Field Engineer Handbook - Volume I

This *Field Engineer Handbook* edition, dated 9/18/00, replaces the Volume I and Volume II contents and tabs.

Volume I CPU is now two tabs; Workstation CPU and Server CPU.

Volume II Sun-4u Systems is now two tabs; Sun-4u Workstation and Sun-4u Server.

Systems and Peripherals added to the twenty-first edition:

- Netra ct 400
- Netra ct 800
- Netra S220
- StorEdge L9
- StorEdge L20, L40, and L60
- StorEdge L180
- StorEdge T3
- Sun Blade 100
- Sun Blade 1000
- Sun Ray 100
- Sun Ray 150

For your filing convenience, a title page with a bar strip on the right edge separates each section, so that you can easily place a new section after the appropriate tab.

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Email your comments and suggestions to the authors at fehb@scarlett.eng.sun.com.

Sun Microsystems, Inc.
901 San Antonio Road, Mail Stop MTV16-127
Palo Alto, California 94303-4900 U.S.A.
The JavaStation JJ and JavaStation JK systems are serviced as whole unit replacements. The CPU boards for these systems are not illustrated in this edition.

The SPARCcluster and MediaCenter chapters are not in this edition. These products were a combination of a workstation or server, a peripheral, and software. The workstations, servers, and peripherals used to build these products can still be found in their respective chapters.

The Netra xt 600 was announced in August 1999 and discontinued in January 2000. The Netra xt 600 is not in this edition.

You may wish to save this product information from the twentieth edition of the Field Engineer Handbook for reference.
Preface

The Field Engineer Handbook, Volumes I and II, illustrates and describes Sun™ Workstations, Servers, and Options. This hardware manual set is available to Sun service providers and customers.

This handbook complements other Sun technical publications and education courses. We assume that Sun service providers and customers who service and repair Sun products have access to these resources.

The Field Engineer Handbook does not include installation, removal, replacement, and troubleshooting procedures documented in other Sun publications.

The complexity of products requiring extensive training is beyond the scope of this hardware manual set. These products are not covered in detail. Refer to the manuals.

The Field Engineer Handbook is not an official configuration guide or sales guide. Configurations and options supported and sold by Sun Microsystems are documented in the End User and Reseller Price Lists. Installation Manuals, User’s Guides, Product Notes, and the Hardware Platform Guide are other sources of supported configuration information.

Send email to fehb-errata@persius.eng.sun.com to receive the errata for the Field Engineer Handbook.

Email your comments and suggestions to the authors at fehb@scarlett.eng.sun.com.
Handbook Organization

The Field Engineer Handbook is organized into two volumes.

Volume I includes the Configuration section.

- **Configurations** contains board and peripheral part numbers, option numbers, and illustrations; jumper and switch settings; video resolutions; memory module compatibility; and notes and references.

Volume II includes the following sections:

- **Parts Breakdown** contains workstation, server, and option illustrations; part number listings; and monitor specifications.

- **Troubleshooting** contains system LED error codes; SCSI connector pin assignments, SCSI sense keys and codes; tape drive manual ejection procedures; and communications device pin assignments.

- **Power** contains fuse and power cord charts; system wiring diagrams; and illustrations of power plugs, power supplies, power sequencers, and power distribution units.
Systems and Peripherals that the part is supported inside are listed. Systems that the part is supported on as an external option are not listed.

When a System or Peripheral name is changed after product introduction, both names are included. Example: The RSM Array 2000 was introduced in 1997. The name was changed to StorEdge A3000 in 1998.

When a System or Peripheral name is discontinued before a follow-on product is introduced, the previous name is not included. Example: The FC-AL 501-4158 Backplane was introduced in 1999. The name, Enterprise Network Array A5000, was discontinued in 1998 and is not used on the 11-slot FC-AL Backplane page in the Fibre Channel chapter.

Internal and external option numbers are listed in Volume I. Internal disk and removable media option numbers are not included in Volume II. Volume II includes chapters for external disk and removable media option numbers.

Option numbers for products with multiple long option numbers are not listed. Example: ARY012A-254G, ARY012A-509G, ARY512A127G. The product name, StorEdge A5000, is used on the 9.1GB FC-AL Disk Drive page.

Supported systems and supported options are subject to change. Refer to the Price List and the Hardware Platform Guide for the most recent list of supported systems and options.
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<thead>
<tr>
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<th>DESCRIPTION</th>
<th>PART NUMBER</th>
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<td></td>
<td></td>
<td>Volume I 800-4006-19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Volume II 800-4247-17</td>
</tr>
</tbody>
</table>
CONFIGURATIONS
Configurations

Handling Static Sensitive Devices
Electronic components on printed circuit boards can be damaged by static electricity. Always wear a grounding strap and use an antistatic mat when handling boards or components.

Reference Documentation
Standard Configurations and Standard Options supported by Sun Microsystems are documented in the End User Price List, Reseller Price List, Hardware Configuration Guides, Product Brochures, and Hardware Installation Manuals.

Abbreviations
Assy Assembly
Bkt Bracket
FRU Field Replaceable Unit
OBP Open Boot PROM
OS Operating System
w With
w/o Without

Option Abbreviations
SSA SPARCstorage Array
A1000 StorEdge A1000
D1000 StorEdge D1000
A3000 StorEdge A3000 (RSM Array 2000)
A3500 StorEdge A3500
A5000 Enterprise Network Array A5000
A5000 StorEdge A5000
A7000 StorEdge A7000
System Abbreviations

SC  SPARCcenter
SS  SPARCserver, SPARCstation, or SPARCsystem
A11 Ultra 1 Models 140 and 170
A12 Ultra 1 Models 140E, 170E, and 200E
A14 Ultra 2
A16 Ultra 30
A17 Ultra Enterprise 3000 Workstation
A18 Ultra Enterprise 4000 Workstation
A20 Ultra 450 Workstation
A21 Ultra 5
A22 Ultra 10
A23 Ultra 60
A25 Ultra Enterprise 450 Workgroup Server
A26 Enterprise 250
A27 Ultra 80
A28 Sun Blade 1000
A33 Enterprise 420R
A34 Enterprise 220R
A36 Sun Blade 100
E150 Ultra Enterprise 150
Ex000 Ultra Enterprise 3000/4000/5000/6000
Ex500 Enterprise 3500/4500/5500/6500
PCI Local Bus

PCI Mechanical Specification

PCI boards have two basic form factors, standard or long length (312 mm) and short length (119-167 mm). Board edge connectors are keyed for 3.3V signaling, 5V signaling, or universal signaling. Universal boards are designed to fit in 3.3V or 5V connectors.

The 32-Bit, 124-Pin PCI connector has 120 signal pins and 4 key pins. The 32-Bit connector defines the system signaling as 3.3V or 5V. An optional 64-Bit extension is built into the same connector molding extending the number of pins to 184.

A 32-Bit PCI board identifies itself for 32-Bit transfers when it is installed in a 32-Bit or 64-Bit connector. A 32-Bit PCI board can be installed in either a 32-Bit or 64-Bit connector.

A 64-Bit PCI board identifies itself for 32-Bit transfers when it is installed in a 32-Bit connector. A 64-Bit PCI board identifies itself for 64-Bit transfers when it is installed in a 64-Bit connector.

The signals that enable 64-Bit operation are REQ64 and ACK64. They are Side A Pin-60 and Side B Pin-60 of the 32-Bit connector.

64-Bit PCI boards do not fit into Ultra 80, Slot 4.

64-Bit PCI boards do not fit into Slots 9 and 10 on A20/A25 System Boards 501-5028, 501-2996, and 501-5270.

PCI Electrical Specification

The PCI specification provides for 3.3V and 5V signaling. Signaling is determined by the motherboard. Signaling for a 3.3V PCI board is at 3.3V. Signaling for a 5V PCI board is at 5V. Signaling for a universal PCI board is at 3.3V or 5V.

All PCI connectors require four power rails: +3.3V, +5V, +12V, and -12V. The distinction between a 3.3V and 5V PCI boards is in the signaling protocol, not the connector power rails.

The maximum power allowed for a PCI board is 25 Watts from all four power rails combined.
PCI Board and PCI Connector Illustrations

PCI Boards are shown with the solder side up because this is the orientation in PCI systems including the Ultra 5 (Slots 1 and 3), Ultra 10, Ultra 30, Ultra 60, Ultra 80, Enterprise 250, and Ultra Enterprise 450.

32-Bit PCI Boards

PCI Connectors

3.3V 32-Bit Compatible

5V 32-Bit Not Compatible

3.3V 32/64-Bit Compatible

5V 32/64-Bit Not Compatible

3.3V 32-Bit Not Compatible

5V 32-Bit Compatible

3.3V 32/64-Bit Not Compatible

5V 32/64-Bit Compatible

Universal 3.3/5V 32-Bit
PCI Board and PCI Connector Illustrations

64-Bit PCI Boards

PCI Connector

- 3.3V 32-Bit Compatible
- 5V 32-Bit Not Compatible
- 3.3V 32/64-Bit Compatible
- 5V 32/64-Bit Not Compatible

- 3.3V 32-Bit Not Compatible
- 5V 32-Bit Compatible
- 3.3V 32/64-Bit Not Compatible
- 5V 32/64-Bit Compatible

- 3.3V 32-Bit Compatible
- 5V 32-Bit Compatible
- 3.3V 32/64-Bit Compatible
- 5V 32/64-Bit Compatible

Universal 3.3/5V 64-Bit
Dip Switches

Rocker and Slide type DIP Switches are used in Sun products. Turn on a Rocker-type switch by pressing down the end of the switch furthest from the OPEN lettering on the switch. Turn on a Slide-type switch by sliding the switch in the direction of the arrow on the switch. Switches 1 and 2 are shown in the ON position in these illustrations.

Jumpers

Jumpers are used to connect two pins of a Terminal Strip. Two sizes of jumpers are used: 0.100 inch and 2.0 millimeter.
Power-On Self Test

Power-On Self Test (POST) is a diagnostic that performs hardware tests at power-on. When POST runs in Diagnostic mode, output is sent to Serial Port A. Frame buffer output occurs during memory initialization after POST has completed. Answer Books, Service Manuals, and Owner Guides provide system specific details on how to use POST and the available options.

**Normal Mode** runs when:
- The NVRAM parameter `diag-switch?` is set to false.
- The NVRAM parameter `diag-level` is set to off.
- The front panel keyswitch is in the Normal or Secure position.

**Diagnostic Mode** runs when:
- The NVRAM parameter `diag-switch?` is set to true.
- The NVRAM parameter `diag-level` is set to min, med, or max.
- The front panel keyswitch is in the Diagnostic position.

**DEMON and Extended Modes** is initialized after POST when:
- The s key (Stop after POST) is depressed after power-on.
- The m key (Menus) is depressed after power-on.

DEMON is available on the SS1000(E) and SC2000(E). Extended POST is available on the E3x00-E6x00.

**OBDiag** in interactive mode is initialized from OBP when:
- The forth word `obdiag` is entered at the ok prompt.
- The forth words `obdiag obtest` are entered at the ok prompt.
- The NVRAM parameter `diag-level` is set to menus.

OBDiag is available on the Ultra 5, Ultra 10, Ultra 30, Ultra 60, Ultra 80, Enterprise 250, and Ultra Enterprise 450.

**OBDiag** runs automatically on the E250/E450 after POST when:
- The NVRAM parameter `diag-switch?` is set to true.
- The NVRAM parameter `diag-level` is set to min, med, or max.
- The front panel keyswitch is in the Diagnostic position.
Open Boot PROM Commands

Power On Commands

STOP bypasses POST. STOP-A aborts POST.

STOP-D forces a diagnostic power-on. The NVRAM Parameter diag-switch? is set to true.

STOP-F forces input and output to ttya. Input from the Keyboard is disabled except for L1-A.

STOP-N forces a set-defaults of the NVRAM.

Help and Printenv Commands

These examples are from an Enterprise 250 with OBP 3.5.

The help command displays the menu of available help options.

ok help

<table>
<thead>
<tr>
<th>Enter ‘help command-name’ or ‘help category-name’ for more help.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Use ONLY the first word of a category-name or category description)</td>
</tr>
<tr>
<td>Examples: help select    -or-    help line</td>
</tr>
<tr>
<td>Repeated loops</td>
</tr>
<tr>
<td>Defining new commands</td>
</tr>
<tr>
<td>Numeric output</td>
</tr>
<tr>
<td>Radix (number base conversions)</td>
</tr>
<tr>
<td>Memory access</td>
</tr>
<tr>
<td>Line editor</td>
</tr>
<tr>
<td>System and boot configuration parameters</td>
</tr>
<tr>
<td>Select I/O devices</td>
</tr>
<tr>
<td>Floppy eject</td>
</tr>
<tr>
<td>Power on reset</td>
</tr>
<tr>
<td>Diag (diagnostic routines)</td>
</tr>
<tr>
<td>Resume execution</td>
</tr>
<tr>
<td>File download and boot</td>
</tr>
<tr>
<td>nvramrc (making new commands permanent)</td>
</tr>
<tr>
<td>Enable/Disable selected hardware subsystems</td>
</tr>
<tr>
<td>Environmental monitor</td>
</tr>
</tbody>
</table>
Open Boot PROM Commands

The `printenv` command displays NVRAM parameter names, current values, and default values.

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Value</th>
<th>Default Value</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>diag-passes</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>diag-verbosity</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>diag-continue?</td>
<td>false</td>
<td>false</td>
<td></td>
</tr>
<tr>
<td>tpe-link-test?</td>
<td>true</td>
<td>true</td>
<td></td>
</tr>
<tr>
<td>scsi-initiator-id</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>keyboard-click?</td>
<td>false</td>
<td>false</td>
<td></td>
</tr>
<tr>
<td>keymap</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ttyb-mode</td>
<td>9600,8,n,1,-</td>
<td>9600,8,n,1,-</td>
<td></td>
</tr>
<tr>
<td>ttya-mode</td>
<td>9600,8,n,1,-</td>
<td>9600,8,n,1,-</td>
<td></td>
</tr>
<tr>
<td>ttyb-rts-dtr-off</td>
<td>false</td>
<td>false</td>
<td></td>
</tr>
<tr>
<td>ttyb-ignore-cd</td>
<td>true</td>
<td>true</td>
<td></td>
</tr>
<tr>
<td>ttya-rts-dtr-off</td>
<td>false</td>
<td>false</td>
<td></td>
</tr>
<tr>
<td>ttya-ignore-cd</td>
<td>true</td>
<td>true</td>
<td></td>
</tr>
<tr>
<td>reboot-flag</td>
<td>false</td>
<td>false</td>
<td></td>
</tr>
<tr>
<td>reboot-posc</td>
<td>4294582272</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>reboot-posl</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>reboot-cmd</td>
<td>boot net -r</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pci-slot-skip-list</td>
<td>none</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>pci0-probe-list</td>
<td>3,2,4,5</td>
<td>3,2,4,5</td>
<td></td>
</tr>
<tr>
<td>upa-port-skip-list</td>
<td>none</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>diag-level</td>
<td>min</td>
<td>min</td>
<td></td>
</tr>
<tr>
<td>diag-script</td>
<td>normal</td>
<td>normal</td>
<td></td>
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<tr>
<td>diag-targets</td>
<td>none</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>diag-trigger</td>
<td>power-reset</td>
<td>power-reset</td>
<td></td>
</tr>
<tr>
<td>env-monitor</td>
<td>enabled</td>
<td>enabled</td>
<td></td>
</tr>
<tr>
<td>asr-disable-list</td>
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<td>asr-status</td>
<td>18437736870358094097</td>
<td>18437736870358094097</td>
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<tr>
<td>post-status</td>
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<tr>
<td>post-address</td>
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<tr>
<td>post-flag</td>
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<td>obp-flags</td>
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<td>obp-state</td>
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<tr>
<td>obp-status</td>
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</table>
Open Boot PROM Commands

**printenv command - continued**

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Value</th>
<th>Default Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>#power-cycles</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>system-board-serial#</td>
<td>802F01F0</td>
<td></td>
</tr>
<tr>
<td>system-board-date</td>
<td>34cf6a6b</td>
<td></td>
</tr>
<tr>
<td>fcode-debug?</td>
<td>false</td>
<td>false</td>
</tr>
<tr>
<td>output-device</td>
<td>screen</td>
<td>screen</td>
</tr>
<tr>
<td>input-device</td>
<td>keyboard</td>
<td>keyboard</td>
</tr>
<tr>
<td>load-base</td>
<td>16384</td>
<td>16384</td>
</tr>
<tr>
<td>boot-command</td>
<td>boot</td>
<td>boot</td>
</tr>
<tr>
<td>auto-boot?</td>
<td>true</td>
<td>true</td>
</tr>
<tr>
<td>auto-boot-on-error?</td>
<td>false</td>
<td>false</td>
</tr>
<tr>
<td>watchdog-reboot?</td>
<td>false</td>
<td>false</td>
</tr>
<tr>
<td>diag-file</td>
<td></td>
<td></td>
</tr>
<tr>
<td>diag-device</td>
<td>net</td>
<td>net</td>
</tr>
<tr>
<td>boot-file</td>
<td></td>
<td></td>
</tr>
<tr>
<td>boot-device</td>
<td>net</td>
<td>disk net</td>
</tr>
<tr>
<td>local-mac-address?</td>
<td>false</td>
<td>false</td>
</tr>
<tr>
<td>ansi-terminal?</td>
<td>true</td>
<td>true</td>
</tr>
<tr>
<td>screen-#columns</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>screen-#rows</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>silent-mode?</td>
<td>false</td>
<td>false</td>
</tr>
<tr>
<td>use-nvramrc?</td>
<td>false</td>
<td>false</td>
</tr>
<tr>
<td>nvramrc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>security-mode</td>
<td>none</td>
<td></td>
</tr>
<tr>
<td>security-password</td>
<td></td>
<td></td>
</tr>
<tr>
<td>security-#badlogins</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>oem-logo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>oem-logo?</td>
<td>false</td>
<td>false</td>
</tr>
<tr>
<td>oem-banner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>oem-banner?</td>
<td>false</td>
<td>false</td>
</tr>
<tr>
<td>hardware-revision</td>
<td></td>
<td></td>
</tr>
<tr>
<td>last-hardware-update</td>
<td></td>
<td></td>
</tr>
<tr>
<td>upa-noprobe-mask</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>mfg-options</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>diag-switch?</td>
<td>false</td>
<td>false</td>
</tr>
</tbody>
</table>
Open Boot PROM Commands

Use `printenv` and the variable name to show a specific parameter.

```
ok printenv diag-switch?
diag-switch? = true
```

The Ultra 450 and Ultra Enterprise 450 OBP 3.12 changed the `printenv` output to eliminate non-user configurable variables used for the internal workings of OpenBoot. Use `printenv -a` to see all variables.

Use the `setenv` command to change a parameter.

```
ok setenv diag-switch? true
```

Use the `set-defaults` command to restore the default settings.

```
ok set-defaults
```

Other commonly used commands are shown below.

<table>
<thead>
<tr>
<th>OPTION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>banner</td>
<td>Display the selftest banner message</td>
</tr>
<tr>
<td>.version</td>
<td>Display the version and date of boot PROM</td>
</tr>
<tr>
<td>print-nvram-stat</td>
<td>Display the PROM version for all boards installed</td>
</tr>
<tr>
<td>.enet-addr</td>
<td>Display the Ethernet address</td>
</tr>
<tr>
<td>.idprom</td>
<td>Display the ID PROM contents</td>
</tr>
<tr>
<td>input [source]</td>
<td>Select source for input (ttya, ttyb, or keyboard)</td>
</tr>
<tr>
<td>output [source]</td>
<td>Select source for output (ttya, ttyb, or keyboard)</td>
</tr>
<tr>
<td>reset</td>
<td>Resets entire system, similar to SunMon k2</td>
</tr>
<tr>
<td>soft-reset</td>
<td>Soft reset, similar to SunMon k1</td>
</tr>
<tr>
<td>eject-floppy</td>
<td>Ejects floppy diskette from the drive</td>
</tr>
<tr>
<td>security-mode</td>
<td>Select non-secure mode (enter <code>none</code>)</td>
</tr>
<tr>
<td></td>
<td>Select command secure mode (enter <code>command</code>)</td>
</tr>
<tr>
<td></td>
<td>Select full secure mode (enter <code>full</code>)</td>
</tr>
<tr>
<td>security-password</td>
<td>Allows user to enter an 8 byte password in ASCII</td>
</tr>
<tr>
<td>sifting <code>text</code></td>
<td>Display forth commands containing <code>text</code></td>
</tr>
<tr>
<td>words</td>
<td>Display forth words in the dictionary</td>
</tr>
<tr>
<td>probe-scsi</td>
<td>Display addresses and types of SCSI devices</td>
</tr>
<tr>
<td>probe-ide</td>
<td>Display addresses and types of IDE devices</td>
</tr>
<tr>
<td>obdiag</td>
<td>Enter open boot diagnostics</td>
</tr>
<tr>
<td>flash-update-ucm</td>
<td>Update UCM flash prom</td>
</tr>
<tr>
<td>diag-level</td>
<td>Set the diagnostic level to min, max, menus, or off</td>
</tr>
</tbody>
</table>
Open Boot PROM Commands

nvramrc
The `nvramrc` is an NVRAM location reserved for user-defined commands used during system initialization. Include the following entries when creating a custom `nvramrc`:

- `probe-all` Probes for plug-in devices
- `install-console` Selects and activates the console
- `banner` Displays the banner to the console

nedit
The `nedit` command opens the `nvramrc` editor and enables the use of the following commands:

- `Return` Inserts a new line
- `Control-L` Displays all lines in the buffer
- `Control-C` Exits the nvramrc editor.

nvquit
The `nvquit` command discards the contents of the temporary `nvramrc` buffer created when an `nedit` session is exited.

nvrun
The `nvrun` command executes the contents of the temporary `nvramrc` buffer created when an `nedit` session is exited.

nvstore
The `nvstore` command saves the contents of the temporary `nvramrc` buffer created when an `nedit` session is exited.

use-nvramrc?
Set the `use-nvramrc?` parameter to true to use the `nvramrc`. This parameter is normally set to false.
Open Boot PROM Commands

**Twisted Pair Ethernet Link Integrity Test**

Set the `tpe-link-test? nvram` parameter to false to disable the on-board Link Integrity Test.

Use the `set-tpe-test` command to enable or disable the on-board Link Integrity Test on the SPARCserver 1000.

- `ok true set-tpe-test` enables the Link Test on all System Boards
- `ok false set-tpe-test` disables the Link Test on all System Boards
- `ok false apply set-tpe-test net0 [net1, net2, net3]` disables the Link Test on System Board 0 [1, 2, 3]

Use the `nvedit` command to program the `nvramrc` to disable the Link Integrity Test when a reset or power cycle occurs on the SPARCserver 1000.

- `ok nvedit`
- `0: probe-all install-console <return>`
- `1: false set-tpe-test <return>`
- `or`
- `1: false apply set-tpe-test net0 [net1, net2, net3]`
- `2: banner <control-c>`
- `ok nvstore`
- `ok setenv use-nvramrc? true`
- `ok reset`
Open Boot PROM Commands

**SBus Quad Ethernet Controller Link Integrity Test**

Use the `set-tpe-test` command to enable the Link Integrity Test.

ok true " sqec-node1-path" " set-tpe-test" execute-device-method drop
ok true " sqec-node2-path" " set-tpe-test" execute-device-method drop
ok true " sqec-node3-path" " set-tpe-test" execute-device-method drop
ok true " sqec-node4-path" " set-tpe-test" execute-device-method drop

Use the `set-tpe-test` command to disable the Link Integrity Test. The Link Integrity Test is enabled if a system reset or power cycle occurs.

ok false " sqec-node1-path" " set-tpe-test" execute-device-method drop
ok false " sqec-node2-path" " set-tpe-test" execute-device-method drop
ok false " sqec-node3-path" " set-tpe-test" execute-device-method drop
ok false " sqec-node4-path" " set-tpe-test" execute-device-method drop

Use the `nvedit` command to program the `nvrmarc` to disable the Link Integrity Test. The Link Integrity Test is not enabled if a system reset or power cycle occurs.

ok nvedit

0: probe-all install-console <return>
1: false " sqec-node1-path" " set-tpe-test" execute-device-method drop
2: false " sqec-node2-path" " set-tpe-test" execute-device-method drop
3: false " sqec-node3-path" " set-tpe-test" execute-device-method drop
4: false " sqec-node4-path" " set-tpe-test" execute-device-method drop
5: banner <control-c>
ok nvstore
ok setenv use-nvramrc? true
ok reset
Open Boot PROM Commands

**SPARCstation 4 Frame Buffer Resolution**

The following methods are available for changing the SS4 tcx frame buffer resolution.

- ok setenv fcode-debug? true
- ok setenv output-device screen:r1152x900x94
- ok reset

or

- ok setenv fcode-debug? true
- ok setenv output-device /sbus/sunw,tcx:r1024x768x84
- ok reset

or

- ok setenv fcode-debug? true
- ok cd /sbus/sunw,tcx
- ok screen select-dev
- ok r1280x1024x135 set-resolution
Open Boot PROM Commands

**PCI System Commands**

The following user query and control commands (forth words) are available on PCI based systems.

Use the `show-pci-devs` command to show all devices on a specific PCI bus.

```
ok show-pci-devs /pci@1f,2000  show pcia devices
ok show-pci-devs /pci@1f,4000  show pcib devices
```

Use the `show-pci-devs-all` command to show all PCI devices.

```
ok show-pci-devs-all  show all pci devices
```

Use the `show-pci-config` command to show configuration space registers for a given PCI device.

```
ok show-pci-config /pci@1f,4000/network@1,1
```

Use the `show-pci-configs` command to show configuration space registers for all PCI devices on a PCI bus.

```
ok show-pci-configs /pci@1f,4000
```

Use the `show-pci-configs-all` command to show configuration space registers for all PCI devices on all PCI busses.

```
ok show-pci-configs-all /pci@1f,4000
```

Use the `probe-pci` command to probe all devices on a specific PCI bus.

```
ok probe-pci /pci@1f,4000
probing /pci@1f,4000 at Device 3 scsi disk tape
probing /pci@1f,4000 at Device 3 nothing there
```

Use the `probe-pci-slot` command to probe a specific PCI slot on a specific PCI bus.

```
ok 3 probe-pci-slot /pci@1f,4000
probing /pci@1f,4000 at Device 3 scsi disk tape
```
Open Boot PROM Commands

Ultra 30

The `pcia-probe-list` NVRAM variable is used to control the probe order for the following pcia devices (/pci@1f,2000):

- Psycho 0 (not probed)
- PCI Slot 0 1 (J1301 = pci@1f,2000/xxx@1)
- no device 2 (historical entry)

```
ok setenv pcia-probe-list 1,2
```
Probe in order 1,2

The `pcib-probe-list` NVRAM variable is used to control the probe order for the following pcib devices (/pci@1f,4000):

- Psycho 0 (not probed)
- Cheerio 1 (not probed)
- PCI Slot 1 2 (J1401 = pci@1f,4000/xxx@2)
- Onboard SCSI 3 (first device probed by default)
- PCI Slot 2 4 (J1501 = pci@1f,4000/xxx@4)
- PCI Slot 3 5 (J1601 = pci@1f,4000/xxx@5)

```
ok setenv pcib-probe-list 3,2,4,5
```
Probe in order 3,2,4,5

The `printenv pcix-probe-list` command is used to show the probe list for pcia or pcib:

```
ok printenv pcia-probe-list
ok printenv pcib-probe-list
```

The `show-pci-devs` command is used to show all devices on a specific PCI bus:

```
ok show-pci-devs /pci@1f,2000
ok show-pci-devs /pci@1f,4000
```

The `show-pci-devs-all` command is used to show all devices.

```
ok show-pci-devs-all
```
show all pci devices
Open Boot PROM Commands

**Ultra 60, Netra t 1120/1125, and Enterprise 220R**

**Ultra 80, Netra t 1400/1405, and Enterprise 420R**

The Ultra 60 Workstation, Netra t 1120/1125 Telco Server, and Enterprise 220R Workgroup Server use the same System Board.

The Ultra 80 Workstation, Netra t 1400/1405 Telco Server, and Enterprise 420R Workgroup Server use the same System Board.

The **banner-name, enclosure-type, and energystar-enabled?** NVRAM variables set up the system board for use in a Workstation, Telco Server, or Workgroup Server. These variables:

- Control the system name displayed in the power-on banner
- Enable or disable energystar
- Report the enclosure type to software

```
ok setenv banner-name Sun Enterprise 220R
banner-name = Sun Enterprise 220R

ok setenv enclosure-type 540-4284
enclosure-type = 540-4284

ok setenv energystar-enabled? true
energy-star-enabled? = false
```

<table>
<thead>
<tr>
<th>System</th>
<th>banner-name</th>
<th>enclosure-type</th>
<th>energystar-enabled?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultra 60</td>
<td>Sun Ultra 60 UPA/PCI</td>
<td>540-3251</td>
<td>true</td>
</tr>
<tr>
<td>Netra t 1120/1125</td>
<td>Sun Ultra 60 UPA/PCI</td>
<td>Unknown</td>
<td>false</td>
</tr>
<tr>
<td>Enterprise 220R</td>
<td>Sun Enterprise 220R</td>
<td>540-4284</td>
<td>false</td>
</tr>
<tr>
<td>Ultra 80</td>
<td>Sun Ultra 80 UPA/PCI</td>
<td>540-3871</td>
<td>true</td>
</tr>
<tr>
<td>Netra t 1400/1405</td>
<td>Sun Ultra 80 UPA/PCI</td>
<td>Unknown</td>
<td>false</td>
</tr>
<tr>
<td>Enterprise 420R</td>
<td>Sun Enterprise 420R</td>
<td>540-4115</td>
<td>false</td>
</tr>
</tbody>
</table>

The **enclosure-type** variable is for future use. Current software uses the **banner-name**.

The **banner-name, enclosure-type, and energystar-enabled?** variables are not changed by the **set-defaults** command.
Open Boot PROM Commands

Enterprise 250

The **upa-port-skip-list** NVRAM variable is used to skip probing of UPA ports. The following UPA ports are used:

- Processors UPA Ports 0 and 1
- Psycho UPA Port 1f

```bash
ok setenv upa-port-skip-list 1
Skip CPU1
```

The **pci0-probe-list** NVRAM variable is used to control the probe order for PCI devices /pci@1f,4000. Device 2 is card slot 2, device 3 is SCSI, device 4 is card slot 1, and device 5 is card slot 0.

```bash
ok setenv pci0-probe-list 3,2,4
Probe in order 3-2-4
```

The **pci-slot-skip-list** NVRAM variable is used to skip probing of PCI devices plugged into the backpanel slots 0, 1, 2, and 3.

```bash
ok setenv pci-slot-skip-list 0,3
Skip slot 0 and 3
```

The **diag-trigger** NVRAM variable is used to control which resets will automatically enable POST when **diag-switch?** is true.

```bash
ok setenv diag-trigger power-reset
Run diagnostics on power-on resets.

ok setenv diag-trigger error-reset
Run diagnostics on power-on resets, fatal hardware errors, and watchdog resets.

ok setenv diag-trigger soft-reset
Run diagnostics on all resets (except XIR) including UNIX unit 6 or reboot

ok setenv diag-trigger none
Does not run diagnostics on any resets.
```

The **auto-boot-on-error?** NVRAM variable is used to allow the system to attempt to boot if POST fails and **auto-boot?** is true.

```bash
ok setenv auto-boot-on-error? true
Attempt to boot if POST fails and auto-boot? is true
```
Open Boot PROM Commands

Enterprise 250 - Continued

The env-monitor NVRAM variable is used for environmental monitoring at the Open Boot PROM level.

```
ok setenv env-monitor advise     overtime warning
ok setenv env-monitor enabled    overtime warning
ok setenv env-monitor disabled   shut down power
```

The asr-enable and asr-disable commands enable and disable system devices. The .asr command displays the settings.

```
ok.asr
System status:    Enabled
CPU0:             Enabled
CPU1:             Enabled
SC-MP:            Enabled
Psycho@1f:        Enabled
Cheerio:          Enabled
SCSI:             Enabled
Mem Bank0:        Enabled
Mem Bank1:        Enabled
Mem Bank2:        Enabled
Mem Bank3:        Enabled
PROM:             Enabled
NVRAM:            Enabled
TTY:              Enabled
Audio:            Enabled
Soupier:          Enabled
PCI Slots:        Enabled
```

Known 'enable/disable' subsystem components are:

```
cpu*  cpu0  cpu1
bank*  bank0  bank1  bank2  bank3
dimm0 - dimm15
```
Open Boot PROM Commands

**Ultra 450 and Ultra Enterprise 450**

The `mfg-options` NVRAM variable is a decimal value that sets up the system as a Workstation or Server. The `mfg-options`:

- Controls the system name displayed in the power-on banner
- Enables or disables energystar
- Controls the behavior after a watchdog reset
- Enables or disables the blinking front panel LEDs

```
ok setenv mfg-options 0        Workstation default (in decimal)
ok setenv mfg-options 49       Server default (in decimal)
```

<table>
<thead>
<tr>
<th>Hex</th>
<th>Root (/ ) Node Properties</th>
<th>/eeprom Node Properties</th>
<th>SUNW.envctrl Node Properties</th>
</tr>
</thead>
</table>
| xxx0 xxx0  | Ultra 450                | Workstation             | Enabled                     | Disabled
| xxx1 xxx1  | Enterprise 450           | Server                  | Disabled                    | Enabled |
| xxx0 xxxx   |                           |                         |                            |         |
| xxx1 xxxx   |                           |                         |                            |         |
| xx0x xxxx   |                           |                         |                            |         |
| xx1x xxxx   |                           |                         |                            |         |

The method of changing the `mfg-options`, `diag-targets`, and `diag-verbosity` was changed in OBP 3.12. The new method accepts a + or - construct for these variables. **mfg-options**:

- `workstation-class`  
  - `setenv mfg-options + workstation-class`  
- `server-class`  
  - `setenv mfg-options + server-class`  
- `workstation`  
  - `setenv mfg-options + workstation`  
- `energystar`  
  - `setenv mfg-options + energystar`  
- `watch-dog`  
  - `setenv mfg-options + watch-dog`  
- `server`  
  - `setenv mfg-options + server`  

```
ok setenv mfg-options + server
ok setenv mfg-options + watch-dog + energystar
ok setenv mfg-options - energystar
```
Open Boot PROM Commands

Ultra 450 and Ultra Enterprise 450 - Continued

diag-targets:

- none  -+(0x00) no bus or device I/O testing
- iopath  -+(0x01) test bus connectivity (eg SCSI)
- media  -+(0x02) perform I/O to the device
- device  -+(0x04) invoke device self test (BIST)
- loopback  -+(0x10) external loopback (eg tty)
- loopback2  -+(0x20) external loopback2 (eg MII)
- loopbacks  -+(0x30) external loopback + loopback2
- loopback3  -+(0x40) external loopback3 (eg RSC)

diag-verbosity:

- none  -+(0x00) minimum output (errors only)
- silent  -+(0x00) minimum output (errors only)
- verbose  -+(0x01) test progress information
- subtests  -+(0x02) print subtest names
- debug  -+(0x04) print debug messages
- callers  -+(0x08) print back trace of callers on errors
- tests  -+(0x10) print Testing <name>
- all  -+(0x1f) verbose + names + debug + callers

The upa-port-skip-list NVRAM variable is used to skip probing of UPA ports. The following UPA ports are used:

- Processors UPA Ports 0, 1, 2, and 3
- Frame Buffers UPA Ports 1d and 1e
- Psycho UPA Ports 4, 6, and 1f

ok setenv upa-port-skip-list 3,1d Skip CPU3 and FFB1
Open Boot PROM Commands

Ultra 450 and Ultra Enterprise 450 - Continued

The `pci0-probe-list` NVRAM variable is used to control the probe order for on-board PCI devices (/pci@1f,4000). The probe order for PCI devices plugged into the backpanel slots cannot be controlled. Devices omitted from the `pci0-probe-list` are not probed.

Devices in the `pci0-probe-list` are:

- `2 = scsi (rma backplane & external connector)`
- `3 = scsi (4 disk backplane)`
- `4 = Empty slot - Back panel slot 10`

```
ok setenv pci0-probe-list 3,2,4
```

Probe in order 3-2-4

Due to internal PCI changes introduced in OBP 3.12, the Cheerio node is pseudo-probed and device 1 must always be included in the `pci0-probe-list`. Prior to OBP 3.12, an entry for device 1 was not required. The default probe order for OBP 3.12 is 1-3-2-4.

Devices in the OBP 3.12 `pci0-probe-list` are:

- `1 = Cheerio (flash, nvram, superio, serial, audio, and I2C)`
- `2 = SCSI (rma backplane & external connector)`
- `3 = SCSI (4 disk backplane)`
- `4 = PCI Slot 10`

```
ok setenv pci0-probe-list 1,3,2,4
```

Probe in order 1-3-2-4

The `pci-slot-skip-list` NVRAM variable is used to skip probing of PCI devices plugged into the backpanel slots. If slot 10 is in the `pci-slot-skip-list`, it will be skipped even if device 4 is included in the `pci0-probe-list`.

```
ok setenv pci-slot-skip-list 4,6
```

Skip slot 4 and 6
Open Boot PROM Commands

**Ultra 450 and Ultra Enterprise 450 - Continued**

The **memory-interleave** NVRAM variable controls how OBP sets memory interleaving. If interleaving is enabled with mixed memory bank sizes, the smaller memory size is used and POST displays a smaller memory value than is physically installed.

```
ok setenv memory-interleave max-size
```

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>auto (default)</td>
<td>OBP chooses best setting</td>
</tr>
<tr>
<td>max-size</td>
<td>Configure for maximum available memory space</td>
</tr>
<tr>
<td>max-interleave</td>
<td>Configure for maximum memory bandwidth (high interleaving values) at the expense of memory size.</td>
</tr>
<tr>
<td>1</td>
<td>Use 1-way interleaving</td>
</tr>
<tr>
<td>2</td>
<td>Use 2-way interleaving</td>
</tr>
<tr>
<td>4</td>
<td>Use 4-way interleaving</td>
</tr>
</tbody>
</table>

The **env-monitor** NVRAM variable determines how OBP responds to environmental monitoring via the I2C serial bus.

```
ok setenv env-monitor advise
```

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>enabled</td>
<td>Issue a warning and shut down the system in 15 seconds if an unsafe condition is detected.</td>
</tr>
<tr>
<td>advise</td>
<td>Issue a warning if an unsafe condition is detected.</td>
</tr>
<tr>
<td>disabled</td>
<td>Do not monitor for unsafe conditions.</td>
</tr>
</tbody>
</table>

The **.post** command displays the results of the Power On Self Test.

```
ok .post
System status : OK
CPU0 : OK
CPU1 : OK
CPU2 : OK
CPU3 : OK
etc ...
```
Open Boot PROM Commands

**Ultra 450 and Ultra Enterprise 450 - Continued**

The **diag-trigger** NVRAM variable is used to control which resets will automatically enable POST when **diag-switch?** is true.

- **ok setenv diag-trigger power-reset**
  Run diagnostics on power-on resets.

- **ok setenv diag-trigger error-reset**
  Run diagnostics on power-on resets, fatal hardware errors, and watchdog resets.

- **ok setenv diag-trigger soft-reset**
  Run diagnostics on all resets (except XIR) including UNIX init 6 or reboot

- **ok setenv diag-trigger none**
  Does not run diagnostics on any resets.

The **asr-enable** and **asr-disable** commands enable and disable system devices. The **.asr** command displays the settings.

```plaintext
ok .asr
System status : Enabled (Not Selectable)
CPU0 : Enabled (cpu0 or cpu*)
CPU1 : Enabled (cpu1 or cpu*)
CPU2 : Disabled (cpu2 or cpu*)
CPU3 : Enabled (cpu3 or cpu*)
SC-Marvin : Enabled (Not Selectable)
Psycho@1f : Enabled (Not Selectable)
Psycho@4 : Enabled (Not Selectable)
Psycho@6 : Enabled (Not Selectable)
Cheerio : Enabled (Not Selectable)
SCSI : Enabled (Not Selectable)
Mem Bank0 : Enabled (bank0 or bank* or dimm0-3)
Mem Bank1 : Enabled (bank1 or bank* or dimm4-7)
Mem Bank2 : Enabled (bank2 or bank* or dimm8-11)
Mem Bank3 : Enabled (bank3 or bank* or dimm12-15)
PROM : Enabled (Not Selectable)
NVRAM : Enabled (Not Selectable)
TTY : Enabled (Not Selectable)
Audio : Enabled (Not Selectable)
SuperI0 : Enabled (Not Selectable)
PCI Slots : Enabled (Not Selectable)
```
Open Boot PROM Commands

Ultra 450 and Ultra Enterprise 450 - Continued

The `/mc` device node stores memory configuration information for use by the operating system.

```
ok cd /mc@0,0
ok ls
f007f3e8 bank@0,c0000000
f007f230 bank@0,80000000
f007f078 bank@0,40000000
f007e9a0 bank@0,00000000

ok cd /mc@0,0/bank@0,0
ok ls
f007eed8 dimm@0,3
f007ed90 dimm@0,2
f007ec48 dimm@0,1
f007eb00 dimm@0,0

ok .properties
reg 00000000 00000000 00000000 08000000
#size-cells 00000002
fru motherboard
device_type memory-bank
name bank

The lower half of the register is the bank size:
00000000 08000000 = 128mb bank
The upper half of the register is the starting address:
00000000 00000000 = starting address 0

ok cd /mc@0,0/bank@0,0/dimm@0,3
ok .properties
socket-name 1704
reg 00000000 00000003 00000000 02000000
fru memory-module
device_type memory-module
name dimm

The lower half of the register is the dimm size:
00000000 02000000 = 32mb
The upper half of the register is the dimm number in the bank:
00000000 00000003 = dimm 3
```
Open Boot PROM Commands

Ultra 450 and Ultra Enterprise 450 - Continued

The /associations tree node contains entries representing categories of associations, or connections, between system components that are dispersed in the device tree.

```
ok cd /associations/slot2dev
ok .properties
Sub-System          Is Associated With
ebusl audio         /pci@1f,4000/ebus@1/*@14,200000
pci-slot#10         /pci@1f,4000/*@4,*
pci-slot#9           /pci@4,4000/*@2,*
pci-slot#8           /pci@4,4000/*@3,*
pci-slot#7           /pci@4,4000/*@4,*
pci-slot#6           /pci@4,2000/*@1,*
pci-slot#5           /pci@1f,2000/*@1,*
pci-slot#4           /pci@6,2000/*@1,*
pci-slot#3           /pci@6,4000/*@2,*
pci-slot#2           /pci@6,4000/*@3,*
pci-slot#1           /pci@6,4000/*@4,*
graphics#2           /*@1d,0
graphics#1           /*@1e,0
cpu-b2               /*@3,0
cpu-b1               /*@2,0
cpu-a2               /*@1,0
cpu-a1               /*@0,0
```

```
ok cd /associations/slot2led
ok .properties
Sub-System          Is Associated With
slot # 3             /pci@1f,4000/ebus@1/i2c@14,600000/bits@40/wo@3
slot # 2             /pci@1f,4000/ebus@1/i2c@14,600000/bits@40/wo@2
slot # 1             /pci@1f,4000/ebus@1/i2c@14,600000/bits@40/wo@1
slot # 0             /pci@1f,4000/ebus@1/i2c@14,600000/bits@40/wo@0
```

```
ok cd /associations/slot2disk
ok .properties
Sub-System          Is Associated With
slot # 3             /pci@1f,4000/scsi@3/disk@3
slot # 2             /pci@1f,4000/scsi@3/disk@2
slot # 1             /pci@1f,4000/scsi@3/disk@1
slot # 0             /pci@1f,4000/scsi@3/disk@0
```
Open Boot PROM Commands

Ultra 450 and Ultra Enterprise 450 - Continued

The `disk-led-assoc` NVRAM variable defines the PCI slot location for the dual channel Ultra/Wide SCSI controller connected to the lower and upper 8-drive backplanes.

The value 0 defines the location of the onboard SCSI controller that connects to the 4-drive backplane.

The value `x` defines the PCI slot location of the lower SCSI controller that connects to the lower 8-drive backplane.

The value `y` defines the PCI slot location of the upper SCSI controller that connects to the upper 8-drive backplane.

```
ok printenv disk-led-assoc
  disk-led-assoc 0 (default)
ok setenv disk-led-assoc 0 x y
```

E3000 - E6500 Flash and FCode

Use the Flash PROM programming utility to update the Flash PROM on the CPU/Memory board and FCode on the I/O boards.

Program the Flash PROM and FCode over a local area network, from CD-ROM, or from Patch 103346. Patch ≤103346-09 is for the 32-bit Solaris Operating System and Patch ≥103346-10 is for the 32-bit or 64-bit Solaris Operating System.

Use caution when performing a Flash PROM update. A board may be inoperable if it is programmed with an older version of code. For example:

CPU/Memory boards with 336MHz modules require OBP ≥3.2 Version 12. Selftest fails if older code is downloaded.

Flash Update 1.6 does not support Type-4 I/O boards. A Type-4 I/O board will appear to be a Type-1 I/O board after downloading FCode from Flash Update 1.6. The device SUNW,socal will not be recognized, and errors from device SUNW,soc will appear during selftest.
Open Boot PROM Commands

**E3000 - E6500 Flash PROM and FCode - Continued**

Use caution when using `flash-update`. A board may be inoperable if it is programmed with a newer version of code. For example:

OBP 3.2.11 does not support Type-4 I/O Boards. If the OBP `flash-update` command is used when Type-1 and Type-4 I/O Boards are installed, the Type-1 I/O Board will appear to be a Type-4 I/O Board after downloading FCode. The SUNW,soc will be programmed as a SUNW,socal.

A corrupted Flash PROM can be reprogrammed if another board of the same type with uncorrupted code is available.

1. Connect to Serial Port A at 9600 baud, 8-bit, no parity, 1 stop bit.
2. Disconnect the board with corrupted code from the backplane.
3. Install the known good board in any available slot.
4. Turn the keysswitch to On.
5. Wait 15 seconds and press 's' to enter Extended POST.
6. Select 'f' for fcopy from the Extended POST Menus.
7. Insert the board with corrupted code into the backplane.
8. Select '4' for Activate System Board and follow the prompts.
9. Select '1' to copy the code and follow the prompts.
10. Turn the keysswitch to Standby.

Use the `.version` command to display the CPU/Memory Board Flash PROM and I/O Board FCode revision.

```
ok .version
Slot 1 - I/O Type 4 FCODE 1.8.7 1997/12/08 15:39 iPOST 3.4.4 1997/08/26 17:37
Slot 3 - I/O Type 3 FCODE 1.8.7 1997/05/09 11:18 iPOST 3.0.2 1997/05/01 10:56
Slot 9 - CPU/Memory OBP 3.2.16 1998/06/08 16:58 POST 3.9.4 1998/06/09 16:25
```

Use the `.properties` command to display the CPU/Memory Board Flash PROM revision in hexadecimal ASCII.

```
ok cd /fch@12,f8800000/flashprom@0,0
ok .properties
version  4f 42 50 20 20 20 33 2e 32 2e 31 36 20 31 39 39
model    SUNW,525-1431
name     flashprom

4f 42 50 20 20 20 33 2e 32 2e 31 36 20 31 39 39 = OBP 3.2.16 199
```
Open Boot PROM Commands

E3000 - E6500 Flash and FCode - Continued

The model property contains the part number of the Flash PROM. The model property of some boards is not the same as the part number used for the Flash PROM Code.

<table>
<thead>
<tr>
<th>Board</th>
<th>Model Property</th>
<th>Flash PROM</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU/Memory</td>
<td>SUNW,525-1431</td>
<td>525-1387</td>
</tr>
<tr>
<td>I/O Type 1</td>
<td>SUNW,525-1432</td>
<td>525-1445</td>
</tr>
<tr>
<td>I/O Type 2</td>
<td>SUNW,525-1433</td>
<td>525-1446</td>
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<tr>
<td>I/O Type 3</td>
<td>SUNW,525-1680</td>
<td>525-1680</td>
</tr>
<tr>
<td>I/O Type 4</td>
<td>SUNW,525-1757</td>
<td>525-1757</td>
</tr>
<tr>
<td>I/O Type 5</td>
<td>SUNW,525-1760</td>
<td>525-1760</td>
</tr>
</tbody>
</table>

Use the `.properties` command to display the I/O Board FCode revision in hexadecimal ASCII.

```
ok cd /fhc@e,f88000000/flashprom@0,0
ok .properties
version 46 43 4f 44 45 20 31 2e 38 2e 33 20 31 39 39 37
model   SUNW,525-1432
name    flashprom

46 43 4f 44 45 20 31 2e 38 2e 33 20 31 39 39 37 = FCODE 1.8.3 1997
```

Use the `.properties` command to display the I/O Board SOC Controller FCode revision.

```
ok cd /sbus@2,0/SUNW,soc@d,10000
ok .properties
soc-fcode 1.3 95/09/28
model   501-2069
name    SUNW,soc
```

Use the `.properties` command to display the I/O Board SOC+ Controller FCode revision.

```
ok cd /sbus@2,0/SUNW,socal@d,10000
ok .properties
version @(#) FCode 1.11 97/12/07
model   501-3060
name    SUNW,socal
```
References

SBus References

OBP 1.x and 2.x References
3. *Introduction to Open Boot 2.0*, 800-5674-10.
8. *Writing FCode Programs for SBus Cards*, 800-4456-10.

OBP 3.x References

Flash PROM References
4. *E6x00/5x00/4x00/3x00 Flash PROM Programming Guide*, 802-5579-12.

Ultra 450 and Ultra Enterprise 450 OBP References

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Jumper Settings

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<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0201</td>
<td>1-2</td>
<td>Out</td>
<td>Pin-1=Gnd / Pin-2=POK</td>
</tr>
<tr>
<td>J1002</td>
<td>1-2</td>
<td>Out</td>
<td>Test point rxda</td>
</tr>
<tr>
<td>J1002</td>
<td>3-4</td>
<td>Out</td>
<td>Test point txd</td>
</tr>
<tr>
<td>J1002</td>
<td>5-6</td>
<td>Out</td>
<td>Test point rxdb</td>
</tr>
<tr>
<td>J1002</td>
<td>7-8</td>
<td>Out</td>
<td>Test point txdb</td>
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<td>J1104</td>
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<td>Out</td>
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<td>J1104</td>
<td>3-4</td>
<td>Out</td>
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</tr>
<tr>
<td>J1104</td>
<td>5-6</td>
<td>Out</td>
<td>Test point tpe&lt;2&gt;</td>
</tr>
<tr>
<td>J1104</td>
<td>7-8</td>
<td>Out</td>
<td>Test point tpe&lt;3&gt;</td>
</tr>
<tr>
<td>J1201</td>
<td>1-2</td>
<td>Out</td>
<td>1= normal (default)</td>
</tr>
<tr>
<td>J1201</td>
<td>1-2</td>
<td>In</td>
<td>0= -4.5db</td>
</tr>
<tr>
<td>J1202</td>
<td>1-2</td>
<td>Out</td>
<td>1=100 Ohm (default)</td>
</tr>
<tr>
<td>J1202</td>
<td>1-2</td>
<td>In</td>
<td>0=150 Ohm</td>
</tr>
<tr>
<td>J1702</td>
<td>1-2</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J1703</td>
<td>1-2</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J1702</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 +12Vdc</td>
</tr>
<tr>
<td>J1703</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 -12Vdc</td>
</tr>
</tbody>
</table>

Notes

1. The minimum operating system is X Terminal Software Version 2.1.
2. The PLCC Boot PROM is not a FRU and is not field replaceable.
3. The serial ports are not supported.
4. OBP settings for the tcx frame buffer use the Pixel frequency instead of Vertical frequency.
5. Use the OBP setenv command to change the frame buffer resolution:
   ok setenv fcode-debug? true
   ok reset
   ok setenv output-device screen:r1152x900x94
   ok setenv output-device screen:r1024x768x84

### Jumper Settings

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<td>Out</td>
<td>Test point rxda</td>
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<td>J1002</td>
<td>3-4</td>
<td>Out</td>
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<td>Test point rxdb</td>
</tr>
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<td>J1002</td>
<td>7-8</td>
<td>Out</td>
<td>Test point txdb</td>
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<td>J1104</td>
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<td>J1104</td>
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<td>Out</td>
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<tr>
<td>J1201</td>
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<td>Out</td>
<td>1= normal (default)</td>
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<td>J1201</td>
<td>1-2</td>
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<td>0= -4.5db</td>
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<td>J1703</td>
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<td>RS-423 (default)</td>
</tr>
<tr>
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<td>In</td>
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</tr>
<tr>
<td>J1703</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 -12Vdc</td>
</tr>
</tbody>
</table>

* Default Setting

### Notes
1. The minimum OS is Solaris 1.1.2 or Solaris 2.4 Hardware: 11/94.
2. The PLCC Boot PROM is not a FRU and is not field replaceable.
3. Serial Port B supports asynchronous operation only.
4. Sync on green produces a higher than normal green output level when the tcx frame buffer is connected to the 16-inch Sony Mid-Range and 17-inch Nokia Entry-Level Color Monitors. Refer to BugID 1218690.
5. OBP settings for the SS4 tcx frame buffer use the Pixel frequency instead of Vertical frequency.
6. Use the OBP setenv command to change the frame buffer resolution:
   ```
   ok setenv fcode-debug? true
   ok reset
   ok setenv output-device screen:r1152x900x94
   ok setenv output-device screen:r1024x768x84
   ```

SPARCstation 4
SS4-85  Netra 400

501-2549  85MHz 0MB FRU
FAB 270-2549

501-2578  85MHz 16MB

501-2590  85MHz 32MB

501-2928  85MHz 0MB FRU
FAB 270-2928-01

---

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<th>NAME</th>
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<tbody>
<tr>
<td>0</td>
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<tr>
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<td>CDROM</td>
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<td>FAN J1302</td>
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<td>6</td>
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<tr>
<td>8</td>
<td>SBus Slot 1</td>
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<tr>
<td>9</td>
<td>A0-A27 21.25MHz</td>
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<tr>
<td>10</td>
<td>AUDIO</td>
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<td>11</td>
<td>APIC</td>
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<tr>
<td>12</td>
<td>SLAVIO</td>
</tr>
<tr>
<td>13</td>
<td>BT458</td>
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<td>14</td>
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<tr>
<td>15</td>
<td>J0305 SIMM 4 RAS 4 08000000 - 09ffffff</td>
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<tr>
<td>16</td>
<td>J0304 SIMM 3 RAS 3 06000000 - 07ffffff</td>
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<td>17</td>
<td>J0303 SIMM 2 RAS 2 04000000 - 05ffffff</td>
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<tr>
<td>18</td>
<td>J0302 SIMM 1 RAS 1 02000000 - 03ffffff</td>
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<td>19</td>
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<td>21</td>
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<td>J1202</td>
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<td>J1201</td>
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<td>VIDEO DB13W3</td>
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<tr>
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<td>PARALLEL DB25</td>
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<td>HD50 SCSI</td>
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<td>SERIAL A/ B DB25</td>
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<td>8-BIT COLOR SUNW,TCX</td>
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<table>
<thead>
<tr>
<th>VALUE</th>
<th>RESOLUTION</th>
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<tbody>
<tr>
<td>744 x 1273 x 105MHz</td>
<td>*</td>
</tr>
<tr>
<td>1000 x 1022 x 105MHz</td>
<td></td>
</tr>
<tr>
<td>1024 x 768 x 64MHz</td>
<td></td>
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<tr>
<td>1024 x 768 x 74MHz</td>
<td></td>
</tr>
<tr>
<td>1024 x 768 x 81MHz</td>
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</tr>
<tr>
<td>1024 x 768 x 84MHz</td>
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<tr>
<td>1024 x 800 x 81MHz</td>
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<td>1024 x 800 x 94MHz</td>
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<td>1280 x 1024 x 118MHz</td>
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<tr>
<td>1280 x 1024 x 135MHz</td>
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</tbody>
</table>

* Pixel frequency
† VSIMM required

WORKSTATION CPU-6  Field Engineer Handbook
Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0201</td>
<td>1-2</td>
<td>Out</td>
<td>Pin-1=Gnd / Pin-2=POK</td>
</tr>
<tr>
<td>J1002</td>
<td>1-2</td>
<td>Out</td>
<td>Test point rxda</td>
</tr>
<tr>
<td>J1002</td>
<td>3-4</td>
<td>Out</td>
<td>Test point txda</td>
</tr>
<tr>
<td>J1002</td>
<td>5-6</td>
<td>Out</td>
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<tr>
<td>J1002</td>
<td>7-8</td>
<td>Out</td>
<td>Test point txdb</td>
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<tr>
<td>J1104</td>
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<td>Out</td>
<td>Test point tpe&lt;0&gt;</td>
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<td>J1104</td>
<td>3-4</td>
<td>Out</td>
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<tr>
<td>J1104</td>
<td>5-6</td>
<td>Out</td>
<td>Test point tpe&lt;2&gt;</td>
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<td>J1104</td>
<td>7-8</td>
<td>Out</td>
<td>Test point tpe&lt;3&gt;</td>
</tr>
<tr>
<td>J1201</td>
<td>1-2</td>
<td>Out</td>
<td>1= normal (default)</td>
</tr>
<tr>
<td>J1201</td>
<td>1-2</td>
<td>In</td>
<td>0= -4.5db</td>
</tr>
<tr>
<td>J1202</td>
<td>1-2</td>
<td>Out</td>
<td>1=100 Ohm</td>
</tr>
<tr>
<td>J1202</td>
<td>1-2</td>
<td>In</td>
<td>0=150 Ohm</td>
</tr>
<tr>
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<td>1-2</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J1703</td>
<td>1-2</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J1702</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 +12Vdc</td>
</tr>
<tr>
<td>J1703</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 -12Vdc</td>
</tr>
</tbody>
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Notes
1. The minimum OS is Solaris 1.1.2 or Solaris 2.4 Hardware: 11/94.
2. The PLCC Boot PROM is not a FRU and is not field replaceable.
3. Serial Port B supports asynchronous operation only.
4. Sync on green produces a higher than normal green output level when the tcx frame buffer is connected to the 16-inch Sony Mid-Range and 17-inch Nokia Entry-Level Color Monitors. Refer to BugID 1218690.
5. OBP settings for the SS4 tcx frame buffer use the Pixel frequency instead of Vertical frequency.
6. Use the OBP setenv command to change the frame buffer resolution:
   ok setenv fcode-debug? true
   ok reset
   ok setenv output-device screen:r1152x900x94
   ok setenv output-device screen:r1024x768x84

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0201</td>
<td>1-2</td>
<td>Out</td>
<td>Pin-1=Gnd / Pin-2=POK</td>
</tr>
<tr>
<td>J1002</td>
<td>1-2</td>
<td>Out</td>
<td>Test point rxda</td>
</tr>
<tr>
<td>J1002</td>
<td>3-4</td>
<td>Out</td>
<td>Test point txda</td>
</tr>
<tr>
<td>J1002</td>
<td>5-6</td>
<td>Out</td>
<td>Test point rxdb</td>
</tr>
<tr>
<td>J1002</td>
<td>7-8</td>
<td>Out</td>
<td>Test point txdb</td>
</tr>
<tr>
<td>J1104</td>
<td>1-2</td>
<td>Out</td>
<td>Test point tpe&lt;0&gt;</td>
</tr>
<tr>
<td>J1104</td>
<td>3-4</td>
<td>Out</td>
<td>Test point tpe&lt;1&gt;</td>
</tr>
<tr>
<td>J1104</td>
<td>5-6</td>
<td>Out</td>
<td>Test point tpe&lt;2&gt;</td>
</tr>
<tr>
<td>J1104</td>
<td>7-8</td>
<td>Out</td>
<td>Test point tpe&lt;3&gt;</td>
</tr>
<tr>
<td>J1201</td>
<td>1-2</td>
<td>Out</td>
<td>1= normal (default)</td>
</tr>
<tr>
<td>J1201</td>
<td>1-2</td>
<td>In</td>
<td>0= -4.5db</td>
</tr>
<tr>
<td>J1202</td>
<td>1-2</td>
<td>Out</td>
<td>1=100 Ohm (default)</td>
</tr>
<tr>
<td>J1202</td>
<td>1-2</td>
<td>In</td>
<td>0=150 Ohm</td>
</tr>
<tr>
<td>J1702</td>
<td>1-2</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J1703</td>
<td>1-2</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J1702</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 +12Vdc</td>
</tr>
<tr>
<td>J1703</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 -12Vdc</td>
</tr>
</tbody>
</table>

Notes
1. The minimum OS is Solaris 1.1.2 or Solaris 2.4 Hardware: 11/94.
2. The PLCC Boot PROM is not a FRU and is not field replaceable.
3. Serial Port B supports asynchronous operation only.
4. Sync on green produces a higher than normal green output level when the tcx frame buffer is connected to the 16-inch Sony Mid-Range and 17-inch Nokia Entry-Level Color Monitors. Refer to BugID 1218690.
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   ok reset
   ok setenv output-device screen:r1152x900x94
   ok setenv output-device screen:r1024x768x84

SPARCstation 4
SS4-110  Netra i4  Netra i4

501-3109  110MHz 0MB FRU
FAB 270-2928-02
w Standoff 240-2196

501-3111  110MHz 32MB

501-3134  110MHz 0MB FRU
FAB 270-2928-02
w Standoff 240-2308

--- Diagram ---

--- Workstation CPU-10 Field Engineer Handbook ---
JUMPER PINS SETTING DESCRIPTION
J0201 1-2 Out Pin-1=Gnd / Pin-2=POK
J0501 1-2 In* Disable sync on green
J0501 2-3 In Enable sync on green
J1002 1-2 Out Test point rxda
J1002 3-4 Out Test point txda
J1002 5-6 Out Test point rxdb
J1002 7-8 Out Test point txdb
J1104 1-2 Out Test point tpe<0>
J1104 3-4 Out Test point tpe<1>
J1104 5-6 Out Test point tpe<2>
J1104 7-8 Out Test point tpe<3>
J1201 1-2 Out 1= normal (default)
J1201 1-2 In 0=-4.5db
J1201 1-2 Out 1=100 Ohm (default)
J1202 1-2 In 0=150 Ohm
J1702 1-2 In RS-423 (default)
J1703 1-2 In RS-423 (default)
J1702 2-3 In RS-232 +12Vdc
J1703 2-3 In RS-232 -12Vdc

Notes
1. The minimum OS is Solaris 1.1.2 or Solaris 2.4 Hardware: 11/94.
2. The PLCC Boot PROM is not a FRU and is not field replaceable.
3. Serial Port B supports asynchronous operation only.
4. Sync on green produces a higher than normal green output level when
the tcx frame buffer is connected to the 16-inch Sony Mid-Range and
17-inch Nokia Entry-Level Color Monitors. Refer to BugID 1218690.
5. OBP settings for the SS4 tcx frame buffer use the Pixel frequency instead
of Vertical frequency.
6. Use the OBP setenv command to change the frame buffer resolution:
   ok setenv fcode-debug? true
   ok reset
   ok setenv output-device screen:r1152x900x94
   ok setenv output-device screen:r1024x768x84

The chronological revision is 3.2, 3.3, 4.0.2, 2.6, and 2.6.2
Jumper Settings

Jumpers J0103 and J0104 set the microSPARC II memory controller wait states. Wait states are used to maintain the memory timing requirements of 60ns DRAM.

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0103</td>
<td>1-2</td>
<td>In*</td>
<td>spd_sel&lt;0&gt; = 0 70MHz</td>
</tr>
<tr>
<td>J0104</td>
<td>1-2</td>
<td>In*</td>
<td>spd_sel&lt;1&gt; = 0 70MHz</td>
</tr>
<tr>
<td>J0103</td>
<td>1-2</td>
<td>Out</td>
<td>spd_sel&lt;0&gt; = 0 85MHz</td>
</tr>
<tr>
<td>J0104</td>
<td>1-2</td>
<td>In</td>
<td>spd_sel&lt;1&gt; = 1 85MHz</td>
</tr>
<tr>
<td>J0103</td>
<td>1-2</td>
<td>In</td>
<td>spd_sel&lt;0&gt; = 1 100MHz</td>
</tr>
<tr>
<td>J0104</td>
<td>1-2</td>
<td>Out</td>
<td>spd_sel&lt;1&gt; = 0 100MHz</td>
</tr>
<tr>
<td>J0103</td>
<td>1-2</td>
<td>Out</td>
<td>spd_sel&lt;0&gt; = 1 125MHz</td>
</tr>
<tr>
<td>J0104</td>
<td>1-2</td>
<td>Out</td>
<td>spd_sel&lt;1&gt; = 1 125MHz</td>
</tr>
</tbody>
</table>

* Default setting for the 70MHz CPU

Jumpers J0105 and J0106 set the divide control bits used by the microSPARC II. Set the 70MHz microSPARC II to divide by three to obtain an SBus speed of 23.33MHz.

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>J0105</td>
<td>1-2</td>
<td>In</td>
<td>div_ctl &lt;0&gt; = 0 /2</td>
</tr>
<tr>
<td>J0106</td>
<td>1-2</td>
<td>In</td>
<td>div_ctl &lt;1&gt; = 0 /2</td>
</tr>
<tr>
<td>J0105</td>
<td>1-2</td>
<td>Out*</td>
<td>div_ctl &lt;0&gt; = 1 /3</td>
</tr>
<tr>
<td>J0106</td>
<td>1-2</td>
<td>In*</td>
<td>div_ctl &lt;1&gt; = 0 /3</td>
</tr>
<tr>
<td>J0105</td>
<td>1-2</td>
<td>In</td>
<td>div_ctl &lt;0&gt; = 0 /4</td>
</tr>
<tr>
<td>J0106</td>
<td>1-2</td>
<td>Out</td>
<td>div_ctl &lt;1&gt; = 1 /4</td>
</tr>
<tr>
<td>J0105</td>
<td>1-2</td>
<td>Out</td>
<td>div_ctl &lt;0&gt; = 1 /5</td>
</tr>
<tr>
<td>J0106</td>
<td>1-2</td>
<td>Out</td>
<td>div_ctl &lt;1&gt; = 1 /5</td>
</tr>
</tbody>
</table>

* Default setting for the 70MHz CPU
### SPARCstation 5

501-2286  501-2472  501-2508
501-2798  501-2802  501-2811

Jumper Settings - Continued

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0100</td>
<td>1-2</td>
<td>Out</td>
<td>Pin-1=Gnd / Pin-2=POK</td>
</tr>
<tr>
<td>J1101</td>
<td>1-2</td>
<td>Out</td>
<td>1= normal (default)</td>
</tr>
<tr>
<td>J1101</td>
<td>1-2</td>
<td>In</td>
<td>0= -4.5db</td>
</tr>
<tr>
<td>J1102</td>
<td>1-2</td>
<td>Out</td>
<td>1=100 Ohm (default)</td>
</tr>
<tr>
<td>J1102</td>
<td>1-2</td>
<td>In</td>
<td>0=150 Ohm</td>
</tr>
<tr>
<td>J1005</td>
<td>1-2</td>
<td>Out</td>
<td>Test point tpe&lt;0&gt;</td>
</tr>
<tr>
<td>J1005</td>
<td>3-4</td>
<td>Out</td>
<td>Test point tpe&lt;1&gt;</td>
</tr>
<tr>
<td>J1005</td>
<td>5-6</td>
<td>Out</td>
<td>Test point tpe&lt;2&gt;</td>
</tr>
<tr>
<td>J1005</td>
<td>7-8</td>
<td>Out</td>
<td>Test point tpe&lt;3&gt;</td>
</tr>
<tr>
<td>J1602</td>
<td>1-2</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J1603</td>
<td>1-2</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J1602</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 -12Vdc</td>
</tr>
<tr>
<td>J1603</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 +12Vdc</td>
</tr>
<tr>
<td>J1604</td>
<td>1-2</td>
<td>Out</td>
<td>Test point rxda</td>
</tr>
<tr>
<td>J1604</td>
<td>3-4</td>
<td>Out</td>
<td>Test point txd</td>
</tr>
<tr>
<td>J1604</td>
<td>5-6</td>
<td>Out</td>
<td>Test point rxdb</td>
</tr>
<tr>
<td>J1604</td>
<td>7-8</td>
<td>Out</td>
<td>Test point txdb</td>
</tr>
<tr>
<td>J1900</td>
<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
<tr>
<td>J1901</td>
<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
<tr>
<td>J1902</td>
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<td>Ground test point</td>
</tr>
<tr>
<td>J1903</td>
<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
<tr>
<td>J1904</td>
<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
<tr>
<td>J1905</td>
<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
<tr>
<td>J1906</td>
<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
</tbody>
</table>

**Notes**

1. The minimum OS is Solaris 1.1.1 Version B or Solaris 2.3 Edition II.
2. SS5 audio requires the Solaris 1.1.1 Version B ms2 patch.
3. Install the highest capacity SIMM in Slot 0 under Solaris 1.x.
4. Use the MFAR value to determine the address of a failing SIMM.
5. The PLCC Boot PROM is not a FRU and is not field replaceable.
6. Serial Ports A and B support synchronous operation.


WORKSTATION CPU-14  
Field Engineer Handbook
SPARCstation 5
SS5-85  Netra 5  Netra s5
501-2572  501-2574
85MHz 0MB FRU  85MHz 32MB
2.3/2.5 microSPARC II  2.3/2.5 microSPARC II

501-2799  501-2803
85MHz 0MB FRU  85MHz 32MB
3.x microSPARC II  3.x microSPARC II

Power: 0MB Board
4.0 Amps @ +5Vdc
0.4 Amps @ +12Vdc
0.1 Amps @ -12Vdc
8.0 Watts
SPARCstation 5
SS5-85  Netra i5  Netra s5

501-2815  85MHz 0MB FRU
501-2816  85MHz 32MB

microSPARC II *

FAB 270-2286-07

* The chronological revision of microSPARC II is 2.6 and 2.6.2.

Power: 0MB Board
4.0 Amps @ +5Vdc
0.4 Amps @ +12Vdc
0.1 Amps @ -12Vdc
8.0 Watts

WORKSTATION CPU-16  Field Engineer Handbook
Jumpers J0103 and J0104 set the microSPARC II memory controller wait states. Wait states are used to maintain the memory timing requirements of 60ns DRAM.

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0103</td>
<td>1-2</td>
<td>In</td>
<td>spd_sel&lt;0&gt; = 0 70MHz</td>
</tr>
<tr>
<td>J0104</td>
<td>1-2</td>
<td>In</td>
<td>spd_sel&lt;1&gt; = 0 70MHz</td>
</tr>
<tr>
<td>J0103</td>
<td>1-2</td>
<td>Out*</td>
<td>spd_sel&lt;0&gt; = 0 85MHz</td>
</tr>
<tr>
<td>J0104</td>
<td>1-2</td>
<td>In*</td>
<td>spd_sel&lt;1&gt; = 1 85MHz</td>
</tr>
<tr>
<td>J0103</td>
<td>1-2</td>
<td>In</td>
<td>spd_sel&lt;0&gt; = 1 100MHz</td>
</tr>
<tr>
<td>J0104</td>
<td>1-2</td>
<td>Out</td>
<td>spd_sel&lt;1&gt; = 0 100MHz</td>
</tr>
<tr>
<td>J0103</td>
<td>1-2</td>
<td>Out</td>
<td>spd_sel&lt;0&gt; = 1 125MHz</td>
</tr>
<tr>
<td>J0104</td>
<td>1-2</td>
<td>Out</td>
<td>spd_sel&lt;1&gt; = 1 125MHz</td>
</tr>
</tbody>
</table>

* Default setting for the 85MHz CPU

Jumpers J0105 and J0106 set the divide control bits used by the microSPARC II. Set the 85MHz microSPARC II to divide by four to obtain an SBus speed of 21.25MHz.

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0105</td>
<td>1-2</td>
<td>In</td>
<td>div_ctl &lt;0&gt; = 0 /2</td>
</tr>
<tr>
<td>J0106</td>
<td>1-2</td>
<td>In</td>
<td>div_ctl &lt;1&gt; = 0 /2</td>
</tr>
<tr>
<td>J0105</td>
<td>1-2</td>
<td>Out</td>
<td>div_ctl &lt;0&gt; = 1 /3</td>
</tr>
<tr>
<td>J0106</td>
<td>1-2</td>
<td>In</td>
<td>div_ctl &lt;1&gt; = 0 /3</td>
</tr>
<tr>
<td>J0105</td>
<td>1-2</td>
<td>In*</td>
<td>div_ctl &lt;0&gt; = 0 /4</td>
</tr>
<tr>
<td>J0106</td>
<td>1-2</td>
<td>Out*</td>
<td>div_ctl &lt;1&gt; = 1 /4</td>
</tr>
<tr>
<td>J0105</td>
<td>1-2</td>
<td>Out</td>
<td>div_ctl &lt;0&gt; = 1 /5</td>
</tr>
<tr>
<td>J0106</td>
<td>1-2</td>
<td>Out</td>
<td>div_ctl &lt;1&gt; = 1 /5</td>
</tr>
</tbody>
</table>

* Default setting for the 85MHz CPU
Jumper Settings - Continued

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0100</td>
<td>1-2</td>
<td>Out</td>
<td>Pin-1=Gnd / Pin-2=POK</td>
</tr>
<tr>
<td>J1101</td>
<td>1-2</td>
<td>Out</td>
<td>Pin-1= normal (default)</td>
</tr>
<tr>
<td>J1101</td>
<td>1-2</td>
<td>In</td>
<td>0= -4.5db</td>
</tr>
<tr>
<td>J1102</td>
<td>1-2</td>
<td>Out</td>
<td>Pin-1=100 Ohm (default)</td>
</tr>
<tr>
<td>J1102</td>
<td>1-2</td>
<td>In</td>
<td>0= 150 Ohm</td>
</tr>
<tr>
<td>J1005</td>
<td>1-2</td>
<td>Out</td>
<td>Test point tpe&lt;0&gt;</td>
</tr>
<tr>
<td>J1005</td>
<td>3-4</td>
<td>Out</td>
<td>Test point tpe&lt;1&gt;</td>
</tr>
<tr>
<td>J1005</td>
<td>5-6</td>
<td>Out</td>
<td>Test point tpe&lt;2&gt;</td>
</tr>
<tr>
<td>J1005</td>
<td>7-8</td>
<td>Out</td>
<td>Test point tpe&lt;3&gt;</td>
</tr>
<tr>
<td>J1602</td>
<td>1-2</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J1603</td>
<td>1-2</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J1602</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 -12Vdc</td>
</tr>
<tr>
<td>J1603</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 +12Vdc</td>
</tr>
<tr>
<td>J1604</td>
<td>1-2</td>
<td>Out</td>
<td>Test point rxda</td>
</tr>
<tr>
<td>J1604</td>
<td>3-4</td>
<td>Out</td>
<td>Test point txda</td>
</tr>
<tr>
<td>J1604</td>
<td>5-6</td>
<td>Out</td>
<td>Test point rxdb</td>
</tr>
<tr>
<td>J1604</td>
<td>7-8</td>
<td>Out</td>
<td>Test point txdb</td>
</tr>
<tr>
<td>J1900</td>
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<td>N/A</td>
<td>Ground test point</td>
</tr>
<tr>
<td>J1901</td>
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<td>N/A</td>
<td>Ground test point</td>
</tr>
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<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
</tbody>
</table>

Notes
1. The minimum OS is Solaris 1.1.1 Version B or Solaris 2.3 Edition II.
2. SS5 audio requires the Solaris 1.1.1 Version B ms2 patch.
3. Install the highest capacity SIMM in Slot 0 under Solaris 1.x.
4. Use the MFAR value to determine the address of a failing SIMM.
5. The PLCC Boot PROM is not a FRU and is not field replaceable.
6. Serial Ports A and B support synchronous operation.

SPARCstation 5
SS5-110  Netra i5  Netra i500  Netra i525
501-2778  501-2779
110MHz 0MB FRU  110MHz 32MB
microSPARC II  microSPARC II

FAB 270-2286-07

J0105
55.000MHz

FLOPPY

SCSI

POWER

JTAG

J0103  J0104

microSPARC II

J0106

SBus Slot 1  SBus Slot 2  SBus Slot 3
A0-A27 22.0MHz SBus

MACIO

SLAVIO

APC

CODEC

PLCC

BOOT

U1500

NVRAM

U1506

PTC F1100

J1101

J1102

PLCC

PTC F1001

J1005

J1006

PTC F1000

PTC F1000

Power:

0MB Board
4.0 Amps @ +5Vdc
0.4 Amps @ +12Vdc
0.1 Amps @ -12Vdc
8.0 Watts

Volume I  WORKSTATION CPU-19
Jumpers J0103 and J0104 set the microSPARC II memory controller wait states. Wait states are used to maintain the memory timing requirements of 60ns DRAM.

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0103</td>
<td>1-2</td>
<td>In</td>
<td>spd_sel&lt;0&gt; = 0 70MHz</td>
</tr>
<tr>
<td>J0104</td>
<td>1-2</td>
<td>In</td>
<td>spd_sel&lt;1&gt; = 0 70MHz</td>
</tr>
<tr>
<td>J0103</td>
<td>1-2</td>
<td>Out</td>
<td>spd_sel&lt;0&gt; = 0 85MHz</td>
</tr>
<tr>
<td>J0104</td>
<td>1-2</td>
<td>In</td>
<td>spd_sel&lt;1&gt; = 1 85MHz</td>
</tr>
<tr>
<td>J0103</td>
<td>1-2</td>
<td>In*</td>
<td>spd_sel&lt;0&gt; = 1 110MHz</td>
</tr>
<tr>
<td>J0104</td>
<td>1-2</td>
<td>Out*</td>
<td>spd_sel&lt;1&gt; = 0 110MHz</td>
</tr>
<tr>
<td>J0103</td>
<td>1-2</td>
<td>Out</td>
<td>spd_sel&lt;0&gt; = 1 125MHz</td>
</tr>
<tr>
<td>J0104</td>
<td>1-2</td>
<td>Out</td>
<td>spd_sel&lt;1&gt; = 1 125MHz</td>
</tr>
</tbody>
</table>

* Default setting for the 110MHz CPU

Jumpers J0105 and J0106 set the divide control bits used by the microSPARC II. Set the 110MHz microSPARC II to divide by five to obtain an SBus speed of 22.00MHz.

<table>
<thead>
<tr>
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<th>PINS</th>
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<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>J0105</td>
<td>1-2</td>
<td>In</td>
<td>div_ctl &lt;0&gt; = 0 /2</td>
</tr>
<tr>
<td>J0106</td>
<td>1-2</td>
<td>In</td>
<td>div_ctl &lt;1&gt; = 0 /2</td>
</tr>
<tr>
<td>J0105</td>
<td>1-2</td>
<td>Out</td>
<td>div_ctl &lt;0&gt; = 1 /3</td>
</tr>
<tr>
<td>J0106</td>
<td>1-2</td>
<td>In</td>
<td>div_ctl &lt;1&gt; = 0 /3</td>
</tr>
<tr>
<td>J0105</td>
<td>1-2</td>
<td>In</td>
<td>div_ctl &lt;0&gt; = 0 /4</td>
</tr>
<tr>
<td>J0106</td>
<td>1-2</td>
<td>Out</td>
<td>div_ctl &lt;1&gt; = 1 /4</td>
</tr>
<tr>
<td>J0105</td>
<td>1-2</td>
<td>Out*</td>
<td>div_ctl &lt;0&gt; = 1 /5</td>
</tr>
<tr>
<td>J0106</td>
<td>1-2</td>
<td>Out*</td>
<td>div_ctl &lt;1&gt; = 1 /5</td>
</tr>
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</table>

* Default setting for the 110MHz CPU
Jumper Settings - Continued

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>J0100</td>
<td>1-2</td>
<td>Out</td>
<td>Pin-1=Gnd / Pin-2=POK</td>
</tr>
<tr>
<td>J1101</td>
<td>1-2</td>
<td>Out</td>
<td>1= normal (default)</td>
</tr>
<tr>
<td>J1101</td>
<td>1-2</td>
<td>In</td>
<td>0= -4.5db</td>
</tr>
<tr>
<td>J1102</td>
<td>1-2</td>
<td>Out</td>
<td>1=100 Ohm (default)</td>
</tr>
<tr>
<td>J1102</td>
<td>1-2</td>
<td>In</td>
<td>0=150 Ohm</td>
</tr>
<tr>
<td>J1005</td>
<td>1-2</td>
<td>Out</td>
<td>Test point tpe&lt;0&gt;</td>
</tr>
<tr>
<td>J1005</td>
<td>3-4</td>
<td>Out</td>
<td>Test point tpe&lt;1&gt;</td>
</tr>
<tr>
<td>J1005</td>
<td>5-6</td>
<td>Out</td>
<td>Test point tpe&lt;2&gt;</td>
</tr>
<tr>
<td>J1005</td>
<td>7-8</td>
<td>Out</td>
<td>Test point tpe&lt;3&gt;</td>
</tr>
<tr>
<td>J1602</td>
<td>1-2</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J1603</td>
<td>1-2</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J1602</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 -12Vdc</td>
</tr>
<tr>
<td>J1603</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 +12Vdc</td>
</tr>
<tr>
<td>J1604</td>
<td>1-2</td>
<td>Out</td>
<td>Test point rxda</td>
</tr>
<tr>
<td>J1604</td>
<td>3-4</td>
<td>Out</td>
<td>Test point txda</td>
</tr>
<tr>
<td>J1604</td>
<td>5-6</td>
<td>Out</td>
<td>Test point rxdb</td>
</tr>
<tr>
<td>J1604</td>
<td>7-8</td>
<td>Out</td>
<td>Test point txdb</td>
</tr>
<tr>
<td>J1900</td>
<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
<tr>
<td>J1901</td>
<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
<tr>
<td>J1902</td>
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</tr>
<tr>
<td>J1903</td>
<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
<tr>
<td>J1904</td>
<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
<tr>
<td>J1905</td>
<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
<tr>
<td>J1906</td>
<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
</tbody>
</table>

Notes
1. The minimum OS is Solaris 1.1.1 Version B or Solaris 2.3 Edition II.
2. SS5 audio requires the Solaris 1.1.1 Version B ms2 patch.
3. Install the highest capacity SIMM in Slot 0 under Solaris 1.x.
4. Use the MFAR value to determine the address of a failing SIMM.
5. The PLCC Boot PROM is not a FRU and is not field replaceable.
6. Serial Ports A and B support synchronous operation.

## Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
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</tr>
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<tbody>
<tr>
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<td>1-2</td>
<td>Out</td>
<td>Pin-1=Gnd / Pin-2=POK</td>
</tr>
<tr>
<td>J1101</td>
<td>1-2</td>
<td>Out</td>
<td>1= normal (default)</td>
</tr>
<tr>
<td>J1101</td>
<td>1-2</td>
<td>In</td>
<td>0= -4.5db</td>
</tr>
<tr>
<td>J1102</td>
<td>1-2</td>
<td>Out</td>
<td>1=100 Ohm (default)</td>
</tr>
<tr>
<td>J1102</td>
<td>1-2</td>
<td>In</td>
<td>0=150 Ohm</td>
</tr>
<tr>
<td>J1005</td>
<td>1-2</td>
<td>Out</td>
<td>Test point tpe&lt;0&gt;</td>
</tr>
<tr>
<td>J1005</td>
<td>3-4</td>
<td>Out</td>
<td>Test point tpe&lt;1&gt;</td>
</tr>
<tr>
<td>J1005</td>
<td>5-6</td>
<td>Out</td>
<td>Test point tpe&lt;2&gt;</td>
</tr>
<tr>
<td>J1005</td>
<td>7-8</td>
<td>Out</td>
<td>Test point tpe&lt;3&gt;</td>
</tr>
<tr>
<td>J1602</td>
<td>1-2</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J1603</td>
<td>1-2</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J1602</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 -12Vdc</td>
</tr>
<tr>
<td>J1603</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 +12Vdc</td>
</tr>
<tr>
<td>J1604</td>
<td>1-2</td>
<td>Out</td>
<td>Test point rxda</td>
</tr>
<tr>
<td>J1604</td>
<td>3-4</td>
<td>Out</td>
<td>Test point txda</td>
</tr>
<tr>
<td>J1604</td>
<td>5-6</td>
<td>Out</td>
<td>Test point rxdb</td>
</tr>
<tr>
<td>J1604</td>
<td>7-8</td>
<td>Out</td>
<td>Test point txdb</td>
</tr>
<tr>
<td>J1900</td>
<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
<tr>
<td>J1901</td>
<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
<tr>
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<td>N/A</td>
<td>Ground test point</td>
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<td>J1904</td>
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<td>Ground test point</td>
</tr>
<tr>
<td>J1905</td>
<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
<tr>
<td>J1906</td>
<td>N/A</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
<tr>
<td>J1908</td>
<td>N/A</td>
<td>N/A</td>
<td>ROMBO selection</td>
</tr>
</tbody>
</table>

### Notes
1. The minimum OS is Solaris 1.1.1 Version B or Solaris 2.3 Edition II.
2. SS5 audio requires the Solaris 1.1.1 Version B ms2 patch.
3. SS5 S24 configurations require Solaris 2.3 Hardware: 8/94.
4. Install the highest capacity SIMM in Slot 0 under Solaris 1.x.
5. Use the MFAR value to determine the address of a failing SIMM.
6. The PLCC Boot PROM is not a FRU and is not field replaceable.
7. Serial Ports A and B support synchronous operation.

**Notes**

1. Part number 501-2924 is a new board with MSBI Version 3.
2. Part number 501-2961 is a repaired 501-2324 with MSBI Version 3.

* This installation sequence does not match the bank order.
† This installation sequence matches the bank order.
† SS20 DSIMM Installation, 801-6185-11.
When Pins 1-2 on J1401 are jumpered, the MBus speed is set to 40MHz.

When Pins 2-3 on J1401 are jumpered, the MBus speed is selected by the module installed in MBus 0. The MBus speed of the SM50 is 50MHz. The MBus speed of the SM51 is 40MHz. The MBus speed of the SM61 is 50MHz.

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0801</td>
<td>1-2</td>
<td>In</td>
<td>RS-232 +12Vdc</td>
</tr>
<tr>
<td>J0802</td>
<td>1-2</td>
<td>In</td>
<td>RS-232 -12Vdc</td>
</tr>
<tr>
<td>J0801</td>
<td>2-3</td>
<td>In*</td>
<td>RS-423</td>
</tr>
<tr>
<td>J0802</td>
<td>2-3</td>
<td>In*</td>
<td>RS-423</td>
</tr>
<tr>
<td>J0805</td>
<td>1-2</td>
<td>Out*</td>
<td>Port B asynchronous</td>
</tr>
<tr>
<td>J0806</td>
<td>1-2</td>
<td>Out*</td>
<td>Port B asynchronous</td>
</tr>
<tr>
<td>J0805</td>
<td>1-2</td>
<td>In†</td>
<td>Port B synchronous</td>
</tr>
<tr>
<td>J0806</td>
<td>1-2</td>
<td>In†</td>
<td>Port B synchronous</td>
</tr>
<tr>
<td>J1401</td>
<td>1-2</td>
<td>In</td>
<td>40MHz MBus</td>
</tr>
<tr>
<td>J1401</td>
<td>2-3</td>
<td>In*</td>
<td>40/50MHz MBus</td>
</tr>
<tr>
<td>J1601</td>
<td>1-2</td>
<td>N/A</td>
<td>Ground test point</td>
</tr>
<tr>
<td>J1602</td>
<td>1-2</td>
<td>N/A</td>
<td>Ground test point</td>
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<tr>
<td>J1603</td>
<td>1-2</td>
<td>N/A</td>
<td>Ground test point</td>
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<tr>
<td>J1703</td>
<td>1-2</td>
<td>Out</td>
<td>Test point tpe&lt;3&gt;</td>
</tr>
<tr>
<td>J1704</td>
<td>1-2</td>
<td>Out</td>
<td>Test point tpe&lt;2&gt;</td>
</tr>
<tr>
<td>J1705</td>
<td>1-2</td>
<td>Out</td>
<td>Test point tpe&lt;1&gt;</td>
</tr>
<tr>
<td>J1706</td>
<td>1-2</td>
<td>Out</td>
<td>Test point tpe&lt;0&gt;</td>
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<tr>
<td>J1707</td>
<td>1-2</td>
<td>Out</td>
<td>Test point edgeon</td>
</tr>
</tbody>
</table>

* Default setting
† Requires an adapter that is not available from Sun
**SPARCstation 20**

**SS20 Netra i20**  
Netra s20  
Netra i600  
Netra i625

- **501-2324**  
  0MB FRU  
w/o MBus Module  
MSBI Version 0 - 3

- **501-2924**  
  0MB FRU  
w/o MBus Module  
MSBI Version 3

- **501-2961**  
  0MB FRU  
w/o MBus Module  
MSBI Version 3

---

* This installation sequence does not match the bank order.
† This installation sequence matches the bank order.

**Notes**
1. Part number 501-2924 is a new board with MSBI Version 3.
2. Part number 501-2961 is a repaired 501-2324 with MSBI Version 3.
When Pins 1-2 on J1401 are jumpered, the MBus speed is set to 40MHz.

When Pins 2-3 on J1401 are jumpered, the MBus speed is selected by the module installed in MBus 0. The MBus speed of the SM50 is 50MHz. The MBus speed of the SM51 is 40MHz. The MBus speed of the SM61 is 50MHz.

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<thead>
<tr>
<th>JUMPER</th>
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<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0801</td>
<td>1-2</td>
<td>In</td>
<td>RS-232 +12Vdc</td>
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<tr>
<td>J0802</td>
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<td>In</td>
<td>RS-232 -12Vdc</td>
</tr>
<tr>
<td>J0801</td>
<td>2-3</td>
<td>In*</td>
<td>RS-423</td>
</tr>
<tr>
<td>J0802</td>
<td>2-3</td>
<td>In*</td>
<td>RS-423</td>
</tr>
<tr>
<td>J0805</td>
<td>1-2</td>
<td>Out*</td>
<td>Port B asynchronous</td>
</tr>
<tr>
<td>J0805</td>
<td>3-4</td>
<td>Out*</td>
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<td>J0805</td>
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<td>1-2</td>
<td>N/A</td>
<td>Ground test point</td>
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<td>J1703</td>
<td>1-2</td>
<td>Out</td>
<td>Test point tpe&lt;3&gt;</td>
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<td>Out</td>
<td>Test point tpe&lt;2&gt;</td>
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<td>Out</td>
<td>Test point tpe&lt;0&gt;</td>
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<tr>
<td>J1707</td>
<td>1-2</td>
<td>Out</td>
<td>Test point edgeon</td>
</tr>
</tbody>
</table>

* Default setting
† Requires an adapter that is not available from Sun
Notes
1. The minimum operating system is Solaris 2.3 or Solaris 1.1.1 Revision B.
2. Use SIMMs 501-2479 (16MB), 501-2622 (32MB), and 501-2480 (64MB).
3. Install Solaris 2.3 Patch >101318-34 when:
   - One 32MB SIMM is mixed with seven 16 or 64MB SIMMs
   - Two 32MB SIMMs are mixed with five or more 16 or 64MB SIMMs
   - Three 32MB SIMMs are mixed with three or more 16 or 64MB SIMMs
   - Four 32MB SIMMs are mixed with one or more 16, 32, or 64MB SIMMs.
4. Use the sxconfig (1M) command to configure contiguous memory.
5. Do NOT mix SPARC modules of different types or speeds.
6. The 100MHz and 125MHz hyperSPARC Modules require OBP 2.19.
7. SuperSPARC II Modules require Boot PROM 2.22.
8. The 150MHz hyperSPARC Module requires OBP 2.25.

ZX and TurboZX Notes
1. Poor performance may occur when running XGL applications with the
ZX and TurboZX frame buffers on system boards with MSBI Versions 0,
1, and 2. Refer to BugID 1173967 and FCO A0073.
2. Use the .attributes OBP command or the ptcconf -vp Unix command
   to determine the MSBI Version:
   ok cd /iommu
   ok .version
   Implementation: 00000001
   Version: 00000000 or 00000001 or 00000002 or 00000003

References
2. SS20 DSIMM Installation, 801-6185-11.
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## Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1101</td>
<td>1-2</td>
<td>Out</td>
<td></td>
</tr>
<tr>
<td>J1101</td>
<td>2-3</td>
<td>N/A</td>
<td>Pins 2-3 are hardwired</td>
</tr>
<tr>
<td>J1102</td>
<td>1-2</td>
<td>Out</td>
<td></td>
</tr>
<tr>
<td>J1102</td>
<td>2-3</td>
<td>N/A</td>
<td>Pins 2-3 are hardwired</td>
</tr>
<tr>
<td>J1405</td>
<td>1-3</td>
<td></td>
<td>Pre-FCS speed selection</td>
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<tr>
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<td>1-3</td>
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<td>Out</td>
<td>JTAG connector</td>
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### References
Ultra 1 Model 140

A11-140 Netra i 1/140 Netra j 1/145

501-2836 501-2854 501-2855 501-2994
143MHz 0MB FRU 143MHz 32MB 143MHz 128MB 143MHz 64MB

Backpanel and Connectors

Screw 240-2076 and Washer 340-2860

Parallel DB25 KBD DIN8 Ethernet DB15 10BASE-T HD50 SCSI Audio

Serial Cable 501-2734 is not a FRU

Internal Peripherals

INTERNAL PERIPHERAL

Parallels KB25 KBD DIN8 Ethernet DB15 10BASE-T HD50 SCSI Audio

Serial Cable 501-2734 is not a FRU

Field Engineer Handbook
### Jumper Settings

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<tr>
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* Netra nfs 150, Netra i 150, and E150 requirement

### Notes

1. The minimum operating system is Solaris 2.5.
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3. Use the Flash PROM Programming Utility to update the flash PROM.
4. UltraSPARC Fan 540-2761 was replaced by Heatsink 540-3361 and Shield 540-3090 in May/June 1997.
5. The 501-5139 was released in April 1998 to fix BugID 4011704.
6. The 501-5139 is only available from Enterprise Service.

### References

Ultra 1 Model 140E
A12-140

501-4291 143MHz OMB FRU
FAB 270-2486

501-4677 143MHz OMB FRU
FAB 270-4358

CONFIGURATION

INTERNAL PERIPHERAL

J2001 LED/SPKR

J2002

U0604 Bank 3H Byte 16-31 Bits 128-255 300000000 - 3fffffff
U0704 Bank 3L Byte 00-15 Bits 000-127 300000000 - 3fffffff
U0603 Bank 2H Byte 16-31 Bits 128-255 200000000 - 2fffffff
U0703 Bank 2L Byte 00-15 Bits 000-127 200000000 - 2fffffff
U0602 Bank 1H Byte 16-31 Bits 128-255 100000000 - 1fffffff
U0702 Bank 1L Byte 00-15 Bits 000-127 100000000 - 1fffffff
U0601 Bank 0H Byte 16-31 Bits 128-255 000000000 - 0fffffff
U0701 Bank 0L Byte 00-15 Bits 000-127 000000000 - 0fffffff

J2003

SBus Slot 1

SBus Slot 0

SERIAL A/B Serial Cable 501-2734 is not a FRU

BACK PANEL and Connectors

Screw 240-2076 and Washer 340-2860

FFB Slot

SBus Slot 1

SBus Slot 0

HEADPHONE

WORKSTATION CPU-36  Field Engineer Handbook
### Jumper Settings

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### Configured System Boards

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**Notes**
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**References**
Ultra 1 Model 170E
A12-170  Netra i 1/170E
501-2486  501-4676
167MHz 0MB FRU  167MHz 0MB FRU
FAB 270-2486  FAB 270-4358

Backpanel and Connectors

Screw 240-2076 and Washer 340-2860

FAB 270-2486-03

INTERNAL PERIPHERAL

WORKSTATION CPU-38  Field Engineer Handbook
### Jumper Settings

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A12-170E Netra i 1/170E
501-2486 501-4676
167MHz 0MB FRU 167MHz 0MB FRU
FAB 270-2486 FAB 270-4358

FAB 270-2486-04/05
INTERNAL PERIPHERAL

UltraSPARC
Fan 540-2761
J2002 J2201
RISC

SDB

SCUP

SYSIO

89C105

J2001 LED/SPKR

J2003

J2106

J2105

J2104

BOOT PROM

NVRAM

U2006

J2201

J2203

J2202

F2101 PTC

J2103 SERIAL A/B
Serial Cable 501-2734 is not a FRU

Backpanel and Connectors

Screw 240-2076 and Washer 340-2860

FFB Slot

J2102

J3602

J3603

SERIAL A DB25

SERIAL B DB25

SERIAL A DB25

SERIAL B DB25

FFB Slot

PARALLEL DB25

KBD DIN8

HD40 MII

10BASE-T 100BASE-TX

HD68 SCSI

AUDIO

PARALLEL DB25

KBD DIN8

HD40 MII

10BASE-T 100BASE-TX

HD68 SCSI

INMIC HEADPHONE

SBus Slot 1

SBus Slot 0

WORKSTATION CPU-40

Field Engineer Handbook
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<td>JTAG connector</td>
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<tr>
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<td>FPROM low half booting (default)</td>
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<tr>
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Configured System Boards

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Notes
1. The minimum operating system is Solaris 2.5 Hardware:1/96.
2. The flash PROM is soldered to the system board.
3. Use the Flash PROM Programming Utility to update the flash PROM.
5. UltraSPARC Fan 540-2761 was replaced by Heatsink 540-3361 and Shield 540-3090 in May/June 1997.

References
Ultra 1 Model 200E
A12-200E Netra i1/200E

501-4134 200MHz OMB FRU
FAB 270-4134

501-4358 200MHz OMB FRU
FAB 270-4358

501-5403 200MHz OMB FRU
FAB 270-4358

Backpanel and Connectors

Serial Cable 501-2734 is not a FRU

FFB Slot

PARALLEL
KBD
HD40 MII
10BASE-T
100BASE-TX
HD68 SCSI
AUDIO

WORKSTATION CPU-42
Field Engineer Handbook
Jumper Settings

<table>
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<tr>
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<td>FPROM write enable</td>
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<td>In</td>
<td>RS-423 (default)</td>
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<td>J2105</td>
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<td>Out</td>
<td>Button POR</td>
</tr>
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<td>Out</td>
<td>ROMBO connector</td>
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<td>JTAG connector</td>
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<td>J2204</td>
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<td>FPROM high half booting</td>
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<td>Out</td>
<td>Ethernet edge test</td>
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Configured System Boards

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Notes
1. The minimum operating system is Solaris 2.5.1.
2. The flash PROM is soldered to the system board.
3. Use the Flash PROM Programming Utility to update the flash PROM.
4. UltraSPARC Fan 540-2761 was replaced by Heatsink 540-3361 and Shield 540-3090 in May/June 1997.

References
Install the first SIMMs in U0501, U0401, U0701, and U0601.
## Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
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<th>DESCRIPTION</th>
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<td>J2002</td>
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<td>In</td>
<td>Select ROMBO</td>
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<td>In</td>
<td>FPROM write protect (default)</td>
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<td>In</td>
<td>FPROM write enable</td>
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<td>Serial port connector</td>
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<td>Serial port edge test</td>
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<td>In</td>
<td>RS-232 -12Vdc</td>
</tr>
<tr>
<td>J2104</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
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<td>RS-232 +12Vdc</td>
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<td>J2105</td>
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<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J2201</td>
<td>1-2</td>
<td>In</td>
<td>UPA Speed2 pullup</td>
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<tr>
<td>J2201</td>
<td>2-3</td>
<td>Out</td>
<td>UPA Speed2 pulldown</td>
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<td>J2202</td>
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<td>ROMBO connector</td>
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<td>JTAG connector</td>
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<td>In</td>
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<td>J2204</td>
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<td>In</td>
<td>FPROM low half booting (default)</td>
</tr>
<tr>
<td>J2205</td>
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<td>Pin-1 hardwired to Vcc</td>
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<td>Pin-3 hardwired to Vcc</td>
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<td>1-8</td>
<td>Out</td>
<td>Ethernet edge test</td>
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**CAUTION -** Do NOT install jumpers on Power Connector J3208.
Ultra 2
A14 Netra i Netra j Netra NFS
501-3132
0MB FRU

FAB 270-2487-06/08/09/10/11

Pair 7 Group 3 Bank 1 60000000 - 7fffffff 2nd dbl word
Pair 7 Group 3 Bank 1 60000000 - 7fffffff 2nd dbl word
Pair 6 Group 3 Bank 0 60000000 - 7fffffff 1st dbl word
Pair 6 Group 3 Bank 0 60000000 - 7fffffff 1st dbl word
Pair 5 Group 2 Bank 1 40000000 - 5fffffff 2nd dbl word
Pair 5 Group 2 Bank 1 40000000 - 5fffffff 2nd dbl word
Pair 4 Group 2 Bank 0 40000000 - 5fffffff 1st dbl word
Pair 4 Group 2 Bank 0 40000000 - 5fffffff 1st dbl word
Pair 3 Group 1 Bank 1 20000000 - 3fffffff 2nd dbl word
Pair 3 Group 1 Bank 1 20000000 - 3fffffff 2nd dbl word
Pair 2 Group 1 Bank 0 20000000 - 3fffffff 1st dbl word
Pair 2 Group 1 Bank 0 20000000 - 3fffffff 1st dbl word
Pair 1 Group 0 Bank 0 00000000 - 1fffffff 2nd dbl word
Pair 1 Group 0 Bank 0 00000000 - 1fffffff 2nd dbl word
Pair 0 Group 0 Bank 0 00000000 - 1fffffff 1st dbl word
Pair 0 Group 0 Bank 0 00000000 - 1fffffff 1st dbl word

Install the first SIMMs in U0501, U0401, U0701, and U0601

J2301 is horizontal on FAB 270-2487-06
J2301 is vertical on FAB 270-2487-08/09/10/11

WORKSTATION CPU-46
Field Engineer Handbook
### Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
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<tr>
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<td>In</td>
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<tr>
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<td>FPROM write enable</td>
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<td>Serial port connector</td>
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<td>J2103</td>
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<td>Out</td>
<td>Serial port edge test</td>
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<td>RS-423 (default)</td>
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<td>J2201</td>
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<td>+3 mode (250MHZ/300MHz)</td>
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<td>SLAVIO TDO - MOD0 TDO</td>
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<td>Even Pins 2-20 = +3.3Vdc</td>
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<tr>
<td>J3403</td>
<td>1-8</td>
<td>Out</td>
<td>Ethernet edge test</td>
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**CAUTION** - Do NOT install jumpers on Power Connector J3208.
Ultra 2
501-2487  501-3132

Backpanel and Connectors

Configured System Boards

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<th>MEMORY SIZE</th>
<th>SIMM SIZE</th>
<th>NUMBER SIMMs</th>
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<th>NUMBER MODULES</th>
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Notes
1. The minimum operating system is Solaris 2.5.1.
2. OBP 3.11 is required if Solaris 7 is used in 64-bit mode.
3. The flash PROM is soldered to the system board.
4. Use the Flash PROM Programming Utility to update the flash PROM.

Graphics Notes
1. FFB2+ is not compatible with 300MHz Module 501-4196.
2. FFB2+ is not compatible with 300MHz Module ≤501-4849-02.
3. Elite3D is not compatible with 300MHz Module 501-4196.
4. Elite3D is not compatible with 300MHz Module ≤501-4849-02.

Memory Notes
1. Two pairs of SIMMs form a group.
2. All four SIMMs within a group must be the same size.
3. The minimum memory requirement is four SIMMs in Group 0.
4. SIMMs can be installed in Group 1, Group 2, or Group 3 in any order.
5. A group addresses 512MB of memory. Unused memory is mapped out.
6. OBP ≤3.1.3 reports memory errors as a pair of SIMMs.
7. OBP ≤3.1.3 reports the wrong SIMM pair when a memory error occurs. Refer to BugID 1262941.
8. OBP 3.1.5 reports memory errors as a single SIMM.

Internal SCSI Bus Notes
1. The SCSI controller is connected to J1202, J3201, and J3202.
2. There is no termination at J1202, J3201, or J3202.
3. The internal SCSI bus is terminated at J1203.
4. Connect J1202 to J1203 with Cable 530-1451 or CD-ROM/Tape Drive Cable 530-2137 to terminate the internal SCSI bus.

References
### Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>JD1</td>
<td>1-2</td>
<td>Out</td>
<td>Composite video synchronization</td>
</tr>
<tr>
<td>JP1</td>
<td>1-2</td>
<td>In</td>
<td>Select PROM (default)</td>
</tr>
<tr>
<td>JP1</td>
<td>2-3</td>
<td>In</td>
<td>Select ROMBO</td>
</tr>
<tr>
<td>JP2</td>
<td>1-2</td>
<td>In</td>
<td>FPROM write protect (default)</td>
</tr>
<tr>
<td>JP2</td>
<td>2-3</td>
<td>In</td>
<td>FPROM write enable</td>
</tr>
<tr>
<td>JP3</td>
<td>1-2</td>
<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>JP3</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>JP4</td>
<td>1-2</td>
<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>JP4</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>JP6</td>
<td>1-2</td>
<td>N/A</td>
<td>Not stuffed</td>
</tr>
<tr>
<td>JP7</td>
<td>1-2</td>
<td>N/A</td>
<td>Not stuffed</td>
</tr>
<tr>
<td>JP8</td>
<td>1-2</td>
<td>In</td>
<td>Simba Clock Input Normal (default)</td>
</tr>
<tr>
<td>JP8</td>
<td>2-3</td>
<td>In</td>
<td>Simba Clock Input Test</td>
</tr>
<tr>
<td>JP9</td>
<td>1-2</td>
<td>In</td>
<td>Simba Clock Input Normal (default)</td>
</tr>
<tr>
<td>JP9</td>
<td>2-3</td>
<td>In</td>
<td>Simba Clock Input Test</td>
</tr>
<tr>
<td>JP10</td>
<td>1-2</td>
<td>Out</td>
<td>Bypass CPU in scan chain</td>
</tr>
<tr>
<td>JP10</td>
<td>2-3</td>
<td>In</td>
<td>Include CPU in scan chain (default)</td>
</tr>
<tr>
<td>JP11</td>
<td>1-10</td>
<td>N/A</td>
<td>Not stuffed</td>
</tr>
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### Miscellaneous Connectors

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>PINS</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>J7</td>
<td>1-10</td>
<td>Asynchronous serial Port B</td>
</tr>
<tr>
<td>J8</td>
<td>1-26</td>
<td>Parallel port</td>
</tr>
<tr>
<td>J9</td>
<td>1-4</td>
<td>CD-ROM audio</td>
</tr>
<tr>
<td>J10</td>
<td>1-24</td>
<td>ROMBO</td>
</tr>
<tr>
<td>J17</td>
<td>1-4</td>
<td>LED and soft reset switch</td>
</tr>
<tr>
<td>J18</td>
<td>1-4</td>
<td>Speaker</td>
</tr>
<tr>
<td>J19</td>
<td>1-3</td>
<td>DC fan power</td>
</tr>
<tr>
<td>J20</td>
<td>1-8</td>
<td>Unknown</td>
</tr>
<tr>
<td>J21</td>
<td>1-8</td>
<td>JTAG</td>
</tr>
<tr>
<td>J22</td>
<td>1-2</td>
<td>Not stuffed</td>
</tr>
<tr>
<td>J23</td>
<td>1-2</td>
<td>Not stuffed</td>
</tr>
<tr>
<td>J24</td>
<td>1-2</td>
<td>Unknown</td>
</tr>
</tbody>
</table>
Ultra 5  Ultra 10  375-0009

Graphics Notes
1. Creator and Creator3D are not supported in the Ultra 5.
2. Elite3D is not supported in the Ultra 5.
3. Elite3D is supported in the Ultra 10.
4. Elite3D-m6 was not sold with System Board 375-0009.

Memory Notes
1. The minimum memory requirement is two DIMMs in any bank.
2. The 16MB DIMM uses 10-bit column addressing and was not sold.
3. The 32, 64, 128, and 256MB DIMMs use 11-bit column addressing.
4. If 10-bit and 11-bit DIMMs are mixed, either pair will be ignored.
5. The 256MB DIMMs are not supported in the Ultra 5.
6. OBP ≥3.25v3 is required when DIMMs manufactured by Micron are installed with 360MHz, 400MHz, or 440MHz CPU modules.

NVRAM Notes
1. NVRAMs 525-1430 and 525-1817 include an M48T59 and a carrier.
2. System Board 375-0009 was built with an AMP NVRAM socket.
3. System Board 375-0009 shipped with NVRAM 525-1430.
4. System Board 375-0015 is built with a Chupond NVRAM socket.
5. NVRAM 525-1430 is compatible with the Chupond socket on 375-0115.
6. NVRAM 525-1817 is not compatible with the AMP socket on 375-0009.

OBP Notes
1. The flash PROM is soldered to the system board.
2. Use the Flash PROM Programming Utility to update the flash PROM.
3. BugIDs 4114343 and 4114784 prevent booting from Dual Ultra SCSI Controller Options X6540A and X6541A. Use the following workaround:

   ok nvedit
   0: dev /builtin-drivers
   1: alias pci1000,1000 pci1000,3
   2: device-end
   3: probe-all install-console banner Ctrl-C to exit
   ok nvstore
   ok setenv use-nvramrc? true
   ok reset-all
4. OBP 3.11 version 9 fixes BugIDs 4114343 and 4114784.
Ultra 5  Ultra 10  
375-0009

Operating System Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 11/97.
2. The minimum Solaris 2.6 release is Solaris 2.6 Hardware: 3/98.

System Board Notes
1. The 375-0009 shipped with Ultra 5 270MHz.
2. The 375-0009 shipped with Ultra 10 300MHz and 333MHz.
3. The 375-0009 is not tested with 360MHz, 400MHz, or 440MHz.
4. Graphics quality BugId 4120186 is fixed on 375-0009-07.
5. Serial communication BugID 4121884 is fixed on 375-0009-08.

References
### Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP1</td>
<td>1-3</td>
<td>N/A</td>
<td>Not stuffed</td>
</tr>
<tr>
<td>JP2</td>
<td>1-2</td>
<td>In</td>
<td>FPROM write protect (default)</td>
</tr>
<tr>
<td>JP2</td>
<td>2-3</td>
<td>In</td>
<td>FPROM write enable</td>
</tr>
<tr>
<td>JP3</td>
<td>1-2</td>
<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>JP3</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>JP4</td>
<td>1-2</td>
<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>JP4</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>JP8</td>
<td>1-2</td>
<td>In</td>
<td>Simba Clock Input Normal (default)</td>
</tr>
<tr>
<td>JP8</td>
<td>2-3</td>
<td>In</td>
<td>Simba Clock Input Test</td>
</tr>
<tr>
<td>JP9</td>
<td>1-2</td>
<td>In</td>
<td>Simba Clock Input Normal (default)</td>
</tr>
<tr>
<td>JP9</td>
<td>2-3</td>
<td>In</td>
<td>Simba Clock Input Test</td>
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<tr>
<td>JP10</td>
<td>1-2</td>
<td>Out</td>
<td>Bypass CPU in scan chain</td>
</tr>
<tr>
<td>JP10</td>
<td>2-3</td>
<td>In</td>
<td>Include CPU in scan chain (default)</td>
</tr>
<tr>
<td>JP11</td>
<td>1-10</td>
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</tr>
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</table>

### Miscellaneous Connectors

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>PINS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J7</td>
<td>1-10</td>
<td>Asynchronous serial port B</td>
</tr>
<tr>
<td>J8</td>
<td>1-26</td>
<td>Parallel port</td>
</tr>
<tr>
<td>J9</td>
<td>1-4</td>
<td>CD-ROM audio</td>
</tr>
<tr>
<td>J10</td>
<td>1-24</td>
<td>ROMBO</td>
</tr>
<tr>
<td>J17</td>
<td>1-4</td>
<td>LED and soft reset switch</td>
</tr>
<tr>
<td>J18</td>
<td>1-4</td>
<td>Speaker</td>
</tr>
<tr>
<td>J19</td>
<td>1-3</td>
<td>DC fan power</td>
</tr>
<tr>
<td>J21</td>
<td>1-8</td>
<td>JTAG</td>
</tr>
<tr>
<td>J22</td>
<td>1-2</td>
<td>Not stuffed</td>
</tr>
<tr>
<td>J23</td>
<td>1-2</td>
<td>Not stuffed</td>
</tr>
<tr>
<td>J24</td>
<td>1-2</td>
<td>Not stuffed</td>
</tr>
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</table>
Chassis EZ Label Notes
1. The EZ Label is located on the lower left side of the front bezel.
2. The EZ Label includes a Service Code and the Serial Number.
3. The Service Code identifies changes made to system FRUs.

<table>
<thead>
<tr>
<th>SERVICE CODE</th>
<th>CPU</th>
<th>MODULE</th>
<th>NVRAM</th>
<th>Ultra 5 SPEAKER</th>
<th>Ultra 10 PCI RISER SPACERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>375-0009</td>
<td>-</td>
<td>525-1430</td>
<td>370-3170</td>
<td>Not installed *</td>
</tr>
<tr>
<td>PGX24</td>
<td>375-0066</td>
<td>-</td>
<td>525-1430</td>
<td>370-3170</td>
<td>Not installed *</td>
</tr>
<tr>
<td>PGX24</td>
<td>375-0079</td>
<td>-</td>
<td>525-1430</td>
<td>370-3170</td>
<td>Not installed *</td>
</tr>
<tr>
<td>SR PGX24</td>
<td>375-0066</td>
<td>501-5568</td>
<td>525-1430</td>
<td>370-3170</td>
<td>Installed</td>
</tr>
<tr>
<td>SR PGX24</td>
<td>375-0079</td>
<td>501-5568</td>
<td>525-1430</td>
<td>370-3170</td>
<td>Installed</td>
</tr>
<tr>
<td>SERIES 3</td>
<td>375-0079</td>
<td>-</td>
<td>525-1430</td>
<td>370-3170</td>
<td>Installed</td>
</tr>
<tr>
<td>B SERIES 3</td>
<td>375-0115</td>
<td>-</td>
<td>525-1817</td>
<td>370-3170</td>
<td>Installed</td>
</tr>
<tr>
<td>C SERIES 3</td>
<td>375-0079</td>
<td>-</td>
<td>525-1430</td>
<td>370-4212</td>
<td>Do not Install</td>
</tr>
<tr>
<td>BC SERIES 3</td>
<td>375-0115</td>
<td>-</td>
<td>525-1817</td>
<td>370-4212</td>
<td>Do not Install</td>
</tr>
</tbody>
</table>

* Refer to FCO A0152 for details.

Graphics Notes
1. PGX24 does not support 8-bit and 24-bit graphics at the same time.
2. Creator and Creator3D are not supported in the Ultra 5.
3. Elite3D is not supported in the Ultra 5.
4. Elite3D is supported in the Ultra 10.
5. Elite3D-m6 was not sold with System Board 375-0066.

Memory Notes
1. The minimum memory requirement is two DIMMs in any bank.
2. The 16MB DIMM uses 10-bit column addressing and was not sold.
3. The 32, 64, 128, and 256MB DIMMs use 11-bit column addressing.
4. If 10-bit and 11-bit DIMMs are mixed, either pair will be ignored.
5. The 256MB DIMMs are not supported in the Ultra 5.
6. Memory speed is 60ns if 50ns and 60ns DIMMs are mixed.
7. OBP ≥3.25v3 is required when DIMMs manufactured by Micron are installed with 360MHz, 400MHz, or 440MHz CPU modules.

Module Notes
1. Ultra 5 ships with 360MHz/512KB module 501-5148.
2. Ultra 10 shipped with 360MHz/2MB module 501-5222.
3. Ultra 5 was not shipped with the 440MHz Module.
5. 360MHz Module 501-5148 requires OBP ≥3.19v4.
Ultra 5 Ultra 10
375-0066 375-0079 375-0115

NVRAM Notes
1. NVRAMs 525-1430 and 525-1817 include an M48T59 and a carrier.
2. The 375-0066 and 375-0079 were built with an AMP NVRAM socket.
3. Approximately 1200 375-0079 boards were built with a Chupond socket.
4. The 375-0115 system board is built with a Chupond NVRAM socket.
5. System Boards 375-0066 and 375-0079 shipped with NVRAM 525-1430.
7. NVRAM 525-1430 is compatible with the Chupond socket on 375-0115.
8. NVRAM 525-1817 is not compatible with the AMP socket on System Boards 375-0009, 375-0066, and 375-0079.

EPB Notes
1. The flash PROM is soldered to the system board.
2. Use the Flash PROM Programming Utility to update the flash PROM.

Operating System Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 11/97.
2. The minimum Solaris 2.6 release is Solaris 2.6 Hardware: 5/98.

System Board Notes
1. The 375-0066 shipped with Ultra 5 270MHz and 333MHz.
2. The 375-0066 shipped with Ultra 10 333MHz and 360MHz.
3. The 375-0079 shipped with Ultra 5 360MHz and 400MHz.
4. The 375-0079 shipped with Ultra 10 440MHz.
5. The 375-0079 shipped with Ultra 5 270/333MHz after July 1999.
7. The 375-0115 shipped with Ultra 5 360/400MHz after May 2000.

References
Install the first two SIMMs in any adjacent pair.

Factory configurations start at Quad 3.
## 501-3139

### FAB 270-3139-03/04/05 Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>J0103</td>
<td>1-2</td>
<td>In</td>
<td>Bypass CPU in scan chain</td>
</tr>
<tr>
<td>J0103</td>
<td>2-3</td>
<td>In</td>
<td>Include CPU in scan chain (default)</td>
</tr>
<tr>
<td>J2604</td>
<td>1-2</td>
<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>J2604</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J2605</td>
<td>1-2</td>
<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>J2605</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J2702</td>
<td>1-2</td>
<td>In</td>
<td>Select FPROM (default)</td>
</tr>
<tr>
<td>J2702</td>
<td>2-3</td>
<td>In</td>
<td>Select ROMBO</td>
</tr>
<tr>
<td>J2703</td>
<td>1-2</td>
<td>In</td>
<td>FPROM write protect (default)</td>
</tr>
<tr>
<td>J2703</td>
<td>2-3</td>
<td>In</td>
<td>FPROM write enable</td>
</tr>
<tr>
<td>J2804</td>
<td>1-2</td>
<td>In</td>
<td>FPROM high half booting</td>
</tr>
<tr>
<td>J2804</td>
<td>2-3</td>
<td>In</td>
<td>FPROM low half booting (default)</td>
</tr>
<tr>
<td>J3001</td>
<td>1-2</td>
<td>In</td>
<td>+3 mode (250MHz/300MHz)</td>
</tr>
<tr>
<td>J3001</td>
<td>2-3</td>
<td>In</td>
<td>+2 mode (167MHz/200MHz)</td>
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### Miscellaneous Connectors

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<th>DESCRIPTION</th>
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<tr>
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<td>1-80</td>
<td>SCSI and floppy bus</td>
</tr>
<tr>
<td>J2303</td>
<td>1-8</td>
<td>Ethernet test (factory use)</td>
</tr>
<tr>
<td>J2602</td>
<td>1-8</td>
<td>Serial test (factory use)</td>
</tr>
<tr>
<td>J2801</td>
<td>1-3</td>
<td>Button XIR/POR (factory use)</td>
</tr>
<tr>
<td>J2802</td>
<td>1-32</td>
<td>ROMBO (factory use)</td>
</tr>
<tr>
<td>J2803</td>
<td>1-8</td>
<td>JSCC (factory use)</td>
</tr>
<tr>
<td>J2901</td>
<td>1-20</td>
<td>Sense from power supply (FAB 03)</td>
</tr>
<tr>
<td>J2901</td>
<td>1-16</td>
<td>Sense from power supply (FAB 04/05)</td>
</tr>
<tr>
<td>J2902</td>
<td>1-8</td>
<td>DC power from power supply</td>
</tr>
<tr>
<td>J2906</td>
<td>1-4</td>
<td>Rear fan power</td>
</tr>
<tr>
<td>J2907</td>
<td>1-2</td>
<td>Front fan power</td>
</tr>
<tr>
<td>J2909</td>
<td>1-12</td>
<td>DC power from power supply</td>
</tr>
<tr>
<td>J3504</td>
<td>1-4</td>
<td>On/Off switch</td>
</tr>
</tbody>
</table>
Ultra 30  Netra t 1100
501-3139

Rear View

PARALLEL
DB25

KEYBOARD
DIN8

SERIAL A
DB25

SERIAL B
DB25

10BASE-T
100BASE-T

Mil
HD40

ULTRA SCSI
HD68

POWER SUPPLY

AC INPUT

HEADPHONE OUT IN MICROPHONE

Audio Slot

UPA Graphics Slot 0

UPA Graphics Slot 1

3.3V 33/66MHz 32/64-Bit PCI Slot 1

5.0V 33MHz 32/64-Bit PCI Slot 2

5.0V 33MHz 32/64-Bit PCI Slot 3

5.0V 33MHz 32/64-Bit PCI Slot 4
Ultra 30 Netra t 1100
501-3139
Configured System Boards

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>MEMORY NUMBER</th>
<th>SIMM SIZE</th>
<th>NUMBER SIMMS</th>
<th>SPARC MODULE</th>
<th>MODULE CACHE</th>
</tr>
</thead>
<tbody>
<tr>
<td>501-4101</td>
<td>128MB</td>
<td>32MB</td>
<td>4</td>
<td>250MHz</td>
<td>1MB</td>
</tr>
<tr>
<td>501-4340</td>
<td>128MB</td>
<td>32MB</td>
<td>4</td>
<td>300MHz</td>
<td>2MB</td>
</tr>
<tr>
<td>501-4341</td>
<td>512MB</td>
<td>128MB</td>
<td>4</td>
<td>300MHz</td>
<td>2MB</td>
</tr>
</tbody>
</table>

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.
2. The flash PROM is soldered to the system board.
3. Use the Flash PROM Programming Utility to update the flash PROM.

Graphics Notes
1. FFB2+ is not compatible with 300MHz Module 501-4196.
2. FFB2+ is not compatible with 300MHz Module ≤501-4849-02.
3. Elite3D is not compatible with 300MHz Module 501-4196.
4. Elite3D is not compatible with 300MHz Module ≤501-4849-02.

Memory Notes
1. Two DIMMs form a pair. Two pairs of DIMMs form a quad.
2. The minimum requirement is two DIMMs in any adjacent pair.
3. DIMMs can be installed in any order of pairs.
4. Interleaving requires a fully populated quad.
5. Each quad addresses 512MB of memory.

PCI Slot Numbering

<table>
<thead>
<tr>
<th>SLOT</th>
<th>BUS</th>
<th>DEVICE TREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>pci@1f,2000/@1,*</td>
</tr>
<tr>
<td>2</td>
<td>B</td>
<td>pci@1f,4000/@2,*</td>
</tr>
<tr>
<td>3</td>
<td>B</td>
<td>pci@1f,4000/@4,*</td>
</tr>
<tr>
<td>4</td>
<td>B</td>
<td>pci@1f,4000/@5,*</td>
</tr>
</tbody>
</table>

PCI Bus B shares the address/data bus with on-board Audio, Ethernet, Flash, Floppy, Keyboard, Mouse, NVRAM, Parallel, SCSI, and Serial devices.

References
Ultra 60   Enterprise 220R   Netra t 1120/1125
A23   A34
501-4450
FAB 270-4450
0MB FRU
501-5606
FAB 270-5606
0MB FRU

PARALLEL
DB25

KEYBOARD
DIN8

SERIAL B
SERIAL A
DB25

10BASE-T
100BASE-TX

HD40

ULTRA SCSI
HD68

MARVIN

RISC

STP2003

U1002 Bank 3 a00000000 - bffffffff
U1001 Bank 3 a00000000 - bffffffff
U0904 Bank 2 80000000 - 9ffffff
U0903 Bank 2 80000000 - 9ffffff
U0902 Bank 2 80000000 - 9ffffff
U0901 Bank 2 80000000 - 9ffffff
U0804 Bank 1 20000000 - 3ffffffff
U0803 Bank 1 20000000 - 3ffffffff
U0802 Bank 1 20000000 - 3ffffffff
U0801 Bank 1 20000000 - 3ffffffff
U0704 Bank 0 00000000 - 1ffffffff
U0703 Bank 0 00000000 - 1ffffffff
U0702 Bank 0 00000000 - 1ffffffff
U0701 Bank 0 00000000 - 1ffffffff

Install the first four SIMMs in any Bank
Factory configurations start at Bank 3

J0101 UPA Slot 0

J0201 UPA Slot 1

J3301 FFB Slot 0

J3401 FFB Slot 1

PSYCHO+

53C876

J1301 3.3V 33/66MHz 32/64-Bit PCI Slot 1

J1401 5.0V 33MHz 32/64-Bit PCI Slot 2

J1501 5.0V 33MHz 32/64-Bit PCI Slot 3

J1601 5.0V 33MHz 32/64-Bit PCI Slot 4

WORKSTATION CPU-62    Field Engineer Handbook
### Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0102</td>
<td>1-2</td>
<td>In</td>
<td>Include CPU0 in scan chain</td>
</tr>
<tr>
<td>J0102</td>
<td>2-3</td>
<td>In</td>
<td>Bypass CPU0 in scan chain (default)</td>
</tr>
<tr>
<td>J0202</td>
<td>1-2</td>
<td>In</td>
<td>Include CPU1 in scan chain</td>
</tr>
<tr>
<td>J0202</td>
<td>2-3</td>
<td>In</td>
<td>Bypass CPU1 in scan chain (default)</td>
</tr>
<tr>
<td>J2604</td>
<td>1-2</td>
<td>In</td>
<td>RS-232 -12Vdc</td>
</tr>
<tr>
<td>J2604</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J2605</td>
<td>1-2</td>
<td>In</td>
<td>RS-232 +12Vdc</td>
</tr>
<tr>
<td>J2605</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J2702</td>
<td>1-2</td>
<td>In</td>
<td>Select Flash PROM (default)</td>
</tr>
<tr>
<td>J2702</td>
<td>2-3</td>
<td>In</td>
<td>Select ROMBO</td>
</tr>
<tr>
<td>J2703</td>
<td>1-2</td>
<td>In</td>
<td>FPROM write protected (default)</td>
</tr>
<tr>
<td>J2703</td>
<td>2-3</td>
<td>In</td>
<td>FPROM write enabled</td>
</tr>
<tr>
<td>J2804</td>
<td>1-2</td>
<td>In</td>
<td>FPROM high half booting</td>
</tr>
<tr>
<td>J2804</td>
<td>2-3</td>
<td>In</td>
<td>FPROM low half booting (default)</td>
</tr>
<tr>
<td>J2908*</td>
<td>1-2</td>
<td>In</td>
<td>Core voltage from CPU 0 (default)</td>
</tr>
<tr>
<td>J2908*</td>
<td>2-3</td>
<td>In</td>
<td>Core voltage from CPU 1</td>
</tr>
<tr>
<td>J2909*</td>
<td>1-2</td>
<td>In</td>
<td>Over voltage protect from CPU 0 (default)</td>
</tr>
<tr>
<td>J2909*</td>
<td>2-3</td>
<td>In</td>
<td>Over voltage protect from CPU 1</td>
</tr>
<tr>
<td>J3001</td>
<td>1-2</td>
<td>In</td>
<td>+3 mode (300MHz/360MHz)†</td>
</tr>
<tr>
<td>J3001</td>
<td>2-3</td>
<td>In</td>
<td>+2 mode and +4 mode (450MHz)‡</td>
</tr>
<tr>
<td>J3505</td>
<td>1-2</td>
<td>In</td>
<td>QAM WGS- to SPEAKER_OUT- (default)</td>
</tr>
<tr>
<td>J3505</td>
<td>2-3</td>
<td>In</td>
<td>QAM WGS- to POWERON_L</td>
</tr>
<tr>
<td>J3506</td>
<td>1-2</td>
<td>In</td>
<td>QAM WGS+ to SPEAKER_OUT+ (default)</td>
</tr>
<tr>
<td>J3506</td>
<td>2-3</td>
<td>In</td>
<td>QAM WGS+ to SUPPLY_TRIP_L</td>
</tr>
</tbody>
</table>

* J2908 and J2909 have two pins on FABs 270-4450-03 and 270-4450-05
† The Ultra 60 was not sold with 167MHz, 200MHz, or 250MHz modules

### PCI Slot Numbering

<table>
<thead>
<tr>
<th>SLOT</th>
<th>BUS</th>
<th>DEVICE TREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>pci@1f,2000/<em>@1,</em></td>
</tr>
<tr>
<td>2</td>
<td>B</td>
<td>pci@1f,4000/<em>@2,</em></td>
</tr>
<tr>
<td>3</td>
<td>B</td>
<td>pci@1f,4000/<em>@4,</em></td>
</tr>
<tr>
<td>4</td>
<td>B</td>
<td>pci@1f,4000/<em>@5,</em></td>
</tr>
</tbody>
</table>

PCI Bus B shares the address/data bus with on-board Audio, Ethernet, Flash, Floppy, Keyboard, Mouse, NVRAM, Parallel, SCSI, and Serial devices.
Ultra 60  Enterprise 220R  Netra t 1120  Netra t 1125  
501-4450  501-5606

Miscellaneous Connectors

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>PINS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1801</td>
<td>1-80</td>
<td>Internal SCSI and floppy bus</td>
</tr>
<tr>
<td>J2303</td>
<td>1-8</td>
<td>Ethernet test (factory use)</td>
</tr>
<tr>
<td>J2601</td>
<td>1-8</td>
<td>Serial test (factory use)</td>
</tr>
<tr>
<td>J2801</td>
<td>1-3</td>
<td>Button XIR/POR (factory use)</td>
</tr>
<tr>
<td>J2802</td>
<td>1-32</td>
<td>ROMBO (factory use)</td>
</tr>
<tr>
<td>J2803</td>
<td>1-8</td>
<td>JSCC (factory use)</td>
</tr>
<tr>
<td>J2901</td>
<td>1-16</td>
<td>Sense from power supply</td>
</tr>
<tr>
<td>J2902</td>
<td>1-8</td>
<td>DC power from power supply</td>
</tr>
<tr>
<td>J2903</td>
<td>1-12</td>
<td>DC power from power supply</td>
</tr>
<tr>
<td>J2905</td>
<td>1-3</td>
<td>LED and speaker</td>
</tr>
<tr>
<td>J2906</td>
<td>1-4</td>
<td>Rear fan power</td>
</tr>
<tr>
<td>J2907</td>
<td>1-2</td>
<td>Front fan power</td>
</tr>
<tr>
<td>J3504</td>
<td>1-4</td>
<td>On/Off switch</td>
</tr>
<tr>
<td>J3507</td>
<td>1-2</td>
<td>Button POR</td>
</tr>
</tbody>
</table>

Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. The flash PROM is soldered to the system board.
3. Use the Flash PROM Programming Utility to update the flash PROM.

SCSI Bus Notes
1. The internal SCSI bus is controlled by /pci@1f,4000/scsi@3.
2. The external SCSI bus is controlled by /pci@1f,4000/scsi@3,1.

Graphics Notes
1. FFB2+ is not compatible with 300MHz Module 501-4196.
2. FFB2+ is not compatible with 300MHz Module ≤501-4849-02.
3. Elite3D is not compatible with 300MHz Module 501-4196.
4. Elite3D is not compatible with 300MHz Module ≤501-4849-02.

Memory Notes
1. The minimum requirement is four DIMMs in any bank.
2. DIMMs can be installed in any order of banks.
3. Each bank addresses .5GB of memory.
4. Interleaving is not supported.

References
Ultra 60  Enterprise 220R  Netra t 1120  Netra t 1125
501-4450  501-5606

Ultra 60 Rear View

PARALLEL DB25

KEYBOARD DIN8

SERIAL A DB25

SERIAL B DB25

10BASE-T 100BASE-TX

MII HD40

ULTRA SCSI HD68

POWER SUPPLY

AC INPUT

HEADPHONE OUT IN MICROPHONE

Audio Slot

UPA Graphics Slot 0

UPA Graphics Slot 1

3.3V 33/66MHz 32/64-Bit PCI Slot 1

5.0V 33MHz 32/64-Bit PCI Slot 2

5.0V 33MHz 32/64-Bit PCI Slot 3

5.0V 33MHz 32/64-Bit PCI Slot 4

Volume I  WORKSTATION CPU-65
## Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0102</td>
<td>2-3</td>
<td>In</td>
<td>Bypass CPU0 in scan chain</td>
</tr>
<tr>
<td>J0202</td>
<td>2-3</td>
<td>In</td>
<td>Bypass CPU1 in scan chain</td>
</tr>
<tr>
<td>J0302</td>
<td>2-3</td>
<td>In</td>
<td>Bypass CPU2 in scan chain</td>
</tr>
<tr>
<td>J0402</td>
<td>2-3</td>
<td>In</td>
<td>Bypass CPU3 in scan chain</td>
</tr>
<tr>
<td>J2804</td>
<td>1-2</td>
<td>In</td>
<td>RS-232 +12Vdc</td>
</tr>
<tr>
<td>J2804</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J2805</td>
<td>1-2</td>
<td>In</td>
<td>RS-232 -12Vdc</td>
</tr>
<tr>
<td>J2805</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J3001</td>
<td>1-2</td>
<td>In</td>
<td>FPROM write protected (default)</td>
</tr>
<tr>
<td>J3001</td>
<td>2-3</td>
<td>In</td>
<td>FPROM write enabled</td>
</tr>
<tr>
<td>J3002</td>
<td>1-2</td>
<td>In</td>
<td>Select Flash PROM (default)</td>
</tr>
<tr>
<td>J3002</td>
<td>2-3</td>
<td>In</td>
<td>Select ROMBO</td>
</tr>
<tr>
<td>J3102</td>
<td>1-2</td>
<td>In</td>
<td>FPROM high half booting</td>
</tr>
<tr>
<td>J3102</td>
<td>2-3</td>
<td>In</td>
<td>FPROM low half booting (default)</td>
</tr>
<tr>
<td>J3201</td>
<td>1-2</td>
<td>In</td>
<td>+3 mode (360MHz)</td>
</tr>
<tr>
<td>J3201</td>
<td>2-3</td>
<td>In</td>
<td>+4 mode (400MHz/450mhz)</td>
</tr>
<tr>
<td>J3202</td>
<td>2-3</td>
<td>In</td>
<td>(on -07/08 FAB removed from -09)</td>
</tr>
<tr>
<td>J3705</td>
<td>1-2</td>
<td>In</td>
<td>QAM WGS- to SPEAKER OUT- (default)</td>
</tr>
<tr>
<td>J3705</td>
<td>2-3</td>
<td>In</td>
<td>QAM WGS- to POWERON_L</td>
</tr>
<tr>
<td>J3706</td>
<td>1-2</td>
<td>In</td>
<td>QAM WGS+ to SPEAKER OUT+ (default)</td>
</tr>
<tr>
<td>J3706</td>
<td>2-3</td>
<td>In</td>
<td>QAM WGS+ to SUPPLYTRIP_L</td>
</tr>
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</table>

### PCI Slot Numbering

<table>
<thead>
<tr>
<th>SLOT</th>
<th>BUS</th>
<th>DEVICE TREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>B</td>
<td>pci@1f,4000/<em>@5,</em></td>
</tr>
<tr>
<td>3</td>
<td>B</td>
<td>pci@1f,4000/<em>@2,</em></td>
</tr>
<tr>
<td>2</td>
<td>B</td>
<td>pci@1f,4000/<em>@4,</em></td>
</tr>
<tr>
<td>1</td>
<td>A</td>
<td>pci@1f,2000/<em>@1,</em></td>
</tr>
</tbody>
</table>

PCI Bus B shares the address/data bus with on-board Audio, Ethernet, Flash, Floppy, Keyboard, Mouse, NVRAM, Parallel, SCSI, and Serial devices.
Ultra 80  Enterprise 420R  Netra t 1400  Netra t 1405  
501-5168  
Miscellaneous Connectors

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>PINS</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>J2801</td>
<td>1-8</td>
<td>Serial test (factory use)</td>
</tr>
<tr>
<td>J2802</td>
<td>1-32</td>
<td>ROMBO (factory use)</td>
</tr>
<tr>
<td>J3101</td>
<td>1-2</td>
<td>Button XIR (factory use)</td>
</tr>
<tr>
<td>J3101</td>
<td>2-3</td>
<td>Button POR (factory use)</td>
</tr>
<tr>
<td>J3103</td>
<td>1-8</td>
<td>JSCC (factory use)</td>
</tr>
<tr>
<td>J4105</td>
<td>1-18</td>
<td>DC-DC Converter</td>
</tr>
<tr>
<td>J4106</td>
<td>1-14</td>
<td>Power supply sense</td>
</tr>
<tr>
<td>J4107</td>
<td>1-28</td>
<td>Power supply +3.3V and +5V</td>
</tr>
<tr>
<td>J4108</td>
<td>1-10</td>
<td>DC-DC converter</td>
</tr>
<tr>
<td>J4109</td>
<td>1-2</td>
<td>Fan power</td>
</tr>
<tr>
<td>J4110</td>
<td>1-2</td>
<td>Fan power</td>
</tr>
<tr>
<td>J4111</td>
<td>1-8</td>
<td>Interlock, LED, speaker, and power switch</td>
</tr>
<tr>
<td>J4112</td>
<td>1-10</td>
<td>DC power to internal peripherals</td>
</tr>
</tbody>
</table>

Notes
1. The minimum OS is 2.5.1 HW: 11/97, 2.6 HW: 5/98, or 7 HW: 8/99.
2. The flash PROM is soldered to the solder side at U3007.
3. Use the Flash PROM Programming Utility to update the flash PROM.
4. 64-Bit PCI boards do not fit into Slot 4. Connector J3601 interferes with the 64-Bit PCI extension connector.

SCSI Bus Notes
1. The internal SCSI bus is controlled by /pci@1f,4000/scsi@3.
2. The external SCSI bus is controlled by /pci@1f,4000/scsi@3,1.

Memory Notes
1. The minimum requirement is four DIMMs in any bank.
2. The recommended installation sequence is Bank 0, 2, 1, 3.
3. DIMMs are required on both the Riser Board and the System Board.
4. Damage to the Mictor Connectors can occur if DIMMs are installed or removed when the Riser Board is installed on the System Board.
5. Each bank addresses 1GB of memory.
6. Two-way and four-way memory bank interleaving is supported.

References
Ultra 80  Enterprise 420R  Netra t 1400  Netra t 1405
501-5168

Ultra 80 Rear View

- SERIAL A DB25
- SERIAL B DB25
- PARALLEL DB25
- ULTRA SCSI HD68
- KEYBOARD DIN8
- 10BASE-T 100BASE-TX
- FILLER PANEL

- HD PH OUT IN MIC

<table>
<thead>
<tr>
<th>Slot</th>
<th>Description</th>
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<tbody>
<tr>
<td>UPA Graphics</td>
<td>Slot 0</td>
</tr>
<tr>
<td>UPA Graphics</td>
<td>Slot 1</td>
</tr>
<tr>
<td>5.0V 33MHz</td>
<td>32-Bit PCI Slot 4</td>
</tr>
<tr>
<td>5.0V 33MHz</td>
<td>32/64-Bit PCI Slot 3</td>
</tr>
<tr>
<td>5.0V 33MHz</td>
<td>32/64-Bit PCI Slot 2</td>
</tr>
<tr>
<td>3.3V 33/66MHz</td>
<td>32/64-Bit PCI Slot 1</td>
</tr>
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POWER SUPPLY 300-1357
Sun Blade 100
A36
375-0096
0MB FRU
w/o UltraSPARC Ile
375-0112
0MB 500MHz
UltraSPARC Ile

WORKSTATION CPU-70
Field Engineer Handbook
### Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>JP1</td>
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<td>Select Flash PROM (default)</td>
</tr>
<tr>
<td>JP1</td>
<td>2-3</td>
<td>In</td>
<td>Select ROMBO</td>
</tr>
<tr>
<td>JP2</td>
<td>1-2</td>
<td>In</td>
<td>OBP write protected (default)</td>
</tr>
<tr>
<td>JP2</td>
<td>2-3</td>
<td>In</td>
<td>OBP write enabled</td>
</tr>
<tr>
<td>JP4</td>
<td>1-4</td>
<td>In</td>
<td>Unknown</td>
</tr>
<tr>
<td>JP5</td>
<td>1-8</td>
<td>In</td>
<td>Unknown</td>
</tr>
<tr>
<td>JP8</td>
<td>1-8</td>
<td>Out</td>
<td>Debug header</td>
</tr>
<tr>
<td>JP9</td>
<td>1-4</td>
<td>In</td>
<td>Unknown</td>
</tr>
<tr>
<td>JPx</td>
<td>1-8</td>
<td>Out</td>
<td>Debug header</td>
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#### JP3 Speed Select Jumper Settings

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<th>3-4</th>
<th>5-6</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>Out</td>
<td>Out</td>
<td>Out</td>
<td>500MHz UltraSPARC Ile</td>
<td>100-6471</td>
</tr>
<tr>
<td>In</td>
<td>Out</td>
<td>Out</td>
<td>550MHz UltraSPARC Ile</td>
<td>Not available</td>
</tr>
<tr>
<td>Out</td>
<td>In</td>
<td>Out</td>
<td>600MHz UltraSPARC Ile</td>
<td>Not available</td>
</tr>
<tr>
<td>In</td>
<td>In</td>
<td>Out</td>
<td>650MHz UltraSPARC Ile</td>
<td>Not available</td>
</tr>
<tr>
<td>Out</td>
<td>Out</td>
<td>In</td>
<td>Reserved</td>
<td>Not available</td>
</tr>
<tr>
<td>In</td>
<td>Out</td>
<td>In</td>
<td>Reserved</td>
<td>Not available</td>
</tr>
<tr>
<td>Out</td>
<td>In</td>
<td>In</td>
<td>Reserved</td>
<td>Not available</td>
</tr>
<tr>
<td>In</td>
<td>In</td>
<td>In</td>
<td>450MHz UltraSPARC Ile</td>
<td>Not available</td>
</tr>
</tbody>
</table>

**Notes**

1. The minimum operating system is Solaris 8 10/00.
2. The minimum memory requirement is one DIMM in U2.
3. The memory installation sequence is U2, U3, U4, and U5.
4. Each bank addresses 512MB of memory with 500MHz UltraSPARC.
5. Each bank addresses 1GB of memory with ≥550MHz UltraSPARC.

501-4143
Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
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<tbody>
<tr>
<td>J2103</td>
<td>1-2</td>
<td>In</td>
<td>FPROM write protected</td>
</tr>
<tr>
<td>J2103</td>
<td>2-3</td>
<td>In</td>
<td>FPROM write enabled (default)</td>
</tr>
<tr>
<td>J2104</td>
<td>1-2</td>
<td>Out</td>
<td>FPROM high half booting</td>
</tr>
<tr>
<td>J2104</td>
<td>2-3</td>
<td>In</td>
<td>FPROM low half booting (default)</td>
</tr>
</tbody>
</table>

Miscellaneous Connectors

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>PINS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1801</td>
<td>1-34</td>
<td>Floppy</td>
</tr>
<tr>
<td>J1901</td>
<td>1-8</td>
<td>Serial test (factory use)</td>
</tr>
<tr>
<td>J2901</td>
<td>1-20</td>
<td>Internal FC-AL</td>
</tr>
<tr>
<td>J3301</td>
<td>1-2</td>
<td>DIMM Fan Power</td>
</tr>
<tr>
<td>J3302</td>
<td>1-2</td>
<td>Graphics and PCI Fan Power</td>
</tr>
<tr>
<td>J3303</td>
<td>1-2</td>
<td>CPU Fan Power</td>
</tr>
<tr>
<td>J3601</td>
<td>1-28</td>
<td>Power supply +3.3V and +5V</td>
</tr>
<tr>
<td>J3602</td>
<td>1-8</td>
<td>Interlock, LED, speaker, and power switch</td>
</tr>
<tr>
<td>J3603</td>
<td>1-14</td>
<td>Power supply sense</td>
</tr>
<tr>
<td>J3604</td>
<td>1-10</td>
<td>Smart Card</td>
</tr>
<tr>
<td>J3605</td>
<td>1-6</td>
<td>Glow Logo LED</td>
</tr>
<tr>
<td>J3608</td>
<td>1-10</td>
<td>DC power to internal peripherals</td>
</tr>
<tr>
<td>J4802</td>
<td>1-38</td>
<td>ROMBO (factory use)</td>
</tr>
<tr>
<td>J4803</td>
<td>1-8</td>
<td>JSCC (factory use)</td>
</tr>
<tr>
<td>J5002</td>
<td>1-50</td>
<td>Internal UltraSCSI</td>
</tr>
<tr>
<td>J5201</td>
<td>1-2</td>
<td>Logic Analyzer Clock</td>
</tr>
<tr>
<td>J5202</td>
<td>1-2</td>
<td>Logic Analyzer Clock</td>
</tr>
</tbody>
</table>

Notes
1. The minimum operating system is Solaris 8.
2. Use the Flash PROM Programming Utility to update the flash PROM.
3. Use torque tool 340-6395 to install the UltraSPARC III module.
4. The minimum memory requirement is four DIMMs in any Group.
5. Each Group addresses 4GB memory.


Volume I WORKSTATION CPU-73
PCI Slot Numbering

<table>
<thead>
<tr>
<th>SLOT</th>
<th>BUS</th>
<th>DEVICE TREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>B</td>
<td>pci@8,7000/®@1,*</td>
</tr>
<tr>
<td>3</td>
<td>B</td>
<td>pci@8,7000/®@2,*</td>
</tr>
<tr>
<td>2</td>
<td>B</td>
<td>pci@8,7000/®@3,*</td>
</tr>
<tr>
<td>1</td>
<td>A</td>
<td>pci@8,6000/®@1,*</td>
</tr>
</tbody>
</table>

PCI Bus A shares the address/data bus with the FC-AL device. PCI Bus B shares the address/data bus with on-board Audio, Ethernet, Flash, Floppy, IEEE 1394, Parallel, SCSI, Serial, and USB devices.
CONFIGURATIONS

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## Server CPU

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Backplane Guide Pins

Remove two screws from the System Board XDBus connector before installing the system board in backplanes with guide pins. Guide pins were added to the backplane in March 1994 by ECO WO_05457.
501-2336

Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1200</td>
<td>1-2</td>
<td>Out</td>
<td>RS-423</td>
</tr>
<tr>
<td>J1201</td>
<td>1-2</td>
<td>Out</td>
<td>RS-423</td>
</tr>
<tr>
<td>J1200</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 +12Vdc (default)</td>
</tr>
<tr>
<td>J1201</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 -12Vdc (default)</td>
</tr>
</tbody>
</table>

Configured System Boards

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>MAIN MEMORY</th>
<th>SIMM SIZE</th>
<th>SPARC MODULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>501-2245-03</td>
<td>32MB</td>
<td>8MB</td>
<td>1 SM41</td>
</tr>
<tr>
<td>501-2247-03</td>
<td>64MB</td>
<td>8MB</td>
<td>2 SM41</td>
</tr>
<tr>
<td>501-2248-03</td>
<td>128MB</td>
<td>32MB</td>
<td>2 SM41</td>
</tr>
<tr>
<td>501-2429-xx</td>
<td>64MB</td>
<td>8MB</td>
<td>2 SM41</td>
</tr>
<tr>
<td>501-2430-xx</td>
<td>512MB</td>
<td>32MB</td>
<td>2 SM41</td>
</tr>
<tr>
<td>501-2245-04</td>
<td>32MB</td>
<td>8MB</td>
<td>1 SM51</td>
</tr>
<tr>
<td>501-2247-04</td>
<td>64MB</td>
<td>8MB</td>
<td>2 SM51</td>
</tr>
<tr>
<td>501-2248-04</td>
<td>128MB</td>
<td>32MB</td>
<td>2 SM51</td>
</tr>
<tr>
<td>501-2736-xx</td>
<td>64MB</td>
<td>8MB</td>
<td>2 SM61</td>
</tr>
<tr>
<td>501-2737-xx</td>
<td>128MB</td>
<td>32MB</td>
<td>2 SM61</td>
</tr>
</tbody>
</table>

Notes
1. The minimum operating system is Solaris 2.2 (SunOS 5.2).
2. Install the highest level Boot PROM set in System Board 0.
3. Use SPARC module and SBus board Standoff 330-1664-01.
4. A root partition >2GB is not supported by Sun-4c, 4m, or 4d systems.

Memory Configuration Notes
1. The minimum memory configuration is 4 SIMMs in Group 0.
2. Use 8MB SIMM 501-1817 and 32MB SIMM 501-2196.
3. Install all Group 0 SIMMs on all system boards from the lowest board slot number to the highest. Then install SIMMs in Group 1 on all system boards, followed by Group 2 and Group 3. Refer to the Memory Module Installation Guide for installation performance guidelines.

References
2. SPARCserver 1000 System Board Manual, 801-2900-12.
5. BugID 4035259 filed against root partition >2GB.
40MHz Control Board
SPARCserver 1000
501-1979  501-2412
Programmed  Unprogrammed

80MHz
Y0501

J1003  3 1/2" SCSI POWER

U0201
TMS29F816

J1004  INTERNAL SCSI BUS

J1002  3 1/2" SCSI POWER

J1001
RESET SWITCH

F0801

F0802

F0805

F0806

F0804

F0801

J0101  JTAG

5 1/4" SCSI POWER

SERVER CPU-4  Field Engineer Handbook
Notes
1. The 40MHz Control Board is not compatible with the SS1000E System Board.
2. The HOSTID and Ethernet Address are programmed into a 2KB x 8-bit Flash EEPROM in the TMS29F816 at U0201. The TMS29F816 is not field replaceable.
3. The HOSTID and Ethernet Address are downloaded from the control board to the NVRAM on all system boards during POST.
4. If the control board EEPROM content is invalid, the values stored in the NVRAM on System Board 0 are used.
5. The Yellow LED on the keyswitch interface board is ON if the control board EEPROM content is invalid.
6. Use the `update-system-idprom` OBP command to download the contents of the NVRAM on System Board 0 to a control board with an invalid EEPROM. OBP 2.11 is required.
7. Use the following commands to invalidate the control board EEPROM:
   - `ok patch noop call update-system-idprom`
   - `ok patch call noop update-system-idprom`
   - `ok update-system-idprom`
8. Use the following commands to change the NVRAM parameter that defines the location of the master system board:
   - `ok clear-master-nvram`
   - `ok reset`
Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1200</td>
<td>1-2</td>
<td>Out</td>
<td>RS-423</td>
</tr>
<tr>
<td>J1201</td>
<td>1-2</td>
<td>Out</td>
<td>RS-423</td>
</tr>
<tr>
<td>J1200</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 +12Vdc (default)</td>
</tr>
<tr>
<td>J1201</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 -12Vdc (default)</td>
</tr>
</tbody>
</table>

Configured System Boards

<table>
<thead>
<tr>
<th>PART#</th>
<th>MEMORY</th>
<th>SIMM</th>
<th>MODULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>501-2764</td>
<td>64MB</td>
<td>8MB</td>
<td>1 SM61</td>
</tr>
<tr>
<td>501-2765</td>
<td>128MB</td>
<td>32MB</td>
<td>2 SM61</td>
</tr>
<tr>
<td>501-2766</td>
<td>0MB</td>
<td>-</td>
<td>2 SM61</td>
</tr>
<tr>
<td>501-2998</td>
<td>0MB</td>
<td>-</td>
<td>2 SM81</td>
</tr>
<tr>
<td>501-3038</td>
<td>128MB</td>
<td>8MB</td>
<td>2 SM81</td>
</tr>
<tr>
<td>501-3039</td>
<td>256MB</td>
<td>32MB</td>
<td>2 SM81</td>
</tr>
</tbody>
</table>

Notes
1. The minimum operating system is Solaris 2.3.
2. The SM81 requires Solaris 2.4 and Patch ≥101945-35.
3. Install the highest level Boot PROM set in System Board 0.
4. Boot PROMs ≥2.18 disable 40MHz System Boards if they are installed in systems using the 50MHz Control Board.
5. Use SPARC module and SBus board Standoff 330-1664-01.
6. A root partition >2GB is not supported by Sun-4c, 4m, or 4d systems.

Memory Configuration Notes
1. The minimum memory configuration is 4 SIMMs in Group 0.
2. Use 8MB SIMMs 501-1817 and 32MB SIMM 501-2196.
3. Install all Group 0 SIMMs on all system boards from the lowest board slot number to the highest. Then install SIMMs in Group 1 on all system boards, followed by Group 2 and Group 3. Refer to the Memory Module Installation Guide for installation performance guidelines.

References
2. SPARCserver 1000 System Board Manual, 801-2900-12.
5. BugID 4035259 filed against root partition >2GB.
50MHz Control Board
SPARCserver 1000E
501-2667  Programmed
501-2673  Unprogrammed

100MHz Y0501
U0201 TMS29F816
J1003  3 1/2" SCSI POWER
J1004  INTERNAL SCSI BUS
J1002  3 1/2" SCSI POWER
J0101  JTAG
J1001  5 1/4" SCSI POWER
J0102
F0801 F0802
F0805 F0806
F0804
RESET SWITCH

SERVER CPU-8  Field Engineer Handbook
Notes
1. The 50MHz Control Board is not compatible with the SS1000 System Board and SuperSPARC modules that run at 40MHz on the XDBus.
2. Boot PROMs $\geq 2.18$ disable 40MHz System Boards if they are installed in systems using the 50MHz Control Board.
3. The HOSTID and Ethernet Address are programmed into a 2KB x 8-bit Flash EEPROM in the TMS29F816 at U0201. The TMS29F816 is not field replaceable.
4. The HOSTID and Ethernet Address are downloaded from the control board to the NVRAM on all system boards during POST.
5. If the control board EEPROM content is invalid, the values stored in the NVRAM on System Board 0 are used.
6. The Yellow LED on the keyswitch interface board is ON if the control board EEPROM content is invalid.
7. Use the `update-system-idprom` OBP command to download the contents of the NVRAM on System Board 0 to a control board with an invalid EEPROM. OBP 2.11 is required.
8. Use the following commands to invalidate the control board EEPROM:
   - `ok patch noop call update-system-idprom`
   - `ok patch noop call update-system-idprom`
   - `ok patch call noop update-system-idprom`
   - `ok update-system-idprom`
9. Use the following commands to change the NVRAM parameter that defines the location of the master system board:
   - `ok clear-master-nvram`
   - `ok reset`
Notes
1. FAB 270-1866-03 uses a fuse at F0200 and F0300.
2. FAB 270-1866-04 uses a PTC at F0200 and F0300.
3. System Board 501-1866-xx can only access 1MB of cache.
Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1400</td>
<td>1-2</td>
<td>Out</td>
<td>RS-423</td>
</tr>
<tr>
<td>J1401</td>
<td>1-2</td>
<td>Out</td>
<td>RS-423</td>
</tr>
<tr>
<td>J1400</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 +12Vdc (default)</td>
</tr>
<tr>
<td>J1401</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 -12Vdc (default)</td>
</tr>
<tr>
<td>J1501</td>
<td>1-2</td>
<td>Out</td>
<td>Factory use only</td>
</tr>
<tr>
<td>J1501</td>
<td>2-3</td>
<td>In</td>
<td>Default setting</td>
</tr>
</tbody>
</table>

Backplane Guide Pins

Remove two screws from the System Board XDbus connectors before installing the system board in backplanes with guide pins. Guide pins were added to the backplane in December 1993 by ECO WO_05425.

Notes
1. The minimum operating system is Solaris 2.2.
2. Solaris 2.2 supports 5 system boards.
3. Solaris 2.2 supports 8 SuperSPARC modules on 4 system boards.
4. Solaris 2.3 supports 20 SuperSPARC modules on 10 system boards.
5. Install the highest level Boot PROM set in System Board 0.
6. Use SPARC module and SBUS board Standoff 330-1664-01.
7. A root partition >2GB is not supported by Sun-4c, 4m, or 4d systems.

Memory Configuration Notes
1. The minimum memory configuration is 8 SIMMs in Group 0.
2. Install all Group 0 SIMMs on all system boards from the lowest board slot number to the highest. Then install SIMMs in Group 1 on all system boards. Refer to the Memory Module Installation Guide for installation performance guidelines.
3. Use 8MB SIMM 501-1817 and 32MB SIMM 501-2196.

References
5. BugID 4035259 filed against root partition >2GB.
SPARCcenter 2000
501-1866  501-2334
Configured System Boards

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>MAIN MEMORY</th>
<th>DIMM SIZE</th>
<th>NV MEMORY</th>
<th>NVSIMM SIZE</th>
<th>SPARC MODULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>501-2208</td>
<td>128MB</td>
<td>8MB</td>
<td>-</td>
<td>-</td>
<td>2 SM41</td>
</tr>
<tr>
<td>501-2209</td>
<td>64MB</td>
<td>8MB</td>
<td>-</td>
<td>-</td>
<td>2 SM41</td>
</tr>
<tr>
<td>501-2221</td>
<td>128MB</td>
<td>8MB</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>501-2223</td>
<td>0MB</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2 SM51</td>
</tr>
<tr>
<td>501-2296</td>
<td>64MB</td>
<td>8MB</td>
<td>8MB</td>
<td>1MB</td>
<td>S SM41</td>
</tr>
<tr>
<td>501-2321</td>
<td>256MB</td>
<td>32MB</td>
<td>-</td>
<td>-</td>
<td>2 SM41</td>
</tr>
<tr>
<td>501-2322</td>
<td>256MB</td>
<td>32MB</td>
<td>8MB</td>
<td>1MB</td>
<td>2 SM41</td>
</tr>
<tr>
<td>501-2323</td>
<td>512MB</td>
<td>32MB</td>
<td>-</td>
<td>-</td>
<td>2 SM41</td>
</tr>
<tr>
<td>501-2437</td>
<td>128MB</td>
<td>8MB</td>
<td>-</td>
<td>-</td>
<td>2 SM51-2</td>
</tr>
<tr>
<td>501-2438</td>
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<td>-</td>
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<tr>
<td>501-2439</td>
<td>512MB</td>
<td>32MB</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>501-2448</td>
<td>64MB</td>
<td>8MB</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>501-2720</td>
<td>0MB</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2 SM61-2</td>
</tr>
<tr>
<td>501-2721</td>
<td>128MB</td>
<td>8MB</td>
<td>-</td>
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<tr>
<td>501-2722</td>
<td>256MB</td>
<td>32MB</td>
<td>-</td>
<td>-</td>
<td>2 SM61-2</td>
</tr>
</tbody>
</table>
40MHz Control Board
SPARCcenter 2000

501-1671  Programmed
501-2335  Programmed
501-2406  Unprogrammed

CARB-1

JTAG
J0101

LEDS
SP
RS
SD
S1
YB
YD
VT
VC

U0203
TMS29F816

80MHz

CARB-0

9/18/00
### LED Description

<table>
<thead>
<tr>
<th>LED</th>
<th>SIGNAL</th>
<th>DESCRIPTION</th>
<th>COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>SVP</td>
<td>Service processor attached</td>
<td>Yellow</td>
</tr>
<tr>
<td>RS</td>
<td>RST</td>
<td>System reset</td>
<td>Yellow</td>
</tr>
<tr>
<td>S0</td>
<td>STP0</td>
<td>Stop request from CARB0 ASIC</td>
<td>Yellow</td>
</tr>
<tr>
<td>S1</td>
<td>STP1</td>
<td>Stop request from CARB1 ASIC</td>
<td>Yellow</td>
</tr>
<tr>
<td>VB</td>
<td>Vbb</td>
<td>-12 Volts DC status OK</td>
<td>Green</td>
</tr>
<tr>
<td>VD</td>
<td>Vdd</td>
<td>+12 Volts DC status OK</td>
<td>Green</td>
</tr>
<tr>
<td>VT</td>
<td>Vtt</td>
<td>+1.2 Volts DC status OK</td>
<td>Green</td>
</tr>
<tr>
<td>VC</td>
<td>Vcc</td>
<td>+5 Volts DC status OK</td>
<td>Green</td>
</tr>
</tbody>
</table>

**Notes**

1. The 40MHz Control Board is not compatible with the SC2000E System Board.
2. The HOSTID and Ethernet Address are programmed into a 2KB x 8-bit Flash EEPROM in the TMS29F816 at U0203. The TMS29F816 is not field replaceable.
3. The HOSTID and Ethernet Address are downloaded from the control board to the NVRAM on all system boards during POST.
4. If the control board EEPROM content is invalid, the values stored in the NVRAM on System Board 0 are used.
5. The Yellow LED on the keyswitch interface board is ON if the control board EEPROM content is invalid.
6. Use the `update-system-idprom` OBP command to download the contents of the NVRAM on System Board 0 to a control board with an invalid EEPROM. OBP 2.11 is required.
7. Use the following commands to invalidate the control board EEPROM:
   - `ok patch noop call update-system-idprom`
   - `ok patch call noop update-system-idprom`
   - `ok update-system-idprom`
8. Use the following commands to change the NVRAM parameter that defines the location of the master system board:
   - `ok clear-master-nvram`
   - `ok reset`
9. The 501-1671-04 has a 66MHz clock for the early production units with 33MHz SuperSPARC modules.

501-2718

Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1200</td>
<td>1-2</td>
<td>Out</td>
<td>RS-423</td>
</tr>
<tr>
<td>J1201</td>
<td>1-2</td>
<td>Out</td>
<td>RS-423</td>
</tr>
<tr>
<td>J1200</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 +12Vdc (default)</td>
</tr>
<tr>
<td>J1201</td>
<td>2-3</td>
<td>In</td>
<td>RS-232 -12Vdc (default)</td>
</tr>
<tr>
<td>J1501</td>
<td>1-2</td>
<td>Out</td>
<td>Factory use only</td>
</tr>
<tr>
<td>J1501</td>
<td>2-3</td>
<td>In</td>
<td>Default setting</td>
</tr>
</tbody>
</table>

Configured System Boards

<table>
<thead>
<tr>
<th>PART#</th>
<th>MEMORY</th>
<th>DIMM</th>
<th>MODULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>501-2672</td>
<td>256MB</td>
<td>32MB</td>
<td>2 SM61-2</td>
</tr>
<tr>
<td>501-2719</td>
<td>0MB</td>
<td>-</td>
<td>2 SM61-2</td>
</tr>
<tr>
<td>501-2723</td>
<td>128MB</td>
<td>8MB</td>
<td>2 SM61-2</td>
</tr>
<tr>
<td>501-2999</td>
<td>0MB</td>
<td>-</td>
<td>2 SM81-2</td>
</tr>
<tr>
<td>501-3034</td>
<td>256MB</td>
<td>32MB</td>
<td>2 SM81-2</td>
</tr>
<tr>
<td>501-3035</td>
<td>256MB</td>
<td>32MB</td>
<td>2 SM81-2</td>
</tr>
<tr>
<td>501-3036</td>
<td>128MB</td>
<td>8MB</td>
<td>2 SM81-2</td>
</tr>
<tr>
<td>501-3037</td>
<td>512MB</td>
<td>32MB</td>
<td>2 SM81-2</td>
</tr>
</tbody>
</table>

Notes
1. The minimum operating system is Solaris 2.3.
2. Solaris 2.3 supports 20 SuperSPARC modules on 10 system boards.
3. The SM81-2 requires Solaris 2.4 and Patch ≥101945-35.
4. Boot PROMs ≥2.18 disable 40MHz System Boards if they are installed in systems using the 50MHz Control Board.
5. Install the highest level Boot PROM set in System Board 0.
6. Use SPARC module and SBus board Standoff 330-1664-01.
7. A root partition >2GB is not supported by Sun-4c, 4m, or 4d systems.

Memory Configuration Notes
1. The minimum memory configuration is 8 SIMMs in Group 0.
2. Use 8MB SIMM 501-1817 and 32MB SIMM 501-2196.
3. Install all Group 0 SIMMs on all system boards from the lowest board slot number to the highest. Then install SIMMs in Group 1 on all system boards. Refer to the Memory Module Installation Guide for installation performance guidelines.

References
3. BugID 4035259 filed against root partition >2GB.
501-2666     501-2674

LED Description

<table>
<thead>
<tr>
<th>LED</th>
<th>SIGNAL</th>
<th>DESCRIPTION</th>
<th>COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>SVP</td>
<td>Service processor attached</td>
<td>Yellow</td>
</tr>
<tr>
<td>RS</td>
<td>RST</td>
<td>System reset</td>
<td>Yellow</td>
</tr>
<tr>
<td>S0</td>
<td>STP0</td>
<td>Stop request from CARB0 ASIC</td>
<td>Yellow</td>
</tr>
<tr>
<td>S1</td>
<td>STP1</td>
<td>Stop request from CARB1 ASIC</td>
<td>Yellow</td>
</tr>
<tr>
<td>VB</td>
<td>Vbb</td>
<td>-12 Volts DC status OK</td>
<td>Green</td>
</tr>
<tr>
<td>VD</td>
<td>Vdd</td>
<td>+12 Volts DC status OK</td>
<td>Green</td>
</tr>
<tr>
<td>VT</td>
<td>Vtt</td>
<td>+1.2 Volts DC status OK</td>
<td>Green</td>
</tr>
<tr>
<td>VC</td>
<td>Vcc</td>
<td>+5 Volts DC status OK</td>
<td>Green</td>
</tr>
</tbody>
</table>

Notes

1. The 50MHz Control Board is not compatible with the SC2000 System Board and SuperSPARC modules that run at 40MHz on the XDBus.
2. Boot PROMs ≥2.18 disable 40MHz System Boards if they are installed in systems using the 50MHz Control Board.
3. The HOSTID and Ethernet Address are programmed into a 2KB x 8-bit Flash EEPROM in the TMS29F816 at U0203. The TMS29F816 is not field replaceable.
4. The HOSTID and Ethernet Address are downloaded from the control board to the NVRAM on all system boards during POST.
5. If the control board EEPROM content is invalid, the values stored in the NVRAM on System Board 0 are used.
6. The Yellow LED on the keyswitch interface board is ON if the control board EEPROM content is invalid.
7. Use the `update-system-idprom` OBP command to download the contents of the NVRAM on System Board 0 to a control board with an invalid EEPROM. OBP 2.11 is required.
8. Use the following commands to invalidate the control board EEPROM:
   - `ok patch noop call update-system-idprom`
   - `ok patch noop call update-system-idprom`
   - `ok patch call noop update-system-idprom`
   - `ok update-system-idprom`
9. Use the following commands to change the NVRAM parameter that defines the location of the master system board:
   - `ok clear-master-nvram`
   - `ok reset`

### Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1001</td>
<td>1-2</td>
<td>In</td>
<td>Enable active SCSI terminator (default)</td>
</tr>
<tr>
<td>J1001</td>
<td>2-3</td>
<td>In</td>
<td>Disable active SCSI terminator</td>
</tr>
<tr>
<td>J1002</td>
<td>1-2</td>
<td>In</td>
<td>Enable SCSI terminator power (default)</td>
</tr>
<tr>
<td>J1002</td>
<td>2-3</td>
<td>In</td>
<td>Disable SCSI terminator power</td>
</tr>
<tr>
<td>J1401</td>
<td>1-2</td>
<td>In</td>
<td>FPROM write protect</td>
</tr>
<tr>
<td>J1401</td>
<td>2-3</td>
<td>In</td>
<td>FPROM write enable (default)</td>
</tr>
<tr>
<td>J1501</td>
<td>1-8</td>
<td>Out</td>
<td>JTAG scan connector</td>
</tr>
<tr>
<td>J1502</td>
<td>1-2</td>
<td>In</td>
<td>External clock (default)</td>
</tr>
<tr>
<td>J1502</td>
<td>2-3</td>
<td>In</td>
<td>Scan clock</td>
</tr>
<tr>
<td>J3301</td>
<td>1-2</td>
<td>In</td>
<td>Disable loopback reset</td>
</tr>
<tr>
<td>J3301</td>
<td>2-3</td>
<td>In</td>
<td>Enable loopback reset (default)</td>
</tr>
<tr>
<td>J3302</td>
<td>1-2</td>
<td>In</td>
<td>Disable user flash write</td>
</tr>
<tr>
<td>J3302</td>
<td>2-3</td>
<td>In</td>
<td>Enable user flash write (default)</td>
</tr>
<tr>
<td>J3303</td>
<td>1-2</td>
<td>In</td>
<td>System flash access by ROMBO</td>
</tr>
<tr>
<td>J3303</td>
<td>2-3</td>
<td>In</td>
<td>System flash access by J3304 (default)</td>
</tr>
<tr>
<td>J3304</td>
<td>1-2</td>
<td>In</td>
<td>Boot from user flash0</td>
</tr>
<tr>
<td>J3304</td>
<td>2-3</td>
<td>In</td>
<td>Boot from system flash (default)</td>
</tr>
<tr>
<td>J3306</td>
<td>2-3</td>
<td>In</td>
<td>7-segment LED display bias</td>
</tr>
<tr>
<td>J3401</td>
<td>1-3</td>
<td>Out</td>
<td>Header for I2C EEPROM module</td>
</tr>
<tr>
<td>J3601</td>
<td>1-3</td>
<td>Out</td>
<td>Header for I2C EEPROM module</td>
</tr>
<tr>
<td>J3602</td>
<td>1-3</td>
<td>Out</td>
<td>Header for I2C EEPROM module</td>
</tr>
<tr>
<td>J4703</td>
<td>1-2</td>
<td>Out</td>
<td>PLD TDO</td>
</tr>
<tr>
<td>J4703</td>
<td>2-3</td>
<td>Out</td>
<td>cPCI TDO</td>
</tr>
<tr>
<td>J5102</td>
<td>1-2</td>
<td>Out</td>
<td>Thermal diode</td>
</tr>
</tbody>
</table>

### Notes
1. The minimum SPARCengine CP1500 OS is Solaris 2.6 HW 5/98.
2. The minimum Netra t1 Model 100/105 OS is Solaris 2.6 HW 5/98.

### References
SPARCengine CP1500

Netra t1  Netra ct400  Netra ct800  SPARCengine CP1500

<table>
<thead>
<tr>
<th>Part</th>
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<th>Options</th>
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<tr>
<td>501-5473</td>
<td>501-5578</td>
<td>501-5580</td>
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<tr>
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<td>440MHz</td>
<td>440MHz</td>
</tr>
<tr>
<td>0MB</td>
<td>0MB</td>
<td>256MB FRU</td>
</tr>
<tr>
<td>w Front Panel</td>
<td>w/o Front Panel</td>
<td>w/o Front Panel</td>
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</table>

Netra t1

501-5731  501-5795  501-5796  501-5800

440MHz  440MHz  440MHz  440MHz
0MB FRU  128MB  512MB  1GB
w Front Panel  w Front Panel  w Front Panel  w Front Panel
Netra ct 400/800  Netra ct 400/800  Netra ct 400/800  Netra ct 400/800
Modified 501-5473

FAB 270-5473

10BASE-T 100BASE-TX

SERIAL A DIN-8

DISPLAY

LED

RESET

INTERRUPT

1.9V DC-DC 3.3V DC-DC

UltraSPARC III

APB

SME 2411

PCI to PCI

DEC 21160

Field Engineer Handbook
### Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
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<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>J1001</td>
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<td>In</td>
<td>Enable active SCSI terminator (default)</td>
</tr>
<tr>
<td>J1001</td>
<td>2-3</td>
<td>In</td>
<td>Disable active SCSI terminator</td>
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<tr>
<td>J1002</td>
<td>1-2</td>
<td>In</td>
<td>Enable SCSI terminator power (default)</td>
</tr>
<tr>
<td>J1002</td>
<td>2-3</td>
<td>In</td>
<td>Disable SCSI terminator power</td>
</tr>
<tr>
<td>J1401</td>
<td>1-2</td>
<td>In</td>
<td>FPROM write protect</td>
</tr>
<tr>
<td>J1401</td>
<td>2-3</td>
<td>In</td>
<td>FPROM write enable (default)</td>
</tr>
<tr>
<td>J1501</td>
<td>1-8</td>
<td>Out</td>
<td>JTAG scan connector</td>
</tr>
<tr>
<td>J1502</td>
<td>1-2</td>
<td>In</td>
<td>External clock (default)</td>
</tr>
<tr>
<td>J1502</td>
<td>2-3</td>
<td>In</td>
<td>Scan clock</td>
</tr>
<tr>
<td>J3301</td>
<td>1-2</td>
<td>In</td>
<td>Disable loopback reset</td>
</tr>
<tr>
<td>J3301</td>
<td>2-3</td>
<td>In</td>
<td>Enable loopback reset (default)</td>
</tr>
<tr>
<td>J3302</td>
<td>1-2</td>
<td>In</td>
<td>Disable user flash write</td>
</tr>
<tr>
<td>J3302</td>
<td>2-3</td>
<td>In</td>
<td>Enable user flash write (default)</td>
</tr>
<tr>
<td>J3303</td>
<td>1-2</td>
<td>In</td>
<td>System flash access by ROMBO</td>
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<td>J3303</td>
<td>2-3</td>
<td>In</td>
<td>System flash access by J3304 (default)</td>
</tr>
<tr>
<td>J3304</td>
<td>1-2</td>
<td>In</td>
<td>Boot from user flash0</td>
</tr>
<tr>
<td>J3304</td>
<td>2-3</td>
<td>In</td>
<td>Boot from system flash (default)</td>
</tr>
<tr>
<td>J3306</td>
<td>2-3</td>
<td>In</td>
<td>7-segment LED display bias</td>
</tr>
<tr>
<td>J3401</td>
<td>1-3</td>
<td>Out</td>
<td>Header for I2C EEPROM module</td>
</tr>
<tr>
<td>J3601</td>
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<td>Out</td>
<td>Header for I2C EEPROM module</td>
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<tr>
<td>J4703</td>
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<td>Out</td>
<td>PLD TDO</td>
</tr>
<tr>
<td>J4703</td>
<td>2-3</td>
<td>Out</td>
<td>cPCI TDO</td>
</tr>
<tr>
<td>J5102</td>
<td>1-2</td>
<td>Out</td>
<td>Thermal diode - pins are not installed</td>
</tr>
</tbody>
</table>

### Notes
1. The minimum SPARCengine CP1500 OS is Solaris 2.6 HW 5/98.
2. The minimum Netra t1 Model 100/105 OS is Solaris 2.6 HW 5/98.
3. The Operating Environment Installation CD is required to install Solaris 2.6 HW: 5/98.
4. The minimum Netra ct 400 and ct 800 OS is Solaris 8 HW: 6/00.

### References
## 501-4681

### Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
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<th>SETTING</th>
<th>DESCRIPTION</th>
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<td>In</td>
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<td>UPA_REQ_SPARE High</td>
</tr>
<tr>
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<td>2-3</td>
<td>In</td>
<td>UPA_REQ_SPARE Low (default)</td>
</tr>
<tr>
<td>J2604</td>
<td>1-2</td>
<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>J2604</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J2605</td>
<td>1-2</td>
<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>J2605</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J2702</td>
<td>1-2</td>
<td>In</td>
<td>Select Flash PROM (default)</td>
</tr>
<tr>
<td>J2702</td>
<td>2-3</td>
<td>In</td>
<td>Select ROMBO</td>
</tr>
<tr>
<td>J2704</td>
<td>1-2</td>
<td>In</td>
<td>FPROM write protect</td>
</tr>
<tr>
<td>J2704</td>
<td>2-3</td>
<td>In</td>
<td>FPROM write enable (default)</td>
</tr>
<tr>
<td>J2804</td>
<td>1-2</td>
<td>In</td>
<td>FPROM flash recovery mode</td>
</tr>
<tr>
<td>J2804</td>
<td>2-3</td>
<td>In</td>
<td>FPROM normal mode (default)</td>
</tr>
<tr>
<td>J3001</td>
<td>1-2</td>
<td>In</td>
<td>+3 mode (250MHZ/300MHz)</td>
</tr>
<tr>
<td>J3001</td>
<td>2-3</td>
<td>In</td>
<td>+2 mode (200MHz) +4 mode (400MHz)</td>
</tr>
<tr>
<td>J3303</td>
<td>1-2</td>
<td>In</td>
<td>Include CPU1 in scan chain</td>
</tr>
<tr>
<td>J3303</td>
<td>2-3</td>
<td>In</td>
<td>Bypass CPU1 in scan chain (default)</td>
</tr>
<tr>
<td>J4101</td>
<td>1-2</td>
<td>In</td>
<td>Include UCM in scan chain</td>
</tr>
<tr>
<td>J4101</td>
<td>2-3</td>
<td>In</td>
<td>Bypass UCM in scan chain (default)</td>
</tr>
<tr>
<td>J4402</td>
<td>1-2</td>
<td>In</td>
<td>Select RSC Flash PROM (default)</td>
</tr>
<tr>
<td>J4402</td>
<td>2-3</td>
<td>In</td>
<td>Select ROMBO</td>
</tr>
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<td>1-2</td>
<td>Out</td>
<td>Unknown function of MPC823 (default)</td>
</tr>
<tr>
<td>S4301</td>
<td>1-2</td>
<td>Out</td>
<td>RSC PBRST (default)</td>
</tr>
</tbody>
</table>

### PCI Slot Numbering

<table>
<thead>
<tr>
<th>SLOT</th>
<th>BUS</th>
<th>DEVICE TREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>A</td>
<td>pci@1f,2000/<em>@1,</em></td>
</tr>
<tr>
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<td>B</td>
<td>pci@1f,4000/<em>@2,</em></td>
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<tr>
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<td>B</td>
<td>pci@1f,4000/<em>@4,</em></td>
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<tr>
<td>0</td>
<td>B</td>
<td>pci@1f,4000/<em>@5,</em></td>
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</tbody>
</table>

PCI Bus B shares the address/data bus with on-board Audio, Ethernet, Flash, Floppy, Keyboard, Mouse, NVRAM, Parallel, SCSI, and Serial devices.
### 501-5440

Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
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<tbody>
<tr>
<td>J0103</td>
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<td>In</td>
<td>Include CPU0 in scan chain</td>
</tr>
<tr>
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<td>2-3</td>
<td>In</td>
<td>Bypass CPU0 in scan chain (default)</td>
</tr>
<tr>
<td>J0104</td>
<td>1-2</td>
<td>In</td>
<td>UPA_REQ_SPARE High</td>
</tr>
<tr>
<td>J0104</td>
<td>2-3</td>
<td>In</td>
<td>UPA_REQ_SPARE Low (default)</td>
</tr>
<tr>
<td>J2604</td>
<td>1-2</td>
<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>J2604</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>J2605</td>
<td>1-2</td>
<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>J2605</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
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<td>Select Flash PROM (default)</td>
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<td>Select ROMBO</td>
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<td>In</td>
<td>FPROM write enable (default)</td>
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<td>1-2</td>
<td>In</td>
<td>FPROM flash recovery mode</td>
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<tr>
<td>J2804</td>
<td>2-3</td>
<td>In</td>
<td>FPROM normal mode (default)</td>
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<td>J3001</td>
<td>1-2</td>
<td>In</td>
<td>+3 mode (250MHZ/300MHZ)</td>
</tr>
<tr>
<td>J3001</td>
<td>2-3</td>
<td>In</td>
<td>+2 (200MHz) +4 (400MHz) +5 (tbd)</td>
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<td>J3002</td>
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<td>In</td>
<td>+2 mode, +3 mode, +4 mode</td>
</tr>
<tr>
<td>J3002</td>
<td>2-3</td>
<td>In</td>
<td>+5 mode</td>
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<td>Include CPU1 in scan chain</td>
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<td>In</td>
<td>Bypass CPU1 in scan chain (default)</td>
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<td>Select RSC Flash PROM (default)</td>
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<td>J4402</td>
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<td>In</td>
<td>Select ROMBO</td>
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<td>1-2</td>
<td>Out</td>
<td>Unknown function of MPC823 (default)</td>
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<td>S4301</td>
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<td>Out</td>
<td>RSC PBRST (default)</td>
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**PCI Slot Numbering**

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<tbody>
<tr>
<td>3</td>
<td>A</td>
<td>pci@1f,2000/@@1,*</td>
</tr>
<tr>
<td>2</td>
<td>B</td>
<td>pci@1f,4000/@@2,*</td>
</tr>
<tr>
<td>1</td>
<td>B</td>
<td>pci@1f,4000/@@4,*</td>
</tr>
<tr>
<td>0</td>
<td>B</td>
<td>pci@1f,4000/@@5,*</td>
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</table>

PCI Bus B shares the address/data bus with on-board Audio, Ethernet, Flash, Floppy, Keyboard, Mouse, NVRAM, Parallel, SCSI, and Serial devices.
Enterprise 250
501-4681  501-5440

Miscellaneous Connectors

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>PINS</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>J1902</td>
<td>1-50</td>
<td>Not used</td>
</tr>
<tr>
<td>J2303</td>
<td>1-8</td>
<td>Ethernet test (factory use)</td>
</tr>
<tr>
<td>J2601</td>
<td>1-8</td>
<td>Serial test (factory use)</td>
</tr>
<tr>
<td>J2801</td>
<td>1-3</td>
<td>Button XIR (1-2) and POR (2-3)</td>
</tr>
<tr>
<td>J2803</td>
<td>1-8</td>
<td>JSCC (factory use)</td>
</tr>
<tr>
<td>J2901</td>
<td>1-16</td>
<td>Sense cable to power distribution board</td>
</tr>
<tr>
<td>J2902</td>
<td>1-4</td>
<td>DC power to power distribution board</td>
</tr>
<tr>
<td>J2903</td>
<td>1-6</td>
<td>DC power to power distribution board</td>
</tr>
<tr>
<td>J2905</td>
<td>1-5</td>
<td>LED and speaker (not used)</td>
</tr>
<tr>
<td>J3504</td>
<td>1-4</td>
<td>On/Off switch (not used)</td>
</tr>
<tr>
<td>J4201</td>
<td>1-20</td>
<td>UCM flex cable</td>
</tr>
<tr>
<td>J4401</td>
<td>1-60</td>
<td>Not used</td>
</tr>
<tr>
<td>J4501</td>
<td>1-14</td>
<td>Sense cable to power distribution board</td>
</tr>
</tbody>
</table>

Notes
1. The minimum operating system is 2.5.1 HW: 11/97 or 2.6 HW: 5/98.
2. Solaris 2.5.1 HW: 11/97 requires Enterprise 250 extensions.
3. The flash PROM is soldered to the system board.
4. Use the Flash PROM Programming Utility to update the flash PROM.
5. Disconnect all system board power cables before removing or installing the NVRAM. Failure to remove power can result in NVRAM corruption.
6. Synchronous communication BugID 4162312 is fixed on 501-4681-06.

SCSI Bus Notes
1. The internal SCSI bus is controlled by /pci@1f,4000/scsi@3.
2. The external SCSI bus is controlled by /pci@1f,4000/scsi@3,1.
3. RMA Tray SCSI Cable ≤530-2445-02 does not terminate the bus.
4. Enable termination on the last device with SCSI Cable ≤530-2445-02.

Memory Notes
1. The minimum requirement is four DIMMs in any bank.
2. The recommended installation sequence is Bank A, B, C, D.
3. Each bank addresses 512MB of memory.

References
2. Enterprise 250 ShowMe How, 724-2794.
Enterprise 250
501-4681  501-5440

Rear View

POWER SUPPLY

PARALLEL
DB25

KEYBOARD
DIN8

SERIAL A
DB25

SERIAL B
DB25

10BASE-T
100BASE-TX

MII
HD40

ULTRA SCSI
HD68

Remote System Control Slot

3.3V 33/66MHz 32/64-Bit PCI Slot 3
5.0V 33MHz 32/64-Bit PCI Slot 2
5.0V 33MHz 32/64-Bit PCI Slot 1
5.0V 33MHz 32/64-Bit PCI Slot 0
Ultra 450
A20
501-5028
OMB FRU w 2MB Cache Support

PCI Slot Numbering

<table>
<thead>
<tr>
<th>SILKSCREEN</th>
<th>PCI SLOT</th>
<th>PSYCHO</th>
<th>PCI BUS</th>
<th>DEVICE TREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-A1</td>
<td>10</td>
<td>PSYCHO A - SLOT 1</td>
<td>B - 0</td>
<td>pci@11,4000/@4,*</td>
</tr>
<tr>
<td>9-B1</td>
<td>9</td>
<td>PSYCHO B - SLOT 1</td>
<td>F - 2</td>
<td>pci@4,4000/@2,*</td>
</tr>
<tr>
<td>8-B2</td>
<td>8</td>
<td>PSYCHO B - SLOT 2</td>
<td>F - 2</td>
<td>pci@4,4000/@3,*</td>
</tr>
<tr>
<td>7-B3</td>
<td>7</td>
<td>PSYCHO B - SLOT 3</td>
<td>F - 2</td>
<td>pci@4,4000/@4,*</td>
</tr>
<tr>
<td>6-B1</td>
<td>6</td>
<td>PSYCHO B - SLOT 1</td>
<td>E - 3</td>
<td>pci@4,2000/@1,*</td>
</tr>
<tr>
<td>5-A1</td>
<td>5</td>
<td>PSYCHO A - SLOT 1</td>
<td>A - 1</td>
<td>pci@11,2000/@1,*</td>
</tr>
<tr>
<td>4-C1</td>
<td>4</td>
<td>PSYCHO C - SLOT 1</td>
<td>C - 5</td>
<td>pci@6,2000/@1,*</td>
</tr>
<tr>
<td>3-C1</td>
<td>3</td>
<td>PSYCHO C - SLOT 1</td>
<td>D - 4</td>
<td>pci@6,4000/@2,*</td>
</tr>
<tr>
<td>2-C2</td>
<td>2</td>
<td>PSYCHO C - SLOT 2</td>
<td>D - 4</td>
<td>pci@6,4000/@3,*</td>
</tr>
<tr>
<td>1-C3</td>
<td>1</td>
<td>PSYCHO C - SLOT 3</td>
<td>D - 4</td>
<td>pci@6,4000/@4,*</td>
</tr>
</tbody>
</table>

Psycho A and Psycho C share the address/data bus. Psycho B has a private bus.
PCI Bus B shares the address/data bus with on-board Audio, Ethernet, Flash, Floppy, Keyboard, Mouse, NVRAM, Parallel, SCSI, and Serial devices.
### CONFIGURATIONS

#### 501-5028

**Jumper Settings**

<table>
<thead>
<tr>
<th>CODE</th>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>J0102</td>
<td>2-3</td>
<td>In</td>
<td>CPU-A1 scan enabled</td>
</tr>
<tr>
<td>b</td>
<td>J0103</td>
<td>2-3</td>
<td>In</td>
<td>UPA-A lab debug use only</td>
</tr>
<tr>
<td>c</td>
<td>J0104</td>
<td>2-3</td>
<td>In</td>
<td>UPA-A lab debug use only</td>
</tr>
<tr>
<td>d</td>
<td>J0202</td>
<td>2-3</td>
<td>In</td>
<td>CPU-A2 scan enabled</td>
</tr>
<tr>
<td>e</td>
<td>J0302</td>
<td>2-3</td>
<td>In</td>
<td>CPU-B1 scan enabled</td>
</tr>
<tr>
<td>f</td>
<td>J0303</td>
<td>2-3</td>
<td>In</td>
<td>UPA-B lab debug use only</td>
</tr>
<tr>
<td>g</td>
<td>J0304</td>
<td>2-3</td>
<td>In</td>
<td>UPA-B lab debug use only</td>
</tr>
<tr>
<td>h</td>
<td>J0402</td>
<td>2-3</td>
<td>In</td>
<td>CPU-B2 scan enabled</td>
</tr>
<tr>
<td>i</td>
<td>J0501</td>
<td>2-3</td>
<td>In</td>
<td>Marvin scan enabled</td>
</tr>
<tr>
<td>j</td>
<td>J0601</td>
<td>2-3</td>
<td>In</td>
<td>Marvin SRAM U0601 scan enabled</td>
</tr>
<tr>
<td>k</td>
<td>J0602</td>
<td>2-3</td>
<td>In</td>
<td>Marvin SRAM U0602 scan enabled</td>
</tr>
<tr>
<td>l</td>
<td>J2304</td>
<td>2-3</td>
<td>In</td>
<td>STP2003 scan enabled</td>
</tr>
<tr>
<td>m</td>
<td>J2402</td>
<td>2-3</td>
<td>In</td>
<td>53C825 SCSI J2401 scan enabled</td>
</tr>
<tr>
<td>n</td>
<td>J2701</td>
<td>2-3</td>
<td>In</td>
<td>+3 mode (250/300MHz)*</td>
</tr>
<tr>
<td>o</td>
<td>J3102</td>
<td>1-2</td>
<td>In</td>
<td>Select FPROM (default)</td>
</tr>
<tr>
<td>o</td>
<td>J3102</td>
<td>2-3</td>
<td>In</td>
<td>Select ROMBO</td>
</tr>
<tr>
<td>p</td>
<td>J3103</td>
<td>1-2</td>
<td>In</td>
<td>FPROM write protect</td>
</tr>
<tr>
<td>p</td>
<td>J3103</td>
<td>2-3</td>
<td>In</td>
<td>FPROM write enable (default)</td>
</tr>
<tr>
<td>q</td>
<td>J3303</td>
<td>1-2</td>
<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>q</td>
<td>J3303</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>r</td>
<td>J3304</td>
<td>1-2</td>
<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>r</td>
<td>J3304</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>s</td>
<td>J3401</td>
<td>2-3</td>
<td>In</td>
<td>Ethernet 83840 PHY scan enabled</td>
</tr>
<tr>
<td>t</td>
<td>J3803</td>
<td>2-3</td>
<td>In</td>
<td>FFB J3801 Port ID 0x1d scan enabled</td>
</tr>
<tr>
<td>u</td>
<td>J3804</td>
<td>2-3</td>
<td>In</td>
<td>FFB J3802 Port ID 0x1e scan enabled</td>
</tr>
<tr>
<td>v</td>
<td>J5501</td>
<td>1-2</td>
<td>In</td>
<td>FPROM flash recovery mode</td>
</tr>
<tr>
<td>v</td>
<td>J5501</td>
<td>2-3</td>
<td>In</td>
<td>FPROM normal booting (default)</td>
</tr>
<tr>
<td>w</td>
<td>J5602</td>
<td>2-3</td>
<td>In</td>
<td>53C825 SCSI J5601 scan enabled</td>
</tr>
<tr>
<td>x</td>
<td>J5701</td>
<td>2-3</td>
<td>In</td>
<td>Psycho B scan enabled</td>
</tr>
<tr>
<td>y</td>
<td>J5702</td>
<td>2-3</td>
<td>In</td>
<td>Psycho A scan enabled</td>
</tr>
<tr>
<td>z</td>
<td>J5703</td>
<td>2-3</td>
<td>In</td>
<td>Psycho C scan enabled</td>
</tr>
</tbody>
</table>

* The "ULTRA-1 CPU 2-3" silkscreen is incorrect. UltraSPARC I is not supported. The 3-Pin header is not installed in system board <501-5028-02.
Ultra Enterprise 450  Enterprise 450
A25
501-2996
0MB FRU w 2MB Cache Support

Psycho A and Psycho C share the address/data bus. Psycho B has a private bus. PCI Bus B shares the address/data bus with on-board Audio, Ethernet, Flash, Floppy, Keyboard, Mouse, NVRAM, Parallel, SCSI, and Serial devices.
## 501-2996
### Jumper Settings

<table>
<thead>
<tr>
<th>CODE</th>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>a</td>
<td>J0102</td>
<td>2-3</td>
<td>In</td>
<td>CPU-A1 scan enabled</td>
</tr>
<tr>
<td>b</td>
<td>J0103</td>
<td>2-3</td>
<td>In</td>
<td>UPA-A lab debug use only</td>
</tr>
<tr>
<td>c</td>
<td>J0104</td>
<td>2-3</td>
<td>In</td>
<td>UPA-A lab debug use only</td>
</tr>
<tr>
<td>d</td>
<td>J0202</td>
<td>2-3</td>
<td>In</td>
<td>CPU-A2 scan enabled</td>
</tr>
<tr>
<td>e</td>
<td>J0302</td>
<td>2-3</td>
<td>In</td>
<td>CPU-B1 scan enabled</td>
</tr>
<tr>
<td>f</td>
<td>J0303</td>
<td>2-3</td>
<td>In</td>
<td>UPA-B lab debug use only</td>
</tr>
<tr>
<td>g</td>
<td>J0304</td>
<td>2-3</td>
<td>In</td>
<td>UPA-B lab debug use only</td>
</tr>
<tr>
<td>h</td>
<td>J0402</td>
<td>2-3</td>
<td>In</td>
<td>CPU-B2 scan enabled</td>
</tr>
<tr>
<td>i</td>
<td>J0501</td>
<td>2-3</td>
<td>In</td>
<td>Marvin scan enabled</td>
</tr>
<tr>
<td>j</td>
<td>J0601</td>
<td>2-3</td>
<td>In</td>
<td>Marvin SRAM U0601 scan enabled</td>
</tr>
<tr>
<td>k</td>
<td>J0602</td>
<td>2-3</td>
<td>In</td>
<td>Marvin SRAM U0602 scan enabled</td>
</tr>
<tr>
<td>l</td>
<td>J2304</td>
<td>2-3</td>
<td>In</td>
<td>STP2003 scan enabled</td>
</tr>
<tr>
<td>m</td>
<td>J2402</td>
<td>2-3</td>
<td>In</td>
<td>53C825 SCSI J2401 scan enabled</td>
</tr>
<tr>
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<td>J2701</td>
<td>1-2</td>
<td>NA</td>
<td>+3 mode (250MHz/300MHz)*</td>
</tr>
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<td>J2701</td>
<td>2-3</td>
<td>NA</td>
<td>+2 mode*</td>
</tr>
<tr>
<td>o</td>
<td>J3102</td>
<td>1-2</td>
<td>In</td>
<td>Select FPROM (default)</td>
</tr>
<tr>
<td>o</td>
<td>J3102</td>
<td>2-3</td>
<td>In</td>
<td>Select ROMBO</td>
</tr>
<tr>
<td>p</td>
<td>J3103</td>
<td>1-2</td>
<td>In</td>
<td>FPROM write protect</td>
</tr>
<tr>
<td>p</td>
<td>J3103</td>
<td>2-3</td>
<td>In</td>
<td>FPROM write enable (default)</td>
</tr>
<tr>
<td>q</td>
<td>J3303</td>
<td>1-2</td>
<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>q</td>
<td>J3303</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
<tr>
<td>r</td>
<td>J3304</td>
<td>1-2</td>
<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>r</td>
<td>J3304</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
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<td>s</td>
<td>J3401</td>
<td>2-3</td>
<td>In</td>
<td>Ethernet 83840 PHY scan enabled</td>
</tr>
<tr>
<td>t</td>
<td>J3803</td>
<td>2-3</td>
<td>In</td>
<td>FFB J3801 Port ID 0x1d scan enabled</td>
</tr>
<tr>
<td>u</td>
<td>J3804</td>
<td>2-3</td>
<td>In</td>
<td>FFB J3802 Port ID 0x1e scan enabled</td>
</tr>
<tr>
<td>v</td>
<td>J5501</td>
<td>1-2</td>
<td>In</td>
<td>FPROM flash recovery mode</td>
</tr>
<tr>
<td>v</td>
<td>J5501</td>
<td>2-3</td>
<td>In</td>
<td>FPROM normal booting (default)</td>
</tr>
<tr>
<td>w</td>
<td>J5602</td>
<td>2-3</td>
<td>In</td>
<td>53C825 SCSI J5601 scan enabled</td>
</tr>
<tr>
<td>x</td>
<td>J5701</td>
<td>2-3</td>
<td>In</td>
<td>Psycho B scan enabled</td>
</tr>
<tr>
<td>y</td>
<td>J5702</td>
<td>2-3</td>
<td>In</td>
<td>Psycho A scan enabled</td>
</tr>
<tr>
<td>z</td>
<td>J5703</td>
<td>2-3</td>
<td>In</td>
<td>Psycho C scan enabled</td>
</tr>
</tbody>
</table>

* The "ULTRA-1 CPU 2-3" silkscreen is incorrect. UltraSPARC I is not supported. The 3-Pin header is not installed in system board 501-2996-07.
Enterprise 450
A25
501-5270
0MB FRU w 8MB Cache Support

J4701 J4705 J4704
FAB 270-5028

J4403 - DC-81
J4404 - DC-82

Jumpers are shown with a code letter. Use the Code column in the Jumper Setting chart to find the Jumper number, setting, and description.

PCI Slot Numbering

<table>
<thead>
<tr>
<th>SILKSCREEN</th>
<th>PCI SLOT</th>
<th>PSYCHO</th>
<th>PCI BUS</th>
<th>DEVICE TREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-A1</td>
<td>10</td>
<td>PSYCHO A - SLOT 1</td>
<td>B - 0</td>
<td>pci@11,4000/<em>@4,</em></td>
</tr>
<tr>
<td>9-B1</td>
<td>9</td>
<td>PSYCHO B - SLOT 1</td>
<td>F - 2</td>
<td>pci@4,4000/<em>@2,</em></td>
</tr>
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<td>8-B2</td>
<td>8</td>
<td>PSYCHO B - SLOT 2</td>
<td>F - 2</td>
<td>pci@4,4000/<em>@3,</em></td>
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<td>7-B3</td>
<td>7</td>
<td>PSYCHO B - SLOT 3</td>
<td>F - 2</td>
<td>pci@4,4000/<em>@4,</em></td>
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<td>6-B1</td>
<td>6</td>
<td>PSYCHO B - SLOT 1</td>
<td>E - 3</td>
<td>pci@4,2000/<em>@1,</em></td>
</tr>
<tr>
<td>5-A1</td>
<td>5</td>
<td>PSYCHO A - SLOT 1</td>
<td>A - 1</td>
<td>pci@11,2000/<em>@1,</em></td>
</tr>
<tr>
<td>4-C1</td>
<td>4</td>
<td>PSYCHO C - SLOT 1</td>
<td>C - 5</td>
<td>pci@6,2000/<em>@1,</em></td>
</tr>
<tr>
<td>3-C1</td>
<td>3</td>
<td>PSYCHO C - SLOT 1</td>
<td>D - 4</td>
<td>pci@6,4000/<em>@2,</em></td>
</tr>
<tr>
<td>2-C2</td>
<td>2</td>
<td>PSYCHO C - SLOT 2</td>
<td>D - 4</td>
<td>pci@6,4000/<em>@3,</em></td>
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<td>1-C3</td>
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<td>PSYCHO C - SLOT 3</td>
<td>D - 4</td>
<td>pci@6,4000/<em>@4,</em></td>
</tr>
</tbody>
</table>

Psycho A and Psycho C share the address/data bus. Psycho B has a private bus.
PCI Bus B shares the address/data bus with on-board Audio, Ethernet, Flash, Floppy, Keyboard, Mouse, NVRAM, Parallel, SCSI, and Serial devices.

SERVER CPU-34
Field Engineer Handbook
## CONFIGURATIONS

### 501-5270

**Jumper Settings**

<table>
<thead>
<tr>
<th>CODE</th>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>J0102</td>
<td>2-3</td>
<td>In</td>
<td>CPU-A1 scan enabled</td>
</tr>
<tr>
<td>b</td>
<td>J0103</td>
<td>2-3</td>
<td>In</td>
<td>UPA-A lab debug use only</td>
</tr>
<tr>
<td>c</td>
<td>J0104</td>
<td>2-3</td>
<td>In</td>
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</tr>
<tr>
<td>d</td>
<td>J0202</td>
<td>2-3</td>
<td>In</td>
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</tr>
<tr>
<td>e</td>
<td>J0302</td>
<td>2-3</td>
<td>In</td>
<td>CPU-B1 scan enabled</td>
</tr>
<tr>
<td>f</td>
<td>J0303</td>
<td>2-3</td>
<td>In</td>
<td>UPA-B lab debug use only</td>
</tr>
<tr>
<td>g</td>
<td>J0304</td>
<td>2-3</td>
<td>In</td>
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</tr>
<tr>
<td>h</td>
<td>J0402</td>
<td>2-3</td>
<td>In</td>
<td>CPU-B2 scan enabled</td>
</tr>
<tr>
<td>i</td>
<td>J0501</td>
<td>2-3</td>
<td>In</td>
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</tr>
<tr>
<td>j</td>
<td>J0601</td>
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<td>l</td>
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<td>2-3</td>
<td>In</td>
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<tr>
<td>m</td>
<td>J2402</td>
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<td>In</td>
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<td>In/Out</td>
<td>+3 mode (250MHz/300MHz)*</td>
</tr>
<tr>
<td>o</td>
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<td>Select FPROM (default)</td>
</tr>
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<td>p</td>
<td>J3103</td>
<td>2-3</td>
<td>In</td>
<td>Select ROMBO</td>
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<td>In</td>
<td>FPROM write enable (default)</td>
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<td>r</td>
<td>J3303</td>
<td>2-3</td>
<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>s</td>
<td>J3401</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
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<td>In</td>
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</tr>
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<td>J5501</td>
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<td>In</td>
<td>FPROM flash recovery mode</td>
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<td>w</td>
<td>J5602</td>
<td>2-3</td>
<td>In</td>
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<td>x</td>
<td>J5701</td>
<td>2-3</td>
<td>In</td>
<td>Psycho B scan enabled</td>
</tr>
<tr>
<td>y</td>
<td>J5702</td>
<td>2-3</td>
<td>In</td>
<td>Psycho A scan enabled</td>
</tr>
<tr>
<td>z</td>
<td>J5703</td>
<td>2-3</td>
<td>In</td>
<td>Psycho C scan enabled</td>
</tr>
</tbody>
</table>

* The "ULTRA-1 CPU 2-3" silkscreen is incorrect. UltraSPARC I is not supported. The 400MHz UltraSPARC II requires a jumper on Pins 2-3. Pins 1-2 are jumpered for 250/300MHz UltraSPARC II. A jumper is not required because Pin-1 is not connected.
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Jumps are shown with a code letter. Use the Code column in the Jumper Setting chart to find the Jumper number, setting, and description.

Psycho A and Psycho C share the address/data bus. Psycho B has a private bus. 
PCI Bus B shares the address/data bus with on-board Audio, Ethernet, Flash, Floppy, Keyboard, Mouse, NVRAM, Parallel, SCSI, and Serial devices.
## Jumper Settings

<table>
<thead>
<tr>
<th>CODE</th>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
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<td>In</td>
<td>CPU-A1 scan enabled</td>
</tr>
<tr>
<td>b</td>
<td>J0103</td>
<td>2-3</td>
<td>In</td>
<td>UPA-A lab debug use only</td>
</tr>
<tr>
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<td>2-3</td>
<td>In</td>
<td>UPA-A lab debug use only</td>
</tr>
<tr>
<td>d</td>
<td>J0202</td>
<td>2-3</td>
<td>In</td>
<td>CPU-A2 scan enabled</td>
</tr>
<tr>
<td>e</td>
<td>J0302</td>
<td>2-3</td>
<td>In</td>
<td>CPU-B1 scan enabled</td>
</tr>
<tr>
<td>f</td>
<td>J0303</td>
<td>2-3</td>
<td>In</td>
<td>UPA-B lab debug use only</td>
</tr>
<tr>
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<td>J0304</td>
<td>2-3</td>
<td>In</td>
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</tr>
<tr>
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<td>2-3</td>
<td>In</td>
<td>CPU-B2 scan enabled</td>
</tr>
<tr>
<td>i</td>
<td>J0501</td>
<td>2-3</td>
<td>In</td>
<td>Marvin scan enabled</td>
</tr>
<tr>
<td>j</td>
<td>J0601</td>
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<td>In</td>
<td>Marvin SRAM U0601 scan enabled</td>
</tr>
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<td>2-3</td>
<td>In</td>
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</tr>
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<td>l</td>
<td>J2304</td>
<td>2-3</td>
<td>In</td>
<td>STP2003 scan enabled</td>
</tr>
<tr>
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<td>J2402</td>
<td>2-3</td>
<td>In</td>
<td>53C825 SCSI J2401 scan enabled</td>
</tr>
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<td>In/Out</td>
<td>+3 mode (250MHZ/300MHz)*</td>
</tr>
<tr>
<td>n</td>
<td>J2701</td>
<td>2-3</td>
<td>In</td>
<td>+2 mode and +4 (400MHz)*</td>
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<td>o</td>
<td>J3102</td>
<td>1-2</td>
<td>In</td>
<td>Select FPROM (default)</td>
</tr>
<tr>
<td>o</td>
<td>J3102</td>
<td>2-3</td>
<td>In</td>
<td>Select ROMBO</td>
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<td>J3103</td>
<td>1-2</td>
<td>In</td>
<td>FPROM write protect</td>
</tr>
<tr>
<td>p</td>
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<td>2-3</td>
<td>In</td>
<td>FPROM write enable (default)</td>
</tr>
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<td>q</td>
<td>J3303</td>
<td>1-2</td>
<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>q</td>
<td>J3303</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
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<td>r</td>
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<td>2-3</td>
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<td>In</td>
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<tr>
<td>t</td>
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<td>2-3</td>
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<td>In</td>
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<tr>
<td>v</td>
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<td>In</td>
<td>FPROM flash recovery mode</td>
</tr>
<tr>
<td>v</td>
<td>J5501</td>
<td>2-3</td>
<td>In</td>
<td>FPROM normal booting (default)</td>
</tr>
<tr>
<td>w</td>
<td>J5602</td>
<td>2-3</td>
<td>In</td>
<td>53C825 SCSI J5601 scan enabled</td>
</tr>
<tr>
<td>x</td>
<td>J5701</td>
<td>2-3</td>
<td>In</td>
<td>Psycho B scan enabled</td>
</tr>
<tr>
<td>y</td>
<td>J5702</td>
<td>2-3</td>
<td>In</td>
<td>Psycho A scan enabled</td>
</tr>
<tr>
<td>z</td>
<td>J5703</td>
<td>2-3</td>
<td>In</td>
<td>Psycho C scan enabled</td>
</tr>
</tbody>
</table>
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#### Jumper Settings

<table>
<thead>
<tr>
<th>CODE</th>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
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<tbody>
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<td>In</td>
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<td>J0103</td>
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<td>In</td>
<td>UPA-A lab debug use only</td>
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<tr>
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<td>In</td>
<td>CPU-A2 scan enabled</td>
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<td>In</td>
<td>CPU-B1 scan enabled</td>
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<td>In</td>
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<td>In</td>
<td>Select ROMBO</td>
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<td>1-2</td>
<td>In</td>
<td>Select FPROM (default)</td>
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<td>In</td>
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<td>p</td>
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<td>2-3</td>
<td>In</td>
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<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>q</td>
<td>J3303</td>
<td>2-3</td>
<td>In</td>
<td>RS-423 (default)</td>
</tr>
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<td>r</td>
<td>J3304</td>
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<td>In</td>
<td>RS-232</td>
</tr>
<tr>
<td>r</td>
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<tr>
<td>v</td>
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<td>2-3</td>
<td>In</td>
<td>FPROM normal booting (default)</td>
</tr>
<tr>
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<td>In</td>
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<tr>
<td>x</td>
<td>J5701</td>
<td>2-3</td>
<td>In</td>
<td>Psycho B scan enabled</td>
</tr>
<tr>
<td>y</td>
<td>J5702</td>
<td>2-3</td>
<td>In</td>
<td>Psycho A scan enabled</td>
</tr>
<tr>
<td>z</td>
<td>J5703</td>
<td>2-3</td>
<td>In</td>
<td>Psycho C scan enabled</td>
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</table>
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Miscellaneous Connectors

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>PINS</th>
<th>DESCRIPTION</th>
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<tr>
<td>J3104</td>
<td>3</td>
<td>Button XIR (1-2) and POR (2-3)</td>
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<tr>
<td>J3105</td>
<td>32</td>
<td>ROMBO (factory use)</td>
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<tr>
<td>J3801</td>
<td>144</td>
<td>First UPA framebuffer *</td>
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<tr>
<td>J3802</td>
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<td>Second UPA framebuffer *</td>
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<td>J4401</td>
<td>40</td>
<td>DC-A1 DC-DC converter for CPU-A1</td>
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<tr>
<td>J4402</td>
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<td>DC-A2 DC-DC converter for CPU-A2</td>
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<td>DC-B1 DC-DC converter for CPU-B1</td>
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<td>DC-B2 DC-DC converter for CPU-B2</td>
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<td>Power from DC distribution board</td>
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<td>To wavecrimp connector J4501</td>
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<td>J4601</td>
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<td>J4602</td>
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<td>J4701</td>
<td>68</td>
<td>Ultra SCSI to removable media backplane</td>
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<td>J4702</td>
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<td>Audio module *</td>
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<td>6</td>
<td>First AFB blower power †</td>
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<td>J4707</td>
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<td>JTAG scan (6-8 jumpered)</td>
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<tr>
<td>J5601</td>
<td>68</td>
<td>Ultra SCSI to 4-slot disk backplane</td>
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</tbody>
</table>

* J4703 and J4707 are not installed on 501-5270.
* J3801, J3802, J4702, J4703, J4707 are not installed on 501-5672.
* J3801, J3802, J4702, J4703, J4707 are not installed on 501-5673.
† The Wrench Icon is lit when AFB Blower 540-3023 or Loopback Plug 530-2509 is not connected to J4705 on the System Board. AFB Blower 540-3023 was not installed after August 1997.
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Notes
1. The minimum A25 operating system is Solaris 2.5.1 Hardware: 4/97.
2. The minimum A20 operating system is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
3. Ultra Enterprise 450 was renamed Enterprise 450 in December 1997.
4. Use the Flash PROM Programming Utility to update the flash PROM.
5. Disconnect all system board power cables before removing or installing the NVRAM. Failure to remove power can result in NVRAM corruption.
6. Use the setenv mfg-options OBP command to set the system up as Server (mfg-options 49) or as a Workstation (mfg-options 0).

Backpanel Insert Notes
1. System Board FRUs include PCI Insert 540-2867.
2. 64-Bit PCI boards do not fit into Slots 9 and 10 of System Boards 501-5028, 501-2996, and 501-5270. Connectors J3802 and J4707 interfere with the 64-Bit PCI extension connector.
3. J3802 and J4707 are not installed on 501-5672 or 501-5673.
4. AFB Insert 540-2868 is required if a second AFB is installed.
5. Three PCI slots are available when the AFB Insert is installed.

Graphics Notes
1. Creator and Creator 3D are not supported.
2. System Board 501-2996 does not support Elite3D (AFB).
3. AFB Power connectors are not on 501-5270, 501-5672, and 501-5673.
4. System Board 501-5028 was shipped in servers by Dev WO _14046.
5. Elite3D-m6 lower board ≤501-4231-06 is not compatible with the A20.
6. Elite3D-m6 assembly ≤540-3058-06 is not compatible with the A20.
7. The Wrench Icon is lit when AFB Blower 540-3023 or Loopback Plug 530-2509 (Pin-1 to 2) is not connected to J4705 on the System Board.
8. AFB Blower 540-3023 was not installed after August 1997.
9. A maximum of three Expert3D boards may be installed.

Module Notes
1. Each UltraSPARC module requires DC-DC Converter 300-1322.
2. The installation sequence is different between FABs ≤270-2996-03 and ≥270-2996-04 (04 to 10) and 270-2058.
3. The 400MHz module requires OBP ≥3.12 Version 1.
4. Empty slot A1 requires Air Baffle 330-2781 or 330-2805 if 400MHz modules are used. A Baffle is included with UGMB-A25AA-A25B.
5. The 400MHz module is not approved for use in the Ultra 450.
6. The 400MHz module is not compatible with System Board 501-2996.
7. Systems built prior to ≡11/98 are FCC Class A compliant with 400MHz.
8. The 480MHz module requires OBP ≥3.18 Version 0.
9. Airduct 540-4597 is required when 480MHz modules are installed.
Ultra 450  Ultra Enterprise 450  Enterprise 450
501-5028  501-2996  501-5270  501-5672  501-5673

Module Slot Numbering for FABs ≥270-2996-04, 270-5028, and 270-5672

<table>
<thead>
<tr>
<th>SOCKET</th>
<th>UPA SLOT</th>
<th>LABEL</th>
<th>INSTALL</th>
<th>OBP/OS</th>
<th>DC-DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0101</td>
<td>1</td>
<td>CPU-A1</td>
<td>4th</td>
<td>CPU 0</td>
<td>DC-A1</td>
</tr>
<tr>
<td>J0201</td>
<td>2</td>
<td>CPU-A2</td>
<td>2nd</td>
<td>CPU 1</td>
<td>DC-A2</td>
</tr>
<tr>
<td>J0301</td>
<td>3</td>
<td>CPU-B1</td>
<td>3rd</td>
<td>CPU 2</td>
<td>DC-B1</td>
</tr>
<tr>
<td>J0401</td>
<td>4</td>
<td>CPU-B2</td>
<td>1st</td>
<td>CPU 3</td>
<td>DC-B2</td>
</tr>
</tbody>
</table>

Memory Notes
1. Four DIMMs of the same size form a bank.
2. The installation sequence is AAAA, BBBB, CCCC, and DDDD.
3. Use the setenv memory-interleave OBP command to override the default interleave setting of auto.
4. The smallest DIMM size is used and the remaining memory is lost if interleaving is enabled and the bank sizes are different.

Memory Slot Numbering

<table>
<thead>
<tr>
<th>SOCKET</th>
<th>LABEL</th>
<th>INSTALL</th>
<th>BANK</th>
<th>DIMM#</th>
<th>ADDRESS</th>
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<tbody>
<tr>
<td>U1604</td>
<td>D</td>
<td>4th</td>
<td>1</td>
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<td>4000 0000 - 7fff ffff</td>
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<td>4000 0000 - 7fff ffff</td>
</tr>
<tr>
<td>U1602</td>
<td>D</td>
<td>4th</td>
<td>1</td>
<td>1</td>
<td>4000 0000 - 7fff ffff</td>
</tr>
<tr>
<td>U1601</td>
<td>D</td>
<td>4th</td>
<td>1</td>
<td>0</td>
<td>4000 0000 - 7fff ffff</td>
</tr>
<tr>
<td>U1804</td>
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<td>3</td>
<td>3</td>
<td>c000 0000 - ffff ffff</td>
</tr>
<tr>
<td>U1803</td>
<td>B</td>
<td>2nd</td>
<td>3</td>
<td>2</td>
<td>c000 0000 - ffff ffff</td>
</tr>
<tr>
<td>U1802</td>
<td>B</td>
<td>2nd</td>
<td>3</td>
<td>1</td>
<td>c000 0000 - ffff ffff</td>
</tr>
<tr>
<td>U1801</td>
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<td>0</td>
<td>c000 0000 - ffff ffff</td>
</tr>
<tr>
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<td>3rd</td>
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<td>3</td>
<td>0000 0000 - 3fff ffff</td>
</tr>
<tr>
<td>U1703</td>
<td>C</td>
<td>3rd</td>
<td>0</td>
<td>2</td>
<td>0000 0000 - 3fff ffff</td>
</tr>
<tr>
<td>U1702</td>
<td>C</td>
<td>3rd</td>
<td>0</td>
<td>1</td>
<td>0000 0000 - 3fff ffff</td>
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<tr>
<td>U1701</td>
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<td>0</td>
<td>0</td>
<td>0000 0000 - 3fff ffff</td>
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<tr>
<td>U1904</td>
<td>A</td>
<td>1st</td>
<td>2</td>
<td>3</td>
<td>8000 0000 - bfff ffff</td>
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<tr>
<td>U1903</td>
<td>A</td>
<td>1st</td>
<td>2</td>
<td>2</td>
<td>8000 0000 - bfff ffff</td>
</tr>
<tr>
<td>U1902</td>
<td>A</td>
<td>1st</td>
<td>2</td>
<td>1</td>
<td>8000 0000 - bfff ffff</td>
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<tr>
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<td>1st</td>
<td>2</td>
<td>0</td>
<td>8000 0000 - bfff ffff</td>
</tr>
</tbody>
</table>

SCSI Bus Notes
1. The RMA Backplane is controlled by /pci@1f,4000/scsi@2.
2. The 4-Slot Disk Backplane is controlled by /pci@1f,4000/scsi@3.
3. The external A20/A25 SCSI bus is controlled by /pci@1f,4000/scsi@2.

References
E3000  E4000  E5000  E6000
CPU/Memory Board
Option 2600
501-2976
0MB FRU w/o Module
83MHz Gigaplane

Backpanel

SERVER CPU-44  Field Engineer Handbook
501-2976
Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
<th>FAB 270-2976</th>
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<tbody>
<tr>
<td>J2502</td>
<td>1-2</td>
<td>Out</td>
<td>Inv Adr 1</td>
<td>-01 -02 -03 -04</td>
</tr>
<tr>
<td>J2503</td>
<td>1-2</td>
<td>In</td>
<td></td>
<td>-01 -02</td>
</tr>
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</table>

Notes
1. The minimum OS for the Ex000 is Solaris 2.5.1.
2. The minimum OS for the Ex500 is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
3. OBP ≥3.2v14 is required when 83MHz and 100MHz boards are mixed.
4. OBP ≥3.2v23 is required 256MB DIMMs are installed.
5. The message “status ‘fail - Downrev AC’” is displayed when CPU Board <501-2976-03 is installed. The message indicates that the Address Controller is pre-FCS and lower than revision 5.

Compatibility Notes
1. The 501-2976 was shipped in the E3000 - E6000.
2. The 501-2976 was not shipped in the E3500 - E6500.
3. The 501-2976 is supported in the E3000 - E6000 and E3500 - E6500.

Flash PROM Notes
1. Use the Flash PROM Programming Utility to update the flash PROM.
2. Use the `prom-copy (src dst --)` command to copy a flash PROM.
   `ok 2 b prom-copy 2` (copies from board 2 to board 11).
3. Use the `update-proms` command to synchronize the latest version of flash PROM installed in the system to all boards of the same type.

Module Notes
1. The 501-2976 supports up to 2MB of cache per module.
2. The 250MHz 1MB module requires OBP 3.2 Version 6.
3. The 250MHz 4MB module requires OBP 3.2 Version 7.
4. The 336MHz 4MB module requires OBP 3.2 Version 12.
5. The 400MHz 4MB module is not supported.
6. The 400MHz 8MB module requires OBP 3.2 Version 21.

References
CONFIGURATION

E3000  E4000  E5000  E6000
CPU/Memory Board
Option 2601
501-4312
0MB FRU w/o Module
83MHz Gigaplane

PROC 0
BGA J2600

PROC 1
BGA J2800

Backpanel
+   +
EJECTOR

SERVER CPU-46  Field Engineer Handbook
501-4312
Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>J2502</td>
<td>1-2</td>
<td>Out</td>
<td>Inv Adr 1</td>
</tr>
</tbody>
</table>

Notes
1. The minimum OS for the Ex000 is Solaris 2.5.1.
2. The minimum OS for the Ex500 is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
3. The first OBP release for the 501-4312 was 3.2 Version 7.
4. OBP ≥3.2v14 is required when 83MHz and 100MHz boards are mixed.
5. OBP ≥3.2v23 is required 256MB DIMMs are installed.

Compatibility Notes
1. The 501-4312 was shipped in the E3000 - E6000.
2. The 501-4312 was not shipped in the E3500 - E6500.
3. The 501-4312 is supported in the E3000 - E6000 and E3500 - E6500.

Flash PROM Notes
1. Use the Flash PROM Programming Utility to update the flash PROM.
2. Use the `prom-copy (src dst -->)` command to copy a flash PROM.
   `ok 2 b prom-copy 2` (copies from board 2 to board 11).
3. Use the `update-proms` command to synchronize the latest version of
   flash PROM installed in the system to all boards of the same type.

Module Notes
1. The 501-4312 supports up to 8MB of cache per module.
2. The 250MHz 1MB module requires OBP 3.2 Version 6.
3. The 250MHz 4MB module requires OBP 3.2 Version 7.
4. The 336MHz 4MB module requires OBP 3.2 Version 12.
5. The 400MHz 4MB module is not supported.
6. The 400MHz 8MB module requires OBP 3.2 Version 21.

References

Volume I
E3500  E4500  E5500  E6500
CPU/Memory Board
Option 2602
501-4882
0MB FRU w/o Module
83/90/100MHz Gigaplane

Backpanel

SERVER CPU-48  Field Engineer Handbook
501-4882
Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J2502</td>
<td>1-2</td>
<td>Out</td>
<td>Inv Adr 1</td>
</tr>
</tbody>
</table>

Configured CPU/Memory FRUs

<table>
<thead>
<tr>
<th>PART#</th>
<th>DESCRIPTION</th>
<th>MODULE#</th>
</tr>
</thead>
<tbody>
<tr>
<td>540-4516</td>
<td>0MB FRU with 2 400MHz Modules</td>
<td>501-5762</td>
</tr>
<tr>
<td>540-4517</td>
<td>0MB FRU with 2 400MHz Modules</td>
<td>501-5661</td>
</tr>
<tr>
<td>540-4575</td>
<td>2GB FRU with 2 400MHz Modules</td>
<td>501-5762</td>
</tr>
</tbody>
</table>

Notes
1. The minimum OS for the Ex000 is Solaris 2.5.1.
2. The minimum OS for the Ex500 is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
3. The first release of OBP for the 501-4882 was 3.2 Version 12.
4. The oldest supported release of OBP for the 501-4882 is 3.2v14.
5. OBP 3.2v14 is required when 83MHz and 100MHz boards are mixed.

Compatibility Notes
1. The 501-4882 was shipped in the E3500 - E6500.
2. The 501-4882 was not shipped in the E3000 - E6000.
3. The 501-4882 is supported in the E3000 - E6000 and E3500 - E6500.

Flash PROM Notes
1. Use the Flash PROM Programming Utility to update the flash PROM.
2. Use the `prom-copy (src dst --)` command to copy a flash PROM.
   *`ok 2 b prom-copy` (copies from board 2 to board 11).*
3. Use the `update-proms` command to synchronize the latest version of
   flash PROM installed in the system to all boards of the same type.

Module Notes
1. The 400MHz 4MB module requires OBP 3.2 Version 18.
2. The 400MHz 8MB module requires OBP 3.2 Version 21.

References
E3000  E4000  E5000  E6000
Clock Board
501-2975
83MHz Gigaplane

Backpanel and Connectors

Notes
1. Clock 501-4286 was shipped in the E3000 - E6000.
2. Clock 501-4286 was not shipped in the E3500 - E6500.
3. Clock 501-4286 is not supported in the E3500 - E6500.
501-2975

Jumper Settings

<table>
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<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J04xx</td>
<td>1-3</td>
<td>N/A</td>
<td>Clock frequency selection</td>
</tr>
<tr>
<td>J0803</td>
<td>1-2</td>
<td>In</td>
<td>RS232 (default)</td>
</tr>
<tr>
<td>J0803</td>
<td>2-3</td>
<td>In</td>
<td>RS423</td>
</tr>
<tr>
<td>J0804</td>
<td>1-2</td>
<td>In</td>
<td>RS232 (default)</td>
</tr>
<tr>
<td>J0804</td>
<td>2-3</td>
<td>In</td>
<td>RS423</td>
</tr>
<tr>
<td>P0601</td>
<td>1-2</td>
<td>In</td>
<td>FPRM write enable (default)</td>
</tr>
<tr>
<td>P0601</td>
<td>1-2</td>
<td>Out</td>
<td>FPRM write protect</td>
</tr>
</tbody>
</table>

Notes
1. The minimum operating system is Solaris 2.5.1.
2. The Clock Board is not a hot swap component.
3. Clock 501-2975 supports 167MHz modules.
4. Clock 501-2975 only supports a 1:2 clock ratio.
5. Use the POR button to perform a Power On Reset.
6. Use the XIR button to perform an Externally Initiated Reset.
7. After an XIR, memory is cleared and some CPU state is preserved.
8. An XIR does not override the NVRAM auto-boot? parameter.
9. Use the OBP .xir-state-all command to display the XIR information.

NVRAM Notes
1. The Clock Board, I/O Board, and I/O Graphics Board NVRAMs are automatically synchronized when the Clock Board NVRAM contents matches at least one I/O Board or I/O Graphics Board NVRAM.
2. Use the following OBP command to manually synchronize a new or replacement I/O Board to an existing Clock Board:
   `ok copy-clock-tod-to-io-boards`
3. Use the following OBP command to manually synchronize a new or replacement Clock Board to an existing I/O Board:
   `ok (ioboard# in hex) copy-io-board-tod-to-clock-tod`

Remote Console Notes
1. The remote console monitors input to ttya.
2. The secure position of the keyswitch disables the remote console.
3. A Power On Reset (POR), Externally Initiated Reset (XIR), or Power Cycle can be performed through the remote console.
4. Enter remote console characters with a 0.5 to 5 second delay.
5. Remote console commands are:
   - Power Cycle  SPACE CR ~ CNTL SHFT P
   - POR         SPACE CR ~ CNTL SHFT R
   - XIR         SPACE CR ~ CNTL SHFT X

References
CONFIGURATION

9/18/00

E3000  E4000  E5000  E6000

Clock Board

501-4286
83/100MHz E3000 Gigaplane
83MHz E4000/5000/6000 Gigaplane

Notes
1. Clock 501-4286 was shipped in the E3000 - E6000.
2. Clock 501-4286 was not shipped in the E3500 - E6500.
3. Clock 501-4286 is not supported in the E3500 - E6500.

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Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
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<tbody>
<tr>
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<td>N/A</td>
<td>Clock frequency selection</td>
</tr>
<tr>
<td>J0803</td>
<td>1-2</td>
<td>In</td>
<td>RS232 (default)</td>
</tr>
<tr>
<td>J0803</td>
<td>2-3</td>
<td>In</td>
<td>RS423</td>
</tr>
<tr>
<td>J0804</td>
<td>1-2</td>
<td>In</td>
<td>RS232 (default)</td>
</tr>
<tr>
<td>J0804</td>
<td>2-3</td>
<td>In</td>
<td>RS423</td>
</tr>
<tr>
<td>P0601</td>
<td>1-2</td>
<td>In</td>
<td>FPROM write enable (default)</td>
</tr>
<tr>
<td>P0601</td>
<td>1-2</td>
<td>Out</td>
<td>FPROM write protect</td>
</tr>
</tbody>
</table>

Notes
1. The minimum operating system is Solaris 2.5.1.
2. The Clock Board is not a hot swap component.
3. Clock 501-4286 supports 167, 250, 336, and 400MHz modules.
5. Use the POR button to perform a Power On Reset.
6. Use the XIR button to perform an Externally Initiated Reset.
7. After an XIR, memory is cleared and some CPU state is preserved.
8. An XIR does not override the NVRAM auto-boot? parameter.
9. Use the OBP .xir-state-all command to display the XIR information.

NVRAM Notes
1. The Clock Board, I/O Board, and I/O Graphics Board NVRAMs are automatically synchronized when the Clock Board NVRAM contents matches at least one I/O Board or I/O Graphics Board NVRAM.
2. Use the following OBP command to manually synchronize a new or replacement I/O Board to an existing Clock Board:
   ok copy-clock-tod-to-io-boards
3. Use the following OBP command to manually synchronize a new or replacement Clock Board to an existing I/O Board:
   ok (ioboard# in hex) copy-io-board-tod-to-clock-tod

Remote Console Notes
1. The remote console monitors input to ttya.
2. The secure position of the keyswitch disables the remote console.
3. A Power On Reset (POR), Externally Initiated Reset (XIR), or Power Cycle can be performed through the remote console.
4. Enter remote console characters with a 0.5 to 5 second delay.
5. Remote console commands are:
   - Power Cycle: SPACE CR ~ CNTL SHFT P
   - POR: SPACE CR ~ CNTL SHFT R
   - XIR: SPACE CR ~ CNTL SHFT X

References
E3500  E4500  E5500  E6500
Clock Board
501-4946
83/90/100MHz Gigaplane

Notes
1. Clock 501-4946 was shipped in the E3500 - E6500.
2. Clock 501-4946 was not shipped in the E3000 - E6000.
3. Clock 501-4946 is supported in the E3000 - E6000 and E3500 - E6500.
501-4946
Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
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<tbody>
<tr>
<td>J04xx</td>
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<td>N/A</td>
<td>Clock frequency selection</td>
</tr>
<tr>
<td>J0803</td>
<td>1-2</td>
<td>In</td>
<td>RS232 (default)</td>
</tr>
<tr>
<td>J0803</td>
<td>2-3</td>
<td>In</td>
<td>RS423</td>
</tr>
<tr>
<td>J0804</td>
<td>1-2</td>
<td>In</td>
<td>RS232 (default)</td>
</tr>
<tr>
<td>J0804</td>
<td>2-3</td>
<td>In</td>
<td>RS423</td>
</tr>
<tr>
<td>P0601</td>
<td>1-2</td>
<td>In</td>
<td>FPROM write enable (default)</td>
</tr>
<tr>
<td>P0601</td>
<td>1-2</td>
<td>Out</td>
<td>FPROM write protect</td>
</tr>
</tbody>
</table>

Notes
1. The minimum OS for the Ex000 is Solaris 2.5.1.
2. The minimum OS for the Ex500 is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
3. The Clock Board is not a hot swap component.
5. Clock 501-4946 supports 1:2, 1:3, and 1:4 clock ratios.
6. Use the POR button to perform a Power On Reset.
7. Use the XIR button to perform an Externally Initiated Reset.
8. After an XIR, memory is cleared and some CPU state is preserved.
9. An XIR does not override the NVRAM auto-boot? parameter.
10. Use the OBP .xir-state-all command to display the XIR information.

NVRAM Notes
1. The Clock Board, I/O Board, and I/O Graphics Board NVRAMs are automatically synchronized when the Clock Board NVRAM contents matches at least one I/O Board or I/O Graphics Board NVRAM.
2. Use the following OBP command to manually synchronize a new or replacement I/O Board to an existing Clock Board:
   ok copy-clock-tod-to-io-boards
3. Use the following OBP command to manually synchronize a new or replacement Clock Board to an existing I/O Board:
   ok (ioboard# in hex) copy-io-board-tod-to-clock-tod

Remote Console Notes
1. The remote console monitors input to ttya.
2. The secure position of the keyswitch disables the remote console.
3. A Power On Reset (POR), Externally Initiated Reset (XIR), or Power Cycle can be performed through the remote console.
4. Enter remote console characters with a 0.5 to 5 second delay.
5. Remote console commands are:
   Power Cycle  SPACE CR ~ CNTL SHFT P
   POR          SPACE CR ~ CNTL SHFT R
   XIR          SPACE CR ~ CNTL SHFT X

References
E3500  E4500  E5500  E6500

Clock Board
501-5365
83/90/100MHz Gigaplane

Backpanel and Connectors

Notes
1. Clock 501-5365 was shipped in the E3500 - E6500.
2. Clock 501-5365 was not shipped in the E3000 - E6000.
3. Clock 501-5365 is supported in the E3000 - E6000 and E3500 - E6500.
Jumper Settings

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<th>PINS</th>
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<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
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<td>In</td>
<td>RS232 (default)</td>
</tr>
<tr>
<td>J0803</td>
<td>2-3</td>
<td>In</td>
<td>RS423</td>
</tr>
<tr>
<td>J0804</td>
<td>1-2</td>
<td>In</td>
<td>RS232 (default)</td>
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<td>J0804</td>
<td>2-3</td>
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<td>RS423</td>
</tr>
<tr>
<td>P0601</td>
<td>1-2</td>
<td>In</td>
<td>FPROM write enable (default)</td>
</tr>
<tr>
<td>P0601</td>
<td>1-2</td>
<td>Out</td>
<td>FPROM write protect</td>
</tr>
</tbody>
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Notes
1. The minimum OS for the Ex000 is Solaris 2.5.1.
2. The minimum OS for the Ex500 is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
3. The Clock Board is not a hot swap component.
6. Use the POR button to perform a Power On Reset.
7. Use the XIR button to perform an Externally Initiated Reset.
8. After an XIR, memory is cleared and some CPU state is preserved.
9. An XIR does not override the NVRAM auto-boot? parameter.
10. Use the OBP .xir-state-all command to display the XIR information.

NVRAM Notes
1. The Clock Board, I/O Board, and I/O Graphics Board NVRAMs are automatically synchronized when the Clock Board NVRAM contents matches at least one I/O Board or I/O Graphics Board NVRAM.
2. Use the following OBP command to manually synchronize a new or replacement I/O Board to an existing Clock Board:
   ok copy-clock-tod-to-io-boards
3. Use the following OBP command to manually synchronize a new or replacement Clock Board to an existing I/O Board:
   ok (ioboard# in hex) copy-io-board-tod-to-clock-tod

Remote Console Notes
1. The remote console monitors input to ttya.
2. The secure position of the keyswitch disables the remote console.
3. A Power On Reset (POR), Externally Initiated Reset (XIR), or Power Cycle can be performed through the remote console.
4. Enter remote console characters with a 0.5 to 5 second delay.
5. Remote console commands are:
   - Power Cycle: SPACE CR ~ CNTL SHFT P
   - POR: SPACE CR ~ CNTL SHFT R
   - XIR: SPACE CR ~ CNTL SHFT X

References
E10000 System Board

Option 2760

501-4347  Tested at 83MHz
Option 2760
Released 2/97

501-4786  Tested at 83MHz
Option 2760
Released 7/97

501-4903  Tested at 83MHz
Option 2760
Released 2/98

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Do NOT remove the System Board if the Yellow LEDs are ON.
3. A minimum of one Processor Module per System Board is required.
4. Mixing module cache sizes on a single board is supported.
5. The smallest cache size is used if mixed size modules are installed.
6. Mixing module cache sizes within a system is supported.
7. Mixing module speeds within a system is supported.
8. Thermal calibration is required if a new System Board is added, or when a System Board is replaced or moved to a different slot.
E10000 System Board
Option 2761

501-5240 Made from 500-4903
Tested at 100MHz
Option 2761

501-5278 Made from 500-4347
Tested at 100MHz
No Option Number

501-5279 Made from 500-4786
Tested at 100MHz
No Option Number

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Do NOT remove the System Board if the Yellow LEDs are ON.
3. A minimum of one Processor Module per System Board is required.
4. Mixing module cache sizes on a single board is supported.
5. The smallest cache size is used if mixed size modules are installed.
6. Mixing module cache sizes within a system is supported.
7. Mixing module speeds within a system is supported.
8. Thermal calibration is required if a new System Board is added, or when a System Board is replaced or moved to a different slot.

Volume I
SERVER CPU-59
E10000 System Board
Option 2761
501-5693
FAB 270-5693
Tested at 100MHz

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Do NOT remove the System Board if the Yellow LEDs are ON.
3. A minimum of one Processor Module per System Board is required.
4. Mixing module cache sizes on a single board is supported.
5. The smallest cache size is used if mixed size modules are installed.
6. Mixing module cache sizes within a system is supported.
7. Mixing module speeds within a system is supported.
8. Thermal calibration is required if a new System Board is added, or when a System Board is replaced or moved to a different slot.
9. Patches 108536-01 and \geq 108930-02 (SSP 3.1.1), or \geq 108543-03 and 108677-01 (SSP 3.2), or 108885-01 (SSP 3.3) are required. Refer to Installation Instructions, 806-5078.
E10000 System Board

501-4347  501-4786  501-4903
501-5240  501-5278  501-5279  501-5693

Backpanel and Connectors

SBus 0 Slot 0
SBus 0 Slot 1
SBus 1 Slot 0
SBus 1 Slot 1

Yellow 3.3VDC
Yellow 5VDC
Yellow VDC CORE

Green SVDC HK
Green 3.3VDC HK

Green HK S/W
Green S/W 7
Green S/W 0

LEDs

References
Notes
1. Do NOT install jumpers at location J6.
2. Do NOT remove the Control Board if the Yellow LEDs are ON.

References
2. Enterprise 10000 System Service Manual, 805-2917

SERVER CPU-62
Field Engineer Handbook
E10000 Control Board
501-4345  501-4839  501-5494
Backpanel and Connectors

To Remote Power Control Module

REMOTE POWER CONTROL

PORT 0
ETHERNET

LEDs
- Green HK S/W
- Green S/W 0
- Green S/W 7
- Green JBC PORT CLAIM
- Green TRANSMIT
- Green RECEIVE
- Green LINK
- Green COLLISION
- Green 5VDC HK
- Green 3.3VDC HK

RPC0
RPC1
RPC2
RPC3
RPC4

PORT 1

RESET
POWER ON/OFF

Yellow 5VDC
Yellow 5VDC
Yellow 5VDC FAN
Yellow 5VDC PER

Volume I
SERVER CPU-63
Netra ft 1800 CPUs

540-4007
CPuset-1P-256MB
256MB Memory
1 300MHz Module

540-4008
CPuset-2P-512MB
512MB Memory
2 300MHz Modules

540-4009
CPuset-4P-4GB
4GB Memory
4 300MHz Modules

540-4336
CPuset-1P-1GB
1GB Memory
1 300MHz Module

Notes
1. The minimum OS is Netra ft 1800 software based on 2.6 HW: 5/98.
2. Fault-tolerant mode requires two identical CPUs.
3. Do NOT add or remove CPuset memory or processors.
4. CPUs are not FRUs.

References
Netra ft 1800 CPUs

540-4224
CPUSET-4P-4GB
4GB Memory
4 400MHz Modules
Option 6983

Notes
1. The minimum OS is Netra ft 1800 Update-01 based on Solaris 2.6.
2. Fault-tolerant mode requires two identical CPUs.
3. Do NOT add or remove CPUs.
4. CPUs System Board 501-5643 is not a FRU.

References
Netra ft 1800 CAF Module
540-3926
Console, Alarms, and Fans

Notes
1. The minimum OS is Netra ft 1800 software based on 2.6 HW: 5/98.
2. Alarms 0, 1, and 2 are user-defined.

References

SERVER CPU-66
Field Engineer Handbook
CONFIGURATIONS

SUPERSPARC
## SuperSPARC

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</tbody>
</table>
SPARC Processor Revision

Several methods are available to determine the revision level of the SPARC Processor. Use the revision level to determine the operating system and patch requirements.

**Open Boot PROM module-info Method**

The `module-info` command displays the processor type and speed.

```
ok module-info (SuperSPARC)
CPU#0 : 40.3 Mhz SuperSPARC / SuperCache
CPU#1 : 40.3 Mhz SuperSPARC / SuperCache
CPU#0 : 50.0 Mhz SuperSPARC / SuperCache

ok module-info (microSPARC II)
CPU FMI,MB86904 Rev. 2.3 : 70.0 Mhz
CPU FMI,MB86904 Rev. 3.2 : 85.0 Mhz
```

**Open Boot PROM cpu-info Method**

The `cpu-info` command displays the processor and SBus speed of microSPARC II based system boards.

```
ok cpu-info
CPU FMI,MB86904 Rev. 3.2 : 70.0 Mhz
SBus (Divide by 3) : 23.3 Mhz

ok cpu-info
CPU FMI,MB86904 Rev. 3.2 : 85.0 Mhz
SBus (Divide by 4) : 21.2 Mhz
```

**Open Boot PROM .speed Method**

The `.speed` command displays the processor, UPA, and SBus speed of systems using OBP 3.x.

```
ok .speed
CPU Speed : 167.00 MHz
UPA Speed : 083.50 MHz
SBus Speed : 025.00 MHz
```
SPARC Processor Revision

**Visual Inspection Method**

Open the system or remove the system board to identify the SPARC module part number.

Four lines of alpha-numeric text are printed on the top corner of the SuperSPARC Processor. The first two numbers on the second line are the revision.

![Image](image.png)

**Open Boot PROM .psr and .mcr Method**

Use the .psr and .mcr Open Boot PROM commands to display the contents of the %psr register and module control register.

```
ok cd /TI,TMS390Z55@f,f8fffffc
ok .psr
  CWP:5  ET:1  PS:1  S:1  PIL:c  EF:0  EC:0  ICC:nZvc  VER:0  IMPL:0
ok .mcr
  ME:1  NF:0  PSO:o  DE:1  IE:1  SB:1  MB:1  PE:0  BM:0  SE:1  AC:0  TC:0  PF:0  VER:4  IMPL:0
```

Use the `switch-cpu` command to switch between modules.

```
ok 2 switch-cpu - switches to the second module
ok 0 switch-cpu - switches to the first module
```
SPARC Processor Revision

Open Boot PROM .psr and .mcr Method - continued

<table>
<thead>
<tr>
<th>SuperSPARC Revision</th>
<th>2.x</th>
<th>3.0</th>
<th>3.1</th>
<th>3.2</th>
<th>3.3</th>
<th>3.5</th>
<th>5.0</th>
<th>5.1</th>
<th>5.2</th>
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</thead>
<tbody>
<tr>
<td>.psr VER</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>.mcr VER</td>
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<td>1</td>
<td>1</td>
<td>4</td>
<td>3</td>
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<tr>
<td>.mcr IMPL</td>
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<td>0</td>
<td>0</td>
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<table>
<thead>
<tr>
<th>SuperSPARC II Revision</th>
<th>1.x</th>
<th>2.x</th>
</tr>
</thead>
<tbody>
<tr>
<td>.psr VER</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>.psr IMPL</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>.mcr VER</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>.mcr IMPL</td>
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<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>microSPARC II Revision</th>
<th>2.3</th>
<th>2.5</th>
<th>3.2</th>
<th>3.3</th>
<th>4.0.2</th>
<th>2.6</th>
<th>2.6.1</th>
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</thead>
<tbody>
<tr>
<td>.psr VER</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>.psr IMPL</td>
<td>4</td>
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<td>4</td>
<td>4</td>
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</tr>
<tr>
<td>.mcr VER</td>
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<td>.mcr IMPL</td>
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<td>0</td>
</tr>
</tbody>
</table>

The microSPARC II uses the upper 8-bits of the Virtual Address Mask Register to identify the version number. The upper 4-bits identify the major rev and the lower 4-bits identify the minor rev.

```
# adb -k /dev/ksyms /dev/mem
swift_version/X
swift_version:
swift_version: 23 (indicates microSPARC II version 2.3)
$q

# /usr/sbin/prtconf -vp
Node 0xffffd43184
mask_rev: 00000032 (indicates microSPARC II version 3.2)
```

The microSPARC II version 2.6 used the same Mask ID as version 2.5. The Mask ID was changed in microSPARC II version 2.6.1.
SPARC Processor Revision

**Open Boot PROM .attributes Method**

Use the `.attributes` Open Boot PROM command to display the version and implementation.

```
ok cd /TI,TMS390Z50@f,f8fffc
ok .attributes
implementation 00000000
version 00000004
name TI,TMS390Z50
```

<table>
<thead>
<tr>
<th>SuperSPARC Revision</th>
<th>2.x</th>
<th>3.0</th>
<th>3.1</th>
<th>3.2</th>
<th>3.3</th>
<th>3.5</th>
<th>5.0</th>
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<td>version</td>
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<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>implementation</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
</tbody>
</table>

**Solaris 1.1.x devinfo -vp or Solaris 2.x prtconf -vp Method**

On Sun4m-based systems, use the `devinfo -vp` or `prtconf -vp` command to display the implementation and version. Search for the node name TI,TMS390Z50 (SuperSPARC) or TI,TMS390Z55 (SuperSPARC with SuperCache).

```
# devinfo -vp
Node 0xffd66150
  implementation: 00000000
  version: 00000004
  name: 'TI,TMS390Z50'
```

<table>
<thead>
<tr>
<th>SuperSPARC Revision</th>
<th>2.x</th>
<th>3.0</th>
<th>3.1</th>
<th>3.2</th>
<th>3.3</th>
<th>3.5</th>
<th>5.0</th>
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<td>0</td>
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<td>0</td>
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<td>0</td>
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</tr>
</tbody>
</table>

**Solaris 2.x prtdiag**

The `prtdiag` command displays system configuration and diagnostic information including the location, cache size, and speed of processors installed.

```
/usr/kvm/prtdiag -v (Solaris 2.4)
/usr/platform/sun4d/sbin/prtdiag -v (Solaris 2.5)
```
SPARC Processor Revision

SuperSPARC Processor Revisions 3.0, 3.1, 3.2, and 3.3 require the following operating system patches.

- Solaris 1.1 Sun-4m Kernel Patch ≥100726-12
- Solaris 1.1 SuperSPARC Processor Patch ≥101408-01
- Solaris 1.1.1 Sun-4m Kernel Patch ≥101508-01
- Solaris 1.1.1 SuperSPARC Processor Patch ≥101509-01
- Solaris 2.3 Kernel Patch ≥101318-12
- Solaris 2.3 SuperSPARC Processor Patch ≥101406-01

The Solaris 2.3 Supplement for SPARCsystem 10 Model 514, SPARCsystem 600MP Model 514, and SX Graphics Systems, 704-4195-10, contains Patches 101318-12 and 101406-01.

SuperSPARC Processor revisions 3.5 and 5.x do not require the SuperSPARC Processor Patch.

SPARC Processor Revision 3.5 is not compatible with Solaris 1.1.1 Version A (SunOS 4.1.3_U1 Version A).

SPARC Processor revisions lower than 3.5 should not be used in the SS10SX or SS20 due to design changes that affect system cooling and MSBI reliability.

SPARC Processor Revision 5.x is compatible with Solaris 1.1, Solaris 1.1.1 Version A, Solaris 1.1.1 Version B, and Solaris 2.x.

The SuperSPARC Processor Patch is automatically enabled on Sun-4d systems if modules that require the patch are installed.

The SuperSPARC Processor Patch is automatically enabled under Solaris 1.1.2 and Solaris 2.4 if modules that require the patch are installed.

The SuperSPARC Processor Patch is automatically enabled under Solaris 2.3 with Kernel Patch ≥101318-57 if modules that require the patch are installed.
SuperCache Revision

Four lines of alpha-numeric text are printed on the top corner of the SuperCache Controller. The first two numbers on the second line are the revision.

![SuperCache Controller Image](image)

SuperSPARC Modules with SuperCache revision 3.x are not compatible with SuperSPARC Modules with SuperCache revision 2.x when used in the same SPARCserver 600MP system.

SuperCache revision 3.x does not meet the SS600MP hold time requirements on the MBus and could cause module to module communication problems if used in combination with SuperCache revision 2.x modules. Module pairs using all SuperCache revision 2.x or all SuperCache revision 3.x will function reliably.

The SuperCache used on 85MHz modules introduced the multiple commands mode. Enabling the multiple commands mode permits the SuperCache to parallelize processor-to-memory transactions.

Solaris 2.4 Patch 101945-35 enables multiple commands mode. Multiple commands mode is enabled by default in Solaris 2.5.

Multiple commands mode can be disabled by adding `set use_multiple_cmds=0` to `/etc/system`.

Volume I
SM41 SuperSPARC Module
SS10  SS630  SS670  SS690  SS1000  SC2000
Option 1161
501-2270
40MHz

MBus Connector

F0801

MXCC 1.x or 2.x

SuperSPARC 2.x

40.333 MHz

Power: 4.28 Amps @ +5Vdc
21.40 Watts

Notes
1. The minimum operating system is Solaris 1.1 (SunOS 4.1.3).
2. If two modules are installed, the minimum OS is Solaris 2.1.
3. Mixing different module types is not supported.
4. Set the SS10 clock speed to 80MHz.
5. The 501-2270-04 is supported in the SS1000 and SC2000.
6. This module is not compatible with 50MHz Sun-4d Control Boards.
7. Surface mounted Fuse F0801 is not field replaceable.

SM41 SuperSPARC Module
SC2000
501-2318
33MHz

Notes
1. This module was used on early production SC2000 systems only.
2. The 66MHz Control Board 501-1671-04 is required.
3. This SM41 module is not compatible with SC2000 Control Board
4. Mixing different module types is not supported.
5. Surface mounted Fuse F0801 is not field replaceable.


Volume I
SM41 SuperSPARC Module
SS10  SS630  SS670  SS690  SC2000
Option 1164
501-2359
40MHz

Power: 4.28 Amps @ +5Vdc
21.40 Watts

Notes
1. The minimum operating system is Solaris 1.1 (SunOS 4.1.3).
2. If two modules are installed, the minimum OS is Solaris 2.1.
3. Mixing different module types is not supported.
4. Set the SS10 clock speed to 80MHz.
5. This module is not compatible with the 50MHz SC2000 Control Board.
6. Surface mounted Fuse F0801 is not field replaceable.

SM50 SuperSPARC Module
SS20
Option 1170
501-2528
50MHz

Notes
1. Solaris 1.1.1 Version A is not supported.
2. If two modules are installed, the minimum OS is Solaris 2.2.
3. Mixing different module types is not supported.
4. The 5A Fuse at F0401 is not field replaceable.

SM50 SuperSPARC Module
SS20
Option 1170
501-2708
50MHz

Notes
1. The minimum operating system is Solaris 1.1 (SunOS 4.1.3).
2. If two modules are installed, the minimum OS is Solaris 2.2.
3. Mixing different module types is not supported.
4. The 22W DC-DC Power Supply is not field replaceable.
5. The 8A Fuse 150-2246-01 at F0401 is field replaceable.

9/18/00

SM51 SuperSPARC Module
SS10  SS630  SS670  SS690  SS1000
Option 1166
501-2360
50MHz

Notes
1. The minimum operating system is Solaris 1.1 (SunOS 4.1.3).
2. If two modules are installed, the minimum OS is Solaris 2.1.
3. Mixing different module types is not supported.
4. Set the SS10 clock speed to 80MHz.
5. The maximum MBus and XDBus speed of the MXCC is 40MHz.
6. This module is not compatible with the 50MHz SS1000 Control Board.
7. The SS600MP requires Boot PROM 2.10.
8. The SS1000 requires Boot PROM 2.11.
9. Surface mounted Fuse F0801 is not field replaceable.


Volume I  SUPERSPARC-13
SM51 SuperSPARC Module
SS10  SS630  SS670  SS690  SS1000
501-2387
50MHz

Notes
1. The minimum operating system is Solaris 1.1 (SunOS 4.1.3).
2. If two modules are installed, the minimum OS is Solaris 2.1.
3. Mixing different module types is not supported.
4. The 501-2387-01 is for Sun internal use only.
5. The 501-2387-01 is tested for operation at room temperature only.
6. Set the SS10 clock speed to 80MHz.
7. The maximum MBus and XDBus speed of the MXCC is 40MHz.
8. This module is not compatible with the 50MHz SS1000 Control Board.
9. The SS600MP requires Boot PROM 2.10.
10. The SS1000 requires Boot PROM 2.11.
11. Surface mounted Fuse F0801 is not field replaceable.

Notes
1. Solaris 1.1.1 Version A is not supported.
2. If two modules are installed, the minimum OS is Solaris 2.1.
3. Mixing different module types is not supported.
4. Set the SS10 clock speed to 80MHz.
5. The maximum MBus speed of the MXCC is 40MHz.
6. The SS600MP requires Boot PROM 2.10.
7. Surface mounted Fuse F0801 is not field replaceable.

SM51 SuperSPARC Module
SS10  SS10SX
SS630  SS670  SS690  SS1000
Option 1166
501-2562-01
50MHz

Notes
1. Solaris 1.1.1 Version A is not supported.
2. If two modules are installed, the minimum OS is Solaris 2.1.
3. Mixing different module types is not supported.
4. Set the SS10 clock speed to 80MHz.
5. The maximum MBus and XDBus speed of the MXCC is 40MHz.
6. This module is not compatible with the 50MHz SS1000 Control Board.
7. The SS600MP requires Boot PROM 2.10.
8. The SS1000 requires Boot PROM 2.11.
9. Do NOT use the 501-2562-01 in the SS20.
10. Surface mounted Fuse F0801 is not field replaceable

Notes
1. Solaris 1.1.1 Version A is not supported.
2. If two modules are installed, the minimum OS is Solaris 2.1.
3. Mixing different module types is not supported.
4. Set the SS10 clock speed to 80MHz.
5. The maximum MBus and XDBus speed of the MXCC is 40MHz.
6. This module is not compatible with the 50MHz SS1000 Control Board.
7. The SS600MP requires Boot PROM 2.10.
8. The SS1000 requires Boot PROM 2.11.
9. Do NOT use the 501-2562-01 in the SS20.
10. Surface mounted Fuse F0801 is not field replaceable.

SM51 SuperSPARC Module
SS10  SS10SX  SS20  SS1000
501-2617
50MHz

Notes
1. The minimum operating system is Solaris 1.1 (SunOS 4.1.3).
2. If two modules are installed, the minimum OS is Solaris 2.1.
3. Mixing different module types is not supported.
4. The maximum MBus and XDBus speed of the MXCC is 40MHz.
5. This module is not compatible with the 50MHz SS1000 Control Board.
6. The 501-2617 is not supported in the SPARCserver 600MP.
7. The SS1000 requires OBP 2.18 to support MXCC 3.x.
8. The 22W DC-DC Power Supply is not field replaceable.
9. The 8A Fuse 150-2246-01 at F0801 is field replaceable.

SM51 SuperSPARC Module
SS10  SS10SX  SS20  SS630  SS670  SS690  SS1000
Options  1169  1173

501-2707
50MHz

Notes
1. The minimum operating system is Solaris 1.1 (SunOS 4.1.3).
2. If two modules are installed, the minimum OS is Solaris 2.1.
3. Mixing different module types is not supported.
4. The maximum MBus and XDBus speed of the MXCC is 40MHz.
5. This module is not compatible with the 50MHz SS1000 Control Board.
6. The 22W DC-DC Power Supply is not field replaceable.
7. The 8A Fuse 150-2246-01 at F0801 is field replaceable.


Volume I  SUPERSPARC-19
SM51 SuperSPARC Module
SS10  SS10SX  SS20  SS1000
501-2754
50MHz

Notes
1. The minimum operating system is Solaris 1.1 (SunOS 4.1.3).
2. If two modules are installed, the minimum OS is Solaris 2.1.
3. Mixing different module types is not supported.
4. The maximum MBus and XDBus speed of the MXCC is 40MHz.
5. This module is not compatible with the 50MHz SS1000 Control Board.
6. The SS1000 requires OBP 2.18 to support MXCC 3.x.
7. The 22W DC-DC Power Supply is not field replaceable.
8. The 8A Fuse 150-2246-01 at F0801 is field replaceable.

SM51-2 SuperSPARC Module

SC2000
Option 1165
501-2353
50MHz

Notes
1. The minimum operating system is Solaris 2.2 (SunOS 5.2).
2. The SC2000 requires Boot PROM 2.11.
3. Mixing different module types is not supported.
4. The maximum XDBus speed of the MXCC is 40MHz.
5. This module is not compatible with the 50MHz SC2000 Control Board.
6. System Board 501-1866-xx can only access 1MB of cache.
7. Surface mounted Fuse F0801 is not field replaceable.

SM51-2 SuperSPARC Module
SC2000
Option 1165
501-2601
50MHz

Notes
1. The minimum operating system is Solaris 2.2 (SunOS 5.2).
2. The SC2000 requires Boot PROM 2.11.
3. Mixing different module types is not supported.
4. The maximum XDBus speed of the MXCC is 40MHz.
5. This module is not compatible with the 50MHz SC2000 Control Board.
6. System Board 501-1866-xx can only access 1MB of cache.
7. Surface mounted Fuse F0801 is not field replaceable.

Reference: SuperSPARC Module Installation Guide 801-2035-12

1. The 8A fuse 150-2246-01 at F0801 is field replaceable.
2. The SC2000 requires boot PROM 2.1.
3. The minimum operating system is Solaris 2.2 (SunOS 5.2).
4. The maximum XDBU speed of the MXCC is 40MHz.
5. This module is not compatible with the 50MHz SC2000 Control Board.
6. System board 501-1666-xx can only access 1MB of cache.
7. The 8A fuse 150-2246-01 at F0801 is field replaceable.

Notes

Field Engineer Handbook

1. The minimum operating system is Solaris 2.3 (SunOS 5.3).

2. The SM52 covers Sbus Slots 0 and 1.

3. Mixing different module types is not supported.

4. The 8A Fuse 150-2246-01 is field replaceable.

Notes
Field Engineer Handbook


Notes

4. The BA Fuse 150-22.45-01 is field replaceable.
3. Mixing different module types is not supported.
2. The SM32 cover bus slots 0 and 1.
1. The minimum operating system is Solaris 2.3 (SunOS 5.3).
SM61 SuperSPARC Module
SS20
501-2571
60MHz

Notes
1. The minimum operating system is Solaris 1.1.1 Version B.
2. If two modules are installed, the minimum OS is Solaris 2.3.
3. Mixing different module types is not supported.
4. This unreleased module was shipped by the Advanced Products Group.
5. The maximum MBus speed of the MXCC is 40MHz.
6. The 5A Fuse at F0801 is not field replaceable.

References
SM61 SuperSPARC Module
SS10  SS10SX  SS20  SS600MP
Options  1168  1174
501-2613  60MHz

Notes
1. The minimum operating system is Solaris 1.1.1 Version B.
2. If two modules are installed, the minimum OS is Solaris 2.3.
3. Mixing different module types is not supported.
4. The maximum MBus speed of the MXCC is 50MHz.
5. The 501-2613 is not tested or approved for use in the SS1000.
6. The 22W DC-DC Power Supply is not field replaceable.
7. The 8A Fuse 150-2246-01 at F0801 is field replaceable.

References

References

8. The SA Fuse 150-2246-01 at F0801 is field replaceable.
7. The 22W DC-DC Power Supply is not field replaceable.
6. The maximum MDUs speed of the MXCC is 50MHz.
5. The maximum MDUs speed of the MXCC is 50MHz.
4. Mixing different module types is not supported.
3. The SS1100 requires OBP 2.19 to support MXCC 3.x.
2. If two modules are installed, the minimum OS is Solaris 2.3.
1. The minimum operating system is Solaris 1.1. Version B.

Notes

SS10 SS10SX SS20 SS1000

SM61 SuperSPARC Module

SNOILV:IN81N00 O~SS O~SS O~SS O~SS

FIG. 1

SUPERSPARC-29

Volume 1

60MHz
501-2519
Options 1168 1171

CONFIGURATIONS 00/18/6
Notes:
1. The minimum operating system is Solaris 1.1.1 Version B.
2. If two modules are installed, the minimum OS is Solaris 2.3.
3. Mixing different module types is not supported.
4. The maximum MBus speed of the MXCC is 50MHz.
5. The 501-2769 is not tested or approved for use in the SS1000.
6. The 22W DC-DC Power Supply is not field replaceable.
7. The 8A Fuse 150-2246-01 at F0801 is field replaceable.

References:
Notes
1. The minimum operating system is Solaris 1.1.1 Version B.
2. If two modules are installed, the minimum OS is Solaris 2.3.
3. Mixing different module types is not supported.
4. The maximum MBus speed of the MXCC is 50MHz.
5. The 501-2752 is not compatible with the Sun4d XDBus.
6. OBP 2.14v3 was used to test the 501-2752 in the SS600MP.
7. The 22W DC-DC Power Supply is not field replaceable.
8. The 8A Fuse 150-2246-01 at F0801 is field replaceable.

References
SM61 SuperSPARC Module
SS10  SS10SX  SS20
501-2782
60MHz

Notes
1. The minimum operating system is Solaris 1.1.1 Version B.
2. If two modules are installed, the minimum OS is Solaris 2.3.
3. Mixing different module types is not supported.
4. The maximum MBus speed of the MXCC is 50MHz.
5. The 501-2782 is not tested or approved for use in the SS1000.
6. The 22W DC-DC Power Supply is not field replaceable.
7. The 8A Fuse 150-2246-01 at F0801 is field replaceable.

References

SUPERSPARC-32  Field Engineer Handbook
SM61 SuperSPARC Module
SS10  SS10SX  SS20  SS600MP  SS1000
Options 1168  1171
501-2825
60MHz

Notes
1. The minimum operating system is Solaris 1.1.1 Version B.
2. If two modules are installed, the minimum OS is Solaris 2.3.
3. Mixing different module types is not supported.
4. The SS1000 requires OBP 2.18 to support MXCC 3.x.
5. The maximum MBus speed of the MXCC is 50MHz.
6. The maximum XDBus speed of the MXCC is 50MHz.
7. OBP 2.14v3 was used to test the 501-2825 in the SS600MP.
8. The 22W DC-DC Power Supply is not field replaceable.
9. The 8A Fuse 150-2246-01 at F0801 is field replaceable.

References
SM61-2 SuperSPARC Module
SC2000
Option 1167
501-2543
60MHz

Notes
1. The minimum operating system is Solaris 2.3.
2. The SC2000 requires OBP 2.18 to support MXCC 3.x.
3. Mixing different module types is not supported.
4. The maximum XDBus speed of the MXCC is 50MHz.
5. System Board 501-1866-xx can only access 1MB of cache.
6. The 8A Fuse 150-2246-01 at F0801 is field replaceable.

References

SUPERSPARC-34 Field Engineer Handbook
SM61-2 SuperSPARC Module

SC2000
Option 1167
501-2757
60MHz

Notes
1. The minimum operating system is Solaris 2.3.
2. The SC2000 requires OBP 2.18 to support MXCC 3.x.
3. Mixing different module types is not supported.
4. The maximum XDBus speed of the MXCC is 50MHz.
5. System Board 501-1866-xx can only access 1MB of cache.
6. The 8A Fuse 150-2246-01 at F0801 is field replaceable.

References
SM71 SuperSPARC II Module
SS10  SS20
Option 1175
501-2520
75MHz

Notes
1. The minimum OS is Solaris 1.1.1 Version B or Solaris 2.3 HW: 8/94.
2. The SS10 and SS20 require Boot PROM 2.22.
3. Mixing different module types is not supported.
4. The maximum MBus speed of the MXCC is 50MHz.
5. The 501-2520 is not compatible with the Sun4d XDBus.
6. The 15A Fuse at F0600 is not field replaceable.

References
1. SPARCstation 20 SuperSPARC II Module Upgrade, 802-2566-10.
2. SPARCstation 10 SuperSPARC II Module Upgrade, 802-2567-10.
3. SPARCstation 20 SuperSPARC II Module X-Option, 802-2568-10.
4. SPARCstation 10 SuperSPARC II Module X-Option, 802-2569-10.
SM71 SuperSPARC II Module
SS10  SS20
Option 1175
501-2904
75MHz

Notes
1. The minimum OS is Solaris 1.1.1 Version B or Solaris 2.3 HW: 8/94.
2. The SS10 and SS20 require Boot PROM 2.22.
3. Mixing different module types is not supported.
4. The maximum MBus speed of the MXCC is 50MHz.
5. The 501-2904 is not compatible with the XDBus.
6. The 15A Fuse at F0600 is not field replaceable.

References
1. SPARCstation 20 SuperSPARC II Module Upgrade, 802-2566-10.
2. SPARCstation 10 SuperSPARC II Module Upgrade, 802-2567-10.
3. SPARCstation 20 SuperSPARC II Module X-Option, 802-2568-10.
4. SPARCstation 10 SuperSPARC II Module X-Option, 802-2569-10.
SM71 SuperSPARC II Module

SS10    SS20
Option 1175
501-2940
75MHz

Notes
1. The minimum OS is Solaris 1.1.1 Version B or Solaris 2.3 HW: 8/94.
2. The SS10 and SS20 require Boot PROM 2.22.
3. Mixing different module types is not supported.
4. The maximum MBus speed of the MXCC is 50MHz.
5. The 501-2940 is not compatible with the XDBus.
6. The 15A Fuse at F0600 is not field replaceable.

References
1. SPARCstation 20 SuperSPARC II Module Upgrade, 802-2566-10.
2. SPARCstation 10 SuperSPARC II Module Upgrade, 802-2567-10.
3. SPARCstation 20 SuperSPARC II Module X-Option, 802-2568-10.
4. SPARCstation 10 SuperSPARC II Module X-Option, 802-2569-10.
SM71 SuperSPARC II Module

SS10   SS20
Option 1175
501-3001
75MHz

Notes
1. The minimum OS is Solaris 1.1.1 Version B or Solaris 2.3 HW: 8/94.
2. The SS10 and SS20 require Boot PROM 2.22.
3. Mixing different module types is not supported.
4. The maximum MBus speed of the MXCC is 50MHz.
5. The 501-3001 is not compatible with the XDBus.
6. The 15A Fuse at F0600 is not field replaceable.

References
1. SPARCstation 20 SuperSPARC II Module Upgrade, 802-2566-10.
2. SPARCstation 10 SuperSPARC II Module Upgrade, 802-2567-10.
3. SPARCstation 20 SuperSPARC II Module X-Option, 802-2568-10.
4. SPARCstation 10 SuperSPARC II Module X-Option, 802-2569-10.
SM71 SuperSPARC II Module
SS10 SS20
Option 1175
501-2925
75MHz

Notes
1. The minimum OS is Solaris 1.1.1 Version B or Solaris 2.3 HW: 8/94.
2. The SS10 and SS20 require Boot PROM 2.22.
3. Mixing different module types is not supported.
4. The maximum MBus speed of the MXCC is 50MHz.
5. The 501-2925 is not tested or approved for use in the SS1000.
6. The 15A Fuse at F0600 is not field replaceable.

References
1. SPARCstation 20 SuperSPARC II Module Upgrade, 802-2566-10.
2. SPARCstation 10 SuperSPARC II Module Upgrade, 802-2567-10.
3. SPARCstation 20 SuperSPARC II Module X-Option, 802-2568-10.
4. SPARCstation 10 SuperSPARC II Module X-Option, 802-2569-10.
SM71 SuperSPARC II Module
SS10  SS20
501-4130
75MHz

Notes
1. The minimum OS is Solaris 1.1.1 Version B or Solaris 2.3 HW: 8/94.
2. The SS10 and SS20 require Boot PROM 2.22.
3. Mixing different module types is not supported.
4. The maximum MBus speed of the MXCC is 50MHz.
5. The 501-4130 is not compatible with the XDBus.
6. The 15A Fuse at F0600 is not field replaceable.

References
1. SPARCstation 20 SuperSPARC II Module Upgrade, 802-2566-10.
2. SPARCstation 10 SuperSPARC II Module Upgrade, 802-2567-10.
3. SPARCstation 20 SuperSPARC II Module X-Option, 802-2568-10.
4. SPARCstation 10 SuperSPARC II Module X-Option, 802-2569-10.
SM81 SuperSPARC II Module
SS1000
Option 1177
501-3033
85MHz

Notes
1. The minimum operating system is Solaris 2.4 and Patch ≥101945-35.
2. Patch 101945-35 enables the Multiple Command Mode.
3. Solaris 2.4 requires Patch ≥102001-08 if SunFastEthernet is installed.
4. SS1000 Boot PROM 2.23 is required on all system boards.
5. Mixing different module types is not supported.
6. The SS1000 requires Left/Right Side Panel 330-1869.
7. Side Panel 330-1869 is used on systems produced after July 1995.
8. The maximum XDBus speed of the MXCC is 50MHz.
9. The 15A Fuse at F0600 is not field replaceable.

References
2. SS1000 and SS1000E Side Vent Product Note, 802-2896-10.
SM81 SuperSPARC II Module
SS1000
Option 1177
501-2953
85MHz

Notes
1. The minimum operating system is Solaris 2.4 and Patch ≥101945-35.
2. Patch 101945-35 enables the Multiple Command Mode.
3. Solaris 2.4 requires Patch ≥102001-08 if SunFastEthernet is installed.
4. SS1000 Boot PROM 2.23 is required on all system boards.
5. Mixing different module types is not supported.
6. The SS1000 requires Left/Right Side Panel 330-1869.
7. Side Panel 330-1869 is used on systems produced after July 1995.
8. The maximum XDBus speed of the MXCC is 50MHz.
9. The 15A Fuse at F0600 is not field replaceable.

References
2. SS1000 and SS1000E Side Vent Product Note, 802-2896-10.
configurations

SM81 SuperSPARC II Module
SS1000
Option 1177
501-4810
85MHz

Notes
1. The minimum operating system is Solaris 2.4 and Patch ≥101945-35.
2. Patch 101945-35 enables the Multiple Command Mode.
3. Solaris 2.4 requires Patch ≥102001-08 if SunFastEthernet is installed.
4. SS1000 Boot PROM 2.23 is required on all system boards.
5. Mixing different module types is not supported.
6. The SS1000 requires Left/Right Side Panel 330-1869.
7. Side Panel 330-1869 is used on systems produced after July 1995.
8. The maximum XDBus speed of the MXCC is 50MHz.
9. The 15A Fuse at F0600 is not field replaceable.

References
2. SS1000 and SS1000E Side Vent Product Note, 802-2896-10.

SUPERSPARC-44 Field Engineer Handbook
SM81-2 SuperSPARC II Module
SC2000
Option 1178
501-3022
85MHz

Notes
1. The minimum operating system is Solaris 2.4 and patch ≥101945-35.
2. Patch 101945-35 enables the Multiple Command Mode.
3. Patch 101945-35 fixes a watchdog reset problem that may occur when more than 12 modules are installed.
4. Solaris 2.4 requires Patch ≥102001-08 if SunFastEthernet is installed.
5. SC2000 Boot PROM 2.23 is required on all system boards.
6. Mixing different module types is not supported.
7. The maximum XDBus speed of the MXCC is 50MHz.
8. The 15A Fuse at F0600 is not field replaceable.

References
Notes
1. The minimum operating system is Solaris 2.4 and Patch ≥101945-35.
2. Patch 101945-35 enables the Multiple Command Mode.
3. Patch 101945-35 fixes a watchdog reset problem that may occur when more than 12 modules are installed.
4. Solaris 2.4 requires Patch ≥102001-08 if SunFastEthernet is installed.
5. SC2000 Boot PROM 2.23 is required on all system boards.
6. Mixing different module types is not supported.
7. The maximum XDBus speed of the MXCC is 50MHz.
8. The 15A Fuse at F0600 is not field replaceable.

References
SM81-2 SuperSPARC II Module
SC2000
Option 1178
501-4780
85MHz

Notes
1. The minimum operating system is Solaris 2.4 and Patch ≥101945-35.
2. Patch 101945-35 enables the Multiple Command Mode.
3. Patch 101945-35 fixes a watchdog reset problem that may occur when more than 12 modules are installed.
4. Solaris 2.4 requires Patch ≥102001-08 if SunFastEthernet is installed.
5. SC2000 Boot PROM 2.23 is required on all system boards.
6. Mixing different module types is not supported.
7. The maximum XDBus speed of the MXCC is 50MHz.
8. The 15A Fuse at F0600 is not field replaceable.

References
SM81-2 SuperSPARC II Module
SC2000
501-5056
85MHz

Notes
1. The minimum operating system is Solaris 2.4 and Patch ≥101945-35.
2. Patch 101945-35 enables the Multiple Command Mode.
3. Patch 101945-35 fixes a watchdog reset problem that may occur when more than 12 modules are installed.
4. Solaris 2.4 requires Patch ≥102001-08 if SunFastEthernet is installed.
5. SC2000 Boot PROM 2.23 is required on all system boards.
6. Mixing different module types is not supported.
7. The maximum XDBus speed of the MXCC is 50MHz.
8. The 15A Fuse at F0600 is not field replaceable.

References
CONFIGURATIONS

HYPERSPARC
hyperSPARC

HS11 hyperSPARC Module .................................................. 2
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 HS11 hyperSPARC Module  
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Notes:
1. The minimum OS is Solaris 1.1.2 or Solaris 2.4 Hardware: 11/94.
2. Only one 370-1864-01 is supported in order to meet FCC Class B.
3. The SS10, SS10SX, and SS20 require OBP 2.19.
4. The hyperSPARC Module is not compatible with the Sun4d XDBus.

References:
1. SPARCstation 10 hyperSPARC Module Upgrade, 802-1652-11.
2. SPARCstation 20 hyperSPARC Module Upgrade, 802-1214-11.
3. SPARCstation 10 hyperSPARC Module X-Option, 802-2565-10.
4. SPARCstation 20 hyperSPARC Module X-Option, 802-2564-10.
HS11 hyperSPARC Module
SS10  SS10SX  SS20
Option 1181
370-1866
100MHz

Notes
1. The minimum OS is Solaris 1.1.2 or Solaris 2.4 Hardware: 11/94.
2. If two modules are installed, the minimum OS is Solaris 2.4 HW: 11/94.
3. The SS10, SS10SX, and SS20 require OBP 2.19.
4. The hyperSPARC Module is not compatible with the Sun4d XDBus.

References
1. SPARCstation 10 hyperSPARC Module Upgrade, 802-1652-11.
2. SPARCstation 20 hyperSPARC Module Upgrade, 802-1214-11.
3. SPARCstation 10 hyperSPARC Module X-Option, 802-2565-10.
4. SPARCstation 20 hyperSPARC Module X-Option, 802-2564-10.
### Notes

1. The minimum operating system is Solaris 2.4 Hardware: 11/94.
2. The SS10, SS10SX, and SS20 require OBP 2.19.
3. The hyperSPARC Module is not compatible with the Sun4d XDBus.

### References

2. *SPARCstation 20 hyperSPARC Module Upgrade*, 802-1214-11.
HS21 hyperSPARC Module
SS10  SS10SX  SS20
Option 1183
370-1865
125MHz 256KB Cache

Notes
1. The minimum OS is Solaris 1.1.2 or Solaris 2.4 Hardware: 11/94.
2. If two modules are installed, the minimum OS is Solaris 2.4 HW: 11/94.
3. The SS10, SS10SX, and SS20 require OBP 2.19.
4. The hyperSPARC Module is not compatible with the Sun4d XDBus.

References
1. SPARCstation 10 hyperSPARC Module Upgrade, 802-1652-11.
2. SPARCstation 20 hyperSPARC Module Upgrade, 802-1214-11.
3. SPARCstation 10 hyperSPARC Module X-Option, 802-2565-10.
4. SPARCstation 20 hyperSPARC Module X-Option, 802-2564-10.
Notes
1. The minimum OS is Solaris 1.1.2 or Solaris 2.4 Hardware: 11/94.
2. If two modules are installed, the minimum OS is Solaris 2.4 HW: 11/94.
3. The SS10, SS10SX, and SS20 require OBP 2.25.
4. The hyperSPARC Module is not compatible with the Sun4d XDBus.
CONFIGURATIONS

ULTRASPARC
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<td>440MHz UltraSPARC IIi Module ..................................</td>
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<th>Sun Blade 1000</th>
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<td>600MHz UltraSPARC III Module ..................................</td>
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<td>750MHz UltraSPARC III Module ..................................</td>
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<td>900MHz UltraSPARC III Module ..................................</td>
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Notes
1. Ultra 2 requires 501-4843 if only one 300MHz module is installed.
2. The UPA Terminator is included with UG-M1XXX-M1300.
3. The UPA Terminator is not included with Option X1191A.

167MHz UltraSPARC I Module

Ultra 2

501-2702-03

512KB Cache Spitfire


Volume I
Notes
1. UltraSPARC 2.2 is installed on 501-2942-01.
2. UltraSPARC 4.0.2 is installed on 501-2942-02.
3. When 501-2942-01 and 501-2942-02 are mixed and OBP is ≤3.1.2, the module speed is set to 148MHz. OBP 3.1.3 fixes this problem.

200MHz UltraSPARC I Module

Ultra 2
Option 1188
501-3041
1MB Cache Spittfire

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Ultra 2 OBP 3.1 Beta 1 is required.
3. Ultra 2 System Board ≥501-3132-07 is required.
4. Ultra 2 System Board 501-2487 is not compatible with this 501-3041.
5. Mixing module speeds is not supported.

200MHz UltraSPARC I Module

Ultra 2
Option 1188
501-4791
1MB Cache Spitfire

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Ultra 2 OBP 3.1 Beta 1 and System Board ≥501-3132-07 is required.
3. Ultra 2 System Board 501-2487 is not compatible with 501-4791.
4. UltraSPARC is made by TI (MANUF=17) or NEC (MANUF=22).
5. UltraSPARC on 501-4791-02 is only made by NEC (MANUF=22).
6. Use the .ver and switch-cpu OBP commands to see the MANUF code.
7. Mixing module cache sizes or speeds is not supported.

250MHz UltraSPARC II Module
Ultra 2  Enterprise 450  Netra t 1100
Option 2230
501-4278
1MB Cache Blackbird

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware:4/97.
2. This module is not supported in the Ultra 2.
3. The 501-4278 was not shipped in Enterprise 250 systems.
4. The 250MHz module was not shipped in Ultra 450 Workstations.
5. Mixing module speeds is not supported.
6. The Enterprise 450 requires DC-DC Converter 300-1322.
7. Option X2230A includes a Module and DC-DC Converter 300-1322.

Reference
Ultra Enterprise 450 UltraSPARC II Module X-Option, 805-1704-10.
250MHz UltraSPARC II Module

Ultra 30  Enterprise 250  Enterprise 450  Netra t 1100
Options  1190  2230
501-4857
1MB Cache Blackbird

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware:4/97.
2. This module is not supported in the Ultra 2.
3. Mixing module speeds is not supported.
4. The 250MHz module was not shipped in Ultra 450 Workstations.
5. The Enterprise 450 requires DC-DC Converter 300-1322.
6. Option X2230A includes a Module and a DC-DC Converter 300-1322.

Reference
*Ultra Enterprise 450 UltraSPARC II Module X-Option, 805-1704-10.*

ULTRASPARC-8  Field Engineer Handbook
300MHz UltraSPARC II Module

Ultra 2  Ultra 30  Enterprise 450  Netra t 1120  Netra t 1125
Options 1191  2240
501-4196
2MB Cache Blackbird

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Ultra 2 OBP 3.7v0 and CPU ≥501-3132-07 is required.
3. UPA Terminator 501-4843 is required if only one module is installed on
   Ultra 2 CPU ≤501-3132-12.
4. The 501-4196 is not compatible with the Ultra 60 (A23).
5. The 501-4196 was not shipped in A20, A23, or A26 systems.
6. Mixing module speeds is not supported.
7. The Enterprise 450 requires DC-DC Converter 300-1322.
8. Option X2240A includes a Module and DC-DC Converter 300-1322.

References
300MHz UltraSPARC II Module

Ultra 2  Ultra 30  Ultra 60  Ultra 450  Enterprise 250
Enterprise 450  Netra t 1120  Netra t 1125  Netra ft 1800
Options 1191  2240
501-4849
2MB Cache Blackbird

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Ultra 2 OBP 3.7v0 and CPU ≥501-3132-07 is required.
3. UPA Terminator 501-4843 is required if only one module is installed on Ultra 2 CPU ≤501-3132-12.
4. Modules ≤501-4849-02 are not compatible with the Ultra 60.
5. UltraSPARC II revision 1.1 is not compatible with the Netra ft 1800.
6. Mixing module speeds is not supported.
7. The Ultra 450 and Enterprise 450 requires DC-DC Converter 300-1322.
8. Option X2240A includes a Module and DC-DC Converter 300-1322.

References
360MHz UltraSPARC II Module
Ultra 60
Option 1192
501-5129
4MB Cache Sapphire-Black

Notes
1. The minimum operating system is Solaris 2.5.1.
2. The Ultra 60 UPA speed is 120MHz using a ÷3 clock.
3. Mixing module speeds is not supported.
4. UltraSPARC on 501-5129 is mask# <80 (Blackbird).
5. UltraSPARC on 501-4781 is mask# ≥80 (Sapphire).
6. Ultra 60 requires OBP 3.11v26 when mask# <80 and ≥80 are mixed.
7. Use the .ver or .properties OBP commands to see the mask#.
8. Use the switch-cpu OBP command to switch CPUs.
360MHz UltraSPARC II Module

Ultra 60
Option 1192
501-4781
4MB Cache Sapphire-Black

Notes
1. The minimum operating system is Solaris 2.5.1.
2. The Ultra 60 UPA speed is 120MHz using a +3 clock.
3. Mixing module speeds is not supported.
4. UltraSPARC on 501-5129 is mask# <80 (Blackbird).
5. UltraSPARC on 501-4781 is mask# ≥80 (Sapphire).
6. Ultra 60 requires OBP 3.11v26 when mask# <80 and ≥80 are mixed.
7. Use the .ver or .properties OBP commands to see the mask#.
8. Use the switch-cpu OBP command to switch CPUs.
360MHz UltraSPARC II Module
Ultra 60
Option 1192
501-5552
4MB Cache Sapphire-Black

Notes
1. The minimum operating system is Solaris 2.5.1.
2. The Ultra 60 UPA speed is 120MHz using a +3 clock.
3. Mixing module speeds is not supported.
4. Use the .ver or .properties OBP commands to see the mask#.
5. Use the switch-cpu OBP command to switch CPUs.
400MHz UltraSPARC II Module
Enterprise 250
Option 1194
501-5237
2MB Cache Sapphire-Black

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Mixing module cache sizes or speeds is not supported.
3. This module is not qualified for use in the Ultra 2.

Enterprise 250 Chassis Notes
1. Rear cardguides installed prior to ≤2/99 may require replacement to prevent component damage on the 400MHz Module. Two guides, part number 250-1390 or 250-1484, are included with the module option.
2. Chassis ≤540-3272-02 is FCC Class B EMI compliant when 250MHz and 300MHz modules are installed.
3. Chassis ≤540-3272-02 is FCC Class A EMI compliant when 400MHz modules are installed.
4. Chassis ≥540-3272-03 is FCC Class B EMI compliant when 250MHz, 300MHz, and 400MHz modules are installed.
5. Front Bottom Door 540-3352-03 is required for FCC Class B.
6. Removable Media Tray 540-3351-02 is required for FCC Class B.
7. Chassis 540-3273-03 includes 540-3351-02 and 540-3352-03.
400MHz UltraSPARC II Module
Ultra 2
Option 1193
501-5541
2MB Cache Sapphire-Black

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Mixing module cache sizes or speeds is not supported.
4. The Ultra 2 requires OBP ≥3.11 Version 2 POST ≥3.3.8.
400MHz UltraSPARC II Module

Ultra 2   Enterprise 250
Options 1193 1194
501-5445
2MB Cache Sapphire-Black

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Mixing module cache sizes or speeds is not supported.
4. The Ultra 2 requires OBP ≥3.11 Version 2 POST ≥3.3.8.

Enterprise 250 Chassis Notes
1. Chassis ≤540-3272-02 is FCC Class B EMI compliant when 250MHz and 300MHz modules are installed.
2. Chassis ≤540-3272-02 is FCC Class A EMI compliant when 400MHz modules are installed.
3. Chassis ≥540-3272-03 is FCC Class B EMI compliant when 250MHz, 300MHz, and 400MHz modules are installed.
4. Front Bottom Door 540-3352-03 is required for FCC Class B.
5. Removable Media Tray 540-3351-02 is required for FCC Class B.
6. Chassis 540-3273-03 includes 540-3351-02 and 540-3352-03.

ULTRASPARC-16 Field Engineer Handbook
**400MHz UltraSPARC II Module**

**Options**
- 2244
- 5224

**Options**
- 501-5239
  - 4MB Cache Sapphire-Black
  - X2244A
  - w/o Cover for A25

- 501-5420
  - 4MB Cache Sapphire-Black
  - SME5224UPA-400
  - w Cover for Ultra AXmp

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**Notes**

1. The minimum operating system is Solaris 2.5.1.
2. Mixing module cache sizes or speeds is not supported.
3. The Enterprise 450 requires System Board 501-5270.
4. The Enterprise 450 requires DC-DC Converter 300-1322.
5. Option 2244 includes 501-5239 and DC-DC Converter 300-1322.
7. Do NOT install a cover on the 400MHz module for the E450 or AXmp.
8. The 400MHz module is not qualified for the Ultra 450 Workstation.
9. The 400MHz module is not compatible with System Board 501-2996.

**Ultra Enterprise 450 Chassis Notes**

1. Chassis ≤540-2833-04 is FCC Class B EMI compliant when 250MHz and 300MHz modules are installed.
2. Chassis ≤540-2833-04 is FCC Class A EMI compliant when 400MHz modules are installed.
3. Chassis ≥540-2833-05 is FCC Class B EMI compliant when 250MHz, 300MHz, and 400MHz modules are installed.
4. Front Disk Door 540-2832-03 is required for FCC Class B.
5. Removable Media Tray 540-2903-03 is required for FCC Class B.
6. Chassis 540-2833-05 includes 540-2832-03 and 540-2903-03.
400MHz UltraSPARC II Module
Enterprise 450 Ultra AXmp
Options 2244  5224
501-5446  501-5500
4MB Cache Sapphire-Black  4MB Cache Sapphire-Black
X2244A  SME5224UPA-400
w/o Cover for A25  w Cover for Ultra AXmp

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Mixing module cache sizes or speeds is not supported.
3. The Enterprise 450 requires System Board 501-5270.
4. The Enterprise 450 requires DC-DC Converter 300-1322.
5. Option 2244 includes 501-5446 and DC-DC Converter 300-1322.
7. Do NOT install a cover on the 400MHz module for the E450 or AXmp.
8. The 400MHz module is not qualified for the Ultra 450 Workstation.
9. The 400MHz module is not compatible with System Board 501-2996.

Ultra Enterprise 450 Chassis Notes
1. Chassis ≤540-2833-04 is FCC Class B EMI compliant when 250MHz and 300MHz modules are installed.
2. Chassis ≤540-2833-04 is FCC Class A EMI compliant when 400MHz modules are installed.
3. Chassis ≥540-2833-05 is FCC Class B EMI compliant when 250MHz, 300MHz, and 400MHz modules are installed.
4. Front Disk Door 540-2832-03 is required for FCC Class B.
5. Removable Media Tray 540-2903-03 is required for FCC Class B.
6. Chassis 540-2833-05 includes 540-2832-03 and 540-2903-03.
440MHz UltraSPARC II Module
Netra t 1120/1125  Netra t 1400/1405
Option 1197
501-5682
4MB Cache Sapphire-Black

Ultra 60 System Board Notes
1. The Netra t 1120 and Netra t 1250 use the Ultra 60 System Board.
2. The minimum OS is 2.5.1 HW: 11/97, 2.6 HW: 5/98, or 7 HW: 3/99.
3. The Operating Environment Installation CD is required to install Solaris 2.5.1 HW: 11/97 and Solaris 2.6 HW: 5/98.
4. OBP ≥3.17 Version 0 is required.

Ultra 80 System Board Notes
1. The Netra t 1400 and Netra t 1405 use the Ultra 80 System Board.
2. The minimum Netra t 1400/1405 OS is Solaris 2.6 HW: 5/98.
3. The Operating Environment Installation CD is required to install Solaris 2.6 HW: 5/98.

Reference: *Ultra 60 Module Upgrade*, 806-1055.
450MHz UltraSPARC II Module
Ultra 60  Ultra 80
Option 1195
501-5344
4MB Cache Sapphire-Black

Ultra 60 Notes
1. The minimum OS is 2.5.1 HW: 11/97, 2.6 HW: 5/98, or 7 HW: 3/99.
2. The Operating Environment Installation CD is required to install Solaris 2.5.1 HW: 11/97 and Solaris 2.6 HW: 5/98.
3. OBP ≥3.17 Version 0 is required.

Reference: Ultra 60 Module Upgrade, 806-1055.
Ultra 60 Notes
1. The minimum OS is 2.5.1 HW: 11/97, 2.6 HW: 5/98, or 7 HW: 3/99.
2. The Operating Environment Installation CD is required to install
   Solaris 2.5.1 HW: 11/97 and Solaris 2.6 HW: 5/98.
3. OBP ≥3.17 Version 0 is required.

Reference: Ultra 60 Module Upgrade, 806-1055.
480MHz UltraSPARC II Module
Enterprise 450
Option 2248
501-5729
8MB Cache Blaze

Enterprise 450 Notes
1. The minimum operating system is Solaris 2.6.
2. Mixing module cache sizes or speeds is not supported.
3. OBP ≥3.18 Version 0 is required.
4. System Board 501-5673 is required.
5. DC-DC Converter 300-1322 is required.
6. Airduct 540-4597 is required.
7. Airduct 540-4597 is included with the 480MHz upgrade.
10. This module is not compatible with System Boards 501-2996, 501-5028, 501-5270, and 501-5672.

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UltraSPARC Module Installation

E3x00-6x00 UltraSPARC Module installation methods are:

Method A
1. Finger tighten all screws following the sequence #1, #2, and #3.
2. Tighten screws #1, #2, and #3 almost all the way.
3. Tighten screws #1, #2, and #3 until medium resistance is met.
4. Finally, tighten screws #1, #2, and #3 an additional 3/4 turn.

Method A References

Method B (Installation method from September 1997 to September 1998)
1. Finger tighten all screws.
2. Tighten screws #1, #2, #3, #4, and #5, in sequence, to 3 in-lb (.34Nm).
3. Tighten screws #1, #2, #3, #4, and #5, in sequence, to 6 in-lb (.68Nm).

Method B References

Method C (Preferred installation method after September 1998)
1. Finger tighten all screws.
2. Tighten screws #1, #2, #3, #4, and #5, in sequence, to 3 in-lb (.34Nm).
3. Tighten screws #1, #2, #3, #4, and #5, in sequence, to 6 in-lb (.68Nm).

UltraSPARC Module Installation - Continued

E10000 UltraSPARC Module installation methods are:

Method A
1. Remove the blue plastic strip from the system board thermal pad.
2. Wipe the system board gold pads with a lint-free non-abrasive cloth.
3. Wipe the module connectors with a lint-free non-abrasive cloth.
4. Finger tighten all screws.
5. Tighten screws #1, #2, #3, #4, and #5, in sequence, to 3 in-lb (.34Nm).
6. Tighten screws #1, #2, #3, #4, and #5, in sequence, to 6 in-lb (.68Nm).

Method A References (Installation method before July 1998)

Method B (Preferred installation method after June 1998)
1. Remove the blue plastic strip from the system board thermal pad.
2. Wipe the system board gold pads with a lint-free non-abrasive cloth.
3. Wipe the module connectors with a lint-free non-abrasive cloth.
4. Finger tighten all screws.
5. Tighten screws #1, #2, #3, #4, and #5, in sequence, to 3 in-lb (.34Nm).
6. Tighten screws #1, #2, #3, #4, and #5, in sequence, to 6 in-lb (.68Nm).

Method B References
Notes
1. The minimum operating system is Solaris 2.5.1.
2. Mixing module cache sizes on a single board is not supported.
3. Mixing module cache sizes within a system is supported.
4. Mixing module speeds within a system is not supported.
5. The speed is 167MHz with Clock 501-2975.
6. The speed is 167MHz with Clock 501-4286/501-4946 and OBP <3.2v6.
7. The speed is 168MHz with Clock 501-4286/501-4946 and OBP ≥3.2v6.
8. E3500-E6500 systems were not shipped with 167MHz modules.
167MHz UltraSPARC I Module

E3000  E4000  E5000  E6000
E3500  E4500  E5500  E6500
Option 2510
501-2959
1MB Cache Blackbird

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Mixing module cache sizes on a single board is not supported.
3. Mixing module cache sizes within a system is supported.
4. Mixing module speeds within a system is not supported.
5. The speed is 167MHz with Clock 501-2975.
6. The speed is 167MHz with Clock 501-4286/501-4946 and OBP <3.2v6.
7. The speed is 168MHz with Clock 501-4286/501-4946 and OBP ≥3.2v6.
8. E3500-E6500 systems were not shipped with 167MHz modules.
250MHz UltraSPARC II Module
E3000  E4000  E5000  E6000  E10000
E3500  E4500  E5500  E6500
Option 2530
501-4178
1MB Cache Blackbird

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Solaris 2.5.1 Patch 103640-06 is recommended.
3. Mixing module cache sizes within a system is supported.

E3000 - E6000 Notes
1. OBP 3.2 Version 6 is required to support 250MHz 1MB modules.
2. Clock Board 501-4286 is required to support 250MHz modules.
3. Clock Board 501-4946 also supports 250MHz modules.
4. Mixing module speeds within a system is not supported.
5. Mixing module cache sizes on a single board requires OBP ≥3.2.21.
6. Ex500 systems were not shipped with 1MB 250MHz modules installed.

E10000 Notes
1. A minimum of one processor per System Board is required.
2. Mixing module speeds within a system is supported.
3. Set the clock multiplier to 3:2 with the sys_clock (1m) ssp command.
Notes
1. The minimum operating system is Solaris 2.5.1.
2. Mixing module cache sizes within a system is supported.

E3000 - E6500 Notes
1. OBP 3.2 Version 7 is required to support 250MHz 4MB modules.
2. Clock Board 501-4286 is required to support 250MHz modules.
3. Clock Board 501-4946 also supports 250MHz modules.
4. Mixing module speeds within a system is not supported.
5. Mixing module cache sizes on a single board requires OBP ≥3.2.21.
6. CPU/Memory Board 501-2976 supports up to 2MB of cache per module.
7. CPU/Memory Board 501-4312 supports up to 8MB of cache per module.
8. CPU/Memory Board 501-4882 supports up to 8MB of cache per module.

E10000 Notes
1. A minimum of one processor per System Board is required.
2. Mixing module speeds within a system is not supported.
3. Set the clock multiplier to 3:2 with the sys_clock (1m) ssp command.
250MHz UltraSPARC II Module

E3000  E4000  E5000  E6000  E10000
E3500  E4500  E5500  E6500
Option 2550
501-4836
4MB Cache Blackbird
SRAM 100-5528

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Mixing module cache sizes within a system is supported.

E3000 - E6500 Notes
1. OBP 3.2 Version 7 is required to support 250MHz 4MB modules.
2. Clock Board 501-4286 is required to support 250MHz modules.
3. Clock Board 501-4946 also supports 250MHz modules.
4. Mixing module speeds within a system is not supported.
5. Mixing module cache sizes on a single board requires OBP ≥3.2.21.
6. CPU/Memory Board 501-2976 supports up to 2MB of cache per module.
7. CPU/Memory Board 501-4312 supports up to 8MB of cache per module.
8. CPU/Memory Board 501-4882 supports up to 8MB of cache per module.

E10000 Notes
1. A minimum of one processor per System Board is required.
2. Mixing module speeds within a system is supported.
3. Set the clock multiplier to 3:2 with the sys_clock (1m) ssp command.
333MHz UltraSPARC II Module
E10000
Option 2560
501-4363
4MB Cache Sapphire-Black

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Mixing module speeds within a system is supported.
3. The module runs at 333MHz from an 83.33MHz clock.
4. A minimum of one processor per System Board is required.
5. Set the clock multiplier to 2:1 with the sys_clock (1m) ssp command.
336MHz UltraSPARC II Module
E3000  E4000  E5000  E6000
E3500  E4500  E5500  E6500
Option 2560
501-4363
4MB Cache Sapphire-Black

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Mixing module speeds within a system is not supported.
3. The module runs at 336MHz from an 84MHz clock.
4. OBP 3.2 Version 12 is required to support 336MHz 4MB modules.
5. Clock Board 501-2975 does not support 336MHz modules.
6. Clock Boards 501-4286 and 501-4946 support 336MHz modules.
7. CPU/Memory Board 501-2976 supports up to 2MB of cache per module.
8. CPU/Memory Board 501-4312 supports up to 8MB of cache per module.
9. CPU/Memory Board 501-4882 supports up to 8MB of cache per module.
**400MHz UltraSPARC II Module**

E3000  E4000  E5000  E3500  E4500  E5500

**Option 2570**

501-4995

4MB Cache Sapphire-Black

Notes

1. The minimum operating system is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. Solaris 2.5.1 patches ≥103640-06 and ≥104595-03 are required.
3. OBP 3.2 Version 18 is required.
4. Mixing module cache sizes on a single board requires OBP ≥3.2.21.
5. Mixing module speeds within a system is not supported.
6. N+1 Power is not supported if seven CPU/Memory boards are installed.

Compatibility Notes

1. Clock 501-2975 is not supported.
2. This module requires 100MHz CPU/Memory and I/O boards.
3. The E3x00 supports Clocks 501-4286, 501-4946, and 501-5365.
4. The E4x00 and E5x00 do not support Clock 501-4286.
5. The E4x00 and E5x00 support Clocks 501-4946 and 501-5365.
6. The E4000 and E5000 require a 100MHz Centerplane upgrade.
7. This module is not supported in the E6000 or E6500.
Notes
1. The minimum operating system is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. Mixing module speeds within a system is supported.
3. A minimum of one processor per System Board is required.
4. Set the clock multiplier to 2:1 with the `sys_clock (1m)` `ssp` command.
5. System Boards 501-4347, 501-4786, and 501-4903 are not compatible with the 400MHz UltraSPARC module.
6. System Boards 501-5240, 501-5278, and 501-5279 are compatible with the 400MHz UltraSPARC module.

Reference
400MHz UltraSPARC II Module

E3000  E4000  E5000  E3500  E4500  E5500

Option 2570
501-5425
4MB Cache Sapphire-Black

Notes
1. The minimum operating system is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. Solaris 2.5.1 patches ≥103640-06 and ≥104595-03 are required.
3. OBP 3.2 Version 18 is required.
4. Mixing module cache sizes on a single board requires OBP ≥3.2.21.
5. Mixing module speeds within a system is not supported.
6. N+1 Power is not supported if seven CPU/Memory boards are installed.

Compatibility Notes
1. Clock 501-2975 is not supported.
2. This module requires 100MHz CPU/Memory and I/O boards.
3. The E3x00 supports Clocks 501-4286, 501-4946, and 501-5365.
4. The E4x00 and E5x00 do not support Clock 501-4286.
5. The E4x00 and E5x00 support Clocks 501-4946 and 501-5365.
6. The E4000 and E5000 require a 100MHz Centerplane upgrade.
7. This module is not supported in the E6000 or E6500.
400MHz UltraSPARC II Module
E10000
Option 2570
501-5425
4MB Cache Sapphire-Black

Notes
1. The minimum operating system is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. Mixing module speeds within a system is supported.
3. A minimum of one processor per System Board is required.
4. Set the clock multiplier to 2:1 with the sys_clock (1m) ssp command.
5. System Boards 501-4347, 501-4786, and 501-4903 are not compatible with the 400MHz UltraSPARC module.
6. System Boards 501-5240, 501-5278, and 501-5279 are compatible with the 400MHz UltraSPARC module.

Reference
400MHz UltraSPARC II Module

E3000  E4000  E5000  E3500  E4500  E5500

Option 2570

501-5585

4MB Cache Sapphire-Black

Notes
1. The minimum operating system is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. Solaris 2.5.1 patches ≥103640-06 and ≥104595-03 are required.
3. OBP 3.2 Version 18 is required.
4. Mixing module cache sizes on a single board requires OBP ≥3.2.21.
5. Mixing module speeds within a system is not supported.
6. N+1 Power is not supported if seven CPU/Memory boards are installed.

Compatibility Notes
1. Clock 501-2975 is not supported.
2. This module requires 100MHz CPU/Memory and I/O boards.
3. The E3x00 supports Clocks 501-4286, 501-4946, and 501-5365.
4. The E4x00 and E5x00 do not support Clock 501-4286.
5. The E4x00 and E5x00 support Clocks 501-4946 and 501-5365.
6. The E4000 and E5000 require a 100MHz Centerplane upgrade.
7. This module is not supported in the E6000 or E6500.
400MHz UltraSPARC II Module
E10000
Option 2570
501-5585
4MB Cache Sapphire-Black

Notes
1. The minimum operating system is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. Mixing module speeds within a system is supported.
3. A minimum of one processor per System Board is required.
4. Set the clock multiplier to 2:1 with the sys_clock (1m) ssp command.
5. System Boards 501-4347, 501-4786, and 501-4903 are not compatible with the 400MHz UltraSPARC module.
6. System Boards 501-5240, 501-5278, and 501-5279 are compatible with the 400MHz UltraSPARC module.

Reference
400MHz UltraSPARC II Module
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
Option 2580
501-5235
4:1 and 5:1 Clock Ratios
8MB Cache Sapphire-Black

Notes
1. The minimum operating system is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. Solaris 2.5.1 patch ≥103640-27 and 2.6 patch ≥105181-14 are required.
3. OBP 3.2 Version 21 is required.
4. Use the limit-ecache-size OBP command before installing Solaris 2.5.1 and before booting Solaris 2.5.1 without patch 103640-27.
5. Use the limit-ecache-size OBP command before installing Solaris 2.6 and before booting Solaris 2.6 without patch 105181-14.
6. Mixing module speeds within a system is not supported.
7. N+1 Power is not supported if seven CPU/Memory boards are installed.

Compatibility Notes
1. Clock 501-2975 is not supported.
2. The E6000 and E6500 require Clock 501-5365 for a 5:1 clock ratio.
3. The E3x00, E4x00, and E5x00 require Clock 501-5365 for a 5:1 clock ratio if 84MHz system boards are installed.
4. Clock 501-4286 or 501-4946 is supported in the E3x00, E4x00, and E5x00 if the centerplane and all system boards are 100MHz.
5. Clock 501-5365 is supported if 84MHz or 100MHz system boards are installed in the E3x00, E4x00, and E5x00.
400MHz UltraSPARC II Module

E10000
Option 2580
501-5235
8MB Cache Sapphire-Black

Notes
1. Mixing module speeds within a system is supported.
2. A minimum of one processor per System Board is required.
3. Set the clock multiplier to 2:1 with the sys_clock (1m) ssp command.
4. System Boards 501-4347, 501-4786, and 501-4903 are not compatible with the 400MHz UltraSPARC module.
5. System Boards 501-5240, 501-5278, and 501-5279 are compatible with the 400MHz UltraSPARC module.

Reference
400MHz UltraSPARC II Module
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
Option 2580
501-5661
4:1 and 5:1 Clock Ratios
8MB Cache Sapphire-Black

Notes
1. The minimum operating system is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. Solaris 2.5.1 patch 103640-27 and 2.6 patch 105181-14 are required.
3. OBP 3.2 Version 21 is required.
4. Use the \textit{limit-ecache-size} OBP command before installing Solaris 2.5.1
   and before booting Solaris 2.5.1 without patch 103640-27.
5. Use the \textit{limit-ecache-size} OBP command before installing Solaris 2.6
   and before booting Solaris 2.6 without patch 105181-14.
6. Mixing module speeds within a system is not supported.
7. N+1 Power is not supported if seven CPU/Memory boards are installed.

Compatibility Notes
1. Clock 501-2975 is not supported.
2. The E6000 and E6500 require Clock 501-5365 for a 5:1 clock ratio.
3. The E3x00, E4x00, and E5x00 require Clock 501-5365 for a 5:1 clock
   ratio if 84MHz system boards are installed.
4. Clock 501-4286 or 501-4946 is supported in the E3x00, E4x00, and
   E5x00 if the centerplane and all system boards are 100MHz.
5. Clock 501-5365 is supported if 84MHz or 100MHz system boards are
   installed in the E3x00, E4x00, and E5x00.

Volume I
400MHz UltraSPARC II Module

E10000
Option 2580
501-5661
8MB Cache Sapphire-Black

Notes
1. Mixing module speeds within a system is supported.
2. A minimum of one processor per System Board is required.
3. Set the clock multiplier to 2:1 with the sys_clock (1m) ssp command.
4. System Boards 501-4347, 501-4786, and 501-4903 are not compatible with the 400MHz UltraSPARC module.
5. System Boards 501-5240, 501-5278, and 501-5279 are compatible with the 400MHz UltraSPARC module.

Reference
400MHz UltraSPARC II Module

E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500

Option 2580

501-5762

4:1 and 5:1 Clock Ratios
8MB Cache Sapphire-Black

Notes
1. The minimum operating system is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. Solaris 2.5.1 patch ≥103640-27 and 2.6 patch ≥105181-14 are required.
3. OBP 3.2 Version 21 is required.
4. Use the limit-ecache-size OBP command before installing Solaris 2.5.1 and before booting Solaris 2.5.1 without patch 103640-27.
5. Use the limit-ecache-size OBP command before installing Solaris 2.6 and before booting Solaris 2.6 without patch 105181-14.
6. Mixing module speeds within a system is not supported.
7. N+1 Power is not supported if seven CPU/Memory boards are installed.

Compatibility Notes
1. Clock 501-2975 is not supported.
2. The E6000 and E6500 require Clock 501-5365 for a 5:1 clock ratio.
3. The E3x00, E4x00, and E5x00 require Clock 501-5365 for a 5:1 clock ratio if 84MHz system boards are installed.
4. Clock 501-4286 or 501-4946 is supported in the E3x00, E4x00, and E5x00 if the centerplane and all system boards are 100MHz.
5. Clock 501-5365 is supported if 84MHz or 100MHz system boards are installed in the E3x00, E4x00, and E5x00.
400MHz UltraSPARC II Module
E10000
Option 2580
501-5762
8MB Cache Sapphire-Black

Notes
1. Mixing module speeds within a system is supported.
2. A minimum of one processor per System Board is required.
3. Set the clock multiplier to 2:1 with the sys_clock (1m) ssp command.
4. System Boards 501-4347, 501-4786, and 501-4903 are not compatible with the 400MHz UltraSPARC module.
5. System Boards 501-5240, 501-5278, and 501-5279 are compatible with the 400MHz UltraSPARC module.

Reference
270MHz UltraSPARC IIi Module
Ultra 5
501-4477
256KB Cache Sabre
Plastic UltraSPARC IIi

Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. The Ultra 10 was not shipped with 270MHz Modules.
3. This module shipped with System Boards 375-0009 and 375-0066.
4. This module is compatible with System Boards 375-0079 and 375-0115.
5. This module was phased out of production in late March 1998.

270MHz UltraSPARC Ili Module
Ultra 5
501-5039
256KB Cache Sabre
Ceramic UltraSPARC Ili

Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. The Ultra 10 was not shipped with 270MHz Modules.
3. This module shipped with System Boards 375-0009 and 375-0066.
4. This module is compatible with System Boards 375-0079 and 375-0115.
5. This module shipped with System Board 375-0079 after July 1999.

300MHz UltraSPARC IIi Module

Ultra 10

501-4379
512KB Cache Sabre
Plastic UltraSPARC IIi

Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. The Ultra 5 was not shipped with 300MHz Modules.
3. This module shipped with System Boards 375-0009 and 375-0066.
4. This module is compatible with System Boards 375-0079 and 375-0115.

300MHz UltraSPARC IIi Module
Ultra 10
501-5040
512KB Cache Sabre
Ceramic UltraSPARC IIi

Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. The Ultra 5 was not shipped with 300MHz Modules.
3. This module shipped with System Boards 375-0009 and 375-0066.
4. This module is compatible with System Boards 375-0079 and 375-0115.

333MHz UltraSPARC Ili Module

Ultra 5  Ultra 10

501-5090
2MB Cache Sabre
Ceramic UltraSPARC Ili

Note
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. The Ultra 5/10 PGX8 was not shipped with 333MHz Modules.
3. This module shipped with System Board 375-0066 before July 1999.
4. This module shipped with System Board 375-0079 after July 1999.
5. This module is compatible with System Board 375-0115.

References
333MHz UltraSPARC Ili Module

Ultra 5  Ultra 10
501-5568
2MB Cache Sapphire-Red
Ceramic UltraSPARC Ili

Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. The Ultra 5/10 PGX8 was not shipped with 333MHz Modules.
3. This module requires Ultra 5/10 OBP ≥3.19v4.
4. This module was not shipped with System Board 375-0066.
5. This module shipped with System Board 375-0079 after July 1999.
6. This module is compatible with System Board 375-0115.

References
360MHz UltraSPARC Ili Module

Ultra 5

501-5148

256KB Cache Sapphire-Red
Ceramic UltraSPARC Ili

Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. This module requires Ultra 5/10 OBP ≥3.19v4.
3. The Ultra 5 PGX8 was not shipped with 360MHz Modules.
4. The Ultra 10 was not shipped with this 360MHz Module.
5. This module shipped with System Boards 375-0079 and 375-0115.

360MHz UltraSPARC Iii Module
Ultra 10
501-5222
2MB Cache Sabre
Ceramic UltraSPARC Iii

Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. The Ultra 5/10 PGX8 was not shipped with 360MHz Modules.
3. The Ultra 5 PGX24 was not shipped with this 360MHz Module.
4. This module shipped with System Board 375-0066.
5. This module shipped with System Board 375-0079 after July 1999.
6. This module is compatible with System Board 375-0115.

400MHz UltraSPARC Ili Module

Ultra 5
501-5740
2MB Cache Sapphire-Red
Ceramic UltraSPARC Ili

Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. This module requires Ultra 5/10 OBP ≥3.25v1.
3. This module was not tested with System Board 375-0009.
4. This module ships with System Boards 375-0079 and 375-0115.

References
400MHz UltraSPARC IIi Module

Ultra 5

501-5741

2MB Cache Sapphire-Red
Ceramic UltraSPARC IIi

Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. This module requires Ultra 5/10 OBP ≥3.25v1.
3. This module was not tested with System Board 375-0009.
4. This module ships with System Boards 375-0079 and 375-0115.

References
440MHz UltraSPARC Ili Module
Ultra 10
501-5149
2MB Cache Sapphire-Red
Ceramic UltraSPARC Ili

Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or 2.6 HW: 5/98.
2. The Operating Environment Installation CD is required to install Solaris 2.5.1 HW: 11/97 and Solaris 2.6 HW: 5/98.
3. This module requires Ultra 5/10 OBP ≥3.19v4.
4. This module ships with System Boards 375-0079 and 375-0115.
5. OBP 3.25v2 fixes memory timing BugID 4342398.

References

Volume I
600MHz UltraSPARC III Module
Sun Blade 1000
501-4999
4MB Cache Cheetah

Notes
1. The minimum Operating System is Solaris 8.
2. Use torque tool 340-6395 to install the module.
2. Torque tool 340-6395 is included with systems that use this module.

750MHz UltraSPARC III Module
Sun Blade 1000
501-5675
8MB Cache Cheetah

Notes
1. The minimum Operating System is Solaris 8.
2. Use torque tool 340-6395 to install the module.
2. Torque tool 340-6395 is included with systems that use this module.

900MHz UltraSPARC III Module
Sun Blade 1000
501-5770
8MB Cache Cheetah

Notes
1. The minimum Operating System is Solaris 8.
2. Use torque tool 340-6395 to install the module.
2. Torque tool 340-6395 is included with systems that use this module.

CONFIGURATIONS

MEMORY
## Memory

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### NVSIMMs

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### DIMMs and SIMMs

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### Peripheral SIMMs

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Memory Module Compatibility

An x indicates the Memory Module was installed at the factory or included in a memory expansion option. An s indicates the Memory Module was tested and is supported in other systems.

JavaStation JJ and JavaStation JK Memory Modules

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* For Sun internal use only.

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Memory Module Compatibility

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* Not supported. May cause correctable ECC errors.
† The memory controller does not support 256MB DIMMs.
‡ OBP limits the bank address size to .5GB.

Sun-4u DIMMs - Continued

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<tr>
<td>64</td>
<td>50</td>
<td>168</td>
<td>370-3797</td>
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<td>50</td>
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<td>370-3798</td>
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<td>256</td>
<td>50</td>
<td>168</td>
<td>370-3799</td>
<td>x†</td>
</tr>
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* The chassis does not support 256MB DIMMs.
† The 50ns DIMMs are sold in the Ultra 5/10 ≥360MHz 24-Bit PGX.

Sun-4u DIMMs - Continued

<table>
<thead>
<tr>
<th>SIZE</th>
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<th>PINS</th>
<th>PART#</th>
<th>E3000 E3500</th>
<th>E4000 E4500</th>
<th>E5000 E5500</th>
<th>E6000 E6500</th>
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<tbody>
<tr>
<td>8MB</td>
<td>60ns</td>
<td>168</td>
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<tr>
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Memory Module Compatibility

Sun-4u DIMMs - Continued

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<td>512MB</td>
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Sun-4u1 DIMMs

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<th>E10000 CONTROL BD</th>
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Memory Module Compatibility

## Miscellaneous Memory Modules

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<th>A1000</th>
<th>T3</th>
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<th>L1000 L11000</th>
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<tr>
<td>4MB</td>
<td>72</td>
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</tr>
</tbody>
</table>

* Tin plated SIMM and gold socket on 370-2728-01.
† Gold plated SIMM and gold socket on 370-2728-02.
‡ ATL part number 6220340.
§ DPT part number DM4050-64. A DM4050-16 is available from DPT.

Volume I  MEMORY-5
Prestoserve
Sun-4/15/30/50/75 SS4 SS5
SS10 SS20 SS600 A11 A12 A14
Option 1021
370-1401

Software Compatibility

<table>
<thead>
<tr>
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<th>PRESTOSERVE</th>
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<td>4.1.1</td>
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<td>2.3</td>
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<td>2.4.2</td>
</tr>
<tr>
<td>2.5.1</td>
<td>2.4.2</td>
</tr>
</tbody>
</table>

Notes
1. Set SW1 to BAT when the board is installed. Software will not initialize Prestoserve unless battery backup is enabled.
2. Set SW1 to +5V when the board is removed and cache data does not need saving.
3. Cache is cleared when SW1 is set to +5V for more than five minutes.
4. Do NOT accelerate the root file system.
5. Install Patch 101714-01 for Prestoserve 2.4 and 2.4.1.
6. The Prestoserve hardware design is not compatible with 64-bit DVMA. Disable 64-bit DVMA when Prestoserve is used with Ultra 1 Model 170E, Ultra 2, and SunSwift. Refer to BugID 1224649. Add the following to /etc/system:
   set fas:fas_enable_sbus64 = 0

References
32MB NVRAM Board
A14
Option 1075
375-0012
Micro Memory MM-1360C
32MB ECC

Notes
1. The minimum operating system is Solaris 2.5.1.
2. Device drivers for the NVRAM Board are in Netra NFS 1.2.
3. The 375-0012-02 fixes BugID 4085112.
4. Use the `nvadm -v` command to display the board status bits.

<table>
<thead>
<tr>
<th>Battery</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00</td>
<td>Normal operation</td>
</tr>
<tr>
<td>0x01</td>
<td>Battery 1 has open fuse or is not enabled</td>
</tr>
<tr>
<td>0x02</td>
<td>Battery 1 has low voltage</td>
</tr>
<tr>
<td>0x04</td>
<td>Battery 2 has open fuse or is not enabled</td>
</tr>
<tr>
<td>0x08</td>
<td>Battery 2 has low voltage</td>
</tr>
<tr>
<td>0x10</td>
<td>Battery 3 has open fuse or is not enabled</td>
</tr>
<tr>
<td>0x20</td>
<td>Battery 3 has low voltage</td>
</tr>
<tr>
<td>0x00</td>
<td>Battery 4 has open fuse or is not enabled</td>
</tr>
<tr>
<td>0x01</td>
<td>Battery 4 has low voltage</td>
</tr>
</tbody>
</table>

32MB NVRAM Board
E3000  E4000  E5000  E6000
E3500  E4500  E5500  E6500  E10000
Options  6738  6745

375-0087
Micro Memory MM-1360C
32MB ECC

Notes
1. The minimum operating system is Solaris 2.6 HW: 3/98.
2. Solaris 7 requires Fast Write Cache ≥1.2.
3. Two boards are included with Options 6738 and 6745.
4. Two boards per system are required.
5. The 375-0087 is not compatible with Netra NFS.
6. The 375-0012-03 is not compatible with Netra NFS.

References
2. Fast Write Cache 2.0 Installation Guide, 806-4405-10

MEMORY-8
Field Engineer Handbook
64MB NVRAM Board

A23  A25  A26  A27

Option 6739

375-0086

64MB ECC

5V  64Bit  33MHz

Notes
1. The minimum operating system is Solaris 2.6.
2. Two boards are included with Option 6739.
3. Two boards per system are required.

**SPARCengine CP1500 Memory**

<table>
<thead>
<tr>
<th>Netra t1 100/105</th>
<th>Netra ct 400/800</th>
<th>SPARCengine CP1500</th>
</tr>
</thead>
<tbody>
<tr>
<td>370-4096 256MB</td>
<td>370-4155 256MB</td>
<td>501-5209 128MB FRU</td>
</tr>
<tr>
<td>501-5210 64MB FRU</td>
<td>501-5388 256MB FRU</td>
<td>501-5359 512MB FRU</td>
</tr>
<tr>
<td>540-5358 64MB FRU</td>
<td>540-4349 256MB FRU</td>
<td>540-4350 512MB FRU</td>
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<td>501-5210</td>
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<td>540-4350 512MB FRU</td>
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<tr>
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<td>501-5359</td>
</tr>
</tbody>
</table>

**Notes.**
1. Install the highest capacity memory board first.
2. The 370-4155 was sold for use in the Netra t1 100/105.
3. Up to four 370-4155 256MB Memory Boards can be installed.
4. Only one 370-4155 can be mixed with any other memory board.

**References**
1MB NVSIMM
SS1000  SC2000
Option 172
501-2197

Notes
1. The minimum operating system is Solaris 2.2 and Prestoserve 2.4.1.
2. The SS1000 supports two banks of four NVSIMMs.
3. The SC2000 supports one bank of eight NVSIMMs.
4. The Panasonic BR2330 Battery is not replaceable.
5. If Prestoserve 2.4.1 is installed on SS1000 or SC2000 systems, install Patch 101714-03 or remove the SUNWprsto package before upgrading to Solaris 2.4.
6. If Solaris 2.4 is installed, do not install Prestoserve 2.4.1 or Patch 101714-03 on SS1000 or SC2000 systems.

References
3. 2.4.1 Prestoserve Release Note, 801-4897-10.
2MB NVSIMM
SS10 SS20
Option 178
501-2001

Notes
1. The minimum operating system is Solaris 2.2 and Prestoserve 2.4.1.
2. One NVSIMM or one SBus Prestoserve is supported.
3. Install the NVSIMM in SS10 connector J0301 or J0202.
4. Install the NVSIMM in SS20 connector J0305 or J0304.
5. Install a shunt at J1001 to enable the battery backup mode.
7. The Panasonic BR3032 Battery is not replaceable.

References
1. SPARCstation 10 NVSIMM Installation, 801-3386-10.
3. 2.4.1 Prestoserve Release Note, 801-4897-10.
Notes
1. Install the highest capacity DIMM in Slot 0 under Solaris 1.x.
2. The minimum memory requirement is one DIMM in Bank 0.
3. The SS4 and SS5 use a 66-bit parity protected memory subsystem.
4. If a memory error occurs and the DIMM location is not reported, use the MFAR (memory fault address register) value as the physical address of the memory error.

References
SS20
Options 116 132 164

<table>
<thead>
<tr>
<th>Option</th>
<th>Memory Configuration</th>
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<tbody>
<tr>
<td>501-2479</td>
<td>16MB 5.0V ECC 60ns DIMM Option 116</td>
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<tr>
<td>501-2480</td>
<td>64MB 5.0V ECC 60ns DIMM Option 132</td>
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<tr>
<td>501-2622</td>
<td>32MB 5.0V ECC 60ns DIMM Option 164</td>
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**Memory Map**

<table>
<thead>
<tr>
<th>SOCKET</th>
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<th>DIMM †</th>
<th>BANK</th>
<th>ADDRESS RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0201</td>
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<td>DIMM 0</td>
<td>Bank 0</td>
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</tr>
<tr>
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<td>DIMM 1</td>
<td>DIMM 2</td>
<td>Bank 2</td>
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<td>J0203</td>
<td>DIMM 2</td>
<td>DIMM 5</td>
<td>Bank 5</td>
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</tr>
<tr>
<td>J0301</td>
<td>DIMM 3</td>
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<td>Bank 3</td>
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<td>DIMM 6</td>
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<td>DIMM 1</td>
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<td>DIMM 7</td>
<td>DIMM 4</td>
<td>Bank 4</td>
<td>10000000 - 13ffffff</td>
</tr>
</tbody>
</table>

* This installation sequence does not match the bank order.


† This installation sequence matches the bank order.

† SS20 DSIMM Installation, 801-6185-11.


**Notes**

1. The 32MB DIMM is not supported in the SS10 or SS10SX.
2. The minimum memory requirement is one DIMM in Bank 0.
3. Install Solaris 2.3 Patch ≥101318-34 when:
   - One 32MB DIMM is mixed with seven 16 or 64MB DIMMs.
   - Two 32MB DIMMs are mixed with five or more 16 or 64MB DIMMs.
   - Three 32MB DIMMs are mixed with three or more 16 or 64MB DIMMs.
   - Four 32MB DIMMs are mixed with one or more 16, 32, or 64MB DIMMs.
4. Use the **sxconfig** (1M) command to configure contiguous memory.
Ultra 1

Options 7001 7002 7003 7004 7005 7043

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>16MB 5V ECC</td>
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<td>32MB 5V ECC</td>
<td>128MB 5V ECC</td>
<td>64MB 5V ECC</td>
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<tr>
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<td>60ns DIMM</td>
<td>60ns DIMM</td>
<td>60ns DIMM</td>
<td>60ns DIMM</td>
</tr>
<tr>
<td>Option 7001</td>
<td>Option 7003</td>
<td>Option 7002</td>
<td>Option 7004</td>
<td>Option 7043</td>
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Memory Map

<table>
<thead>
<tr>
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<th>BITS</th>
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<td>16 - 31</td>
<td>128 - 255</td>
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<tr>
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<td>Bank 3</td>
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<td>000 - 127</td>
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<td>Bank 2</td>
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<td>128 - 255</td>
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<td>128 - 255</td>
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Notes
1. Each bank requires two DIMMs.
2. The minimum memory requirement is two DIMMs in Bank 0.
3. DIMMs can be installed in Bank 1, Bank 2, or Bank 3 in any order.
4. Each bank addresses 256MB of memory. Unused memory is mapped out by the memory management hardware.

References
Ultra 2

Options 7001 7002 7003 7004 7003
16MB 5V ECC 64MB 5V ECC 32MB 5V ECC 128MB 5V ECC 64MB 5V ECC
60ns DIMM 60ns DIMM 60ns DIMM 60ns DIMM 60ns DIMM
Option 7001 Option 7003 Option 7002 Option 7004 Option 7003

Memory Map

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<th>WORD</th>
<th>BYTE</th>
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<td>00-15</td>
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<td>Bank 0</td>
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<td>16-31</td>
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<td>Bank 1</td>
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<td>16-31</td>
</tr>
<tr>
<td>U0702</td>
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<td>Bank 1</td>
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Notes
1. Two pair of DIMMs form a group of four DIMMs.
2. All four DIMMs within a group must be the same size.
3. The minimum memory requirement is four DIMMs in Group 0.
4. DIMMs can be installed in Group 1, Group 2, or Group 3 in any order.
5. Each group addresses 512MB of memory. Unused memory is mapped out by the memory management hardware.

Reference: Ultra 2 Creator Series Service Manual, 802-2561-10
### Ultra 5 Ultra 10

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#### Memory Map

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<tr>
<th>SOCKET</th>
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<th>ADDRESS RANGE</th>
<th>ADDRESS RANGE</th>
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</thead>
<tbody>
<tr>
<td>DIMM 1</td>
<td>Bank 0</td>
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<td>Bank 1</td>
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<td>300000000 - 3fffffff</td>
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</table>

**Notes**

1. The minimum memory requirement is two DIMMs in any bank.
2. The 16MB DIMM uses 10-bit column addressing and was not sold.
3. The 32, 64, 128, and 256MB DIMMs use 11-bit column addressing.
4. If 10-bit and 11-bit DIMMs are mixed, either pair will be ignored.
5. The 256MB DIMMs are not supported in the Ultra 5.
6. Memory speed is 60ns if 50ns and 60ns DIMMs are mixed.
7. UltraSPARC III speeds ≥360MHz support 50ns memory speed.
8. Boards 375-0066, 375-0079, and 375-0115 support 50ns memory.
9. OBP ≥3.25v3 is required when DIMMs manufactured by Micron are installed with 360MHz, 400MHz, or 440MHz CPU modules.

**References**

Ultra 30 Netra t 1100

Options 7001 7002 7003 7004 7043

16MB 5V ECC 64MB 5V ECC 60ns DIMM 60ns DIMM
1100 Option 7001 Option 7003 Option 7002 Option 7004 Option 7043

Memory Map

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<th>PAIR ADDRESS</th>
<th>QUAD ADDRESS</th>
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<td>Quad 3</td>
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<td>Quad 3</td>
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<td>40000000 - 5fffffff</td>
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<td>Pair 1</td>
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<td>Quad 0</td>
<td>Pair 1</td>
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<td>00000000 - 1fffffff</td>
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<td>Pair 0</td>
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<td>Quad 0</td>
<td>Pair 0</td>
<td>00000000 - 0fffffff</td>
<td>00000000 - 1fffffff</td>
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</table>

Notes
1. Two DIMMs form a pair. Two pair of DIMMs form a quad.
2. The minimum requirement is two DIMMs in any adjacent pair.
3. DIMMs can be installed in any order of pairs.
4. Interleaving requires a fully populated quad.
5. Each quad addresses up to 512MB of memory.

Ultra 60    Enterprise 220R    Netra t 1120/1125
Options 7002  7003  7004  7003

501-2480  501-2622  501-3136  501-5691
64MB 5.0V ECC  32MB 5.0V ECC  128MB 5.0V ECC  64MB 5.0V ECC
60ns DIMM  60ns DIMM  60ns DIMM  60ns DIMM
Option 7003  Option 7002  Option 7004  Option 7043

Memory Map

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<thead>
<tr>
<th>SOCKET</th>
<th>BANK</th>
<th>ADDRESS RANGE</th>
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</tr>
<tr>
<td>U1003</td>
<td>Bank 3</td>
<td>a0000000 - bfffffff</td>
</tr>
<tr>
<td>U1002</td>
<td>Bank 3</td>
<td>a0000000 - bfffffff</td>
</tr>
<tr>
<td>U1001</td>
<td>Bank 3</td>
<td>a0000000 - bfffffff</td>
</tr>
<tr>
<td>U0904</td>
<td>Bank 2</td>
<td>80000000 - 9fffffff</td>
</tr>
<tr>
<td>U0903</td>
<td>Bank 2</td>
<td>80000000 - 9fffffff</td>
</tr>
<tr>
<td>U0902</td>
<td>Bank 2</td>
<td>80000000 - 9fffffff</td>
</tr>
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<td>Bank 2</td>
<td>80000000 - 9fffffff</td>
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<td>U0701</td>
<td>Bank 0</td>
<td>00000000 - 1fffffff</td>
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</table>

Notes
1. The minimum requirement is four DIMMS in any bank.
2. DIMMs can be installed in any bank order.
3. Each bank addresses 512MB of memory.
4. Interleaving is not supported.

References
### Ultra 80 Enterprise 420R Netra t 1400/1405

**Options**

- 7043
- 7005

#### 501-5691

- 64MB 5.0V ECC
- 60ns DIMM
- Option 7043

#### 501-4743

- 256MB 5.0V ECC
- 60ns DIMM
- Option 7005

---

**Memory Map**

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<th>SYSTEM BOARD</th>
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<td>3</td>
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**Notes**

1. The minimum requirement is four DIMMs in any bank.
2. DIMMs are required on both the Riser Board and the System Board.
3. The recommended installation sequence is Bank 0, 2, 1, 3.
4. Each bank addresses 1GB of memory.
5. 64MB DIMM 501-2480 and 128MB DIMM 501-3136 are not supported.
6. 16MB and 32MB DIMMs are not sold for the Ultra 80.


**MEMORY-20**

Field Engineer Handbook
Ultra 80 Memory Riser
Ultra 80  Enterprise 420R  Netra t 1400/1405
501-5218
0MB FRU

| U0403 BANK 3 | c000 0000 - 7fff ffff |
| U0403 BANK 3 | c000 0000 - 7fff ffff |
| U0402 BANK 1 | 4000 0000 - 7fff ffff |
| U0401 BANK 1 | 4000 0000 - 7fff ffff |
| U0304 BANK 2 | 8000 0000 - bfff ffff |
| U0303 BANK 2 | 8000 0000 - bfff ffff |
| U0302 BANK 0 | 0000 0000 - 3fff ffff |
| U0301 BANK 0 | 0000 0000 - 3fff ffff |

J1601  J1501
Mictor Connector  Mictor Connector

Notes
1. The minimum requirement is four DIMMs in any bank.
2. The recommended installation sequence is Bank 0, 2, 1, 3.
3. DIMMs are required on both the Riser Board and the System Board.
4. Memory is 2-way interleaved when the same size DIMMs are installed in Banks 0 and 1.
5. Memory is 4-way interleaved when the same size DIMMs are installed in Banks 0, 1, 2, and 3.
6. Damage to the Mictor Connectors can occur if DIMMs are installed or removed when the Riser Board is installed on the System Board.
7. Each bank addresses 1GB of memory

Torque Requirements
1. Use torque tool 340-6091 to install the memory riser board.
2. Tool 340-6091 is included with systems that use the memory riser board.
3. A torque driver set to 4.0 - 4.5 in/lbs with a #2 Square Drive bit may be used to install the memory riser board.

References
2. Ultra 80 Product Note, 806-1457.
3. Memory Riser Assembly Damage Caution, 806-2892.
Sun Blade 100
Options 6691 6692 6693

370-4149 370-4150 370-4151
128MB 3.3V ECC 256MB 3.3V ECC 512MB 3.3V ECC
10ns SDRAM DIMM 10ns SDRAM DIMM 10ns SDRAM DIMM
Option 6691 Option 6692 Option 6693

Memory Map

<table>
<thead>
<tr>
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<th>Address Range 1</th>
<th>Address Range 2</th>
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<tbody>
<tr>
<td>U5</td>
<td>60000000-7fffffff or c0000000-ffffffff</td>
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<tr>
<td>U4</td>
<td>40000000-5fffffff or 80000000-bfffffff</td>
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<tr>
<td>U3</td>
<td>20000000-3fffffff or 40000000-7fffffff</td>
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</tr>
<tr>
<td>U2</td>
<td>00000000-1fffffff or 00000000-3fffffff</td>
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Notes
1. The minimum memory requirement is one DIMM in U2.
2. The memory installation sequence is U2, U3, U4, and U5.
3. Each bank addresses 512MB of memory with 500MHz UltraSPARC.
4. Each bank addresses 1GB of memory with ≥550MHz UltraSPARC.

Sun Blade 1000
Options  7050  7052  7053

501-4489  128MB 3.3V ECC  7ns SDRAM DIMM  Option 7050
501-5031  1GB 3.3V ECC  7ns SDRAM DIMM  Option 7052
501-5401  256MB 3.3V ECC  7ns SDRAM DIMM  Option 7053

Memory Map

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<th>Address Range</th>
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<tr>
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<td>Group 0</td>
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<td>000000000 - f9ffffff</td>
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<tr>
<td>U0101</td>
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<td>Bank 1/3</td>
<td>fa0000000 - f13fffff</td>
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<tr>
<td>U0100</td>
<td>Group 0</td>
<td>Bank 0/2</td>
<td>000000000 - f9ffffff</td>
</tr>
</tbody>
</table>

Notes
1. The minimum requirement is four DIMMs in any Group.
2. DIMMs can be installed in any Group order.
3. Each Group addresses 4GB of memory.

Enterprise 250

Options  7001  7002  7003  7004  7043

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<td>Option 7002</td>
<td>Option 7004</td>
<td>Option 7043</td>
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Memory Map

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<tr>
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</tbody>
</table>

Notes
1. Four DIMMs of the same size form a bank.
2. The recommended installation sequence is Bank A, B, C, D.
3. Each bank addresses 512MB of memory.

References
2. Enterprise 250 ShowMe How, 724-2974.
Ultra 450  
Options 7002  
501-2480  
64MB 5V ECC  
60ns DIMM  
Option 7003  

Ultra Enterprise 450  
Options 7003  
501-2622  
32MB 5V ECC  
60ns DIMM  
Option 7002  

501-4743  
256MB 5V ECC  
60ns DIMM  
Option 7005  

501-5691  
64MB 5V ECC  
60ns DIMM  
Option 7004  

501-5896  
256MB 5V ECC  
60ns DIMM w GAL  
Option 7005  

---

**Memory Map**

<table>
<thead>
<tr>
<th>SOCKET</th>
<th>LABEL</th>
<th>INSTALL</th>
<th>BANK</th>
<th>DIMM#</th>
<th>ADDRESS</th>
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<tr>
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<td>1st</td>
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<td>0</td>
<td>8000 0000 - bfff ffff</td>
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**Notes**
1. Four DIMMs of the same size form a bank.
2. The installation sequence is AAAA, BBBB, CCCC, and DDDD.
3. Use the `setenv memory-interleave` OBP command to set interleaving.
4. The smallest DIMM size is used and the remaining memory is lost if interleaving is enabled and the bank sizes are different.

**References**
CONFIGURATIONS

<table>
<thead>
<tr>
<th></th>
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<td>7021</td>
<td>7022</td>
<td>7023</td>
<td>7026</td>
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</table>

- **501-2652**: 8MB 3.3V ECC, 60ns DIMM, Option 7021
- **501-2653**: 32MB 3.3V ECC, 60ns DIMM, Option 7022
- **501-2654**: 128MB 3.3V ECC, 60ns DIMM, Option 7023
- **501-5658**: 256MB 3.3V ECC, 60ns DIMM, Option 7026

Notes
1. Eight DIMMs form a bank.
2. All DIMMs within a bank must be the same size.
3. The first bank of memory can be either Bank 0 or Bank 1.
4. Install one bank on each CPU/Memory board before installing the second bank on any board.
5. Install the largest density banks first, then medium density banks, and finally the smallest density banks.
6. The 256MB DIMMs require OBP >=3.2.23.
7. The Solaris 2.5.1 `prtdiag` command displays incorrect memory capacity. Install Patch 104595-10.
8. OBP 3.2v26 fixes 2GB memory bank BugID 4323635.

References

MEMORY-26

Field Engineer Handbook
**E10000**

Options 7022 7023

<table>
<thead>
<tr>
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**DIMM Installation**

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<tr>
<th># DIMMs</th>
<th>MEMORY ASIC 0</th>
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<tr>
<td>16</td>
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<td>16</td>
<td>x</td>
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<tr>
<td>16</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>16</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

**Notes**

1. All DIMMs on the E10000 Memory Board must be the same size.
2. Memory Board configurations of 512MB or 1GB are supported using 32MB DIMMs. Configurations of 768MB are not supported.
3. Memory Board configurations of 2GB or 4GB are supported using 128MB DIMMs. Configurations of 3GB are not supported.

**Reference**

E10000 Memory Board
Option 7025
501-4351  0MB FRU
501-4776  0MB FRU

Notes
1. Tighten the Mezcon Connector screws to 6 in/lb in the sequence shown.
2. All DIMMs on the Memory Board must be the same size.

References
Notes
1. The Main Processor Unit (MPU) SIMMs serve as processor memory.
2. The RAID Parity Assist (RPA) SIMMs serve as cache memory.
5. Install 501-2438 in SIMM-5 and SIMM-6 for MPU DRAM.
6. Memory failures are reported as a pair of two SIMMs.
7. The 370-2438 or 370-2439 are not labeled with a Sun part number.

References
StorEdge A1000
Option 7040

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<tr>
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<th>Sun Part Number</th>
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Front View of 4MB MPU SIMM

Rear View of 4MB MPU SIMM

Front View of 8MB MPU/RPA SIMM

Rear View of 8MB MPU/RPA SIMM

Front View of 32MB RPA SIMM 370-2439

72-Pin

Notes
1. The Main Processor Unit (MPU) SIMMs serve as processor memory.
2. The RAID Parity Assist (RPA) SIMMs serve as cache memory.
3. Install 8MB or 32MB SIMMs in RPA slots SIMM-1 and SIMM-2.
4. Install 4MB or 8MB SIMMs in MPU slots SIMM-3 and SIMM-4.

Reference
CONFIGURATIONS

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# Graphics

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- ZX ........................................................................... 11
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MG1
1-Bit ECL Monochrome Frame Buffer
Sun-4/15/30/40/50/60/65/75  Sun-4/E  SS10  SS20
SS600  SC2000
501-1419  501-8043
w 4/E Backpanel

Screen Resolutions
1152 x 900  61.8KHz  66Hz
1600 x 1280  89.0KHz  66Hz

UNIX ID: /dev/bwtwo0
Power:  1.3 Amps @ +5Vdc
        6.5 Watts

Note: The final software release is Solaris 2.6
MG2
1-Bit Analog Frame Buffer
Sun-4/15/30/40/50/60/65/75 SS4 SS5 SS10 SS20 SS600
501-1455 501-8062
w 4/E Backpanel

UNIX ID: /dev/bwtwo0
Power: 0.4 Amps @ +5Vdc
2.0 Watts

Note
1. The final software release is Solaris 2.6.
2. The MG2 Frame Buffer produces a 1-bit Analog output.
MG2
1-Bit Analog Frame Buffer
Sun-4/15/30/40/50/65/75 SS4 SS5 SS10 SS20 SS600
501-1561 501-8077
w 4/E Backpanel

Screen Resolutions
1152 x 900 61.8KHz 66Hz
1152 x 900 71.7KHz 76Hz*
*Default

UNIX ID: /dev/bwtwo0
Power: 0.3 Amps @ +5Vdc
1.6 Watts

Note
1. The final software release is Solaris 2.6.
2. The MG2 Frame Buffer produces a 1-bit Analog output.
CG3
8-Bit Color Frame Buffer
Sun-4/15/30/40/50/60/65/75 SS4 SS5 SS10 SS20
501-1415 501-8044
FAB 270-1415 w 4/E Backpanel

Screen Resolution
1152 x 900 61.8KHz 66Hz

UNIX ID: /dev/cgthree0
Power: 0.7 Amps @ +5Vdc
3.5 Watts
CG3
8-Bit Color Frame Buffer
Sun-4/15/30/40/50/60/65/75 SS4 SS5 SS10 SS20
501-1718 501-1909
FAB 270-1415 FAB 270-1909

SBus Connector
92.94 MHz 105.5 MHz
8
FCode

Screen Resolutions
1152 x 900 61.8 KHz 66Hz
1152 x 900 71.7 KHz 76Hz*
*Default

UNIX ID: /dev/cgthree0
Power: 1.1 Amps @ +5Vdc
5.5 Watts
CG3
8-Bit Color Frame Buffer
SS5
501-2691

UNIX ID: /dev/cgthree0
Power: 0.7 Amps @ +5Vdc
3.5 Watts
GX
8-Bit Color Frame Buffer
Sun-4/15/30/40/50/60/65/75  SS4  SS5  SS10  SS20  SS600  SS1000  SC2000
501-1672  501-1996
w/o 340-2348

UNIX ID: /dev/cgsix0
Power: 1.0 Amps @ +5Vdc
5.0 Watts

Volume I

GRAPHICS-9
GXplus
8-Bit Color Frame Buffer
Sun-4/15/30/50/75 SS4 SS5 SS10 SS20 SS600 SS1000 SC2000
501-1717 501-2018 501-2039 w/o 340-2349

Screen Resolutions
1152 x 900 61.8KHz 66Hz
1152 x 900 71.7KHz 76Hz
1024 x 800 71.7KHz 85Hz
1280 x 1024 71.7KHz 67Hz*

UNIX ID: /dev/cgsix0
Power: 2.5 Amps @ +5Vdc
12.5 Watts


GRAPHICS-10
Field Engineer Handbook
ZX
24-Bit Color Frame Buffer
Sun-4/15/30/75 SS5 SS10 SS20 SS1000 SC2000
A11 A12 A14
Option 1094

501-1845
2 Board Set
w/o 340-2349

501-1843
Upper Board

501-1844
Lower Board

501-1845 Rear View

SBus Connector

SBus Connector

501-1845 Front View without Backpanel

501-1845 Front View with Backpanel

FILLER PANEL
340-2851

STEREO
DB13W3

501-1845 with Backpanel and Upper Backpanel 340-2349

FILLER PANEL
340-2851

STEREO
DB13W3

UNIX ID: /dev/leo0
Power: 6.8 Amps @ +5Vdc
34.0 Watts
ZX Upper Board
501-1843

Bottom Side

Screen Resolutions
- 640 x 480  60Hz
- 770 x 575  50Hz
- 960 x 680  108Hz
- 960 x 680  112Hz
- 1024 x 768  60Hz
- 1024 x 768  76Hz
- 1152 x 900  66Hz
- 1152 x 900  76Hz
- 1280 x 1024  76Hz
- 1280 x 1024  67Hz
ZX Lower Board
501-1844

Notes
1. The minimum operating system is Solaris 2.2.
2. The GT/ZX Supplement to Solaris 2.2 is recommended.
3. The final software release is Solaris 2.6.
4. The ZX Graphics Accelerator uses the /opt/SUNWleo device driver.
5. Standoff 240-2716 and Screw 240-2102 fasten the boards together.
6. The Sun-4/15/30/75 requires three 250-1195-01 rubber bumpers.
7. The SC1000 and SC2000 require three 240-2090-01 nylon screws.
8. The SC1000 and SC2000 require three 240-2103-01 nylon standoffs.
9. The A11 and A12 require SBus Extender Cable 530-2290.
10. The A11 and A12 require Ferrite 150-2633 if the stereo output is used.

Screen Resolution
1. The variable monitor_type is defined in /etc/init.d/leoconfig.
2. Make temporary changes to the screen resolution with the following command: /etc/opt/SUNWleo/bin/leoconfig -M monitor_type.
3. Make permanent changes to the screen resolution by removing the comment symbol # from the desired setting in /etc/init.

TurboZX
24-Bit Color Frame Buffer
SS10  SS10SX  SS20
Option 1096

501-2503  501-2711  501-2502
2 Board Set  Upper Board  Lower Board
w/o 340-2349

501-2503 Rear View

501-2503 Front View without Backpanel

501-2503 Front View with Backpanel

501-2503 with Backpanel and Upper Backpanel 340-2349

SS20 Cooling
TurboZX Upper Board
501-2711

Bottom Side

Screen Resolutions
640 x 480  60Hz
770 x 575  50Hz
960 x 680  108Hz
960 x 680  112Hz
1024 x 768  60Hz
1024 x 768  76Hz
1152 x 900  66Hz
1152 x 900  76Hz
1280 x 1024  76Hz
1280 x 1024  67Hz

UNIX ID: /dev/leo0

Volume I

GRAPHICS-15
**TurboZX Lower Board**

**501-2502**

**Bottom Side**

SBus Connector | SBus Connector
---|---
P0201 | Flex Cable to Fan Card

---

**Notes**

1. Solaris 2.3 requires Patch 101284-12.
2. Solaris 2.4 requires Patch 101921.
3. Solaris 2.4 with hyperSPARC requires Patch 101945.
4. The final software release is Solaris 2.6.
5. TurboZX was announced in May 1995 and discontinued in Nov 1995.
6. TurboZX uses the /opt/SUNWleo device driver.
7. Standoff 240-2716 and Screw 240-2102 fasten the boards together.
8. The SS10 and SS20 require two 501-2840 Fan Cards.

**Screen Resolution**

1. The variable monitor_type is defined in `/etc/init.d/leoconfig`.
2. Make temporary changes to the screen resolution with the following command: `./etc/opt/SUNWleo/bin/leoconfig -M monitor_type`.
3. Make permanent changes to the screen resolution by removing the comment symbol `#` from the desired setting in `/etc/init`.

**Reference:** *TurboZX Installation Manual, 801-7829-10.*
TurboZX Fan Card
501-2840

Notes
1. The SS10 and SS20 require two 501-2840 Fan Cards.
2. Flex Cable 530-2165 provides additional power to the TurboZX.

UNIX ID: /dev/vfc0

Power: 1.0 Amps @ +5Vdc
5.0 Watts

Notes
1. VideoPix is not supported in SunOS 4.1.3_U1 Version B.
2. VideoPix is not supported in SunOS 4.1.4.
3. VideoPix is not supported in Solaris 2.x.

SunVideo
Sun-4/15/30/40/50/60/65/75 SS4 SS5 SS10 SS10SX
SS20 SS600 A11 A12 A14
Option 1085
501-2232

UNIX ID: /dev/rtvc0
Power: 1.8 Amps @ +5Vdc
9.0 Watts

Notes
1. The minimum operating system is Solaris 2.3.
2. Jalapeno revision 3 is not compatible with Solaris 2.3 SunDiag.
   Install Patch 101330-05.
3. The SUNWrtvc package is required.
4. The XIL runtime packages are required.
5. SunVideo input is NTSC or PAL format.
6. SunVideo uses the Philips square pixel decoder chip set.

References
SunVideo

Sun-4/15/30/40/50/60/65/75  SS4  SS5  SS10  SS10SX
SS20  SS600  A11  A12  A14
Option 1085
501-3019

UNIX ID: /dev/rtvc0
Power:  1.8 Amps @ +5Vdc
        9.0 Watts

Notes
1. The minimum operating system is Solaris 2.3.
2. Jalapeno revision 3 is not compatible with Solaris 2.3 SunDiag.
   Install Patch 101330-05.
3. The SUNWrtvc package is required.
4. The XIL runtime packages are required.
5. SunVideo input is NTSC or PAL format.
6. SunVideo uses the Philips square pixel decoder chip set.

TurboGX
8-Bit Color Frame Buffer
Sun-4/15/30/40/50/60/65/75 SS4 SS5 SS10 SS20 SS600
SS1000 SC2000 A11 A12 A14 E150
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
Options 322 359
501-2325

Screen Resolutions
1024 x 768 48.2KHz 60Hz
1024 x 768 62.0KHz 77Hz
1152 x 900 61.8KHz 66Hz
1152 x 900 71.8KHz 76Hz

UNIX ID: /dev/cgsix0

Notes
1. The minimum operating system is SunOS 4.0.3.
2. If multiple cards are installed, the minimum OS is SunOS 4.1.1.
3. To test multiple cards with SunDiag, 4.1.1 requires 4.1.1 GFX Rev 2.
4. The SS1, SS1+, and IPC require OBP 2.x.
5. OBP 2.x for the SS1, SS1+, and IPC requires SunOS 4.1.1.
6. The SS2 requires OBP ≥2.4.

References
3. Platform Notes: SMCC Frame Buffers, 802-2661-10.
4. Platform Notes: SMCC Frame Buffers, 802-3755-10.
5. Platform Notes: SMCC Frame Buffers, 802-5011-10.
TurboGX
8-Bit Color Frame Buffer
Sun-4/15/30/40/50/60/65/75 SS4 SS5 SS10 SS20 SS600
SS1000 SC2000 A11 A12 A14 E150
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
Options 322 359 7110
501-2922

UNIX ID: /dev/cgsixO

Notes
1. The minimum operating system is SunOS 4.0.3.
2. If multiple cards are installed, the minimum OS is SunOS 4.1.1.
3. To test multiple cards with SunDiag, 4.1.1 requires 4.1.1 GFX Rev 2.
4. The SS1, SS1+, and IPC require OBP 2.x.
5. OBP 2.x for the SS1, SS1+, and IPC requires SunOS 4.1.1.
6. The SS2 requires OBP ≥2.4.

References
3. Platform Notes: SMCC Frame Buffers, 802-2661-10.
4. Platform Notes: SMCC Frame Buffers, 802-3755-10.
5. Platform Notes: SMCC Frame Buffers, 802-5011-10.
TurboGXplus
8-Bit Color Frame Buffer

Sun-4/15/30/50/75  SS4  SS5  SS10  SS20  SS600
SS1000  SC2000  A11  A12  A14
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
Option 367
501-2253

UNIX ID: /dev/cgsix0

Notes
1. The minimum operating system is SunOS 4.1.1.
2. To test multiple cards with SunDiag, 4.1.1 requires 4.1.1 GFX Rev 2.
3. The 501-2253-05 is required to support 1600x1280x76.
4. The SS2 requires OBP ≥2.4.

References
3. Platform Notes: SMCC Frame Buffers, 802-2661-10.
4. Platform Notes: SMCC Frame Buffers, 802-3755-10.
5. Platform Notes: SMCC Frame Buffers, 802-5011-10.
TurboGXplus
8-Bit Color Frame Buffer
Sun-4/15/30/50/75 SS4 SS5 SS10 SS20 SS600
SS1000 SC2000 A11 A12 A14
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
Option 367 3655
501-2955

UNIX ID: /dev/cgsix0

Notes
1. The minimum operating system is SunOS 4.1.1.
2. To test multiple cards with SunDiag, 4.1.1 requires 4.1.1 GFX Rev 2.
3. The 501-2955 is not compatible with the SS5 on Solaris 1.x.
4. The SS2 requires OBP ≥2.4.

References
3. Platform Notes: SMCC Frame Buffers, 802-2661-10.
4. Platform Notes: SMCC Frame Buffers, 802-3755-10.
5. Platform Notes: SMCC Frame Buffers, 802-5011-10.

 GRAPHICS-24 Field Engineer Handbook
UNIX ID: /dev/txc0

Notes
1. The minimum operating system is Solaris 1.1.2 or 2.4 Hardware: 11/94.
2. Video memory without the VSIMM installed is 1MB.
3. Video memory with the VSIMM installed is 2MB.
4. The VSIMM adds support for 1280 x 1024 resolution.

UNIX ID: /dev/tcx0

Notes:
1. The minimum operating system is Solaris 2.3 Hardware: 8/94.
2. Solaris 2.3 HW: 8/94 on the Model 110 requires Patch 101863-02.
4. Solaris 2.4 HW: 3/95 on the Model 110 requires Patch 101923-05.
5. The S24 uses the backpanel opening for SBus Slot 3.

Auxiliary Video Board

Options

SS10SX  SS20

Options

325  326  327  345  346  347

501-2020  501-2488

SS10SX  SS20

83.8 mm x 98.4 mm  83.8 mm x 95.6 mm

Screen Resolutions

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Refresh Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1024 x 768</td>
<td>60Hz</td>
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<tr>
<td>1024 x 768</td>
<td>60Hz</td>
</tr>
<tr>
<td>1024 x 768</td>
<td>70Hz</td>
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<tr>
<td>1024 x 800</td>
<td>84Hz</td>
</tr>
<tr>
<td>1152 x 900</td>
<td>66Hz</td>
</tr>
<tr>
<td>1152 x 900</td>
<td>76Hz</td>
</tr>
<tr>
<td>1280 x 1024</td>
<td>66Hz</td>
</tr>
<tr>
<td>1600 x 1280</td>
<td>66Hz</td>
</tr>
</tbody>
</table>

DB13W3

Notes

1. The minimum operating system is Solaris 2.3.
2. Solaris 2.3 requires the Solaris 2.3 Supplement CD, 704-4195-10.
3. Solaris 2.6 does not support XIL compute acceleration for the SX.
4. The Auxiliary Video Board is required if two VSIMMs are installed.
5. Install the second VSIMM in J0202 on the SS10SX CPU.
6. Install the second VSIMM in J0406 on the SS20 CPU.
7. Use the sxconfig (1M) command to configure contiguous memory.
8. Use the cg14config (1M) command to change resolutions.

References

1. SPARCstation 10SX VSIMMs Installation, 801-2535-10.
2. SPARCstation 20 VSIMMs Installation, 801-6185-10.
5. Platform Notes: SMCC Frame Buffers, 802-2661-10.
7. Platform Notes: SMCC Frame Buffers, 802-5011-10.
CG14
4MB 60ns 24-Bit VSIMM

SS20
Options 325  327
501-2481

Screen Resolutions
1024 x 768  60Hz
1024 x 768  60Hz
1024 x 768  70Hz
1024 x 800  84Hz
1152 x 900  66Hz
1152 x 900  76Hz
1280 x 1024  66Hz
1600 x 1280  67Hz

UNIX ID: /dev/cgfourteen0

Notes
1. The minimum operating system is Solaris 2.3.
2. Solaris 2.3 requires the Solaris 2.3 Supplement CD, 704-4195-10.
3. Solaris 2.6 does not support XIL compute acceleration for the SX.
4. Install the first VSIMM in J0407 and the second VSIMM in J0406.
5. The Auxiliary Video Board is required if two VSIMMs are installed.
6. Use the sxconfig (1M) command to configure contiguous memory.
7. Use the cg14config (1M) command to change resolutions.

References
1. SPARCstation 20 VSIMMs Installation, 801-6185-10.
CG14
8MB 60ns 24-Bit VSIMM
SS20
Option 326
501-2482

Screen Resolutions
1024 x 768  60Hz
1024 x 768  60Hz
1024 x 768  70Hz
1024 x 800  84Hz
1152 x 900  66Hz
1152 x 900  76Hz
1280 x 1024 66Hz
1600 x 1280 66Hz

UNIX ID: /dev/cgfourteen0

Notes
1. The minimum operating system is Solaris 2.3.
2. Solaris 2.3 requires the Solaris 2.3 Supplement CD, 704-4195-10.
3. Solaris 2.6 does not support XIL compute acceleration for the SX.
4. Install the first VSIMM in J0407 and the second VSIMM in J0406.
5. The Auxiliary Video Board is required if two VSIMMs are installed.
6. Use the sxconfig (1M) command to configure contiguous memory.
7. Use the cg14config (1M) command to change resolutions.

References
1. SPARCstation 20 VSIMMs Installation, 801-6185-10.
Elite3D-m3  Elite3D-m6  AFB Series 1
24-Bit Color Frame Buffer
A16  A22  A23  A27
Options 3664  3665

501-4860  Elite3D-m3/FRU
501-5268  Elite3D-m3/FRU
501-5201  Elite3D-m3
501-5484  Elite3D-m3/FRU

540-3623  Elite3D-m6/FRU
501-4860 + 501-5058
540-3902 Elite3D-m6/FRU
501-5201 + 501-5058
501-5058  Daughter Board

Screen Resolutions
- 640 x 480  60Hz
- 640 x 480  60Hz
- 575 x 575  50Hz
- 680 x 1024  68Hz
- 680 x 1024  68Hz
- 768 x 768  75Hz
- 768 x 768  75Hz
- 800 x 800  84Hz
- 900 x 900  76Hz
- 900 x 900  66Hz
- 800 x 680  76Hz
- 800 x 680  76Hz
- 1024 x 800  84Hz
- 1152 x 900  76Hz
- 1152 x 900  66Hz
- 1280 x 800  76Hz
- 1280 x 800  76Hz
- 1024 x 768  77Hz
- 1024 x 1024  67Hz
- 1280 x 1024  67Hz
- 1280 x 1024  60Hz

Ribbon Cable Assembly 530-2672
DB9 SERIAL  DB9 SERIAL
Operating System Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or Solaris 2.6 HW: 3/98.
2. The Elite3D Supplemental CD for Solaris 2.5.1 is required.
3. Elite3D device drivers are bundled in Solaris 2.6 Hardware: 3/98.

Board Notes
1. Do NOT assemble or disassemble an Elite3D-m6. The Mictor connector can be damaged during assembly and disassembly.
2. Elite3D-m6 assembly 540-3623 includes 501-4860 and 501-5058.
4. Elite3D-m3 501-5484 includes 501-5201 and barcode label 262-5463.
5. Elite3D-m3 501-5268 includes 501-4860 and barcode label 262-5565.

Compatibility Notes
1. Elite3D-m3 is not compatible with 300MHz Module ≤501-4379-05.
2. Elite3D-m3 is not compatible with 300MHz Module ≤501-5040-02.

References
1. afbconfig (1M) and afb (7D) manual pages.
Elite3D-m3  Elite3D-m6  AFB Series 2
24-Bit Color Frame Buffer
A16  A22  A23  A27
Options 3677  3679

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Reasonable</th>
<th>3677</th>
<th>3679</th>
</tr>
</thead>
<tbody>
<tr>
<td>501-5574</td>
<td>Elite3D-m3/FRU</td>
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<td></td>
<td></td>
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<tr>
<td>501-5575</td>
<td>Elite3D-m3</td>
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<td></td>
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</tr>
<tr>
<td>540-4313</td>
<td>Elite3D-m6/FRU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>501-5058</td>
<td>Daughter Board</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Elite3D-m3
- FLOAT
- FCode
- FLOAT
- CMD
- DRAW
- DRAW
- DAC

Daughter Board
- FLOAT
- FLOAT
- to Daughter Board
- to Elite3D-m3

Screen Resolutions:
- 640 x 480  60Hz
- 1600 x 900  60Hz
- 1280 x 1024  76Hz
- 1280 x 1024  80Hz

Ribbon Cable Assembly 530-2672
- DB9 SERIAL
- DB9 SERIAL

GRAPHICS-32
Field Engineer Handbook
Operating System Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or Solaris 2.6 HW: 3/98.
2. The *Elite3D Supplemental CD for Solaris 2.5.1* is required.
3. Elite3D device drivers are bundled in Solaris 2.6 Hardware: 3/98.

Board Notes
1. Do NOT assemble or disassemble an Elite3D-m6. The Mictor connector can be damaged during assembly and disassembly.
2. Elite3D-m6 assembly 540-3623 includes 501-4860 and 501-5058.
4. Elite3D-m3 501-5484 includes 501-5201 and barcode label 262-5463.
5. Elite3D-m3 501-5268 includes 501-4860 and barcode label 262-5565.

Compatibility Notes
1. Elite3D-m3 is not compatible with 300MHz Module ≤501-4379-05.
2. Elite3D-m3 is not compatible with 300MHz Module ≤501-5040-02.

References
1. *afbconfig* (1M) and *afb* (7D) manual pages.
Elite3D-m6  AFB
24-Bit Color Frame Buffer
A14  A20
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
Options  3666  3667

540-3058  540-3979  501-4231  501-4232
AFB Assembly  AFB Assembly  Lower Board  Upper Board

Screen Resolutions
640 x 480  60Hz
640 x 480  60Hz
768 x 575  50Hz
s960 x 680  108Hz
s960 x 680  112Hz
1024 x 768  77Hz
1024 x 768  75Hz
1024 x 768  70Hz
1024 x 768  60Hz
1024 x 800  84Hz
1152 x 900  76Hz
1152 x 900  66Hz
1280 x 800  76Hz
1280 x 1024  76Hz
1280 x 1024  67Hz
1280 x 1024  60Hz

GRAPHICS-34  Field Engineer Handbook
540-3058  540-3979  501-4231  501-4232

Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or Solaris 2.6 HW: 3/98.
2. The Elite3D Supplemental CD for Solaris 2.5.1 is required.
3. Elite3D device drivers are bundled in Solaris 2.6 Hardware: 3/98.
4. Use Y-Cable 180-1910 to drive multiple monitors from the stereo port.

Compatibility Notes
1. Lower board ≤501-4231-06 is not compatible with the A20.
2. Assembly ≤540-3058-06 is not compatible with the A20.
3. Assembly 540-3058 is not compatible with the E3x00-E6x00.

References
1. afbconfig (1M) and afb (7D) manual pages.
Elite3D-m6  AFB
24-Bit Color Frame Buffer
A14   A20
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
Options  3680
540-4335  501-5608  501-4232
AFB Assembly  Lower Board  Upper Board

Screen Resolutions
640 x 480  60Hz
640 x 480  60Hz
768 x 575  50Hz
896 x 680  108Hz
896 x 680  112Hz
1024 x 768  77Hz
1024 x 768  75Hz
1024 x 768  70Hz
1024 x 768  60Hz
1024 x 800  84Hz
1152 x 900  76Hz
1152 x 900  66Hz
1280 x 800  76Hz
1280 x 1024  76Hz
1280 x 1024  67Hz
1280 x 1024  60Hz

Connector to Upper Board
Connector to Lower Board

GRAPHICS-36  Field Engineer Handbook
Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or Solaris 2.6 HW: 3/98.
2. The *Elite3D Supplemental CD for Solaris 2.5.1* is required.
3. Elite3D device drivers are bundled in Solaris 2.6 Hardware: 3/98.
4. Use Y-Cable 180-1910 to drive multiple monitors from the stereo port.

References
1. *afbconfig* (1M) and *afb* (7D) manual pages.
## CONFIGURATIONS

### Creator Series 1  FFB

**24-Bit Color Frame Buffer**

- **A12**  A14
- **Option 3651**
- **501-2634**
- **67MHz Clock**

### Screen Resolutions

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Frequency</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>640 x 480</td>
<td>60Hz</td>
<td>NTSC</td>
</tr>
<tr>
<td>768 x 575</td>
<td>50Hz</td>
<td>PAL</td>
</tr>
<tr>
<td>960 x 680</td>
<td>108Hz</td>
<td>Stereo</td>
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<td>960 x 680</td>
<td>121Hz</td>
<td>Stereo</td>
</tr>
<tr>
<td>1024 x 768</td>
<td>77Hz</td>
<td></td>
</tr>
<tr>
<td>1024 x 768</td>
<td>70Hz</td>
<td></td>
</tr>
<tr>
<td>1024 x 768</td>
<td>60Hz</td>
<td></td>
</tr>
<tr>
<td>1024 x 800</td>
<td>84Hz</td>
<td></td>
</tr>
<tr>
<td>1152 x 900</td>
<td>76Hz</td>
<td></td>
</tr>
<tr>
<td>1152 x 900</td>
<td>66Hz</td>
<td></td>
</tr>
<tr>
<td>1280 x 1024</td>
<td>76Hz</td>
<td></td>
</tr>
<tr>
<td>1280 x 1024</td>
<td>67Hz</td>
<td></td>
</tr>
</tbody>
</table>

### UNIX ID:

```
/dev/ffb0
```

### Notes

1. Revisions ≤501-2634-04 are not compatible with the E3x00, E4x00, E5x00, or E6x00. Use 501-2634-05 or 501-4127.
2. The FFB has a combined framebuffer and graphics clock.

### References

1. `fftconfig (1M)` and `ffb (7D)` manual pages.

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**GRAPHICS-38**

Field Engineer Handbook
Creator Series 1  FFB
24-Bit Color Frame Buffer
A12  A14
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
Options  3651  3653  3669
501-4127
67MHz Clock

UNIX ID: /dev/ffb0

Notes
1. Revisions ≤501-2634-04 are not compatible with the E3x00, E4x00, E5x00, or E6x00. Use 501-2634-05 or 501-4127.
2. The FFB has a combined framebuffer and graphics clock.

References
1. fibconfig (1M) and ffb (7D) manual pages.
4. Platform Notes: SMCC Frame Buffers, 802-3755-10.
5. Platform Notes: SMCC Frame Buffers, 802-5011-10.
Creator3D Series 1  FFB
24-Bit Color Frame Buffer
A12  A14
Option 3652
501-2633
67MHz Clock

Screen Resolutions
640 x 480 60Hz NTSC
768 x 575 50Hz PAL
960 x 680 108Hz Stereo
960 x 680 112Hz Stereo
1024 x 768 77Hz
1024 x 768 70Hz
1024 x 768 60Hz
1024 x 800 84Hz
1152 x 900 76Hz
1152 x 900 66Hz
1280 x 1024 76Hz
1280 x 1024 67Hz
1600 x 1280 76Hz
1920 x 1080 72Hz

UNIX ID: /dev/ffb0

Notes
1. Revisions ≤501-2633-05 are not compatible with the E3x00, E4x00, E5x00, or E6x00. Use 501-2633-06 or 501-4126.
2. The FFB has a combined framebuffer and graphics clock.

References
1. ffbconfig (1M) and ffb (7D) manual pages.
4. Platform Notes: SMCC Frame Buffers, 802-3755-10.
5. Platform Notes: SMCC Frame Buffers, 802-5011-10.
Creator3D Series 1  FFB
24-Bit Color Frame Buffer
A12  A14
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500

Option 3652
501-3129
75MHz Clock

Screen Resolutions
- 640 x 480  60Hz  NTSC
- 768 x 575  50Hz  PAL
- 960 x 680  108Hz  Stereo
- 960 x 680  112Hz  Stereo
- 1024 x 768  77Hz
- 1024 x 768  70Hz
- 1024 x 768  60Hz
- 1024 x 800  84Hz
- 1152 x 900  76Hz
- 1152 x 900  66Hz
- 1280 x 1024  76Hz
- 1280 x 1024  67Hz
- 1600 x 1280  76Hz
- 1920 x 1080  72Hz

UNIX ID: /dev/ffb0

Notes
1. The 501-3129 was released in May 1996 without an option number.
2. The 501-3129 was assigned Option number 3652 in November 1996.
3. The I/O Graphics board requires iPOST 3.2.6. Refer to BugID 1256295.
4. The FFB has a combined framebuffer and graphics clock.

References
1. ffbconfig (1M) and ffb (7D) manual pages.
4. Platform Notes: SMCC Frame Buffers, 802-3755-10.
5. Platform Notes: SMCC Frame Buffers, 802-5011-10
Creator3D Series 1  FFB
24-Bit Color Frame Buffer
A12  A14
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
Options 3652  3654
501-4126
67MHz Clock

Screen Resolutions
640 x 480 60Hz  NTSC
768 x 575 50Hz  PAL
960 x 680 108Hz Stereo
960 x 680 112Hz Stereo
1024 x 768 77Hz
1024 x 768 70Hz
1024 x 768 60Hz
1024 x 800 84Hz
1152 x 900 76Hz
1152 x 900 66Hz
1280 x 1024 76Hz
1280 x 1024 67Hz
1600 x 1280 76Hz
1920 x 1080 72Hz

UNIX ID: /dev/ffb0

Note: The FFB has a combined framebuffer and graphics clock.

References
1. ffbconfig (1M) and ffb (7D) manual pages.
4. Platform Notes: SMCC Frame Buffers, 802-3755-10.
5. Platform Notes: SMCC Frame Buffers, 802-5011-10.
Creator Series 2  FFB2
24-Bit Color Frame Buffer
A16  A23
Options 3658  7131
501-4174

UNIX ID: /dev/ffb0
Note: The minimum operating system is Solaris 2.5.1 Hardware: 4/97.

References
1. ffbconfig (1M) and ffb (7D) manual pages.

Volume I
CONFIGURATIONS

Creator3D Series 2  FFB2
24-Bit Color Frame Buffer

A12  A14
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500

Options 3657  3675  7132  7140
501-4173

Screen Resolutions

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Screen Frequency</th>
<th>NTSC/PAL</th>
<th>Stereo</th>
</tr>
</thead>
<tbody>
<tr>
<td>640 x 480</td>
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<tr>
<td>768 x 576</td>
<td>50Hz</td>
<td>PAL</td>
<td></td>
</tr>
<tr>
<td>960 x 680</td>
<td>108Hz</td>
<td>Stereo</td>
<td></td>
</tr>
<tr>
<td>960 x 680</td>
<td>112Hz</td>
<td>Stereo</td>
<td></td>
</tr>
<tr>
<td>1024 x 768</td>
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<tr>
<td>1024 x 768</td>
<td>70Hz</td>
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<td>1024 x 768</td>
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<td>1024 x 800</td>
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<tr>
<td>1920 x 1200</td>
<td>70Hz</td>
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</tbody>
</table>

UNIX ID: /dev/ffb0

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.
2. The E4000 CPU/Memory Board requires OBP 3.2 Version 9.

References
1. ffbconfig (1M) and ffb (7D) manual pages.
Creator3D Series 2  FFB2
24-Bit Color Frame Buffer
A16  A23
Options 3659  7133  7141
501-4172

Stereo Mode Jumper J1101

3-4 = Stereo Mode Slave
R1105 and R1107 Removed
R1104 and R1108 Installed
This setting is not used

1-2 = Stereo Mode Master
R1105 and R1107 Installed
R1104 and R1108 Removed
Default jumper setting and
resistor installation locations

Screen Resolutions
640 x 480  60Hz  NTSC
640 x 480  60Hz
768 x 575  50Hz  PAL
960 x 680  108Hz Stereo
960 x 680  112Hz Stereo
1024 x 768  77Hz
1024 x 768  70Hz
1024 x 768  60Hz
1024 x 800  84Hz
1152 x 900  76Hz
1152 x 900  66Hz
1280 x 1024  76Hz
1280 x 1024  67Hz
1440 x 900  76Hz
1600 x 1000  66Hz
1600 x 1000  76Hz
1600 x 1280  76Hz
1920 x 1080  72Hz
1920 x 1200  70Hz

UNIX ID: /dev/ffb0

Note: The minimum operating system is Solaris 2.5.1 Hardware: 4/97.

References
1. ffbconfig (1M) and ffb (7D) manual pages.

Volume I

GRAPHICS-45
Creator Series 3  FFB2+
24-Bit Color Frame Buffer
A16  A22  A23
Options 3662  3672
501-4789

Screen Resolutions
- 640 x 480 60Hz  NTSC
- 768 x 575  50Hz  PAL
- 960 x 680  108Hz  Stereo
- 960 x 680  112Hz  Stereo
- 1024 x 768 77Hz
- 1024 x 768 70Hz
- 1024 x 768 60Hz
- 1024 x 800 84Hz
- 1152 x 900 76Hz
- 1152 x 900 66Hz
- 1280 x 1024 60Hz
- 1280 x 1024 67Hz
- 1280 x 1024 76Hz

24-Bit Color
Frame Buffer

Options 3662 3672
501-4789

UNIX ID: /dev/ffb0

Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. The FFB2+ is not compatible with 300MHz Module 501-4196.
3. The FFB2+ is not compatible with 300MHz Module ≤501-4849-02.
4. The 300MHz Module is not compatible with FFB2+ ≤501-4789-02.
5. Errors may occur using SunVTS 2.1.2 with ≥501-4789-04 Rev 51.

References
1. ffbconfg (1M) and ffb (7D) manual pages.
Creator3D Series 3  FFB2+
24-Bit Color Frame Buffer

A14
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
Options  3661  3671
501-4790

![Diagram of Creator3D Series 3 FFB2+](image)

**Screen Resolutions**
- 640 x 480 60Hz  NTSC
- 640 x 480 60Hz  PAL
- 768 x 575 50Hz  PAL
- 960 x 680 108Hz  Stereo
- 960 x 680 112Hz  Stereo
- 1024 x 768 77Hz
- 1024 x 768 70Hz
- 1024 x 768 60Hz
- 1024 x 800 54Hz
- 1152 x 900 76Hz
- 1152 x 900 66Hz
- 1280 x 1024 76Hz
- 1280 x 1024 67Hz
- 1440 x 900 76Hz
- 1600 x 1000 66Hz
- 1600 x 1000 76Hz
- 1600 x 1280 76Hz
- 1920 x 1080 72Hz
- 1920 x 1200 70Hz

**UNIX ID:** /dev/ffb0

**Notes**
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. The E3000-E6000 CPU/Memory Board requires OBP 3.2 Version 9.
3. The FFB2+ is not compatible with 300MHz Module 501-4196.
4. The FFB2+ is not compatible with 300MHz Module ≤501-4849-02.

**References**
1. ffbconfig (1M) and ffb (7D) manual pages.

**Volume I**
Creator3D Series 3  FFB2+
24-Bit Color Frame Buffer
A16  A22  A23
Options  3663  3670
501-4788  501-5690

UNIX ID: /dev/ffb0

Notes
1. The minimum OS is Solaris 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
2. The FFB2+ is not compatible with 300MHz Module 501-4196.
3. The FFB2+ is not compatible with 300MHz Module ≤501-4849-02.
4. The 300MHz Module is not compatible with FFB2+ ≤501-4788-02.

References
1. ffbcfg (1M) and fb (7D) manual pages.
**PGX**

8-Bit Color Frame Buffer

- **A16**
- **A20**
- **A21**
- **A22**
- **A23**
- **A25**
- **A26**

**Options** 3660 7128 7138 7148

**370-2256**

5V 32Bit 33MHz

---

**Screen Resolutions**

- 1600 x 1000 79.9KHz 76Hz
- 1600 x 1000 65.5KHz 66Hz
- 1440 x 900 71.8KHz 76Hz
- 1280 x 1024 81.1KHz 76Hz
- 1280 x 1024 xx.KHz 75Hz
- 1280 x 1024 71.7KHz 67Hz
- 1280 x 1024 xx.KHz 60Hz
- 1280 x 800 xx.KHz 76Hz
- 1152 x 900 71.7KHz 76Hz
- 1152 x 900 61.8KHz 66Hz
- 1024 x 768 xx.KHz 75Hz
- 1024 x 768 xx.KHz 70Hz
- 1024 x 768 48.3KHz 60Hz
- 800 x 600 46.8KHz 75Hz
- 768 x 575 xx.KHz 50Hz
- 640 x 480 xx.KHz 60Hz

---

**UNIX ID:** /dev/fbs/m640

**Notes**

1. The minimum operating system is 2.5.1 Hardware: 4/97.
2. The A20/A25 is not compatible with FCode 1.06 on 370-2256-02.
3. The A20/A25 displays black lines with FCode 1.09. Use FCode 1.11.

**Reference:** *M64 Installation Guide*, 802-5787-10.
PGX32
8/24-Bit Color Frame Buffer

A16  A20  A21  A22  A23  A25  A26  A27
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500

Option 3668
370-3753
3.3/5V 32Bit 33MHz

Screen Resolutions

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<td>Mode 0</td>
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UNIX ID: /dev/fbs/gfxp0

Notes
1. The minimum OS is 2.6 with the TSlgfxdrv and TSlgfxOW packages.
2. The TSlpgx package is integrated in Solaris 7 Hardware: 5/99.
3. Testing on Solaris 2.5.1 has not been completed as of 3/26/99.
4. The A20/A25 OBP banner command fails with PGX32 <370-3753-03.
5. The E3000-6000 and E3500-E6500 require PGX32 370-3753-04.
6. Option 3668 includes HD15 to DB13W3 Adapter 530-2357 or 530-2917.
7. Resolutions up to 1280 x 1024 default to 8/24-bit mode.
8. Resolutions over 1280 x 1024 default to 8-bit mode.

SunVideo Plus

Options 1086 1087 1088 1089

UNIX ID: /dev/olk0

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.
2. SunVideo Plus 1.0 device drivers are on CD-ROM 704-5994-10.
5. SunVideo Plus uses the SUNWolkpd device driver.
6. SunVideo Plus uses the SUNWolkpu runtime scripts.

Expert3D
24-Bit Color Frame Buffer
A23  A25  A27  A34
Option 3678
370-3987
Intense3D Wildcat 4110
3.3/5V 64Bit 66MHz

Screen Resolutions
1920 x 1200  75Hz
1920 x 1200  70Hz
1920 x 1080  72Hz Composite
1792 x 1344  75Hz  VESA
1600 x 1280  76Hz
1600 x 1200  75Hz  VESA
1600 x 1000  76Hz Composite
1600 x 1000  66Hz
1440 x 900  76Hz Composite
1280 x 1024  112Hz Stereo
1280 x 1024  85Hz  VESA
1280 x 1024  76Hz Composite
1280 x 1024  76Hz  VESA
1280 x 1024  67Hz Composite
1280 x 1024  60Hz  VESA
1280 x 800  76Hz
1152 x 900  76Hz Composite
1152 x 900  66Hz Composite
1024 x 800  84Hz Composite
1024 x 768  77Hz
1024 x 768  75Hz  VESA
1024 x 768  70Hz
1024 x 768  60Hz Composite
960 x 640  112Hz Stereo
960 x 640  108Hz Stereo
768 x 576  50Hz Interlaced
640 x 480  60Hz  VESA
640 x 480  60Hz Composite

UNIX ID: /dev/fbs/ifb0

References
1. fbconfig and SUNWifb_config manual pages.
CONFIGURATIONS

FIBRE CHANNEL
## Fibre Channel

### SPARCstorage Array Model 100 and Model 200 Series

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### Enterprise Network Array A5000 StorEdge A5x00

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### StorEdge T3

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Fibre Channel Host Adapter  FC25/S
SS4  SS5  SS10  SS20  SS600  SS1000  SC2000
A11  A12  A14  E3000  E4000  E5000  E6000
E3500  E4500  E5500  E6500  E10000
Option 1057
501-2069  501-2553
FRU w/o 370-1426  w 370-1426

SBus Connector

SOC

J0303  J0302
Slot A  Slot B

Connector 1  Connector 0
Notes
1. The minimum operating system is Solaris 2.3.
2. Filler Panel 340-2895 cannot be installed in Slot B.
3. Install the first Fibre Channel Optical Module in Slot B.

Firmware Notes
1. The FC25/S requires firmware ≥1.33 to boot the SPARCstorage Array.
2. Firmware 1.33 is on FC25/S 501-2069-07 and 501-2553-03.
3. Use the OBP `sccsid` command to display the FC25/S firmware level:
   - `ok setenv fcode-debug? true`
   - `ok cd /io-unit@f,e1200000/sbi@0,0/SUNW,soc@3,0`
   - `ok sccsid type 1.18 94/03/15`
   - `ok device-end`
4. Use the `fc_update` command to download the FC25/S firmware, then halt the system and power cycle the SPARCstorage Array:
   - `#/cdrom/ssa_2_1_sparc/fc_update/fc_update`
5. The `fc_update` command is not supported on the SS4 or SS5.

Firmware Revisions

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<td>525-1386-04</td>
<td>1.52</td>
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Booting Notes
1. Solaris 2.3 does not support booting from the Array Controller.
2. Solaris 2.4 Hardware: 3/95, SPARCstorage Array Software 2.1, and FC25/S firmware ≥1.33 are required to boot the SPARCstorage Array.

References
Fibre Channel Optical Module  FC/OM
Option 595
370-1426
Eldec  IBM  Vixel  Western Digital

Notes
1. The minimum operating system is Solaris 2.3.
2. Install the first card in Slot B on the FC25/S.
3. Install the first card in Slot B on the Array Controller.
4. The following cable types are supported:
   50/125 Multimode Fiber up to 2 Kilometers
   62.5/125 Multimode Fiber up to 500 meters

Reference
Battery Module

501-2028
Obsolete

501-2857

Notes
1. The minimum operating system is Solaris 2.3.
2. SPARCstorage Array Software 1.0 and 2.0 do not support fast writes.
3. SPARCstorage Array Software 2.1 supports fast writes.
4. The 3V batteries are not field replaceable.
5. The battery provides approximately 72 days of backup power.
6. The low battery warning signal activates when there are 10 to 15 days of battery backup life remaining.

References
1. SPARCstorage Array 100 Series Service Manual, 801-2206-12.
SSA Model 100 Series Array Controller
SPARCstorage Array Models 101 and 102
501-2080  501-2552
FRU w Battery and Optical Module

Top Side
- SOC
- ISP1000 SCSI6
- ISP1000 SCSI5
- 40MHz microSPARC
- ISP1000 SCSI4
- BIANCA
- PLCC U1210 FEPROM

Bottom Side
- ISP1000 SCSI1
- ISP1000 SCSI2
- ISP1000 SCSI3
- ISP1000 SCSI4
- ISP1000 SCSI5
- ISP1000 SCSI6
- 512K x 72 NVRAM = 4MB
- 256K x 8 FEPROMs
- J1401 Battery Module
- R1601 / R1602
- U1202 / U1204
- U1203
- 256K x 16
- 256K x 16
- 256K x 16
- 256K x 16
- 256K x 16
- 256K x 16
- 256K x 16
- 256K x 16

- AMBER LED
- NVRAM SWITCH
- NORMAL/EXTENDED DIAG
- RESET
- JTAG
- GREEN LED
- J1702 FIBRE MODULE B
- J1701 FIBRE MODULE A
Notes
1. The minimum operating system is Solaris 2.3.
2. Install the first Fibre Channel Optical Module in Slot B.

Array Controller Firmware Notes
1. Firmware $\geq 1.9$ is required with Solaris 2.3 and SSA 2.0.
2. Firmware $\geq 1.10$ is required with Solaris 2.3 and SSA 2.1.
3. Firmware $\geq 2.0$ is required with Solaris 2.4 and SSA 2.1.
   Firmware $\geq 2.1$ is recommended.
4. Use the SSA 1.0 or 2.0 `ssacli` command to program the firmware, then
   halt the system and power cycle the SPARCstorage Array:
   ```
   # ssacli -s -f /opt/SUNWssa/lib/1.x/ssafirmware download <ctlr>
   # ssacli -s -f /opt/SUNWssa/lib/2.x/ssafirmware download <ctlr>
   ```
5. Use the SSA 1.0 or 2.0 `ssacli` command to display the Array Controller
   status, Firmware level, and Device status:
   ```
   # ssacli display <ctlr>
   ```
6. Use the SSA 2.1 `ssadm` command to program the firmware, then
   halt the system and power cycle the SPARCstorage Array:
   ```
   # ssadm download -f /usr/lib/firmware/ssa/ssafirmware <ctlr>
   ```
7. Use the SSA 2.1 `ssadm` command to display the Array Controller
   firmware level, Controller status, and Device status:
   ```
   # ssadm display <ctlr>
   ```
8. Array Controllers 501-2080-09 and 501-2552-06 contain Firmware 2.0
    and Diagnostic PROM 525-1366-06.
9. Array Controllers manufactured after June 1994 use LSI Logic or
   Toshiba/QLogic ISP Controllers. Toshiba/QLogic ISP Controllers are not
   compatible with firmware $\leq 1.9$.
10. Solaris 2.3 Patch 103351-01, Solaris 2.4 Patch 103290-02, or Solaris
    2.5 Patch 103017-04 includes Array Controller Firmware 3.6.
11. Firmware revisions $> 3.6$ are not supported by Solaris 2.3 as of 7/21/97.

Fast Write Notes
1. Fast Writes are not supported in SSA 1.0, SSA 2.0, or Solaris 2.3.
2. Fast Writes are supported in SSA 2.1.
3. Fast Writes require diagnostic PROM $\geq 525-1366-06$ at U1210.
4. Array Controllers 501-2080-09 and 501-2552-06 contain Firmware 2.0
    and Diagnostic PROM 525-1366-06.
5. Fast writes require Array Controller Firmware 3.6.

References
1. SPARCstorage Array 100 Series Service Manual, 801-2206-12.
5. SPARCstorage Array 2.0 CD Insert Product Note, 804-4793-11.
6. SPARCstorage Array 2.1 CD Insert Product Note, 804-4996-10.
7. SPARCstorage Array 2.1.1 Product Note, 802-2043-11.
8. SPARCstorage Array 2.1.1 CD Product Note, 802-5314-10.
SSA Model 100 Series Array Controller
SPARCstorage Array Model 112

501-2872
Light Grey
FRU
501-2982
Light Grey
w Battery
w Optical Module
501-4271
Medium Grey
FRU
501-4272
Medium Grey
w Battery
w Optical Module

Top Side

Bottom Side

FIBRE-8

Field Engineer Handbook
Notes
1. The minimum operating system is Solaris 2.3.
2. SPARCstorage Array Software 2.1.1 is required.
3. Install the first Fibre Channel Optical Module in Slot B.
4. The 2.1GB Disk Drive requires Firmware 0417 (≥370-1412-02).
5. The 2.9GB Disk Drive requires Firmware 0404 (≥370-1695-01).

Array Controller Firmware Notes
1. Firmware revision ≥3.x is required to support microSPARC II.
2. Use the ssaadm command to program the Array Controller firmware, then halt the system and power cycle the SPARCstorage Array:
   # ssaadm download -f /usr/lib/firmware/ssa/ssafirmware <ctlr>
3. Use the ssaadm display command to display the Array Controller firmware level, Controller status, and Device status:
   # ssaadm display <ctlr>
4. Use the ssaadm command to spin-up a disk tray after a warm-plug. The differential SCSI disk tray will not automatically spin-up:
   # ssaadm start <ctlrlunit>
6. Solaris 2.3 Patch 103351-01, Solaris 2.4 Patch 103290-02, or Solaris 2.5 Patch 103017-04 includes Array Controller Firmware 3.6.
7. Firmware revisions >3.6 are not supported by Solaris 2.3 as of 7/21/97.

References
5. SPARCstorage Array 2.1.1 Product Note, 802-2043-11.
6. SPARCstorage Array 2.1.1 CD Product Note, 802-5314-10.
Chassis Backplane
SPARC Storage Array Model 100 Series
501-2029

Rear View

Array Controller Connectors
J0201
J0202

Power Supply Connector
J0301

Front View

J0103 Ctrl 4 = Right Tray
Ctrl 5 = Right Tray

J0102 Ctrl 2 = Middle Tray
Ctrl 3 = Middle Tray

J0101 Ctrl 0 = Left Tray
Ctrl 1 = Left Tray

J0401 Fan Tray

FIBRE-10 Field Engineer Handbook
8-Slot SCSI Disk Backplane
SPARCstorage Array Model 100 Series
501-2010

Controller 0 = Left Tray
Controller 2 = Middle Tray
Controller 4 = Right Tray
Controller 1 = Left Tray
Controller 3 = Middle Tray
Controller 5 = Right Tray

J0101  Disk 0
J0102  Disk 1
J0103  Disk 2
J0104  Disk 3
J0105  Disk 4

J0201  Disk 0
J0202  Disk 1
J0203  Disk 2
J0204  Disk 3
J0205  Disk 4

Solenoid Not Installed
Notes
1. The minimum operating system is Solaris 2.3.
2. SPARCstorage Array Software 2.1 is required.
3. Install the first Fibre Channel Optical Module in Slot B.
4. The 2.1GB Disk Drive requires Firmware 0417 (≥370-1412-02).
5. The 2.9GB Disk Drive requires Firmware 0404 (≥370-1695-01).

Array Controller Firmware Notes
1. Use the ssaadm command to program the Array Controller firmware, then halt the system and power cycle the SPARCstorage Array:
   # ssaadm download -f /usr/lib/firmware/ssa/ssafirmware <ctlr>
2. Use the ssaadm display command to display the Array Controller firmware level, Controller status, and Device status:
   # ssaadm display <ctlr>
3. Use the ssaadm command to spin-up a disk tray after a warm-plug. The differential SCSI disk tray will not automatically spin-up:
   # ssaadm start <ctlrunit>
4. Array Controllers manufactured after June 1994 use LSI Logic or Toshiba/QLogic ISP Controllers. Toshiba/QLogic ISP Controllers are not compatible with firmware ≤1.9. Use firmware ≥1.10.
6. Solaris 2.3 Patch 103351-01, Solaris 2.4 Patch 103290-02, or Solaris 2.5 Patch 103017-04 includes Array Controller Firmware 3.6.
7. Firmware revisions >3.6 are not supported by Solaris 2.3 as of 7/21/97.

References
5. SPARCstorage Array 2.1 CD Insert Product Note, 804-4996-10.
6. SPARCstorage Array 2.1.1 Product Note, 802-2043-11.
7. SPARCstorage Array 2.1.1 CD Product Note, 802-5314-10.
SSA Model 200 Series Array Controller
SPARCstorage Array Model 210
501-3021 501-3024
FRU w Battery and Optical Module
Notes
1. The minimum operating system is Solaris 2.3.
2. SPARCstorage Array Software 2.1.1 is required.
3. Install the first Fibre Channel Optical Module in Slot B.
4. The 2.1GB Disk Drive requires Firmware 0417 (≥370-1412-02).
5. The 2.9GB Disk Drive requires Firmware 0404 (≥370-1695-01).

Array Controller Firmware Notes
1. Firmware revision ≥3.x is required to support microSPARC II.
2. Use the ssaadm command to program the Array Controller firmware, then halt the system and power cycle the SPARCstorage Array:
   # ssaadm download -f /usr/lib/firmware/ssa/ssafirmware <ctlr>
3. Use the ssaadm display command to display the Array Controller firmware level, Controller status, and Device status:
   # ssaadm display <ctlr>
4. Use the ssaadm command to spin-up a disk tray after a warm-plug. The differential SCSI disk tray will not automatically spin-up:
   # ssaadm start <ctrlunit>
6. Solaris 2.3 Patch 103351-01, Solaris 2.4 Patch 103290-02, or Solaris 2.5 Patch 103017-04 includes Array Controller Firmware 3.6
7. Firmware revisions >3.6 are not supported by Solaris 2.3 as of 7/21/97.

References
5. SPARCstorage Array 2.1.1 Product Note, 802-2043-11.
6. SPARCstorage Array 2.1.1 CD Product Note, 802-5314-10.
Differential SCSI Adapter
SPARCstorage Array Model 200 Series
501-2670
LCD Assembly
SPARCstorage Array Model 200 Series
501-2781

DISPLAY PCB 501-2671

LCD CABLE 530-2156

LCD 501-2713

LCD CABLE 530-2156
Chassis Backplane
SPARCstorage Array Model 200 Series
501-2664
Pressfit
FC-AL Host Adapter   FC100/S
SS1000E   SC2000E
E3000   E4000   E5000   E6000
E3500   E4500   E5500   E6500   E10000
Option 6730
501-3060   540-2989
FRU
w/o 370-2303
≤540-2989-03
w 501-3060
w 370-2303

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware 8/97.
2. The Ultra 2 is not compatible with FC100/S 501-3060.
3. The A3500-FC is not compatible with FC100/S 501-3060.
4. The following cable type is supported with GBIC 370-2303:
   50/125 Multimode Fiber up to 500 meters

References
1. FC-AL SBus Card Installation and Service Manual, 802-7572.
FC-AL Host Adapter   FC100/S
SS1000E   SC2000E   A14
E3000   E4000   E5000   E6000
E3500   E4500   E5500   E6500   E10000
Option 6730
501-5202       540-2989
FRU            540-2989-04
w/o 370-2303   w 501-5202
w 370-2303

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware 8/97.
2. The following cable type is supported with GBIC 370-2303:
   50/125 Multimode Fiber up to 500 meters

References
1. FC-AL SBus Card Installation and Service Manual, 802-7572.

FIBRE-20              Field Engineer Handbook
FC-AL Host Adapter   FC100/S
SS1000E   SC2000E   A14
E3000   E4000   E5000   E6000
E3500   E4500   E5500   E6500   E10000
Option 6730
501-5266       540-2989
FRU
w/o 370-2303
≥540-2989-05
w 501-5266
w 370-2303

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware 8/97.
2. The following cable type is supported with GBIC 370-2303:
   50/125 Multimode Fiber up to 500 meters

References
1. FC-AL SBus Card Installation and Service Manual, 802-7572.
FC-AL Host Adapter FC100/P
A23 A25 A26 A27 Netra t1 100/105
Option 6729
375-0040
QLogic QLA2100F
3.3/5V 32/64Bit 33/66MHz

Notes
1. The minimum operating system is Solaris 2.6.
2. The minimum StorEdge A5000 firmware is 1.05.

Dual FC-AL Host Adapter
Option 6726
375-0099
QLogic
3.3/5V 32/64Bit 33/66MHz

50/125 Multimode Fiber up to 500 meters
2 Meter Cable 537-1004
5 Meter Cable 537-1020
15 Meter Cable 537-1006

Notes
1. The minimum OS is Solaris 7 HW: 11/99 or Solaris 8 HW: 6/00.
2. The minimum StorEdge A5000 firmware is 1.05.

FC-AL SW-GBIC

FC100/S  FC100/P

Option 6731

370-2303-02  370-2303-03  370-3975
IBM 21H9750  IBM 21H9870  IBM 21H9750
Vixel 00550037-904  Vixel 00651050-70  Relabeled 370-2303-02
CD-ROM Laser  VCSEL Laser  CD-ROM Laser
830 - 870 nm  830-870 nm  830 - 870 nm

Internal End View

Top View

External End View

SC DUPLEX CONNECTOR
50/125 Multimode Fiber up to 500 meters
2 Meter Cable 537-1004
5 Meter Cable 537-1020
15 Meter Cable 537-1006

Note: The minimum operating system is Solaris 2.5.1 Hardware 8/97.

References
1. GBIC Installation and Removal, 805-3885-10.
2. FC-AL SBus Card Installation and Service Manual, 802-7572.
FC-AL LW-GBIC
FC100/S  FC100/P
Option 6737
370-3722
IBM 21H9154
VCSEL Laser
1270 - 1350 nm

Internal End View

Top View

External End View

SC DUPLEX CONNECTOR
9/125 Singlemode Fiber up to 10 Kilometers
15 Meter 9/125 Cable 537-1014

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware 8/97.
2. Sun supplies 15 meter Singlemode 9/125 Fiber Cable 537-1014.
3. The A5x00 Interface Board requires Firmware v1.09.
4. The A5x00 Horizontal Interconnect Board requires Firmware v1.09.

References
2. Long Wave GBIC Installation and Removal, 805-6965-10.
FC-100 Hub  StorEdge F100 Hub
Option 6732
370-3012
Vixel Corporation
IntraLink 1000

Front View

Rear View

Notes
1. The Bypass LED is On when a port is not connected.
2. The Device Active LED is Off when a port is not connected.
3. The following cable type is supported with GBIC 370-2303: 50/125 Multimode Fiber up to 500 meters


FIBRE-26  Field Engineer Handbook
Interface Board
Enterprise Network Array A5000
StorEdge A5000  StorEdge A5100  StorEdge A5200
Option 6734
501-2951  540-2988
FRU w/o 370-2303 w 370-2303

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware 8/97.
2. The following cable type is supported with GBIC 370-2303:
   50/125 Multimode Fiber up to 500 meters

References
1. FC-AL SBus Card Installation and Service Manual, 802-7572.
7-Slot FC-AL Disk Backplane
Enterprise Network Array A5000
StorEdge A5000  StorEdge A5100
501-4372  501-5316
Released 12/98
Inactivated 8/99
Not Manufactured

Note: The minimum configuration is 5 disk drives installed in Front Backplane Slots 3 and 6 and Rear Backplane Slots 0, 3, and 6.

11-Slot FC-AL Disk Backplane
StorEdge A5200
501-4158

Note: The minimum configuration is 7 disk drives installed in Front Backplane Slots 0, 5, and 10 and Rear Backplane Slots 0, 3, 6, and 10.

Vertical Interconnect Board
Enterprise Network Array A5000
StorEdge A5000  StorEdge A5100  StorEdge A5200
540-2864 501-2947
Interconnect Assembly Vertical Board
w 501-2947 and 501-2948

FIBRE-30 Field Engineer Handbook
Horizontal Interconnect Board
Enterprise Network Array A5000
StorEdge A5000  StorEdge A5100  StorEdge A5200

540-2864  501-2948
Interconnect Assembly  Horizontal Board
w 501-2947 and 501-2948


Volume I
E3500 FC-AL Interface Board
Option 2652

501-4820  FRU w/o GBIC
595-4739  Option 2652
w 2 370-2303 GBICs
w 1 537-1004 Cable


FIBRE-32  Field Engineer Handbook
RAID Controller
StorEdge T3
375-0084
w 32MB Processor Memory
w 256MB Cache Memory

Notes
1. The minimum operating system is Solaris 2.6.
2. There is no Sun Part Number for the 32MB Processor Memory.
3. There is no Sun Part Number for the 128MB Cache Memory.

Interconnect Card
StorEdge T3
375-0085

Notes
1. Interconnect Card 1 controls Drives 4 to 9.
2. Interconnect Card 2 controls Drives 1 to 3 and the cache mirror.
3. Cache mirroring is disabled when Interconnect Card 2 fails.

# SCSI

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<th></th>
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<td>Differential SCSI/Ethernet</td>
<td>DSBE/S</td>
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<td>Single-Ended Fast/Wide</td>
<td>SWIS/S</td>
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<tr>
<td>Differential Fast/Wide</td>
<td>DWIS/S</td>
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<tr>
<td>Differential Ultra/Wide</td>
<td>UDWIS/S</td>
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<tr>
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<td>SunSwift</td>
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</thead>
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<td>SunSwift</td>
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<td>Dual Single-Ended Ultra/Wide</td>
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<td>Dual Differential Ultra/Wide</td>
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<tr>
<td>SCSI RAID Controller</td>
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<th>SCSI Adapters</th>
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<td>Ultra 1</td>
<td></td>
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<tr>
<td>Ultra 30 Ultra 60</td>
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<td>Ultra 80</td>
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<tr>
<td>Netra t 1100</td>
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<tr>
<td>Netra t 1120 Netra t 1125</td>
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<td>E220R E420R</td>
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<tr>
<td>E4x00 E5x00 E6x00</td>
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<tr>
<td>MediaCenter 1000E</td>
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<tr>
<td>Desktop Storage Pack</td>
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<td>SPARCstorage Unipack</td>
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<tr>
<td>StorEdge Unipack</td>
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<tr>
<td>SPARCstorage FlexiPack</td>
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<tr>
<td>StorEdge FlexiPack</td>
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### StorEdge A1000 StorEdge D1000
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SCSI-2 Field Engineer Handbook
9/18/00

SCSI SSHA
Sun-4/15/30/40/50/60/65/75
SS4 SS5 SS10 SS20 A11 A12 A14
Option 1055

501-1759
FCC-A/VCCI-1
15/30/40/50/60/65/75

501-1850
FCC-B/VCCI-2
15/30/40/50/60/65/75
SS4/SS5/SS10/SS20
A11/A12/A14

501-1759
501-1850

32-Bit SBus Connector

FCode
525-1151-01
525-1151-02

S4-DMA+

25MHz
53C90A

2A F0102
150-1174

Green LED
TERMPWR
Yellow LED
Blown Fuse

HD50-PIN SCSI

Power: 0.6Amps @ +5Vdc
3.0 Watts

Notes
1. The Sun-4/60 CPU requires Boot PROM 1.3 Version 3.
2. This card is not compatible with Slot-3 of the Sun-4/60/65.
3. Disable the SS10 on-board Ethernet if two or more SCSI host adapters are installed. Use an SBE/S or FSBE/S for Ethernet.
4. FCode on SSHA 501-1759 is not compatible with the SS10, SS20, A11, A12, and A14. The 501-1759 was discontinued in March 1991.
5. The SS4, SS5, SS10, SS20, A11, A12, and A14 require 501-1850-02. Refer to BugID 1264704.
6. Add the following to /etc/system on Solaris 2.6: forceload: drv/dma.
   Refer to BugID 4078972.

### JUMPER SETTING DESCRIPTION

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>J0202</td>
<td>In</td>
<td>Enable SCSI clock</td>
</tr>
<tr>
<td>J0302</td>
<td>In</td>
<td>Enable 10BASE5</td>
</tr>
<tr>
<td>J0302</td>
<td>Out</td>
<td>Enable 10BASE-T</td>
</tr>
</tbody>
</table>

**Power:** 1.9 Amps @ +5Vdc
9.5 Watts not including MAU +12Vdc power requirements

**Notes**
1. Use Adapter Cable 530-1812 for 10BASE5 Ethernet.
2. Use Adapter Cable 530-1813 for 10BASE-T Ethernet.
3. The SBE/S does not provide Link Test. Disable Link Test on the Hub.

Fast SCSI/Ethernet   FSBE/S
Sun-4/15/30/40/50/60/65/75  SS4  SS5  SS10
SS20 SS600 SS1000 SC2000 A11 A12 A14
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
E10000
Option 1053
501-2015        501-2981

Power:  1.9 Amps @ +5Vdc
         9.5 Watts not including MAU +12Vdc power requirements

Notes
1. The minimum operating system is Solaris 1.1 (SunOS 4.1.3)
2. Open Boot PROM 2.x is required.
3. Install J0202 to enable the SCSI clock.
4. Install J0302 to disable the TPE link integrity test.
5. Remove J0302 to enable the TPE link integrity test.
6. The 501-2015-05 uses a modified AM79C90 Ethernet Controller and a piggyback mounted PAL to make the AM79C90 act like a AM7990.
7. The 501-2981 uses a modified AM79C90 Ethernet Controller.

Differential SCSI/Ethernet  DSBE/S
4/75 SS5 SS10 SS20 SS600
SS1000 SC2000 A11 A12 A14
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
E10000
Option 1052
501-1902

32-Bit SBus Connector

ESC-1

AM7990
or
MK7990

J0302

10BASE-T

HD68-PIN SCSI

Power: 1.9 Amps @ +5Vdc
9.5 Watts

Notes
1. Install J0302 to disable the TPE link integrity test.
2. Remove J0302 to enable the TPE link integrity test.


SCSI-6 Field Engineer Handbook
Single-Ended Fast/Wide   SWIS/S
SS4 SS5 SS10 SS20 SS600
SS1000 SC2000 A11 A12 A14
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
E10000
Option 1063
370-1703
QLogic SP1610402

64-Bit SBus Connector

FCode

ISP-1000

40MHz

HD68-PIN SCSI

Power: 1.6 Amps @ +5Vdc
8.0 Watts maximum

Notes
1. The minimum operating system is Solaris 2.3.
2. The SWIS/S supports up to 15 targets on the SCSI bus.
3. Do NOT mix narrow (8-bit) and wide (16-bit) SCSI devices on the same controller under Solaris 2.3. Install Patch 101378-01.
4. Warning messages are displayed if fast/wide SCSI is enabled under Solaris 2.3. Install Patch 101378-01.
5. Set scsi_options=0x3f8 in /etc/system to enable fast/wide transfers.


Volume I

SCSI-7
Differential Fast/Wide SCSI  DWIS/S
SS5  SS10  SS20  SS600  SS1000  SC2000  A11  A12  A14
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
E10000
Option 1062
370-1704
QLogic SP1710401

Notes
1. The minimum operating system is Solaris 2.3.
2. The DWIS/S supports up to 15 targets on the SCSI bus.
3. Do NOT mix narrow (8-bit) and wide (16-bit) SCSI devices on the same
controller under Solaris 2.3. Install Patch 101378-01.
4. Warning messages are displayed if fast/wide SCSI is enabled under
Solaris 2.3. Install Patch 101378-01.
5. Set scsi_options=0x3f8 in /etc/system to enable fast/wide transfers.
6. The 2.1GB Disk Drive requires 0420 Firmware (370-1412-03) for
optimal performance. Set scsi_options=0xf8 in the /etc/system file if
older disk drive firmware is used.
7. Install SunSwift in Slot 0 and DWIS/S in Slot 1 when installing SunSwift
and DWIS/S on an E10000 I/O board. Refer to BugIDs 4046986,
4049704, and 4091053.

Notes
1. The minimum operating system is Solaris 2.4.
2. Install Solaris 2.4 Patch 102509-06.
3. Install Solaris 2.5 Patch 103936-01.
4. Install Solaris 2.5.1 Patch 103934-01.
5. The UDWIS/S supports up to fifteen targets on the SCSI bus.
6. FCode 1.26 on 370-2443-02 fixes BugID 4230719.
7. Install the UDWIS/S and SCI on separate E10000 SBus channels.

Reference
SBus Wide Intelligent Ultra SCSI Differential Host Adapter Guide, 802-7748.
Single-Ended Fast/Wide SCSI
SunSwift
4/15/30  SS5  SS10  SS20  SS600
SS1000  SC2000  A11  A12  A14
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
E10000
Option 1018
501-2739

Notes
1. The minimum operating system is Solaris 2.4.
2. The SUNWhmd and SUNWhmdu packages are bundled in Solaris 2.5.
3. Solaris 2.4 packages are on CD-ROM 794-5626-01.
5. Install SunSwift in Slot 0 and DWIS/S in Slot 1 on E10000 SBus I/O board 501-4349.

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Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.
2. Use Auto-negotiation to select ethernet operating mode and speed.

Single-Ended Ultra/Wide SCSI
A21 A22
Option 5010
375-0097
3.3/5V 32Bit 33MHz

<table>
<thead>
<tr>
<th>LOWER</th>
<th>UPPER</th>
<th>DESCRIPTION</th>
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<td>1-2</td>
<td>1-2</td>
<td>Automatic Termination Enabled</td>
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<td>Out</td>
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<td>Lower Byte Termination Disabled</td>
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<tr>
<td>-</td>
<td>Out</td>
<td>Upper Byte Termination Disabled</td>
</tr>
<tr>
<td>-</td>
<td>2-3</td>
<td>Upper Byte Termination Enabled</td>
</tr>
</tbody>
</table>

Notes
1. The minimum OS is 2.5.1 HW: 11/97, 2.6 HW: 5/98, or 7 HW: 3/99.
2. The default jumper configuration enables automatic termination.

Dual Single-Ended Ultra/Wide SCSI

A20  A21  A22  A23  A25  A26  A27  Netra t1 100/105
Netra t 1120/1125  Netra t 1400/1405

Option 6540

375-0005  375-0013
Symbios SYM22801  Symbios SYM22801
w/o FCode  w FCode
3.3/5V  32Bit  33MHz  3.3/5V  32Bit  33MHz

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.
2. Dip switches enable/disable termination.
4. VHDCI is the Very High Density Cable Interconnect Standard.

Dual Differential Ultra/Wide SCSI

A16  A20  A21  A22  A23  A25  A26  A27  Netra t1 100/105
Netra t 1120/1125  Netra t 1400/1405  Netra ft 1800

Options 6541  6935

375-0006  375-0014  540-3980
Symbios SYM22802  Symbios SYM22802  Netra ft 1800 FRU
w/o FCode  w FCode  w 375-0006
3.3/5V  32Bit  33MHz  3.3/5V  32Bit  33MHz

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.
5. VHDCI is the Very High Density Cable Interconnect Standard.

SCSI RAID Controller    SRC/P
A25   A26
Options 6542   6602
375-0078
DPT SmartRAID Millennium PM3755U2B
w Battery Backup Module BB4050
w SCSI Expansion Module SX4055U2-2
w 64MB ECC EDO DIMM DM4050-64
3.3/5V 64Bit 33MHz

Battery Backup Module

SmartRAID Millennium
DPT PM3755U2B
No Sun part number

Intel i960

SCSI Expansion Module

VHDCI68 B
VHDCI68 A

HD68 B
HD68 A

HD68 C

HD68 C

Electrical Connections

LOAD
RUN

J12 to Battery Module

FPGA

1012C

1012C

PCI9080

21154-AB

ISP1080

J7

J7/8 to SCSI Expansion Module

J8

VHDCI68 A

VHDCI68 A
375-0078

Battery Backup Module
DPT BB4550
375-0082

SCSI Expansion Module
DPT SX4055U2-2
No Sun Part Number

64MB DIMM
DPT DM4050-64
No Sun Part Number

Notes
1. The minimum operating system is Solaris 2.6 Hardware: 3/98.
2. The E250 and E450 require OBP ≥3.12.
3. The SRC/P requires a 64-Bit PCI slot.
4. Internal option 6602 is only available for the E450 (A25).
5. The maximum high-speed disk cache memory is 256MB.

Cable Notes
1. The A25 requires internal 8-Disk Backplane Cable 530-2744.
2. External cable 530-2452-02 is Option X3832A.
3. The housing on cable 530-2452-02 is 0.280” thick.
4. The housing on cables 530-2452-01 and 530-2453-01 is 0.355” thick.
5. Cables with 0.355” housings are not usable at the same time on the A and B ports due to the thickness of the housing.

References
SCSI Adapter
SS4  SS5  SS20
501-2462

Notes
1. SCSI target assignments are hardwired and cannot be changed.
2. A SCSI command conflict occurs when a Conner 1GB Disk Drive (370-1822, FRU 540-2560) and an IBM 1GB Disk Drive (370-2072, FRU 540-2560) are installed.
3. Chassis 540-2438 was phased out of production in Nov/Dec 1996.
4. Chassis 540-2850 was phased into production in July 1996.
5. Vibration Kit 540-3346, for the SS4 with Quantum 1080S Disk Drive, includes a SCSI Adapter, SCSI Cable, and DC Wire Harness.
6. Only one drive is supported in the SS4 in the Target 3 connector. The Target 1 connector is not supported in the SS4.
Floppy and SCSI Adapter
Ultra 1 140/170  Ultra 1 140E/170E/200E
530-2153

240 mm Cable to CD-ROM
50-Pin Connector J0102

POWER - DATA - SCSI ID
TARGET 1 80-Pin SCA2 Connector J0107

J0103 Solder Side

POWER - DATA - SCSI ID
TARGET 0 80-Pin SCA2 Connector J0101

J0104oooooo 80-Pin Connector J0102
240 mm Cable to System Board

240 mm Cable to CD-ROM
50-Pin Connector J0102

J0107 Solder Side

FLOPPY DATA J0103

J0101 Solder Side

POWER J0104

80-Pin Connector J0102
240 mm Cable to System Board
Floppy and SCSI Adapter

Ultra 30
530-2322
Cable Assembly

Ultra 60
540-3016
Drive Bay FRU

Notes
1. FRU 540-3016 includes the Cardcage and Cable Assembly.
2. Cable Assembly 530-3022 includes the PCBs and Cables.
3. Cables are soldered to the PCBs.
Floppy and SCSI Adapter
Ultra 80

530-2691 540-3874
Cable Assembly Drive Bay FRU

To Floppy Drive 530-2346

To CD-ROM 400 mm

J0103 34-Pin
J0104 68-Pin

J0105

80-Pin SCA2 Drive 1

80-Pin SCA1
To System Board 170 mm

J0102

80-Pin SCA2 Drive 0

Volume I

Notes
1. Assembly 540-3874 includes the Cardcage and Cable Assembly.
2. Cable Assembly 530-2691 includes the PCBs and SCSI Bus Cables.
3. SCSI Bus Cables are soldered to the PCBs.
4. Floppy Cable 530-2346 is detachable.
5. PCB 501-4186 terminates the SCSI Bus.
SCSI Adapter
Netra t 1100
530-2473

50-Pin
PCB 501-4186

To CD-ROM
440 mm

Cable/Backplane Assembly 530-2473

PCB 501-4184

J0104
68-Pin

J0105

J0103
34-Pin

Floppy Not Used

J0100
80-Pin SCA2 Drive 1

J0101
80-Pin SCA2 Drive 0

J0102

80-Pin SCA1
To Ultra 30 System Board
1.0M

LED

SCSI-22
Field Engineer Handbook
SCSI Adapter
Enterprise 220R   Enterprise 420R
501-5505

80-Pin SCA2 Connector J0301

TARGET 1

J0302 Cable to Removable Media

J0103

80-Pin SCA2 Connector J0201

TARGET 0

J0101 Power Cable from PDB

J0102 SCSI Cable

Note: Solaris 2.6 HW: 5/98 requires Patch 105580-13 for disk hot plug.

References
### SCSI Adapter

<table>
<thead>
<tr>
<th>Model</th>
<th>Code</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>E4000</td>
<td>E5000</td>
<td>E6000</td>
</tr>
<tr>
<td>501-2600</td>
<td>540-2587</td>
<td>540-2713</td>
</tr>
</tbody>
</table>

SCSI Tray Assembly
- E4000
- E4500
- E5000 and E6000
- E5500 and E6500

#### J0303 DC Power Cable Connector
- 530-2118 in 540-2587
- 530-2218 in 540-2713

#### J0201 132-Pin Backplane Connector

#### J0304 Jumper Cable
- Removed = Rack Mounted System
- Installed = Standalone System
- Pins 1-3 disable blower sensing circuits
- The jumper is attached to 530-2119 and 530-2382
- The jumper is only included in the E4000/E4500

#### J0301 68-Pin SCSI Data Cable Connector
- 530-2119 or 530-2382 in 540-2587
- 530-2217 in 540-2713

#### J0302 DC Power
SCSI Adapter
MediaCenter 1000E SPARCstorage Array

595-3563 501-2980 501-2070
FRU Assembly Interconnect Card Daughter Card

501-2980 Solder Side

501-2980 Top Side

501-2070 Top Side

SCSI-26
Field Engineer Handbook
Notes
1. Sun MediaCenter software is required.
2. Sun MediaCenter software is an integrated extension to Solaris 2.4, incorporating modified device drivers, file system management tools, and networked media management tools.
3. Solstice Backup and Solstice DiskSuite are not compatible with the Media File System because the Media File System uses RAID 4 data striping and parity.

References
1. Sun MediaCenter Server Software Manual, 802-3804-10
2. Sun MediaCenter Server Hardware Manual, 802-4680-10.
Notes
1. The 2A Fuse, 150-1174-01, protects the power supply. The peripheral inside the Desktop Storage Pack is not affected if the fuse blows.
2. TERMPWR, Pin-38, from the external SCSI bus is not connected to the peripheral inside the Desktop Storage Pack.
3. TERMPWR, Pin-26, from the peripheral inside the Desktop Storage Pack is not connected to the external SCSI bus.
4. TERMPWR from the power supply is not connected to the peripheral inside the Desktop Storage Pack.
5. TERMPWR from the power supply is connected to Pin-38 on the external SCSI bus.
SCSI Adapter

SPARCstorage UniPack    StorEdge UniPack

501-2790
80-Pin Disk Options
Fast/Wide SCSI

Notes
1. The SCSI bus length on the SCSI Adapter is ≈170 mm.
2. The SCSI Adapter is included with Power Supply Assembly 540-2694.

Termination Notes
3. The Desktop Storage Pack requires external termination.
4. The SPARCstorage Unipack does not require external termination.
5. The Upper LED indicates termination of SCSI Data Bits D15 - D8.
6. The Lower LED indicates termination of SCSI Data Bits D7 - D0.

Reference
SPARCstorage UniPack Hardware Setup Instructions, 802-3227-10.
Notes
1. The SCSI bus length on the SCSI Adapter is ≈170 mm.
2. The SCSI Adapter is included with Power Supply Assembly 540-3732.

Termination Notes
3. The Desktop Storage Pack requires external termination.
4. The StorEdge Unipack does not require external termination.
5. The Upper LED indicates termination of SCSI Data Bits D15 - D8.
6. The Lower LED indicates termination of SCSI Data Bits D7 - D0.

Reference
SPARCstorage UniPack Hardware Setup Instructions, 802-3227-10.
Notes
1. The SCSI bus length on the SCSI Adapter is ≈170 mm.
2. The ribbon cable is soldered to the printed circuit board.
3. The SCSI Adapter is included with Power Supply Assembly 540-2674.

Termination Notes
4. The Desktop Storage Pack requires external termination.
5. The SPARCstorage Unipack does not require external termination.
6. The Upper LED indicates termination of SCSI Data Bits D15 - D8.
7. The Lower LED indicates termination of SCSI Data Bits D7 - D0.

Reference
SPARCstorage UniPack Hardware Setup Instructions, 802-3227-10.
**SCSI Adapter**

**SCARCstorage UniPack**  **StorEdge UniPack**

501-3108  
Wide SCSI Tape Options

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**Notes**

1. The SCSI bus length on the SCSI Adapter is ≈170 mm.
2. The ribbon cable is soldered to the printed circuit board.
3. The SCSI Adapter is included with Power Supply Assembly 540-3004.

**Termination Notes**

4. The Desktop Storage Pack requires external termination.
5. The SPARCstorage Unipack does not require external termination.
6. The Upper LED indicates termination of SCSI Data Bits D15 - D8.
7. The Lower LED indicates termination of SCSI Data Bits D7 - D0.

**Reference**

*SPARCstorage UniPack Hardware Setup Instructions, 802-3227-10.*

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**SCSI-32**  
Field Engineer Handbook
Notes
1. The SCSI bus length on the SCSI Adapter is ≈170 mm.
2. The ribbon cable is soldered to the printed circuit board.
3. Adapter 501-4327 supports two Wide SCSI devices.
4. Narrow 50-Pin devices require HD68-Pin to 50-Pin Adapter 370-2819.
5. The SPARCstorage FlexiPack does not require external termination.
6. The Upper LED indicates termination of SCSI Data Bits D15 - D8.
7. The Lower LED indicates termination of SCSI Data Bits D7 - D0.

Notes
1. The SCSI bus length on the SCSI Adapter is ≈170 mm.
2. The ribbon cable is soldered to the printed circuit board.
3. Adapter 501-4356 supports one Narrow SCSI device.
4. The SPARCstorage FlexiPack does not require external termination.
5. The Upper LED indicates termination of SCSI Data Bits D15 - D8.
6. The Lower LED indicates termination of SCSI Data Bits D7 - D0.

Notes
1. The SCSI bus length on the SCSI Adapter is ~170 mm.
2. The ribbon cable is soldered to the printed circuit board.
3. Adapter 501-4357 supports one Wide SCSI device.
4. The SPARCstorage FlexiPack does not require external termination.
5. The Upper LED indicates termination of SCSI Data Bits D15 - D8.
6. The Lower LED indicates termination of SCSI Data Bits D7 - D0.

6-Slot SCSI Disk Backplane
SPARCstorage MultiPack
501-2871
Fast/Wide SCSI

Target Numbers
T9/T12 T10/T13 T11/T14
T1/T4 T2/T5 T3/T6
LEDS

J0504 J0505 J0506
80-Pin SCA2 Connectors

Target Numbers
T1/T9 T2/T10 T3/T11
J0401 J0402 J0403
80-Pin SCA2 Connectors

DC POWER
J0301 Daughter Card Connector
Daughter Card 501-2893

T1-T6 or T9-T14 Address Switch S0301
D8-D15 Termination LED
D0-D7 Termination LED
68-Pin Connector

J0101 J0201
From SCSI Host To Next Device or FPT

From SCSI Host To Next Device or FPT
6-Slot SCSI Disk Backplane
SPARCstorage MultiPack 2   StorEdge MultiPack
501-4747
Ultra/Wide SCSI

Target Numbers

80-Pin SCA2 Connectors

Target Numbers

80-Pin SCA2 Connectors

DC POWER
J0301 [Daughter Card Connector]
Daughter Card 501-2893

T1-T6 or T9-T14 Address Switch S0301
D8-D15 Termination LED
D0-D7 Termination LED
68-Pin Connector

68-Pin Connector

From SCSI Host
No terminator if Ultra/Wide Host
No other devices if Ultra/Wide Host

Volume I

SCSI-37
12-Slot SCSI Disk Backplane
SPARCstorage MultiPack
501-2899
Fast/Wide SCSI

Target Numbers
T10 T11 T12 T13 T14 T15
J0601 J0602 J0603 J0704 J0705 J0706
80-Pin SCA2 Connectors

Target Numbers
T2 T3 T4 T5 T8 T9
J0401 J0402 J0403 J0504 J0505 J0506
80-Pin SCA2 Connectors

DC POWER
J0301 Daughter Card Connector
Daughter Card 501-2893

D8-D15 Termination LED
D0-D7 Termination LED
68-Pin Connector
J0101
From SCSI Host

68-Pin Connector
J0201
To Next Device or FPT
12-Slot SCSI Disk Backplane

Netra i 150  Netra nfs 150  Enterprise 150
501-3081

Volume I  SCSi-39
Removable Media Backplane
Ultra 450 Ultra Enterprise 450
501-3128

Front View

- P0201 SCSI Power
- J0201 50-Pin SCSI Data
- J0202 50-Pin SCSI Data
- P0202 SCSI Power

Rear View

- J0100 20-Pin
- J0100 80-Pin
- J0104 24-Pin
- J0102 34-Pin

Notes
1. The RMA Backplane is controlled by /pci@1f,4000/scsi@2.
2. The external A20/A25 SCSI bus is controlled by /pci@1f,4000/scsi@2.

References

SCSI-40 Field Engineer Handbook
4-Slot SCSI Disk Backplane
Ultra 450  Ultra Enterprise 450
501-4148

Front View

<table>
<thead>
<tr>
<th>ID0</th>
<th>80-Pin SCA2 J0201</th>
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<tr>
<td>ID1</td>
<td>80-Pin SCA2 J0301</td>
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<td>PCF8574 I</td>
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Rear View

<table>
<thead>
<tr>
<th>P0500</th>
<th>J0102 68-Pin SCSI</th>
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</thead>
<tbody>
<tr>
<td>I  C Bus</td>
<td>J0101 20-Pin Power</td>
</tr>
</tbody>
</table>

Notes
1. The 4-Slot Backplane is controlled by /pci @ 1f,4000/scsi @ 3.
2. Set OBP disk-led-assoc 0 to access the 4-Slot Backplane.
3. Hot plugging ≤501-4148-04 causes other disks on the bus to go off-line.

References
8-Slot SCSI Disk Backplane
Ultra 450  Ultra Enterprise 450
Options 6600  6601  6602
501-4189  501-5274  501-5274
X6600A  X6601A  X6602A

Notes
1. The 8-Slot Backplane is split into two SCSI buses.
2. Options 6600 and 6601 include a dual single-ended SCSI Controller, internal SCSI Cable, DC Power Cable, and I2C Cable.
3. Option 6602 includes an SRC/P, internal SCSI cable, DC Power Cable, and I2C Cable.
4. Hot plugging 501-4189 causes other disks on the bus to go off-line.
5. Hot plugging 501-5274-02 operates correctly.
6. Set the disk-led-assoc OBP parameter after installing a disk backplane.

References
6-Slot SCSI Disk Backplane
Enterprise 250
501-4682

Notes
1. Backplane 501-4682-04 with FAB 270-4682-04 is shown.
2. Backplane 501-4682-03 was built with FAB 270-4682-03.
3. Power connector J0104 is on the right side of FAB 270-4682-03.
4. Keyswitch connector J0601 is on the left side of FAB 270-4682-03.

References
2. Enterprise 250 ShowMe How, 724-2794.
Operator Panel

SPARCstorage RSM

370-2198
FRU Assembly

50-Pin Connector
4.5" Cable to Centerplane

On/Off Switch

LEDS
Green - Power Indicator
Red - Pwr Module A Fault
Red - Pwr Module B Fault
Yellow - Fan Module Warning
Red - Fan Module Failure
Red - Over Temperature

Alarm

Alarm Reset Switch

Note
FRU 370-2198 includes the Chassis, Operator Panel, Operator Panel Cable, and Centerplane.

Reference
SPARCstorage RSM Installation, Operations, and Service, 802-5062.

SCSI-44
Field Engineer Handbook
WD2S SCSI Adapter
SPARCstorage RSM

370-2196  370-3375
Programable FPGA  Masked PROM
w U30 Installed  w/o U30 Installed

96-Pin Connector

Install ID3 when the WD2S card is used with the RSM Array 2000

Xilinx FGPA or Unisys PROM

20MHz

REMOTE/LOCAL
S1

HD68-Pin Connector
DIFFERENTIAL FAST/WIDE SCSI

Notes
1. Do NOT connect the WD2S to single-ended host adapters.
2. The WD2S does not support Ultra SCSI transfer rates.
3. Single-ended SCSI disk drives are installed in the SPARCstorage RSM.
4. The WD2S converts single-ended wide SCSI to differential wide SCSI.
5. Daisy chain operation is not supported by the 370-2196 WD2S card.
6. SCSI addresses are 0 to 7 when ID3 is removed.
7. SCSI addresses are 8 to f when ID3 is installed.

Reference
SPARCstorage RSM Installation, Operations, and Service, 802-5062.
Environmental Sensor
SPARCstorage RSM
Option 6510
370-2195

Notes
1. Set the first board to target 0xf on the Rotary Switch.
2. Set the second board to target 0xe when two trays are daisy chained.
3. The maximum number of disk drives is thirteen when two trays and two Environmental Boards are daisy chained.

7-Slot SCSI Disk Backplane
SPARCstorage RSM
370-2198
FRU Assembly

Note
FRU 370-2198 includes the Chassis, Operator Panel, Operator Panel Cable, and Centerplane. Individual parts are not available.

Reference
SPARCstorage RSM Installation, Operations, and Service, 802-5062.

Volume I

SCSI-47
Array Controller
RSM Array 2000      StorEdge A3000
370-2435            540-3600
w/o Memory          w 16MB MPU
                    w 64MB RPA
                    FRU

Alternating Pattern LED Codes

On = ●   Off = ○

● ● ● ● ● ● ● ● ● Active - No fault
● ● ● ● ● ● ● ● ● Passive - No fault
● ● ● ● ● ● ● ● ● Controller held in reset
● ● ● ● ● ● ● ● ● Controller in wrong slot
● ● ● ● ● ● ● ● ● MPU SIMM fault
● ● ● ● ● ● ● ● ● RPA SIMM fault
Notes
1. The Phase I minimum operating system is Solaris 2.4.
2. The Phase II minimum operating system is Solaris 2.5.1.
3. Phase II software requires Firmware ≥02.04.04.01.
4. The M48T18 NVRAM uses an M4T28 SNAPHAT battery.

RSM Array 2000 Notes
1. The RSM Array 2000 is a controller and chassis.
2. The RSM Array 2000 is also the name of a cabinet mounted RSM Array 2000 controller and chassis with SSA 214/219 RSM disk trays.
4. The RSM Array 2000 was renamed StorEdge A3000 in January 1998.
5. Use Array Controller 540-3600 with the RSM Array 2000.

StorEdge A3000 Notes
1. The StorEdge A3000 is a controller and chassis.
2. The StorEdge A3000 is also the name of a cabinet mounted A3000 controller and chassis with SSA 214/219 RSM disk trays.
3. An RSM Array 2000 nameplate is on the StorEdge A3000 chassis in a StorEdge A3000 cabinet with SSA 214/219 RSM disk trays.
4. Use Array Controller 540-3600 with the StorEdge A3000.

StorEdge A3500 Notes
1. The StorEdge A3500 is a controller and chassis.
2. The StorEdge A3500 is also the name of a rack mounted StorEdge A3500 controller and chassis with StorEdge D1000 disk trays.
3. Before December 1999, a StorEdge A3000 nameplate was on the StorEdge A3500 chassis in a StorEdge A3500 cabinet with StorEdge D1000s. After November 1999, a StorEdge A3500 nameplate is used.
4. Use Array Controller 540-3083 with the StorEdge A3500.

Memory Notes
1. The Main Processor Unit (MPU) SIMMs serve as processor memory.
2. The RAID Parity Assist (RPA) SIMMs serve as cache memory.
4. The 370-2438 and 370-2439 are not labeled with a Sun Part Number.
5. Memory failures are reported as a pair of two SIMMs.
7. Install 32MB SIMMs in SIMM-1 and SIMM-3 for RPA High Bank.
8. Install 8MB SIMMs in SIMM-5 and SIMM-6 for MPU DRAM.
9. The 540-3600 Array Controller FRU was released October 1997.

References
Array Controller
StorEdge A3500

370-3656
w/o Memory

540-3083
w 16MB MPU
w 64MB RPA
FRU

53C875
SCSI HOST

i486DX2
66MHz

SCSI-0

SCSI-1

SCSI-2

SCSI-3

SCSI-4

M48T18

E1100

E1200

E1300

PCB 3480031424

Alternating Pattern LED Codes

On = ● Off = ○

 Alternating Pattern:

● ● ● ● ● ● ● ● Active - No fault
○ ○ ○ ○ ○ ○ ○ ○ Passive - No fault
● ● ● ● ● ● ● ● Controller held in reset
○ ○ ○ ○ ○ ○ ○ ○ Controller in wrong slot
○ ○ ○ ○ ○ ○ ○ ○ MPU SIMM fault
○ ○ ○ ○ ○ ○ ○ ○ RPA SIMM fault

SCSI-50 Field Engineer Handbook
Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 8/97.
2. The M48T18 NVRAM uses an M4T28 SNAPHAT battery.

RSM Array 2000 Notes
1. The RSM Array 2000 is a controller and chassis.
2. The RSM Array 2000 is also the name of a cabinet mounted RSM Array 2000 controller and chassis with SSA 214/219 RSM disk trays.
4. The RSM Array 2000 was renamed StorEdge A3000 in January 1998.
5. Use Array Controller 540-3600 with the RSM Array 2000.

StorEdge A3000 Notes
1. The StorEdge A3000 is a controller and chassis.
2. The StorEdge A3000 is also the name of a cabinet mounted A3000 controller and chassis with SSA 214/219 RSM disk trays.
3. An RSM Array 2000 nameplate is on the StorEdge A3000 chassis in a StorEdge A3000 cabinet with SSA 214/219 RSM disk trays.
4. Use Array Controller 540-3600 with the StorEdge A3000.

StorEdge A3500 Notes
1. The StorEdge A3500 is a controller and chassis.
2. The StorEdge A3500 is also the name of a rack mounted StorEdge A3500 controller and chassis with StorEdge D1000 disk trays.
3. A StorEdge A3000 nameplate is on the StorEdge A3500 chassis in a StorEdge A3500 cabinet with StorEdge D1000 disk trays if the unit was built before December 1999. Units built after December 1999 have an A3500 nameplate on the A3500 chassis.
4. Use Array Controller 540-3083 with the StorEdge A3500.

Memory Notes
1. The Main Processor Unit (MPU) SIMMs serve as processor memory.
2. The RAID Parity Assist (RPA) SIMMs serve as cache memory.
4. The 370-2438 and 370-2439 are not labeled with a Sun Part Number.
5. Memory failures are reported as a pair of two SIMMs.
7. Install 32MB SIMMs in SIMM-1 and SIMM-3 for RPA High Bank.
8. Install 8MB SIMMs in SIMM-5 and SIMM-6 for MPU DRAM.

References
Array Controller
StorEdge A3500FC
Option 6538

370-3930
w/o Memory
Used in 540-4026
Option 6538

540-4026
w 16MB MPU
w 64MB RPA
D1000 FRU

370-3931
w/o Memory
Used in 540-4027
No Option Number

540-4027
w 16MB MPU
w 64MB RPA
SSA 214/219 FRU

PCB 3480031423

53C875
SCSI HOST

S82423
RAID Parity Assist

SIMM

Daughter Board

i486DX2
66MHz

6MB MPU SIMM 370-2438
8MB MPU SIMM 370-2438
32MB RPA LO SIMM 370-2439
32MB RPA HI SIMM 370-2439
32MB RPA LO SIMM 370-2439
32MB RPA HI SIMM 370-2439

53C875
SCSI HOST

1 2 3 4 5 6

PClset

48T18

E11 00
E12 00
E13 00

Lsb
Ms b
Pwr
Flt

Alternating Pattern LED Codes

On = ● Off = ○

● ● ● ● ● ● ● Active - No fault
● ● ● ● ● ● ● Passive - No fault
● ● ● ● ● ● ● Controller held in reset
● ● ● ● ● ● ● Controller in wrong slot
● ● ● ● ● ● ● MPU SIMM fault
● ● ● ● ● ● ● RPA SIMM fault

SCSI-52
Field Engineer Handbook
Notes
1. The minimum operating system is Solaris 2.6.
2. The M48T18 NVRAM uses an M4T28 SNAPHAT battery.

SSA 214/219 RSM Notes
1. Use Controller 540-4027 with the SSA 214/219 RSM disk tray.
2. Controller 540-4027 is not available in a chassis option.
3. Controller 540-4027 is available as Upgrade UG-A3K-A3500FC.

StorEdge D1000 Notes
1. Use Controller 540-4026 with the StorEdge D1000 disk tray.
2. Controller 540-4026 is available in Chassis Option 6538.
3. Controller 540-4026 is available in Upgrade UG-A3500-A3500FC.

Memory Notes
1. The Main Processor Unit (MPU) SIMMs serve as processor memory.
2. The RAID Parity Assist (RPA) SIMMs serve as cache memory.
4. The 370-2438 and 370-2439 are not labeled with a Sun Part Number.
5. Memory failures are reported as a pair of two SIMMs.
7. Install 32MB SIMMs in SIMM-1 and SIMM-3 for RPA High Bank.
8. Install 8MB SIMMs in SIMM-5 and SIMM-6 for MPU DRAM.

References

Volume I
Chassis Backpanel

To Host 1   To RSM Drive Tray 1   To RSM Drive Tray 3   To RSM Drive Tray 5
J3          J11               J9               J7           HD68-Pin
DIFF SCSI IN BD1  DIFF SCSI ARRAY 1  DIFF SCSI ARRAY 3  DIFF SCSI ARRAY 5
14-Pin
P/S INTERFACE
Terminator
J5 DIFF SCSI OUT BD1

To Host 1   Terminator   To RSM Drive Tray 2   To RSM Drive Tray 4
J4          J6               J10              J8           HD68-Pin
DIFF SCSI IN BD2  DIFF SCSI OUT BD2  DIFF SCSI ARRAY 2  DIFF SCSI ARRAY 4
0 0 0 0
GND +5 GND +5

Notes
1. Set Controller 1 to Host-Side SCSI ID 4.
2. Install Controller 1 in the lower slot of the chassis.
3. Set Controller 2 to Host-Side SCSI ID 5.
4. Install Controller 2 in the upper slot of the chassis.

RSM Array 2000 Notes
1. The Phase I minimum operating system is Solaris 2.4.
2. The Phase II minimum operating system is Solaris 2.5.1.

SSA 214/219 RSM Drive Tray Notes
1. Count Drive Trays from the bottom (Tray 1) to the top (Tray 5) of the Expansion Cabinet.
2. Set the Drive Tray to hi-order addressing (8 - f) by installing a jumper at location ID3 on the WD2S card.

References
2.1-Gbyte Disk Card
SS1000 disktower 1000
Option 597

501-2066 w/o Disks
501-2244 4 535MB Disks
Disk FRU 540-2403

Notes
1. The minimum operating system is Solaris 2.2.
2. Drive Address selection is preset to Target 0, 1, 2, and 3.
3. An FSBE/S card is required if only one system board is installed.
4. Do NOT daisy chain System Board 0 to the SCSI Expansion Board, if disk drives are installed on the SS1000 internal SCSI Bus.
5. Do NOT daisy chain SCSI Expansion Boards.
6. The 42W DC-DC Converter 300-1109 is not field replaceable.


Volume I
4.2-Gbyte Disk Card
SS1000 disktower 1000
Options 772 773
501-2588 w/o Disks
501-2589 4 1.05GB Disks
Disk FRU 540-2568

Notes
1. The minimum operating system is Solaris 2.2.
2. Backplane Slot 0 sets drive addresses to Targets 0, 1, 2, and 3.
3. Backplane Slot 1 sets drive addresses to Targets 8, 9, 10, and 11.
4. Backplane Slot 2 sets drive addresses to Targets 0, 1, 2, and 3.
5. Backplane Slot 3 sets drive addresses to Targets 12, 13, 14, and 15.
6. An SWIS/S card is required if only one system board is installed.
7. The 42W DC-DC Converter 300-1109 is not field replaceable.

8.4-Gbyte Disk Card
SS1000 disktower 1000
Option 775

501-2588 501-2980
w/o Disks 4 2.1GB Disks
7200 RPM
Disk FRU 540-2706

Notes
1. Backplane Slot 0 sets drive addresses to Targets 0, 1, 2, and 3.
2. Backplane Slot 1 sets drive addresses to Targets 8, 9, 10, and 11.
3. Backplane Slot 2 sets drive addresses to Targets 0, 1, 2, and 3.
4. Backplane Slot 3 sets drive addresses to Targets 12, 13, 14, and 15.
5. An SWIS/S card is required if only one system board is installed.
6. The 42W DC-DC Converter 300-1109 is not field replaceable.

Disk Board

E4000  E5000  E6000  E4500  E5500  E6500

Options 5161  5162  5163  5164

<table>
<thead>
<tr>
<th>501-4168</th>
<th>501-5137</th>
<th>501-5584</th>
<th>501-5761</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 2.1GB Disks</td>
<td>2 4.2GB Disks</td>
<td>2 9.1GB Disks</td>
<td>2 18.2GB Disks</td>
</tr>
<tr>
<td>7200 RPM</td>
<td>7200 RPM</td>
<td>7200 RPM</td>
<td>10000 RPM</td>
</tr>
<tr>
<td>0GB FRU 501-3113</td>
<td>0GB FRU 501-3113</td>
<td>0GB FRU 501-3113</td>
<td>0GB FRU 501-3113</td>
</tr>
<tr>
<td>Disk FRU 540-2730</td>
<td>Disk FRU 540-2938</td>
<td>Disk FRU 540-3704</td>
<td>Disk FRU 540-4177</td>
</tr>
</tbody>
</table>

E4000/E5000/E4500/E5500 Notes
1. Up to four Disk Boards are supported.
2. Install the Disk Board in any slot.
3. The 4.2GB Disk Drive requires Disk Board ≥501-3113-03.
4. Disk Drives may fail to power up on Disk Board ≤501-3113-02.

E6000 and E6500 Notes
1. Up to two Disk Boards are supported.
2. Install the Disk Board in Slot 14 and Slot 15 only.
3. The 4.2GB Disk Drive requires Disk Board ≥501-3113-03.
4. Disk Drives may fail to power up on Disk Board ≤501-3113-02.
5. Install the Disk Board in Slot 15 if only one board is installed.

SCSI-58  Field Engineer Handbook
Default Drive Address Settings

The default drive address settings are assigned by the centerplane when a jumper is not installed on J0702 and J0703 Pins 1-2.

<table>
<thead>
<tr>
<th>SLOT</th>
<th>DISK 0 ADDRESS</th>
<th>DISK 1 ADDRESS</th>
<th>SLOT</th>
<th>DISK 0 ADDRESS</th>
<th>DISK 1 ADDRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>1</td>
<td>6</td>
<td>7</td>
<td>9</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>1</td>
<td>10</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>11</td>
<td>11</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>3</td>
<td>12</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>12</td>
<td>13</td>
<td>13</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>9</td>
<td>14</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>14</td>
<td>15</td>
<td>15</td>
<td>10</td>
<td>11</td>
</tr>
</tbody>
</table>

Jumper Settings

Jumpers J0702 and J0703 override the default drive address settings assigned by the centerplane.

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0702</td>
<td>1-2</td>
<td>Out</td>
<td>Disk 0 default address selection</td>
</tr>
<tr>
<td>J0702</td>
<td>1-2</td>
<td>In</td>
<td>Disk 0 manual address selection</td>
</tr>
<tr>
<td>J0702</td>
<td>A0-A3</td>
<td>As required</td>
<td>Disk 0 address select</td>
</tr>
<tr>
<td>J0703</td>
<td>1-2</td>
<td>Out</td>
<td>Disk 1 default address selection</td>
</tr>
<tr>
<td>J0703</td>
<td>1-2</td>
<td>In</td>
<td>Disk 1 manual address selection</td>
</tr>
<tr>
<td>J0703</td>
<td>A0-A3</td>
<td>As required</td>
<td>Disk 1 address select</td>
</tr>
<tr>
<td>J0705</td>
<td>1-2</td>
<td>As required</td>
<td>Disk 0 delay spin</td>
</tr>
<tr>
<td>J0706</td>
<td>1-2</td>
<td>As required</td>
<td>Disk 1 delay spin</td>
</tr>
</tbody>
</table>

Notes
1. Disk Board FRU 501-5113 does not include disk drives.
2. 10000 RPM disk drives require Disk Board ≥501-5113-05.
3. The normal LED pattern is On-Off-On prior to Solaris 2.6 HW 5/98.
4. The normal LED pattern is Off-On-Off in Solaris ≥2.6 HW 5/98.

References
Raid Controller
StorEdge A1000

375-0007
8MB MPU Memory
16MB RPA Memory
w Battery

375-0015
16MB MPU Memory
64MB RPA Memory
FRU w/o Battery

375-0016
8MB MPU Memory
16MB RPA Memory
FRU w/o Battery

375-0134
8MB MPU Memory
16MB RPA Memory
w Battery

375-0135
8MB MPU Memory
16MB RPA Memory
FRU w/o Battery

375-0136
16MB MPU Memory
64MB RPA Memory
FRU w/o Battery

Symbios Logic 3240 Array Controller 348-0033621

6Vdc Battery 370-3417

LOCKING HANDLE

100MHZ Pentium

Processor Memory
4MB or 8MB EDO SIMMs

RAID Parity Assist Memory
8MB or 32MB EDO SIMMs

Field Engineer Handbook
Switch and Jumper Settings

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>1-2</td>
<td>In</td>
<td>Unknown</td>
</tr>
<tr>
<td>E2</td>
<td>1-2</td>
<td>Out</td>
<td>Unknown</td>
</tr>
<tr>
<td>E3</td>
<td>1-2</td>
<td>In</td>
<td>Unknown</td>
</tr>
<tr>
<td>E4</td>
<td>1-2</td>
<td>Out</td>
<td>Unknown</td>
</tr>
<tr>
<td>E5</td>
<td>1-2</td>
<td>In</td>
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</tr>
<tr>
<td>E6</td>
<td>1-2</td>
<td>In</td>
<td>Unknown</td>
</tr>
<tr>
<td>E7</td>
<td>1-2</td>
<td>Out</td>
<td>Unknown</td>
</tr>
<tr>
<td>SW1</td>
<td>0-f</td>
<td>As required</td>
<td>SCSI ID</td>
</tr>
<tr>
<td>SW2</td>
<td>1-4</td>
<td>Off</td>
<td>Diag</td>
</tr>
</tbody>
</table>

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 8/97.
2. The M48T59 NVRAM uses an M4T28 SNAPHAT battery.

Memory Notes
1. The RAID Controller uses Extended Data Out SIMMs.
2. The 32MB RPA SIMM is Sun Part Number 370-2439-01.
3. The 4MB MPU SIMM has no Sun part number.
4. The 8MB MPU or RPA SIMM has no Sun part number.
5. Install 8MB or 32MB RPA SIMMs in slots SIMM-1 and SIMM-2.
6. Install 4MB or 8MB MPU SIMMs in slots SIMM-3 and SIMM-4.

Firmware Notes
1. Firmware on 375-0007, 375-0015, and 375-0016 is compatible with RAID Manager 6.0, 6.1, and 6.1.1. This controller firmware is not compatible with RAID Manager 6.22.
2. Firmware on 375-0134, 375-0135, and 375-0136 is compatible with RAID Manager 6.22. This controller firmware is not compatible with RAID Manager 6.0, 6.1, and 6.1.1.

Reference
**Notes**

1. The minimum operating system is Solaris 2.5.1 Hardware: 8/97.
2. There are no pins at E3, E6, E7, E8, E9, E10, E11, E12, E13, or E14.
375-0008
SW1 Switch Settings

<table>
<thead>
<tr>
<th>SWITCH</th>
<th>DIP</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW1</td>
<td>1</td>
<td>Up *</td>
<td>Array 1 drive addresses 8-11 (default)</td>
</tr>
<tr>
<td>SW1</td>
<td>1</td>
<td>Down</td>
<td>Array 1 drive addresses 0-3</td>
</tr>
<tr>
<td>SW1</td>
<td>2</td>
<td>Up</td>
<td>Array 2 drive addresses 8-11</td>
</tr>
<tr>
<td>SW1</td>
<td>2</td>
<td>Down</td>
<td>Array 2 drive addresses 0-3 (default)</td>
</tr>
<tr>
<td>SW1</td>
<td>3</td>
<td>Up</td>
<td>Wait for start unit command</td>
</tr>
<tr>
<td>SW1</td>
<td>3</td>
<td>Down</td>
<td>Use SW1-4 setting (default)</td>
</tr>
<tr>
<td>SW1</td>
<td>4</td>
<td>Up</td>
<td>Delayed start 12 sec x drive id (default)</td>
</tr>
<tr>
<td>SW1</td>
<td>4</td>
<td>Down</td>
<td>Start at power-on</td>
</tr>
<tr>
<td>SW1</td>
<td>5</td>
<td>Up/Down</td>
<td>Reserved for future use</td>
</tr>
</tbody>
</table>

* Up = On, Down = Off

SW2 Rotary Switch Settings

Rotary Switch SW2 sets the Module ID of the StorEdge D1000.

<table>
<thead>
<tr>
<th>StorEdge A3500 1x5 ID Settings</th>
<th>StorEdge A3500 2x7 ID Settings</th>
<th>StorEdge A3500 3x15 Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>72&quot; Exp Cabinet</td>
<td>72&quot; Exp Cabinet</td>
<td>72&quot; Exp Cabinet</td>
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<tr>
<td>D1000 ID5</td>
<td>D1000 ID4</td>
<td>D1000 ID5</td>
</tr>
<tr>
<td>D1000 ID4</td>
<td>D1000 ID5</td>
<td>D1000 ID4</td>
</tr>
<tr>
<td>D1000 ID5</td>
<td>D1000 ID4</td>
<td>D1000 ID5</td>
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<tr>
<td>D1000 ID4</td>
<td>D1000 ID3</td>
<td>D1000 ID3</td>
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<tr>
<td>D1000 ID3</td>
<td>D1000 ID4</td>
<td>D1000 ID3</td>
</tr>
<tr>
<td>A3000</td>
<td>D1000 ID4</td>
<td>A3000</td>
</tr>
<tr>
<td>D1000 ID5</td>
<td>A3000 B</td>
<td>A3000</td>
</tr>
<tr>
<td>D1000 ID4</td>
<td>D1000 ID2</td>
<td>D1000 ID1</td>
</tr>
<tr>
<td>D1000 ID3</td>
<td>D1000 ID2</td>
<td>D1000 ID1</td>
</tr>
<tr>
<td>D1000 ID2</td>
<td>D1000 ID1</td>
<td>D1000 ID2</td>
</tr>
<tr>
<td>D1000 ID1</td>
<td></td>
<td>D1000 ID3</td>
</tr>
</tbody>
</table>

Notes
1. The board is installed solder side up in the StorEdge D1000.
2. SW1 switch setting Up is toward the solder side of the board.
3. SW1 switch setting Down is toward the component side of the board.

References
8-Slot SCSI Disk Backplane
StorEdge A1000  StorEdge D1000
501-4560

StorEdge D1000 Controller Address Settings

<table>
<thead>
<tr>
<th>SWITCH</th>
<th>DIP</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW1</td>
<td>1</td>
<td>Up</td>
<td>Array 1 drive addresses 8-11 (default)</td>
</tr>
<tr>
<td>SW1</td>
<td>1</td>
<td>Down</td>
<td>Array 1 drive addresses 0-3</td>
</tr>
<tr>
<td>SW1</td>
<td>2</td>
<td>Up</td>
<td>Array 2 drive addresses 8-11</td>
</tr>
<tr>
<td>SW1</td>
<td>2</td>
<td>Down</td>
<td>Array 2 drive addresses 0-3 (default)</td>
</tr>
</tbody>
</table>
12-Slot SCSI Disk Backplane
StorEdge A1000  StorEdge D1000
501-4440

StorEdge D1000 Controller Address Settings

<table>
<thead>
<tr>
<th>SWITCH</th>
<th>DIP</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW1</td>
<td>1</td>
<td>Up</td>
<td>Array 1 drive addresses 8-13 (default)</td>
</tr>
<tr>
<td>SW1</td>
<td>1</td>
<td>Down</td>
<td>Array 1 drive addresses 0-5</td>
</tr>
<tr>
<td>SW1</td>
<td>2</td>
<td>Up</td>
<td>Array 2 drive addresses 8-13</td>
</tr>
<tr>
<td>SW1</td>
<td>2</td>
<td>Down</td>
<td>Array 2 drive addresses 0-5 (default)</td>
</tr>
</tbody>
</table>
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CONFIGURATIONS

DISK
## Disk

**Single Ended Standard Connector SCSI Disk Drives**

<table>
<thead>
<tr>
<th>Drive Description</th>
<th>Capacity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantum 105S</td>
<td>104MB</td>
<td>5</td>
</tr>
<tr>
<td>Quantum 210S</td>
<td>207MB</td>
<td>6</td>
</tr>
<tr>
<td>Maxtor LXT-213SY</td>
<td>207MB</td>
<td>7</td>
</tr>
<tr>
<td>Conner CP30200</td>
<td>207MB</td>
<td>8</td>
</tr>
<tr>
<td>CDC 94171-327/344</td>
<td>327MB</td>
<td>9</td>
</tr>
<tr>
<td>Seagate ST1480N</td>
<td>424MB</td>
<td>10</td>
</tr>
<tr>
<td>Micropolis 1588-15</td>
<td>669MB</td>
<td>11</td>
</tr>
<tr>
<td>Maxtor XT-8760S</td>
<td>669MB</td>
<td>12</td>
</tr>
<tr>
<td>Seagate ST41600N</td>
<td>1.3GB</td>
<td>14</td>
</tr>
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</table>

**Single Ended Standard Connector Fast SCSI Disk Drives**

<table>
<thead>
<tr>
<th>Drive Description</th>
<th>Capacity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seagate ST3610N</td>
<td>535MB</td>
<td>15</td>
</tr>
<tr>
<td>Conner CP30540</td>
<td>535MB</td>
<td>16</td>
</tr>
<tr>
<td>Seagate ST5660N</td>
<td>535MB</td>
<td>18</td>
</tr>
<tr>
<td>Seagate ST11200N</td>
<td>1.05GB</td>
<td>19</td>
</tr>
<tr>
<td>Seagate ST31200N</td>
<td>1.05GB</td>
<td>20</td>
</tr>
<tr>
<td>Conner CFP1080S</td>
<td>1.05GB</td>
<td>21</td>
</tr>
<tr>
<td>Seagate ST12400N</td>
<td>2.1GB</td>
<td>22</td>
</tr>
<tr>
<td>Conner CFP2105S</td>
<td>2.1GB</td>
<td>23</td>
</tr>
<tr>
<td>Seagate ST32430N</td>
<td>2.1GB</td>
<td>24</td>
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<td>Seagate ST32550N</td>
<td>2.1GB</td>
<td>25</td>
</tr>
<tr>
<td>IBM DFHS-32160-S2F</td>
<td>2.1GB</td>
<td>26</td>
</tr>
<tr>
<td>Seagate ST15230N</td>
<td>4.2GB</td>
<td>27</td>
</tr>
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</table>

**Single Ended Single Connector Fast SCSI Disk Drives**

<table>
<thead>
<tr>
<th>Drive Description</th>
<th>Capacity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting Hardware</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>Seagate ST3500NC</td>
<td>535MB</td>
<td>30</td>
</tr>
<tr>
<td>Conner CP30548</td>
<td>535MB</td>
<td>31</td>
</tr>
<tr>
<td>Seagate ST5660NC</td>
<td>535MB</td>
<td>32</td>
</tr>
<tr>
<td>Seagate ST31200WC</td>
<td>1.05GB</td>
<td>33</td>
</tr>
<tr>
<td>Conner CFP1060E</td>
<td>1.05GB</td>
<td>34</td>
</tr>
<tr>
<td>Conner CFP1080E</td>
<td>1.05GB</td>
<td>35</td>
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<tr>
<td>IBM DPES-31080-S1S</td>
<td>1.05GB</td>
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</tr>
<tr>
<td>Quantum 1080S</td>
<td>1.05GB</td>
<td>37</td>
</tr>
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</table>
## Disk - Continued

### Single Ended Single Connector Fast SCSI Disk Drives
- **Conner CFP2105E** 2.1GB .................................. 38
- **Seagate ST32430WC** 2.1GB .................................. 39
- **Seagate ST32550WC** 2.1GB .................................. 40
- **IBM DFHS-32160-S2S** 2.1GB .................................. 41
- **Seagate ST15230WC** 4.2GB .................................. 42

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- **IBM DORS-32160** 2.1GB .................................. 45
- **IBM DCAS-32160** 2.1GB .................................. 46
- **Fujitsu M2952** 2.1GB .................................. 47
- **Seagate ST32171WC** 2.1GB .................................. 48
- **Quantum VK22J05** 2.1GB .................................. 49
- **Fujitsu M2954** 4.2GB .................................. 50
- **Seagate ST34371WC** 4.2GB .................................. 51
- **Quantum VK45J05** 4.2GB .................................. 52
- **Fujitsu MAB3045SC** 4.2GB .................................. 53
- **IBM DDRS-34560** 4.2GB .................................. 54
- **Seagate ST34501WC** 4.2GB .................................. 55
- **Seagate ST34502LC** 4.2GB .................................. 56
- **Fujitsu M2949** 9.1GB .................................. 57
- **Seagate ST19171WC** 9.1GB .................................. 58
- **Fujitsu MAB3091SC** 9.1GB .................................. 59
- **IBM DDRS-39130** 9.1GB .................................. 60
- **Seagate ST39173WC** 9.1GB .................................. 61
- **Fujitsu MAE3091LC** 9.1GB .................................. 62
- **IBM DNES-309170** 9.1GB .................................. 63
- **Seagate ST39102LC** 9.1GB .................................. 64
- **Fujitsu MAG3091LC** 9.1GB .................................. 65
- **Seagate ST39103LC** 9.1GB .................................. 66
- **Seagate ST39204LC** 9.1GB .................................. 67
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- **Seagate ST118273LC** 18.2GB .................................. 69
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**Single Ended Single Connector Ultra SCSI Disk Drives**

<table>
<thead>
<tr>
<th>Disk Drive</th>
<th>Capacity</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM DGHS-18Y</td>
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<tr>
<td>Fujitsu MAG3182LC</td>
<td>18.2GB</td>
<td>71</td>
</tr>
<tr>
<td>Seagate ST318203LC</td>
<td>18.2GB</td>
<td>72</td>
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<tr>
<td>Seagate ST318404LC</td>
<td>18.2GB</td>
<td>73</td>
</tr>
<tr>
<td>Fujitsu MAJ3182M</td>
<td>18.2GB</td>
<td>74</td>
</tr>
<tr>
<td>Fujitsu MAF3364LC</td>
<td>36.4GB</td>
<td>75</td>
</tr>
<tr>
<td>Seagate ST136403LC</td>
<td>36.4GB</td>
<td>76</td>
</tr>
<tr>
<td>Fujitsu MAJ3364M</td>
<td>36.4GB</td>
<td>77</td>
</tr>
<tr>
<td>Seagate ST336704LC</td>
<td>36.4GB</td>
<td>78</td>
</tr>
</tbody>
</table>

**Differential SCSI Disk Drives**

<table>
<thead>
<tr>
<th>Disk Drive</th>
<th>Capacity</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seagate ST42400ND</td>
<td>2.1GB</td>
<td>79</td>
</tr>
<tr>
<td>Seagate ST43401ND</td>
<td>2.9GB</td>
<td>80</td>
</tr>
<tr>
<td>Seagate ST43402ND</td>
<td>2.9GB</td>
<td>82</td>
</tr>
<tr>
<td>Seagate ST410800WD</td>
<td>9.0GB</td>
<td>83</td>
</tr>
</tbody>
</table>

**ATA/IDE/EIDE Disk Drive**

<table>
<thead>
<tr>
<th>Disk Drive</th>
<th>Capacity</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seagate ST34342A</td>
<td>4.3GB</td>
<td>85</td>
</tr>
<tr>
<td>Seagate ST34321A</td>
<td>4.3GB</td>
<td>86</td>
</tr>
<tr>
<td>Seagate ST34312A</td>
<td>4.3GB</td>
<td>87</td>
</tr>
<tr>
<td>Seagate ST38420A</td>
<td>8.4GB</td>
<td>88</td>
</tr>
<tr>
<td>Seagate ST38410A</td>
<td>8.4GB</td>
<td>89</td>
</tr>
<tr>
<td>Seagate ST39140A</td>
<td>9.1GB</td>
<td>90</td>
</tr>
<tr>
<td>IBM DJNA-370910</td>
<td>9.1GB</td>
<td>91</td>
</tr>
<tr>
<td>Seagate ST39120A</td>
<td>9.1GB</td>
<td>92</td>
</tr>
<tr>
<td>Seagate ST39111A</td>
<td>9.1GB</td>
<td>93</td>
</tr>
<tr>
<td>Seagate ST315320A</td>
<td>15.3GB</td>
<td>94</td>
</tr>
</tbody>
</table>
### FC-AL Disk Drives

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seagate ST19171FC</td>
<td>9.1GB</td>
<td>95</td>
</tr>
<tr>
<td>Seagate ST39102FC</td>
<td>9.1GB</td>
<td>97</td>
</tr>
<tr>
<td>Seagate ST39103FC</td>
<td>9.1GB</td>
<td>98</td>
</tr>
<tr>
<td>Seagate ST118273FC</td>
<td>18.2GB</td>
<td>99</td>
</tr>
<tr>
<td>Seagate ST118202FC</td>
<td>18.2GB</td>
<td>100</td>
</tr>
<tr>
<td>Seagate ST318203FC</td>
<td>18.2GB</td>
<td>101</td>
</tr>
<tr>
<td>Seagate ST318304FC</td>
<td>18.2GB</td>
<td>102</td>
</tr>
<tr>
<td>Seagate ST136403FC</td>
<td>36.4GB</td>
<td>103</td>
</tr>
<tr>
<td>Seagate ST336704FC</td>
<td>36.4GB</td>
<td>104</td>
</tr>
<tr>
<td>Seagate ST173404FC</td>
<td>73.4GB</td>
<td>105</td>
</tr>
</tbody>
</table>
Quantum 105S 104MB
3 1/2" 3600 RPM Single Ended SCSI
Sun-4/60/65
Option 550
370-1200
1 5/8" Height

In the Desktop Storage Pack, orient the Flex Cable as shown and plug it into A0 A1 A2.

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
<th>USAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>Out</td>
<td>Spindle sync</td>
<td>Not used</td>
</tr>
<tr>
<td>EP</td>
<td>Out</td>
<td>Parity</td>
<td>Not used</td>
</tr>
<tr>
<td>WS</td>
<td>Out</td>
<td>Wait spin</td>
<td>Not used</td>
</tr>
<tr>
<td>A0,A1,A2</td>
<td>Out</td>
<td>Drive ID</td>
<td>Target 0</td>
</tr>
<tr>
<td>A0</td>
<td>In</td>
<td>Drive ID</td>
<td>Target 1</td>
</tr>
<tr>
<td>A1</td>
<td>In</td>
<td>Drive ID</td>
<td>Target 2</td>
</tr>
<tr>
<td>A0,A1</td>
<td>In</td>
<td>Drive ID</td>
<td>Target 3</td>
</tr>
</tbody>
</table>

Power: 0.7 Amps @ +5Vdc
0.5 Amps @ +12Vdc
9.5 Watts

Quantum 210S  207MB
3 1/2”  3600 RPM  Single Ended SCSI
Sun-4/40/50/75  SS10
Options 552  553
370-1327  370-1376
1 5/8” Height  1 5/8” Height

In the Desktop Storage Pack, orient the Flex Cable as shown and plug it into A0 A1 A2.

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
<th>USAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>Out</td>
<td>Spindle sync</td>
<td>Not used</td>
</tr>
<tr>
<td>EP</td>
<td>In</td>
<td>Parity</td>
<td>Enable parity</td>
</tr>
<tr>
<td>WS</td>
<td>Out</td>
<td>Wait spin</td>
<td>Not used</td>
</tr>
<tr>
<td>A0,A1,A2</td>
<td>Out</td>
<td>Drive ID</td>
<td>Target 0</td>
</tr>
<tr>
<td>A0</td>
<td>In</td>
<td>Drive ID</td>
<td>Target 1</td>
</tr>
<tr>
<td>A1</td>
<td>In</td>
<td>Drive ID</td>
<td>Target 2</td>
</tr>
<tr>
<td>A0,A1</td>
<td>In</td>
<td>Drive ID</td>
<td>Target 3</td>
</tr>
</tbody>
</table>

Power: 0.7 Amps @ +5Vdc
0.7 Amps @ +12Vdc
11.9 Watts

Notes
1. Remove the TERMPWR fuse when installing the drive in an SS10.
2. The Sun-4/60 or Sun-4/65 chassis does not provide adequate cooling for the 207MB Disk Drive.

References
3. Installing SPARCstation 2 Internal Disk Drives, 800-5661-10.
Maxtor LXT-213SY  207MB
3 1/2"  3600 RPM  Single Ended SCSI
Sun-4/40/50/75   SS10
Option 553
370-1327
1 5/8" Height

TERMPWR Fuse

○ ○ TP

A0 ○ ○
A1 ○ ○
A2 ○ ○

WS [○ ○]
EP [○ ○]
TERMINATORS
Removed

Power:  0.6 Amps @ +5Vdc
0.6 Amps @ +12Vdc
10.2 Watts

Notes
1. The Sun-4/60/65 chassis does not provide adequate cooling for the 207MB Disk Drive.
2. This drive is not supported inside the Desktop Storage Pack due to the orientation of the address jumpers.

References
3. Installing SPARCstation 2 Internal Disk Drives, 800-5661-10.

Volume I  DISK-7
Conner CP30200  207MB
3 1/2”  3600 RPM  Single Ended SCSI
Sun-4/15/30/40/50  SS10
Option 552
370-1417
1” Height

In the Desktop Storage Pack, orient the Flex Cable as shown and plug it into E1 E2 E3.

Power: 0.410 Amps @ +5Vdc
       0.215 Amps @ +12Vdc
       4.63 Watts

Notes
1. Use 2 mm shunts on Jumpers E1, E2, E3, E4, and E5.
2. The 370-1417 Disk Drive requires 35W Power Supply 300-1090-02
   or 300-1105-xx, Flex Cable 530-1894, and Mounting Bracket
3. The Conner CP30200 is not supported in the Sun-4/75. The drive
does not provide adequate loading of the DC power supply.

References
2. Installing Drives in a SPARCstation 2, 800-6398-10.
CDC 94171-327/344  327MB
5 1/4”  3600 RPM  Single Ended SCSI

Options  526  527  530  539

555-1005  370-1153  370-1230
w Bracket  w/o Bracket  w/o Bracket
w/o Bezel  77777107  77777126
3 1/4” Height

Notes
1. Remove the terminators from the underside of the drive.
2. Terminate the SS630MP SCSI-Out PCB with terminator 120-1608-01.

Format Utility Notes
1. The 94171-327 has fewer cylinders than the 94171-344.
2. Solaris 2.x includes an entry for the 94171-327 in format.dat.
   Remove the comment symbol "#" to use the entry.
3. The SunOS 4.x format utility fails if the 94171-327 is used with the standard format.dat entry on any system other than a Sun386i.
4. Use the following format.dat entry for the 94171-327 on SunOS 4.x.
   \disk_type = "CDC Wren IV 94171-327"
   : ctlr = SCSI : fmt_time = 4 : cache = 0x11 : trks_zone = 9
   : nsect = 46 : rpm = 3600 : bpt = 20833

References
1. 327MB Embedded SCSI Configuration Procedures, 814-1015-01.
2. 5 1/4-Inch Disk Drive Installation Manual, 813-1055-10.
Seagate ST1480N  424MB
3 1/2"  4400 RPM  Single Ended SCSI
Sun-4/15/30/50/75  SS10
Option 540

370-1392  540-2165  595-2965
3 1/4" Height FRU  SS10 Assembly  X540A Assembly

In the Desktop Storage Pack, orient the Flex Cable as shown and plug it into J5.

Power:  0.8 Amps @ +5Vdc
          0.9 Amps @ +12Vdc
          14.8 Watts Operating Maximum

References
2. Installing Drives in a SPARCstation 2, 800-6398-10.
Micropolis 1588-15  669MB
5 1/4"  3600 RPM  Single Ended SCSI

Options  561  563  565  566

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>370-1319</td>
<td>Black Bezel</td>
</tr>
<tr>
<td>370-1326</td>
<td>Green LED</td>
</tr>
<tr>
<td>555-1151</td>
<td>w/ Bracket</td>
</tr>
</tbody>
</table>

Options  561  563  565  566

Bottom View

All other jumpers on this board are set by the manufacturer. Do NOT change these settings.

End View

In the External Storage Module, orient Pin-1 of the Address Select Switch Cable with ID2 of J2.

References
1. 5-1/4" SCSI Disk Drive Installation and Configuration for Sun Office Pedestals, 813-2048-11.
2. Revised Removal/Replacement Procedures for Sun ESM and EEM Storage Units, 814-3044-01.
### CONFIGURATIONS

**Maxtor XT-8760S 669MB**

- **5 1/4” 3600 RPM Single Ended SCSI**

---

<table>
<thead>
<tr>
<th>Options</th>
<th>561</th>
<th>563</th>
<th>565</th>
<th>566</th>
</tr>
</thead>
<tbody>
<tr>
<td>370-1319</td>
<td>370-1326</td>
<td>555-1151</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1098618-B</td>
<td>1098778-B</td>
<td>FS0019-01-6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Bezel</td>
<td>w/o Bezel</td>
<td>w/o Bezel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green LED</td>
<td>w/o LED</td>
<td>w/ LED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 1/4” Height</td>
<td>3 1/4” Height</td>
<td>w/ Bracket</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Bottom View**

All other jumpers on this board are set by the manufacturer. Do NOT change these settings.

- **JP14** Motor Enable
  - 0 0

- **JP35**
  - A0 0
  - A1 0
  - A2 0

- **JP36**
  - 0 0

- **JP37**
  - 0 0

- **JP40**
  - 0 0

- **JP39**
  - Parity
  - Delay Start

- **TERMINATORS**
  - Removed

---

**End View**

---

DISK-12 Field Engineer Handbook
Address Description

The address is set on the J2 Adapter installed in the J2 Auxiliary connector, the Address Select switch on the External Storage Module, or on Jumpers JP35, JP36, and JP37. Set the address at only one location.

Notes
1. Drive address selection cannot be set on Auxiliary Connector J2 unless the adapter is installed.
2. The J2 Adapter must be installed in order for the ID Select Switch on the External Storage Module to function.
3. The Maxtor drive does not fit into the lower drive position of External Storage Modules manufactured prior to October 1990. Remove the vertical stop block with 10-Inch End Cutter 250-1074-01.

References
1. 5-1/4" SCSI Disk Drive Installation and Configuration for Sun Office Pedestals, 813-2048-11.
2. Revised Removal/Replacement Procedures for Sun ESM and EEM Storage Units, 814-3044-01.

Volume I
Seagate ST41600N 1.3GB
5 1/4" 5400 RPM Single Ended SCSI
SS630MP SS670MP

Option 571
370-1377
3 1/4" Height
976002-012
Elite-1

Top View

End View

Notes
1. The minimum operating system is SunOS 4.1.1.
2. SunOS 4.1.1 Sun-4c requires the 1.3GB Disk Drive Enhancement (esp.o, sd.o, and format.dat).
3. SunOS 4.1.1 Rev B Sun-4c requires the 1.3GB Disk Drive Enhancement (esp.o and sd.o).
4. SunOS 4.1.1 Sun-4 requires the 1.3GB Disk Drive Enhancement (format.dat).
5. The 1.3GB Disk Drive is not supported inside Sun 12-Slot Office Pedestals that use SCSI Interface PCBs 501-1493 and 501-1496.
6. The 1.3GB Disk Drive is not supported inside SCSI Peripheral Trays that use SCSI Interface PCB 501-1496.

References
5. 12-Slot Office Pedestal with Single Peripheral Tray, 800-6497-10.
Seagate ST3610N  535MB
3 1/2”  5400 RPM  Single Ended Fast SCSI
SS1000
Options 580  581  582
370-1424
1 5/8” Height
952002-030

In the Desktop Storage Pack, orient the Flex Cable as shown and plug it into J5.

Power:  0.8 Amps @ +5Vdc
1.6 Amps @ +12Vdc
23.2 Watts Peak

Notes
1. The minimum operating system is SunOS 4.1.1 Rev B.
2. The 535MB drive supports Tagged Queuing with Solaris 2.x.
3. The Target ID is the Boolean OR of J5 and J6. Do NOT install shunts in both locations.
4. The Seagate drive is not supported in the 4/15/30/50/75 or SS10.

Conner CP30540  535MB
3 1/2"  5400 RPM  Single Ended Fast SCSI
SS1000
Options 580  581  582
370-1424
1" Height

In the Desktop Storage Pack, orient the Flex Cable as shown and plug it into E1.

Power: 0.6 Amps @ +5Vdc
0.3 Amps @ +12Vdc
6.6 Watts

Notes
1. The minimum operating system is SunOS 4.1.1 Rev B.
2. The 535MB drive supports Tagged Queuing with Solaris 2.x.
3. Use 2 mm shunts on Jumpers E1 through E6.

Conner CP30540 535MB
3 1/2" 5400 RPM Single Ended Fast SCSI
Sun-4/15/30/50/75 SS10
Option 581
370-1684
1" Height

Power: 0.6 Amps @ +5Vdc
0.3 Amps @ +12Vdc
6.6 Watts

Notes
1. The minimum operating system is SunOS 4.1.1 Rev B.
2. The 535MB drive supports Tagged Queuing with Solaris 2.x.
3. Use 2 mm shunts on Jumpers E1 through E6.
4. Part number 370-1684 is only a Conner drive.
5. Part number 370-1424 is either a Seagate or Conner drive.
6. The Seagate drive is not qualified for use in the 4/15/30/50/75.

Seagate ST5660N  535MB
3 1/2” 5400 RPM  Single Ended Fast SCSI
Sun-4/15/30/50/75  SS10
Options 580  581
370-1843
3/4" Height
9A2002-030/031/032
Decathlon 545

J8 Exploded View

In the Desktop Storage Pack, orient the Flex Cable as shown and plug it into J5.

Notes
1. The minimum operating system is SunOS 4.1.1 Rev B.
2. The 535MB drive supports Tagged Queuing with Solaris 2.x.
3. This drive was not qualified for use in the SS1000.

Seagate ST11200N  1.05GB
3 1/2"  5400 RPM  Single Ended Fast SCSI
Sun-4/15/30/75  SS10
Options  545  546  547
370-1546  540-2420  595-2996
1 5/8" Height  SS10  X546A

In the Desktop Storage Pack, orient the Flex Cable as shown and plug it into J5.

Power:  0.8 Amps @ +5Vdc
        1.0 Amps @ +12Vdc
        11.0 Watts Typical

Notes
1. The minimum operating system is SunOS 4.1.1 Rev B.
2. The 1.05GB drive supports Tagged Queuing with Solaris 2.x.
3. SunOS 4.1.1 Rev B Sun-4c requires the 1.3GB Disk Drive Enhancement (esp.o and sd.o).
4. The Target ID is the Boolean OR of J5 and J6. Do NOT install in both locations.

Seagate ST31200N 1.05GB
3 1/2" 5400 RPM Single Ended Fast SCSI
Sun-4/15/30/75 SS10 SS1000
Options 545 546 771 773
370-1710
1" Height
950001-035

In the Desktop Storage Pack, orient the Flex Cable as shown and plug it into J5.

Power: 0.73 Amps @ +5Vdc
0.40 Amps @ +12Vdc
8.45 Watts Typical

Notes
1. The minimum operating system is SunOS 4.1.1 Rev B.
2. The 1.05GB drive supports Tagged Queuing with Solaris 2.X.
3. SunOS 4.1.1 Rev B Sun-4c requires the 1.3GB Disk Drive Enhancement (esp.o and sd.o).
4. The Target ID is the Boolean OR of J5 and J6. Do NOT install shunts in both locations.

Conner CFP1080S 1.05GB
3 1/2" 5400 RPM Single Ended Fast SCSI
Sun-4/15/30/75 SS10 SS1000
Options 545 546 771 773
370-1963
1" Height
Antigua

In the Desktop Storage Pack, orient the Flex Cable as shown and plug it into J4.

Notes
1. The minimum operating system is SunOS 4.1.1 Rev B.
2. The 1.05GB drive supports Tagged Queuing with Solaris 2.X.
3. SunOS 4.1.1 Rev B Sun-4c requires the 1.3GB Disk Drive Enhancement (esp.o and sd.o).
4. The Target ID is the Boolean OR of J4 and J6. Do NOT install shunts in both locations.

References
1. 1.05 Gbyte Disk Drive Installation Manual, 801-6131-10.
2. 1.05 Gbyte Disk Drive Installation Manual, 802-2704-10.
Seagate ST12400N  2.1GB
3 1/2"  5400 RPM  Single Ended Fast SCSI
Sun-4/75  SS10
Options 567  568  569  570
370-1709
1 5/8" Height
949001-033

In the Desktop Storage Pack, orient the Flex Cable as shown and plug it into J5.

Power:  0.72 Amps @ +5Vdc
0.60 Amps @ +12Vdc
10.8 Watts Typical

Notes
1. The minimum operating system is Solaris 1.1.
2. The 2.1GB drive supports Tagged Queuing with Solaris 2.x.
3. The Target ID is the Boolean OR of J5 and J6. Do NOT install shunts in both locations.

References
1. 2.1 Gbyte Disk Drive Installation Manual, 801-6118-10.
3. 2.1Gbyte Disk Drive Installation Manual, 802-2703-10.
Conner CFP2105S  2.1GB
3 1/2"  5400 RPM  Single Ended Fast SCSI
Sun-4/75  SS10
Options  567  568  569  570
370-1929
1" Height
Cayman

In the Desktop Storage Pack, orient the Flex Cable as shown and plug it into E1-E3.

Note: The minimum operating system is Solaris 1.1.

Reference: 2.1Gbyte Disk Drive Installation Manual, 802-2703-10

Volume I  DISK-23
Notes
1. The minimum operating system is Solaris 1.1.
2. Using the smaller J2 jumpers on J5 or J6 will distort the jumper.

DISK-24
Field Engineer Handbook
Seagate ST32550N 2.1GB
3 1/2” 7200 RPM Single Ended Fast SCSI
SS1000
Options 735 737 738 739 774
370-2067
1” Height
Barracuda-2LP

Power: 1.06 Amps @ +5Vdc
0.57 Amps @ +12Vdc
12.14 Watts

Notes
1. The minimum operating system is Solaris 1.1.
2. Field Change Order A0069 is recommended.
3. Patch 103451-04 includes drive Firmware 0420.

Reference: 2.1Gbyte Disk Drive Installation Manual, 802-3527-10

Volume I
IBM DFHS-32160-S2F  2.1GB
3 1/2"  7200 RPM  Single Ended Fast SCSI

SS1000
Options 735 737 738 739 774
370-1957
1" Height
Starfire

J1 Exploded View

Power:  1.1 Amps @ +5Vdc
0.75 Amps @ +12Vdc
14.5 Watts

Notes
1. The minimum operating system is Solaris 1.1.
2. This drive was not shipped.


DISK-26
Field Engineer Handbook
Seagate ST15230N  4.2GB
3 1/2"  5400 RPM  Single Ended Fast SCSI
Options 5211  5212  5210
370-2153
1 5/8" Height
Hawk-4

Power:  0.8 Amps @ +5Vdc
       0.62 Amps @ +12Vdc
       11.5 Watts

Notes
1. The minimum operating system is Solaris 2.3.
2. Solaris 1.x does not support the 4.2GB Disk Drive.
3. Using the smaller J2 jumpers on J5 or J6 will distort the jumper.

Mounting Hardware
Single Connector Assembly (SCA) Disk Drives

Jiffy Bracket
Left 330-1951 and Right 330-1952
Screw and Bracket Kit 540-2767

Spud Bracket
1.0" 540-3024  Bracket Kit 560-2442
1.6" 540-3025  1.6" 540-3925
Shield 340-3462
Shield 340-5928
Shield 340-6640

Aurora Bracket
540-2570

Systems
Ultra 1 Model 140/170
Ultra 1 Model 140E/170E/200E
Ultra 2
Ultra Enterprise 150
Netra nfs 150 and Netra i 150
SPARCstorage MultiPack

Systems
Ultra 1 Ultra 2
Ultra 30 Ultra 60 Ultra 80
E250 E450 E220R E420R
Sun Blade 1000
E150 nfs 150 i 150
MultiPack E3000 E3500
A1000 D1000 A3500
A5000 A5100 A5200 A7000
Netra ct 400 Netra ct 800
st D130 st A1000 st D1000

Systems
SPARCstation 4
SPARCstation 5
SPARCstation 20

DISK-28
Field Engineer Handbook
Mounting Hardware
Single Connector Assembly (SCA) Disk Drives

SSA Bracket 540-2764*
SSA Model 100 Series
SPARCserver 1000 Disk Card
* Bracket 540-2764 replaced Seagate bracket 540-2412 and Conner bracket 540-2413

RSM Bracket 370-2304
RSM Filler Bracket 370-2305
SSA Model 214/219 RSM

Not included with Filler Bracket 370-2305
Seagate ST3500NC  535MB
3 1/2"  5400 RPM  Single Ended Fast SCSI
Options 589  597
370-1550  540-2403
1" Height  SSA FRU
ST3600  2.1GB Disk Card FRU
w Bkt 540-2413

Notes
1. The 535MB drive supports Tagged Queuing with Solaris 2.x.
2. The addresses are preset to 0, 1, 2, and 3 on Disk Card 501-2066.
3. Do NOT daisy chain System Board 0 to the disk card if disk drives are installed on the internal SS1000 SCSI Bus.
4. The disk card mounting brackets are not interchangeable between the Seagate and Conner disk drives.

References

DISK-30  Field Engineer Handbook
Conner CP30548  535MB
3 1/2"  5400 RPM  Single Ended Fast SCSI
SS4  SS5  SS20  A11  A12  A14
Options 589  597

<table>
<thead>
<tr>
<th>370-1425</th>
<th>540-2403</th>
<th>540-2443</th>
<th>540-2631</th>
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<td>1&quot; Height</td>
<td>2.1GB Disk Card FRU</td>
<td>SS5/SS20 FRU</td>
<td>SS5/SS20 FRU</td>
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<td>w Bkt 540-2412</td>
<td>w Bkt 540-2570</td>
<td>w Bkt 540-2570</td>
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Notes
1. The 535MB drive supports Tagged Queuing with Solaris 2.x.
2. The addresses are preset to 0, 1, 2, and 3 on Disk Card 501-2066.
3. The addresses are preset to 3 and 1 in the SS5 and SS20.
4. The addresses are preset to 0 and 1 in the A11, A12, and A14.
5. Do NOT daisy chain System Board 0 to the disk card if disk drives are installed on the internal SS1000 SCSI Bus.
6. The disk card mounting brackets are not interchangeable between the Seagate and Conner disk drives.
7. System upgrades to A11, A12, and A14 may use this drive.

References
2. 535 Mbyte Disk Drive Installation Manual, 801-6559-11
Seagate ST5660NC 535MB
3 1/2" 4500 RPM Single Ended Fast SCSI
SS4 SS5 SS20 A11 A12 A14
Options 589 597

370-1844 540-2403 540-2443
3/4" Height 2.1GB Disk Card FRU SS5/SS20 FRU
Decathlon 545 w Bkt 540-2413 w Bkt 540-2570

Notes
1. The 535MB drive supports Tagged Queuing with Solaris 2.x.
2. The addresses are preset to 0, 1, 2, and 3 on Disk Card 501-2066.
3. The addresses are preset to 3 and 1 in the SS5 and SS20.
4. The addresses are preset to 0 and 1 in the A11, A12, and A14.
5. Do NOT daisy chain System Board 0 to the disk card if disk drives are installed on the internal SS1000 SCSI Bus.
6. The disk card mounting brackets are not interchangeable between the Seagate and Conner disk drives.
7. System upgrades to A11, A12, and A14 may use this drive.

References

DISK-32
Field Engineer Handbook
Seagate ST31200WC 1.05GB
3 1/2” 5400 RPM Single Ended Fast/Wide SCSI
SS4 SS5 SS20 SSA-101 A11 A12 A14
Options 649 651 652 653 654 655 772 773
370-1753 540-2560 540-2568 540-2733
1” Height SS5/SS20 FRU SSA FRU SS4 FRU
w Bkt 540-2570 4.2GB Disk Card FRU w Bkt 540-2570
w Bkt 540-2413 or 540-2764

Notes
1. The 1.05GB drive supports Tagged Queuing with Solaris 2.x.
2. Addresses are preset to 3 and 1 in the SS5 and SS20.
3. Addresses are preset to 0 through 4 in the SPARCstorage Array.
4. System upgrades to A11, A12, and A14 may use this drive.

References
1. 1.05Gbyte Disk Drive Installation Manual, 801-2207-10.
2. 1.05Gbyte Disk Drive Installation Manual, 802-2702-10.
Conner CFP1060E 1.05GB
3 1/2” 5400 RPM Single Ended Fast/Wide SCSI
SS4 SS5 SS20 SSA-101 A11 A12 A14
Options 649 651 652 653 654 655 772 773
370-1822 540-2560 540-2568
1” Height SS5/SS20 FRU SSA FRU
Barbados w Bkt 540-2570 4.2GB Disk Card FRU
w Bkt 540-2412 or 540-2764

Power: 0.7 Amps @ +5Vdc
0.4 Amps @ +12Vdc
8.3 Watts

Notes
1. The 1.05GB drive supports Tagged Queuing with Solaris 2.x.
2. Addresses are preset to 3 and 1 in the SS4, SS5, and SS20.
3. Addresses are preset to 0 through 4 in the SPARCstorage Array.
4. This drive was disqualified for use in the SS4.
5. System upgrades to A11, A12, and A14 may use this drive.

References
1. 1.05Gbyte Disk Drive Installation Manual, 801-2207-10.
2. 1.05Gbyte Disk Drive Installation Manual, 802-2702-10.
**Conner CFP1080E 1.05GB**

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<th>655</th>
<th>772</th>
<th>773</th>
<th>5101</th>
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**Notes**
1. The 1.05GB drive supports Tagged Queuing with Solaris 2.x.
2. Addresses are preset to 3 and 1 in the SS5 and SS20.
3. Addresses are preset to 0 through 4 in the SPARCstorage Array.
4. System upgrades to A11 and A14 may use this drive.

**References**
2. *1.05Gbyte Disk Drive Installation Manual, 802-2702-10.*

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**Conner CFP1080E 1.05GB**

- **3 1/2” 5400 RPM**
- **Single Ended Fast/Wide SCSI**

SS4 SS5 SS20 SSA-101 A11 A12 A14

Options 649 651 652 653 654 655 772 773 5101

5102 5103

- **370-1964**
  - 1” Height Antigua
- **540-2560**
  - SS5/SS20 FRU
  - w Bkt 540-2570
- **540-2568**
  - SSA FRU
  - w Bkt 540-2412 or 540-2764
- **540-2733**
  - SS4 FRU
  - w Bkt 540-2570
- **540-2729**
  - A12 FRU
  - w Bkt 540-2570
- **540-2875**
  - SS4 FRU
  - w Bkt 540-2570

**Notes**
1. The 1.05GB drive supports Tagged Queuing with Solaris 2.x.
2. Addresses are preset to 3 and 1 in the SS5 and SS20.
3. Addresses are preset to 0 through 4 in the SPARCstorage Array.
4. System upgrades to A11 and A14 may use this drive.

**References**
2. *1.05Gbyte Disk Drive Installation Manual, 802-2702-10.*

---

**Volume I**

**DISK-35**
IBM DPES-31080-S1S  1.05GB
3 1/2"  5400 RPM  Single Ended Fast SCSI
SS5  SS20  A11  A12  A14

Options  649  5104

370-2072  540-2560  540-2765
1" Height  SS/SS20 FRU  A11 FRU
Deskstar  w Bkt 540-2570  w R Bkt 330-1951

Power:  0.4 Amps @ +5Vdc
         0.28 Amps @ +12Vdc
         5.56 Watts

Notes
1. The 1.05GB drive supports Tagged Queuing with Solaris 2.x.
2. Addresses are preset to 3 and 1 in the SS5 and SS20.
3. Addresses are preset to 0 and 1 in the A11, A12, and A14.
4. This drive does not support wide SCSI transfers.
5. This drive is not used in the SPARCstation 4.
6. This drive is not used in the SPARCstorage UniPack.
7. This drive is not used in the SPARC Storage Array Model 100.
8. System upgrades to A12 and A14 may use this drive.

Quantum 1080S 1.05GB
3 1/2” 5400 RPM Single Ended Fast SCSI
SS4 SS5 SS20 A11 A12 A14
Option 5104

<table>
<thead>
<tr>
<th>370-2168</th>
<th>540-2560</th>
<th>540-2765</th>
<th>540-2875</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&quot; Height</td>
<td>SS5/SS20 FRU</td>
<td>A11 FRU</td>
<td>SS4 FRU</td>
</tr>
<tr>
<td>Fireball</td>
<td>w Bkt 540-2570</td>
<td>w R Bkt 330-1951</td>
<td>w Bkt 540-2570</td>
</tr>
</tbody>
</table>

Notes
1. The 1.05GB drive supports Tagged Queuing with Solaris 2.x.
2. Addresses are preset to 3 and 1 in the SS5 and SS20.
3. Addresses are preset to 0 and 1 in the A11, A12, and A14.
4. This drive does not support wide SCSI transfers.
5. The SS4 requires Standoff 240-2308.
6. Standoff 240-2308 is only on SS4 Model 110 CPU 501-3134.
7. This drive is not used in the SPARCstorage UniPack.
8. This drive is not used in the SPARC Storage Array Model 100.
9. System upgrades to A12 and A14 may use this drive.

Conner CFP2105E 2.1GB
3 1/2" 5400 RPM  Single Ended Fast/Wide SCSI
SS5  SS20  A11  A12  A14

Option 659
370-1930  540-2699  540-2770
1" Height  SS5/SS20 FRU  SS4 FRU
Cayman  w Bkt 540-2570  w Bkt 540-2570

Note:
1. The minimum operating system is Solaris 1.1.
2. SPARCstation 4 2.1GB configurations were removed from the Price List in October 1995 because the drive failed qualification testing.
3. System upgrades to A11, A12, and A14 may use this drive.

Seagate ST32430WC 2.1GB
3 1/2” 5400 RPM Single Ended Fast/Wide SCSI
SS5 SS20 A11 A12 A14
Options 659 5175

370-2071
1” Height
Hawk-2LP

540-2699
SS5/SS20 FRU
w Bkt 540-2570

540-2782
A11/A12/A14 FRU
w R Bkt 330-1951
w L Bkt 330-1952

Notes
1. The minimum operating system is Solaris 1.1.
2. SPARCstation 4 2.1GB configurations were removed from the Price
   List in October 1995 because the drive failed qualification testing.


Volume I
Seagate ST32550WC 2.1GB
3 1/2” 7200 RPM  Single Ended Fast/Wide SCSI
A12  A14  A20  A25  E150  E3000
Options  765  766  768  769  770  775  790  791  792
5151  5152  5153  5161  5511  5512  5513
6590  6591  6592
370-2040  540-2706  540-2730
1” Height  SSA FRU  Axx/E150/E3000 FRU
Barracuda-2LP  8.4GB Disk Card FRU  w R Bkt 330-1951
w Bkt 540-2413 or 540-2764  w L Bkt 330-1952

Power:  1.06 Amps @ +5Vdc
0.57 Amps @ +12Vdc
12.14 Watts

Notes
1. The minimum operating system is Solaris 1.1.
2. Field Change Order A0069 is recommended.
IBM DFHS-32160-S2S  2.1GB
3 1/2” 7200 RPM  Single Ended Fast/Wide SCSI
A12  A14  A20  A25  E150  E3000
Options  765  766  768  769  770  775  790  791  792
5151  5152  5153  5161  5511  5512  5513
370-1956  540-2706  540-2730
1” Height  SSA FRU  Axx/E150/E3000 FRU
Starfire  8.4GB Disk Card FRU  w R Bkt 330-1951
w Bkt 540-2413 or 540-2764  w L Bkt 330-1952

Power:  0.96 Amps @ +5Vdc
0.36 Amps @ +12Vdc
9.1 Watts Reading/Writing

Notes
1. The minimum operating system is Solaris 1.1.
2. This drive was disqualified. Approximately 200 were shipped.

Reference: 2.1 Gbyte 7200 RPM Disk Drive Specifications, 802-4058-10.
Seagate ST15230WC  4.2GB
3 1/2"  5400 RPM  Single Ended Fast/Wide SCSI
Options  5203  5204
370-2152
1 5/8" Height
Hawk-4

Power:  0.85 Amps @ +5Vdc
        0.62 Amps @ +12Vdc
        11.7 Watts

Notes
1. The minimum operating system is Solaris 1.1.2 or 2.3.
2. The Solaris 1.1.2 maximum partition size is 2.1GB, 1940 cylinders,
   or 4190400 blocks.
3. Solaris 1.1.2 requires editing format.dat and building a new kernel.
4. Using the smaller diameter J2 jumpers on J6 will distort the jumper.
5. Do NOT install jumpers on J6 Pins 13 -20.

Reference: 4.2 Gbyte Disk Drive Product Note, 802-4495-10.
Seagate ST15230WC  4.2GB
3 1/2"  5400 RPM  Single Ended Fast/Wide SCSI
Options 5203  5204  5225  5501  5502  5503  6503  6504
6506  6530  6531
370-2286  540-2784  540-2815
1 5/8" Height  RSM FRU  MultiPack FRU
Hawk-4  w Bkt 370-2304  w R Bkt 330-1951
370-2304 w L Bkt 330-1952

Power:  0.85 Amps @ +5Vdc
         0.62 Amps @ +12Vdc
         11.7 Watts

Notes
1. The minimum operating system is Solaris 1.1.2 or 2.3.
2. The Solaris 1.1.2 maximum partition size is 2.1 GB, 1940 cylinders,
   or 4190400 blocks.
3. Solaris 1.1.2 requires editing format.dat and building a new kernel.
4. Using the smaller diameter J2 jumpers on J6 will distort the jumper.
5. Do NOT install jumpers on J6 Pins 13 -20.

Reference: 4.2 Gbyte 5400 rpm Disk Drive Specifications, 802-5302-10.
Seagate ST32155WC  2.1GB
3 1/2”  5400 RPM  Single Ended Ultra/Wide SCSI
SS5  SS20  A11  A12  A14
Options  659  5175

370-2314  540-2699  540-2782
1” Height  SS5/SS20 FRU  A11/A12/A14 FRU
Hawk-2XL  w Bkt 540-2570  w R Bkt 330-1951

Note: The Ultra SCSI capability of this drive is not qualified by Sun.

Reference: 2.1 Gbyte 7200 rpm Disk Drive Specifications, 802-7743-10.
Note: The Ultra SCSI capability of this drive is not qualified by Sun.

Reference: 2.1 Gbyte 7200 rpm Disk Drive Specifications, 802-7743-10.

Volume I

DISK-45
IBM DCAS-32160  2.1GB
3 1/2"  5400 RPM  Single Ended Ultra/Wide SCSI
SS5  SS20  A11  A12  A14
Options  659  5175

370-2842  540-2699  540-3171
1" Height  SS5/SS20 FRU  Spud Bracket FRU
Ultrastar 2ES
w Bkt 540-2570  w 1" Bkt 540-3024

Note: The Ultra SCSI capability of this drive is not qualified by Sun.
Reference: 2.1 Gbyte 7200 rpm Disk Drive Specifications, 802-7743-10.
Fujitsu M2952  2.1GB
3 1/2"  7200 RPM  Single Ended Ultra/Wide SCSI
Options 5151  5152
370-2366
1" Height
Allegro 3

Notes
1. The Ultra SCSI capability of this drive is not qualified by Sun.
2. The M2952 operating current exceeds the capability of the SSA 100.

Reference: 2.1 Gbyte 7200 rpm Disk Drive Specifications, 802-7743-10.
Seagate ST32171WC  2.1GB
3 1/2”  7200 RPM  Single Ended Ultra/Wide SCSI
A12 A14 A16 A20 A23 A25 E150 E3000
Options 765 766 768 769 770 790 791 792
5151 5152 5153 5161 5511 5512 5513
6520 6590 6591 6592
370-2365  540-2706  540-2936
1” Height  SSA FRU   Spud Bracket FRU
Barracuda 2LP  w Bkt 540-2764  w 1” Bkt 540-3024

Reference: 2.1 Gbyte 7200 rpm Disk Drive Specifications, 802-7743-10.
Quantum VK22J05  2.1GB
3 1/2"  7200 RPM  Single Ended Ultra/Wide SCSI
A12  A14  A16  A20  A23  A25  E150  E3000
Options  765  766  768  769  770  790  791  792
5151  5152  5153  5161  5511  5512  5513
6520  6590  6591  6592
370-2808  540-2706  540-2936
1" Height  SSA FRU  Spud Bracket FRU
Viking  w Bkt 540-2764  w 1" Bracket 540-3024

Reference: 2.1 Gbyte 7200 rpm Disk Drive Specifications, 802-7743-10.
Fujitsu M2954 4.2GB
3 1/2" 7200 RPM Single Ended Ultra/Wide SCSI
Options 5209 5213 6507 6508 6509 6532 6533
370-2368 540-2939
1" Height RSM FRU
Allegro 3 w Bkt 370-2304

Note: The operating current exceeds the capability of the SSA 100.
Reference: 4.2 Gbyte 7200 rpm Disk Drive Specifications, 802-7744-11.

DISK-50 Field Engineer Handbook
Seagate ST34371WC  4.2GB
3 1/2”  7200 RPM  Single Ended Ultra/Wide SCSI
A12  A14  A16  A20  A23  A25  A26  E150
Netra t 1100  E3000
Options  5162  5206  5207  5209  5213  5214
5514  5515  5516  6507  6508  6509
6517  6518  6519  6532  6533
370-2367  540-2937  540-2938  540-2939
1” Height  SSA FRU  Spud Bracket FRU  RSM FRU
Barracuda 4LP  w Bkt 540-2764  w 1” Bkt 540-3024  w Bkt 370-2304

Reference: 4.2 Gbyte 7200 rpm Disk Drive Specifications, 802-7744-11.
Quantum VK45J05  4.2GB
3 1/2"  7200 RPM  Single Ended Ultra/Wide SCSI
A12  A14  A16  A20  A23  A25  A26  E150
Netra t 1100  E3000
Options  5162  5206  5207  5209  5213  5214
5514  5515  5516  6517  6518  6519
370-2809  540-2937  540-2938
1" Height  SSA FRU  Spud Bracket FRU
Viking  w Bkt 540-2764  w 1" Bkt 540-3024

Reference: 4.2 Gbyte 7200 rpm Disk Drive Specifications, 802-7744-11.

DISK-52  Field Engineer Handbook
Fujitsu MAB3045SC  4.2GB
3 1/2"  7200 RPM  Single Ended Ultra/Wide SCSI
A12  A14  A16  A20  A23  A25  A26  E150
Netra t 1100  E3000  StorEdge MultiPack  StorEdge UniPack
Options 5162  5214  5514  5515  5516
370-3412  540-2938
1" Height  Spud Bracket FRU
Allegro4L  w 1" Bkt 540-3024

Reference: 4.2 Gbyte 7200 rpm Disk Drive Specifications, 802-7744-11.
IBM DDRS-34560  4.2GB
3 1/2”  7200 RPM  Single Ended Ultra/Wide SCSI
SS5  SS20  A12  A14  A16  A20  A23  A25  E150
Netra t 1100  E3000  StorEdge MultiPack  StorEdge UniPack
Options  5162  5206  5207  5214  5514  
5515  5516  5911  6517  6518  6519
370-3403  540-2937  540-2938  540-3988
1” Height  SSA FRU  Spud Bracket FRU  SS5/SS20 FRU
Draco 4  w Bkt 540-2764  w 1” Bkt 540-3024  w Bkt 540-2570

Notes
1. Support for 4.2GB Disks in the SS5 was announced in September 1998.
2. Qualification of 4.2GB Disks in the SS20 was completed in Nov. 1998.
3. The 4.2GB Disk was not qualified in Ultra 1 Models 140 or 170 (A11).
4. Solaris 1.x supports a maximum disk drive size of 2.1GB.
5. Label the 4.2GB Disk Drive as Sun2.1G to use the drive on Solaris 1.x.
6. A root partition >2GB is not supported by Sun-4c, 4m, or 4d systems.

References
1. 4.2 Gbyte 7200 rpm Disk Drive Specifications, 802-7744-11
3. BugID 4035259 filed against root partition >2GB.

DISK-54  Field Engineer Handbook
Seagate ST34501WC  4.2GB
3 1/2”  10000 RPM  Single Ended Ultra/Wide SCSI
StorEdge A1000  StorEdge D1000
Option 5228

370-3338  540-3594
1" Height  12-Slot A/D1000 FRU
Cheetah 4LP  w 1" Bkt 540-3024
Opt 340-4288

Reference: 4.2 Gbyte 10000 rpm Disk Drive Specifications, 805-3619-10.
Volume I  DISK-55
Seagate ST34502LC 4.2GB
3 1/2" 10000 RPM  Single Ended Ultra/Wide SCSI
StorEdge A1000  StorEdge D1000
Option 5228

390-0003  540-3594
1" Height  12-Slot A/D1000 FRU
Cheetah 9LD w 1" Bkt 540-3024
w Plate 340-4288

Reference: 4.2 Gbyte 10000 rpm Disk Drive Specifications, 805-3619-10.
Fujitsu M2949 9.1GB
3 1/2” 7200 RPM Single Ended Ultra/Wide SCSI
Options 5253 5254 6514 6515 6516 6534 6535
370-2370 540-2942
1 5/8" Height Allegro 3
RSM FRU w Bkt 370-2304

Reference: 9 Gbyte 7200 rpm Disk Drive Specifications, 802-7745-10.
Seagate ST19171WC 9.1GB
3 1/2” 7200 RPM Single Ended Ultra/Wide SCSI
A16 A23 A26 Netra t 1100 E3000
Options 5251 5253 5254 5504 5505 5506 5506 6512
6515 6516 6534 6535 6995 6596
370-2369 540-2942 540-2951
1 5/8” Height RSM FRU Spud Bkt FRU
Barracuda 9 w Bkt 370-2304 w 1.6” Bkt 540-3025

Notes
1. Install four 230-1545 dampers per drive location, to reduce the soft error rate of the ST19171WC in the SSA Model 219 RSM Tray.
2. Damper Kit 565-1421 includes 35 dampers.

Reference: 9 Gbyte 7200 rpm Disk Drive Specifications, 802-7745-10.
Fujitsu MAB3091SC  9.1GB
3 1/2"  7200 RPM  Single Ended Ultra/Wide SCSI
A14  A16  A20  A23  A25  A26
Netra t 1120  Netra t 1125  Netra ft 1800  Netra t1  E3000
StorEdge A1000  StorEdge D1000  StorEdge A7000
StorEdge MultiPack  StorEdge UniPack
Options 5163  5229  5230  6288  6956
370-3413
1" Height Allegro 4L

540-2942  540-3704  540-3720  540-4004
RSM FRU  Spud Bracket FRU  12-Slot A/D1000 FRU  Netra ft 1800 FRU
w Bkt 370-2304  w 1" Bkt 540-3024  w 1" Bkt 540-3024  w Plate 340-4288

Notes
1. The 9.1 GB Drive is not compatible with A7000 Option 9652.
2. The 9.1 GB Drive is not compatible with A7000 Disk Array 540-3666.
3. The 9.1 GB Drive requires A7000 Disk Array Chassis Option 9656.
4. The 9.1 GB Drive requires A7000 Disk Array Chassis 540-3841.

IBM DDRS-39130 9.1GB

3 1/2" 7200 RPM  Single Ended Ultra/Wide SCSI
A14 A16 A20 A23 A25 A26
Netra t 1120  Netra t 1125  Netra ft 1800  Netra t1 E3000
StorEdge A1000  StorEdge D1000  StorEdge A7000
StorEdge MultiPack  StorEdge UniPack
Options 5163  5229  5230  6288  6956

370-3404  540-3704  540-3720  540-4004
1" Height  Spud Bracket FRU  12-Slot A/D1000 FRU  Netra ft 1800 FRU
Draco 9  w 1" Bkt 540-3024  A7000 FRU  w 1" Bkt 540-3024
w Plate 340-4288

Notes
1. The 9.1GB Drive is not compatible with A7000 Option 9652.
2. The 9.1GB Drive is not compatible with A7000 Disk Array 540-3666.
3. The 9.1GB Drive requires A7000 Disk Array Chassis Option 9656.
4. The 9.1GB Drive requires A7000 Disk Array Chassis 540-3841.

Seagate ST39173WC  9.1GB
3 1/2"  7200 RPM  Single Ended Ultra/Wide SCSI
A14  A16  A20  A23  A25  A26
Netra t 1120  Netra t 1125  Netra ft 1800  Netra t 11  E3000
StorEdge A1000  StorEdge D1000  StorEdge A7000
StorEdge MultiPack  StorEdge UniPack
Options  5163  5229  5230  6288  6956
370-3595  540-3704  540-3720  540-4004
1" Height  Spud Bracket FRU  12-Slot A/D1000 FRU  Netra ft 1800 FRU
Barracuda 9LP  w 1" Bkt 540-3024  A7000 FRU  w 1" Bkt 540-3024
              w Plate 340-4288

Notes
1. The 9.1GB Drive is not compatible with A7000 Option 9652.
2. The 9.1GB Drive is not compatible with A7000 Disk Array 540-3666.
3. The 9.1GB Drive requires A7000 Disk Array Chassis Option 9656.
4. The 9.1GB Drive requires A7000 Disk Array Chassis 540-3841.

Fujitsu MAE3091LC 9.1GB
3 1/2" 7200 RPM Single Ended Ultra/Wide SCSI
A14 A16 A20 A23 A25 A26
Netra t 1120 Netra t 1125 Netra t1 E3000
StorEdge A1000 StorEdge D1000 StorEdge A7000
StorEdge MultiPack StorEdge UniPack
Options 5163 5229 5230 6288

390-0004 540-3704 540-3720
1" Height Spud Bracket FRU 12-Slot A/D1000 FRU
Allegro 5 w 1" Bkt 540-3024 A7000 FRU

Notes
1. The 9.1GB Drive is not compatible with A7000 Option 9652.
2. The 9.1GB Drive is not compatible with A7000 Disk Array 540-3666.
3. The 9.1GB Drive requires A7000 Disk Array Chassis Option 9656.
4. The 9.1GB Drive requires A7000 Disk Array Chassis 540-3841.

IBM DNES-309170  9.1GB
3 1/2"  7200 RPM  Single Ended Ultra/Wide SCSI
A14 A16 A20 A23 A25 A26
Netra t 1120  Netra t 1125  Netra t1 E3000
StorEdge MultiPack  StorEdge UniPack
Options 5163 5229 5230 6288
390-0007  540-3704
1" Height  Spud Bracket FRU
Neptune  w 1" Bkt 540-3024

Note: The StorEdge UniPack requires ≥390-0007-05.
Seagate ST39102LC  9.1GB  
3 1/2"  10000 RPM  Single-Ended Ultra/Wide SCSI  
A16  A20  A23  A25  A26  Netra t1  
StorEdge MultiPack  StorEdge A1000  StorEdge D1000  
Options  5234  5235  
370-3649  540-3881  540-3966  
1" Height  Spud Bracket FRU  12-Slot A/D1000 FRU  
Cheetah 9LP  w 1" Bkt 540-3024  w 1" Bkt 540-3024  

Fujitsu MAG3091LC  9.1GB
3 1/2"  10000 RPM  Single-Ended Ultra/Wide SCSI
A16 A20 A23 A25 A26 Netra t1
StorEdge MultiPack  StorEdge UniPack
StorEdge A1000  StorEdge D1000
Options  5234  5235

390-0005  540-3881  540-3966
1" Height  Spud Bracket FRU  12-Slot A/D1000 FRU
Allegro 5  w 1" Bkt 540-3024  w 1" Bkt 540-3024
w Plate 340-4288

Note: The StorEdge UniPack requires ≥390-0005-05.

Volume I  DISK-65
Seagate ST39103LC 9.1GB
3 1/2” 10000 RPM Single-Ended Ultra/Wide SCSI
A16  A20  A23  A25  A26  Netra t1
StorEdge MultiPack  StorEdge UniPack
StorEdge A1000  StorEdge D1000
Options  5234  5235

390-0009  540-3881  540-3966
1” Height  Spud Bracket FRU  12-Slot A/D1000 FRU
Cheetah 18LP w 1” Bkt 540-3024 w 1” Bkt 540-3024
w Plate 340-4288

Seagate ST39204LC 9.1GB
3 1/2" 10000 RPM Single-Ended Ultra/Wide SCSI
A16 A20 A23 A25 A26 Netra t1
StorEdge MultiPack StorEdge UniPack
StorEdge A1000 StorEdge D1000
Options 5234 5235

390-0037 540-3881 540-3966
1" Height Spud Bracket FRU 12-Slot A/D1000 FRU
Cheetah 18XL w 1" Bkt 540-3024 w 1" Bkt 540-3024
w Plate 340-4288

POWER - DATA - SCSI ID
80-Pin SCA2 Connector

Fujitsu MAA3182SC  18.2GB
3 1/2"  7200 RPM  Single Ended Ultra/Wide SCSI
A23  A26  A27  Netra t 1120  Netra t 1125  E3000
StorEdge A1000  StorEdge D1000  StorEdge A7000
StorEdge MultiPack  StorEdge UniPack

Options 5232  5233

370-3414  540-3719  540-3721
1 5/8" Height  Spud Bracket FRU  8-Slot A/D1000 FRU
Allegro 4  w 1.6" Bkt 540-3025  A7000 FRU

Notes
1. The 18GB Drive is not compatible with A7000 Option 9652.
2. The 18GB Drive is not compatible with A7000 Disk Array 540-3666.
3. The 18GB Drive requires A7000 Disk Array Chassis Option 9656.
4. The 18GB Drive requires A7000 Disk Array Chassis 540-3841.

Seagate ST118273LC 18.2GB
3 1/2” 7200 RPM Single Ended Ultra/Wide SCSI
370-3596
1 5/8” Height
Barracuda 18

Notes
1. The 370-3956 was released in February 1999.
2. The 370-3956 is not used in any assembly.

IBM DGHS-18Y  18.2GB
3 1/2"  7200 RPM  Single Ended Ultra/Wide SCSI
StorEdge A1000  StorEdge D1000  StorEdge A7000
Option 5233

370-3716  540-3721
1 5/8" Height  8-Slot A/D1000 FRU
Marlin  A7000 FRU
w 1.6" Bkt 540-3925
w Plate 340-4288

Notes
1. The 18GB Drive is not compatible with A7000 Option 9652.
2. The 18GB Drive is not compatible with A7000 Disk Array 540-3666.
3. The 18GB Drive requires A7000 Disk Array Chassis Option 9656.
4. The 18GB Drive requires A7000 Disk Array Chassis 540-3841.


DISK-70  Field Engineer Handbook
Fujitsu MAG3182LC  18.2GB
3 1/2"  10000 RPM  Single Ended Ultra/Wide SCSI
A20  A23  A25  A26  A27  E3000  Netra t 1400/1405
StorEdge A1000  StorEdge D1000  StorEdge MultiPack
Options  5164  5237  5238

390-0006  540-4177  540-4178
1" Height  Spud Bracket FRU  12-Slot A/D1000 FRU
Allegro 5  w 1" Bkt 540-3024  w 1" Bkt 540-3024
w Plate 340-4288

Note: This drive is not NEBS Level 3 qualified in the Netra st D130.

References
1. *18 Gbyte 10000 rpm Disk Drive Specifications*, 806-1057.
Seagate ST318203LC  18.2GB
3 1/2”  10000 RPM  Single Ended Ultra/Wide SCSI
A20  A23  A25  A26  A27  E3000
Netra ft 1800  Netra t 1400/1405
StorEdge A1000/D1000  StorEdge MultiPack  StorEdge UniPack
Netra st A1000  Netra st D1000  Netra st D130
Options 5164  5237  5238  5239  6957
390-0002
1” Height
Cheetah 18

540-4077  540-4177  540-4178  540-4401
Netra ft 1800 FRU  Spud Bracket FRU  12-Slot A/D1000 FRU  Netra st D130 FRU
w Bkt 540-4884  w 1” Bkt 540-3024  w 1” Bkt 540-3024  w 1” Bkt 540-3024
w Plate 340-4288  w Plate 340-4288  w Plate 340-4288

References
1.  18 Gbyte 10000 rpm Disk Drive Specifications, 806-1057.
2.  StorEdge MultiPack Product Note, 806-1102.

DISK-72  Field Engineer Handbook
Seagate ST318404LC  18.2GB
3 1/2”  10000 RPM  Single Ended Ultra/Wide SCSI
A20  A23  A25  A26  A27  E3000  Netra t 1400/1405
StorEdge A1000  StorEdge D1000
StorEdge UniPack  StorEdge MultiPack
Options  5164  5237  5238
390-0038  540-4177  540-4178
1” Height  Spud Bracket FRU  12-Slot A/D1000 FRU
Cheetah 18XL  w 1” Bkt 540-3024  w 1” Bkt 540-3024
w Plate 340-4288

References
1. 18 Gbyte 10000 rpm Disk Drive Specifications, 806-1057.
2. StorEdge MultiPack Product Note, 806-1102.
Fujitsu MAJ3182M  18.2GB
3 1/2” 10000 RPM  Single Ended Ultra/Wide SCSI
A20  A23  A25  A26  A27  E3000  Netra t 1400/1405
Netra ct 400/800  StorEdge A1000/D1000  Netra st D130
StorEdge UniPack  StorEdge MultiPack
Options  5164  5237  5238
390-0043  390-0060
1” Height  1” Height
Allegro 6LE  Allegro 6LE

540-4177  540-4178  540-4401  540-4620
Spud Bracket FRU  12-Slot A/D1000 FRU  Netra st D130 FRU  ct 400/800 FRU
w Drive 390-0043  w Drive 390-0043  w Drive 390-0043  w Drive 390-0043
w 1” Bkt 540-3024  w 1” Bkt 540-3024  w 1” Bkt 540-3024  w 1” Bkt 540-3024
w Plate 340-4288  w Plate 340-4288  w Plate 340-4288  w Plate 340-4288

Notes
1. Drives 390-0043 and 390-0060 are the same Fujitsu model number.
2. Drives 390-0043 and 390-0060 respond to an Inquiry command with different values.

Reference: 18 Gbyte Disk Drive Specifications, 806-1057 and 806-6395.
Fujitsu MAF3364LC  36.4GB
3 1/2"  10000 RPM  Single Ended Ultra/Wide SCSI
StorEdge A1000  StorEdge D1000
Options  5239  5240
390-0014  540-4263
1 5/8" Height  8-Slot A/D1000 FRU
Allegro 5  w 1.6" Bkt 540-3025
w Plate 340-4288

Reference: 36 Gbyte 10000 rpm Disk Drive Specifications, 806-1492.

Volume I
Seagate ST136403LC  36.4GB
3 1/2"  10000 RPM Single Ended Ultra/Wide SCSI
StorEdge A1000  StorEdge D1000
Options  5239  5240

390-0020  540-4263
1 5/8" Height  8-Slot A/D1000 FRU
Cheetah 36  w 1.6" Bkt 540-3025
w Plate 340-4288

Reference: 36 Gbyte 10000 rpm Disk Drive Specifications, 806-1492.

DISK-76  Field Engineer Handbook
Fujitsu MAJ3364M  36.4GB
3 1/2"  10000 RPM  Single Ended Ultra/Wide SCSI
A23  A25  A26  A27  A33  A34
StorEdge A1000  StorEdge D1000  Netra st D130
StorEdge UniPack  StorEdge MultiPack
Options  5242  5243  5244
390-0051  390-0059
1" Height  1" Height
Allegro 6  Allegro 6

540-4520  540-4521  540-4689
12-Slot A/D1000 FRU  w Drive 390-0051  Netra st D130 FRU
w 1" Bkt 540-3024  w 1" Bkt 540-3024  w 1" Bkt 540-3024
w Plate 340-4288  w Plate 340-4288  w Plate 340-4288

Notes
1. Drives 390-0051 and 390-0059 are the same Fujitsu model number.
2. Drives 390-0051 and 390-0059 respond to a SCSI Inquiry command with different values.

Reference: 36 Gbyte 10000 rpm Disk Drive Specifications, 806-1492.
Seagate ST336704LC  36.4GB
3 1/2”  10000 RPM  Single Ended Ultra/Wide SCSI
A23  A25  A26  A27  A33  A34
StorEdge A1000  StorEdge D1000  Netra st D130
Options  5239  5240  5244
390-0050  540-4520  540-4521  540-4689
1” Height  12-Slot A/D1000 FRU  w 1” Bkt 540-3024
w Plate 340-4288  Netra st D130 FRU
w 1” Bkt 540-3024  w Plate 340-4288

Reference: 36 Gbyte 10000 rpm Disk Drive Specifications, 806-1492.
Seagate ST42400ND  2.1GB
5 1/4"  5400 RPM  Differential Fast SCSI
Options  573  574  575  576
370-1412
3 1/4" Height
990002-002
Elite 2

Top View

End View

Notes
1. The minimum operating system is SunOS 4.1.3.
2. Jumpers J01, J4A, and J4B use 2 mm shunts.
3. The J5 spindle synchronization connector is not used.
4. The DWIS/S requires 2.1GB drive Firmware 0420 (370-1412-03) for optimum performance. If the firmware is less than 0420, disable fast/wide transfers by adding "set scsi_options=0xf8" to /etc/system.

References
3. 2.1Gbyte Disk Drive Installation Manual, 800-7007-11.
Seagate ST43401ND  2.9GB
5 1/4”  5400 RPM  Differential Fast/Wide SCSI
Options  583  584  585  586
370-1695
3 1/4” Height
992004-005/6
Elite 3

Top View

End View

Notes
1. The minimum operating system is Solaris 2.3.
2. Solaris 2.3 requires Patch 101378-xx.
3. The firmware on 370-1695-02 is level 0407.

References
2. 2.9GByte Disk Drive Installation Manual, 801-2066-10.

DISK-80  Field Engineer Handbook
Seagate ST43401ND  2.9GB
5 1/4"  5400 RPM  Differential Fast/Wide SCSI
CS6400 Peripheral Cabinet
370-2766  420-6113-001
3 1/4" Height  BSD Part Number
992004-001  Elite 3

Top View

End View

TERMINATORS
Removed  Removed  Removed

J4A  J7  4  J01  Removed  TERMPWR
0000 0000 0000 0000 0000 0000
0000 0000 0000 0000 0000 0000
0000 0000 0000 0000 0000 0000
0000 0000 0000 0000 0000 0000
0000 0000 0000 0000 0000 0000

J15  J4B
0000 0000 0000 0000 0000 0000
0000 0000 0000 0000 0000 0000
0000 0000 0000 0000 0000 0000

J06 68-PIN CONNECTOR

Blu  Yel  Red

Grn  Orm  Brn

Orient Address Cable 530-2097 as shown, and plug it into the left side of J7.

Spin  Delay Start Parity Sweep

Power:  2.85 Amps @ +5Vdc
        1.85 Amps @ +12Vdc
        36.45 Watts

Note: The firmware on 370-2766-01 is level 0105.
Seagate ST43402ND  2.9GB
5 1/4”  5400 RPM  Differential Fast/Wide SCSI
CS6400 Peripheral Cabinet
370-2765   420-6063-001
3 1/4” Height  BSD Part Number
992006-002  Elite 3

Top View

End View

PORT B

PORT A

J01B

TERMPWR 2 1

32103210

Port B Port A

SCSI ID

Brown

Blu Yel Red

Plug the Address Cable into the left side of J9 with the wire colors oriented as shown.

Note: The firmware on 370-2765-01 is level 0111.

DISK-82  Field Engineer Handbook
Seagate ST410800WD  9.0GB
5 1/4”  5400 RPM  Differential Fast/Wide SCSI

Options  783  784  785  786
370-1868  540-2646
3 1/4” Height  9.0GB Disk Drive FRU
9A7004-021  w Bkt 340-2612
Elite 9

Notes
1. The minimum operating system is Solaris 2.3.
2. Solaris 2.3 requires Patch 101378-xx.
3. The firmware on 370-1868-03 and 540-2646-02 is level 0407.
4. The maximum operating altitude is 6000 feet.
5. The adapter is required on 370-1868-01 and 370-1868-02.
6. The adapter is not used on 370-1868-03 or 540-2646-02.

References
2. Product Note, 801-6582-12.
Seagate ST410800WD  9.0GB
5 1/4”  5400 RPM  Differential Fast/Wide SCSI
CS6400 Peripheral Cabinet

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Top View

End View

Note: The firmware on 370-2771-01 is level 0002.
Seagate ST34342A  4.3GB
3 1/2"  4500 RPM  Ultra ATA-3
A21  A22
Option 5227
370-3176
Medalist 4342

Bottom View

End View

References
Seagate ST34321A  4.3GB  
3 1/2"  5400 RPM  Ultra ATA-3 
A21 
370-3692 
Medalist 4321

Bottom View

End View

Notes
1. The 4GB 5400RPM drive was not sold as a standalone option.
2. The 4GB 5400RPM drive was not sold in the Ultra 10.

References

DISK-86  Field Engineer Handbook
Notes
1. The 4GB 5400RPM drive was not sold as a standalone option.
2. The 4GB 5400RPM drive was not sold in the Ultra 10.

References
Seagate ST38420A  8.4GB
3 1/2”  5400 RPM  Ultra ATA-4
A21
370-3863
Medalist 8420

Bottom View

End View

Notes
1. The 8.4GB Disk Drive shipped in the 360MHz Ultra 5.
2. The 8.4GB Disk Drive was not shipped in the Ultra 10.
3. The 8.4GB Disk Drive was not sold as a standalone option.

References
2. CD-ROM and Hard Drive Installation Guides, 805-3085 and 805-7115.

DISK-88
Field Engineer Handbook
Seagate ST38410A  8.4GB
3 1/2"  5400 RPM  Ultra ATA/66
A21
370-3863
U8 8410

Bottom View

End View

Notes
1. The 8.4GB Disk Drive shipped in the 360MHz Ultra 5.
2. The 8.4GB Disk Drive was not shipped in the Ultra 10.
3. The 8.4GB Disk Drive was not sold as a standalone option.

References
2. CD-ROM and Hard Drive Installation Guides, 805-3085 and 805-7115.
Seagate ST39140A 9.1GB
3 1/2” 7200 RPM Ultra ATA-4
A21  A22
Options 5226  5236
370-3693
Medalist Pro 9140

Notes
1. Either a Floppy or a front Disk Drive can be installed in the Ultra 5.
2. The Ultra 5 front Disk Mounting Bracket replaces the Floppy Bracket.
3. The Ultra 5 front Disk Mounting Bracket has no Sun part number.
4. The Ultra 5 front Disk Mounting Bracket is included with Option 5236.
5. The Ultra 10 primary/rear drive requires Mounting Bracket 370-3721.

References
2. CD-ROM and Hard Drive Installation Guides, 805-3085 and 805-7115.

DISK-90
Field Engineer Handbook
IBM DJNA-370910  9.1GB
3 1/2”  7200 RPM  Ultra ATA/66
A21  A22
Options 5226  5236
370-3693
Deskstar 22GXP

Notes
1. Either a Floppy or a front Disk Drive can be installed in the Ultra 5.
2. The Ultra 5 front Disk Mounting Bracket replaces the Floppy Bracket.
3. The Ultra 5 front Disk Mounting Bracket has no Sun part number.
4. The Ultra 5 front Disk Mounting Bracket is included with Option 5236.
5. The Ultra 10 primary/rear drive requires Mounting Bracket 370-3721.

References
Seagate ST39120A 9.1GB
3 1/2" 7200 RPM Ultra ATA/66
A21 A22
Options 5226 5236
370-3693
Barracuda ATA

Bottom View

End View

Notes
1. Either a Floppy or a front Disk Drive can be installed in the Ultra 5.
2. The Ultra 5 front Disk Mounting Bracket replaces the Floppy Bracket.
3. The Ultra 5 front Disk Mounting Bracket has no Sun part number.
4. The Ultra 5 front Disk Mounting Bracket is included with Option 5236.
5. The Ultra 10 primary/rear drive requires Mounting Bracket 370-3721.

References
2. CD-ROM and Hard Drive Installation Guides, 805-3085 and 805-7115.
Seagate ST39111A 9.1GB
3 1/2" 7200 RPM Ultra ATA/66
A21 A22
Options 5226 5236
370-3693
Barracuda ATA II

Bottom View

40-Pin Data Connector

End View

40-Pin Data Connector

J3 J5 J4 40-Pin Data Connector

Master (Out) (In when used with Solstice DiskSuite)
Cable Select (In) (Out when used with Solstice DiskSuite)
Remote LED (Out)
Alternate Capacity (Out)

Notes
1. Either a Floppy or a front Disk Drive can be installed in the Ultra 5.
2. The Ultra 5 front Disk Mounting Bracket replaces the Floppy Bracket.
3. The Ultra 5 front Disk Mounting Bracket has no Sun part number.
4. The Ultra 5 front Disk Mounting Bracket is included with Option 5236.
5. The Ultra 10 primary/rear drive requires Mounting Bracket 370-3721.

References
2. CD-ROM and Hard Drive Installation Guides, 805-3085 and 805-7115.
Seagate ST315320A  15.3GB
3 1/2”  7200 RPM  Ultra ATA/66
A36
370-4154
Barracuda ATA II

Bottom View

End View

40-Pin Data Connector  J5  J3 Power

Master (Out)
Cable Select (In)
Remote LED (Out)
Alternate Capacity (Out)
Seagate ST19171FC   9.1GB
3 1/2”    7200 RPM    FC-AL
StorEdge A5000
Option 6708
370-2875 540-3249
1 5/8” Height Spud Bracket FRU
Barracuda 9FC w 1.6” Bkt 540-3025
          w Shield 340-3462

Notes
1. The 370-2875 was manufactured with an Aurora 170-2 or 170-3 ASIC.
2. The E3500 cannot boot from CD-ROM if there is one drive on the fibre channel loop and that drive has an Aurora 170-2 ASIC.
3. The 370-2875 and 540-3249 are not supported in the E3500.

Seagate ST19171FC  9.1GB
3 1/2" 7200 RPM  FC-AL
E3500  StorEdge A5000
Option 6709

370-3602  540-3852
1 5/8" Height  Spud Bracket FRU
Barracuda 9FC  w 1.6" Bkt 540-3025
1 5/8" Height  w Shield 340-3462

Note: The 370-3602 is manufactured with an Aurora 170-3 ASIC.
Seagate ST39102FC  9.1GB
3 1/2”  10000 RPM  FC-AL
E3500  StorEdge A5200
Option 6710
370-3647  540-3869
1” Height  Spud Bracket FRU
Cheetah 9LP  w 1” Bkt 540-3024
w Plate 340-4288

Seagate ST39103FC  9.1GB
3 1/2”  10000 RPM  FC-AL
E3500  StorEdge A5200  StorEdge T3
Option 6710

390-0016
1” Height
Cheetah 9LP
Assy 540-3869

390-0026
1” Height
Cheetah 9LP
Assy 540-4366

540-3869
Spud Bracket FRU
w 1” Bkt 540-3024
w Plate 340-4288

540-4366
T3 FRU
w Bkt 540-4303

Notes
1. Drives 390-0016 and 390-0026 are the same Seagate model number.
2. Drives 390-0016 and 390-0026 are not interchangeable because they
   have different firmware.


DISK-98  Field Engineer Handbook
Seagate ST118273FC 18.2GB
3 1/2" 7200 RPM FC-AL
E3500 StorEdge A5000 StorEdge A5100
Option 6711

370-3678 540-3923
1 5/8" Height Spud Bracket FRU
Barracuda 18 w 1.6" Bkt 540-3025
w Plate 340-4288

Notes
1. The E3500 requires 2.5.1 Patches 103346-19, 104708-16, and 105310-08.
2. The E3500 requires 2.6 Patches 103346-19, 105356-08, and 105375-10.
3. The E3500 on Solaris 7 is not supported as of 6/15/99.
4. A5000 Interface Board Firmware 1.08 fixes BugID 4190846.

Seagate ST118202FC  18.2GB
3 1/2"  10000 RPM  FC-AL
StorEdge T3
390-0017
1 5/8" Height
Cheetah 18
540-4287
T3 FRU
w Enclosure 540-4303
Early Production

Reference: *18 Gbyte 10000 rpm Disk Drive Specifications*, 806-1493-10.
Seagate ST318203FC  18.2GB
3 1/2"  10000 RPM  FC-AL
A28  E3500  StorEdge A5200  StorEdge T3
Options  6716  6720  6782
390-0011  390-0022
1" Height  1" Height
Cheetah 18LP  Cheetah 18LP
Assy 540-4191  Assy 540-4440
Assy 540-4673

540-4191
Spud Bracket FRU
w 1" Bkt 540-3024
w Plate 340-5928
or Plate 340-6640

540-4440
T3 FRU
w Bkt 540-4303

540-4673
Spud Bracket FRU
w 1" Bkt 540-3024
w Plate 340-6640

Notes
1. Drives 390-0011 and 390-0022 are the same Seagate model number.
2. Drives 390-0011 and 390-0022 are not interchangeable because they have different firmware and different mode sense data.
3. Plate 340-5928 is not compatible with the Sun Blade 1000 (A28).

Reference: **18 Gbyte 10000 rpm Disk Drive Specifications**, 806-1493-10.
Seagate ST318304FC  18.2GB  
3 1/2"  10000 RPM  FC-AL  
A28  E3500  StorEdge A5200  StorEdge T3  
Options  6720  6782  
390-0034  390-0053  
1" Height  1" Height  
Cheetah 36LP  Cheetah 36LP  
Assy 540-4191  Assy 540-4440  
 Assy 540-4673  
540-4191  540-4440  540-4673  
Spud Bracket FRU  T3 FRU  Spud Bracket FRU  
w 1" Bkt 540-3024  w Bkt 540-4303  
w Plate 340-5928  w Plate 340-6640  
or Plate 340-6640  

Notes  
1. Drives 390-0034 and 390-0053 are the same Seagate model number.  
2. Drives 390-0034 and 390-0053 are not interchangeable because they have different firmware and different mode sense data.  
3. Plate 340-5928 is not compatible with the Sun Blade 1000 (A28).  

Reference: 18 Gbyte 10000 rpm Disk Drive Specifications, 806-1493-10.
Seagate ST136403FC  36.4GB
3 1/2"  10000 RPM  FC-AL
StorEdge A5100
Options  6714  6722

390-0012  390-0023  540-4192  540-4367
1 5/8" Height   1 5/8" Height   Spud Bracket FRU   T3 FRU
Cheetah 36    Cheetah 36    w 1.6" Bkt 540-3025   w Bkt 540-4303
Assy 540-4192  Assy 540-4367

Notes
1. Drives 390-0012 and 390-0023 are the same Seagate model number.
2. Drives 390-0012 and 390-0023 are not interchangeable because they have different firmware.

Reference: 36 Gbyte 10000 rpm Disk Drive Specifications, 806-1491-10.

Volume I  DISK-103
Seagate ST336704FC  36.4GB
3 1/2"  10000 RPM  FC-AL
A28  StorEdge A5200  StorEdge T3
Option 6724

390-0035  390-0056  540-4525  540-4367
1" Height  1" Height  Spud Bracket FRU  T3 FRU
Cheetah 36LP  Cheetah 36LP  w 1" Bkt 540-3024  w Bkt 540-4303
Assy 540-4525  Assy 540-4367

Notes
1. Drives 390-0035 and 390-0056 are the same Seagate model number.
2. Drives 390-0035 and 390-0056 are not interchangeable because they have different firmware and different mode sense data.

Reference: 36 Gbyte 10000 rpm Disk Drive Specifications, 806-1491-10.

DISK-104  Field Engineer Handbook
Seagate ST173404FC 73.4GB
3 1/2" 10000 RPM FC-AL
StorEdge T3
Option 6717
390-0036  540-4519
1 5/8" Height T3 FRU
Cheetah 73 w Enclosure 540-4303

Reference: 73 Gbyte 10000 rpm Disk Drive Specifications, 806-4800-10.
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CONFIGURATIONS

REMOVEABLE MEDIA
### Removable Media

**Floppy Disk Drives**
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Notes
1. Use 3 mm diameter mounting screws.
2. This drive supports 744KB and 1.44MB formatted capacities.
3. This drive supports 1MB and 2MB unformatted capacities.
Triple Density Floppy
Sun-4/15/30/40/50/60/65/75
SS4 SS5 SS10 SS20
Options 554 556 560

370-1420
Sony MPF420-6-D10
Sun-4/60/65/75
SS10
4 mm Black Bezel

370-1419
Sony MPF420-6-A10
Sun-4/15/30/40/50
SS4 SS5 SS20
8 mm Black Bezel

540-2509
Sony MPF420-6-A10
SS4 SS5 SS20
FRU Assembly

Notes
1. Use #6-32 mounting screws.
2. Set the drive to Unit 0 on switch SW4.
3. This drive supports 1MB, 1.6MB, and 2MB unformatted capacities.

Triple Density Floppy
Sun-4/15/30/40/50/60/65/75
SS4 SS5 SS10 SS20
A11 A12 A14
Options 554 556 560 6001 6003
370-2151-01 370-2252
Sony MPF520-7-D10 Sony MPF520-7-D10
Black Bezel Light Grey Bezel

Top View

Rear View

Unit 0 = 1-2 / Unit 1 = 2-3

Power
34-Pin Data Connector

Notes
1. Use 3 mm diameter mounting screws.
2. The default drive address is Unit 0.
3. This drive supports 1MB, 1.6MB, and 2MB unformatted capacities.
4. SPARCstation 20 and Ultra 2 multi-processor systems require DC Power Filter Cable 530-2316.
Notes
1. This drive supports 1MB, 1.6MB, and 2MB unformatted capacities.
2. This drive is not compatible with Chassis 340-2915.
3. This drive is compatible with Chassis 340-3397.
4. Chassis 340-3397 was phased into production in July 1996.
5. Chassis 340-2915 was phased out of production in Nov/Dec 1996.
Triple Density Floppy
A16 A20 A23 A25 A26 A27
Options 6004 6005
370-2729 370-2730
Sony MPF920E Sony MPF920E
Light Grey Bezel Medium Grey Bezel

Notes
1. Use 3 mm diameter mounting screws.
2. The default drive address is Unit 0.
3. This drive does not support auto ejection.
4. This drive supports 1MB, 1.6MB, and 2MB unformatted capacities.
Triple Density Floppy
A11  A12  A14  E150
Options  6001  6003
370-3212
Sony MPF920E
Black Bezel

Top View

Rear View

Notes
1. Use 3 mm diameter mounting screws.
2. The default drive address is Unit 0.
3. This drive supports 1MB, 1.6MB, and 2MB unformatted capacities.
SunCD
Sun-4/330/370/390/470/490
SS600MP SS1000 SC2000
Options 558 559
370-1312
Sony CDU-8012
Light Grey Bezel
370-1347
Sony CDU-8012
Black Bezel

Front View

Rear View

SunCD Plus Pack, Multi-Tape Backup Tray, and SC2000 Remote Address Cable Orientation

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2</td>
<td>In</td>
<td>SCSI ID 6</td>
</tr>
<tr>
<td>Parity</td>
<td>In</td>
<td>Enable parity</td>
</tr>
</tbody>
</table>

Power: 0.5 Amps @ +5Vdc
0.5 Amps @ +12Vdc
8.5 Watts

Notes
1. The Sun CD-ROM requires 1.0 SunCD for SunOS 4.0.3c.
2. Use 370-1347-03 when mounted on-end in the SS630MP.
SunCD Plus
SS1000  SC2000
Options 557  557-KDK

370-1573  Sony CDU-561
Option 557-KDK
370-1584  Sony CDU-561
Light Grey Bezel
370-1615  Sony CDU-561
Black Bezel

Front View

Rear View

SunCD Plus Pack, Multi-Tape Backup Tray, and SC2000 Remote Address Cable Orientation

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parity</td>
<td>In</td>
<td>Enable parity</td>
</tr>
<tr>
<td>0, 1, 2</td>
<td>Out</td>
<td>ID Select 20, 21, 22</td>
</tr>
<tr>
<td>Prevent/Allow</td>
<td>In</td>
<td>Enable eject button</td>
</tr>
<tr>
<td>Test Mode</td>
<td>Out</td>
<td></td>
</tr>
</tbody>
</table>

Power: 0.5 Amps @ +5Vdc
0.5 Amps @ +12Vdc
8.5 Watts

References
SunCD 2Plus
SS4  SS5  SS20  SS1000  SC2000
Options 578  579  661

370-1679  Toshiba XM-4101B
1" Purple Bezel

370-1682  Toshiba XM-4101B
1.6" Light Grey Bezel

540-2500  Toshiba XM-4101B
SS4/SS5/SS20 FRU
370-1679 w Bracket

Front View

Rear View

SSS AUDIO CABLE 530-2079

SunCD Plus Pack, Multi-Tape Backup Tray,
and SC2000 Address Cable Orientation

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 2 1</td>
<td>4 and 2 In</td>
<td>ID Select 2(^{nd}) 2(^{nd}) 2(^{nd}) 2(^{nd})</td>
</tr>
<tr>
<td>Parity</td>
<td>Out</td>
<td>Enable parity</td>
</tr>
<tr>
<td>Prevent/Allow</td>
<td>Out</td>
<td>Enable eject button</td>
</tr>
<tr>
<td>Test</td>
<td>Out</td>
<td>Disabled</td>
</tr>
<tr>
<td>TERMPWR</td>
<td>In</td>
<td>Enable TERMPWR</td>
</tr>
</tbody>
</table>

Notes
1. The default setting is Target 6.
2. The ID Select silkscreen is backwards on early production units.
3. The last order date for this drive was September 30, 1996.
4. This drive is not compatible with SS4, SS5, or SS20 chassis 340-3397.


Volume I

REMOVABLE MEDIA-11
SunCD 4
Options 6151  6152
370-2082
Toshiba XM-5301B
1 5/8" Height
Light Grey Bezel
SPARCstorage UniPack

Front View

Rear View

Notes
1. The minimum operating system is Solaris 1.1.1 or Solaris 2.3.
2. The drive is not supported in the SC2000.
3. The SPARCstorage UniPack requires Ferrite 150-1480.
4. The drive does not function on its left side with the Eject button up.

References

REMovable Media-12  Field Engineer Handbook
SunCD 4

SS4  SS5  SS20  SS1000  SC2000
A11  A12  A14  E3000  E4000  E5000  E6000
Options  6151  6152  6153  6154  6155  6156

370-2101
Toshiba XM-5401B
1 5/8" Height
Black Bezel

370-2102
Toshiba XM-5401B
1 5/8" Height
Light Grey Bezel

370-2103
Toshiba XM-5401B
1 5/8" Height
SS1000 Bezel

370-2203
Toshiba XM-5401B
1 5/8" Height
Medium Grey Bezel

540-2852
Toshiba XM-5401B
SS4  SS5  SS20
FRU Assembly

Front View

Rear View

Notes
1. The minimum operating system is Solaris 1.1.1 or Solaris 2.3.
2. The SS1000 uses a custom sized bezel.
3. Use Bezel Kit 555-1334 to change bezel types.
4. This drive is not compatible with SS4, SS5, or SS20 chassis 340-2915.

SunCD 12  StorEdge CD12
SS5  A11  A12  A14  A20  A23  A25
Netra t 1100  Netra t 1120  Netra t 1125
E150  E3000  E4000  E5000  E6000
Options 6157  6158  6159  6160  6161  6162  6163  6165

370-2816
Toshiba XM-5701B
1 5/8" Height
Light Grey Bezel

370-2817
Toshiba XM-5701B
1 5/8" Height
Medium Grey Bezel

Front View

Rear View

Note: The minimum operating system is Solaris 1.1.2 or Solaris 2.4.

REMOVABLE MEDIA-14  Field Engineer Handbook
**Notes**

1. SunCD 32 is not qualified in the UniPack or FlexiPack.
2. SunCD 32, Option 6166, for the FlexiPack was price listed in error.

**Reference**

StorEdge 10X DVD-CDROM
A25  A26  A28  A36  Netracnt 800
   E3500  E4500  E5500  E6500
Options  5883  6168  Netra S220

390-0025  540-4683  540-4684
Toshiba SD-M1401  Netra S220 FRU  Netra ct 800 FRU
1 5/8" Height
Medium Grey Bezel

Front View

Rear View

Notes
1. The minimum CD-ROM mode operating system is Solaris 2.5.1.
2. The minimum DVD-ROM mode operating system is Solaris 8.


REMOVABLE MEDIA-16  Field Engineer Handbook
24X CD-ROM
A21  A22
Option 6170
370-3319
Goldstar CRD-8240B
ATAPI/IDE Interface
1 5/8" Height

Front View

Rear View

The boot cdrom command will not work with the default device alias when the drive is set to slave. Change the OBP device alias to boot from CD-ROM.

CD-ROM Connected to the Primary Channel
nvalias cdrom /pci@1f,0/pci@1,1/ide@3/cdrom@1,0:f

CD-ROM Connected to the Secondary Channel
nvalias cdrom /pci@1f,0/pci@1,1/ide@3/cdrom@3,0:f

References
2. CD-ROM and Hard Drive Installation Guides, 805-3085 and 805-7115.
32X CD-ROM

A21  A22
Option 6171

370-3694  Goldstar CRD-8322B
ATAPI/IDE Interface
1 5/8" Height

370-3694  Goldstar CRD-8324B
ATAPI/IDE Interface
1 5/8" Height

Front View

Rear View

The **boot cdrom** command will not work with the default device alias when the drive is set to slave. Change the OBP device alias to boot from CD-ROM.

CD-ROM Connected to the Primary Channel

```bash
cvalias cdrom /pci@1f,0/pci@1,1/ide@3/cdrom@1,0:f
```

CD-ROM Connected to the Secondary Channel

```bash
cvalias cdrom /pci@1f,0/pci@1,1/ide@3/cdrom@3,0:f
```

References
This page intentionally left blank.
CONFIGURATIONS 9/18/00

5GB 4 mm DDS-1 Tape Drive
SS1000
Options 821 822 823 6251 6252
370-1571 370-2088
Archive 4324RP Archive 4324RP
Light Grey Bezel Light Grey Bezel
Backup Pack UniPack

Front View

Front View

Rear View

Address Select Switch Cable

In the Desktop Backup Pack, orient the Flex Cable as shown, and plug it into JP6.

In the SPARCstorage UniPack, orient the Address Cable as shown, and plug it into JP6.

Power: 0.63 Amps @ +5Vdc
0.38 Amps @ +12Vdc
7.7 Watts

REMOVABLE MEDIA-20 Field Engineer Handbook
### Jumper JP4

<table>
<thead>
<tr>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Out</td>
<td>Disable TERMPWR to bus</td>
</tr>
<tr>
<td>1-2</td>
<td>In</td>
<td>Enable TERMPWR to bus</td>
</tr>
</tbody>
</table>

### Jumper JP6

<table>
<thead>
<tr>
<th>SCSI ID</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Out</td>
<td>Out</td>
<td>Out</td>
</tr>
<tr>
<td>1</td>
<td>Out</td>
<td>Out</td>
<td>In</td>
</tr>
<tr>
<td>2</td>
<td>Out</td>
<td>In</td>
<td>Out</td>
</tr>
<tr>
<td>3</td>
<td>Out</td>
<td>In</td>
<td>In</td>
</tr>
<tr>
<td>4</td>
<td>In</td>
<td>Out</td>
<td>Out</td>
</tr>
<tr>
<td>5</td>
<td>In</td>
<td>Out</td>
<td>In</td>
</tr>
<tr>
<td>6</td>
<td>In</td>
<td>In</td>
<td>Out</td>
</tr>
</tbody>
</table>

### Switch SW1

<table>
<thead>
<tr>
<th>SWITCH</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Off</td>
<td>Enable SCSI ID 0 = $2^0$</td>
</tr>
<tr>
<td>2</td>
<td>Off</td>
<td>Enable SCSI ID 1 = $2^1$</td>
</tr>
<tr>
<td>3</td>
<td>Off</td>
<td>Enable SCSI ID 2 = $2^2$</td>
</tr>
<tr>
<td>4</td>
<td>On</td>
<td>Enable SCSI-2 mode</td>
</tr>
<tr>
<td>5</td>
<td>On</td>
<td>Enable parity</td>
</tr>
<tr>
<td>6</td>
<td>Off</td>
<td>Enable data compression</td>
</tr>
<tr>
<td>7</td>
<td>Off</td>
<td>Reserved for factory use</td>
</tr>
<tr>
<td>8</td>
<td>On</td>
<td>Enable power-on self test</td>
</tr>
</tbody>
</table>

### Notes
1. The minimum operating system is Solaris 1.1.1 or Solaris 2.1.
2. Solaris 2.1 writes in high-density mode only.
3. Solaris 2.1 reads in low-density or high-density mode.
4. Solaris 2.2 reads and writes in low-density or high-density mode.
5. The Blank Tape part number is 370-1612-01.
6. The Cleaning Kit part number is 370-1613-01.
7. Firmware Update Tape 4.CDA-24 is part number 370-3006-01.

### Reference
*5Gbyte 4mm Backup Tape Drive Server Installation Manual, 801-4623.*

---

**Volume I**

**REMOVABLE MEDIA-21**
4-8GB 4 mm DDS-2 Tape Drive

**SS1000**  A11  A12  A14  E150
**E3000**  **E4000**  **E5000**  **E6000**  **E3500**  **E4500**  **E5500**  **E6500**

Options  6253  6254  6255  6256  6259  6260
**370-2176**  **370-2177**  **370-2178**
Conner CTD8000  Conner CTD8000  Conner CTD8000
Light Grey Bezel  Medium Grey Bezel  SS1000 Bezel

Front View

![Diagram of Front View](image)

Rear View

![Diagram of Rear View](image)

SW5501 is located on the bottom of the drive.

**Address Select Switch Cable**

In the SPARCstorage UniPack, orient the Address Cable as shown and plug it into JP5526.

**Notes**

1. The minimum operating system is Solaris 1.1.1 or Solaris 2.3.
2. The Blank DDS-2 120 Meter Tape part number is 370-2181-01.
3. The Cleaning Kit part number is 370-1613-01.
4. The Bezel Kit part number is 555-1339.

**Reference:** *DDS-2 Tape Drive Specification*, 802-5324-10.
### Jumper and Switch Settings

#### JP5501

<table>
<thead>
<tr>
<th>PIN</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Out</td>
<td>Not used</td>
</tr>
<tr>
<td>2-3</td>
<td>Out</td>
<td>Not used</td>
</tr>
</tbody>
</table>

#### JP5526

<table>
<thead>
<tr>
<th>PIN</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>As required</td>
<td>Enable SCSI ID 0 = 2^0</td>
</tr>
<tr>
<td>3-4</td>
<td>As required</td>
<td>Enable SCSI ID 1 = 2^1</td>
</tr>
<tr>
<td>5-6</td>
<td>As required</td>
<td>Enable SCSI ID 2 = 2^2</td>
</tr>
<tr>
<td>8-10</td>
<td>Out</td>
<td>Self test</td>
</tr>
<tr>
<td>11-12</td>
<td>Out</td>
<td>Active termination</td>
</tr>
<tr>
<td>13-14</td>
<td>Out</td>
<td>Reserved</td>
</tr>
<tr>
<td>15-16</td>
<td>Out</td>
<td>TERMPWR</td>
</tr>
</tbody>
</table>

#### SW5501

<table>
<thead>
<tr>
<th>SWITCH</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Off</td>
<td>Enable SCSI ID 0 = 2^0</td>
</tr>
<tr>
<td>2</td>
<td>Off</td>
<td>Enable SCSI ID 1 = 2^1</td>
</tr>
<tr>
<td>3</td>
<td>Off</td>
<td>Enable SCSI ID 2 = 2^2</td>
</tr>
<tr>
<td>4</td>
<td>On</td>
<td>Enable SCSI-2 mode</td>
</tr>
<tr>
<td>5</td>
<td>On</td>
<td>Enable parity</td>
</tr>
<tr>
<td>6</td>
<td>Off</td>
<td>Enable data compression</td>
</tr>
<tr>
<td>7</td>
<td>Off</td>
<td>Reserved for factory use</td>
</tr>
<tr>
<td>8</td>
<td>On</td>
<td>Enable self test</td>
</tr>
</tbody>
</table>
4-8GB 4 mm DDS-2 Tape Drive
Options 6261 6262 6263 6264 6265
TAP4MM-010A TAP4MM-020A
370-2375
Seagate STD18000N
Light Grey Bezel

Front View

Rear View

Notes
1. The minimum operating system is Solaris 1.1.1 or Solaris 2.3.
2. The Blank DDS-2 120 Meter Tape part number is 370-2181-01.
3. The Cleaning Kit part number is 370-1613-01.

# 370-2375

## Jumper and Switch Settings

### JP2201

<table>
<thead>
<tr>
<th>PIN</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Out</td>
<td>Not used</td>
</tr>
<tr>
<td>2-3</td>
<td>Out</td>
<td>Not used</td>
</tr>
</tbody>
</table>

### CP8001

<table>
<thead>
<tr>
<th>PIN</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>As required</td>
<td>Enable SCSI ID 0 = 2^0</td>
</tr>
<tr>
<td>3-4</td>
<td>As required</td>
<td>Enable SCSI ID 1 = 2^1</td>
</tr>
<tr>
<td>5-6</td>
<td>As required</td>
<td>Enable SCSI ID 2 = 2^2</td>
</tr>
<tr>
<td>7-8</td>
<td>N/A</td>
<td>Reserved</td>
</tr>
<tr>
<td>9-10</td>
<td>Out</td>
<td>Reserved</td>
</tr>
<tr>
<td>11-12</td>
<td>Out</td>
<td>Active termination disabled</td>
</tr>
<tr>
<td>13-14</td>
<td>Out</td>
<td>Reserved</td>
</tr>
<tr>
<td>15-16</td>
<td>Out</td>
<td>TERMPWR disabled</td>
</tr>
</tbody>
</table>

### SW0801

<table>
<thead>
<tr>
<th>SWITCH</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Off</td>
<td>Enable SCSI ID 0 = 2^0</td>
</tr>
<tr>
<td>2</td>
<td>Off</td>
<td>Enable SCSI ID 1 = 2^1</td>
</tr>
<tr>
<td>3</td>
<td>Off</td>
<td>Enable SCSI ID 2 = 2^2</td>
</tr>
<tr>
<td>4</td>
<td>On</td>
<td>Allow non-MRS tapes</td>
</tr>
<tr>
<td>5</td>
<td>On</td>
<td>Enable parity</td>
</tr>
<tr>
<td>6</td>
<td>Off</td>
<td>Enable data compression</td>
</tr>
<tr>
<td>7</td>
<td>On</td>
<td>Enable datmon upon power on</td>
</tr>
<tr>
<td>8</td>
<td>On</td>
<td>Enable self test</td>
</tr>
</tbody>
</table>
12-24GB 4 mm DDS-3 Tape Drive

A11 A12 A14 A20 A25 A26 A27
E150 E220R E420R Netra ft 1800
Netra t 1120/1125 Netra t 1400/1405 Netra ct 400/800
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
Options 6280 6281 6282 6283 6284 6286 6288 6930
TAP4MM-011A TAP4MM-021A

370-2376 370-2377 540-4016 540-4409
HP C1537-00626 HP C1537-00625 Netra ft 1800 FRU ct 400/800 FRU
Medium Grey Bezel Light Grey Bezel RMM Tray with RMM Tray with
CD-ROM + DDS-3 370-2376

Front View

Rear View

S2 is located on the bottom of the drive.

Notes
1. The minimum operating system is Solaris 1.1.2 or Solaris 2.4.
2. Switch S2 is disabled by the Sun firmware.
3. An adapter cable is attached to the Address Connector.
4. The adapter cable is provided by the drive manufacturer.
5. The Blank Data Tape part number is 370-2378-01.
6. The Cleaning Kit part number is 370-1613-01.
7. Firmware Update Tape L706 is part number 370-3376-01.

20-40GB 4 mm DDS-4 Tape Drive

Front View

Rear View

Notes
1. The minimum operating system is Solaris 2.5.1 with Patch 103857.
2. The Narrow SCSI 68-50 Pin Adapter Cable is part number 540-4484.
3. Use the Address Cable or 2 mm shunts on the Address Connector.
4. Solaris only supports S1 switch settings Ox2b and Ox6b.
5. The Blank Data Tape part number is 370-4083-01.
6. The Cleaning Kit part number is 370-1613-01.

**20GB 4 mm DDS-1 Autoloader**

**SC2000**

Options 825 826 827

370-1616 Archive 4584NP
Light Grey Bezel

370-1617 Archive 4584NP
Black Bezel

**Operator Panel**

Cassette Warning Open / Close

Compress Write Protect Step

**LMJB0153 PCB**

50-Pin Data Connector

Address Select Switch Cable

In the Multi-Tape Backup Tray and SC2000, orient the Address Select Switch Cable as shown, and plug it into JP6.

**Note**

Remove the mylar sheet from the bottom of the drive before installation.

Reference: *Product Note 801-6234-12.*
370-1616 370-1617
Jumper and Switch Settings

JP4

<table>
<thead>
<tr>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Out</td>
<td>Disable TERMPWR to bus</td>
</tr>
<tr>
<td>1-2</td>
<td>In</td>
<td>Enable TERMPWR to bus</td>
</tr>
</tbody>
</table>

JP6

<table>
<thead>
<tr>
<th>SCSI ID</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Out</td>
<td>Out</td>
<td>Out</td>
</tr>
<tr>
<td>1</td>
<td>Out</td>
<td>Out</td>
<td>In</td>
</tr>
<tr>
<td>2</td>
<td>Out</td>
<td>In</td>
<td>Out</td>
</tr>
<tr>
<td>3</td>
<td>Out</td>
<td>In</td>
<td>In</td>
</tr>
<tr>
<td>4</td>
<td>In</td>
<td>Out</td>
<td>Out</td>
</tr>
<tr>
<td>5</td>
<td>In</td>
<td>Out</td>
<td>In</td>
</tr>
<tr>
<td>6</td>
<td>In</td>
<td>In</td>
<td>Out</td>
</tr>
</tbody>
</table>

SW1

<table>
<thead>
<tr>
<th>SWITCH</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Off</td>
<td>Enable SCSI ID 0 = 2⁰</td>
</tr>
<tr>
<td>2</td>
<td>Off</td>
<td>Enable SCSI ID 1 = 2¹</td>
</tr>
<tr>
<td>3</td>
<td>Off</td>
<td>Enable SCSI ID 2 = 2²</td>
</tr>
<tr>
<td>4</td>
<td>On</td>
<td>Enable SCSI-2 mode</td>
</tr>
<tr>
<td>5</td>
<td>On</td>
<td>Enable parity</td>
</tr>
<tr>
<td>6</td>
<td>Off</td>
<td>Enable data compression</td>
</tr>
<tr>
<td>7</td>
<td>Off</td>
<td>Reserved for factory use</td>
</tr>
<tr>
<td>8</td>
<td>On</td>
<td>Enable power-on self test</td>
</tr>
</tbody>
</table>
20GB 4 mm DDS-1 Autoloader  
370-1616  370-1617  
Switch Settings

LMJB0178 PCB

<table>
<thead>
<tr>
<th>SWITCH</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Off*</td>
<td>English language display</td>
</tr>
<tr>
<td>2</td>
<td>Off*</td>
<td>English language display</td>
</tr>
<tr>
<td>1</td>
<td>Off</td>
<td>French language display</td>
</tr>
<tr>
<td>2</td>
<td>On</td>
<td>French language display</td>
</tr>
<tr>
<td>1</td>
<td>On</td>
<td>Spanish language display</td>
</tr>
<tr>
<td>2</td>
<td>On</td>
<td>Spanish language display</td>
</tr>
<tr>
<td>1</td>
<td>On</td>
<td>German language display</td>
</tr>
<tr>
<td>2</td>
<td>Off</td>
<td>German language display</td>
</tr>
<tr>
<td>3</td>
<td>Off</td>
<td>Stop after last tape</td>
</tr>
<tr>
<td>3</td>
<td>On*</td>
<td>Restart at Tape 1 after last tape</td>
</tr>
<tr>
<td>4</td>
<td>On*</td>
<td>High intensity display</td>
</tr>
<tr>
<td>4</td>
<td>Off</td>
<td>Low intensity display</td>
</tr>
<tr>
<td>5</td>
<td>On*</td>
<td>Enable power-on self test</td>
</tr>
<tr>
<td>6</td>
<td>Off</td>
<td>Not used</td>
</tr>
<tr>
<td>7</td>
<td>Off</td>
<td>Not used</td>
</tr>
</tbody>
</table>

* Default settings
## 20GB 4 mm DDS-1 Autoloader

370-1616 370-1617

Switch Settings

### Auto-Loader

![Auto-Loader Diagram]

<table>
<thead>
<tr>
<th>SWITCH</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Off*</td>
<td>Horizontal character display</td>
</tr>
<tr>
<td>1</td>
<td>On</td>
<td>Vertical character display</td>
</tr>
<tr>
<td>2</td>
<td>Off</td>
<td>Do NOT load tape on power up</td>
</tr>
<tr>
<td>2</td>
<td>On*</td>
<td>Load tape on power up</td>
</tr>
<tr>
<td>3</td>
<td>Off</td>
<td>Stop after last tape</td>
</tr>
<tr>
<td>3</td>
<td>On*</td>
<td>Restart at first tape after last tape</td>
</tr>
<tr>
<td>4</td>
<td>Off</td>
<td>Not used</td>
</tr>
</tbody>
</table>

* Default settings

### Notes
1. The minimum operating system is Solaris 2.2.
2. Solaris 2.2 reads and writes in low-density or high-density mode.
3. The 4-Tape Magazine part number is 370-1683-01.
4. The Blank 90 Meter Tape part number is 370-1612-01
5. The Cleaning Kit part number is 370-1613-01.
6. Firmware Update Tape 4.CDA-424 is part number 370-2867-01.
7. Firmware Update Tape 4.CDB-424 is part number 370-3270-01.

### References
16-32GB 4 mm DDS-2 Autoloader
SC2000

Options

<table>
<thead>
<tr>
<th></th>
<th>6271</th>
<th>6272</th>
<th>6273</th>
<th>6274</th>
<th>6275</th>
<th>6276</th>
</tr>
</thead>
<tbody>
<tr>
<td>370-2179</td>
<td>Conner 71300105</td>
<td>Light Grey Bezel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>370-2180</td>
<td>Conner 71300106</td>
<td>Medium Grey Bezel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>370-2201</td>
<td>Conner 71300107</td>
<td>Black Bezel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Operator Panel

![Operator Panel Diagram]

LMJB0259 PCB

![LMJB0259 PCB Diagram]

Address Select Switch Cable

In the Multi-Tape Backup Tray and SC2000, orient the Address Select Switch Cable as shown, and plug it into JP6503.

Note
Remove the mylar sheet from the bottom of the drive before installation.

REMovable-media-32 Field Engineer Handbook
### Jumper Settings

**JP6501**

<table>
<thead>
<tr>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Out</td>
<td>Disable TERMPWR to bus</td>
</tr>
<tr>
<td>1-2</td>
<td>In</td>
<td>Enable TERMPWR to bus</td>
</tr>
</tbody>
</table>

**JP6503**

<table>
<thead>
<tr>
<th>SCSI ID</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Out</td>
<td>Out</td>
<td>Out</td>
</tr>
<tr>
<td>1</td>
<td>Out</td>
<td>Out</td>
<td>In</td>
</tr>
<tr>
<td>2</td>
<td>Out</td>
<td>In</td>
<td>Out</td>
</tr>
<tr>
<td>3</td>
<td>Out</td>
<td>In</td>
<td>In</td>
</tr>
<tr>
<td>4</td>
<td>In</td>
<td>Out</td>
<td>Out</td>
</tr>
<tr>
<td>5</td>
<td>In</td>
<td>Out</td>
<td>In</td>
</tr>
<tr>
<td>6</td>
<td>In</td>
<td>In</td>
<td>Out</td>
</tr>
</tbody>
</table>

**SW6501**

<table>
<thead>
<tr>
<th>SWITCH</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Off</td>
<td>Enable SCSI ID 0 = 2^0</td>
</tr>
<tr>
<td>2</td>
<td>Off</td>
<td>Enable SCSI ID 1 = 2^1</td>
</tr>
<tr>
<td>3</td>
<td>Off</td>
<td>Enable SCSI ID 2 = 2^2</td>
</tr>
<tr>
<td>4</td>
<td>On</td>
<td>Enable SCSI-2 mode</td>
</tr>
<tr>
<td>5</td>
<td>On</td>
<td>Enable parity</td>
</tr>
<tr>
<td>6</td>
<td>Off</td>
<td>Enable data compression</td>
</tr>
<tr>
<td>7</td>
<td>Off</td>
<td>Reserved for factory use</td>
</tr>
<tr>
<td>8</td>
<td>On</td>
<td>Enable power-on self test</td>
</tr>
</tbody>
</table>
Jumper Settings

LMJB0178 PCB

<table>
<thead>
<tr>
<th>SWITCH</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Off*</td>
<td>English language display</td>
</tr>
<tr>
<td>2</td>
<td>Off*</td>
<td>English language display</td>
</tr>
<tr>
<td>1</td>
<td>Off</td>
<td>French language display</td>
</tr>
<tr>
<td>2</td>
<td>On</td>
<td>French language display</td>
</tr>
<tr>
<td>1</td>
<td>On</td>
<td>Spanish language display</td>
</tr>
<tr>
<td>2</td>
<td>On</td>
<td>Spanish language display</td>
</tr>
<tr>
<td>1</td>
<td>On</td>
<td>German language display</td>
</tr>
<tr>
<td>2</td>
<td>Off</td>
<td>German language display</td>
</tr>
<tr>
<td>3</td>
<td>Off</td>
<td>Stop after last tape</td>
</tr>
<tr>
<td>3</td>
<td>On*</td>
<td>Restart at Tape 1 after last tape</td>
</tr>
<tr>
<td>4</td>
<td>On</td>
<td>High intensity display</td>
</tr>
<tr>
<td>4</td>
<td>Off</td>
<td>Low intensity display</td>
</tr>
<tr>
<td>5</td>
<td>On*</td>
<td>Enable power on self test</td>
</tr>
<tr>
<td>6</td>
<td>Off</td>
<td>Not used</td>
</tr>
<tr>
<td>7</td>
<td>Off</td>
<td>Not used</td>
</tr>
</tbody>
</table>

* Default settings
16-32GB 4 mm DDS-2 Autoloader
370-2179 370-2180 370-2201

Jumper Settings

Auto-Loader

<table>
<thead>
<tr>
<th>SWITCH</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Off*</td>
<td>Horizontal character display</td>
</tr>
<tr>
<td>1</td>
<td>On</td>
<td>Vertical character display</td>
</tr>
<tr>
<td>2</td>
<td>Off</td>
<td>Do NOT load tape on power up</td>
</tr>
<tr>
<td>2</td>
<td>On*</td>
<td>Load tape on power up</td>
</tr>
<tr>
<td>3</td>
<td>Off</td>
<td>Reserved</td>
</tr>
<tr>
<td>4</td>
<td>Off</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

* Default settings

Notes
1. The minimum operating system is Solaris 1.1.1 or Solaris 2.3.
2. Fan Assembly 540-2607 is required when the drive is installed in the SC2000 SCSI Tray.
3. The 4-Tape Magazine part number is 370-1683-01.
4. The Blank DDS-2 120 Meter Tape part number is 370-2181-01.
5. The Cleaning Kit part number is 370-1613-01.

References
1. DDS-2 Tape Drive Specification, 802-5324-10
2. DDS-2 Autoloader Installation Manual, 802-5324-10
72-144GB 4 mm DDS-3 Autoloader
Options 6292 6293 TAP4MM-031A
370-2379 370-2380
HP C1557-00626 HP C1557
Medium Grey Bezel Light Grey Bezel

Front View

Rear View

S2 is on the bottom of the drive DC Y Cable 180-1715
Settings

<table>
<thead>
<tr>
<th>VALUE</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ox1h</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>Ox2h*</td>
<td>Off</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>Ox6h</td>
<td>Off</td>
<td>On</td>
<td>On</td>
<td>Off</td>
</tr>
<tr>
<td>Ox7h†</td>
<td>On</td>
<td>On</td>
<td>On</td>
<td>Off</td>
</tr>
</tbody>
</table>

* Circular mode. Requires firmware U709.
† Default setting

Options

<table>
<thead>
<tr>
<th>OPTION</th>
<th>0x1h</th>
<th>0x6h</th>
<th>0x7h*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto-Stack</td>
<td>Enabled</td>
<td>Disabled</td>
<td>Disabled</td>
</tr>
<tr>
<td>Auto-Eject</td>
<td>Enabled</td>
<td>Disabled</td>
<td>Disabled</td>
</tr>
<tr>
<td>Allow Resequencing</td>
<td>Disabled</td>
<td>Enabled</td>
<td>Enabled</td>
</tr>
<tr>
<td>LUN 1 Magazine Ready</td>
<td>Disabled</td>
<td>Enabled</td>
<td>Enabled</td>
</tr>
<tr>
<td>LUN 0 Drive Inquiry</td>
<td>Disabled</td>
<td>Enabled</td>
<td>Disabled</td>
</tr>
</tbody>
</table>

* The default setting is 0x7h

Notes
1. The minimum operating system is Solaris 1.1.2 or Solaris 2.4.
2. Switch S2 is disabled by the Sun firmware.
3. The Option Switch is read at power on.
4. An adapter cable is attached to the Address Connector.
5. The adapter cable is provided by the drive manufacturer.
6. The Blank Data Tape part number is 370-2378-01.
7. The Magazine part number is 370-2381-01.
8. The Cleaning Kit part number is 370-1613-01.
9. Firmware Update Tape U709 is part number 370-3377-01.

150MB 1/4” Tape Drive
Sun-4/330/370/390/470/490
SS630MP SS670MP SS690MP SC2000

Options 539 565 660

370-1205 Archive 2150S Half-Height Black Bezel
370-1206 Archive 2150S Full-Height Black Bezel
370-1218 Archive 2150S Half-Height Custom Bezel
370-1246 Archive 2150S Full-Height Light Grey Bezel

Rear View

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>RXD/TXD</td>
<td>Out</td>
<td>Serial Port</td>
</tr>
<tr>
<td>DIAG</td>
<td>Out</td>
<td>Normal/Diag</td>
</tr>
<tr>
<td>Parity</td>
<td>Out</td>
<td>Parity (in for 370-1246)</td>
</tr>
<tr>
<td>CF2 CF1 CF0</td>
<td>In</td>
<td>Disconnect Transfer Size = 32K</td>
</tr>
<tr>
<td>ID2 ID1 ID0</td>
<td>As required</td>
<td>SCSI ID</td>
</tr>
</tbody>
</table>

Flex Cable

In the Desktop Tape Pack, plug the Flex Cable into the SCSI ID jumper block.

Address Select Switch Cable

In the External Storage Module, plug the Address Select Switch Cable into the SCSI ID jumper block.

Note: The Cartridge Tape part number is 370-1203-01.
**2.5GB 1/4” Tape Drive**

**SC2000** A14 E3000 E4000 E5000 E6000  
**Options** 6101 6102 6103 6104 6105  
370-2017 370-2018 370-2202

<table>
<thead>
<tr>
<th>Model</th>
<th>Bezel Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tandberg TDC4220</td>
<td>Black Bezel</td>
</tr>
<tr>
<td>Tandberg TDC4220</td>
<td>Light Grey Bezel</td>
</tr>
<tr>
<td>Tandberg TDC4200</td>
<td>Medium Grey Bezel</td>
</tr>
</tbody>
</table>

**Notes**

1. The minimum operating system is Solaris 1.1.1 or Solaris 2.3.
2. The Cartridge Tape part number is 370-2019-01.
3. The 2.5GB Data Tape part number is 370-2039-01.
4. The 2.5GB Tape Drive requires M3 mounting screws.
5. The drive can read, but not write, QIC-24.
6. The drive can read and write QIC-2GB, QIC-1000, QIC-525, QIC-150, and QIC-120.

**References**

4-8GB 1/4” SLR Tape Drive

A16  A20  A25  A26  A27
Options  6106  6107  6108  6109  6110  6111
TAPSLR-010A  TAPSLR-020A
370-3279  370-3280
Tandberg SLR5  Tandberg SLR5
Light Grey Bezel  Medium Grey Bezel

Front View

Rear View

Notes
1. The minimum operating system is Solaris 1.1.2 or Solaris 2.4.
2. The Cartridge Tape part number is 370-3282-01.
3. The Cleaning Tape part number is 370-3281-01.
4. The drive can read and write QIC-4GB, QIC-2GB, QIC-1000, QIC-525, QIC-150, and QIC-120.

References
1. 4.0 GByte 1/4” Tape Drive Specifications, 805-2449-12.
Notes
1. The minimum operating system is Solaris 2.5.
2. The MLR3 Cartridge Tape part number is 370-3373-01.
3. The Cleaning Kit part number is 370-3513-01.
4. The 68-50 Pin Adapter Cable is part number 370-3548-01.
5. The drive can read and write QIC-16GB and QIC-25GB.
6. The drive can read QIC-4GB, QIC-2GB, QIC-1000, QIC-525, QIC-150, and QIC-120.

Reference: 25GB MLR3 Tape Drive, 805-3752-10.
2.3GB 8 mm Tape Drive
Sun-4/370/390/470/490
SS670MP SS690MP
Options 566 802 804
370-1297 370-1405
Exabyte EXB-8200 Exabyte EXB-8200
Black Bezel Light Grey Bezel

Rear View

Jumper P2

<table>
<thead>
<tr>
<th>SCSI ID</th>
<th>(MSB) 1</th>
<th>2</th>
<th>(LSB) 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>In</td>
<td>Out</td>
<td>Out</td>
</tr>
<tr>
<td>5</td>
<td>In</td>
<td>Out</td>
<td>In</td>
</tr>
<tr>
<td>3</td>
<td>Out</td>
<td>In</td>
<td>In</td>
</tr>
<tr>
<td>2</td>
<td>Out</td>
<td>In</td>
<td>Out</td>
</tr>
<tr>
<td>1</td>
<td>Out</td>
<td>Out</td>
<td>In</td>
</tr>
<tr>
<td>0</td>
<td>Out</td>
<td>Out</td>
<td>Out</td>
</tr>
</tbody>
</table>

Address Select Switch Cable

In the Desktop Storage Module and External Storage Module, orient the Address Select Switch Cable as shown and plug it into P2.

Power:
- 4.0 Amps @ +5Vdc
- 1.2 Amps @ +12Vdc
- 34.4 Watts
MX Card

Dip Switch U32

<table>
<thead>
<tr>
<th>SWITCH</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>On</td>
<td>Bypass memory test</td>
</tr>
<tr>
<td>2</td>
<td>On</td>
<td>Enable parity checking</td>
</tr>
<tr>
<td>3</td>
<td>On</td>
<td>Even byte disconnect</td>
</tr>
<tr>
<td>4</td>
<td>Off</td>
<td>Report busy status</td>
</tr>
<tr>
<td>5</td>
<td>On</td>
<td>Variable block mode on power up</td>
</tr>
<tr>
<td>6</td>
<td>Off</td>
<td>No disconnect during data transfer</td>
</tr>
<tr>
<td>7</td>
<td>Off</td>
<td>Not used</td>
</tr>
<tr>
<td>8</td>
<td>Off</td>
<td>P6 cartridge type</td>
</tr>
</tbody>
</table>

Manual Eject Switch

Push Forward to Open Tape Door

Notes
1. The 112 Meter Tape part number is 370-1298-01.
2. The Cleaning Kit part number is 370-2344-01.
3. ECO WO_01575 enabled Parity checking on the MX card. Parity checking is disabled on drives shipped prior to December 1991.

Reference
Sun 2.3-Gbyte 8mm Tape Drive Configuration Procedures for 56-Inch Data Center Cabinets, 813-2081.
5.0GB 8 mm Tape Drive
SS670MP  SS690MP  SC2000
Options 811  812  814  816
370-1415  370-1416
Exabyte EXB-8500  Exabyte EXB-8500
Black Bezel  Light Grey Bezel

Rear View

Address Select Switch Cable

In the Multi-Tape Backup Tray, Desktop Storage Module, and SC2000, orient the Address Select Switch Cable as shown and plug it into P3.

Manual Eject Switch

Push Forward to Open Tape Door

Power: 2.0 Amps @ +5Vdc
0.7 Amps @ +12Vdc
18.4 Watts
Jumper Settings

### Jumper P3

<table>
<thead>
<tr>
<th>SCSI ID</th>
<th>1-2</th>
<th>3-4</th>
<th>5-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>In</td>
<td>Out</td>
<td>Out</td>
</tr>
<tr>
<td>5</td>
<td>In</td>
<td>Out</td>
<td>In</td>
</tr>
<tr>
<td>3</td>
<td>Out</td>
<td>In</td>
<td>In</td>
</tr>
<tr>
<td>2</td>
<td>Out</td>
<td>In</td>
<td>Out</td>
</tr>
<tr>
<td>1</td>
<td>Out</td>
<td>Out</td>
<td>In</td>
</tr>
<tr>
<td>0</td>
<td>Out</td>
<td>Out</td>
<td>Out</td>
</tr>
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### Switch U2

<table>
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<tr>
<td>4</td>
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<td>5</td>
<td>On</td>
<td>Off</td>
<td>On</td>
</tr>
<tr>
<td>3</td>
<td>On</td>
<td>On</td>
<td>Off</td>
</tr>
<tr>
<td>2</td>
<td>Off</td>
<td>On</td>
<td>Off</td>
</tr>
<tr>
<td>1</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>0</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
</tbody>
</table>

**Notes**

1. The minimum operating system is SunOS 4.1.2.
2. Use 54000 as the `d(bpi)`, argument to the `dump` command in the high-density 8500 compatibility mode.
3. Use 13000 as the `s(size)`, argument to the `dump` command in the high-density 8500 compatibility mode.
4. Use 6000 as the `s(size)`, argument to the `dump` command in the low-density 8200 compatibility mode.
5. The 112 Meter Tape part number is 370-1298-01.
6. The Cleaning Kit part number is 370-2344-01.

**References**

1. *5.0 Gbyte 8mm Tape Drive Installation Manual*, 800-7008.
2. *Product Note 5.0 Gbyte 8mm Tape Drive*, 800-7303.
10GB 8 mm Tape Drive
SS1000  SC2000
Options 831  833  834  836
370-1808  Exabyte EXB-8505
Light Grey Bezel
370-1809  Exabyte EXB-8505
Black Bezel

Front View

Rear View

Address Select Switch Cables

Pin-1

In the Desktop Backup Pack, orient the Flex Cable as shown and plug it into the remote address connector.

In the Multi-Tape Backup Tray and SC2000, orient the Address Select Switch Cable as shown and plug it into the remote address connector.

Power: 1.6 Amps @ +5Vdc
0.6 Amps @ +12Vdc
15.2 Watts

REMOVABLE MEDIA-46  Field Engineer Handbook
370-1808  370-1809
Jumper Settings and LED Codes

Remote Address Connector

<table>
<thead>
<tr>
<th>SCSI ID</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>SCSI ID</th>
<th>3</th>
<th>2</th>
<th>1</th>
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<tbody>
<tr>
<td>Target 0</td>
<td>Out</td>
<td>Out</td>
<td>Out</td>
<td>Target 4</td>
<td>In</td>
<td>Out</td>
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<tr>
<td>Target 1</td>
<td>Out</td>
<td>Out</td>
<td>In</td>
<td>Target 5</td>
<td>In</td>
<td>Out</td>
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</tr>
<tr>
<td>Target 2</td>
<td>Out</td>
<td>In</td>
<td>Out</td>
<td>Target 6</td>
<td>In</td>
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<tr>
<td>Target 3</td>
<td>Out</td>
<td>In</td>
<td>In</td>
<td></td>
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LED Codes

<table>
<thead>
<tr>
<th>LEDs</th>
<th>POST PART 1</th>
<th>POST PART 2</th>
<th>POST FAILED</th>
<th>READY NO TAPE</th>
<th>READY TAPE IN</th>
<th>NORMAL MOTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>On</td>
<td>On</td>
<td>Fast</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>Middle*</td>
<td>On</td>
<td>Random</td>
<td>Random</td>
<td>Off</td>
<td>Random</td>
<td>Random</td>
</tr>
<tr>
<td>Bottom</td>
<td>On</td>
<td>Off †</td>
<td>Off</td>
<td>On</td>
<td>Slow</td>
<td>Slow</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEDs</th>
<th>HI-SPEED MOTION</th>
<th>SCSI RESET</th>
<th>ERROR</th>
<th>CLEANING NEEDED</th>
<th>CLEANING TAPE IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>Off</td>
<td>On</td>
<td>Slow</td>
<td>Fast</td>
<td>Off</td>
</tr>
<tr>
<td>Middle*</td>
<td>Random</td>
<td>Random</td>
<td>Random</td>
<td>Random</td>
<td>Random</td>
</tr>
<tr>
<td>Bottom</td>
<td>Fast</td>
<td>On</td>
<td>Off</td>
<td>Fast</td>
<td>Slow</td>
</tr>
</tbody>
</table>

* Green - tape is in uncompressed format.
* Amber - tape is in compressed format.
* OFF - drive is not connected to the SCSI Bus.
† Flashing slow and then fast if a tape is loaded.

Slow LED = 1 flash per second (0.96Hz)
Fast LED = 4 flashes per second (3.76Hz)
Random LED = flash rate varies with SCSI Bus activity

Notes
1. The minimum operating system is Solaris 1.1.1.
2. Cleaning is required after every 30 hours of tape motion.
3. The Cleaning Kit part number is 370-2344-01.
4. The 112 Meter Tape part number is 370-1298-01.
5. Firmware 07T0 Update Tape is part number 370-3235-01.

7-14GB 8 mm Tape Drive

SS1000  SC2000  A11  A12  A14
E3000  E4000  E5000  E6000  E5500  E6500
Options  841  843  844  845  846  6201  6202  6203  6204
       6205  6206  6207

- 370-1856  Exabyte EXB-8505XL
  - Rectangular LED
  - Black Bezel
- 370-1857  Exabyte EXB-8505XL
  - Round LED
  - Backup Pack Bezel
- 370-1881  Exabyte EXB-8505XL
  - Rectangular LED
  - EXB-210 Bezel
- 370-1922  Exabyte EXB-8505XL
  - Rectangular LED
  - Light Grey Bezel
- 370-2200  Exabyte EXB-8505XL
  - Rectangular LED
  - Medium Grey Bezel

**Front View**

- UNLOAD SWITCH
- with raised diamond pattern (except 370-1857)

**Rear View**

- 50-Pin Data Connector
- REMOTE ADDRESS CONNECTOR
- MONITOR PORT

In the Desktop Backup Pack, orient the Flex Cable as shown and plug it into the Remote Address Connector.

In the Multi-Tape Backup Tray, SC2000, and SPARCstorage UniPack, orient the Address Select Switch Cable as shown and plug it into the Remote Address Connector.

**Power:**
- 1.6 Amps @ +5Vdc
- 0.6 Amps @ +12Vdc
- 15.2 Watts

** REMOVABLE MEDIA-48 **

Field Engineer Handbook
Remote Address Connector

<table>
<thead>
<tr>
<th>SCSI ID</th>
<th>3</th>
<th>2</th>
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<th>SCSI ID</th>
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<th>2</th>
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<tbody>
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<td>Target 0</td>
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<td>Target 4</td>
<td>In</td>
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<td>Out</td>
</tr>
<tr>
<td>Target 1</td>
<td>Out</td>
<td>Out</td>
<td>In</td>
<td>Target 5</td>
<td>In</td>
<td>Out</td>
<td>In</td>
</tr>
<tr>
<td>Target 2</td>
<td>Out</td>
<td>In</td>
<td>Out</td>
<td>Target 6</td>
<td>In</td>
<td>In</td>
<td>Out</td>
</tr>
<tr>
<td>Target 3</td>
<td>Out</td>
<td>In</td>
<td>In</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>

LED Codes

<table>
<thead>
<tr>
<th>LED</th>
<th>POST PART 1</th>
<th>POST PART 2</th>
<th>POST FAILED</th>
<th>READY NO TAPE</th>
<th>READY TAPE IN</th>
<th>NORMAL MOTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>On</td>
<td>On</td>
<td>Fast</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>Middle*</td>
<td>On</td>
<td>Random</td>
<td>Random</td>
<td>Off</td>
<td>Random</td>
<td>On</td>
</tr>
<tr>
<td>Bottom</td>
<td>On</td>
<td>Off †</td>
<td>Off</td>
<td>On</td>
<td>Fast</td>
<td>Random</td>
</tr>
</tbody>
</table>

* Green - tape is in uncompressed format.
* Amber - tape is in compressed format.
* OFF - drive is not connected to the SCSI Bus.
† Flashing slow and fast if a tape is loaded.

Slow LED = 1 flash per second (0.96Hz)
Fast LED = 4 flashes per second (3.76Hz)
Random LED = flash rate varies with SCSI Bus activity

Notes
1. The minimum operating system is Solaris 1.1.1.
2. Cleaning is required after every 30 hours of tape motion.
3. The Cleaning Kit part number is 370-2344-01.
4. The 112 Meter Tape part number is 370-1298-01.
5. The 160 Meter XL Tape part number is 370-1858-01.
6. Firmware 07T0 Update Tape is part number 370-3235-01.
7. The E3000 and E4000 Option 6213 replaced 6206 in March 1997.
8. The E3500 and E4500 were introduced in April 1998.
9. Option 6206 is not price listed for the E3500 and E4500.

7-14GB 8 mm Tape Drive

A11  A12  A14  A20  A25  A26  A27
E220R  E420R  E3000  E4000  E3500  E4500
Options  6208  6209  6210  6211  6212  6213  6227
6228  6229  TAP8MM-010A  TAP8MM-020A

370-2881  370-2882  370-3128
Exabyte EXB-8705DX  Exabyte EXB-8705DX  Exabyte EXB-8705DX
Light Grey Bezel  Medium Grey Bezel  EXB-210 Bezel

Front View

UNLOAD SWITCH

GREEN LED
GREEN LED
AMBER LED

Rear View

50-Pin Data Connector

POWER

Backup Pack, UniPack, and FlexiPack
Remote Address Cable Orientation
Remote Address Connector

<table>
<thead>
<tr>
<th>SCSI ID</th>
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<th>SCSI ID</th>
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<td>Target 0</td>
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<td>Target 4</td>
<td>In</td>
<td>Out</td>
<td>Out</td>
</tr>
<tr>
<td>Target 1</td>
<td>Out</td>
<td>Out</td>
<td>In</td>
<td>Target 5</td>
<td>In</td>
<td>Out</td>
<td>In</td>
</tr>
<tr>
<td>Target 2</td>
<td>Out</td>
<td>In</td>
<td>Out</td>
<td>Target 6</td>
<td>In</td>
<td>In</td>
<td>Out</td>
</tr>
<tr>
<td>Target 3</td>
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<td>In</td>
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LED Codes

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<th>LEADS</th>
<th>POST PART 1</th>
<th>POST PART 2</th>
<th>POST FAILED</th>
<th>READY NO TAPE</th>
<th>READY TAPE IN</th>
<th>NORMAL MOTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>On</td>
<td>On</td>
<td>Fast</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>Middle*</td>
<td>On</td>
<td>Random</td>
<td>Random</td>
<td>Random</td>
<td>Random</td>
<td>Random</td>
</tr>
<tr>
<td>Bottom</td>
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<td>Off †</td>
<td>Off</td>
<td>On</td>
<td>Slow</td>
<td>Slow</td>
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<table>
<thead>
<tr>
<th>LEADS</th>
<th>Hi-SPEED MOTION</th>
<th>SCSI RESET</th>
<th>ERROR</th>
<th>CLEANING NEEDED</th>
<th>CLEANING TAPE IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>Off</td>
<td>Random</td>
<td>Slow</td>
<td>Fast</td>
<td>Off</td>
</tr>
<tr>
<td>Middle*</td>
<td>Random</td>
<td>Off</td>
<td>Fast</td>
<td>Random</td>
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</tr>
<tr>
<td>Bottom</td>
<td>Fast</td>
<td>On</td>
<td>Off</td>
<td>Random</td>
<td>Slow</td>
</tr>
</tbody>
</table>

* OFF - drive is not connected to the SCSI Bus.
† Flashing slow and fast if a tape is loaded.

Slow LED = 1 flash per second (0.96Hz)
Fast LED = 4 flashes per second (3.76Hz)
Random LED = flash rate varies with SCSI Bus activity

Notes
1. The minimum operating system is Solaris 1.1.1 or Solaris 2.3.
2. Cleaning is required after every 30 hours of tape motion.
3. The Cleaning Kit part number is 370-2344-01.
4. The 112 Meter Tape part number is 370-1298-01.
5. The 160 Meter XL Tape part number is 370-1858-01.
6. Firmware 8HC-0098 Update Tape is part number 370-3639-01.

20-40GB 8 mm Tape Drive

E3000  E4000  E3500  E4500  E5500  E6500
Options  6225  6226  6230  6231  6232
          6233  6234  6235  6236  6237  6238
TAP8MM-011A  TAP8MM-021A  TAP8MM-400G
LIB8MM1-400G  TAP8MMB-400G  TAP8MMC-400G

370-2183  370-2184  370-2401
EXB-8900  EXB-8900  EXB-8900
Single-Ended  Single-Ended  Differential
Light Grey Bezel  Medium Grey Bezel  EXB-220 Bezel
w LCD Display  w/o LCD Display  w/o LCD Display

Front View

Rear View

Power: 1.6 Amps @ +5Vdc
        0.6 Amps @ +12Vdc
        15.2 Watts
Remote Address Connector

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
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<tbody>
<tr>
<td>0</td>
<td>As required</td>
<td>SCSI ID 0 (20)</td>
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<tr>
<td>1</td>
<td>As required</td>
<td>SCSI ID 1 (21)</td>
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<tr>
<td>2</td>
<td>As required</td>
<td>SCSI ID 2 (22)</td>
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<td>3</td>
<td>As required</td>
<td>SCSI ID 3 (23)</td>
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Drive Configuration Guidelines

<table>
<thead>
<tr>
<th>SCSI HOST ADAPTER</th>
<th>COMPRESSION</th>
<th>OTHER DEVICES ON THE BUS</th>
<th>MAX # OF DRIVES PER HOST ADAPTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast/Wide</td>
<td>Not enabled</td>
<td>No</td>
<td>6</td>
</tr>
<tr>
<td>Fast/Wide</td>
<td>Not enabled</td>
<td>Yes</td>
<td>4</td>
</tr>
<tr>
<td>Narrow</td>
<td>Not enabled</td>
<td>No</td>
<td>3</td>
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<tr>
<td>Narrow</td>
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<td>2</td>
</tr>
<tr>
<td>Narrow</td>
<td>Enabled</td>
<td>Yes or No</td>
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<tr>
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<td>Enabled</td>
<td>Yes or No</td>
<td>1</td>
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Library Configuration Guidelines

<table>
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<tr>
<th>COMPRESSION</th>
<th>MAX # OF LIBRARIES PER HOST ADAPTER</th>
</tr>
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<tbody>
<tr>
<td>Not Enabled</td>
<td>3</td>
</tr>
<tr>
<td>Enabled</td>
<td>2</td>
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</tbody>
</table>

Notes
1. The minimum operating system is Solaris 2.5.
2. The 170 Meter AME Tape part number is 370-2395-01.
3. The Cleaning Kit part number is 370-2396-01.
4. Firmware 37F Update Tape is part number 370-3367-01.
5. Firmware 37F is not compatible with EXB-8900 370-xxxx-02 Rev 52.
6. The E3000 requires internal SCSI Cable 530-2381.
7. The E4000 requires internal SCSI Cable 530-2382.
8. The E5000 does not provide adequate cooling for the EXB-8900.
9. The E6000 does not provide adequate cooling for the EXB-8900.

References
1. 20-40 Gbyte 8mm Tape Drive Installation and User's Guide, 802-7712.
2. 20-40 Gbyte 8mm Tape Drive Installation Guide, 805-0416.
20-40GB 1/2-Inch DLT Tape Drive

Options  6053  6054  6055  6056  6057  6058  6059  TAPDLT-020A

370-2187 Quantum DLT4000 370-2255 Quantum DLT4000 370-2848 Quantum DLT4000
Medium Grey Bezel Black Bezel Light Grey Bezel

Front View

Rear View

Left Side View

Notes
1. The minimum operating system is Solaris 2.4.
2. The DLT4700 Autoloader requires drive 370-2264.
3. The Address Select Switch Cable for 370-2255 is 370-2333.
4. The Address Select Switch Cable for 370-2848 is 530-2372.

References
20-40GB 1/2-Inch DLT Tape Drive

Options 6051 6052 6071
540-2780 Quantum DLT4000
Single-Ended SCSI
Desktop Assy/FRU
w Drive 370-2848

540-2781 Quantum DLT4700
Single-Ended SCSI
Library Assy/FRU
w Drive 370-2264

Front View

Rear View

Left Side View

Notes
1. The minimum operating system is Solaris 2.4.
2. The DLT4700 requires drive 370-2264.
3. The Address Select Switch Cable for 370-2848 is 530-2372

References
35-70GB 1/2-Inch DLT Tape Drive
Options 6060  6061  6062  TAPDLT-021A

<table>
<thead>
<tr>
<th>Options</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>370-2329</td>
<td>Quantum DLT7000 Single-Ended SCSI Medium Grey Bezel 4MB Internal Cache</td>
</tr>
<tr>
<td>370-3331</td>
<td>Quantum DLT7000 Single-Ended SCSI Medium Grey Bezel 4MB Internal Cache</td>
</tr>
<tr>
<td>370-2847</td>
<td>Quantum DLT7000 Single-Ended SCSI Medium Grey Bezel 8MB Internal Cache</td>
</tr>
<tr>
<td>370-3330</td>
<td>Quantum DLT7000 Single-Ended SCSI Medium Grey Bezel 8MB Internal Cache</td>
</tr>
</tbody>
</table>

Front View

Rear View

Left Side View

FlexiPack Remote Address Cable Orientation

Notes
1. The minimum operating system is Solaris 2.5.
2. The SPARCstorage FlexiPack Address Switch Cable is 530-2372.
20-40GB 1/2-Inch DLT Tape Drive
ETL 4/1000
Option 6072
370-2865
Quantum DLT4000
Differential SCSI
ETL 4/1000 FRU

Front View

Rear View

Left Side View

Notes
1. The minimum operating system is Solaris 2.5.
2. The ETL 4/1000 requires a Differential SCSI Controller.
3. The ETL 4/1000 requires a Differential SCSI DLT4000.

References
1. ETL Service CD-ROM, 704-5683-01.
35-70GB 1/2-Inch DLT Tape Drive

ETL 4/1800  StorEdge L1800  ETL 7/3500  StorEdge L3500
Options 6063  6073  6074  6075  6076  6079  6080

370-3272  Quantum DLT7000  370-3332  Quantum DLT7000
Differential SCSI  Differential SCSI
4/1800 & 7/3500 FRU  4/1800 & 7/3500 FRU
4MB Internal Cache  8MB Internal Cache

Front View

Rear View

Left Side View

Notes
1. The minimum operating system is Solaris 2.5.
2. The ETL 4/1800 and 7/3500 requires a Differential SCSI Controller.
3. The ETL 4/1800 and 7/3500 requires a Differential SCSI DLT7000.

References
35-70GB 1/2-Inch DLT Tape Drive
StorEdge L280
370-3423
Quantum DLT7000
Differential SCSI

Front View

Stepper Motor

TAPE SLOT

Rear View

HD68-Pin Data Connector

HD68-Pin Data Connector

Notes
1. The minimum operating system is Solaris 2.5.
2. The 370-3423 includes address and data cables, fan, mounting bracket, stepper motor, and stepper motor circuit board.
3. To remove the tape drive, slide the drive 2.5" (65 mm) out of the chassis. Disconnect the DC Power, Fan Power, Stepper Motor, and SCSI Address cables, and remove the drive from the chassis.

35-70GB 1/2-Inch DLT Tape Drive
StorEdge L1000
370-3516
Quantum DLT7000
Differential SCSI

Notes
1. The minimum operating system is Solaris 2.5.
2. The StorEdge L1000 requires a Differential SCSI Controller.
3. The StorEdge L1000 requires a Differential SCSI DLT7000.
4. The DLT 7000 includes an Address Cable, Fan, Interface Board, Magnetic Interlock, Mounting Bracket, and Stepper Motor.

References

REMOVABLE MEDIA-60
Field Engineer Handbook
35-70GB 1/2-Inch DLT Tape Drive
StorEdge L11000
370-3723
Quantum DLT7000
Differential SCSI

Notes
1. The minimum operating system is Solaris 2.5.
2. The StorEdge L11000 requires a Differential SCSI Controller.
3. The StorEdge L11000 requires a Differential SCSI DLT7000.
4. Part number 370-3723 includes a DLT7000, Interface Board, and Stepper Motor mounted in a Drive Carrier.
5. Install drives in consecutive order from position 0 to position 15.
6. Set the Drive Sideboard Switch to the address on the left/right door.

References
35-70GB 1/2-Inch DLT Tape Drive
StorEdge L20  StorEdge L40  StorEdge L60

Notes
1. The minimum operating system is Solaris 2.6.
2. The StorEdge L20/40/60 requires a Differential SCSI Controller.
3. The StorEdge L20/40/60 requires a Differential SCSI DLT7000.
4. Part number 380-0346 includes a DLT7000, Interface Board, and Stepper Motor mounted in a Drive Carrier.

References
4. StorEdge L20 FRU Replacement, HP C7200-90005.
40-80GB 1/2-Inch DLT Tape Drive
StorEdge L9
380-0383
FRU Assembly
HP C7202-80008
HV Differential SCSI

Notes
1. The minimum operating system is Solaris 2.6.
2. The StorEdge L9 requires a Differential SCSI Controller.
3. The StorEdge L9 requires a Differential SCSI DLT8000.
4. Part number 380-0383 includes a DLT8000, Interface Board, and Stepper Motor mounted in a Drive Carrier.

References
1. StorEdge L9 FRU Replacement, HP C7145-90020.

Volume I
REMOVABLE MEDIA-63
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# Ethernet

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Ethernet Controller
Sun-4/15/30/40/60/65/75 SS4 SS5
Options 450 453
501-1450 501-1881
X450A X450A and X453A
40/50/60/65/75 15/30/40/50/60/65/75
SS4 SS5

32-Bit SBus Connector

FCode
S4DMA
or
S4DMA+

501-1450
501-1881

AM7990

2A Fuse F1
150-1174-01

8 1
Ethnernet
Thin Ethernet

SW1

Power: 1.0 Amps @ +5Vdc
5.0 Watts not including MAU +12Vdc power requirements

Notes
1. The Sun-4/75 supports one internal 207MB or 424MB disk drive if the Ethernet MAU draws current from the +12Vdc output to Pin-13.
2. Do NOT install this card in Slot-3 of the Sun-4/60 or Sun-4/65.
5. Option X450A included 501-1450 or 501-1881.

References
1. Installing the SBus Ethernet Card, 800-5161-10
2. Installing the SBus Ethernet Card, 800-6682-10.
Quad Ethernet Controller  SQEC/S
Sun-4/15/30/40/50/60/65/75  SS4  SS5  SS10  SS20
SS600  SS1000  SC2000  A11  A12  A14  E150
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
E10000  Option 1058  501-2062

Power:  2.0 Amps @ +5Vdc  10.0 Watts

Notes
1. The minimum operating system is SunOS 4.1.3 or Solaris 2.3.
2. The minimum OS for an SS4 with SQEC is Solaris 2.4 Hardware: 11/94.
3. The minimum OS for an SS5 with SQEC is Solaris 2.3 Hardware: 5/94.
4. The minimum OS for an SS20 with SQEC is Solaris 2.3.
5. The final OS for the BEC device and the be driver is Solaris 2.6.
6. SunOS 4.1.3 requires Quad Ethernet Controller 1.1 software.
7. SQEC device drivers are bundled in Solaris 2.3.
8. SunOS 4.x device drivers support Sun-4m architecture only.
9. Open Boot PROM 2.x is required.
10. The Link Integrity Test is enabled/disabled through the OBP.

SunFastEthernet 1.0

Sun-4/15/30 SS5 SS10 SS20 SS600
SS1000 SC2000
Option 1056

501-2450 501-2646 501-2655
SBus Card Transceiver Card FRU Assembly

Notes
1. The minimum OS is SunOS 4.1.3 or Solaris 2.3 Hardware 5/94.
2. SunOS 4.1.3 requires SunFastEthernet 1.1 software.
3. Solaris 2.3 Hardware: 5/94 requires Patch 101820-01.
5. SunOS 4.x device drivers support Sun-4m architecture only.
6. The final software release is Solaris 2.6.
7. SS1000 and SC2000 require Solaris 2.4 Patch ≥102001-08 if the SM81 is installed.

SunFastEthernet 2.0/2.1

Sun-4/15/30  SS5  SS10  SS20  SS600
SS1000  SC2000  A11  A12  A14  E150
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
E10000

Option 1059
501-2919

Notes
1. The minimum OS for SunFastEthernet 2.0 is Solaris 1.1.2 or Solaris 2.4.
2. The minimum OS for SunFastEthernet 2.1 is Solaris 1.1.1 or Solaris 2.3.
3. The SUNWhmd and SUNWhmdu packages are bundled in Solaris 2.5.
4. The SS1000 and SC2000 require OBP 2.26 due to BugID 1228182.
5. Install SunFastEthernet in Slot 0 and DWIS/S in Slot 1 on E10000 SBus I/O board 501-4349.

Sun Quad FastEthernet 1.0  SQFE/S
SS5  SS10  SS20  SS600  SS1000  SC2000
A11  A12  A14  E3x00  E4x00  E5x00  E6x00
Option 1042
501-4302

Notes
1. The minimum OS is Solaris 2.4 and Quad FastEthernet 1.0.
2. QFE/S 1.0 uses the SUNWhmed device driver.
3. QFE/S is not compatible with Sun Trunking 1.0.
5. One CPU per port is recommended for maximum throughput.
6. Two CPUs per QFE/S are recommended for ≥200MHz systems.
7. SQFE <501-4302-03 fails the Fcode checksum test and will not configure
during boot if the E3000-E6000 is set to Diagnostic mode. Set Keyswitch
diagnostics Off, OBP diag-switch? false, and OBP diag-level min.
8. Set the NVRAM variable local-mac-address? to true to enable the MAC
addresses of the network interfaces on the Quad FastEthernet board.

Sun Quad FastEthernet 2.0   SQFE/S
SS5   SS10   SS20   SS600   SS1000   SC2000
A11   A12   A14   E3x00   E4x00   E5x00   E6x00   E10000
Option 1049
501-4837   501-5443

Operating System Notes
1. The minimum OS is Solaris 2.4 and Quad FastEthernet 2.0.
2. Solaris 2.6 requires QFE 2.1 software.
3. Do NOT use QFE 2.1 software with Solaris 2.6 Hardware: 5/98.
4. QFE 2.2 software is bundled in 2.6 HW: 5/98 and SunTrunking 1.0.1.
5. QFE/S 2.0 uses the SUNWqfed drivers and supports Sun Trunking.
6. The output of pkginfo -x does not match the QFE release number.
   Conversion tables are included in Release Notes 805-3893-10.

Notes
2. The E10000 is not compatible with 501-4837-01. Use ≥501-4837-02.
3. One CPU per port is recommended for maximum throughput.
4. Two CPUs per QFE/S are recommended for ≥200MHz systems.
5. Set the NVRAM variable local-mac-address? to true to enable the MAC addresses of the network interfaces on the Quad FastEthernet board.

GigabitEthernet 1.0  GBE/S
A14 E3000 E4000 E5000 E6000
E3500 E4500 E5500 E6500 E10000
Option 1045
375-0003
Alteon AceNIC

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.
2. The final operating system is Solaris 2.6.
3. Install GBE/S in Slot 0 on E10000 SBus I/O board 501-4349.
4. The minimum software for the E10000 is Gigabit Ethernet 1.1.

GigabitEthernet 2.0  GBE/S
A14  E3000  E4000  E5000  E6000
E3500  E4500  E5500  E6500  E10000
Option 1140
501-4375
Multi-Mode Fiber

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 11/97.
2. There are no slot restrictions for the E10000 SBus I/O board.

References
SunFastEthernet FE/P
A16 A20 A21 A22 A23 A25 A26 A27
Netra t 1100/1120/1125 Netra t 1400/1405 Netra ft 1800
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
Options 1033 6934

501-4359 501-5019 540-3981
3.3/5V 32Bit 33MHz 3.3/5V 32Bit 33MHz Netra ft 1800 FRU
w 501-4359 or 501-5019

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.
2. Auto-negotiation is used to select operating mode and speed.
3. The address of the on-board MII transceiver is 1.
4. Set the external MII transceiver to an address other than 1 to avoid an address conflict with the on-board transceiver. Refer to BugID 4062714.

References

ETHERNET-10 Field Engineer Handbook
Sun Quad FastEthernet QFE/P

A16 A20 A21 A22 A23 A25 A26 A27 Netra t1 100/105
Netra t1 1100/1120/1125 Netra t1 1400/1405 Netra ft 1800
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
Options 1034 6943

501-4366 501-5406 540-4094
3.3/5V 64Bit 33MHz 3.3/5V 64Bit 33MHz Netra ft 1800 FRU

Notes
1. The minimum OS is Solaris 2.5.1 HW: 4/97 and Quad FastEthernet 2.0.
2. Solaris 2.6 requires QuadFastEthernet 2.1.
3. Quad FastEthernet hardware uses the SUNWqfed device driver.
4. The Ultra 30 requires DC21153 Revision C. See BugID 4094903.
5. One CPU per port is recommended for maximum throughput.
6. Two CPUs per QFE/P are recommended for ≥200MHz systems.
7. Auto-negotiation is used to select operating mode and speed.

Reference

Volume I
Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.
2. The final operating system is Solaris 2.6.
3. The minimum E10000 operating system is Solaris 2.6.

GigabitEthernet 2.0  GBE/P
A16  A20  A21  A22  A23  A25  A26  A27  Netra t 1 100/105
Netra t 1100  Netra t 1120/1125  Netra t 1400/1405
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
E10000
Option 1141
501-4373  501-5470
Multi-Mode Fiber  Special for Apple
3.3/5V  64Bit  33/66MHz

Note: The minimum operating system is Solaris 2.5.1 Hardware: 11/97.

References
GigabitEthernet FC-AL/P

A16  A22  A23  A25  A26  A27

Option 2069

501-5426

3.3/5V 32/64Bit 33/66MHz

 FC-AL SC-DUPLEX  GbE SC-DUPLEX
50/125 MM Fiber (500 Meter)
62.5/125 MM Fiber (300 Meter)
2 Meter Cable 537-1004
5 Meter Cable 537-1020
15 Meter Cable 537-1006

Notes
1. The minimum operating system is Solaris 7 HW: 11/99.
2. The minimum OBP is 3.11.

References
2. GigabitEthernet FC-AL/P Product Note, 806-2386.
Rear Access Quad FastEthernet
Netra ct 400   Netra ct 800
Option 1334
501-5417
3.3/5V  64Bit  33MHz cPCI

Notes
1. The minimum operating system is Solaris 8 HW: 6/00.
2. Option 1334 includes front QFE 501-5417 and rear QFE 501-5427.
3. QFE 501-5427 is required in the same slot in the rear of the chassis.

References

Volume I

ETHERNET-15
Rear Access Quad FastEthernet Transition Board
Netra ct 400  Netra ct 800
Option 1334
501-5427

Notes
1. The minimum operating system is Solaris 8 HW: 6/00.
2. Option 1334 includes front QFE 501-5417 and rear QFE 501-5427.
3. QFE 501-5417 is required in the same slot in the front of the chassis.

References
Notes
1. The minimum operating system is Solaris 8 HW: 6/00.
2. The 6U assembly 501-5737 includes untested 3U QFE 500-5502.
3. Do Not use Rear Access QFE Transition Board with Front Access QFE.

References

Volume I
MII to AUI Converter
Options 467 2817 3817
595-3780 595-4364
Japan

AC Input
100-240V
50-60Hz

40-Pin MII Connector
45 cm Cable

12V DC Power Cable

Ref: MII-AUI Converter, 802-5358-10.
SunSwitch Gigabit Ethernet Switch
Option 1046
380-0001
Alteon AceSwitch 110

Front View

10BASE-T
100BASE-TX
4 Meter Cable 530-1871
4 Meter Cable 530-2093

Rear View

MATE-N-LOK
AMP 15-Pin
SERIAL A
DB-9

Top View with Cover Removed

Power One MPU150-4530
85 - 250VAC 3A Power Supply
3.3V@15A 5V@30A
12V@3A 12V@3A

CR1620

3.3V 64Bit PCI

FLEX EPF8282

Front View

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<th>PWR</th>
<th>PKT</th>
<th>COLL</th>
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<td></td>
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<td>1 2 3 4</td>
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Green = Link OK  Off = Link Fail  Yellow = Partition

Rear View

- POWER
- MDI (In)
- MDIX (Out)
- 10BASE-T

Notes
1. The MDI/MDIX Switch affects the operation of Port 4.
2. Set Switch 4 to MDIX (Out) when connecting to a workstation.
3. Set Switch 4 to MDI (In) when connecting to an OfficeConnect Hub.
4. FRU 540-3584 includes the following AC-DC power adapters:

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<th>PRIMARY COUNTRY</th>
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<th>DC OUTPUT</th>
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<td>120V 0.2A</td>
<td>13V 0.8A</td>
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SuperStack II Entry Hub
Options 2721  2722
370-3795
3Com 3C16440
10BASE-T Ethernet

Front View

1x 6x
7x 12x

UTP Category 5 Wire
4 Meter Cable 530-1871
4 Meter Cable 530-2093

Status
Green = Link OK
Flashing Green = Partition
Off = No Link

MDI (In)
MDIX (Out)

Collision
Packet

Power
Fan

Rear View

AC Power

Transceiver Module

Notes
1. Option 2721 includes Control Board 501-4839 and AC Cord 530-2197.
2. Option 2722 includes Control Board 501-5494 and AC Cord 530-2197.
3. The MDI/MDIX Switch affects the operation of Port 12.
4. Set the switch to MDIX (Out) when connecting to a workstation.
5. Set the switch to MDI (In) when connecting to a 10BASE-T repeater.
6. The Redundant Power System (RPS) option is available from 3Com.


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CONFIGURATIONS

COMMUNICATION
# CONFIGURATIONS

## Communication

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Sun-4/15/30/40/50/60/65/75 SS4 SS5 SS10 SS20 SS600 SS1000 SC2000 A11 A12 A14 E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500 E10000

Option 1012

501-1849 501-2603
BABT ETSI-1 AV-1

---

Notes
1. The minimum operating system is Solaris 2.1.
2. The final software release for the SunISDN-BRI/SBI was Solaris 2.5.1.
3. SunISDN-BRI/SBI is not compatible with Slot-3 of the Sun-4/60/65.

Reference
Serial Parallel Controller  SPC/S
Sun-4/15/30/40/50/60/65/75  SS4  SS5  SS10  SS20
SS600  SS1000  SC2000  A11  A12  A14
E3x00  E4x00  E5x00  E6x00  E10000
Options  1008  1146
501-1931

Notes
1. The minimum operating system is SunOS 4.0.3c.
2. The 501-1931 is not compatible with SPC/S driver SPC 1.0.
3. The 501-1931 is compatible with SPC/S drivers SPC 1.1, 1.2, and 2.x.
4. SPC/S driver SPC 2.0 is compatible with Solaris 2.1 and 2.2.
5. SPC/S driver SPC 2.0 is not compatible with Solaris ≥2.3.
6. The SPC/S driver is included in Solaris ≥2.3.
7. Option 1146 includes SPC 3.0 for Solaris 7 64-Bit operating system.
8. The CL-CD180 Rev B is not compatible with Sun4d systems.
9. The CL-CD180 Rev B was not tested with Sun4u systems.

References
Token Ring Interface  TRI/S  
Sun-4/15/30/40/50/60/65/75  SS4  SS5  SS10  SS20  SS600  SS1000  SC2000  A11  A12  A14  E150  E3x00  E4x00  E5x00  E6x00  E10000
Options  1004  1014  1144  2144

501-1932  4/16MBit

32-Bit SBus Connector

FCode

S4DMA
100-1803-04
or
S4DMA+
100-2674-03

TMS380C16

JM0301 IN = 16Mbit/Sec
JM0301 OUT = 4Mbit/Sec

DB-9

Notes
1. The minimum operating system is SunOS 4.1.
2. Option 1144 includes TRI 4.0 for Solaris 7 64-Bit operating system.
3. The TRI/S is not compatible with Slot-3 of the Sun-4/60/65.
5. The TRI/S <501-1932-03 was not tested with Sun4u systems.
6. Install only one TRI/S per SS1000 or SC2000 System board.
7. Install only one TRI/S per SBus channel on the E3x00-E6x00 I/O board.
8. Do NOT use onboard Ethernet, SCSI, SOC, or SOC+ when TRI/S is installed in the same SBus channel on the E3x00-E6x00 I/O board.
9. Install only one TRI/S on the E10000 SBus I/O board and do NOT install any board in the second slot.

References
High Speed Serial Interface  HSI/S
Sun-4/15/30/40/50/60/65/75  SS4  SS5  SS10
SS20 SS600 SS1000 SC2000 A11 A12 A14
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
E10000
Options 1009 1019 1145
501-1725  501-2005
Cray Special

Notes
1. The minimum operating system is SunOS 4.1.
2. Option 1145 includes HSI 3.0 for Solaris 7 64-Bit operating system.
4. Sun-4m, Sun-4u, and Sun-4d systems require HSI/S 2501-1725-05.
5. The transmit driver is always enabled on 501-1725.
6. The transmit driver is enabled by RTS on 501-2005.
7. The E3x00-6x00 require I/O board FW  ≥ 1.8.1 to fix BugID 4024654.

References
1. HSI/S 1.0 Installation and Administration Guide, 800-5332-10.

COMMUNICATION-6  Field Engineer Handbook
FDDI/S SAS 1.0/2.0
Sun-4/15/30/40/50/60/65/75 SS10 SS600 SS1000 SC2000
Options 1003 1005 501-1732

Power: 1.0 Amps @ +5Vdc
5.0 Watts

Notes
1. The minimum operating system is SunOS 4.1.1.
2. The FDDI/S is not supported in Solaris ≥2.5.
3. This card is not compatible with Slot-3 of the Sun-4/60/65.
4. The last unbundled release for the FDDI/S is FDDI 2.0.
5. The FDDI/S is not compatible with FDDI 3.0, 4.0, or 5.0.
6. The FDDI/S is not compatible with the SS4 or SS5.

FDDI/S SAS 3.0
Sun-4/15/30/40/50/60/65/75 SS4 SS5 SS10 SS20
SS600 SS1000 SC2000
Option 1015

<table>
<thead>
<tr>
<th>FRU</th>
<th>Sun Part Number</th>
<th>Sun FRU Assembly</th>
<th>Sun HW/SW Assy</th>
</tr>
</thead>
<tbody>
<tr>
<td>370-2838</td>
<td>501-2687</td>
<td>595-3444</td>
<td>605-1494</td>
</tr>
<tr>
<td>CS6400</td>
<td>NPI 610-0241</td>
<td>NPI 610-0241</td>
<td></td>
</tr>
</tbody>
</table>

Notes
1. The FDDI/S operates on Solaris 1.x or Solaris 2.x.
2. The FDDI/S is compatible with FDDI 3.0, 4.0, and 5.0.
3. The FDDI/S is not compatible with FDDI 1.0 or FDDI 2.0.

FDDI/S DAS 3.0
Sun-4/15/30/40/50/60/65/75 SS5 SS10 SS20 SS600
SS1000 SC2000
Option 1016

370-2839 501-2689 595-3446 605-1495
CS6400 FRU Sun Part Number Sun FRU Assembly Sun HW/SW Assy
NPI NPI

Notes
1. The FDDI/S operates on Solaris 1.x or Solaris 2.x.
2. The FDDI/S is compatible with FDDI 3.0, 4.0, and 5.0.
3. The FDDI/S is not compatible with FDDI 1.0 or FDDI 2.0.

**FDDI/S SAS 4.0**

Sun-4/15/30 SS2 SS4 SS5 SS20 SS600
SS1000 SC2000 A11 A12 A14 E150
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500

Option 1023

370-2238 605-1559 370-2715 605-1564
NPI 105-0162 HW/SW Assy NPI 105-0162 HW/SW Assy

**Notes**
1. The minimum operating system is Solaris 1.1.1 or Solaris 2.3.
2. The FDDI/S is compatible with FDDI 4.0 and 5.0.
3. The FDDI/S is not compatible with FDDI 1.0, 2.0, or 3.0.


**COMMUNICATION-10**

Field Engineer Handbook
FDDI/S DAS 4.0
Sun-4/15/30 SS2 SS5 SS20 SS600
SS1000 SC2000 A14
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
Option 1024
370-2239 605-1560 370-2716 605-1565
NPI 105-0163 HW/SW Assy NPI 105-0163 HW/SW Assy

32-Bit SBus Connector

<table>
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<tr>
<th>CY7C373</th>
<th>BSI2</th>
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<tr>
<td>FCode</td>
<td>BMAC</td>
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HFBR 5113

<table>
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<tr>
<th>MIC CONNECTOR</th>
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<tbody>
<tr>
<td>OPTICAL BYPASS</td>
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<tr>
<td>RJ-45</td>
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<table>
<thead>
<tr>
<th>32-Bit SBus Connector</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>LED1</th>
<th>OPTICAL BYPASS</th>
<th>LED2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED1</td>
<td>OPTICAL BYPASS</td>
<td>LED2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEDs Off</th>
<th>Red LED</th>
<th>Amber LED</th>
<th>Green LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver not loaded</td>
<td>Driver loaded</td>
<td>Interfaces not configured (ifconfig down)</td>
<td>Interfaces configured (ifconfig up)</td>
</tr>
<tr>
<td>Not connected to active FDDI network</td>
<td>Connected to active FDDI network</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes
1. The minimum operating system is Solaris 1.1.1 or Solaris 2.3.
2. The FDDI/S is compatible with FDDI 4.0 and 5.0.
3. The FDDI/S is not compatible with FDDI 1.0, 2.0, or 3.0.


Volume I
FDDI/S SAS 5.0/6.0
Sun-4/15/30 SS5 SS10 SS20 SS600
SS1000 SC2000 A11 A12 A14
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
E10000
Options 1025 1142

370-2339 370-3142 370-4045
w/o Backpanel Holes w Backpanel Holes =370-3142-02
NPI 105-0167 NPI 105-0167

Notes
1. The minimum FDDI 5.0 OS is Solaris 1.1.1 or Solaris 2.3.
2. The FDDI/S is not compatible with FDDI 1.0, 2.0, 3.0 or 4.0.
3. Option 1142 includes FDDI 6.0 for Solaris 7 64-Bit operating system.
4. PLD Rev 1.0 is not compatible with the A11, A12, and A14.
5. The 3 Meter cable has a duplex MIC connector (male) on one end and a duplex SC connector (male) on the other end.
6. Cable assembly 537-1009 includes type A, AM, B, BM, and S keys and a duplex MIC to MIC (female to female) coupler.
7. Ship Kit 560-2366 includes an Upper SBus Backpanel and screws.

References
FDDI/S DAS 5.0/6.0

Sun-4/15/30 SS5 SS10 SS20 SS600
SS1000 SC2000 A11 A12 A14
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
E10000

Options 1026 1143

370-2340 370-3143 370-4046
w/o Backpanel Holes w Backpanel Holes =370-3143-02
NPI 105-0167 NPI 105-0167 BugID 4156113

Notes
1. The minimum FDDI 5.0 OS is Solaris 1.1.1 or Solaris 2.3.
2. The FDDI/S is not compatible with FDDI 1.0, 2.0, 3.0 or 4.0.
3. Option 1143 includes HSI 3.0 for Solaris 7 64-Bit operating system.
4. PLD Rev 1.0 is not compatible with the A11, A12, and A14.
5. The 3 Meter cable has a duplex MIC connector (male) on one end and a duplex SC connector (male) on the other end.
6. Cable assembly 537-1009 includes type A, AM, B, BM, and S keys and a duplex MIC to MIC (female to female) coupler.
7. Ship Kit 560-2366 includes an Upper SBus Backpanel and screws.

References
SunATM-155/MFiber 1.0
Sun-4/15/30/50/75 SS4 SS5 SS10 SS20 SS600
SS1000 SC2000
Option 1050
501-2523

Notes
1. The minimum operating system is Solaris 2.4.
2. The final operating system is Solaris 2.5.

SunATM-155/UTP 1.0
Sun-4/15/30/50/75 SS4 SS5 SS10 SS20 SS600
SS1000 SC2000
Option 1051
501-2665

Notes
1. The minimum operating system is Solaris 2.4.
2. The final operating system is Solaris 2.5.

SunATM-155/MFiber 2.0/2.1/4.0
Sun-4/15/30/50/75 SS4 SS5 SS10 SS20
SS600 SS1000 SC2000 A11 A12 A14 E150
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
E10000
Options 1060 1147
501-2794

Notes
1. The minimum operating system is Solaris 2.4.
2. Option 1147 includes ATM 4.0 for Solaris 7 64-Bit operating system.
4. SunATM-155 ≤501-2794-07 FCode identifies the board as ba.
5. SunATM-155 ≥501-2794-08 FCode identifies the board as SUNW,ba.

References

COMMUNICATION-16
Field Engineer Handbook
SunATM-155/UTP 2.0/2.1/4.0
Sun-4/15/30/50/75 SS4 SS5 SS10 SS20
SS600 SS1000 SC2000 A11 A12 A14 E150
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500 E10000
Options 1061 1148
501-2795

Notes
1. The minimum operating system is Solaris 2.4.
2. Option 1148 includes ATM 4.0 for Solaris 7 64-Bit operating system.
4. SunATM-155 ≦501-2795-05 FCode identifies the board as ba.
5. SunATM-155 ≧501-2795-06 FCode identifies the board as SUNW,ba.

References
SunATM-622/MFiber 2.1/4.0

SS20  SS1000  SC2000  A11  A12  A14
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
E10000
Options  1064  1149
501-2864

Notes
1. The minimum operating system is Solaris 2.4.
2. Option 1149 includes ATM 4.0 for Solaris 7 64-Bit operating system.

References
Jtag Scan Control Card  JSCC
CS6400
501-1760

![Diagram of JSCC CS6400](attachment:image.png)

- 32-Bit SBus Connector
- XC3042
- S4DMA
- XC3090
- 2732
- 25-PIN CONNECTOR
- MINI DIN-8
- 1 Meter Cable 530-2158
SCI Adapter
E3000  E4000  E5000  E6000
E3500  E4500  E5500  E6500  E10000
Option 1257
370-2345  370-2868
Programmable FPGA

Notes
1. The minimum operating system is Solaris 2.5.1.
2. SCI Adapter 370-2345 requires SUNWsci Version 1.1.
3. FCode corruption occurs if 370-2868 is used with SUNWsci Version 1.0.
4. SUNWsci Version 1.1 is at http://sunsolve.sun.com/sunsolve/PDB.
5. PDB 1.2 CD-ROM 704-5449-10 includes SUNWsci Version 1.0.
7. SCI Adapter 370-2345 works with SUNWsci Version 1.0 or 1.1.
8. SCI Adapter 501-2345 is not compatible with PDB 2.0.
9. Install the SCI and UDWIS/S on separate E10000 SBus channels.

SCI Switch
Enterprise HPC
Option 3876
370-3146
Dolphin D505 4-Way Modular SCI Switch

Front View

Rear View

Top View with Cover Removed and 9059 Daughter Board Installed
High Speed Serial Interface  HSI/P
A16  A20  A21  A22  A23  A25  A26  A27
Netra t 1100/1120/1125  Netra t 1400/1405  Netra ft 1800
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
Options  1040  1155  6931
370-2728  540-3982
Performance Technologies  Netra ft 1800 FRU
PT-PCI334  w 370-2728
5V  32Bit  33MHz

COMMUNICATION-22  Field Engineer Handbook
### Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>K1</td>
<td>1-2</td>
<td>Out</td>
<td>Burn-In disabled</td>
</tr>
<tr>
<td>K2</td>
<td>1-2</td>
<td>In</td>
<td>Max Power = 25W</td>
</tr>
<tr>
<td>K3</td>
<td>1-2</td>
<td>Out</td>
<td>Max DRAM 32MB</td>
</tr>
<tr>
<td>K2</td>
<td>1-2</td>
<td>Out</td>
<td>Max Power = 15W (default)</td>
</tr>
<tr>
<td>K3</td>
<td>1-2</td>
<td>In</td>
<td>Max DRAM 8MB (default)</td>
</tr>
<tr>
<td>K2</td>
<td>1-2</td>
<td>In</td>
<td>Max Power = 7.5W</td>
</tr>
<tr>
<td>K3</td>
<td>1-2</td>
<td>In</td>
<td>Max DRAM 2MB</td>
</tr>
<tr>
<td>K2</td>
<td>1-2</td>
<td>Out</td>
<td>Max Power = 0W</td>
</tr>
<tr>
<td>K3</td>
<td>1-2</td>
<td>Out</td>
<td>Max DRAM 0MB</td>
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### Connectors

<table>
<thead>
<tr>
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<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>J1</td>
<td>72</td>
<td>SIMM socket</td>
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<tr>
<td>J2</td>
<td>80</td>
<td>RS-449 (422) port</td>
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<tr>
<td>P1</td>
<td>3</td>
<td>Debug port</td>
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<td>P2</td>
<td>10</td>
<td>Background Debug Mode (BDM) port</td>
</tr>
<tr>
<td>P3</td>
<td>1</td>
<td>Clock test</td>
</tr>
<tr>
<td>P4</td>
<td>34</td>
<td>Data bus test (not stuffed)</td>
</tr>
<tr>
<td>P5</td>
<td>18</td>
<td>Control test (not stuffed)</td>
</tr>
<tr>
<td>P6</td>
<td>34</td>
<td>Address bus test (not stuffed)</td>
</tr>
</tbody>
</table>

**Notes**

1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.
2. The HSI/P 1.0 software is on CD-ROM 704-5748-10.
3. Option 1155 includes HSI/P 2.0 for Solaris 7 64-Bit operating system.
4. The HSI/P supports 1MB through 32MB, 72-Pin, 5 Volt SIMMs.
5. A 4MB SIMM is installed as a standard configuration.
6. The 4MB SIMM does not have a Sun part number.
7. The BDM port is defined in the QUICC User's Manual, Section 9.9.
8. Cables 530-2492 and 530-2726 provide four DB37 connectors.

Serial Asynchronous Interface  SAI/P
A16  A20  A21  A22  A23  A25  A26  A27
Netra t 1100/1120/1125  Netra t 1400/1405  Netra ft 1800
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
Options  1041  1156  6933
370-2810  540-3983
Digi International PCI/8  Netra ft 1800 FRU
3.3/5V  32Bit  33MHz  w 370-2810

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.
2. Option 1156 includes SAI/P 2.0 for Solaris 7 64-Bit operating system.
3. The Cable and Patch Panel are one assembly.


COMMUNICATION-24  Field Engineer Handbook
Serial Asynchronous Interface  SAI/P
A16  A20  A21  A22  A23  A25  A26  A27
Netra t 1100  Netra t 1120/1125  Netra t 1400/1405
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
Option 2156
375-0100
Digi International PCI/8
3.3/5V  32Bit  33MHz

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.
2. Option 2156 includes SAI/P 3.0 for Solaris 8.
3. The Cable and Patch Panel are one assembly.

Token Ring Interface TRI/P

Netra t 1100  Netra t 1120  Netra t 1125
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
Options 1039  1154

375-0001
Madge Presto PCI
4/16 MBit/Sec
3.3/5V 32Bit 33MHz

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.
2. Option 1154 includes TRI/P 4.0 for Solaris 7 64-Bit operating system.
3. Do Not install the TRI/P in Ultra 80 PCI Slot 4 (pci@1f,4000/* @5,*).

References
2. TRI/P 4.0 Installation Guide, 805-6905-10.
3. TRI/P 5.0 Installation Guide, 806-4204-10.
Token Ring Interface  TRI/P  

A16  A20  A21  A22  A23  A25  A26  A27  
Netra t 1100  Netra t 1120  Netra t 1125  
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500  

Option 2154  
375-0073  
Madge Presto PCI  
4/16 MBit/Sec  
3.3/5V  32Bit  33MHz  

Notes  
1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.  
2. Option 2154 includes TRI/P 5.0 for Solaris 8.  
3. Do Not install the TRI/P in Ultra 80 PCI Slot 4 (pci@1f,4000/*@5,*).  

References  
1. TRI/P 5.0 Installation Guide, 806-4204-10.  

Volume I  COMMUNICATION-27
FDDI/P SAS 1.0/2.0
A16 A20 A21 A22 A23 A25 A26 A27
Netra t 1100 Netra t 1120 Netra t 1125
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
Options 1035 1152
370-2811
Network Peripherals 105-0174
5V 32Bit 33MHz

Notes
1. The minimum FDDI/P 1.0 OS is Solaris 2.5.1 Hardware: 4/97.
2. Option 1152 includes FDDI 2.0 for Solaris 7 64-Bit operating system.
3. The 3 Meter cable has a duplex MIC connector (male) on one end and a duplex SC connector (male) on the other end.
4. Cable assembly 537-1009 includes type A, AM, B, BM, and S keys and a duplex MIC to MIC (female to female) coupler.

References
FDDI/P DAS 1.0/2.0
A16  A20  A21  A22  A23  A25  A26  A27
Netra t 1100  Netra t 1120  Netra t 1125
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
Options 1036  1153
370-2812
Network Peripherals 105-0174
5V 32Bit 33MHz

Notes
1. The minimum FDDI/P 1.0 OS is Solaris 2.5.1 Hardware: 4/97.
2. Option 1153 includes FDDI 2.0 for Solaris 7 64-Bit operating system.
3. The 3 Meter cable has a duplex MIC connector (male) on one end
   and a duplex SC connector (male) on the other end.
4. Cable assembly 537-1009 includes type A, AM, B, BM, and S keys
   and a duplex MIC to MIC (female to female) coupler.

References

Volume I
SunATM-155/MFiber 3.0/4.0
A16  A20  A21  A23  A25  A26  A27  Netra t1 100/105
Netra t 1100/1120/1125  Netra t 1400/1405  Netra ft 1800
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
Options  1066  1157  6932
501-3028  540-3984
3.3/5V  64Bit  33MHz  Netra ft 1800 FRU
w 501-3028

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.
2. The SunATM 3.0 software is on CD-ROM 704-6006-10.
3. The SunATM 3.0 software Update 1 is on CD-ROM 704-6006-11.
4. Option 1157 includes ATM 4.0 for Solaris 7 64-Bit operating system.

References
SunATM-155/UTP 3.0/4.0
A16 A20 A21 A22 A23 A25 A26 A27 Netra t1 100/105
Netra t 1100 Netra t 1120 Netra t 1125
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
Options 1067 1158
501-3027
3.3/5V 64Bit 33MHz

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.
2. The SunATM 3.0 software is on CD-ROM 704-6006-10.
3. The SunATM 3.0 software Update 1 is on CD-ROM 704-6006-11.
4. Option 1158 includes ATM 4.0 for Solaris 7 64-Bit operating system.

References

Volume I
COMMUNICATION-31
SunATM-622/MFiber 3.0/4.0

Options 1068  1159

3.3/5V  32/64Bit  33/66MHz

Notes
1. The minimum operating system is Solaris 2.5.1 Hardware: 4/97.
2. The SunATM 3.0 software Update 1 is on CD-ROM 704-6006-11
3. Option 1159 includes ATM 4.0 for Solaris 7 64-Bit operating system.

References
Notes
1. The minimum operating system is Solaris 2.6.
2. Cable 370-3879 is included with Options 1070 and 1071.
3. HIPPI is the abbreviation for High-Performance Parallel Interface.

Notes
1. The minimum operating system is Solaris 8.
2. Solaris 8 device drivers are in Sun Cluster 2.2.
3. SCI is the abbreviation for Scalable Coherent Interface.


COMMUNICATION-34

Field Engineer Handbook
Rear Access ATM 155MMF
Netra ct 400  Netra ct 800
Option 1366
501-5482
3.3/5V  64Bit  33MHz cPCI

Notes
1. The minimum operating system is Solaris 8 HW: 6/00.
2. Option 1366 includes front ATM 501-5482 and rear ATM 501-5518.
3. ATM 501-5518 is required in the same slot in the rear of the chassis.

References
2. ATM 155MMF Release Notes, 806-2996.
Options 1366
501-5518

Notes
1. The minimum operating system is Solaris 8 HW: 6/00.
2. Option 1366 includes front ATM 501-5482 and rear ATM 501-5518.
3. ATM 501-5482 is required in the same slot in the front of the chassis.

References
2. ATM 155MMF Release Notes, 806-2996.
Network Terminal Server
Option 2064
370-1574

Front View

Rear View

Top View

Notes
1. Use Console Cable 370-1607-01.
2. Network Terminal Software 1.0 is equivalent to Xylogics Release 7.0.
3. Sun discontinued the NTS hardware and software in May 1997.

Network Terminal Server
Options 2064  2065
370-2310

Notes
1. Use Console Cable 370-1607-01.
2. Network Terminal Software 1.0 is equivalent to Xylogics Release 7.0.
3. The 10BASE2 and 10BASE-T ports are not supported by NTS 1.0.
4. Sun discontinued the NTS hardware and software in May 1997.

Notes
1. Use Bracket 370-1582-01 to mount Option 964 in a 19-inch Rack.
2. Sun discontinued the NTS hardware and software in May 1997.


Volume I
Terminal Concentrator
Xylogics Micro Annex
SPARCcluster 1  SPARCcluster PDB
Options 1310  1311  1312
370-1434

Notes
1. The SPARCcluster 1 minimum operating system is Solaris 2.2.
2. The console workstation minimum operating system is Solaris 2.2.
3. The Ethernet Address is 00:80:2d:xx:xx:xx.
4. The 10BASE-T Ethernet port is on the 370-1434-02.
5. The “break fix” (removal of a +300-400mv transient on the RS232 driver during power up) is installed in 370-1434-02.
6. Option X1310A is the Terminal Concentrator and Serial Cable 530-2151.
7. Option X1311A is mounting hardware for the Terminal Concentrator.
8. Option X1312A is the Terminal Concentrator and Serial Cable 530-2152.

References

COMMUNICATION-40  Field Engineer Handbook
Remote System Control RSC
Enterprise 250
501-4818

Notes
1. The minimum operating system is Solaris 2.6 Hardware: 5/98.
2. The RSC Flash Prom is on the E250 System Board at U4401.
3. Cable 530-2526 is included with 501-4818 and F501-4818.

Power Distribution Board Notes
1. If the RSC issues a power-off when the system is Off, the system will be latched Off. This is fixed on PDB 501-4683-05 Rev 51.
2. The RSC may not be able to read the keyswitch position when DC power is Off. This is fixed on PDB 501-4683-05 Rev 53.

References
2. Enterprise 250 ShowMe How, 724-2794.
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CONFIGURATIONS

MISCELLANEOUS
# Miscellaneous

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<td>Netra ct 400 Netra ct 800</td>
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<tr>
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<td>23</td>
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<td>Front CPU Transition Board</td>
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<tr>
<td>Rear CPU Transition Board</td>
<td>26</td>
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<tr>
<td>Alarm Board</td>
<td>27</td>
</tr>
<tr>
<td>Rear Alarm Transition Board</td>
<td>29</td>
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</tbody>
</table>
SunPC Accelerator SX
Sun-4/15/30/40/50/60/65/75 SS5 SS10 SS20
Options 1120 1122 1124 1126
501-1980
16MHz

Notes
1. The minimum operating system is SunOS 4.1.1.
2. SunOS 4.x requires SunPC 3.x.
3. Solaris 2.1, 2.2, and 2.3 require SunPC 4.0.
4. The SS10 on SunOS 4.1.3 requires SunPC 3.1 and Patch 100726-10.
5. Do NOT install this card in SBus Slot 3 of the Sun-4/60 or Sun-4/65.

Notes
1. The minimum operating system is SunOS 4.1.1.
2. SunOS 4.x requires SunPC 3.x.
3. Solaris 2.1, 2.2, and 2.3 require SunPC 4.0.
4. The SS10 on SunOS 4.1.3 requires SunPC 3.1 and Patch 100726-10.
5. Do NOT install this card in SBus Slot 3 of the Sun-4/60 or Sun-4/65.

Notes
1. Solaris 1.1.1 Version B requires SunPC 3.1.
2. Solaris 2.3 requires SunPC 4.1.
3. A minimum of 32MB memory is required.

SunPC 133-MHz 5X86
SS4  SS5  SS10  A11  A12  A14
Option 1129
501-4230
133MHz

Notes
1. The minimum operating system is Solaris 2.3.
2. The minimum application software is SunPC 4.1.
3. Only one 5X86 board per system is supported.
4. Installation of the 5X86 in the SS4 and SS10 is documented in the SunPC Coprocessor Guide.
5. The Price List documents the sale of the 5X86 for use in the SS5, A11, A12, and A14.


Volume I
### 375-0075 Jumper Settings

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<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>JK1</td>
<td>1-2</td>
<td>In</td>
<td>66.8MHz CPU/33.4MHz PCI clock</td>
</tr>
<tr>
<td>JK2</td>
<td>1-2</td>
<td>In</td>
<td>66.8MHz CPU/33.4MHz PCI clock</td>
</tr>
<tr>
<td>JK3</td>
<td>1-2</td>
<td>In</td>
<td>66.8MHz CPU/33.4MHz PCI clock</td>
</tr>
<tr>
<td>JP2</td>
<td>1-2</td>
<td>Out</td>
<td>Normal mode (default)</td>
</tr>
<tr>
<td>JP2</td>
<td>1-2</td>
<td>In</td>
<td>Manufacturing mode</td>
</tr>
<tr>
<td>JP4</td>
<td>1-2</td>
<td>In</td>
<td>AMD K6/K6+ 4.5x clock multiplier</td>
</tr>
<tr>
<td>JP4</td>
<td>3-4</td>
<td>In</td>
<td>AMD K6/K6+ 4.5x clock multiplier</td>
</tr>
<tr>
<td>JP4</td>
<td>5-6</td>
<td>In</td>
<td>AMD K6/K6+ 4.5x clock multiplier</td>
</tr>
<tr>
<td>JP5</td>
<td>1-2</td>
<td>Out</td>
<td>2.2V CPU core voltage</td>
</tr>
<tr>
<td>JP5</td>
<td>3-4</td>
<td>In</td>
<td>2.2V CPU core voltage</td>
</tr>
<tr>
<td>JP5</td>
<td>5-6</td>
<td>Out</td>
<td>2.2V CPU core voltage</td>
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<tr>
<td>JP5</td>
<td>7-8</td>
<td>Out</td>
<td>2.2V CPU core voltage</td>
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<tr>
<td>JR1</td>
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</tr>
<tr>
<td>JR1</td>
<td>2-3</td>
<td>In</td>
<td>Flash recovery (not implemented)</td>
</tr>
</tbody>
</table>

Notes
1. The minimum operating system is Solaris 2.5.1.
2. DOS, Windows 3.x, Windows 95, and Windows NT are supported.
3. BIOS on 375-0075-02 may not be compatible with SunPCi 1.0 or 1.1.
   Upgrade to 1.1.1 if the message “Unknown flash device” is displayed.
4. Use 64MB DIMM 370-3800, Option 7041.
5. Use 128MB DIMM 370-3801, Option 7035.
6. RS-232 signal levels are used. RS-423 is not available.
7. The Parallel/Serial Port Backpanel does not have a part number.
8. The Parallel/Serial Port Backpanel requires an adjacent PCI slot on the component side of the SunPCi.

PCI Slot Notes
1. SunPCi does not fit into Ultra 5, Slot 1 or Slot 2.
2. SunPCi does not fit into Ultra 10, Slot 1.
3. SunPCi does not fit into Ultra 30 or Ultra 60, Slot 4.
4. In the Ultra 30 and Ultra 60, the SunPCi fan housing can touch the solder side of a long PCI board installed in the second slot below a SunPCi. Install the card and side cover with the system in the service position.
5. SunPCi does not fit into Ultra 80, Slot 1 or Slot 4.
6. SunPCi does not fit into Ultra 450, Slot 1.

References
SunPCI
A16  A20  A21  A22  A23  A27
Option 1131A-64.2
375-0095
5V 64Bit 33MH

The setting depends on the
K6 CPU voltage requirement.
SunPCI boards with 2.0V and
2.2V K6 CPUs have the same
part number. Do Not change
the JP5 jumper setting.
375-0095

Jumper Settings

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<tr>
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<th>PINS</th>
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<th>DESCRIPTION</th>
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<tr>
<td>JK1</td>
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<td>In</td>
<td>66.8MHz CPU/33.4MHz PCI clock</td>
</tr>
<tr>
<td>JK2</td>
<td>1-3</td>
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<td>1-3</td>
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<td>AMD K6/K6+ clock multiplier</td>
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<td>5-6</td>
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<td>AMD K6/K6+ clock multiplier</td>
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<tr>
<td>JP5</td>
<td>1-2</td>
<td>Out</td>
<td>2.2V CPU core voltage *</td>
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<tr>
<td>JP5</td>
<td>3-4</td>
<td>In</td>
<td>2.2V CPU core voltage *</td>
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<tr>
<td>JP5</td>
<td>5-8</td>
<td>Out</td>
<td>2.2V CPU core voltage *</td>
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<td>JP5</td>
<td>1-8</td>
<td>Out</td>
<td>2.0V CPU core voltage *</td>
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<td>JR1</td>
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<td>In</td>
<td>Normal (default)</td>
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<tr>
<td>JR1</td>
<td>2-3</td>
<td>In</td>
<td>Flash recovery (not implemented)</td>
</tr>
</tbody>
</table>

* Do Not change the JP5 jumper setting.

Notes

1. The minimum operating system is Solaris 2.5.1.
2. DOS, Windows 3.x, Windows 95, and Windows NT are supported.
3. Use 64MB DIMM 370-3800, Option 7041.
4. Use 128MB DIMM 370-3801, Option 7035.
5. RS-232 signal levels are used. RS-423 is not available.
6. The Parallel/Serial Port Backpanel does not have a part number.
7. The Parallel/Serial Port Backpanel requires an adjacent PCI slot on the component side of the SunPCI.

PCI Slot Notes

1. SunPCI does not fit into Ultra 5, Slot 1 or Slot 2.
2. SunPCI does not fit into Ultra 10, Slot 1.
3. SunPCI does not fit into Ultra 30 or Ultra 60, Slot 4.
4. In the Ultra 30 and Ultra 60, the SunPCI fan housing can touch the solder side of a long PCI board installed in the second slot below a SunPCI. Install the card and side cover with the system in the service position.
5. SunPCI does not fit into Ultra 80, Slot 1 or Slot 4.
6. SunPCI does not fit into Ultra 450, Slot 1.

References

SBus Expansion Adapter
Sun-4/50/75 SS4 SS5 SS10 SS20 SS600
Options 171 1072
501-1840

Notes
1. SBus Expansion 1.0 is compatible with SunOS 4.1.1 and 4.1.2.
2. SBus Expansion 1.2 is compatible with SunOS 4.1.1, 4.1.2, and 4.1.3.
3. SBus Expansion is not supported in SunOS 4.1.3_U1 Version B.
4. SBus Expansion is not supported in SunOS 4.1.4.
5. SBus Expansion device drivers are included in Solaris 2.2.
6. The final software release is Solaris 2.5.1.
7. SS10 Boot PROM 2.7 extends the dictionary space to 1MB.
8. SS600MP Boot PROM 2.8 extends the dictionary space to 1MB.

References
These SBus cards are not compatible with the SES/C:

<table>
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</tbody>
</table>

Reference

*SBus Expansion Subsystem Product Compatibility Note*, 801-2209-11.
Notes
1. The minimum operating system is Solaris 2.3, Edition 2.
2. Solaris 2.3 requires the SUNWpmdm package.
3. The SUNWpmdm package supports the Sun PCMCIA Modem.
4. Solaris 2.4 Hardware: 11/94 requires the SUNWpcm cluster.
5. Solaris 2.4 Hardware: 11/94 includes the SUNWpcser driver for serial and modem cards and the SUNWpcmem driver for memory cards.
6. The A11, A12, and A14 require modified EMI shield 340-3050-03. The modified EMI shield is installed on 501-2367-05.
Audio Module
SS4 Ultra 450 Ultra Enterprise 450
Option 496
501-2592

Notes
1. The SS4 minimum operating system is Solaris 1.1.2 or 2.4 HW: 11/94.
2. The A20 minimum operating system is Solaris 2.5 HW: 4/97.
3. The SS4 Option 496 includes internal SS4 Audio Cable 530-2079.
Audio Module
Ultra 30  Ultra 60  Ultra 80
501-4155

Notes
1. The minimum Ultra 30 (A16) OS is 2.5.1 Hardware: 4/97.
2. The minimum Ultra 60 (A23) OS is 2.5.1 HW 11/97 or 2.6 HW: 3/98.

References
Alarm Module
Netra t 1100  Netra t 1120  Netra t 1125
501-4669

Notes
1. The minimum Netra t 1100 OS is 2.5.1 Hardware: 4/97.
2. The minimum Netra t 1120 OS is 2.5.1 HW 11/97 or 2.6 HW: 3/98.
3. The minimum Netra t 1125 OS is 2.5.1 HW 11/97 or 2.6 HW: 3/98.
4. The Alarm Module software is on CD-ROM 704-6024-10.

References
System Controller
Netra i 150  Netra nfs 150  Ultra Enterprise 150
501-4308

Volume I
Fan Controller
E5000  E6000  E5500  E6500
Option 956

540-2709  501-2900
FRU Assembly  Fan Controller

FAN 4  J0104  POWER SUPPLY DC OUTPUT
FAN 3  J0103  POWER SUPPLY 300-1296
FAN 2  J0107  POWER SUPPLY AC INPUT
FAN 1  J0101  POWER SUPPLY 300-1296

J0110  POWER SUPPLY AC INPUT
J0106  FAN TRAY AC INPUT
J0109  POWER SUPPLY DC OUTPUT

D0105  LOCAL FAN FAILURE LED
D0104  POWER GOOD LED
D0106  REMOTE FAN FAILURE LED

J0105  FAN SENSE CABLE
Notes
1. Some connectors were molded without the right side key.
2. The PCI signaling is 5V, 32Bits, 33MHz.
3. All slots support 32-bit or 64-bit PCI boards.
4. Slots 1 and 3 support long (312 mm) or short (119-167 mm) boards.
5. Slot 2 supports short (119-167 mm) boards only.

References
CONFIGURATIONS

PCI Riser Board

Ultra 10

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<td>370-3197</td>
<td>5V 32Bit 33MHz w/o Stiffener w/o Bracket</td>
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<tr>
<td>370-3982</td>
<td>5V 32Bit 33MHz w Stiffener w/o Bracket</td>
</tr>
<tr>
<td>540-4228</td>
<td>5V 32Bit 33MHz w Stiffener w Bracket</td>
</tr>
</tbody>
</table>

**Notes**
1. Some connectors were molded without the right side key.
2. The PCI signaling is 5V, 32Bits, 33MHz.
3. All slots support 32-bit or 64-bit PCI boards.
4. All slots support long (312 mm) or short (119-167 mm) boards.
5. Systems built before July 1999 may require spacers under the PCI Riser. Spacers are included in Mounting Kit 540-4228. Refer to FCO A0152.

**References**
PCI Riser Board
Sun Blade 100
370-4208
5V 32Bit 33MHz

Notes
1. The PCI signaling is 5V, 32Bits, 33MHz.
2. All slots support 32-bit or 64-bit PCI boards.

Smart Card Reader
Sun Blade 100  Sun Blade 1000
370-3933

Cable to system board
System Control Board
Netra ct 400  Netra ct 800
Option 7168
501-5612

Notes
1. The minimum operating system is Solaris 8 HW: 6/00.
2. The SCB is installed behind the System Status Panel.
3. The component side of the SCB faces the left side of the chassis.

Note: The minimum operating system is Solaris 8 HW: 6/00.
Notes
1. The minimum operating system is Solaris 8 HW: 6/00.
2. Shunt Board 501-5619 is required in the rear of Slot 1 and 2.


Volume I

MISCELLANEOUS-25
Note: The minimum operating system is Solaris 8 HW: 6/00.

MISCELLANEOUS-26 Field Engineer Handbook
Alarm Board
Netra ct 400
Option 7160
540-4406
FRU Assembly

Notes
1. The minimum operating system is Solaris 8 HW: 6/00.
2. FRU assembly 540-4406 includes 501-5620, 501-5649, and 501-5650.
3. CR1632 Battery 150-2850 is installed on 501-5620.

References
Alarm Board
Netra ct 800
Option 7161
501-5610

Notes
1. The minimum operating system is Solaris 8 HW: 6/00.
2. CR1632 Battery 150-2850 is installed at BT0401.

References
Note: The minimum operating system is Solaris 8 HW: 6/00.

References
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CONFIGURATIONS

I/O
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<tr>
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<tr>
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<td>I/O Graphics Board</td>
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<td>E10000</td>
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<td>PCI I/O Board</td>
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<td>PCI Riser Boards</td>
<td>25</td>
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</table>
I/O Board

E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
Options 2610
501-2977
I/O Type 1
83MHz Gigaplane

Backpanel and Connectors

I/O-2  Field Engineer Handbook
501-2977
Jumper Settings

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<td>SOC Flash write disabled</td>
<td>-01</td>
</tr>
</tbody>
</table>

*J2503 is not illustrated. The default jumper setting is unknown.

Notes
1. The minimum Ex000 operating system is Solaris 2.5.1.
2. The minimum Ex500 OS is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
3. The Gigaplane runs at the speed of the slowest detected board.
4. The message “status ‘fail - Downrev AC” is displayed when I/O Graphics Board <501-2977-04 is installed. The message indicates that the Address Controller is pre-FCS and lower than revision 4.
5. The following cable types are supported:
   - 50/125 Multimode Fiber up to 2 Kilometers
   - 62.5/125 Multimode Fiber up to 500 meters

Flash PROM Notes
1. Use the FlashPROM Programming Utility to update the FCode.
2. Use the prom-copy (src dst --) command to copy a flash PROM.
   - ok 2 b prom-copy (copies from board 2 to board 11)
3. Use the update-proms command to synchronize the latest version of the flash PROM installed in the system to all boards of the same type.

NVRAM Notes
1. The Clock Board and I/O Board NVRAMs are automatically synchronized when the Clock Board NVRAM matches at least one I/O Board NVRAM.
2. Use one of the following OBP commands to synchronize the Clock Board and I/O Board NVRAM:
   - ok copy-clock-tod-to-io-boards
   - ok copy-io-board-tod-to-clock-tod

References
I/O Board

E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
Option 2610
501-4287
I/O Type 1
83MHz Gigaplane

Backpanel and Connectors
501-4287
Jumper Settings

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<td>Out</td>
<td>Inv Adr 1</td>
<td>-06</td>
</tr>
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</table>

Notes
1. The minimum Ex000 operating system is Solaris 2.5.1.
2. The minimum Ex500 OS is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
3. The Gigaplane runs at the speed of the slowest detected board.
4. The following cable types are supported:
   - 50/125 Multimode Fiber up to 2 Kilometers
   - 62.5/125 Multimode Fiber up to 500 meters

Flash PROM Notes
1. Use the FlashPROM Programming Utility to update the FCode.
2. Use the prom-copy (src dst --) command to copy a flash PROM.
   - ok 2 b prom-copy (copies from board 2 to board 11)
3. Use the update-proms command to synchronize the latest version of the flash PROM installed in the system to all boards of the same type.

NVRAM Notes
1. The Clock Board and I/O Board NVRAMs are automatically synchronized when the Clock Board NVRAM matches at least one I/O Board NVRAM.
2. Use one of the following OBP commands to synchronize the Clock Board and I/O Board NVRAM:
   - ok copy-clock-tod-to-io-boards
   - ok copy-io-board-tod-to-clock-tod

References
I/O Board with SOC+
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
Option 2611
501-4266
I/O Type 4
83MHz Gigaplane

Backpanel and Connectors
501-4266
Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0401</td>
<td>1-2</td>
<td>In</td>
<td>SOC+ Flash write enabled</td>
</tr>
<tr>
<td>J0401</td>
<td>1-2</td>
<td>Out</td>
<td>SOC+ Flash write protected</td>
</tr>
<tr>
<td>J2500</td>
<td>1-2</td>
<td>Out</td>
<td>Inv Adr 1</td>
</tr>
</tbody>
</table>

Notes
1. The minimum Ex000 operating system is Solaris 2.5.1.
2. The minimum Ex000 OS is 2.5.1 HW: 11/97 if a GBIC is installed.
3. The minimum Ex500 OS is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
4. The Gigaplane runs at the speed of the slowest detected board.
5. The following cable type is supported with GBIC 370-2303: 50/125 Multimode Fiber up to 500 meters

E4500 72" Expansion Cabinet Notes
1. Install the E4500 in the 72" Expansion Cabinet in numerical sequence.
2. SBus Filler Panel 540-4566, Option 1099, is required in SBus Slot 3 of the I/O Board with SOC+ under the following conditions:

<table>
<thead>
<tr>
<th>CABINET POSITION</th>
<th>MOUNTING HOLE #</th>
<th>SOC+ I/O BOARD IN SLOT 3</th>
<th>SOC+ I/O BOARD IN SLOT 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th E4500</td>
<td>84 90 96</td>
<td>Filler Panel not required</td>
<td>Filler Panel required</td>
</tr>
<tr>
<td>1st E4500</td>
<td>60 66 72</td>
<td>Filler Panel required when: 3 or more E4500s are installed 1 E4500 + 4 A5000s are installed</td>
<td>Filler Panel required</td>
</tr>
<tr>
<td>2nd E4500</td>
<td>36 42 48</td>
<td>Filler Panel required</td>
<td>Filler Panel required</td>
</tr>
<tr>
<td>3rd E4500</td>
<td>12 18 24</td>
<td>Filler Panel required</td>
<td>Filler Panel required</td>
</tr>
</tbody>
</table>

Flash PROM Notes
1. Use the FlashPROM Programming Utility to update the FCode.
2. Use the prom-copy (src dst --) command to copy a flash PROM. ok 2 b prom-copy (copies from board 2 to board 11)
3. Use the update-proms command to synchronize the latest version of the flash PROM installed in the system to all boards of the same type.

NVRAM Notes
1. The Clock Board and I/O Board NVRAMs are automatically synchronized when the Clock Board NVRAM matches at least one I/O Board NVRAM.
2. Use one of the following OBP commands to synchronize the Clock Board and I/O Board NVRAM:
   ok copy-clock-tod-to-io-boards
   ok copy-io-board-tod-to-clock-tod

References
3. SBus and Graphics I/O Boards Installation, 805-2704.
I/O Board with SOC+
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
Option 2612
501-4883
I/O Type 4
83/90/100MHz Gigaplane

Backpanel and Connectors

Field Engineer Handbook
501-4883
Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J0401</td>
<td>1-2</td>
<td>In</td>
<td>SOC+ Flash write enabled</td>
</tr>
<tr>
<td>J0401</td>
<td>1-2</td>
<td>Out</td>
<td>SOC+ Flash write protected</td>
</tr>
<tr>
<td>J2500</td>
<td>1-2</td>
<td>Out</td>
<td>Inv Adr 1</td>
</tr>
</tbody>
</table>

Notes
1. The minimum Ex000 operating system is 2.5.1.
2. The minimum Ex000 OS is 2.5.1 HW: 11/97 if a GBIC is installed.
3. The minimum Ex500 OS is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
4. The Gigaplane runs at the speed of the slowest detected board.
5. The following cable type is supported with GBIC 370-2303:
   50/125 Multimode Fiber up to 500 meters

E4500 72" Expansion Cabinet Notes
1. Install the E4500 in the 72" Expansion Cabinet in numerical sequence.
2. SBus Filler Panel 540-4566, Option 1099, is required in SBus Slot 3 of the I/O Board with SOC+ under the following conditions:

<table>
<thead>
<tr>
<th>CABINET POSITION</th>
<th>MOUNTING HOLE #</th>
<th>SOC+ I/O BOARD IN SLOT 3</th>
<th>SOC+ I/O BOARD IN SLOT 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th E4500</td>
<td>84 90 96</td>
<td>Filler Panel not required</td>
<td>Filler Panel required</td>
</tr>
<tr>
<td>1st E4500</td>
<td>60 66 72</td>
<td>Filler Panel required when: 3 or more E4500s are installed</td>
<td>Filler Panel required</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 E4500 + 4 A5000s are installed</td>
<td></td>
</tr>
<tr>
<td>2nd E4500</td>
<td>36 42 48</td>
<td>Filler Panel required</td>
<td>Filler Panel required</td>
</tr>
<tr>
<td>3rd E4500</td>
<td>12 18 24</td>
<td>Filler Panel required</td>
<td>Filler Panel required</td>
</tr>
</tbody>
</table>

Flash PROM Notes
1. Use the FlashPROM Programming Utility to update the FCode.
2. Use the prom-copy (src dst --) command to copy a flash PROM.
   ok 2 b prom-copy (copies from board 2 to board 11)
3. Use the update-proms command to synchronize the latest version of the flash PROM installed in the system to all boards of the same type.

NVRAM Notes
1. The Clock Board and I/O Board NVRAMs are automatically synchronized when the Clock Board NVRAM matches at least one I/O Board NVRAM.
2. Use one of the following OBP commands to synchronize the Clock Board and I/O Board NVRAM:
   ok copy-clock-tod-to-io-boards
   ok copy-io-board-tod-to-clock-tod

References
3. SBus and Graphics I/O Boards Installation, 805-2704.
I/O Graphics Board
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
Option 2620
501-2749
I/O Type 2
83MHz Gigaplane

Backpanel and Connectors

I/O-10
Field Engineer Handbook
501-2749
Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
<th>FAB 270-2749</th>
</tr>
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<tbody>
<tr>
<td>J0500</td>
<td>1-2</td>
<td>In</td>
<td>Unknown</td>
<td>-01 -02 -03 -04</td>
</tr>
<tr>
<td>J0501</td>
<td>1-2</td>
<td>In</td>
<td>Unknown</td>
<td>-01 -02 -03 -04</td>
</tr>
<tr>
<td>J2500</td>
<td>1-2</td>
<td>Out</td>
<td>Inv Adr 1</td>
<td>-01 -02 -03</td>
</tr>
<tr>
<td>J2500</td>
<td>1-2</td>
<td>Out</td>
<td>Inv Adr 1</td>
<td>-04 -05 -06</td>
</tr>
<tr>
<td>J2501</td>
<td>1-2</td>
<td>In</td>
<td>Unknown</td>
<td>-01 -02 -03 -04</td>
</tr>
<tr>
<td>J2503</td>
<td>1 2 3</td>
<td>*</td>
<td>Unknown</td>
<td>-01 -02</td>
</tr>
<tr>
<td>J4302</td>
<td>1-2</td>
<td>In</td>
<td>SOC Flash write enabled</td>
<td>-01 -02</td>
</tr>
<tr>
<td>J4302</td>
<td>1-2</td>
<td>Out</td>
<td>SOC Flash write disabled</td>
<td>-01 -02</td>
</tr>
</tbody>
</table>

*J2503 is not illustrated. The default jumper setting is unknown.

Notes
1. The minimum Ex000 operating system is Solaris 2.5.1.
2. The minimum Ex500 OS is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
3. The Gigaplane runs at the speed of the slowest detected board.
4. I/O Graphics Board iPOST 3.4.1 is required to support FFB 501-3129.
5. The message “status ‘fail - Downrev AC’” is displayed when I/O Graphics Board <501-2749-05 is installed. The message indicates that the Address Controller is pre-FCS and lower than Revision 4.
6. The following cable types are supported:
   50/125 Multimode Fiber up to 2 Kilometers
   62.5/125 Multimode Fiber up to 500 meters

Flash PROM Notes
1. Use the FlashPROM Programming Utility to update the FCode.
2. Use the prom-copy (src dst --) command to copy a flash PROM.
   ok 2 b prom-copy (copies from board 2 to board 11)
3. Use the update-proms command to synchronize the latest version of the flash PROM installed in the system to all boards of the same type.

NVRAM Notes
1. The Clock Board and I/O Board NVRAMs are automatically synchronized when the Clock Board NVRAM matches at least one I/O Board NVRAM.
2. Use one of the following OBP commands to synchronize the Clock Board and I/O Board NVRAM:
   ok copy-clock-tod-to-io-boards
   ok copy-io-board-tod-to-clock-tod

References
I/O Graphics Board

E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500

Option 2620
501-4288
I/O Type 2
83MHz Gigaplane

Backpanel and Connectors

I/O-12  Field Engineer Handbook
501-4288
Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J2500</td>
<td>1-2</td>
<td>Out</td>
<td>Inv Adr 1</td>
</tr>
<tr>
<td>J4302</td>
<td>1-2</td>
<td>Out</td>
<td>SOC flash write disabled</td>
</tr>
</tbody>
</table>

Notes
1. The minimum Ex000 operating system is Solaris 2.5.1.
2. The minimum Ex500 OS is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
3. The Gigaplane runs at the speed of the slowest detected board.
4. I/O Graphics Board requires iPOST 3.4.1 to support FFB 501-3129.
5. The following cable types are supported:
   50/125 Multimode Fiber up to 2 Kilometers
   62.5/125 Multimode Fiber up to 500 meters

Flash PROM Notes
1. Use the FlashPROM Programming Utility to update the FCode.
2. Use the prom-copy (src dst --) command to copy a flash PROM.
   ok 2 b prom-copy (copies from board 2 to board 11)
3. Use the update-proms command to synchronize the latest version of
   the flash PROM installed in the system to all boards of the same type.

NVRAM Notes
1. The Clock Board and I/O Board NVRAMs are automatically synchronized
   when the Clock Board NVRAM matches at least one I/O Board NVRAM.
2. Use one of the following OBP commands to synchronize the Clock Board
   and I/O Board NVRAM:
   ok copy-clock-tod-to-io-boards
   ok copy-io-board-tod-to-clock-tod

References
I/O Graphics Board with SOC+
E3000  E4000  E5000  E6000  E3500  E4500  E5500  E6500
Option 2622
501-4884
I/O Type 5
83/90/100MHz Gigaplane
501-4884
Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J2500</td>
<td>1-2</td>
<td>Out</td>
<td>Inv Adr 1</td>
</tr>
<tr>
<td>J0401</td>
<td>1-2</td>
<td>Out</td>
<td>SOC+ Flash write disabled</td>
</tr>
</tbody>
</table>

Notes
1. The minimum Ex000 operating system is 2.5.1.
2. The minimum Ex000 OS is 2.5.1 HW: 11/97 if a GBIC is installed.
3. The minimum Ex500 OS is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
4. The Gigaplane runs at the speed of the slowest detected board.
5. The following cable types are supported:
   - 50/125 Multimode Fiber up to 2 Kilometers
   - 62.5/125 Multimode Fiber up to 500 meters

E4500 72" Expansion Cabinet Notes
1. Install the E4500 in the 72" Expansion Cabinet in numerical sequence.
2. SBus Filler Panel 540-4566, Option 1099, is required in SBus Slot 3
   of the I/O Graphics Board with SOC+ under the following conditions:

<table>
<thead>
<tr>
<th>CABINET POSITION</th>
<th>MOUNTING HOLE #</th>
<th>SOC+ I/O BOARD IN SLOT 3</th>
<th>SOC+ I/O BOARD IN SLOT 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th E4500</td>
<td>84 90 96</td>
<td>Filler Panel not required</td>
<td>Filler Panel required</td>
</tr>
<tr>
<td>1st E4500</td>
<td>60 66 72</td>
<td>Filler Panel required when: 3 or more E4500s are installed</td>
<td>Filler Panel required</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 E4500 + 4 A5000s are installed</td>
<td></td>
</tr>
<tr>
<td>2nd E4500</td>
<td>36 42 48</td>
<td>Filler Panel required</td>
<td>Filler Panel required</td>
</tr>
<tr>
<td>3rd E4500</td>
<td>12 18 24</td>
<td>Filler Panel required</td>
<td>Filler Panel required</td>
</tr>
</tbody>
</table>

Flash PROM Notes
1. Use the FlashPROM Programming Utility to update the FCode.
2. Use the prom-copy (src dst --) command to copy a flash PROM.
   - ok 2 b prom-copy (copies from board 2 to board 11)
3. Use the update-proms command to synchronize the latest version of
   the flash PROM installed in the system to all boards of the same type.

NVRAM Notes
1. The Clock Board and I/O Board NVRAMs are automatically synchronized
   when the Clock Board NVRAM matches at least one I/O Board NVRAM.
2. Use one of the following OBP commands to synchronize the Clock Board
   and I/O Board NVRAM:
   - ok copy-clock-tod-to-io-boards
   - ok copy-io-board-tod-to-clock-tod

References
3. SBus and Graphics I/O Boards Installation, 805-2704.
Jumper Settings

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>PINS</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J2500</td>
<td>1-2</td>
<td>Out</td>
<td>Inv Adr 1</td>
</tr>
</tbody>
</table>

Notes
1. The minimum Ex000 operating system is Solaris 2.5.1.
2. The minimum Ex500 OS is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
3. The Gigaplane runs at the speed of the slowest detected board.
4. The E3000-E6000 CPU/Memory Board requires OBP 3.2 Version 8.
5. Patch 103346-06 includes OBP 3.2 Version 8.
6. Option 2630 includes two 5V Riser Boards and two 3.3V Riser Boards.
7. Up to three PCI I/O Boards are supported in the E3x00.
8. Up to six PCI I/O Boards are supported in the E4x00, E5x00, and E6x00.
9. The following cable types are supported:
   - 50/125 Multimode Fiber up to 2 Kilometers
   - 62.5/125 Multimode Fiber up to 500 meters

FlashPROM Notes
1. Use the FlashPROM Programming Utility to update the FCode.
2. Use the prom-copy (src dst --) command to copy a flash PROM.
   - ok 2 b prom-copy (copies from board 2 to board 11)
3. Use the update-proms command to synchronize the latest version of the flash PROM installed in the system to all boards of the same type.

NVRAM Notes
1. The Clock Board and I/O Board NVRAMs are automatically synchronized when the Clock Board NVRAM matches at least one I/O Board NVRAM.
2. Use one of the following OBP commands to synchronize the Clock Board and I/O Board NVRAM:
   - ok copy-clock-tod-to-io-boards
   - ok copy-io-board-tod-to-clock-tod

ISP1040 Ultra SCSI Controller Notes
1. The ISP 1040 is an Ultra SCSI controller.
2. Ultra SCSI transfer rates are not supported.
3. Disable Ultra SCSI transfers to the onboard SCSI controller.

References
1. PCI I/O Board Installation, 805-1372.
PCI I/O Board
E3000 E4000 E5000 E6000 E3500 E4500 E5500 E6500
Option 2632
501-4881 501-4926
I/O Type 3 I/O Type 3 FRU
83/90/100MHz Gigaplane w 2 5V Risers

Backpanel and Connectors

I/O-18 Field Engineer Handbook
Notes
1. The minimum Ex000 operating system is 2.5.1.
2. The minimum Ex500 OS is 2.5.1 HW: 11/97 or 2.6 HW: 3/98.
3. The Gigaplane runs at the speed of the slowest detected board.
4. Option 2632 includes two 5V Riser Boards and two 3.3V Riser Boards.
5. Up to three PCI I/O Boards are supported in the E3x00.
6. Up to six PCI I/O Boards are supported in the E4x00, E5x00, and E6x00.
7. The following cable types are supported:
   50/125 Multimode Fiber up to 2 Kilometers
   62.5/125 Multimode Fiber up to 500 meters

FlashPROM Notes
1. Use the FlashPROM Programming Utility to update the FCode.
2. Use the `prom-copy (src dst --)` command to copy a flash PROM.
   - `ok 2 b prom-copy` (copies from board 2 to board 11)
3. Use the `update-proms` command to synchronize the latest version of
   the flash PROM installed in the system to all boards of the same type.

NVRAM Notes
1. The Clock Board and I/O Board NVRAMs are automatically synchronized
   when the Clock Board NVRAM matches at least one I/O Board NVRAM.
2. Use one of the following OBP commands to synchronize the Clock Board
   and I/O Board NVRAM:
   - `ok copy-clock-tod-to-io-boards`
   - `ok copy-io-board-tod-to-clock-tod`

ISP1040 Ultra SCSI Controller Notes
1. The ISP 1040 is an Ultra SCSI controller.
2. Ultra SCSI transfer rates are not supported.
3. Disable Ultra SCSI transfers to the onboard SCSI controller.
4. Refer to `PCI I/O Product Note 805-3364-10` of September 1997.

References
1. `PCI I/O Board Installation`, 805-1372.
**CONFIGURATIONS**

**PCI Riser Boards**

<table>
<thead>
<tr>
<th>Models</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>E3000</td>
<td>2630, 2632</td>
</tr>
<tr>
<td>E4000</td>
<td></td>
</tr>
<tr>
<td>E5000</td>
<td></td>
</tr>
<tr>
<td>E6000</td>
<td></td>
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<td>E3500</td>
<td></td>
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<td>E4500</td>
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</tr>
<tr>
<td>E5500</td>
<td></td>
</tr>
<tr>
<td>E6500</td>
<td></td>
</tr>
</tbody>
</table>

- **501-4128**: 3.3V 33/66MHz 32/64-Bit Riser Board
- **501-4169**: 5V 33MHz 32/64-Bit Riser Board

### JUMPER SETTING DESCRIPTION

<table>
<thead>
<tr>
<th>JUMPER</th>
<th>SETTING</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1</td>
<td>In</td>
<td>JTAG enabled</td>
</tr>
<tr>
<td>J1</td>
<td>Out</td>
<td>JTAG disabled</td>
</tr>
</tbody>
</table>

**Notes**

1. If JTAG is enabled and the PCI card does not support JTAG, the I/O Board will not be initialized or recognized during POST or boot.
2. The E3000-E6000 CPU/Memory Board requires OBP 3.2 Version 8.
3. Patch 103346-06 includes OBP 3.2 Version 8.
4. Options 2630 and 2632 include two 5V and two 3.3V Riser Boards.
5. Up to three PCI I/O Boards are supported in the E3000.
6. Up to six PCI I/O Boards are supported in the E4000, E5000, and E6000.

**References**

1. PCI I/O Board Installation, 805-1372-10.
2. BugIDs 4090962 and 4362243.
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SBus I/O Board
E10000
Option 2730
501-4349  501-4478

Mezcon Connector Screw tightening sequence used before July 1998.
References
805-0311-10 March 1997
805-2917-10, 11, 12, 13

1. Tighten to 6 in/lb in the sequence shown

Mezcon Connector Screw tightening sequence used after June 1998.
Reference
805-2917-14 July 1998

2. Tighten to 6 in/lb in the sequence shown
501-4349 501-4478

Notes
1. Install only one TRIIS. Do NOT install any board in the second slot.
2. Install SCI and UDWIS/S on separate SBus channels.

SBus I/O Board 501-4349 Notes
1. Install FC100/S in Slot 0 and DWIS/S in Slot 1.
2. Install GBE/S 1.x in Slot 0. There are no slot restrictions for GBE/S 2.0.
3. Install SunFastEthernet 2.x in Slot 0 and DWIS/S in Slot 1.
4. Install SunSwift in Slot 0 and DWIS/S in Slot 1.
5. SSP software controls whether the system will boot when SBus boards are installed in Slot 1 of SBus I/O board 501-4349. Problems may occur if SBus slot restrictions are not followed.

<table>
<thead>
<tr>
<th>501-4349</th>
<th>SSP 3.0</th>
<th>SSP 3.0</th>
<th>SSP 3.1</th>
<th>SSP 3.1</th>
<th>SSP 3.1.1</th>
<th>SSP 3.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slot 1</td>
<td>≤104853-04</td>
<td>≥104853-05</td>
<td>≤105684-06</td>
<td>≥105684-07</td>
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<tr>
<td>SunSwift</td>
<td>will not boot</td>
<td>will boot</td>
<td>will not boot</td>
<td>will boot</td>
<td>will boot</td>
<td>will boot</td>
</tr>
<tr>
<td>FastEthernet</td>
<td>will not boot</td>
<td>will boot</td>
<td>will not boot</td>
<td>will boot</td>
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<td>will boot</td>
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<tr>
<td>GBE/S 1.x</td>
<td>will not boot</td>
<td>will boot</td>
<td>will not boot</td>
<td>will boot</td>
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<td>FC100/S</td>
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<td>will boot</td>
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<td>will boot</td>
<td>will boot</td>
</tr>
</tbody>
</table>

SBus I/O Board 501-4478 Notes
1. SSP software controls whether the system will boot when SBus boards are installed in Slot 1 of SBus I/O board 501-4478.
2. There are no slot restrictions for FC100/S, GBE/S, SunFastEthernet, or SunSwift when SBus I/O board 501-4478 is used with new versions of SSP software.*

<table>
<thead>
<tr>
<th>501-4478</th>
<th>SSP 3.0</th>
<th>SSP 3.0*</th>
<th>SSP 3.1</th>
<th>SSP 3.1*</th>
<th>SSP 3.1.1*</th>
<th>SSP 3.2*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slot 1</td>
<td>≤104853-04</td>
<td>≥104853-05</td>
<td>≤105684-06</td>
<td>≥105684-07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SunSwift</td>
<td>will not boot</td>
<td>will boot</td>
<td>will not boot</td>
<td>will boot</td>
<td>will boot</td>
<td>will boot</td>
</tr>
<tr>
<td>FastEthernet</td>
<td>will not boot</td>
<td>will boot</td>
<td>will not boot</td>
<td>will boot</td>
<td>will boot</td>
<td>will boot</td>
</tr>
<tr>
<td>GBE/S 1.x</td>
<td>will not boot</td>
<td>will boot</td>
<td>will not boot</td>
<td>will boot</td>
<td>will boot</td>
<td>will boot</td>
</tr>
<tr>
<td>FC100/S</td>
<td>will boot</td>
<td>will boot</td>
<td>will boot</td>
<td>will boot</td>
<td>will boot</td>
<td>will boot</td>
</tr>
</tbody>
</table>

References
2. BugIDs 4046986, 4049704, 4091053, and 4157729.
PCI I/O Board
E10000
Option 2731

500-4779
Untested PCI I/O
w/o 5V Riser

501-4830
PCI I/O Assembly
PCI I/O 500-4779
2 5V Riser 501-4778

F501-4830
PCI I/O FRU
Assembly 501-4830
3.3V Riser Kit 565-1474

Notes
1. The minimum operating system is Solaris 2.6 Hardware: 5/98.
2. There is no part number for a tested PCI I/O board without Riser boards.

References

I/O-24
Field Engineer Handbook
PCI Riser Boards  
E10000  
Option 2731

501-4777  501-4778  
3.3V Riser Board  5V Riser Board

501-4777 3.3V 33/66MHz 32/64-Bit Riser

501-4778 5V 33MHz 32/64-Bit Riser

Notes
1. Riser Kit 565-1474 includes two 501-4777 3.3V Riser Boards.
2. Mounting Kit 565-1482 includes:

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>240-2391</td>
<td>PCI Filler Panel (x2)</td>
</tr>
<tr>
<td>240-2853</td>
<td>M3 x 5 Screw (x6)</td>
</tr>
<tr>
<td>340-4311</td>
<td>Mounting Bracket (x2)</td>
</tr>
<tr>
<td>340-4419</td>
<td>Personality Plate</td>
</tr>
<tr>
<td>540-3562</td>
<td>Front Cover</td>
</tr>
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</table>

Volume I  
I/O-25
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CONFIGURATIONS

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# Backplane

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- SC2000/SC2000E 10-Slot Centerplane ........................................ 5

Sun-4u Architecture
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- E3500 5-Slot Centerplane ..................................................... 8
- E4000/E5000 8-Slot Centerplane ............................................. 10
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Pressfit Backplane Information

Pressfit Backplane production began in June 1987. Solderless contacts are machine pressed into plated-through holes on printed circuit boards. Component leads installed into the solderless contacts are held in place by a tapered entry, multi-finger contact design.

Cross Sectional View

Overhead View of Solderless Contact
4-Slot Backplane
SS1000 SS1000E
501-2021

SYSTEM BOARD SLOT 0
J0900

SYSTEM BOARD SLOT 1
J0800

SYSTEM BOARD SLOT 2
J0700

SYSTEM BOARD SLOT 3
J0600

J1100
SYSTEM CONTROL BOARD SLOT
AND INTERNAL SCSI BUS

J0200
POWER SUPPLY SLOT
+5,-5

J1000
POWER SUPPLY SLOT
+12,-12,+1.2

Notes
1. Guide Pins were added to the Backplane in March 1994.
10-Slot Backplane
SC2000   SC2000E
501-1670

Notes
1. Use 15A Fuse 140-1019-01 or 140-1035-01.
2. J0605 is connected to Keyswitch Cable 530-1725.
3. J1103 is connected to SCSI Power Cable 530-1752.
4. J1107 is connected to Power Supply Sense Cable 530-1728.
5. Guide Pins were added to the Backplane in December 1993.
1. Three screws are used to fasten a vertical stiffener to the backplane.
2. Some disk drives may bottom out against the two stiffener screws next to Slots T2 and T12 if pan-head screw 240-1268 is installed.
3. Replace pan-head screw 240-1268 with button-head screw 240-2033.
4. Do NOT install washers under the stiffener screws.
6. Screw 240-1268 was replaced with screw 240-2033 in November 1997.
A terminated I/O Board is required in Slot 1 to access the internal SCSI Bus.
5-Slot Centerplane
E3500
501-4799
83/100MHz Gigaplane

Front View

J4602 F1
F2 J4601
J0701
LED Board
SCSI Tray Data Cable

J500 J501 J5600 J5601
T4 T5 T6 T7

J5300 J5301 J5400 J5401
T0 T1 T2 T3

J0302
Peripheral Power Supply

J0702
Fan Tray

9/18/00
A terminated I/O Board is required in Slot 1 to access the internal SCSI Bus.
8-Slot Centerplane
E4000  E5000
501-2978
83MHz Gigaplane

Front View

Keyswitch Tray J0901
SCSI Tray
J1701 Slot 0
J2701 Slot 2
J3701 Slot 4
J4701 Slot 6

PS 0
J0501
PS 2
J0601

Power/Cooling Modules

BACKPLANE-10  Field Engineer Handbook
9/18/00

CONFIGURATIONS

501-2978

Rear View

- J0301: AC/Fan Tray
- J0401: Peripheral Power Supply
- J1101: Clock Board
- J2201: Slot 1
- J3201: Slot 3
- J4201: Slot 5
- J5201: Slot 7

A terminated I/O Board is required in Slot 1 to access the internal SCSI Bus

Volume I

BACKPLANE-11
8-Slot Centerplane
E4500  E5500
501-4944
83/100MHz Gigaplane

Front View

Keyswitch Tray [J0901]
SCSI Tray [J10201]

J1701 Slot 0
J2701 Slot 2
J3701 Slot 4
J4701 Slot 6

Power/Cooling Modules

J0301
G L L/N

J0501
PS 0

J0601
PS 2
A terminated I/O Board is required in Slot 1 to access the internal SCSI Bus.
Rear View

J0301 AC/Fan Tray

J0502 PS 1

J0602 PS 3

J0604 PS 5

J0702 Power/Cooling Modules

J0401 Peripheral Power Supply

Clock Board J1101

Slot 1 J2201

Slot 3 J3201

Slot 5 J4201

Slot 7 J5201

Slot 9 J6201

Slot 11 J7201

Slot 13 J8201

Slot 15 J9201

A terminated I/O Board is required in Slot 1 to access the internal SCSI Bus
16-Slot Centerplane
E6500
501-5010
83/90MHz Gigaplane

Front View

Keyswitch Tray J0901
SCSI Tray

J1701 Slot 0
J2701 Slot 2
J3701 Slot 4
J4701 Slot 6
J5701 Slot 8
J6701 Slot 10
J7701 Slot 12
J8701 Slot 14

Power/Cooling Modules

G L L/N

PS 0 J0501
PS 2 J0601
PS 4 J0603
PS 6 J0701

J0301
A terminated I/O Board is required in Slot 1 to access the internal SCSI Bus.
16-Slot Centerplane

E10000

500-4844 Logic Centerplane Untested
500-4845 Power Centerplane Untested
501-4348 500-4844 + 500-4845 Assembly/FRU

Notes
1. Thermal calibration is required if the Centerplane is replaced.
2. Patch 106465-04 (SSP 3.1), 108080-02 (SSP 3.1.1), 109678-01 (SSP 3.2) or 109634-01 (SSP 3.3) is required when ST Micro EEPROM M93S56-W is installed on the centerplane.

References
3. E10000 Centerplane Installation, 806-5977.
Rear View

Wire Harness 530-2396

Support Board 0
Control Board 0
System Board 0
System Board 1
System Board 2
System Board 3
System Board 4
System Board 5
System Board 6
System Board 7
Centerplane Support Board
E10000
501-4346

Note
Do NOT remove the Centerplane Support Board if the Yellow LEDs are ON.

References
5-Slot cPCI Centerplane
Netra ct 400
501-5621  540-4569
Backplane  Drawer Assembly/FRU

Disk Slot 1
Empty Slot 2
CPU Slot 3
I/O Slot 4
I/O Slot 5
Alarm Slot 1
Control Board

P5 Connector
P4 Connector
P3 Connector
P2 Connector
P1 Connector

Fan Tray 1
Fan Tray 2
Power Supply


Volume I  BACKPLANE-21
8-Slot cPCI Centerplane
Netra ct 800
501-5617 540-4568
Backplane Drawer Assembly/FRU