

Product Catalog

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1. Company Overview

NEMONIX™ Engineering is a privately held corporation that has been in business for 30+ years. Our customers are located all over the world, and include many Fortune 500 companies in all industries.

NEMONIX™ Engineering continues to make investments in the VAX and AlphaServer market place because we know it's important to our customers. You can count on us to continue to provide you with new and innovative VAX and AlphaServer services and products for the greater OpenVMS market place.

We offer Call Center support on all your VAX systems and early model Alpha's. Our service offerings are designed with a variety of options to solve your hardware system outages in a minimal period of time, and provide known good spare parts for all covered components.

NEMONIX™ Engineering designs and manufactures a variety of hardware enhancements for VAX and AlphaServer platforms. Our product set includes NEW RZ/EZ disk drive replacements, NEW VT terminal replacements, VAX CPU and cache, memory expansion, Ultra Wide SCSI and 100Mb Ethernet enhancements for your VAX and Gigabit Ethernet for AlphaServers. Enhancements can be done in one step and normally without a change in your systems' software, configuration, or disrupting your users. Our products are self maintainable and self installable.

In addition, we provide depot level repair services for everything from modules to whole systems. This includes PDP-11's, VAX, MicroVAX's, ALPHA'S, PC's, terminal servers, printers, terminals, disk drives, other peripherals, CPU, memory, and standard I/O modules.

Many of our employees come from Digital Equipment Corp, Compaq Computer Corporation and/or HP. As such, we understand the demands of this mission critical business environment. NEMONIX™ Engineering provides 24X7 telephone service.

For your convenience, we have an extensive worldwide network of distributors and resellers.

VAX, Vaxstation, MicroVax, AlphaServer, HP OpenVMS, DEC and DECservice are registered trademarks of HP Computer Corporation.

2. VT Replacement Terminals

NEMONIX™ Engineering Inc. offers VT5xx video terminals. These are cost effective direct replacements for the Digital Equipment Corporation/Compaq family of VTxxx video terminals.

These products replace failing out of production VT series video terminals. These new video terminals end the gamble when purchasing used terminals on the open market. No longer will you have to settle for terminals that have screen burn in, limited CRT life, or have discolored cases from age. They also end the need for excessive costs of purchasing and supporting PC based hardware and terminal based VT emulator software. These replacement terminals bring user reliability and decreased system support costs back to your VMS and TRU64 systems.

Originally designed by Digital, these new units are exact replacements. They come in two varieties. The first are monochrome single and multiple session units. Screen phosphors are available in green, amber and white. The second is a color variety. It can be coupled with a new flat panel display if desired. These come with either an ASCII style DEC keyboard, or a PC style keyboard. Specific country keyboards can be provided.

These replacement terminals are aimed at extending the life of your existing AlphaServer and VAX systems by giving you an option to replace your aging VT video terminals with new units. They are designed for easy plug-and-play installation utilizing serial or DEC 6 pin MMJ connections.

Physically, these terminals have the same form, fit and function as standard VT5xx series terminals. This delivers significant cost savings to the engineering, operations and service departments by eliminating different footprints for mixed type older terminals, PC based terminal emulators, and older out of production video terminals with emulation.

VT5xx terminals are guaranteed for a period of 3 years.

ROHS compliant units are available.

VT510/20/25 Features:

| |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Both the single and multiple session monochrome terminals feature down-loadable micros; status and indicator lines; off-screen memory; horizontal and vertical scrolling; local copy and paste; and a built in clock and calculator. |
| The multiple session models can create four independent sessions over a single wire with Digital's Session Support Utility or you can access applications via three connectors provided on the terminal. It offers multi-session features such as split screen viewing, labeling of each session, session status indicators, and copy and paste between connected sessions. |
| The color unit provides for up to 4 color independent sessions that can use up to 16 colors from a pallet of 4096 colors. Monochrome support is built in for instant color in monochrome applications. |

VT510/520 Monochrome Display Features:

| |
|----------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • 14" Flat face, reduced glare, high resolution screen |
| <ul style="list-style-type: none"> • Controls up front |
| <ul style="list-style-type: none"> • 72 Hz refresh rates for clear flicker free viewing |
| <ul style="list-style-type: none"> • Choice of Green, Amber or White phosphor |
| <ul style="list-style-type: none"> • 24,25,26,36,42,48,50,53 lines |
| <ul style="list-style-type: none"> • 80 or 132 columns |
| <ul style="list-style-type: none"> • 8 pages of memory |
| <ul style="list-style-type: none"> • Windows like set up |
| <ul style="list-style-type: none"> • Double high, double wide characters |
| <ul style="list-style-type: none"> • Selectable screen saver |
| <ul style="list-style-type: none"> • Programmable tab stops |
| <ul style="list-style-type: none"> • Hot key access to the Desktop features |

VT525 Color Display Features:

| |
|-------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Four full color, independent sessions |
| <ul style="list-style-type: none"> • Each session is capable of 16 colors from a 4,096-color palette |
| <ul style="list-style-type: none"> • Support for ANSI color protocol |
| <ul style="list-style-type: none"> • ASCII color emulation |
| <ul style="list-style-type: none"> • Color support for monochrome monitors. Monochrome applications can have instant color |
| <ul style="list-style-type: none"> • Compatible with any SVGA monitor and some flat panel units |

Communications:

| |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Full/half duplex, Block |
| <ul style="list-style-type: none"> • Serial host Port - RS-232C main host - DTE, DB 25 male or female (1 on single session model, 2 on the multi session model and color unit) |
| <ul style="list-style-type: none"> • DEC RS-423 6 Pin MMJ 1 on the single session 2 on the multi session model and color unit |
| <ul style="list-style-type: none"> • Parallel Printer Port - IBM PC and Centronics compatible printer port (female) |
| <ul style="list-style-type: none"> • Flow Control DTR/DSR, XON/XOFF,XPC, or none |
| <ul style="list-style-type: none"> • Baud Rate—300 to 115.2KBaud |

Keyboards:

| |
|-------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • ALL keys programmable to 8 levels by user or host |
| <ul style="list-style-type: none"> • Country kits are available |
| <ul style="list-style-type: none"> • ASCII or PC based key layouts are available |

Available Terminal Emulations:

| |
|----------------|
| • VT 100 |
| • VT 220 |
| • VT 320 |
| • VT 420 |
| • Dorio 10 |
| • Wyse 50/50+ |
| • Wyse 55 |
| • Wyse 60/160 |
| • Wyse 120/150 |
| • TVI 910+ |
| • TVI 925/950 |
| • SCO Console |

Built in Desk Accessories:

| |
|-----------------|
| • Calculator |
| • Calendar |
| • Clock |
| • Character Set |

Power:

| |
|-------------------------|
| • 100-240 VAC, 47-63 Hz |
|-------------------------|

Supported Operating Systems:

| |
|--------------|
| • OpenVMS |
| • Tru64 UNIX |
| • Others |

This device may be installed utilizing Nemonix Engineering phone support, self installed, or we will work with your service provider. NEMONIX Engineering offers 9-5 installation and warranty support during the 3 year return to factory warranty period via phone. NEMONIX Engineering takes pride in offering superior products, backed by outstanding service and support.

3. NXRZ Replacement Disk Drive

NXRZ-xx Replacement RZxx Disk Drives for AlphaServers and VAX

NEMONIX™ Engineering Inc. NXRZ-xx SCSI disk drives are direct replacements for the Digital Equipment Corporation/Compaq family of RZ disk drives.

This product replaces out of production RZ series SCSI disk drives. These new drives end the gamble when purchasing used SCSI RZ drives on the open market. No longer will you experience drives that will not spin up after they are spun down, have noisy spindles, or intermittent data errors caused by excessive bearing wear in the spindle motor assembly from too many years of running. These replacement drives bring back data reliability to your system.

These replacement drives are aimed at extending the life of your existing AlphaServer and VAX systems by giving you an option to replace your aging RZ series disk spindles with new drives. These drives are designed for easy plug-and-play installation utilizing either the original DEC SBB technology or conventional rail mountings. They can be supplied in capacities from 1GB to 73.3GB's. The NXRZ disk provides the same storage functions found in SCSI-1 and SCSI-2 fast, narrow, and wide hard disk drives. The onboard firmware and hardware manage the translation from SCSI host commands to IDE disk commands.

Physically, NEMONIX Engineering produces the same form, fit and function as standard RZ series drives. This delivers significant cost savings to the engineering, operations and service departments by eliminating periodic disk qualifications, inventory costs, and field upgrades. Once configured to the target system requirements, no modifications to the target systems are required. This makes the NEMONIX Engineering NXRZ disk an easy upgrade for field maintenance. Once installed, they appear as standard RZ drives so that the Operating System recognizes them. For drives installed in a BA35x, they assume the drive number according to slot in the BA35x they are inserted in.

Using modern +5 volt technology instead of both +5 and +12 volts, power and cooling requirements are far less than the original drives. This means that there is no worry of taxing your existing power and cooling systems. For BA35x owners, no power supply or two speed fan upgrade is required. Using SCSI host-to-IDE disk adapter architecture - with its controlled command set - combined with a standard 3.5-inch IDE disk drive, the NXRZ returns long term availability to your system.

Replacement drives are guaranteed for a period of 3 years.

Features and Benefits:

| <u>Feature</u> | <u>Benefit</u> |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> Proven industry standards | <ul style="list-style-type: none"> Standard SCSI interface delivers unparalleled operating system compatibility 3.5 inch form factor for standard drive |
| <ul style="list-style-type: none"> High capacity in a standard 1-inch tall enclosure | <ul style="list-style-type: none"> The Nemonix Engineering NXRZ can be configured for capacities ranging from 1GB's to 73.3 GB's |
| <ul style="list-style-type: none"> Replaces out-of-production 3.5-inch hard disk drives | <ul style="list-style-type: none"> Designed to replace variants of Digital Equipment Corp. RZ series disk drives. RZ25, RZ26, RZ28, RZ29, and RZ1 drives. Includes both low profile and full height drives. |
| <ul style="list-style-type: none"> Controlled command set features | <ul style="list-style-type: none"> Ensures long term compatibility and availability |
| <ul style="list-style-type: none"> Configurable to meet demanding needs in wide ranging applications | <ul style="list-style-type: none"> SCSI-1 and SCSI-2 compatible. |
| <ul style="list-style-type: none"> Industry Standard connections | <ul style="list-style-type: none"> Standard 50 Pin connector and interface on drive. 68 or 80 SCA also available on wide units BA350 or HSx-xx Compatible connector on drives in Shells Standard 4 pin power connector on drive |

Supported Operating Systems:

| |
|---------------------------------------------------------------------------|
| <ul style="list-style-type: none"> OpenVMS 5.5.4-HW and up |
| <ul style="list-style-type: none"> Tru64 UNIX |

Key Application Areas:

| |
|-----------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> Telecommunications switches, telephone voice mail, and PBX systems |
| <ul style="list-style-type: none"> Defense, avionics, and airborne systems |
| <ul style="list-style-type: none"> Network routers and switches |
| <ul style="list-style-type: none"> Semiconductor manufacturing equipment |
| <ul style="list-style-type: none"> Medical laboratory instrumentation |
| <ul style="list-style-type: none"> Avionics and airborne systems |
| <ul style="list-style-type: none"> Any device requiring SCSI drive availability beyond end-of-life service period. |

Performance:

| | |
|---------------------------------------------------------------------------------------|--------------------|
| <ul style="list-style-type: none"> Start up times (reset to selection) | 250 ms or less |
| <ul style="list-style-type: none"> Start up times (Standby to active) | 4 ms (max) |
| <ul style="list-style-type: none"> Controller Overhead | 2 ms (max) |
| <ul style="list-style-type: none"> Read or Write (sustained) | 4 Mbytes/sec (min) |
| <ul style="list-style-type: none"> Read or Write (burst) | 8 Mbytes/sec (max) |

Power Requirements:

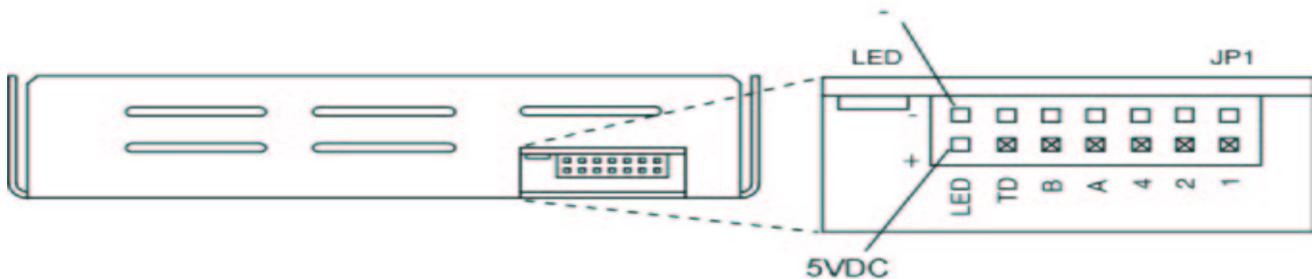
| | |
|--------------------|------------|
| • Start up current | 1.2A (max) |
| • Active current | 0.7A (max) |
| • Standby | 0.2A (max) |

Reliability:

| | |
|----------------------------|--------------------------------------------|
| • Data Reliability | 1 in 10 to the 13th bits read |
| • Service Life | Service life is based on active duty cycle |
| • Preventative Maintenance | None Required |

SCSI Termination:

SCSI termination is supplied by onboard active terminators. Termination is enabled by default and can be disabled by placing a jumper on JP1, Pins TD.



JP1 Jumper Descriptions:

| | |
|-------|------------------------------|
| 1,2,4 | SCSI ID |
| A | Reserved |
| B | Disable Disconnects |
| TD | Termination Disconnect |
| LED | Remote mounted LED connector |

Pins marked with an "X" are connected to signal ground

Note: No jumper setting is required for BA35x applications. They are factory set within the SBB enclosure.

| SCSI ID | JP1 "4" | JP1 "2" | JP1 "1" |
|---------|---------|---------|---------|
| 0 | OFF | OFF | OFF |
| 1 | OFF | OFF | ON |
| 2 | OFF | ON | OFF |
| 3 | OFF | ON | ON |
| 4 | ON | OFF | OFF |
| 5 | ON | OFF | ON |
| 6 | ON | ON | OFF |
| 7 | ON | ON | ON |

Typical Performance Summary of Nemonix NXRZ29-E vs DEC RZ Drives

| Drive Type | RZ26 | RZ28M | RZ29B | <u>NXRZ29E</u> |
|----------------------------------|---------------|---------------|---------------|-----------------------------|
| Small Block Transfer Test | | | | |
| Read Performance I/O Rate | 188 IO/Sec | 152 IO/Sec | 87 IO/Sec | <u>642 IO/Sec</u> |
| Read Performance Data Rate | 96384 B/Sec | 78105 B/Sec | 44959 B/Sec | <u>329113 B/Sec</u> |
| Write Performance I/O Rate | 152 I/O Sec | 137 I/O Sec | 200 IO/Sec | <u>516 IO/Sec</u> |
| Write Performance Data Rate | 77875 B/Sec | 70476 B/Sec | 102656 B/Sec | <u>264473 B/Sec</u> |
| Large Block Transfer Test | | | | |
| Read Performance I/O Rate | 38 IO/Sec | 38 IO/Sec | 37 IO/Sec | <u>44 IO/Sec</u> |
| Read Performance Data Rate | 1960960 B/Sec | 1979733 B/Sec | 1922560 B/Sec | <u>2275840 B/Sec</u> |
| Write Performance I/O Rate | 32 I/O Sec | 41 I/O Sec | 45 IO/Sec | <u>52 IO/Sec</u> |
| Write Performance Data Rate | 1681919 B/Sec | 2138453 B/Sec | 2332160 B/Sec | <u>2703360 B/Sec</u> |

Tests run on a VAXstation 4000 model 90 using the built in SCSI controller

Test S/W was IOX. Program was created by DEC to measure relative I/O perf on VAX systems
VMS V5.2-H4

Test Date 3/10/2006

Test Parameters

Seek range = 2000
Starting LBN List= 20
Queue Length List= 10
Transfer size = (small block test) 1 Block
Transfer size = (large block test) 100 Blocks
Infinite number of operations in 20 seconds.
All drives freshly initialized
All drives in a BA356

This device may be installed utilizing Nemonix Engineering phone support, self installed, or we will work with your service provider. NEMONIX Engineering offers 9-5 installation and warrantee support during the **3 year warrantee period** via phone. NEMONIX Engineering takes pride in offering superior products, backed by outstanding service and support.

4. NXEZ (Flash) Replacement EZ Disk Drives

NEMONIX Engineering 3.5" flash disk drive provides high capacity non-volatile storage at significantly greater speeds than comparable 3.5" SCSI hard disk drives. Equipped with long life operation that far exceeds the MTBF of hard disk drives and enhanced operating reliability and rugged durability, the **NX-EZXX-FB** excels in mission critical applications where the cost of lost data is high.

The industry-standard Ultra Wide SCSI interface simplifies the integration of flash storage memory into any computing platform and operating environment. The **NX-EZXX-FB** is available with either a 68-pin unitized connector, or the 80-pin Single Connector Attachment (SCA-2) connector for direct backplane attachment. Designed for heavy duty operation, the **NX-EZXX-FB** drives perform under conditions of extended temperature, high shock and vibration, and rapid temperature gradients.

General Description

- The Nemonix Engineering **NX-EZXX-FB** is an Ultra Wide SCSI flash disk drive that uses solid state flash technology.
- The **NX-EZXX-FB** provides extreme durability and reliability in industrial and military applications and environments where traditional mechanical hard disk and tape drives fail.
- The Nemonix Engineering **NX-EZXX-FB** SCSI flash drive offers capacities from 8GB to 128GB in a standard 3.5" – Wide SCSI disk drive form factor.
- Nemonix Engineering also offers 3.5" narrow SCSI flash disk drives.

Features

- Solid state flash technology
- Ultra Wide SCSI high performance 30MB/sec sustained data transfer rate
- Low Voltage Differential (LVD) and Single-Ended (SE) operations supported
- SCSI 68-pin interface for cable connection or Single Connector Attachments (SCA-2) 80-pin interface for direct backplane attachment
- Broad compatibility with operating system drivers
- Full SCSI disk operation
- Built-in support for 512 Byte sector operation
- 5V only operation eliminates the requirement for 12V power supplies
- Available in commercial (0°C to +70°C) and industrial (-40°C to +85°C) operating temperature ranges
- Compliant with ANSI X3.131-1994 (American National Standard for Information Systems, SCSI-2)
- Tested to MIL-STD-810F specifications
- Standard Warranty: 3 years

Characteristics

| Absolute Maximum Ratings | | | |
|---------------------------|-----------|------|--------------|
| Parameter | Symbol | Min | Typ Max Unit |
| 5V supply voltage | Vcc | -0.3 | 6.0 V |
| All input/output voltages | Vin, Vout | -0.5 | VCC + 0.5 V |
| Storage temperature range | Tstg | -40 | 85 °C |

| Recommended Operating Conditions | | | | | |
|-----------------------------------------|---------------|------------|------------|------------|-------------|
| Parameter | Symbol | Min | Typ | Max | Unit |
| 5V supply voltage | Vcc | 4.75 | 5 | 5.25 | V |
| Commercial Ta | | 0 | 25 | 70 | °C |
| Industrial Ta | | -40 | -- | 85 | °C |

Environmental

| | |
|----------------------------|-------------------------------------|
| Humidity | +60°C and 95% RH, noncondensing |
| Altitude | 24, 384m (80,000ft) |
| Operating Shock | 70g, 100-3000Hz, 3X, 3 axes |
| Operating Vibration-random | 11G (15-2000Hz) |
| Helicopter | 2.9g rms, 3-500Hz random, 3 axes |
| Jet | 10g rms, 5-2000Hz random, 3 axes |
| Jet | 16.4g rms, 10-2000Hz random, 3 axes |

Power Requirements

| | |
|------------------|--------------|
| Start-up current | 2.00 (max) A |
| Active current | 2.00 (max) A |
| Standby | 1.00 (max) A |

Physical Characteristics

| Parameter | Operating Conditions |
|------------------|------------------------------------|
| Width | 101.7mm [4.000"] |
| Depth | 145.5mm [5.739"] +/- .25mm [.010"] |
| Height | 25.4mm [1.000"] |
| Weight | 454g [16oz] (Based on capacity) |

Performance

| Item | Performance |
|-------------------------------------|--------------------|
| Start up times (Reset to Selection) | 250 ms or less |
| Start up times (Standby to Active) | 4 ms (max) |
| Read (Sustained) | 31 MBytes/sec |
| Write (Sustained) | 30 MBytes/sec |
| Read (Burst) | 37 MBytes/sec |
| Write (Burst) | 35 MBytes/sec |

Reliability

| | |
|-------------------------------------|---------------------------------------------------------|
| MTBF | |
| MIL-HDBK-217F (Note 2) | 250,000 hours |
| Telcordia | 1,400,000 hours |
| Telcordia | 2,900,000 hours |
| Write Endurance per Sector Typical: | 5,000,000 write/erase cycles |
| Bit Error Rate (BER) | < 1 non-recoverable error in 10 ¹⁴ bits read |
| Read Endurance | Unlimited |
| Data Retention at 25°C | > 10 years |

5. System Refresh Program

For those IT environments that demand true VAX compatibility and reliability, this is the answer you have been looking for!

NEMONIX Engineering, the industry leading provider of VAX performance upgrades for over 20 years, now brings you the hardware reliability you need to keep your VAX systems running and extend your ROI into the future.

For most VAX users, the options to continued reliable VAX hardware operation are limited. You have a choice of service with spare parts as old, or older, than your original system, expensive replacement of the hardware with emulator software, or an expensive platform migration where the replacement hardware is the smallest cost of your investment!

Nemonix Engineering Inc. has a better choice. We now offer *System Refresh*. Unlike most other service options, we do not just dust off the old hardware and send it to you. Instead we **REBUILD** your systems to like new condition. Through careful engineering analysis we have identified the cause for most VAX hardware failures. This allows us to “*System Refresh*” your existing units with new components that meet or exceed original manufacturers specs. The result puts the reliability back into the VAX platform.

System Refresh Highlights

- “*Technology Refreshed*” systems are designed to put the reliability and maintainability back into your VAX systems environment.
- Engineered to extend the service life up to an additional 10 years.
- All major Field Replaceable Units in the system box are warranted under the “*System Refresh*” program. (Disks and tapes excluded)
- All components are original Digital Equipment Corp. VAX hardware.
- All high failure rate system components replaced.
- Service designed for integration into self maintenance activities, return to factory repair, or in support of third party maintenance service.
- Focused on keeping your costs at a fraction of the price required to migrate to other platforms.
- Included is a 1 year return to factory warranty. Extended warranties up to 10 years are available.
- Multi system discounts available.

System Refresh offerings:

VAXstation 4000*
VAX 3100/4100*
VAX 3400 */**
VAX 4000 */**
VAX 6000 */**
VAX 7000 */**

Selected AlphaServers also

*Return of an identical system or components is required otherwise additional charges will apply

** Refresh is done on the customer site by a Nemonix Engineering Inc. maintenance partner.

6. AlphaServer Gigabit Ethernet Hardware Data Sheets

AlphaServer Dual Port Gigabit Ethernet Controller For DS/ES/GS Series AlphaServer Systems

NEMONIX™ Engineering Dual Port Gigabit Ethernet Controller for AlphaServers offers exceptional performance and is designed for easy plug and play installation utilizing an available 64 bit PCI or PCI-X slot. The Gigabit Ethernet Controller offers increased networking capabilities for AlphaServers, and is 10/100 compatible. It does not interfere with the existing 100Mb port. The controller supports OpenVMS Alpha 7.3-2 and above. It may be installed utilizing NEMONIX™ Engineering phone support, self installed, or we will work with your service provider. NEMONIX™ Engineering offers 9-5 installation and warranty support during the 3 year warranty period via phone. Combine this with your existing maintenance contract and you have the highest level of support possible. NEMONIX™ Engineering takes pride in offering superior products, backed by outstanding service and support.

Technical Specifications:

| | |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interface Standard: | AlphaServer 64 bit PCI 33/66/100Mhz PCI-X 32/64-bit, 66/133MHz |
| Bus Architecture: | PCI-X bus-mastering, compatible with existing PCI bus |
| Dimensions: | PCI Short card; 2.5" (63.5 mm) H x 6.6" (167.6 mm) L |
| Weight: | 2.47 oz (70 grams) |
| PCI Card Type: | Universal 64 bit Card |
| PCI Voltage: | +5V (Min 4.75V, Max, 5.25V) |
| PCI Connector: | Universal / 64 bit |
| Holder: | Metal Bracket |
| Power Consumption: | 1.6A at 5V: Typical all ports operate at 1000Mbit/s. 0.7A at 5V: Typical all ports operate at 100Mbit/s. 0.65A at 5V: Typical all ports operate at 10Mbit/s. |
| Operating Humidity: | 0%–90%, non-condensing |
| Operating Temperature: | 0°C – 50°C (32°F - 122°F) |
| Storage: | -20°C–65°C (-4°F–149°F) |
| Certifications: | FCC Part 15, Subpart B class B, CE EN 55022 CE EN 55024 CE EN 60950 |

Ethernet Specifications:

| | |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| IEEE Standard / Network topology: | Gigabit Ethernet, 1000Base-T Fast Ethernet, 100Base-TX Ethernet, 10Base-T |
| Simplex / Full duplex operation | Support both Simplex & Full duplex operation in both operating speeds |
| Auto negotiation | Auto-negotiation between full duplex and simplex operations and between 10Mb/s 100Mb/s speeds and duplex 1000Mb/s. |
| Data Transfer Rate: | 100 and 10 Mbits/sec in simplex mode per port 2000Mbit/s 200 and 20 Mbit/s in full duplex mode per port |
| Cabling: | 10Base-T: Category 3, 4 or 5 UTP; 100Base-TX: Category 5 UTP; 1000Base-T: Category 5 UTP (or better) |

LED/Connector Specifications:

| | |
|---------------------|-------------------------------------------------------------------------------------------------|
| LEDs | (3) LEDs per port Link Activity: Link: Turns on Activity: blinks 100Mbits/s 1000Mbit/s |
| LED location | LEDs are located on the PCB and are visible via holes in the metal bracket holder. |
| Connectors | (2) Shielded RJ-45 |

7. Intel and AMD Gigabit Ethernet Data Sheets

Intel and AMD based Server and PC systems

2/4 Port Gigabit Ethernet Fiber Adapters

NEMONIX™ Engineering Inc. 2/4 port Gigabit Ethernet Fiber Adapters for Intel and AMD based Server and PC platforms offer exceptional performance. They are designed for easy plug-and-play installation utilizing an available PCI or PCI-X slot. The Gigabit Ethernet adapters offer increased networking capabilities for all platforms and with a PCI-X connection and 64 bit interface they significantly reduce system overhead and increase system performance.

Operating Systems Support:

| |
|-------------------------|
| • Windows NT/XP/98/2000 |
| • Windows.net |
| • Linux |
| • Netware |
| • UNIX |
| SCO Open Server |
| UnixWare /OpenUnix 8 |
| • Solaris |

Key Application areas are:

| |
|---------------------------------|
| • Storage Area Network (SAN) |
| • Network Attached Storage |
| • Enterprise network servers |
| • ISP/Web Hosting |
| • Firewalls, Gateways & Routers |
| • Appliance Servers |
| • Network Segmentation |
| • Mixed NIC environments |

Key Features:

| |
|-----------------------------------------------------------------------------------------------|
| • 2 or 4 Independent Fiber Gigabit channels support Gigabit Ethernet (1000Base-SX or LX) |
| • High Performance, reliability, low power consumption. |
| • Ultra Deep, 64KB packet buffer per channel lowers CPU utilization to avoid PCI-X congestion |
| • Dual high speed RISC processor acceleration per channel for advanced packet classification |
| • Jumbo Frame (9KB) |
| • Server class reliability, availability like Link Aggregation, Load Balancing, Failover |
| • PCI Hot Plug |
| • Priority Queuing -802.1p layer 2 priority encoding |
| • PCI Power Management Interface (V1.1) |
| • LC Connectors |
| • 802.x Flow Control |
| • Boot Rom embedded or optional |
| • Hardware acceleration to offload tasks from the host processor |

Technical Specifications:

| | |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interface Standard: | PCI V2.2 32/64 bit 33/66 MHz PCI-X V1.0 32/64-bit, 66/100/133MHz |
| Bus Architecture: | PCI-X bus-mastering, compatible with existing PCI bus |
| Dimensions: | PCI Short card; 2.5" (63.5 mm) H x 6.6" (167.6 mm) L |
| Weight: | 2.82 oz |
| PCI Voltage: | +5V (Min 4.75V, Max, 5.25V) and |
| PCI Connector: | Universal 64 bit Card |
| Holder: | Metal Bracket |
| Power Consumption: | 1.0A at 5V: Typical. |
| Operating Humidity: | 0%–90%, non-condensing |
| Operating Temperature: | 0°C – 50°C (32°F - 122°F) |
| Storage: | -20°C–65°C (-4°F–149°F) |
| Advanced Software Features | Advanced software suite with increased Fault Tolerance, Bidirectional Load Balancing, Port Aggregation, Jumbo Frame Support and Server Management Software. |
| Certifications: | FCC Part 15, Subpart B class B, CE EN 55022 , CE EN 55024 , CE EN 60950 |

Ethernet Specifications:

| | |
|------------------------------------------|---------------------------------------------|
| IEEE Standard / Network Topology: | Fiber Gigabit Ethernet, 1000Base-SX (850nm) |
| Data Transfer Rate: | 2000Mbit/s in full duplex mode per port |
| Cabling: | Multimode Fiber 220 m or 550 m |

LED/Connector Specifications:

| | |
|---------------------|------------------------------------------------------------------------------------|
| LEDs | 2 LED's Link & Activity |
| LED location | LEDs are located on the PCB and are visible via holes in the metal bracket holder. |
| Connectors | 2SFF LC |

Support and Installation:

This device may be installed utilizing Nemonix Engineering phone support, self installed, or we will work with your service provider. NEMONIX Engineering offers 9-5 installation and warrantee support during the **3 year warrantee period** via phone. NEMONIX Engineering takes pride in offering superior products, backed by outstanding service and support.

Intel and AMD based Server and PC systems 2/4/6 Port Gigabit Ethernet Copper Adapters

NEMONIX™ Engineering Inc. 2/4/6 port Gigabit Ethernet adapter for Intel and AMD based Server and PC platforms offer exceptional performance. They are designed for easy plug-and-play installation utilizing an available PCI or PCI-X slot. The Gigabit Ethernet Adapters offers increased networking capabilities for all platforms, and are 10/100 compatible. They do not interfere with the existing Ethernet ports.

Supported Operating Systems:

| |
|-------------------------|
| • Windows NT/XP/98/2000 |
| • Windows.net |
| • Linux |
| • Netware |
| • UNIX |
| SCO Open Server |
| UnixWare /OpenUnix 8 |
| • Solaris |

Key Application Areas:

| |
|---------------------------------|
| • Storage Area Network (SAN) |
| • Network Attached Storage |
| • Enterprise network servers |
| • ISP/Web Hosting |
| • Firewalls, Gateways & Routers |
| • Appliance Servers |
| • Network Segmentation |
| • Mixed NIC environments |

Key Features:

- 2,4,or 6 Independent Copper Gigabit Channels
- High Performance, reliability, low power consumption.
- Ultra Deep, 64KB packet buffer per channel lowers CPU utilization to avoid PCI-X congestion
- Dual high speed RISC processor acceleration per channel for advanced packet classification
- Jumbo Frame (9KB)
- Server class reliability, availability like Link Aggregation, Load Balancing, Failover
- PCI Hot Plug
- Priority Queuing -802.1p layer 2 priority encoding
- PCI Power Management Interface (V1.1)
- LC Connectors
- 802.x Flow Control
- Boot Rom embedded or optional
- Hardware acceleration to offload tasks from the host processor

Technical Specifications:

| | |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interface Standard: | PCI V2.2 32/64 bit 33/66 MHZ PCI-X V1.0 32/64-bit, 66/100/133MHz |
| Bus Architecture: | PCI-X bus-mastering, compatible with existing PCI bus |
| Dimensions: | PCI Short card; 2.5" (63.5 mm) H x 6.6" (167.6 mm) L |
| Weight: | (2P) 2.47oz, (4P) 5.64oz, (6P) 6.3oz |
| PCI Card Type: | Universal 64 bit Card |
| PCI Voltage: | +5V (Min 4.75V, Max, 5.25V) |
| PCI Connector: | 2 port - Universal 64 bit Card, 4 & 6 port – 3.3V/64 bits |
| Holder: | Metal Bracket |
| Power Consumption: | 1.6A at 5V: Typical all ports operate at 1000Mbit/s. 0.7A at 5V: Typical all ports operate at 100Mbit/s. 0.65A at 5V: Typical all ports operate at 10Mbit/s. |
| Operating Humidity: | 0%–90%, non-condensing |
| Operating Temperature: | 0°C – 50°C (32°F - 122°F) |
| Storage: | -20°C–65°C (-4°F–149°F) |
| Certifications: | FCC Part 15, Subpart B class B, CE EN 55022, CE EN 55024, CE EN 60950 |

Ethernet Specifications:

| | |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| IEEE Standard / Network Topology: | Gigabit Ethernet, 1000Base-T Fast Ethernet, 100Base-TX , Ethernet, 10Base-T |
| Simplex / Full duplex operation | Support both Simplex & Full duplex operation in all operating speeds |
| Auto negotiation | Auto-negotiation between full duplex and simplex operations and between 10Mb/s 100Mb/s speeds and duplex 1000Mb/s. |
| Data Transfer Rate: | 100 and 10 Mbits/sec in simplex mode per port 2000Mbit/s 200 and 20 Mbit/s in full duplex mode per port |
| Cabling: | 10Base-T: Category 3, 4 or 5 UTP 100Base-TX: Category 5 UTP 1000Base-T: Category 5 UTP (or better) |

LED/Connector Specifications:

| | |
|---------------------|----------------------------------------------------------------------------|
| LEDs | Link & Activity, 100Mbits/s, 1000Mbit/s |
| LED location | LEDs are located on the PCB and are visible via holes in the metal bracket |
| Connectors | Shielded RJ-45 |

Support and Installation:

This device may be installed utilizing Nemonix Engineering phone support, self installed, or we will work with your service provider. NEMONIX Engineering offers 9-5 installation and warrantee support during the **3 year warrantee period** via phone. NEMONIX Engineering takes pride in offering superior products, backed by outstanding service and support.

8. Hardware Maintenance Services

Our traditional service offerings feature unlimited troubleshooting calls during the selected contract window, to resolve hardware issues on the covered equipment. Once the issue is discovered over the phone, a replacement component is shipped, and we telephone assist in the step by step installation and reconfiguration of the replacement. Your service contract includes all stated replacement parts. On-site technical support is available at an additional, but reduced rate for you as a contract holder.

Emerald Passport Service

- For customers who can tolerate a minor outage, have redundant systems, or have a single system and do not rely on their systems to run their business on weekends and/or after-hours.
- 9X5 M-F Coverage is 8 AM to 5 PM local time at the customer site.
- Saturday and/or Sunday coverage available at uplift.
- Unlimited call hours during the contract window.
- Per Call Continuous Coverage is available outside of the selected contract window for calls logged during the contract window.

Ruby Passport Service

- For customers who need extended coverage because of critical business needs.
- 12X5 Monday-Friday Coverage is 8 AM to 8 PM local time at customer site.
- Unlimited call hours during contract window.
- Per Call Continuous Coverage is available outside of the selected contract window for calls logged during the contract window.
- Saturday and/or Sunday coverage is available at uplift.

Diamond Passport Service

- For customers who can not tolerate outages of any length, and who require continuous effort to resolve outages.
- On site spares are recommended.
- 24X5 Monday-Friday Coverage.
- Saturday and/or Sunday coverage is available at uplift.

Logistics Options

Option 1: Included in the service contract, parts are kept at Nemonix and will be delivered to the customer within 3 Business Days.

Option 2: Included in the service contract, parts are kept at Nemonix and will be delivered to the customer by expedited overnight delivery using the fastest means possible.

Option 3: On-site parts are included in the cost of the contract.

Other Service Offerings

Fly-and-Drive (on-site service)

- Where a customer has requested on-site work, Nemonix will provide on-site service at an hourly rate for non contract customers and at a reduced rate for contract customers.
- Travel and Expenses will be billed at actual cost plus reduced labor charge during travel.
- A minimum of 2 hours is charged while at the customer site.
- Travel is defined as Portal-to-Portal.
- Parts provided at prevailing market rates for non-contract customers.
- Parts for contract customers, covered as per the contract.

Per-Call continuous effort

- Offered and provided where a contract customer has reached the end of the normal call window and needs to continue the effort without interruption.
- Customer must be on contract and authorize continuation of effort.
- Offered at an hourly rate with no minimum number of hours charged.

Per-Call call center support

- This service is offered only when a customer has an outage on a piece of equipment not on contract, or for a new customer not on contract.
- One time only, then customer or equipment needs to be placed on contract.
- Offered at an hourly rate during 8-5 Monday -Friday only with a minimum 2 hour charge.
- Parts provided on a best effort basis at market price.

9. VAX & AlphaServer Lifeline *Maintenance*

Why pay a PREMIUM?

The real reason maintenance service contracts are so expensive lies in the cost to locate and replace parts for your system. The huge price you pay is calculated like an insurance policy, where the worst case cost is covered in the policy. Yet in many cases, the problem that stopped your system can be identified and resolved by your own people and a NEMONIX Engineering expert over the phone. Many times no replacement parts are needed. In cases where they are, we can supply you with only the item that is identified as defective. The service experts at NEMONIX Engineering recognized this and have created a cost effective alternative for self maintainers. We call this program the VAX and Alpha Lifeline

Our new Lifeline packages cover technical support only and include all your VAX and Alpha hardware at a single site for one low price.

Service Highlights

- One low price covers all your VAX and Alpha systems at a single site.
- 2-hour phone response, guaranteed.
- Extended call windows available up to 24x7.
- Additional call package hours available at any time at discounted rates.
- Calls recorded in 1/2 hour increments - not full hours - and valid for 1 year.
- Replacement parts provided at market rates.
- 30 day warranty on all replacement parts.
- Discount on multiple site call packages.

10. Hardware Upgrades at a Glance

| Processor Type | Model | CPU & Cache | CPU Only | Memory * | SCSI ** | Ethernet | Combo ** |
|--------------------|-----------------|-------------|----------|----------|-----------|------------|----------|
| MicroVAX 3100 | 3140 | NX3185XLCU | NA | 1,2,3 | NXSCSI41 | NXETHER41 | NXSE41 |
| | 3180 | NX3185XLCU | NA | 1,2,3 | NXSCSI41 | NXETHER41 | NXSE41 |
| | 3185 | NX3185XLC | NA | 1,2,3 | NXSCSI41 | NXETHER41 | NXSE41 |
| | 3190 | NX3190XLC | NA | 1,2,3 | NXSCSI41 | NXETHER41 | NXSE41 |
| | 3195 | NX3195XLC | NA | 1,2,3 | NXSCSI41 | NXETHER41 | NXSE41 |
| | 3196 | NX3196XLC | NA | 1,2,3 | NXSCSI41 | NXETHER41 | NXSE41 |
| | VAXstation 4000 | 4050 | | NX4050XL | 1,2,3 | NA | NA |
| 4090 | | NX4090XLC | NA | 1,2,3 | NXSCSI49 | NXETHER49 | NXSE41 |
| 4090A | | NX4096AXLC | NA | 1,2,3 | NXSCSI49 | NXETHER49 | NXSE41 |
| 4096 | | NX4096XLC | NA | 1,2,3 | NXSCSI49 | NXETHER49 | NXSE41 |
| VAX 4000 | 4100 | NX4100AXLC | NA | 1,2,3 | NXSCSI41 | NXETHER41 | NXSE41 |
| | 4105 | NX4105AXLC | NA | 1,2,3 | NXSCSI41 | NXETHER41 | NXSE41 |
| | 4106 | NX4106AXLC | NA | 1,2,3 | NXSCSI41 | NXETHER41 | NXSE41 |
| VAX 4000 | 4400 | NX4400XLC | NA | NA | NA | NA | NA |
| | 4500 | NX4500XLC | NA | NA | NA | NA | NA |
| | 4500A | NX4500AXLC | NA | NA | NXSCSI44 | NXETHER44 | NXSE44 |
| | 4505A | NX4505AXLC | NA | NA | NXSCSI44 | NXETHER44 | NXSE44 |
| | 4600A | NX4600AXLC | NA | NA | NXSCSI44 | NXETHER44 | NXSE44 |
| | 4600 | NX4600XLC | NA | NA | NA | NA | NA |
| VAXstation | 3188 | NA | NA | 1,2,3 | NXSCSI109 | NXETHER109 | NXSE109 |
| | 3198 | NA | NA | 1,2,3 | NXSCSI109 | NXETHER109 | NXSE109 |
| | 4108 | NA | NA | 1,2,3 | NXSCSI109 | NXETHER109 | NXSE109 |
| | 4109 | NA | NA | 1,2,3 | NXSCSI109 | NXETHER109 | NXSE109 |
| VAX 4300 to 4400 | 4300 | NX4400XLCU | NA | 1,2,3 | NA | NA | NA |
| VAX 4300 to 4500A | 4300 | NX4500AXLCU | NA | 1,2,3 | NXSCSI44 | NXETHER44 | NXSE44 |
| VAX 4700A to 4705A | 4700A | NX4700AXL | NA | 1,2,3 | NXSCSI44 | NXETHER44 | NXSE44 |
| VAX 6000 | 6210 | NA | NX6210 | NA | NXSCSI60 | NXETHER60 | NXSE60 |
| VAX 7000 | 7610 | NX7610XLC | NX7610XL | NA | NXSCSI60 | NXETHER60 | NXSE60 |
| | 7710 | NX7710XLC | NA | NA | NXSCSI60 | NXETHER60 | NXSE60 |
| | 7810 | NX7810XLC | NA | NA | NXSCSI60 | NXETHER60 | NXSE60 |
| VAX 10000 | 10000 | NX7810XLC | NA | NA | NXSCSI60 | NXETHER60 | NXSE60 |

** Please Specify either LVD or HVD when ordering.

* 1 = NX32-4 (128MB)

* 2 = NX64-4 (256MB)

* 3 = NX64-8 (512MB)

11. VAX Hardware Data Sheets

CPU Upgrades (see data sheets for more information)

MicroVAX 3100 CPU and Cache for Model 85,90,95,96
VAXstation 4000 CPU and Cache for Model 90, 90(A), 96
VAX 4000 CPU & Cache for Model 100,105,106
VAX 4000 Series CPU and Cache Model 4400, 4500(A) 4505(A) 4600(A)
VAX 4300 to 4400 CPU and Cache
VAX 4300 to 4500 CPU and Cache
VAX 4700A to 4705 CPU and Cache
VAX 6000 Series CPU and Cache
VAX 7000 Series CPU and Cache

Memory Upgrades

MicroVAX 3100 Series
VAXstation 4000 Series
VAX 4000 100, 105,106

Ultra Wide SCSI and 100MB Ethernet Adapters

VAX XMI
VAX non XMI Ultra Wide

MicroVAX 3100 CPU & Cache Upgrades

MODEL 85 MODEL 90 MODEL 95 MODEL 96

NEMONIX™ Engineering CPU & Cache Upgrades maximize and safeguard your existing technology investment by providing the fastest upgraded single VAX processor on the market today. The MicroVAX 3100 models 85, 90, 95 and 96 performance upgrades provide your system(s) with performance equivalent to the VAX4705. In a matter of minutes, your MicroVAX reaches a phenomenal **50 VUP** status with 2MB of CPU cache, and your Digital memory ceiling can be shattered with the NEMONIX 512MB (ECC) memory option. Add our I/O expansion package and your system becomes incomparable! All of your existing hardware and software remain intact.

Available Memory Options

- Qty. (4) 32MB = 128MB
- Qty. (4) 64MB = 256MB
- Qty. (4) 32MB + (4) 64MB = 384MB
- Qty. (8) 64MB = 512MB

Features and Benefits

- Up to 200% CPU performance gain
- Memory expansion capability up to 512MB
- I/O expansion from 5MB/s to 10MB/s
- No software or VMS license fees
- DEC diagnostic compatibility
- NEMONIX service support

I/O Expansion Option

- 1 NEMONIX CPU & Cache Upgrade
- 1 Accelerated SCSI Channel

Note: I/O increased to 10MB /s from 5MB /s

Configuration

This performance upgrade consists of the following:

| Quantity | Description |
|----------|---------------------------------------------------|
| 1 | Upgraded mother board |
| 1 | Daughter board containing 2MB of CPU cache |
| 1 | VAXstation 3100 Series Installation / User Manual |

Note: Trade-in of existing CPU board(s) is required.

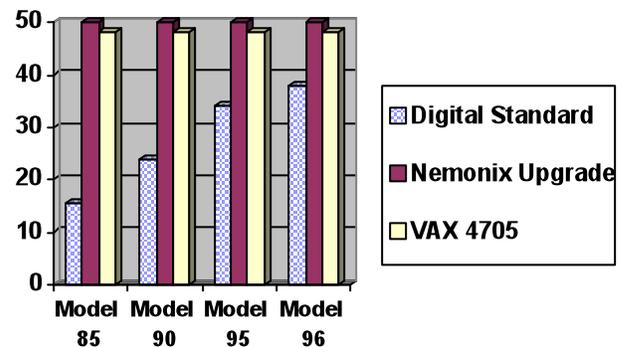
Operating Temperature

- 10° to 40° centigrade

Meantime Between Failure

- 52,416 hours
(Approximately 6 continuous years)

Power Requirements



VAXstation 4000 CPU & Cache Upgrades

MODEL 90 MODEL 90A MODEL 96

NEMONIX™ Engineering provides protection to VAX users who have spent millions of dollars in systems, training and applications development. The NEMONIX™ Engineering VAXstation 4000 Series upgrades are designed to meet the customer's individual computing requirements. System capability expansion can be done in one step. No change in software. No change in your computer configuration. No disruption to your users.

Available Memory Options

- Qty. (4) 32MB = 128MB
- Qty. (4) 64MB = 256MB
- Qty. (4) 32MB + (4) 64MB = 384MB
- Qty. (8) 64MB = 512MB

I/O Expansion Option

Includes (1) accelerated SCSI channel along with your NEMONIX CPU and cache upgrade. This option will increase your I/O transfer rate to 10MB / s from the original 5MB / s.

Configuration

This performance upgrade consists of the following:

| Quantity | Description |
|----------|--------------------------------------------|
| 1 | Upgraded mother board |
| 1 | Daughter board containing 2MB of CPU cache |
| 1 | VAXstation 4000 Installation / User Manual |

Note: Trade-in of existing CPU board(s) is required.

Operating Temperature

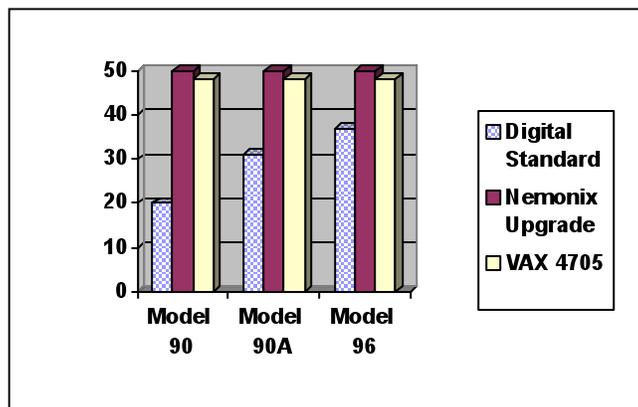
- 10° to 40° centigrade

Meantime Between Failure

- 52,416 hours
(Approximately 6 continuous years)

Power Requirements

- 110V / 2.2 AMP



VAX 4000 CPU & Cache Upgrades

MODEL 100 MODEL 105 MODEL 106

NEMONIX™ Engineering NX4100XLC maximizes and safeguards your existing technology investment by providing the fastest upgraded single VAX processor on the market today. The VAX 4000 models 100, 105 and 106 CPU upgrades are capable of providing your VAX with up to 50 VUPs.

NEMONIX™ Engineering upgrades are self installable and maintainable by you, your service provider or NEMONIX. Along with our 3 year warranty and service options, allows system owners to maintain the highest level of support possible.

Memory Expansion Options

- Qty. (4) 32MB = 128MB
- Qty. (4) 64MB = 256MB
- Qty. (4) 32MB + (4) 64MB = 384MB
- Qty. (8) 64MB = 512MB

Features and Benefits

- Up to 100% CPU performance gain
- No software or VMS license fees
- 100% software and hardware compatibility
- Memory expansion capability up to 512MB
- DEC diagnostic compatibility

Configuration

This performance upgrade consists of the following:

| Quantity | Description |
|----------|--------------------------------------------|
| 1 | Upgraded mother board |
| 1 | Daughter board containing 2MB of CPU cache |
| 1 | VAX 4000 Series Installation / User Manual |

Note: Trade-in of existing CPU board(s) is required.

Operating Temperature

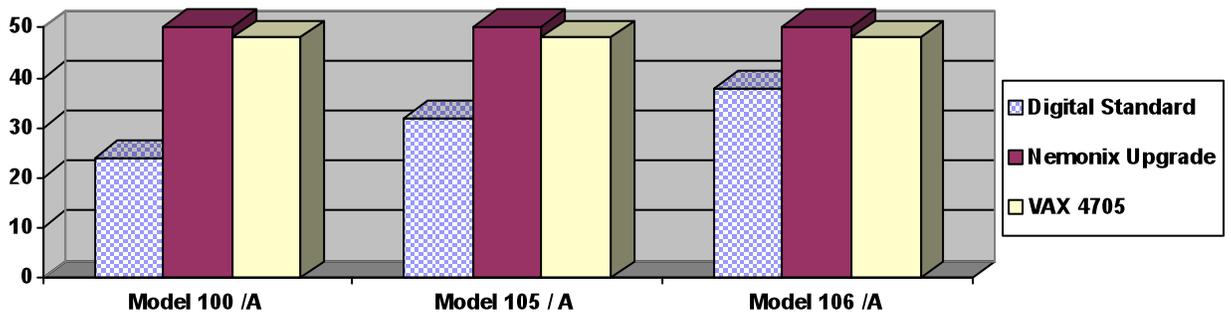
- 10° to 40° centigrade

Meantime Between Failure

- 52,416 hours
(Approximately 6 continuous years)

Power Requirements

- 110V / 2.2 AMP



VAX 4000 Series CPU and Cache Upgrades

4400 4500(A) 4505(A) 4600(A)

NEMONIX™ Engineering has just what you need! There are no associated software or VMS re-licensing fees. No system ID changes. Our upgrades are self installable and maintainable by you, your service provider or NEMONIX. The NEMONIX 4000 Series CPU & Cache Upgrade is a superior cost-effective approach to the complex issue of system expansion.

Performance Statistics and Product Numbers

| VAX Model Number | Standard System | NEMONIX Engineering Upgraded | Performance Increase | NEMONIX Part Number |
|------------------|-----------------|------------------------------|----------------------|---------------------|
| VAX 4400 | 16.0 VUPs | 50.0 VUPs + 2MB CPU Cache | 200 % | NX4400-XLC |
| VAX 4500 (A) | 24.0 VUPs | 50.0 VUPs + 2MB CPU Cache | 100 % | NX4500-XLC |
| VAX 4505 (A) | 32.0 VUPs | 50.0 VUPs + 2MB CPU Cache | 55 % | NX4505-XLC |
| VAX 4600 (A) | 32.0 VUPs | 50.0 VUPs + 2MB CPU Cache | 55 % | NX4600-XLC |

Note: Actual system throughput performance may vary due to system configuration and application.

4000 Series Product Configurations

| The VAX 4400 Upgrade | | The VAX 450X (A) Upgrade | | The VAX 4600 (A) Upgrade | |
|---------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------|------------------------------------------------|----------------------------|------------------------------------------------|
| Consists of the following: | | Consists of the following: | | Consists of the following: | |
| Quantity: | | Quantity: | | Quantity: | |
| 1 | Upgraded mother board | 1 | Upgraded mother board | 1 | Upgraded mother board |
| 1 | Daughter board containing 2MB CPU cache | 1 | Daughter board containing 2MB CPU cache | 1 | Daughter board containing 2MB CPU cache |
| 1 | Media tape | 1 | Media tape | 1 | Media tape |
| 1 | NEMONIX Engineering Installation / User Manual | 1 | NEMONIX Engineering Installation / User Manual | 1 | NEMONIX Engineering Installation / User Manual |
| Meantime Between Failure | | | | | |
| <ul style="list-style-type: none"> 52,416 hours (approximately 6 continuous years) | | | | | |
| Operating Temperature | | | | | |
| <ul style="list-style-type: none"> 0° to 70° centigrade | | | | | |

Note: Trade-in of existing CPU board is required.

VAX 4300 to 4400 CPU & Cache Upgrade

Technical Specifications

Configuration

This performance upgrade consists of the following:

| Quantity | Description |
|----------|-----------------------------------------------|
| 1 | Upgraded mother board |
| 1 | Daughter board containing 2MB of CPU cache |
| 1 | Media tape |
| 1 | NEMONIX Engineering Installation / User Guide |

Note: Trade-in of existing CPU board(s) is required.

Operating Temperature

- 0° to 70° centigrade

Meantime Between Failure

- 52,416 hours
(Approximately 6 continuous years)

Diagnostics

- All DEC diagnostics are compatible

Important Information

The VAX 4300 memory is not compatible with the VAX 4400. A memory swap will have to be done. Nemonix can provide the memory when requested by the client.

HP (Digital) classified the VAX 4300 and the VAX 4400 systems in the same category. Both are “Departmental” under the Traditional License Code Class Chart. Therefore, HP does not charge uplift fees. It is necessary to check with your third party software vendors to make sure they classify the two systems in the same class as well.

The ECO levels of your existing VAX 4300 will also need to be checked.

Performance Statistics

| VAX Model Number | Standard System | Nemonix Upgraded | Performance Increase | Nemonix Part Number |
|------------------|-----------------|---------------------------|----------------------|---------------------|
| VAX 4300 | 8.0 VUPs | 50.0 VUPs + 2MB CPU Cache | 500% | NX4400-XLCU |

VAX 4300 to 4500 CPU & Cache Upgrade

Technical Specifications

Configuration

This performance upgrade consists of the following:

| Quantity | Description |
|----------|-----------------------------------------------|
| 1 | Upgraded mother board |
| 1 | Daughter board containing 2MB of CPU cache |
| 1 | Media tape |
| 1 | NEMONIX Engineering Installation / User Guide |

Note: Trade-in of existing CPU board(s) is required.

Operating Temperature

- 0° to 70° centigrade

Meantime Between Failure

- 52,416 hours
(Approximately 6 continuous years)

Diagnostics

- All DEC diagnostics are compatible

Important Information

The VAX 4500 memory is not compatible with the VAX 4400. A memory swap will have to be done. Nemonix can provide the memory when requested by the client.

Digital classified the VAX 4300 and the VAX 4500 systems in the same category. Both are "Departmental" under the Traditional License Code Class Chart. Therefore, HP (Digital) does not charge uplift fees. It is necessary to check with your third party software vendors to make sure they classify the two systems in the same class as well.

The ECO levels of your existing VAX 4300 will also need to be checked.

Performance Statistics

| VAX Model Number | Standard System | Nemonix Upgraded | Performance Increase | Nemonix Part Number |
|------------------|-----------------|---------------------------|----------------------|---------------------|
| VAX 4300 | 8.0 VUPs | 50.0 VUPs + 2MB CPU Cache | 500% | NX4500-XLCU |

VAX 4700A to 4705 CPU & Cache Upgrade

Technical Specifications

Configuration

This performance upgrade consists of the following:

| Quantity | Description |
|----------|-----------------------------------------------|
| 1 | Upgraded mother board |
| 1 | NEMONIX Engineering Installation / User Guide |

Note: Trade-in of existing CPU board(s) is required.

Operating Temperature

- 0° to 70° centigrade

Meantime Between Failure

- 52,416 hours
(Approximately 6 continuous years)

Diagnostics

- All DEC diagnostics are compatible

Features and Benefits

- 1 3 year warranty
- 2 Maintainable and installable by all
- 3 service providers
- 4 Simple board-level upgrade
- 5 Full hardware and software compatibility
- 6 Maximizes the return on your investment

NEMONIX™ Engineering's reputation for service and support is demonstrated by the world-class organizations we include on our customer list. Nemonix products are used in a variety of mission critical applications:

*database,
automated factory control,
medical,
government,
|...to name a few.*

Ordering Information

| NEMONIX Part Number | Description |
|---------------------|-----------------------------------------------|
| NX4700A-XL | VAX 4700A upgraded to the power of a VAX 4705 |

VAX 6000 Series CPU Upgrades

Technical Specifications

NEMONIX™ Engineering has just what you need when your VAX 6000 Series System has reached maximum utilization. There are no associated software or VMS re-licensing fees. No system ID changes. Our upgrades are self installable and are maintainable by your service provider or NEMONIX™ Engineering. The 6000 Series CPU & Cache upgrade is a superior cost-effective approach to the complex issue of system expansion.

Performance Statistics and Product Numbers

| VAX Model Number | CPU Boards | Standard System | NEMONIX Engineering Upgraded | Performance Increase* | NEMONIX Engineering Part Number |
|-----------------------------------------------------------|------------|-----------------|------------------------------|-----------------------|---------------------------------|
| VAX 6410 | 1 | 7.0 VUPs | 9.3 VUPs | 33% | NX6410-XL |
| VAX 6420 | 2 | 13.0 VUPs | 17.3 VUPs | 33% | NX6420-XL |
| VAX 6430 | 3 | 19.0 VUPs | 25.3 VUPs | 33% | NX6430-XL |
| VAX 6440 | 4 | 25.0 VUPs | 33.3 VUPs | 33% | NX6440-XL |
| 6000 Series Custom Upgrades Available Upon Request | | | | | |
| VAX 6210 | 1 | 2.8 VUPs | 3.8 VUPs | 36% | NX6210-XL |
| VAX 6220 | 2 | 5.5 VUPs | 7.5 VUPs | 36% | NX6220-XL |
| VAX 6230 | 3 | 8.3 VUPs | 11.3 VUPs | 36% | NX6230-XL |
| VAX 6240 | 4 | 11.0 VUPs | 15.0 VUPs | 36% | NX6240-XL |
| VAX 6310 | 1 | 3.8 VUPs | 5.0 VUPs | 33% | NX6310-XL |
| VAX 6320 | 2 | 7.5 VUPs | 9.9 VUPs | 33% | NX6320-XL |
| VAX 6330 | 3 | 11.3 VUPs | 15.0 VUPs | 33% | NX6330-XL |
| VAX 6340 | 4 | 15.0 VUPs | 19.9 VUPs | 33% | NX6340-XL |

***Note:** Actual system throughput performance may vary due to system configuration and application.

Configuration

| Quantity | Description |
|--------------------------------------------------------------------------------------|--------------------------------|
| 1,2,3 or 4 | Upgraded mother board(s) |
| 1 | 6000 Series Installation Guide |
| Note: Trade-in of existing CPU board(s) is required. | |
| Operating Temperature | |
| <ul style="list-style-type: none"> 0° to 70° centigrade | |
| Meantime Between Failure | |
| <ul style="list-style-type: none"> 52,416 hours | |
| Diagnostics | |
| <ul style="list-style-type: none"> All DEC diagnostics are compatible | |

Features and Benefits

1. 3 year warranty
2. Maintainable and installable by all service providers
3. Simple board-level upgrade
4. Full hardware and software compatibility
5. Maximizes the return on your investment

VAX 7000 Series CPU Upgrades

Technical Specifications

NEMONIX™ Engineering has just what you need when your VAX 7000 Series System has reached maximum utilization. There are no associated software or OpenVMS VAX re-licensing fees. No system ID changes. No changes to OpenVMS. Our upgrades are self installable and are maintainable by your service provider or NEMONIX™ Engineering. 7000 Series CPU & Cache Upgrade is a superior, efficient, cost-effective and risk free approach to the complex issue of system expansion.

Performance Statistics and Product Numbers

| VAX Model Number | CPU Boards | Standard System | NEMONIX™ Engineering Upgraded XL/XLC | Performance Increase* | NEMONIX™ Engineering Part Number |
|------------------|------------|-----------------|--------------------------------------|-----------------------|----------------------------------|
| VAX 7610 | 1 | 35 VUPs | 66/80VUPs | 89%/129%** | NX7610-XL/XLC |
| VAX 7620 | 2 | 65 VUPs | 123/149VUPs | 89%/129%** | NX7620-XL/XLC |
| VAX 7630 | 3 | 95 VUPs | 179/216VUPs | 88%/127%** | NX7630-XL/XLC |
| VAX 7640 | 4 | 125 VUPs | 236/285VUPs | 89%/128%** | NX7640-XL/XLC |
| VAX 7710 | 1 | 50 VUPs | 80VUPs | 60% | NX7710-XLC |
| VAX 7720 | 2 | 93 VUPs | 149VUPs | 60% | NX7720-XLC |
| VAX 7730 | 3 | 135VUPs | 216VUPs | 60% | NX7730-XLC |
| VAX 7740 | 4 | 178 VUPs | 285VUPs | 60% | NX7740-XLC |
| VAX 7810 | 1 | 60 VUPs | 80VUPs | 33% | NX7810-XLC |
| VAX 7820 | 2 | 111 VUPs | 149VUPs | 34% | NX7820-XLC |
| VAX 7830 | 3 | 162 VUPs | 216VUPs | 33% | NX7830-XLC |
| VAX 7840 | 4 | 213 VUPs | 285VUPs | 34% | NX7840-XLC |
| VAX 7850 | 5 | 255 VUPs | 339 VUPs | 33% | NX7850-XLC |
| VAX 7860 | 6 | 306 VUPs | 407 VUPs | 33% | NX7860-XLC |

* Actual system throughput performance may vary due to system configuration, tuning and applications.

** Cache Memory upgraded from 4 MB to 16 MB on all but XL for 76XX series.
CPU replaced by an EV4/5 fabricated CPU that runs at 177 MHZ

| Configuration | |
|--------------------------------------------------------------------------|--------------------------------|
| Quantity | Description |
| 1 to 6 | Upgraded mother board(s) |
| 1 | 7000 Series Installation Guide |
| Note: Trade-in of existing CPU board(s) is required. | |
| Operating Temperature | |
| <ul style="list-style-type: none"> • 0° to 70° centigrade | |
| Meantime Between Failure | |
| <ul style="list-style-type: none"> • 52,416 hours | |
| Diagnostics | |
| All original DEC diagnostics are compatible | |

| Features and Benefits |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> 1. Original design of stock board by Digital Equipment Corp. 2. 3 year warranty 3. Maintainable and installable by all service providers 4. Simple board-level upgrade 5. Full hardware and software compatibility 6. Maximizes the return on your investment |

Expansion Memory

Technical Specifications

NEMONIX™ Engineering Expansion Memory Options
 Maximize system performance and reliability through 16 Mb DRAM technologies. Based on 32MB and 64MB high-density modules, system memory capability is expanded from 128 MB to 512 MB. (Memory can be combined; however, it must be added in quads.)

Capacity

- 128 MB Memory Option
- 256 MB Memory Option
- 384 MB Memory Option
- 512 MB Memory Option

Mechanical

- 32 MB Modules: single-sided surface mount
- 64 MB Modules: double-sided surface mount

Features and Benefits

- 16 Mb DRAM technology
- Error Correction Code (ECC)
- Simple board-level upgrade
- Flexible memory configuration
- Access time of 70 ns
- Exceptional expansion path – up to 512 MB

Memory Options Chart

| Digital Systems | Memory Slots | Digital Maximum Memory | NEMONIX Engineering Maximum Memory | NEMONIX Engineering Memory Options | Order Numbers |
|-------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------|------------------------------------|----------------------------------------|------------------|
| MicroVAX 3100 Models: 85,90, 95, 96 VAXstation 4000 models: 90, 90A, 95, 96 VAX4000 Models: 100, 105, 106 | 8 SIMM Slots | 128 MB | 512 MB | 128 MB (4 x 32MB modules) | NX32-4 |
| | | | | 256 MB (4 x 64MB modules) | NX64-4 |
| | | | | 384 MB (4 x 32MB and 4 x 64MB modules) | NX32-4 NX64-4 |
| | | | | 512 MB (8 x 64 MB modules) | NX64-8 |

VAX XMI Ultra-Wide SCSI Adapter/100 MB Ethernet Controller VAX 6000, 7000 and 10000 Series Systems

NEMONIX™ Engineering XMI adapters for the VAX 6000, 7000 and 10000 series offer exceptional performance and are designed for easy plug and play installation utilizing an available XMI slot. The Ultra-Wide SCSI Adapter provides peak I/O performance. The 100Mb Ethernet Controller offers increased networking capabilities and is 10/100 compatible. The XMI Ultra Ultra-Wide SCSI Adapter and 100Mb Ethernet Controller may be purchased separately or conveniently packaged as a combo card. The adapters may be self-installed and maintained by you, your service provider or Nemonix. Nemonix offers 24X7 technical assistance via phone. Combine this with your existing maintenance contract and you have the highest level of support possible. Nemonix takes pride in offering superior products, backed by outstanding service and support.

ULTRA-WIDE DIFFERENTIAL SCSI ADAPTER

- Fastest VAX SCSI Adapter available – designed for demanding I/O throughput
- Provides performance of > 25 MB/second and more than 5000 I/O's per throughput
- Supports SCSI-2 and SCSI-3 devices LVD, HVD, SE
- Uses intelligent SCSI processor to free CPU from I/O operation
- Features on-board script processor and on-board DMA
- Does not interfere with existing SCSI or DSSI Controllers
- Supports VMS versions 5.5-2H4, 6.1, 6.2, 7.1, 7.2,7.3
- Supports multiple adapters

100Mb ETHERNET CONTROLLER

- Provides cost-effective 100Mb/s Ethernet cluster capability
- Features parallel processing that transmits & receives packets concurrently
- Provides the following on-board buffer RAM: Receive: 4k (FIFO) Transmit: 2k
- Does not interfere with existing 10Mb Ethernet ports
- Supports VMS Versions 5.5-2H4, 6.1, 6.2, 7.1, 7.2, 7.3
- Uses 10/100 twisted pair media interface
- Supports multiple adapters
- Provides performance of > 5.5 MB/second

PART NUMBERS for VAX 6000, 7000, 10000

| | |
|-----------|-----------------------|
| NXSCSI60 | (SCSI only) |
| NXETHER60 | (ETHERNET only) |
| NXSE60 | (SCSI/ETHERNET COMBO) |

VAX Ultra-Wide SCSI Adapter/100 MB Ethernet Controller VAX 4XXX, MicroVAX™ VAXstation™ Series Systems

NEMONIX™ Engineering SCSI/Ethernet adapters for the VAX series offer exceptional performance and are designed for easy plug and play installation utilizing an available Turbo channel, or the CDAL expansion card position. The Ultra-Wide SCSI Adapter provides peak I/O performance. The 100Mb Ethernet Controller offers increased networking capabilities and is 10/100 compatible. The Ultra Ultra-Wide SCSI Adapter and 100Mb Ethernet Controller may be purchased separately or conveniently packaged as a combo-card. The adapters may be self installed. NEMONIX Engineering offers 24/7 technical assistance via phone. Combine this with your existing maintenance contract and you have the highest level of support possible. NEMONIX Engineering takes pride in offering superior products, backed by outstanding service and support.

ULTRA-WIDE DIFFERENTIAL SCSI ADAPTER

- Fastest VAX SCSI Adapter available – designed for demanding I/O throughput
- Provides performance of > 10MB/second and more than 5000 I/O's per throughput
- Supports SCSI-2 and SCSI-3 devices LVD, HVD, SE
- Uses intelligent SCSI processor to free CPU from I/O operation
- Features on-board script processor and on-board DMA
- Does not interfere with existing SCSI or DSSI Controllers
- Supports VMS versions 5.5-2H4, 6.1, 6.2, 7.1, 7.2, 7.3

100Mb ETHERNET CONTROLLER

- Provides cost-effective 100Mb/s FDX or HDX Ethernet cluster capability
- Features parallel processing that transmits & receives packets concurrently
- Provides the following on-board buffer RAM: Receive: 4k (FIFO) Transmit: 2k
- Does not interfere with existing 10Mb/s Ethernet ports
- Supports VMS Versions 5.5-2H4, 6.1, 6.2, 7.1, 7.2, 7.3
- Uses 10/100 twisted pair media interface
- Provides performance of > 4.0 MB/second

PART NUMBERS

VAX 3185, 90, 95, 96, 4100, 05, 06

NXSCSI41 (SCSI)
 NXETHER41 (ETHERNET)
 NXSE41 (SCSI/ETHERNET COMBO)

VAX 4500A, 05A, 4600A, 4700, 4705, 05A

NXSCSI44 (SCSI)
 NXETHER44 (ETHERNET)
 NXSE44 (SCSI/ETHERNET COMBO)

VAX 4090, 4090A, 4096

NXSCSI49 (SCSI)
 NXETHER49 (ETHERNET)
 NXSE49 (SCSI/ETHERNET COMBO)

VAX 3188, 3198, 4108, 4109

NXSCSI109 (SCSI)
 NXETHER109 (ETHERNET)
 NXSE109 (SCSI/ETHERNET COMBO)

12. Depot Level Repair Services

NEMONIX™ Engineering offers depot level repairs on equipment manufactured by DIGITAL EQUIPMENT CORPORATION™, and COMPAQ COMPUTER CORPORATION™, including PDP-11's, VAX, MicroVAX's, ALPHA'S, PC's, terminal servers, printers, terminals, disk drives, other peripherals, CPU, memory, and standard I/O modules. Please contact us for information on any other types of repairs, including ECO's and firmware changes.

Our warranty on all repairs covers workmanship and components replaced for a period of 90 days (excluding electro-mechanical devices, which are warranted for 60 days). Normal turn around time is 3 working days plus shipping time. Specific turnaround time for repairs will be outlined at time of quote. We will work with you to provide the least amount of disruption to your system. 24-hour turn around service can be arranged.

13. Hard to Find Parts Locator Services

As VAX, early Alpha and PDP11 parts become scarcer, NEMONIX™ Engineering with its extensive network of logistics sources, can find those hard-to-locate parts that you need to maintain your systems. If it exists, we can find it. If not, we can recreate it.

14. Custom Engineering Services

For many customers the continued availability of VAX options is a necessity. Original parts have increasingly become an issue for many service providers and customers. In cases where options can't be found, or where they have become so expensive that they are no longer an alternative, give NEMONIX™ Engineering a call. NEMONIX™ Engineering has the in house capability to recreate options and give you what you need at an acceptable price. We also can refurbish existing systems and provide you with turn key solutions.

15. How to Contact NEMONIX™ Engineering

NEMONIX™ Engineering, Inc.

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Northborough, MA 01532

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