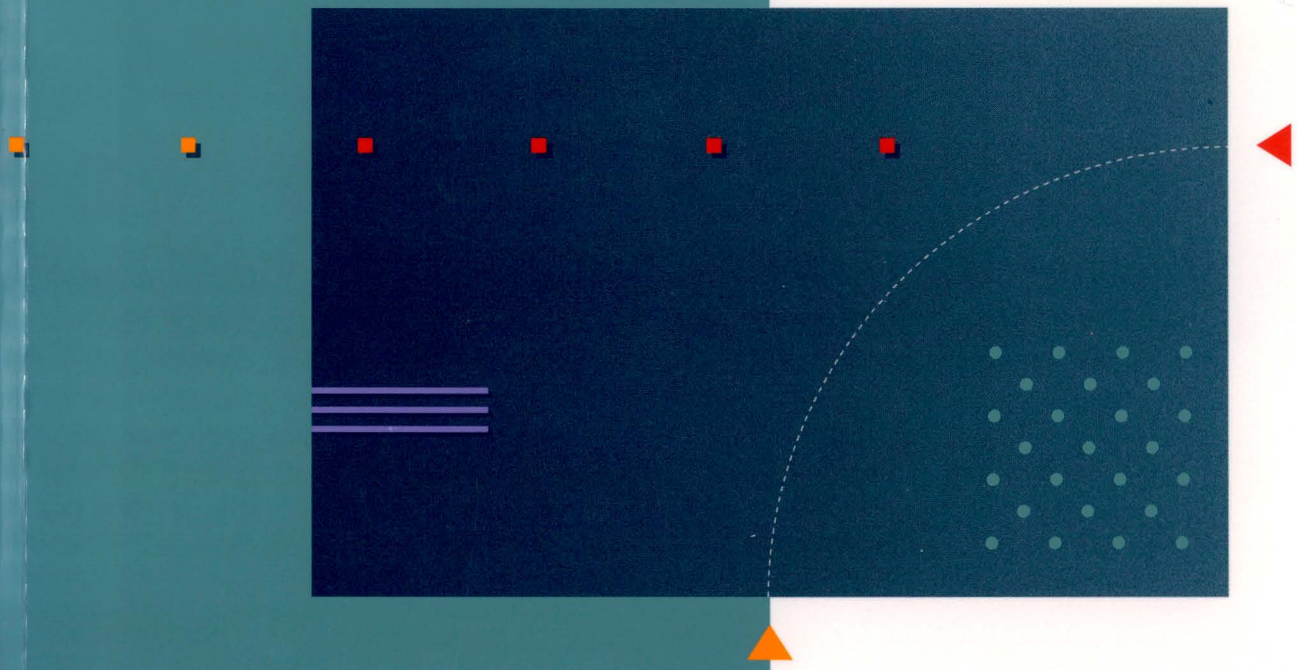
Desktop SPARC

Hardware Owner's Guide



SPARC©

Sun

Hardware Owner's Guide

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Electromagnetic Compatibility Information – U.S.A.

System Classes

Please read all of the following information to determine the class of system you have and the environment in which it should be installed and operated.

In the United States, the Federal Communications Commission (FCC) governs the levels of electromagnetic emissions from a digital device. Electromagnetic emissions can interfere with radio and television transmission. To reduce the risk of harmful interference the FCC has established requirements for manufacturers of digital devices.

A manufacturer of a digital device must test and label the product to inform an end-user of the maximum emission level from the product when used in accordance with its instructions. The FCC has established two classes of levels, Class A and Class B. A system which meets the FCC Class A requirements may be marketed for use in an industrial or a commercial area. A system which meets the more stringent FCC Class B requirements may be marketed for use in a residential area in addition to an industrial or a commercial area.

An end-user in the United States is responsible for ensuring that his system is suitable for its environment as stated in the above paragraph and bears the financial responsibility for correcting harmful interference.

For a system to be considered an FCC Class B system, all peripherals of the system (workstation, monitor, keyboard, mouse, external disk and tape drives, modem, printer, etc.) must be labeled as such. If any peripheral or the workstation itself is labeled as FCC Class A, the entire system becomes FCC Class A and should not be used in a residential area.

To determine if your system is FCC Class A or FCC Class B, you must check the marking on each peripheral and on your workstation. Each piece of equipment should have an FCC statement marked on the unit. The FCC statement should identify the equipment as Class A or Class B. If there is no indication of the Class in the FCC statement, consider it to be Class A unless there is a mark which states "FCC ID:" followed by alpha-numeric characters. If it has this FCC ID mark, it is Class B. If any of the peripherals in your system is not marked with an FCC statement, the equipment should not be used in a home because of the greater likelihood of interference to radio and television reception. Contact the manufacturer of the peripheral if you have any questions.

If an SBus board is added to the workstation by the end-user, the FCC Class of the machine could be affected. An SBus board should be marked to indicate the FCC Class of the board. If an FCC Class A SBus board is added to an FCC Class B workstation, the system becomes FCC Class A.

Modifications

If the end-user adds single inline memory modules (SIMMs) or internal drives to the workstation, the FCC Class of the machine could be affected. All SIMMs and internal drives offered by Sun for use in a Sun Workstation have been tested and will not change the FCC Class labeled on the workstation if installed per the instructions in the Sun Installation Guide.

If memory or drives are purchased from sources other than Sun, the FCC Class of the workstation may be adversely affected. Modifications not approved by Sun may void the authority granted by the FCC to operate the equipment.

Shielded Cables

Connections between the workstation and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits.

One of the following notices applies to your system. Please reference the appropriate statement.

FCC Class A Notice

If your system is FCC Class A, the following applies:

Note – This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Class B Notice

If your system is FCC Class B, the following applies:

Note – This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Electromagnetic Compatibility Information – Canada

Communications Canada (i.e. the Department of Communications) regulates digital devices similar to the FCC in the United States. Every product should be labeled or provided with documentation which states the class of the product. The DOC defines the environment in which a digital device should be used as the FCC does, DOC Class A is for an industrial or a commercial area and DOC Class B is for a residential, an industrial, or a commercial area.

As it is with the FCC, every peripheral of a system must meet DOC Class B levels in order for a system to be considered DOC Class B. If any peripheral or the workstation is DOC Class A, the system is DOC Class A and should not be used in a residential area.

An end-user in Canada is responsible for ensuring that his system is suitable for its environment as stated in the above paragraph.

To determine if your system is DOC Class A or DOC Class B, you must check the marking on each peripheral and on your workstation. Each piece of equipment should have a DOC marking on the unit or a notice included with the equipment stating the DOC Class. If any peripheral or workstation does not have any indication of the DOC Class, consult the manufacturer of the product.

If an SBus board is added to the workstation by the end-user, the DOC Class of the machine could be affected. An SBus board should be marked to indicate the DOC Class of the board or a notice stating the DOC Class should be included. If a DOC Class A SBus board is added to a DOC Class B workstation, the system becomes DOC Class A.

If single inline memory modules (SIMMs) or internal drives are added to the workstation, the DOC Class of the machine could be affected. All SIMMs and internal drives offered by Sun for use in a Sun Workstation have been tested and will not change the DOC Class labeled on the workstation if installed per the instructions in the Sun Installation Guide. If memory or drives are purchased from sources other than Sun, the DOC Class of the workstation may be adversely affected.

One of the following notices applies to your system. Please reference the appropriate statement.

DOC Class A Notice

If your system is DOC Class A, the following applies:

This digital apparatus does not exceed Class A limits for radio noise emission for a digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

DOC Class B Notice

If your system is DOC Class B, the following applies:

This digital apparatus does not exceed Class B limits for radio noise emission for a digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Renseignements de compatibilité électromagnetique – Canada

Communications Canada (c'est-à-dire le DOC, Ministère des Communications) règlemente les dispositifs numériques de façon analogue aux presciptions de la FCC (Commission fédérale des communications) aux Etats Unis. Chaque produit doit être étiqueté ou livré avec une documentation spécifiant sa classe. Le DOC définit, comme le fait la FCC, l'environnement dans lequel un dispositif numérique doit être utilisé. La classe A, spécifiée par le DOC, s'applique aux zones industrielles ou commerciales, alors que la classe B s'applique aux zones résidentielles, industrielles ou commerciales.

Comme il en est le cas avec la FCC, chaque périphérique d'un système doit répondre aux spécifications de la classe B définie par le DOC afin qu'un système puisse être considéré comme faisant partie de cette classe. Si un périphérique ou un poste de travail quelconque appartient à la classe A, le système appartient alors à la classe A définie par le DOC et par conséquent ne doit pas être mis en service dans une zone résidentielle.

Au Canada il revient à l'utilisateur de s'assurer que son système est approprié pour l'environnement auquel il appartient, tel que spécifié dans le paragraphe ci-dessus.

Pour déterminer si votre système appartient à la classe A ou B définie par le DOC, vous devez vérifier le marquage figurant sur chaque périphérique ainsi que sur votre poste de travail. Toute pièce de matériel doit porter un marquage du DOC ou être accompagnée d'un document spécifiant la classe DOC à laquelle elle appartient. Si aucune référence à la classe définie par le DOC n'est présente sur un périphérique ou un poste de travail, contactez le fabricant du produit.

Si l'utilisateur ajoute une carte de type SBus au poste de travail, cela risque d'affecter la classe définie par le DOC. Une carte de type SBus doit être marquée pour indiquer à quelle classe elle appartient, ou un document spécifiant sa classe doit l'accompagner. Si une carte de type SBus de la classe A du DOC est ajoutée à un poste de travail de la classe B, le système appartiendra alors à la classe A, telle qu'elle est définie par le DOC.

Si des unités internes ou des barrettes de mémoire SIMM sont ajoutées à un poste de travail, la classe du DOC de la machine risque d'être affectée. Toutes les unités internes et barrettes de mémoire SIMM offertes par Sun et destinées à être utilisées sur un poste de travail Sun ont été soumises à des essais. Elles ne changeront pas la classe du DOC figurant sur le poste de travail si l'installation est conformée aux instructions spécifiées dans le Guide d'installation Sun. Si l'utilisateur se procure des unités et des barrettes de mémoire ailleurs que chez Sun, la classe du poste de travail définie par le DOC risque d'être défavorablement affectée.

Veuillez consulter celui des avis suivants qui s'applique à votre système:

Avis concernant les systèmes appartenant à la classe A du DOC:

Si votre système appartient à la classe A du DOC, ce qui suit s'y applique:

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

Avis concernant les systèmes appartenant à la classe B du DOC:

Si votre système appartient à la classe B du DOC, ce qui suit s'y applique:

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

Informationen zur Elektromagnetischen Kompatibilität — Bundesrepublik Deutschland (Federal Republic of Germany)

Hiermit wird bescheinigt, dass die Desktop SPARCstation in Übereinstimmung mit den Bestimmungen der Verfügung 243/1991 funkenstört ist. Der Deutschen Bundespost wurde das inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Sun Microsystems, Incorporated: 2550 Garcia Avenue, Mountain View, California, 94043-1100 U.S.A.

第一種VCCIの表記があるワークステーションは、第一種情報装置であり、下記が該当します。

第一種VCCI基準に関するお知らせ

この装置は、第一種情報装置(商工業地域において使用されるべき情報装置)で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。
従って、住宅地域またはその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。
取扱説明書に従って正しい取り扱いをして下さい。

第二種VCCIの商標  がついたワークステーションおよび接続付属品は、第二種情報装置であり、下記が該当します。

第二種VCCI基準に関するお知らせ

この装置は、第二種情報装置（住宅地域またはその隣接した地域において使用されるべき情報装置）で住宅地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。
しかし、本装置をラジオ、テレビジョン受信機に近接してご使用になると、受信障害の原因となることがあります。

Safety Agency Compliance

The following text provides safety precautions to follow when installing a Sun Microsystems, Inc., product.

Safety Precautions

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all warnings and instructions marked on the equipment.
- Ensure that the voltage and frequency of your power source matches the voltage and frequency inscribed on the equipment's electrical rating label.
- Never push objects of any kind through openings in the equipment. Dangerous voltages may be present. Conductive foreign objects could produce a short circuit that could cause fire, electric shock, or damage to your equipment.

Symbols

The following symbols appear in this book.

Caution – There is risk of personal injury and equipment damage. Follow the instructions.

Warning – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

On: The principal on/off switch is in the On position.

Off: The principal on/off switch is in the Off position.

Standby: The principal on/standby switch is in the standby position. AC voltage is still present within the power supply.

Modifications to Equipment

Do not make mechanical or electrical modifications to the equipment. Sun Microsystems, Inc., is not responsible for regulatory compliance of a modified Sun product.

Placement of a Sun Product

Caution – To ensure reliable operation of your Sun product and to protect it from overheating, openings in the equipment must not be blocked or covered. A Sun product should never be placed near a radiator or heat register.

Power Cord Connection

Warning – Sun products are designed to work with single-phase power systems having a grounded neutral conductor. To reduce the risk of electrical shock, do not plug Sun products into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

Warning – Not all power cords have the same current ratings. Household extension cords do not have overload protection and are not meant for use with computer systems. Do not use household extension cords with your Sun product.

Warning – Your Sun product is shipped with a grounding type (3-wire) power cord. To reduce the risk of electric shock, always plug the cord into a grounded power outlet.

European Ergonomics

In order to conform with the German ZH1/618 ergonomic standard, an anti-glare treatment to the CRT has been provided. For text processing applications, a positive mode display (black characters on a white background) is required.

Lithium Battery

Caution – On Sun CPU boards, there is a lithium battery molded into the real-time clock, SGS No. MK48T08. Batteries are not customer replaceable parts. They may explode if mistreated. Do not dispose of the battery in fire. Do not disassemble it or attempt to recharge it.

System Unit Cover

You must remove the cover of your Sun computer system unit in order to add cards, memory, or internal storage devices. Be sure to replace the top cover before powering up your computer system.

Caution – It is not safe to operate Sun products without the top cover in place. Failure to take this precaution may result in personal injury and system damage.

SELV Compliance

Safety status of I/O connections comply to SELV requirements.

Conformité aux normes de sécurité

Cette texte traite des mesures de sécurité qu'il convient de suivre pour l'installation d'un produit Sun Microsystems, Inc.

Mesures de sécurité

Pour votre protection, veuillez prendre les précautions suivantes pendant l'installation du matériel:

- Suivre tous les avertissements et toutes les instructions inscrites sur le matériel.
- Vérifier que la tension et la fréquence de la source d'alimentation électrique correspondent à la tension et à la fréquence indiquées sur l'étiquette de classification de l'appareil.
- Ne jamais introduire d'objet quel qu'il soit dans une des ouvertures de l'appareil. Vous pourriez vous trouver en présence d'éléments haute tension. Tout objet conducteur introduit de la sorte pourrait produire un court-circuit qui entraînerait des flammes, des risques d'électrocution ou des dégâts matériels.

Symboles

Vous trouverez ci-dessous la signification des différents symboles utilisés:

Attention : Risques de blessures corporelles et de dégâts matériels. Veuillez suivre les instructions.

Danger : Présence de tensions dangereuses. Pour éviter les risques d'électrocution et de danger pour la santé physique, veuillez suivre les instructions.

Marche : Le commutateur marche/arrêt principal est en position de *marche*.

Arrêt : Le commutateur marche/arrêt principal est en position *d'arrêt*.

Veille : L'interrupteur principal MARCHE/VEILLE est en position VEILLE. Attention, la tension secteur reste presente.

Modification *du matériel*

Ne pas apporter de modification mécanique ou électrique au matériel. Sun Microsystems, Inc., n'est pas responsable de la conformité réglementaire d'un produit Sun qui a été modifié.

Positionnement d'un produit Sun

Attention : Pour assurer le bon fonctionnement de votre produit Sun et pour l'empêcher de surchauffer, il convient de ne pas obstruer ni recouvrir les ouvertures prévues dans l'appareil. Un produit Sun ne doit jamais être placé à proximité d'un radiateur ou d'un registre de chaleur.

Connexion du cordon d'alimentation

Danger : Les produits Sun sont conçus pour fonctionner avec des alimentations monophasées munies d'un conducteur neutre mis à la terre. Pour écarter les risques d'électrocution, ne pas brancher de produit Sun dans un autre type d'alimentation secteur. En cas de doute quant au type d'alimentation électrique du local, veuillez vous adresser au directeur de l'exploitation ou à un électricien qualifié.

Danger : Tous les cordons d'alimentation n'ont pas forcément la même puissance nominale en matière de courant. Les rallonges d'usage domestique n'offrent pas de protection contre les surcharges et ne sont pas prévues pour les systèmes d'ordinateurs. Ne pas utiliser de rallonge d'usage domestique avec votre produit Sun.

Danger : Votre produit Sun a été livré équipé d'un cordon d'alimentation à trois fils du type avec prise de terre. Pour écarter les risques d'électrocution, toujours brancher ce cordon dans une prise mise à la terre.

Ergonomie européenne

Conformément à la norme d'ergonomie allemande ZH1/618, le CRT a été soumis à un traitement antireflets. Pour le traitement de texte, un affichage en mode positif (c'est-à-dire des caractères noirs sur fond blanc) est nécessaire.

Batterie au lithium

Attention : Sur les cartes UC Sun, une batterie au lithium (référence MK48T08) a été moulée dans l'horloge temps réel SGS. Les batteries *ne sont pas* des pièces remplaçables par le client. Elles risquent d'exploser en cas de mauvais traitement. Ne pas jeter la batterie au feu. Ne pas la démonter ni tenter de la recharger.

Couvercle

Pour ajouter des cartes, de la mémoire, ou des unités de stockage internes, vous devrez démonter le couvercle du système ordinateur Sun. Ne pas oublier de remettre ce couvercle en place avant de mettre le système sous tension.

Attention : Il est dangereux de faire fonctionner un produit Sun sans le couvercle en place. Si l'on néglige cette précaution, on encourt des risques de blessures corporelles et de dégâts matériels.

SELV conformité

Sécurité : les raccordements E/S sont conformes aux normes SELV.

Sicherheitsbehördliche Vorschriften

In diesemVorwort werden die Sicherheitsmaßnahmen beschrieben, die bei der Installation eines Produkts von Sun Microsystems, Inc., zu befolgen sind.

Sicherheits-maßnahmen

Beachten Sie zu Ihrem eigenen Schutz die folgenden Sicherheitsmaßnahmen, wenn Sie Ihre Geräte aufbauen:

- Beachten Sie alle auf den Geräten angebrachten Warnungen und Anweisungen.
- Vergewissern Sie sich, daß Spannung und Frequenz Ihrer Stromquelle mit der Spannung und Frequenz übereinstimmen, die auf dem Etikett mit den elektrischen Nennwerten des Geräts angegeben sind.
- Stecken Sie niemals irgendwelche Gegenstände in Öffnungen in den Geräten. Es Sie können gefährliche Spannungen vorliegen. Leitfähige fremde Gegenstände könnten einen Kurzschluß verursachen, der zu Feuer, Elektroschock oder einer Beschädigung Ihrer Geräte führen könnte.

Symbole

Die verwendeten Symbole haben die folgende Bedeutung:

Vorsicht – Gefahr von Personenverletzung und Geräteschäden. Anweisungen befolgen.

Warnung – Gefährliche Spannungen. Zur Reduzierung des Elektroschockrisikos und der Gesundheitsgefährdung die Anweisungen befolgen.

Ein: Der Hauptschalter steht auf *Ein*.

Aus: Der Hauptschalter steht auf *Aus*.

Standby: Der Hauptschalter ON/STANDBY steht auf STANDBY. Das Gerät ist in Wartestellung.

Änderung der Geräte

Nehmen Sie keine mechanischen oder elektrischen Änderungen an den Geräten vor. Sun Microsystems, Inc., ist nicht verantwortlich für die Einhaltung behördlicher Vorschriften, wenn an einem Sun-Produkt Änderungen vorgenommen wurden.

Aufstellungsort eines Sun-Produkts

Vorsicht – Um einen zuverlässigen Betrieb Ihres Sun-Produkts zu gewährleisten und es vor Überhitzung zu schützen, dürfen die Öffnungen im Gerät nicht blockiert oder bedeckt werden. Ein Sun-Produkt sollte niemals in der Nähe eines Heizkörpers oder einer Heizluftklappe aufgestellt werden.

Anschluß des Stromkabels

Warnung – Sun-Produkte sind für den Betrieb mit Einphasen-Stromsystemen mit einem geerdeten Mittelleiter vorgesehen. Um die Elektroschockgefahr zu reduzieren, schließen Sie Sun-Produkte nicht an andere Arten von Stromsystemen an. Wenden Sie sich an Ihren Anlagenleiter oder einen qualifizierten Elektriker, wenn Sie sich nicht sicher sind, welche Art von Strom Ihr Gebäude erhält.

Warnung – Nicht alle Stromkabel besitzen die gleichen Stromnennwerte. Haushaltsverlängerungsschnuren haben keinen Überlastungsschutz und sind nicht zum Gebrauch mit Computersystemen bestimmt. Benutzen Sie keine Haushaltsverlängerungsschnuren für Ihr Sun-Produkt.

Warnung – Ihr Sun-Produkt wird mit einem Erdungs-Netzkabel (3-Leiter) geliefert. Um die Elektroschockgefahr zu reduzieren, schließen Sie das Kabel nur an eine geerdete Steckdose an.

Europäische Ergonomievorschriften

Um den Anforderungen der deutschen Ergonomie-Norm ZH1/618 zu entsprechen, wurde der Bildschirm mit Blendschutz versehen. Für die Textverarbeitung wird eine positive Anzeigemodus (schwarze Zeichen auf weißem Hintergrund) erforderlich.

Lithiumbatterie

Vorsicht – Eine Lithiumbatterie ist in die SGS-Echtzeituhr, Nr. MK48T08, von Sun-CPU-Karten eingepreßt. Batterien können *nicht* vom Kunden ausgewechselt werden. Bei falscher Behandlung können sie explodieren. Batterien nicht in Feuer werfen und nicht auseinandernehmen oder wiederaufladen.

Obere Abdeckung

Wenn Sie Karten, Speicherelemente oder interne Speichereinheiten in Ihr Sun-Computersystem einbauen wollen, müssen Sie die obere Abdeckung der Einheit abnehmen. Vergessen Sie nicht, die obere Abdeckung wieder anzubringen, bevor Sie Ihr Computersystem einschalten.

Vorsicht – Der Betrieb von Sun-Produkten ohne obere Abdeckung ist nicht sicher. Bei Nichteinhalten dieser Vorsichtsmaßregel kann es zu Personenverletzung und Systemschäden kommen.

SELV Vorschriften

Die E/A-Anschlüsse erfüllen die Sicherheitsanforderungen der SELV-Norm.

Conformidad con la agencia de seguridad

Este prólogo presenta las precauciones de seguridad a seguir cuando se instala un producto de Sun Microsystems, Inc.

Precauciones de seguridad

Para su protección, observe las siguientes precauciones de seguridad al instalar su equipo:

- Siga todos los avisos e instrucciones marcados en el equipo.
- Asegúrese de que el voltaje y la frecuencia de su fuente de alimentación sean iguales al voltaje y frecuencia indicados en la etiqueta de la capacidad eléctrica nominal del equipo.
- No introduzca jamás objetos de ninguna clase por las aberturas del equipo porque pueden estar presentes voltajes peligrosos. Cualquier objeto conductor extraño puede producir cortocircuito que podría causar incendio, electrochoque, o daños a su equipo.

Símbolos

Los siguientes símbolos significan:

Precaución – Peligro de lesión personal y daño al equipo. Siga las instrucciones.

Aviso – Hay presentes voltajes peligrosos. Siga las instrucciones para reducir el riesgo de electrochoque y los peligros contra la salud.

Encendido (On): El interruptor principal de encendido/apagado está en la posición de *encendido.*

Apagado (Off): El interruptor principal de encendido/apagado está en la posición de *apagado.*

Espera: El interruptor principal de encendido/espera se encuentra en la posición de espera. El suministro de energía eléctrica continúa recibiendo tensión de corriente alterna.

Modificaciones al equipo

No haga modificaciones mecánicas o eléctricas al equipo. Sun Microsystems, Inc., no se hace responsable del cumplimiento de las regulaciones de un producto Sun si ha sido modificado.

Colocación de un producto Sun

Precaución – Para lograr un funcionamiento seguro de su producto Sun y para protegerlo contra el calentamiento excesivo, no se deben bloquear o cubrir las aberturas del aparato. Ningún producto Sun se debe colocar jamás cerca de un radiador o una fuente térmica.

Conexión del cable de alimentación

Aviso – Los productos Sun han sido diseñados para funcionar con sistemas de alimentación monofásicos que tengan un conductor neutro a tierra. Para reducir el riesgo de electrochoque, no enchufe los productos Sun a ningún otro tipo de sistema de alimentación. Si no está seguro del tipo de alimentación eléctrica que se suministra a su edificio, consulte al administrador de la propiedad o a un electricista profesional.

Aviso – No todos los cables de alimentación tienen la misma capacidad nominal de corriente. Las extensiones tipo caseras no tienen protección contra sobrecargas y no están destinadas a usarse con sistemas de computación. No use extensiones caseras con su producto Sun.

Aviso – Su producto Sun se le provee con un cable de alimentación con salida a tierra (trifilar). Para reducir el riesgo de electrochoque, enchufe siempre el cable a un tomacorriente con conexión a tierra.

Ergonomía europea

Para estar en conformidad con la norma ergonómica ZH1/618 de Alemania, se ha dado un tratamiento antideslumbrante al CRT. Para aplicaciones de procesamiento de texto se requiere un presntador visual de modo positivo (caracteres negros sobre un fondo blanco).

Batería de litio

Precaución – En los tableros de la CPU de Sun, viene instalada una batería de litio moldeada a reloj de tiempo real, SGS No. MK48T08. El cliente *no* debe cambiar las baterías porque pueden estallar si no se manejan como es debido. No se deshaga de las baterías echándolas al fuego. No las desmonte ni trate de volverlas a cargar.

Cubierta superior

Para agregar tableros, memoria o dispositivos internos de almacenamiento, debe quitar la cubierta superior de su sistema de computadora Sun. Asegúrese de volver a colocar la cubierta superior antes de aplicar energía eléctrica a su sistema de computadora.

Precaución – Los productos Sun no pueden funcionar sin riesgo si la cubierta superior no está colocada en su sitio. Si no toma esta precaución, correrá el riesgo de lesionarse personalmente y dañar el equipo.

SELV conformidad

La seguridad de las conecciónes de entrada-salida cumplen con las normas de seguridad para baja tensión (SELV).

Contents

About This Book

The *Desktop SPARC Hardware Owner's Guide* contains hardware installation procedures for the following Desktop SPARCstation™ systems:

- SPARCclassic™
- SPARCstation LX™
- SPARCstation 10™
- SPARCserver 10™

Note – If you are installing a deskside server system, this manual is not for you. Refer instead to the documentation packaged with your server system.

Throughout this manual, the following naming conventions apply:

- The term *Desktop SPARCstation* means any of the four systems listed above.
- The term *SPARCstation 10* always refers to both the SPARCstation 10 and the SPARCserver 10 systems.
- The term *SPARCclassic* always refers to both the SPARCclassic workstation and the SPARCclassic server.

Who Should Read This Book

This book is for new users of Sun workstations. You should be somewhat familiar with working on computers, but you do not need to be a computer expert to use this book.

How To Use This Book

In this book, each chapter begins with an introduction to the chapter's contents. From the introduction, you can quickly determine which sections you need to read.

When you first receive your workstation, you should read the first three chapters of this book to help you unpack, set up, and install the machine.

The appendixes of this book tell you how to add internal parts and peripheral devices to your system. They also provide additional information about your Desktop SPARCstation system.

It is a good idea to skim through a procedure (so you will know what is coming) before you begin to follow the step-by-step instructions.

Related Books

The following books provide additional information that you may need and are occasionally referenced in this book:

- *Desktop Storage Pack Installation & User's Guide*
- *Desktop Storage Module Installation Guide*
- *Sun External Storage Module Installation Manual*
- *Installing SPARCclassic/SPARCstation LX DSIMMs and VSIMMs*
- *SPARCstation 10 DSIMMs Installation*
- *Sun ISDN Hardware Configuration Guide*
- *SPARCclassic/SPARCstation LX Service Manual*
- *SPARCstation 10 Service Manual*

Typographic Conventions

This book uses a number of typographic conventions:

- *Italic font* is used for titles of books or to give special emphasis. For example:

  If your system is connected to a network, the network will require some advance preparation *before* you turn on your system.

- `Courier font` indicates messages or prompts from the system that appear on your screen. For example:

```
Configuration successfully completed
```

- **`Courier bold font`** is used in screen examples to show characters or words that you type. For example:

  At the prompt, type **`halt`**.

```
nevada# halt
```

- A capitalized word within text indicates a key that you press. For example:

  Press Return.

  When you see two key names, press and hold the first key, and then type the second character. For example:

  To press Stop(L1)-a, press and hold the Stop(L1) key, and then type a.

Safety Precautions

The following international symbols appear in this book when you must perform procedures requiring proximity to electrical current.

Caution – There is risk of personal injury and equipment damage. Follow the instructions.

Warning – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

Safety information is contained in a section titled "Safety Agency Compliance" in the front of this book. Be sure to read the entire section before installing and operating this equipment. This information also appears after the English version in French, German, and Spanish translations.

Getting Started 1

Your new Desktop SPARCstation is a high-performance workstation designed to be used on its own or as part of a network.

This chapter introduces you to your new SPARCstation system and explains everything you need to know before you begin setting up your workstation. Specifically, this chapter covers the following topics:

- Selecting a work area
- Unpacking the shipping cartons
- Taking inventory
- Identifying cables and connectors
- Examining the system unit
- Adding internal parts and peripheral devices
- Using diskettes, tapes, and compact discs

After reading this chapter, you'll be ready to take the first steps in connecting some of the basic system components and plugging in the power cords. These steps are covered in Chapter 2.

Selecting a Work Area

Before unpacking your system, you should decide where you want to put it and how you want to use it.

Select an appropriate work area. Start with an area on your desktop that allows plenty of room for the system unit, monitor, keyboard, and mouse, as well as for the cables and power cords.

Placement of the System Unit

When you place your SPARCstation system unit on a desktop, be sure to allow *at least* 3 inches (76 millimeters) of unobstructed space at the rear and both sides of the system unit. Do not allow any piece of equipment to emit warm exhaust air into the air intake vents of the system unit.

If your system comes with a vertical stand, you can place the system unit either on its feet or on its side in the vertical stand. *Do not place the unit on its side without using the vertical stand.* Doing so blocks the vents.

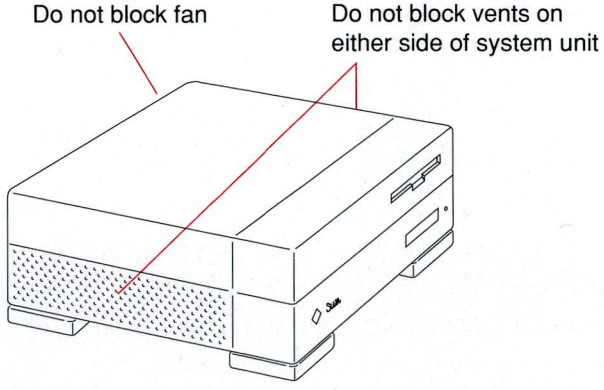


Figure 1-1 System unit clearance — SPARCclassic, SPARCstation LX

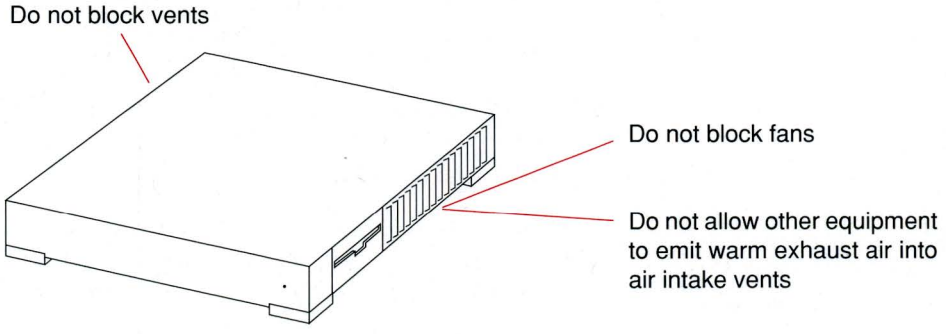


Figure 1-2 System unit clearance — SPARCstation 10

You can safely place monitors with bases the same size or smaller than the system unit on top of the unit. Monitors with larger bases may be unstable.

Caution – Do not place monitors with bases larger than the system unit on top of the unit. Do not block any fan or vents on the sides or rear of the system unit. Do not place the system unit on its side without using the vertical stand.

Environmental Ranges

Your Desktop SPARCstation is a sturdy machine, but like any piece of electronic equipment, it must be treated properly. Avoid extremes in temperature and other environmental hazards.

Generally, if your working conditions are comfortable for you, your environment is suitable for your SPARCstation system.

The acceptable environmental ranges are:

- Temperature between 32 and 104 degrees Fahrenheit (0 and 40 degrees Celsius)
- Humidity between 5% and 80% (relative noncondensing)
- Altitude between 0 and 10,000 feet (0 and 3048 meters) above sea level
- A well ventilated or air-conditioned work area to avoid overheating
- A dust-free work area (as much as possible)

Power and Grounding Requirements

Your Desktop SPARCstation and associated equipment use nominal input voltages of 115 VAC or 230 VAC. Sun products are designed to work with single-phase power systems having a grounded neutral conductor.

To reduce the risk of electrical shock, do not plug Sun products into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

In planning where to place your equipment, remember that each of the following items requires access (by way of a separate power cord) to a power outlet:

- Desktop SPARCstation system unit
- External peripherals
  - Hard disk drives
  - Compact disc drives
  - Tape drives
  - Printers
- Monitor (depending on your country's requirements—see following note)

Note – The monitor's power cord plugs either into a power outlet or into the system unit, in compliance with the requirements of your country. The appropriate power cord is included with your system.

Cable Length

Cables supplied with Sun equipment are of sufficient length to meet the needs of most installations. Some of these cables are of specific lengths in conformity with engineering and safety standards. If the cables packed with your equipment are too short for your installation, ask your Sun sales representative about the availability of appropriate alternate cables.

Caution – Using an inappropriate alternative cable may degrade the performance of your equipment and may also be hazardous.

Warning – Not all power cords have the same current ratings. Household extension cords do not have overload protection and are not meant for use with computer systems. Do not use household extension cords with your Desktop SPARCstation and associated equipment.

Unpacking the Shipping Cartons

Illustrations depicting how to unpack your system are printed on the inside flaps of the shipping cartons for the monitor and system unit—these pictures are self-explanatory. However, there are a few additional things you should be aware of:

1. **Inspect the shipping cartons before opening.**
   If there is evidence of damage to a carton, contact your sales representative and arrange for an agent of the carrier to be present when you remove the equipment.

2. **Remove and save the** *Customer Information Sheet*.
   This sheet is in the plastic envelope on the side of the system unit carton. Retain this sheet for your records. If you are connecting your system to a network, your system administrator will need this sheet during the installation procedure.

3. **Save the cartons and the packing material.**
   You will need them if you ever want to ship your system elsewhere.

Caution – The monitor is heavy, so you may need assistance to lift it into position. Do not place a monitor with a base larger than the system unit on top of the unit.

Taking Inventory

Check the packing slip to make sure you have everything you ordered. Figure 1-3 shows the basic parts included in a SPARCclassic or SPARCstation LX system. Figure 1-4 shows the basic system parts for a SPARCstation 10 system. If you have ordered optional parts, such as external drives, see the installation manuals that come with them.

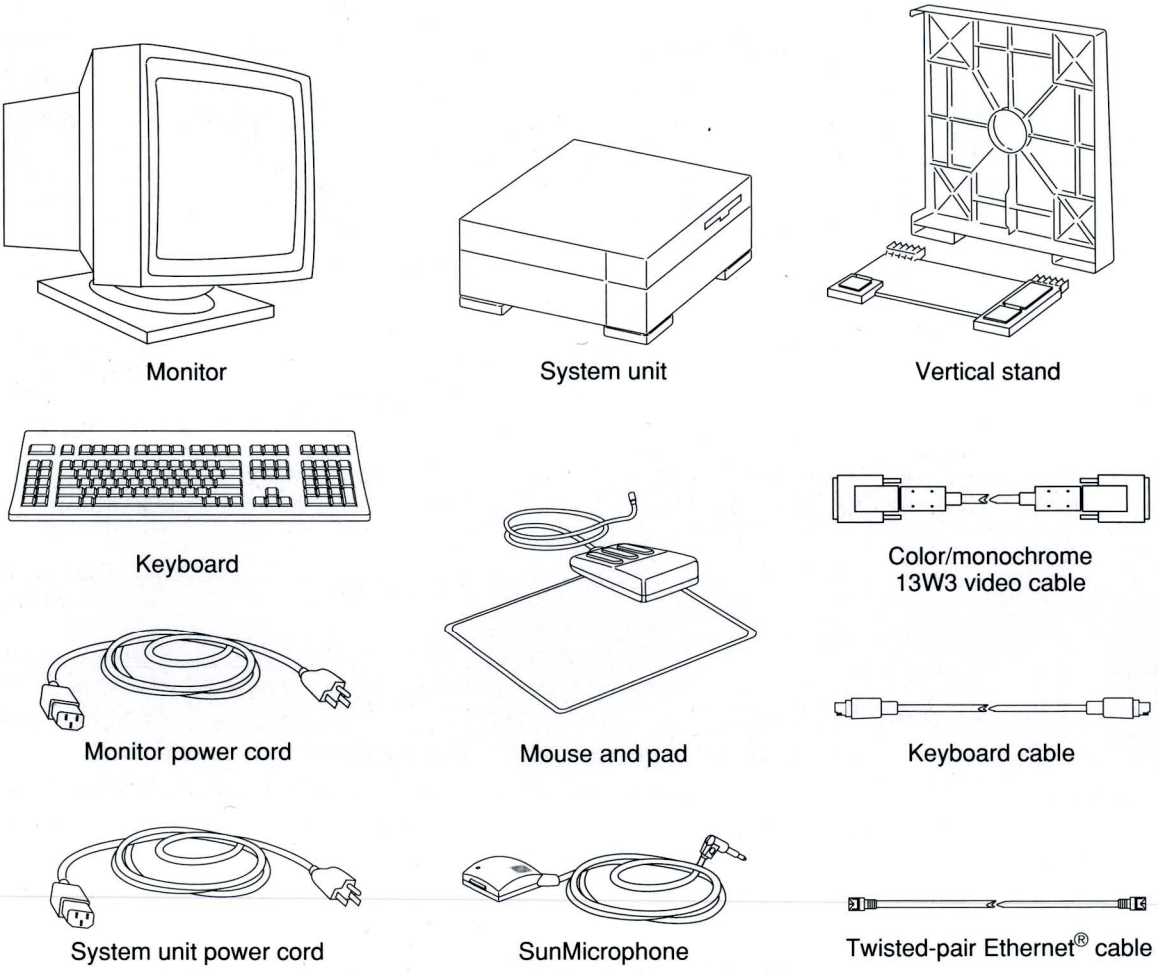


Figure 1-3 Basic System Parts — SPARCclassic/SPARCstation LX systems

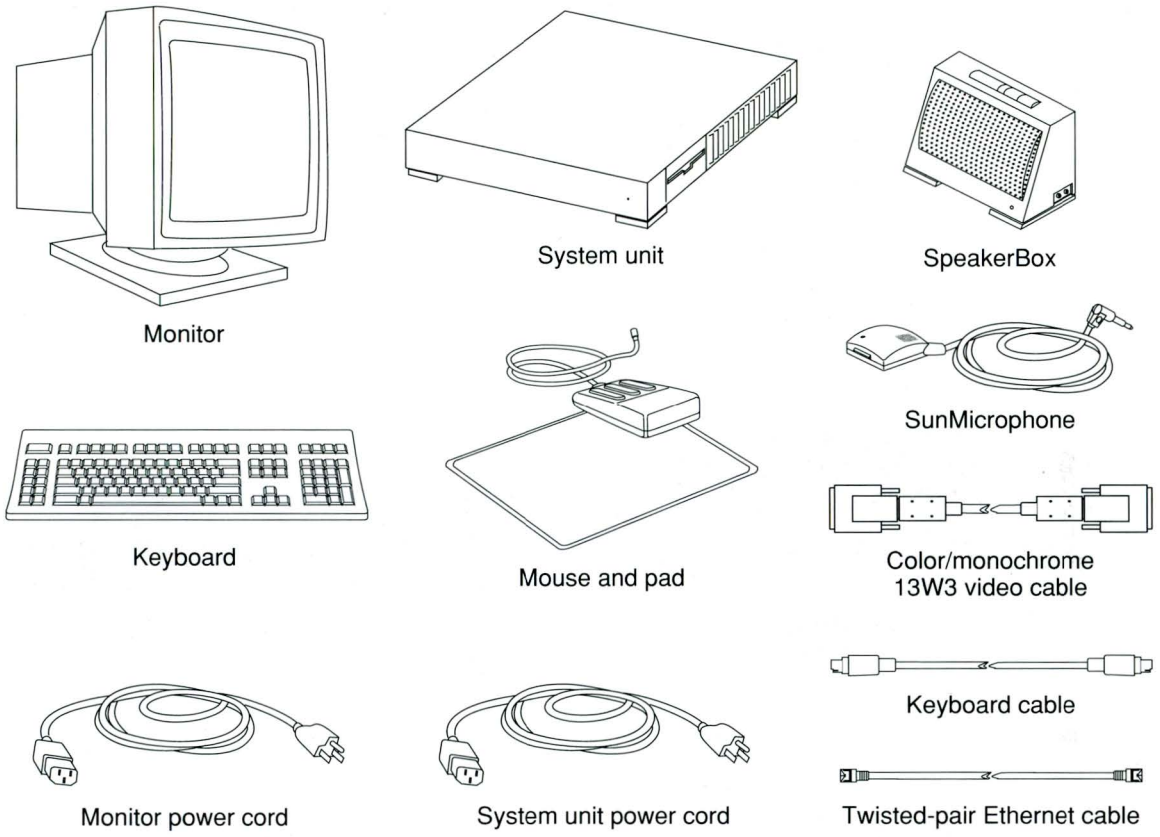


Figure 1-4 Basic System Parts — SPARCstation 10 System

Identifying Cables and Connectors

Figure 1-5 through Figure 1-16 show the cables that come standard with your system and also show a sampling of cables that are available as options. Optional cables must be ordered separately for use with peripheral devices (e.g., printers and external disk drives) and for certain network connections.

Use the illustrations in Figure 1-5 through Figure 1-16 to identify cables as you unpack them. As the illustrations show, each cable is associated with an icon.

The icon appears either on the cable itself, on the port it connects to on the back panel of the system unit, or both. Back panels are shown in Figure 1-19 and Figure 1-20.

Note – Some of the cables shipped with your system have plastic caps to protect the connectors. Remove the protective caps before using the cables.

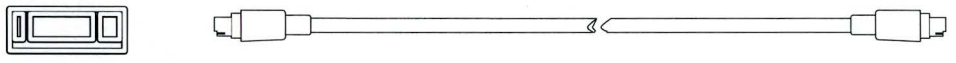


Figure 1-5 Keyboard Cable (Included with System)

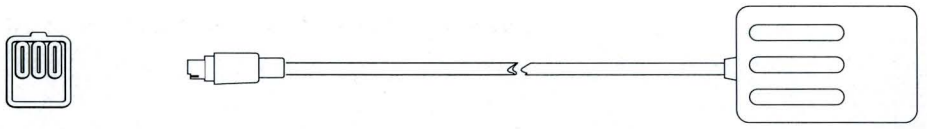


Figure 1-6 Mouse and Cable (Included with System)

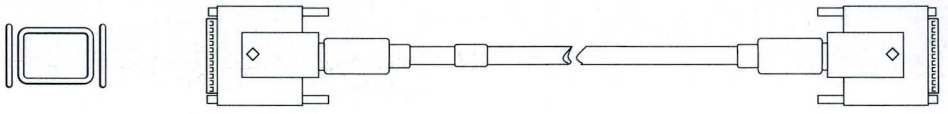


Figure 1-7 13W3 Video Cable (Included with System)

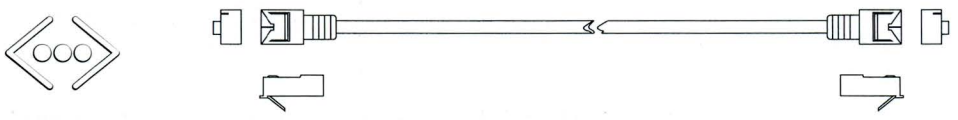


Figure 1-8 Twisted-Pair Ethernet Cable (Included with System)

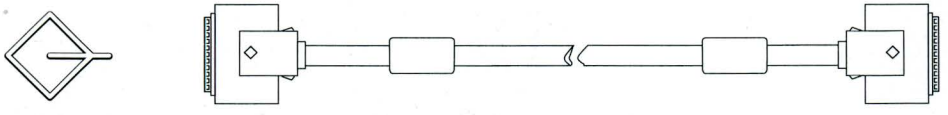


Figure 1-9 Small Computer System Interface (SCSI) Cable (Option)

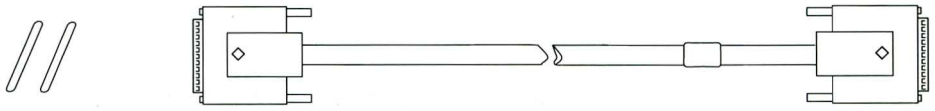


Figure 1-10 IBM® Parallel Interface Cable — SPARCclassic/SPARCstation LX (Option)

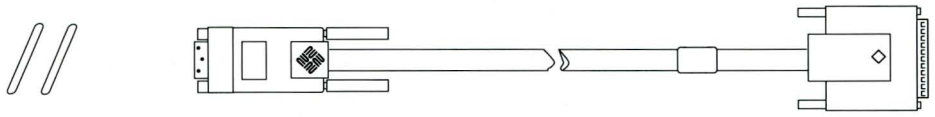


Figure 1-11 IBM Parallel Interface Cable — SPARCstation 10 (Option)

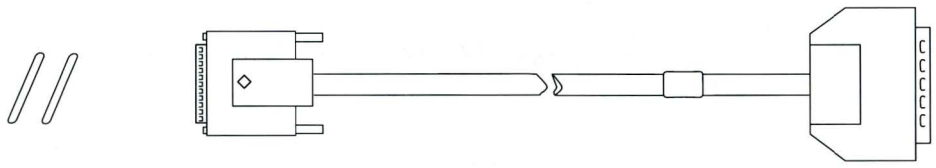


Figure 1-12 Centronics™ Parallel Interface Cable — SPARCclassic/SPARCstation LX (Option)

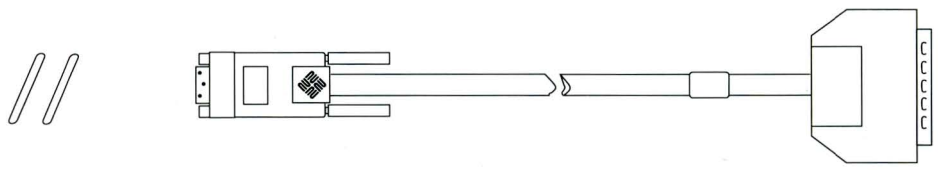


Figure 1-13 Centronics Parallel Interface Cable — SPARCstation 10 (Option)

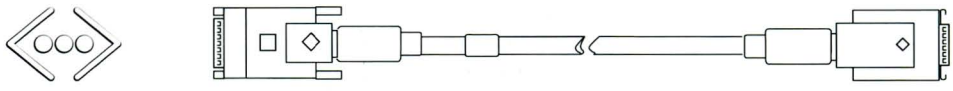


Figure 1-14 Attachment Unit Interface (AUI) Adapter Cable (Option)

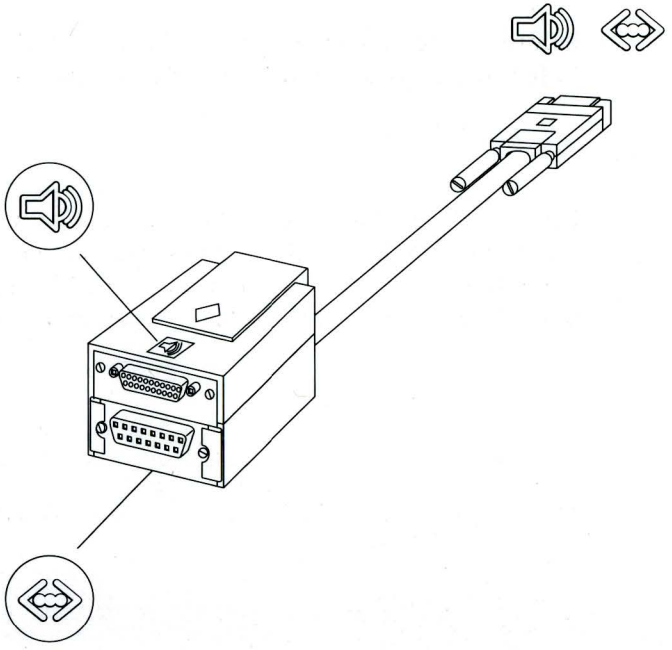


Figure 1-15 Attachment Unit Interface (AUI)/Audio Adapter Cable (Option)

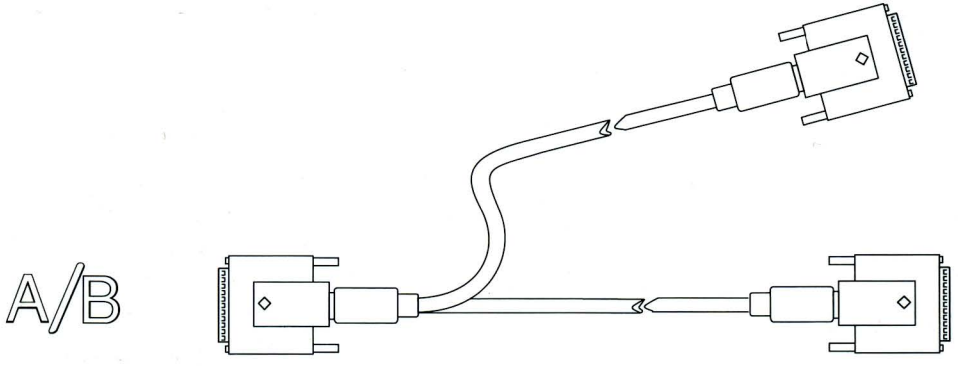


Figure 1-16 Serial Interface Y-Cable (Option)

Examining the System Unit

Before you begin installing your Desktop SPARCstation system, take a moment to familiarize yourself with its external features.

Front Panel

Figure 1-17 and Figure 1-18 show locations for the diskette drive and system power LED (light emitting diode). The power LED is green and remains lit when the power to the system unit is on. For information on using diskettes, see "Using Diskettes, Tapes, and Compact Discs" later in this chapter.

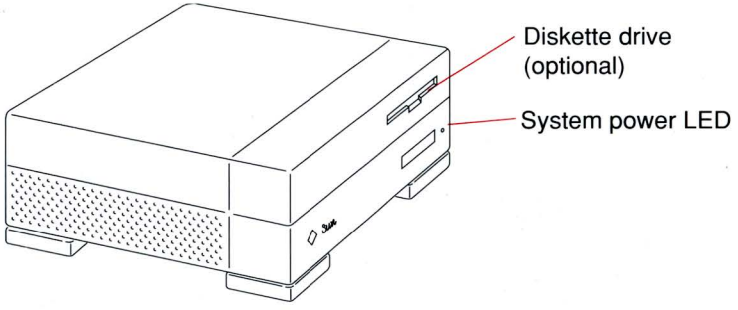


Figure 1-17 Front Panel of the System Unit — SPARCclassic/SPARCstation LX

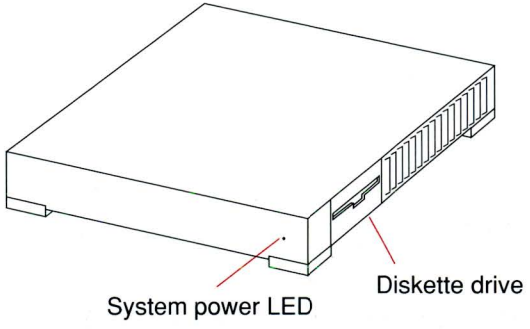


Figure 1-18 Front Panel of the System Unit — SPARCstation 10

Back Panel

The back panel of your Desktop SPARCstation system has a power switch, a power receptacle and outlet, connector openings, and ports. Refer to Figure 1-19 and Figure 1-20 to help you locate them as you connect the rest of the system. These figures also show the icons associated with each port.

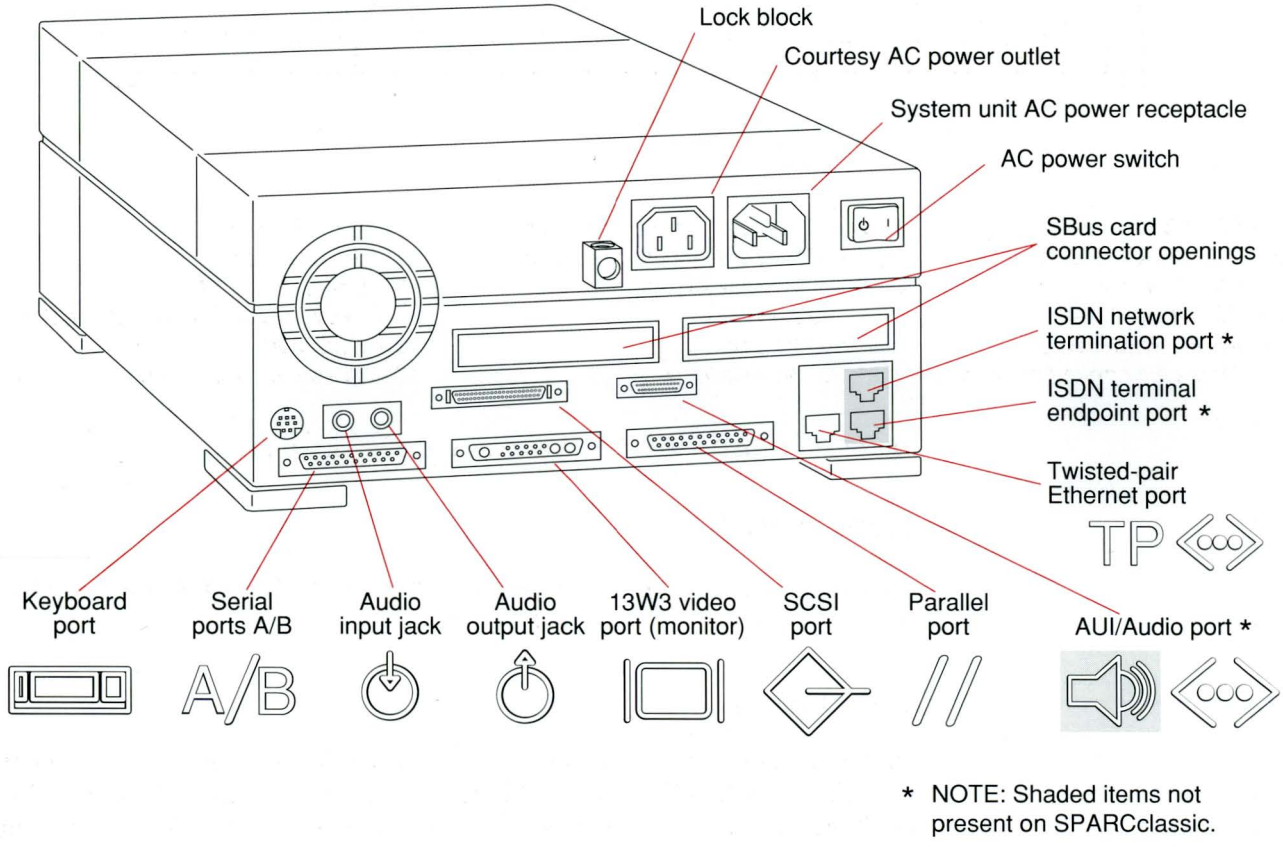
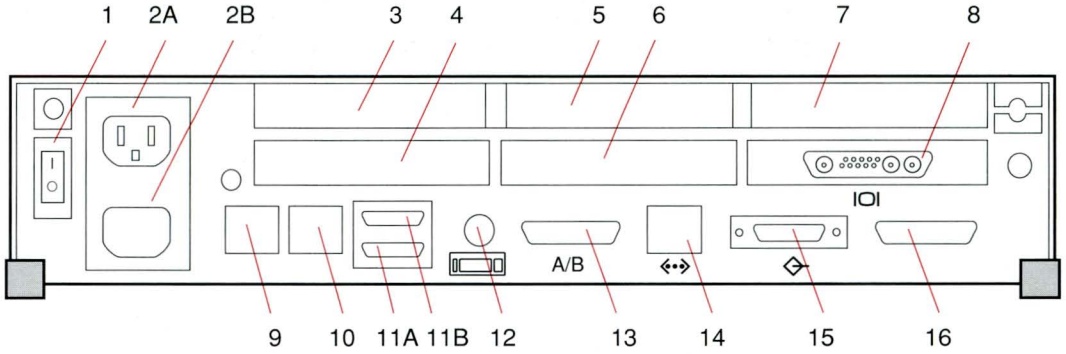


Figure 1-19 Back Panel of the System Unit — SPARCclassic/SPARCstation LX



Legend:

1 – AC power switch
2A – AC power receptacle
2B – AC power outlet
3 – MBus filler panel
4 – MBus filler panel
5 – SBus card connector opening
6 – SBus card connector opening
7 – SBus card connector opening
8 – 13W3 video connector
9 – ISDN port
10 – ISDN port
11A – AUI/Audio port
11B – Parallel port
12 – Keyboard port
13 – Serial ports A/B
14 – Twisted-pair Ethernet connector
15 – SCSI port
16 – Reserved for future use

Figure 1-20 Back Panel of the System Unit — SPARCstation 10

Keyboard Port

The keyboard port on the back panel of the system unit is the connection point for the keyboard cable shown in Figure 1-5.

13W3 Video Port

The video display monitor connects to your Desktop SPARCstation system through the 13W3 video port at the rear of the system unit. All current Sun monitors are also equipped with a 13W3 video port. The cable for connecting between the two 13W3 ports is shown in Figure 1-7.

Attachment Unit Interface (AUI)/Audio Port

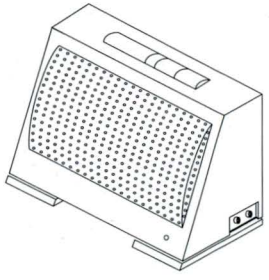
The Attachment Unit Interface (AUI)/Audio port is the connection point for the Sun SpeakerBox shown in Figure 1-21. This port is also used to connect to a thick Ethernet network, although you need a special Ethernet adapter cable to do so. There are two types of adapter cables available:

- AUI/Audio Adapter Cable (Figure 1-15)
- AUI Adapter Cable (Figure 1-14)

You'll need the AUI/Audio adapter cable if you plan to connect your SPARCstation 10 or SPARCstation LX system to both the Sun SpeakerBox and a thick Ethernet network. If you have no plans to connect your system to a thick Ethernet network, you can connect the SpeakerBox directly to the AUI/Audio port.

You'll need the AUI adapter cable if you are connecting your SPARCstation LX or SPARCclassic system to a thick Ethernet network, but have no plans to connect it to a Sun SpeakerBox.

Note – SPARCclassic systems do not support the SpeakerBox. To connect a SPARCclassic system to a thick Ethernet network, use the AUI adapter cable shown in Figure 1-14. See Chapter 2 for details.



The SpeakerBox is:

- Standard with SPARCstation 10
- An option for SPARCstation LX
- Not supported by SPARCclassic

Figure 1-21 Sun SpeakerBox

Twisted-pair Ethernet Connector

The twisted-pair Ethernet (TPE) connector is used to connect the system unit to a twisted-pair Ethernet computer network. A twisted-pair Ethernet cable is similar in appearance to a modular telephone cable (see Figure 1-8).

SCSI Port

The small computer system interface (SCSI) port on the back panel of your Desktop SPARCstation system is the connection point for the system unit to external storage units like hard disk, cartridge tape, and compact disc drives. The optional SCSI cable is shown in Figure 1-9.

Serial Port

You can attach up to two devices to the 25-pin serial port. The primary serial port provides full modem, synchronous, and asynchronous support via a standard serial port cable. There is also a secondary port that you can access with the optional serial interface Y-cable shown in Figure 1-16. This secondary port accommodates asynchronous devices only. If you are not sure what support your serial port device requires, check the documentation accompanying the device. (See Appendix B for more information on connecting serial devices.)

Parallel Port

The parallel port on the back panel of your system unit is the connection point for the optional parallel interface cables shown in Figure 1-10 through Figure 1-13. A typical use of this port is for connecting printers to the system unit.

ISDN Ports (SPARCstation LX, SPARCstation 10 Only)

SPARCstation LX and SPARCstation 10 back panels are equipped with two Integrated Services Digital Network (ISDN) ports. ISDN is a technical standard that provides for fully digital transmission and reception of data, and fully digital end-to-end connectivity of telecommunications devices across a public network.

Caution – The ISDN ports are equipped with plastic plugs. Removal of the plastic plugs and insertion of improper cables into the ISDN ports may cause damage to your system, the network, or both. For further information, see the *Sun ISDN Hardware Configuration Guide.*

Audio Jacks (SPARCclassic, SPARCstation LX Only)

SPARCclassic and SPARCstation LX systems are equipped with audio input and output jacks for connecting audio devices such as microphones, speakers, and headphones. The SunMicrophone that is shipped with your system connects to the audio input jack on the system unit. For information on other types of audio devices you can connect to your system, see Appendix D.

SBus and MBus Connector Openings

Any unused SBus or MBus connector openings are protected by filler panels. These filler panels should remain in place for any opening that is not used.

Adding Internal Parts and Peripheral Devices

This section gives an overview of the types of internal parts and peripheral devices that you can add to your Desktop SPARCstation system, and tells you where to find the procedures for installing them.

Note – Sun recommends that you get your basic system up and running *before* adding internal parts or peripheral devices. That way you can make sure the basic system is working as it should.

After your basic system is working, follow the appropriate instructions to add an internal part or device. This makes it easier for you to isolate any problems that might occur. Although it is possible to add them before you turn on power to your system for the first time, doing so makes the initial installation more complex.

Internal Parts

Depending on the type of system you have, you may want to add some of the following internal parts:

- SBus cards
- MBus modules
- DSIMMs (*dynamic* random access memory *single inline memory modules*)
- VSIMMs (*video* random access memory *single inline memory modules*)
- Internal hard disk drive
- Internal diskette drive

SBus Cards

SBus cards (see Figure 1-22) are printed circuit boards that allow you to connect certain devices such as printers and monitors to your Desktop SPARCstation system. A variety of SBus cards are available, including Ethernet boards for additional Ethernet connections, SCSI host adapter cards for additional SCSI devices, the SPARCprinter™ card for the SPARCprinter product, and monochrome and color frame buffer cards for video monitors.

See Appendixes H and I for instructions on installing SBus cards.

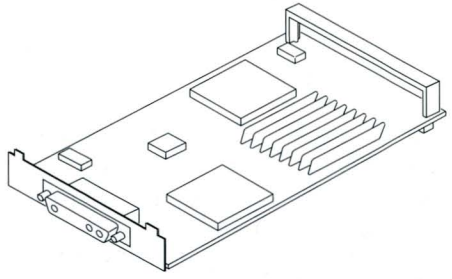


Figure 1-22 Typical SBus Card

MBus Modules (SPARCstation 10 Only)

SPARCstation 10 systems come equipped with one or more MBus modules (Figure 1-23). The MBus module contains the central-processing SPARC integrated circuits including:

- Integer unit (IU)
- Floating point unit (FPU)
- Cache controller
- Cache random access memory (Cache RAM)

As new MBus modules become available, you can upgrade your SPARCstation 10 system by removing the existing MBus module and replacing it with a newer one. Procedures for doing this are found in documents packed with each new MBus module.

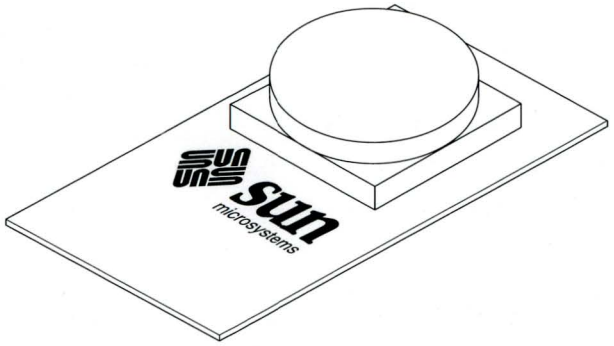


Figure 1-23 SPARCstation 10 MBus Module (Factory-Installed)

DSIMMs

Dynamic random access memory single inline memory modules, or DSIMMs, provide memory for your system (see Figure 1-24). Table 1-1 shows what type of DSIMMs your system supports, together with the system's standard and maximum memory capacities.

For information about installing DSIMMs in SPARCstation 10 systems, see *SPARCstation 10 DSIMMs Installation.*

For instructions on installing DSIMMs in a SPARCclassic or SPARCstation LX system, see *Installing SPARCclassic/SPARCstation LX DSIMMs and VSIMMs.*

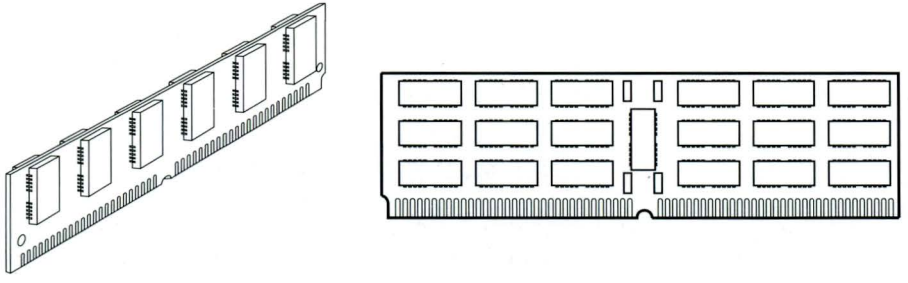


Figure 1-24 Typical DSIMMs

Table 1-1 Desktop SPARCstation Memory

	SPARCclassic and SPARCstation LX	SPARCstation 10
SIMM types supported	4 MB, 16 MB	16 MB, 64 MB
Memory in standard configuration	16 MB	32 MB
Maximum memory capacity	96 MB	512 MB

Video SIMM (SPARCstation LX Only)

SPARCstation LX systems can accommodate an optional one-megabyte video SIMM (VSIMM). The VSIMM, which looks like a DSIMM, allows SPARCstation LX systems to support the following video display resolutions:

- 1600 x 1280
- 1280 x 1024
- 1152 x 900 double-buffered

For instructions on installing Video SIMMs in SPARCstation LX systems, see *Installing SPARCclassic/SPARCstation LX DSIMMs and VSIMMs.*

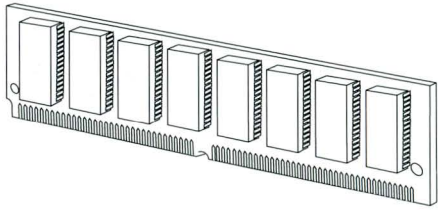


Figure 1-25 A Typical VSIMM

Internal Hard Disk Drive

If your system is diskless, you can order an internal hard disk drive separately. SPARCstation 10 systems come with one hard drive installed and can accommodate a second. Consult your Sun sales representative for a list of hard disk drives currently available for your system. All add-on hard disk drives come with their own installation documents.

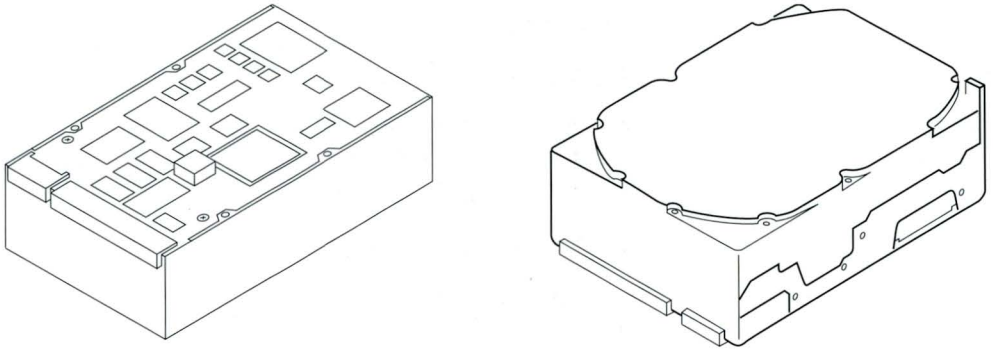


Figure 1-26 Internal Hard Disk Drives

Internal Diskette Drive (SPARCclassic, SPARCstation LX Only)

SPARCclassic and SPARCstation LX system units can accommodate an optional internal diskette drive that is Sun-, IBM-, and NEC-compatible. It uses 3.5-inch (88.9 mm) diskettes (types HD, 2HD, and 2DD) and supports densities of 720 kilobytes, 1.2 megabytes, and 1.44 megabytes. The optional diskette drive comes with its own installation document.

The diskette drive is a standard feature on SPARCstation 10 systems.

Peripheral Devices

Several types of peripheral devices can be connected to your Desktop SPARCstation system. These include SCSI devices to increase your system's storage capacity; serial devices such as printers, modems, and terminals; and audio devices.

SCSI Devices—External Storage Devices

SCSI is an acronym for *small computer system interface*. SCSI devices, such as disk drives, cartridge tape drives, and compact disc drives, provide external storage for your system. These devices connect to the SCSI port on the back panel of the system unit.

Some of the SCSI devices you can connect to your system include the following:

Desktop Storage Packs

- Desktop Disk Pack
- Desktop Sun CD™ Pack
- Desktop Backup Pack

Desktop Storage Modules

- Hard disk drive
- Tape drive

External Storage Modules

- Hard disk drive
- Two hard disk drives
- Hard disk drive and tape drive

For the system to recognize a SCSI device, you must turn off power to the system, connect the device, and then turn the power back on. See the documentation supplied with the SCSI device for installation instructions.

Note – Do not connect External Storage Modules to the SCSI port of a SPARCclassic or SPARCstation LX system—either directly or as part of a daisy-chain configuration. Such configurations are unsupported and may cause SCSI bus data loss.

Note – Sun recommends that you do not combine External Storage Modules with "fast" SCSI devices on the same SCSI bus. Such configurations are unsupported and may cause SCSI bus data loss. A "fast" SCSI device is one that communicates over the SCSI bus at a rate of 10 megabytes per second. Check the specifications for your particular SCSI device to see if it qualifies as a "fast" SCSI device.

Serial Devices—Printers, Terminals, and Modems

Serial devices such as printers, terminals, and modems connect to the serial ports marked "A/B" on the system unit's back panel. Some devices connect to an SBus card that comes with the device. The SBus card must be installed in your workstation's system unit before you can connect the device.

Serial devices can be connected to your system while it is up and running.

Appendix B tells you how to connect printers, terminals, and modems. Appendix C describes the cables used with serial devices.

Audio Devices

Several types of audio devices can be connected to your Desktop SPARCstation system. These include microphones, speakers, headphones, tape players, and compact disc players. Appendix D, "Audio Devices," describes which audio devices you can use, and the parts you need to connect them.

Parallel Devices

Parallel devices such as printers, plotters, and scanners connect to the parallel port on the back panel of the system unit. See the documentation supplied with the parallel device for installation instructions.

Using Diskettes, Tapes, and Compact Discs

You can use diskettes, cartridge tapes, and compact discs with your SPARCstation system to:

- Load software onto your system.
- Save work files.
- Make backup copies of work files for data security.

You must purchase your own new diskettes, cartridge tapes, or compact discs.

Diskettes

Your Desktop SPARCstation system uses 3.5-inch (88.9 mm) high-density diskettes (type HD, 2HD, and 2DD). For information on how to read, write, format, and eject diskettes, see the documentation that accompanies your operating system software.

Cartridge Tapes

You can use cartridge tapes with your Desktop SPARCstation system if it is connected to an optional external tape drive unit or has network access to another Sun system that is connected to an external tape drive unit.

For information about cartridge tapes, see the *Desktop Storage Pack Installation Guide*, the *Desktop Storage Module Installation Guide*, and the *Sun External Storage Module Installation Manual*.

Compact Discs

You can use compact discs with your Desktop SPARCstation system if it is connected to an optional external compact disc drive unit or has network access to another Sun system that is connected to a compact disc drive.

For information about using and handling compact discs, see the *Desktop Storage Pack Installation Guide*.

What's Next

You have finished Chapter 1 and have done the following:

- Selected a work area
- Unpacked the shipping cartons
- Taken inventory
- Identified cables
- Examined the system unit

You have also learned about:

- Internal parts and peripheral devices that can be added to your system
- The types of storage media available on a Desktop SPARCstation system

Now you are ready to turn to Chapter 2 and begin setting up your system.

Installing Your System 2

This chapter explains how to connect the basic components of your Desktop SPARCstation system. It describes how to:

- Install the system unit in the vertical stand (if applicable).
- Connect the mouse to the keyboard.
- Connect the keyboard to the system unit.
- Install the monitor.
- Plug in the power cords to the monitor and system unit.
- Use the lock block.
- Connect the system to an Ethernet network (optional).

It also tells you where to get safety information for your system and what to do if you want to install additional internal parts or peripheral devices.

Note – If you ordered a deskside server system, this manual is not for you. Refer instead to the documentation packaged with your server system.

Safety Information

Safety information is contained in a section entitled "Safety Agency Compliance" in the front of this book. Be sure to read the entire section before installing and operating this equipment.

This information also appears after the English version in French, German, and Spanish translations.

Installing Internal Parts and Peripheral Devices

Your Desktop SPARCstation system comes with all basic internal parts installed. If you ordered any parts separately, such as SBus cards or additional memory modules, you can either install them before connecting the basic components of the system as described in this chapter, or install them after you get your basic system up and running.

Note – Sun recommends that you get your basic system up and running *before* installing additional internal parts or peripheral devices. That way you can make sure the basic system is working as it should without them.

After your basic system is working, follow the appropriate instructions to add an internal part or a device. This makes it easier for you to isolate any problems that might occur. Although it is possible to add them before you turn on power to your system for the first time, doing so makes the initial installation more complex.

Procedures and Information

The following documents contain installation procedures and related information for internal parts and peripheral devices:

- MBus modules – See the document that is packed with each MBus module.
- DRAM Single Inline Memory Modules (DSIMMs) – See *SPARCstation 10 DSIMMs Installation* or *Installing SPARCclassic/SPARCstation LX DSIMMs and VSIMMs*, whichever is applicable.
- Video RAM Single Inline Memory Modules (VSIMMs) – See *Installing SPARCclassic/SPARCstation LX DSIMMs and VSIMMs.*
- Internal hard disk drives – Each internal disk drive comes with its own installation manual.
- Internal diskette drive – See the *SPARCclassic/SPARCstation LX Diskette Drive Installation Guide.*
- SCSI devices (external storage) – See the manual that is shipped with the device.
- Serial devices (printers, terminals, modems) – See Appendix B.

- Audio devices – See Appendix D.
- SBus cards – See Appendices H and I.

See "Adding Internal Parts and Peripheral Devices" in Chapter 1, "Getting Started," for more information about internal parts and peripheral devices.

Note – Do not connect External Storage Modules to the SCSI port of a SPARCclassic or SPARCstation LX system—either directly or as part of a daisy-chain configuration. Such configurations are unsupported and may cause SCSI bus data loss.

Note – Sun recommends that you do not combine External Storage Modules and "fast" SCSI devices on the same SCSI bus. Such configurations are unsupported and may cause SCSI bus data loss. A "fast" SCSI device is one that communicates over the SCSI bus at a rate of 10 megabytes per second. Check the specifications for your particular SCSI device to see if it qualifies as a "fast" SCSI device.

Using the Vertical Stand (SPARCclassic/SPARCstation LX Only)

SPARCclassic and SPARCstation LX systems include a vertical stand for the system unit. Use of the stand is *optional*.

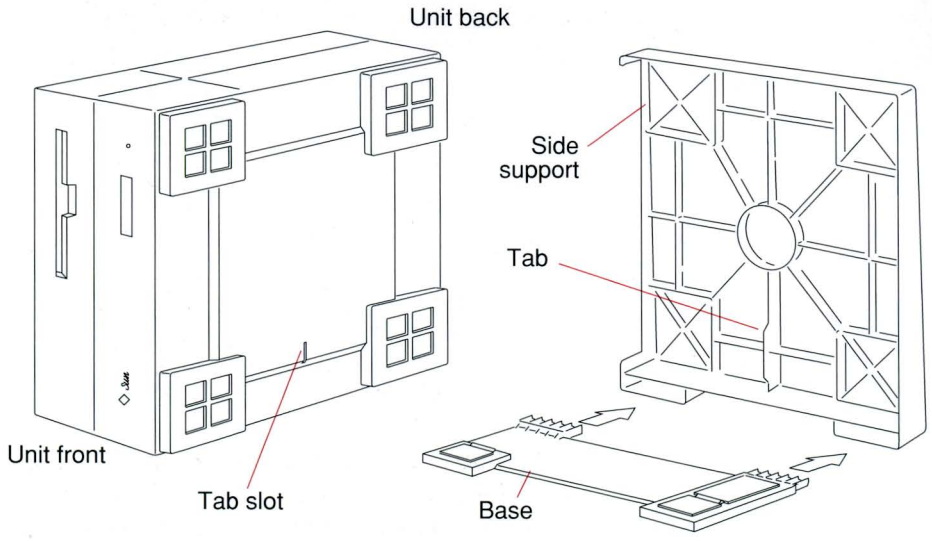
The stand has two pieces—a base and a side support. The side support has a tab that fits into a slot on the bottom of the system unit. The tab allows the system unit to fit into the stand in *one way only.*

This section tells you how to assemble the stand and insert the system unit into the stand. It also tells you how to remove the system unit from the stand.

Caution – Do not place the system unit on its side without using the vertical stand.

To assemble the vertical stand:

1. **Hold the base in one hand with the rubber feet down.**
2. **Insert the base tabs into the slots on the side support.**
3. **Set the stand upright (rubber feet on work area).**



To insert the system unit into the stand:

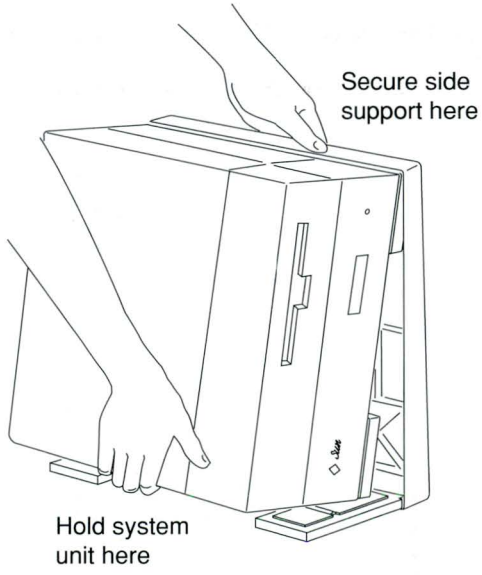
Note – The power to the system unit must be turned *off*. Cables and power cords must *not* be installed.

---

1. **Hold the system unit on its side with the top facing you and the bottom facing the stand.**
   The front of the system (with the diskette drive slot) is on your right, and the back of the system (with the connectors) is on your left.

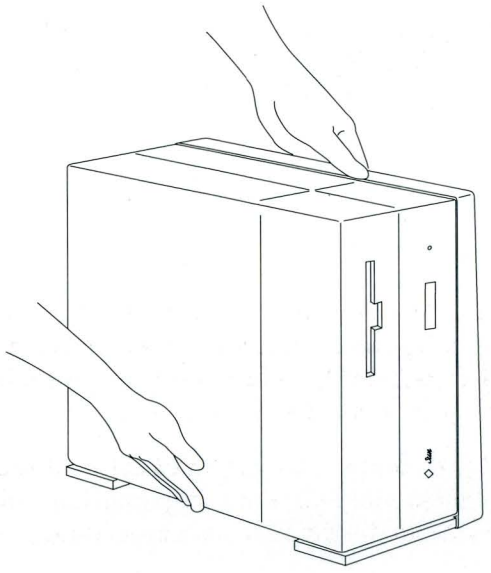
   The tab on the stand's side support allows the system unit to fit into the stand in *one way only*.

2. **Hook the top two feet of the system under the upper rim of the side support.**
   Use one hand to secure the side support and one hand to hold the system.



3. **Continue to secure the top of the side support, and align the two bottom feet of the system with the base of the stand.**
   The tab slot on the bottom of the system lines up with the tab on the side support.

4. **Rotate the system to a vertical position and gently press it towards the stand.**
   You will hear a click when the system unit is fully engaged.



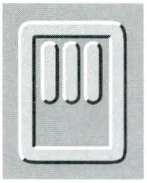
To remove the system unit from the stand:

Note – The power to the system unit must be turned *off*. Cables and power cords must *not* be installed.

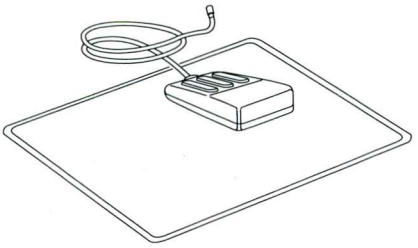
---

1. **Secure the top of the side support with one hand, and lift the system at the base of the stand.**
2. **Rotate the bottom two feet of the system away from the stand.**
   This disengages the system from the stand.
3. **Set the system unit on its feet.**

Connecting the Mouse to the Keyboard

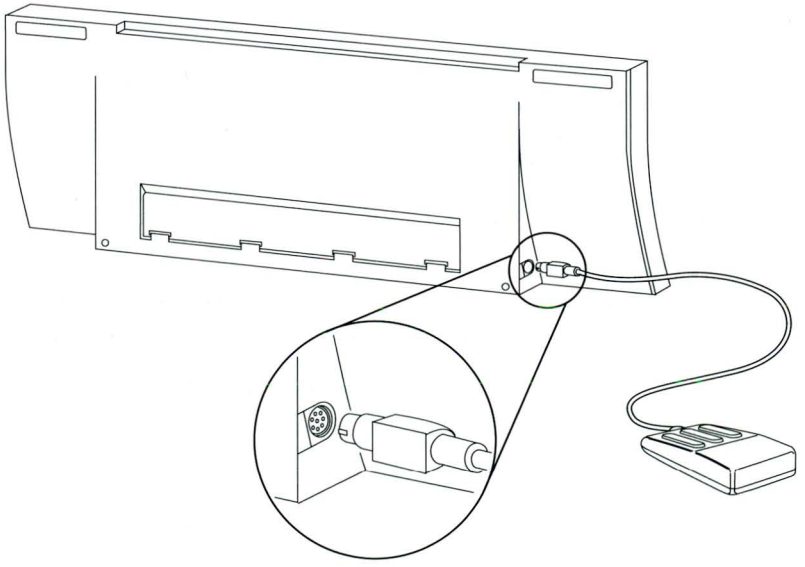


1. **Find the mouse with its attached cable.**
   Remove the protective end cap from the plug.

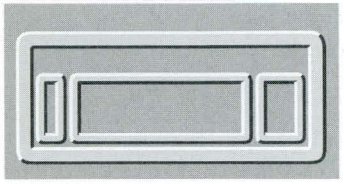


2. **Locate the jack on the underside of the keyboard.**
   The jack you use depends on where you want to place the mouse on your desktop. Insert the plug into the left jack if you are left-handed, or into the right jack if you are right-handed.

3. **Plug the mouse cable into a keyboard jack.**
   The plug is keyed for correct insertion. Align the flat sides of the plug and the jack, and then push in the cable plug firmly.



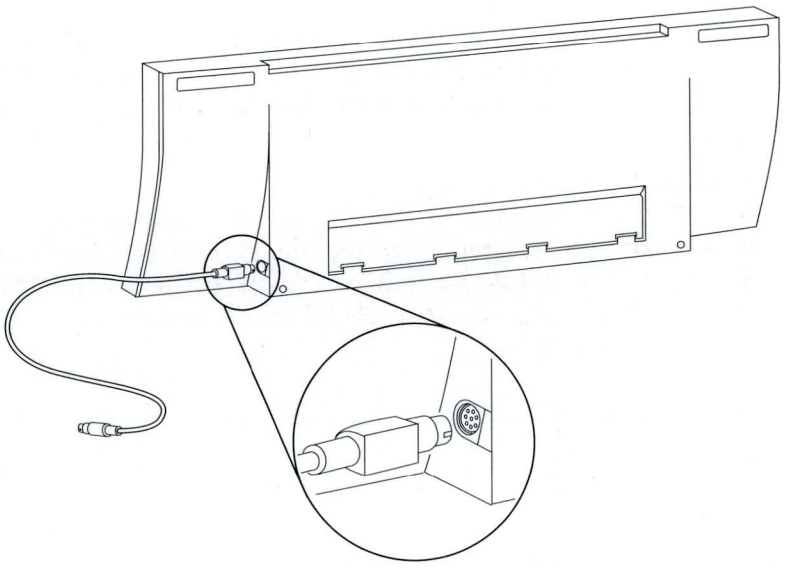
Connecting the Keyboard to the System Unit



If you plugged the mouse into the right keyboard jack, use the left keyboard jack for the keyboard cable. If you plugged the mouse into the left keyboard jack, use the right keyboard jack for the keyboard cable.

To connect the keyboard to the system unit:

1. **Insert either end of the keyboard cable into the free keyboard jack.**
   The plug is keyed for correct insertion. Align the flat sides of the plug and the jack, and then push in the cable plug firmly.



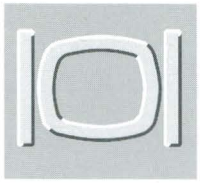
2. **Find the keyboard port on the back panel of the system unit.**
   The port is identified with the following icon: Illustrations for the system unit back panel are found on pages 12 and 13.

3. **Push the remaining keyboard cable plug into the keyboard port.**
   Align the key groove on the cable plug with the key slot on the port. Push the cable plug into the port so that the cable is firmly connected.

4. **Place the keyboard in a comfortable position on your desk top.**

5. **Set the mouse on the mouse pad.**

Installing the Monitor



The monitor allows you to view the progress and operation of the system. It has a video display screen and receives its picture signal from a frame buffer inside your SPARCstation system unit.

SPARCclassic and SPARCstation LX systems have a frame buffer built into the main logic board. Most SPARCstation 10 systems have an SBus frame buffer card that comes pre-installed on the main logic board.

The connector opening for this frame buffer is the 13W3 video port on the back panel of your system unit. The monitor is connected to the system's video port with a 13W3 video cable, as described in the following sections.

Frame buffers are also available on optional SBus cards that can be installed in the system unit. If you are connecting a monitor to an SBus frame buffer card, see Appendixes H and I for instructions on installing the SBus card.

Using the 13W3 Video Cable

All current Sun monitors have a 13W3 video input port on their back panel. A 13W3 video cable connects this port to the 13W3 video output port on the back panel of your SPARCstation system unit.

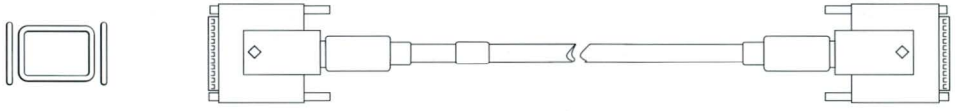


Figure 2-1 13W3 Video Cable

A 13W3 video cable of sufficient length (4 feet/1.2 meters) is provided with your Sun monitor. You can order a longer cable (14.8 feet/4.5 meters) if you need it. If you have special cable length requirements, ask your Sun sales representative about the availability of appropriate alternate cables.

Caution – Some Sun cables are of specific lengths in conformity with engineering and safety standards. Using an inappropriate alternative cable may degrade the performance of your equipment and may be hazardous.

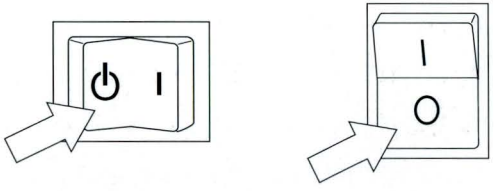
Connecting the Monitor

To connect the monitor to the system unit:

1. **Place the monitor where you want it.**

Caution – Monitors with bases the same size or smaller than the system unit can be placed safely on top of the unit. Monitors with larger bases may be unstable.

2. **Make sure that the power switches on both the system unit and the monitor are in the Off (or Standby) position.**
   Press the side labeled ○ (or ⏻).



   The power cord should *not* be plugged into the power receptacle on the back panel of the monitor at this time.

3. **Remove the protective end caps from the cable plugs at both ends of the 13W3 video cable.**

4. **Connect the 13W3 video cable to the monitor.**
   Insert either end of the 13W3 cable into the 13W3 video input port on the back panel of the monitor.

   Hand tighten the two screws on both sides of the 13W3 plug by turning the screws clockwise. Be careful not to overtighten the screws.

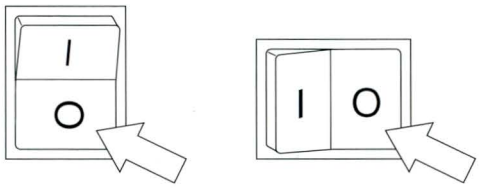
5. **Connect the 13W3 video cable to the system unit.**
   Insert the other end of the 13W3 cable into the 13W3 video port on the back panel of the system unit. Illustrations for the system unit back panel are found on pages 12 and 13.

   Hand tighten the two screws on both sides of the 13W3 plug by turning the screws clockwise. Be careful not to overtighten the screws.

Plugging In the Monitor Power Cord

To plug a power cord into the monitor:

1. **Make sure the power switch on the monitor is in the Off position. Press the side labeled O.**
   The switch may be located in different places depending on the type of monitor. It is typically located on the front of the unit or on the back panel.



2. **Plug in the monitor power cord.**
   Plug the female end of the power cord into the receptacle on the back of the monitor. Plug the male end of the power cord into a power outlet, *but not into the outlet located on the back of the system unit.*

Warning – Sun products are designed to work with single-phase power systems having a grounded neutral conductor. To reduce the risk of electric shock, do not plug Sun products into any other type of power system. Check the power rating on your outlet before connecting all devices to the wall outlet or to a power strip. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

Plugging In the System Unit Power Cord

To plug a power cord into the system unit:

1. **Make sure the power switch on the system unit is in the Off (or Standby) position. Press the side labeled O (or ⏻).**
2. **Plug the female end of the system unit power cord into the AC power receptacle on the back of the system unit.**
   See pages 12 and 13 for the location of the AC power receptacle.
3. **Plug the male end of the system unit power cord into an AC power outlet.**

Using the Lock Block

The lock block is a small part that measures approximately 10 by 14 by 14 millimeters and is installed on the rear panel of your system unit (Figure 2-2). It contains a single small Phillips screw, one square hole, and two round holes. You use the lock block to secure your Desktop SPARCstation system unit to a desk, workbench, or other piece of office furniture to prevent unauthorized moving or removal of your system.

To use the lock block:

1. **Locate the lock block on the system unit back panel.**

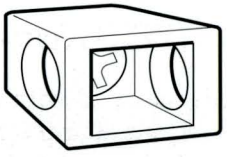


Figure 2-2 Lock Block

2. **Pass a small-gauge locking cable, cable-and-lock, or chain-and-lock through the lock block holes.**
   The maximum cable diameter for use with the lock block is 6 millimeters (3 AWG).

3. **Lock the system unit to a piece of office furniture.**

Connecting to an Ethernet Network (Optional)

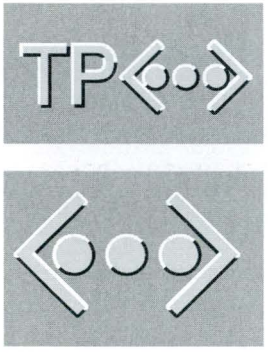
If your system is going to be part of an *existing* Ethernet network, you must connect it to the network using a twisted-pair Ethernet (TPE) cable or a thick Ethernet transceiver cable, as detailed in the following subsections.

If you are setting up a *new* network, see your system administrator or consult the network administration documentation supplied with your operating system software.

Caution – Connect only *one* Ethernet cable to your Desktop SPARCstation system—*either* a twisted-pair Ethernet (TPE) cable *or* a thick Ethernet cable. *Do not connect both* TPE and thick Ethernet cables to your system at the same time. If you require access to two different Ethernet networks, purchase and install an optional Sun SBus Ethernet card.

Note – If you are installing the system on a network that uses an interface *other than* Ethernet, see the documentation provided with that network interface card for installation procedures now.

Connecting to a Twisted-Pair Ethernet (TPE) Network



A twisted-pair Ethernet cable is included with your Desktop SPARCstation system. The TPE cable has plastic modular plugs at both ends. Both plugs have a plastic snap-lock tab. Figure 2-3 shows details of the TPE cable plugs.

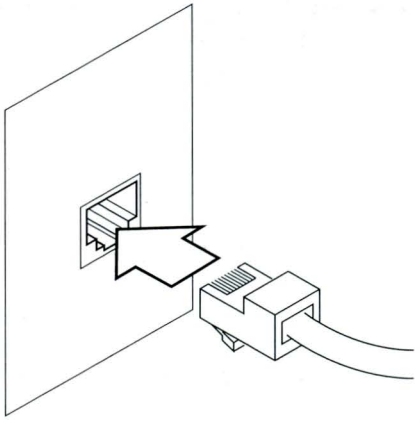
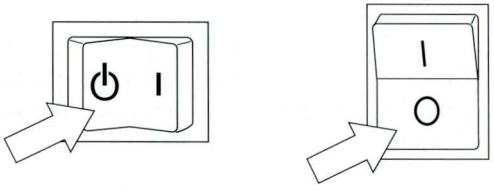


Figure 2-3 Connecting a Twisted-pair Ethernet (TPE) Cable

Caution – If the outlet you want to plug the cable into is not clearly marked for local area network (LAN) data use, consult your system administrator before plugging in the cable. TPE cable plugs and outlets resemble similar plugs and outlets which connect to the public telephone network. Connecting a TPE cable to the public telephone network can do damage to the network as well as to your computer equipment.

To connect a twisted-pair Ethernet (TPE) transceiver cable:

1. **Make sure the power switch on the system unit is in the Off (or Standby) position. Press the side labeled O (or ⏻).**



2. **Locate the TPE outlet.**
   The TPE outlet may be set in the wall or the floor, and resembles a telephone set's modular jack or outlet.

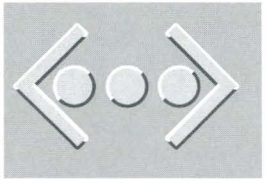
3. **Plug one end of the TPE cable into the TPE outlet.**
   See Figure 2-3. Push the plug into the outlet until you hear the snap-lock tab "click" and feel the plug making a firm connection.

4. **Locate the TPE connector on the back panel of the system unit.**
   The TPE connector resembles a telephone set's modular jack. It is identified with the TP⟨◦◦◦⟩ icon on SPARCclassic and SPARCstation LX systems or the ⟨◦◦◦⟩ icon on SPARCstation 10 systems. For connector locations, see the back panel illustrations on pages 12 and 13.

5. **Plug the TPE cable into the TPE connector on the back panel of the system unit.**
   Push the plug into the connector until you hear the snap-lock tab "click" and feel the plug making a firm connection.

6. **Before you turn on your Desktop SPARCstation system, read Appendix G, "Twisted-Pair Ethernet Link Test."**
   Appendix G contains important information for getting your system to communicate correctly over a twisted-pair Ethernet network.

Connecting to a Thick Ethernet Network



To connect your Desktop SPARCstation system to a thick Ethernet network, you must purchase an optional Ethernet adapter cable for your system. There are two types of adapter cables to choose from:

- Attachment Unit Interface (AUI) adapter cable
- Attachment Unit Interface (AUI)/Audio adapter cable

You'll need the AUI/Audio adapter cable if you plan to connect your SPARCstation 10 or SPARCstation LX system to the Sun SpeakerBox in addition to a thick Ethernet network. The AUI/Audio adapter cable is shown in Figure 2-5.

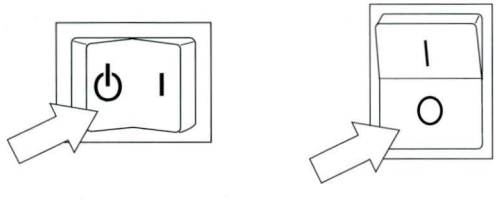
You'll need the AUI adapter cable if you are connecting your SPARCstation LX or SPARCclassic system to a thick Ethernet network, but have no plans to connect to a Sun SpeakerBox. This cable is shown in Figure 2-4.

Note – SPARCclassic systems do not support the SpeakerBox. To connect a SPARCclassic system to a thick Ethernet network, use the AUI adapter cable shown in Figure 2-4.

To connect your system to the network, you will also need an Ethernet transceiver cable. You should see the person in charge of your network about getting an Ethernet transceiver cable for your system.

To connect your system to a thick Ethernet network:

1. **Make sure the power switch on the system unit is in the Off (or Standby) position. Press the side labeled ○ (or ⏻).**



2. **Locate the AUI/Audio port on the back panel of the system unit.**
   For connector locations, see the back panel illustrations on pages 12 and 13.

   If an adapter cable is already connected to the AUI/Audio port, skip ahead to Step 5.

3. **Locate the appropriate Ethernet adapter cable for your system configuration.**
   Use the AUI/Audio adapter cable if you are also connecting your system to a Sun SpeakerBox. Otherwise, use the AUI adapter cable.

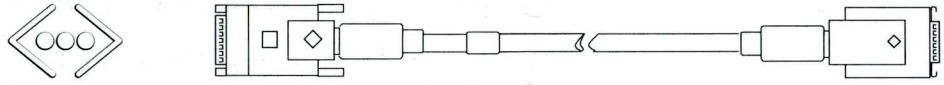


Figure 2-4 AUI Adapter Cable

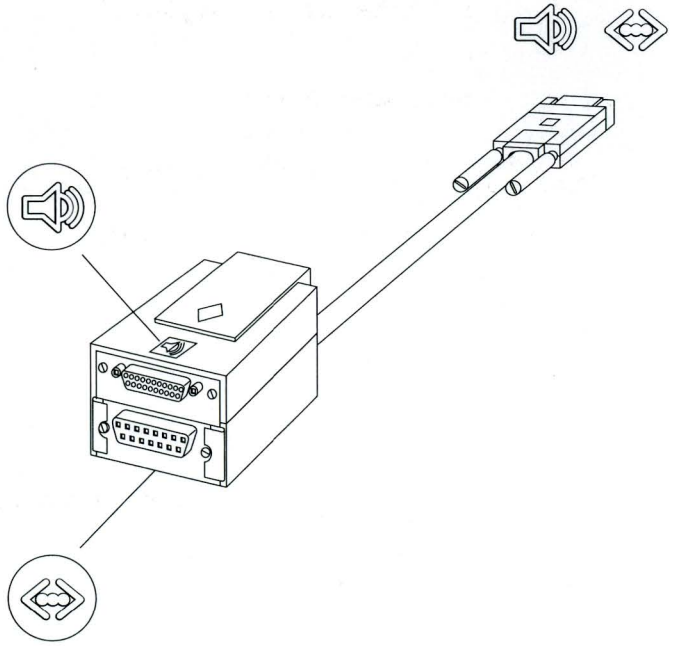


Figure 2-5 AUI/Audio Adapter Cable

4. **Connect the male end of the Ethernet adapter cable to the AUI/Audio port.**
   Hand tighten the two screws on both sides of the connector by turning the screws clockwise. Be careful not to overtighten the screws.

5. **Attach the male end of the Ethernet transceiver cable to the 15-pin D connector on the adapter cable.**
   The 15-pin D connector features a slide-locking mechanism and is identified with the following symbol: ⟨⋯⟩

   With the two cables oriented as shown in Figure 2-6, push the slide-lock mechanism fully to the left. Then insert the male end of the transceiver cable into the adapter cable connector. Finally, press the slide to the right so that it engages the posts on the transceiver cable's connector.

6. **Connect the female end of the transceiver cable to the Ethernet tap.**
   The Ethernet tap may be set in the wall or the floor, or it may descend from the ceiling. Locate the Ethernet tap and align the holes in the connector with the pins in the tap. Align the slide-lock so that the screws on the tap can pass through. Push the connector firmly onto the tap. Then push the slide-lock to lock the connector in place.

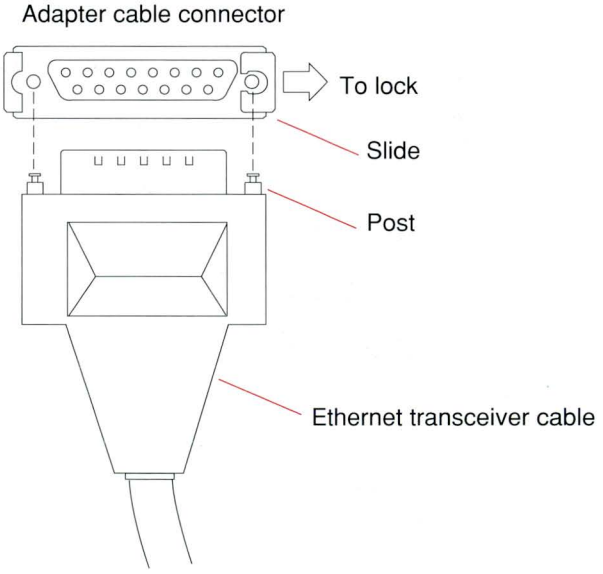


Figure 2-6 Connecting the Ethernet Transceiver Cable

What's Next

You have completed the basic installation of your Desktop SPARCstation system hardware. Now you are ready to move on to Chapter 3 to turn on power to your system for the first time.

Note – Do not turn on your Desktop SPARCstation system until instructed to do so in Chapter 3.

Turning the System Power On and Off 3

Turning a computer on and off is not as simple as operating a household appliance like a stereo or television set. You must follow specific procedures for turning on and off the power.

This chapter tells you:

- How to power on your system for the first time
- What to do if power-on does not succeed
- When to turn the power off
- How to turn the power off
- How to turn the power back on

Your Desktop SPARCstation system is designed to be left running continuously. Turning the power on and off too frequently can damage the system's electrical components. Turning the power off at the end of your work day is not necessary, but doing so does not harm the system.

Note – Procedures for powering your workstation on and off depend on the operating system software you use. Be sure to consult the documentation supplied with your operating system for instructions on installing and configuring the operating system, and for power on and power off procedures.

Powering On Your System for the First Time

The procedure for powering on your system for the first time depends on the operating system you are using. If your system is connected to a network, the network will require some advance preparation *before* you turn on your system.

This network preparation is typically done by the person in charge of your network. When you are ready to power on your Desktop SPARCstation system for the first time, notify your system administrator that you wish to do so. He or she will make the necessary preparations and provide you with some information you may need. After you receive permission from the system administrator to power on your system, perform the following procedure.

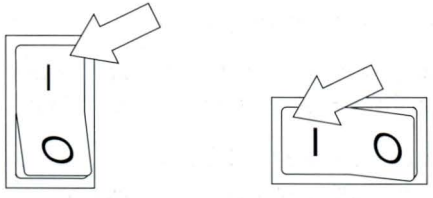
Note – Do not power on your system until you have notified your system administrator and have received permission to proceed. If you must act as your own system administrator, see the documentation that accompanies your operating system software.

To power on your system:

1. **Turn on the power to the external drive units (if any), starting with the unit that has the SCSI terminator attached.**
   The drive unit that is connected directly to your SPARCstation system unit should be turned on last.

   Refer to the documentation that comes with your drive(s).

2. **Turn on the power to the monitor.**
   Find the power switch on the monitor. Press the side labeled |.



3. **Turn on the power to the system unit.**
   Press the side of the switch labeled |. For power switch locations, see the back panel illustrations on pages 12 and 13.

If your Desktop SPARCstation system is operating properly, your monitor displays a banner screen up to 30 seconds after it is powered on.

```
SPARCstation XXX, Keyboard Present
ROM Rev. X.XY, XX MB memory installed, Serial #XXX
Ethernet address X:X:YY:Z:A:BB, Host ID:  XXXXXXXX
```

At this point, the operating system may start to boot automatically or you may need to enter a command at the system prompt. What you do next depends on the operating system software you are using. Consult the documentation supplied with your operating system for instructions on booting, installing, and configuring the operating system.

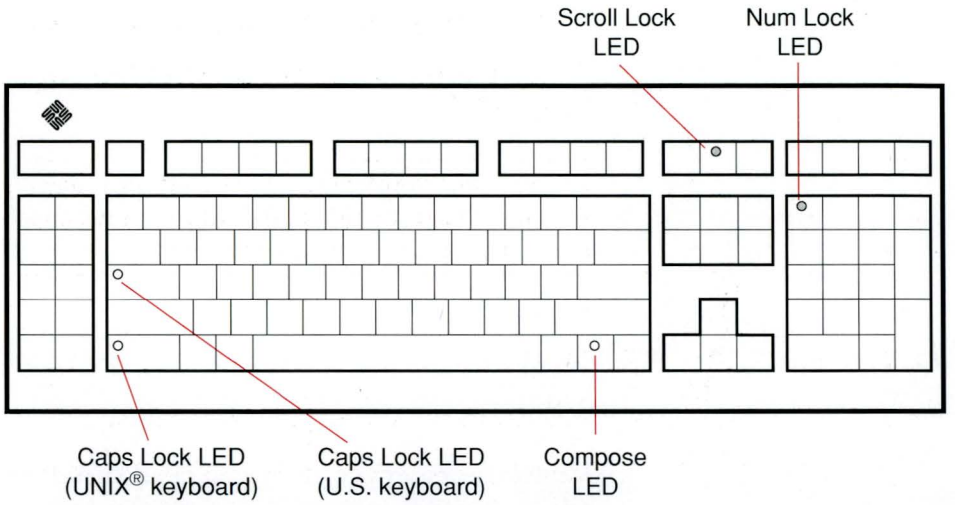
Caution – Once the power is on, you should leave the system running, barring one of the few situations that warrants shutting it off. Conditions that warrant shutting off the system and turning the power off are described later in this chapter (starting on page 47).

What To Do if Power-On Does Not Succeed

If you do not see the banner screen within 30 seconds after you turn on the power, proceed as follows:

1. **Make sure the power switch on the system unit is in the Off (or Standby) position. Press the side labeled ○ (or ⏻).**
2. **Make sure that all cable connections are secure.**
   Loose cables are a common source of computer "failures."
3. **Turn on the power to the system unit and immediately press Stop(L1)-d.**
   Hold down the Stop(L1) key, then press d. This action initiates the power-on diagnostic tests.

The status of the power-on tests is conveyed by four light-emitting diodes (LEDs) on the system keyboard. The LEDs are on the Caps Lock, Scroll Lock, Num Lock, and Compose keys:



To indicate the beginning of the tests, the four LEDs briefly illuminate all at once. The Caps Lock key then begins flashing on and off for the duration of the tests.

4. **Watch for keyboard LED illumination.**
   If the power-on tests detect a problem, one of the three LEDs on the right half of the keyboard will illuminate again. Each lit LED indicates a failed part. Watch the LEDs and note which, if any, are lit. The LED may be lit for only a few seconds before the system continues its tests.

5. **Watch for failure messages on the display monitor.**
   In some cases, the power-on tests will generate failure messages on the display monitor. Record any failure messages you see.

6. **Watch for failure messages on an attached terminal.**
   When your system unit fails a power-on test, it sends failure messages to the serial port on its back panel. If you have a terminal connected to serial port A on your system, you will see test failure messages displayed on the terminal screen. Note that your monitor is different from a terminal and is not connected to the back panel serial port. For information on installing and configuring a terminal, see Appendix B.

In this application the serial port on your terminal must be set at 9600 baud. See Appendix B for additional information.

If your system fails a power-on test, or exhibits some other problem, call your authorized Sun customer service representative (or other service provider).

When you call, tell the service engineer about any failure messages you may have seen and which LEDs, if any, were lit. This will help the service engineer restore your system to its full performance potential as quickly as possible.

To interpret the meaning of each LED, see Appendix A, "Type-5 Keyboard LED Diagnostics."

Note – Once your system is booted and running the operating system, these LEDs are used for the keyboard functions as labeled and should *not* be interpreted as diagnostic error codes.

When To Turn the Power Off

Turn off the power only if you want to:

- Remove or install a part inside the system unit.
- Remove or install an external drive unit or monitor.
- Unplug the system unit power cord; for example, to move the system to a new location.
- Recover from a "hung" or "frozen" system—a system that does not respond to the keyboard or the mouse.
- Prepare for an *expected* power outage in your building.

  Note that you cannot plan for an *unexpected* power outage. When an unexpected outage occurs, turn off the power switches on all your equipment. Doing this protects your equipment from possible power surge damage when power is restored to your building.

Turning the power off at the end of your work day is not necessary, but doing so does not harm the system. Turning the power off conserves energy; but if your system is connected to a network, you may be unable to receive electronic mail messages if the mail program depends on your local disk.

Do not turn off the power to stop a software installation procedure. Instead, press Stop(L1)-a and see "When Your System Does Not Respond Normally" on page 49. Turn off the power to stop the procedure *only if* pressing Stop(L1)-a does not stop it. If you are using a terminal as the system console, press the Break key to stop the software installation procedure.

Caution – Always allow at least 10 seconds between turning off the power and turning it back on again. This pause prevents possible damage to power supply components in the system unit.

How To Turn the Power Off

The way you turn off the power depends on whether your system is working normally or not, as described in the next sections.

When Your System Is Working Normally

1. **Save all your work.**
   Consult your software documentation for instructions on ending a work session and saving your files. If you do not save your work, you could lose it when you switch off the power.

2. **Return to the operating system environment.**
   If you are in a windowing environment, exit from it and wait for the system prompt to appear. See the documentation supplied with your windowing system.

3. **Halt the operating system.**
   See the documentation supplied with your operating system for instructions on how to halt it.

4. **After halting the operating system, wait for either the > or `ok` prompt.**
   The system displays system halt messages followed by either the > or `ok` prompt.

   When either prompt appears, you can safely turn off the power in the proper sequence.

5. **Turn off the power in sequence to:**
   a. External drive units (if any)
   b. Desktop SPARCstation system unit
   c. Monitor

Caution – Always allow at least 10 seconds between turning off the power and turning it back on again. This pause prevents possible damage to power supply components in the system unit.

When Your System Does Not Respond Normally

If your system does not respond to the mouse or keyboard, end your work session and turn off the power as follows:

1. **If your system is on a network, wait a few minutes before taking any action.**
   Your system's slow response may be due to network problems or delays. Check with the person in charge of your network. If the response is not due to the network, go to the next step.

2. **Press Stop(L1)-a (or Break).**
   If you use a Wyse® WY-50™, VT100™, or compatible terminal as the console with your SPARCstation system unit, press Break instead of Stop(L1)-a.

   Pressing Stop(L1)-a (or Break) puts the system into the PROM (Programmable Read-Only Memory) monitor command mode (indicated by the `ok` prompt).

Note – If the system does not respond to the mouse and keyboard, pressing Stop(L1)-a will not be effective. You may have to turn the power off, wait at least 10 seconds, and turn the power on again. Then try pressing Stop(L1)-a again.

3. **When the `ok` or > prompt appears, boot the operating system.**
   Type `boot` at the `ok` prompt or `b` at the > prompt.

4. **Halt the operating system in an orderly fashion.**
   See the documentation supplied with your operating system for instructions on how to halt it.

5. **After halting the operating system, wait for either the > or `ok` prompt.**
   The system displays system halt messages followed by either the > or `ok` prompt. When either prompt appears, you can safely turn off the power in the proper sequence.

6. **Turn off the power in sequence to:**

   a. All external drive units, if any

   b. Desktop SPARCstation system unit

   c. Monitor

Caution – Always allow at least 10 seconds between turning off the power and turning it back on again. This pause prevents possible damage to power supply components in the system unit.

How To Turn the Power Back On

If you have turned off the power after using the system, turning the power on again is relatively simple.

Note – If you are powering on your system *for the first time,* follow the instructions in "Powering On Your System for the First Time" on page 44.

1. **Turn on the power in this sequence:**

   a. External drive units (if any), starting with the unit that is furthest electrically from the system unit

   b. Monitor (if you turned it off)

   c. Desktop SPARCstation system unit

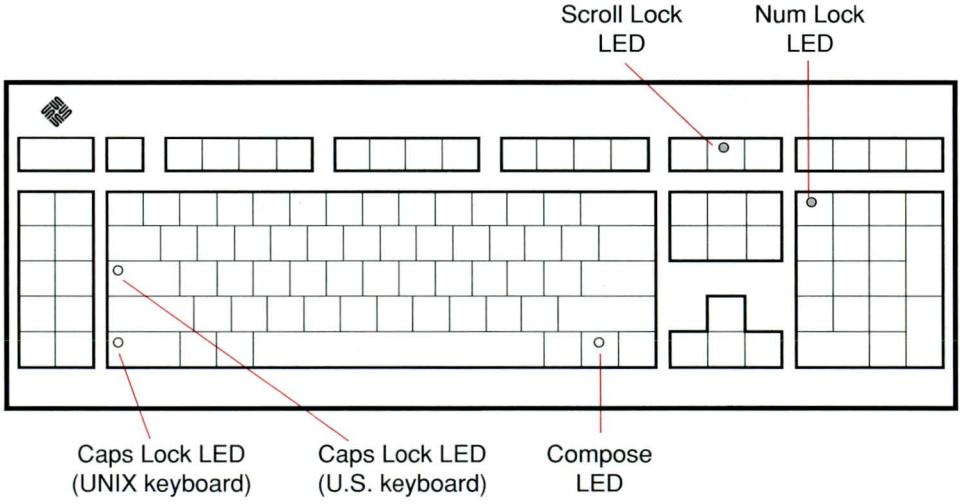
2. **Boot the operating system.**
   The operating system may start to boot automatically or you may need to enter a command at the system prompt. What you do next depends on the operating system software you are using. Consult the documentation supplied with your operating system for instructions on booting and logging in to your system.

What's Next

Congratulations—you're ready to start using your new Desktop SPARCstation system. Consult the documentation supplied with your operating system for further instructions.

Type-5 Keyboard LED Diagnostics A

Across the right half of your Desktop SPARCstation keyboard are three light-emitting diodes (LEDs) that may illuminate to indicate that a system part has failed a power-on test. The LEDs are on the Compose, Scroll Lock, and Num Lock keys as shown below. The Caps Lock key LED, located on the left-hand side of the keyboard, is not used as a power-on test failure indicator. Its LED simply flashes on and off to indicate that power-on tests are in progress.



These keyboard LEDs display the following:

- *Diagnostic error status*
  During the system's power-on tests, a lit LED indicates that one of the system's internal replaceable parts has failed the power-on tests.

- *Status of keyboard functions*
  Once your system is booted and running the operating system, each LED displays the status (on or off) of the *keyboard functions as labeled*: Caps Lock, Compose, Scroll Lock, and Num Lock. During normal system operation, the LEDs should *not* be interpreted as diagnostic error indicators.

This appendix describes what to expect during the power-on tests, and how to interpret the keyboard diagnostic LEDs.

Note – The keyboard LED diagnostics feature described here applies only to a Desktop SPARCstation system with a Sun Type-5 keyboard connected to its keyboard port. The LED diagnostics feature does not apply if a different keyboard is connected to the keyboard port, or if a terminal and its keyboard are used as a main console instead of a monitor and Sun Type-5 keyboard.

Power-on Tests

Your Desktop SPARCstation system does not normally run its power-on diagnostic tests. You must tell the system when to begin the tests. The easiest way is to press Stop(L1)-d immediately after you power on your system unit. (Press and hold down the Stop(L1) key, then press d.)

Your system responds by running its power-on tests. To indicate the beginning of these tests, the four keyboard LEDs briefly illuminate all at once. The monitor screen remains blank, and the Caps Lock LED flashes for the duration of the power-on tests.

Passing

If the system passes all the power-on tests, your monitor displays a banner screen up to 30 seconds after the tests begin.

SPARCstation XXX, Keyboard Present
ROM Rev. X.XY, XX MB memory installed, Serial #XXX
Ethernet address X:X:YY:Z:A:BB, Host ID: XXXXXXXX

The banner screen may be followed by a series of test messages.

On initial power-on, the system begins the software installation process after it displays the banner and testing messages. (This may begin automatically, or you may need to enter a command at the system prompt. See the documentation supplied with your operating system for details.)

On regular power-on, after displaying the banner and testing message, the system boots and displays the login prompt.

Note – Once your system is booted and running the operating system, these LEDs are used for the keyboard functions as labeled and should *not* be interpreted as diagnostic error indicators.

Failing

If the system fails one or more power-on tests, an LED may illuminate to indicate a defective system part. If this should happen, proceed as follows:

1. **Watch the LEDs and note which one illuminates.**
   The LED may be lit continuously, or for just a few seconds.

2. **Record any error messages displayed on the screen.**
   The system may display messages that provide additional information about the system failure.

If your system fails a power-on test, or exhibits some other problem, call your authorized Sun customer service representative (or other service provider).

When you call, tell the service engineer about any failure messages you may have seen and which LEDs, if any, were lit. This will help the service engineer restore your system to its full performance potential as quickly as possible.

If you have a Customer Assisted Repair Service contract, or you are otherwise authorized to perform repair procedures yourself, see Table A-1 below to interpret the meaning of each diagnostic LED. Then consult the following manuals for information on additional diagnostic tests and removal/replacement procedures:

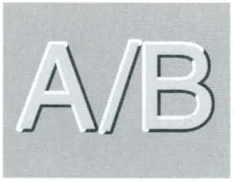
- For a SPARCstation 10 system – See the *SPARCstation 10 Service Manual.*
- For a SPARCclassic or SPARCstation LX system – See the *SPARCclassic/SPARCstation LX Service Manual.*

Table A-1 Interpreting the Keyboard Diagnostic LEDs

Diagnostic LED	Failed Part (SPARCstation 10)	Failed Part (SPARCclassic or SPARCstation LX)
Num Lock ON	Main logic board	Main logic board
Scroll Lock ON	MBus module	NVRAM
Compose ON	DSIMM J0201	DSIMM U0303 or U0304

Connecting Serial Devices

B



This appendix tells you how to connect the following serial devices:

- Printers
- Terminals
- Modems

Note – The back panel of the system unit has *one* 25-pin D connector (marked "A/B") providing functionality for *two* serial ports when used with the *optional* serial interface Y-cable described and shown in Appendix C. *Port A* on the Y-cable provides both *asynchronous* and *synchronous* functionality. *Port B* on the Y-cable provides *asynchronous* functionality only. Direct connection of other types of cables to the back panel 25-pin D connector provides access to port A *or* port B only. The Y-cable is required for access to both ports.

What You Need

Before you connect any peripheral devices to your system, you need the following:

- A Desktop SPARCstation system that is up and running
- The correct cable and connectors
- The manual for the printer, terminal, or asynchronous modem

You can leave the power to your Desktop SPARCstation system on when you install a printer, terminal, or modem.

Supported Devices

Your Desktop SPARCstation system supports the following kinds of serial devices (among others):

- Laser printers
- Most popular types of terminals
- Hayes™ and Hayes-compatible external modems

Note – Many serial devices can operate in either RS-423 mode or RS-232 mode. The serial ports on the SPARCstation 10 system are set to operate in RS-423 mode, but they can be configured to operate in RS-232 mode (see "Serial Port Requirements" later in this chapter). SPARCclassic and SPARCstation LX systems operate in RS-232 mode only. To determine which mode your serial device uses, consult the owner's manual provided with the serial device.

Laser Printers

You can purchase a laser printer through Sun Microsystems or other sources. A laser printer uses laser beam technology rather than a mechanical print head. A laser printer purchased from Sun Microsystems is capable of printing anything that appears on the screen (except colors), and it produces a high-quality image suitable for commercial reproduction.

Terminals

A terminal consists of a screen and keyboard that can be connected to a Desktop SPARCstation system to display and enter information. The terminal is a second point of access to your system—in addition to the monitor and standard keyboard.

Modems

A modem is a device that enables the system to communicate with another computer system over telephone lines.

Cable Requirements

Table B-1 gives the cable requirements for connecting certain types of printers, terminals, and modems mentioned in the remainder of this appendix. See Appendix C, "Cables for Serial Devices," for additional information on cables.

Table B-1 Device Cable Requirements

Device	Cabling Equipment
Printers	Male-to-male 25-pin RS-232 cable
Wyse WY-50 terminal	Male-to-male 25-pin null modem cable
VT-100 terminal	Female-to-male 25-pin null modem cable
Hayes and compatible asynchronous modems	Male-to-male 25-pin modem cable

Note – You must use shielded cables to maintain compliance with FCC, DOC, VCCI, and VDE radio frequency emission limits.

Power and Outlet Requirements

Each printer, terminal, and modem operates with a separate power cord and plugs into a separate grounded power outlet. For more information, refer to the manual supplied with the serial device.

Warning – Not all power cords have the same current ratings. Household extension cords do not have overload protection, and are not meant for use with computer systems. Do not use household extension cords with your Desktop SPARCstation and associated equipment.

Maximum Serial Baud Rate

The baud rate is the signaling rate for transmitted data. The maximum baud rate for Desktop SPARCstation serial ports is 19200 (19.2K) baud in asynchronous mode, and 38400 (38.4K) baud in synchronous mode.

Serial Port Mode Requirements (SPARCstation 10 Only)

Many printers, terminals, and modems can operate in either of two serial modes (as specified by the manual for the device):

- RS-423
- RS-232

The serial ports on the SPARCstation 10 system are set to operate in RS-423 mode. If your device can operate in RS-232 mode only, you need to configure the serial ports on your system to operate in RS-232 mode. Both serial ports must operate in the same mode.

If you use your SPARCstation 10 system in Germany, you *must* configure the serial ports on your system to operate in RS-232 mode.

The serial port modes are controlled by two serial port jumpers on the main logic board. Both jumpers must be set the same. The jumpers are preset to RS-423 mode.

The following sections describe how to change the serial port mode jumpers on a SPARCstation 10 system to RS-232 mode.

Note – SPARCclassic and SPARCstation LX systems operate in RS-232 mode only.

Tools You Need

You need the following tools to change the serial port jumpers:

- Phillips screwdriver
- Needlenose pliers

Changing the Serial Port Jumpers

To change the serial port mode jumpers for both ports A and B on the main logic board to RS-232 mode:

1. **Open the system unit.**
   See "Opening the System Unit" in Appendix E.

2. **Locate the jumpers on the main logic board.**
   The jumper blocks are preset to RS-423 mode, with the jumpers between posts 2 and 3 on both blocks.

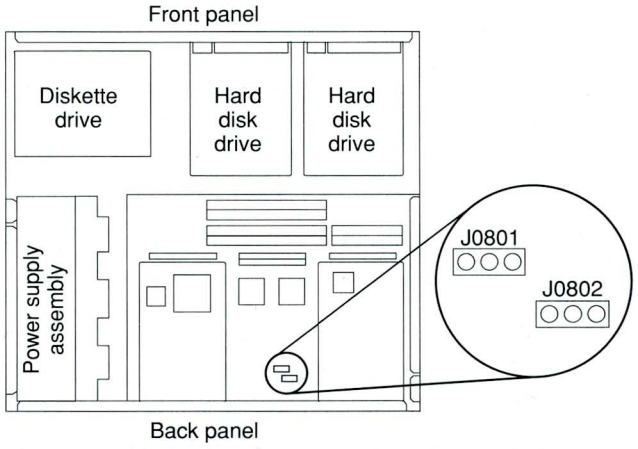


Figure B-1 Locating the Serial Port Mode Jumpers – SPARCstation 10

3. **Change the jumpers on** *both jumper blocks* **to the position between posts 1 and 2 (see Figure B-2).**
   Both jumpers must be set the same.

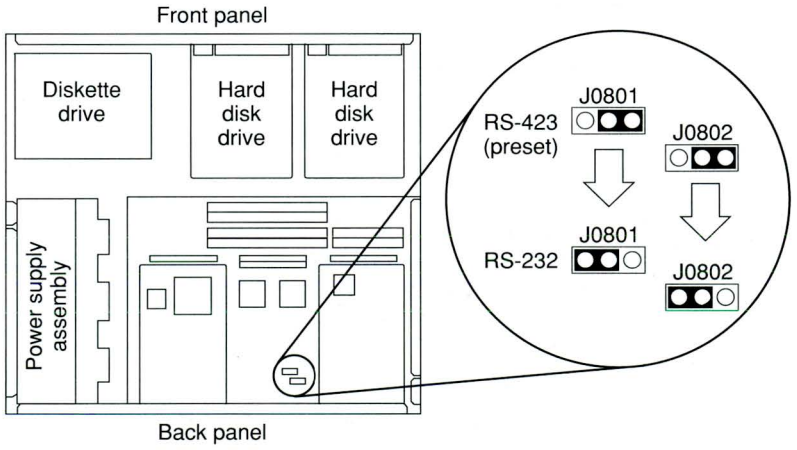


Figure B-2 Changing the Serial Port Mode Jumpers

4. **Close the system unit.**
   See "Closing the System Unit" in Appendix E.

Connecting a Serial Printer

For information about setting up and operating your printer, refer to the owner's manual that came with it.

You can leave the power to your Desktop SPARCstation system on when you connect a printer.

To connect a serial printer to a Desktop SPARCstation system:

1. **Make sure the printer's power switch is in the Off position.**

2. **Set up the printer for operation.**
   Read the operator's manual that comes with your printer to determine how to set up the unit for operation.

3. **Change the serial port mode jumpers inside your SPARCstation 10 system unit (if necessary).**
   If your printer requires asynchronous RS-232 operation, and you are connecting it to a SPARCstation 10 system, you must change the serial port jumpers in the SPARCstation 10 system unit.

   See "Serial Port Requirements" earlier in this appendix.

4. **If you plan to connect a second serial device in addition to the printer, locate the serial interface Y-cable. Otherwise, skip ahead to Step 7.**
   The serial interface Y-cable is an optional cable that you must purchase separately (see Figure B-3).

5. **Connect the male end of the serial interface Y-cable to the serial connector on the system unit's back panel.**
   For the location of the serial connector, see the back panel illustrations on pages 12 and 13.

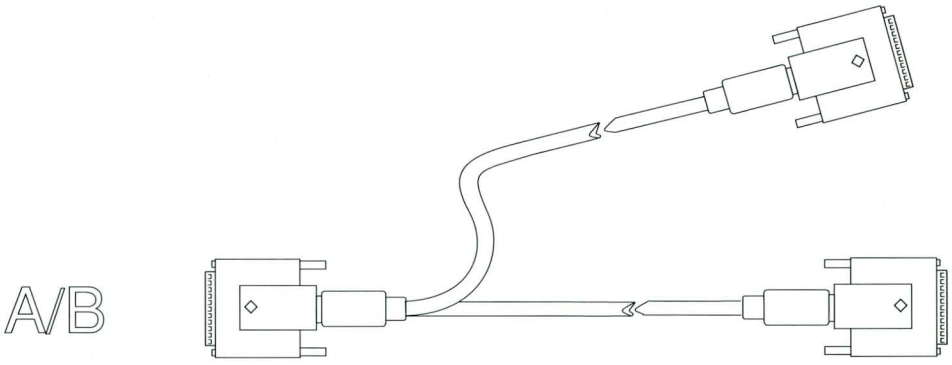


Figure B-3 Serial Interface Y-Cable

6. **Connect either the "A" or "B" end of the Y-cable to the printer's serial cable. Then skip ahead to Step 8.**
   Use the "B" end for the printer if the other serial device you are connecting is a synchronous device. The synchronous device must use port A.

7. **Connect one end of the printer's serial cable to the serial connector on the system unit's back panel.**
   For the location of the serial connector, see the back panel illustrations on pages 12 and 13.

Note – Connecting a standard serial cable to the serial A/B connector enables serial port A.

---

8. **Connect the other end of the printer's serial cable to the printer.**

9. **Turn on the power to the printer.**

10. **Define the printer to the system.**
    After you have connected and powered up the printer, you must tell your operating system that it is there. For information about how to define the printer to your operating system, see the documentation that accompanies your operating system software.

Connecting Wyse WY-50 and VT-100 Terminals

Consult your terminal operations manual or your dealer if you are not sure whether the terminal you plan to connect is compatible with a Wyse WY-50 or VT-100.

You can leave the power to your Desktop SPARCstation system on when you connect a terminal.

To connect a terminal to a Desktop SPARCstation system unit:

1. **Make sure the power switch on the terminal is in the Off position.**

2. **Set up the terminal for operation.**
   Read the manual that comes with the terminal to determine how to set up the unit for operation.

3. **Change the serial port mode jumpers inside your SPARCstation 10 system unit (if necessary).**
   If your terminal requires asynchronous RS-232 operation, and you are connecting it to a SPARCstation 10 system, you must change the serial port jumpers in the SPARCstation 10 system unit.

   See "Serial Port Requirements" earlier in this appendix.

4. **Connect a null modem cable to the terminal's modem port.**
   Most terminals have two ports: a modem port and an auxiliary port. The null modem cable must be connected to the modem port.

   The Wyse WY-50 serial port requires a male-to-male null modem cable. The VT-100 serial port requires a female-to-male null modem cable. Attach the female end to the VT-100 modem port.

   If you need to purchase or make your own null modem cable, see Appendix C.

   See the terminal owner's manual for the gender and location of the serial port on your terminal.

5. **If you plan to connect a second serial device in addition to the terminal, locate the serial interface Y-cable. Otherwise, skip ahead to Step 8.**
   The serial interface Y-cable is an optional cable you must purchase separately (see Figure B-3).

6. **Connect the male end of the serial interface Y-cable to the serial connector on the system unit's back panel.**
   For the location of the serial connector, see the back panel illustrations on pages 12 and 13.

7. **Connect either the "A" or "B" end of the Y-cable to the terminal's null modem cable. Then skip ahead to Step 9.**
   Use the "B" end for the terminal if the other serial device you are connecting is a synchronous device. The synchronous device must use port A.

8. **Connect the free end of the terminal's null modem cable to the serial connector on the system unit's back panel.**
   For the location of the serial connector, see the back panel illustrations on pages 12 and 13.

Note – Connecting a standard null modem cable to the serial A/B connector enables serial port A.

---

9. **Turn on the power to the terminal.**

10. **Configure the terminal.**
    The Wyse WY-50 and VT-100 terminals have setup menus for controlling terminal operation. The setup options control features that need to be adjusted only once (unless you decide to change how the terminal operates). See the terminal's operation manual to find out how to access the setup menu.

    Then set the options as follows:

    - Wyse WY-50: set at TVI925 emulation mode
    - 7 data bits per character
    - 1 stop bit
    - Even parity
    - 9600 baud
    - XON/XOFF enabled

11. **Define the terminal to the system.**
    After you have connected, powered on, and configured the terminal, you must tell your system that it is there. The operating system needs to know where to send data to display on the terminal, and where to find data entered from the terminal.

    For information about how to define the terminal to your operating system, see the documentation that accompanies your operating system software.

Connecting Other Types of Terminals

To use your Desktop SPARCstation system with a terminal that is not Wyse WY-50 or VT-100 compatible, you must:

- Make sure that the null modem cable conforms to Desktop SPARCstation requirements described in Appendix C.
- Consult the documentation that accompanies your operating system software for instructions on defining your type of terminal to the operating system.

Although the null modem cable assembly described in Appendix C will probably work with other terminals, you may have to make a custom cable. See the terminal's operation manual and Appendix C of this book for information about making a custom null modem cable.

Connecting Hayes and Hayes-Compatible Modems

The Hayes Smartmodem 1200™, Hayes Smartmodem 2400™, and Hayes-compatible asynchronous modems respond to a special set of commands from the keyboard.

You can leave the power to your Desktop SPARCstation system on when you install a modem.

To connect a Hayes or Hayes-compatible asynchronous modem:

1. **Set up the modem for operation.**
   Read the manual that comes with the modem to determine the proper setup procedure for the unit. Locate the power switch on the modem and make sure it is set to the Off position.

   The default switch settings for the Hayes Smartmodem 2400 are compatible with your SPARCstation system. If you have a Hayes-compatible modem, the switches may not correspond exactly to the Hayes switches. The standard switch settings are provided here so that you can emulate the Hayes standards on other modems.

   The standard Hayes switch settings are as follows.

   - *Baud rate* is the speed at which data is transmitted. The baud rate can sometimes be set using the modem switches, but it is also specified when using your operating system software. Be sure the modem's baud rate is the same as the baud rate of the other modem(s) with which it must communicate.
   - *DTR* is Off. Your SPARCstation system uses XON/XOFF to control data flow, rather than DTR (Data Terminal Ready).
   - *Numeric result codes* is On.
   - *Suppress result codes* is Off.
   - *Echo off-line commands* is Off.
   - *Auto-answer on ring* is Off, unless you are using the modem to answer incoming calls from other computers.
   - *Normal carrier detect* is Off.
   - *Single phone connection* is Off.
   - *Normal AT command set* is On. This enables the modem to respond to commands from the keyboard.
   - *Disconnect with* +++ is On. This enables you to break the phone connection by typing three plus (+) signs.

2. **Change the serial port mode jumpers inside your SPARCstation 10 system unit (if necessary).**
   If your modem requires asynchronous RS-232 operation, and you are connecting it to a SPARCstation 10 system, you must change the serial port jumpers in the SPARCstation 10 system unit.

   See "Serial Port Mode Requirements" on page 60.

3. **Connect a modem cable to the modem.**
   Plug one end of the modem cable into the serial port on the modem. (Appendix C, "Cables for Serial Devices," describes modem cables.)

4. **If you plan to connect a second serial device in addition to the modem, locate the serial interface Y-cable. Otherwise, skip ahead to Step 7.**
   The serial interface Y-cable is an optional cable that you must purchase separately (see Figure B-3).

5. **Connect the male end of the serial interface Y-cable to the serial connector on the system unit's back panel.**
   For the location of the serial connector, see the back panel illustrations on pages 12 and 13.

6. **Connect the free end of the modem cable to either port A or port B of the serial interface Y-cable. Then skip ahead to Step 8.**
   Use port B for the modem if the other serial device you are connecting is a synchronous device. The synchronous device must use port A.

7. **Connect the free end of the modem cable to the serial connector on the system unit's back panel.**
   For the location of the serial connector, see the back panel illustrations on pages 12 and 13.

Note – Connecting a standard modem cable to the serial A/B connector enables serial port A.

---

8. **Turn on the modem.**

9. **Define the modem to the operating system.**
   After you have connected and powered on the modem, you must tell your system that it is there. The operating system needs to be configured to know where to send the data that travels over the telephone lines.

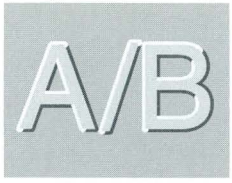
   For information about how to define modems to your operating system, see the documentation that accompanies your operating system software.

Connecting Other Types of Modems

If you use your Desktop SPARCstation system with a modem that is not Hayes-compatible, you must:

- Make sure that the modem cable conforms to Desktop SPARCstation requirements described in Appendix C.
- Consult the documentation that accompanies your operating system software for instructions on defining a non-Hayes modem to the operating system.

Cables for Serial Devices



This appendix gives information about serial cables used to connect your Desktop SPARCstation system unit to serial peripheral devices such as printers, terminals, and modems. You can either purchase ready-made cables or make them yourself.

This appendix shows the pinouts for the following cables:

- Modem cable
- Null modem cable
- Optional serial interface Y-cable

Note – The back panel of the system unit has *one* 25-pin D connector (marked "A/B") providing functionality for *two* serial ports when used with the *optional* serial interface Y-cable described and shown later in this appendix. *Port A* on the Y-cable provides both *asynchronous* and *synchronous* functionality. *Port B* on the Y-cable provides *asynchronous* functionality only. Direct connection of other types of cables to the back panel 25-pin D connector provides access to port A *or* port B only. The Y-cable is required for access to both ports.

Note – Many serial devices can operate in either RS-423 mode or RS-232 mode. The serial ports on the SPARCstation 10 system are set to operate in RS-423 mode, but they can be configured to operate in RS-232 mode (see "Serial Port Requirements" in Appendix B). SPARCclassic and SPARCstation LX systems operate in RS-232 mode only. To determine which mode your serial device uses, consult the owner's manual provided with the device.

Serial Interface Y-Cable

You *must* use the optional serial interface Y-cable to utilize the full functionality of serial ports A and B on your Desktop SPARCstation system. The serial interface Y-cable shown in Figure C-1 is available at extra cost as a separately ordered item.

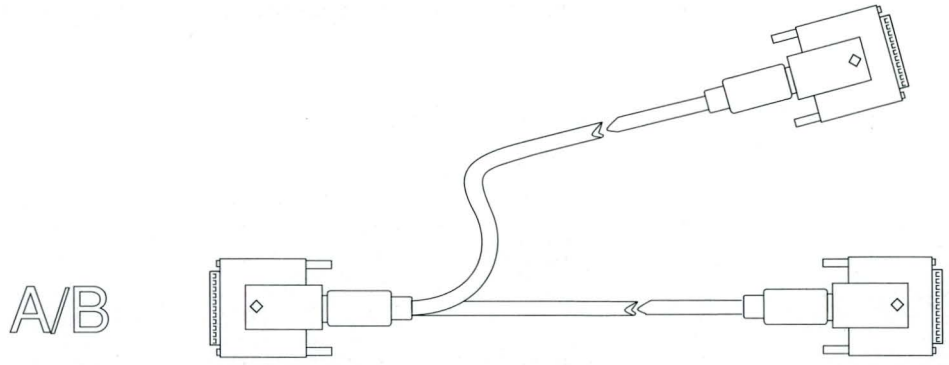


Figure C-1 Serial Interface Y-Cable

Other Cable Types

Basic types of cables for serial devices include the following:

- Serial modem cables, used to connect modems
- Serial null modem cables, used to connect printers, terminals, and other devices

Both modem and null modem cables may connect to the optional serial interface Y-cable, which connects to your Desktop SPARCstation system unit (see Figure C-1). You may also connect modem and null modem cables directly to the back panel serial connector if you do not need access to both SPARCstation serial ports. In this case, only serial port A is enabled for use.

Note – You must use shielded cables to maintain compliance with FCC, DOC, VCCI, and VDE radio frequency emission limits.

Serial Modem Cables

A modem cable is a type of serial cable that is used to connect a modem to a computer system. If you are connecting a Hayes or Hayes-compatible modem, you must obtain a cable with a male connector on both ends. The modem cable is connected to either of the system unit serial ports.

Figure C-2 shows a typical serial modem cable. You can obtain a serial modem cable from most computer dealers or computer supplies stores.

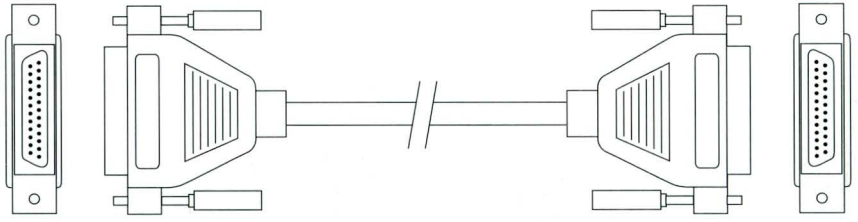


Figure C-2 Serial Modem Cable

In a serial modem cable, the pins in the connectors are wired "straight through." This means that the pins function identically on the two connectors at either end of the cable.

The acronym DTE stands for Data Terminal Equipment. DTE typically includes terminals, personal computers, and workstations. The acronym DCE stands for Data Communications Equipment. Modems are a good example of DCE. Your Desktop SPARCstation system is a DTE device.

A modem cable connects the SPARCstation system unit (DTE) to a modem (DCE). Since DTE and DCE devices send and receive through different pins, their signals will not "collide."

Figure C-3 shows the wiring of a serial modem cable that enables the SPARCstation system unit to communicate with a Hayes or Hayes-compatible modem. If you obtain a serial cable wired like the one shown *and* connect it to the back panel connector either directly or by means of an optional serial interface Y-cable, you will properly connect a Hayes-type modem and a Desktop SPARCstation system unit.

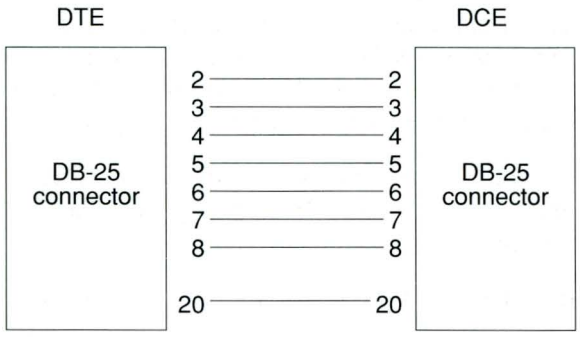


Figure C-3 Serial Modem Cable Wiring

Null Modem Cables

Null modem cables are another type of serial cable used to connect printers, terminals, and other devices. Null modem cable wires are connected to the pins in the connectors differently from how they are attached in a modem cable. The cable should have a male 25-pin connector for the system unit end. The gender of the connector at the other end of the cable depends on the device you are connecting to the system unit.

You can obtain ready-made null modem cables from most computer dealers or computer supplies stores.

As an alternative, you can make a null modem cable yourself. Simply connect a null modem *converter* to a modem cable, and (if needed) connect the null modem converter to the serial interface Y-cable (see Figure C-4).

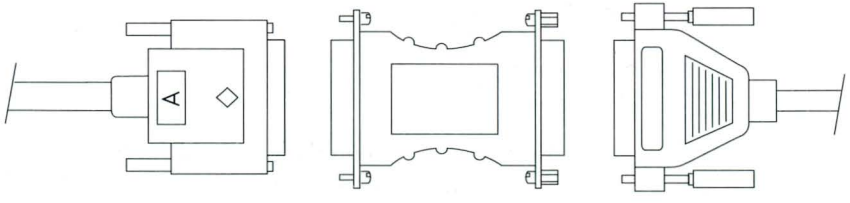


Figure C-4 Making a Null Modem Cable

The serial null modem cable is designed for devices that send and receive data on the same pins. Like your Desktop SPARCstation system unit, printers and terminals are DTE devices—both expect to send data on pin 2 and receive it on pin 3. Because both devices are trying to send and receive on the same wire, these wires must be crossed.

If your device uses pins 4 and 5, they must also be crossed. These pins send and receive signals that control when data is transferred between the two devices.

If you are making your own null modem cable, you must connect the wires as follows (see Figure C-5):

- Pin 1 on the system unit end connects to pin 1 on the device end.
- Pin 2 on the system unit end connects to pin 3 on the device end.
- Pin 3 on the system unit end connects to pin 2 on the device end.
- Pin 4 on the system unit end connects to pin 5 on the device end.
- Pin 5 on the system unit end connects to pin 4 on the device end.
- Pin 7 on the system unit end connects to pin 7 on the device end.
- Pins 6 and 8 on both ends are jumpered together and connect to pin 20 on the other end.

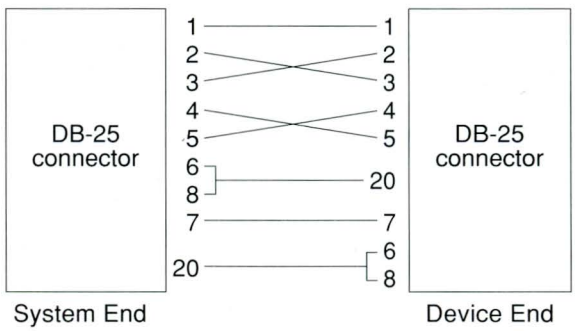


Figure C-5 Null Modem Cable Wiring

A null modem cable also disables certain features of a peripheral device by "jumpering" wires from one pin to another pin on the same connector. Figure C-5 shows pins 6 and 8 jumpered and then connected to pin 20. This is the same for both ends of the cable.

A cable that is wired like the one shown in Figure C-5 *and* connected to a serial interface Y-cable will properly connect your Desktop SPARCstation system unit to a Wyse WY-50 or a VT-100 terminal.

If you have some other type of device, you will have to consult the manual for the device to determine whether jumpering is necessary and which pins should be jumpered.

Unrecognized Cables

In order for your Desktop SPARCstation system unit and a serial peripheral device to communicate, you must first connect them with an appropriate serial cable. Because each device is different, there is no general rule for selecting or creating a serial cable. To obtain the correct cable, you will need to know which of the serial port pins are active. The manual for the printer, modem, or terminal should specify the active pins and what type of signal is sent or received on each pin. It should also specify what type of cable is required.

You should also consult Figures C-6, C-7, and C-8. These figures identify the pins that the back panel serial connector and the optional serial interface Y-cable ports use. Not all pins are active. If a pin is not highlighted, that means it is inactive—it does not send or receive any signal.

Note – After you connect a serial device to your Desktop SPARCstation system, you must tell the system software that the device is there. For information about how to define a serial device to your operating system, see the documentation that accompanies your operating system software.

To cable an unsupported device:

1. **Make sure the device is a serial device.**
   Only serial devices are cabled to the system unit serial ports. There is a separate connector on the system unit for connecting parallel devices.

2. **Determine whether the device is DCE or DTE.**
   The manual or your dealer should have this information. Modems are generally DCE devices; most terminals and printers are DTE.

3. **If the device is DCE, try a modem cable. If it is DTE, try a null modem cable.**
   Begin by trying the cables with the pin configuration specified earlier in this appendix. These cables work with most devices.

If these typical cable specifications do not work, see the device manual to determine which pins are active and consult Figures C-6, C-7, and C-8 for the active back panel connector and optional serial interface Y-cable pins. Tables C-1 through C-4 give additional pin specifications. You have to wire peripheral device cable connectors according to the needs of both the peripheral device and either the back panel serial connector or the serial interface Y-cable ports. You may succeed only after some experimentation.

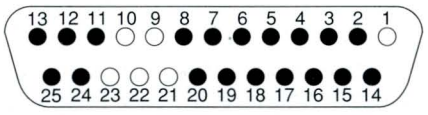


Figure C-6 System Unit Serial Connector A/B (active pins shown in black)

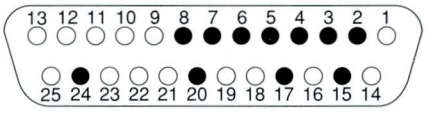


Figure C-7 Serial Interface Y-Cable, Port A (active pins shown in black)

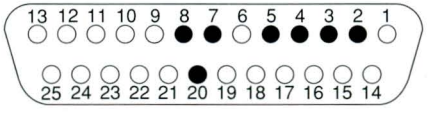


Figure C-8 Serial Interface Y-Cable, Port B (active pins shown in black)

Table C-1 Back Panel Serial Connector Specifications, Pins 1-12

Pin	Circuit	Signal	Direction	Description
1	none	none	none	**Not connected**
2	BA	TD	output	**Transmit Data:** Port A
3	BB	RD	input	**Receive Data:** Port A
4	CA	RTS	output	**Request To Send:** Port A
5	CB	CTS	input	**Clear To Send:** Port A
6	CC	DSR	input	**Data Set Ready:** Port A
7	AB	SG	none	**Signal Ground**
8	CF	DCD	input/output	**Data Carrier Detect:** Port A
9	none	none	none	**Not connected**
10	none	none	none	**Not connected**
11	SCD	SDTR	input	**Secondary Data Terminal Ready:** Port B
12	SCF	SDCD	input	**Secondary Data Carrier Detect:** Port B

Table C-2 Back Panel Serial Connector Specifications, Pins 13-25

Pin	Circuit	Signal	Direction	Description
13	SCB	SCTS	input	**Secondary Clear To Send:** Port B
14	SBA	STD	output	**Secondary Transmit Data:** Port B
15	DB	TC	input	**Transmit Clock:** Port A, DCE source
16	SBB	SRD	input	**Secondary Receive Data:** Port B
17	DD	RC	input	**Receive Clock:** Port A
18	SDB	STC	input	**Secondary Transmit Clock:** Port B
19	SCA	SRTS	output	**Secondary Request To Send:** Port B
20	CD	DTR	output	**Data Terminal Ready:** Port A
21	none	none	none	**Not connected**
22	none	none	none	**Not connected**
23	none	none	none	**Not connected**
24	DA	TC	output	**Transmit Clock:** Port A, DTE source
25	DA	TC	output	**Transmit Clock:** Port B DTE source

Table C-3 Serial Interface Y-Cable Port A Specifications—Synchronous & Asynchronous

Pin	Circuit	Signal	Direction	Description
2	BA	TD	output	**Transmit Data**
3	BB	RD	input	**Receive Data**
4	CA	RTS	output	**Request To Send**
5	CB	CTS	input	**Clear To Send**
6	CC	DSR	input	**Data Set Ready:** Signal from other device indicating its status
7	AB	SG	none	**Signal Ground:** Provides reference level for other signals
8	CF	DCD	input/output	**Data Carrier Detect**
15	DB	TC	input	**Transmit Clock:** DCE source
17	DD	RC	input	**Receive Clock**
20	CD	DTR	output	**Data Terminal Ready**
24	DA	TC	output	**Transmit Clock:** DTE source

Table C-4 Serial Interface Y-Cable Port B Specifications—Asynchronous only

Pin	Circuit	Signal	Direction	Description
2	BA	TD	output	**Transmit Data**
3	BB	RD	input	**Receive Data**
4	CA	RTS	output	**Request To Send**
5	CB	CTS	input	**Clear To Send**
7	AB	SG	none	**Signal Ground**
8	CF	DCD	input/output	**Data Carrier Detect**
20	CD	DTR	output	**Data Terminal Ready**

Audio Devices

The audio capabilities of your Desktop SPARCstation system depend on the type of system you have:

- SPARCclassic and SPARCstation LX systems are equipped with audio input and output jacks for connecting audio devices such as microphones, speakers, and headphones.
- SPARCstation LX and SPARCstation 10 systems have an Attachment Unit Interface (AUI)/Audio port for connecting the Sun SpeakerBox.

Types of Devices You Can Use

You can connect the following audio devices to your Desktop SPARCstation system:

- Dynamic, high-impedance microphone (10K ohms to 50K ohms impedance)
- Dynamic, low-impedance microphone (150 ohms to 1000 ohms impedance)
- Audio tape player equipped with attenuating adapter
- Compact disc player equipped with attenuating adapter
- Headphones (30 ohms to 100 ohms impedance)
- External amplifier and loudspeaker

Note – On SPARCstation 10 systems, all audio devices connect via the SpeakerBox.

SpeakerBox and SunMicrophone

The SpeakerBox provides 16-bit audio quality and input/output (I/O) functionality to the system. It comes standard with SPARCstation 10 systems, and is available as an option for SPARCstation LX systems. The SpeakerBox cannot be used with SPARCclassic systems.

SPARCstation 10 and SPARCstation LX systems have an Attachment Unit Interface (AUI)/Audio port for connecting the SpeakerBox. You can connect the SpeakerBox directly to this port, or connect it indirectly through the AUI/Audio adapter cable (see Figure D-1). The AUI/Audio adapter is only necessary if you plan to connect your system to a thick Ethernet network in addition to the SpeakerBox.

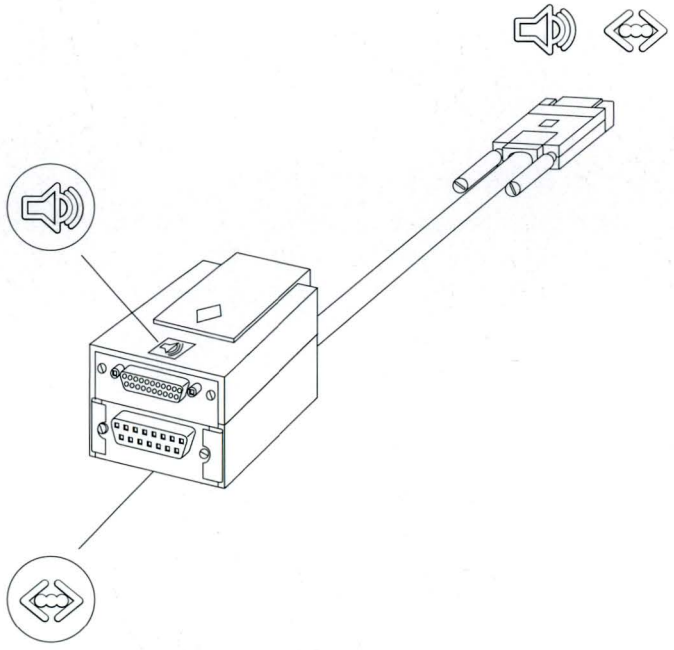


Figure D-1 AUI/Audio Adapter Cable

The SunMicrophone connects to the audio input jack on SPARCclassic and SPARCstation LX system units, or to the microphone jack on the SpeakerBox.

For information about how to connect the SpeakerBox and SunMicrophone to your Desktop SPARCstation system, see the documents that come packed with these two audio devices.

Figures D-2 and D-3 show the SpeakerBox and SunMicrophone.

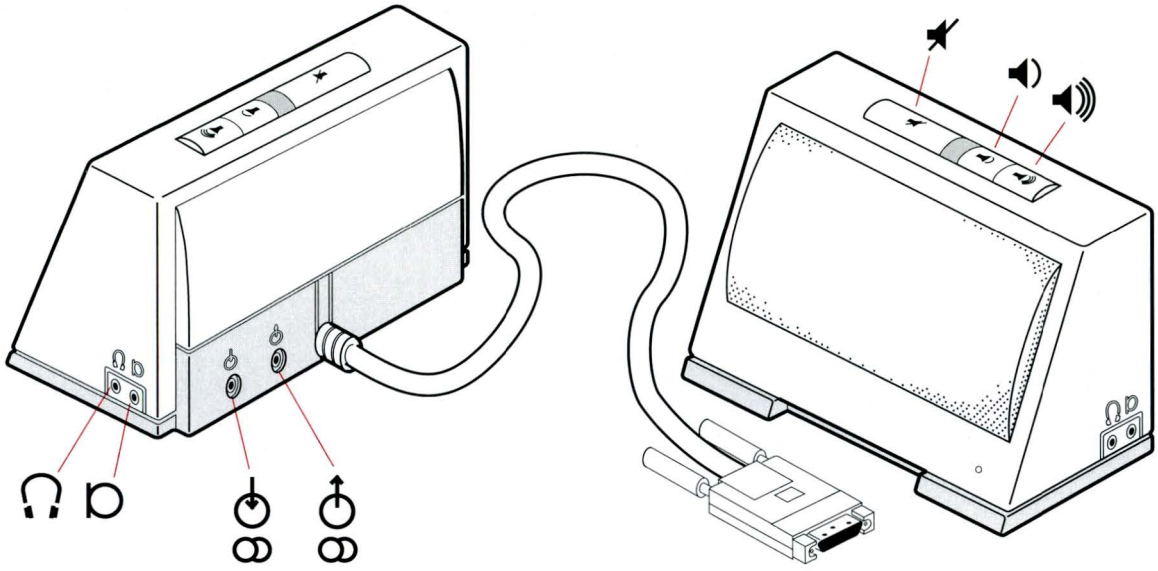


Figure D-2 SpeakerBox

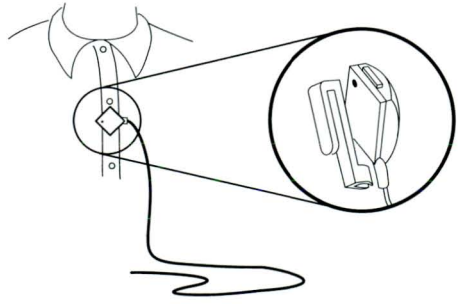


Figure D-3 SunMicrophone

SpeakerBox Specifications

The SpeakerBox meets the following specifications:

- Voice audio input via an external SunMicrophone with sensitivity to pick up human voice of 50-70 dB @ 1 meter with a frequency response of 100 Hz to 5 kHz, 4 dB minimum
- Audio output via a loudspeaker with minimum output of 85 dB @ 1 meter over a 200 Hz to 10 kHz range, 5 dB range
- Audio distortion of the power amplifier output will be < 0.5% THD
- Audio output at 85 dB @ 1 meter = approximately 5% THD (complete system with loudspeaker)
- Full 16-bit/48 kHz sampling rate audio functionality
- Stereophonic Line In and Line Out gold-plated jacks
- Side-panel stereophonic microphone input jacks accept inputs of 5-50 mV @ 1 kΩ

SunMicrophone Specifications

The SunMicrophone meets the following specifications:

- Internal battery, user-replaceable
- Battery type CR2032 or equivalent lithium battery
- Battery life 210 hours
- On/Off switch
- Output impedance 220Ω 30% unbalanced
- Omni-directional
- Frequency response 50 Hz to 8 kHz 3 dB minimum
- Signal to noise ratio 60 dB 1 kHz 1 pa
- Output level -29 dB to 4 dB

Note – The internal battery is not required when the SunMicrophone is connected to the SpeakerBox.

Opening and Closing the SPARCstation 10 System Unit

E

You need to open the SPARCstation 10 system unit to change the serial port jumper settings on the main logic board (see Appendix D) or to install SBus cards, MBus modules, DSIMMs, or an internal disk drive.

This appendix tells you how to open and close the SPARCstation 10 system unit and attach a wrist strap. For instructions on installing internal parts, see "Installing Internal Parts and Peripheral Devices" on page 26.

Opening the System Unit

Warning – Before opening the system unit, make sure the system power switch is Off (O position). When the power is off, the green power LED on the front is not lit and the fans inside the unit are not running.

Caution – Do *not* disconnect the power cord from the system unit's power receptacle when installing internal components. The power cord should be left plugged in to a grounded power outlet. This connection provides the ground path necessary so that you can safely remove and install printed circuit boards and other components.

The top cover of the system unit attaches to the chassis at the front with molded plastic hooks, and to the back with a plastic tab and a captive screw. When you lift the cover upwards until it is at a 60-degree angle in relation to the chassis, you release the front of the cover from its points of attachment to the chassis.

To remove the cover from the system unit:

1. **Make sure that the AC power switch on the system unit is in the Off position. Press the side labeled O.**
   The green LED on the front of the system unit should not be lit, and the fans should not be running. Leave the AC power cord connected to both the system unit and wall outlet. See "How To Turn the Power Off" on page 48 for instructions on powering off your system.

2. **Place the system unit on a work table.**

3. **Use a Phillips screwdriver to fully loosen the captive screw holding the cover to the back panel.**
   The screw will remain attached to the back panel after it is fully loosened from the cover (see Figure E-1).

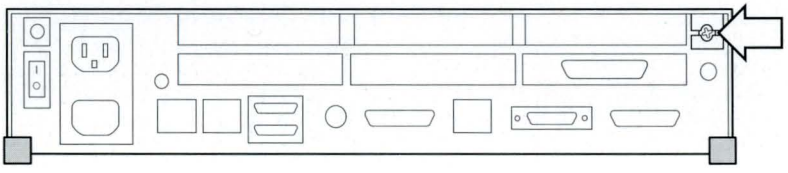


Figure E-1 Captive Screw Location, SPARCstation 10 Back Panel

4. **Use a Phillips screwdriver to press the plastic tab while you lift the cover from the back panel with your other hand (see Figures E-2 and E-3).**

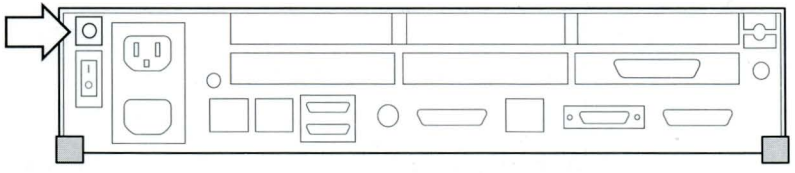


Figure E-2 Plastic Tab Location, SPARCstation 10 Back Panel

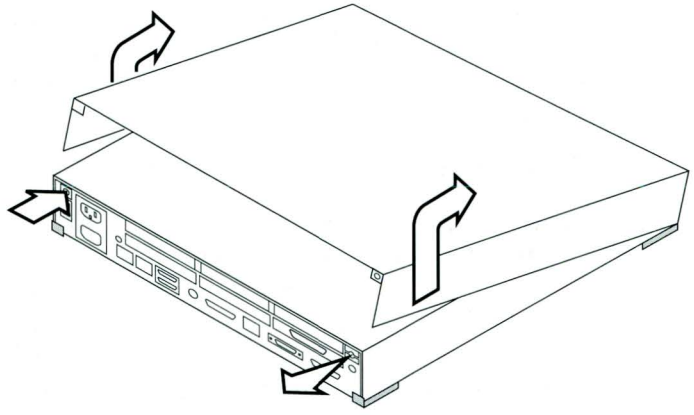


Figure E-3 Lifting the System Unit Cover—SPARCstation 10

5. **Face the back panel and grasp the sides of the cover and lift up until the cover is at a 60-degree angle in relation to the chassis. Push the cover forward until its hinge hooks are free of the chassis.**

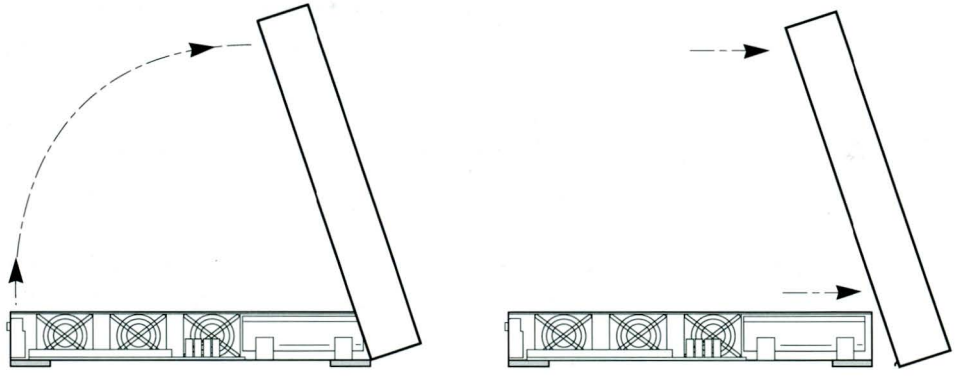


Figure E-4 Removing the System Unit Cover, Side View

Warning – Before powering on your system again, be sure to replace the cover using the procedure that follows in the second half of this appendix. It is not safe to operate the SPARCstation 10 system without its top cover in place.

Attaching a Wrist Strap

A *wrist strap* (or *grounding strap*) provides grounding for static electricity between your body and the chassis of the system unit. Electric current and voltage do not pass through the wrist strap.

Before you handle any components inside the system unit, attach the wrist strap to your wrist and to the metal casing of the power supply. Parts that require the use of a wrist strap are packed with one.

Caution – Boards and modules can be damaged by harmful electrical charges if you do not wear a wrist strap.

To attach the wrist strap:

1. **Wrap the grounding strap twice around your wrist.**
   Make sure the adhesive side is against your skin.
2. **Attach the end with the adhesive copper strip to the metal casing of the power supply inside the system unit.**

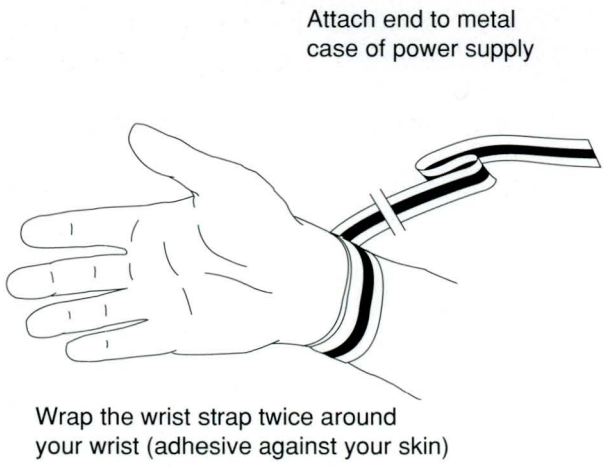


Figure E-5 Attaching a Wrist Strap

Closing the System Unit

Caution – Before replacing the system unit cover, be sure that the diskette drive and hard disk drive(s) are fully seated inside the system unit. Otherwise, you may damage the drives when you lower the cover into place.

To replace the system unit cover:

1. **Hold the cover at a 60-degree angle in relation to the system unit, and gently guide the hinge hooks on the cover into the tab slots on the front of the system unit. Continue to hold the cover with your hands.**

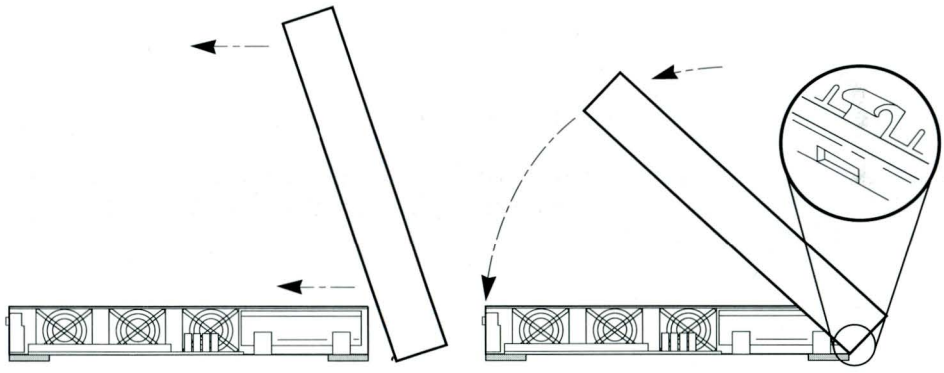


Figure E-6 Replacing the System Unit Cover, Side View

2. **Slowly lower the cover onto the system unit.**

3. **Push down on the cover's left and right sides until the plastic tab snaps the cover to the back panel.**

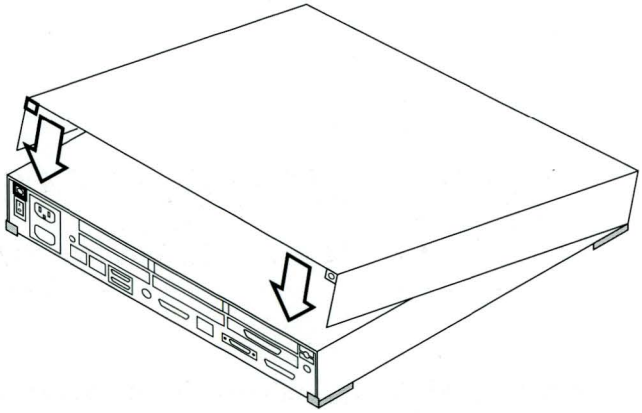


Figure E-7 Pushing Down on the Cover's Sides, Back Panel View

4. **Using a Phillips screwdriver, tighten the captive screw on the back panel to the cover.**

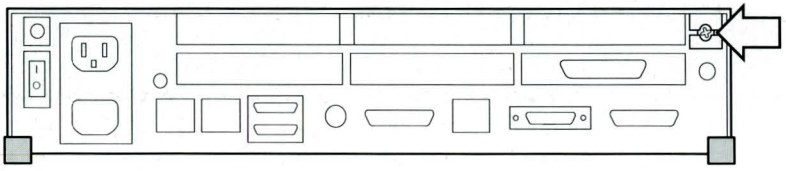


Figure E-8 Captive Screw Location, Back Panel

Opening and Closing SPARCclassic & SPARCstation LX System Units F

You need to open the system unit to install SBus cards, SIMMs, or an internal drive unit. This appendix tells you how to open and close a SPARCclassic or SPARCstation LX system unit and attach a wrist strap.

For instructions on installing internal parts, see "Installing Internal Parts and Peripheral Devices" on page 26.

Opening the System Unit

Warning – Before opening the system unit, make sure the system power switch is in the Standby (⏻) position. The green LED on the front of the system unit should not be lit, and the fan should not be running.

Caution – Do *not* disconnect the power cord from the system unit's power receptacle when installing internal components. The power cord should be left plugged in to a grounded power outlet. This connection provides the ground path necessary so that you can safely remove and install printed circuit boards and other components.

To open a SPARCclassic or SPARCstation LX system unit:

1. **Make sure that the AC power switch on the system unit is in the Standby position. Press the side labeled ⏻.**
   The green LED on the front of the system unit should not be lit, and the fan should not be running. Leave the AC power cord connected to both the system unit and wall outlet. See "How To Turn the Power Off" on page 48 for instructions on powering off your system.

2. **Position the system on the table with the rear panel facing you.**
   Leave enough space to lay the unit top flat on the table behind the unit bottom.

3. **Remove the screw that secures the lock block to the back panel (see Figure F-1).**

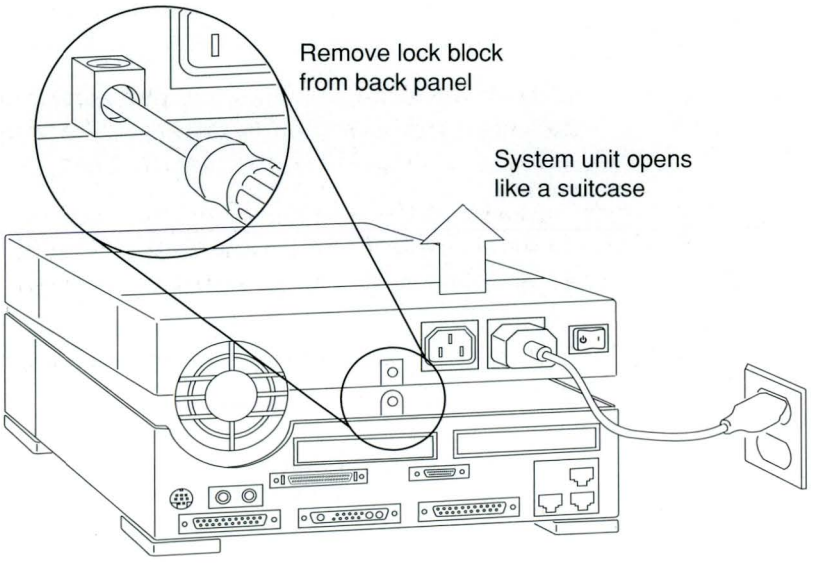


Figure F-1 Opening the System Unit

4. **Grasp the unit top at its rear corners and carefully open the system unit like a suitcase (Figure F-1).**
   Lay the unit top flat on the table behind the unit bottom. The unit top and bottom are still connected by the power and data cables leading from the disk drive(s) and power supply to the main logic board.

Note – The unit top contains the power supply and disk drives and is the heavier of the two sections.

Warning – When you are finished installing parts inside the system unit, be sure to close the system unit before turning on the power. It is not safe to operate the system unit while it is open. See "Closing the System Unit" on page 96 for instructions.

Attaching a Wrist Strap

A *wrist strap* (or *grounding strap*) provides grounding for static electricity between your body and the chassis of the system unit. Electric current and voltage do not pass through the wrist strap.

Before you handle any components inside the system unit, attach the wrist strap to your wrist and to the metal casing of the power supply. Parts that require the use of a wrist strap are packed with one.

Caution – Boards and modules can be damaged by harmful electrical charges if you do not wear a wrist strap.

To attach the wrist strap:

1. **Wrap the grounding strap twice around your wrist.**
   Make sure the adhesive side is against your skin.
2. **Attach the end with the adhesive copper strip to the metal casing of the power supply in the top of the system unit.**

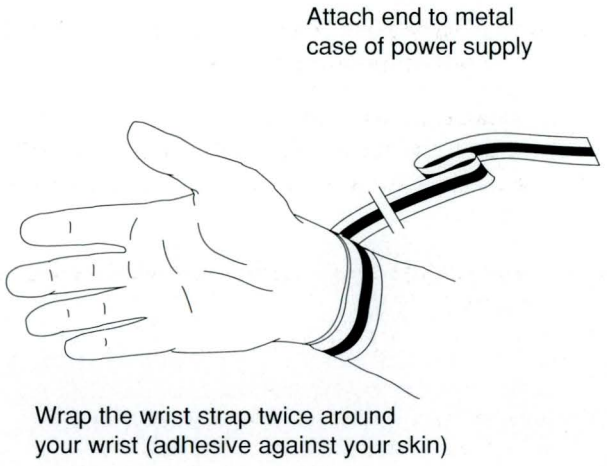


Figure F-2 Attaching a Wrist Strap

Closing the System Unit

To close a SPARCclassic or SPARCstation LX system unit:

1. **Preparation.**
   a. Check that there are no loose tools or screws in the unit.
   b. Check that all SBus cards and SIMMs are seated properly.
   c. Check that all internal cable connections are tight.
   d. Check that the power supply wiring is tucked inside the system to avoid pinching the wiring when you close the system unit.

2. **Hold the unit top at roughly a 45-degree angle to the unit bottom as shown in Figure F-3.**
   Align the five interlock hooks along the front edges where the two halves join.

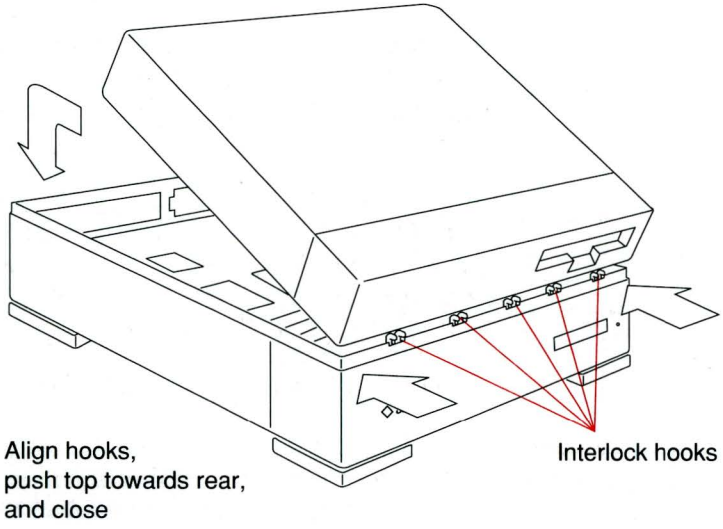
3. **Reconnect the unit top and bottom.**

   a. Lower the unit top, while gently pushing it toward the rear to secure the connection. The unit top will rest slightly forward.

   b. Gently push the unit top back a few millimeters until the unit top and bottom are aligned.

4. **Attach the lock block.**
   Attach the lock block by inserting the PEM screw through the block on the outside, through the security loop on the inside, and into the power supply (see Figure F-3).

   Tighten the screw with a screwdriver. Be careful not to overtighten the screw.



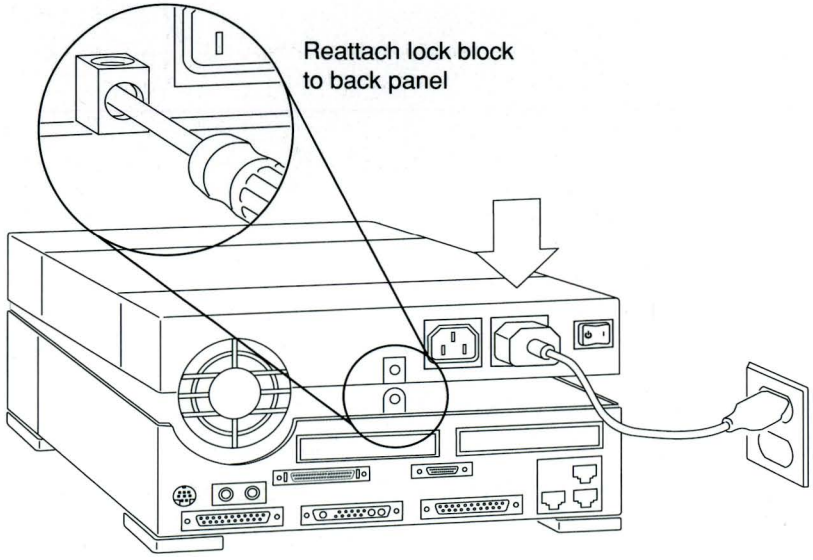


Figure F-3 Closing the System Unit

Twisted-Pair Ethernet Link Test

G

Read this appendix if you are connecting your Desktop SPARCstation system to a twisted-pair Ethernet (TPE) network. This appendix contains important information for getting your system to communicate correctly over a TPE network. If you have no experience with TPE networks, ask your system or network administrator to perform the procedures in this appendix.

Overview

The twisted-pair Ethernet link integrity test is a function defined by the IEEE 802.3 10BASET specification. For a networked workstation (host) to communicate with a network hub, the link test state (enabled or disabled) must be the same on the host and hub.

If either the host or hub does not share the link test enabled/disabled state of the other, then the host cannot communicate effectively with the hub, and the hub cannot communicate effectively with the host.

Figure G-1 gives an example of a star configuration local area network (LAN), showing the relationship of hosts to a hub.

Figure G-2 shows the importance of ensuring that the host and hub link test settings match.

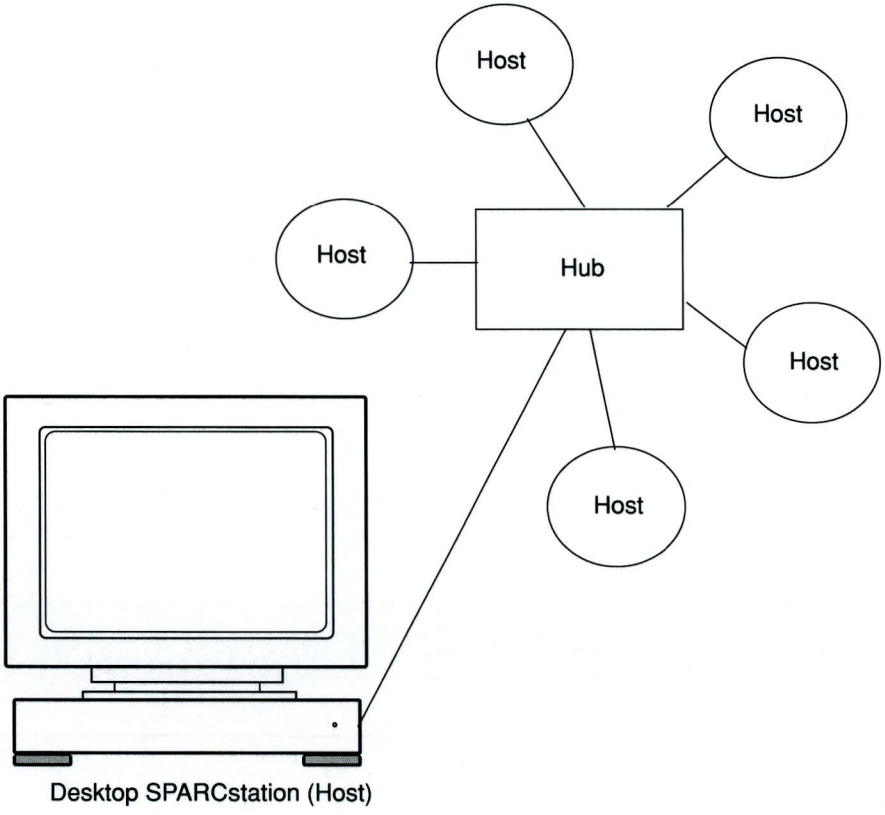


Figure G-1 Hosts and Hub in a Local Area Network

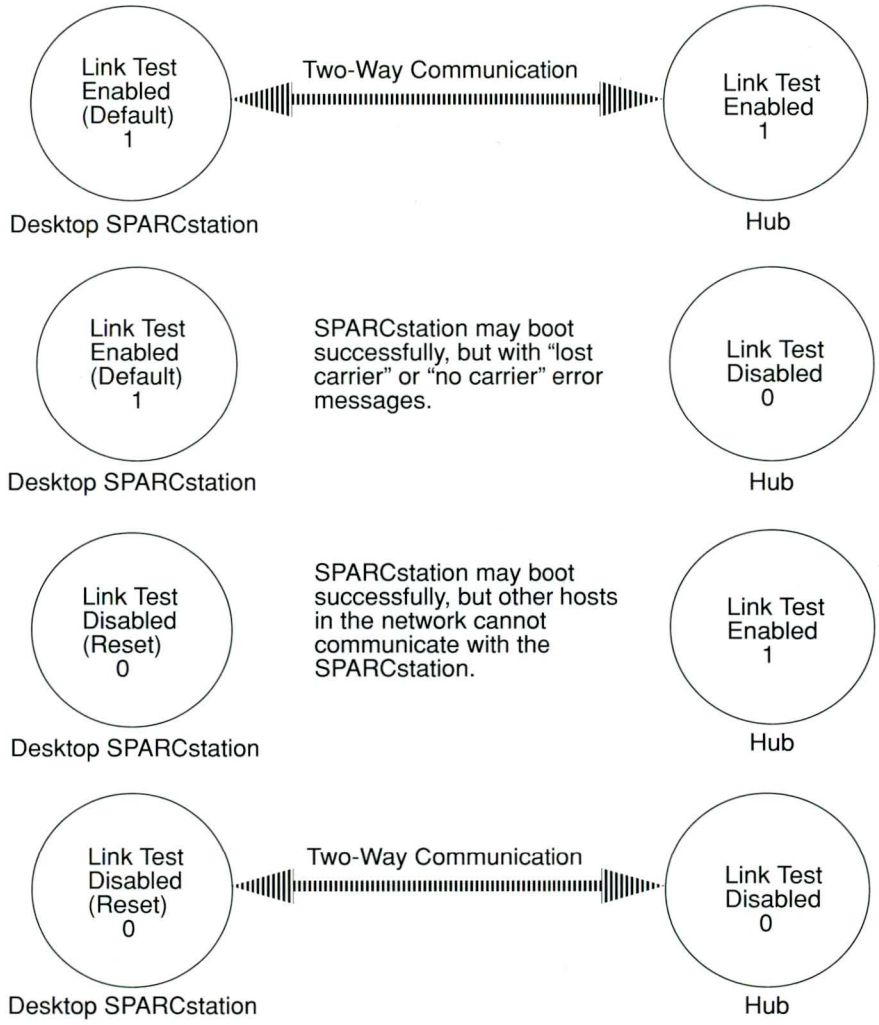


Figure G-2 Ensuring Host -Hub Communication

Technical Discussion

The twisted-pair Ethernet link integrity test determines the state of the twisted-pair cable link between the host and the hub in a network. Both the host and hub regularly transmit a link test pulse. When either the host or hub has not

received a link test pulse within a certain amount of time (50-150 ms), it makes the transition from the link-pass state to the link-fail state and remains in the link-fail state until it once again receives regular link test pulses.

The link integrity test is specific to twisted-pair Ethernet and is not applicable to the other physical layer implementations of IEEE 802.3 such as 10BASE5 ("thicknet") or 10BASE2 ("thinnet").

The link test function at the host or hub is either enabled (link test enabled or 1) or disabled (link test disabled or 0). The IEEE 802.3 10BASET specification requires that the link test be enabled at both the host and the hub.

However, equipment in real-world situations does not always conform to the 10BASET specification. The link test function is often disabled in some installations. Hubs from various vendors tend to exhibit any of the following:

- If link test is "hardwired" enabled, then the link test is always enabled.
- If link test is "hardwired" disabled, then the link test is always disabled.
- If link test is configurable, the network administrator may enable or disable link test.

Troubleshooting

If you have connected a Desktop SPARCstation host to a hub using twisted-pair Ethernet cable, and you either observe "no carrier" messages or fail to communicate effectively with another host in the same network, look first at the hub. If it supports configurable link test, then make sure *link test enabled* is configured. This is usually done by setting a hardware switch.

If the hub does not support configurable link test, then refer to the hub manufacturer's documentation. Check to see if your hub is "hardwired" for *link test disabled*. If it is, you must follow the procedures described in the next two sections to disable the link test at your SPARCstation host.

Moves and Changes

If the Desktop SPARCstation host is physically moved to another network location, or if the hub is reconfigured, remember to refer back to Figure G-2. Unless the new network relationship between the host and the hub is

functional (that is, 1-1 link test enabled-link test enabled or 0-0 link test disabled-link test disabled), there will be no full, normal two-way communication between the host and the hub.

Checking Link Test State of a SPARCstation Host

To check the link test state of a SPARCstation host:

1. **If you do not see the `ok` prompt, press the Stop(L1)-a keys.**
2. **At the system's `ok` prompt, type the following command (indicated by boldface) and press Return.**

```
ok printenv tpe-link-test?
tpe-link-test?          true                    true
ok
```

The above screen shows the current link test state (true, or enabled), followed by the default state (true, or enabled).

Disabling the Link Test on a SPARCstation Host

To disable the link test on a SPARCstation host:

1. **If you do not see the `ok` prompt, press the Stop(L1)-a keys.**
2. **At the system's `ok` prompt, type the following command (indicated by boldface) and press Return.**

```
ok printenv tpe-link-test?
tpe-link-test?          true                    true
ok
```

The above screen shows the current link test state (true, or enabled), followed by the default state (true, or enabled).

3. **Type the following command to disable the host's link test function.**

```
ok setenv tpe-link-test? false
tpe-link-test? =     false
ok
```

4. **Boot the host and verify that the "no carrier" error messages do not appear. Type** `boot` **and press Return.**

Enabling the Link Test on a SPARCstation Host

To enable the link test on a SPARCstation host:

1. **If you do not see the** `ok` **prompt, press the Stop(L1)-a keys.**
2. **At the system's** `ok` **prompt, type the following command (indicated by boldface) and press Return.**

```
ok printenv tpe-link-test?
tpe-link-test?          false                true
ok
```

The above screen shows the current link test state (false, or disabled), followed by the default state (true, or enabled).

3. **Type the following command to enable the host's link test function.**

```
ok setenv tpe-link-test? true
tpe-link-test? =     true
ok
```

4. **Boot the host and verify that the "no carrier" error messages do not appear. Type** `boot` **and press Return.**

Installing SBus Cards in a SPARCstation 10 System

H

This appendix describes how to install SBus cards into a SPARCstation 10 system unit. You should also read the guide for the specific SBus card you are installing.

Tools Needed

To install an SBus card you will need the following tools and materials:

- Phillips screwdriver (size #1)
- Phillips screwdriver (size #2)
- Wrist strap
- Antistatic surface

The following items can be used as an antistatic surface:

- Bag or shipping container used to package the SBus card
- Inner surface of the system unit cover
- Sun ESD mat (contact your Sun sales representative to purchase one)

Safety Precautions

Please observe the following safety precautions when you install an SBus card:

Warning – Before installing the card, make sure the system power switch is in the Off (O position). When the power is off, the green LED on the front panel is not lit and the fans are not running.

Warning – After installing the card, do not power on the system without replacing and securing the top. Failure to take this precaution may result in personal injury and system damage.

Installing the SBus Card

To install an SBus card into a SPARCstation 10 system unit:

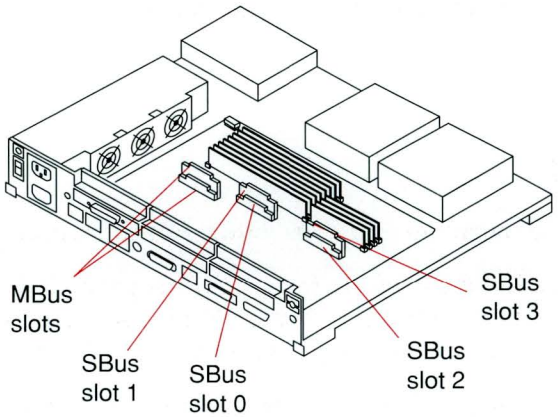
1. **Read the guide for your SBus product.**
   Pay particular attention to the section describing the jumper or switch settings, slot requirements, and tools needed.
2. **Power off your system as described in Chapter 3, "Turning the System Power On and Off."**
3. **Detach all cables except the AC power cord from the back of the system.**
   The AC power cord provides an electrical path for safely discharging static electricity.

Note – If you are installing an SBus card into a new system, make sure that you attach the power cord to the power outlet on the system and to the wall outlet.

4. **Remove the system unit cover.**
   Refer to "Opening the System Unit" on page 87.
5. **Attach the wrist strap.**
   Refer to "Attaching a Wrist Strap" on page 90.

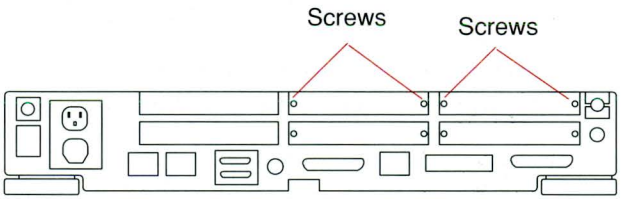
6. **Identify the slot you want to use.**
   If you are installing more than one SBus card, use the lower SBus slots first (SBus slots 0 and 2). The following diagram shows slot identification for a SPARCstation 10 system.

Note – Some SBus cards have special slot requirements. Before installing an SBus card, check the guide supplied with the card for information on slot requirements.

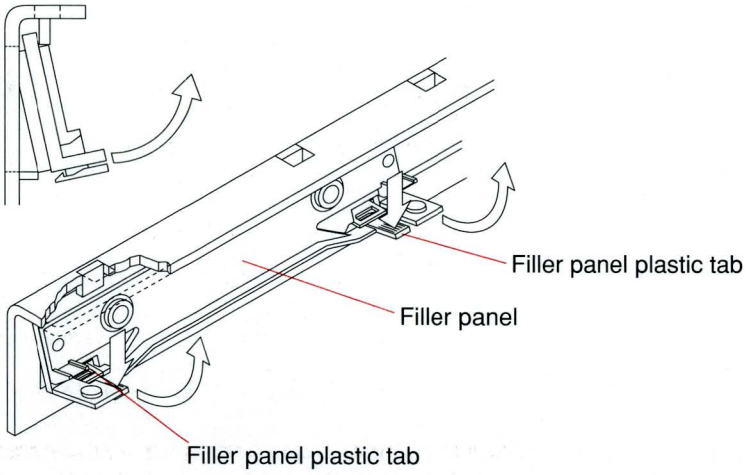


7. **Identify which SBus opening(s) you will be using on the system unit back panel.**

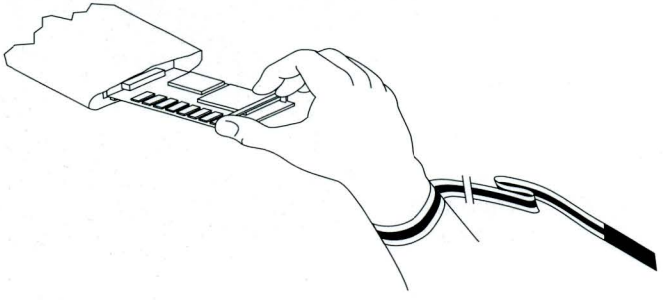
8. **Using a Phillips screwdriver, remove both sets of screws and washers that secure the SBus filler panel to the outside of the system unit.**
   Save the screws and washers. You will need them later.



9. **Push down on the filler panel plastic tabs, one at a time, and press inward on the outside of the filler panel. This releases the panel.**



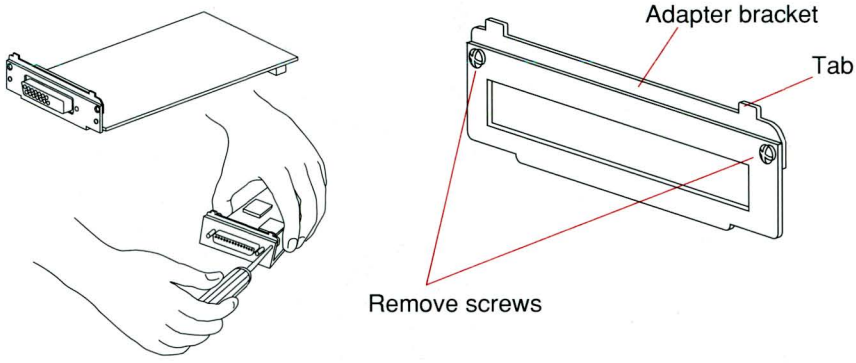
10. **Remove the new card from its antistatic bag. Hold the card by the edges.** Place the SBus card on an antistatic surface (either an antistatic mat or the antistatic bag the card was shipped in).



11. **If required, set the jumpers or switches on the card.** Refer to the guide for your SBus product for the settings.

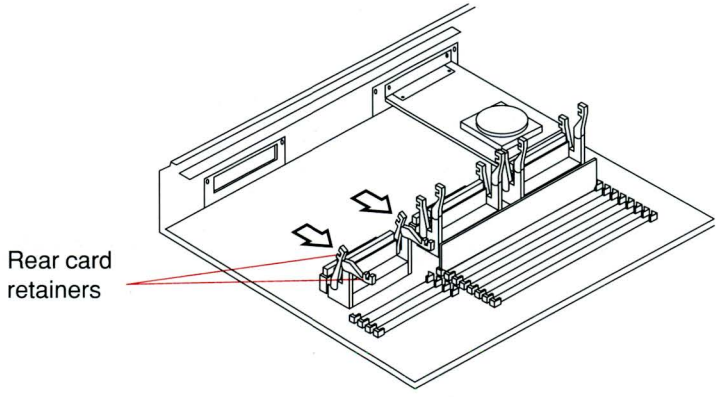
12. **If the card you are installing has tabs on the backplate, remove the adapter bracket.**

    a. **Remove the two screws that attach the adapter bracket to the backplate.**



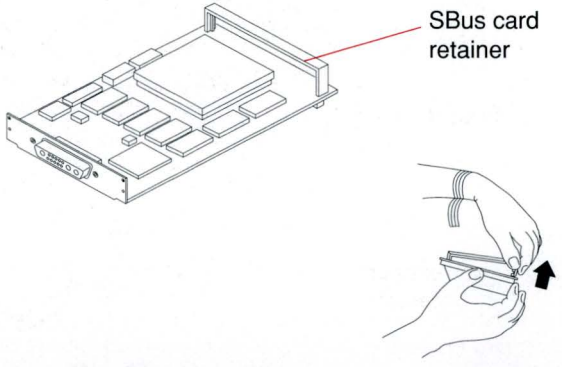
    b. **Save the adapter bracket and the screws in case you need to use them when installing SBus cards in other systems.**

13. **Push both rear card retainers back.**

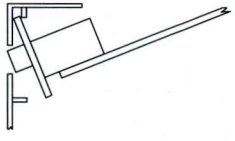


14. **Remove the card retainer from the SBus card.**
Bend one leg of the retainer slightly to the outside until the hook clears the hole in the SBus card. Remove the other side of the retainer, which should come out easily without bending it.

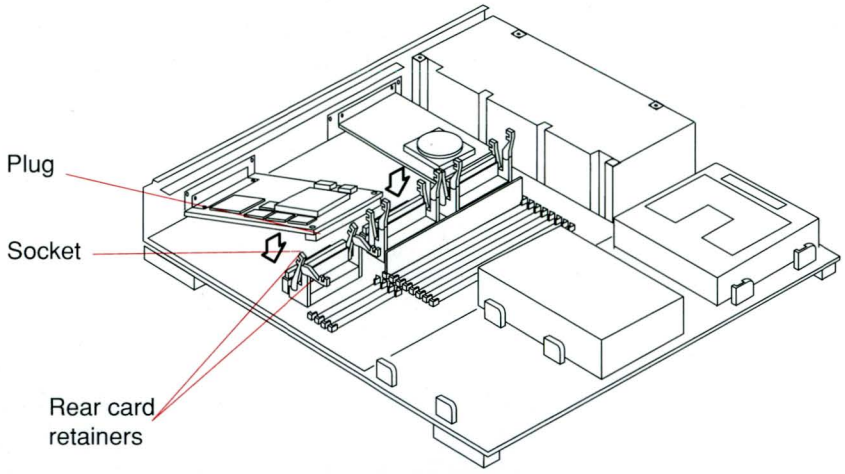
    Save the SBus card retainer to use as an extraction tool, should you need to remove the SBus card in the future.



15. **Slide the card at an angle into the back panel of the system. Hook the card backplate under the lip on the back panel. Be sure the card backplate shows through the slots on the back panel.**
The connector(s) for your card may not line up with other connectors in the back panel.

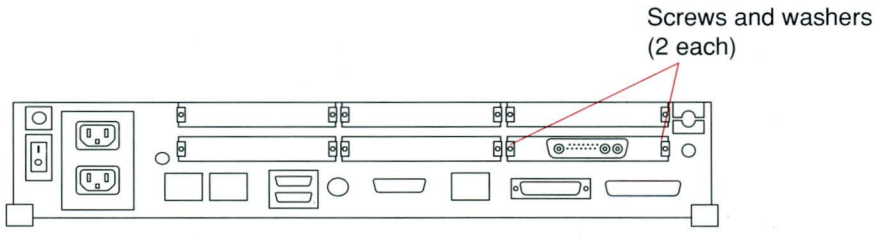


16. **Align the plug with the socket. Gently press the corners of the card to push the plug into the socket. Do not force the card or you may damage the pins on the card.**



17. **Push the rear card retainers forward over the edge of the SBus card.**

18. **Secure the SBus card to the back panel using a Phillips screwdriver and the washers and screws you removed earlier.**
The long side of the washer should be oriented vertically as shown below.



19. **Detach the wrist strap.**

20. **Follow the instructions in Appendix E to replace the system unit cover.**

21. **Reconnect all cables to the back of the system unit and the SBus card.**
For cabling information, refer to Chapter 2, "Installing Your System," and see the guide for your SBus product.

22. **Power on your system as described in Chapter 3, "Turning the System Power On and Off."**

23. **Refer to the guide for your SBus product to complete any required software installation, configuration, or additional setup procedures.**

Installing SBus Cards in SPARCclassic & SPARCstation LX Systems

This appendix describes how to install SBus cards into a SPARCstation LX or SPARCclassic system unit. You should also read the guide for the specific SBus card you are installing.

Tools Needed

To install an SBus card, you will need the following tools and materials:

- Phillips screwdriver (size #1)
- Phillips screwdriver (size #2)
- Wrist strap
- Antistatic surface

The following items can be used as an antistatic surface:

- Bag or shipping container used to package the SBus card
- Inner surface of the system unit cover
- Sun ESD mat (contact your Sun sales representative to purchase one)

Safety Precautions

Please observe the following safety precautions when you install an SBus card:

Warning – Before opening the system unit, make sure the system power switch is in the Standby (⏻) position. The green LED on the front panel should not be lit and the fan should not be running.

Warning – After installing the card, do not power on the system without replacing and securing the unit top. Failure to take this precaution may result in personal injury and system damage.

Installing the SBus Card

To install an SBus card into a SPARCclassic or SPARCstation LX system unit:

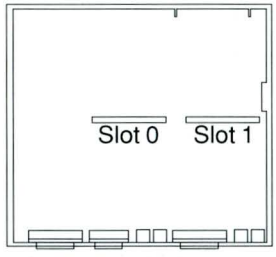
1. **Read the guide for your SBus product.**
   Pay particular attention to the section describing the jumper or switch settings, slot requirements, and tools needed.
2. **Power off your system as described in Chapter 3, "Turning the System Power On and Off."**
3. **Detach all cables except the power cord from the back of the system.**
   The AC power cord provides an electrical path for safely discharging static electricity.

Note – If you are installing an SBus card into a new system, make sure that you attach the power cord to both the system unit and the AC wall outlet.

4. **Remove the system unit cover.**
   Refer to "Opening the System Unit" on page 93.
5. **Attach the wrist strap.**
   Refer to "Attaching a Wrist Strap" on page 95.

6. **Identify the slot you want to use.**
   The following diagram shows slot identification for a SPARCstation LX or SPARCclassic system.

Note – Some SBus cards have special slot requirements. Before installing an SBus card, check the guide supplied with the card for information on slot requirements.

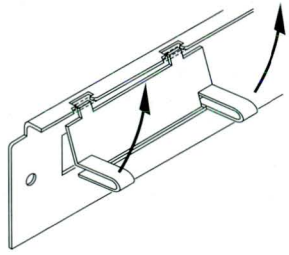


Note – On the system unit back panel, the SBus opening for Slot 0 is slightly wider than the opening for Slot 1. Some nonstandard SBus cards may have backplates that are too wide to fit in Slot 1. Cards of this type must be installed in Slot 0. Note that either slot can accommodate cards of standard width.

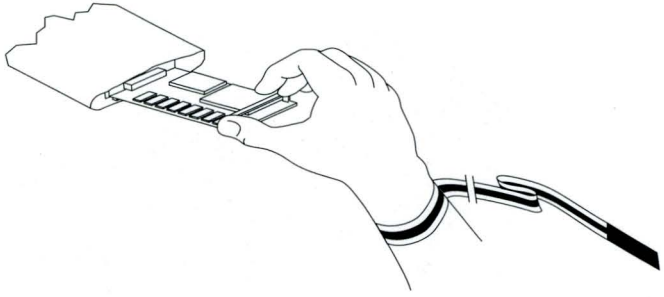
---

7. **Identify which SBus opening(s) you will be using on the system unit back panel.**

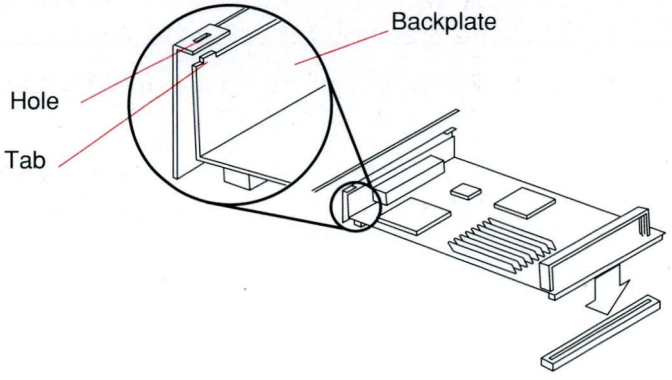
8. **To remove the SBus filler panel, lift up on the clips at the bottom of the panel and pull the panel toward the front of the system.**



9. **Remove the new card from its antistatic bag. Hold the card by the edges.**
   Place the SBus card on an antistatic surface (either an antistatic mat or the antistatic bag the card was shipped in).

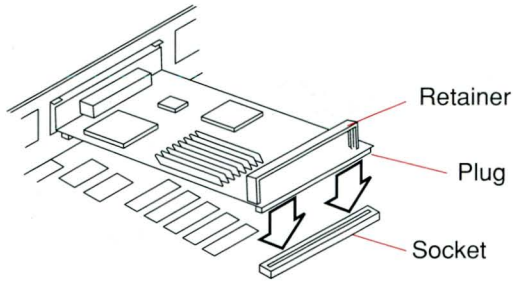


10. **If required, set the jumpers or switches on the card.**
    Refer to the guide for your SBus product for the settings.
11. **Slide the card at an angle into the back panel of the system.**
12. **Hook the tabs on the card backplate into the holes in the back panel.**



13. **Push the card against the back panel.**
    The connector(s) for your card may not line up with other connectors in the back panel.

14. **Check that the plug is aligned with the socket.**
    Gently press the corners of the card (not the retainer) to push the plug into the socket. *Do not force the card.*



15. **Refer to the guide for your SBus product for instructions on any additional hardware setup.**
16. **Detach the wrist strap.**
17. **Follow the instructions in Appendix E to replace the system unit cover.**
18. **Reconnect all cables to the back of the system unit and the SBus card.**
    For cabling information, refer to Chapter 2, "Installing Your System," and see the guide for your SBus product.
19. **Power on your system as described in Chapter 3, "Turning the System Power On and Off."**
20. **Refer to the guide for your SBus product to complete any required software installation, configuration, or additional setup procedures.**

Changing the Display Resolution and Refresh Rate

If your SPARCclassic or SPARCstation LX system includes a 16-inch mid-range color monitor, you can change the monitor's resolution and refresh rate to suit your needs.

The 16-inch mid-range color monitor lets you choose between the following resolutions and refresh rates:

- 1152 x 900 resolution at a 66 Hertz refresh rate
- 1024 x 768 resolution at a 76 Hertz refresh rate

You can choose the higher resolution for a crisper display, or the higher refresh rate for reduced flicker. The factory default setting for this monitor is 1152 x 900 at 66 Hertz.

Note – If you have installed the optional VSIMM in your SPARCstation LX system, see the manual included with the VSIMM for instructions on changing the display resolution.

To change the resolution and refresh rate for the 16-inch mid-range color monitor:

1. **Save any work in progress and return to the operating system environment.**
   Consult your software documentation for instructions on ending a work session and saving your files. If you are in a windowing environment, exit from it and wait for the system prompt to appear. (See the documentation supplied with your windowing system.)

2. **Press Stop(L1)-A to access the `ok` prompt.**
   Press and hold the Stop(L1) key, then press A.

3. **At the system's `ok` prompt, type one of the following commands (indicated by boldface) and press Return.**

   To change to 1024 x 768 resolution at 76 Hertz, type:

```
ok setenv output-device screen:r1024x768x76
output-device          screen:r1024x768x76          screen
ok
```

   To change to 1152 x 900 resolution at 66 Hertz, type:

```
ok setenv output-device screen:r1152x900x66
output-device          screen:r1152x900x66          screen
ok
```

   The system displays the new setting.

Note – The new setting remains in effect even after you power off your system.

4. **Reboot the operating system.**

   Type `boot` at the `ok` prompt and press Return.

   Wait for the login prompt to appear, then log back in to your system. Consult the documentation supplied with your operating system for instructions on logging in to your system.

Glossary

account
The means by which you access the system and the space assigned for your files and directories.

address
Refers to a location within a computer system's memory. The word *location* is a synonym. Reference is usually made to an *address* for the purpose of retrieving or storing information.

Attachment Unit Interface (AUI)/Audio port
The port on the system unit where the AUI adapter cable or AUI/Audio adapter cable is connected.

Attachment Unit Interface (AUI) adapter cable
An adapter cable that connects to the attachment unit interface (AUI) port of the SPARCclassic system unit. It terminates with a 15-pin D connector that is used to connect to a thick Ethernet transceiver cable.

Attachment Unit Interface (AUI)/SpeakerBox interface (SBI) adapter cable
A cable that connects to the attachment unit interface (AUI)/Audio port on SPARCstation LX and SPARCstation 10 system units. The other end has two connectors: a 26-pin micro-D connector that is used to connect to the SpeakerBox, and a 15-pin D connector that is used to connect the system unit to a thick Ethernet cable.

backup
The process of making a copy of files on a diskette or tape.

backup copy
A duplicate copy of files.

board
See *printed circuit board*. In a Desktop SPARCstation system unit, a board occupies one or more SBus slots.

boot
To load the system software into memory and start it running.

cables
Wires or bundles of wires configured with connectors at each end and used to connect two or more hardware devices.

card
See *printed circuit board*.

cartridge tape
0.25-inch (6.35 mm) magnetic tape used in the tape drive of the Desktop Backup Pack and External Storage Module to read and write data.

client
A system on a network that relies on another system (called a server) for resources.

DCE
Data Communications Equipment. Modems are a good example of DCE. Any equipment that connects to DTE (Data Terminal Equipment) using an RS-232 or CCITT V.24 standard interface.

default
A preset value that is assumed to be correct unless changed by the user.

Desktop Storage Module
An external data storage that contains a disk drive or a tape drive.

Desktop Storage Pack
An external data storage unit that contains a disk drive (Desktop Disk Pack), a tape drive (Desktop Backup Pack), or a compact disc drive (Desktop SunCD Pack) and that can be connected to a Desktop SPARCstation system.

disk
A round platter, or set of platters, coated with magnetic medium and organized into concentric tracks for storing data.

disk drive
The mechanism that rotates a disk.

diskette
A removable disk of magnetic medium for storing software and information. The outer jacket of the diskette is made of firm plastic that measures 3.5 inches (88.9 millimeters) across.

diskette drive
A device that reads and writes to diskettes.

DSIMM
A small printed circuit card that contains dynamic random access memory (DRAM) chips. The acronym "DSIMM" stands for *dynamic* random access memory *single inline memory module.*

DTE
Data Terminal Equipment. Typically, DTE includes terminals, personal computers, and workstations. Your Desktop SPARCstation system is a DTE device.

DTR
Data Terminal Ready. DTR is the name of a circuit used to control the switching of data communication equipment to the communication channel. When DTR is in the ON condition, the circuit prepares the data communication equipment to be connected to the communication channel and maintains the connection established. When DTR is in the OFF condition, the data communication equipment is removed from the communication channel following completion of any transmission that is already in progress.

Ethernet
A type of network hardware that allows communication between systems connected directly together by transceiver taps, transceiver cables, and a coaxial cable. Also implemented using twisted-pair telecommunications wire and cable.

Ethernet address
A unique number assigned to each system when it is manufactured. The Ethernet address of your system is displayed on the banner screen that appears when you power on your Desktop SPARCstation system.

External Storage Module (ESM)
An external unit that contains disk/tape drives and that can be connected to a Desktop SPARCstation system.

formatting
Preparing a diskette or hard disk so that information can be stored on it.

host name
A name that you (or your system administrator) assign to your system unit to uniquely identify it to the SunOS™ operating system (and also to the network).

hung system
A system that does not respond to input from the keyboard or mouse.

Integrated Services Digital Network (ISDN)
A technical standard that provides for fully digital transmission and reception of data, and fully digital end-to-end connectivity of telecommunications devices across a public network.

keyboard
Input device for entering information by typing.

keyboard port
The port on your Desktop SPARCstation system unit where the keyboard cable is connected.

laser printer
A high-speed, high-resolution printer that uses laser technology to produce computer output.

log in
The process of gaining access to a system by entering a user name and, optionally, a password.

log out
The process of exiting from a system.

modem
A device that enables a computer or terminal to establish a connection with another computer or terminal and to communicate data through telephone lines.

modem cable
A cable that physically connects a modem or some other device to a Desktop SPARCstation serial port. The modem cable is wired "straight through." See also *null modem cable.*

monitor
A video display unit that is part of your Desktop SPARCstation system. Not the same thing as a terminal.

mouse
A hand-held device that controls the position of a pointer on the screen.

mouse button
One of three buttons on the mouse that you press to perform an operation.

mouse pad
A thin pad that is used as a surface for positioning the mouse.

network
A collection of at least two systems that are connected by an Ethernet cable.

network address
A unique number assigned to each system on a network, consisting of the network number and the system number. Also known as Internet address.

null modem cable
A cable used to connect a printer, terminal, or some other device to your Desktop SPARCstation system. Unlike the modem cable, the null modem cable is not wired "straight through"; some wires are crossed or jumpered to change the flow of data in a particular way.

operating system
Software that allows you to control the resources of your system: hardware, programs, data, and user access.

password
A character string that is associated with a user name. Provides security for a user account. Desktop SPARCstation systems require you to type a password when you log into the system, so that no unauthorized person can use your system.

printed circuit board
Any board with electronic wiring etched on it.

printer
A physical device that takes electronic signals, interprets them, and prints them on paper.

SCSI
Small Computer System Interface; pronounced "scuzzy."

SCSI cable
A cable that connects the Desktop Storage Packs, External Storage Module, or External Expansion Module to the SCSI port of your Desktop SPARCstation system unit.

SCSI port
The ports on the Desktop Disk Pack, Desktop Backup Pack, External Storage Module, External Expansion Module, and Desktop SPARCstation system unit where the SCSI cable is connected.

SCSI terminator
A device that terminates the signal coming through an unused SCSI port.

serial interface Y-cable
Your Desktop SPARCstation system has two serial ports located on the two terminations of its optional serial interface Y-cable.

server
A system that is on a network and provides resources to other systems.

single system
A system that is used by itself and not connected to a computer network.

slot
An electronic connection and long, narrow groove or opening in the system unit designed to receive a module or a printed circuit board (such as a SIMM or a frame buffer board).

Sun windowing system
The windowing screen, such as OpenWindows™, a background screen containing a menu for access to files and applications. Refers to both the background screen and the objects on it, such as icons and individual windows.

superuser
: A user with full access privileges on a system, unlike a regular user whose access to files and accounts is limited.

system
: Any computer that allows you to run programs or applications. In this book, it is used to mean your Desktop SPARCstation system unit together with the operating system and peripheral hardware devices.

system unit
: The enclosure containing the system's memory, central processing unit, hard disk, diskette drive, and frame buffer.

tape drive
: A drive that reads information from and writes information to a quarter-inch (six-millimeter) cartridge tape. The tape drive is located in the optional Desktop Tape Pack, Desktop Storage Module, or External Storage Module.

terminal
: A device that consists of a video display and keyboard that you use to type and display information. A terminal may be connected to either of the RS-232 serial interface ports on the back panel of the Desktop SPARCstation system unit. Not the same thing as a monitor.

user name
: A combination of letters, and possibly numbers, that identifies a user to the system.

VSIMM
: A small printed circuit card that contains dynamic random access memory (DRAM) chips used to store video images. The acronym "VSIMM" stands for *video* random access memory *single inline memory module*.

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Reader Comments

We welcome your comments and suggestions to help improve the *Desktop SPARC Hardware Owner's Guide*, part number *801-2175-10*. Please take time to let us know what you think about this manual.

■ The tasks were well documented and easy to follow.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
❑	❑	❑	❑	❑

Comments _____

■ The information provided in the *Desktop SPARC Hardware Owner's Guide* was complete.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
❑	❑	❑	❑	❑

Comments _____

■ The information I needed was easy to find.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
❑	❑	❑	❑	❑

Comments _____

■ The manual was useful to me.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
❑	❑	❑	❑	❑

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