
Required Electronic Emission and Connectivity Notices

Class A Federal Communications Commission Statement

Federal Communications Commission (FCC) Statement

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.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Compliance Statement

This Class A digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union (EU) Electromagnetic Compatibility Directive

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

Attention:

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take adequate measures. If the Ethernet port is connected, 100 ohm category 5 shielded twisted-pair Ethernet cable must be used to reduce the potential for causing interference to radio and TV communications and to other electrical or electronic equipment. IBM cannot accept responsibility for any interference caused by other-than-recommended cables and connectors.

Germany

Zulassungsbescheinigung laut Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) vom 30. August 1995

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Der Aussteller der Konformitätserklärung ist die:

International Business Machines
Industrial Computers
P.O. Box 1328
Boca Raton FL 33429-1328
U.S.A.

Informationen in Hinsicht EMVG Paragraph 3, Abs. 2:

Das Gerät erfüllt die Schutzanforderungen nach EN 50082-1 und EN 55022 Klasse A.

EN 55022 Klasse A Geräte bedürfen folgender Hinweise:

Nach dem EMVG:

"Geräte dürfen an Orten, für die sie nicht ausreichend entstört sind, nur mit besonderer Genehmigung des Bundesministeriums für Post und Telekommunikation oder des Bundesamtes für Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind." (Auszug aus dem EMVG, Paragraph 3, Abs. 4)

Dieses Genehmigungsverfahren ist nach Paragraph 9 EMVG in Verbindung mit der entsprechenden Kostenverordnung (Amtsblatt 14/93) kostenpflichtig.

Nach der EN 55022:

"Dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen durchzuführen und dafür aufzukommen."

Anmerkung:

Um die Einhaltung des EMVG sicherzustellen, sind die Geräte wie in den Handbüchern angegeben zu installieren und zu betreiben.

Japan

Japanese Voluntary Control Council for Interference (VCCI) Statement

This equipment is in the Class 1 category (information equipment to be used in commercial and/or industrial areas) and conforms to the standards set by the Voluntary Control Council for Interference by Information Technology Equipment aimed at preventing radio interference in commercial and industrial areas.

Consequently, when used in a residential area or in an adjacent area thereto, radio interference may be caused to radios and TV receivers, and so forth.

Read the instructions for correct handling.

Korea

Korean Communications Statement

Please note that this device has been approved for business purpose with regard to electromagnetic interference. If you find this is not suitable for your use, you may exchange it for a non-business one.

Safety Notices (Multi-Lingual Translations)

The following safety notices are provided in English, French, German, Italian, and Spanish languages.

Safety Notice 1

Before removing any FRU, power-off the system unit, unplug all power cords from electrical outlets, remove the battery pack, then disconnect any interconnecting cables.

Avant de retirer une unité remplaçable en clientèle, mettez le système hors tension, débranchez tous les cordons d'alimentation des socles de prise de courant, retirez la batterie et déconnectez tous les cordons d'interface.

Die Stromzufuhr muß abgeschaltet, alle Stromkabel aus der Steckdose gezogen, der Akku entfernt und alle Verbindungskabel abgenommen sein, bevor eine FRU entfernt wird.

Prima di rimuovere qualsiasi FRU, spegnere il sistema, scollegare dalle prese elettriche tutti i cavi di alimentazione, rimuovere la batteria e poi scollegare i cavi di interconnessione.

Antes de quitar una FRU, apague el sistema, desenchufe todos los cables de las tomas de corriente eléctrica, quite la batería y, a continuación, desconecte cualquier cable de conexión entre dispositivos.

Safety Notice 2

Some standby batteries contain a small amount of nickel and cadmium. Do not disassemble it, recharge it, throw it into fire or water, or short-circuit it. Dispose of the battery as required by local ordinances or regulations. Use only the battery in the appropriate parts listing. Use of an incorrect battery can result in ignition or explosion of the battery.

Certaines batteries de secours contiennent du nickel et du cadmium. Ne les démontez pas, ne les rechargez pas, ne les exposez ni au feu ni à l'eau. Ne les mettez pas en court-circuit. Pour les mettre au rebut, conformez-vous à la réglementation en vigueur. Lorsque vous remplacez la pile de sauvegarde ou celle de l'horloge temps réel, veillez à n'utiliser que les modèles cités dans la liste de pièces détachées adéquate. Une batterie ou une pile inappropriée risque de prendre feu ou d'exploser.

Die Bereitschaftsbatterie, die sich unter dem Diskettenlaufwerk befindet, kann geringe Mengen Nickel und Cadmium enthalten. Sie darf nur durch die Verkaufsstelle oder den IBM Kundendienst ausgetauscht werden. Sie darf nicht zerlegt, wiederaufgeladen, kurzgeschlossen, oder Feuer oder Wasser ausgesetzt werden. Die Batterie kann schwere Verbrennungen oder Verätzungen verursachen. Bei der Entsorgung die örtlichen Bestimmungen für Sondermüll beachten. Beim Ersetzen der Bereitschafts- oder Systembatterie nur Batterien des Typs verwenden, der in der Ersatzteilliste aufgeführt ist. Der Einsatz falscher Batterien kann zu Entzündung oder Explosion führen.

Alcune batterie di riserva contengono una piccola quantità di nichel e cadmio. Non smontarle, ricaricarle, gettarle nel fuoco o nell'acqua né cortocircuitarle. Smaltirle secondo la normativa in vigore (DPR 915/82, successive disposizioni e disposizioni locali). Quando si sostituisce la batteria dell'RTC (real time clock) o la batteria di supporto, utilizzare soltanto i tipi inseriti nell'appropriato Catalogo parti. L'impiego di una batteria non adatta potrebbe determinare l'incendio o l'esplosione della batteria stessa.

Algunas baterías de reserva contienen una pequeña cantidad de níquel y cadmio. No las desmonte, ni recargue, ni las eche al fuego o al agua ni las cortocircuite. Deséchelas tal como dispone la normativa local. Utilice sólo baterías que se encuentren en la lista de piezas. La utilización de una batería no apropiada puede provocar la ignición o explosión de la misma.

Safety Notice 3

The battery pack contains small amounts of nickel. Do not disassemble it, throw it into fire or water, or short-circuit it. Dispose of the battery pack as required by local ordinances or regulations. Use only the battery in the appropriate parts listing when replacing the battery pack. Use of an incorrect battery can result in ignition or explosion of the battery.

La batterie contient du nickel. Ne la démontez pas, ne l'exposez ni au feu ni à l'eau. Ne la mettez pas en court-circuit. Pour la mettre au rebut, conformez-vous à la réglementation en vigueur. Lorsque vous remplacez la batterie, veillez à n'utiliser que les modèles cités dans la liste de pièces détachées adéquate. En effet, une batterie inappropriée risque de prendre feu ou d'exploser.

Akkus enthalten geringe Mengen von Nickel. Sie dürfen nicht zerlegt, wiederaufgeladen, kurzgeschlossen, oder Feuer oder Wasser ausgesetzt werden. Bei der Entsorgung die örtlichen Bestimmungen für Sondermüll beachten. Beim Ersetzen der Batterie nur Batterien des Typs verwenden, der in der Ersatzteilliste aufgeführt ist. Der Einsatz falscher Batterien kann zu Entzündung oder Explosion führen.

La batteria contiene piccole quantità di nichel. Non smontarla, gettarla nel fuoco o nell'acqua né cortocircuitarla. Smaltirla secondo la normativa in vigore (DPR 915/82, successive disposizioni e disposizioni locali). Quando si sostituisce la batteria, utilizzare soltanto i tipi inseriti nell'appropriato Catalogo parti. L'impiego di una batteria non adatta potrebbe determinare l'incendio o l'esplosione della batteria stessa.

Las baterías contienen pequeñas cantidades de níquel. No las desmonte, ni recargue, ni las eche al fuego o al agua ni las cortocircuite. Deséchelas tal como dispone la normativa local. Utilice sólo baterías que se encuentren en la lista de piezas al sustituir la batería. La utilización de una batería no apropiada puede provocar la ignición o explosión de la misma.

Safety Notice 4

CAUTION

The lithium battery presents a fire, explosion, or severe burn risk. Do not recharge it, remove its polarized connector, disassemble it, heat it above 100 C (212 F), incinerate it, or expose its cell contents to water. Dispose of the battery as required by local ordinances or regulations. When replacing the battery, use only Part No. 33F8354. Use of another battery could result in ignition or explosion of the battery. Replacement batteries can be ordered from IBM or IBM Authorized Dealers.

ADVARSEL

Litiumbatteriet kan forårsage brand, eksplosion eller alvorlige brandsår. Det må ikke genoplades, åbnes, udsættes for mere end 100 grader C, brændes eller komme i berøring med vand. Desuden må man ikke fjerne forbindelsesstikket fra det. Litiumbatteriet destrueres som foreskrevet af myndighederne. Ved udskiftning af litiumbatteriet anvendes partnummer 33F8354. Brug af andre former for batterier kan medføre, at batteriet brænder eller eksploderer. Nye batterier bestilles gennem IBM eller IBM-forhandleren.

WAARSCHUWING

De lithiumbatterij kan brand- en explosiegevaarlijk zijn. De batterij mag niet worden opgeladen, gedemonteerd, verbrand of boven 100°C worden verhit. Laat de inhoud niet in aanraking komen met water en verwijder de gepolariseerde aansluiting niet. Bescherm het milieu; lever oude batterijen in bij inzamelpunten. Gebruik ter vervanging uitsluitend batterijen met bestelnummer 33F8354. Gebruik van andere batterijen kan leiden tot ontbranding of explosie. Nieuwe batterijen kunnen worden besteld bij IBM of geautoriseerde IBM-dealers.

ATTENTION !

Prenez garde aux risques d'incendie, d'explosion et de brûlures graves liés à l'utilisation d'une pile au lithium. Ne rechargez pas la pile, n'en retirez pas le connecteur et ne la démontez pas. Ne la chauffez pas au-delà de 100°C (212°F) et n'en exposez pas le contenu à l'eau. Détruisez-la conformément à la réglementation en vigueur. Si vous la remplacez, commandez une pile de rechange sous la référence 33F8354 : toute autre pile risquerait de prendre feu ou d'exploser. Les piles de rechange peuvent être obtenues auprès d'IBM ou d'un distributeur agréé IBM.

VAROITUS

Litiumparisto voi syttyä tuleen, räjähtää tai aiheuttaa vakavia palovammoja. Älä koskaan lataa paristoa uudelleen, irrota pariston polarisoitua liitintä, pura paristoa, kuumenna paristoa yli 100°C lämpötilaan, polta paristoa tai päästä vettä pariston sisään. Hävitä paristo paikallisten määräysten mukaisesti. Vaihda pariston tilalle ainoastaan tuote 33F8354. Muun pariston käyttö voi johtaa sen syttymiseen tai räjähtämiseen. Vaihtoparistoja voi tilata IBM:stä tai valtuutetulta IBM-jälleenmyyjältä.

ACHTUNG

Lithiumbatterien sind feuergefährlich, explosiv und können schwere Verätzungen verursachen. Bei Außerbetriebsetzen (Verschrotten) des Gerätes örtliche Entsorgungsrichtlinien für Sondermüll beachten. Die Batterie darf nicht mit Wasser in Berührung gebracht, über 100 Grad erhitzt, wieder aufgeladen, repariert oder zerlegt werden. Eine verbrauchte Batterie nur durch eine Batterie mit der Teilenummer 33F8354 ersetzen. Andere Batterien können sich entzünden oder explodieren. Ersatzbatterien können von IBM oder einem IBM Vertragshändler bezogen werden.

Safety Notice 4 (continued)

ATTENZIONE

La batteria al litio può incendiarsi, esplodere o procurare serie bruciature. Evitare di ricaricarla, toglierle il connettore polarizzato, smontarla, riscaldarla ad una temperatura superiore ai 100 gradi centigradi, incendiarla o gettarla in acqua. Per eliminarla seguire le procedure di sicurezza aziendali e quanto stabilito dal DPR 915 del 10-9-82 e successive disposizioni. Sostituire solo con la parte IBM N. 33F8354. L'uso di una diversa batteria potrebbe provocare incendi o esplosioni. Ordinare le batterie all'IBM o ai rivenditori autorizzati.

ADVARSEL

På grunn av brann- og eksplosjonsfare må ikke litiumsbatterier lades opp, taes fra hverandre, brennes eller utsettes for sterk varme over 100°C. Ikke fjern de polariserte tilkoblingene eller utsett batteriene for vann. Brukte batterier bør kastes så raskt som mulig og i henhold til gjeldende forskrifter. Bruk bare batterier med delnummer 33F8354 når du bytter batteri. Bruk av feil batteri kan føre til at batteriet antennes eller eksploderer. Nye batterier kan bestilles fra autoriserte IBM PC-forhandlere.

CUIDADO

A pilha de lítio representa um risco de incêndio, explosão ou de graves queimaduras. Não a recarregue, remova o conector polarizado, desmonte, aqueça acima de 100°C (212°F), queime ou molhe o conteúdo da célula. Destrua a pilha de acordo com os regulamentos locais. Quando substituir a pilha, utilize apenas a peça com o número de referência 33F8354. A utilização de qualquer outra pilha poderá ocasionar auto-ignição ou explosão da pilha. Podem ser encomendadas pilhas sobresselentes à IBM ou aos seus Concessionários Autorizados.

VARNING:

Litiumbatterier kan explodera eller börja brinna. Ladda inte upp det, ta inte bort dess polariserade anslutningar, upphetta det inte över 100°C, ta inte isär det och utsätt inte batteriets cellinnehåll för vatten. Om du ska byta batteriet ska du byta till ett batteri med beställningsnummer 33F8354. Om du använder något annat batteri kan det antändas eller explodera. Beställ batterier från IBM eller från en av IBM auktoriserad återförsäljare.

PRECAUCION

La batería de litio representa un peligro de incendio, explosión o de graves quemaduras. No la recargue, quite su conector polarizado, desmonte, caliente a más de 100°C (212°F), la incinere o someta su contenido al agua. Deshágase de la batería según los reglamentos u ordenanzas locales. Utilice como recambio sólo el número de pieza No. 33F8354. La utilización de otra batería podría provocar su deflagración o explosión. Las baterías de recambio pueden pedirse a IBM o a Concesionarios Autorizados IBM.

Safety Notice 5

Though main batteries have low voltage, a shorted or grounded battery can produce enough current to burn combustible materials or personnel.

Bien que le voltage des batteries principales soit peu élevé, le court-circuit ou la mise à la masse d'une batterie peut produire suffisamment de courant pour brûler des matériaux combustibles ou causer des brûlures corporelles graves.

Obwohl Hauptbatterien eine niedrige Spannung haben, können sie doch bei Kurzschluß oder Erdung genug Strom abgeben, um brennbare Materialien zu entzünden oder Verletzungen bei Personen hervorzurufen.

Sebbene le batterie di alimentazione siano a basso voltaggio, una batteria in corto circuito o a massa può fornire corrente sufficiente da bruciare materiali combustibili o provocare ustioni ai tecnici di manutenzione.

Aunque las baterías principales tienen un voltaje bajo, una batería cortocircuitada o con contacto a tierra puede producir la corriente suficiente como para quemar material combustible o provocar quemaduras en el personal.

Safety Information

This section contains the safety information that you need to be familiar with before servicing an Industrial Computer.

General Safety

Follow these rules to ensure general safety.

- Observe good housekeeping in the area of the system units during and after maintenance.
 - When lifting any heavy object:
 1. Ensure you can stand safely without slipping.
 2. Distribute the weight of the object equally between your feet.
 3. Use a slow lifting force. Never move suddenly or twist when you attempt to lift.
 4. Lift by standing or by pushing up with your leg muscles; this action removes the strain from the muscles in your back. *Do not attempt to lift any objects that weigh more than 16 kg (35 lb) or objects that you think are too heavy for you.*
 - Do not perform any action that causes hazards to the customer, or that makes the equipment unsafe.
 - Before you start the system unit, ensure that other service representatives and the customer's personnel are not in a hazardous position.
 - Place removed covers and other parts in a safe place, away from all personnel, while you are servicing the system unit.
 - Keep your tool case away from walk areas so that other people will not trip over it.
 - Do not wear loose clothing that can be trapped in the moving parts of a system unit. Ensure that your sleeves are fastened or rolled up above your elbows. If your hair is long, fasten it.
 - Insert the ends of your necktie or scarf inside clothing or fasten it with a nonconductive clip, approximately 8 centimeters (3 inches) from the end.
 - Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing.
- Remember:** Metal objects are good electrical conductors.
- Wear safety glasses when you are: hammering, drilling, soldering, cutting wire, attaching springs, using solvents, or working in any other conditions that might be hazardous to your eyes.
 - After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
 - Reinstall all covers correctly before returning the system unit to the customer.

Electrical Safety

CAUTION:

Electrical current from power, telephone, and communication cables can be hazardous. To avoid any shock hazard, you should disconnect all power cords and cables as described in the following information.

For your safety, always do the following *before* removing the cover:

1. Turn off the system unit and any attached devices, such as printers, displays, and external drives.

Note: Industrial computer users in the United Kingdom who have a modem or fax machine attached to your system unit must disconnect the telephone line from the system unit *before* unplugging any power cords (also known as power cables). When reassembling the system unit, reconnect the telephone line *after* plugging in the power cords.

2. Unplug all the power cords from electrical outlets.
3. Disconnect all communication cables from external receptacles.
4. Disconnect all cables and power cords from the back of the system unit.

Note: Do not reconnect any cables or power cords until you reassemble the system unit and put the cover back on.

CAUTION:

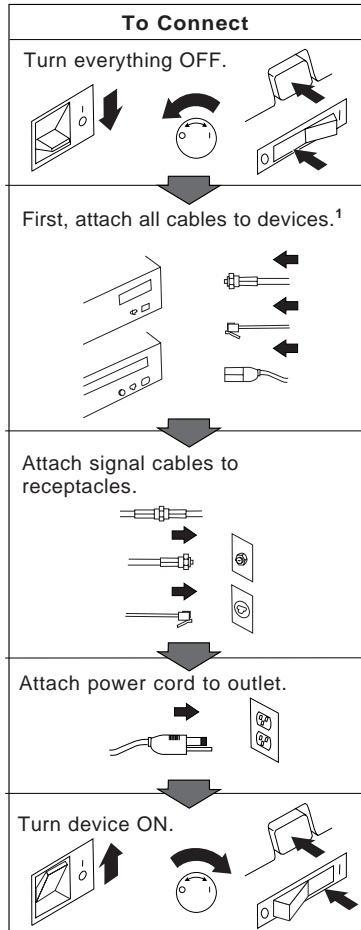
Never remove the cover on the power supply. If you have a problem with the power supply, have your system unit serviced.

CAUTION:

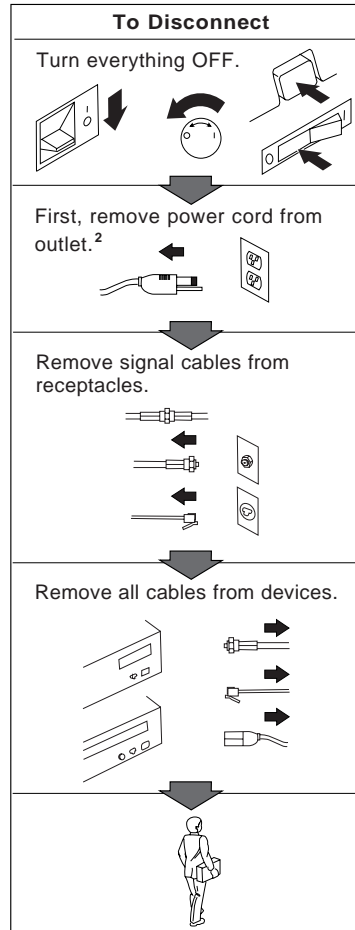
The system unit with options can weigh as much as 15 kilograms (33.3 pounds). Do not attempt to lift it by yourself if you think it is too heavy for you.

**DANGER:**

Electrical current from power, telephone, and communication cables is hazardous. To avoid shock hazard, connect and disconnect cables as shown below when installing, moving or opening the covers of this product or attached devices. The power cord must be used with a properly grounded outlet.



¹ In the U.K., by law, the telephone cable must be connected after the power cord.



² In the U.K., by law, the power cord must be disconnected after the telephone line cable.

Observe the following rules when working on electrical equipment.

Important

Use only approved tools and test equipment. Some hand tools have handles covered with a soft material that does not insulate you when working with live electrical currents.

Many customers have, near their equipment, rubber floor mats that contain small conductive fibers to decrease electrostatic discharges. Do not use this type of mat to protect yourself from electrical shock.

- Find the room emergency power-off (EPO) switch, disconnecting switch, or electrical outlet. If an electrical accident occurs, you can then operate the switch or unplug the power cord quickly.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Disconnect all power before:
 - Performing a mechanical inspection
 - Working near power supplies
 - Removing or installing main units
- Before you start to work on the system unit, unplug the power cord. If you cannot unplug it, ask the customer to power-off the wall box that supplies power to the system unit and to lock the wall box in the off position.
- If you need to work on a system unit that has *exposed* electrical circuits, observe the following precautions:
 - Ensure that another person, familiar with the power-off controls, is near you.

Remember: Another person must be there to switch off the power, if necessary.

- Use only one hand when working with powered-on electrical equipment; keep the other hand in your pocket or behind your back.

Remember: There must be a complete circuit to cause electrical shock. By observing the above rule, you may prevent a current from passing through your body.

- When using testers, set the controls correctly and use the approved probe leads and accessories for that tester.
- Stand on suitable rubber mats (obtained locally, if necessary) to insulate you from grounds such as metal floor strips and system unit frames.

Observe the special safety precautions when you work with very high voltages; these instructions are in the safety sections of maintenance information. Use extreme care when measuring high voltages.

- Regularly inspect and maintain your electrical hand tools for safe operational condition.
- Do not use worn or broken tools and testers.
- *Never assume* that power has been disconnected from a circuit. First, *check* that it has been powered-off.
- Always look carefully for possible hazards in your work area. Examples of these hazards are moist floors, nongrounded power extension cables, power surges, and missing safety grounds.
- Do not touch live electrical circuits with the reflective surface of a plastic dental mirror. The surface is conductive; such touching can cause personal injury and system unit damage.

- Do not service the following parts (and similar units) *with the power on* when they are removed from their normal operating places in a system unit (this practice ensures correct grounding of the system units):
 - Power supply units
 - Pumps
 - Blowers and fans
 - Motor generators
- If an electrical accident occurs:
 - **Use caution; do not become a victim yourself.**
 - **Switch off power.**
 - **Send another person to get medical aid.**

Safety Inspection Guide

The intent of this inspection guide is to assist you in identifying potentially unsafe conditions on these products. Each system unit, as it was designed and built, had required safety items installed to protect users and service personnel from injury. This guide addresses only those items. However, good judgment should be used to identify potential safety hazards due to attachment of non-IBM features or options not covered by this inspection guide.

If any unsafe conditions are present, you must determine how serious the apparent hazard could be and whether you can continue without first correcting the problem.

Consider these conditions and the safety hazards they present:

- Electrical hazards, especially primary power (primary voltage on the frame can cause serious or fatal electrical shock).
- Explosive hazards, such as a damaged CRT face or bulging capacitor
- Mechanical hazards, such as loose or missing hardware

The guide consists of a series of steps presented in a checklist. Begin the checks with the power off, and the power cord disconnected.

Checklist:

1. Check exterior covers for damage (loose, broken, or sharp edges).
2. Power-off the system unit and disconnect the power cord.
3. Check the power cord for:
 - a. A third-wire ground connector in good condition. Use a meter to measure third-wire ground continuity for 0.1 ohm or less between the external ground pin and frame ground.
 - b. The power cord should be the appropriate type as specified in the parts listings.
 - c. Insulation must not be frayed or worn.
4. Remove the cover.
5. Check for any obvious non-IBM alterations. Use good judgment as to the safety of any non-IBM alterations.
6. Check inside the unit for any obvious unsafe conditions, such as metal filings, contamination, water or other liquids, or signs of fire or smoke damage.
7. Check for worn, frayed, or pinched cables.
8. Check that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.

Handling Electrostatic-Discharge-Sensitive Devices

Any system unit part containing transistors or integrated circuits (ICs) should be considered sensitive to electrostatic discharge (ESD). ESD damage can occur when there is a difference in charge between objects. Protect against ESD damage by equalizing the charge so that the system unit, the part, the work mat, and the person handling the part are all at the same charge.

Notes:

1. Use product-specific ESD procedures when they exceed the requirements noted here.
2. Make sure that the ESD protective devices you use have been certified (ISO 9000) as fully effective.

When handling ESD-sensitive parts:

- Keep the parts in protective packages until they are inserted into the product.
- Avoid contact with other people.
- Wear a grounded wrist strap against your skin to eliminate static on your body.
- Prevent the part from touching your clothing. Most clothing is insulative and retains a charge even when you are wearing a wrist strap.
- Use the black side of a grounded work mat to provide a static-free work surface. The mat is especially useful when handling ESD-sensitive devices.
- Select a grounding system, such as those listed below, to provide protection that meets the specific service requirement.

Note: The use of a grounding system is desirable but not required to protect against ESD damage.

- Attach the ESD ground clip to any frame ground, ground braid, or green-wire ground.
- Use an ESD common ground or reference point when working on a double-insulated or battery-operated system unit. You can use coax or connector-outside shells on these system units.
- Use the round ground-prong of the AC plug on AC-operated system units.

Grounding Requirements

Electrical grounding of the system unit is required for operator safety and correct system unit function. Proper grounding of the electrical outlet can be verified by a certified electrician.

Laser Compliance Statement

The CD-ROM drive in the system unit is a laser product. The CD-ROM drive's classification label (sample shown below) is located on the drive.

	CLASS 1 LASER PRODUCT LASER KLASSE 1 LUOKAN 1 LASERLAITE APPAREIL A LASER DE CLASSE 1 KLASSE 1 LASER APPARAT
Note: Do not open the drive; no user adjustments or serviceable parts are inside.	

The CD-ROM drive is certified in the U.S. to conform to the requirements of the Department of Health and Human Services 21 Code of Federal Regulations (DHHS 21 CFR) Subchapter J for Class 1 laser products.

In other countries, the drive is certified to conform to the requirements of EN60825.

Class 1 laser products are not considered to be hazardous. The CD-ROM drive has an internal Class I (1), 0.5-milliwatt, aluminum gallium-arsenide laser that operates at a wavelength of 760 to 810 nanometers.

The design of the laser system and the CD-ROM drive ensures that there is no exposure to laser radiation above a Class 1 (1) level during normal operation, user maintenance, or servicing conditions.

German Power Switch Statement

The 7588 Industrial Computer power switch is marked with a “–” for On and an “O” for Off.

Der 7587 Hauptschalter ist mit einem “–” für ein-, und einem “O” für ausgeschalten versehen.

Power Cord Notice

For your safety, IBM provides a power cord with a grounded attachment plug to use with this IBM product. To avoid electrical shock, always use the power cord and plug with a properly grounded outlet.

IBM power cords used in the United States and Canada are listed by Underwriter's Laboratories (UL) and certified by the Canadian Standards Association (CSA).

For units intended to be operated at 115 volts: Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a parallel blade, grounding-type attachment plug rated 15 amperes, 125 volts.

For units intended to be operated at 230 volts (U.S. use): Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a tandem blade, grounding-type attachment plug rated 15 amperes, 250 volts.

For units intended to be operated at 230 volts (outside the U.S.): Use a cord set with a grounding-type attachment plug. The cord set should be marked <HAR> and have the appropriate safety approvals for the country in which the equipment will be installed.

IBM power cords for a specific country are usually available only in that country:

IBM Power Cord Part Number	Used in These Countries
13F9940	Argentina, Australia, China (PRC), New Zealand, Papua New Guinea, Paraguay, Uruguay, Western Samoa
13F9979	Afghanistan, Algeria, Andorra, Angola, Austria, Belgium, Benin, Bulgaria, Burkina Faso, Burundi, Cameroon, Central African Rep., Chad, Czech Republic, Egypt, Finland, France, French Guiana, Germany, Greece, Guinea, Hungary, Iceland, Indonesia, Iran, Ivory Coast, Jordan, Lebanon, Luxembourg, Macau, Malagasy, Mali, Martinique, Mauritania, Mauritius, Monaco, Morocco, Mozambique, Netherlands, New Caledonia, Niger, Norway, Poland, Portugal, Romania, Senegal, Slovakia, Spain, Sudan, Sweden, Syria, Togo, Tunisia, Turkey, former USSR, Vietnam, former Yugoslavia, Zaire, Zimbabwe
13F9997	Denmark
14F0015	Bangladesh, Burma, Pakistan, South Africa, Sri Lanka
14F0033	Antigua, Bahrain, Brunei, Channel Islands, Cyprus, Dubai, Fiji, Ghana, Hong Kong, India, Iraq, Ireland, Kenya, Kuwait, Malawi, Malaysia, Malta, Nepal, Nigeria, Polynesia, Qatar, Sierra Leone, Singapore, Tanzania, Uganda, United Kingdom, Yemen, Zambia
14F0051	Liechtenstein, Switzerland
14F0069	Chile, Ethiopia, Italy, Libya, Somalia
14F0087	Israel
1838574	Thailand
62X1045	Bahamas, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Korea (South), Liberia, Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Surinam, Taiwan, Trinidad (West Indies), United States of America, Venezuela

Appendix B. System Records

Use the following tables to keep a record of important information about your system unit.. This information can be helpful when you install additional options in your system unit or if you ever need to have it serviced.

Table B-1. System Unit Identification Numbers

Industrial Computer Type/Model	_____
Industrial Computer Serial Number	_____
Key Serial Number	_____
Key Address	_____

Table B-2. Internal and External Drives

Location	Drive Description	SCSI ID
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

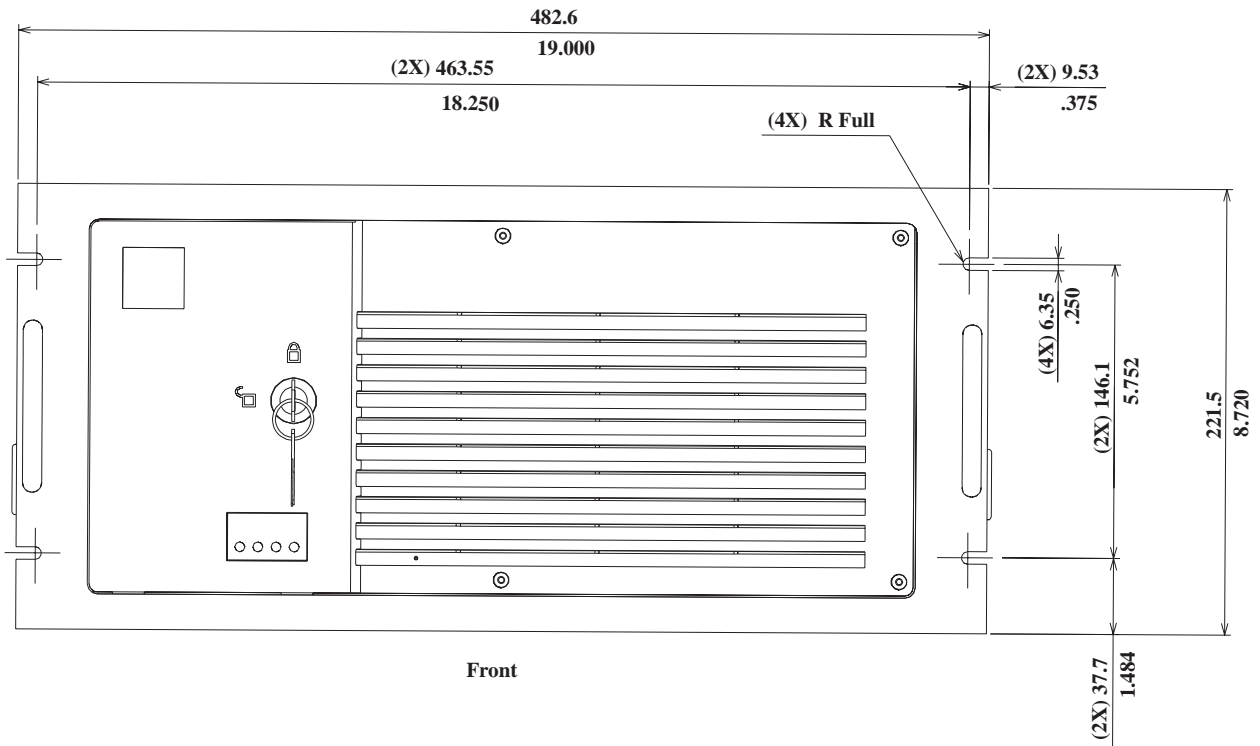
Note: If you attach a drive or other device to a SCSI adapter, be sure to record the expansion slot number of the adapter in the location field of this table.

Table B-3. Internal and External Options

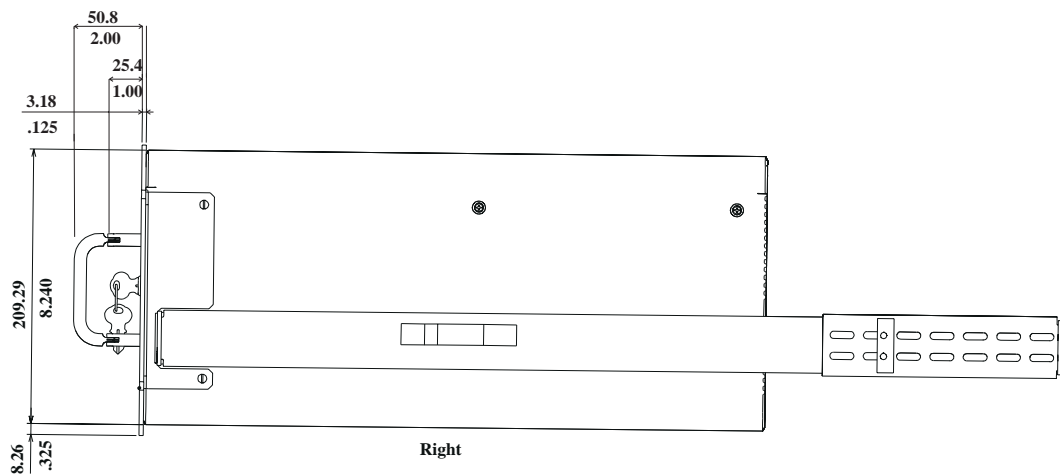
Location	Option Description
Processor Type	<u>Pentium</u> _____ <u>Other:</u> _____
Bank 1	
Memory (MEM1)	<u>8 MB Kit</u> _____ <u>16 MB Kit</u> _____ <u>32 MB Kit</u> _____
Memory (MEM2)	<u>8 MB Kit</u> _____ <u>16 MB Kit</u> _____ <u>32 MB Kit</u> _____
Bank 2	
Memory (MEM3)	<u>8 MB Kit</u> _____ <u>16 MB Kit</u> _____ <u>32 MB Kit</u> _____
Memory (MEM4)	<u>8 MB Kit</u> _____ <u>16 MB Kit</u> _____ <u>32 MB Kit</u> _____
Cache Memory	<u>256 KB Kit</u> _____ <u>512 KB Kit</u> _____
Power Supply	<u>250 Watt</u> _____ <u>Other:</u> _____
Mouse Connector	<u>IBM Mouse</u> _____ <u>Other:</u> _____
Keyboard Connector	<u>Space Saving</u> _____ <u>Enhanced</u> _____ <u>Other:</u> _____
Display Connector	_____
Expansion Slot 1 (ISA/PCI)	_____
Expansion Slot 2 (ISA/PCI)	_____
SBC	_____
Expansion Slot 3 (ISA)	_____
Expansion Slot 4 (ISA)	_____
Parallel Connector	_____
Serial Connector A	_____
Serial Connector B	_____

Appendix C. 7588 Industrial Computer Physical Dimensions

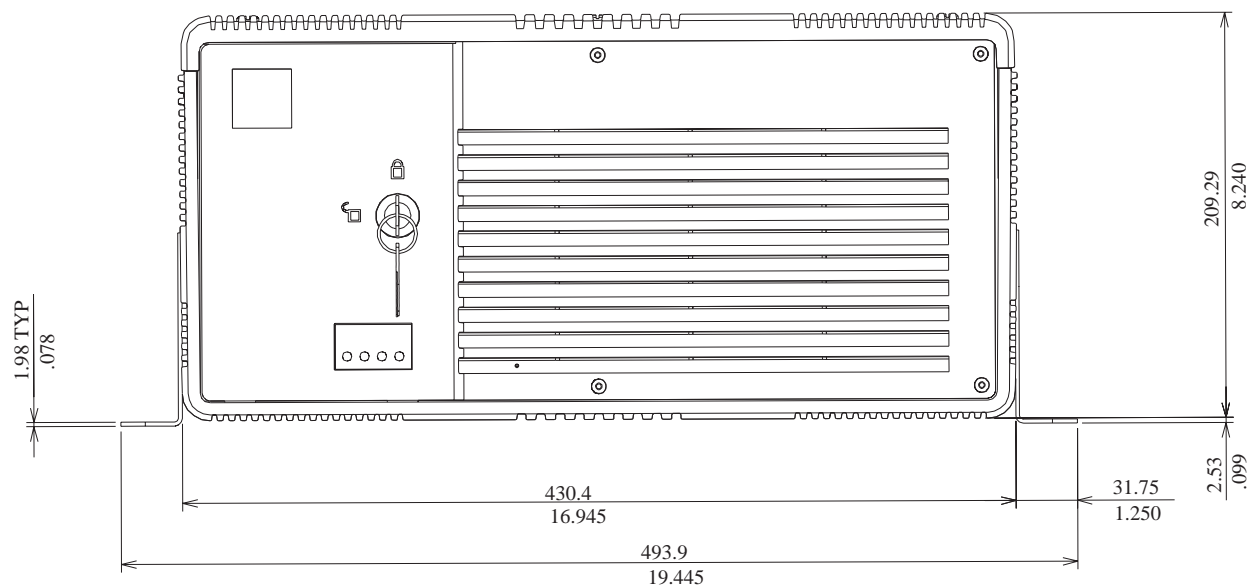
Rack-Mount Front View of 7588 Industrial Computer



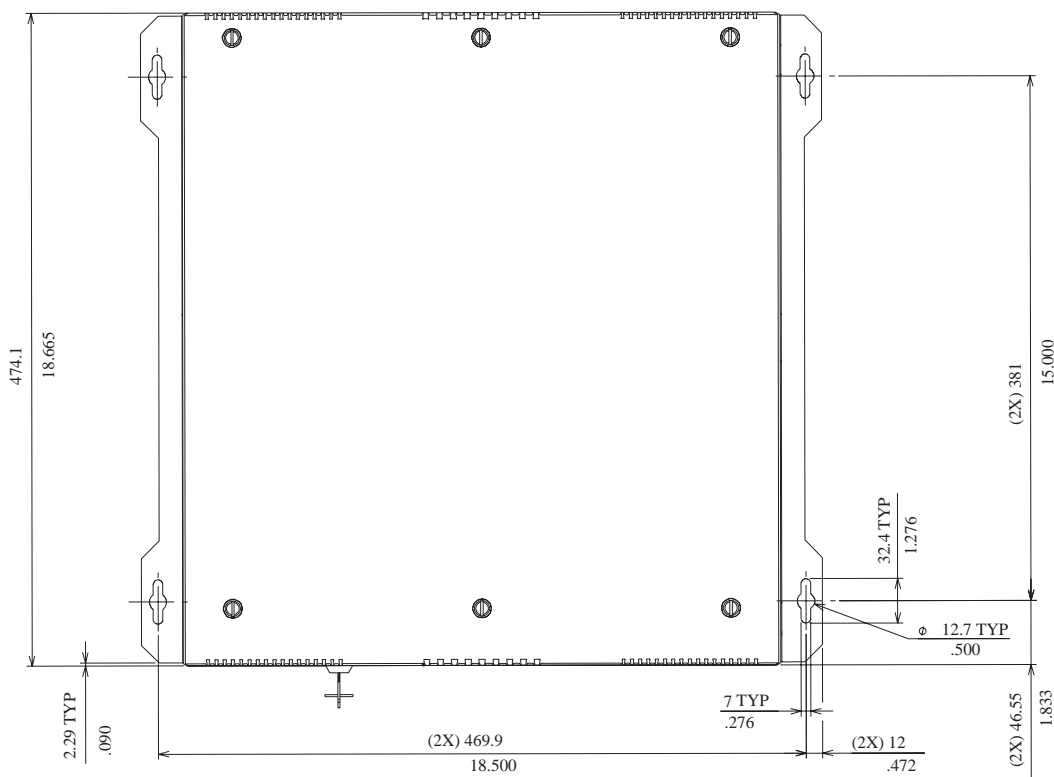
Rack-Mount Right-Side View



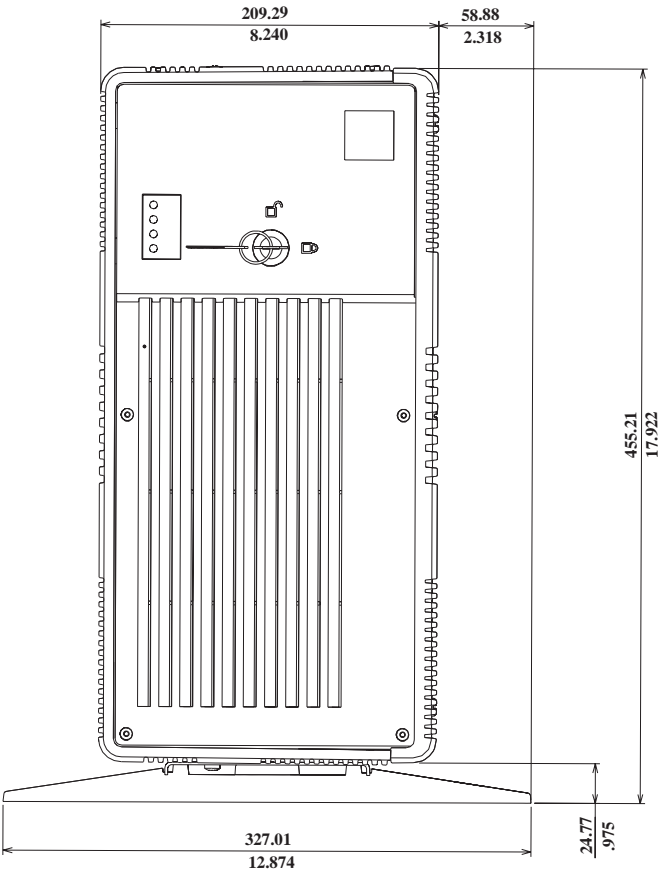
Panel-Mount Front View of 7588 Industrial Computer



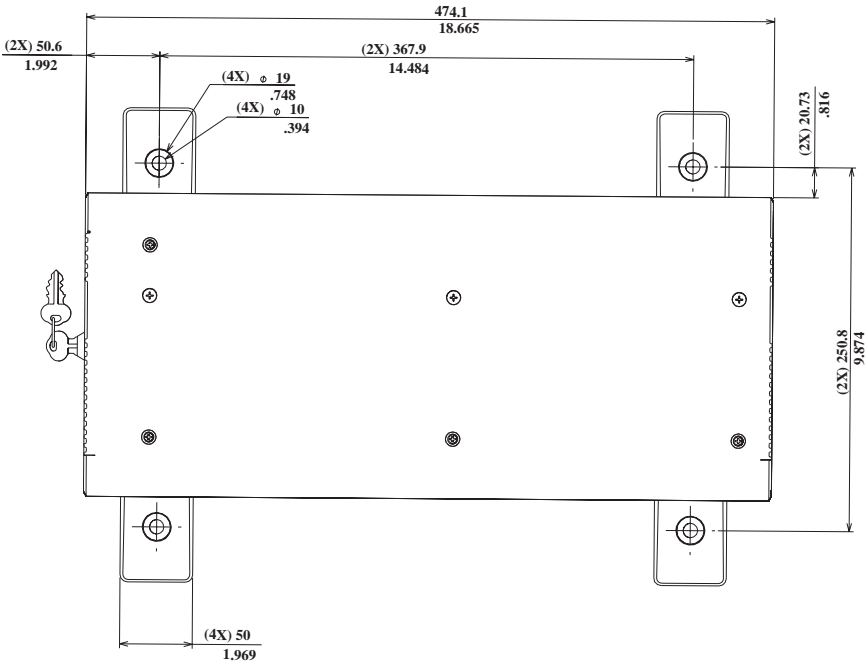
Panel-Mount Top View of 7588 Industrial Computer



Front View with Floor Stand



Top View with Floor Stand



Appendix D. Jumpers, Switches, and Pin Assignments

Jumpers are located on the IBM 586 or 586E Single-Board Computer (processor card) to allow you to customize the way your system unit operates. The jumper settings are imprinted on the processor card next to the respective jumpers.

Each jumper covers two of the three pins on a pin block and can be positioned to fit over the center pin and either the pin to the rear or to the front of the center pin.

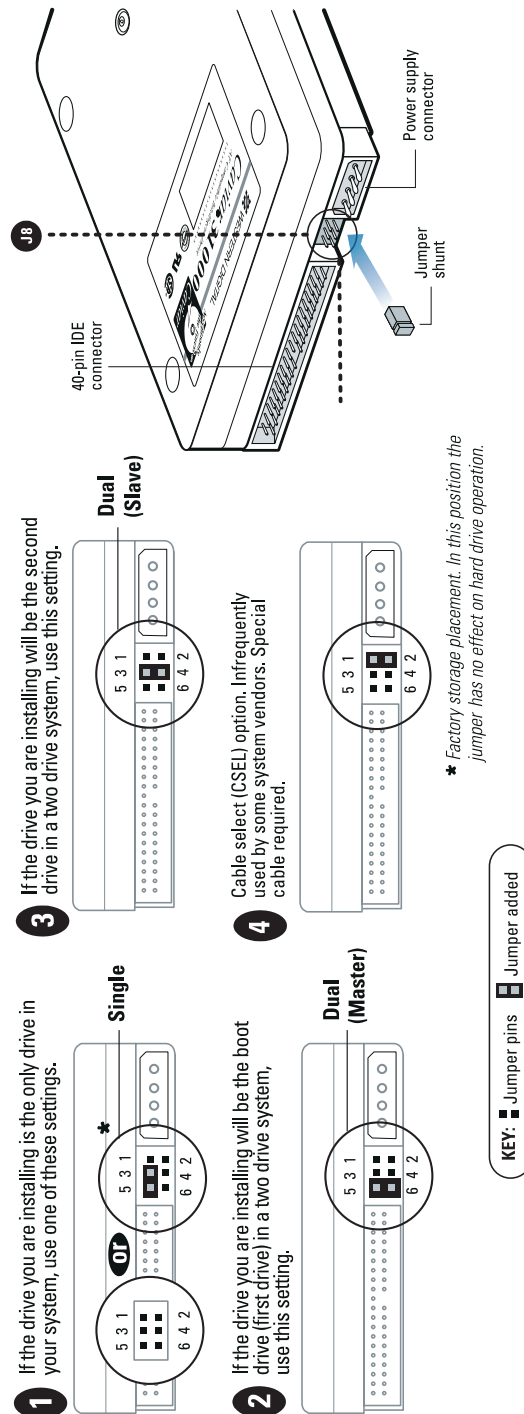
Note: The microprocessor-voltage jumper (5V/3V) is different from the other jumpers on the system board. Depending on the microprocessor installed on the system board, the jumper is either present or is replaced with a voltage-regulator circuit board. This jumper is always present on the processor card.

To change a jumper's position, do the following.

1. Turn off system unit power and disconnect the power cord.
2. Remove the system unit cover.
3. Remove whatever is necessary to gain access to the jumper to be changed.
4. Lift the jumper straight off the pin block.
5. Align the holes in the bottom of the jumper with the center pin and the pin that was not covered previously.
6. Slide the jumper fully onto these pins.
7. Reassemble the components that were removed, and install the system unit cover.
8. Reconnect the system unit power cord.

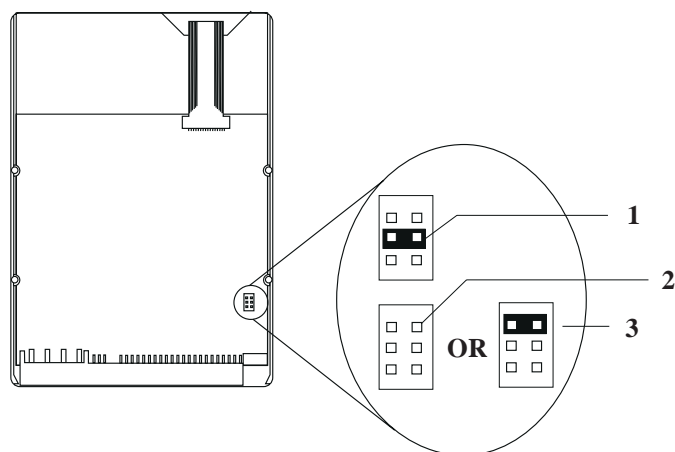
Hard Disk Drive Jumper Settings

Hard disk drives use jumpers to set the drives as primary (master) or secondary (slave). If your drive matches the following illustration, use the information in the drawing to set the jumpers.



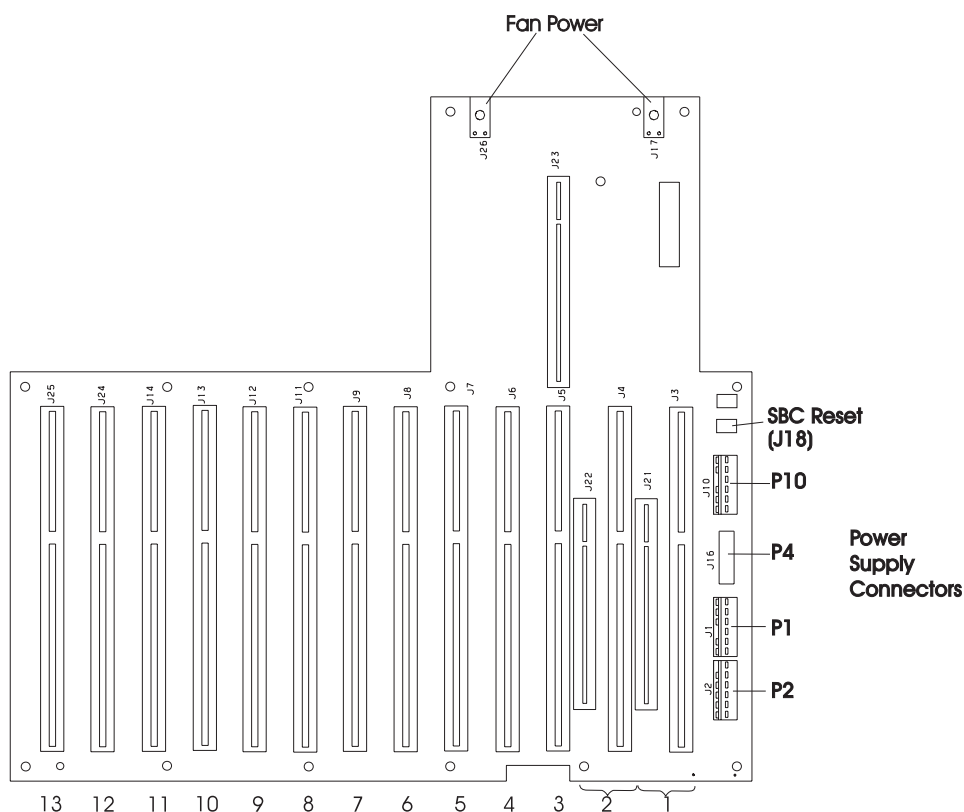
If your drive matches the following illustration and is the primary drive, set the jumper to position 1.

If your drive is set to the primary setting but you want it to be the secondary drive, you must reset the jumper to either position 2 or position 3. Position 3 is recommended because it allows you to store the jumper for use in the future.



IBM 7588 Industrial Computer Bus Card and Cable Connectors

The following illustration shows the bus card and cable connectors on the 7588-001, backplane.



The following illustration shows the bus card and cable connectors on the 7588-101, backplane.

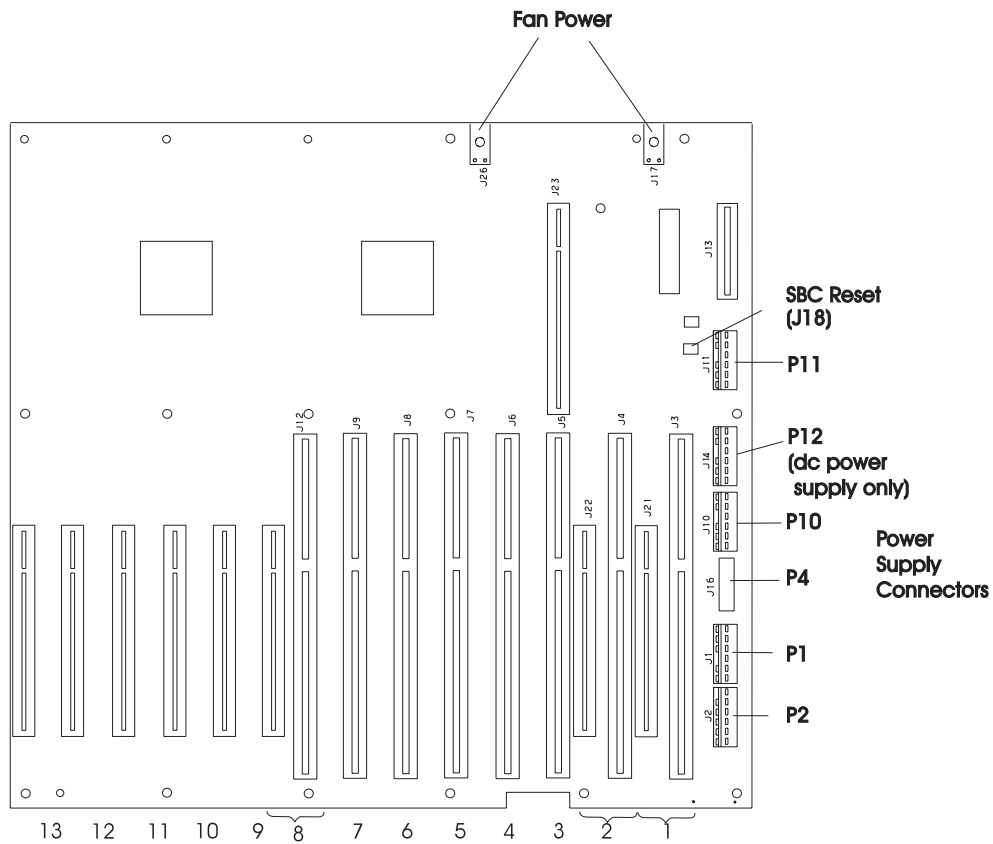
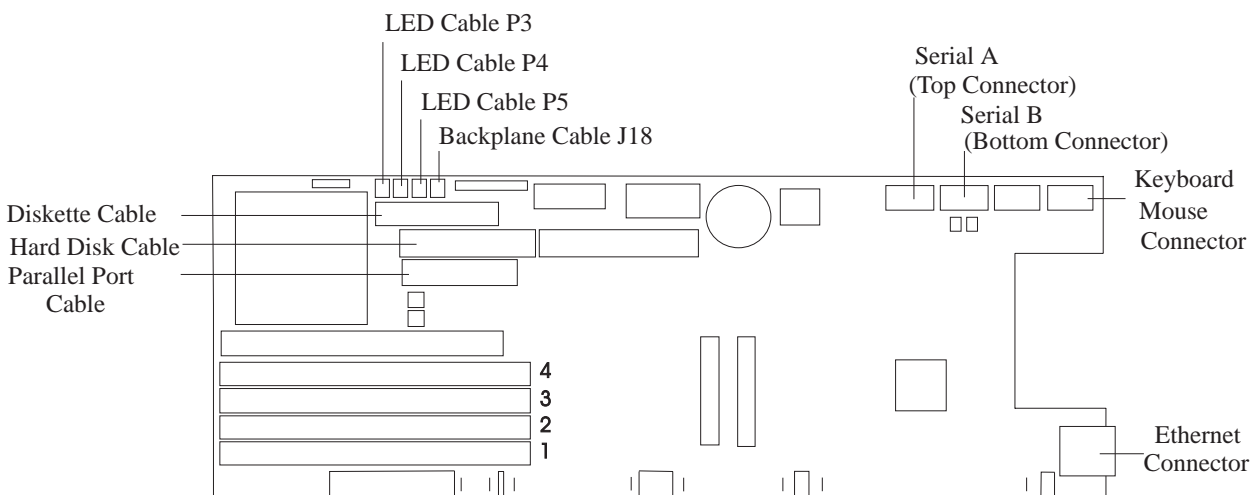


Table D-1. PCI Bus Assignments for Slots With PCI Connectors

PCI Bus	PCI Slots	Comments
0	1,2	The PCI connector in slot 2 is not Bus-Master-capable
1	8,9,10,11	
2	12,13	

Note: All PCI connectors are Bus-Master-capable except the connector in slot 2.

The following illustration shows the connectors on the processor card as used in the 7588 Industrial Computer.



Switch Settings

Table D-2. Switch Definitions

Switch	Definition
1	CPU speed
2	CPU speed
3	Reserved
4	Enable RS-232
5	Auto boot
6	CPU/PCI clock speed #0
7	CPU/PCI clock speed #1
8	Disable video
9	Reserved

Table D-3. Processor Selection

Freq	Switch 1	Switch 2	Switch 6	Switch 7
200 MHz	OFF	ON	ON	ON
166 MHz	ON	ON	ON	ON
133 MHz	ON	OFF	ON	ON
100 MHz	OFF	OFF	ON	ON

Serial Port Pin Assignments

<i>Table D-4. Serial Port Pin Assignments</i>		
RS-232 Serial A, Serial B		RS-422/485 Serial B
Pin 1	Carrier detect	Receive data (–)
Pin 2	Receive data	Receive data (+)
Pin 3	Transmit data	Transmit data (–)
Pin 4	Data terminal ready	Transmit data (+)
Pin 5	Ground	N/C
Pin 6	Dataset ready	N/C
Pin 7	Request to send	N/C
Pin 8	Clear to send	N/C
Pin 9	Ring indicate	N/C

Appendix E. Interrupt and DMA Assignments

The tables in this appendix outline the interrupt request assignments and direct memory access (DMA) channel assignments for your system unit. If you install industry-standard architecture (ISA)-bus adapters (AT-bus adapters) in your system unit, be sure that no interrupts or DMA channels conflict with existing resources. For example, do not set an ISA adapter to use interrupt 14 (IRQ14) because IRQ14 is used by the IDE hard disk drive.

Interrupt Request Assignments

The following table outlines the interrupt request assignments.

<i>Table E-1. Interrupt Request Assignments</i>	
Interrupt Request	System Resource
NMI	Parity error or channel check
0	Reserved (interval timer)
1	Reserved (keyboard buffer full)
2	Reserved (cascade interrupt from slave PIC)
3	Serial port 2
4	Serial port 1
5	Available (parallel port 2, or can be used by either AT- or PCI-bus adapters) (see Note 2)
6	Diskette drive
7	Parallel port 1
8	Real-time clock
9	Available (can be used by either AT- or PCI-bus adapters) (see Note 2)
10	Available (can be used by either AT- or PCI-bus adapters) (see Note 2)
11	Onboard Ethernet (optional)
12	Mouse port, if enabled; otherwise, it is available
13	Reserved (math coprocessor)
14	IDE hard disk drives
15	Alternate IDE hard disk drives

Notes:

- Abbreviations:
 - NMI = non-maskable interrupt
 - PCI = peripheral component interface
 - PIC = programmable interrupt controller
- For interrupts 5, 9, 10, and 11, at least one must be available for PCI adapters if any PCI adapters are installed. Interrupt 9 can be used as the vertical retrace interrupt by some software, so it might not always be available.

DMA Channel Assignments

The following table outlines the DMA channel assignments.

<i>Table E-2. DMA Channel Assignments</i>		
DMA Channel	Data Width	System Resource
0	8 bits	Available
1	8 bits	Available
2	8 bits	Reserved (diskette drive)
3	8 bits	Available (used by parallel port when in extended capabilities (ECP) mode)
4		Reserved (cascade channel)
5	16 bits	Available
6	16 bits	Available
7	16 bits	Available

Appendix F. S3 Trio64V+ Super VGA Driver Installation

Some application programs require custom software, known as device drivers, to take full advantage of the S3 video controller installed in your Industrial Computer. Device drivers are special programs that enable your operating system and application programs to use the advanced capabilities of the video controller. The operating system loads these programs after the hardware is configured. Many applications come with drivers that are compatible with the S3 video controller.

Note: Your system unit has an S3 Trio64V+ video controller. Use only the SVGA device drivers supplied with this system unit (or a later version) as earlier versions might not work properly.

Device drivers are supplied on diskettes. You must install the device drivers onto your hard disk. The instructions for installing or copying the device drivers are provided in this appendix. Technical notes and device driver features (if applicable) are included in README files located in the directories containing the drivers.

Default Resolutions

If your system unit comes with *preinstalled* software, your S3 Trio64V+ drivers are already installed. Your system unit video resolution has been set to 640 x 480 x 64K colors. You can change the monitor resolution using procedures in this book.

Operating Systems

If your system unit does not have preinstalled software, the diskettes that come with the 7588 Industrial Computer contain the following device drivers:

- Operating systems
 - OS/2® and OS/2 Warp
 - Microsoft® Windows® 3.1
 - Microsoft Windows 95
 - Microsoft Windows NT®
- DOS-only applications
 - AutoDesk ADI (protected mode)
 - MicroStation PC (protected mode) Version 4.0
 - MicroStation PC (protected mode) Version 5.0

These drivers provide support for greater speed, higher resolution, and more available colors. The AutoDesk ADI driver also provides additional features when used with the AutoCAD program.

Your DOS, Windows, OS/2, or application software documentation contains explanations of terms and instructions about how to perform common operations. Refer to the documentation, if necessary, as you perform the steps outlined in the remainder of this appendix.

Selecting a Monitor Using the Configuration/Setup Utility Program

Selecting the correct monitor in the Configuration/Setup Utility program allows your system unit to set the monitor to its maximum vertical refresh rate, which provides an image with minimum flicker.

Do the following to access the Configuration/Setup Utility program and to select a video monitor type.

1. Turn on your system unit. If your system unit is on when you start this procedure, you must shut down the operating system, and press Ctrl+Alt+Del to restart the system unit.
2. While the POST memory test is counting, the Configuration/Setup Utility program symbol appears in the upper-right corner of the display screen. Press F1 while the memory is still counting to access the Configuration/Setup Utility program main screen.
3. Select **Devices and I/O Ports**.
4. Select **Video Setup**.
5. Select **Video Display Type**.
6. Select your monitor type from this list.

Notes:

- a. If your monitor is not shown in the list, select the **Custom** option and select the maximum refresh rate the monitor supports for each resolution. Do not select a refresh rate that is too high for your monitor. Doing so produces an unreadable image and could damage the monitor.
 - b. If a display data channel (DDC) monitor is attached to the PC, it will be selected automatically in the Configuration/Setup Utility program.
7. Save the settings and restart your system unit.

Installing Windows 3.1 Video Drivers

Use the following for the *initial installation* of Trio64V+ drivers for Windows 3.1. Also, use this procedure to *reinstall* Trio64V+ drivers for Windows 3.1 or to change resolutions for Window 3.1 after the driver has been installed.

To install Windows 3.1 video drivers, do the following.

1. Exit from Windows.
2. Enter **CDIWINDOWS** to change to the WINDOWS directory.
3. Enter **SETUP**.
4. The screen shows the current Windows configuration. Move the highlight bar to the **Display** entry, and press Enter. (*Display* here actually means a monitor mode or video mode provided by a video driver.)
5. You see a list of modes (drivers) from which you can choose. Move the highlight bar to **Other (Requires disk provided by a hardware manufacturer)**, and press Enter.
6. Insert the *S3 Trio64V+ Windows Drivers* diskette in drive A, and press Enter.
7. Select the desired resolution, and press Enter. Refer to the information that comes with your monitor to determine which resolutions your monitor supports.
8. Press Enter to complete the changes.
9. If you get a message that the driver is already installed, press Esc to replace the driver.

10. If you are prompted to insert a diskette, enter **A:**.
11. When Setup is complete, the DOS prompt appears. Enter **Win** to start Windows. The new video driver is now installed and is controlling your monitor.
12. Repeat this procedure for other resolutions, if desired.

Alternative Method for Changing Resolutions

You can use the following procedure to change the monitor resolutions.

1. In the Program Manager, select **Main**.
2. In the Main group, select **Windows Setup**.
3. In the Windows Setup window, select **Options**.
4. In the Options menu, select **Change System Settings**.
5. In the Change System Settings window, select **Display**.
6. Select the down arrow at the **Display** field, and select the desired resolution for the S3 Trio64V+ graphics accelerator.

Updating the Windows 3.1 Video Driver

Do the following.

1. Select the VGA driver to control your monitor during the update procedure. This ensures the video driver you are updating is not the same one currently controlling your monitor. Do the following.
 - a. In the Program Manager, select **Main**.
 - b. In the Main group, select **Windows Setup**.
 - c. In the Windows Setup window, select **Options**.
 - d. In the Options menu, select **Change System Settings**.
 - e. In the Change System Settings window, select **Display**.
 - f. Select the down arrow at the **Display** field.
 - g. In the pull-down menu, select the VGA driver, and select **OK**.
 - h. Select **Current** to use the currently installed VGA driver.
 - i. Restart Windows.
 - j. The VGA driver is now controlling your monitor.
2. Delete the existing S3 video driver file to prevent the pull-down menu from becoming filled with multiple versions of the same file. Do the following.
 - a. Open a DOS window.
 - b. In the **WINDOWS\SYSTEMS** subdirectory, find a file named **OEMx.INF**, where *x* is a number. If there is more than one of these files, use a text editor to view the files, and verify which one is the S3 video driver file (near the beginning of the file, you will read "S3 Trio64V+ Windows Drivers Disk").
 - c. Delete the S3 video driver file.
3. Proceed with the installation instructions in "Installing Windows 3.1 Video Drivers" on page F-2.

Installing Windows 95 Video Drivers

Use this procedure for the *initial installation* of Trio64V+ drivers for Windows 95. Also use this procedure to *reinstall* Trio64V+ drivers for Windows 95 and to change resolutions for Windows 95 after the drivers are installed.

To install the Windows 95 drivers, do the following.

1. Start Windows 95.
2. Select **Settings**.
3. Select **Control Panel**.
4. Double click on the **Display** icon. The Display Properties window appears.
You also can click the right mouse button anywhere on the desktop, and select the Properties option from the pop-up menu.
5. Click on the **Settings** folder.
6. Click on the **Change Display Type...** button. The Change Display Type... window appears.
7. Under Adapter Type, click on the **Change...** button.
8. Click on the **Have Disk...** button.
9. Change directories to A:\ and click on the **OK** button.
10. Select **S3.INF** and click on the **OK** button.
11. Select **S3 Trio64V+ PCI driver** from the list, and click on the **OK** button. If a message stating that one or more driver files are older than the files on the system unit, click on **no**.
12. Click on the **Close** button.
13. Select the appropriate resolution using the Desktop Area and Color Palette options.
14. Click on the **Apply** button. A Systems Settings Change box appears.
15. Click on **Yes** to restart your system unit.

The Windows 95 Trio64V+ driver installation is now complete.

Alternative Method for Changing Resolutions

To change the resolution after the drivers are installed, do the following.

1. Start Windows 95.
2. Select **Settings**.
3. Select **Control Panel**.
4. Double click on the **Display** icon. The Display Properties window appears.
You also can click the right mouse button anywhere on the desktop and select the Properties option from the pop-up menu.
5. Click on the **Settings** folder.
6. Select the appropriate resolution using the Desktop Area and Color Palette options.
7. Click on the **Apply** button. A Systems Settings Change box appears.
8. Click on **Yes** to restart your system unit.

Installing Windows NT Video Drivers

Use this procedure for the *initial installation* of Trio64V+ drivers for Windows NT. See step 11 on page F-5 to change resolutions, at a later time, after the drivers have been installed.

1. Start Windows NT.
2. Double-click on the **Control Panel** icon in the Main folder.
3. Double-click on the **Display** icon.
4. Select **Change Display Type...**
5. Select **Change....** on the Display Type screen under the Adapter Type section.
6. Insert the S3 Trio 32/64/64V+ Win NT Display Driver diskette into drive A.
7. Select **S3 Video Driver Update Vx.xx** from the list, and click on **Install**. Click on **Yes** to change the system configuration.
8. If a message appears stating that the driver is already installed, select **New**.
9. Click on **Continue** if prompted for the driver disk a second time.
10. Restart Windows NT when prompted.
11. After Windows NT restarts, select the desired resolution by means of the Display utility program located under the Control Panel in the Main folder. The screen appearance can be changed using the Color Palette, Desktop Area, Refresh Frequency, and Font Size settings.

The Display utility will start automatically the first time the new S3 video driver is loaded.

Installing OS/2 and OS/2 Warp Video Drivers

Use this procedure for the *initial installation* of Trio64V+ drivers for OS/2 and OS/2 Warp and to change resolutions after the driver is installed. To change resolutions after the driver has been installed, start at step 16 on page F-6.

1. Start OS/2, if it is not already running.
2. Double-click on the **OS/2 System** icon.
3. Double-click on the **Command Prompts** icon.
4. Double-click on the **OS/2 Window** icon.
5. Insert the S3 Trio 32/64/64V+ OS/2 Display Driver diskette in drive A.
6. At the command prompt in the OS/2 window, enter **A:**.
7. At the command prompt, enter **SETUP A: C:**.

Notes:

- a. If OS/2 is not installed on drive C, replace the **C** with the drive letter where OS/2 is installed. For example, if OS/2 is installed on drive D, enter **SETUP A: D:**.
 - b. For the CID (Configuration, Installation, and Distribution) method of installation, use the optional CID parameter. For example, enter **SETUP A: C: CID**.
8. Wait until the Setup program is finished installing the drivers. This can take several minutes. When the Display Driver Install Completed screen is displayed, remove the diskette from drive A.
 9. Restart OS/2 by turning the system unit off and then on, or by pressing Ctrl+Alt+Del.
 10. Run the Display Driver Install program by doing the following.

- a. Double-click on the **OS/2 System** icon.
 - b. Double-click on the **System Setup** folder.
 - c. Double-click on the **Display** icon to start the program.
11. Click on the **Primary Display** icon, and click on **OK**.
 12. Select the S3 Trio 32/64/64V+ driver with the version number that corresponds to the number on the diskette, and click on **OK**. For example, if the version number on the diskette is V2.70-02, select **S3 Trio 32/64/64V+ (32 Bit) Version 2.70-02**.
Note: If a message appears that indicates the target file is newer than the source file, select **yes** to overwrite the target file.
 13. On the Monitor Configuration/Setup Utility screen, select **Install Using Default for Monitor Type**, and click on **OK**.
 14. When the Source Directory screen appears, insert the S3 Trio 32/64/64V+ OS/2 Display Driver diskette into drive A, and click on **Install...**
 15. Wait until the installation is complete; then remove the diskette and restart OS/2 by turning the system unit off and then on, or by pressing Ctrl+Alt+Del.
 16. When OS/2 has restarted, to select the type of monitor, do the following.
 - a. Double-click on the **OS/2 System** icon.
 - b. Double-click on the **System Setup** folder.
 - c. Double-click on the **System** icon.
 - d. Go to the second page of the Screen tab.
Note: If you have a DDC monitor installed, the second page will not be visible, because the DDC monitor is selected automatically.
 - e. Select the type of monitor you have from the list in the Display name pull-down menu.
 17. Go to the first page of the Screen tab and select the desired resolution, color depth, and monitor refresh. You should select the highest refresh rate supported by the monitor, to minimize flicker.
 18. When you are finished selecting the resolution, color depth, and refresh rate, double-click on the upper-left corner of the System Settings window to close it.
 19. Select **Yes** if a screen appears indicating that the system needs to run the SVGA utility program.
 20. Restart OS/2 by shutting down the system unit and pressing Ctrl+Alt+Del. The new resolution, color depth, and refresh rate will be active.
 21. To change the resolution again, perform steps 17 through 20. If you are changing monitors and resolutions, perform steps 16 through 20.

Installing Video Drivers for CAD Panacea

Refer to the instructions for installing the device drivers for CAD Panacea in the ADI1.TXT file on the CAD Panacea Drivers diskette.

Installing Video Drivers for MicroStation PC

Video drivers are provided to support MicroStation PC Version 4.0 and MicroStation PC Version 5.0, both in DOS 386 protected mode. Do the following to install the drivers.

1. Open a DOS window.
2. Insert the DOS Utilities and Microstation Drivers diskette into drive A.
3. Change to drive A by entering **A:**.
4. Enter **CD\MICROSTA** to change to the MicroStation drivers directory.
5. Enter **INSTALL**.
6. Follow the instructions on the screen until the installation is complete.
7. Change to the directory on the hard disk drive where the drivers are installed.
8. Enter **PSCONFIG** to run the PSCONFIG program to select the new device driver.
9. Start MicroStation and do the following to complete the configuration.
 - a. Select **Display Adapters**.
 - b. Select **Vendor Supplied Driver**.
 - c. Select the driver for S3 accelerators.
 - d. Select **No Second Adapter**.
 - e. Select Swap Screen Status **Y** or **N**.
 - f. Select **Exit and Save**.
10. Restart the MicroStation PC program to activate the drivers.

Note: The first time you start the MicroStation PC program and activate the drivers, you are asked to select a video resolution. Make sure the resolution you select is supported by your monitor. If you want to use a different resolution at a later time, you must first delete the MGL?S3.CFG file in the USTAT40\DRIVERS directory. The ? in the file name is a version number.

