NEPTUNE EPIC SBCs

EPIC SBCs with Interchangeable CPUs, integrated data acquisition, and PC/104-Plus expansion

Highly Integrated SBC
Neptune integrates an I/O application layer, COM layer, and thermal layer into a compact, EPIC form-factor single board computer. The SBC family offers a configurable ETX COM CPU core that allows you to match a Neptune SBC to the precise price/performance needs of your application and integrates the functionality of six PC/104 modules into a single SBC.

Neptune’s ETX-based design provides you with access to the latest CPU and I/O technology, while protecting your investment from CPU obsolescence via plug compatible ETX CPU modules.

Rugged Design
Neptune SBCs feature an operating temperature of -40°C to +85°C, rugged DDR3 SDRAM, and a high tolerance for shock and vibration, making it an ideal choice for vehicle, outdoor and harsh environment applications.

The processor is located on the bottom side with a conduction cooling heat spreader to efficiently transfer the heat away from the SBC.

Software Support
Neptune runs Linux, Windows® XP and Windows Embedded Standard. All OS drivers are shipped with the product. Diamond’s Universal Driver software provides a C programming library for the integrated data acquisition circuit.

CPU FEATURES
◆ Interchangeable ETX CPU core module provides price/performance flexibility and protects against product obsolescence
◆ Choice of CPUs:
  1.91GHz Intel Atom E3845 quad core
  1.65GHz AMD Fusion G-T56N
  1.0GHz AMD Fusion G-T40N
◆ Supports up to 8GB DDR3 SO-DIMM SDRAM

I/O FEATURES
◆ Integrates the functions of 6 PC/104 modules into a compact EPIC SBC
◆ 1 10/100Mpbs and 1 Gigabit Ethernet LAN
◆ 4 USB 2.0 ports
◆ 2 SATA ports
◆ 1 IDE port
◆ 4 RS-232/422/485 port
◆ 2 RS-232 ports
◆ LVDS LCD support
◆ VGA output
◆ AC’97 audio
◆ PS/2 keyboard & mouse
◆ Watchdog timer
◆ On-board CompactFlash socket
◆ PC/104-Plus expansion (ISA + PCI)

OPTIONAL DATA ACQUISITION FEATURES
◆ Multiplexed 32 channel 16/bit A/D with Autocalibration
◆ 4 channel 12-bit D/A
◆ 24 digital I/O lines
◆ 8 opto-isolated digital inputs
◆ 8 opto-isolated digital outputs
◆ 2 counter / timers

GENERAL
◆ ETX COM mounted on the bottom improves thermal management and increases space for I/O functions and connectors on top
◆ On-board 40W 8-28V DC/DC power supply
◆ EPIC form factor: 4.5” x 6.5” (114mm x 165mm)
◆ -40°C to +85°C or -20°F to +71°F operating temperature (model dependent)
Neptune EPIC SBC with Interchangeable COMs

### Specifications

**Processor**
1.91GHz Intel Atom E3845 quad core, 1.65GHz AMD Fusion G-T56N or 1.0GHz AMD Fusion G-T40N CPU

**Cooling**
Heat spreader

**Memory**
Supports up to 8GB DDR3 SO-DIMM SDRAM

**BIOS**
UEFI or InSyde BIOS, model dependent

**Display**
LVDS LCD, VGA CRT

**USB ports**
4 USB 2.0

**Serial ports**
4 RS-232/422/485 ports (COM1 – 4)
2 RS-232 ports (COM5 – 6)

**Networking**
1 Gigabit Ethernet from ETX CPU
2 SATA ports support 1 device each

**Mass storage**
1 IDE port supports 2 IDE devices including CompactFlash IDE Type II socket

**Keyboard/Mouse**
PS/2

**Audio**
AC’97 audio CODEC; mic in, line in/out

**Analog input**
32 16-bit inputs

**Sample rate**
250KHz maximum

**Analog output**
4 12-bit D/A

**Digital I/O**
24 DIO lines; 3.3V/5V compatible

**Optoisolated DIO**
8 inputs and 8 outputs; 3-24V range

**Counter / timers**
2 programmable counter/timers

**Watchdog timer**
Non-maskable interrupt or reset modes

**Other I/O**
SMBus, IrDA interface

**I/O expansion**
PC/104-Plus (ISA + PCI) interface

**Input power**
40W 8-28V DC-to-DC power supply
-5VDC +/-5% or +5VDC

**Power consumption**
NPT-E3845-xG: 14.7W typical
NPT-E3825-xG: 11.8W typical
NPT-T40N-xG: 11W typical
NPT-T56N-xG: 16.1W typical

**Operating temp**
-20°C to +71°C (-4°F to +160°F) or
-40°C to +85°C (-40°F to +185°F)
model dependent

**Operating humidity**
0-90% non-condensing

**Shock & Vibration**
MIL-STD-202G compatible

**Dimensions**
4.5” x 6.5” x 1.77” (114mm x 165mm x 32mm)

**Weight**
14.6 oz (414g) with heatspreader and SO-DIMM SDRAM

**RoHS**
Compliant

### Ordering Information

**NPT-E3845X-4GAW**
Neptune SBC, 1.91GHz Intel E3845 quad core CPU, 4GB SO-DIMM SDRAM, data acquisition, wide voltage input, -40°C to +85°C

**NPT-E3845XT-4GA5**
Neptune SBC, 1.91GHz Intel E3845 quad core CPU, 4GB SO-DIMM SDRAM, data acquisition, +5V input, -40°C to +85°C

**NPT-E3845XT-8GAW**
Neptune SBC, 1.91GHz Intel E3845 quad core CPU, 8GB SO-DIMM SDRAM, data acquisition, wide voltage input, -40°C to +85°C

**NPT-E3845XT-8GA5**
Neptune SBC, 1.91GHz Intel E3845 quad core CPU, 8GB SO-DIMM SDRAM, data acquisition, +5V input, -40°C to +85°C

**NPT-T56N-4GAW**
Neptune SBC, 1.65GHz AMD Fusion G-T56N CPU, 4GB SO-DIMM SDRAM, data acquisition, wide voltage input, -20°C to +71°C

**NPT-T56N-4GA5**
Neptune SBC, 1.65GHz AMD Fusion G-T56N CPU, 4GB SO-DIMM SDRAM, data acquisition, +5V input, -20°C to +71°C

**NPT-T56N-2GAW**
Neptune SBC, 1.65GHz AMD Fusion G-T56N CPU, 2GB SO-DIMM SDRAM, data acquisition, wide voltage input, -20°C to +71°C

**NPT-T56N-2GA5**
Neptune SBC, 1.65GHz AMD Fusion G-T56N CPU, 2GB SO-DIMM SDRAM, data acquisition, +5V input, -20°C to +71°C

**NPT-T40N-4GAW**
Neptune SBC, 1.0GHz AMD Fusion G-T40N CPU, 4GB SO-DIMM SDRAM, data acquisition, wide voltage input, -20°C to +71°C

**NPT-T40N-4GA5**
Neptune SBC, 1.0GHz AMD Fusion G-T40N CPU, 4GB SO-DIMM SDRAM, data acquisition, +5V input, -20°C to +71°C

**NPT-T40N-2GAW**
Neptune SBC, 1.0GHz AMD Fusion G-T40N CPU, 2GB SO-DIMM SDRAM, data acquisition, wide voltage input, -20°C to +71°C

**NPT-T40N-2GA5**
Neptune SBC, 1.0GHz AMD Fusion G-T40N CPU, 2GB SO-DIMM SDRAM, data acquisition, +5V input, -20°C to +71°C

**C-NPT-KIT**
Neptune Cable Kit for most on-board I/O

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Neptune SBC side view