports, a full set of peripheral interface header connectors, modular PCI-104 or SUMIT expansion, and a FeaturePak socket, in addition to a complete embedded-PC core—all within the compact COM Express footprint.

Available Models						
Model Number	CPU	RAM	Heatspreader			
	1.6GHz Core 2 Duo .7500	4GB	Yes			
	I.6GHz Core 2 Duo _7500	1GB	Yes			
MAG-Z510-1G 1	1.1GHz Atom Z510	1GB	Yes			
MAG-Z510LC-1G 1	L.1GHz Atom Z510	1GB	Yes			
	Magellan 965 System I MAG-965LC-1G, cable					
	Magellan Z510 System Development Kit: MAG-Z510-1G, cable kit, OS drivers					
C-MAG-KIT	Magellan Cable Kit					

WE CAN CUSTOMIZE TO YOUR REQUIREMENTS!

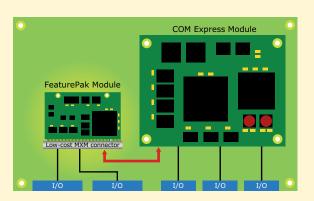




The **FeaturePak** standard, originated by Diamond Systems, provides a compact, low-cost method of adding I/O to board-level embedded computers. The modules can be used as snap-in customization modules for commercial, off-the-shelf single-board computers (SBCs) and computer-on-module (COM) baseboards, or as functional blocks on fully-custom embedded electronics.

This new mezzanine-style embedded I/O expansion standard is highly synergistic with existing and emerging bus-, I/O-, chip- and board-level technologies. It leverages the latest high-speed serial expansion standards—such as PCI Express and USB—and is compatible with a wide range of current and future processors, including both x86 and RISC architectures.

More information is available at www.featurepak.org.



FeaturePak modules greatly simplify the design of COM baseboards by offering I/O functions as pre-designed modules $\,$



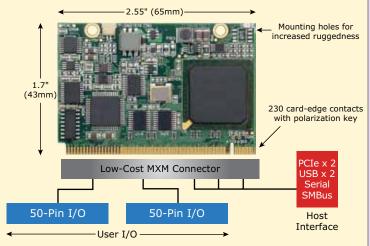
World's Smallest PCI Express Open Architecture Embedded I/O Standard

Key Features

- Compact, low profile form-factor—0.6x the size of a credit card!
- Single low-cost connector integrates all host and external I/O signals
- Provides up to 100 I/O points per module
- Leverages industry-standard buses such as PCI Express, USB, and SMBus
- Host form-factor and processor agnostic
- Coexists with PC/104, SUMIT, Qseven, ETX, XTX, COM Express, etc.
- Multiple FeaturePak modules may be present within one system
- Rugged performance: tested to MIL-STD-202G 12G shock and vibration
- Open industry standard

Key Benefits

- Shortens time-to-market
- Reduces board-level development costs and risks
- Simplifies system design
- Eliminates cables, resulting in higher reliability, lower cost, and faster assembly
- Enables scalable and reconfigurable system design
- Enables easy product upgrades
- Protects from component obsolescence



FeaturePak Modules Enable Faster and More Flexible Baseboard Design

With their compact size and standardized connector, FeaturePak modules simplify the task of COM baseboard design. Just as the computer-on-module eliminates the need to design the CPU, FeaturePak modules eliminate the need to design much of the I/O. Baseboard design can be reduced to as little

as placing connectors on the board and connecting them together. This macrocomponent design approach greatly reduces design time and risk and enables easy reconfiguration and upgrade of the baseboard solution.

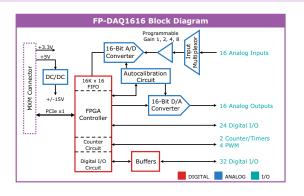
FP-DAQ1616

FeaturePak

FeaturePak **

FeaturePak Analog I/O Module with 2MHz A/D and Autocalibration

- 16 16-bit analog inputs with 2MHz maximum sampling rate
- Programmable input ranges, polarity, and mode
- 16K sample A/D FIFO with programmable threshold
- 16 16-bit analog outputs with programmable range and polarity
- Autocalibration circuit with precision reference voltages
- 56 programmable digital I/O
- 2 32-bit counter/timers for A/D timing and general purpose use
- 4 24-bit pulse-width modulator circuits
- 1 PCI Express x1 lane host interface
- FeaturePak form-factor compliant
- -40°C to +85°C operating temperature
- Universal Driver software support



FP-DAQ1616 features Diamond's newest and fastest analog I/O technology and a PCI Express interface. This board offers 16-bit A/D sampling at 2MHz, supported with an expanded 16K-sample FIFO for reliable data collection in any operating system. Analog output capability has been expanded to 16 16-bit channels with programmable output ranges. All analog I/O features are enhanced with our industry-leading autocalibration technology, featuring independent calibration factors for each input and output range to guarantee maximum accuracy across all operating modes and the entire operating temperature range.

Digital I/O features include 7 8-bit ports with both bitwide and byte-wide direction control, 2 32-bit up/down counter/timers with programmable input source and gate, and 4 24-bit pulse-width modulation circuits with 0-100% duty cycle. Universal Driver software support is included for Linux, Windows XP/Embedded Standard, and Windows CE.

Available Models

FP-DAQ1616

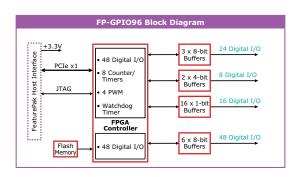
FeaturePak 2MHz 16-Bit Analog I/O and Digital I/O Module

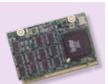
FP-GPIO96

FeaturePak FPGA and Digital I/O Module



- 96 buffered, programmable digital I/O
- Byte-wide and bit-wide port direction control
- 8 32-bit counter/timers
- 4 24-bit pulse-width modulators
- 50MHz system clock
- 1 PCI Express x1 lane host interface
- FeaturePak form-factor compliant
- -40°C to +85°C operating temperature
- Universal Driver software support





FP-GPIO96 uses a high-capacity (700K gate equivalent) PCI Express FPGA for maximum density and flexibility. The base hardware configuration features 96 digital I/O lines grouped into 12 8-bit ports. All ports have I/O buffers to protect the FPGA and offers 5.0V logic drive levels. The ports are organized into a combination of byte-wide, nibble-wide, and bit-wide direction control for maximum flexibility and application compatibility.

The built-in FPGA personality provides multiple configuration options. All 96 I/O lines may be used in common I/O mode. Six of these ports can be reconfigured to enable an array of additional features, including 8 32-bit up/down counter/timers with programmable input source and gate, 4 24-bit PWM circuits with 0-100% duty cycle capability and interrupt/latched mode operation.

The flash-based design enables easy field upgrades using a Diamond-provided software utility (no cable or 3rd party software required!) as well as custom code development. Universal Driver software support is included for Linux, Windows XP/Embedded Standard, and Windows CE.

Available Models

FP-GPIO96

FeaturePak FPGA and digital I/O module with standard personality



10100010010SUMIT and PCIe/104 I/O MODULES



SUMIT-ISM Analog I/O Module with 2MHz A/D and Autocalibration

- Based on Diamond's FP-DAQ1616 FeaturePak module
- 1 PCI Express x1 lane host interface
- SUMIT-ISM Type 1 form factor compliant
- -40°C to +85°C operating temperature
- Universal Driver software support

SMT-DAQ1616 is a SUMIT-ISM type 1 analog I/O module featuring Diamond's newest and fastest analog I/O technology and a PCI Express interface. Refer to the FP-DAQ1616 information on page 14 for more details on the features and functions of this product.



Available Models

SMT-DAQ1616 Analog I/O and Digital I/O SUMIT-ISM module

SMT-GPIO96



Sumit[™]

SUMIT-ISM FPGA and Digital I/O Module

- Based on Diamond's FP-GPIO96 FeaturePak module
- 1 PCI Express x1 lane host interface
- SUMIT-ISM Type 1 form factor compliant
- -40°C to +85°C operating temperature
- Universal Driver software support



SMT-GPIO96 is a general purpose I/O SUMIT-ISM Type 1 module using a high-capacity (700K gate equivalent) PCI Express FPGA for maximum density and flexibility. Refer to the FP-GPIO96 information on page 14 for more details on the features and functions of this product.



Available Models

SMT-GPI096

FPGA and digital I/O SUMIT-ISM module with standard personality

E104-DAQ1616











PCIe/104 Analog I/O Module with 2MHz A/D and Autocalibration

- Based on Diamond's FP-DAQ1616 FeaturePak module
- 1 PCI Express x1 lane host interface
- SUMIT-ISM Type 1 form factor compliant
- -40°C to +85°C operating temperature
- Universal Driver software support

E104-DAQ1616 is a PCIe/104 analog I/O module featuring Diamond's newest and fastest analog I/O technology and a PCI Express interface. Refer to the FP-DAQ1616 information on page 14 for more details on the features and functions of this product.



Available Models

E104-DAQ1616 Analog I/O and Digital I/O PCIe/104 module

E104-GPI096 M



- Based on Diamond's FP-GPIO96 FeaturePak module
- 1 PCI Express x1 lane host interface
- SUMIT-ISM Type 1 form factor compliant
- -40°C to +85°C operating temperature
- Universal Driver software support

details on the features and functions of this product.

E104-GPIO96 is a general purpose I/O PCIe/104 module using a high-capacity (700K gate equivalent) PCI Express FPGA for maximum density and flexibility. Refer to the FP-GPIO96 information on page 14 for more



Available Models

E104-GPI096

FPGA and digital I/O PCIe/104 module with standard personality





Sumit[™]

SUMIT-ISM Wireless and Ethernet Module with SUMIT-A and PC/104 Expandability

- WiFi module
 - 802.11 a/b/g wireless LAN
 - Up to 108Mbps transmit and receive rates
 - Average power up to 23dBm
 - Peak power up to 28dBm
 - Module secured to carrier board
 - On-module heatsink
- Two on-board 10/100Base-T Ethernet ports
- Dual USB 2.0 ports
- SDVO to VGA converter for Aurora SBC
- Optional onboard 2.5" SATA solid state drive
- SUMIT-A stackable expansion
- PC/104 (ISA) stackthrough bus
- Extremely rugged -40°C to +85°C operation
- WiFi support for Windows XP and Linux





Corona SUMIT Communications module with SATA SSD installed on the bottom.

Corona features WiFi and dual Ethernet functions in the SUMIT-ISM Type I form factor. The product contains a wide temperature WiFi card connected via a mini PCI socket, two 10/100Base-T Ethernet ports, two USB 2.0 ports, a socket for a 2.5" SATA SSD card, and both a SUMIT-A connector and a PC/104 (ISA) connector for expansion.

The WiFi card implements IEEE 802.11 and provides average power of up to 200mW, with peak power of up to 600mW. The on-board 10/100Base-T Ethernet ports provide a high speed option for communication with remote hosts.

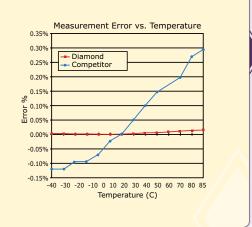
On the bottom side of the module are standoffs for an add-on 2.5" SATA solid state drive.

Available Models	5
COR-LANWIFI-XT	Corona SUMIT-ISM Wireless Module with dual Ethernet
COR-LAN2-XT	Corona SUMIT-ISM Dual Ethernet Module
ACC-ANT-01	External SMA Wireless antenna

ANALOG I/O 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°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's patented Universal Driver software provides built-in autocalibration code with a simple function call to enable quick and easy calibration and ensure accurate measurements at all times.



DIAMOND-MM-32DX-AT

PC110A

DIAMOND-MM-AT

PCITOA

Analog I/O Module with Advanced Automatic Autocalibration

- 32 16-bit A/D with 250KHz sample rate
- Programmable ranges from ±10V down to ±0.625V bipolar, 0-10V down to 0-0.625V unipolar
- 1024 sample FIFO
- Patented auto-autocalibration of A/D and D/A for highest accuracy
- 4 16-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

Diamond-MM-32DX-AT is Diamond's most advanced embedded A/D board. Using Diamond's 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's Universal Driver programming software for Linux, Windows 2000/XP/CE, and DOS.

Available Models

DMM-32DX-AT Analog I/O PC/104 Module with autocalibration

◆ 16 12-bit A/D with 100KHz sample rate

16 Channel, 12-bit Analog I/O with

- Programmable ranges from ±10V down to ±0.625V bipolar, 0-10V down to 0-1.25V unipolar
- 512 sample FIFO

Autocalibration

- Autocalibration for high accuracy
- 2 12-bit D/A
- 8 digital inputs and 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's Universal Driver programming software for Linux, Windows 98/2000/XP/CE, and DOS.

Available Models

Available Models

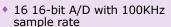
DMM-AT

Autocalibrating 16-ch 12-bit A/D + 2-channel

12-bit D/A

DIAMOND-MM-16-AT

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



- Programmable ranges from ±10V down to ±0.625V bipolar, 0-10V down to 0-1.25V unipolar
- 512 sample FIFO
- Autocalibration of A/D and D/A for high accuracy
- 4 12-bit D/A
- 8 digital inputs and 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's Universal Driver programming software for Linux, Windows 2000/XP/CE, and DOS.

Available Models

DMM-16-AT Autocalibrating 16-ch 16-bit A/D +

4-channel 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 Module



- 16 12-bit A/D with 100KHz sample rate
 Programmable ranges from ±10V
- Programmable ranges from ±10V down to ±0.5V bipolar, 0-10V down to 0-0.5V unipolar
- 2 12-bit D/A
- 8 digital inputs and 8 digital outputs
- Counter/timers for A/D control and general use
- -40°C to +85°C operating temperature
- Universal Driver Software

Diamond-MM offers 16 high accuracy 12-bit analog inputs with a 100KHz sample rate but without a 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's Universal Driver programming software for Linux, Windows 2000/ XP/CE, and DOS.

Available Models

DMM 16-ch 12-bit A/D + 2-ch 12-bit D/A

DMM-XT 16-ch 12-bit A/D + 2-ch 12-bit D/A, extended

temperature



17

RUBY-MM-412/812/1612

RUBY-MM-416



12-Bit Analog Output Module with Digital I/O

- 4, 8, or 16 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 useradjustable. 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			

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 included 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

PC/104 POWER SUPPLIES

JUPITER-MM-512





25 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

The Jupiter-MM-512 family of power supplies provides a mid-range, compact power source for embedded systems. The full 50W power can 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 and weight.

Available Models

JMM-512	50 watts, +5V, +12V outputs
JMM-512-V512	50 watts, +/-5V, +/-12V outputs

JUPITER-MM-LP

- 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 Intel's Atom, a LX800, and a Vortex86. Jupiter-MM-LP meets the requirements of low power, low cost, lightweight, and overall efficiency.

Available Models

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



10100010010 PC/104 SERIAL COMMUNICATIONS

EMERALD-MM

4-Port RS-232/422/485 Module



EMERALD-MM-OPTO



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

4 Optoisolated serial ports, RS-232/422/485

Module

- 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 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-OPT4-XT

4 Opto-isolated RS-232/422/485

EMERALD-MM-8P

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 eight 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
- Jumper selectable protocols
- Max baud rate 1.8432Mbps
- 8 programmable digital I/O lines PC/104-Plus (PCI) interface
- -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



PC/104 DIGITAL I/O AND RELAYS

GPIO-MM



ONYX-MM

FPGA-Based Reconfigurable Digital I/O Module

- FPGA-based digital I/O module with re-programmable feature sets: 64 digital I/O + 10 9513-style 16-bit counter/ timers, 96 digital I/O, and
- custom designs 100 I/O pins on 3 connectors
- 2 programmable interrupts 8 diagnostic LEDs
- RAM-based field-reprogrammable FPGA with 200K gates
- 40MHz 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. Custom personalities can be developed by users or by Diamond. 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

OPAL-MM



- 8 SPDT/Form C relays (NC, NO, C contacts)
- Switching capacity 2A at 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 optoisolated inputs offer wide input voltage range and also work with AC signals.

Available Models

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

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
- 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 hass 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 oneshot, counting, timing, pulse output, and square wave generation features.

Available Models

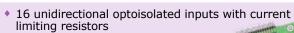
OMM-XT 48 digital I/O and 3 16-bit counter/timers

OMM-DIO-XT 48 digital I/O

OPAL-MM-1616



Opto Input and Relay Output Module



- 30VDC input capacity
- Programmable edge detection with interrupts
- 16 Form C SPDT relay outputs
 - 2A current capacity
 - 30VDC / 60W switching capacity
- Interrupt on change of state capability
- -40°C to +85°C operating temperature
- Universal Driver software

OPMM-1616-AT features 16 optoisolated, unidirectional digital inputs that accept DC voltages up to 30VDC. The inputs feature a programmable edge detection circuit (change of state detection circuit) that can generate interrupts on any change on any input.

The module also features 16 DPDT (form C) relays with 30VDC / 2A (60W resistive) capacity. Each relay has two sets of NO, C, and NC contacts wired in parallel for greater reliability and lifetime (but not increased capacity).

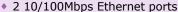
Available Models

OPMM-1616-XT Optoisolated Input and Relay Output PC/104 Module



MERCATOR

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



- 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



Mercator helps to reduce the size and cost of your PC/104 system. The 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

PEARL-MM

16 Relay Module

- 16 SPDT/Form C relays (NC, NO, C contacts)
- Switching capacity 2A at 30VDC
- Long lifetime—100,000,000 operations
- 500V AC/DC isolation between signals and board
- Pin header connections
- -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.

Available Models

PMM-P

16 relays, pin header connections



JANUS-MM

CAN Module with GPS/Cellular Communications







Dual CAN PC/104 module

With GPS and wireless modem

- 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







Lassen SKII GPS

Lassen iQ GPS SocketModem GSM/GPRS

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.

Available Models	
JNMM-COMBO-XT	Janus Dual CAN + Carrier PC/104 Module
JNMM-GPS-g	Janus-MM, SKII/iQ module, dual CAN
JNMM-WSM-w	Janus-MM, wireless modem, dual CAN
JNMM-DUO-g-w	Janus-MM, GPS and wireless, dual CAN
JNMM-GPS-g-DK	Janus-MM, SKII/iQ module, dual CAN, antenna
JNMM-WSM-w-DK	Janus-MM, wireless modem, dual CAN, antenna
JNMM-DUO-g-w-DK	Janus-MM, GPS and wireless, dual CAN, antenna
JNMM-CAN2-XT	Janus-MM dual CAN ports only
JNMM-GPS-g-XT	Janus-MM, SKII/iQ module, no CAN
CK-GPS-g	Antenna Kit for SKII/iQ modules
CK-WSM-01	Antenna Kit for SocketModem modules

 ${q = iQ \text{ or SK; } w = \text{ wireless module}}$







Standalone Managed 8-Port Gigabit Ethernet Switch

- 8 10/100/1000Mbps Ethernet ports with non-blocking wirespeed performance
 - Layer 2 managed switch
 - Standalone operation
 - 17KB on-chip buffer
 - DSCP remarking for IPv4 and IPv6 frames
 - Jumbo frame support at all speeds
 - Built-in 8051 microcontroller for configuration and management
 - Programmable multi-layer classifier with 4 QoS classes
 - RS-232 serial port for host interface
- Can operate autonomously or in conjunction with a host SBC
- +5VDC or +18-36VDC input
- PC/104 form-factor
- Does not require any bus interface
- Extremely rugged -40°C to +85°C operation

Epsilon is a Layer 2 managed Gigabit Ethernet switch module offering eight 10/100/1000Mbps copper twisted-pair ports on a PC/104 form-factor board. It can be used standalone, without any connection to a single board computer.

Epsilon has a built-in microcontroller and memory for configuration and management. The memory holds dual application images, boot code, MAC addresses, and other parameters, and can also be used for program execution.

An RS-232 serial port enables communication between the module's on-board management microcontroller and a host processor. The microcontroller is also accessible via a web management interface over one of the Ethernet ports.

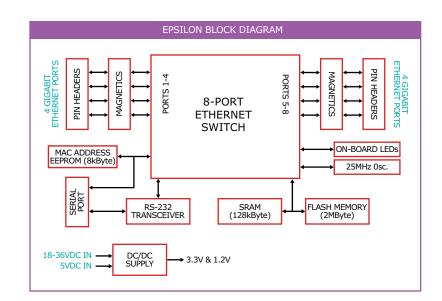
Power can be provided through the +18-36VDC widerange DC power supply built into the module, enabling use with industrial power sources. Alternatively, Epsilon can operate from +5VDC power.

Available Models

EPS-8000-XT Standalone Managed 8-Port Gigabit Ethernet

Switch

C-EPS800-KIT Episilon cable kit





PANDORA

Cable-Free Enclosure For PC/104 Single Board Computers



- 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 SBCs.

The PC/104 SBC mounts to a unique panel I/O board, which converts the pin headers on the SBC to industry-standard I/O connectors for most features. The entire assembly mounts to the front panel of the enclosure. Multiple body lengths provide room for additional PC/104 boards, batteries, modems, etc. Select from:

- 1.7" fits SBC and panel I/O board only
- * 3.0" fits SBC and up to 2 PC/104 modules
- 5.0" fits SBC and up to 5 PC/104 modules
- 7.0" fits SBC and up to 7 PC/104 modules

Panel I/O Boards

Our unique Panel I/O Board system is offered on most of our PC/104 single board computers and provides industry standard I/O connectors for the I/O, including CRT, Ethernet, USB, Serial, Parallel, PS/2, and data acquisition. Status LEDs and PC speaker are also included.

Some panel I/O boards also include extra built-in connectors which allows I/O from add-on PC/104 boards to be brought out to the front panel without having to customize the enclosure.





Panel I/O Board for Helios SBC

Panel I/O Board for Aurora SBC



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

Available Models

PB-AUR-170-K Pandora enclosure for Aurora SBC, includes PNL-AUR-01 panel I/O board

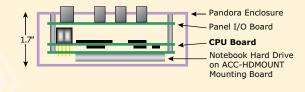
PB-HLV-xxx-K Pandora enclosure for Helios SBC, includes PNL-HLV-01 panel I/O board

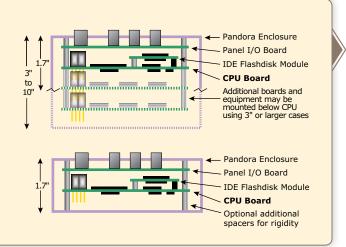
xxx Specify 170, 300, 500, or 700

PANDORA CONFIGURATION EXAMPLES

These Pandora cross-section drawings illustrate the relative positions of the components inside 1.7" and larger Pandora enclosures. These can serve as a quick overview of the proper assembly method.

When building an embedded system with Pandora, Diamond recommends you start with the face plate and work your way down to ensure that all the mounting hardware aligns properly.







OCTAVIO

Compact, Rugged, Low-power, Pre-integrated Embedded Application Servers



Supported SBCs

- Octavio is available with the following pre-integrated Diamond SBCs:
 - Aurora, with 1.6GHz Atom Z530 CPU (page 8)
 - Helios, with 800MHz Vortex86DX CPU (page 9)

Embedded-PC subsystem features

- Gigabit or 10/100BaseT Ethernet ports
- LVDS and SDVO or VGA display interface
- * 2 RS-232 and 2 RS-232/422/485 serial ports
- ♦ 4 USB 2.0 ports
- SATA or IDE storage interfaces
- Onboard flashdisk options
- Keyboard and mouse ports
- Real-time clock
- Watchdog timer
- * 8 or 16 digital I/O lines

Data Acquisition subsystem features (Helios models only)

- ◆ 16 16-bit analog inputs with 250KHz sample rate
- Interrupt-based A/D sampling with 2048 FIFO
- Programmable input ranges
- 4 12-bit analog outputs
- ◆ 25 additional programmable digital I/O lines
- 2 programmable counter/timers
- Autocalibration
- Supported by Diamond's Universal Driver software

Physical Characteristics

- Fanless operation over either -20°C to +71°C (Aurora) or -40°C to +85°C (Helios)
- Size: 5.5 x 5.75 x 1.7 inches
 - Alternate heights: 3.0, 5.0, or 7.0 in. (Helios only)
- Wall and DIN rail mounting options

The **Octavio** embedded application servers are based on Diamond's rugged PC/104 form-factor single board computers based on low-power, highly integrated CPUs such as the Intel Atom Z530 and DMP Vortex86DX system-on-chip processors. Additionally, some Octavio models incorporate Diamond's industry-leading data acquisition circuitry.

Octavio systems come with up to 2GB of SDRAM, and have an internal solid-state flashdisk preloaded with a bootable Linux image. Models with integrated data acquisition functions also include Diamond's Universal Driver data acquisition programming software.

All Octavio models also provide a full set of standard embedded-PC I/O interfaces, including USB, Ethernet LAN, and multi-protocol serial ports, and graphics, keyboard, and mouse interfaces.

The Octavio enclosure is compact, lightweight, and rugged. All system I/O is brought out to the front, in the form of industry standard connectors. The internal structure of the enclosure eliminates most internal cables, improving reliability of the system. Additionally, the systems feature fanless operation over either -20°C to +71°C or -40°C to +85°C, depending on the integrated SBC.

TAILORING OCTAVIO TO YOUR APPLICATION'S REQUIREMENTS

Standard Order Options

- Choice of integrated SBC: Aurora (page 8) or Helios (page 9)
- Available with integrated data acquisition subsystem (requires Helios SBC option)
- Up to 1GB flashdisks (includes bootable Linux OS) along with Diamond's Universal Driver software (when applicable)
- Integrated 7-30V DC power supply: a 25W or 50W internal power supply can be added, allowing Octavio to operate in environments where a source of regulated +5V DC is not available (requires 3.0inch minimum case height)
- Case height options: 1.7*, 3.0, 5.0, or 7.0 in. (*Aurora models limited to 1.7 in. max. height)
- DIN rail mounting option: available pre-installed

Special Order Options

- Integrated hard drive
- Integrated PC/104 expansion I/O modules
- Windows CE OS instead of Linux
- Various BIOS and jumper configuration settings
- Contact Diamond Systems for other options!



SOFTWARE

Diamond offers a selection of Software Development Kits (SDKs), device drivers, and other support software for operation of our products under a range of popular standard and embedded operating systems. Operating System Software Development Kits (OS SDKs) let you rapidly experience the OS running on your Diamond processor module with little or no configuration effort. Additionally, the Diamond Universal Driver toolkit provides C language support for most Diamond products having onboard Analog I/O, digital I/O, timer/counters, and watch-dog timer functions. The available products are summarized below.

SUPPORTED OPERATING SYSTEMS

The table below indicates supported operating systems across Diamond's processor module products, including single-board computers, computer-on-modules, and embedded-ready subsystems. Any model of supported processor module may be used with any model of compatible software development kit. Support for other operating systems will be considered upon request.

SOFTWARE DEVELOPMENT KITS

Diamond's Operating System Software Development Kits (OS SDKs) let you experience the operating system running on your processor module in a quick-start fashion with minimal or no configuration effort. Many kits include development tools to enable immediate application development. Additionally, many of our processor modules are supported by solid-state flashdisks, which are offered with pre-flashed operating system images.

Diamond's OS SDKs are sold separately from the processor modules, enabling you to select exactly the right combination for your application. A typical order includes the processor module of your choice, a hardware development kit or cable kit, and a software development kit.

Supported Operating Systems and Software Development Kits							
SBCs & COMs	DOS	Linux	Win CE	Win XP	Win XPe	QNX	
Aurora		SDK	SDK	S	SDK	S	
COM Express COMs		S	5.0	S	S		
ETX COMs		S	S	S	S		
Helios	S	SDK	SDK				
Helix	S	SDK	SDK				
Magellan	S	S	S	S	SDK		
Neptune	S	SDK		S	S		
Pegasus		S	S	S	S		
Pluto	S	S	S	S	SDK		
Poseidon	S	S		S		SDK	
Rhodeus		S	S	S	S		

"S" = supported; "SDK" = supported and SDK available

UNIVERSAL DRIVER SOFTWARE

Diamond's Universal Driver software is a software toolkit that provides a flexible and powerful C language programming library for data acquisition and control.



It contains a comprehensive set of functions for controlling the analog I/O, digital I/O, counter/timer, and interrupt features of the underlying hardware. The Universal Driver is provided free with all our SBCs with integrated data acquisition, and with all our analog I/O expansion boards. No other vendor provides this level of software functionality for embedded system data acquisition.

Key features include:

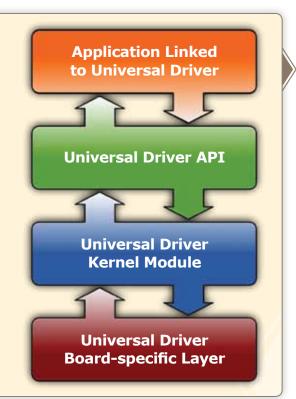
- Cross platform compatibility—supports Linux, Windows CE, Windows XP, and DOS
- Extensive interrupt handling features
- Autocalibration with software commands
- Supports low-level register reads/writes
- Multi-board operation, up to 16 boards
- Comprehensive, easy-to-use documentation
- Extensive programming examples











FLASHDISKS

- Rugged, bolt-on installation
- Requires no additional space on stack or in enclosure
- Typically support -40°C to +85°C operation
- Two variants available (depending on SBC):
 - IDE, up to 4GB
 - USB, up to 8GB



IDE Flashdisk



USB Flashdisk

SATA FLASHDISK

- Rugged, bolt-on installation
- Requires no additional space on stack or in enclosure
- Supports -40°C to +85°C operation
- 32GB and 64GB capacities

Note: SATA SSD mounting only available on Corona (page 16)



SATA Flashdisk

RUGGED SO-DIMMS

- DDR2, 1GB and 2GB capacities
- -40°C to +85°C operation
- Ruggedly attaches to SBC via two spacers
- Interchangeable with standard SO-DIMMS
- ♦ Tested to MIL-STD-202G 12G shock and vibration

Note: Currently only supported on Aurora (page 8)

CABLE KITS

- Cable kits are available for all SBCs
- Cables convert pin headers to PC-style connectors



PC/104 TERMINAL BOARD

- STB-104's PC/104 format board fits conveniently on board stack
- Angled screw terminals
- 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

AC ADAPTERS

- Wide input range 90-240VAC, 50-60Hz
- 5V/6A output with PS-5V-04
- 12V 4A output with PS-12V-01
- Compatible with all DSC +5V and +12V input SBCs



SUMIT-FEATUREPAK ADAPTER

- Socket for 1 FeaturePak module
- Mounts in SUMIT stacks
- Provides SUMIT-AB and ISA bus passthrough
- Uses one PCIe x1 link



PCIE/104-FEATUREPAK ADAPTER

- Socket for 1 FeaturePak module
- Mounts in PCIe/104 and PCI/104-Express stacks
- Provides PCIe/104 bus stackthrough
- Uses one PCIe x1 link



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



HDD ADAPTER KIT

- 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"



PC/104 SPACERS & MOUNTING HARDWARE

- SPC-104 spacers
- MTG104 PC/104 mounting kit, includes 4 each spacer, screw, and nut
- Spacers are 0.6" long x 3/16" diameter x #4-40 thread, with male and female ends; aluminum with clear finish

SPC-104 is the standard PC/104 mounting spacer with 0.6" height and #4-40 threads; male/female thread configuration enables continuous stacking. MTG104 is a complete mounting kit including 4 spacers, 4 screws, and 4 nuts; one kit required per board.

PC/104 CONNECTORS

PC/104 headers are available in both stackthrough (long pins) and non-stackthrough (short pins) format.



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



POWERING A WIDE RANGE OF REAL-WORLD APPLICATIONS FOR OVER TWO DECADES



Aerospace

A U.S. government contractor designed Diamond's data acquisition and control PC/104 modules into the onboard control system of the U.S. Air Force's Miniature Air-Launched Decoy (MALD) unmanned aerial vehicle (UAV). The MALD simulates the radar signature of fighter jets to deflect enemy attention away from the real planes.



Industrial Automation

An industrial automation specialist in the Middle East designed Diamond's PC/104 SBCs with built-in data acquisition and control features into a state-ofthe-art programmable logic controller (PLC). The PLCs are used for both indoor and outdoor process control and factory automation applications, so they must be capable of operating reliably in harsh environments with wide temperature extremes and high levels of shock and vibration.



Medical Devices

A medical device maker used Diamond's PC/104 form-factor SBCs and analog I/O modules as the basis of a new, noninvasive glucose monitoring instrument. The light weight, handheld device is intended to displace current finger-prick methods used by millions of diabetic patients to check their glucose levels at home.



Energy Management

As part of a project to convert a 1980s-era experimental solar plant into a modern hybrid solar/gas furnace, the French government used Diamond's FPGA and digital I/O PC/104 modules in an embedded system that manages the movement and monitoring of mirrors.



Homeland Security & Defense

A leading U.S. defense contractor used a stack of Diamond's rugged, extended temperature PC/104 SBCs and I/O modules to upgrade the electronics of an invehicle diagnostics computer. The vehicles provide ground transport for U.S. Marine Corps global peacekeeping activities.



Intelligent Transportation Systems

A leading Australian Intelligent Transport System (ITS) solution provider utilized a customized version of Diamond's Octavio application server inside a roadside traffic monitoring and management system. The system optimizes traffic flow, by coordinating the timing of traffic signals and controlling variable message signs.

WHY DIAMOND?

- ◆ Compact 2-in-1 SBCs with on-board DAQ and other application-oriented functions I/O
- Low heat dissipation, coupled with Diamond's innovative conduction cooling technology
- Ability to support -40°C to +85°C operation and MIL-STD-202G shock/vibration
- ♦ Originator of the FeaturePak embedded I/O standard
- ◆ Leader in PC/104, PC/104-Plus, PCIe/104, SUMIT, FeaturePak, and other embedded standards
- ◆ Industry-leading data acquisition capabilities
- ♦ Rugged, application-ready, integrated systems
- Extensive customization and integration services resulting in "perfect fit solutions"
- World class quality and reliability





Diamond Systems Corporation, founded in 1989, is a leading global supplier of small form factor embedded computing solutions to OEMs, system integrators, and product developers targeting a wide range of markets, including transportation, energy, aerospace, defense, manufacturing, medical, and research.

Diamond's standard product families include highly integrated single-board computers (SBCs) spanning a broad range of performance and power requirements; an extensive line of expansion modules for I/O, communications, GPS, and DC power conversion; and enclosures and application-ready systems. In support of performance-critical embedded requirements, our products are designed to operate reliably over extended temperature ranges, such as –40°C to +85°C, and at high levels of shock and vibration. Diamond is renowned as an innovator of embedded I/O standards and technologies: we originated the FeaturePak I/O module standard in 2010, were one of the earliest suppliers of PC/104 I/O modules, and hold a patent for a unique analog I/O autocalibration technique.

Recognizing the broad diversity of embedded application requirements, Diamond also offers comprehensive hardware, software, and system integration and customization services. From specialized testing, to product modifications, to custom board and system development, we are dedicated to helping you achieve your quality, cost, feature, performance, time-to-market, and product longevity goals.



DIAMOND SYSTEMS CORPORATION

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Product Guide no. 2102

















