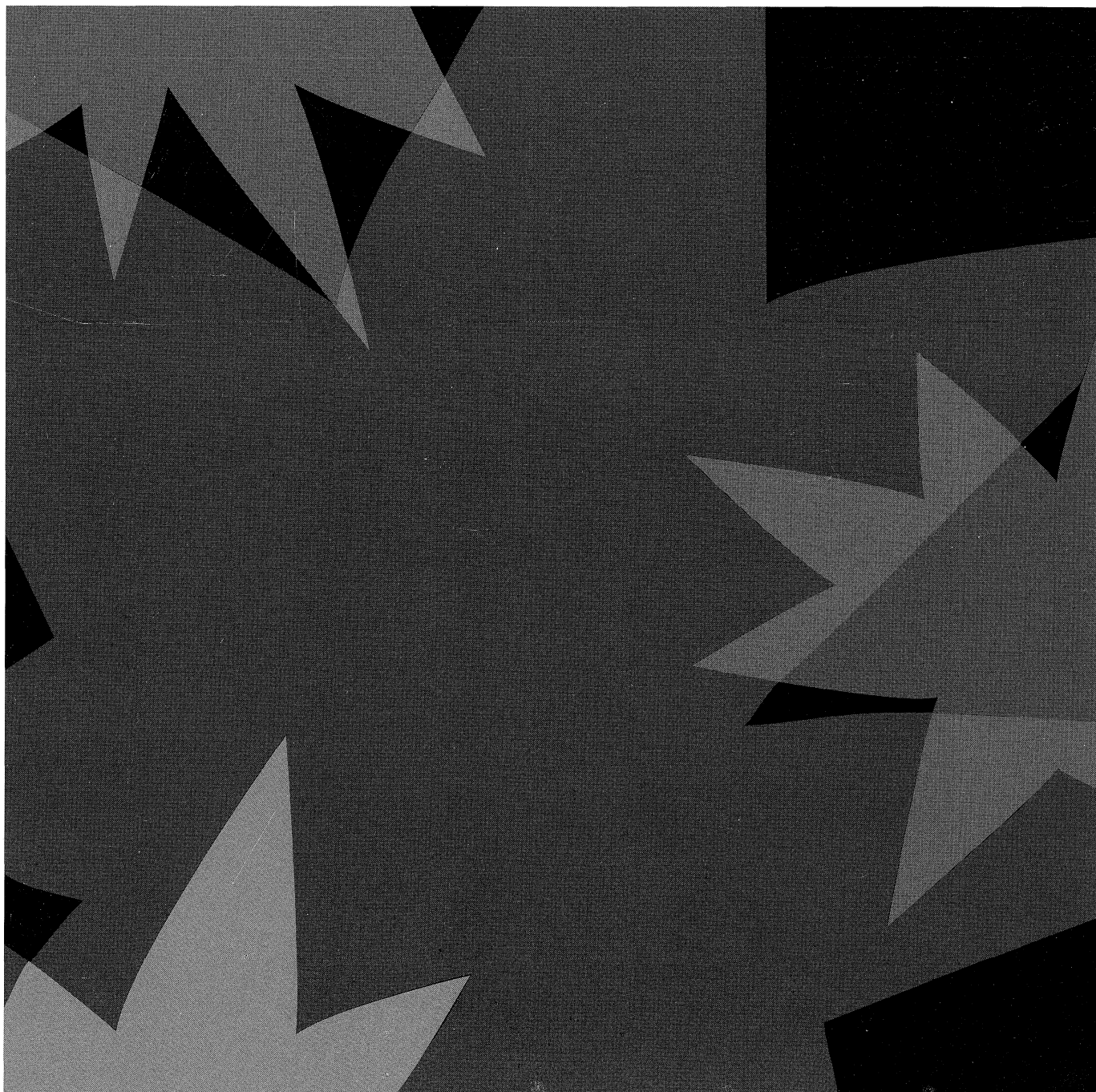


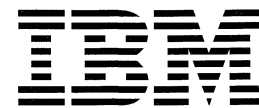
AS/400



Physical Planning Summary



AS/400



Physical Planning Summary

Take Note!

Before using this information and the product it supports, be sure to read the general information under "Notices" on page vii.

First Edition (September 1995)

Make sure you are using the proper edition for the level of the product.

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Each safety notice contains a reference number (RSFTxxxx). To see if the safety notice is available in your language, refer to the reference number in the *Safety Information*, SA41-4139.

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on metal parts of the system or the products that attach to the system. It is the customer's responsibility to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

(RSFTD201)

DANGER

To prevent a possible electrical shock when installing the system, ensure that the power cords for all devices are unplugged before installing signal cables. *(RSFTD202)*

DANGER

To prevent a possible electrical shock when adding or removing any devices to or from the system, ensure that the power cords for those devices are unplugged before the signal cables are connected or disconnected. If possible, disconnect all power cords from the existing system before you add or remove a device. *(RSFTD203)*

DANGER

To prevent a possible electrical shock during an electrical storm, do not connect or disconnect cables or station protectors for communications lines, display stations, printers, or telephones. *(RSFTD003)*

DANGER

To prevent a possible electrical shock from touching two surfaces with different electrical grounds, use one hand, when possible, to connect or disconnect signal cables. *(RSFTD004)*

Product Recycling

This unit contains recyclable materials. These materials should be recycled where facilities are available and according to local regulations. In some areas IBM will provide a product take-back program that ensures proper handling of the product. Contact your IBM representative for more information.

Product Disposal

This AS/400 may contain batteries. These batteries must be removed and discarded or recycled according to local regulations and where facilities exist. Specific information per battery type will be referenced throughout the manual where applicable.

Environmental Design

The environmental efforts that have gone into the design of the AS/400 Advanced Series signifies IBM's commitment to improve the quality of its products and processes. Some of these activities include elimination of the use of CFCs, development of reusable or recyclable packaging, and reductions in manufacturing wastes.

Electronic Emission Notices

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.

Avis de conformité à la réglementation d'Industrie Canada

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

European Community Compliance Statement

This product is in conformity with the protection requirements of EC 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.

Germany Only: This product is in conformity with the EN55022 class A emission limits. Products in this class are not allowed to be operated within a residential area without a special permit of local PTT authority (ref. GERMAN EMV Law, Nov.92 and regulation 177/93).

Japanese Voluntary Control Council for Interference (VCCI) Statement

This equipment is Class 1 Equipment (information equipment to be used in commercial and industrial districts) which is in conformance with the standard set by Voluntary Control for Interference by Data Processing Equipment and Electronic Office Machines (VCCI) with an aim to prevent radio interference in commercial and industrial districts.

This equipment could cause interference to radio and television receivers when used in and around residential districts.

Please handle the equipment properly according to the instruction manual.

Korean Government Ministry of Communication (MOC) 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 purpose one.

The AS/400 9401 Model P03 is a Class B device.

The following statement applies to this IBM product. The statement for other IBM products intended for use with this product will appear in their accompanying manuals.

Federal Communications Commission (FCC) Statement

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 an IBM authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM authorized dealers. 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 B digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Avis de conformité à la réglementation d'Industrie Canada

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

European Community Compliance Statement

This product is in conformity with the protection requirements of EC 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 B Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

Properly shielded and grounded cables and connectors (IBM part number 21H1955 or its equivalent) must be used in order to reduce the potential for causing interference to radio and TV communications and to other electrical or electronic equipment. Such cables and connectors are available from IBM authorized dealers. IBM cannot accept responsibility for an interference caused by using other than recommended cables and connectors.

Germany Only: This product is in conformity with the EN55022 class B emission limits.

Japanese Voluntary Control Council for Interference (VCCI) Statement

This equipment is Class 2 Equipment (information equipment to be used in and around residential districts) which is in conformance with the standard set by Voluntary Control for Interference by Data Processing Equipment and Electronic Office Machines (VCCI) with an aim to prevent radio interference in residential districts.

This equipment could cause interference to reception when used in proximity to radio and television receivers.

Please handle the equipment properly according to the instruction manual.

Korean Government Ministry of Communication (MOC) Statement

Please note that this device has been approved for non-business purposes and may be used in any environment including residential area.

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About Physical Planning Summary (SX41-4108)

This manual provides information on those preinstallation tasks that you must complete before the arrival of your IBM AS/400 system. These tasks include planning for and installation of power, communications connections, cabling, security, cooling, and consideration of other environmental factors.

There are two AS/400 physical planning manuals:

- *Physical Planning Summary*, SX41-4108 - for simple system unit installations
- *Physical Planning Reference*, SA41-4109 - for more complex installations where additional power, temperature, noise, or cable information is needed.

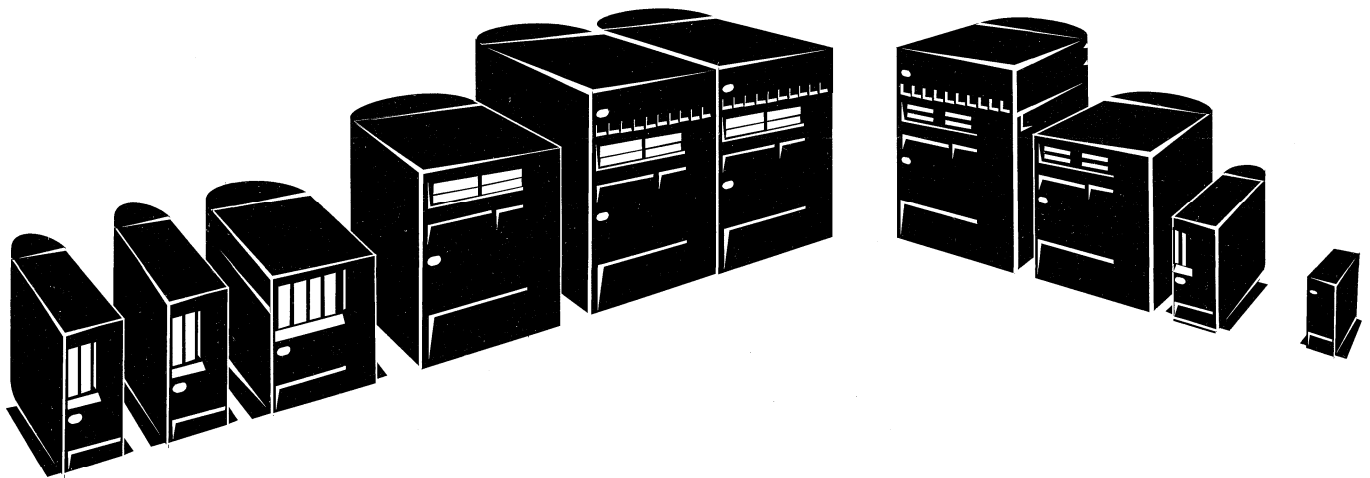
For information about other AS/400 publications, see either of the following:

- The *Publications Reference* book, SC41-4003, in the AS/400 Softcopy Library.
- The *AS/400 Information Directory*, a unique, multimedia interface to a searchable database containing descriptions of titles available from IBM or from selected other publishers. The *AS/400 Information Directory* is shipped with your system at no charge.

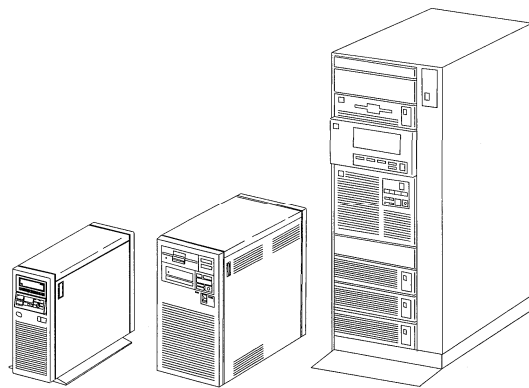
For a list of related publications, see the Bibliography.

Chapter 1. Introduction to Site Planning

This manual is intended to help you successfully plan the installation of your IBM* AS/400* family of business computing systems. Depending on your data processing experience, you may be able to plan for a relatively small system without any additional help. For larger systems that using complex communications networks, you may need some assistance from your IBM marketing or your installation planning representative. Proper planning for your new system will aid in a smooth installation and fast system startup. For upgrades, consult the *System Upgrade Road Map (CISC to CISC)*, SX41-3135.



RV3C068-0



RV3C069-0

Figure 1-1. AS/400 Advanced Series and AS/400 Systems

System Planning

As part of your system planning activity, decisions are made about where to locate your equipment, who will operate the computer, and so on. A good plan ensures that the equipment and materials are ready to use when your new computer arrives.

You should select an individual to serve as the coordinator for your planning efforts. One person is generally responsible for most or all of the system planning. It is also possible to divide the responsibilities among other people in your business.

The type of software (operating system and application programs) that you intend to use must support the hardware feature and devices on the system. You should contact your IBM marketing representative for information on planning for the software.

Planning Forms

You will use planning forms to record the following:

- Specific machine types integrated with or attached to the system
- Workstations
- Communications network information.

This list covers only part of the information on the various planning forms. The list also but indicates how important the forms are to the initial installation of your AS/400 system and to the future changes you may make. These planning forms are found in Appendix A, "Forms for Planning" on page A-1.

As you proceed through this manual, you will be given instructions on how to fill out these forms. Much of the information for the forms can be provided only by you, because you know your requirements best.

Schedule Planning Tasks

Begin your planning activities by using the Planning Schedule Checklist. You can update this form as you proceed through the planning tasks. IBM is interested in your planning progress. It is a good idea to give a copy of your planning schedule to your IBM marketing representative and your IBM installation planner.

When you ordered the system, the IBM marketing representative gave you an approximate date when the system will arrive. Remember that this date is an estimate, and that you will be notified later by IBM when you can expect to receive your system. Use the estimated date as a reference for the Planning Schedule Checklist.

The planning tasks are in a recommended sequence, although they do not necessarily have to be completed in this sequence. The progress of these tasks should be reviewed throughout the planning cycle.

The planning coordinator is the key person responsible for the successful installation of the system. While the planning coordinator will be handling much of the responsibility, several people might be helping with this job. Record the name of the person responsible for each task.

Planning Schedule Checklist

Responsible Person	Task Description	Completion Date
<i>16 Weeks Before Delivery</i>		
_____	Complete the System Summary Forms: You will need a copy of your AS/400 order. See Chapter 2, "Completing System Summary Forms" on page 2-1.	_____
_____	Review the General Cabling Considerations: See Chapter 3, "General Cabling Considerations" on page 3-1.	_____
_____	Consider Unexpected Power Outages: To keep your system running during unexpected power outages, you can connect your system to an uninterruptible power supply. See the <i>Physical Planning Reference</i> , SA41-4109 for more information.	_____
_____	Consider Other Factors: See Chapter 6, "Other Considerations" on page 6-1.	_____
_____	Lay out the Floor Plan: See Chapter 4, "Creating a Floor Plan" on page 4-1.	_____
<i>14 Weeks Before Delivery</i>		
_____	Review Overall Site Plan: Review the overall site plan with your IBM representative.	_____
_____	IBM Representative _____	_____
_____	Order Telephone Lines: Contact your local telephone company to order the telephone lines that you have defined.	_____
_____	Telephone Company _____	_____
_____	Order Cables: Contact your cable supplier to order those system cables (workstation, 370 channel, network, etc.) that you must supply.	_____
_____	Cable Supplier _____	_____
<i>12 Weeks Before Delivery</i>		
_____	Define a Training Program: You can get an AS/400 Education Curriculum Planning Guide (available in the United States only) or equivalent from your marketing representative. It describes the education available for the AS/400 system.	_____
_____	Consider Your Supplies: See Chapter 5, "Ordering Supplies" on page 5-1.	_____
_____	Develop a Security Plan: Plan to protect your system against damage and from being used by people who do not have proper authority by:	_____
	<ul style="list-style-type: none"> • Providing a locked room or a room with controlled access for your system. • Storing magnetic media in a safe place. • Keeping a backup copy of your system at another location. • Locking the control panel of your system unit with a key. 	_____
_____	Arrange for Installation of Cables: If your cables go through walls, ceilings, floors, or outdoors, you will want to make arrangements for these cables to be installed when they arrive.	_____
_____	Cable Installer _____	_____
_____	Develop a Power Requirements Plan: Use the system summary forms and the floor plan layout to develop a power requirements plan. The person responsible for determining your power requirements should be familiar with your local electrical codes and ensure your office is able to meet the electrical requirements for the new system.	_____
_____	Arrange for Installation of Power: Contact a qualified electrician to make arrangements for installing additional power outlets.	_____
_____	Electrician _____	_____
_____	Order Required Manuals: See "Bibliography" on page H-1 for a list of manuals.	_____

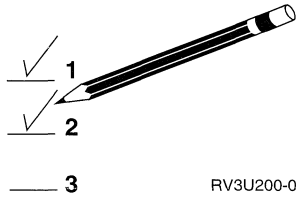
Responsible Person	Task Description	Completion Date
<i>8 Weeks Before Delivery</i>		
_____	Start Employee Training: Begin to implement the training program that you have defined.	_____
_____	Start Installing Power Outlets: Have the electrician begin to install the power outlets.	_____
_____	Start Installing and Labeling Cables: Have the cable installer begin to install and label the cables. See Chapter 7, "Labeling Cables" on page 7-1 for cable labeling information.	_____
<i>2 Weeks Before Delivery</i>		
_____	Complete Check of Cable and Power: Check the continuity and polarity of cables and power outlets.	_____
_____	Plan for System Placement: Check the route your system will take from where it is delivered to where it will be installed. Consider the size of halls and doorways, and the capacity of elevators through which the equipment must be moved. Also consider any special moving equipment that might be needed.	_____
_____	Consider Warranty and Maintenance Agreements: IBM provides warranty service during the warranty period as specified in the Agreement for Purchase of IBM Machines. Contact your marketing representative for the definition of warranty coverage and the benefits of an early purchase of maintenance agreements.	_____
<i>Arrival of System</i>		
_____	Locate and Unpack System: Have the system (still in its crate) delivered to the location where your system will be installed. Unpack the equipment according to instructions.	_____
_____	Call IBM Service to Install.	_____
	IBM Service _____	

Chapter 2. Completing System Summary Forms

The system information forms in Appendix A, "Forms for Planning" on page A-1, contain blank spaces. These forms are to record all the items that were ordered for your system. The completed forms will help you complete the planning tasks. You will need a copy of your AS/400 order to complete these forms.

Keep the completed forms for later reference.

Note: Make a copy of the blank forms in Appendix A and return the original forms to Appendix A for future use.



Step 1 Complete form A1 the System Information Form by performing the following steps:

- a. Record information (frame identifier, device type and model number, or description and feature code) about the devices.
- b. Record the plug type and supply voltage for each frame. Use the Rack Power Specify Code (only racks have specify codes) to determine rack power requirements. Note any additional requirements. Refer to Appendix D, "Specifications for the AS/400" on page D-1.
- c. Record the plug type and supply voltage for all other devices except displays and printers. Refer to the sales literature for the devices.
- d. Record the names of licensed programs.

Step 2 Complete form A3, the Workstation Information Form, by performing the following steps:

- a. Record the device type and location.
- b. Leave cable length blank. This will be filled in later.
- c. Record the device plug type and supply voltage. Refer to the sales literature for the display or printer.

Step 3 Complete form F11, the Electronic Customer Support Form.

Part of this form contains the information you need to order your communications line for electronic customer support from the telephone company. The other part of this form contains the information you will need if you did not order a modem from IBM and will be purchasing a modem from a different supplier. If you ordered a Total System Package, you will receive a modem with your system.

To complete form F11 you should perform the following steps:

Common Carrier Ordering Information

- a. Line Type - Normal voice grade analog switched line.
- b. Line Interface - EIA-232/V.24, V.35, and X.21 with remote loop back.
- c. Line Speed - 1200, 2400, or 9600 bps duplex.

- ___ d. Line Termination Requirements - This is the type of jack that you want at the end of the line. In the United States and Canada, you should use an RJ11 data jack.
- ___ e. Telephone Set Options - A telephone set (which is optional) that the telephone service in your area provides could have one of the following:
 - Tone dial (Bell 2500 series or equivalent)
 - Pulse dial (Bell 500 series or equivalent).

Modem Supplier Ordering Information

- ___ f. Modem Type and Model Number
- ___ g. Modem Characteristics:
 - Supports analog switched lines
 - Supports telephone line interface CCITT V.22bis
 - Supports line speed of 1200, 2400, or 9600 bps duplex
 - Supports system interface of EIA-232/V.24, V.35, and X.21
 - Supports NRZI (non-return to zero) capability.

The following modems have the required electronic customer support characteristics.

- IBM 5853 or IBM 7855 for the United States and Canada
- IBM 5853 Model 003 for Japan
- Concord Data Corporation 5858 Model 224 for Europe, the Middle East, and Africa
- Racal Vadic Model VI 2422SS for the Asia Pacific Group (except Japan)
- IBM 5853 for Latin America.

Step

4 If you are planning wide area network (communications) lines, complete form A4, the Wide Area Network Form, by performing the following steps:

- ___ a. Record information about each input/output processor or IOA by checking the appropriate boxes and recording the feature code number.
- ___ b. Record the line number. The line name will be filled in later.
- ___ c. Record the interface type by checking the appropriate boxes.
- ___ d. Record the cable length.
- ___ e. Record the protocol by checking the appropriate boxes.
- ___ f. Record the data rate.
- ___ g. Record the connection type by checking the appropriate boxes.
- ___ h. Record the remote controller type.
- ___ i. Record the modem information.
- ___ j. Leave RECSP blank. This will be filled in later.

Step

5 If you are planning local area network (token ring, Ethernet, or Distributed Data Interface) lines, complete form A5, the Local Area Network Form, by performing the following steps:

- ___ a. Record information about each input/output processor or IOA by checking the appropriate boxes and recording the feature code number.
- ___ b. Record the line name.

- c. Record if the line is online at IPL time by checking the appropriate boxes.
- d. Record the standard by checking the appropriate boxes.
- e. Record the link speed by checking the appropriate boxes.
- f. Record the local adapter address.
- g. Record the cabling type by checking the appropriate boxes.
- h. Record the cable designation.
- i. Record the cable length.
- j. Record the MAU or Hub port number.
- k. Record the TR LAN Mgr Mode used.
- l. Record the maximum frame size for token ring.
- m. Record if dual homing by checking the appropriate box.
- n. Record if dual or single attach station by checking the appropriate box.
- o. Record if optical bypass available by checking the appropriate box.
- p. Record the type of antenna used if wireless LAN

Chapter 3. General Cabling Considerations

Cable Path Considerations

Cables should be routed to avoid:

- Creating a safety hazard
- Exposing a cable to damage
- Sources of electrical interference (for example, electric motors and transformers)
- Physical barriers such as a wall

Cables that run outside of a building must have lightning protection as it is addressed in the following National Electrical Code articles or other national codes:

- 645
- 725
- 770
- 800

Separating Twinaxial Cables from Electrical Equipment

Workstation signal cables should not be installed near any power lines transmitting or electrical equipment that is using more than 440 volts. The following distances are a guide for voltages up to 440 volts:

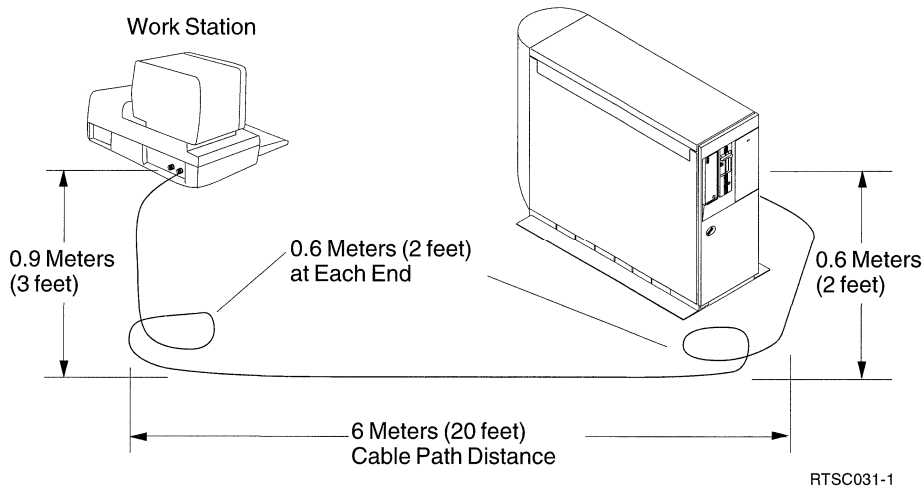
- The recommended minimum distance between a signal cable and fluorescent, neon, or incandescent lighting fixtures is 127 millimeters (5 inches).
- The recommended minimum distance between a signal cable and either unshielded power lines or electrical equipment depends on the power consumption of the equipment:
 - 2 kVA or below: 127 millimeters (5 inches)
 - 2 through 5 kVA: 305 millimeters (12 inches)
 - Over 5 kVA: 610 millimeters (24 inches)
- The recommended minimum distance between a signal cable and unshielded power lines or electrical equipment with the signal cable in a grounded metallic conduit is:
 - 2 kVA or below: 63.5 millimeters (2.5 inches)
 - 2 through 5 kVA: 152 millimeters (6 inches)
 - Over 5 kVA: 305 millimeters (12 inches)
- The recommended minimum distance between a signal cable and power lines in a grounded metallic conduit is:
 - 2 kVA or below: 63.5 millimeters (2.5 inches)
 - 2 through 5 kVA: 152 millimeters (6 inches)
 - Over 5 kVA: 305 millimeters (12 inches)
- The recommended minimum distance between a signal cable enclosed in a grounded metallic conduit and power lines in a grounded metallic conduit is:
 - 2 kVA or below: 30.5 millimeters (1.2 inches)
 - 2 through 5 kVA: 76 millimeters (3 inches)
 - Over 5 kVA: 152 millimeters (6 inches)

Local Workstation Cables

It is your responsibility to purchase, install, label, and test workstation cables and station protectors. Because of the effort and expertise that is required to assemble cables, it is recommended that you purchase assembled cables.

Note: If you ordered a Total System Package with at least one display station, one 6-meter (20-foot) cable is included in the shipment. If you ordered at least one printer, your shipment includes one 6-meter (20-foot) printer cable.

Console Considerations



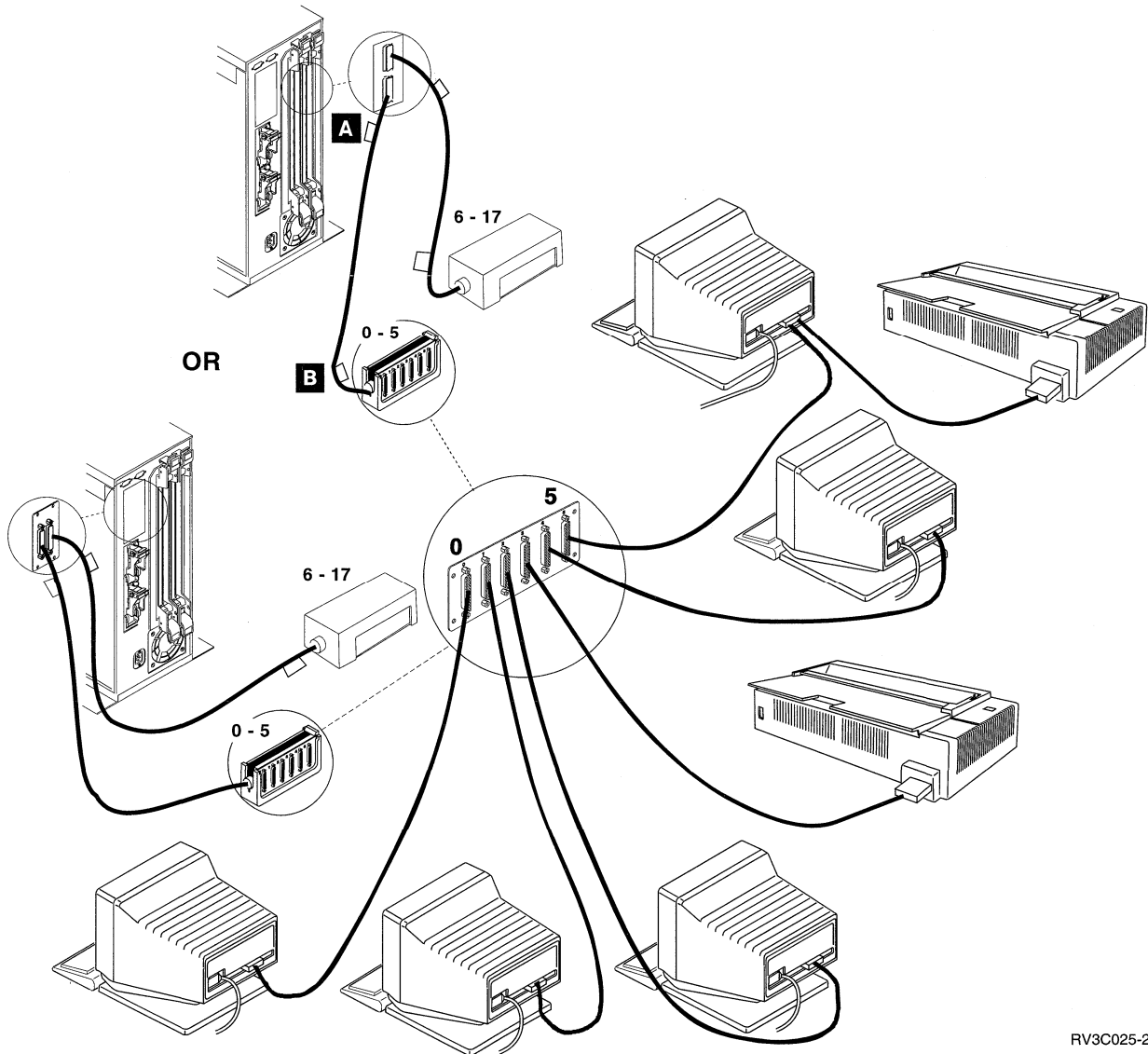
The display station that is designated as the console:

- Must be located within 6 meters (20 feet) of the system unit
- Should be in the same room and within view of the system unit
- Should be within view of a telephone

ASCII Workstations

For additional information on ASCII device considerations, see the *ASCII Work Station Reference*.

Note: The figures that are used show a 9402 2xx system unit. The attachment of cables may differ, from what is shown, when making the physical connections to other AS/400 systems. The same cabling concepts still apply.



RV3C025-2

Figure 3-1. Cabling for ASCII Workstations

The workstations (displays or printers) connect directly to the system unit or to a workstation attachment. Each display with an auxiliary port can have a local printer attached.

The address of each workstation is determined by the port to which it is connected in the system unit or workstation attachment. The console must be attached to port 0 of the First Workstation controller. For the 9402 system, this is port 0 on the back of the system unit.

Limitation: The maximum number of ASCII workstations that can be active at one time is determined by the number of ports installed on the system. For example, a system with an 18 port ASCII workstation attachment, can have a total of 36 physical devices attached. This is because attached displays, for

example, can have an auxiliary port for attaching a local printer. However, each ASCII controller can only have a total of 18 devices varied on and actively used at one time.

Personal Computer Cabling: The following figures show the IBM cables required to attach a personal computer (PC) to the ASCII ports on the system unit or the ASCII workstation attachment cable.

Note: The order part number is listed first. The part number in parentheses is the number that appears on the cable.

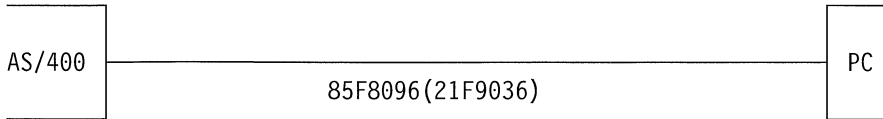


Figure 3-2. Personal Computer Direct Connection

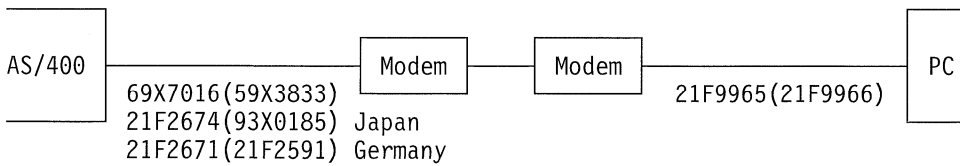


Figure 3-3. Personal Computer Modem-Attached Connection

Client Access/400 Workstation Console

Client Access/400 console support enables an IBM-compatible personal computer to function at the AS/400 console. The Client Access/400 console eliminates the need for a dedicated dependent workstation used as the system console. It also eliminates the need for a twinaxial or ASCII workstation processor used to connect the dependent workstation to the AS/400 system.

The personal computer used as the console is attached to the AS/400 system using a special console cable (feature code #9026 and #9027). The cable connects the serial port on the personal computer to a #2609 or #2612 communications input/output adapter installed on the AS/400 system. Only one personal computer attached to the AS/400 can use the Client Access/400 console support at a given time.

The personal computer used as the AS/400 system console must be running the PC5250 application to emulate a locally attached 5250 display station. The Client Access/400 console does not support a console printer.

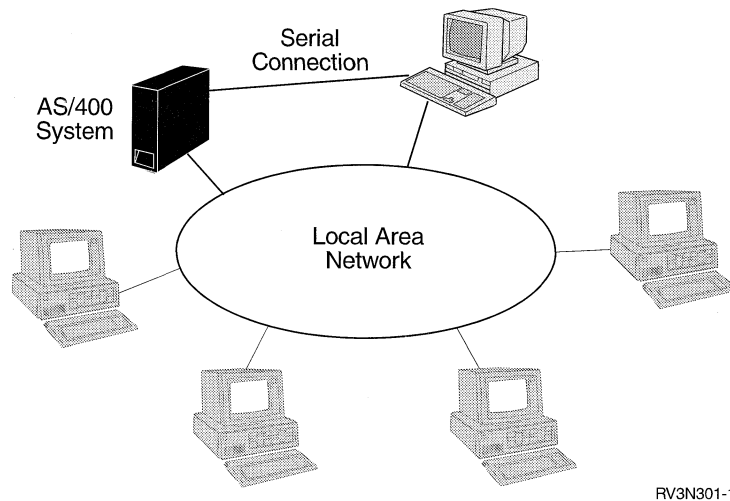


Figure 3-4. A Personal Computer Attached as the AS/400 System Console

Figure 3-4 illustrates an example of a Client Access/400 system console connection. A serial connection is used to attach the personal computer used as the system console to the AS/400 system. The personal computer and the AS/400 system are also attached to a token-ring network.

Client Access/400 system console support requires a special cable for connecting the personal computer to the AS/400 system.

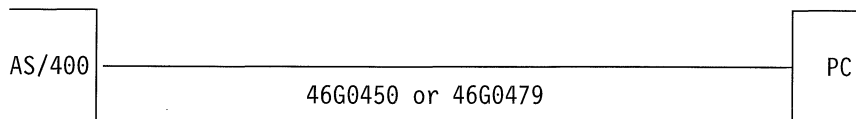


Figure 3-5. Personal Computer Direct Connection

Two console cable length are available. Cable lengths, feature codes, and part numbers are listed below.

Feature Code	Cable Length	Part Number
9026	6 m (20 ft)	46G0450
9027	2.5 m (8 Ft)	46G0479

For more information about planning for a Client Access/400 workstation refer to the following publications:

Publication	Title
SC41-3530	Client Access/400 for Windows 3.1 – Getting Started
SC41-3552	Client Access/400 for Windows 3.1 PC5250 Setup
SC41-3580	Client Access/400 for Windows 3.1 TCP/IP Setup
SC41-3510	Client Access/400 Optimized for OS/2 – Getting Started
SC41-3555	Client Access/400 Optimized for OS/2 PC5250 Setup
SC41-3556	Client Access/400 for DOS Setup
SC41-3558	Client Access/400 for DOS Setup (DBCS)
SC41-3500	Client Access/400 for DOS with Extended Memory Setup
SC41-3502	Client Access/400 for DOS with Extended Memory Setup (DBCS)
SC41-3504	Client Access/400 for DOS with Extended Memory – Getting Started

Twinaxial Workstations

Note: The figures used show a 9402 2xx system unit. The attachment of cables differs from what is shown when making the physical connections to other AS/400 systems. The same cabling concepts still apply.

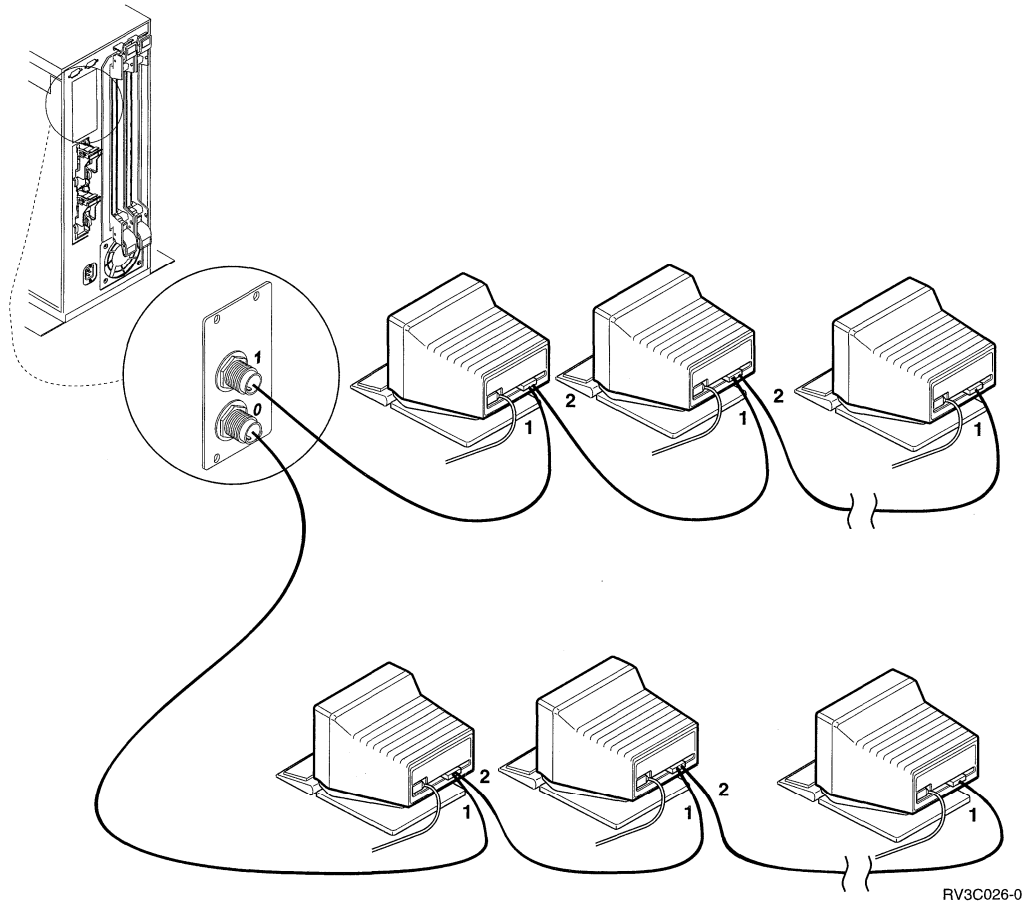


Figure 3-6. Cabling Twinaxial Workstations to the Standard Twinaxial Workstation Plate

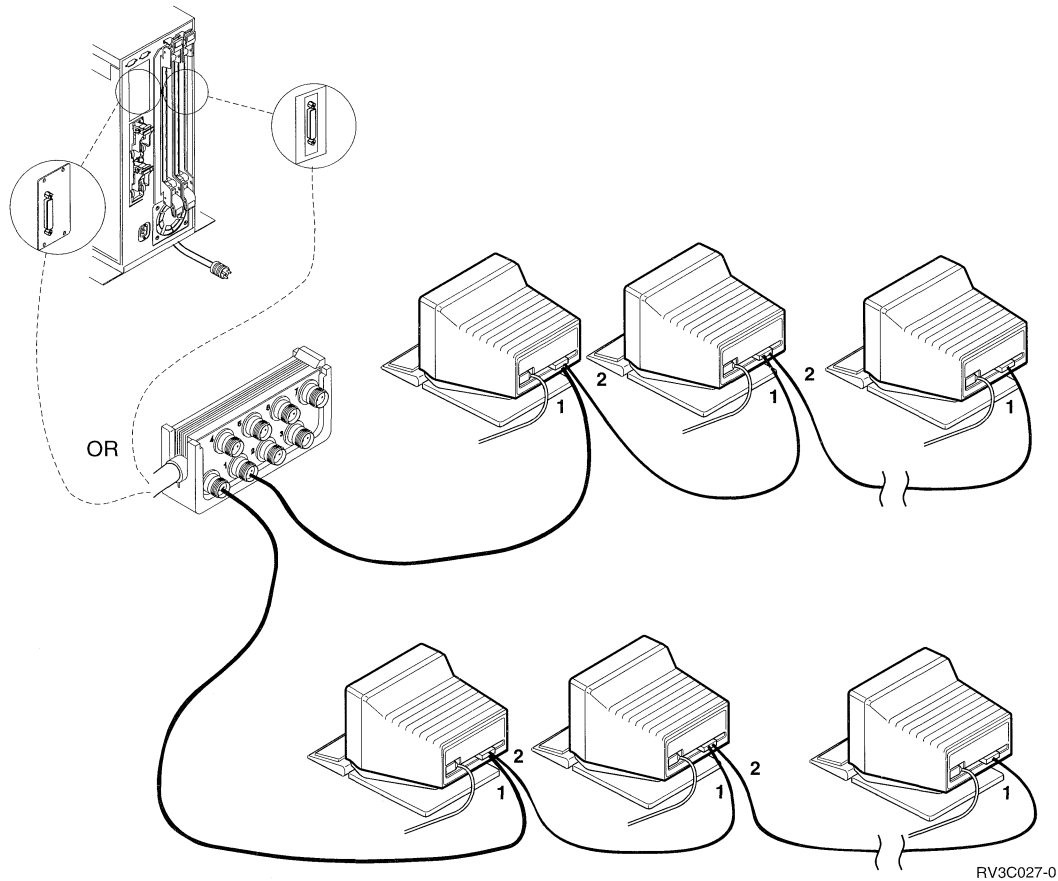


Figure 3-7. Cabling Twinaxial Workstations to the Twinaxial 8-Port Workstation Attachment

The workstations (displays or printers) each have 2 sockets for cable connections. The workstations are connected in series, as shown, to one or more of the twinaxial ports on the back of the 9402 system unit or to the ports of the Twinaxial Workstation Attachment on the 9402, 9404, and 9406 systems.

- If you have the First Workstation Attachment Feature on your 9402 system, you can have up to 5 addresses on port 0 (up to 6, if a printer is not attached to the First Workstation Attachment Feature.)
- 9402 systems without the First Workstation Attachment Feature and all 9404 and 9406 systems can have up to 7 addresses on port 0.
- You can always have up to 7 addresses on all other twinaxial ports on a 9402, 9404 or, 9406.
- The last workstation in each series must have a terminator for the cable. Most workstations have this already built-in and nothing further is required; however, some older models require an external terminating plug. See the documentation for the workstation to determine if the external terminating plug is required.

Assigning Addresses

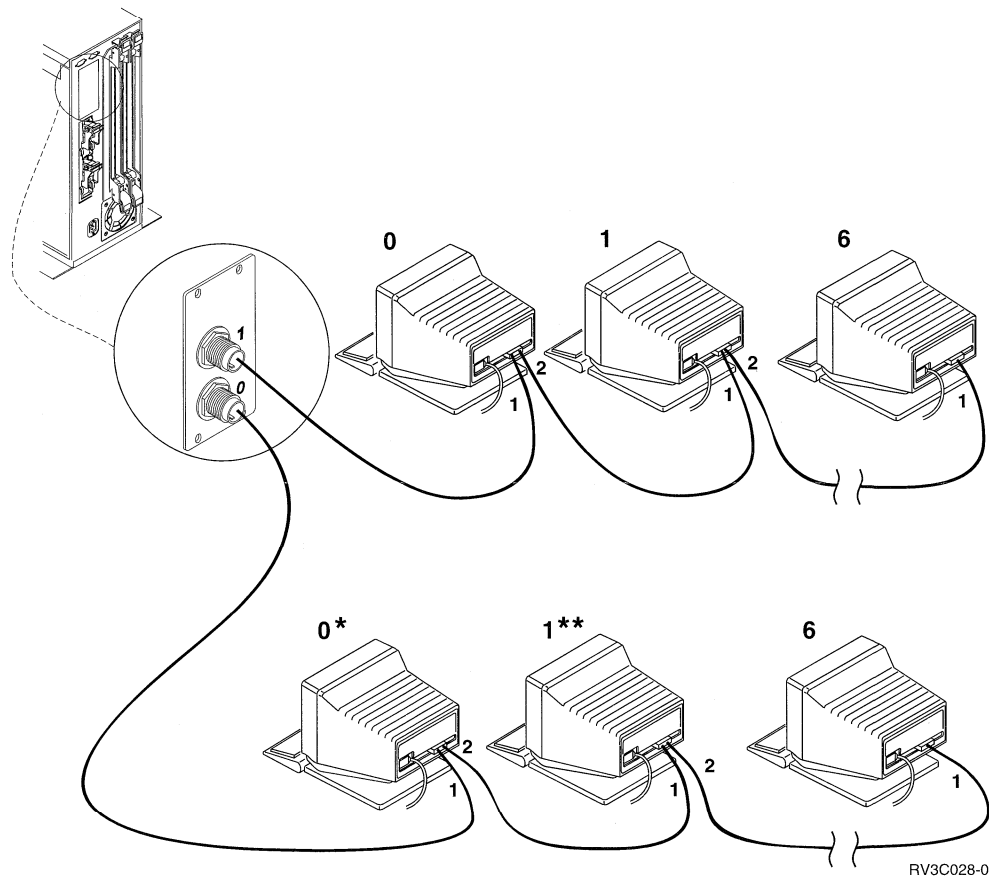


Figure 3-8. Assigning Addresses for Twinaxial Workstations

Workstation addressing is done after you have determined how many devices will be connected to a port. An address is given to each workstation connected to the system.

Keep in mind:

- The console must be attached to port 0 of the first workstation controller. For the 9402 system, this is port 0 at the back of the system unit.
- 9402 systems without the First Workstation Attachment Feature and all 9404 and 9406 systems have addresses 0 through 6 available on all twinaxial ports. A 9402 is shown in Figure 3-8.
- If you have the First Workstation Attachment Feature on your 9402 system, with both a display and a printer attached, address 0 on port 0 is used for the display and address 1 on port 0 is used for the printer.

The addresses available for the twinaxial workstations connected to port 0 (indicated in Figure 3-8 by * and **) are then 2 and 3. The remaining addresses (through 6) are also available.

- If you have the First Workstation Attachment Feature on your 9402 system, with only a display attached (no printer), address 0 on port 0 is used for the display.

The addresses available for the twinaxial workstations connected to port 0 (indicated in Figure 3-8 by * and **) are then 1 and 2. The remaining addresses (through 6) are also available. Each twinaxial workstation must have a unique address.

- It is not necessary to assign the addresses in sequential order. For example, because the display station having address 0 on port 0 is the console, you would usually want that to be the workstation closest to the system unit; but it doesn't have to be.

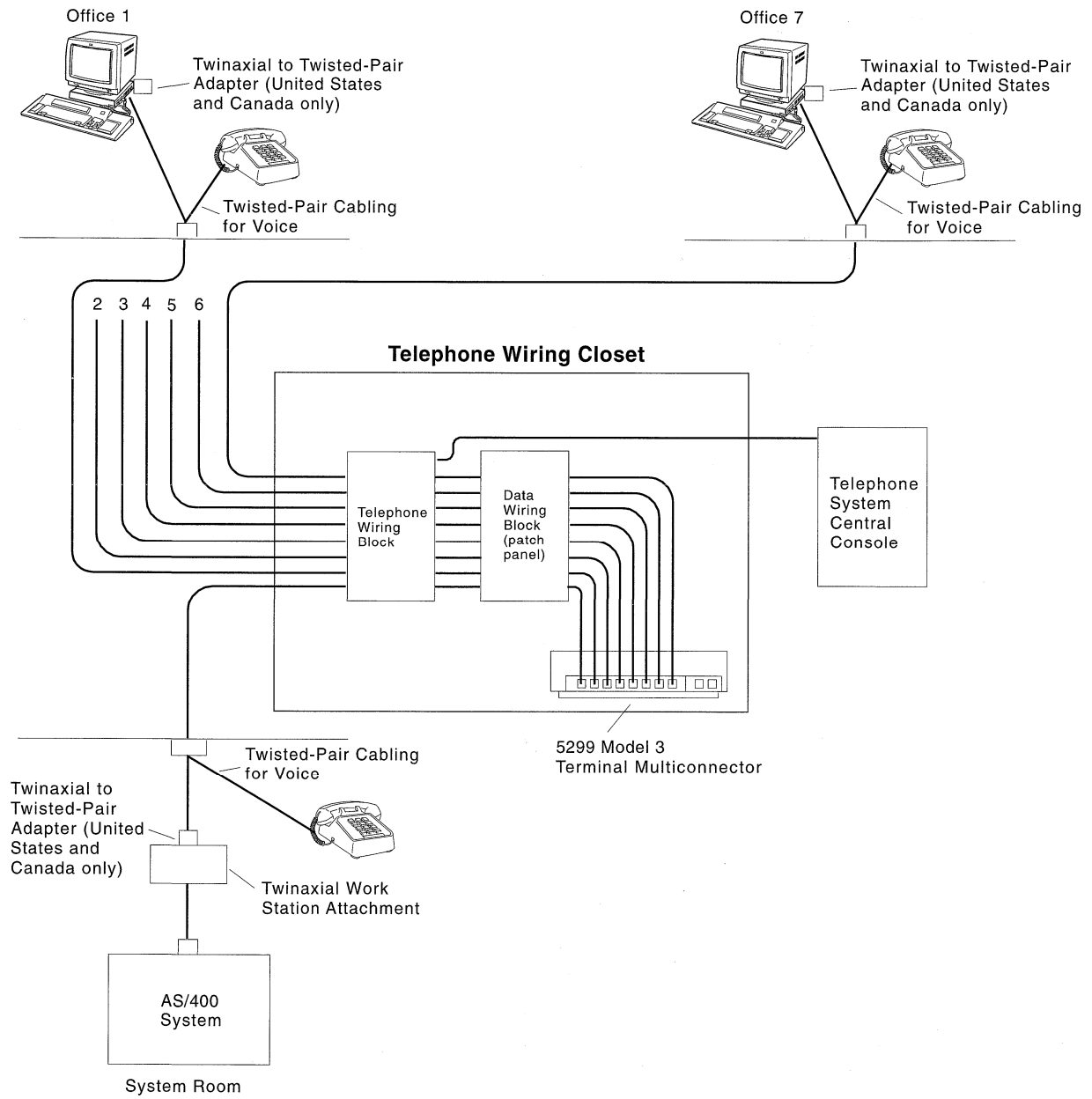
What you must do to assign an address and set up a workstation depends on the workstation type. Follow the instructions in the setup guide for each type of workstation you have.

Telephone Twisted-Pair Cabling: Telephone twisted-pair cabling allows you to attach display stations and printers to a twinaxial workstation controller by using the IBM 5299 Model 3 Terminal Multiconnector or the IBM 6299 Mid-Range System Hub. Each allows you to attach these workstations using the same telephone wiring cable that is typically already installed for telephone voice networks.

Note: IBM recommends that customers install the IBM 5299 model 3 or the IBM 6299 Mid-Range System Hub model 8TC when attaching more than one workstation to a single host port.

Note: If you use a non-IBM telephone twisted-pair adapter and terminal multiconnector box, they must be equivalent to the IBM 5299 Model 3 specifications. See the *IBM 5299 Terminal Multiconnector Model 3 Planning Installation, Problem and Analysis*, GA27-3749, for more information.

The following figure shows a sample of how telephone twisted-pair cabling can be used to attach devices to a system. The twinaxial to twisted-pair adapter in the figure is also known as a balun.



RSLC174-10

Figure 3-9. An Example of Telephone Twisted-Pair Cabling

Apple** Workstations

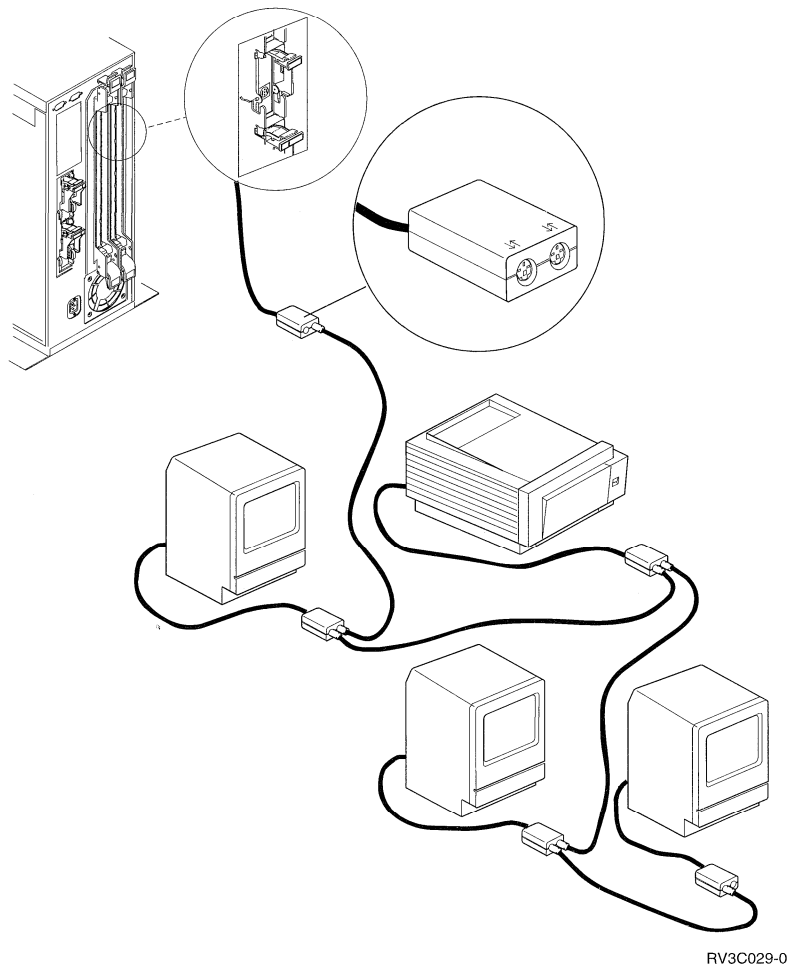


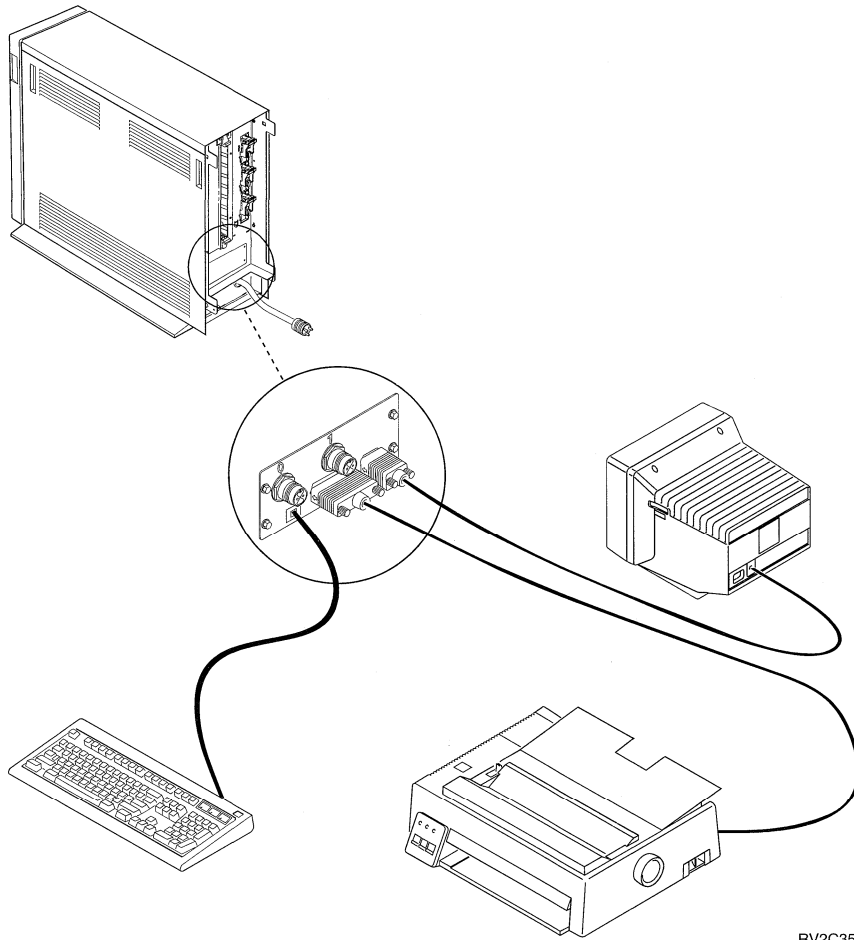
Figure 3-10. Cabling for Apple Workstations

The workstations (displays or printers) connect to the 6054 workstation adapter card on the AS/400 system or to each other through connector boxes. If you order this workstation adapter card, your shipment includes one connector box. The connector box is 0.56 meter (22 inches) long.

For more information on Apple workstation cabling, see the device manuals for Apple workstations.

Note: Because the AS/400 system is like any other device in the network, the system can connect at any position in the network.

9402 First Workstation Attachment



RV2C358-4

Figure 3-11. Cabling for First Workstation Attachment Feature

The display station supported by the First Workstation Attachment Feature is the console, even if you have other twinaxial workstations attached to your system.

Communications Cables

You are responsible for selecting and installing lightning protection devices on all communications cables that connect outdoors.

IBM provides a cable with all wide area network features.

IBM provides a cable (with an IBM Cabling System data connector) with each token ring feature. You must supply all other local area network cables.

#2618/#8664 Fiber Distributed Data Interface (FDDI) Adapter

This feature provides one interface to connect an AS/400 System to an FDDI LAN which complies with ANSI X3T9.5 and ISO 9314 standards.

The Fiber Distributed Data Interface (FDDI) Adapter requires the multi-mode (62.5/125 micron) FDDI optical fiber jumper cables to connect the Adapter into a FDDI ring. These jumper cables are to be supplied by the customer and they may be ordered from a local authorized IBM cabling distributor. For EMEA customers, cables are available from Montpellier through customer service representative offerings.

A fixed duplex shrouded connector is required on both ends of the optical cable. The ring attachment device used for the connection into a FDDI ring requires an examination to determine the proper connector to be used.

#2665/#8665 Shielded Twisted-Pair Distributed Data Interface (SDDI) Adapter

This feature provides one interface to connect an AS/400 System to an FDDI LAN which is constructed of IBM Cabling System Type 1, 2, 6, or 9 shielded twisted-pair wiring.

The SDDI Adapter requires copper jumper cables constructed of IBM Cabling System type 1, 2, 6, or 9 shielded twisted-pair wiring to connect the adapter into a FDDI ring. The jumper cables are to be supplied by the customer and may be ordered from a local authorized IBM cabling distributor. For EMEA customers, cables are available from Montpellier through a customer service representative offering.

A 9-pin subminiature D-shell shielded connector with 440 jack screws is required for connection to the SDDI adapter. An IBM token ring connector is required for connection to the ring attachment device. This cable is available from IBM by ordering part number 33G2762 or part number 6339098. Before ordering a cable, the ring attachment device requires an examination to determine the proper connector to be used.

#2666 High Speed Communications Adapter

The High Speed Communications Adapter provides the AS/400 with one communications line capable of T1/E1 (1.544/2.048 Mbps) speeds. This feature consists of a card, a wrap connector, and a cable. Three physical interface types are offered. The cable type plugged into the adapter determines which interface will be used. All cables are UL listed as CL2 per NEC 725 and CSA Certified as FT4.

When using the #2666, you can use either the RS-449/V.36 or V.35 cable for full T-1 speeds.

- RS-449/V.36

The RS-449/V.36 comes in 20ft (9882), 80ft (9883), for full T-1 speeds. The RS-449/V.36 comes in 20ft (9882), 80ft (9883), and 150ft (9884) lengths. The 80 and 150ft cables can be used only if the DCE provides looped clocking.

One of the following cables must be specified when ordering feature #2666

- #9882 20ft/6m RS449/V.36 CCITT Cable
- #9883 80ft/24.4m RS449/V.36 CCITT Cable #
- #9884 150ft/45.7m RS449/V.36 CCITT Cable #

- V.35

One of the following cables must be specified when ordering feature #2666:

- #9879 20ft/6m V.35 CCITT Cable
- #9880 80ft/24.4m V.35 CCITT Cable *

- X.21

- #9885 20ft/6m X.21 CCITT Cable

Wireless LAN Communications

Before installing a wireless network, or expanding an existing LAN with wireless access points, a site survey should be performed on the area of coverage within the location this feature is to be placed.

The wireless function is performed within a microcell that is bounded by the device's communication range, type of antenna used, and other factors. These factors include building materials, items stored in the building, building environment, and how the wireless devices are used in an all wireless environment (or a backbone network with wireless access points).

Each cell's size will be determined by transmitter power, receiver sensitivity, antenna cable losses, the efficiency of the antenna, and the building environment.

A site survey should include reviewing the building blueprint or diagram, mapping out the areas to be covered by the wireless feature, preliminary testing all areas to be covered, and recording of location points for each device.

In site preparation, the type of materials used in the construction of the building must be determined. For example steel walls block radio energy, while other types of barriers absorb it. Reflecting walls and ceilings can produce multiple signal reflections, that interfere with each other. Spread spectrum transmission is less susceptible to this, but still can be affected.

The following are some examples of transmission ranges for planning purposes only. It is recommended that preliminary testing be done using an antenna centrally located and elevated to 1.8 meters (6 ft).

A lightning arrester can be purchased from IBM. The part number is 92G5129.

Environment	Transmission range
Cluttered office	100 - 150 feet (30.48 - 45.72 m)
Open office	150 - 300 feet (45.72 - 91.44 m)
Open warehouse	1500 feet (457.5 m)
Outdoors	3 miles (4.8 km) (with specialized antenna)

For more information about planning for a wireless LAN, see the following publications:

Publication	Title
GA33-0189	Wireless LAN Designing Your Network
G571-0303	AS400 Wireless Installation and Planning Guide
G571-0323	AS/400 Wireless Ethernet LAN Access Point User's Manual
G571-0324	AS400 Wireless RS/485 LAN Access Point User's Manual
G571-0326	AS400 Wireless RS/485 LAN Access Point User's Manual
G571-0319	2482 AS/400 Wireless PTC User's Manual
G571-0320	2482 AS/400 Wireless PTC User's Manual
G571-0321	2484 AS/400 Wireless PTC User's Manual

The installation of an outdoor antenna requires a lightning arrester on the coaxial cable. Lightning arresters must be purchased from a vendor that, in the United States, supplies UL listed lightning arresters. Follow the installation instructions provided with your device. In the United States, the discharge terminal should be either attached directly to service entrance grounding electrode, or to a separate grounding electrode that is bonded to the service entrance grounding electrode as required by the National Electrical Code (articles 250-81, 250-83, and 250-86).

Integrated FAX Adapter

The Integrated Fax Adapter and the new version of Facsimile Support/400 provides the AS/400 with two ports capable of transmission and receipt of facsimile data to or from a Group 3 capable fax machine, another AS/400 with an Integrated Fax Adapter, or PCs with appropriately programmed fax adapters. Feature #2664 consists of a card, a wrap cable (one per machine), two country-unique attachment couplers, telephone cables and Licensed Internal Code.

The Integrated Fax Adapter is supported by the Facsimile Support/400 licensed program offering that, until now, supported only the PS/2 LAN-based facsimile product. This program provides configuration parameters for the Integrated Fax Adapter, schedules fax transmissions between multiple adapters, and manages sending and receiving faxes to and from the adapter.

The Integrated Fax Adapter can simultaneously support two send, two receive, or one send and one receive operation. To the AS/400, the Integrated Fax Adapter appears as an IPDS* (Intelligent Printer Data Stream) printer for outbound faxes. Most output, including text, image, graphics and bar codes that can be printed on an AS/400 IPDS printer can be faxed via the Integrated Fax Adapter. Double Byte Character Sets (DBCS) are supported for in-bound faxes, but not for out-bound faxes.

Documents transmitted from the AS/400 through the Integrated Fax Adapter are limited to a maximum of approximately 30 text pages per port, per phone call. If only a single port is configured for sending Fax documents, then the limit is raised to approximately 60 text pages. Resident cover pages are counted against this limit.

The Integrated FAX Adapter is designed to be directly attached to the Public Switched Telephone Network (PSTN). Attachment to a Private Branch Exchange (PBX) may give unsatisfactory results.

The Integrated FAX Adapter supports the facsimile protocols defined in CCITT Blue Book Volume VII, Fascicle VII.3 Recommendations T.4 and T.30.

Integrated Fax Adapter supports the following compression algorithms in fax mode:

- Group 3 MR
- Group 3 MH

Integrated Fax Adapter supports the following modem standards:

- V.21 ch2 (300bps)
- V.27 ter (2400, 4800bps)
- V.29 (7200, 9600bps)

Initial country support includes: USA, Canada, France, United Kingdom, Germany, Italy, Japan and Sweden. Country support is subject to approval that country. Two country-unique couplers and country-specific Public Switched Telephone Network (PSTN) attachment cables (one for each port), required. The couplers and cables are included with the Integrated Fax Adapter feature.

OS/400 Version 3 Release 0.5, or later, and Facsimile Support/400 Version Release 0.5, or later, are required to support this feature.

Chapter 4. Creating a Floor Plan

Use the completed system summary forms, the information from Chapter 3, "General Cabling Considerations" on page 3-1, and the "Plan Views" on page 4-4 to create a floor plan.

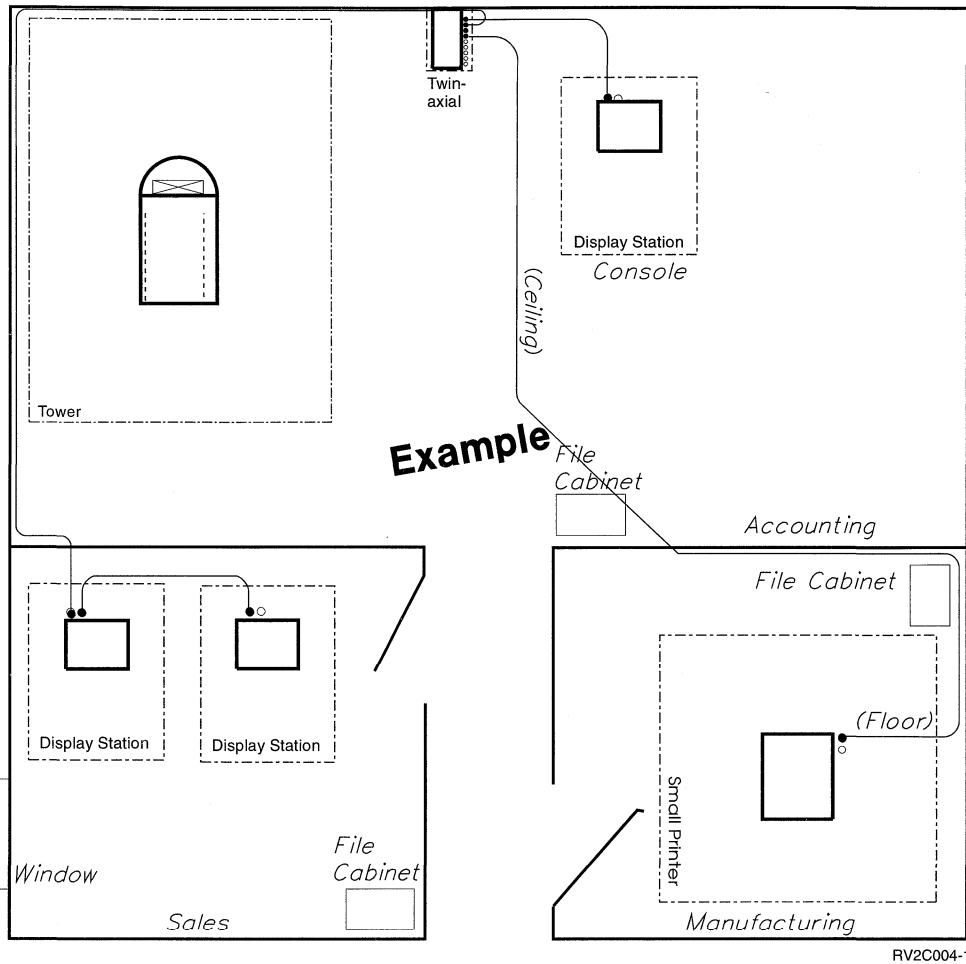


Figure 4-1. Example of a Completed Floor Plan

Note: AS/400 models 2xx, 3xx, 4xx and 5xx can be installed in a raised floor or a non-raised floor environment.

Step 1

Draw a layout of the area where the equipment will be installed. Your floor plan must be accurate and drawn to scale (1 mm equals 5 cm; 1/4-inch equals 1 foot) so you can determine such things as cable length and cable paths. Draw the layout as if you were looking down from above the ceiling. Include the location of the following on your drawing:

- All entrances, exits, windows, and columns or pillars
- Air conditioning equipment and controls
- File cabinets, furniture, and other office equipment
- Power outlets and the type of outlet
- Telephone connections

— **Step 2** Make a copy of the equipment templates in Appendix A, Forms for Planning. Refer to “Plan Views” on page 4-4 to identify what device types are included in the templates. Cut out the needed plan views (around the dotted lines) and place them on your floor plan. You may want to write the device type on the sample floor examples. Write *console* on the device that will be the system's console. Consider the following on your drawing:

- Flow of work and personnel within the area.
- Service clearances required for each unit.
- Weight distribution to comply with floor-load ratings.
- Console location (should be within 6 meters (20 feet) of the system unit).
- Modem location (modems should generally be placed within 6 meters (20 feet) of the system).
- Additional equipment that may be added in the future.
- Unit-to-unit cable lengths.

— **Step 3** On the drawing, indicate the location and plug type of all new power outlets required.

— **Step 4** Draw all workstation cables. Consider the following on your drawing:

- Planned placement of cables for minimum obstruction
- Additional amount of cable needed, if the cable runs indirectly between units (such as vertically on a wall)
- Plan to attach ASCII workstation cables to the end of an IBM-supplied 6 meter (20 feet) attachment cable except:
 - On the 9402 models x02, x04, and x06 with 1 to 6 ports, attach cables at the back of the system.
 - On the 9402/9404 models 20S, 200 and 4xx with the 6 port attachment, attach an IBM-supplied 3 m (10 feet) attachment cable.
 - On 9402/9404 2xx and 4xx, and 9404 models Bxx-Fxx with a 12 port attachment, attach an IBM-supplied 3 m (10 feet) attachment cable.
- Plan to attach twinaxial workstation cables to the end of an IBM-supplied 6 m (20 feet) long attachment cable except:
 - On the 9402 models x02, C0x, D0x and 9402/9404 models 2xx and 4xx with less than 14 devices, attach cables at the back of the system.
 - On 9402 models E04, E06, F04 and F06 with less than 28 devices, attach cables at the back of the system.

— **Step 5** Record the workstation cable lengths that you must supply on form A3, the Workstation Information Form.

— **Step 6** Draw all other device cables. Consider the following on your drawing:

- Planned placement of cables for minimum obstruction

- Additional amount of cable needed, if the cable runs indirectly between units (such as vertically on a wall)

__ **Step 7** On the drawing, indicate the location and type of your wide area network or local area network connections.

__ **Step 8** Draw all wide area network or local area network cables on the drawing. Consider the following on your drawing:

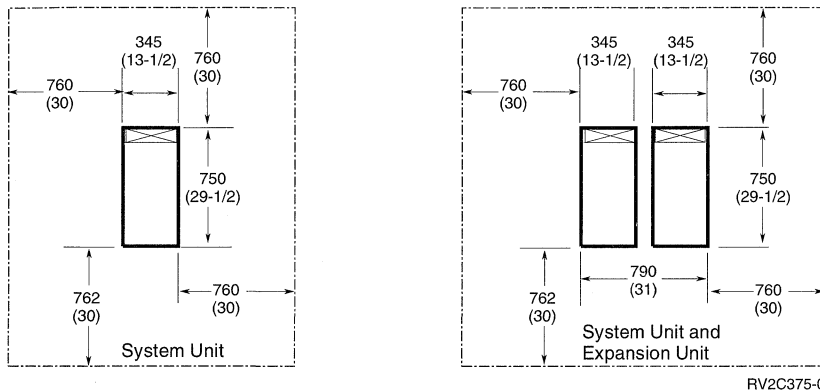
- Planned placement of cables for minimum obstruction
- Additional amount of cable needed, if the cable runs indirectly between units (such as vertically on a wall)

Plan Views

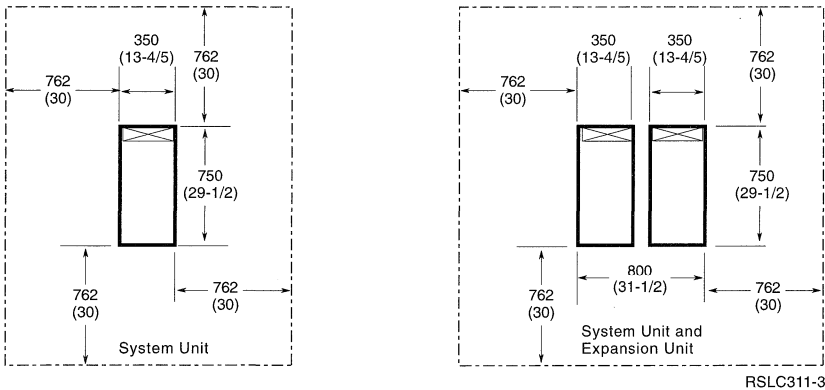
The plan views show you the dimensions of the units as well as the dimensions required for ventilation, service clearance, and floor loading for the AS/400. Also included are the plan views for several common devices such as displays and printers.

Use the plan views as well as the templates in Appendix A, "Forms for Planning" on page A-1 for your floor plan.

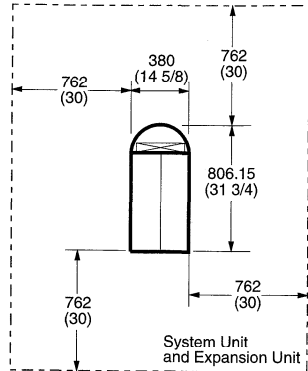
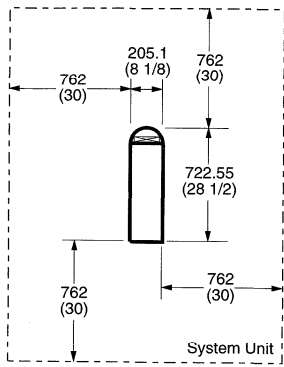
9402 Models Cxx-Fxx, 100 System Unit and the Optional Expansion Unit



9404 Models Bxx-Fxx 135, 140 System Unit and the Optional Expansion Unit



9402/9404 Models 2xx and 4xx System Unit and the System Unit with the Optional Integrated Expansion Unit

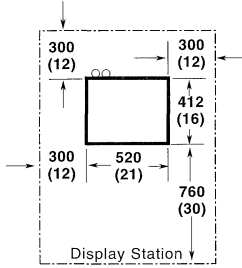


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Small Display Stations

- 3101 ³
- 3151
- 3161
- 3162
- 3163
- 3164
- 3179-2 ²
- 3197-C10, D20, W20 ²

- 3476-EAx, EGx ¹
- 3477-FAx, FDx, FGx, FCx ¹
- 3486-BA ¹
- 3487-HA, HC, HG, HW ¹
- 3488 ¹
- 3489-V11, V13, V41, V43, V51, V53
- 5291-2
- 5295-001, 002, 0C2, LK1



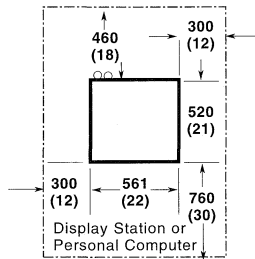
RSLC194-16

Large Display Stations and Personal Computers

Note: This information applies to personal computers without printers. You must consider additional space for a printer.

- 3179-2 ³
- 3180-2
- 3196-A10, B10 ³
- 3197-C10, D10, D40, W10 ³
- 3476 EAx, EGx ³
- 3477 FAX, FDx, FGx, FCx ³
- 3486-BA ³

- 3487-HA, HC, HG, HW ³
- 5251-11, 12
- 5291-1
- 5292-1, 2
- Personal Computers
- Personal System/2*
- Personal System/55

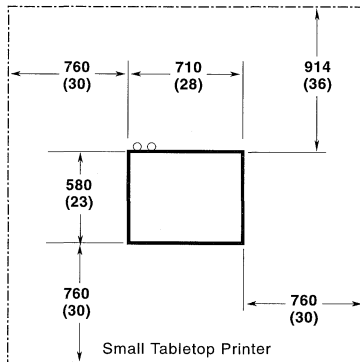


RV2C376-1

¹ with 102-key keyboard
² with 102-key Enhanced keyboard
³ with 122-key keyboard

Small Tabletop Printers

- 2380-001, 002
- 2381-001, 002
- 2390-001, 002
- 2391-001, 002
- 3112-001
- 3116-001, 002, 003
- 3812-1, 2
- 3816-01S, 01D
- 3912-AS0, AS1
- 3916-AS0, AS1
- 3930-02S, 02D
- 4019
- 4028-AS1
- 4029-10, 20, 30, 30PS, 40, 40PS
- 4037-5E
- 4039-10D, 10R, 12L, 12R, 16L
- 4070-001, 002
- 4072-001
- 4076-001
- 4201-2, 3
- 4202-1, 2, 3
- 4207-1, 2
- 4208-1, 2
- 4210-1
- 4214-2
- 4216-10, 30, 31
- 4224-101, 102, 1C2, 1E2, 1E3, 301, 302, 3E3,
1A3, 3A3, 1X1, 1X2
- 4226-302
- 4230-101, 1S2, 1I1, 1O2, 4S3, 4I3
- 5204-1
- 5219-D01, D02
- 5223
- 5224-1, 2
- 5256-1, 2, 3
- 5317-001
- 5553-B01, B02
- 5557-B01
- 5563-B02, H02
- 5572-B01
- 5575-B01, B02, F01, F02
- 5577-B01, F01, F02, G01
- 5583-200
- 5587-G01



RV2C026-1

Floor-Standing Printers

Notes:

1. This information does not include sheet feeds, power stackers, or form tractors.
2. The diagram below is an example for the largest size floor-standing printer. Review the correct product specification in Appendix E, "Specifications for the IBM AS/400 Family of Business Computing Systems and Attachable Devices" on page E-1.

3820

4234-2, 8, 9, 12, 13

5225-1, 2, 3, 4

5227-001, 002, 003, 005

5262-1

5327-001

5337-001

5417-001, 002, 003, 005

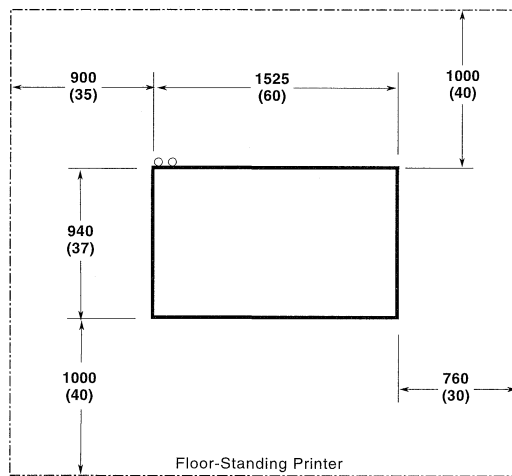
5427-001, 002, 003, 005

6252-T08, T12, AS2, AS8, T0Z, T1Z

6262-T12, T14, T-22

6408-A00, CT0, CTA

6412-A00, CT0, CTA

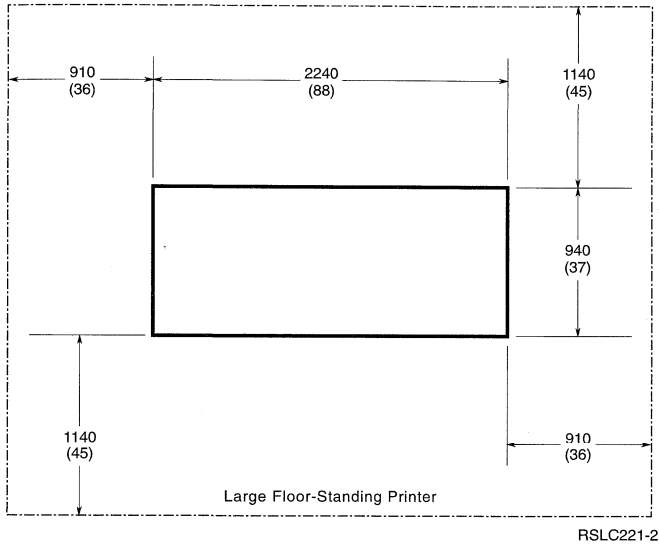


RSLC109-21

Large Floor-Standing Printers

3825
3827
3828
3829

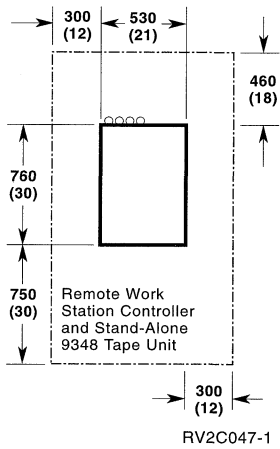
3831
3835-001, 002
3900-001
3935-001



Remote Workstation Controllers and Stand-Alone 9348 Tape Unit

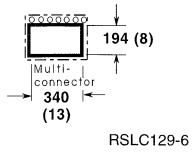
5251-012
5294-001, K01, S01
5394-1, 2

5494-001, 002
9348-1, 2



5299 Model 3 Terminal Multiconnector

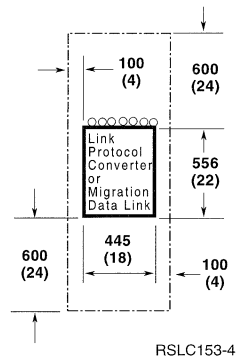
Note: Available only in the United States and Canada.



Link Protocol Converters or Migration Data Link

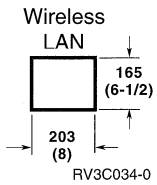
Note: The ROLMbridge** 5250 Link Protocol Converter is contained in a CBX 8000 or CBX 9000. Refer to the *CBXII 8000 Installation Manual* for CBX device specifications.

- 5208
- 5209
- 5259



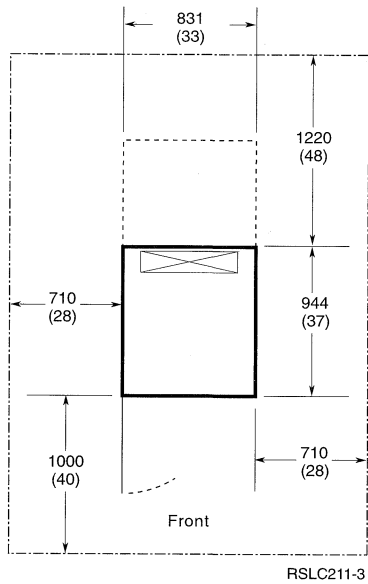
Wireless Access Point

2480-E00, RS0



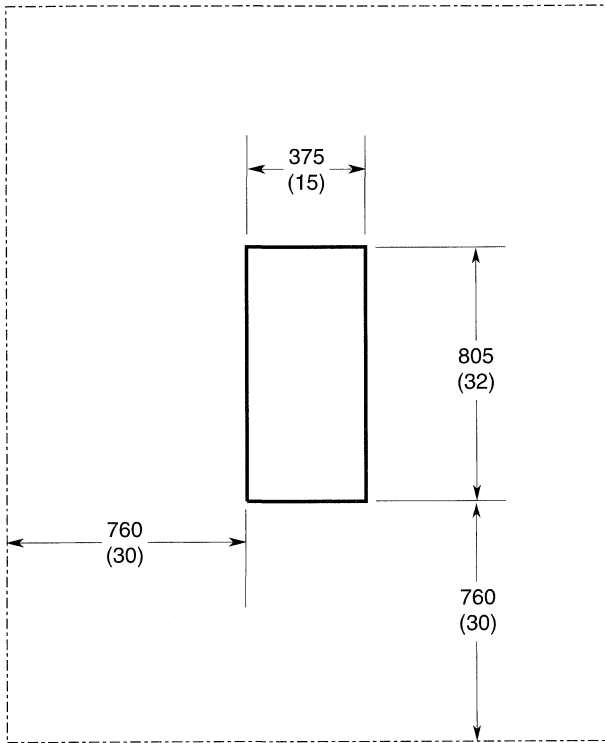
Tape Units

- 2440
- 3422
- 3430
- 3450-001
- 3480
- 3490-A01, A02, B02, B04, D31, D32
- 3490E-A10, A20, B20, B40, D41, D42, C10, C11, C1A, C22, C2A, E01, E11
- 3494-L10
- 3570-B00, B01, B11, B1A, C00, C01, C11, C1A
- 3590-B11, B1A
- 7208-002, 012, 222, 232
- 9348-001, 002
- 9427-210, 211



Optical Library

3995-042, 043, 142, 143, A43



RV3C035-0

Chapter 5. Ordering Supplies

Some supplies, such as tape cartridges, are required while other supplies are optional. If you have not ordered the supplies you need, you should order them and have them in stock by the time your system arrives.

If you order a Total System Package, you will automatically receive a box of printer paper and enough blank tapes to make a tape backup of your system.

Ordering Your Supplies

IBM offers a variety of supplies and accessories for your system. You can order most of the following data processing supplies by telephone from distribution centers:

- Magnetic tape cartridges or reels and tape accessories
- Diskettes and diskette accessories
- Office supplies
- Printer paper and ribbons
- Printer cartridges
- Binders

Supplies and limited accessories can be ordered through the IBM DIRECT catalog. If you cannot wait for the catalog and need to order your basic supplies and accessories now, call IBM DIRECT (1-800-426-3333, United States only) and explain your situation.

Ordering Magnetic Tape or Tape Cartridges: Magnetic tapes or tape cartridges are generally ordered more than once during the planning cycle: first, to provide an initial supply, and later, when you have determined how many tapes will be used on a regular basis. These tapes are reusable. You may want to order additional tapes for copying files from disk and other system functions, such as permanently storing data and transferring data from one system to another. The number of tapes needed to make a backup of your system depends on:

- Size of the system (megabytes of disk storage)
- Save and restore strategy you have decided on; how often you want to make backup tapes
- Number of levels of tape backups you keep in storage

Note: The AS/400 system does not support 3600-foot reel tape.

You should order backup tapes and have them on hand when your system arrives. (One blank tape is shipped with your system for diagnostic purposes.) Order the type that is correct for the tape unit that you ordered for your system.

If you are going to use a brand of tape other than IBM, consider trying several different brands before purchasing a large quantity. This may reduce the chance of magnetic tape problems.

Ordering Printer Supplies: Your printer requires ribbons, ribbon cartridges, paper, belts, print wheels, print heads, or any combination of these items depending on the type of printer. Your marketing representative will recommend the quantity of printer supplies to order. IBM ribbons can be stored for up to 36 months, therefore you can safely order extra ribbons.

IBM printer paper is made from high-quality 100% register bond designed to take a sharp, legible image. When ordering paper for printing, consider the following:

- Paper size: Pay particular attention to the minimum print width of the paper.

- Use standard sizes: Standard sizes reduce the time needed to change printer paper.
- Single-part paper: Order single-part printer paper to start with.

Ordering Special Forms: If special forms are used in your business for such applications as billing and payroll, they may need to be redesigned for your new printer.

Special forms may require several weeks for printing. Therefore, you should prepare and order them well before installation time. If you have special forms requirements for your printer, order the *Form Design Reference Guide for Printers* from IBM.

Chapter 6. Other Considerations

Air Quality and Temperature: If you are installing your system in a typical business office or clean industrial location, you probably do not have to worry about the quality and cleanliness of the surrounding air. However, you should ensure that you keep the air temperature cool enough to handle the additional people in the office, and the additional BTU output of the system and associated equipment (about 20° C, 68° F).

Poor-quality air, especially in the chemical process industries, can corrode electrical parts in the system. Extensive corrosion and dust in any system can cause electrical problems. These conditions can, in turn, cause system problems and data processing errors. If you are in doubt about the air quality where you plan to put your system, ask your service or marketing representative about environmental testing or call your local air conditioning professionals.

Altitude: The AS/400 system operates at altitudes of between 0 - 2133 meters (0 - 7000 feet). If your altitude is outside this operating range, contact your service representative.

Static Electricity: When the humidity is low, people, carts, furniture, and paper can cause static electricity. Static electricity creates an annoying static shock when discharged to or near another person or object. If discharged to or near data processing equipment, these charges can cause data processing errors and possibly damage to the system or device.

To minimize this problem, use an antistatic floor covering, antistatic furniture, or an antistatic spray on your floor covering. Another way to avoid this problem is to raise the humidity in the room. A proven method for controlling static is to maintain a 45% relative humidity level at your location.

Lighting Considerations: Consider the following lighting factors:

- Paint offices in light colors with white ceilings to enable reflection (rather than absorption) of light.
- To lessen glare, ensure that windows or direct sunlight are not in the operator's field of vision or directly facing the display station.
- It is best to have a low level of general lighting (300 to 500 lux), with adjustable local lighting at each display station.
- To avoid eye fatigue, ensure that sources of light are compatible. White and warm white fluorescent lamps are compatible with both incandescent lamps and daylight.
- Place the display stations between fluorescent ceiling lights.

Acoustical Noise Considerations: The type of ceiling you have can reduce acoustical noise. A dropped, porous ceiling works best. If there are overhead ducts, preventing these ducts from transmitting sound from another area into your data processing area will also help decrease noise.

In rooms, you can reduce noise by applying acoustical material to the floor and walls. Proper spacing and orientation of noise producing equipment can also reduce room noise. See the *Physical Planning Reference*, SA41-4109 for more information on device noise levels.

Electromagnetic Interference: Avoid putting your system in areas of high electromagnetic interference. Such areas may exist within 500 meters (1650 feet) of a radio frequency source, such as radio-transmitting antennas (AM, FM, TV, and two-way radio), radar (commercial and military), and within 50 meters (165 feet) of certain industrial machines (RF induction heaters, RF arc welders, and insulation testers), certain electrical heating systems, and high-energy power lines. Under these conditions, consider if any special installation or product considerations are needed to ensure normal system operation and maintenance. Contact your service representative if you need assistance in determining if you have a potential problem.

Possible screen interference can be caused by power supplies in printers and other data processing equipment. To avoid this, maintain a minimum of 1 meter (3.3 feet) between display stations and printers or other data processing equipment.

Chapter 7. Labeling Cables

After deciding on the physical arrangement of your system and determining where the cables go, you should label the cables to ensure trouble-free setup of the system devices.

Cable labels can be found in Appendix A, Forms for Planning. Adhesive backed labels are available by ordering form number SX21-9920.

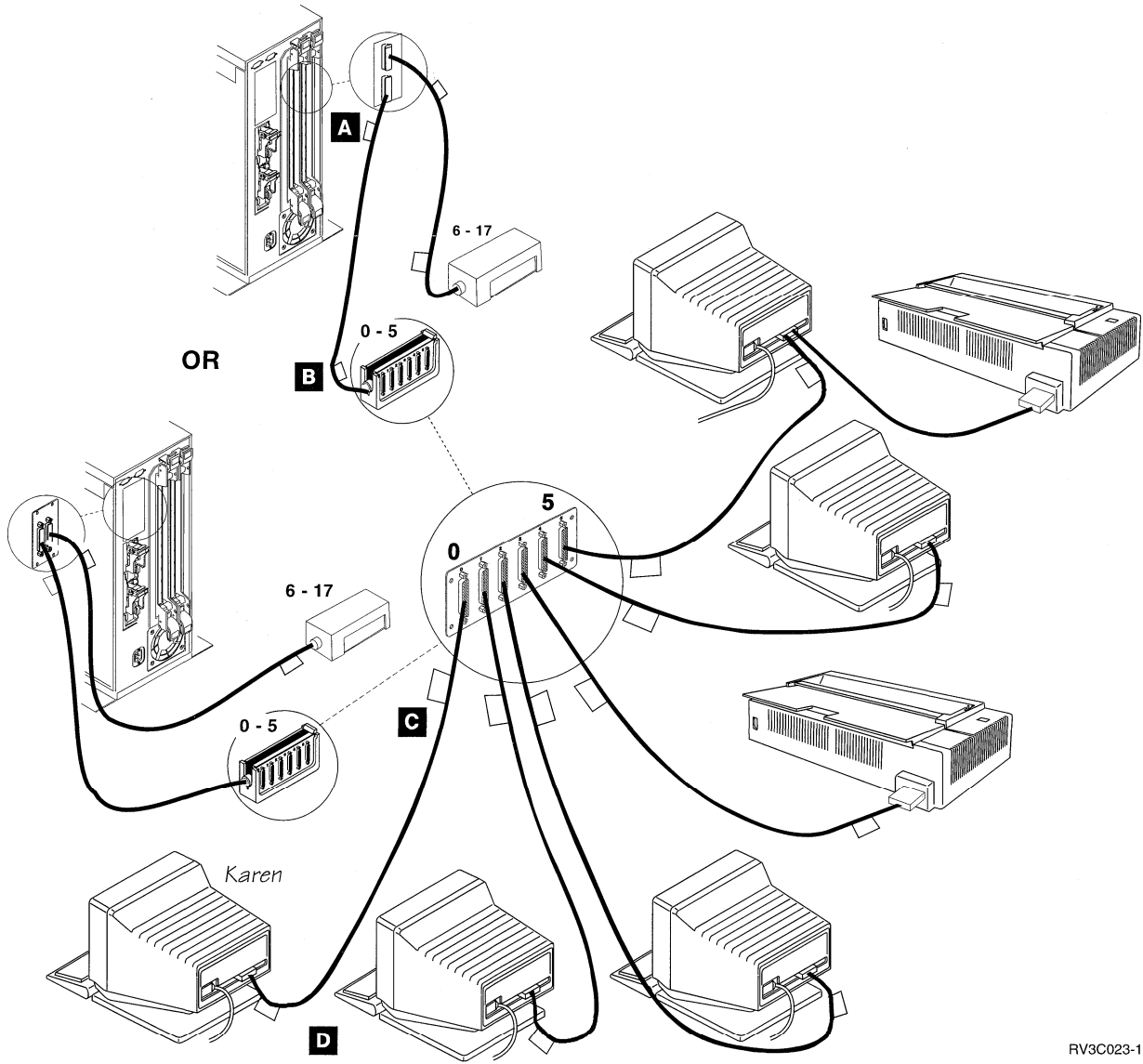
Note: The figures that follow use the 9402 2xx/4xx system unit as an example to illustrate the attachment of cables. The attachment of cables differs from what is shown when making the physical connections to other AS/400 systems; however the same cabling concepts still apply.

ASCII Workstations

Refer to Figure 7-1 on page 7-3. For the sample points indicated, you would make labels as shown in the table below. If the local printers are kept close to their displays, it probably is not necessary to label those cables. However, you should **make a label for each end of all other cables in the system.**

Location	Label												
A	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Connect this end to:</td> <td style="width: 50%;">Other end connects to:</td> </tr> <tr> <td>Device type/name <i>SYSTEM UNIT</i></td> <td><i>WSA 0-5</i></td> </tr> <tr> <td>Location</td> <td></td> </tr> <tr> <td>Device address</td> <td></td> </tr> <tr> <td>Socket/port <i>0</i></td> <td>SX21-9920</td> </tr> <tr> <td colspan="2" style="text-align: right;">RV2C357-2</td> </tr> </table>	Connect this end to:	Other end connects to:	Device type/name <i>SYSTEM UNIT</i>	<i>WSA 0-5</i>	Location		Device address		Socket/port <i>0</i>	SX21-9920	RV2C357-2	
Connect this end to:	Other end connects to:												
Device type/name <i>SYSTEM UNIT</i>	<i>WSA 0-5</i>												
Location													
Device address													
Socket/port <i>0</i>	SX21-9920												
RV2C357-2													
B	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Connect this end to:</td> <td style="width: 50%;">Other end connects to:</td> </tr> <tr> <td>Device type/name <i>WSA 0-5</i></td> <td><i>System Unit</i></td> </tr> <tr> <td>Location</td> <td></td> </tr> <tr> <td>Device address</td> <td></td> </tr> <tr> <td>Socket/port</td> <td><i>Port 0</i> SX21-9920</td> </tr> <tr> <td colspan="2" style="text-align: right;">RV2C367-1</td> </tr> </table>	Connect this end to:	Other end connects to:	Device type/name <i>WSA 0-5</i>	<i>System Unit</i>	Location		Device address		Socket/port	<i>Port 0</i> SX21-9920	RV2C367-1	
Connect this end to:	Other end connects to:												
Device type/name <i>WSA 0-5</i>	<i>System Unit</i>												
Location													
Device address													
Socket/port	<i>Port 0</i> SX21-9920												
RV2C367-1													
C	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Connect this end to:</td> <td style="width: 50%;">Other end connects to:</td> </tr> <tr> <td>Device type/name <i>WSA 0-5</i></td> <td><i>Karen</i></td> </tr> <tr> <td>Location</td> <td></td> </tr> <tr> <td>Device address</td> <td><i>0</i></td> </tr> <tr> <td>Socket/port <i>0</i></td> <td>SX21-9920</td> </tr> <tr> <td colspan="2" style="text-align: right;">RV2C365-1</td> </tr> </table>	Connect this end to:	Other end connects to:	Device type/name <i>WSA 0-5</i>	<i>Karen</i>	Location		Device address	<i>0</i>	Socket/port <i>0</i>	SX21-9920	RV2C365-1	
Connect this end to:	Other end connects to:												
Device type/name <i>WSA 0-5</i>	<i>Karen</i>												
Location													
Device address	<i>0</i>												
Socket/port <i>0</i>	SX21-9920												
RV2C365-1													
D	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Connect this end to:</td> <td style="width: 50%;">Other end connects to:</td> </tr> <tr> <td>Device type/name <i>Karen</i></td> <td><i>WSA 0-5</i></td> </tr> <tr> <td>Location</td> <td></td> </tr> <tr> <td>Device address <i>0</i></td> <td></td> </tr> <tr> <td>Socket/port</td> <td><i>Port 0</i> SX21-9920</td> </tr> <tr> <td colspan="2" style="text-align: right;">RV2C366-1</td> </tr> </table>	Connect this end to:	Other end connects to:	Device type/name <i>Karen</i>	<i>WSA 0-5</i>	Location		Device address <i>0</i>		Socket/port	<i>Port 0</i> SX21-9920	RV2C366-1	
Connect this end to:	Other end connects to:												
Device type/name <i>Karen</i>	<i>WSA 0-5</i>												
Location													
Device address <i>0</i>													
Socket/port	<i>Port 0</i> SX21-9920												
RV2C366-1													

- Step 1** Study Figure 7-1 for an overview of ASCII workstation cable labeling.
- Step 2** Make a copy of the page of labels from Appendix A, Forms for Planning.
- Step 3** Record the workstation information for your devices on the labels. As soon as the cables are available, cut out the labels and tape them to the cables.



RV3C023-1

Figure 7-1. Labeling ASCII Workstation Cables

Twinaxial Workstations

Refer to Figure 7-2 on page 7-5. For the sample points indicated, you would make labels as shown in the table below. **Make a label for each end of each cable in the system.**

Location	Label																
A	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Connect this end to:</td> <td style="width: 50%;">Other end connects to:</td> </tr> <tr> <td>Device type/name <i>Twinaxial Work Station</i></td> <td>Device type/name <i>Twinaxial Work Station</i></td> </tr> <tr> <td>Plate <i>Plate</i></td> <td>Plate <i>Plate</i></td> </tr> <tr> <td>Location _____</td> <td>Location _____</td> </tr> <tr> <td>Device address _____</td> <td>Device address _____</td> </tr> <tr> <td>Socket/port <i>0</i></td> <td>Socket/port <i>Socket 1</i></td> </tr> <tr> <td>_____</td> <td><i>SX21-9920</i></td> </tr> <tr> <td colspan="2" style="text-align: right;">RV2C355-2</td> </tr> </table>	Connect this end to:	Other end connects to:	Device type/name <i>Twinaxial Work Station</i>	Device type/name <i>Twinaxial Work Station</i>	Plate <i>Plate</i>	Plate <i>Plate</i>	Location _____	Location _____	Device address _____	Device address _____	Socket/port <i>0</i>	Socket/port <i>Socket 1</i>	_____	<i>SX21-9920</i>	RV2C355-2	
Connect this end to:	Other end connects to:																
Device type/name <i>Twinaxial Work Station</i>	Device type/name <i>Twinaxial Work Station</i>																
Plate <i>Plate</i>	Plate <i>Plate</i>																
Location _____	Location _____																
Device address _____	Device address _____																
Socket/port <i>0</i>	Socket/port <i>Socket 1</i>																
_____	<i>SX21-9920</i>																
RV2C355-2																	
B	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Connect this end to:</td> <td style="width: 50%;">Other end connects to:</td> </tr> <tr> <td>Device type/name <i>SAM</i></td> <td>Device type/name <i>Twinaxial Work Station</i></td> </tr> <tr> <td>Plate _____</td> <td>Plate <i>Plate</i></td> </tr> <tr> <td>Location _____</td> <td>Location _____</td> </tr> <tr> <td>Device address <i>0</i></td> <td>Device address _____</td> </tr> <tr> <td>Socket/port <i>1</i></td> <td>Socket/port <i>Port 0</i></td> </tr> <tr> <td>_____</td> <td><i>SX21-9920</i></td> </tr> <tr> <td colspan="2" style="text-align: right;">RV2C354-2</td> </tr> </table>	Connect this end to:	Other end connects to:	Device type/name <i>SAM</i>	Device type/name <i>Twinaxial Work Station</i>	Plate _____	Plate <i>Plate</i>	Location _____	Location _____	Device address <i>0</i>	Device address _____	Socket/port <i>1</i>	Socket/port <i>Port 0</i>	_____	<i>SX21-9920</i>	RV2C354-2	
Connect this end to:	Other end connects to:																
Device type/name <i>SAM</i>	Device type/name <i>Twinaxial Work Station</i>																
Plate _____	Plate <i>Plate</i>																
Location _____	Location _____																
Device address <i>0</i>	Device address _____																
Socket/port <i>1</i>	Socket/port <i>Port 0</i>																
_____	<i>SX21-9920</i>																
RV2C354-2																	
C	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Connect this end to:</td> <td style="width: 50%;">Other end connects to:</td> </tr> <tr> <td>Device type/name <i>Twinaxial Work Station</i></td> <td>Device type/name <i>Mary</i></td> </tr> <tr> <td>Plate <i>Plate</i></td> <td>Plate _____</td> </tr> <tr> <td>Location _____</td> <td>Location _____</td> </tr> <tr> <td>Device address _____</td> <td>Device address _____</td> </tr> <tr> <td>Socket/port <i>1</i></td> <td>Socket/port <i>Socket 1</i></td> </tr> <tr> <td>_____</td> <td><i>SX21-9920</i></td> </tr> <tr> <td colspan="2" style="text-align: right;">RV2C364-1</td> </tr> </table>	Connect this end to:	Other end connects to:	Device type/name <i>Twinaxial Work Station</i>	Device type/name <i>Mary</i>	Plate <i>Plate</i>	Plate _____	Location _____	Location _____	Device address _____	Device address _____	Socket/port <i>1</i>	Socket/port <i>Socket 1</i>	_____	<i>SX21-9920</i>	RV2C364-1	
Connect this end to:	Other end connects to:																
Device type/name <i>Twinaxial Work Station</i>	Device type/name <i>Mary</i>																
Plate <i>Plate</i>	Plate _____																
Location _____	Location _____																
Device address _____	Device address _____																
Socket/port <i>1</i>	Socket/port <i>Socket 1</i>																
_____	<i>SX21-9920</i>																
RV2C364-1																	
D	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Connect this end to:</td> <td style="width: 50%;">Other end connects to:</td> </tr> <tr> <td>Device type/name <i>MARY</i></td> <td>Device type/name <i>Twinaxial Work Station</i></td> </tr> <tr> <td>Plate _____</td> <td>Plate <i>Plate</i></td> </tr> <tr> <td>Location _____</td> <td>Location _____</td> </tr> <tr> <td>Device address <i>2</i></td> <td>Device address _____</td> </tr> <tr> <td>Socket/port <i>1</i></td> <td>Socket/port <i>Port 1</i></td> </tr> <tr> <td>_____</td> <td><i>SX21-9920</i></td> </tr> <tr> <td colspan="2" style="text-align: right;">RV2C356-2</td> </tr> </table>	Connect this end to:	Other end connects to:	Device type/name <i>MARY</i>	Device type/name <i>Twinaxial Work Station</i>	Plate _____	Plate <i>Plate</i>	Location _____	Location _____	Device address <i>2</i>	Device address _____	Socket/port <i>1</i>	Socket/port <i>Port 1</i>	_____	<i>SX21-9920</i>	RV2C356-2	
Connect this end to:	Other end connects to:																
Device type/name <i>MARY</i>	Device type/name <i>Twinaxial Work Station</i>																
Plate _____	Plate <i>Plate</i>																
Location _____	Location _____																
Device address <i>2</i>	Device address _____																
Socket/port <i>1</i>	Socket/port <i>Port 1</i>																
_____	<i>SX21-9920</i>																
RV2C356-2																	

- Step 1** Study Figure 7-2 for an overview of twinaxial workstation cable labeling.
Note: For simplicity, only one method of twinaxial workstation cabling is shown.
- Step 2** Make a copy of the labels from page A-19.
- Step 3** Record the workstation information for your devices on the labels. As soon as the cables are available, cut out the labels and tape them to the cables.

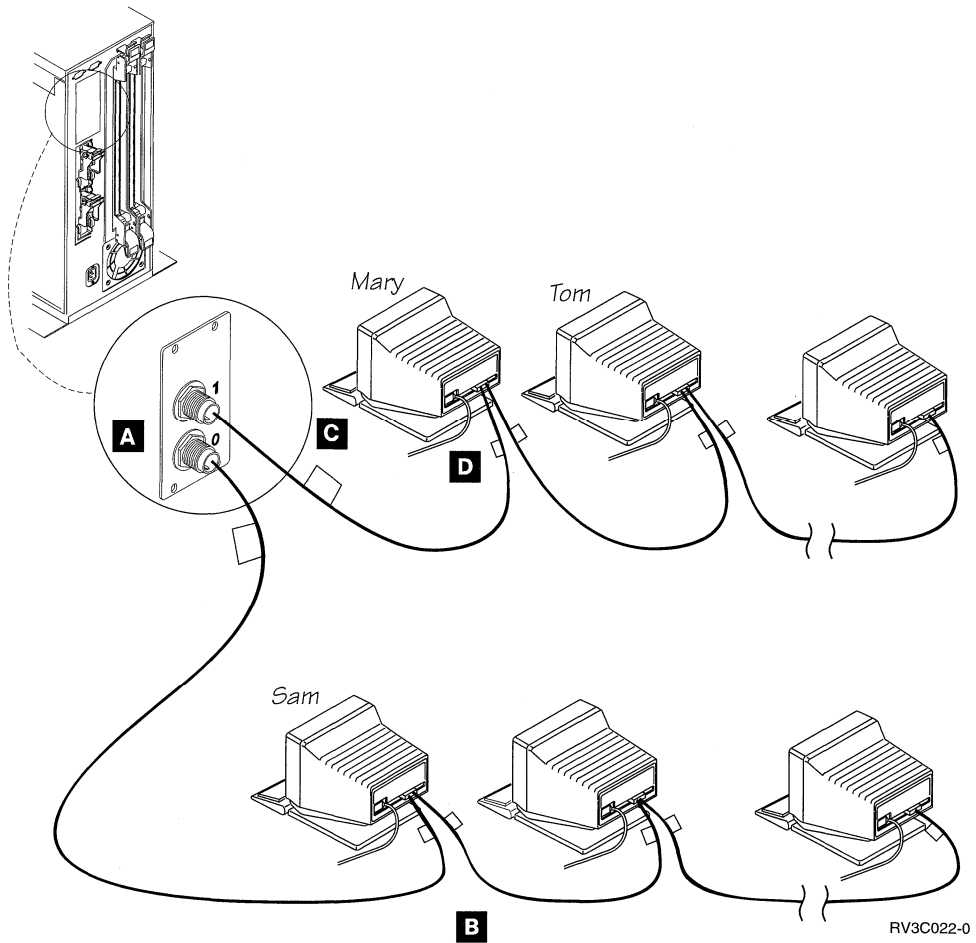


Figure 7-2. Labeling Twinaxial Workstation Cables

Apple Workstations

If you have only one network of Apple workstations connected to the 6054 workstation adapter card on the AS/400 system, it is not necessary to label the cables.

Refer to Figure 7-3 on page 7-8. For the sample points indicated, you would make labels as shown in the table below. You should make a label for each end of all other cables in the system.

Location	Label												
A	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Connect this end to:</td> <td style="width: 50%;">Other end connects to:</td> </tr> <tr> <td>Device type/name <u>SYSTEM UNIT</u></td> <td><u>System CB</u></td> </tr> <tr> <td>Location _____</td> <td>_____</td> </tr> <tr> <td>Device address _____</td> <td>_____</td> </tr> <tr> <td>Socket/port <u>Card Slot 4</u></td> <td><u>SX21-9920</u></td> </tr> <tr> <td colspan="2" style="text-align: right;">RV2C389-2</td> </tr> </table>	Connect this end to:	Other end connects to:	Device type/name <u>SYSTEM UNIT</u>	<u>System CB</u>	Location _____	_____	Device address _____	_____	Socket/port <u>Card Slot 4</u>	<u>SX21-9920</u>	RV2C389-2	
Connect this end to:	Other end connects to:												
Device type/name <u>SYSTEM UNIT</u>	<u>System CB</u>												
Location _____	_____												
Device address _____	_____												
Socket/port <u>Card Slot 4</u>	<u>SX21-9920</u>												
RV2C389-2													
B	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Connect this end to:</td> <td style="width: 50%;">Other end connects to:</td> </tr> <tr> <td>Device type/name <u>System CB</u></td> <td><u>System Unit</u></td> </tr> <tr> <td>Location _____</td> <td>_____</td> </tr> <tr> <td>Device address _____</td> <td>_____</td> </tr> <tr> <td>Socket/port <u>Card Slot 4</u></td> <td><u>SX21-9920</u></td> </tr> <tr> <td colspan="2" style="text-align: right;">RV2C388-2</td> </tr> </table>	Connect this end to:	Other end connects to:	Device type/name <u>System CB</u>	<u>System Unit</u>	Location _____	_____	Device address _____	_____	Socket/port <u>Card Slot 4</u>	<u>SX21-9920</u>	RV2C388-2	
Connect this end to:	Other end connects to:												
Device type/name <u>System CB</u>	<u>System Unit</u>												
Location _____	_____												
Device address _____	_____												
Socket/port <u>Card Slot 4</u>	<u>SX21-9920</u>												
RV2C388-2													
C	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Connect this end to:</td> <td style="width: 50%;">Other end connects to:</td> </tr> <tr> <td>Device type/name <u>System CB</u></td> <td><u>Bob's CB</u></td> </tr> <tr> <td>Location _____</td> <td>_____</td> </tr> <tr> <td>Device address _____</td> <td>_____</td> </tr> <tr> <td>Socket/port <u>SX21-9920</u></td> <td>_____</td> </tr> <tr> <td colspan="2" style="text-align: right;">RV2C387-2</td> </tr> </table>	Connect this end to:	Other end connects to:	Device type/name <u>System CB</u>	<u>Bob's CB</u>	Location _____	_____	Device address _____	_____	Socket/port <u>SX21-9920</u>	_____	RV2C387-2	
Connect this end to:	Other end connects to:												
Device type/name <u>System CB</u>	<u>Bob's CB</u>												
Location _____	_____												
Device address _____	_____												
Socket/port <u>SX21-9920</u>	_____												
RV2C387-2													
D	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Connect this end to:</td> <td style="width: 50%;">Other end connects to:</td> </tr> <tr> <td>Device type/name <u>Bob's CB</u></td> <td><u>System CB</u></td> </tr> <tr> <td>Location _____</td> <td>_____</td> </tr> <tr> <td>Device address _____</td> <td>_____</td> </tr> <tr> <td>Socket/port <u>SX21-9920</u></td> <td>_____</td> </tr> <tr> <td colspan="2" style="text-align: right;">RV2C386-2</td> </tr> </table>	Connect this end to:	Other end connects to:	Device type/name <u>Bob's CB</u>	<u>System CB</u>	Location _____	_____	Device address _____	_____	Socket/port <u>SX21-9920</u>	_____	RV2C386-2	
Connect this end to:	Other end connects to:												
Device type/name <u>Bob's CB</u>	<u>System CB</u>												
Location _____	_____												
Device address _____	_____												
Socket/port <u>SX21-9920</u>	_____												
RV2C386-2													
<p>Note: Connector box is abbreviated CB on these labels.</p>													

Location	Label										
E	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Connect this end to:</td> <td style="width: 50%;">Other end connects to:</td> </tr> <tr> <td>Device type/name <i>Bob's CB</i></td> <td><i>Bob's WS</i></td> </tr> <tr> <td>Location</td> <td></td> </tr> <tr> <td>Device address</td> <td></td> </tr> <tr> <td>Socket/port</td> <td>SX21-9920</td> </tr> </table> <p style="text-align: right; font-size: small;">RV2C390-2</p>	Connect this end to:	Other end connects to:	Device type/name <i>Bob's CB</i>	<i>Bob's WS</i>	Location		Device address		Socket/port	SX21-9920
Connect this end to:	Other end connects to:										
Device type/name <i>Bob's CB</i>	<i>Bob's WS</i>										
Location											
Device address											
Socket/port	SX21-9920										
F	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Connect this end to:</td> <td style="width: 50%;">Other end connects to:</td> </tr> <tr> <td>Device type/name <i>Bob's WS</i></td> <td><i>Bob's CB</i></td> </tr> <tr> <td>Location</td> <td></td> </tr> <tr> <td>Device address</td> <td></td> </tr> <tr> <td>Socket/port</td> <td>SX21-9920</td> </tr> </table> <p style="text-align: right; font-size: small;">RV2C391-2</p>	Connect this end to:	Other end connects to:	Device type/name <i>Bob's WS</i>	<i>Bob's CB</i>	Location		Device address		Socket/port	SX21-9920
Connect this end to:	Other end connects to:										
Device type/name <i>Bob's WS</i>	<i>Bob's CB</i>										
Location											
Device address											
Socket/port	SX21-9920										
G	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Connect this end to:</td> <td style="width: 50%;">Other end connects to:</td> </tr> <tr> <td>Device type/name <i>Bob's CB</i></td> <td><i>Printer 1 CB</i></td> </tr> <tr> <td>Location</td> <td></td> </tr> <tr> <td>Device address</td> <td></td> </tr> <tr> <td>Socket/port</td> <td>SX21-9920</td> </tr> </table> <p style="text-align: right; font-size: small;">RV2C392-2</p>	Connect this end to:	Other end connects to:	Device type/name <i>Bob's CB</i>	<i>Printer 1 CB</i>	Location		Device address		Socket/port	SX21-9920
Connect this end to:	Other end connects to:										
Device type/name <i>Bob's CB</i>	<i>Printer 1 CB</i>										
Location											
Device address											
Socket/port	SX21-9920										
H	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Connect this end to:</td> <td style="width: 50%;">Other end connects to:</td> </tr> <tr> <td>Device type/name <i>Printer 1 CB</i></td> <td><i>Bob's CB</i></td> </tr> <tr> <td>Location</td> <td></td> </tr> <tr> <td>Device address</td> <td></td> </tr> <tr> <td>Socket/port</td> <td>SX21-9920</td> </tr> </table> <p style="text-align: right; font-size: small;">RV2C393-2</p>	Connect this end to:	Other end connects to:	Device type/name <i>Printer 1 CB</i>	<i>Bob's CB</i>	Location		Device address		Socket/port	SX21-9920
Connect this end to:	Other end connects to:										
Device type/name <i>Printer 1 CB</i>	<i>Bob's CB</i>										
Location											
Device address											
Socket/port	SX21-9920										
<p>Note: Connector box is abbreviated CB on these labels.</p>											

- Step 1** Study Figure 7-3 for an overview of Apple workstation cable labeling.
- Step 2** Make a copy of the labels from page A-19.
- Step 3** Record the workstation information for your devices on the labels. As soon as the cables are available, cut out the labels and tape them to the cables.

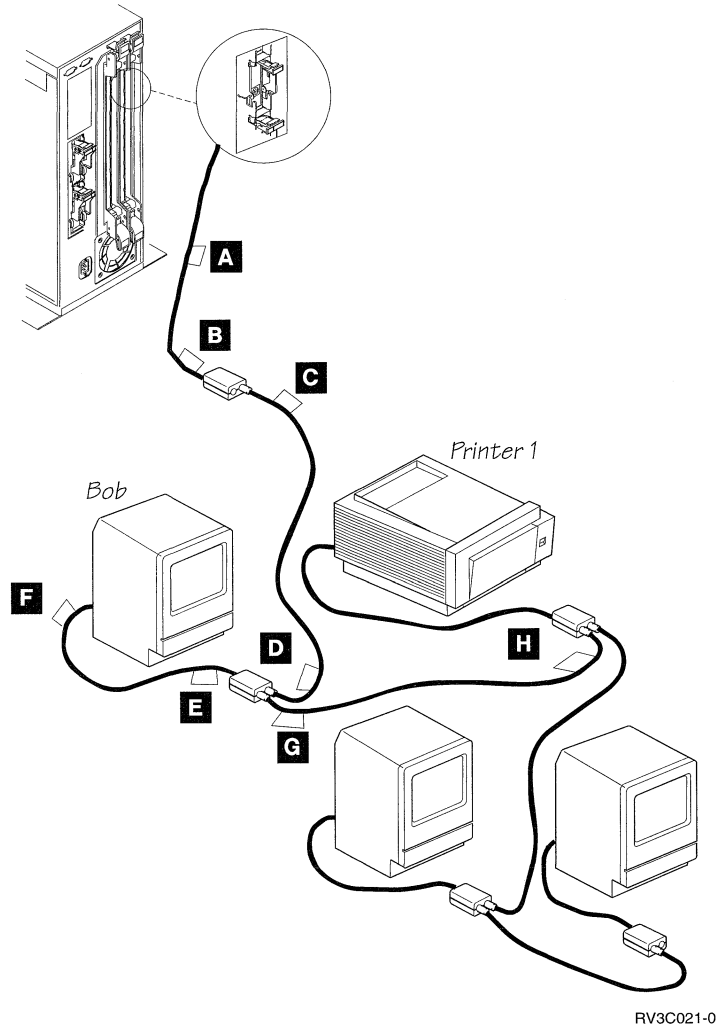


Figure 7-3. Labeling Apple Workstation Cables

Note: If an Apple workstation is the console, this workstation is attached to the first 6054 workstation adapter card on the AS/400 system. For the AS/400 9402 System Unit, this card is in slot 4. For the 9404 and 9406 system units, the console is attached to the first 6054 card from the left.

Appendix A. Forms for Planning

One copy of each form is included in this appendix. You may want to copy some of these forms before you fill them in. Each form has a letter and a number in the top left corner; this information will help you retrieve the forms easily. By looking at the top left corner, you can tell what form you have.

Store these forms together in a safe place.

F11

Electronic Customer Support Form

Common Carrier Ordering Information

Line Type: _____

Line Interface: _____

Line Speed: _____

Line Termination Requirements: _____

Telephone Set Options: _____

Modem Supplier Ordering Information

Modem Type and Model Number: _____

Modem Characteristics: _____

Note: You may copy as necessary.

A4 Wide Area Network Form

Input/Output Processor - Type:

MFIOF

3-LINE

6-LINE

IOA Type	Slot A		Slot B		Slot C	
Single Line	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Two Line	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
ISDN	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Feature Code	_____		_____		_____	
Port Information	Port 1	Port 2	Port 1	Port 2	Port 1	Port 2
Line Number	_____	_____	_____	_____	_____	_____
Line Name	_____	_____	_____	_____	_____	_____
Interface:						
V.24 Enhanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V.24	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
X.21	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V.35	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ISDN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cable Length	_____	_____	_____	_____	_____	_____
Protocol:						
SDLC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BSC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ASYN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
X.25	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IDLC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data Rate (bps)	_____	_____	_____	_____	_____	_____
Connection Type:						
Leased						
Point - Point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Multipoint	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Switched						
Manual Dial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Autodial V.25	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Autodial V.25bis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Autodial AT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manual Answer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Auto Answer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Remote Controller Type	_____	_____	_____	_____	_____	_____
Modem Manufacturer	_____	_____	_____	_____	_____	_____
Modem Model	_____	_____	_____	_____	_____	_____
Modem Type	_____	_____	_____	_____	_____	_____
RECSP Number	_____	_____	_____	_____	_____	_____

Note: You may copy as necessary.

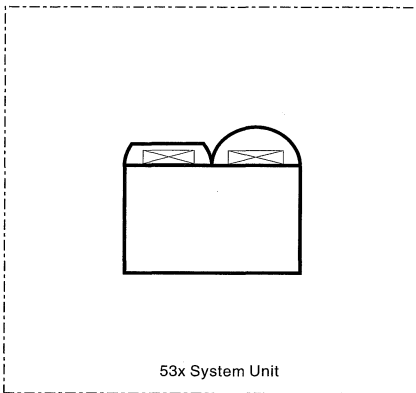
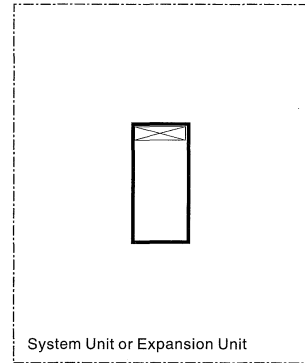
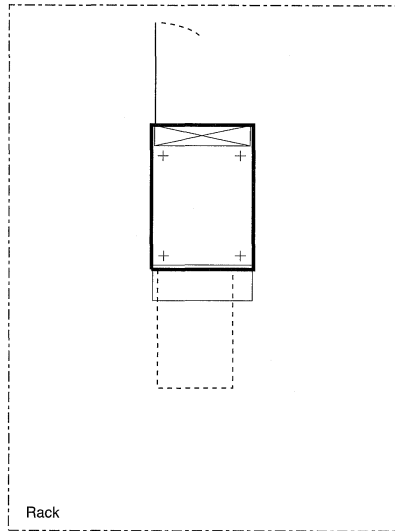
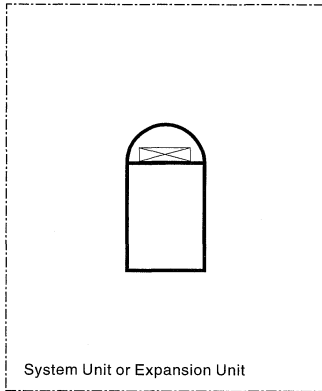
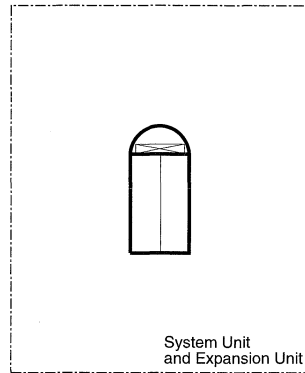
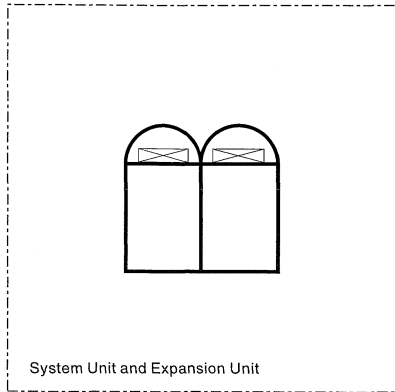
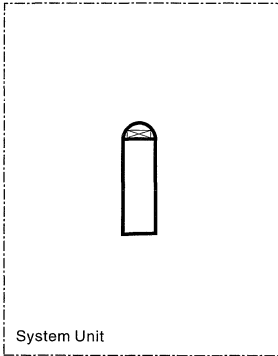
A5

Local Area Network Form

	Token Ring	Ethernet	SDDI/FDDI	WIRELESS
Feature Code #	<input type="checkbox"/> 2619 <input type="checkbox"/> 2626 <input type="checkbox"/> 2636	<input type="checkbox"/> 2617 <input type="checkbox"/> 2625	<input type="checkbox"/> 2618 <input type="checkbox"/> 2665	<input type="checkbox"/> 2668
Line Description Name				
Online at IPL?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Standard	<input type="checkbox"/> IEEE 802.5 (only 1 option)	<input type="checkbox"/> STD (Both) <input type="checkbox"/> ETH (ETHV2) <input type="checkbox"/> IEEE 802.3	<input type="checkbox"/> ANSX3T9.5 (only 1 option)	<input type="checkbox"/> ALL (BOTH) <input type="checkbox"/> ETH (EHTV2) <input type="checkbox"/> IEEE 802.3
Link Speed	<input type="checkbox"/> 4 Mbps <input type="checkbox"/> 16 Mbps	<input type="checkbox"/> 10 Mbps (only 1 speed)	<input type="checkbox"/> 100 Mbps (only 1 speed)	<input type="checkbox"/> 1 Mbps <input type="checkbox"/> 2 Mbps
Local Adapter Address				
Cabling Type	<input type="checkbox"/> UTP <input type="checkbox"/> STP	<input type="checkbox"/> UTP <input type="checkbox"/> STP <input type="checkbox"/> Thick <input type="checkbox"/> Thin <input type="checkbox"/> MMF	<input type="checkbox"/> Copper <input type="checkbox"/> SMF/MMF	<input type="checkbox"/> Hard wire to access point (with balun) <input type="checkbox"/> No hard wiring
Cable Designation				
Cable Length				
MAU or Hub Port Number				–
TR LAN Mgr Mode		–	–	–
Maximum Frame Size		–	–	–
Dual Homing?	–	–	<input type="checkbox"/> Yes <input type="checkbox"/> No	–
Dual/Single Attach Station	–	–	<input type="checkbox"/> Dual <input type="checkbox"/> Single	–
Optical Bypass Avail- able	–	–	<input type="checkbox"/> Yes <input type="checkbox"/> No	–
Antenna type	–	–	–	<input type="checkbox"/> Omnidirectional <input type="checkbox"/> Hemispherical <input type="checkbox"/> Directional

Note: You may copy as necessary.

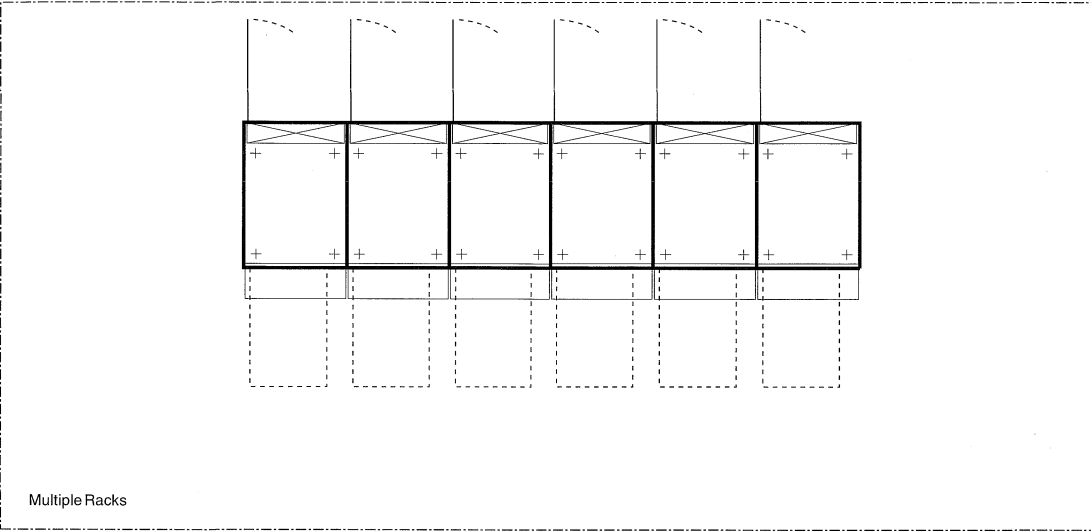
B1 Equipment Templates



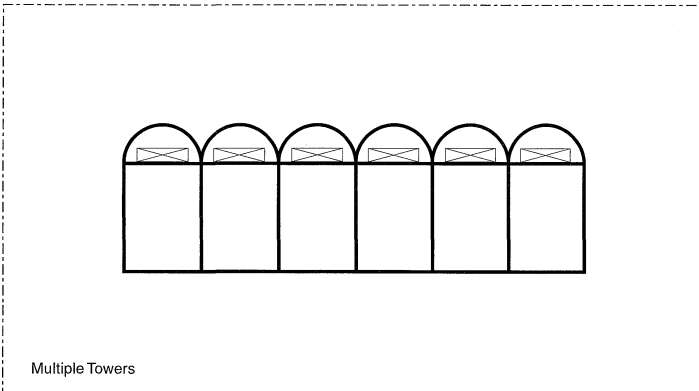
Note: You may copy as necessary.

RV3C036-1

B2 Equipment Templates



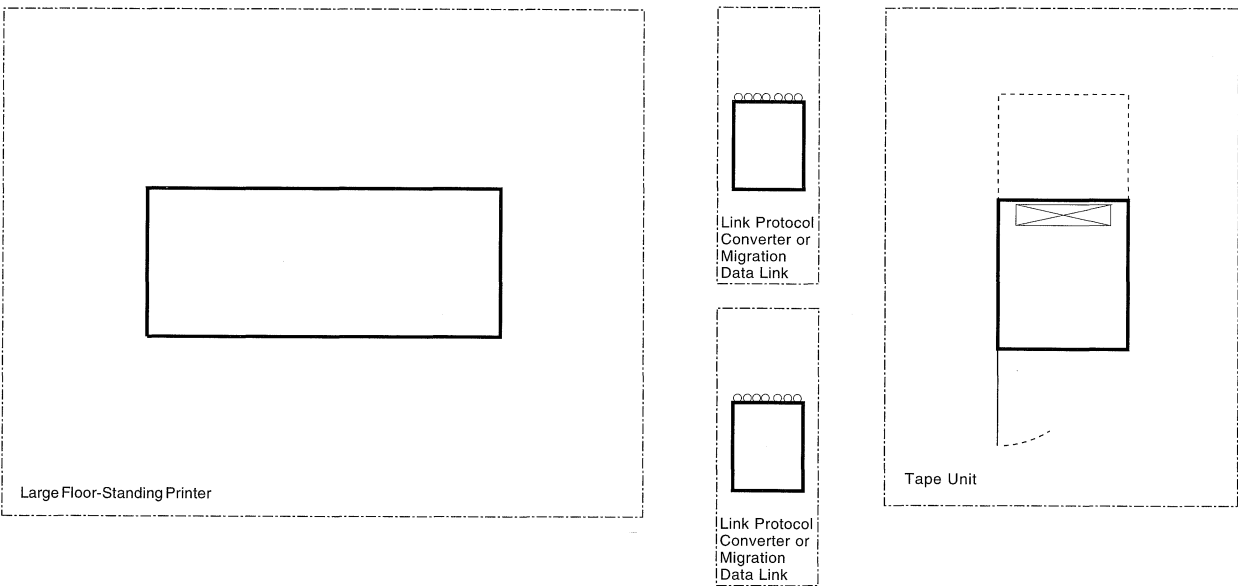
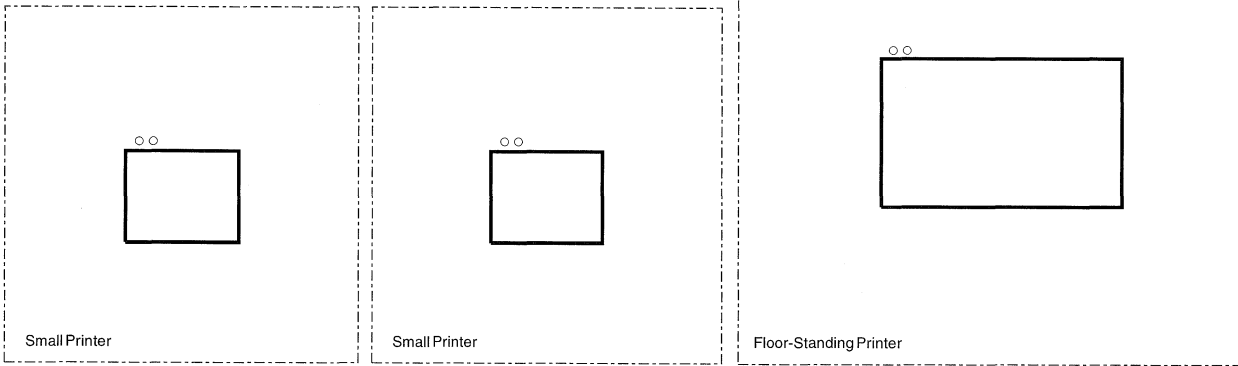
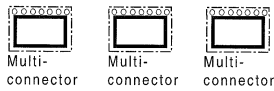
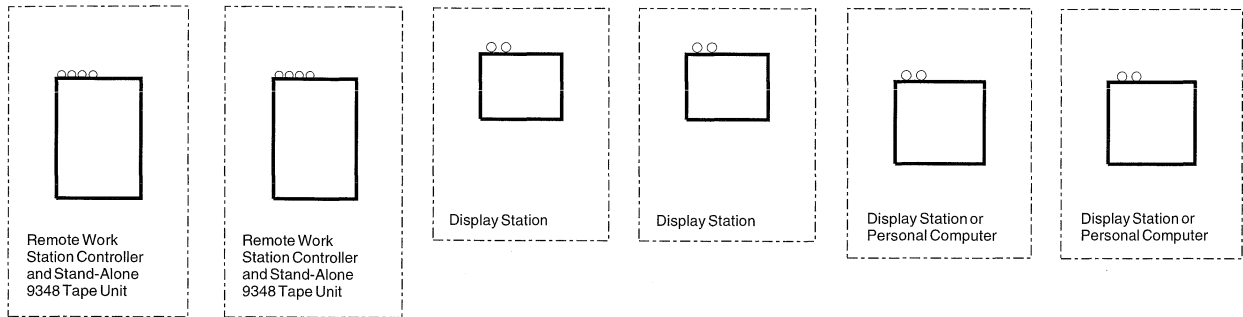
Note: You may copy as necessary.



Note: You may copy as necessary.

RV3C067-0

B3 Equipment Templates



Note: You may copy as necessary.

RV3X001-0

S2 ID Labels for Workstation Signal Cables

Connect this end to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Other end connects to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Connect this end to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Other end connects to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Connect this end to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Other end connects to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920
Connect this end to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Other end connects to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Connect this end to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Other end connects to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Connect this end to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Other end connects to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920
Connect this end to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Other end connects to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Connect this end to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Other end connects to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Connect this end to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Other end connects to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920
Connect this end to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Other end connects to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Connect this end to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Other end connects to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Connect this end to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920	Other end connects to: _____ Device type/name _____ Location _____ Device address _____ Socket/port _____ SX21-9920

Note: You may copy as necessary.

RV3X004-0

Appendix B. Temperature and Humidity Limits

The following is a chart of operating and non-operating limits for the AS/400 system devices.

Note: The upper limit of dry bulb air temperature must be de-rated (lowered) by 0.6° C (1.0° F) per 76 meters (250 feet) of elevation above 1295 meters (4250 feet).

The upper limit of wet bulb air temperature must be de-rated (lowered) by 0.6° C (1.0° F) per 152 meters (500 feet) of elevation above 1372 meters (4500 feet).

Type of Device	Maximum Temperature, Dry Bulb ⁶		Relative Humidity	Maximum Temperature, Wet Bulb ⁶	
	Operating	Nonoperating		Operating	Nonoperating
9401-P0x	10° to 37.8° C (50° to 100° F)	10° to 43° C (50° to 109.4° F)	8% to 80%	23° C (73.4° F)	27° C (80.6° F)
9402- Cxx-Fxx	10° to 38° C (50° to 100° F)	10° to 52° C (50° to 125° F)	8% to 80%	23° C (73° F)	27° C (80° F)
9402-100	10° to 38° C (50° to 100° F)	10° to 52° C (50° to 125° F)	8% to 80%	23° C (73° F)	27° C (80° F)
9402/9404 2xx, 4xx	10° to 37.8° C (50° to 100° F)	10° to 43° C (50° to 109.4° F)	8% to 80%	23° C (73.4° F)	27° C (80.6° F)
9404- Bxx-Fxx ⁵	10° to 38° C (50° to 100° F)	10° to 52° C (50° to 125° F)	8% to 80%	23° C (73° F)	27° C (80° F)
9404-135, 140 ⁵	10° to 38° C (50° to 100° F)	10° to 52° C (50° to 125° F)	8% to 80%	23° C (73° F)	27° C (80° F)

⁵ The 9404 minimum nonoperating dry bulb temperatures is 5° C (41° F).

Appendix C. Product Noise Levels

The following is a chart showing the product noise emission values for the AS/400 system.

Notes:

1. Table values are valid for new equipment.
2. For 9404 Models 2xx and 4xx, see Type 9402/9404 models.
3. For 9404 Models 3xx and 5xx, see Type 9406/9404 models.

Declaration of IBM Product Noise Emission Values							
Type No.	Description	LwAd		LpAm		<LpA>m	
		Operating (Bels)	Idling (Bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
9401-P02 ¹ , P03	System Unit	5.3	5.1	–	–	38	36
9402-Cxx, Dxx ¹	System Unit ¹²	6.0	5.5	–	–	44	36
9402-E02 ¹	System Unit ^{13, 15}	5.4 (6.0)	5.3	38 (44)	37	36 (42)	35
9402-E04, E06, F04, F06 ¹	System Unit ^{14, 15}	5.6 (6.0)	5.5	42 (44)	41	40 (46)	39
9402-E06, F06 w/expansion unit ¹	System Unit ^{20, 15}	6.0	5.8	45	42	47	45
9402-100 ¹	System Unit ^{14, 15}	5.6 (6.0)	5.5	42 (44)	41	40 (46)	39
9402-100 w/expansion unit ¹	System Unit ^{21, 15}	6.0	5.8	45	42	47	45
9402/9404-2xx, 4xx ¹	System Unit ²²	5.6	5.3	39	35	38	36
9402/9404-2xx, 4xx ¹	(175 watt power supply) System Unit ²³	6.0	5.7	–	–	42	40
9404- Bxx-Fxx	(320 watt power supply) System Unit ⁹	5.8	5.5	–	–	40	39
9404- Bxx-Fxx	System Unit and Expansion Unit ⁹	6.0	5.8	–	–	42	41
9404- Bxx-Fxx	System Unit with Feature 7203 ¹⁶	6.0	5.7	–	–	42	41
9404- Bxx-Fxx	System Unit with 7203 and Expansion Unit with 7203 ¹⁶	6.3	6.0	–	–	45	44
9404-135, 140 ⁹	System Unit	5.8	5.5	–	–	40	39
9404-135, 140	System Unit with FC7203 ¹⁶	6.0	5.7	–	–	42	41

Legend:

LwAd Is the declared sound power emission level.

LpAm Is the mean value of the sound pressure for emission levels at the operator position (if any).

<LpA>m Is the mean value of the spaced-average sound pressure for emission levels at the one-meter positions.

– Not applicable (no operator position) or no data available.

Note No audible noise emitted in the frequency range below 10,000 Hertz.

All measurements made in accordance with ANSI S12.10 and reported in conformance with ISO 9296.

¹ Preliminary data subject to change.

Appendix D. Specifications for the AS/400

Power

The 9401, 9402, 9404, and workstations plug into a standard 125V 15 amp circuit (for many countries).

Note: The 9402 system unit can share a circuit with other normal office equipment. Machines or equipment that produce significant electrical noise (for example, welders) should not be plugged into the same circuit. For 9402 systems that have an expansion unit and 9404 Bxx-Fxx systems with or without an expansion unit, you must provide a dedicated 125V 15 amp circuit.

For more information, see the *Physical Planning Reference*, SA41-4109.

Product Specifications

System	Model	Width		Depth		Height		Weight	
		mm	in	mm	in	mm	in	kg	lb
9401	P0x, 10S	105 ¹ 165 ²	4.1 ¹ 6.5 ²	400	15.7	320	12.6	10	22
9402	Cxx-Fxx and 100	345	13.6	750	29.5	610	24	62	137
9402 with Expansion Unit	E06 F06	790	31.2	750	29.5	610	24	124	274
9402/9404 System Unit	2xx,4xx	205 ¹ 305 ²	8.2 ¹ 12.2 ²	723 ¹ 806 ²	28.5 ¹ 31.7 ²	500	19.7	33 ³	74 ³
9402/9404 System Unit and Expan- sion Unit	2xx,4xx	380 ¹ 422 ²	14.9 ¹ 16.9 ²	723 ¹ 806 ²	28.5 ¹ 31.7 ²	500	19.7	54	120
9404	Bxx-Fxx	350	13.8	750	29.5	650	25.6	91	200
9404 System Unit and Expan- sion Unit	Bxx-Cxx	800	31.5	750	29.5	650	25.6	182	400
9404 System Unit and Expan- sion Unit with 7203	Dxx-Fxx	800	31.5	750	29.5	820	32.3	111	244
9404 System Unit	135 140	350	13.8	750	29.5	650	25.6	91	200
¹ Excluding pedestal ² Including pedestal ³ Not including battery backup unit									

For service clearances, allow about 762 mm (30 inches) in front of and around the 9402 and 9404 models 20S, 200.

Appendix E. Specifications for the IBM AS/400 Family of Business Computing Systems and Attachable Devices

Some of the boxes in the following three tables may contain a dash (-). The dash means that either information is not available or does not apply to that product.

Note: Consult machine power rating label which covers all voltage ranges for the system model you are working with.

Power

Notes:

1. For 9404 models 2xx and 4xx, see 9402/9404 models 2xx and 4xx.

Table E-1 (Page 1 of 2). Power Specifications

Device	Maximum Measured Heat Output	Airflow	Nominal Voltage Range ¹⁰	Maximum Measured kVA	Phase	Plug Type (United States and Canada)	Power Cord Length
9401-P0x System Unit	77 watts (239 BTU/hr)	Each system unit has its own fan	100-127 200-240	0.14	1	4 or 5	1.8 m (6 ft) (USA Only)
							2.7 m (9 ft)
9402-Cxx-Fxx System Unit	272 watts (928 BTU/hr)	Each system unit has its own fan	100-127 200-240	0.297	1	4 or 5	1.8 m (6 ft)
9402-E06, F06 Expansion Unit	272 watts (928 BTU/hr)	Each expansion unit has its own fan	100-127 200-240	0.297	1	4 or 5	1.8 m (6 ft)
9402-100 System Unit	272 watts (928 BTU/hr)	Each system unit has its own fan	100-127 200-240	0.297	1	4 or 5	1.8 m (6 ft)
9402-100 Expansion Unit	272 watts (928 BTU/hr)	Each expansion unit has its own fan	100-127 200-240	0.297	1	4 or 5	1.8 m (6 ft)
9402/9404-20S System Unit	219 watts (747 BTU/hr)	Each system unit has its own fan	100-127 200-240	0.225	1	4 or 5	1.8 m (6 ft) (USA Only)
							2.7 m (9 ft)
9402/9404-20S System Unit and Expansion Unit (#7117)	555 watts (1895 BTU/hr)	Each system unit has its own fan	100-127 200-240	0.571	1	4 or 5	1.8 m (6 ft) (USA Only)
							2.7 m (9 ft)
9402/9404-200 ²¹ System Unit (175 watt power supply #9242)	171 watts (584 BTU/hr)	Each system unit has its own fan	100-127 200-240	0.273	1	4 or 5	1.8 m (6 ft) (USA Only)
							2.7 m (9 ft)
9402/9404-200 System Unit (320 watt power supply #5135)	219 watts (747 BTU/hr)	Each system unit has its own fan	100-127 200-240	0.225	1	4 or 5	1.8 m (6 ft) (USA Only)
							2.7 m (9 ft)
9402/9404-200 System Unit and Expansion Unit (#7117)	555 watts (1895 BTU/hr)	Each system unit has its own fan	100-127 200-240	0.571	1	4 or 5	1.8 m (6 ft) (USA Only)
							2.7 m (9 ft)

Table E-1 (Page 2 of 2). Power Specifications

Device	Maximum Measured Heat Output	Airflow	Nominal Voltage Range ¹⁰	Maximum Measured kVA	Phase	Plug Type (United States and Canada)	Power Cord Length
9402-236 System Unit	220 watts (750 BTU/hr)	–	100-127 200-240	0.245	1	4 or 5	1.8 m (6 ft) (USA Only)
							2.7 m (9 ft)
9402-236 System Unit and Expansion Unit	276 watts (940 BTU/hr)	–	100-127 200-240	0.305	1	4 or 5	1.8 m (6 ft) (USA Only)
							2.7 m (9 ft)
9402/9404-4xx System Unit (175 watt power supply #9242)	171 watts (584 BTU/hr)	Each system unit has its own fan	100-127 200-240	0.273	1	4 or 5	1.8 m (6 ft) (USA Only)
							2.7 m (9 ft)
9402/9404-4xx System Unit (320 watt power supply #5135/#9135)	230 watts (785 BTU/hr)	Each system unit has its own fan	100-127 200-240	0.267	1	4 or 5	1.8 m (6 ft) (USA Only)
							2.7 m (9 ft)
9402/9404-4xx System Unit and Expansion Unit (#7117/#9117)	555 watts (1894 BTU/hr)	Each system unit has its own fan	100-127 200-240	0.571	1	4 or 5	1.8 m (6 ft) (USA Only)
							2.7 m (9 ft)
9404 Bxx-Cxx System Unit	350 watts (1194 BTU/hr)	–	100-127 200-240	0.584	1	4 or 5 See Note 14	1.8 m (6 ft) (USA Only)
							2.7 m (9 ft)
9404 Bxx-Cxx Expansion Unit	350 watts (1194 BTU/hr)	–	100-127 200-240	0.547	1	4 or 5 See Note 14	1.8 m (6 ft) (USA Only)
							2.7 m (9 ft)
9404 Dxx-Fxx System Unit	317 watts (1082 BTU/hr)	3.9 m ³ /min (140 cfm)	100-127 200-240	0.57	1	4 or 5	1.8 m (6 ft)
9404 Dxx-Fxx Expansion Unit	350 watts (1194 BTU/hr)	3.9 m ³ /min (140 cfm)	100-127 200-240	0.63	1	4 or 5 See Note 14	1.8 m (6 ft)
9404-135, 140 System Unit	409 watts (1396 BTU/hr)	3.9 m ³ /min (140 cfm)	100-127 200-240	0.413	1	4 or 5	1.8 m (6 ft) Note 16
9404-135, 140 Expansion Unit	300 watts (1024 BTU/hr)	3.9 m ³ /min (140 cfm)	100-127 200-240	0.303	1	4 or 5	1.8 m (6 ft) Note 16

Appendix F. Advanced 36 Planning Considerations

Your new AS/400 Advanced 36 will be arriving soon.

It is important that you have read the previous chapters, as they contain fundamental AS/400 physical planning information. This chapter provides additional planning considerations to help your Advanced 36 installation go smoothly:

- Twinaxial Cabling
- Communications
- Display Workstations and Printers
- Electrical Grounding

Twinaxial Cabling

The workstation controller that is used on the AS/400 Advanced 36 operates at a substantially higher rate than S/36 workstation controllers. This increased performance causes a higher susceptibility to noise problems with cabling networks that are out of specification.

Your IBM service provider can perform diagnostics on your cabling networks, both to verify that each twinaxial line meets specifications and to help identify any deficiencies. Some examples of problems that can be found include:

- Improper line termination
- Improperly split lines
- Improper attenuation of telephone-twisted pair (TTP) wiring attenuation
- Damaged cables

Twinaxial Workstation Cable Test

For detailed twinaxial cabling information, refer to Appendix **Twinaxial Cables**, in the *Physical Planning Reference*, SA41-4109.

- Check the local work station cabling by using an ECOS meter.
 - First disconnect the cable from the work station controller (WSC)
 - Turn all devices on that are attached to the cable, to test the cable for noise.

This can be done by measuring both the DC and AC voltage from the barrel of the connector to the WSC port. All readings should be zero.

Using an analog meter, measure from each phase connector to the shield for proper line termination (55 ohms). Reversing the leads, the reading should be the same. If the reading is 45 ohms or less in either direction, determine and correct the cause.

Communications

In preparing for installation of your new AS/400 Advanced 36, some of the communication-related hints that will help you avoid problems are:

- Use cables that come with the Advanced 36, connecting them to the Input/Output Adapter (IOA) or TPAC on two-line adapters during IPL so the Licensed Internal Code detects the cable type.
- Recommend using non-enhanced cable for all OEM modems (some require it), as well as modem eliminators and null modems, unless they support the local and remote modem loop tests (LPDA II).
- Set up AUTOCALL lines with ACU on odd line (that is, line 1 = ACU and line 2 = modem).
- Since CONCAR is different than it was on the System 36, set leased line to CONCAR and switched line to NOCONCAR.
- Change modem strapping to work on the AS/400 Advanced 36 (that is, on leased lines you may need to strap CTS on and have CONCAR on.)
- A problem with a modem, if it worked on the System 36, and does not work on the new Advanced 36.
- Add EON (end of number) character (*) into the telephone number for some AUTOCALL units to work with the AS/400 Advanced 36.
- Use NRZI for analog lines, and NRZ for digital lines.
- Do not use an address of "zero" (0) on X.25 protocols.

A table of communication cables (both enhanced and non-enhanced) by feature number are in the following table for easy reference.

Feature	Cable Part Number	Protocols	Line
9612	EIA 232 / V.24	SDLC, X.25, BSC, Async	One
9022 9836	22F0149 (20') Non-Enhanced 21F9348 (50') Non-Enhanced 22F0151 (20') Non-Enhanced (Japan) 21F9349 (50') Non-Enhanced (Japan) 22F0150 (20') Non-Enhanced (Germany) 21F9353 (50') Non-Enhanced (Germany)		
9609, 8609, 2609	(EIA 232 / V.24)	SDLC, X.25, BSC, Async	Two
9022 9836	22F0149 (20') Non-Enhanced 21F9348 (50') Non-Enhanced 22F0151 (20') Non-Enhanced (Japan) 21F9349 (50') Non-Enhanced (Japan) 22F0150 (20') Non-Enhanced (Germany) 21F9353 (50') Non-Enhanced (Germany)		
9023 9835	22F0152 (20') Non-Enhanced 21F9350 (50') Non-Enhanced 22F0154 (20') Non-Enhanced (Japan) 21F9351 (50') Non-Enhanced (Japan) 22F0153 (20') Non-Enhanced (Germany) 21F9352 (50') Non-Enhanced (Germany)		
2610	(X.21)	X.21, X.25	Two
9021 9839	21F9356 (20') 72X5640 (50')		
2613	(V.35)	SDLC, X.25, BSC	One
9020 9838	21F9357 (20') 72X5641 (50') 74F1837 (50')		
2-Line AUTOCALL Advanced 36 Auto Call Unit (ACU) RS-366 Cable 72X5643 (Japan) 21F4415			

Figure F-1. Communication cables

Display Workstations and Printers

5250 Emulation

Some 5250 type display stations and printers sold by original equipment manufacturers (OEM) were not designed to meet the AS/400 workstation controller requirements.

If you have any OEM devices (including 5250 emulator cards in PCs) that will be attached to your AS/400 Advanced 36, check with the manufacturer or your service provider to be certain that they are compatible with the AS/400 6050 Enhanced Twinaxial Workstation Controllers. Many manufacturers have updates available for their older equipment. PCs need the latest 5250 emulation card and code (release 2.1 or later).

InfoWindow Displays (Europe EMEA)

Contact your hardware service provider, to make sure that the correct EC has been installed.

If you have a 3477 model FA, FC, FD, or FG, and are experiencing printer-related problems such as losing data, with underscores, with rotating the page, loops, continuous prints, or over-prints, you need to install RPQ 8J2010. This RPQ is "as required" and not billable to the customer. To order this RPQ, you will need to provide the total quantity of each set of ROS part numbers when contacting the Marketing branch office. Do the following to determine the logic card P/N or ROS module P/Ns:

- Turn terminal off. Wait 10 seconds, and turn on while depressing the space bar to bring up a menu.
- Select "Test Workstation" by depressing the "Down Cursor" key twice, and then pressing the "Enter" key.
- The next screen shows "3477" on the left near the top. Directly below is the serial number. Below that is the microcode level (e.g., "A080"). To the right of that is the ROS module P/N. Directly below that is another ROS P/N. Record the ROS P/Ns to order the correct parts for this 3477 display.

Note: If the ROS P/Ns are 38F5835 and 38F5836, no fixes are applied. If 56F8934 or 56F8935, the "lost data" fix is installed. If 79F2020 or 79F2021 the "lost data" and "word underscore" have been applied. If 79F7028 or 79F2029, the "lost data", "word underscore", "page rotation", and looping fixes are installed. If the ROS P/Ns are 95F4167 and 95F4168, all fixes are installed. If you have ROS module P/Ns 79F2020 and 79F2021, the ROS modules are not removable and the RPQ will replace the entire logic card rather than the ROS module. You may also wish to record the system serial number for your personal records.

Electrical Grounding

On any computer system (including the AS/400 Advanced 36) it is important to have good electrical and ground connections.

To avoid electrical noise from other equipment, the AS/400 Advanced 36 should be connected to a dedicated electrical circuit. To make sure your power source is appropriate, have your electrician verify the following:

- All outlets are properly grounded.
- The outlet that the AS/400 Advanced 36 will be connected to, uses a non-current carrying ground. The ground needs to be connected back to the electrical service entrance.

Glossary

This glossary includes terms and definitions from:

- The *American National Dictionary for Information Systems*, ANSI X3.172-1990, copyright 1990 by the American National Standards Institute (ANSI). Copies may be purchased from the American National Standards Institute, 1430 Broadway, New York, New York 10018. Definitions are identified by the symbol (A) after the definition.
- The *Information Technology Vocabulary*, developed by Subcommittee 1, Joint Technical Committee 1, of the International Organization for Standardization and the International Electrotechnical Committee (ISO/IEC JTC1/SC1). Definitions of published parts of this vocabulary are identified by the symbol (I) after the definition; definitions taken from draft international standards, committee drafts, and working papers being developed by ISO/IEC JTC1/SC1 are identified by the symbol (T) after the definition, indicating that final agreement has not yet been reached among the participating National Bodies of SC1.

adapter. A part that electrically or physically connects a device to a computer or to another device.

address switches. Switches on a device that the user sets to represent the address of that device.

AM. Amplitude modulation.

American National Standard Code for Information Interchange (ASCII). The code developed by the American National Standards Institute for information exchange among data processing systems, data communications systems, and associated equipment. The ASCII character set consists of 7-bit control characters and symbolic characters, plus one parity bit.

American National Standards Institute (ANSI). An organization sponsored by the Computer and Business Equipment Manufacturers Association for establishing voluntary industry standards.

amp. Ampere. A unit of measure for electrical current.

ASCII. See *American National Standard Code for Information Interchange (ASCII)*.

asynchronous communications. A method of communications supported by the operating system that allows an exchange of data with a remote device, using either a start-stop line or an X.25 line. Asynchronous communications includes the file transfer support and the interactive terminal facility support.

automatic answer. In data communications, a line type that does not require operator action to receive a call over a switched line.

balun. A transformer used to connect balanced cables, such as twisted-pair cables, to unbalanced cables, such as coaxial cables, by matching the electrical characteristics of the cables.

binary synchronous communications (BSC). A data communications line protocol that uses a standard set of transmission control characters and control character sequences to send binary-coded data over a communications line.

bpi. Bits per inch.

bps. Bits per second.

BSC. See *binary synchronous communications (BSC)*.

BTU. British thermal unit.

cable path. A series of cables connected in sequence.

cable-through. A function or feature of a display station that allows multiple workstations to be attached to one cable path.

CCITT. The International Telegraph and Telephone Consultative Committee.

coaxial cable. A cable consisting of one conductor, usually a small copper wire, within and insulated from another conductor of larger diameter, usually copper tubing or copper braid. Coaxial cable is used on the 3270 family devices.

common carrier. In data communications, any government-regulated company in the United States or Canada that provides communications services to the general public. Examples are: the government-regulated telephone and telegraph companies in the United States, the General Post Office in the United Kingdom, the Bundespost in Germany, and Nippon Telephone and Telegraph Public Corporation in Japan.

communications line. The physical link (such as a wire or a telephone circuit) that connects one or more workstations to a communications controller, or connects one controller to another.

conduit. A pipe for protecting electric wires or cables.

configuration. The physical and logical arrangement of devices and programs that make up a data processing system.

configure. To describe the interconnected arrangement of the devices, programs, communications, and optional features installed on a system.

console. A display station from which an operator can control and observe the system operation.

data circuit-terminating equipment (DCE). The equipment installed at the user's premises that provides all the functions required to establish, maintain, and end a connection, and the signal conversion and coding between the data terminal equipment and the line. See also *data terminal equipment (DTE)* and *modem*.

data terminal equipment (DTE). That part of a data link that sends data, receives data, and provides the data communications control function according to protocols.

DCE. See *data circuit-terminating equipment (DCE)*.

default. A value that is automatically supplied or assumed by the system or program when no value is specified by the user.

device name. The symbolic name of an individual device.

device type. The generic name for a group of devices. For example, 5219 for IBM 5219 Printers.

display station. A device that includes a keyboard from which an operator can send information to the system and a display screen on which an operator can see the information sent to or the information received from the system.

DTE. See *data terminal equipment (DTE)*.

EIA-232. In data communications, a specification of the Electronic Industries Association (EIA) that defines the interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) using serial binary data interchange.

electronic customer support. A part of the operating system that allows a customer to access: the question-and-answer function; problem analysis, reporting, and management; IBM product information; and technical information exchange.

FM. Frequency modulation.

IPI-3. The IBM implementation of the proposed ANSI/X3T9.3 standard defining the electrical, data link protocol, and functional interfaces.

kVA. Kilovolt ampere. A unit of power.

licensed program (LP). A separately orderable program, supplied by IBM, that performs functions

related to processing user data. Examples of licensed programs are Client Access for OS/400, COBOL for OS/400, Application Development ToolSet/400, OfficeVision/400.

local. Pertaining to a device or system that is connected directly to your system or a file that is read directly from your system, without the use of a communications line. Contrast with *remote*.

local area network (LAN). The physical connection that allows the transfer of information among devices located on the same premises.

lux. A measurement of light.

microcell. The area that a device can transmit and receive data.

modem (modulator/demodulator). A device that converts data from the computer to a signal that can be sent over a communications line (modulator), and converts the communications signal received to data for the computer (demodulator). See also *data circuit-terminating equipment (DCE)*.

network. A collection of data processing products connected by communications lines for exchanging information between stations.

nonswitched line. A connection between computers or devices that does not have to be made by dialing. Contrast with *switched line*.

operating system. A collection of system programs that control the overall operation of a computer system.

plenum. A space used for environmental air.

port. (1) System hardware where the I/O devices are attached. (2) An access point (for example, a logical unit) for data entry or exit. (3) A functional unit of a node through which data can enter or leave a data network.

Post Telephone and Telegraph Administration (PTT). An organization, usually a government department, that provides data communication services in countries other than the USA and Canada. Examples of PTTs are the Bundespost in Germany and the Nippon Telephone and Telegraph Public Corporation in Japan.

power cord. The electrical connection between the AC power source and the computer.

protocol. A set of rules controlling the communication and transfer of data between two or more devices or systems in a communications network.

PTT. See *Post Telephone and Telegraph Administration (PTT)*.

receptacle. A hollowed electrical fitting that contains the live parts of a circuit.

remote. Pertaining to a device, system, or file that is connected to another device, system, or file through a communications line. Contrast with *local*.

RF. Radio frequency.

switched line. In data communications, a connection between computers or devices that is established by dialing. Contrast with *nonswitched line*.

synchronous data link control (SDLC). A form of communications line control that uses commands to control the transfer of data over a communications line.

TV. Television.

twinaxial cable. A cable made of two twisted wires inside a shield that is used on the 5250 family devices.

twisted-pair. Pertaining to a transmission medium that consists of two insulated conductors twisted together to reduce interference. For example, twisted-pair wiring can be used as an alternative to twinaxial cable.

workstation. A device used to transmit information to or receive information from a computer, for example, a display station or printer.

workstation address. The address to which the switches on a workstation are set, or the internal address assumed by the system if no address is specified.

workstation controller (WSC). An I/O controller card in the card enclosure that provides the direct connection of local workstations to the system.

WSC. See *workstation controller (WSC)*.

Bibliography

The following manuals contain related information about the tasks in this guide, although it is not necessary to read these manuals to complete the planning tasks. You can order these manuals through your marketing representative.

- For information about all the manuals in the AS/400 library, refer to the following:
 - *Publications Reference*, SC41-4003, which identifies the publications shipped with the product and the publications that can be ordered.
 - The *AS/400 Information Directory*, a unique multimedia interface to a searchable database containing descriptions of titles available from IBM or from selected other publishers. The *AS/400 Information Directory* is shipped with your system at no charge.
- For information about migrating from your System/36 or System/38 to your AS/400 with the Transition Data Link or the Migration Data Link, see the:
 - *Transition Data Link User's Guide*, SC21-8372.
 - *IBM 5259 Migration Data Link User's Guide*, SA21-9551.
- For information about planning for device configuration, see the *Local Device Configuration*, SC41-4121.
- Information about configuring and using ASCII devices is in the *ASCII Work Station Reference*, SA41-3130.
- For information about planning for remote communications to another system or workstation controller, refer to the following:
 - *Communications Configuration*, SC41-3401. This guide contains information on configuring objects for communications.
 - *Remote Work Station Support*, SC41-3402. This guide contains information on using the following supports:
 - DHCP
 - Display station pass-through
 - 3270 remote attachment
 - Remote workstation configuration support
 - *LAN and Frame Relay Support*, SC41-3404. This guide contains information needed to configure the system for token-ring or Ethernet networks. It also has information on the 8209 LAN Bridge.
 - *X.25 Network Support*, SC41-4405. This book contains information about X.25 network interface and how to use it on the AS/400. This information includes X.25 network concepts, examples, and information on preparation and configuration.
- *Communications Management*, SC41-3406. This guide contains information on using AS/400 communications such as work management, communications status, error handling, aggregate line speed, and subsystem storage.
- For information about planning for local and remote workstations, refer to the following:
 - *IBM 5208 ASCII-5250 Link Protocol Converter User's Guide*, SA21-9870.
 - *IBM 5209 3270-5250 Link Protocol Converter User's Guide*, SA21-9869.
- For information about planning for remote workstations, refer to the following:
 - *IBM 3270 IDS Installation Manual—Physical Planning*, GA27-2787.
 - *IBM 5394-1, 2 Introduction and Installation Planning Guide*, GA27-3852.
- For information about personal computer or personal systems system units, display stations, and printers, refer to the documents that came with the device.
- For information about education available for the AS/400 system, contact your IBM representative or business partner. In the United States, you can call 800 IBM-TEACH (800 426-8322).
- For information about the IBM Cabling System, refer to the *IBM Cabling System Planning and Installation Guide*, GA27-3361, to the *IBM Cabling System Catalog*, G570-2040, or to the *Using the IBM Cabling System with Communications Products* manual, GA27-3620.
- For information about planning for wireless LAN, see the:
 - *AS/400 Wireless LAN Installation Planning Guide*, G571-0303
 - *Wireless LAN Designing Your Network*, GA33-0189
 - *AS/400 Wireless Ethernet LAN Access Point User's Manual*, G571-0323
 - *AS400 Wireless RS/485 LAN Access Point User's Manual*, G571-0324
 - *AS400 Wireless RS/485 LAN Access Point User's Manual*, G571-0326
 - *2482 AS/400 Wireless PTC User's Manual*, G571-0319
 - *2482 AS/400 Wireless PTC User's Manual*, G571-0320

- *2482 AS/400 Wireless PTC User's Manual*, G571-0321
- For additional information about planning for telephone twisted-pair cabling, see the
 - *5299 Terminal Multiconnector Model 3 Planning, Setup, and Maintenance Guide*, GA27-3749.
 - *6299 User's Guide for Mid-Range Systems*, G571-0362.
- For additional information about planning for twinaxial cabling, see the
 - *5250 Information Display System Planning Guide*, GA21-9337.
 - *5250 Emulation Family Installation and Test Instructions/Hardware Maintenance*, G571-0380.
- For additional information about planning for Apple LocalTalk** cabling, see the *Apple LocalTalk Cable System Owner's Guide*.
- For additional information about planning for Apple LocalTalk** cabling, see the *AS/400 Client Access/400 Console*, G325-6200
- For information about 1/2-inch reel tape media, refer to *Tape Requirements 1/2-Inch Tape Units*, GA32-0006.
- For information about tapes and tape cartridges, refer to:
 - *Care and Handling of the IBM Magnetic Tape Cartridge*, GA32-0047.
 - *Tape and Cartridge Requirements for the IBM Magnetic Tape Cartridge Drives*, GA32-0048.
- For information about special printer forms, see the *Form Design Reference Guide for Printers*, GA24-3488.
- For information about AS/400 Advanced Series system upgrades and system changes, see the:
 - *System Upgrade Road Map (CISC to CISC)*, SX41-3135
 - *AS/400 Road Map for Changing to PowerPC Technology*, SA41-4150

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