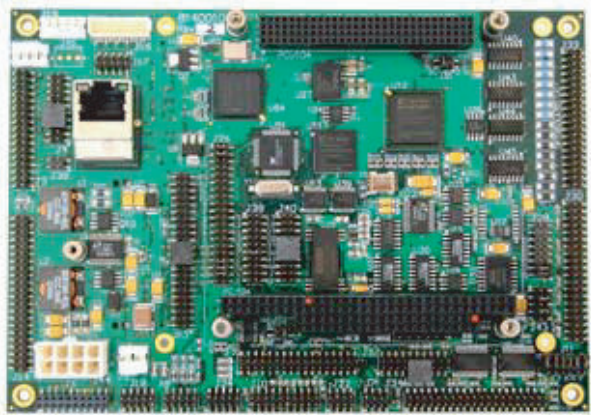


# NEPTUNE

Highly Integrated Embedded SBC with User-Selectable ETX Processor Core



- Highest level of integration in a single board computer:  
Replaces 6 individual boards
- ETX CPU core provides flexibility in price / performance,  
reduces cost, and protects against obsolescence
- Choice of AMD LX800 up to Intel Core 2 Duo processors with  
512MB to 2GB system memory
- Best-in-class analog data acquisition with autocalibration  
and software support
- 5-28V DC/DC power supply for easier system integration
- EPIC format with PC/104-PLUS expansion provides compact  
size with flexibility

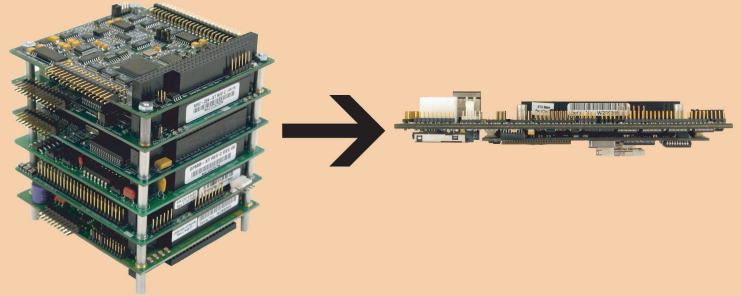
## DESCRIPTION

NEPTUNE introduces a new concept in small form factor embedded SBCs. The CPU core consists of an ETX module which mounts on the bottom side of the board for improved thermal management. This technique provides more room on the main board for I/O features. The result is an efficient, cost-effective, reliable, and compact embedded SBC rich in I/O and user benefits. Neptune is the first 6-in-1 embedded SBC, integrating processor, system I/O, data acquisition, and even a DC/DC power supply onto a single board in the compact EPIC format.

You can select from a wide range of ETX CPU modules from a world-class supplier to tailor Neptune's price and performance to your application and budget. A PC/104-Plus expansion socket enables you to add still more I/O or features if needed, and the built-in 5-28V input DC/DC power supply

Integrates the functions of 6 boards into 1!

- CPU
- Data Acquisition
- Opto-isolated Digital I/O
- Multiprotocol Serial Ports
- Gigabit Ethernet
- DC/DC Power Supply



## BENEFITS OF 6-IN-1 INTEGRATION

**LESS SPACE:** Smaller and thinner than a stack of PC/104 boards

**LOWER COST:** An integrated solution eliminates extra PCBs and connectors to lower the unit cost

**HIGHER RELIABILITY:** Less interconnects and components, resulting in higher reliability

**MORE RUGGED:** The flatter profile and reduction in connectors makes Neptune far more rugged in mobile applications

**SINGLE VENDOR:** Purchasing and stocking are easier with a single board

**SAVES TIME:** Assembly effort is dramatically reduced, shortening your total system integration time

## DATA ACQUISITION

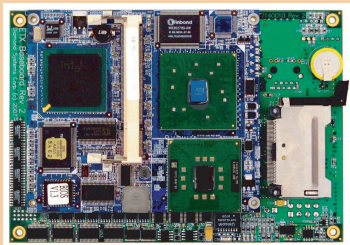
Neptune includes Diamond Systems' top-of-the-line data acquisition circuit with the industry's widest set of I/O features:

- 32 analog inputs, 16-bit A/D, 250KHz sample rate
- 4 analog outputs, 12-bit D/A
- 24 digital I/O, 3.3V/5V compatible
- 8 opto-isolated digital inputs, 3-24V range
- 8 opto-isolated digital outputs, 3-24V range
- 2 counter/timers for A/D sample rate control, event counting/timing, and programmable interrupts
- Universal Driver software support for C programming under Windows and Linux

provides flexibility in integrating the board with your system power supply. These features give Neptune an unsurpassed level of value and flexibility in a small form factor embedded SBC.

## BENEFITS OF AN ETX PROCESSOR CORE

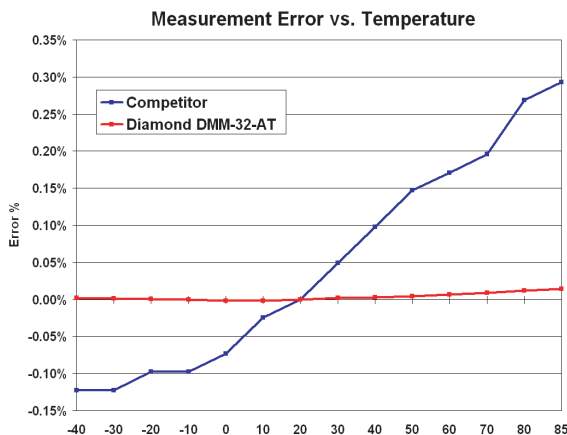
- Choice of price/performance: Neptune is available with a low-power AMD LX800 up to an Intel Core 2 Duo, so you can obtain exactly the performance and price point you need
- Protection from obsolescence: Easily switch processor modules in case of processor end of life
- Easy upgrade: ETX CPUs are interchangeable, allowing you to easily upgrade your system with minimal or no redesign
- Low Cost: ETX modules cost less than their equivalent single board computer, resulting in a lower total cost for Neptune



Bottom side showing ETX CPU module

## AUTOCALIBRATION FOR BEST MEASUREMENT ACCURACY

Diamond's top-performing autocalibration circuitry enables you to calibrate the analog circuits under software control at any time, maintaining best accuracy under all conditions. Temperature- and time-dependent measurement drift is eliminated, as the board can be calibrated as often as desired in just a few seconds to ensure accurate readings in all environments.



## THERMAL MANAGEMENT

Neptune places the processor on the bottom side of the board. An integrated heat spreader makes thermal contact with the heat generating components on the CPU module and provides a flat surface on the bottom side for mating to the system enclosure. This technique provides for efficient removal of heat from the CPU without the need for a fan.

## CPU OPTIONS

Processor	0/60°C	-30/+85°C
AMD LX800	Yes	Yes
Intel Celeron M 1GHz	Yes	Yes
Intel Pentium M 1.4GHz	Yes	Yes
Intel Core 2 Duo	Yes	-10/+85°C

## SYSTEM I/O FEATURES

All models of Neptune include the following standard CPU I/O features in addition to the data acquisition and DC/DC power supply:

<b>Serial Ports</b>	2 RS-232, 4 RS-232/422/485
<b>USB</b>	4 ports, 1.1 / 2.0 depending on ETX module
<b>PS/2</b>	Keyboard and mouse provided
<b>Ethernet</b>	1 10/100Mbps from ETX module; 1 Gigabit Ethernet using Intel 82541 and on-board RJ-45 jack
<b>Parallel and Floppy</b>	User selectable through ETX module configuration
<b>Audio</b>	AC'97 (Mic in, Line in, Line out)
<b>IDE</b>	1 44-pin connector for solid state flashdisk up to 4GB; 1 44-pin connector for hard disk interface
<b>CompactFlash</b>	Socket for Type I/II device
<b>S-ATA</b>	Available on Core 2 Duo model
<b>VGA, LCD</b>	Performance depends on ETX module

## ACCESSORIES

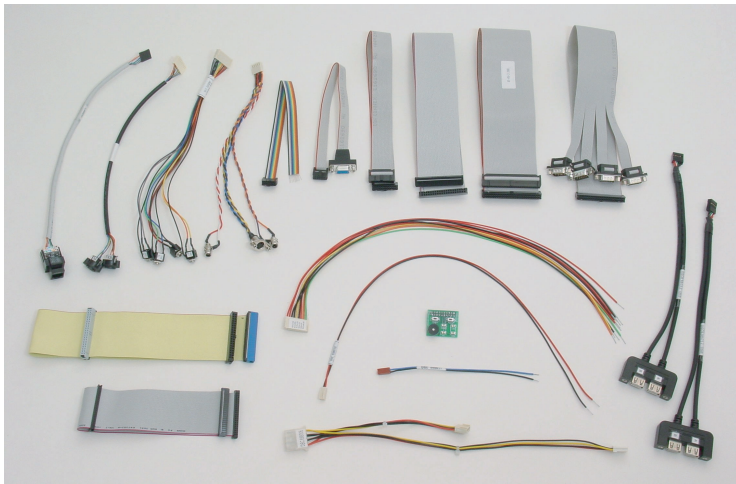
### Panel I/O Board

This accessory plugs onto the front row of pin headers to provide cable-free access to the standard system I/O: Serial ports, USB, Ethernet, PS/2, VGA, Power input



### Cables

A cable kit provides access to all I/O features on Neptune including the features on the panel I/O board.



### Memory

Neptune uses DIMM modules with capacities ranging from 512MB to 2GB depending on the choice of ETX CPU module.

### Development Kits

A quick-start development kit includes everything you need to get started with your application development, including:

- Neptune SBC with integrated CPU of your choice
- 1GB memory installed
- Heat spreader installed
- 128MB Flashdisk with embedded Linux
- Panel I/O board
- Cable kit
- AC power adapter

## OPERATING SYSTEM SUPPORT

Standard support: Windows XP/XP embedded,  
Windows CE, Linux

Optional upon request: Vxworks, QNX

## ORDERING INFORMATION

Part Number	Description
C-NPT-KIT	Neptune Cable Kit
DK-LNX-NPT	Linux Development Kit for Neptune with 512MB flash disk
DK-NPTCM10-01	Neptune CM10A Development Kit: SBC with data acquisition, cables, FlashDisk with Linux, docs and software
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
MEM-1024-02	1GB DDR SODIMM for NPT-LX8 and NPT-PM14
MEM-1024-03	1GB DDR SODIMM for NPT-CM10
MEM-512-03	512MB DDR SODIMM for NPT-C1000
MEM-2048-03	2GB DDR SODIMM for NPT-CM10
MEM-512-02	512MB DDR SODIMM for NPT-LX8 and NPT-PM14
MEM-512-03	512MB DDR SODIMM for NPT-CM10
NPT-CM10A	Neptune SBC, 1GHz Celeron M CPU, with data acquisition
NPT-CM10N	Neptune SBC, 1Gz Celeron M CPU, no data acquisition
NPT-LX8A	Neptune SBC, 500MHz LX800 CPU, with data acquisition
NPT-LX8N	Neptune SBC, 500MHz LX800 CPU, no data acquisition
NPT-PM14A	Neptune SBC, 1.4GHz Pentium M 738 CPU with data acquisition
NPT-PM14N	Neptune SBC, 1.4GHz Pentium M 738 CPU, no data acquisition
PNL-NPT-01	Neptune Panel I/O Board
PNL-NPT-KIT	Neptune Panel I/O Board Kit
TRI-NPT-K	Triton Enclosure and hardware for Neptune
TRI-NPT-KIT	Triton Kit for Neptune with panel I/O board and cable kit

## FOR MORE INFORMATION

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