Application System/400™

GA21-9984-0

New Products Planning Information

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First Edition (September 1989)

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The information herein is subject to change before the products described become available.

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Federal Communications Commission (FCC) Statement

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

Instructions to User: Properly shielded and grounded cables and connectors must be used for connection to peripherals in order to meet FCC emission limits. Proper cables are available from IBM authorized dealers. IBM is not responsible for any radio or television interference caused by using other than recommended cables or by unauthorized modifications to this equipment. It is the responsibility of the user to correct such interference.

Canadian Department of Communications compliance statement

This equipment does not exceed Class A limits per radio noise emissions for digital apparatus, set out in the Radio Interference Regulation of the Canadian Department of Communications. Operation in a residential area may cause unacceptable interference to radio and TV reception requiring the owner or operator to take whatever steps are necessary to correct the interference.

Avis de conformité aux normes du ministère des Communications du Canada

Cet équipement ne dépasse pas les limites de Classe A d'émission de bruits radioélectriques pour les appareils numériques, telles que prescrites par le Règlement sur le brouillage radioélectrique établi par le ministère des Communications du Canada. L'exploitation faite en milieu résidentiel peut entraîner le brouillage des réceptions radio et télé, ce qui obligerait le propriétaire ou l'opérateur à prendre les dispositions nécessaires pour en éliminer les causes.

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.

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.

1. **To prevent a possible electrical shock when installing the device, ensure that the power cord for that device is unplugged before installing signal cables.**
2. **To prevent a possible electrical shock when adding the device to a system, disconnect all power cords, if possible, from the existing system before connecting the signal cable to that device.**

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.

DANGER

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

About This Manual

This manual helps you plan for the new products you are adding to your AS/400 system.

Who Should Use This Manual

System managers should use this manual to plan for new products for the AS/400 system. The AS/400 system (9404 or 9406) should be installed already.

What You Should Know

You may need to use information from the following manuals:

Planning Guide — 9404, GA21-9914
Planning Guide — 9406, GA21-9913
Data Communications Planning Guide, GA21-9902

How This Manual Is Organized

This manual is organized as follows:

Chapter 1 introduces the new licensed programs and enhancements to the licensed program products for Release 2.0. This chapter also lists the space requirements for available licensed programs.

Chapter 2 provides information about the new hardware products and enhancements for Release 2.0.

Chapter 3 provides information about education products that are new or enhanced for Release 2.0. This chapter also lists new publications available for Release 2.0 and future dates.

Appendix A describes how to plan for advanced function printing.

Appendix B describes new functions such as system values, commands, and object types.

Related Printed Information

You may want to read, or have access to, the following publications before using this manual. These manuals are listed with their full title and base order number. When these publications are referred to in this manual, a shortened version of the title is used.

- *ASCII Work Station Reference*, SA21-9922, provides information about using ASCII devices.
- *IBM 5259 Migration Data Link User's Guide*, SA21-9551, provides information about migrating from your System/36 or System/38 to your AS/400 system with the 5259 Migration Data Link.
- *Planning Guide — 9404*, GA21-9914, provides information about planning for a 9404 system expansion unit.

- *Planning Guide — 9406*, GA21-9913, provides information about planning for a 9406 system unit.
- *Programming: Backup and Recovery Guide*, SC21-8079, provides information about recovery and availability.
- *Remote PrintManager Installation Guide*, S544-3440, provides a description of the procedures to install, configure, and maintain the Remote PrintManager.
- *Tape Requirements 1/2-Inch Tape Units*, GA32-0006, provides information about tape units.

Contents

Figures

Chapter 1. Licensed Programs

This chapter describes the new licensed programs, the space requirements for the programs, and the enhancements for Release 2.0.

New Licensed Programs

The following items are new licensed programs. Please note that some of these programs will not be available at Release 2.0, but will be available at a later date.

AS/400 Advanced Function Printing Fonts (5728-FNT)

Document processing and publishing applications require a large variety of typefaces in order to satisfy demands for aesthetics, variety of style, emphasis, national language support and readability. To assist in these needs, IBM makes available several separate font features in 5728-FNT, the AS/400[1] advanced function printing fonts licensed program.

Fonts consist of digitized alphabetic and other character forms in sizes ranging from 4 to 72 points (approximately 1/18 inch to 1 inch in height). Character patterns in the 5728-FNT licensed program are designed for printers with a resolution of 240 x 240 dots (pels) per square inch that are supported by advanced function printing software integrated in the Operating System/400[1] (OS/400[1]).

Typically each font feature is provided in four typefaces and 14 point sizes. The four typefaces are Roman medium, Roman bold; italic medium, and italic bold. The 14 point sizes are 6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 20, 24, 30, and 36 points.

For a more complete description of the available typefaces and sizes, see the 5728-FNT Licensed Program Summary (G544-3295) and About Type: IBM's Technical Reference for 240-Pel Digitized Type (S544-3216).

AS/400 Point-of-Sale Communications Utility (5728-CF1)

The AS/400 point-of-sale communications utility provides a connectivity solution for an AS/400 system used as an in-store processor (store and forward), or as a host system in the retail distribution and supermarket industries. With point-of-sale systems, these industries can provide automatic processing to a variety of management functions such as sales tracking, accounting, maintaining price files, electronic funds transfer, and credit authorization. The licensed program allows point-of-sale files stored on the AS/400 system to be processed by user-written application programs using the file translation function. Multiple sessions between the AS/400 system and the point-of-sale controller are supported over a single communications line. User menus and displays follow the Systems Application Architecture[1] guidelines.

The AS/400 point-of-sale communications utility provides functional enhancements to the System/36 host and in-store processor support for the 3650, 3680, and 4680 point-of-sale programming request for price quotations (PRPQs) (5799-CNE and 5799-CNF). This licensed program utilizes the AS/400 retail communications

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1 AS/400, Operating System/400, OS/400, and Systems Application Architecture are trademarks of the International Business Machines Corporation.

point-of-sale programming request for price quotations (PRPQs) (5799-CNE and 5799-CNF). This licensed program utilizes the AS/400 retail communications support program contained within the OS/400 program and is required for Advanced Data Communications for Stores host communications to the AS/400 system. The licensed program also enables the AS/400 system to function as an in-store or host processor within a retail information network and provides the following three major functions:

Advanced Data Communications for Stores (ADCS) emulation
Host command processor (HCP) emulation
Point-of-sale file translation function

The licensed program supports programmable point-of-sale controllers, but does not support fixed-function point-of-sale controllers.

Advanced Data Communications for Stores (ADCS) Emulation

Allows the AS/400 system to appear as an ADCS host to a point-of-sale controller and enables the user to send the following ADCS commands to the host command processor (HCP) program in the point-of-sale controller: file-level (delete, zero, create, purge, redo), start user program, and keyed-record commands. The file-level mode allows manipulation of the entire point-of-sale data files. The record-level commands permit maintenance of individual records in an existing, keyed file operation.

Host Command Processor (HCP) Emulation

The HCP emulation program in the AS/400 system receives ADCS commands from the host computer and responds as if the AS/400 system were a point-of-sale controller. HCP emulation supports the following ADCS commands from the host: Dump, load, create, reset, clear, purge and status. Files previously translated by the file translation subsystem may be retrieved by a host system using HCP emulation. Since this function is controlled by the host system, no operator interaction is required. A host file name cross-reference provides mapping from the ADCS 6-character name to the appropriate AS/400 file and library.

Point-of-Sale File Translation System

File translation is provided for data files retrieved from the point-of-sale controller. The point-of-sale file translation system provides a menu-driven interface to assist users in translating the different types of 4680 point-of-sale files. Options are provided to make COBOL, RPG, and data description specifications (DDS) source statements for the files created from the translation process. File translation is accomplished through translation templates. The template name may also be specified for batch translation jobs. The AS/400 point-of-sale communication utility provides translation templates for the IBM 4680 Supermarket licensed program applications. The AS/400 user can interactively change or add unique file translation templates to those provided with the licensed program host to and from the 4680 program. File transmissions can be in PC binary format, programmable storage system (PSS) format, new host format, or PC print format. HCP provides varying degrees of file translation services for the different transmitted file formats.

The AS/400 point-of-sale communications utility has an interactive menu and control language interface for unattended operation.

C/400 Programming Language (5728-CX1)

The new C/400[2] programming language enhances the AS/400 system to provide C solutions. C applications can now be ported to and developed on the AS/400 system. The C/400 programming language uses level 2 Systems Application Architecture C language on the AS/400 system. The Systems Application Architecture C standard is based on the American National Standards Institute (ANSI) draft, Programming Language C (C X3J11/88-090), December 7, 1988.

AS/400 TCP/IP Connectivity Utility (5728-TC1)

The IBM AS/400 TCP/IP connectivity utility enhances the AS/400 system's capabilities for connecting to IBM and multiple vendor networks. Transmission Control Protocol/Internet Protocol (TCP/IP) allows the AS/400 system to communicate with the:

- System/370[2]
- AS/400 system
- IBM RT Personal Computer[3]
- Non-IBM independent work station system
- Non-IBM mid-range system
- Non-IBM host system

Included in TCP/IP are connectivity functions for local networks, including the capability of routing across the local network. A standardized addressing procedure is used for the major TCP/IP networks to ensure uniqueness of the addresses. The collection of TCP/IP interconnected networks is known as **internet**. With the proper authority, a user on a standard TCP/IP network can communicate with users on any of the other networks.

File Transfer Protocol (FTP) and Simple Mail Transfer Protocol (SMTP) are supported.

The objectives of FTP are to:

- Promote sharing of files (programs and data)
- Encourage indirect or implicit use of remote computers
- Shield users from variations in file storage systems among hosts
- Transfer data reliably and efficiently

The AS/400 FTP user interface is primarily interactive with a program interface available to PASCAL applications.

SMTP transfers mail reliably and efficiently. SMTP can relay mail across transport service environments. The interface to SMPT occurs through the AS/400 Office support.

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2 C/400 and System/370 are trademarks of the International Business Machines Corporation.

3 RT Personal Computer is a registered trademark of the International Business Machines Corporation.

Space Requirements for Licensed Programs

Figure 1-1 shows the AS/400 licensed programs for Release 2.0.

Figure 1-1 (Page 1 of 3). Approximate Space Requirements for Licensed Programs

AS/400 Licensed Programs	Program Number	Program Size[1]	Increase	SBCS or DBCS National Language Version Size[2]	Increase
AS/400 Advanced DBCS Printer Support	5728-AP1	4.0 M	0.8 M	1.0 M	—[3]
AS/400 Application Development Tools	5728-PW1	8.5 M	4.0 M	6.0 M	2.0 M
AS/400 BASIC	5728-BA1	2.5 M	0.5 M	1.0 M	0.2 M
AS/400 Communications Utilities	5728-CM1	4.0 M	0.5 M	0.4 M	—
AS/400 Cryptographic Support	5728-CR1	0.5 M	0.25 M	0.5 M	0.34 M
AS/400 System/38 Utilities	5728-DB1	8.0 M	2.5 M	1.0 M	—
AS/400 Business Graphics Utility (BGU)	5728-DS1	2.0 M	0.3 M	0.5 M	—
AS/400 Advanced Function Printing Fonts	5728-FNT[4]				
Sonoran Serif[6]		4.0 M	N/A[5]	None	N/A
Sonoran Sans Serif[6]		4.0 M	N/A	None	N/A
Sonoran Serif Headliner		5.0 M	N/A	None	N/A
Sonoran Sans Serif Headliner		5.0 M	N/A	None	N/A
Sonoran Sans Serif Expanded		2.0 M	N/A	None	N/A
Sonoran Sans Serif Condensed		3.0 M	N/A	None	N/A
Monotype Garamond[6]		3.5 M	N/A	None	N/A
Century Schoolbook[7]		4.0 M	N/A	None	N/A
Pi and Specials		1.5 M	N/A	None	N/A
ITC Souvenir[8]		4.0 M	N/A	None	N/A
ITC Avant Garde[8] Gothic		3.5 M	N/A	None	N/A
Math and Science		3.0 M	N/A	None	N/A
DATA1		0.1 M	N/A	None	N/A
APL2		1.0 M	N/A	None	N/A
OCR A and OCR B		1.0 M	N/A	None	N/A
AS/400 Language Dictionaries	5728-DCT	9.0 M[9]	2.7 M	None	N/A
AS/400 Office	5728-WP1	14.0 M	3.0 M	1.0 M	—
AS/400 PASCAL	5728-PS1	6.5 M	0.3 M	0.1 M	—

Figure 1-1 (Page 2 of 3). Approximate Space Requirements for Licensed Programs

AS/400 Licensed Programs	Program Number	Program Size[1]	Increase	SBCS or DBCS National Language Version Size[2]	Increase
AS/400 PC Support - base	5728-PC1	3.0 M	N/A	4.0 M	N/A
PC DOS Programs		6.0 M	N/A	6.0 M	N/A
DBCS (DOS)		10.0 M	N/A	10.0 M	N/A
OS/2[10] Programs		3.0 M	N/A	9.0 M	N/A
DBCS (OS/2)		5.0 M	N/A	15.0 M	N/A
AS/400 Performance Tools	5728-PT1	9.0 M	4.0 M	1.0 M	0.2 M
AS/400 PL/I	5728-PL1	2.0 M	—	0.5 M	0.2 M
AS/400 Query	5728-QU1	3.0 M	0.4 M	1.5 M	—
COBOL/400[11]	5728-CB1				
COBOL/400 - Base Support		3.5 M	1.4 M	0.5 M	0.2 M
System/36-Compatible COBOL		3.5 M	0.8 M	0.5 M	0.2 M
System/38-Compatible COBOL		2.1 M	0.9 M	0.5 M	0.2 M
*PRV[12] Base Support		2.0 M	N/A	0.5 M	N/A
*PRV System/36-Compatible COBOL		2.0 M	N/A	0.5 M	N/A
C/400	5728-CX1	2.0 M	N/A	None	N/A
RPG/400[11]	5728-RG1				
RPG/400 - Base Support		2.0 M	—	1.0 M	0.3 M
System/36 - Compatible RPG II		2.0 M	0.1 M	1.0 M	0.3 M
System/38 - Compatible RPG III[13]		2.0 M	—	1.0 M	—
*PRV Base Support		1.0 M	N/A	1.0 M	N/A
*PRV System/36 - Compatible RPG II		1.0 M	N/A	1.0 M	N/A
ICF Point-of-Sale Communications Facility	5728-CF1	1.0 M	N/A	None	N/A
Structured Query Language/400	5728-ST1	1.0 M	0.1 M	0.5 M	0.14 M

Figure 1-1 (Page 3 of 3). Approximate Space Requirements for Licensed Programs

AS/400 Licensed Programs	Program Number	Program Size[1]	Increase	SBCS or DBCS National Language Version Size[2]	Increase
AS/400 TCP/IP Connectivity Utility	5728-TC1	13.0 M	N/A	N/A	N/A

[1] M equals 1 000 000 bytes.

[2] These numbers are based on preliminary information. Contact your marketing representative for final program sizes.

[3] Indicates no increase from previous release.

[4] Each of these fonts can be ordered individually.

[5] Not applicable.

[6] Sonoran Serif is a functional equivalent of Monotype Times New Roman. Sonoran Sans Serif is a functional equivalent of Monotype Arial. These fonts, along with Monotype Garamond, are trademarks of The Monotype Corporation plc.

[7] Century Schoolbook is a trademark of the American Type Foundry.

[8] ITC Souvenir and ITC Avant Garde Gothic are trademarks of the International Typeface Corporation.

[9] All dictionaries are loaded when you install the operating system. Those that are not needed can be deleted.

[10] OS/2 is a registered trademark of the International Business Machines Corporation.

[11] COBOL/400 and RPG/400 are trademarks of the International Business Machines Corporation.

[12] *PRV means previous release.

[13] Prior to Release 2.0, System/38 compatible RPG III was included with the RPG/400 base support. In Release 2.0, System/38 compatible RPG III is a separate option and requires more space.

Space Requirements for the Operating System/400 and Optional Items

Figure 1-2 shows the approximate space requirements for the Operating System/400 and optional items.

Figure 1-2. Approximate Space Requirements for Optional Items

Program Name	Program Size[1]	Increase	National Language Version Size[2]	Increase
Operating System/400	234.0 M[3] (includes licensed internal code)	25.0 M	17.0 M	3.6 M
Optional Items				
Extended Base Support	1.0 M	—[4]	None	N/A[5]
Online Information	16.0 M	7.0	20.0 M	10.0 M
Online Education	4.0 M	—	4.0 M	—
System/36 and System/38 Migration	4.0 M	2.5 M	0.5 M	0.2 M
System/36 Environment	11.0 M	3.0 M	0.5 M	0.12 M
System/38 Environment	2.5 M	0.6 M	0.1 M	0.05 M
Example Tools Library	19.0 M	2.0 M	None	N/A
Advanced Function Printing Compatibility Fonts	3.0 M	—	None	N/A
*PRV[6] CL Compiler Support	3.0 M	N/A	None	N/A

1 M equals 1 000 000 bytes.

2 These numbers are based on preliminary information. Contact your marketing representative for final program sizes.

3 This assumes that you have a system with a minimum main storage configuration (4 M of main storage). If you increase the main storage size, the disk space size will increase by the same amount.

4 Indicates no increase from previous release.

5 Not applicable.

6 *PRV means previous release.

Licensed Program Enhancements

The licensed programs described in this section have been enhanced and are currently available or will be available at a later date.

AS/400 Application Development Tools (5728-PW1)

The following application development tools have been enhanced for Release 2.0.

Screen Design Aid (SDA)

The enhanced AS/400 menu supports creation of DDS, rather than Screen Format Generator (SFGR). The advantages of the enhancements are:

- Full display attribute, color, and editing support for the menu image, consistent with the Design Screens display
- Support for up to 99 menu options
- Displays and display flow that more closely resemble the other displays in SDA, and are significantly more usable and efficient
- Improved programming development manager (PDM) communication to SDA AS/400 menu support.
- The ability to create and save the menu source in any file with a record length between 92 and 132 bytes, inclusive.

Other enhancements include the following:

- The command line of the System/38 environment and the AS/400 environment SDA main menu now provides F9 (Retrieve) for retrieving the commands run previously. (F9 is not supported for the recovery and dump command lines.)
- The block move/copy function on the display has been enhanced to allow a user to move or copy only those fields completely contained within the box.
- The field length for nonconstant, nonreferenced fields can be changed without having to delete and create fields again. Users no longer need to first delete a field, then create it again and rename it before adding options.
- Enhancements are provided to make significant use of Systems Application Architecture common user access rules and guidelines.

Source Entry Utility (SEU)

The SEU has been enhanced in the following ways:

- A switch for displaying function keys is now provided. The user can remove the function keys from the display to show more lines on the display. This full-screen mode is provided to enhance the productivity of users who are familiar with the editor.
- A direct path from the edit display to the prompt selection display is provided through the F23 function key. This makes finding the user-defined prompting easier.
- Support for C member type is provided. The user can search for C syntax errors in compiled listings of C programs.
- SEU provides PDM with an interface to support the PDM Find String function.
- In the System/36 environment, an operator control language (OCL) logging option for System/36 procedure members is added to the exit display. When

editing a member from file QS36PC, users can turn on or off the logging of OCL statements to the job log.

- Enhancements are provided to make significant use of Systems Application Architecture common, user-access rules and guidelines.

Programming Development Manager (PDM)

Enhancements are provided to make significant use of Systems Application Architecture common, user-access rules and guidelines.

Enhancements include a Find String capability similar to PRPQ Autobrowse. Find String provides the user with the ability to:

- Search through multiple members in a file for a specified character string.
- Search source physical file members and data physical file members.
- Search for a string in all members in a list, a list within a list, or only in selected members of a list.
- Automatically perform an option on each member containing the search string. The options perform as they would if started directly outside Find String.
- Submit the search to batch processing and print a list of the member names that contain the search string.

New object types and member types are supported. In particular, member types for the C language and new objects for cross-system product (CSP) are supported. The following enhancements have been made:

- Capability to create subsets enhanced through a generic name for member type and object attributes
- Capability to submit copy, delete, rename, and move operations to batch processing
- Capability to repeat options on a list without having to type the option against each item through a function key
- Access to a command entry display from any of the list displays
- Prompting for user-defined options
- Provision for multiple column format showing three to four times the number of list items per display
- A list display that defaults to the previous list on the next call
- An enhanced change default display field permits separate compile and run in batch default.

AS/400 Communications Utilities (5728-CM1)

The Remote Spooling Communications Subsystem/Professional Office System (RSCS/PROFS) bridge now supports connection from the AS/400 system to the System/370 host system's VM/RSCS (Virtual Machine) or Multiple Virtual Storage / Job Entry Subsystem 2 or 3 (MVS/JES) operating systems using Systems Network Architecture (SNA). This connection is completed over Synchronous Data Link Control (SDLC) lines, using an X.25 or an IBM Token-Ring Network. The SDLC and X.25 lines may connect through an X.21 interface.

AS/400 Office (5728-WP1)

AS/400 Office is in the first stage of joining IBM's Systems Application Architecture office series. As a result, you will see the product referred to as both AS/400 Office and OfficeVision/400 in this transitional period.

The following enhancements have been made to this product:

- Display enhancements for Systems Application Architecture conformance
- Major calendar enhancements with a new look and new functions to make it easier to use
- Word processing enhancements:
  - Notepad supported
  - Sort text added
  - Merging controls from one document into another supported
  - Setting variables supported
  - Flow of multiple column text into newspaper columns supported
  - PC text files on GET function supported
  - Prompted stop codes added
  - Duplex print supported
  - Cursor draw supported
  - Skip to a specified line supported
  - View images and graphics supported
  - Extensions to existing functions added
- Proofreading aids enhancements:
  - Synonym aid for additional languages
  - Synonym aid for previously supported languages
  - User-defined dictionary
- Work station controller dependency removed by providing the capability to use a new word processing option. The new option uses an editor that requires no editor code in the controller. The product can now be used from any work-station able to gain access to your AS/400 system.
- Capability to save and restore electronic mail
- Support for individual nicknames that can be used in place of user ID/address for mail and other office functions
- Application programming interfaces (CL commands) enhanced
- PC files exchange using the PROFS[7] Bridge enhanced

AS/400 PC Support (5728-PC1)

IBM AS/400 PC Support continues to significantly expand the power and use of personal systems and personal computers by delivering AS/400 resources and server functions to end users and application developers.

7 PROFS is a registered trademark of the International Business Machines Corporation.

The following enhancements have been made to AS/400 PC Support:

Enhancements Common to both OS/2 and DOS-Based Systems

- Program temporary fix (PTF) installation improved
- Shared folders document and folder names expanded
- Submit remote command function added, giving added capability to send AS/400 commands from a PC prompt.

Enhancements for DOS-Based Systems

- Asynchronous connectivity

  PC Support connectivity support has been expanded to include asynchronous attachment of DOS-based systems to AS/400 systems. The same PC Support functions are provided in the asynchronous environment as are available to twinaxial, SDLC, and IBM Token-Ring Networks.

- Work station function enhancements
  - PC convertible keyboard
  - Bypass sign-on screen
  - Keyboard emulation enhancements for row 1 column 1 for 3270 device emulation
  - IBM 3812 Printer emulation support
  - Keyboard emulation enhancements for:
    - World trade special character set (layer 100)
    - Arabic, Hebrew, Greek, and Turkish languages
  - Additional printer function tables are provided
- Shared folders function performance enhancements
- 5250 Session Manager

  5250 Session Manager allows users to view multiple display sessions at the same time. Each session window can be dynamically sized, maximized, and moved using either a mouse or the keyboard.

- Organizer and PC text-assist enhanced
- Expanded memory support (EMS) added
- DOS main storage requirements reduced
- Ability to remove some PC Support functions from memory

Enhancements for the OS/2 System

PC Support is enhanced to operate with IBM Operating System/2[8] Extended Edition (OS/2 EE) Version 1.2. PC Support provides a link for two of the participants in the IBM Systems Application Architecture for the Operating System/400 and OS/2 EE. PC Support provides a similar function to both OS/2 and DOS-based systems. The following features have been enhanced:

- Installation, configuration, and update functions
- Transfer function for file transfer and conversion of data among host database files, personal systems, and personal computers
- Shared folders function for simultaneous access and update to folders with byte-level locking for applications
- Virtual print uses host, personal system, and personal computer printers

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[8] Operating System/2 is a trademark of the International Business Machines Corporation.

- Message function for local, remote, and networking message support
- Organizer for a single menu communications to host, personal system, and personal computer functions
- Simultaneous communications with multiple AS/400 units and System/36 units, allowing users to simultaneously access the resources on up to 32 host systems in the network
- Co-residence with the IBM PC local area network (LAN) program

AS/400 Performance Tools (5728-PT1)

The following enhancements have been made to the AS/400 Performance Tools program:

- Capacity planner now supports B10, B20, B70, and 9332-600 system units
- Interactive display of performance data supported
- Performance analysis reports added

AS/400 Structured Query Language (5728-ST1)

The following enhancements have been made to the Structured Query Language/400 (SQL/400[9]):

- Prompting supported for SQL statements

  This enhancement is in interactive SQL and supports three modes:

  - A menu of all SQL statements when F4 (Prompt) is pressed with no statement
  - A partial statement can be entered followed by F4 (Prompt)
  - A complete statement can be entered followed by F4 (Prompt)

- Session save/retrieval

  This enhancement is also in interactive SQL. On the exit display from interactive SQL, a new option is available that gives the user the ability to save the current interactive SQL session. The next time you do a Start Structured Query Language (STRSQL) command, you have the option to resume the saved session.

- High-level language (HLL) syntax checking

  This enhancement is also in interactive SQL. You can specify which language syntax rules to use when checking the syntax of entered SQL statements. This can be specified on the STRSQL display or in session services.

- Pre-compiler support for C/400

  You can now embed SQL statements in programs written in C/400.

COBOL/400 (5728-CB1)

The following enhancements have been made to COBOL/400:

- Many ANSI COBOL X3.23-1985 high-level elements and most of the IBM Systems Application Architecture COBOL language elements are now provided. Newly supported are the INITIALIZE and EVALUATE statements, the CONVERTING phrase of the INSPECT statement, seven-dimensional tables, and Systems Application Architecture flagging.

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9 SQL/400 is a trademark of the International Business Machines Corporation.

- Support for tables up to 3 000 000 bytes in length is provided. Individual elements can be up to 32 767 bytes in length. All COBOL statements can be used (following the usual COBOL rules) with elements of large tables. Additionally, certain statements (such as MOVE) can also be used with table names.
- Performance enhancements for exponentiation and large binary items are provided.
- To enable users to more easily support multiple AS/400 systems from a central site, it is now possible to compile and save COBOL/400 or AS/400 System/36-compatible COBOL objects on a system at Release 2 and restore them on a system at Release 1 Modification Level 2. (If Release 1 is the target release, it is the user's responsibility to ensure that only Release 1 functions are used and the applications are thoroughly tested.)

DBCS Support for 3X74 Remote Attachment

The 3X74 Remote Attachment allows the 3X74 Remote Control Unit and the Personal System/55[10] running the SNA DBCS 3270PC program (Version 6 or later compatible versions) to be attached to an AS/400 system using an SNA/SDLC communications port. This programming gives 3X74-attached DBCS 3270s and single-station 3270s access to most 5250 applications.

Operating System/400 (5728-SS1)

The following sections of the OS/400 program have been enhanced for Release 2.0:

1. Availability/recovery
2. Communications support
3. Configuration support
4. Database and device file support
5. DBCS support
6. DEBUG support
7. Device support
8. Library/object support
9. Message support
10. Online education support
11. Program temporary fix (PTF) installation
12. Security support
13. System/36 environment compatibility and function
14. Work management support

These sections have been enhanced in the following manner:

1. The availability/recovery enhancements include:
   - A simple method for saving all auxiliary storage (SAVSTG)
   - Lower cost power protection (basic uninterruptible power supply)
   - A restore option to allow owner and date differences
   - Capability to save security information independently (SAVSECDTA)
   - A new SAVE parameter to generate Save media that can be restored using a previous release
2. Communications support enhancements include the following:
   - Communications recovery by configuration object

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[10] Personal System/55 is a registered trademark of the International Business Machines Corporation in the U.S.A. and/or other countries.

Communications line and remote controller descriptions are enhanced to include control over contact attempts for a failed line or controller.

- Communications takedown

  For situations involving communications failures, improved takedown of communications devices, lines, and controllers should result in decreased elapsed time required to do a full vary off.

- Distributions supported by SNADS

  The limit on the size of an object that can be distributed using SNA Distribution Services (SNADS) with object distribution is increased from 16 megabytes to over 2000 megabytes.

- Distribution supported by SNADS using TCP/IP communications

  This support allows the AS/400 Office user to exchange notes, memos, and messages with a TCP/IP user.

- Distributions supported by DSNX

  The limit on the size of an object that can be distributed using Distributed System Node Executive (DSNX) with object distribution is increased from 16 megabytes to over 2000 megabytes.

- Remote release by DSNX

  The Release Remote Phase (RLSRMTPHS) CL command allows an AS/400 system to release phases which exist in a held state on a NetView[11] Distribution Manager host system.

- Finance communications

  Finance communications allow you to communicate with the 3694, 4701, and 4702 finance control units using the Intersystem Communications Function (ICF) over an SDLC or a X.25 line. It also supports migration of System/36 finance programs.

- Intrasystem

  Intrasystem communications allow two application programs running in two jobs on the same system to communicate. AS/400 application programs can be written in COBOL/400, RPG/400, or C/400. Intrasystem communications uses ICF data management to send and receive data between the two programs.

- Retail communications

  Retail communications allow you to communicate with the 3651, 3684, 4680, and 4684 retail controllers using ICF over an SDLC line. In addition, a pass-through function is provided to allow these controllers to communicate with the host through the AS/400 system.

- Short hold mode with multiple port sharing support

  The short hold mode configuration allows physical disconnection of an X.21 circuit-switched line when there is no data to be transmitted, while maintaining established SNA sessions. Short mode is supported only with the SDLC data link protocol.

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[11] NetView is a trademark of the International Business Machines Corporation.

Multiple port sharing occurs when a group of ports is shared between more than one remote controller through use of the multiple lines at the same address network feature.

- Trace intersystem communications function (TRCICF)

  The Trace Intersystem Communications Function (TRCICF) command traces intersystem communications function input and output (I/O) operations that occur in a job in which the TRCICF command is entered. It also allows you to save information about language operations and communication functions directed to an ICF file in the current job, or in the job being serviced as a result of the Start Service Job (STRSRVJOB) command.

3. Configuration support enhancements include:

   - Enhancements to configuration WRKxxx commands
   - Enhanced device naming in automatic configuration; new value (*DEVADR) for QDEVNAMING system value
   - Separate console configuration used for attended IPLs
   - A new Retrieve Configuration Source (RTVCFGSRC) command which allows easier portability of device configurations to another system
   - A new Retrieve Configuration Status (RTVCFGSTS) command which provides an application program interface (API) to retrieve the status of lines, controllers, and devices

4. Database support enhancements include:

   - Improved performance for database inserts
   - A new Retrieve Member Description (RTVMBRD) command
   - SEQONLY(*YES) supported in commitment control
   - Support for hexadecimal data type in DDS
   - Mapping of DBCS data fields enhanced in CPYF
   - Interactive data definition utility (IDDU) enhancements

5. DBCS support enhancements include:

   - Support for the new Korean code standard (new code page)
   - Support for DBCS characters

6. DEBUG support procedure enhancements include:

   - Breakpoint programs are allowed in interactive debug
   - Trace internal (TRCINT) supports communications lines
   - MPL trace support for batch jobs

7. Device support enhancements include:

   - High-speed printer support (advanced function printing data stream) for the 3820, 3825, 3827, and 3835 printers
   - Advanced function printing on the 3812 and 3816 printers
   - Duplex printing support
   - Local ASCII devices support on 9406
   - New ASCII printers support
   - Support for ASCII controllers by PRTDEVADR command
   - Enhanced support for emulating ASCII devices
   - Enhanced paper drawer and envelope slot support for printers
   - Enhanced error recovery (disconnect/reconnect) support for display devices
   - User-specified assignment of function keys
   - Specification of SEQNBR(*NEXT) for multiple file tape reels
   - Support for the 3476 display station

8. Library/object support enhancements include:

- Additional objects supported by WRKxxx commands
- Changes in support for objects in folders
- Enhancement to the ADDLIBLE command

9. Message support enhancements include:

   - Enhancements to the Japanese Katakana text presentation
   - A formatted output option on the message text display
   - The option to keep inquiry messages that are not responded to
   - Improved text of 2500 messages

10. Online education support enhancements include:

    - Two new courses in tutored system support (TSS)

      – Program temporary fix (PTF) overview

        This module explains the fundamentals of AS/400 program temporary fix management and operation

      – Administering online education

        This module shows how to administer the system for online education functions. These functions include enrolling students, monitoring student progress, adding courses, and changing course information.

    - An added bookmark function

      This enhancement provides student status feedback and bookmark support for independent work station (IWS) based course presentation.

    - User-defined audience paths

      This enhancement allows education administrators to further tailor their education offerings by allowing the creation of additional audience paths, thus customizing the manner in which their modules are presented.

    - New interface for online education administrators

      This enhancement provides an interface within the current administration system to create the course description files required to open a self-authored course for student use. Education administrator now also have the ability to change courses.

    - An option added to the Main Menu of online education

      Option 10 (User support and education) has been added to the AS/400 Main Menu to allow for easier and more obvious access to online education.

11. Program temporary fix (PTF) installation enhancements include:

    A reduced number of IPLs, reduced special operations, and manual intervention for the following areas:

    - Automatic PTF installation during release update
    - Installation of a cumulative PTF package

12. Security support enhancements include:

    - An option to display the sign-on information display
    - An option to restrict sign-on to more than one device at a time (does not prevent a second sign-on from the same device)
    - An option to not require explicit authority to a work station for users with *ALLOBJ or *SERVICE special authority
    - The Retrieve User Profile (RTVUSRPRF) command enhanced to support additional parameters

- The output file enhanced for the Display User Profile (DSPUSRPRF) command to obtain a list of owner-authorized objects
- Passwords not shown in the job log when using OS/400 commands
- Password composition rules enforced on the Change Password (CHGPWD) command
- User-specified time-outs for inactive work stations
- An option to force password changes
- An option to delete user profiles with owned objects by deleting or changing ownership of owned objects
- Additional enhancements to the user profile
  - Ability to control the appearance of the sign-on display
  - Ability to limit a user to only one device session
  - Ability to control the password expiration date
- Additional security for security level 10 or 20 — *SECADM special authority removed from users defined as USRCLS, *PGMR, *SYSOPR, or *USER
- Ability to save security information more efficiently (SAVSECDTA command)
- Performance improvement for authority checking — objects authorized by public authority will have checking performance enhancements

13. System/36 environment compatibility and function enhancements include:

    - A closer match between System/36 and AS/400 security
      - Password end date
      - Option to force password changes
    - Display file handling enhancements
      - Cursor positioning rules
      - Special cursor positioning technique
      - Function key processing
      - Return Input-N
      - No ending attribute for output-only fields
      - Put overrides supported on initial put of display format
      - Field protect status not changed by put override
      - Return to application program from help screen
      - Improved performance for multiple puts with invite
      - Delay write attribute
    - Multiple MSGIDs allowed per field in DDS
    - $$TIMER function equivalence
    - Procedure control of CL escape messages
    - An option to control an automatic shared open
    - Lower cost power protection on the IBM 9406 System Unit
    - Additional files libraries
    - Record blocking for shared files
    - Larger default extend size for new files
    - DDS enhancements for DBCS fields
    - SFGR enhancements for DBCS fields
    - A callable program for converting device names
    - Improvements to the System/36 Restore Files command
    - System/36 encryption subroutines supported

14. Work management support enhancements include:

    - The ability to add new libraries to the middle of an existing library list
    - Controlling subsystem descriptions moved to QSYS library
    - Enhanced recovery from device errors in interactive jobs
    - Generic work station names in subsystem work entries
    - Inactive time-out for work stations
    - An OPTION parameter added to the Display Job (DSPJOB) and Work with Jobs (WRKJOB) commands

- Pre-start jobs for communications applications
- Special handling of interactive jobs at time slice end

15. Other enhancements to OS/400 include:

    - Binary synchronous communications (BSC) device configuration support enhanced for RPG II T specifications on the CRTDEVBSC command
    - Maximum length of the CL variable increased to 9999
    - Screens changed to support user-interface standards
    - DR2 graphics orders supported in graphical data display manager (GDDM)
    - Maximum length of the data queue entry increased to 4096
    - Simultaneous update protection added to the Q & A database
    - Multilingual Q & A databases supported
    - Additions, changes, and deletions in the QUSRTOOL library
    - Added system value for the model identifier
    - Additional reason code on the reply ignored message
    - Internal limit on program sizes increased
    - Ability to monitor IPL progress enhanced
    - Warnings added to the Convert CL Source (CVTCLSRC) command
    - Alternate telephone number dialing for electronic customer support
    - Electronic customer support enhanced to allow display for the received TIE file
    - Added AS/400 support for Cross System Product/Application Execution (CSP/AE), which is part of Systems Application Architecture
    - Additional characters allowed in the system name
        - A leading numeric character
        - Special characters @, #, and $
        - Embedded blanks
    - Performance improved for character translation

RPG/400 (5728-RG1)

The following enhancements have been made to RPG/400:

- RPG/400 implements the RPG interface of the common programming interface (CPI) in the AS/400 environment of Systems Application Architecture.
- The RPG/400 (native) compiler has functional improvements beyond System/38 environment RPG III. This includes support for named constants, which is a new language construct where a name represents a specific value and may not be changed during program processing. Also supported are four new edit codes (N, O, P, and Q) for negative numbers with a floating minus sign. A REDPE operation is also supported. It retrieves the prior sequential record if the key of the record matches the search argument specified in factor 1.
- RPG/400 or AS/400 System/36-compatible RPG II objects can now be saved on a system at Release 2.0 and restored on a system at Release 1.0 Modification Level 2. This enables users to more easily support multiple AS/400 systems from a central site. (If Release 1.0 is the target release, it is the user's responsibility to ensure that only Release 1.0 functions are used and the applications are thoroughly tested.)
- For the System/36-compatible RPG II environment, support for the major return code 24 has been added and the handling of unknown or unacquired devices has changed. When an RPG II program is recompiled, the program receives a major/minor 8000 for operations to unknown or unacquired devices. The major return code 24 is seen in a variety of cases where it was not previously being set by the OS/400 program. The recompile of the program will cause the return code 24 to be handled the same as the System/36.

Chapter 2. Hardware

This chapter describes the hardware products that are new for Release 2.0 of the AS/400 system. The description includes specifications and planning information. Hardware enhancements are listed at the end of this chapter.

New Products for Release 2.0

Several new hardware products are available with Release 2.0. The following information provides a brief description of these products.

9406 System Unit Model B70

The 9406 Model B70 extends the range of performance for the AS/400 system. Model B70 performance is 130 percent greater than that of a 9406 Model B60. It has a capacity for 38.4G (G equals 1 073 741 824 bytes) disk storage, and 96M (M equals 1 048 576 bytes) main storage capacity.

In addition, you can attach up to 48 communications lines, 15 work station controllers, and tape and diskette units. The Model B70 disk, tape, and diskette devices are placed in the IBM 9309 Rack Enclosure with the predefined rack configuration of the Model B60.

All applications and programs are completely compatible among AS/400 system models.

Interconnecting cables and filler displays are added automatically when the system is built, and the OS/400 program is preloaded on the system unit when ordered with the original system unit.

9404 System Unit Model B20 Expansion Unit

The 9404 Model B20 Expansion Unit allows the attachment of additional disk units, twinaxial work station controllers, ASCII work station controllers, three-line communication controllers, an IBM Token-Ring Network adapter, a diskette unit, and a cartridge tape unit. The additions to the 9404 Model B20 more than double its previous maximum disk storage capacity.

Characteristics of the Model B20 expansion unit include:

- Increased disk storage capacity
- Expanded communications and IBM Token-ring Network connectivity
- Additional ASCII and twinaxial device support
- Additional diskette unit and cartridge tape support

9332 Model 600 Direct Access Storage Device

The 9332 Model 600 Direct Access Storage Device attaches to all models of the 9406 System Unit. It has the same configuration as the Model 400, can be intermixed on 9332 strings with the Model 400, but has a lower price per megabyte than the Model 400.

The Model 600 has the performance characteristics of the Model 400, but has fewer actuators at equal capacity. When configuring for performance, the number of actuators should be considered.

3422 Magnetic Tape Unit Models A01 and B01 (9406 only)

Both models of the 3422 Magnetic Tape Unit attach to the 9406 System Unit. The 3422/A01 tape unit attaches to the I/O card and the 3422/B01 tape unit attaches to the 3422/A01. The tape speed is 125 inches per second (ips). The 3422 unit records and reads data at 1600 bits per inch or 6250 bits per inch.

The 3422 unit attaches by 2604 IOP, which includes a hardware compress/decompress function compatible with System/38 compressed tapes. The two-channel switch tape feature (#3005) can be used with this function.

The 2604 IOP uses one input/output (I/O) card slot. However, the I/O card must be installed in the primary card unit, and it does not provide power control for the attached 3422s. The 3422s must be operated in local power control mode, and turned on and off manually.

In addition, a code (#5508) may be entered on the 9406 order to select the 3422 as the alternate initial program load (IPL) device. The alternate IPL device must match the media type selected for program distribution.

3430 Magnetic Tape Unit Models A01 and B01 (9406 only)

Both models of the 3430 Magnetic Tape Unit attach to the 9406 System Unit. The 3430/A01 attaches to the I/O card, and the 3430/B01 attaches to the 3430/A01. The tape speed is 50 inches per second (ips). The 3430 records and reads data at 1600 bits per inch or 6250 bits per inch.

The 3430 unit attaches by the 2604 input/output processor (IOP), which includes a hardware compress/decompress function compatible with System/38 compressed tapes. The two-channel switch tape feature, request for price quotation (RPQ), can be used with this function.

The 2604 IOP uses one I/O card slot. However, the I/O card must be installed in the primary card unit, and it does not provide power control for the attached 3430s. The 3430s must be operated in local power control mode, and turned on and off manually.

In addition, a code (#5509) may be entered on the 9406 order to select the 3430 as the alternate initial program load (IPL) device. The alternate IPL device must match the media type selected for program distribution.

9348 Magnetic Tape Unit (9406 only)

The 9348 Magnetic Tape Unit is an auto-loading tape unit capable of loading 6.0, 7.0, 8.5, and 10.5-inch diameter tape reels. The primary applications of the 9348 tape unit are data interchange, save/restore processes, and program distribution. The 9348 supports the use of 1.5-mil substrate tape designed to meet or exceed *ANSI X3.40-1983 Unrecorded Magnetic Tape* specifications. Because of the incompatibility of the head wear profiles, the 9348 does not support use of 1-mil tapes.

The 9348 is installed in a standard 19-inch Electronic Industries Association (EIA) rack using slides and the installing hardware provided with each tape unit. A cable assembly arm that connects to the back of the unit and rack is also provided. The arm allows the unit to slide in and out of the rack without binding the cables.

The 9348 contains a 1M buffer. The small computer system interface (SCSI) bus data rate in and out of this buffer is controlled by the SCSI bus interface hand-

shaking. The SCSI rate does not exceed 1.5M per second. Characteristics of the 9348 Magnetic Tape Unit include:

Recording Method	6250 bpi, GCR 1600 bpi, phase encoding
Tape Speed	123 ips nominal for GCR 130 ips nominal for phase encoding
Rewind Speed	320 ips nominal 450 ips maximum
Rewind Time	90 seconds nominal (from EOT to BOT for a 2400-ft tape)
Data Rates(s)	768 K/s instantaneous at 6250 bpi 208 K/s instantaneous at 1600 bpi
Media	1.5-mil, half-inch tape on 6.0, 7.0, 8.5, and 10.5-inch reels. 1.0-mil tape not supported.

3476 Display Station

The InfoWindow[1] 3476 Display Station establishes a new level of price for performance in entry mid-range displays. InfoWindow 3476 replaces the IBM 3196 Display Station, offering superior ergonomics and high quality functions that include the following:

- Record, play, pause, and set-up modes
- Choice of amber-gold or green 14-inch flat monochrome monitor with a smudge-resistant screen capable of displaying up to 1920 characters
- Choice of keyboards
- Choice of warranty offerings

The InfoWindow 3476 attaches to System/36, System/38, and AS/400 processors. It attaches remotely to these processors through the appropriate 5294 or 5394 remote work station controllers. It also may be attached through the 5259 Migration Data Link.

3101 ASCII Display Station

The 3101 ASCII Display Station is a 12-inch cathode ray tube (CRT) keyboard display station with a 1920-character screen (24 lines by 80 characters). It uses the 128-ASCII character set and asynchronous communications with a variety of processors.

The 3101 display station uses customer-replaceable work station elements (display, logic, and keyboard) for ease of maintenance and availability.

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1 InfoWindow is a registered trademark of the International Business Machines Corporation.

3151 ASCII Display Station

The 3151 ASCII Display Station extends the IBM ASCII display family to a two-element, 14-inch flat screen design. Logic and display elements are combined into a single element. The various models span the range from an entry-level, 80-column display to a full-function, 132-column display. The IBM 3151 Models 310/410 and 360/460 feature new slim-line cartridges that expand the functional capabilities of these models.

The IBM 3151 ASCII Display Stations are offered in the following combinations:

3151 110, 160	80-column, green, 84-key keyboard, RS232C communications
3151 310, 360	132-column[2], green, 102-key keyboard, RS232C expandable to RS422A using a cartridge
3151 410, 460	132-column[2], amber-gold, 102-key keyboard, RS232C expandable to RS422A using a cartridge

3161 ASCII Display Station

The 3161 ASCII Display Station brings new functions and ergonomics to IBM ASCII displays. It is designed to attach to both IBM and non-IBM systems. Each unit contains a 3101 Model 881 (Model 230) emulation board, providing current 3101 users with a smooth migration path. A number of non-IBM ASCII display emulations are available for non-IBM processor attachment.

The 3161 is a high-function, entry-level, ASCII display station. Its characteristics include:

- Menu setup
- Definable function keys
- Split screen
- Character and field attributes
- Auxiliary port
- Cartridge capability
- ASCII keyboard with a numeric keypad

The 3161 is upwardly compatible with the 3163 ASCII display station.

The 3161 display station is a high-resolution, 12-inch monitor, and the keyboard has a low profile with tactile feedback. The 3161 provides a high-quality terminal for a variety of user applications, and non-IBM 3101 emulation that allows a wide variety of processor attachments. The 3161 is particularly useful for engineering and scientific education, distribution, and manufacturing for IBM and non-IBM processor attachments.

New cartridges for the 3161 ASCII display station provide the additional read command feature and TeleVideo[3] 950 emulation.

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2 The ASCII WSC only supports 80 columns on this model.

3 TeleVideo is a registered trademark of TeleVideo Systems, Inc.

3162 ASCII Display Station

The 3162 ASCII Display Station, with a new, ergonomically-designed, 14-inch, 132-character, green or amber-gold display, has the same low-profile ASCII keyboard as the 3161, 3163, and 3164 display stations. An optional space-saving, shorter keyboard also is available. The compact logic unit has resident IBM 3101 and 3161 compatibility, and accommodates new cartridges which emulate the following:

- DEC[4] VT220/100/52
- Wyse[5] 50/50
- Televideo 925/925E
- Other non-IBM terminals

The 3161/3162 conversion cartridges enhance the usability of the 3161 and 3162 printers when attached to a link protocol converter (3708/3710).

3163 ASCII Display Station

The 3163 ASCII Display Station brings new function and ergonomics to IBM ASCII displays. It is designed to attach to both IBM and non-IBM systems. Each unit contains IBM 3101 Model 881 (Model 230) emulation board, providing current 3101 users with a smooth migration path. A number of non-IBM ASCII display emulations are available for non-IBM processor attachment.

The 3163 is a high-function, entry-level, ASCII display station. Its characteristics include:

- Menu setup
- Definable function keys
- Split screen
- Character and field attributes
- Auxiliary port
- Cartridge capability
- ASCII keyboard with a numeric keypad

The display is a high-resolution, 12-inch monitor, and the keyboard has a low profile with tactile feedback. The 3163 provides a high-quality terminal for a variety of user applications.

The 3163 provides non-IBM 3101 emulation that allows a wide variety of processor attachments. The 3163 is particularly useful for engineering and scientific education, distribution, and manufacturing using IBM and non-IBM processor attachments.

New cartridges for the 3163 ASCII Display Station provide the additional read command feature on the 3163 and TeleVideo 950 emulation on the 3163.

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4 DEC is a trademark of the Digital Equipment Corp.

5 Wyse is a trademark of the Wyse Corp.

3164 ASCII Color Display Station

The newest addition to IBM's 316x family of ASCII display stations, the 3164 ASCII Color Display Station offers the advanced capabilities of the 3163 Display Station in eight colors on a high-resolution, 14-inch monitor. The low-profile keyboard has tactile feedback and is compatible with the keyboards on the 3161 and 3163.

Applications that call for multiple windows, smooth paging, and double size characters can now be presented in color.

As a member of a family of ASCII display stations, the 3164 is upwardly compatible from the 3161 and 3163 units. In its own mode, the 3164 defaults to four colors on programs written for the 3161/3163. The 3164 Model 230 also emulates the 3101 model 881, and provides four colors for 3101 programs in block mode.

6-Port ASCII Work Station Attachment

This attachment allows you to attach up to six ASCII ports to the ASCII work station controller. It does not contain active parts. It is attached on one end to the lower connecter of the ASCII work station controller (through a single cable) and to six ASCII work stations on the other end (through six 25-pin D shell connectors). The attachment is shipped with each ASCII work station controller.

12-Port ASCII Work Station Attachment

This attachment allows you to expand the work station attachment capability of the ASCII work station controller by 12 ports. It contains active parts and derives its power from the ASCII work station controller. It is attached on one end to the upper connector of the ASCII work station controller (through a single cable) and to 12 ASCII work stations on the other end (through twelve 25-pin D shell connectors). The attachment can be ordered if more than six ports are required on an ASCII work station controller.

3816 Printer

The 3816 Printer is a laser printer capable of printing 24 single-sided pages per minute. It uses the intelligent printer data stream (IPDS) including 240 by 240 pel graphics, image, and bar codes.

Characteristics of the 3816 Printer include:

- Face-down stacker
- 550-sheet input (primary)
- 250-sheet input (alternate)
- Optional 1200-sheet input
- 550-sheet output tray
- Advanced function printing (AFP)

3820 Printer

The 3820 Printer is a high-quality laser printer that provides cut-sheet, duplex printing for distributed printing applications. It operates at speeds up to 20 pages per minute (for single-sided printing), and it can be attached using a synchronous

data link control (SDLC) communications line or by using Remote PrintManager (RPM) running on a token-ring-attached PC AT[6] or PS/2[7] Model 30.

Refer to Appendix A, "Planning for Advanced Function Printing," for further 3820 attachment requirements.

Characteristics of the 3820 Printer include:

- Advanced function printing (AFP)
- All-points-addressable printing
- 240 by 240 pel
- Duplex printing
- Intelligent printer data stream (IPDS)

Up to 32 single-byte fonts per sheet can be stored and printed. Fonts can be printed in four orientations:

- 0°
- 90°
- 180°
- 270°

3825 Printer

The 3825 Printer is a high-speed, nonimpact, cut-sheet, 240-pel, all-points-addressable, duplex printer that does high-quality advanced function printing. The 3827 attaches to the AS/400 system using RPM on a token-ring attached PC AT or PS/2 model 30.

The 3825 Printer uses only IPDS architecture.

Refer to Appendix A, "Planning for Advanced Function Printing," for more information on the 3825 Printer.

3827 Printer

The 3827 Printer is a remotely-attached (using RPM), high-speed, nonimpact, cut-sheet, 240-pel, all-points-addressable, duplex printer that does high-quality advanced function printing. It handles many sizes of paper for printing at speeds up to 92 pages per minute. The 3827 attaches to the AS/400 system using RPM on a token-ring-attached PC AT or PS/2 model 30.

Refer to Appendix A, "Planning for Advanced Function Printing," for attachment requirements for the 3827 Printer.

Characteristics of the 3827 Printer include:

- High reliability
- Printer-resident tests for quick problem analysis
- Dual input supply capacity when using 75 g/m^2 xerographic paper
  - 2500 sheets in the primary (lower) drawer
  - 1000 sheets in the secondary (upper) drawer
- Advanced function printing

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6 PC AT is a registered trademark of the International Business Machines Corporation in the U.S.A. and/or other countries.

7 PS/2 is a registered trademark of the International Business Machines Corporation.

- Print orientations of:
  - 0°
  - 90°
  - 180°
  - 270°
- Prints up to 63 single-byte fonts per page
- IPDS architecture

3835 Printer

The 3835 Printer is an intermediate-speed, nonimpact, 240-pel, all-points-addressable, fanfold printer that does high-quality advanced function printing at speeds up to 88 pages per minute. The 3835 attaches to the AS/400 system using RPM on a token-ring-attached PC AT or PS/2 Model 30.

Refer to Appendix A, "Planning for Advanced Function Printing," for attachment requirements for the 3835 Printer.

Characteristics of the 3835 Printer include:

- Prints to within 1/6-inch of the page horizontal perforation
- High reliability
- Printer-resident tests for quick problem analysis
- Prints on preprinted and perforated forms
- Prints labels
- Print orientations of:
  - 0°
  - 90°
  - 180°
  - 270°
- Prints up to 63 single-byte fonts per page
- IPDS architecture

4201-2, 3 Proprinter II, III

The IBM Proprinter[8] II and III are low-to-medium use, narrow-carriage, near-letter-quality utility printers for the IBM PC family. The 4201 Models 2 and 3 are functionally enhanced companions to the IBM Proprinter family. Enhancements include:

- Increased print speed
  - 320 characters-per-second Fastfront[9]
  - 270 characters-per-second burst speed in 10 characters-per-inch draft mode
  - 65 characters-per-second, near-letter quality
- increased throughput
- An italics near letter quality (NLQ) II font
- Propark (one-touch paper parking function)

Options include:

- IBM Proprinter sheet feed
- 32K (K equals 1024 bytes) spooled file
- RS-232/RS-422 serial interface for serial attachment at speeds up to 38.4 kilobits per second.

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8 Proprinter is a registered trademark of the International Business Machines Corporation.

9 Fastfront is a trademark of the International Business Machines Corporation.

4202-1, 2, 3 Proprinter XL, II XL, III XL

The 4202 Proprinter is a wide-carriage, serial, dot-matrix printer that attaches to IBM Personal Computers and display stations with auxiliary printer ports.

The 4202 Proprinter adds high-speed, wide-carriage, desktop impact printing to the IBM Personal Computer family. Manual front sheet feed and continuous forms paper handling are integrated.

Characteristics include:

- 256-character print fonts that can be downloaded
- IBM Personal Computer-compatible parallel interface
- Optional asynchronous serial interface
- Optional 8K spooled file

The 4202-2 II XL is the wide-carriage equivalent of the 4201 Proprinter II, and it replaces the 4202-1 XL. Enhancements include:

- Fastfront
- NLQ II
- Paper tear assist

The 4202-3 III XL provides the following characteristics:

- Increased print speed
  - 320 characters-per-second Fastfront
  - 270 characters-per-second burst speed in 10 characters-per-inch draft mode
  - 65 characters-per-second, near-letter quality
- Increased throughput
- An italics NLQ II font
- Propark (one-touch paper parking function)

Options include:

- IBM Proprinter sheet feed
- 32K spooled file
- RS-232/RS-422 serial interface

4207-1, 2 Proprinter X24, X24E

The 4207 Proprinter X24 and X24E are narrow-carriage, high-speed, 24-wire, serial, dot-matrix, impact, letter-quality printers. They provide high-resolution graphics as well as all print functions of the Proprinter XL. They attach to:

- IBM Personal Computers
- Some IBM display stations
- Compatible, non-IBM personal computer hosts

The 4207 Proprinter X24 and X24E incorporate four-part forms handling and can print envelopes. They are designed for low to medium use. The Proprinter X24 and X24E attach to:

- IBM Personal Computers
- IBM display stations
- IBM processors

The 4207 X24 and X24E provide the following characteristics:

- Increased print speed

  - 240 characters-per-second draft mode
  - 80 characters-per-second, letter-quality printing at 10 characters per inch
- Increased throughput
- Propark (one-touch paper parking function)

Options include:

- IBM Proprinter sheet feed
- Font set
- RS-232/RS-422 serial interface

4208-1, 2 Proprinter XL24, XL24E

The 4208 Proprinter XL24 and XL24E are wide-carriage, high-speed, 24-wire, serial, dot-matrix, impact, letter-quality printers. They provide high-resolution graphics as well as all print functions of the Proprinter XL. They are designed for low to medium use, and attach to:

- IBM Personal Computers
- Some IBM display stations
- Compatible, non-IBM personal computer hosts

The 4208 XL24 and XL24E incorporate four-part forms handling and can print on envelopes. They attach to:

- IBM Personal Computers
- IBM display stations
- IBM processors

The 4208 XL24 and XL24E provide the following characteristics:

- Increased print speed
  - 240 characters-per-second draft mode
  - 80 characters-per-second, letter-quality at 10 characters per inch
- Increased throughput
- Propark (one-touch paper parking function)

Options include:

- IBM Proprinter sheet feed
- Font set
- RS-232/RS-422 serial interface

4216-D10 Personal Printer

The IBM 4216-D10 Personal Printer is a compact, table-top, ASCII printer which prints at speeds up to six pages per minute on letter-size paper using a laser/electrophotographic process. Letter-quality printing is provided at resolutions up to 300 by 300 dots per inch. The printer comes with 1M of main storage, which allows the customer to print limited graphics and handle additional fonts and images.

The printer has a 150-sheet input tray that automatically feeds paper and manually feeds envelopes, transparencies, and labels. The following output tray options are available:

Lower output tray
: Holds 100 sheets (20-pound paper) of nonsequential output.

Upper output tray
Holds 150 sheets (20-pound paper) of sequenced output.

The printer provides extensive compatibility with existing programs by supporting both the primary data stream (with 20 resident fonts) and the Proprinter data stream.

The following fonts are available in Roman-8, PC-8, and ECMA-94 symbol sets, portrait or landscape orientation:

- Courier 10, 10 bold
- Letter Gothic 12
- Gothic 17
- Prestige Elite[10] 12, 12 italic

The following fonts are available in the Roman-8 and ECMA-94 symbol sets in portrait orientation only:

- 10-point Press Roman medium, bold, italic
- 14-point Press Roman medium
- 10-point Foundry medium, bold, italic
- 14-point Foundry medium

The following fonts are resident fonts in code page 437 or 850 for the Proprinter data stream. Each font is available in portrait or landscape orientation.

- Courier 10, 12, 17
- Boldface PS

The 4216-D10 Personal Printer is designed for attachment to the IBM PC family and to selected IBM host systems.

Parallel and serial attachment interfaces are standard. The printer can be used with hardware applications designed for printer sharing. The 4216-D10 Personal Printer is designed for customer set-up and ease of use. The operator can communicate with the printer using the control panel containing LED indicators, push button switches, and a liquid crystal display. This high-function control display allows access to 69 programmable set-up parameters (44 are stored in nonvolatile memory) and displays over 88 status or error indications.

The following options are available:

Sheet Feeder Option
The sheet feeder option automatically feeds from two paper trays and an envelope tray. Each of the paper trays can hold up to 200 sheets (20 pound paper). In addition, single sheets can be fed manually with the sheet feeder in place. The printer and sheet feeder combine to use only one wall receptacle for ac power.

Memory Option
The one megabyte storage option allows the customer to print a full page (8.5 inches by 14 inches) of all-points-addressable graphics. This option also enables the printer to handle downloaded fonts and image data.

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[10] Elite is a trademark of the AT&T Corporation.

Gothic Font Option

The Gothic font cartridge is available for the Proprinter data stream and contains Gothic 10, 12, 17, and print stream in code page 437.

Prestige Font Option

The Prestige font cartridge is available for the Proprinter data stream and contains Prestige 10,12, 17, and printer stream in code page 437.

4234-12 Printer

The 4234-12 Printer is a stand-alone, dot-band, impact printer. It has a maximum speed of 700 lines per minute. The dot-band technology allows it to maintain the print rate independent of character set or line length. Its characteristics include:

- 4224 emulation
- 3, 4, 6, and 8 lines per inch
- 10, 12, 13.3, 16.4, and 18 characters per inch on a proportional spacing machine
- 700, 500, and 150 lines per minute (lpm)
- Six-part forms capability
- Draft, text, and near-letter quality printing
- All Points Addressable (APA) graphics, 144 pel
- IPDS system unit support for graphics, images, page segments, overlays, loaded fonts, and bar codes

4234-13 Printer

The 4234-13 Printer is a stand-alone, dot-band, ASCII-attached impact printer. It has a maximum speed of 800 lines per minute. The dot-band technology allows it to maintain the print rate independent of character set or line length. The attachment is set up for each use through operations display menus. Its characteristics include:

- Serial interface (300 to 38.4K band)
- Parallel interface
- Proprinter (4202-base) command subset
- RS-232/RS-422 attachment
- 3, 4, 6, 8, and 12 lines per inch
- 10, 12, 13.3, 16.7, and 18 characters per inch on a proportional spacing mode (PSM)
- 700, 500, and 150 lines per minute (lpm)
- Six-part forms capability
- Draft, text, and near-letter quality printing
- Graphics capabilities
- IPDS system unit support for graphics, images, page segments, overlays, loaded fonts, and bar codes

6262-T14 Printer

The 6262-T14 Printer is an intermediate-speed impact printer. It sets new IBM price performance standards for 1400 lpm printer users. With the full-formed character print head, users can produce print at least as good as that of 4245 printers. The operator-called flight timing function allows easy maintenance of print quality. Characteristics include:

- Lower price
- Improved price performance
- Enhanced reliability
- 12-month warranty
- Easier-to-use forms setup procedures
- Six-part forms capability
- 132 print positions at 10 print positions per inch
- Four tractors

5259 Migration Data Link

The 5259 Migration Data Link performs the following functions:

Transfers data between two host systems

The 5259 data link attaches to two host systems and transfers data between them.

Maintains an inactive host session

The 5259 data link allows display stations to alternate between host sessions. While the operator is in one session, the 5259 data link saves and maintains the other session. The 5259 data link stores the information appearing on the last display before the switch occurs. After the switch, it updates the stored display data with changes from the host. When the operator switches back, the 5259 data link presents an up-to-date display (except for printers). Printers attached to the 5259 data link can operate on only one session at a time.

Performs diagnostic testing

The 5259 data link automatically performs a diagnostic test (called the initialization test) each time you turn on the power. If the test runs correctly, the R (Ready) light on the 5259 front display lights.

Identifies attached displays and printers

The 5259 data link checks the displays and printers attached to it, automatically identifies them, and makes the information available to the host system.

Tasks that may involve making choices, such as configuration, are performed at an attached display station. This way, the 5259 data link can guide you using a series of displays. The displays contain menus and instructions to help you make changes quickly and correctly.

Switches a printer to a different session

You may switch a printer from one host session to another. Using an attached display station, you can display instructions for the transfer.

8209 LAN Bridge

The 8209 LAN Bridge connects an IBM Token-Ring Network and an Ethernet[11] Local Area Network (LAN). Systems and work stations with compatible protocols such as TCP/IP can communicate across this connection. The 8209 handles the conversion necessary to route information between dissimilar LANs. Token-ring stations view the 8209 as a bridge to another token-ring. To Ethernet stations, the 8209 LAN Bridge is functionally transparent.

The AS/400 TCP/IP connectivity utility, used with the 8209 LAN Bridge, provides the AS/400 system customer with mixed vendor communication capability.

9270 Voice Response Unit

The 9270 Voice Response Unit (VRU) is a telephony and data processing system which automates telephone transactions. The 9270 VRU provides telephone access to information including host data, and can place host-initiated calls. Using a telephone as a work station, a person calling enters choices and data through the telephone keypad. The VRU responds with prompts and host data in digitally-stored human voice. The 9270 VRU emulates IBM 3196 (5250 family) terminals. One 9270 can accommodate four simultaneous telephone calls, each having an associated host connection through the twinaxial cable.

Planning for Hardware

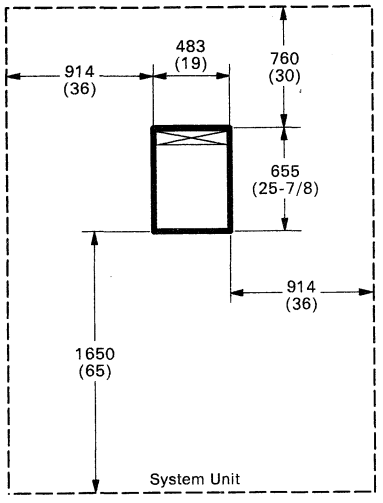
Each device described in the section that follows attaches to both the AS/400 9404 and AS/400 9406 System Units, unless otherwise noted. A dash (—) in the product specifications indicates the value is not applicable.

The plan views of the hardware described here can be copied, cut out, and placed on your floor plan. Each plan view represents the highest possible dimensions. Use the information in the specifications sections to determine the dimensions of each device.

[11] Ethernet is a registered trademark of the Xerox Coroporation.

9406 System Unit Model B70

Plan View



RSLC678-1

Specifications

Dimensions (system unit):

	Width	Depth	Height
Millimeters	483	655	702
Inches	19	25.8	28

Service Clearances (rack):	**Front**	**Rear**	**Right**	**Left**
Millimeters	1650	760	914	914
Inches	65	30	36	36

Weight: 134 kg (296 lb)[1]

Heat Output (varies with supply voltage):

Watts	860
BTU/hr	2930

Power Requirements:

kVA	1.24

Operating Environment:

Temperature, dry bulb	10° to 38° C (50° to 100° F)
Relative humidity	8% to 80%
Temperature, wet bulb	23° C (73° F)

Nonoperating Environment:

Temperature, dry bulb	10° to 52° C (50° to 125° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

[1] Weight includes rack hardware.

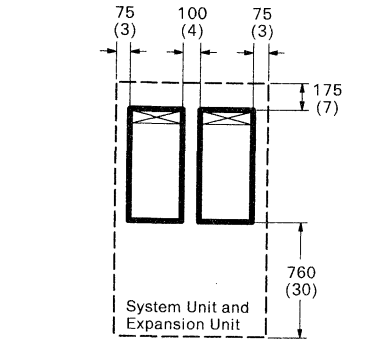
Product Noise Emission Values

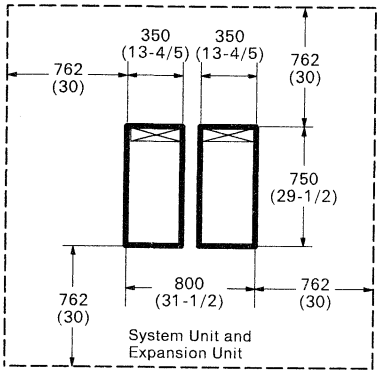
LwAd		LpAm		<LpA>m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
6.9	6.9	–	–	53	53

RSLC653-0

9404 System Unit and Expansion Unit

Plan View





RSLC654-2

Specifications

Dimensions:

	Width	Depth	Height
Millimeters	800	750	650
Inches	31.5	29.5	25.6

Service Clearances:

	Front	Rear	Right	Left
Millimeters	762	762	762	762
Inches	30	30	30	30

Weight: 182 kg (400 lb)

Heat Output (varies with supply voltage):

Watts	700
BTU/hr	2380

Power Requirements:

kVA	1.25

Operating Environment:

Temperature, dry bulb	10° to 38° C (50° to 100° F)
Relative humidity	8% to 80%
Temperature, wet bulb	23° C (73° F)

Nonoperating Environment:

Temperature, dry bulb	10° to 52° C (50° to 125° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

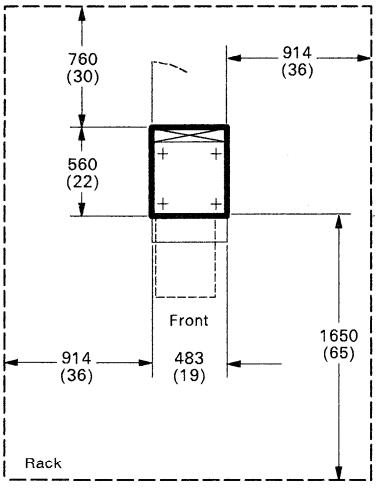
Product Noise Emission Values

LwAd		LpAm		< LpA > m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
6.0	5.8	–	–	40	39

RSLC655-0

9332 Model 600 Storage Device (9406 only)

Plan View



RSLC656-3

Specifications

Dimensions (unit):

	Width	Depth	Height
Millimeters	483	560	129
Inches	19	22	5

Service Clearances (rack):	**Front**	**Rear**	**Right**	**Left**
Millimeters	1650	760	914	914
Inches	65	30	36	36

Weight: 35 kg (77 lb)[1]

Heat Output (varies with supply voltage):

Watts	115
BTU/hr	390

Power Requirements:

kVA	0.20

Operating Environment:

Temperature, dry bulb	10° to 41° C (50° to 105° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

Nonoperating Environment:

Temperature, dry bulb	10° to 52° C (50° to 125° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

[1] Weight includes rack hardware.

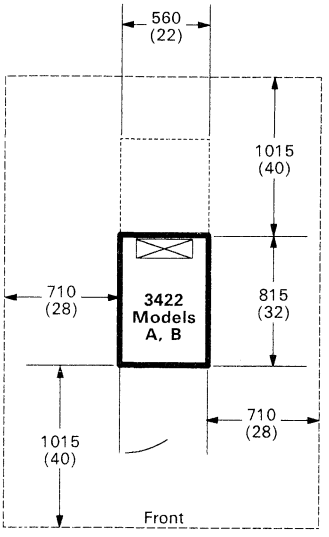
Product Noise Emission Values

LwAd		LpAm		<LpA>m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
5.8	5.8	–	–	43	43

RSLC657-0

3422 Magnetic Tape Unit Models A and B (9406 only)

Plan View



RSLC658-2

Specifications

Dimensions:

	Width	Depth	Height
Millimeters	560	815	1525
Inches	22	32	60

Service Clearances:

	Front	Rear	Right	Left
Millimeters	1015	1015	710	710
Inches	40	40	28	28

Weight: 295 kg (650 lb)

Heat Output (varies with supply voltage):

Watts	1830
BTU/hr	6250

Power Requirements:

kVA	2.3

Operating Environment:

Temperature, dry bulb	16° to 32° C (60° to 90° F)
Relative humidity	20% to 80%
Temperature, wet bulb	26° C (78° F)

Nonoperating Environment:

Temperature, dry bulb	10° to 43° C (50° to 110° F)
Relative humidity	20% to 80%
Temperature, wet bulb	27° C (80° F)

Product Noise Emission Values

LwAd		LpAm		< LpA > m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
7.1	7.2	–	–	58	59

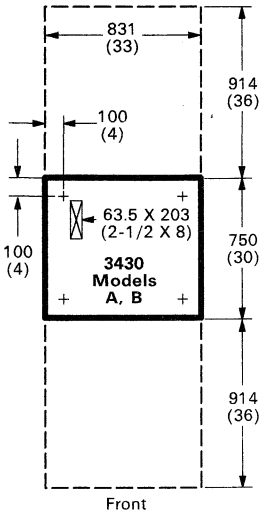
This device is designed for a different acoustic environment than the 9406 System Unit. For noise considerations, the device should be installed in a data processing area rather than a general business area.

A data processing area is designed for data processing equipment (a computer room). A general business area is an administrative office, word processing center, bank teller station, and so forth.

RSLC659-1

3430 Magnetic Tape Unit Models A and B (9406 only)

Plan View



RSLC660-2

Specifications

Dimensions:

	Width	Depth	Height
Millimeters	831	750	1000
Inches	33	30	39

Service Clearances:

	Front	Rear	Right	Left
Millimeters	914	914	—	—
Inches	36	36	—	—

Weight: 215 kg (470 lb)

Heat Output (varies with supply voltage):

Watts	1100
BTU/hr	3700

Power Requirements:

kVA	1.2

Operating Environment:

Temperature, dry bulb	16° to 32° C (60° to 90° F)
Relative humidity	20% to 80%
Temperature, wet bulb	26° C (78° F)

Nonoperating Environment:

Temperature, dry bulb	10° to 43° C (50° to 110° F)
Relative humidity	20% to 80%
Temperature, wet bulb	27° C (80° F)

[1] Dash (—) indicates not applicable.

Product Noise Emission Values

LwAd		LpAm		< LpA > m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
7.3	6.4	—	—	56	48

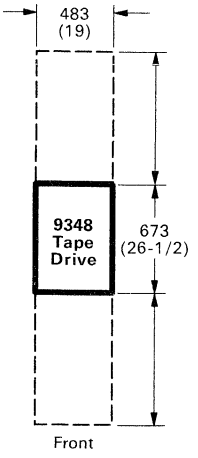
This device is designed for a different acoustic environment than the 9406 System Unit. For noise considerations, the device should be installed in a data processing area rather than a general business area.

A data processing area is designed for data processing equipment (a computer room). A general business area is an administrative office, word processing center, bank teller station, and so forth.

RSLC661-1

9348 Magnetic Tape Unit

Plan View



RSLC691-0

Specifications

Dimensions:

	Width	Depth	Height
Millimeters	483	673	222
Inches	19	26.5	8.8

Service Clearances:

	Front	Rear	Right	Left
Millimeters				
Inches				

Weight: 48 kg (105 lb)

Heat Output (varies with supply voltage):

Watts	130
BTU/hr	474

Power Requirements:

kVA	0.25

Operating Environment:
Temperature, dry bulb
Relative humidity
Temperature, wet bulb

Nonoperating Environment:
Temperature, dry bulb
Relative humidity
Temperature, wet bulb

Product Noise Emission Values

LwAd		LpAm		< LpA > m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
5.9	5.8	–	–	42	41

This device is designed for a different acoustic environment than the 9406 System Unit. For noise considerations, the device should be installed in a data processing area rather than a general business area.

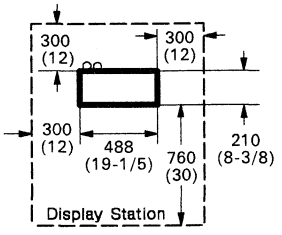
A data processing area is designed for data processing equipment (a computer room). A general business area is an administrative office, word processing center, bank teller station, and so forth.

RSLC690-0

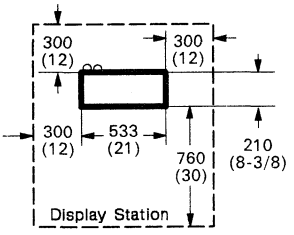
3476 Display Station

Plan View

With 102-Key
Enhanced Keyboard



With 122-Key
Keyboard



RSLC662-2

Specifications

Dimensions:

	Width	Depth	Height
Millimeters (102-key)	488	210	30
Inches (102-key)	19.2	8.3	1.2
Millimeters (122-key)	533	210	30
Inches (122-key)	21.0	8.3	1.2

Service Clearances:

	Front	Rear	Right	Left
Millimeters	760	300	300	300
Inches	30	12	12	12

Weight: 9.5 kg (18.3 lb); 12.5 kg (33 lb) including keyboard

Heat Output (varies with supply voltage):

Watts	35
BTU/hr	88

Power Requirements:

kVA	0.09

Operating Environment:

Temperature, dry bulb	16° to 32° C (60° to 90° F)
Relative humidity	8% to 80%
Temperature, wet bulb	23° C (73° F)

Nonoperating Environment:

Temperature, dry bulb	10° to 43° C (50° to 110° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

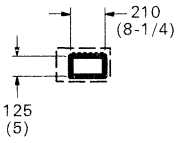
Product Noise Emission Values

LwAd		LpAm		< LpA > m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
4.0	4.0	24	24	21	21

RSLC663-0

6-Port ASCII Work Station Attachment

Plan View



RSLC681-1

Specifications[1]

Dimensions:

	Width	Depth	Height
Millimeters	210	125	85
Inches	8.3	5	3.3

Service Clearances:

	Front	Rear	Right	Left
Millimeters	—	—	—	—
Inches	—	—	—	—

Weight: 2 kg (5 lb)

Heat Output (varies with supply voltage):

Watts	—
BTU/hr	—

Power Requirements:

kVA	—

Operating Environment:

Temperature, dry bulb	—
Relative humidity	—
Temperature, wet bulb	—

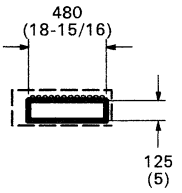
Nonoperating Environment:

Temperature, dry bulb	—
Relative humidity	—
Temperature, wet bulb	—

[1] Dash (—) indicates not applicable.
No noise below 10 000 Hertz is emitted.

12-Port ASCII Work Station Attachment

Plan View



RSLC682-1

Specifications[1]

Dimensions:

	Width	Depth	Height
Millimeters	480	125	150
Inches	18.9	5	5.9

Service Clearances:

	Front	Rear	Right	Left
Millimeters	—	—	—	—
Inches	—	—	—	—

Weight: 4 kg (10 lb)

Heat Output (varies with supply voltage):

Watts	—
BTU/hr	—

Power Requirements:

kVA	—

Operating Environment:

Temperature, dry bulb	—
Relative humidity	—
Temperature, wet bulb	—

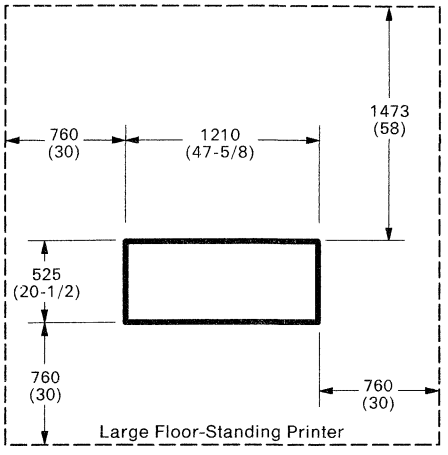
Nonoperating Environment:

Temperature, dry bulb	—
Relative humidity	—
Temperature, wet bulb	—

[1] Dash (—) indicates not applicable.
No noise below 10 000 Hertz is emitted.

3816 Printer

Plan View



RSLC665-4

Specifications

Dimensions:

	Width	Depth	Height
Millimeters	1210	525	380
Inches	47.6	20.5	14.9

Service Clearances:

	Front	Rear	Right	Left
Millimeters	760	1473	760	760
Inches	30	58	30	30

Weight: 63 kg (138 lb)

Heat Output (varies with supply voltage):

Watts (operating)	570
Watts (standby)	242
BTU/hr (operating)	1950
BTU/hr (standby)	826

Power Requirements:

kVA	1.3

Operating Environment:

Temperature, dry bulb	18° to 29° C (65° to 85° F)
Relative humidity	15% to 72%
Temperature, wet bulb	24° C (76° F)

Nonoperating Environment:

Temperature, dry bulb	10° to 52° C (50° to 125° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

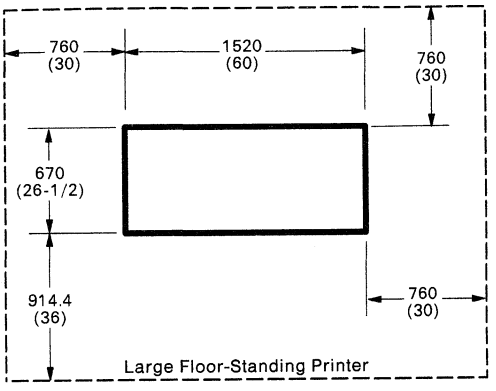
Product Noise Emission Values

LwAd		LpAm		< LpA > m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
7.0	5.5	–	–	57	48

RSLC666-0

3820 Printer

Plan View



RSLC693-0

Specifications

Dimensions:

	Width	Depth	Height
Millimeters	1520	670	1190
Inches	60	26.5	470

Service Clearances:

	Front	Rear	Right	Left
Millimeters	914.4	760	760	760
Inches	36	30	30	30

Weight: 272 kg (600 lb)

Heat Output (varies with supply voltage):

Watts	1400
BTU/hr	4780

Power Requirements:

kVA	—

Operating Environment:

Temperature, dry bulb	18° to 29° C (65° to 85° F)
Relative humidity	20% to 90%
Temperature, wet bulb	23° C (73° F)

Nonoperating Environment:

Temperature, dry bulb	10° to 52° C (50° to 125° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° (80° F)

Product Noise Emission Values

LwAd		LpAm		< LpA > m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
8.6	7.3	–	–	68	57

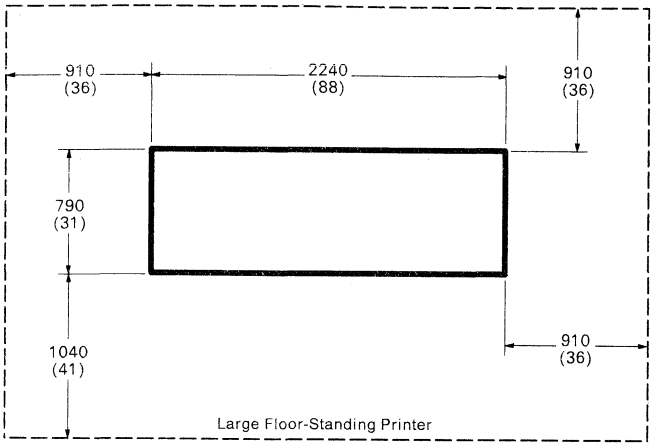
This device is designed for a different acoustic environment than the 9406 System Unit. For noise considerations, the device should be installed in a data processing area rather than a general business area.

A data processing area is designed for data processing equipment (a computer room). A general business area is an administrative office, word processing center, bank teller station, and so forth.

RSLC667-1

3825 Printer

Plan View



RSLC677-1

Specifications

Dimensions:

	Width	Depth	Height
Millimeters	2240	790	1270
Inches	88	31	50

Service Clearances:

	Front	Rear	Right	Left
Millimeters	1040	910	910	910
Inches	41	36	36	36

Weight: 830 kg (1830 lb)

Heat Output (varies with supply voltage):

Watts	6000
BTU/hr	20 500

Power Requirements:

kVA	9.0

Operating Environment:

Temperature, dry bulb	16° to 29° C (60° to 85° F)
Relative humidity	20% to 80%
Temperature, wet bulb	23° C (73° F)

Nonoperating Environment:

Temperature, dry bulb	16° to 29° C (60° to 85° F)
Relative humidity	20% to 80%
Temperature, wet bulb	4° to 38° C (40° to 100° F)

Product Noise Emission Values

LwAd		LpAm		<LpA>m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
7.8	7.0	–	–	61	53

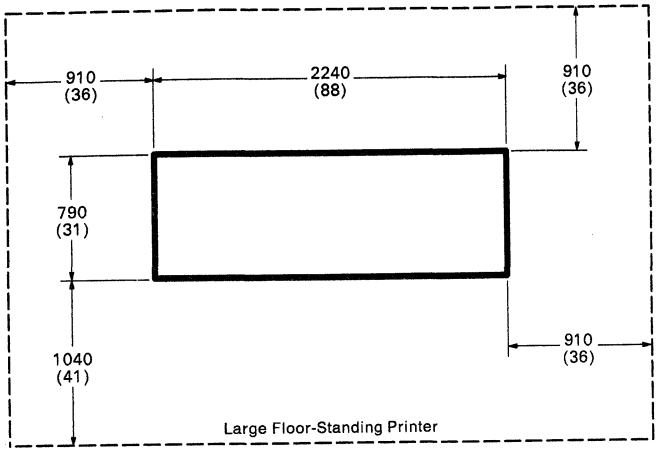
This device is designed for a different acoustic environment than the 9406 System Unit. For noise considerations, the device should be installed in a data processing area rather than a general business area.

A data processing area is designed for data processing equipment (a computer room). A general business area is an administrative office, word processing center, bank teller station, and so forth.

RSLC683-1

3827 Printer

Plan View



RSLC677-1

Specifications

Dimensions:

	Width	Depth	Height
Millimeters	2240	790	1270
Inches	88	31	50

Service Clearances:

	Front	Rear	Right	Left
Millimeters	1040	910	910	910
Inches	41	36	36	36

Weight: 675 kg (1675 lb)

Heat Output (varies with supply voltage):

Watts	4200
BTU/hr	14 500

Power Requirements:

kVA	9.0

Operating Environment:

Temperature, dry bulb	16° to 32° C (60° to 90° F)
Relative humidity	20% to 80%
Temperature, wet bulb	23° C (73° F)

Nonoperating Environment:

Temperature, dry bulb	10° to 43° C (50° to 109° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

Product Noise Emission Values

LwAd		LpAm		< LpA > m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
8.5	7.5	–	–	68	57

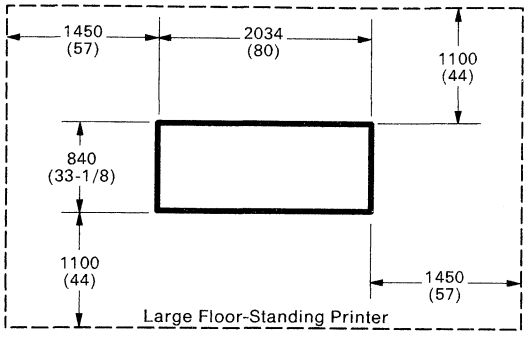
This device is designed for a different acoustic environment than the 9406 System Unit. For noise considerations, the device should be installed in a data processing area rather than a general business area.

A data processing area is designed for data processing equipment (a computer room). A general business area is an administrative office, word processing center, bank teller station, and so forth.

RSLC679-1

3835 Printer

Plan View



RSLC694-0

Specifications

Dimensions:

	Width	Depth	Height
Millimeters	2034	840	1413
Inches	80	33.1	55.6

Service Clearances:

	Front	Rear	Right	Left
Millimeters	1100	1100	1450	1450
Inches	44	44	57	57

Weight[1]: 848 kg (1866 lb)

Heat Output (varies with supply voltage):

Watts	6000
BTU/hr	20 500

Power Requirements:

kVA	—

Operating Environment:

Temperature, dry bulb	16° to 32° C (60° to 90° F)
Relative humidity	20% to 80%
Temperature, wet bulb	23° C (73° F)

Nonoperating Environment:

Temperature, dry bulb	10° to 43° C (50° to 109° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

[1] Printer and controller.

Product Noise Emission Values

LwAd		LpAm		< LpA > m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
7.7	7.7	–	–	59	55

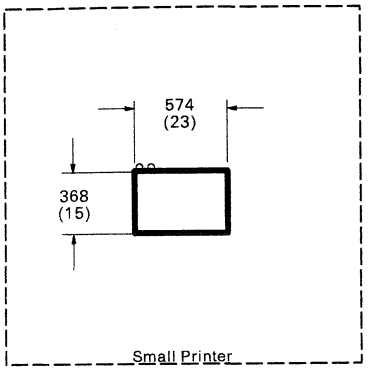
This device is designed for a different acoustic environment than the 9406 System Unit. For noise considerations, the device should be installed in a data processing area rather than a general business area.

A data processing area is designed for data processing equipment (a computer room). A general business area is an administrative office, word processing center, bank teller station, and so forth.

RSLC680-1

4201-2, 3 Proprinter II, III

Plan View



RSLC676-3

Specifications

Dimensions:

	Width	Depth	Height
Millimeters	404	343	133
Inches	16	13.5	5.25

Service Clearances:

	Front	Rear	Right	Left
Millimeters	*[1]	*	*	*
Inches	*	*	*	*

Weight: 6 kg (19 lb)

Heat Output (varies with supply voltage):

Watts	44
BTU/hr	150

Power Requirements:

kVA	0.12

Operating Environment:

Temperature, dry bulb	10° to 41° C (50° to 105° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

Nonoperating Environment:

Temperature, dry bulb	*
Relative humidity	*
Temperature, wet bulb	*

[1] Information not available.

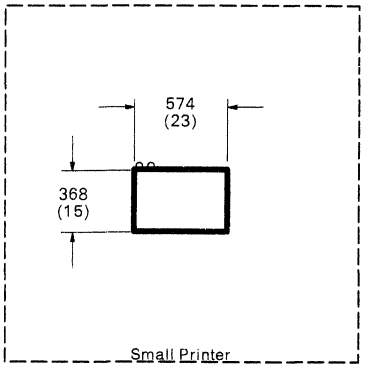
Product Noise Emission Values

LwAd		LpAm		<LpA>m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
7.4	–	67	–	60	–

RSLC668-0

4202-1, 2, 3 Proprinter XL, II XL, III XL

Plan View



RSLC676-3

Specifications

Dimensions:

	Width	Depth[1]	Height
Millimeters	574	368	140
Inches	23	15	6

Service Clearances:

	Front	Rear	Right	Left
Millimeters	*[2]	*	*	*
Inches	*	*	*	*

Weight: 11 kg (24 lb)

Heat Output (varies with supply voltage):

Watts	44
BTU/hr	150

Power Requirements:

kVA	0.12

Operating Environment:

Temperature, dry bulb	10° to 41° C (50° to 105° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

Nonoperating Environment:

Temperature, dry bulb	*
Relative humidity	*
Temperature, wet bulb	*

[1] Depth includes the operator display.
[2] Information not available.

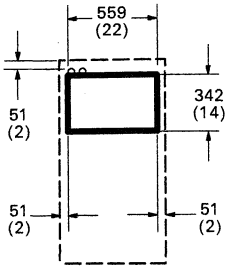
Product Noise Emission Values

LwAd		LpAm		<LpA>m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
7.4	–	67	–	60	–

RSLC670-0

4207-1, 2 Proprinter X24, X24E

Plan View



Small Printer

RSLC695-0

Specifications

Dimensions:

	Width	Depth	Height
Millimeters	559	342	122
Inches	22	14	5

Service Clearances:

	Front	Rear	Right	Left
Millimeters	*[1]	51	51	51
Inches	*	2	2	2

Weight: 12 kg (27 lb)

Heat Output (varies with supply voltage):

Watts (operating)	44
Watts (idle)	20
BTU/hr (operating)	150
BTU/hr (idle)	68

Power Requirements:

kVA	0.12 (printing), 0.06 (standby)

Operating Environment:

Temperature, dry bulb	*
Relative humidity	*
Temperature, wet bulb	*

Nonoperating Environment:

Temperature, dry bulb	*
Relative humidity	*
Temperature, wet bulb	*

[1] Information not available.

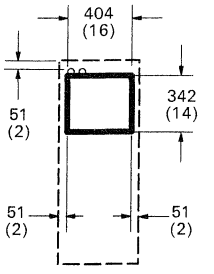
Product Noise Emission Values

LwAd		LpAm		< LpA > m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
7.4	–	66	–	60	–

RSLC671-0

4208-1, 2 Proprinter XL24, XL24E

Plan View



Small Printer

RSLC696-0

Specifications

Dimensions:

	Width	Depth	Height
Millimeters	464	342	122
Inches	16	14	5

Service Clearances:

	Front	Rear	Right	Left
Millimeters	*[1]	51	51	51
Inches	*	2	2	2

Weight: 8 kg (17 lb)

Heat Output (varies with supply voltage):

Watts (operating)	44
Watts (idle)	20
BTU/hr (operating)	150
BTU/hr (idle)	68

Power Requirements:

kVA	0.12 (printing), 0.06 (standby)

Operating Environment:

Temperature, dry bulb	*
Relative humidity	*
Temperature, wet bulb	*

Nonoperating Environment:

Temperature, dry bulb	*
Relative humidity	*
Temperature, wet bulb	*

[1] Information not available.

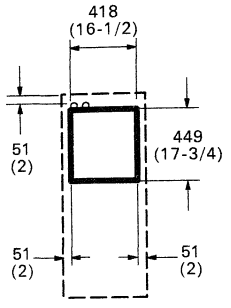
Product Noise Emission Values

LwAd		LpAm		<LpA>m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
7.4	–	66	–	60	–

RSLC672-0

4216-D10 Personal Printer

Plan View



Small Printer

RSLC697-0

Specifications

Dimensions:

	Width	Depth	Height
Millimeters	418	449	212
Inches	16.5	17.7	8.4

Service Clearances:

	Front	Rear	Right	Left
Millimeters	—	51	51	51
Inches	—	2	2	2

Weight: 18.2 kg (40 lb)

Heat Output (varies with supply voltage):

Watts (operating)	44
Watts (idle)	20
BTU/hr (operating)	150
BTU/hr (idle)	68

Power Requirements:

kVA	0.12 (printing), 0.06 (standby)

Operating Environment:

Temperature, dry bulb	15.6° to 32.2° C (60° to 90° F)
Relative humidity	20% to 80%
Temperature, wet bulb	22.8° C (73° F)

Nonoperating Environment:

Temperature, dry bulb	10° to 43° C (50° to 109° F)
Relative humidity	10% to 80%
Temperature, wet bulb	26.7° C (80° F)

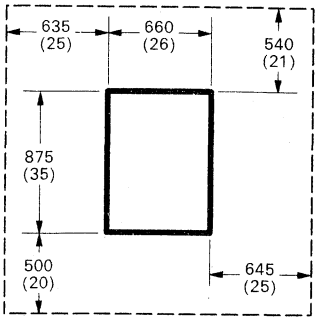
Product Noise Emission Values

LwAd		LpAm		<LpA>m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
—	—	52	48	—	—

RSLC684-0

4234-12 Printer

Plan View



Large Floor-Standing Printer

RSLC698-0

Specifications

Dimensions:

	Width	Depth	Height
Millimeters	660	875	958 (1265 with cover raised)
Inches	26	35	38 (50 with cover raised)

Service Clearances:[1]

	Front	Rear	Right	Left
Millimeters	500	540	645	635
Inches	20	21	25	25

Weight: 48 kg (105 lb), stand 9 kg (20 lb)

Heat Output (varies with supply voltage):

Watts	600
BTU/hr	2041

Power Requirements:

kVA	0.9

Operating Environment:

Temperature, dry bulb	10° to 41° C (50° to 105° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

Nonoperating Environment:

Temperature, dry bulb	10° to 52° C (50° to 125° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

[1] A 180-mm (7-inch) clearance for loading paper must be provided under the front of the printer.

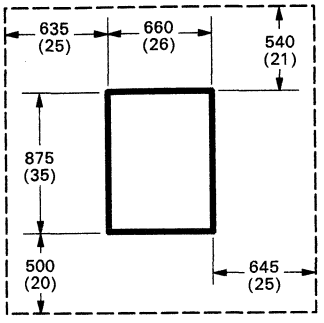
Product Noise Emission Values

LwAd		LpAm		<LpA>m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
–	–	–	–	57	44

RSLC673-0

4234-13 Printer

Plan View



Large Floor-Standing Printer

RSLC698-0

Specifications

Dimensions:

	Width	Depth	Height
Millimeters	660	875	958 (1265 with cover raised)
Inches	26	35	38 (50 with cover raised)

Service Clearances:[1]

	Front	Rear	Right	Left
Millimeters	500	540	645	635
Inches	20	21	25	25

Weight: 48 kg (105 lb), stand 9 kg (20 lb)

Heat Output (varies with supply voltage):

Watts	600
BTU/hr	2041

Power Requirements:

kVA	0.9

Operating Environment:

Temperature, dry bulb	10° to 41° C (50° to 105° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

Nonoperating Environment:

Temperature, dry bulb	10° to 52° C (50° to 125° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

[1] A 180-mm (7-inch) clearance for loading paper must be provided under the front of the printer.

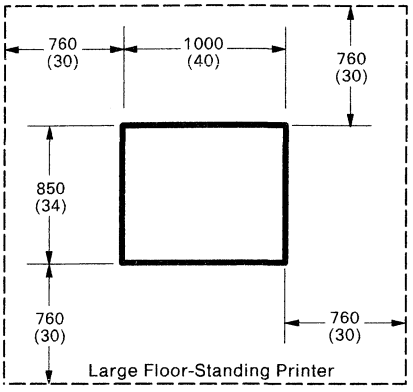
Product Noise Emission Values

LwAd		LpAm		<LpA>m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
–	–	–	–	57	44

RSLC673-0

6262-T14 Printer

Plan View



RSLC699-0

Specifications

Dimensions:

	Width	Depth	Height
Millimeters	1000	850	1360
Inches	40	34	54

Service Clearances:

	Front	Rear	Right	Left
Millimeters	760	760	760	760
Inches	30	30	30	30

Weight: 301 kg (665 lb)

Heat Output (varies with supply voltage):

Watts	1250
BTU/hr	4260

Power Requirements:

kVA	1.5

Operating Environment:

Temperature, dry bulb	10° to 41° C (50° to 105° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

Optical Character Recognition (OCR) Applications:

Temperature, dry bulb	16° to 29° C (60° to 85° F)
Relative humidity	20% to 52%
Temperature, wet bulb	22° C (72° F)

Nonoperating Environment:

Temperature, dry bulb	10° to 52° C (50° to 125° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

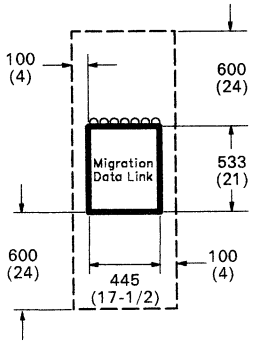
Product Noise Emission Values

LwAd		LpAm		< LpA > m	
Operating (bels)	Idling (bels)	Operating (dB)	Idling (dB)	Operating (dB)	Idling (dB)
7.5	6.7	–	–	58	52

RSLC674-1

5259 Migration Data Link

Plan View



RSLC675-3

Specifications[1]

Dimensions:

	Width	Depth	Height
Millimeters	445	533	133.4
Inches	17.5	21	5.25

Service Clearances:

	Front	Rear	Right	Left
Millimeters	600	600	100	100
Inches	24	24	4	4

Weight: 6 kg (13 lb)

Heat Output (varies with supply voltage):

Watts	32
BTU/hr	110

Power Requirements:

kVA	0.07

Operating Environment:

Temperature, dry bulb	10° to 41° C (50° to 105° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

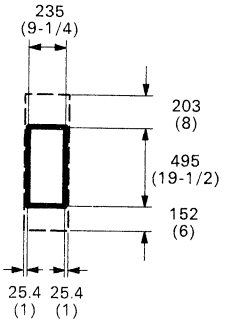
Nonoperating Environment:

Temperature, dry bulb	10° to 52° C (50° to 125° F)
Relative humidity	8% to 80%
Temperature, wet bulb	27° C (80° F)

[1] Refer to device manuals for product noise emission values.

9270 Voice Response Unit

Plan View



RSLC689-0

Specifications[1]

Dimensions:

	Width	Depth	Height
Millimeters	235	495	480
Inches	9.25	19.5	18.9

Service Clearances:

	Front	Rear	Right	Left
Millimeters	152	203	25.4	25.4
Inches	6	8	1	1

Weight: 19.5 Kg (43 lb)

Heat Output (maximum):

BTU/hr	922

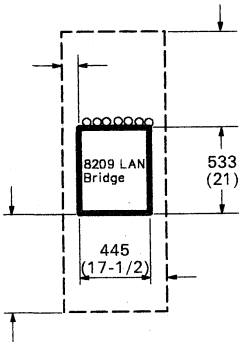
Operating Environment:

Temperature, dry bulb	5° to 40° C (4° to 104° F)
Relative humidity	10% to 80%

[1] Refer to device manuals for product noise emission values.

8209 LAN Bridge

Plan View



RSLC692-1

Specifications[1]

Dimensions:

	Width	Depth	Height
Millimeters	445	533	133.35
Inches	17.5	21.0	5.25

Service Clearances:

	Front	Rear	Right	Left
Millimeters	—	—	—	—
Inches	—	—	—	—

Weight: 9.1 kg. (20 lbs)

Heat Output (maximum):
BTU/hr —

Operating Environment:
Temperature, dry bulb —
Relative humidity —

[1] Refer to device manuals for product noise emission values.

Planning for ASCII Devices

This section describes the ASCII display stations and printers that attach to the ASCII work station controller. The information should help you perform the following tasks when planning for your ASCII devices:

- Complete the information form
- Draw the floor plan for ASCII devices
- Add the plan views for ASCII devices
- Plan the cabling requirements for ASCII devices
- Complete the ASCII work station diagrams
- Complete the ASCII work station controller index
- Determine the types of cables needed for ASCII devices

Note: If you need information on how to perform tasks related to planning for your new devices, order the *Planning Guide — 9404* or the *Planning Guide — 9406* (whichever is appropriate).

ASCII Display Stations

The following ASCII display stations attach to the ASCII work station controller:

Figure 2-1 (Page 1 of 2). ASCII Display Stations

Actual Device Type	Actual Model Number[1]	Emulated Device
3101	23	3196 A2
3151	11, 31, 41	3196 A2
3161	11, 12	3196 A2
3162	11, 12, 31, 32,	3196 A2
3163	11, 12	3196 A2
3164	11, 12	3197 C2
Personal computers or Personal System/2s[2]		
T910 (TeleVideo 910)		3196 A2
T925 (TeleVideo 925)		3196 A2
T955 (TeleVideo 955)		3196 A2
V100 (DEC VT-100)		3196 A2
V220 (DEC VT-220)		3196 A2
W30 (Wyse WY30[3])		3196 A2
W50 (Wyse WY50[3])		3196 A2
W60 (Wyse WY60[3])		3196 A2

Figure 2-1 (Page 2 of 2). ASCII Display Stations

Actual Device Type	Actual Model Number[1]	Emulated Device
D220 (Data General Dasher[4] D220)		3197 C2

[1] If the actual model number cannot be determined, *ASCII can be used during configuration to represent a generic ASCII model number.

[2] Personal computers or personal systems must emulate a supported ASCII display station. Personal System/2 is a registered trademark of the International Business Machines Corporation.

[3] WY30, WY50, and WY60 are trademarks of Wyse Corp.

[4] Dasher is a trademark of Data General Corporation.

ASCII Printers

Following are the ASCII printers that attach to the ASCII work station controller:

Figure 2-2 (Page 1 of 2). ASCII Printers

Actual Device Type[1]	Actual Model Number[2]	Emulated Device
4201 (IBM Proprinter II)	2	5224 0001 5256 0003
4201 (IBM Proprinter III)	3	5224 0001 5256 0003
4202 (IBM Proprinter XL)	1	5224 0001 5256 0003
4202 (IBM Proprinter II XL)	2	5224 0001 5256 0003
4202 (IBM Proprinter III XL)	3	5224 0001 5256 0003
4207 (IBM Proprinter X24)	1	5219 D2 5224 0001 5256 0003
4207 (IBM Proprinter X24E)	2	5219 D2 5224 0001 5256 0003
4208 (IBM Proprinter XL24)	1	5219 D2 5224 0001 5256 0003
4208 (IBM Proprinter XL24E)	2	5219 D2 5224 0001 5256 0003
4216 (IBM Personal Printer)	10	5219 D2 5224 0001 5256 0003
4224	301, 302, 303	5219 D2 5224 0001 5256 0003

Figure 2-2 (Page 2 of 2). ASCII Printers

Actual Device Type[1]	Actual Model Number[2]	Emulated Device
4234	13	5224 0001 5256 0003
5204 (IBM Quickwriter[3])	1	5219 D2 5224 0001 5256 0003

[1] Other printers can attach to the AS/400 system if they can emulate one of the supported printers.

[2] If the actual model number cannot be determined, *ASCII can be used during configuration to represent a generic ASCII model number.

[3] Quickwriter is a registered trademark of the International Business Machines Corporation.

Enhancements

The following hardware enhancements are available as part of this release.

9406 Model B35 and Model B45 System Units

Two new models of the 9406 System Unit are available for this release. The 9406 Model B35 and Model B45 System Units offer:

- Improved price performance
- Modular packaging installed in the rack used by other 9406 models
- Field upgrade capability

9406 System Unit Cabling Options

9406 System Unit communication adapters can use either a 20-foot or 50-foot communication cable.

2440 A12 Magnetic Tape Subsystem

The 2440 A12 Magnetic Tape Subsystem has a high-speed characteristic. It provides substantially improved performance for tape operations.

Work Station Controller Enhancements

The following work station controller enhancements have been made for this release:

Typeahead
Allows a user to continue typing if keyboard becomes locked.

Keyboard Layer 100
Gives a user access to extended graphics characters through a keyboard layer added to the enhanced keyboard.

True Monocasing
Capitalizes selected alphabetic characters, regardless of shift position, when the Caps Lock key is in the on position.

Improved Diacritic Support
Allows spacing of accent keys to meet unique national requirements.

Insert key as switch
Turns insert mode on and off by pressing the Insert key.

Alt Shift/Caps Lock
Enables the shift lock function by using the Alt key and the Caps Lock key when the base keyboard supports caps lock.

Right to left support
Added text functions defined in the Hebrew 1a keyboard font.

Auto-quad selection of bi-directional countries
Automatically selects the appropriate layer and shift lock status whenever the cursor direction is changed.

G keyboard IDs that meet national requirements
Changes to the G keyboards for these countries:

Spain	From 172 to 173 keys
Italy	From 293 to 142 keys

Chapter 3. Other New Products

This chapter describes other new products for Release 2.0, such as education support products, online education support products, and new publications.

Education Support

Education for new programs is provided in a combination of self-study and classroom courses. The following self-study courses will be updated and available by October 1989:

- DE001 Two Tutorial System Support modules
  - Program Temporary Fix (PTF) Overview
  - Administering Online Education
- DE002 Discover/Education AS/400 Implementation
- DE006 Discover/Education AS/400 Implementation — Additional Topics
- DE005 Discover/Education RPG Programming
- S6004 RPG/400 Interactive Programming Workshop
- S6016 AS/400 COBOL Interactive Programming Workshop
- S6014 AS/400 Interactive Program Design
- S6020 AS/400 Control Language Programming Workshop

A description of the courses is contained in the *AS/400 Education Curriculum Planning Guide* (GR20-5047). Call IBM Direct Education toll free at 1-800-426-2468 for schedules and enrollments.

Online Education Support

The following support has been updated or added to AS/400 online education:

- Two new courses are included in the tutorial system support.
- The Bookmark function has been added to the online education.
- Audience paths are now user-defined.
- A new set of interfaces is available for the online education administrator.
- Access to online education has been made easier.

New Publications

The manuals below are listed with their full title and base order number. When these manuals are referred to, a shortened version of the title is used.

The following AS/400 manuals are new publications available to you for Release 2.0:

- *Application Programming: Application Development by Example*, SC21-9852, provides applications programmers with information needed to understand the relationships of some of the various programmer tools and utilities on the AS/400 system that can be used to produce applications.
- *Central Site Distribution Guide*, GA21-9993, provides information for the central site programmer on how to distribute licensed programs to other systems under IBM licensing agreements.

- *Communications: Intrasystem Communications Programmer's Guide*, SC21-9864, provides the applications programmer or programmer with information about interactive communications between two application programs on the same AS/400 system.
- *Communications: Retail Communications Programmer's Guide*, SC21-9858, provides the applications programmer or system administrator with the information needed to set up, start, and end retail communications.
- *Licensed Programs and New Release Installation Guide*, SC21-9878, provides the system operator or system administrator with step-by-step procedures for initial installation, installing licensed programs, program temporary fixes (PTFs), and secondary languages from IBM.
- *National Language Support Guide*, GC21-9877, provides the data processing manager, IBM marketing representatives, IBM system engineers, system operators and managers, application programmers, and end users with information required to understand and use the national language support function on the AS/400 system.
- *Network Planning Guide*, GC21-9861, provides the data processing manager, IBM marketing representatives, IBM system engineers, and industry remarketers with information about planning for a communications network.
- *New Products Planning Information*, GA21-9984, provides the system manager or planner with information about new products available for use on the system.
- *Office: OfficeVision/400 Adapted Word Processing Function User's Guide*, SC21-9879, provides the end user with information on how to do word processing tasks with the adapted word processing function of AS/400 Office.
- *Programming: Cross System Product/Application Execution User's Guide and Reference*, SH23-0516, provides the applications programmer and system administrator or planner with information on running and managing Cross System Product applications on the AS/400 system.
- *Programming: Office Services Concepts and Programmer's Guide*, SC21-9758, provides the application programmer with information about writing applications that use Office functions.
- *System Concepts*, GC21-9802, provides the application programmer, system administrator, or system operator with a general understanding of the concepts related to the overall design and use of the AS/400 system and its operating system.
- *System Operations: Advanced Function Printing by Example*, SC21-8181, provides the person who is to implement advanced function printing on the AS/400 system with information on the following topics:
  - Environments in which you can do advanced function printing
  - Example AS/400 system configuration information
  - Configuration relationships between the AS/400 system and Remote PrintManager (RPM)
  - Resources needed on the AS/400 system to do advanced function printing
  - How to receive and print advanced function printing data stream (AFPDS) files
- *System Operations: Common Tasks*, GA21-9573, provides the system operator with a summary of how to do day-to-day system operations.

The following publications will be available at a later date:

- *Communications: Point-of-Sale Communications Utility User's Guide* provides the applications programmer with information needed to use the AS/400 retail communications in an Advanced Data Communication for Stores (ADCS) environment.
- *Communications: Transmission Control Protocol/Internet Protocol Guide* provides the applications programmer with information about Transmission Control Protocol (TCP) and how TCP relates to other AS/400 communications and AS/400 Office.
- *Languages: C/400 Reference Summary* provides the applications programmer or programmer with a summary of information on the basic C/400 commands and detailed syntax diagrams for C/400 functions.
- *Languages: C/400 User's Guide* provides the experienced C/400 programmer with information on how to write application programs or develop programs using the C/400 CL language.

Appendix A. Planning for Advanced Function Printing

If you are planning for advanced function printing (AFP):

The printers capable of AFP include the 3812, 3816, 3820, 3825, 3827, and 3835 printers.

- You must have the following if you are going to use a 3820 Printer with a synchronous data link control (SDLC) communications line:
  - AS/400 system
    - 4 M main storage
    - 400 M disk storage
  - OS/400 Release 2.0
  - AFP resources installed on the AS/400 system (for example, fonts, form definitions, overlays, or page segments)
  - 2 modems or a modem eliminator
  - IBM 3820 Printer with a 3050 feature

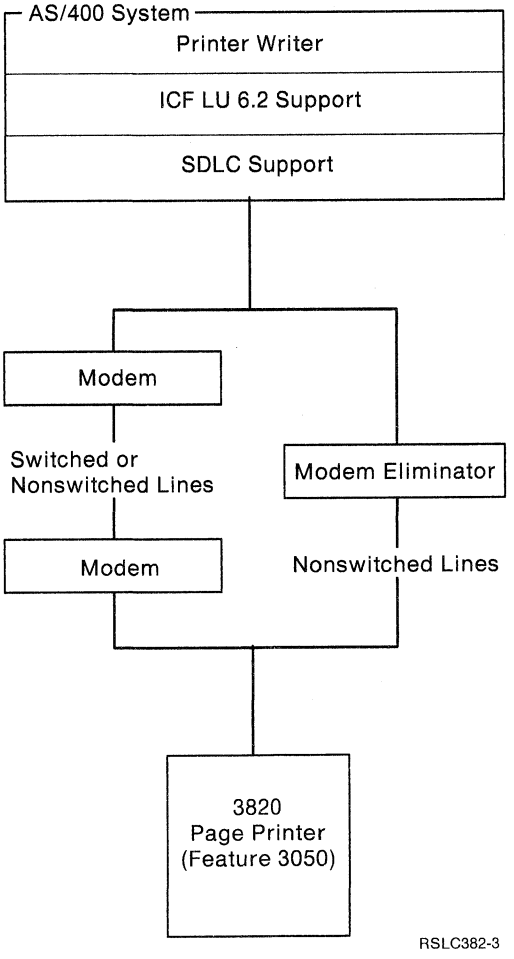


Figure A-1. Sample Configuration: 3820 Printer with a SDLC Data Link

- You must have the following to use a printer that is configured for AFP attached to Remote PrintManager (RPM) on a token-ring-attached PC AT or PS/2 Model 30:

  Note: Printers capable of working in the RPM environment are the 3820, 3825, 3827, and 3835.

  - AS/400 system
    - 4 megabytes main storage
    - 400 megabytes disk storage
  - OS/400 Release 2.0
  - AFP resources installed on the AS/400 system (for example, fonts, form definitions, overlays, or page segments)
  - Token-ring cable
  - Multiple-station access unit (8228)
  - Token-ring PC cable (3390)
  - Personal Computer AT[1] (5170) or Personal System/2 Model 30 E21, 021
    - Token-ring PC network adapter
    - LAN support program or token-ring adapter support interface
    - Advanced program-to-program communications (APPC)/PC program
    - PC/DOS program
      - 3.2 or later for the PC AT
      - 3.3 or later for the PS/2 Model 30
    - Remote PrintManager program

      Note: See the latest announcement letter or your marketing representative for the appropriate service level of RPM 2.0.
  - System/370 Channel Emulator Card (3200)
  - System/370 Channel Emulator Cable
  - System/370 Channel Terminators TAG
  - System/370 Channel Terminators BUS
  - IBM Printer (3820 (with a 3055 feature), 3825, 3827, or 3835).

  Note: For more information on RPM, refer to the *IBM Remote PrintManager User's Guide* and the *IBM Remote PrintManager Installation Guide*.

[1] Personal Computer AT is a registered trademark of the International Business Machines Corporation.

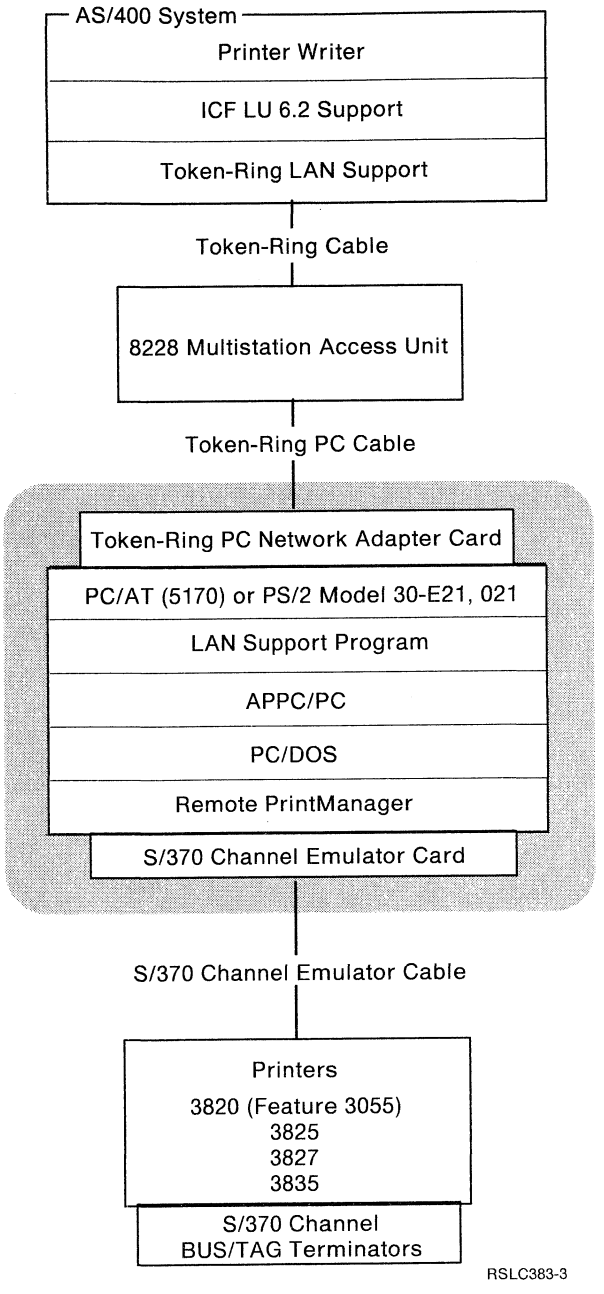


Figure A-2. Sample Configuration: RPM with a Token-Ring Data Link

- You must have the following if you are using AFP with an SDLC line with a 5294 or a 5394 controller:
  - An AS/400 system
  - OS/400 Release 2.0 or later
  - AFP resources installed on the AS/400 system (for example, fonts, form definitions, overlays, or page segments)
  - 2 modems
  - A 5294 or a 5394 controller
  - A 3812 or a 3816 Printer

    Note: A 3816 Printer can be attached only to a 5394 controller and not to a 5294 controller.

  For further planning information on advanced function printing, see the *Data Communications Planning Guide*.

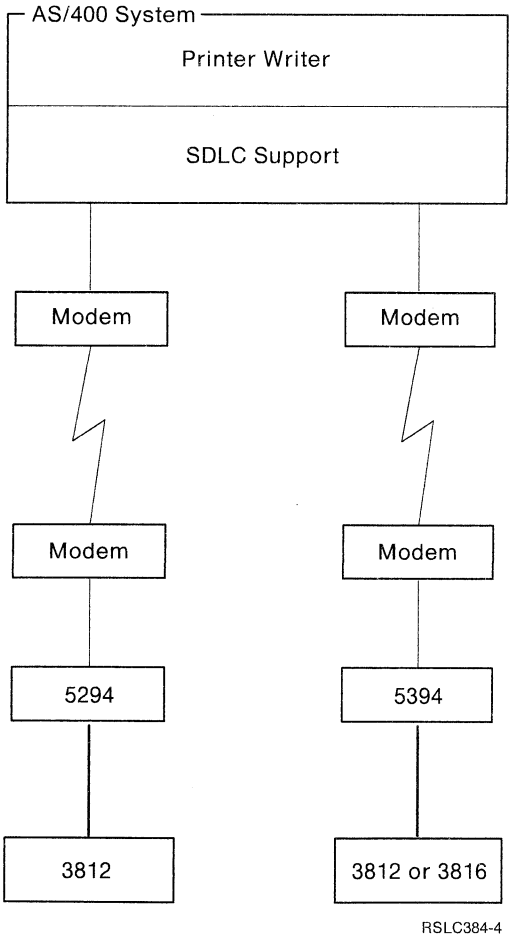


Figure A-3. Sample Configuration: An SDLC Line with the 5394 Controller

Appendix B. New Functions

This appendix lists the new or enhanced system values, commands, and object types for Release 2.0.

System Values

Figure B-1 lists system values new or changed for this release.

Figure B-1 (Page 1 of 2). System Values

System Value	Change	Description
CHARACTER(20)	New	Specifies how the system handles pass-through requests.
QAUTOVRT	New	Specifies whether normal pass-through virtual devices are automatically configured.
QDEVNAMING	*DEVADR option	Derives device names from resource names.
QDEVRCYACN	New	Controls device recovery action for interactive jobs.
QDSCJOBITV	New	Indicates an interval in which a job can be disconnected.
QDSPSGNINF	New	Controls the display of sign-on information.
QINACTITV	New	Specifies time-out interval in minutes.
QINACTMSGQ	New	Specifies name of a message queue to which interactive jobs are sent.
QLMTDEVSSN	New	Controls limiting of concurrent device sessions.
QLMTSECOFR	New	Controls limiting of users with *ALLOBJ and *SERVICE access to work stations.
QPWDLMTAJC	New	Limits use of adjacent digits in a password.
QPWDLMTCHR	New	Limits use of specified characters in a password.
QPWDLMTREP	New	Limits use of repeated characters in a password.
QPWDEXITB	New	Helps prevent unauthorized access to the system.
QPWDEXPITV	New	Controls the number of days a password is valid.
QPWDMAXLEN	New	Controls maximum number of characters in a password.
QPWDMINLEN	New	Controls minimum number of characters in a password.
QPWDPOSDIF	New	Controls positions in a new password.
QPWDRQDDGT	New	Controls a required digit in a new password.
QPWDRQDDIF	New	Controls whether password must be different than previous 32

Figure B-1 (Page 2 of 2). System Values

System Value	Change	Description
QPWDVLDPGM	New	Specifies name and library of a password validation program supplied by the computer system.
QRMTSIGN	New	Controls whether pass-through is allowed and whether a sign-on is required.
QTSEPOOL	New	Indicates whether interactive jobs should be moved to another main storage pool when time-slice end is reached.
QUPSDLYTIM	*BASIC option	Supports a non-interruptible power source that powers only the processing unit, IOP cards, and load-source disk unit.

Commands

The following commands are new for this release:

ADDALRD	Add Alert Description
ADDPJE	Add Prestart Job Entry
CFGTCP	Configure TCP/IP
CHGALRD	Change Alert Description
CHGALRTBL	Change Alert Table
CHGCSPPGM	Change CSP/AE Program
CHGCTLNET	Change Controller Description (Network)
CHGCTLRTL	Change Controller Description (Retail)
CHGCTLTAP	Change Controller Tape
CHGDEVINTR	Change Device Description (Intrasystem)
CHGDEVNET	Change Device Description (Network)
CHGDEVRTL	Change Device Description (Retail)
CHGDSTD	Change Distribution Description
CHGPJ	Change Prestart Job
CHGPJE	Change Prestart Job Entry
CHGS36MSGL	Change S/36 Message List
CHKDLO	Check Document Library Object
CRTALRTBL	Create Alert Table
CRTCLD	Create C Locale Description
CRTCPGM	Create C Program
CRTCSPAPP	Create CSP/AE Application Objects
CRTCSPMSGF	Create CSP/AE User Message File
CRTCTLNET	Create Controller Description (Network)
CRTCTLRTL	Create Controller Description (Retail)

CRTCTLTAP	Create Controller Tape
CRTDEVINTR	Create Device Description (Intrasystem)
CRTDEVNET	Create Device Description (Network)
CRTDEVRTL	Create Device Description (Retail)
CRTFNTRSC	Create Font Resources
CRTFORMDF	Create Form Definition
CRTOVL	Create Overlay
CRTPAGSEG	Create Page Segment
CRTSQLC	Create Structured Query Language
CVTPFRDTA	Convert Performance Data
DLTALRTBL	Delete Alert Table
DLTCLD	Delete C Locale Description
DLTCSPMAP	Delete CSP/AE Map Group
DLTCSPTBL	Delete CSP/AE Table
DLTFNTRSC	Delte Font Resources
DLTFORMDF	Delete Form Definition
DLTOVL	Delete Overlay
DLTPAGSEG	Delete Page Segment
DSCJOB	Disconnect Job
DSPACTPJ	Display Active Prestart Jobs
DSPCSPOBJ	Display CSP/AE Object
DSPLCLHDW	Display Local Hardware
DSPPFRDTA	Dispaly Performance Data
DSPSFWRSC	Display Software Resources
ENDPJ	End Prestart Jobs
ENDRMTSPT	End Remote Support
HLDDSTQ	Hold Distribution Queue
PRTAFPDTA	Print Advanced Function Printer Data
PRTCSPAPP	Print CSP/AE Application
PRTJOBRPT	Print Job Report
PRTPOLRPT	Print Pool Report
PRTSCRPT	Print Resource Report
RLSDSTQ	Release Distribution Queue
RLSRMTPHS	Release Remote Phase
RMVALRD	Remove Alert Description
RMVPJE	Remove Prestart Job Entry
RSTS38AUT	Restore System/38 Authority

RTVCFGSRC	Retrieve Configuration Source
RTVCFGSTS	Retrieve Configuration Status
RTVCLDSRC	Retrieve C Locale Description Source
RTVMBRD	Retrieve Member Description
SAVSECDTA	Save Security Data
SAVSTG	Save Storage
SNDDSTQ	Send Distribution Queue
STRCSP	Start CSP/AE Utilities
STRPJ	Start Prestart Jobs
STRRMTSPT	Start Remote Support
STRTCPFTP	Start TCP/IP File Transfer Protocol
TRCCSP	Trace CSP/AE Application
TRCICF	Trace ICF
VFYTAP	Verify Tape
VFYTCPCNN	Verify TCP/IP Connection
WRKALRD	Work with Alert Descriptions
WRKALRTBL	Work with Alert Tables
WRKCHTFMT	Work with Chart Formats
WRKCLS	Work with Classes
WRKDTAARA	Work with Data Areas
WRKDTAQ	Work with Data Queues
WRKEDTD	Work with Edit Descriptions
WRKFNTRSC	Work with Font Resources
WRKFORMDF	Work with Form Definitions
WRKGSS	Work with Graphics Symbol Sets
WRKJRNRCV	Work with Journal Receivers
WRKMSGF	Work with Message Files
WRKNAMSMTP	Work with Names for SMTP
WRKOBJCSP	Work with Objects for CSP/AE
WRKOVL	Work with Overlays
WRKPAGSEG	Work with Page Segments
WRKPGM	Work with Programs
WRKPNLGRP	Work with Panel Groups
WRKSCHIDX	Work with Search Indexes
WRKSPADCT	Work with Spelling Aid Dictionaries
WRKSYSACT	Work with System Activity
WRKTBL	Work with Tables

Object Types

Following are the object types new for this release:

***ALRTBL**	Alert table
***CLD**	C locale description
***CSPMAP**	Cross-system product map
***CSPTBL**	Cross-system product table
***FNTRSC**	Font resource
***FORMDF**	Form definition
***OVL**	Overlay
***PAGSEG**	Page segment

DDS Keywords

Following are the DDS keywords new for this release:

ALTHELP	Alternative Help
ALTPAGEUP	Alternative Page Up
ALTPAGEDWN	Alternative Page Down
PAGEUP	Page Up
PAGEDWN	Page Down
PRTQLTY	Print Quality
DFNLIN (DBCS only)	Define Line
FCFO	First-Changed First-Out

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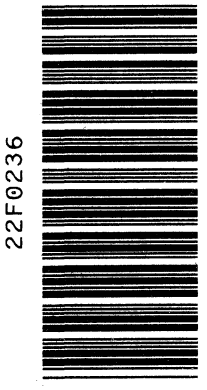

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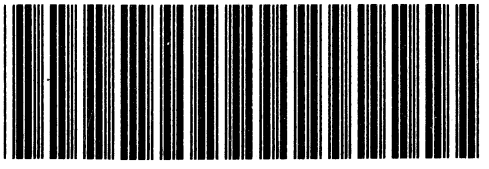

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