Site and Hardware Planning Information

Thirteenth Edition (September 2001)

Before using this information and the product it supports, read the information in “Appendix. Notices” on page 249.

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Contents

About This Book

This book provides information for technical personnel planning for the installation of a system.

Audience Description

This book is intended for use by technical personnel planning for the installation of a system.

This book assumes that the service technician has had training on systems and attached SSA disk drive subsystems.

MAPs that are common to all systems are contained in the Created by ActiveSystems 05-10-2000. Entity not defined.

Overview of Contents

This book provides information to help when you are planning to install a system. It contains the following chapters:

- Chapter 1, “Site Planning and Preparation Overview,” provides a general overview of things to consider when doing site planning.
- Chapter 2, “Physical Characteristics of Systems,” contains information about the physical and electrical characteristics of the systems.
- Chapter 3, “Physical Characteristics of Displays,” contains information about the physical and electrical characteristics of many of the displays used with the systems.
- Chapters 4 through 9, “Physical Characteristics of Series XXXX,” contains information about the physical and electrical characteristics of some associated products used with the systems.
- Chapter 10, “Power Cords and Electrical Needs,” describes the electrical needs to be considered when planning for your installation.
- Chapter 11, “Cable Planning,” provides guidance for planning cable paths and lengths that are required for the installation.
- Chapter 12, “Cable Labeling,” provides guidance for labeling cables that are required for the installation.
- Chapter 13, “High Availability (HA) Clusters,” provides information for installing a high-availability cluster systems.
- Chapter 14, “Additional Planning Considerations,” provides guidance for additional planning steps that may be necessary.
- An index is provided at the back of this book.

ISO 9000

ISO 9000 registered quality systems were used in the development and manufacturing of this product.

Online Publications

RS/6000 and pSeries publications are available online. To access the online books, visit our Web site at: http://www.rs6000.ibm.com/resource/hardware_docs/

Related Publications

The following is a list of catalogs and overview publications that provide information on systems and related products.

- *Adapters, Devices and Cable Information for Micro Channel Bus Systems* , order number SA23-2764, gives information about adapters and devices and detailed information about cables and cabling used with Micro Channel Bus Systems.
- *Adapters, Devices and Cable Information for Multiple Bus Systems* , order number SA23-2778, gives information about adapters and devices and detailed information about cables and cabling used with Multiple Bus Systems.
- *AIX Versions 3.2 and 4 Asynchronous Communications Guide*, order number SC23-2488, provides information about asynchronous communications.
- *Diagnostic Information for Micro Channel Bus Systems*, order number SA23-2765 contains common diagnostic procedures, error codes, service request numbers, and failing function codes to help diagnose and repair system problems. This manual is intended for trained service technicians.
- *Diagnostics Information for Multiple Bus Systems* , order number SA23-2769 contains common diagnostic procedures, error codes, service request numbers, and failing function codes to help diagnose and repair system problems. This manual is intended for trained service technicians.
- The *High Availability Cluster Multi-Processing for AIX, Version 4.3: Enhanced Scalability Installation and Administration Guide*, order number SC23-4284, is needed for HACMP/ES planning information.
- The *High Availability Cluster Multi-Processing for AIX, Version 4.3: Planning Guide* , order number SC23-4277, is needed for HACMP/ES planning information.
- *PCI Adapter Placement Reference* order number SA23-2504. This publication has information regarding PCI adapter placement in your system unit.

Ordering Publications

To order copies of the publications referenced above contact your sales representative.

To order a copy of this publication contact your sales representative and use order number SA38-0508.

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PowerPC
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POWERserver
Seascape
Versatile Storage Server

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Data Integrity and Verification

These computer systems contain mechanisms designed to reduce the possibility of undetected data corruption or loss. This risk, however, cannot be eliminated. Users who experience unplanned outages, system failures, power fluctuations or outages, or component failures must verify the accuracy of operations performed and data saved or transmitted by the system at or near the time of the outage or failure. In addition, users must establish procedures to ensure that there is independent data verification before relying on such data in sensitive or critical operations. Users should periodically check our support websites for updated information and fixes applicable to the system and related software.

Chapter 1. Site Planning and Preparation Overview

Successful installation does not happen by accident: It takes planning. You are the most valuable resource in site planning because you know where and how your system, and devices attached to it, will be used.

Site preparation for the complete system is the responsibility of the customer. The primary task of your site planner is to ensure that each system is installed so that it can operate and be serviced efficiently.

This chapter provides the basic information you need to plan for your system installation. It provides an overview of each planning task, as well as valuable reference information useful throughout the performance of these tasks. Depending on the complexity of the system you ordered and your existing computing resource you may not need to perform all the steps noted here.

First, with the help of your systems engineer, sales representative, or with the help of those coordinating your installation, sit down and list the hardware for which you need to plan. Use the summary of your order to help you when making your list. This list is now your “To Do” list. You can use the “Planning Task Checklist” on page 2 to assist you.

While you are responsible for planning, vendors, contractors, and your sales representative are also available to help with any aspect of the planning. For some system units, a customer service representative will install your system unit and verify correct operation. Other system units such as the 7006, 7025, and 7026 models are customer-installed. If you are not sure, check with your sales representative.

The physical planning section of this publication is a resource which provides the physical characteristics of many system units, and associated products. For information on products not in this publication contact your sales representative or your authorized dealer.

Before proceeding with planning, you should ensure that the hardware and software you have chosen meets your needs. Your sales representative is available to answer questions.

This book is for hardware planning. However, since the system memory and disk storage needed are a function of the software to be used, some things to consider are listed below. Information on software products is generally in or with the software Licensed Program Product itself.

In assessing the adequacy of hardware and software, consider the following:

- Adequacy of available disk space and system memory for accommodating software, online documentation, and data (including future growth needs resulting from additional users, more data, and new applications).
- Compatibility of all devices.
- Compatibility of software packages with each other and with the hardware configuration.
- Adequate redundancy or backup capabilities in hardware and software.
- Software portability to the new system, if necessary.
- Prerequisites and corequisites of chosen software have been satisfied.
- Data to be transferred to the new system.

Planning Task Checklist

This checklist provides a convenient way for you to document your planning progress.

Working with your sales representative, you should establish completion dates for each of the tasks. You may want to review your planning schedule periodically with your sales representative.

Target Date	Completion Date	Person Responsible	Planning Step
			Plan Your Office or Computer Room Layout (Physical Planning)
			Prepare for Power Cords and Electrical Needs
			Prepare for Cables and Cabling
			Create or Modify Communications Networks
			Perform Building Alterations, as Needed
			Prepare Maintenance, Recovery, and Security Plans
			Develop an Education Plan
			Order Supplies
			Prepare for System Delivery

CSU/CE Feature Installation

Attention: The following information indicates which features on various systems/models are intended to be installed by the customer and which features are to be installed by a Customer Engineer/Customer Service Representative (CE/CSR) as part of a Miscellaneous Equipment Specification (MES). This information is for systems/models available as of 09–2000.

Notes:
1. The acronym CSU means Customer Set-Up.
2. For a description of Feature Codes. See the Feature Code Descriptions below the following table.
3. The 7013 Model J30 was announced as CSU. U.S. practice has been for CE installation.

Machine Type	Model	System CSU [1]	Features/Options [2]	
			CE Install	Customer Install
7006	(All)	Yes	All Features	None
7007	(All)	Yes	All Features	None
7008	(All)	Yes	All Features	None
7009	(All)	Yes	All Features	None
7010	(All)	Yes	All Features	None
7011	(All)	Yes	All Features	None
7012	(All)	Yes	All Features	None
7013	(All) [3]	No	All Features	None
7015	(All)	No	All Features	None
7017	(All)	No	All Features	None
7024	(All)	Yes	FC 6309	All Other Features
7025	(All)	Yes	FC 2856, 6309, 6549	All Other Features

Machine Type	Model	System CSU [1]	Features/Options [2]	
			CE Install	Customer Install
7026	(All except B80)	No	All Other Features	FC 2901, 2908, 2909, 2911, 2913, 3071, 3072, 3074, 3078, 3079, 3083
7026	(B80)	Yes	FC 4361, 4362, 4365	All Other Features
7027	(All)	No	All Other Features	FC 2616, 3080, 3083, 3084, 3090, 6142, 6147, 3133, 3134, 3137, 3138, 6153, 6294, 6295
7043	(All)	Yes	FC 2856 & 6309	All Other Features
7044	(All)	Yes	FC 2856 & 6309 c.All Other Features	
7046	(All)	Yes	FC 2856 & 6309	All Other Features
7236	(All)	No	All Features	None
7248	(All)	Yes	FC 2856	All Other Features
7317	(All)	No	All Features	None
7318	(All)	No	All Features	None
7319	(All)	No	All Features	None

Feature Code	Feature Code Description
2616	Internal CD-ROM 2/4X/Tray Loading, 600KB/s
2856	PCI/Short/32bit/3.3 or 5V, 7250 Attach Adapter
2901	4.5GB F/W Ultra SCSI DASD Module
2908	9.1GB Ultra SCSI DASD Module
2909	18.2GB Ultra SCSI DASD Module
2911	9.1GB F/W Ultra SCSI DASD Module
2913	9.1GB F/W Ultra Module, 1″ High
3071	4.5GB SSA DASD Module, 1″ High
3072	9.1GB SSA DASD Module, 1.6″ High
3074	9.1GB SSA DASD Module, Hot Swap
3078	9.1GB SSA DASD Module, 10K
3079	9.1GB SSA DASD Module, 10K
3080	4.5GB F/W SCSI DASD Module
3083	2.2GB F/W SCSI DASD Module
3084	4.5GB F/W SCSI DASD Module
3090	9.1GB F/W SCSI DASD Module
3133	Cable SCSI, 3M, to F/W MC SCSI Adapter (SE OR Diff)
3134	Cable SCSI, 6M, to F/W MC SCSI Adapter (SE OR Diff)
3137	Cable SCSI/DIFF, 12M, to F/W MC SCSI Adapter
3138	Cable SCSI/DIFF, 18M, to F/W MC SCSI Adapter
4361	1–Way 375MHz POWER3–II Processor Card
4362	2–Way 375MHz POWER3–II Processor Card
4365	2–Way 375MHz POWER3–II Processor Card (8MB L2/Processor)
6142	Internal 4mm 4/8GB Tape
6147	8mm 5/10GB VDAT Tape
6153	4mm Tape Drive + Autoloader, Horizontal
6294	Optional AC Power Supply for 7027 SCSI Drawers
6295	Optional bifurcated (Y-cable) Power Cord for 7027 SCSI Drawers
6309	Digital Trunk Quad Adapter, PCI/Long/32Bit/5V
6549	Additional Power Supply for 2nd and 3rd 6-Pks on Model F40

General Considerations

When determining the placement of your system, consider the following:

- Adequate space for the devices.
- Working environment of personnel who will be using the devices (their comfort, ability to access the devices, supplies, and reference materials).
- Adequate space for maintaining and servicing the devices.
- Physical security requirements necessary for the devices.
- Weight of the devices.
- Heat output of the devices.
- Operating temperature requirements of the devices.
  - When using tape media, the maximum operating temperature is 16 to 32°C (60 to 90°F). The maximum operating wet bulb temperature is 23°C (73°F), unless other specified in the system specifications
- Humidity requirements of the devices.
  - When using tape media, the humidity is 20 to 80%.
- Air flow requirements of the devices.
- Air quality of the location where the devices will be used. (For example, excess dust could damage your system.)

  Note: The system and devices are designed to operate in normal office environments. Dirty or other poor environments may damage the system or the devices. It is a customer responsibility to provide the proper operating environment.
- Altitude limitations of the devices.
- Noise emission levels of the devices.
- Any vibration of equipment near where the devices will be placed.
- Paths of power cords.

The following pages contain the information you need to evaluate these considerations; simply turn to the page relating to the system units or devices you purchased.

Footprint Example

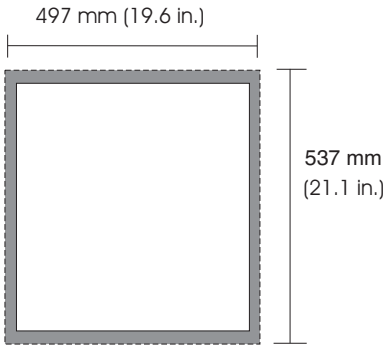
Footprint dimensions are shown in the table for systems or devices that they are appropriate. If you want to use full-sized footprints of the system units or devies, use the measurements provided to construct them out of folded newspaper or sheets of construction paper. You can then use them to plan a layout within the actual office space.

Each footprint represents a top view of the system unit or device. All dimensions given include air flow but not service accessibility.

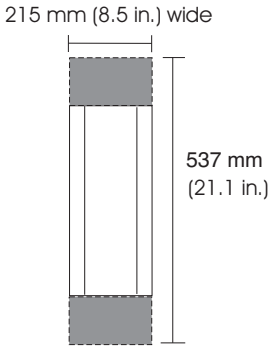
This is an example to illustrate the use of a footprint. This illusration uses the 7006 Graphics Workstation Models 41T, 41W, 42T, and 42w for the example.

Footprint[1]	**Width**	**Depth**
Desktop	497mm (19.6 in)	537mm (21.1 in)
Deskside	215mm (8.5 in)	537mm (21.1 in)
Note 1. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.		

The figure below visually shows the space for the system and required clearances.



Desktop Footprint



Deskside Footprint Includes Pedestal

Chapter 2. Physical Characteristics of Systems

This section gives the physical characteristics for systems. This information can help you with physical planning for the products you have ordered.

Note: The electrical and thermal information provided for systems does not include displays or a operators terminal (such as an ASCII terminal). Be sure to include display or terminal characteristics when planning the installation of system units.

7006 Graphics Workstation Models 41T, 41W, 42T, and 42W

Dimensions	**Desktop**		**Deskside**	
Height	119 mm	4.7 in.	447 mm	17.6 in.
Width[1]	447 mm	17.6 in.	215 mm	8.5 in.
Depth	451 mm	17.8 in.	451 mm	17.8 in.
Weight	12.7 kg 28 lbs.			
Electrical				
Power source loading (typical in kVA)	0.170			
Voltage range (V ac)	100 to 127 or 200 to 240 (switchable)			
Frequency (hertz)	50 or 60			
Thermal output (typical)	290 Btu/hr			
Power requirements (typical)	85 watts			
Power factor	0.5 to 0.7			
Inrush current[6]	75 amps at 120 V ac, 150 amps at 240 V ac			
Maximum altitude	2135 m (7000 ft.)			
Temperature Requirements	**Operating**		**Non-Operating**	
	16 to 32°C (60 to 90.5°F)		10 to 43°C (50 to 110.5°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73.5°F)		27°C (80.5°F)	
Noise Emissions[2]	**Operating**		**Idle**	
L_{WAd}	5.2 bels		5.0 bels	
L_{pAm}	41 dBA		38 dBA	
$<L_{pA}>_m$	36 dBA		34 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances[3]	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[4,5]	35mm(1.5 in)	51mm(2 in)	25mm(1 in)	25mm(1 in)
Service	466mm(18 in)	N/A	N/A	N/A
Footprint[4]	**Width**		**Depth**	
Desktop	497mm (19.6 in)		537mm (21.1 in)	
Deskside	215mm (8.5 in)		537mm (21.1 in)	

1. Deskside width measurement includes the optional vertical stand.
2. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
3. Left and right measurements apply only when the system is used in the desktop position.
4. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
5. When placed in the vertical position, the system requires 25mm (1 in) at the bottom and top for proper air flow. The necessary bottom clearance is provided by the optional vertical stand.
6. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7007 POWERportable N40

Dimensions				
Height		51 mm 2.0 in.		
Width		290 mm 11.8 in.		
Depth		216 mm 8.5 in.		
Weight		3.13 kg 6.9 lbs		
Electrical				
Voltage range (V ac)		90 to 240 (autosensing)		
Frequency (hertz)		50 or 60		
Power requirements (typical)		55 watts		
Temperature Requirements		**Operating** 5 to 35.5°C (41 to 95.5°F)		
Humidity Requirements (Noncondensing) **Wet Bulb**		**Operating** 8 to 80% 23°C (73.5F)		
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	5.1 bels		4.8 bels	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	N/A	N/A	N/A	N/A

*See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

7008 POWERstations™ M20, and M2A

Dimensions				
Height	413 mm 16.1 in.			
Width	410 mm 16.0 in.			
Depth	459 mm 17.9 in.			
Weight				
Minimum	23.5 kg 52 lbs.			
Maximum	23.5 kg 52 lbs.			
Electrical				
Power source loading (typical in kVA)	0.22			
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)			
Frequency (hertz)	50 or 60			
Thermal output (typical)	550 Btu/hr			
Power requirements (typical)	160 watts			
Power factor	0.5 to 0.7			
Inrush current	20 amps at 120 V ac, 40 amps at 240 V ac			
Maximum altitude	2135 m (7000 ft.)			
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73.5F)		27°C (80.5F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.0 bels		5.0 bels	
L_{pAm}	38 dBA		38 dBA	
$<L_{pA}>_m$	38 dBA		38 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	N/A	152 mm(6 in)	76 mm(3 in)	76 mm(3 in)
Service	Install so that it can be moved to an area providing 760 mm (30 in) on each side.			
Footprint[2]	**Width** 562 mm(22 in)		**Depth** 611 mm(23.9 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7009 Compact Server C10, and C20

Dimensions		
Height	394 mm	15.5 in.
Width	191 mm	7.5 in.
Width with pedestal	241 mm	9.5 in.
Depth	432 mm	17.0 in.
Weight		
Minimum	16 kg	35.0 lbs.
Maximum	18 kg	39.5 lbs.
Electrical		
Power source loading (maximum in kVA)	0.232	
Voltage range (V ac)	100 to 127 or 200 to 240 (switchable)	
Frequency (hertz)	50 or 60	
Thermal output (max)	(C10) 512 Btu/hr (C20) 544 Btu/hr	
Power requirements (max)	(C10) 150 watts (C20) 160 watts	
Power factor	0.5 to 0.7	
Inrush current[3]	75 amps at 120 V ac, 150 amps at 240 V ac	
Maximum altitude	2135 m (7000 ft.)	

Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)	**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity Requirements (Noncondensing) **Wet Bulb**	**Operating** 8 to 80% 23°C (73°F)	**Non-Operating** 8 to 80% 27°C (80°F)
Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.7 bels	5.3 bels
L_{pAm}	NA	NA
$<L_{pA}>_m$	41 dBA	38 dBA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	76 mm(3 in)	152 mm(6 in)	N/A	N/A
Service	Install so that it can be moved to an area providing 457 mm (18 in) on the front and 457 mm (18 in) on the left side.			

Footprint[2]	**Width** 241 mm(9.5 in)	**Depth** 660 mm(26 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7010 Xstation 130

Dimensions				
Height		72 mm	2.9 in.	
Width		375 mm	14.8 in.	
Depth		380 mm	15.0 in.	
Weight				
Minimum		7.7 kg	17 lbs.	
Maximum		9.5 kg	21 lbs.	
Electrical				
Power source loading (maximum in kVA)		0.100		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		222 Btu/hr		
Power requirements (peak)		65 watts		
Power factor		0.5 to 0.7		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.0 bels		4.8 bels	
L_{pAm}	40 dBA		39 dBA	
$<L_{pA}>_m$	37 dBA		36 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Footprint[2]	**Width** 375 mm(14.8 in)		**Depth** 685 mm(27 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7010 Xstation 140, and 150

Dimensions				
Height		72 mm	2.9 in.	
Width		375 mm	14.8 in.	
Depth		380 mm	15.0 in.	
Weight				
Minimum		7.3 kg	16 lbs.	
Maximum		8.6 kg	19 lbs.	
Electrical				
Power source loading (maximum in kVA)		0.100		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (max)		222 Btu/hr		
Power requirements (peak)		65 watts		
Power factor		0.5 to 0.7		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	4.7 bels		4.7 bels	
L_{pAm}	33 dBA		33 dBA	
$<L_{pA}>_m$	31 dBA		31 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Footprint[2]	**Width** 375 mm(14.8 in)		**Depth** 685 mm(27 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7010 Xstation Model 160

Dimensions		
Height	68 mm	2.75 in.
Width	306 mm	12.00 in.
Depth	306 mm	12.00 in.
Weight		
Minimum	4.1 kg	10 lbs.
Maximum	4.5 kg	9 lbs.
Electrical		
Power source loading (maximum in kVA)	0.121	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (max)	143 Btu/hr	
Power requirements (peak)	50 watts	
Power factor	0.715	
Maximum altitude	2135 m (7000 ft.)	

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (60 to 90°F)	10 to 43°C (50 to 110°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	4.3 bels	4.3 bels
L_{pAm}	37 dBA	37 dBA
$<L_{pA}>_m$	41 dBA	41 dBA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	152 mm(6 in)	152 mm(6 in)

Footprint[2]	**Width**	**Depth**
	612 mm(24 in)	612 mm(24 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7011 POWERstation and POWERserver® 220, and 230

Dimensions	**Desktop**		**Deskside**	
Height	84 mm	3.3 in.	432 mm	17.0 in.
Width[1]	406 mm	16.0 in.	216 mm	8.5 in.
Depth	419 mm	16.5 in.	419 mm	16.5 in.

Weight	
Minimum	9.0 kg 20 lbs.
Maximum	11.5 kg 25 lbs.

Electrical	
Power source loading (typical in kVA)	0.17
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)
Frequency (hertz)	50 or 60
Thermal output (typical)	340 Btu/hr
Power requirements (typical)	100 watts
Power factor	0.5 to 0.7
Inrush current	50 amps at 120 V ac, 100 amps at 240 V ac
Maximum altitude	2135 m (7000 ft.)

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (60 to 90°F)	10 to 43°C (50 to 110°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)

Noise Emissions[2]	**Operating**	**Idle**
L_{WAd}	5.2 bels	5.0 bels
L_{pAm}	41 dBA	40 dBA
$<L_{pA}>_m$	39 dBA	38 dBA
Impulsive or prominent discrete tones	No	No

Clearances[3]	**Front**	**Back**	**Left**	**Right**
Install/ Air Flow[4,5]	35mm(1.5 in)	51mm(2 in)	25mm(1 in)	25mm(1 in)
Service	466mm(18 in)	N/A	N/A	N/A

Footprint[4]	**Width**	**Width**
Desktop	456mm(18 in)	508mm(20 in)
Deskside	216mm(8.5 in)	508mm(20 in)

1. Deskside width measurement includes the optional vertical stand.
2. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
3. Left and right measurements apply only when the system is used in the desktop position.
4. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
5. When placed in the vertical position, the Model 220 requires 25 mm (1 in) at the bottom and top for proper air flow. The necessary bottom clearance is provided by the optional vertical stand.

7011 POWERstation and POWERserver 250

Dimensions	**Desktop**		**Deskside**	
Height	84 mm	3.3 in.	432 mm	17 in.
Width[1]	406 mm	16 in.	216 mm	8.5 in.
Depth	419 mm	16.5 in.	419 mm	16.5 in.

Weight	
Minimum	9.0 kg 20 lbs.
Maximum	11.5 kg 25 lbs.

Electrical	
Power source loading (typical in kVA)	0.185
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)
Frequency (hertz)	50 or 60
Thermal output (typical)	410 Btu/hr
Power requirements (typical)	120 watts
Power factor	0.5 to 0.7
Inrush current	50 amps at 120 V ac, 100 amps at 240 V ac
Maximum altitude	2135 m (7000 ft.)

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (60 to 90°F)	10 to 43°C (50 to 110°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)

Noise Emissions[2]	**Operating**	**Idle**
L_{WAd}	5.2 bels	5.0 bels
L_{pAm}	41 dBA	40 dBA
$<L_{pA}>_m$	39 dBA	38 dBA
Impulsive or prominent discrete tones	No	No

Clearances[3]	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[4,5]	35 mm(1.5 in)	51 mm(2 in)	25 mm(1 in)	25 mm(1 in)
Service	466mm (18 in)	N/A	N/A	N/A

Footprint[4]	**Width**	**Depth**
Desktop	456mm(18 in)	508mm(20 in)
Deskside	216mm(8.5 in)	508mm(20 in)

1. Deskside width measurement includes the optional vertical stand.
2. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
3. Left and right measurements apply only when the Model 250 is used in the desktop position.
4. The amount of space needed by the unit during normal operation is indicated by on the footprint dimensions.
5. When placed in the vertical position, the Model 250 requires 25 mm (1 in) at the bottom and top for proper air flow. The necessary bottom clearance is provided by the optional vertical stand.

7012 POWERstation and POWERserver 34H, 355, 360, 365, 370, and 375

Dimensions	**Desktop**	**Deskside**
Height	162 mm 6.4 in.	466 mm 18.3 in.
Width (at pedestal for deskside)	456 mm 18.0 in.	241 mm 9.5 in.
Depth	523 mm 20.6 in.	523 mm 20.6 in.
Weight		
Minimum	12.7 kg 28 lbs.	12.7 kg 28 lbs.
Maximum	15.4 kg 34 lbs.	15.4 kg 34 lbs.
Electrical		
Power source loading (typical in kVA)	0.29	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	585 Btu/hr	
Power requirements (typical)	185 watts	
Power factor	0.5 to 0.7	
Inrush current	49 amps at 120 V ac, 98 amps at 240 V ac	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)	**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)
Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.7 bels	5.5 bels
L_{pAm}	45 dBA N/A	45 dBA(desktop) N/A (deskside)
$<L_{pA}>_m$	41 dBA 38 dBA	41 dBA (desktop) 38 dBA(deskside)
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	760 mm(30 in)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
Desktop	456 mm(18 in)	830 mm(33 in)
Deskside	241 mm(9.5 in)	828 mm(32.6 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7012 POWERserver Models 380, 390, and 39H

Dimensions	**Desktop**	**Deskside**
Height	162 mm 6.4 in.	452 mm 17.8 in.
Width (at pedestal for deskside)	442 mm 17.4 in.	241 mm 9.5 in.
Depth	478 mm 18.8 in.	478 mm 18.8 in.
Weight		
Minimum	18.1 kg 40 lbs.	18.1 kg 40 lbs.
Maximum	21.8 kg 48 lbs.	21.8 kg 48 lbs.
Electrical		
Power source loading (typical in kVA)	0.35	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	770 Btu/hr	
Power requirements (typical)	225 watts	
Power factor	0.5 to 0.7	
Inrush current[3]	42 amps at 120 V ac, 42 amps at 240 V ac	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)	**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity Requirements (Noncondensing)	**Operating** 8 to 80%	**Non-Operating** 8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)
Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.5 bels	5.3 bels
L_{pAm}	41 dBA (desktop) 38 dBA (deskside)	41 dBA (desktop) 38 dBA (deskside)
$<L_{pA}>_m$	41 dBA (desktop) 38 dBA (deskside)	41 dBA (desktop) 38 dBA (deskside)
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	760 mm(30 in)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
Desktop	442mm(17.4 in)	782mm(30.8 in)
Deskside	241mm(9.5 in)	782mm(30.8 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7012 Model 397

Dimensions	**Desktop**	**Deskside**
Height	162 mm 6.4 in.	452 mm 17.8 in.
Width (at pedestal for deskside)	442 mm 17.4 in.	241 mm 9.5 in.
Depth	478 mm 18.8 in.	478 mm 18.8 in.
Weight		
Minimum	18.1 kg 40 lbs.	18.1 kg 40 lbs.
Maximum	21.8 kg 48 lbs.	21.8 kg 48 lbs.
Electrical		
Power source loading (typical in kVA)	0.5	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	770 Btu/hr	
Power requirements (typical)	250 watts	
Power factor	0.8 to 0.94	
Inrush current[3]	20 amps at 120 V ac, 20 amps at 240 V ac	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)	**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)
Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.7 bels	5.5 bels
L_{pAm}	46 dBA (desktop)	46 dBA (desktop)
$<L_{pA}>_m$	48 dBA (desktop)	47 dBA (desktop)
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	760 mm(30 in)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
Desktop	442mm(17.4 in)	782mm(30.8 in)
Deskside	241mm(9.5 in)	782mm(30.8 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7012 Models G30, G40, and G02

Dimensions	**G30 & G40**		**G02**	
Height	450 mm	17.75 in.	450 mm	17.75 in.
Width	173 mm	6.9 in.	173 mm	6.9 in.
Width (at pedestal)	280 mm	11 in.	280 mm	11 in.
Depth	613 mm	24.1 in.	613 mm	24.1 in.
Weight	**G30 & G40**		**G02**	
Minimum	19 kg	43 lbs.	19 kg	43 kg
Maximum	25 kg	55 lbs.	25 lbs.	55 lbs.
Electrical	**G30 & G40**		**G02**	
Power source loading (typical in kVA)	0.45		0.2	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)		100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60		50 or 60	
Thermal output (typical)	1380 Btu/hr		615 Btu/hr	
Power requirements (typical)	405 watts		180 watts	
Power factor	0.8 to 1.0		0.8 to 1.0	
Inrush current[3]	35 amps at 120 V ac 70 amps at 240 V ac		35 amps at 120 V ac 70 amps at 240 V ac	
Maximum altitude	2135 m (7000 ft.)		2135 m (7000 ft.)	

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (60 to 90°F)	10 to 43°C (50 to 110°F)

Humidity Requirements (Noncondensing)	**Operating**	**Non-Operating**
Without tape drive	8 to 80%	8 to 80%
With tape drive	20 to 80%	20 to 80%
Wet Bulb Requirements		
Without tape drive	27°C (80°F)	27°C (80°F)
With tape drive	23°C (73°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.8 bels	5.5 bels
L_{pAm}	39 dBA	37 dBA
$<L_{pA}>_m$	39 dBA	37 dBA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	760 mm(30 in)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
	280mm(11 in)	917mm(36.1 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7013 POWERstation and POWERserver 52H

Dimensions		
Height	610 mm	24.0 in.
Width	360 mm	14.2 in.
Depth	675 mm	26.6 in.
Weight		
Minimum	36.7 kg	81 lbs.
Maximum	53.1 kg	117 lbs.
Electrical		
Power source loading (typical in kVA)	0.4	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	975 Btu/hr	
Power requirements (typical)	285 watts	
Power factor	0.8 to 1.0	
Inrush current	22 amps at 120 V ac, 44 amps at 240 V ac	
Maximum altitude	2135 m (7000 ft.)	

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (60 to 90°F)	10 to 43°C (50 to 110°F)

Humidity Requirements (Noncondensing)	**Operating**	**Non-Operating**
Without tape drive	8 to 80%	8 to 80%
With tape drive	20 to 80%	20 to 80%
Wet Bulb Requirements		
Without tape drive	27°C (80°F)	27°C (80°F)
With tape drive	23°C (73°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.7 bels	5.5 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	39 dBA	38 dBA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	N/A	152mm(6 in)	76mm(3 in)	76mm(3 in)
Service	Install so that it can be moved to an area providing 760 mm (30 in) on each side.			

Footprint[2]	**Width**	**Depth**
	512mm(20.2 in)	828mm(32.6 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7013 POWERstation and POWERserver 550L

Dimensions				
Height		610 mm	24.0 in.	
Width		360 mm	14.2 in.	
Depth		675 mm	26.6 in.	
Weight				
Minimum		36.7 kg	81 lbs.	
Maximum		53.1 kg	117 lbs.	
Electrical				
Power source loading (typical in kVA)		0.4		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		975 Btu/hr		
Power requirements (typical)		285 watts		
Power factor		0.8 to 1.0		
Inrush current		22 amps at 120 V ac, 44 amps at 240 V ac		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity (Noncondensing)	**Operating**		**Non-Operating**	
Without tape drive	8 to 80%		8 to 80%	
With tape drive	20 to 80%		20 to 80%	
Wet Bulb Requirements				
Without tape drive	27°C (80°F)		27°C (80°F)	
With tape drive	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.7 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	39 dBA		38 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	N/A	152 mm(6 in)	76 mm(3 in)	76 mm(3 in)
Service	Install so that it can be moved to an area providing 760 mm (30 in) on each side.			
Footprint[2]	**Width** 512mm(20.2 in)		**Depth** 828mm(32.6 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7013 POWERstation and POWERserver 570, and 580

Dimensions				
Height		610 mm	24.0 in.	
Width		360 mm	14.2 in.	
Depth		675 mm	26.6 in.	
Weight				
Minimum		36.7 kg	81 lbs.	
Maximum		53.1 kg	117 lbs.	
Electrical				
Power source loading (typical in kVA)		0.43		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		1450 Btu/hr		
Power requirements (typical)		425 watts		
Power factor		0.8 to 1.0		
Inrush current		34 amps at 120 V ac, 68 amps at 240 V ac		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements		**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity (Noncondensing)		**Operating**		**Non-Operating**
Without tape drive		8 to 80%		8 to 80%
With tape drive		20 to 80%		20 to 80%
Wet Bulb Requirements				
Without tape drive		27°C (80°F)		27°C (80°F)
With tape drive		23°C (73°F)		27°C (80°F)
Noise Emissions[1]		**Operating**		**Idle**
L_{WAd}		5.7 bels		5.5 bels
L_{pAm}		N/A		N/A
$<L_{pA}>_m$		39 dBA		38 dBA
Impulsive or prominent discrete tones		No		No
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	N/A	152 mm(6 in)	76 mm(3 in)	76 mm(3 in)
Service	Install so that it can be moved to an area providing 760 mm (3 in) on each side.			
Footprint[2]		**Width** 512mm(20.2 in)		**Depth** 828mm(32.6 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7013 Models 58H, 590, 59H, 591, and 595

Dimensions		
Height	610 mm	24 in.
Width	360 mm	14.2 in.
Depth	675 mm	26.6 in.
Weight		
Minimum	36.7 kg	81 lbs.
Maximum	53.1 kg	117 lbs.
Electrical		
Power source loading (typical in kVA)	0.5	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	1620 Btu/hr	
Power requirements (typical)	550 watts	
Power factor	0.8 to 1.0	
Inrush current	34 amps at 120 V ac, 68 amps at 240 V ac	
Maximum altitude	2135 m (7000 ft.)	

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (61 to 90°F)	10 to 43°C (50 to 110°F)

Humidity (Noncondensing)	**Operating**	**Non-Operating**
Without tape media	8 to 80%	8 to 80%
With tape media	20 to 80%	20 to 80%
Wet Bulb Requirements		
Without tape media	27°C (80°F)	27°C (80°F)
With tape media	23°C (73°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.8 bels	5.3 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	39 dBA	38 dBA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	N/A	152 mm(6 in)	76 mm(3 in)	76 mm(3 in)
Service	Install so that it can be moved to an area providing 760 mm (3 in) on each side.			

Footprint[2]	**Width**	**Depth**
	512mm(20.2 in)	828mm(32.6 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7013 Models J30, J40, and J01

Dimensions	**J30 & J40**		**J01**	
Height	610 mm	24 in.	610 mm	24 in.
Width	360 mm	14.2 in.	360 mm	14.2 in.
Depth	750 mm	29.5 in.	750 mm	29.5 in.
Weight	**J30 & J40**		**J01**	
Minimum	67 kg	148 lbs.	67 kg	148 lbs.
Maximum	84 kg	185 lbs.	84 kg	185 lbs.
Electrical	**J30 & J40**		**J01**	
Power source loading (typical in kVA)	0.9		0.6	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)		100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60		50 or 60	
Thermal output (typical)	2765 Btu/hr		1843 Btu/hr	
Power requirements (typical)	810 watts		540 watts	
Power factor	0.8 to 1.0		0.8 to 1.0	
Inrush current[3]	35 amps at 120 V ac 70 amps at 240 V ac		35 amps at 120 V ac 70 amps at 240 V ac	
Maximum altitude	2500 m (8202 ft.)		2500 m (8202 ft.)	

Temperature Requirements	**Operating**	**Non-Operating**
	10 to 32°C (50 to 90°F)	5 to 50°C (41 to 122°F)

Humidity (Noncondensing)	**Operating**	**Non-Operating**
Without tape drive	8 to 80%	5 to 95%
With tape drive	20 to 80%	20 to 80%
Wet Bulb Requirements		
Without tape drive	24°C (75°F)	28°C (82°F)
With tape drive	23°C (73°F)	27°C (80°F)

Noise Emissions[1,4]	**Operating**	**Idle**
L_{WAd}	5.8 bels	5.5 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	NA	NA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	500mm(20 in)	500mm(20 in)	500mm(20 in)	500mm(20 in)
Service	500mm(20 in)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
	1630mm(64 in)	1750mm(70 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7013 Model J50

Dimensions		
Height	610 mm	24 in.
Width	360 mm	14.2 in.
Depth	750 mm	29.5 in.
Weight		
Minimum	67 kg	148 lbs.
Maximum	84 kg	185 lbs.
Electrical		
Power source loading (typical in kVA)	0.6	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	1843 Btu/hr	
Power requirements (typical)	540 watts	
Power factor	0.8 to 1.0	
Inrush current	35 amps at 120 V ac, 70 amps at 240 V ac	
Maximum altitude	2500 m (8202 ft.)	

Temperature Requirements	**Operating**	**Non-Operating (Power Off)**
	10 to 32°C (50 to 90°F)	10 to 43°C 50 to 109°F)

Humidity Requirements (Noncondensing)	**Operating**	**Non-Operating (Power Off)**
Without tape drive	8 to 80%	8 to 80%
With tape drive	20 to 80%	8 to 80%
Wet Bulb Requirements	23°C (73°F)	27°C (80°F)

Noise Emissions[1,4]	**Operating**	**Idle**
L_{WAd}	5.8 bels	5.5 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$		
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	500mm(20 in)	500mm(20 in)	500mm(20 in)	500mm(20 in)
Service	500mm(20 in)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
	1630mm(64 in)	1750mm(70 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
4. The values for $<L_{pA}>_m$ not available at the time of publishing.

7014 Model S00 Rack

Dimensions				
Height		1577 mm	62.0 in.	
Width		650 mm	25.5 in.	
Depth		1019 mm	40.1 in.	
Weight[1]				
Base Rack		159 kg	349 lbs.	
Full Rack		594 kg	1309 lbs.	
Electrical[2]		(sum specified values for drawers or enclosures in rack)		
DC Rack				
Power source loading maximum in kVA[3]		8.4		
Voltage range (V dc)		-40 to -60		
AC Rack				
Power source loading maximum in kVA (per PDB)[4]		4.8		
Voltage range (V ac)		200 to 240		
Frequency (hertz)		50 or 60		
Humidity Requirements		(see specifications for drawers or enclosures)		
Noise Emissions		(see specifications for drawers or enclosures)		
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.			
Service	915mm(36 in)	915mm(36 in)	915mm(36 in)	915mm(36 in)

Notes:

1. Configuration dependent, base weight plus the weight of the drawers mounted in the rack. The rack can support up to a maximum of 13.6 kg (30) lbs/EIA (Unit)
2. The total rack power should be derived from the sum of the power used by the drawrers in the rack.

S00 Rack Weight Distribution and Floor Loading

The S00 rack can get very heavy when several drawers are present. The following tables show the necessary weight distribution distances for the S00 rack when loaded.

Rack	System Weight (1) lbs(kg)	Width (2) in(mm)	Depth (2) in(mm)	Weight Distribution Distance (3)	
				Front & Back in(mm)	Left & Right in(mm)
7014-S00 (4)	1309 (594)	25.5 (650)	35 (889)	22 (559), 19.2 (487.7)	18 (457.2)
7014-S00 (5)	1309 (594)	25.5 (650)	35 (889)	22 (559), 19.2 (487.7)	0.0 (0.0)
7014-S00 (6)	1309 (594)	25.5 (650)	35 (889)	22 (559), 19.2 (487.7)	13 (330.2)

The following notes are for both the weight distribution distance table and the floor loading table.

Notes:

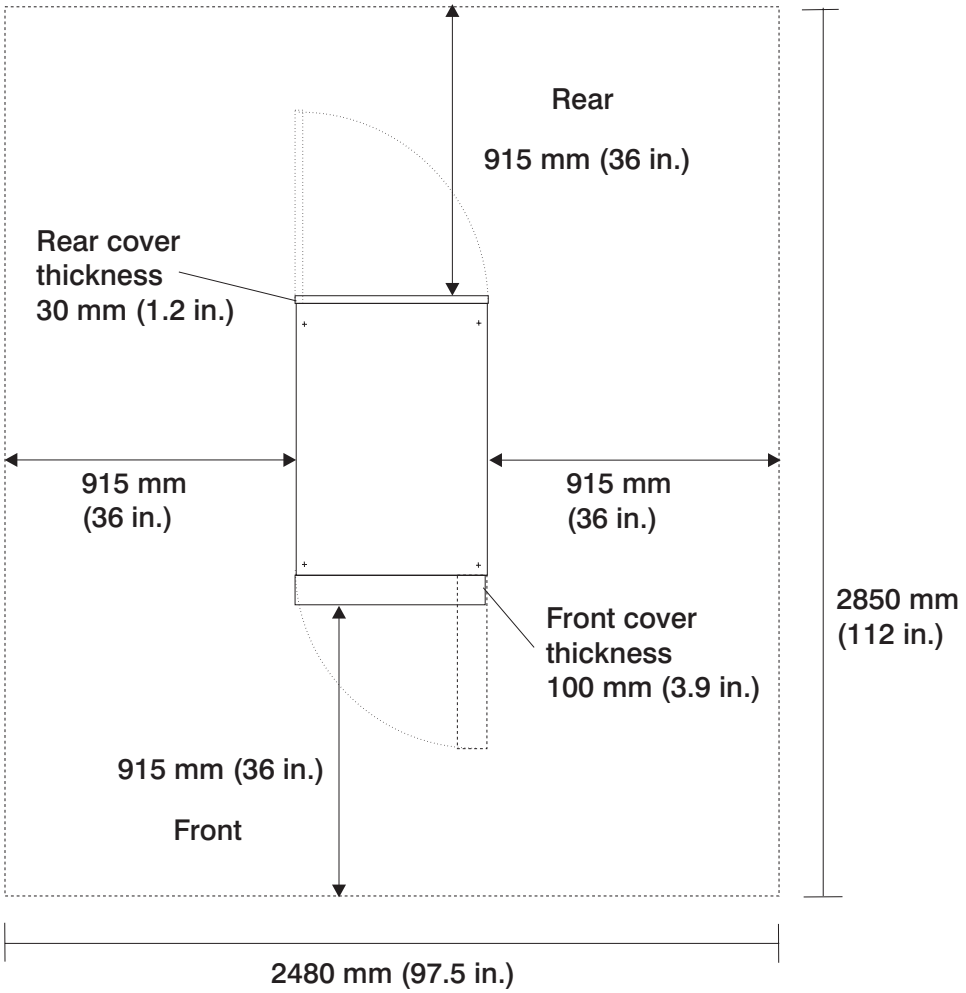
1. Maximum weight of fully populated rack, units are lbs with kg in parenthesis.
2. Dimensions without covers, units are inches with mm in parenthesis.
3. The weight distribution distance in all four directions is the area around the rack perimeter (minus covers) necessary to distribute the weight beyond the perimeter of the rack. Weight distribution areas cannot overlap with adjacent computer equipment weight distribution areas. Units are inches with mm in parenthesis.
4. Weight distribution distance is 1/2 the service clearance values shown in the figure plus cover thickness.
5. No left and right weight distribution distance.
6. Left and right weight distribution distance required for a 70 lb/ft2 raised floor loading objective.

The S00 rack can get very heavy when several drawers are present. The following tables show the necessary floor loading for the S00 rack when loaded.

Rack	Floor Loading			
	Raised kg/m2	Non-Raised kg/m2	Raised lb/ft2	Non-Raised lb/ft2
7014-S00 (4)	304	260.2	62.3	53.3
7014-S00 (5)	561.5	517.5	115	106
7014-S00 (6)	840	296	70	61
See notelist above.				

S00 Rack Service Clearances

The amount of space needed by the unit during service operation is indicated by the lines on the footprint. For multiple racks placed side by side, the left and right clearances apply only to the leftmost and rightmost rack.



Note: Rack units are large and heavy and are not easily moved. Because maintenance activities require access at both the front and back, extra room needs to be allowed. The footprint shows the radius of the swinging doors on the I/O rack. The illustration shows the minimum space required.

7014 Rack

Model T00 Rack

Dimensions				
Height	1804 mm 71.0 in.			
Capacity	36 EIA Units			
With PDP - DC only	1926 mm 75.8 in.			
Width without side panels	623 mm 24.5 in.			
With side panels	644 mm 25.4 in.			
Depth with rear door only	1042 mm 41.0 in.			
Depth with rear door and RS/6000 style front door	1098 mm 43.3 in.			
pSeries (sculptured) style front door	1147 mm 45.2 in.			
Weight				
Base Rack	244 kg 535 lbs			
Full Rack[1]	816 kg 1795 lbs See “T00 and T42 Rack Weight Distribution and Floor Loading” on page 34.			
Electrical[2]	(sum specified values for drawers or enclosures in rack)			
DC Rack				
Power source loading maximum in kVA[3]	8.4			
Voltage range (V dc)	-40 to -60			
AC Rack				
Power source loading maximum in kVA (per PDB)[4]	4.8			
Voltage range (V ac)	200 to 240			
Frequency (hertz)	50 or 60			
Temperature Requirements	(see specifications for drawers or enclosures)			
Humidity Requirements	(see specifications for drawers or enclosures)			
Noise Emissions	(see specifications for drawers or enclosures)			
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Rack airflow requirements are a function of the number and type of drawers installed (see note 5). Please refer to the individual drawer specifications.			
Service	915mm(36 in)	915mm(36 in)	915mm(36 in)	915mm(36 in)

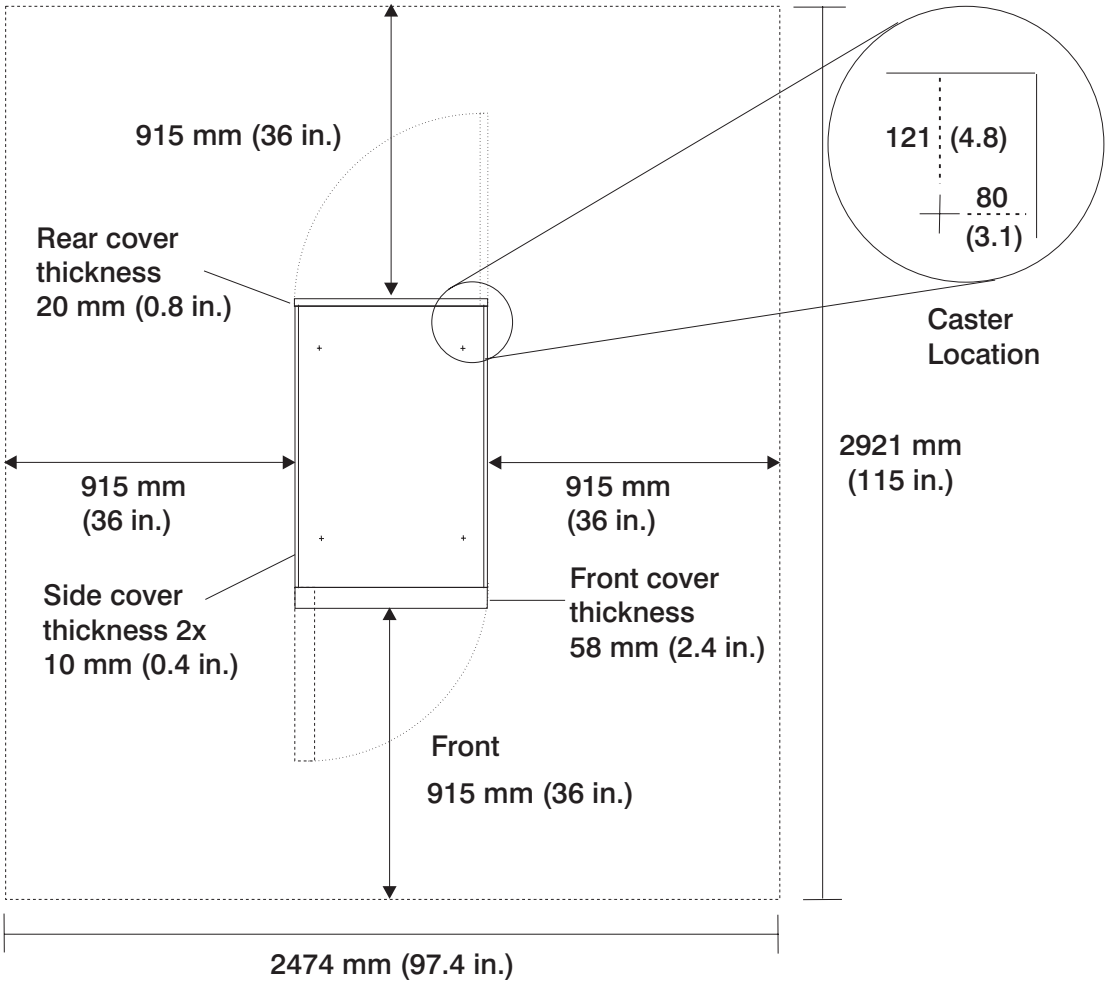
1. Configuration dependent, base rack weight plus the weight of the drawers mounted in the rack. The rack can support up to a maximum weight of 35 lbs/EIA (Unit).
2. The total rack power should be derived from the sum of the power used by the drawers in the rack.
3. The Power Distribution Panel (PDP) on the DC powered rack can hold up to eighteen (nine per power source) 48 volt 20 to 50 amp circuit breakers (configuration dependent). Each power source supports up to 8.4 kVA.
4. Each AC Power Distribution Bus (PDB) can supply 4.8 kVA. A rack can have up to four PDB's as required by the drawers mounted in the rack.
5. All rack installations require careful site and facilities planning designed to both address the cumulative drawer heat output and provide the airflow volumes rates necessary to comply with drawer temperature requirements.

Model T42 Rack

Dimensions	
Height	2015 mm 79.3 in.
Capacity	42 EIA Units
With PDP - DC only	Not applicable
Width without side panels	623 mm 24.5 in.
With side panels	644 mm 25.4 in.
Depth with rear door only	1042 mm 41.0 in.
Depth with rear door and RS/6000 style front door	1098 mm 43.3 in.
pSeries (sculptured) style front door	1147 mm 45.2 in.
Weight	
Base Rack	261 kg 575 lbs.
Full Rack[1]	930 kg 2045 lbs See “T00 and T42 Rack Weight Distribution and Floor Loading” on page 34.
Service Clearance	Recommended minimum vertical service clearance from floor is 2439 mm or 8 feet.
All Other Specifications	For all other technical information see the table for “Model T00 Rack” on page 29.

T00 and T42 Service Clearances and Caster Location

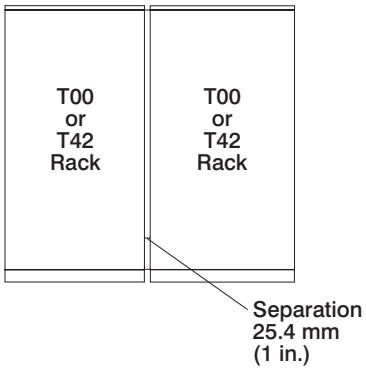
The service clearances and caster locations are shown in the following illustration:


915 mm (36 in.)
Rear cover
thickness
20 mm (0.8 in.)
121 (4.8)
80
(3.1)
Caster
Location
2921 mm
(115 in.)
915 mm
(36 in.)
915 mm
(36 in.)
Side cover
thickness 2x
10 mm (0.4 in.)
Front cover
thickness
58 mm (2.4 in.)
Front
915 mm (36 in.)
2474 mm (97.4 in.)

Note:

1. Rack units are large and heavy and are not easily moved. Because maintenance activities require access at both the front and back, extra room needs to be allowed. The footprint shows the radius of the swinging doors on the I/O rack. The illustration shows the minimum space required.
2. The amount of space needed by the unit during service operation is indicated by the lines on the footprint. For multiple racks placed side by side, the left and right clearances apply only to the leftmost and rightmost rack.

T00 and T42 Racks Multiple Attachment



T00 racks or T42 racks can be bolted together in a multiple rack arrangement as shown above. A kit is available including the bolts, spacers, and decorative trim pieces to cover the 25.4mm (1 in.) space. For service clearances use the service clearances as shown in the table for the “Model T00 Rack” on page 29.

T00 and T42 Rack Weight Distribution and Floor Loading

The T00 and T42 racks can get very heavy when several drawers are present. The following tables show the necessary weight distribution distances for the T00 and T42 racks when loaded.

Rack	System Weight (1) lbs(kg)	Width (2) in(mm)	Depth (2) in(mm)	Weight Distribution Distance (3)	
				Front & Back in(mm)	Left & Right in(mm)
7014-T00 (4)	1795 (816)	24.5 (623)	40.2 (1021)	20.3 (515.6), 18.8 (477.5)	18.4 (467.4)
7014-T00 (5)	1795 (816)	24.5 (623)	40.2 (1021)	20.3 (515.6), 18.8 (477.5)	0.0 (0.0)
7014-T00 (6)	1795 (816)	24.5 (623)	40.2 (1021)	20.3 (515.6), 18.8 (477.5)	22 (559)
7014-T42 (4)	2045 (930)	24.5 (623)	40.2 (1021)	20.3 (515.6), 18.8 (477.5)	18.4 (467.4)
7014-T42 (5)	2045 (930)	24.5 (623)	40.2 (1021)	20.3 (515.6), 18.8 (477.5)	0.0 (0.0)
7014-T42 (6)	2045 (930)	24.5 (623)	40.2 (1021)	20.3 (515.6), 18.8 (477.5)	27 (686)

The following notes are for both the weight distribution distance table and the floor loading table.

Notes:

1. Maximum weight of fully populated rack, units are lbs with kg in parenthesis.
2. Dimensions without covers, units are inches with mm in parenthesis.
3. The weight distribution distance in all four directions is the area around the rack perimeter (minus covers) necessary to distribute the weight beyond the perimeter of the rack. Weight distribution areas cannot overlap with adjacent computer equipment weight distribution areas. Units are inches with mm in parenthesis.
4. Weight distribution distance is 1/2 the service clearance values shown in the figure plus cover thickness.
5. No left and right weight distribution distance.
6. Left and right weight distribution distance required for a 70 lb/ft2 raised floor loading objective.

The T00 and T42 racks can get very heavy when several drawers are present. The following tables show the necessary floor loading for the T00 and T42 racks when loaded.

Rack	Floor Loading			
	Raised kg/m2	Non-Raised kg/m2	Raised lb/ft2	Non-Raised lb/ft2
7014-T00 (4)	366.7	322.7	75	66
7014-T00 (5)	734.5	690.6	150.4	141.4
7014-T00 (6)	341	297	70	61
7014-T42 (4)	403	359	82.5	73.5
7014-T42 (5)	825	781	169	160
7014-T42 (6)	341.4	297.5	70	61
See notes above.				

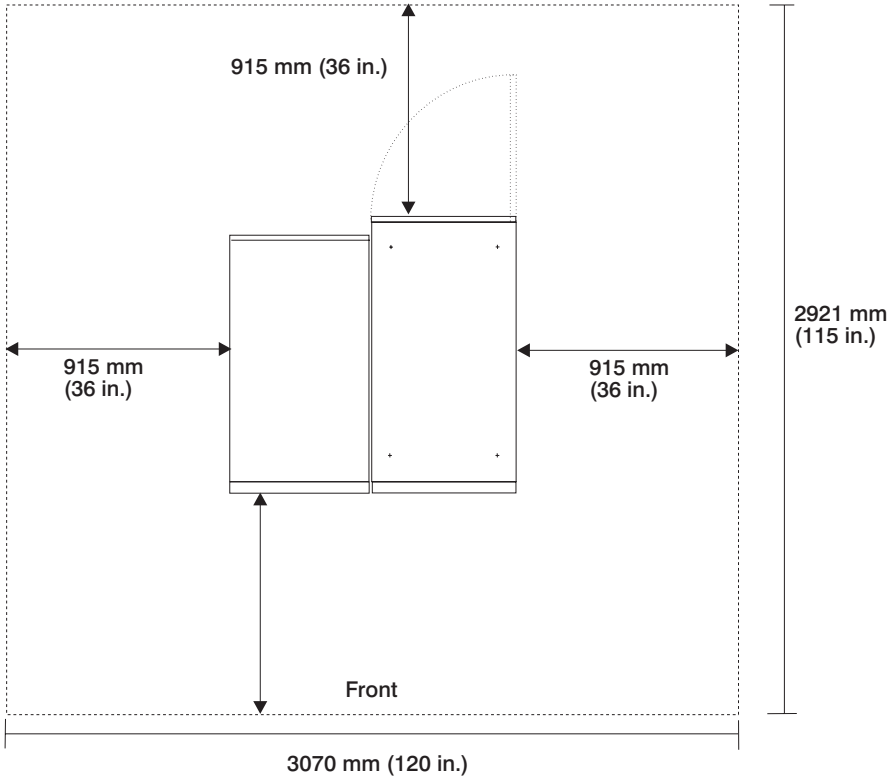
Service Clearances for S80 or S85 System With T00 Style I/O Rack

The amount of space needed by the units during service is indicated by large box of the footprint.

For multiple racks placed side by side, the left and right clearances apply only to the leftmost and rightmost rack.

Note: If you are planning to install an S80 or S85 in an SP System environment, see SP Planning Volume 1, Hardware and Physical Environment (GA22-7280) for system planning information.

Rack Configuration for AC Systems or -48v DC Systems



Note: Rack units are large and heavy and are not easily moved. Because maintenance activities require access at both the front and back, extra room needs to be allowed. The footprint shows the radius of the swinging doors on the I/O rack. The illustrations show the minimum space required.

7015 POWERserver 970B, and 980B

Dimensions				
Height		1578 mm	62.0 in.	
Width		650 mm	25.5 in.	
Depth		921 mm	36.0 in.	
Weight				
Minimum		205kg	450 lbs.	
Maximum		441kg	970 lbs.	
Electrical[5]	**Maximum Entry Configuration**		**Maximum Configuration**	
Power source loading (max)	1.0		2.4	
Voltage range (V ac)	200 to 240 or -48V dc		200 to 240 or -48V dc	
Frequency (hertz)	50 or 60		50 or 60	
Thermal output (max)	2165 Btu/hr		4100 Btu/hr	
Power requirements (max)	634 watts		1200 watts	
Power factor[4]	0.5 to 0.7		0.5 to 0.7	
Inrush current[6]	125 amps		125 amps	
Maximum altitude	2135 m (7000 ft.)		2135 m (7000 ft.)	
Temperature Requirements	**Operating**		**Non-Operating**	
	10 to 40°C (50 to 104°F)		10 to 52°C (50 to 125°F)	
Humidity (Noncondensing)	**Operating**		**Non-Operating**	
Without tape drive	8 to 80%		8 to 80%	
With tape drive	20 to 80%		20 to 80%	
Wet Bulb Requirements				
Without tape drive	27°C (80°F)		27°C (80°F)	
With tape drive	23°C (73°F)		27°C (80°F)	
Noise Emissions[1,2]	**Operating**		**Idle**	
L_{WAd}	6.4 bels		6.2 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	49 dBA		47 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances[3]	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow			
Service	(See service clearances for the “7015 System Rack R00” on page 40)			

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. Noise emissions data for the 7015 system unit is based on the following configuration: a processor drawer with eight memory cards and eight I/O cards, a SCSI device drawer with four SCSI devices, the second eight I/O slots with eight asynchronous cards, two SCSI disk drawers with four SCSI devices each, and a Battery Back up Unit. Noise emissions data for the SCSI disk drawer is therefore included in the data.
3. For multiple racks placed side by side, the left and right clearances apply only to the leftmost and rightmost rack. For five to six racks placed side by side, the left and right clearances need to be increased to 1525 mm (60 in). Having more than six racks side by side is not recommended. See “7015 System Rack R00” on page 40 for additional clearance information.
4. Power factor is 0.7 to 0.9 without a Battery Back up Unit.
5. The figures for power source loading, thermal output, and power requirement represent maximums. Please work with your sales or service representative to determine the typical figures for your configuration.
6. Inrush currents occur only at initial application of power, no inrush occurs during normal use.

7015 POWERserver 990

Dimensions				
Height		1578 mm	62.0 in.	
Width		650 mm	25.5 in.	
Depth		921 mm	36.0 in.	
Weight				
Minimum		205 kg	450 lbs.	
Maximum		441 kg	970 lbs.	
Electrical[5]	**Maximum Entry Configuration**		**Maximum Configuration**	
Power source loading (max)	1.0		2.4	
Voltage range (V ac)	200 to 240 or -48V dc		200 to 240 or -48V dc	
Frequency (hertz)	50 or 60		50 or 60	
Thermal output (max)	2165 Btu/hr		4100 Btu/hr	
Power requirements (max)	634 watts		1200 watts	
Power factor[4]	0.5 to 0.7		0.5 to 0.7	
Inrush current[6]	125 amps		125 amps	
Maximum altitude	2135 m (7000 ft.)		2135 m (7000 ft.)	
Temperature Requirements	**Operating**		**Non-Operating**	
	16 to 32°C (60 to 90°F)		10 to 43°C (50 to 110°F)	
Humidity (Noncondensing)	**Operating**		**Non-Operating**	
Without tape drive	8 to 80%		8 to 80%	
With tape drive	20 to 80%		20 to 80%	
Wet Bulb Requirements	23°C (73°F)		27°C (80°F)	
Noise Emissions[1,2]	**Operating**		**Idle**	
L_{WAd}	6.4 bels		6.2 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	49 dBA		47 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances[3]	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow			
Service	(See service clearances for the "7015 System Rack R00" on page 40)			

1. See "Noise Emission Notes" on page 199 for definitions of noise emissions positions.
2. Noise emissions data for the 7015 system unit is based on the following configuration: a Processor Drawer with eight memory cards and eight I/O cards, a SCSI Device Drawer with four SCSI devices, the second eight I/O slots with eight asynchronous cards, two SCSI Disk Drawers with four SCSI devices each, and a Battery Back up Unit. Noise emissions data for the SCSI Disk Drawer is therefore included in the data.
3. For multiple racks placed side by side, the left and right clearances apply only to the leftmost and rightmost rack. For five to six racks placed side by side, the left and right clearances need to be increased to 1525 mm (60 in). Having more than six racks side by side is not recommended. See "7015 System Rack R00" on page 40 for additional clearance information.
4. Power factor is 0.7 to 0.9 without a Battery Back up Unit.
5. The figures for power source loading, thermal output, and power requirement represent maximums. Please work with your sales or service representative to determine the typical figures for your configuration.
6. Inrush currents occur only at initial application of power, no inrush occurs during normal use.

7015 SCSI Disk and Device Drawers

Dimensions		
Height	171 mm	6.7 in. (4 EIA units)
Width	443 mm	17.4 in.
Depth	686 mm	27.0 in.
Weight		
Minimum	25 kg	55 lbs.
Maximum	48 kg	105 lbs.
Electrical		
Power source loading (typical in kVA)	0.34	
Voltage range (V ac)	200 to 240	
Frequency (hertz)	50 or 60	
Thermal output (typical)	580 Btu/hr	
Power requirements (typical)	170 watts	
Power factor	0.5 to 0.7	
Inrush current*	39 amps	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating** 10 to 52°C (50 to 125°F)
Humidity (Noncondensing)	**Operating**	**Non-Operating**
Without tape drive	8 to 80%	8 to 80%
With tape drive	20 to 80%	20 to 80%
Wet Bulb Requirements		
Without tape drive	27°C (80°F)	27°C (80°F)
With tape drive	23°C (73°F)	27°C (80°F)
Noise Emissions Data included with calculations for the 7015 POWERservers.		
* Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.		

1/2-Inch 9-Track Tape Drive Drawer

Dimensions			
Height	222 mm	8.75 in. (6 EIA units)	
Width	483 mm	19.00 in.	
Depth	679 mm	26.75 in.	
Weight			
Minimum	48.2 kg	106 lbs.	
Maximum	48.2 kg	106 lbs.	
Electrical			
Power source loading (typical in kVA)	0.2		
Voltage range (V ac)	100 to 125 or 200 to 240 (selectable)		
Frequency (hertz)	50 or 60		
Thermal output (typical)	410 Btu/hr		
Power requirements (typical)	120 watts		
Power factor	0.5 to 0.7		
Maximum altitude	2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity Requirements (Noncondensing) **Wet Bulb**	**Operating** 20 to 80% 23°C (73°F)		**Non-Operating** 20 to 80% 27°C (80°F)

7015 System Rack R00

Dimensions				
Height		1578 mm	62.0 in.	
Width		650 mm	25.5 in.	
Depth with Std. Door		921 mm	36.0 in.	
Depth with SMP Door		1060 mm	41.8 in.	
Weight [1]				
Base Rack		130 kg	286 lbs.	
Full rack		594 kg	1309 lbs.	
Electrical[2]		(sum specified values for drawers or enclosures in rack)		
DC Rack				
Power source loading maximum in kVA[3]		8.4		
Voltage range (V dc)		-40 to -60		
AC Rack				
Power source loading maximum in kVA (per PDB)[4]		4.8		
Voltage range (V ac)		200 to 240		
Frequency (hertz)		50 or 60		
Noise Emissions	(see specifications for drawers or enclosures)			
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.			
Service	915mm(36 in)	915mm(36 in)	915mm(36 in)	915mm(36 in)

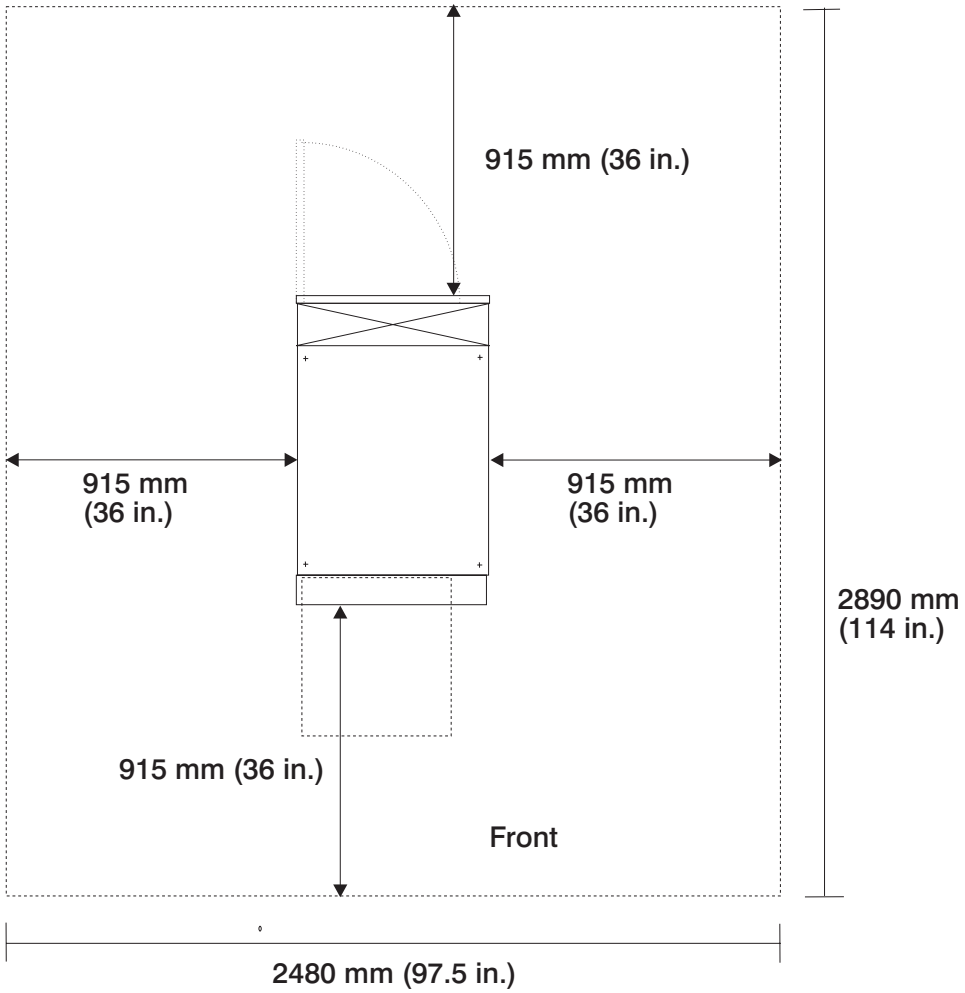
Notes:

1. Configuation dependent, base rack weight plus the weight of the drawers mounted in the rack. The rack can support up to a maximum of 13.6 kg (30) lbs/EIA (Unit).
2. The total rack power should be derived from the sum of the power used by the drawers in the rack.

R00 Rack Service Clearances

The amount of space needed by the unit during normal operation is indicated by broken lines on the footprint.

For multiple racks placed side by side, the left and right clearances apply only to the leftmost and rightmost rack. For five to six racks placed side by side, the left and right clearances need to be increased to 1525 mm (60 in). Having more than six racks side by side is not recommended.



Note: Rack units are large and heavy and are not easily moved. Because maintenance activities require access at both the front and back, extra room needs to be allowed. The footprint shows the radius of the swinging door on the rear of the rack and a drawer in the extended position. The illustration shows the minimum space required.

7015 Models R10, R20, and R21 CPU Drawers

Dimensions				
Height		266.7 mm	10.5 in.	
Width		445.5 mm	17.5 in.	
Depth		610.0 mm	24.0 in.	
Weight				
Minimum (Configuration dependant)		30.3 kg	65 lbs.	
Electrical				
Power source loading (typical in kVA)		0.29KVA		
Voltage range (V ac)		200 to 240		
Frequency (hertz)		50 or 60		
Thermal output (typical)		850 Btu/hr		
Power requirements (typical)		250 watts (Model R10) 280 watts (Model R20)		
Power factor		0.85 min		
Inrush current[3]		20 amps		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 10 to 40°C (50 to 104°F)	
Humidity (Noncondensing)	**Operating**		**Non-Operating**	
Without tape drive	8 to 80%		8 to 80%	
With tape drive	20 to 80%		20 to 80%	
Wet Bulb Requirements				
Without tape drive	27°C (80°F)		27°C (80°F)	
With tape drive	23°C (73°F)		27°C (80°F)	
Noise Emissions[1,2]	**Operating**		**Idle**	
L_{WAd}	6.4 bels		6.2 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	49 dBA		47 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.			
Service	(See service clearances for the R00 System Rack)			

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. Noise emissions data for Models R10 and R20 CPU Drawers are based on a processor drawer mounted in a R00 System Rack.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7015 Model R24

Dimensions				
Height		445.5 mm	17.5 in.	
Width		445.5 mm	17.5 in.	
Depth		710.0 mm	28.0 in.	
Weight				
Minimum (Configuration dependent)		51.3 kg	112 lbs.	
Electrical				
Power source loading (typical in kVA)		0.685		
Voltage range (V ac)		200 to 240 or -48V dc		
Frequency (hertz)		50 or 60		
Thermal output (typical)		2100 Btu/hr		
Power requirements (typical)		615 watts		
Power factor		0.8 to 1.0		
Inrush current[3]		68 amps		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 10 to 40°C (50 to 104°F)	
Humidity (Noncondensing)	**Operating**		**Non-Operating**	
Without tape drive	8 to 80%		8 to 80%	
With tape drive	20 to 80%		20 to 80%	
Wet Bulb Requirements				
Without tape drive	27°C (80°F)		27°C (80°F)	
With tape drive	23°C (73°F)		27°C (80°F)	
Noise Emissions[1,2]	**Operating**		**Idle**	
L_{WAd}	6.4 bels		6.2 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	49 dBA		47 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.			
Service	(See service clearances for the R00 System Rack)			

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. Noise emissions data for the Model R24 CPU Media Enclosure are based on the following configuration: the enclosure is mounted in a R00 System Rack with three 2.0GB SCSI Disk drives are installed, two SCSI Disk Drawers with three 2.41GB disk drives installed, a power distribution unit is installed in the rack and the system is operating in a nominal environment of 25°C (78 °F)
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7015 Model R30, R40, and R50

Dimensions				
Height		267.0 mm	10.5 in.	
Width		445.5 mm	17.5 in.	
Depth		925.0 mm	36.4 in.	
Weight				
Minimum (Configuration dependent)		59.7 kg	132 lbs.	
Electrical				
Power source loading (typical in kVA)		0.8		
Voltage range (V ac)		200 to 240 or -48V dc		
Frequency (hertz)		50 or 60		
Thermal output (typical)		2457 Btu/hr		
Power requirements (typical)		720 watts		
Power factor		0.8 to 1.0		
Inrush current[3]		45 amps at 240 V ac 90 amps at 240 V ac with redundant power option		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating (Power Off)** 10 to 40°C (50 to 104°F)	
Humidity (Noncondensing)	**Operating**		**Non-Operating (Power Off)**	
Without tape drive	8 to 80%		8 to 80%	
With tape drive	20 to 80%		8 to 80%	
Wet Bulb Requirements				
Without tape drive	27°C (80°F)		27°C (80°F)	
With tape drive	27°C (80°F)		27°C (80°F)	
Noise Emissions[1,2,4]	**Operating**		**Idle**	
L_{WAd}	6.4 bels		6.0 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	49 dBA		47 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.			
Service	(See service clearances for the R00 System Rack)			

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. Noise emissions data for the Models R30, R40, and R50 CPU Media Enclosure are based on the following configuration: the enclosure is mounted in a R00 System Rack and a power distribution unit is installed in the rack and the system is operating in a nominal environment of 25°C (78 °F)
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

Enterprise Server Models S70, and S7A (7017, 7013, 7015)

System Rack

Dimensions				
Height		1577 mm	62.0 in.	
Width		567 mm	22.3 in.	
Depth		1041 mm	40.9 in.	
Weight				
Minimum (Configuration dependant)		400 kg	880 lbs.	
Electrical				
Power source loading (maximum in kVA)		1.887KVA		
Voltage range (V ac)		200 to 240		
Frequency (hertz)		50 - 60		
Thermal output (Maximum)		5796 Btu/hr		
Power requirements (Maximum)		1698 watts		
Power factor		0.9		
Inrush current[3]		102 amps		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements[4,5]	**Operating** 10 to 37.8°C (50 to 100°F)		**Non-Operating** 1 to 60°C (34 to 140°F)	
Humidity	**Operating**		**Non-Operating**	
Noncondensing	8 to 80%		8 to 80%	
Wet Bulb Requirements[6]	23°C (73°F)		23°C (73°F)	
Noise Emissions[1,2]	**Operating**		**Idle**	
L_{WAd}	7.0 bels		7.0 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	N/A		N/A	
Impulsive or prominen discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.			
Service	See “Service Clearances for System in an S70, S7A, or S80 I/O Rack” on page 52.			

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. Noise emissions data for Models S70 and S7A are based on a system with the doors closed.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
4. The use of the PCI SSA Multi-Initiater/RAID EL in the Model S70 I/O Drawer limits the system usage to a 28°C (82°F) environment maximum.
5. The upper limit of the dry bulb temperature must be derated 1 degree C per 137M (450 ft.) above 1295M (4250 ft.)
6. The upper limit of the wet bulb temperature must be derated 1 degree C per 274M (882 ft.) elevation above 1370M (4500 ft.)

Enterprise Server Model S80 (7017)

The S80 can be used with a T00 or T42 style I/O rack, see “Model T00 Rack” on page 29. The rack can be ordered by feature code with your system.

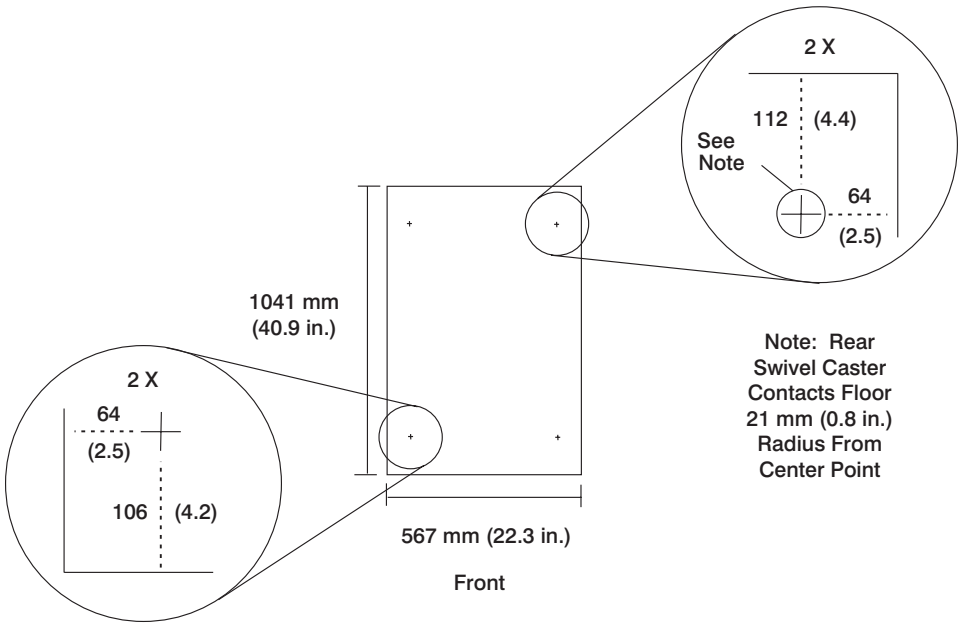
System Rack

Dimensions				
Height		1577 mm	62.0 in.	
Width		567 mm	22.3 in.	
Depth		1041 mm	40.9 in.	
Weight				
Minimum (Configuration dependant)		400 kg	880 lbs.	
Electrical				
Power source loading (maximum in kVA)		2.129KVA		
Voltage range (V ac)		200 to 240		
Frequency (hertz)		50 - 60		
Thermal output (Maximum)		6904 Btu/hr		
Power requirements (Maximum)		2023 watts		
Power factor		0.92 to 0.98		
Inrush current[3]		43 amps		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements[4,5]	**Operating**		**Non-Operating**	
	10 to 37.8°C (50 to 100°F)		1 1 to 60°C (34 to 140°F)	
Humidity	**Operating**		**Non-Operating**	
Noncondensing	8 to 80%		8 to 80%	
Wet Bulb Requirements[6]	23°C (73°F)		23°C (73°F)	
Noise Emissions[1,2]	**Operating**		**Idle**	
L_{WAd}	6.9 bels		6.8 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	49.5 dBA		49.0 dBA	
Impulsive or prominent discrete tones	None		None	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.			
Service	See “Service Clearances for System in an S70, S7A, or S80 I/O Rack” on page 52. Or, See “Service Clearances for S80 or S85 System With T00 Style I/O Rack” on page 35.			

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. Noise emissions data for Model S80 are based on a system with the doors closed.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
4. The use of the PCI SSA Multi-Initiater/RAID EL in the Model S7A and S80 I/O Drawer 10 EIA limits the system usage to a 28°C (82°F) environment maximum.
5. The upper limit of the dry bulb temperature must be derated 1 degree C per 137M (450 ft.) above 1295M (4250 ft.)
6. The upper limit of the wet bulb temperature must be derated 1 degree C per 274M (882 ft.) elevation above 1370M (4500 ft.)

S80 Rack Caster Location

The following figure shows the caster locations for the S80 rack. For complete specifications on S80 System rack, see “Enterprise Server Model S80 (7017)” on page 46.



Front Caster Location

7017 Model S85

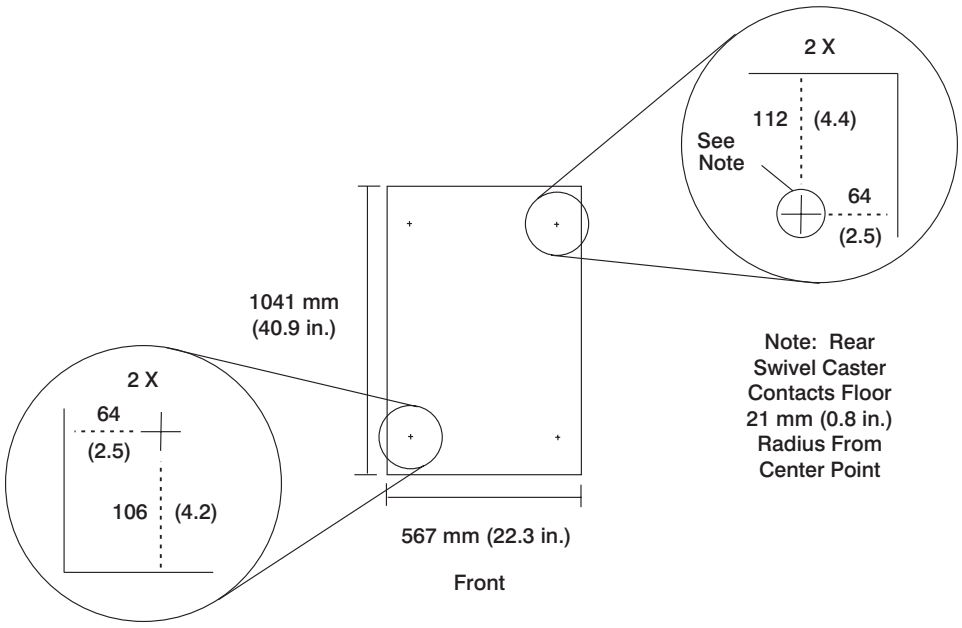
The S85 can be used with a T00 or T42 style I/O rack, see “Model T00 Rack” on page 29. The rack can be ordered by feature code with your system.

Dimensions				
Height		1577 mm	62.0 in.	
Width		565 mm	22.2 in.	
Depth		1200 mm	47.2 in.	
Weight				
Minimum (Configuration dependant)		400 kg	880 lbs.	
Electrical				
Power source loading (maximum in kVA)		2.129KVA		
Voltage range (V ac)		200 to 240		
Frequency (hertz)		50 - 60		
Thermal output (Maximum)		6904 Btu/hr		
Power requirements (Maximum)		2023 watts		
Power factor		0.92 to 0.98		
Inrush current[3]		43 amps		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements[4,5]	**Operating** 10 to 37.8°C (50 to 100°F)		**Non-Operating** 1 1 to 60°C (34 to 140°F)	
Humidity	**Operating**		**Non-Operating**	
Noncondensing	8 to 80%		8 to 80%	
Wet Bulb Requirements[6]	23°C (73°F)		23°C (73°F)	
Noise Emissions[1,2]	**Operating**		**Idle**	
L_{WAd}	6.9 bels		6.8 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	49.5 dBA		49.0 dBA	
Impulsive or prominent discrete tones	None		None	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.			
Service	See “Service Clearances for S80 or S85 System With T00 Style I/O Rack” on page 35.			

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. Noise emissions data for Model S85 are based on a system with the doors closed.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
4. The use of the PCI SSA Multi-Initiater/RAID EL in the Model S80 and S85 I/O Drawer 10 EIA limits the system usage to a 28°C (82°F) environment maximum.
5. The upper limit of the dry bulb temperature must be derated 1 degree C per 137M (450 ft.) above 1295M (4250 ft.)
6. The upper limit of the wet bulb temperature must be derated 1 degree C per 274M (882 ft.) elevation above 1370M (4500 ft.)

S85 Rack Caster Location

The following figure shows the caster locations for the S85 rack. For complete specifications on S85 System rack, see “7017 Model S85” on page 48.



Front Caster Location

S70 SCSI I/O Drawer 7 EIA

Dimensions				
Height	306.2 mm 12.1 in.			
Width	442.4 mm 17.4 in.			
Depth	748.2 mm 29.5 in.			
Weight				
Minimum configuration	43 kg 95 lbs.			
Maximum configuration	61 kg 135 lbs.			
Electrical	**AC**		**DC**	
Power source loading (typical in kVA)	0.4		0.4	
Power source loading (maximum in kVA)	1.0		1.0	
Voltage range	200 to 240 V ac		40 to 60 VDC	
Frequency (hertz)	50 / 60		N.A	
Thermal output (typical)	1228 Btu/hr		1365 Btu/hr	
Thermal output (maximum)	3071 Btu/hr		3412 Btu/hr	
Power requirements (typical)	360 watts		400 watts	
Power requirements (maximum)	900 watts		1000 watts	
Power factor	0.9		N/A	
Inrush current[3]	120 amps		300 amps	
Maximum altitude	2135 m (7000 ft.)		2135 m (7000 ft.)	
Temperature Requirements[4]	**Operating** 10 to 40°C[4] (50 to 104°F)		**Non-Operating** 10 to 52°C (50 to 125.6°F)	
Humidity (Noncondensing)	**Operating**		**Non-Operating**	
Without tape drive	8 to 80%		8 to 80%	
With tape drive	20 to 80%		20 to 80%	
Wet Bulb Requirements				
Without tape drive	27°C (80°F)		27°C (80°F)	
With tape drive	23°C (73°F)		27°C (80°F)	
Noise Emissions[1,2]	**Operating**		**Idle**	
L_{WAd}	5.9 bels		5.8 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	39 dBA		38 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.			
Service	(See "Service Clearances for System in an S70, S7A, or S80 I/O Rack" on page 52)			

1. See "Noise Emission Notes" on page 199 for definitions of noise emissions positions.
2. Noise emissions data for the Model S70 SCSI I/O Drawer 7 EIA are based on the I/O drawer mounted in a rack. See "S70, S7A and S80 I/O Rack" on page 51.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
4. Use of the PCI SSA Multi-Initiator/RAID EL in this S70 I/O Drawer limits the system usage to a 28°C (82°F) environment maximum.

S70, S7A and S80 I/O Rack

Dimensions				
Height		1577 mm	62.0 in.	
Width		650 mm	25.5 in.	
Depth		1019 mm	40.1 in.	
Weight[1] (Base Rack)		159 kg	349 lbs.	
Electrical	(see specifications for drawers or enclosures)			
Temperature Requirements	(see specifications for drawers or enclosures)			
Humidity Requirements	(see specifications for drawers or enclosures)			
Noise Emissions	(see specifications for drawers or enclosures)			
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.			
Service	See “Service Clearances for System in an S70, S7A, or S80 I/O Rack” on page 52.			
1. Configuration dependent, base weight plus weight of drawers.				

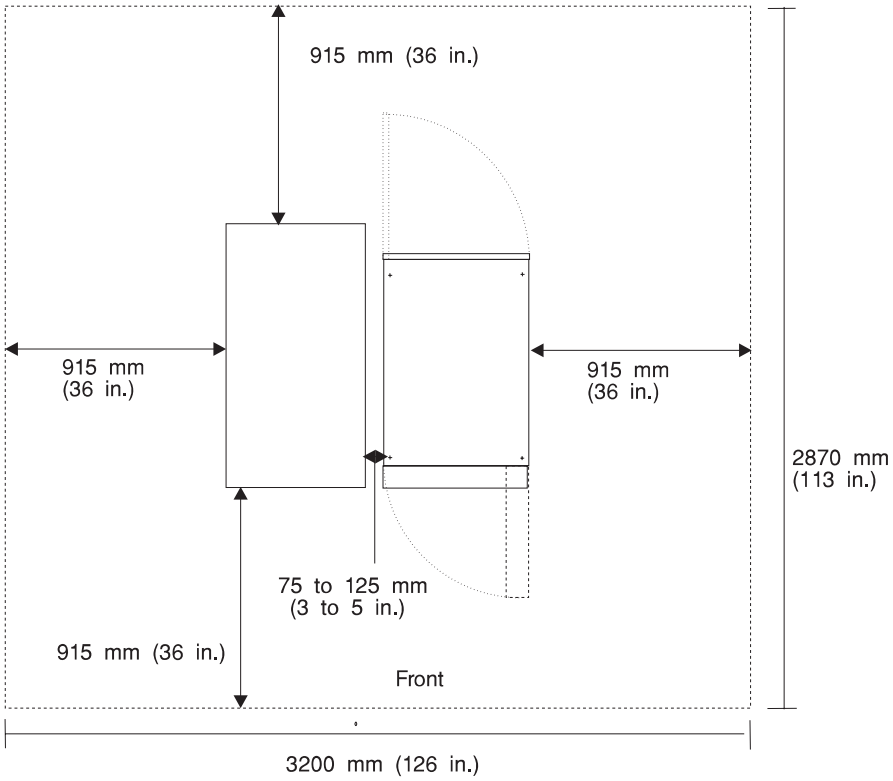
Service Clearances for System in an S70, S7A, or S80 I/O Rack

The amount of space needed by the units during service is indicated by large box of the footprint. See “S70, S7A and S80 I/O Rack” on page 51.

For multiple racks placed side by side, the left and right service clearances apply only to the leftmost and rightmost rack.

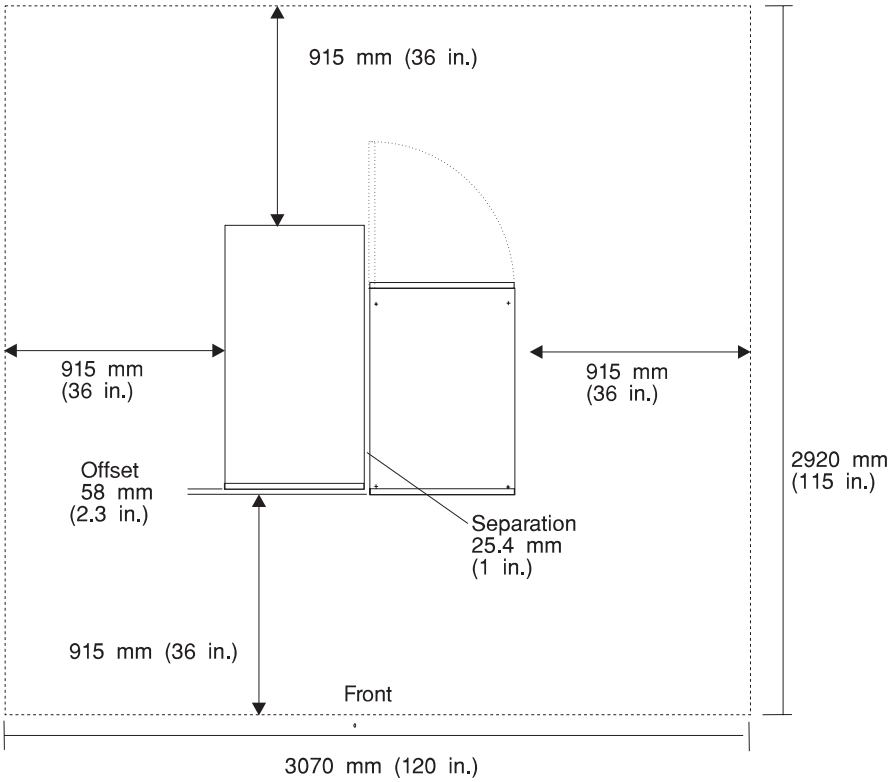
Note: If you are planning to install an S70, S7A or S80 in an SP System environment, see SP Planning Volume 1, Hardware and Physical Environment (GA22-7280) for system planning information.

Rack Configuration (AC Systems)



Note: Rack units are large and heavy and are not easily moved. Because maintenance activities require access at both the front and back, extra room needs to be allowed. The footprint shows the radius of the swinging doors on the I/O rack. The illustrations show the minimum space required.

Rack Configuration (-48v DC Systems)



Note: Rack units are large and heavy and are not easily moved. Because maintenance activities require access at both the front and back, extra room needs to be allowed. The footprint shows the radius of the swinging doors on the I/O rack. The illustrations show the minimum space required.

7020 Entry Workstation Model 40P

Dimensions	**Desktop**		**Deskside**	
Height	124 mm	4.9 in.	477 mm	18.8 in.
Width[1]	454 mm	17.9 in.	215 mm	8.5 in.
Depth	447 mm	17.6 in.	447 mm	17.6 in.

Weight	
Minimum configuration	12 kg 26 lbs.
Maximum configuration	14.5 kg 32 lbs.

Electrical	
Power source loading (typical in kVA)	0.52
Voltage range (V ac)	100 to 127 or 200 to 240 (switchable)
Frequency (hertz)	50 or 60
Thermal output (typical)	290 Btu/hr
Power requirements (typical)	185 watts
Power factor	0.5 to 0.7
Inrush current[6]	23 amps at 120 V ac and at 240 V ac
Maximum altitude	2135 m (7000 ft.)

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (60 to 90°F)	10 to 43°C (50 to 110°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)

Noise Emissions[2]	**Operating**	**Idle**
L_{WAd}	5.1 bels	4.8 bels
L_{pAm}	43 dBA	43 dBA
$<L_{pA}>_m$	40 dBA	40 dBA
Impulsive or prominent discrete tones	No	No

Clearances[3]	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[4,5]	35mm(1.5 in)	51mm(2 in)	25mm(1 in)	25mm(1 in)
Service	466mm(18 in)	N/A	N/A	N/A

Footprint[4]	**Width**	**Depth**
Desktop	505mm(19.9 in)	550mm(21.6 in)
Deskside	215mm(8.5 in)	550mm(21.6 in)

1. Deskside width measurement includes the optional vertical stand.
2. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
3. Left and right measurements apply only when the system is used in the desktop position.
4. The amount of space needed by the unit during normal operation is indicated by the footprint dimentions.
5. When placed in the vertical position, the system requires 25 mm (1 in) at the bottom and top for proper air flow. The necessary bottom clearance is provided by the optional vertical stand.
6. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7024 Entry Deskside PowerPC Server E Series

Dimensions				
Height	648 mm 25.5 in.			
Width[1]	315 mm 12.4 in.			
Depth	450 mm 17.7 in.			
Weight				
Maximum	25 kg 55 lbs.			
Electrical				
Power source loading (typical in kVA)	0.17			
Voltage range (V ac)	100 to 127 or 200 to 240 (switchable)			
Frequency (hertz)	50 or 60			
Thermal output (typical)	375 Btu/hr			
Power requirements (typical)	110 watts			
Power factor	0.5 to 07			
Inrush current[4]	75 amps at 120 V ac, 150 amps at 240 V ac			
Maximum altitude	2135 m (7000 ft.)			
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[2]	**Operating**		**Idle**	
L_{WAd}	5.2 bels		5.0 bels	
L_{pAm}	41 dBA		38 dBA	
$<L_{pA}>_m$	36 dBA		34 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[3]	76mm(3 in)	76mm(3 in)	25mm(1 in)	25mm(1 in)
Service	466mm(18 in)	N/A	N/A	N/A
Footprint[3]	**Width** 365mm(14.4 in)		**Depth** 602mm(23.7 in)	

1. Width measurement includes the optional vertical stand.
2. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
3. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
4. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7025 Deskside 6F0 Series

Dimensions				
Height	610 mm 24.0 in.			
Width	483 mm 19.0 in.			
Depth	728 mm 28.7 in.			
Weight				
Minimum configuration	70 kg 155 lbs.			
Maximum configuration	95 kg 209 lbs.			
Electrical				
Power source loading typical in kVA	0.42			
Power source loading maximum in kVA	0.63			
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)			
Frequency (hertz)	50 or 60			
Thermal output (typical)	1365 Btu/hr			
Thermal output (maximum)	2048 Btu/hr			
Power requirements (typical)	400 watts			
Power requirements (maximum)	600 watts			
Power factor	0.95			
Inrush current[3]	90 amps			
Maximum altitude[4]	2135 m (7000 ft.)			
Temperature Requirements	**Operating[4]** 10 to 38°C (50 to 100°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating[4]**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	6.1 bels		5.9 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	43 dBA		40 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	76mm(3 in)	152mm(6 in)	51mm(2 in)	51mm(2 in)
Service	Install so that it can be moved to an area providing 457 mm (18 in.) on the front and 457 mm (18 in) on the left side.			
Footprint[2]	**Width** 585mm(23 in)		**Depth** 956mm(37.7 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
4. A)Dry bulb temperature derating at high altitude: Upper limit temperature must be derated 1.0 deg C per 137 m of elevation beyond 1295 m above sea level. (1 deg F per 250 ft above 4250 feet). B) Wet bulb temperature derating at high altitude: Upper limit temperature must be derated 1 deg C per 274 m of elevation beyond 1372m above sea level (1 deg F per 500 ft above 4500 feet).

7025 Deskside 6F1 Series

Dimensions				
Height	610 mm 24.0 in.			
Width	483 mm 19.0 in.			
Depth	728 mm 28.7 in.			
Weight				
Minimum configuration	70 kg 155 lbs.			
Maximum configuration	95 kg 209 lbs.			
Electrical				
Power source loading typical in kVA	0.59			
Power source loading maximum in kVA	0.86			
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)			
Frequency (hertz)	50 or 60			
Thermal output (typical)	1920 Btu/hr			
Thermal output (maximum)	2867 Btu/hr			
Power requirements (typical)	560 watts			
Power requirements (maximum)	840 watts			
Power factor	0.95			
Inrush current[3]	70 amps			
Maximum altitude[4]	2135 m (7000 ft.)			
Temperature Requirements	**Operating[4]** 10 to 38°C (50 to 100°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements (Noncondensing) **Wet Bulb**	**Operating[4]** 8 to 80% 23°C (73°F)		**Non-Operating** 8 to 80% 27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	6.1 bels		5.9 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	43 dBA		40 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	76mm(3 in)	152mm(6 in)	51mm(2 in)	51mm(2 in)
Service	Install so that it can be moved to an area providing 457 mm (18 in.) on the front and 457 mm (18 in) on the left side.			
Footprint[2]	**Width** 585mm(23 in)		**Depth** 956mm(37.7 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
4. A)Dry bulb temperature derating at high altitude: Upper limit temperature must be derated 1.0 deg C per 137 m of elevation beyond 1295 m above sea level. (1 deg F per 250 ft above 4250 feet). B) Wet bulb temperature derating at high altitude: Upper limit temperature must be derated 1 deg C per 274 m of elevation beyond 1372m above sea level (1 deg F per 500 ft above 4500 feet).

7025 Deskside F30 Series

Dimensions				
Height	620 mm 24.3 in.			
Width	245 mm 9.6 in.			
Width with Pedestal	350 mm 13.7 in.			
Depth	695 mm 27.3 in.			
Depth with Pedestal	745 mm 29.3 in.			
Weight				
Minimum configuration	30 kg 65 lbs.			
Maximum configuration	50 kg 110 lbs.			
Electrical				
Power source loading (maximum in kVA)	0.56			
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)			
Frequency (hertz)	50 or 60			
Thermal output (maximum)	1535 Btu/hr			
Power requirements (maximum)	450 watts			
Power factor	0.8			
Inrush current[3]	30 amps at 120 V ac, 60 amps at 240 V ac			
Maximum altitude	2135 m (7000 ft.)			
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.8 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	41 dBA		38 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	76mm(3 in)	152mm(6 in)	51mm(2 in)	51mm(2 in)
Service	Install so that it can be moved to an area providing 457mm (18 in.) on the front and 457 mm (18 in) on the left side.			
Footprint[2]	**Width** 350mm(13.7 in)		**Depth** 975mm(38.4 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7025 Deskside F40 Series

Dimensions				
Height	620 mm 24.3 in.			
Width	245 mm 9.6 in.			
Width with Pedestal	350 mm 13.7 in.			
Depth	695 mm 27.3 in.			
Depth with Pedestal	745 mm 29.3 in.			
Weight				
Minimum configuration	30 kg 65 lbs.			
Maximum configuration	50 kg 110 lbs.			
Electrical				
Power source loading typical in kVA	0.41			
Power source loading maximum in kVA	0.56			
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)			
Frequency (hertz)	50 or 60			
Thermal output (typical)	1125 Btu/hr			
Thermal output (maximum)	1535 Btu/hr			
Power requirements (typical)	330 watts			
Power requirements (maximum)	450 watts			
Power factor	0.8 - 0.96			
Inrush current[3]	30 amps at 120 V ac, 60 amps at 240 V ac			
Maximum altitude	2135 m (7000 ft.)			
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.8 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	41 dBA		38 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	76mm(3 in)	152mm(6 in)	51mm(2 in)	51mm(2 in)
Service	Install so that it can be moved to an area providing 457 mm (18 in.) on the front and 457 mm (18 in) on the left side.			
Footprint[2]	**Width** 350mm(13.7 in)		**Depth** 975mm(38.4 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7025 Deskside F50 Series

Dimensions				
Height	620 mm 24.3 in.			
Width	245 mm 9.6 in.			
Width with Pedestal	350 mm 13.7 in.			
Depth	695 mm 27.3 in.			
Depth with Pedestal	745 mm 29.3 in.			
Weight				
Minimum configuration	30 kg 65 lbs.			
Maximum configuration	55 kg 120 lbs.			
Electrical				
Power source loading typical in kVA	0.52			
Power source loading maximum in kVA	0.56			
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)			
Frequency (hertz)	50 or 60			
Thermal output (typical)	975 Btu/hr			
Thermal output (maximum)	2050 Btu/hr			
Power requirements (typical)	285 watts			
Power requirements (maximum)	600 watts			
Power factor	0.8 - 0.96			
Inrush current[3]	50 amps			
Maximum altitude	2135 m (7000 ft.)			
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements (Noncondensing) **Wet Bulb**	**Operating** 8 to 80% 23°C (73°F)		**Non-Operating** 8 to 80% 27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.8 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	41 dBA		38 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	76mm(3 in)	152mm(6 in)	51mm(2 in)	51mm(2 in)
Service	Install so that it can be moved to an area providing 457 mm (18 in.) on the front and 457 mm (18 in) on the left side.			
Footprint[2]	**Width** 350mm(13.7 in)		**Depth** 975mm(38.4 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7025 Deskside F80 Series

Dimensions				
Height	610 mm 24.0 in.			
Width	483 mm 19.0 in.			
Depth	728 mm 28.7 in.			
Weight				
Minimum configuration	70 kg 155 lbs.			
Maximum configuration	95 kg 209 lbs.			
Electrical				
Power source loading typical in kVA	0.59			
Power source loading maximum in kVA	0.86			
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)			
Frequency (hertz)	50 or 60			
Thermal output (typical)	1920 Btu/hr			
Thermal output (maximum)	2867 Btu/hr			
Power requirements (typical)	560 watts			
Power requirements (maximum)	840 watts			
Power factor	0.95			
Inrush current[3]	70 amps			
Maximum altitude[4]	2135 m (7000 ft.)			
Temperature Requirements	**Operating[4]** 10 to 38°C (50 to 100°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements (Noncondensing) **Wet Bulb**	**Operating[4]** 8 to 80% 23°C (73°F)		**Non-Operating** 8 to 80% 27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	6.1 bels		5.9 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	43 dBA		40 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	76mm(3 in)	152mm(6 in)	51mm(2 in)	51mm(2 in)
Service	Install so that it can be moved to an area providing 457 mm (18 in.) on the front and 457 mm (18 in) on the left side.			
Footprint[2]	**Width** 585mm(23 in)		**Depth** 956mm(37.7 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
4. A)Dry bulb temperature derating at high altitude: Upper limit temperature must be derated 1.0 deg C per 137 m of elevation beyond 1295 m above sea level. (1 deg F per 250 ft above 4250 feet). B) Wet bulb temperature derating at high altitude: Upper limit temperature must be derated 1 deg C per 274 m of elevation beyond 1372m above sea level (1 deg F per 500 ft above 4500 feet).

7026 Model 6H0 CEC Drawer

The Model 6H0 includes two drawers. They are the Central Electronics Complex (CEC) Drawer with an I/O Drawer. For technical information on the I/O Drawer see “I/O Drawer 5 EIA” on page 72.

Dimensions		
Height	218 mm 8.58 in. 5 (EIA Units)	
Width	445 mm 17.5 in.	
Depth	820 mm 32.3 in.	
Weight		
Minimum configuration	41 kg 90 lbs.	
Maximum configuration	52 kg 115 lbs.	
Electrical		
Power source loading typical in kVA	0.24	
Power source loading maximum in kVA	0.37	
Voltage range (V ac)	200 to 240	
Frequency (hertz)	50 or 60	
Thermal output (typical)	768 Btu/hr	
Thermal output (maximum)	1195 Btu/hr	
Power requirements (typical)	225 watts	
Power requirements (maximum)	350 watts	
Power factor	0.95	
Inrush current[1]	40 amps	
Maximum altitude[2]	2135 m (7000 ft.)	
Temperature Requirements[2]	**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating** 10 to 52°C (50 to 125.6°F)
Humidity Noncondensing	**Operating**	**Non-Operating**
Without tape drive	8 to 80%	8 to 80%
With tape drive	20 to 80%	8 to 80%
Wet Bulb Requirements		
Without tape drive	27°C (80.6°F)	27°C (80.6°F)
With tape drive	23°C (73°F)	27°C (80.6°F)
Noise Emissions[3]	**Operating**	**Idle**
With H80 CEC Drawer only		
L_{WAd}	5.8 bels	5.8 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	45 dBA	45 dBA
Impulsive or prominent discrete tones	No	No
Noise Emissions[3]	**Operating**	**Idle**
With H80 and Primary I/O Drawer		
L_{WAd}	6.2 bels	6.2 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	48 dBA	48 dBA
Impulsive or prominent discrete tones	No	No
Install/Air Flow Clearance	Maintenance of proper service clearances should allow proper air flow.	
Service Clearance	(See service clearances for the 7014 T00 Rack)	

1. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
2. For altitudes above 915 meters, the maximum temperature limit is derated by 1 degree C for every 137 meters of elevation above 915 meters.
3. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

7026 Model 6H1 CEC Drawer

The Model 6H1 includes two drawers. They are the Central Electronics Complex (CEC) Drawer with an I/O Drawer. For technical information on the I/O Drawer see “I/O Drawer 5 EIA” on page 72.

Dimensions		
Height	218 mm 8.58 in. 5 (EIA Units)	
Width	445 mm 17.5 in.	
Depth	820 mm 32.3 in.	
Weight		
Minimum configuration	41 kg 90 lbs.	
Maximum configuration	52 kg 115 lbs.	
Electrical		
Power source loading typical in kVA	0.32	
Power source loading maximum in kVA	0.48	
Voltage range (V ac)	200 to 240	
Frequency (hertz)	50 or 60	
Thermal output (typical)	1025 Btu/hr	
Thermal output (maximum)	1536 Btu/hr	
Power requirements (typical)	300 watts	
Power requirements (maximum)	450 watts	
Power factor	0.95	
Inrush current[1]	40 amps	
Maximum altitude[2]	2135 m (7000 ft.)	
Temperature Requirements[2]	**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating** 10 to 52°C (50 to 125.6°F)
Humidity Noncondensing	**Operating**	**Non-Operating**
Without tape drive	8 to 80%	8 to 80%
With tape drive	20 to 80%	8 to 80%
Wet Bulb Requirements		
Without tape drive	27°C (80.6°F)	27°C (80.6°F)
With tape drive	23°C (73°F)	27°C (80.6°F)
Noise Emissions[3]	**Operating**	**Idle**
With H80 CEC Drawer only		
L_{WAd}	5.8 bels	5.8 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	45 dBA	45 dBA
Impulsive or prominent discrete tones	No	No
Noise Emissions[3]	**Operating**	**Idle**
With H80 and Primary I/O Drawer		
L_{WAd}	6.2 bels	6.2 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	48 dBA	48 dBA
Impulsive or prominent discrete tones	No	No
Install/Air Flow Clearance	Maintenance of proper service clearances should allow proper air flow.	
Service Clearance	(See service clearances for the 7014 T00 Rack)	

1. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
2. For altitudes above 915 meters, the maximum temperature limit is derated by 1 degree C for every 137 meters of elevation above 915 meters.
3. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

7026 Model 6M1 CEC Drawer

The RS/6000 Enterprise Server Model M80 and @server pSeries 660 Model 6M1systems are multiprocessor, multibus systems packaged in two to five drawers. The processors and memory are packaged in an 8 EIA-unit central electronics complex (CEC) drawer, and the optional DASD and I/O devices are in 5 EIA-unit I/O drawers. The basic system consists of one CEC drawer and one I/O drawer in the same rack. The system is expanded by adding up to three additional I/O drawers in a minimum of two racks. For technical information on the I/O Drawer see “I/O Drawer 5 EIA” on page 72.

Dimensions		
Height	355.6 mm	14.0 in.
Width	445.5 mm	17.5 in.
Depth	825.5 mm	32.5 in.
Weight		
Minimum	69.7 kg	158 lbs.
Maximum	74.6 kg	169 lbs.

Electrical	
Power source loading typical in kVA	0.45
Power source loading maximum in kVA	0.69
Voltage range (V ac)	200 to 240
Frequency (hertz)	50 or 60
Thermal output (typical)	M80: 1265 Btu/hr 6M1: 1450 Btu/hr
Thermal output (maximum)	M80: 1877 Btu/hr 6M1: 2218 Btu/hr
Power requirements (typical)	M80: 370 watts 6M1: 425 watts
Power requirements (maximum)	M80: 550 watts 6M1: 650 watts
Power factor	0.95
Inrush current	34 amps
Maximum altitude	2135 m (7000 ft.)

Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating (Power Off)** 10 to 52°C (50 to 125°F)
Humidity (Noncondensing)	**Operating**	**Non-Operating (Power Off)**
Without tape drive	8 to 80%	8 to 80%
With tape drive	20 to 80%	8 to 80%
Wet Bulb Requirements		
Without tape drive	27°C (80°F)	27°C (80°F)
With tape drive	27°C (80°F)	27°C (80°F)
Noise Emissions[1,2]	**Operating**	**Idle**
With M80 CEC drawer only		
L_{WAd}	6.4 bels	6.4 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	48 dBA	48 dBA
Impulsive or prominent discrete tones	No	No
Noise Emissions[1,2]	**Operating**	**Idle**
With M80 and Primary I/O Drawer		
L_{WAd}	6.5 bels	6.5 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	49 dBA	49 dBA
Impulsive or prominent discrete tones	No	No

Clearances	Front	Back	Left	Right

Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.
Service	(See service clearances for the 7014 Series Model T00 Rack)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. Noise emissions data are based on the following configuration: the drawer is mounted in a 7014 Series Model T00 Rack , a power distribution unit is installed in the rack, and the system is operating in a normal environment of 25 °C (78 °F).
3. Inrush currents occur only at initial application of power; no inrush occurs during normal power off-on cycle.

7026 Model B80

Dimensions				
Height	217 mm 8.6 in. 5 EIA Units			
Width	482.0 mm 19 in.			
Depth	617 mm 24.3 in.			
Weight				
Minimum configuration	36.5 kg 80.3 lbs.			
Maximum configuration	45.0 kg 99.3 lbs.			
Electrical				
Power source loading (maximum in kVA)	0.46			
Power source loading (typical in kVA)	0.29			
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)			
Frequency (hertz)	50 / 60			
Voltage range (V dc)	–48			
Thermal output (maximum)	1536 Btu/hr			
Thermal output (typical)	1024 Btu/hr			
Power requirements (maximum)	450 watts			
Power requirements (typical)	300 watts			
Power factor - US, World Trade, Japan	0.98			
Inrush current[2]	30 amps			
Maximum altitude[3],[4]	2135 m (7000 ft.)			
Temperature Requirements[3]	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 10 to 52°C (50 to 126°F)	
Humidity Requirements[4]	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	27°C (80°F)		27°C (80°F)	
Noise Emissions[1],[5]	**Operating**		**Idle**	
L_{WAd}	6.1 bels		5.9 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	46 dBA		44 dBA	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintance of proper service clearance should allow proper air flow.			
Service	See service clearances for the 7014 T00 Rack			

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions. See noise emissions note 4.
2. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
3. The upper limit of the dry bulb temperature must be derated 1 degree C per 137m (450 ft.) above 915m (3000 ft.).
4. The upper limit of the wet bulb temperature must be derated 1 degree C per 274m (900 ft.) above 305m (1000 ft.).
5. Levels are for a single system installed in a T00 32 EIA rack with the center of the unit approximately 1500 mm (59 in.) off the floor.

7026 Model H10 Drawer

Dimensions				
Height	306.2 mm 12.1 in.			
Width	442.4 mm 17.4 in.			
Depth	748.2 mm 29.5 in.			
Weight				
Minimum configuration	42 kg 92 lbs.			
Maximum configuration	57 kg 126 lbs.			
Electrical				
Power source loading (typical in kVA)	0.41			
Power source loading (maximum in kVA)	0.56			
Voltage range (V ac)	200 to 240			
Frequency (hertz)	50 or 60			
Thermal output (typical)	683 Btu/hr			
Thermal output (maximum)	1365 Btu/hr			
Power requirements (typical)	200 watts			
Power requirements (maximum)	400 watts			
Power factor	0.8 - 0.96			
Inrush current[3]	60 amps at 240 V ac			
Maximum altitude	2135 m (7000 ft.)			
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 10 to 52°C (50 to 125.6°F)	
Humidity (Noncondensing)	**Operating**		**Non-Operating**	
Without tape drive	8 to 80%		8 to 80%	
With tape drive	20 to 80%		20 to 80%	
Wet Bulb Requirements				
Without tape drive	27°C (80°F)		27°C (80°F)	
With tape drive	23°C (73°F)		27°C (80°F)	
Noise Emissions[1,2]	**Operating**		**Idle**	
L_{WAd}	5.9 bels		5.8 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	39 dBA		38 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.			
Service	(See service clearances for the “7015 System Rack R00” on page 40)			

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. Noise emissions data for the Model H10 CPU Drawer is based on the processor drawer mounted in a “7015 System Rack R00” on page 40.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7026 Model H50 (Enterprise Server)

Dimensions				
Height	350 mm 13.8 in.			
Width	443 mm 17.5 in.			
Depth	844 mm 33.2 in.			
Weight				
Minimum configuration	71 kg 157 lbs.			
Maximum configuration	89 kg 195 lbs.			
Electrical				
Power source loading typical in kVA	0.4			
Power source loading maximum in kVA	0.63			
Voltage range (V ac)	200 to 240 (autoranging)			
Frequency (hertz)	50 or 60			
Thermal output (typical)	1296 Btu/hr			
Thermal output (maximum)	2460 Btu/hr			
Power requirements (typical)	380 watts			
Power requirements (maximum)	600 watts			
Power factor	0.8 - 0.96			
Inrush current[2]	50 amps			
Maximum altitude[3]	915 m (3000 ft.)			
Temperature Requirements[3]	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	6.2 bels		5.9 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	43 dBA		40 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintence of proper service clearances should allow proper air flow.			
Service	(See service clearances for the “7015 System Rack R00” on page 40)			

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
3. For altitudes above 915 meters, the maximum temperature limit is derated by 1 degree C for every 137 meters of elevation above 915 meters.

7026 Model H70 (Enterprise Server)

Dimensions				
Height	350 mm 13.8 in. 8 (EIA Units)			
Width	443 mm 17.4 in.			
Depth	875 mm 34.2 in.			
Weight				
Minimum configuration	71 kg 157 lbs.			
Maximum configuration	89 kg 195 lbs.			
Electrical				
Power source loading typical [1] in kVA	0.46			
Power source loading maximum [1] in kVA	0.691			
Voltage range (V ac)	200 to 240			
Frequency (hertz)	50 or 60			
Thermal output (typical)	1485 Btu/hr			
Thermal output (maximum)	2818 Btu/hr			
Power requirements (typical)	434 watts			
Power requirements (maximum)	650 watts			
Power factor	0.9 - 0.98			
Inrush current[2]	50 amps			
Maximum altitude[3]	915 m (3000 ft.)			
Temperature Requirements[3]	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 10 to 52°C (50 to 125.6°F)	
Humidity Requirements (Noncondensing) **Wet Bulb**	**Operating** 8 to 80% 27°C (80.6°F)		**Non-Operating** 8 to 80% 27°C (80.6°F)	
Noise Emissions[4]	**Operating**		**Idle**	
L_{WAd}	6.2 bels		5.9 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	43 dBA		40 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintence of proper service clearances should allow proper air flow.			
Service	(See service clearances for the “7015 System Rack R00” on page 40)			

1. The power source loading is calculated using the power factor = 0.94.
2. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
3. For altitudes above 915 meters, the maximum temperature limit is derated by 1 degree C for every 137 meters of elevation above 915 meters.
4. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

7026 Model H80 CEC Drawer

The Model H80 includes two drawers. They are the Central Electronics Complex (CEC) Drawer with an I/O Drawer. For technical information on the I/O Drawer see “I/O Drawer 5 EIA” on page 72.

Dimensions		
Height	218 mm 8.58 in. 5 (EIA Units)	
Width	445 mm 17.5 in.	
Depth	820 mm 32.3 in.	
Weight		
Minimum configuration	41 kg 90 lbs.	
Maximum configuration	52 kg 115 lbs.	
Electrical		
Power source loading typical in kVA	0.32	
Power source loading maximum in kVA	0.48	
Voltage range (V ac)	200 to 240	
Frequency (hertz)	50 or 60	
Thermal output (typical)	1025 Btu/hr	
Thermal output (maximum)	1536 Btu/hr	
Power requirements (typical)	300 watts	
Power requirements (maximum)	450 watts	
Power factor	0.95	
Inrush current[1]	40 amps	
Maximum altitude[2]	2135 m (7000 ft.)	
Temperature Requirements[2]	**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating** 10 to 52°C (50 to 125.6°F)
Humidity Noncondensing	**Operating**	**Non-Operating**
Without tape drive	8 to 80%	8 to 80%
With tape drive	20 to 80%	8 to 80%
Wet Bulb Requirements		
Without tape drive	27°C (80.6°F)	27°C (80.6°F)
With tape drive	23°C (73°F)	27°C (80.6°F)
Noise Emissions[3]	**Operating**	**Idle**
With H80 CEC Drawer only		
L_{WAd}	5.8 bels	5.8 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	45 dBA	45 dBA
Impulsive or prominent discrete tones	No	No
Noise Emissions[3]	**Operating**	**Idle**
With H80 and Primary I/O Drawer		
L_{WAd}	6.2 bels	6.2 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	48 dBA	48 dBA
Impulsive or prominent discrete tones	No	No
Install/Air Flow Clearance	Maintenance of proper service clearances should allow proper air flow.	
Service Clearance	(See service clearances for the 7014 T00 Rack)	

1. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
2. For altitudes above 915 meters, the maximum temperature limit is derated by 1 degree C for every 137 meters of elevation above 915 meters.
3. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

7026 Model M80 CEC Drawer

The Model M80 includes two drawers. They are the Central Electronics Complex (CEC) Drawer with an I/O Drawer. For technical information on the I/O Drawer see “I/O Drawer 5 EIA” on page 72.

Dimensions		
Height	355.6 mm	14.0 in.
Width	445.5 mm	17.5 in.
Depth	825.5 mm	32.5 in.
Weight		
Minimum	69.7 kg	158 lbs.
Maximum	74.6 kg	169 lbs.
Electrical		
Power source loading typical in kVA	0.39	
Power source loading maximum in kVA	0.6	
Voltage range (V ac)	200 to 240	
Frequency (hertz)	50 or 60	
Thermal output (typical)	1265 Btu/hr	
Thermal output (maximum)	1877 Btu/hr	
Power requirements (typical)	370 watts	
Power requirements (maximum)	550 watts	
Power factor	0.95	
Inrush current[3]	34 amps	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating (Power Off)** 10 to 52°C (50 to 125°F)
Humidity (Noncondensing)	**Operating**	**Non-Operating (Power Off)**
Without tape drive	8 to 80%	8 to 80%
With tape drive	20 to 80%	8 to 80%
Wet Bulb Requirements		
Without tape drive	27°C (80°F)	27°C (80°F)
With tape drive	27°C (80°F)	27°C (80°F)
Noise Emissions[1,2]	**Operating**	**Idle**
With M80 CEC Drawer only		
L_{WAd}	6.4 bels	6.4 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	48 dBA	48 dBA
Impulsive or prominent discrete tones	No	No
Noise Emissions[1,2]	**Operating**	**Idle**
With M80 and Primary I/O Drawer		
L_{WAd}	6.5 bels	6.5 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	49 dBA	49 dBA
Impulsive or prominent discrete tones	No	No
Install/Air Flow Clearance	Maintenance of a proper service clearance should allow proper air flow.	
Service Clearance	(See service clearances for the 7014 T00 Rack)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. Noise emissions data are based on the following configuration: a drawer is in a T00 Rack and a power distribution unit is installed in the rack and the system is operating in a normal environment of 25 °C (78 °F)
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

I/O Drawer 5 EIA

This I/O Drawer is used with several of the System CEC Drawers. It is used as primary and secondary I/O Drawer for those systems.

Dimensions				
Height	218.0 mm 8.6 in.			
Width	445.0 mm 17.5 in.			
Depth	820.0 mm 32.3 in.			
Weight				
Minimum configuration	41 kg 90 lbs.			
Maximum configuration	52 kg 115 lbs.			
Electrical				
Power source loading (typical in kVA)	0.23			
Power source loading (maximum in kVA)	0.54			
Voltage range	200 to 240 V ac			
Frequency (hertz)	50 / 60			
Thermal output (typical)	750 Btu/hr			
Thermal output (maximum)	1750 Btu/hr			
Power requirements (typical)	220 watts			
Power requirements (maximum)	515 watts			
Power factor	0.95			
Inrush current[3]	41 amps			
Maximum altitude	2135 m (7000 ft.)			
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 10 to 52°C (50 to 125.6°F)	
Humidity (Noncondensing)	**Operating**		**Non-Operating**	
Without tape drive	8 to 80%		8 to 80%	
With tape drive	20 to 80%		20 to 80%	
Wet Bulb Requirements				
Without tape drive	27°C (80°F)		27°C (80°F)	
With tape drive	23°C (73°F)		27°C (80°F)	
Noise Emissions[1,2]	**Operating**		**Idle**	
L_{WAd}	5.8 bels		5.8 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	45 dBA		45 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.			
Service	(See “Service Clearances for System in an S70, S7A, or S80 I/O Rack” on page 52)			

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. Noise emissions data are based on the following configuration: the drawer is mounted in a T00 Rack and a power distribution unit.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7027 Model HSC

Dimensions		
Height	307 mm	12.1 in. 7 (EIA units)
Width	445 mm	17.5 in.
Depth	748 mm	29.5 in.
Weight		
Empty	35 kg	75 lbs.
Maximum Configuration	80 kg	175 lbs.
Electrical		
Power source loading (kVA)	0.18 plus 0.027 for each additional disk drive	
Voltage range (V ac)	100 to 127 or 200 to 240	
Frequency (hertz)	50 or 60	
Thermal output (Btus/hr)	580 plus 89 for each additional disk drive	
Power requirements (watts)	170 plus 27 for each additional disk drive	
Power factor	0.95	
Maximum altitude	2135m (7000 ft.)	
Temperature Requirements	**Operating** 10 to 40°C (50 to 110°F)	**Non-Operating** 1 to 52°C (34 to 125°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8% to 80%	8% to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	5.8 bels	5.5 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	48 dBA	47.5 dBA
Impulsive or prominent discrete tones	No	No

* See “Noise Emission Notes” on page 199 for definitions of emissions positions.

7028 Models 6C1 and 6E1

The Model 6C1 is a rack-mounted server system and the Model 6E1 is a deskside tower system. The units are either a 1–way or 2–way system. The system can accommodate two processor cards, one memory card with 16 DIMMs, and 5 PCI adapters. It supports six hot-swap DASD bays and one floppy drive.

Dimensions	**Rack (Model 6C1)**	**Tower (Model 6E1)**
Height	215 mm 8.5 in. 5 EIA Units	426 mm (16.8 in.)
Width	426 mm 16.8 in.	215 mm (8.5 in.)
Depth	617 mm 24 in.	617 mm (24 in.)
Weight		
Minimum configuration	35.5 kg 78 lbs.	
Maximum configuration	43.1 kg 94.8 lbs.	
Electrical		
Power source loading (maximum in kVA)	0.46	
Power source loading (typical in kVA)	0.31	
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)	
Frequency (hertz)	50 / 60	
Voltage range (V dc)	Not supported	
Thermal output (maximum)	1536 Btu/hr	
Thermal output (typical)	1024 Btu/hr	
Power requirements (maximum)	450 watts	
Power requirements (typical)	300 watts	
Power factor - US, World Trade, Japan	0.98	
Inrush current[2]	70 amps	
Maximum altitude[3],[4]	2135 m (7000 ft.)	
Temperature Requirements[3]	**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating** 10 to 52°C (50 to 126°F)
Humidity Requirements[4]	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	27°C (80°F)	27°C (80°F)
Model 6E1 Noise Emissions[1],[5]	**Operating**	**Idle**
L_{WAd}	6.1 bels	6.1 bels
$<L_{pA}>_m$	42 dBA	41 dBA
Model 6C1 Noise Emissions[1],[5]	**Operating**	**Idle**
L_{WAd}	6.4 bels	6.1 bels
$<L_{pA}>_m$	44 dBA	41 dBA
Install/Air Flow	Maintance of proper service clearance should allow proper air flow.	
Service	See service clearances for the 7014 T00 Rack	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions. See noise emissions note 4.
2. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
3. The upper limit of the dry bulb temperature must be derated 1 degree C per 137 m (450 ft.) above 915 m (3000 ft.).
4. The upper limit of the wet bulb temperature must be derated 1 degree C per 274 m (900 ft.) above 305 m (1000 ft.).
5. Levels are for a single system installed in a T00 32 EIA rack with the center of the unit approximately 1500 mm (59 in.) off the floor.

7030 POWERstations 3AT, 3BT, and 3CT

Dimensions	**Desktop**		**Deskside**	
Height	162 mm	6.4 in.	452 mm	17.8 in.
Width (at pedestal for deskside)	442 mm	17.4 in.	280 mm	11.0 in.
Depth	478 mm	18.5 in.	478 mm	18.8 in.

Weight	
Minimum	18.1 kg 40 lbs.
Maximum	21.8 kg 48 lbs.

Electrical	
Power source loading (typical in kVA)	0.35
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)
Frequency (hertz)	50 or 60
Thermal output (typical)	770 Btu/hr
Power requirements (typical)	225 watts
Power factor	0.5 to 0.7
Inrush current[3]	42 amps at 120 V ac, 42 amps at 240 V ac
Maximum altitude	2135 m (7000 ft.)

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (60 to 90°F)	10 to 43°C (50 to 110°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.5 bels	5.3 bels
L_{pAm}	41 dBA	41 dBA (desktop)
	38 dBA	38 dBA (deskside)
$<L_{pA}>_m$	41 dBA	41 dBA (desktop)
	38 dBA	38 dBA (deskside)
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm (6 in.)	152 mm (6 in.)	N/A	N/A
Service	760 mm (30 in.)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
Desktop	442 mm (17.4 in.)	782 mm (30.8 in.)
Deskside	280 mm (11 in.)	782 mm (30.8 in.)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7043 43P Series Model 140

Dimensions	**Desktop**		**Deskside**	
Height	165 mm	6.5 in.	450 mm	17.7 in.
Width	420 mm	16.5 in.	165 mm	6.5 in.
Width[4]			235 mm	9.25 in.
Depth	460 mm	18.0 in.	460 mm	18.0 in.

Weight	
Minimum configuration	14.5 kg 32 lbs.
Maximum configuration	18.2 kg 40 lbs.

Electrical	
Power source loading (typical in kVA)	0.2
Power source loading (maximum in kVA)	0.4
Voltage range (V ac) - US and World Trade	100 to 127 or 200 to 240 (switchable)
Voltage range (V ac) - Japan	100 to 127 or 200 to 240 (autoranging)
Frequency (hertz)	50 or 60
Thermal output (typical)	425 Btu/hr
Thermal output (maximum)	850 Btu/hr
Power requirements (typical)	125 watts
Power requirements (maximum)	250 watts
Power factor - US and World Trade	0.6
Power factor - Japan	0.98
Inrush current[3]	less than 70 amps at 120 V ac and at 240 V ac
Maximum altitude	2135 m (7000 ft.)

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (60 to 90°F)	10 to 43°C (50 to 110°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.3 bels	5.0 bels
L_{pAm}	43 dBA	43 dBA
$<L_{pA}>_m$	40 dBA	40 dBA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	76mm(3 in)	76mm(3 in)	76mm(3 in)	50mm(2 in)

Service	Install so that it can be taken to an area providing 457mm(18 in) on the front and 457mm(18 in) on the left side.

Footprint[2]	**Width**	**Width**
Desktop	520mm(20.5 in)	610mm(24 in)
Deskside	318mm(12.5 in)	610mm(24 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
4. Width measurement includes the optional verticle stand.

7043 43P Series Model 150

Dimensions	**Desktop**		**Deskside**	
Height	165 mm	6.5 in.	450 mm	17.7 in.
Width	420 mm	16.5 in.	165 mm	6.5 in.
Width[4]			235 mm	9.25 in.
Depth	460 mm	18.0 in.	460 mm	18.0 in.

Weight	
Minimum configuration	14.5 kg 32 lbs.
Maximum configuration	18.2 kg 40 lbs.

Electrical	
Power source loading (typical in kVA)	0.2
Power source loading (maximum in kVA)	0.4
Voltage range (V ac)	
- US, World Trade, and Japan	100 to 127 or 200 to 240 (autoranging)
Frequency (hertz)	50 or 60
Thermal output (typical)	425 Btu/hr
Thermal output (maximum)	850 Btu/hr
Power requirements (typical)	125 watts
Power requirements (maximum)	250 watts
Power factor - US, World Trade, Japan	0.98
Inrush current[3]	less than 70 amps at 120 V ac and at 240 V ac
Maximum altitude	2135 m (7000 ft.)

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (60 to 90°F)	10 to 43°C (50 to 110°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.4 bels	5.0 bels
L_{pAm}	43 dBA	43 dBA
$<L_{pA}>_m$	40 dBA	40 dBA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	76mm(3 in)	76mm(3 in)	50mm(2 in)	50mm(2 in)

Service	Install so that it can be taken to an area providing 457mm(18 in) on the front and 457mm(18 in) on the left side.

Footprint[2]	**Width**	**Depth**
Desktop	520mm(20.5 in)	610mm(24.0 in)
Deskside	318mm(12.5 in)	610mm(24.0 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
4. Width measurement includes the optional vertical stand.

7043 43P Series Model 240

Dimensions	**Desktop**		**Deskside**	
Height	165 mm	6.5 in.	450 mm	17.7 in.
Width	420 mm	16.5 in.	165 mm	6.5 in.
Width[4]			235 mm	9.25 in.
Depth	460 mm	18.0in.	460 mm	18.0 in.

Weight	
Minimum configuration	14.5 kg 32 lbs.
Maximum configuration	18.2 kg 40 lbs.

Electrical	
Power source loading (typical in kVA)	0.2
Power source loading (maximum in kVA)	0.4
Voltage range (V ac) - US and World Trade	100 to 127 or 200 to 240 (switchable)
Voltage range (V ac) - Japan	100 to 127 or 200 to 240 (autoranging)
Frequency (hertz)	50 or 60
Thermal output (typical)	425 Btu/hr
Thermal output (maximum)	850 Btu/hr
Power requirements (typical)	125 watts
Power requirements (maximum)	250 watts
Power factor - US and World Trade	0.6
Power factor - Japan	0.98
Inrush current[3]	less than 70 amps at 120 V ac and at 240 V ac
Maximum altitude	2135 m (7000 ft.)

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (60 to 90°F)	10 to 43°C (50 to 110°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.2 bels	5.0 bels
L_{pAm}	Ukn dBA	Unk dBA
$<L_{pA}>_m$	39 dBA	38 dBA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	76mm(3 in)	76mm(3 in)	50mm(2 in)	50mm(2 in)

Service	Install so that it can be taken to an area providing 457mm(18 in) on the front and 457mm(18 in) on the left side.

Footprint[2]	**Width**	**Depth**
Desktop	520mm(20.5 in)	610mm(24.0 in)
Deskside	318mm(12.5 in)	610mm(24.0 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
4. Width measurement includes the optional verticle stand.

7043 43P Series Model 260

Dimensions				
Height	610 mm 24.0 in.			
Width	222 mm 8.7 in.			
Width with Pedestal	340 mm 13.4 in.			
Depth	713 mm 28.1 in.			
Weight				
Minimum configuration	37 kg 80 lbs.			
Maximum configuration	45 kg 97 lbs.			
Electrical				
Power source loading (maximum in kVA)	0.41			
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)			
Frequency (hertz)	50 to 60			
Thermal output (typical)	883 Btu/hr			
Thermal output (maximum)	1324 Btu/hr			
Power requirements (typical)	259 watts			
Power requirements (maximum)	388 watts			
Power factor	0.89 to 0.98			
Inrush current[3]	16 amps at 120 V ac, 21 amps at 240 V ac			
Maximum altitude	2135 m (7000 ft.)			
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements (Noncondensing) **Wet Bulb**	**Operating** 8 to 80% 23°C (73°F)		**Non-Operating** 8 to 80% 27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.5 bels		5.4 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	37 dBA		36 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	76mm(3 in)	152mm(6 in)	51mm(2 in)	51mm(2 in)
Service	Install so that it can be moved to an area providing 457mm (18 in.) on the front and 457 mm (18 in) on the left side.			
Footprint[2]	**Width** 324mm(12.7 in)		**Depth** 940mm(36.6 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7044 44P Series Model 170

Dimensions				
Height	490 mm 19.25 in.			
Width	200 mm 7.9 in.			
Width[4]	235 mm 9.25 in.			
Depth	515 mm 20.25 in.			
Weight				
Minimum configuration	17.7 kg 39 lbs.			
Maximum configuration	20.4 kg 45 lbs.			
Electrical				
Power source loading (typical in kVA)	0.23			
Power source loading (maximum in kVA)	0.40			
Voltage range (V ac)				
- US, World Trade, and Japan	100 to 127 or 200 to 240 (autoranging)			
Frequency (hertz)	50 to 60			
Thermal output (typical)	752 Btu/hr			
Thermal output (maximum)	1368 Btu/hr			
Power requirements (typical)	220 watts			
Power requirements (maximum)	400 watts			
Power factor - US, World Trade, Japan	0.98			
Inrush current[3]	less than 60 amps at 120 V ac and at 240 V ac			
Maximum altitude	2135 m (7000 ft.)			
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** Power off 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating** Power off	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.5 bels		5.4 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	38 dBA		37 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	76mm(3 in)	76mm(3 in)	0mm(0 in)	0mm(0 in)
Service	Install so that it can be taken to an area providing 457mm(18 in) on the front and 457mm(18 in) on the left side.			
Footprint[2]	**Width** 235mm(9.25 in)		**Depth** 667mm(26.25 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
4. Width measurement With feet extended.

7044 43P Series Model 270

Dimensions				
Height	610 mm 24.0 in.			
Width	222 mm 8.7 in.			
Width with Pedestal	340 mm 13.4 in.			
Depth	713 mm 28.1 in.			
Weight				
Minimum configuration	37 kg 80 lbs.			
Maximum configuration	45 kg 97 lbs.			
Electrical				
Power source loading (maximum in kVA)	0.47			
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)			
Frequency (hertz)	50 to 60			
Thermal output (typical)	1012 Btu/hr			
Thermal output (maximum)	1518 Btu/hr			
Power requirements (typical)	297 watts			
Power requirements (maximum)	445 watts			
Power factor	0.92 to 0.99			
Inrush current[3]	30 amps at 120 V ac, 32 amps at 240 V ac			
Maximum altitude	2135 m (7000 ft.)			
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements (Noncondensing) **Wet Bulb**	**Operating** 8 to 80% 23°C (73°F)		**Non-Operating** 8 to 80% 27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.5 bels		5.4 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	37 dBA		36 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	76mm(3 in)	152mm(6 in)	51mm(2 in)	51mm(2 in)
Service	Install so that it can be moved to an area providing 457mm (18 in.) on the front and 457 mm (18 in) on the left side.			
Footprint[2]	**Width** 324mm(12.7 in)		**Depth** 940mm(36.6 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7046 Model B50

Dimensions				
Height	88 mm 3.5 in. 2 EIA Units			
Width	447.0 mm 17.6 in.			
Depth	751.8 mm 29.6 in.			
Weight				
Minimum configuration	14.5 kg 32 lbs.			
Maximum configuration	15.9 kg 35 lbs.			
Electrical				
Power source loading (maximum in kVA)	0.147			
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)			
Frequency (hertz)	50 or 60			
Thermal output (maximum)	478 Btu/hr			
Power requirements (maximum)	140 watts			
Power factor - US, World Trade, Japan	0.95			
Inrush current[2]	40 amps			
Maximum altitude	2135 m (7000 ft.)			
Temperature Requirements[3]	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 10 to 52°C (50 to 126°F)	
Humidity Requirements[4]	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	27°C (80°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.2 bels		4.7 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	35 dBA		30 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	76mm(3 in)	76mm(3 in)	50mm(2 in)	50mm(2 in)
Service	Install so that it can be taken to an area providing 457mm(18 in) on the front and 457mm(18 in) on the left side.			

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions. See noise emissions note 4.
2. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.
3. The upper limit of the dry bulb temperature must be derated 1 degree C per 137m (450 ft.) above 915m (3000 ft.).
4. The upper limit of the wet bulb temperature must be derated 1 degree C per 274m (900 ft.) above 305m (1000 ft.).

7248 Model 43P

Dimensions	**Desktop**		**Deskside**	
Height	160 mm	6.3 in.	420 mm	16.5 in.
Width[1]	420 mm	16.5 in.	160 mm	6.3 in.
Depth	454 mm	17.7 in.	454 mm	17.7 in.

Weight	
Minimum	13.2 kg 29 lbs.
Maximum	15.9 kg 35 lbs.

Electrical	
Power source loading (typical in kVA)	0.23
Voltage range (V ac)	100 to 127 or 200 to 240 (switchable)
Frequency (hertz)	50 or 60
Thermal output (maximum)	510 Btu/hr
Thermal output (minimum)	225 Btu/hr
Power requirements (maximum)	150 watts
Power factor	0.5 to 0.7
Inrush current[6]	23 amps at 120 V ac, 23 amps at 240 V ac
Maximum altitude	2135 m (7000 ft.)

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (60 to 90°F)	10 to 43°C (50 to 110°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.2 bels	5.0 bels
L_{pAm}	41 dBA	38 dBA
$<L_{pA}>_m$	36 dBA	34 dBA
Impulsive or prominent discrete tones	No	No

Clearances[3]	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[4 5]	35mm(1.5 in)	51mm(2 in)	25mm(1 in)	25mm(1 in)
Service	466mm(18 in)	N/A	N/A	N/A

Footprint[4]	**Width**	**Depth**
Desktop	470mm(18.5 in)	537mm(21.1 in)
Deskside	211mm(8.3 in)	537mm(21.1 in)

1. Width measurement includes the optional vertical stand.
2. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
3. Left and right measurements apply only when the system is used in the desktop position.
4. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
5. When placed in the vertical position, the system requires 25 mm (1 in) at the bottom and top for proper air flow. The necessary bottom clearance is provided by the optional vertical stand.
6. Inrush currents occur only at initial application of power, no inrush occurs during normal power off-on cycle.

7317 Model D10

Dimensions		
Height	464 mm	18.3 in.
Width	490 mm	19.3 in.
Depth with device handles	289 mm	11.4 in.
Weight		
Minimum	31.8 kg	70 lbs.
Maximum	45.4 kg	100 lbs.
Electrical		
Power source loading (typical in kVA)	N/A	
Voltage range (V dc)	-40 to -65	
Thermal output (typical)	360 Btu/hr	
Thermal output (maximum)	600 Btu/hr	
Power requirements (typical)	106 watts	
Power requirements (maximum)	176 watts	
Maximum altitude (operating) class c	0 to 2133 m (0 to 7000 ft.)	

Temperature Requirements	**Operating**	**Non-Operating**
Class C	10 to 40°C (50 to 104°F)	10 to 52°C (50 to 125°F)

Humidity Requirements)	**Operating**
(Noncondensing)	8 to 80%
Wet Bulb Requirements	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	6.0 bels	6.0 bels
L_{pAm}	N/A dBA	N/A dBA
$<L_{pA}>_m$	47 dBA	47 dBA
Impulsive or prominent discrete tones	None	None

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	150mm(6 in)	0	0	0
Service[3]	500mm(20 in)	0	0	0

Footprint[2]	**Width**	**Depth**
	490mm(19.3 in)	440mm(17.3 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. All service is performed at the front of the machine.

7317 Model F3L

Dimensions		**w/o Media**		**with Media**
Height	746 mm	29.4 in.	823 mm	32.4 in.
Width	440 mm	17.3 in.	440 mm	17.3 in.
Depth with device handles	289 mm	11.4 in.	289 mm	11.4 in.

Weight		**w/o Media**		**with Media**
Minimum	45.5 kg	100 lbs.	50 kg	110 lbs.
Maximum	72.6 kg	160 lbs.	72.6 kg	160 lbs.

Electrical	
Power source loading (typical in kVA)	N/A
Voltage range (V dc)	-40 to -65
Thermal output (typical)	770 Btu/hr
Thermal output (maximum)	1100 Btu/hr
Power requirements (typical)	225 watts
Power requirements (maximum)	322 watts
Maximum altitude (operating)	0 to 2133 m (0 to 7000 ft.)

Temperature Requirements	**Operating**	**Non-Operating**
Class C	10 to 40°C (50 to 104°F)	10 to 52°C (50 to 125°F)

Humidity (Noncondensing)	**Operating**	**Non-Operating**
with tape	8 to 80%	
without tape	20 to 80%	
Wet Bulb Requirements	28°C (82°F)	

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	6.0 bels	6.0 bels
L_{pAm}	N/A	N/A dBA
$<L_{pA}>_m$	47 dBA	47 dBA
Impulsive or prominen discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	150mm(6 in)	0	0	0
Service[3]	500mm(20 in)	0	0	0

Footprint[2]	**Width**	**Depth**
	440mm(17.3 in)	440mm(17.3 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. All service is performed at the front of the machine.

Chapter 3. Physical Characteristics of Displays

This section gives the physical characteristics for some of the displays that can be used with the systems. The following information can help you plan for your displays. You only have to do physical planning for the displays you have ordered.

POWERdisplay 17 and POWERdisplay 20

POWERdisplay 17 with a maximum viewable image size of 409 mm (16.1 inches) measured diagonally.

POWERdisplay 20 with a maximum viewable image size of 486 mm (19.1 inches) measured diagonally

Dimensions				
POWERdisplay 17				
Height		414 mm	16.3 in	
Width		404 mm	15.9 in	
Depth		450 mm	17.7 in	
POWERdisplay 20				
Height		474 mm	18.6 in	
Width		480 mm	18.9 in	
Depth		505 mm	19.9 in	
Weight				
POWERdisplay 17		22.5 kg	49.5 lbs	
POWERdisplay 20		30.0 kg	66.3 lbs	
Electrical				
Power source loading (typical in kVA)		.38		
Voltage range (V ac)		100 to 120 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		480 Btu/hr		
Power requirements (typical)		140 watts		
Power factor		0.7		
Maximum altitude		3048 m (10,000 ft.)		
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 1 to 60°C (35 to 140°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80 %		8 to 80 %	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	3.5 bels		3.5 bels	
Clearances	**Front**	**Back**	**Left**	**Right**
Service	Install so that air vents are not blocked.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

6091 Color Display Model 19i

6091 Color Display Model 19i with a maximum viewable image size of 439 mm (17.3 inches) measured diagonally.

Dimensions				
Height		485 mm	19.1 in	
Width		480 mm	18.9 in	
Depth		506 mm	19.9 in	
Weight		34 kg	75 lbs	
Electrical				
Power source loading (typical in kVA)		.38		
Voltage range (V ac)		100 to 120 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		480 Btu/hr		
Power requirements (typical)		185 watts		
Power factor		0.7		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 1 to 60°C (35 to 140°F)	
Humidity Requirements (Noncondensing)	**Operating** 8 to 80 %		**Non-Operating** 8 to 80 %	
Noise Emissions* L_{WAd}	**Operating** 3.5 bels		**Idle** 3.5 bels	
Clearances	**Front**	**Back**	**Left**	**Right**
Service	Install so that air vents are not blocked.			
* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.				

9516 TFT LCD Color Monitor

9516 TFT LCD Color Monitor with a maximum viewable image size of 408 mm (16.1 inches) measured diagonally.

Dimensions				
Height (Display only)		431 mm	17.0 in	
(Display with Tilt/Swivel)		511 mm	21.1 in	
Width		408 mm	16.1 in	
Depth		250 mm	9.8 in	
Weight		9.9 kg	21.8 lbs	
Electrical				
Voltage range (V ac)		100 to 240		
Frequency (hertz)		50 or 60		
Thermal output (maximum)		188 Btu/hr		
Power requirements				
(in active mode VESA Standby)		18 watts		
(in enegry saving mode VESA off)		8 watts		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	5 to 80 %		5 to 80 %	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	4.5 bels		N/A bels	
Clearances	**Front**	**Back**	**Left**	**Right**
Service	Install so that air vents are not blocked.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

P50 15″ Display, P70 17″ Display, P200 and P201 20″ Displays

P50 15″ display with a maximum viewable image size of 345 mm (13.6 inches) measured diagonally.
P70 17″ display with a maximum viewable image size of 403 mm (15.9 inches) measured diagonally.
P200 20″ display with a maximum viewable image size of 486 mm (19.1 inches) measured diagonally.
P201 20″ display with a maximum viewable image size of 486 mm (19.1 inches) measured diagonally.

Dimensions		
P50 display		
Height	374 mm	14.7 in
Width	368 mm	14.5 in
Depth	390 mm	15.3 in
P70 display		
Height	414 mm	16.3 in
Width	406 mm	15.9 in
Depth	453 mm	17.8 in
P200 and P201 display		
Height	474 mm	18.6 in
Width	474 mm	18.6 in
Depth	505 mm	19.9 in
Weight		
P50	14.0 kg	30.8 lbs
P70	23.0 kg	50.6 lbs
P200	30.0 kg	66.3 lbs
P201	31.5 kg	69.4 lbs
Electrical		
Power source loading (typical in kVA)	.38	
Voltage range (V ac)	100 to 120 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	480 Btu/hr	
Power requirements (typical)	P50=110 watts, P70=140 watts P200=140 watts, P201=150 watts	
Power factor	0.85	
Maximum altitude	3048 m (10000 ft.)	
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating** 0 to 60°C (32 to 140°F)
Humidity Requirements (Noncondensing)	**Operating** 8 to 80 %	**Non-Operating** 5 to 90 %
Noise Emissions* L_{WAd}	**Operating** 3.5 bels	**Idle** 3.5 bels

Clearances	**Front**	**Back**	**Left**	**Right**
	152mm (6 in)	152mm (6 in)	152mm (6 in)	152mm (6 in)
Service	Install so that air vents are not blocked.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

P72 17″ Display, P92 19″ Display, and P202 21″ Display

P72 17″ display with a maximum viewable image size of 407 mm (16.0 inches) measured diagonally.
P92 19″ display with a maximum viewable image size of 456 mm (17.9 inches) measured diagonally.
P202 21″ display with a maximum viewable image size of 503 mm (19.8 inches) measured diagonally.

Dimensions		
P72 display		
Height	441 mm	17.4 in
Width	408 mm	16.1 in
Depth	434 mm	17.1 in
P92 display		
Height	478 mm	18.8 in
Width	462 mm	18.2 in
Depth	476 mm	18.7 in
P202 display		
Height	513 mm	20.2 in
Width	498 mm	19.6 in
Depth	500 mm	19.7 in
Weight		
P72	19.2 kg	43.2 lbs
P92	25.0 kg	56.3 lbs
P202	31.0 kg	70.0 lbs
Electrical		
Voltage range (V ac)	100 to 240	
Frequency (hertz)	50 or 60	
Power requirements (typical)	P72=120 watts, P92=140 watts, P202=160 watts	
Maximum altitude	3048 m (10000 ft.)	

Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating** 0 to 60°C (32 to 140°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	10 to 80 %	5 to 95 %
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	4.5 bels	4.5 bels

Clearances	**Front**	**Back**	**Left**	**Right**
	152mm (6 in)	152mm (6 in)	152mm (6 in)	152mm (6 in)
Service	Install so that air vents are not blocked.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

P76 17″ Display, and P260 21″ Display

P76 17″ Max. Viewable Image Size 326.7 x 242.5 mm how do you get the one measurement? **Use Diagonal measurement!**

P260 21″ Max. Viewable Image Size 403.8 x 302.2 mm how do you get the one measurement? **Use Diagonal measurement!**

Dimensions				
P76 display				
Height		416 mm	16.3 in	
Width		406 mm	15.9 in	
Depth		430 mm	16.8 in	
P260 Display				
Height		504 mm	19.7 in	
Width		498 mm	19.6 in	
Depth		509 mm	19.9 in	
Weight				
P76		19.2 kg	43.2 lbs	
P260		31.0 kg	70.0 lbs	
Electrical				
Voltage range (V ac)		100 to 240		
Frequency (hertz)		50 or 60		
Power requirements (typical)		P76=110 watts, P260=160 watts		
Maximum altitude		3048 m (10000 ft.)		
Temperature Requirements	**Operating** 0 to 40°C (32 to 104°F)		**Non-Operating** -40 to 60°C (-40 to 140°F)	
Humidity Requirements (Noncondensing)	**Operating** 10 to 80 %		**Non-Operating** 5 to 95 %	
Noise Emissions* L_{WAd}	**Operating** 4.5 bels		**Idle** 4.5 bels	
Clearances	**Front** 152mm (6 in)	**Back** 152mm (6 in)	**Left** 152mm (6 in)	**Right** 152mm (6 in)
Service	Install so that air vents are not blocked.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

3153 Display Station

the 3153 is an ASCII display station that attaches to a system that supports ASCII displays. It operates on a serial communications port with a choice of RS232C or RS422A communications interface. For additional information see *3153 Marketing Reference Guide*, order number G520–9415

Dimensions			
Display with Tilt/Swivel[1]			
Height		330 mm	13.0 in
Width		318 mm	12.5 in
Depth		340 mm	13.4 in
Keyboard			
Height		38 mm	1.5 in
Width		451 mm	17.8 in
Depth		158 mm	6.3 in
Weight			
Display with Tilt/Swivel		7.7 kg	16.9 lbs
Keyboard		0.9 kg	2.0 lbs
Electrical			
Voltage range (V ac)		100 to 240	
Frequency (hertz)		50 or 60	
Thermal Output		222 Btu/hr	
Power requirements (typical)[2]		41 watts	
Power requirements (maximum)		65 watts	
Maximum altitude		3048 m (10000 ft.)	
Temperature Requirements	**Operating**		**Power Off, Shipping, Storage**
	10 to 40°C (50 to 104°F)		0 to 50°C (-32 to 122°F)
Humidity Requirements	**Operating**		**Power Off, Shipping, Storage**
(Noncondensing)	30 to 80 %		10 to 95 %
Noise Emissions[3][4]	**Operating**		**Idle**
L_{WAd}	4.8 bels or less		–
Service	Install so that air vents are not blocked.		

1. The display tilt/swivel stand has a +15° to -3°of tilt, +/- 135° of swivel and is not detachable from the display.
2. Power consumption is reduced to less than 15 watts when power management feature is enabled.
3. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
4. The noise emission level stated is the declared (upper limit) A-weighted sound power level, in Bels, for a random sample of monitors.

Chapter 4. Physical Characteristics of the 2100 Series

This section gives the physical characteristics for the 21xx series of external devices.The following information can help you plan for your external devices. You only have to do physical planning for the devices you have ordered. Footprints are not drawn to scale.

Where a footprint is shown, the figure represents a top view of the device.

2101, 2102, and 2103 Fibre Channel RAID Storage Subsystem

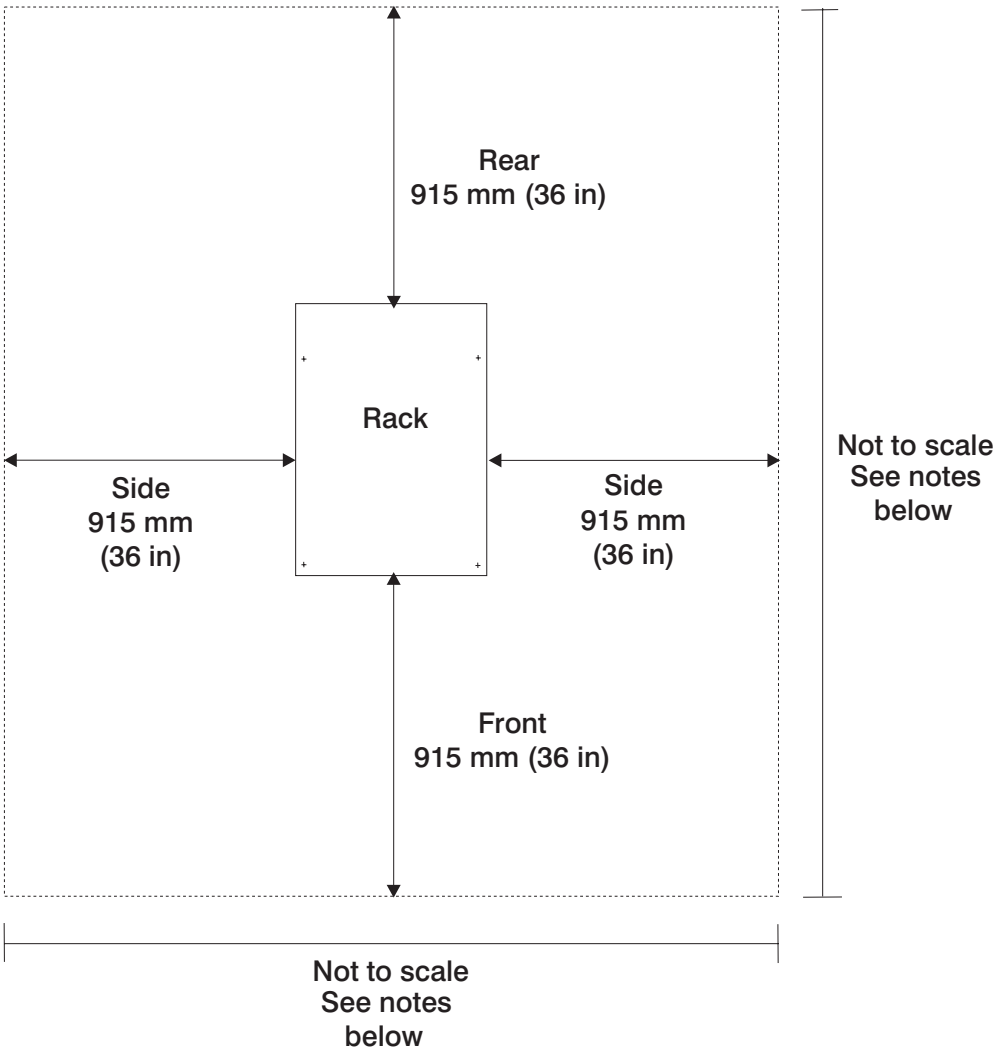
For more information on the 2101, 2102, and 2103 Fibre Channel Disk SubSystem, see note below.

2101 Model 100 Seascape™ Solution Rack

Dimensions				
Height		1580 mm	62.0 in.	
Width		650 mm	25.5 in.	
Depth		1030 mm	36.0 in.	
			40.5 in.	
Weight (empty)		160 kg	352 lbs.	
Electrical				
Power source loading:				
Maximum operating		2.7 kVA		
Voltage range (V ac)		200 to 240		
Frequency (hertz)		50 or 60		
Thermal output (Maximum)		9250 Btu/hr		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 10 to 52°C (50 to 125°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8% to 80%		8% to 80%	
Wet Bulb	27°C (80°F)		27°C (80°F)	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	6.6 bels		NA bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	NA dBA		NA dBA	
Impulsive or prominent discrete tones	N/A		N/A	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.			
Service	915mm(36 in)	915mm(36 in)	915mm(36 in)	915mm(36 in)
* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.				

2101 Model 100 Service Clearances

Note: For more information, using the web, see URL http://www.ibm.com/storage/fcss.



Note: Rack units are large and heavy and are not easily moved. Because maintenance activities require access at both the front and back, extra room needs to be allowed. The illustration shows the minimum space required.

For multiple racks placed side by side, the left and right clearances apply only to the leftmost and rightmost rack. For five to six racks placed side by side, the left and right clearances need to be increased to 1525 mm (60 in). Having more than six racks side by side is not recommended.

2102 Model F10 Fibre Channel RAID Storage Server

For more information on the 2102 Model F10 Fibre Channel RAID Storage Server see page 96.

Dimensions		
Height	175 mm	6.88 in. (4 EIA units)
Width	445 mm	17.5 in.
Depth	635 mm	25.0 in.
Weight	36 kg	79 lbs.
Electrical		
Power source loading:		
Maximum operating	0.329 kVA	
Voltage range (V ac)	100 to 125 or 200 to 240	
Frequency (hertz)	50 or 60	
Thermal output (Maximum)	731 Btu/hr	
Power Requirements	214 watts	
Inrush current	4 amps. at 120 Vac	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	(see specifications for rack on page “2101 Model 100 Seascape™ Solution Rack” on page 95)	
Humidity Requirements	(see specifications for rack on page “2101 Model 100 Seascape™ Solution Rack” on page 95)	
Noise Emissions	(see specifications for rack on page “2101 Model 100 Seascape™ Solution Rack” on page 95)	
Clearances	(see specifications for rack on page “2101 Model 100 Seascape™ Solution Rack” on page 95)	

2102 Model D00 Expandable Storage Unit

For more information on the 2102 Model D00 Expandable Storage Unit see page 96.

Dimensions		
Height	132 mm	5.2 in. (3 EIA units)
Width	480 mm	18.9 in.
Depth	575 mm	22.6 in.
Weight		
Minimum	31 kg	69 lbs.
Maximum	42 kg	92 lbs.
Electrical		
Power source loading (typical in kVA)	0.39	
Voltage range (V ac)	100 to 125 or 200 to 240	
Frequency (hertz)	50 or 60	
Thermal output (typical)	1315 Btu/hr	
Power requirements (typical)	385 watts	
Inrush current	2.52 amps	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	(see specifications for rack on page “2101 Model 100 Seascape™ Solution Rack” on page 95)	
Humidity Requirements	(see specifications for rack on page “2101 Model 100 Seascape™ Solution Rack” on page 95)	
Noise Emissions	(see specifications for rack on page “2101 Model 100 Seascape™ Solution Rack” on page 95)	
Clearances	(see specifications for rack on page “2101 Model 100 Seascape™ Solution Rack” on page 95)	

2103 Model H07 Fibre Channel Storage Hub

For more information on the 2103 Model H07 Fiber Channel Storage Hub see page 96.

Dimensions		
Height	44 mm	1.7 in. (1 EIA unit)
Width	219 mm	8.6 in.
Depth	367 mm	14.4 in.
Weight	4 kg	8 lbs.
Electrical		
Voltage range (V ac)	100 to 240	
Frequency (hertz)	50 or 60	
Power requirements (typical)	30 watts	
Inrush current	1 amp at 120 Vac	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	(see specifications for rack on page “2101 Model 100 Seascape™ Solution Rack” on page 95)	
Humidity Requirements	(see specifications for rack on page “2101 Model 100 Seascape™ Solution Rack” on page 95)	
Noise Emissions	(see specifications for rack on page “2101 Model 100 Seascape™ Solution Rack” on page 95)	
Clearances	(see specifications for rack on page “2101 Model 100 Seascape™ Solution Rack” on page 95)	

2104 Model DL1 Expandable Storage Plus

Dimensions		
Height	128 mm	5 in. (3 EIA units)
Width	445 mm	17.5 in.
Depth	552 mm	21.7 in.
Weight[1]		
Minimum	21 kg	47 lbs.
Maximum	32 kg	71 lbs.
Electrical (For each drawer)		
Power source loading	N/A	
Power factor	not less than 0.97 at 25% maximum load	
Voltage range (V ac)	100 to 240	
Frequency (hertz)	50 to 60	
Thermal output (Maximum)[1]	921 Btu/hr	
Power Requirements (Maximum)	270 watts	
Inrush current	71 amps	
Maximum altitude	2133 m (7000 ft.)	

Temperature Requirements[2]	**Operating**	**Non-Operating**
	10 to 40°C (50 to 104°F)	10 to 52°C (50 to 125°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8% to 80%	8% to 80%
Wet Bulb	27°C (80°F)	27°C (80°F)

Noise Emissions[3]	**Operating**	**Idle**
L_{WAd}	6.15 bels	6.1 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	N/A	N/A
Impulsive or prominent discrete tones	N/A	N/A

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[1]	1140 mm(45 in)	810 mm (32 in)	N/A	N/A
Service	1140 mm(45 in)	810 mm (32 in)	When mounted in a rack	

1. Each 2104 rack-mounted unit requires an air flow of 1.1 cubic meters/minute (40 Cubic feet per minute (CFM)). When racks containing many 2104 units are to be installed together, the following requirements must be met to ensure that the 2104 units are adequately cooled:
   - The airflow is in at the front of the rack and out at the back. To avoid moving exhaust air to the intake of another piece of equipment, racks should be positioned in alternate rows, back-to-back and front-to-front.
   - The front of racks should be positioned on floor-tile seams, with a full line of perforated tiles immediately in front of the racks.
   - Where racks are in rows front-to-front or back-to-back, there should be a gap of at least 1220 mm (48 in) separating the rows.
   - To ensure proper air flow within each rack, the rack filler plates must be installed in unused positions. Also, all the gaps in the front of the racks must be sealed, including the gaps between the 2104 units.
2. The recommended operating temperature is 22°C (72°F) or lower. At lower temperatures, the risk of failure in the unit is reduced. If the operating temperature is above 22°C (72°F) for long periods of time, the unit will be exposed to a greater risk of failure from external causes.
3. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

2104 Model DU3 Expandable Storage Plus

Dimensions		
Height	128 mm	5 in. (3 EIA units)
Width	447 mm	17.6 in.
Depth	563 mm	22.2 in.
Weight[1]		
Minimum	22 kg	49 lbs.
Maximum	36 kg	80 lbs.
Electrical (For each drawer)		
Power source loading	N/A	
Voltage range (V ac)	100 to 240	
Frequency (hertz)	50 to 60	
Thermal output (Maximum)	1126 Btu/hr	
Power Requirements (Maximum)	330 watts	
Power factor	not less than 0.95 at 50% maximum load	
Inrush current	40 amps	
Maximum altitude	2133 m (7000 ft.)	

Temperature Requirements[2]	**Operating**	**Non-Operating**
	10 to 40°C (50 to 104°F)	10 to 52°C (50 to 125°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8% to 80%	8% to 80%
Wet Bulb	27°C (80°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	6.5 bels	6.1 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	N/A	N/A
Impulsive or prominent discrete tones	N/A	N/A

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	1140 mm(45 in)	810 mm (32 in)	N/A	N/A
Service	1140 mm(45 in)	810 mm (32 in)	When mounted in a rack	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The recommended operating temperature is 22°C (72°F) or lower. At lower temperatures, the risk of failure in the unit is reduced. If the operating temperature is above 22°C (72°F) for long periods of time, the unit will be exposed to a greater risk of failure from external causes.

2104 Model TL1 Expandable Storage Plus

Dimensions		
Height	529 mm	21.0 in.
Width (at pedestal)	281 mm	11.0 in.
Depth	594 mm	23.5 in.
Weight		
Minimum	43.5 kg	96 lbs.
Maximum	54.5 kg	120 lbs.
Electrical		
Power source loading	N/A	
Power factor	not less than 0.97 at 25% of maximum load	
Voltage range (V ac)	88 to 264	
Frequency (hertz)	50 or 60	
Thermal output (Maximum)	921 Btu/hr	
Maximum altitude	2133 m (7000 ft.)	

Temperature Requirements (See note)	**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating** 10 to 52°C (50 to 125°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	27°C (80°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
	6.6 bels	6.5 bels
L_{WAd}	N/A	N/A
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	N/A	No
Impulsive or prominent discrete tones		

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	1000 mm(39 in)	1000 mm(39 in)	1000 mm(39 in)	1000 mm(39 in)

Footprint[2]	**Width**	**Depth**
	281mm(11 in)	898mm(35.5 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

Note: The recommended operating temperature is 22°C (72°F) or lower. At lower temperatures, the risk of failure in the unit is reduced. If the operating temperature is above 22°C (72°F) for long periods of time, the unit will be exposed to a greater risk of failure from external causes.

2104 Model TU3 Expandable Storage Plus

Dimensions				
Height		539 mm	21.2 in.	
Width (at pedestal)		281 mm	11.0 in.	
Depth		585 mm	23.0 in.	
Weight				
Minimum		39 kg	86 lbs.	
Maximum		52 kg	114 lbs.	
Electrical				
Power source loading		N/A		
Voltage range (V ac)		100 to 240		
Frequency (hertz)		50 or 60		
Thermal output (Maximum)		1126 Btu/hr		
Power Requirements (Maximum)		330 watts		
Power factor		not less than 0.95 at 50% of maximum load		
Maximum altitude		2133 m (7000 ft.)		
Temperature Requirements (See note)	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 10 to 52°C (50 to 125°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	27°C (80°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
	6.6 bels		6.5 bels	
L_{WAd}	N/A		N/A	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	N/A		No	
Impulsive or prominent discrete tones				
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	1000 mm(39 in)	1000 mm(39 in)	1000 mm(39 in)	1000 mm(39 in)
Footprint[2]	**Width** 281mm(11 in)		**Depth** 898mm(35.5 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

Note: The recommended operating temperature is 22°C (72°F) or lower. At lower temperatures, the risk of failure in the unit is reduced. If the operating temperature is above 22°C (72°F) for long periods of time, the unit will be exposed to a greater risk of failure from external causes.

2105 Model B09 Versatile Storage Server™

Dimensions				
Height		1780 mm	70.0 in.	
Width		840 mm	33.0 in.	
Depth		1305 mm	51.0 in.	
Weight		746 kg	1640 lbs.	
Electrical				
Power source loading		3.4 kVA		
Power factor		0.9		
Voltage range (V ac)		200 to 480		
Frequency (hertz)		50 or 60		
Thermal output (Maximum)		11600 Btu/hr		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements (See note)	**Operating** 10 to 38°C (50 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]		**Operating**		
L_{WAd}		7.6 bels		
Clearances	**Front**	**Back**	**Left**	**Right**
Service	1145 mm(45 in)	810 mm (32 in)	N/A	N/A

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

Note: The recommended operating temperature is 22°C (72°F) or lower. At lower temperatures, the risk of failure in the unit is reduced. If the operating temperature is above 22°C (72°F) for long periods of time, the unit will be exposed to a greater risk of failure from external causes.

2105 Models E10, F10, E20 and F20 Enterprise Storage Server™s

For more information on the 2105 Models E10, F10, E20, F20 and E20 or F20 with the expansion enclosure, see note 1 below.

Dimensions				
Height		1915 mm	75.3 in.	
Width E10, F10, E20, F20		1383 mm	54.4 in.	
E20 or F20 with Expansion Enclosure		2938 mm	115.7 in	
Depth		909 mm	35.8 in.	
Weight				
various configurations	See table on page “2105 Enterprise Storage Server Clearances” on page 106			
Electrical				
Power source loading for Max. E10, F20		3.5 kVA		
Power source loading for Max. E20, F20		5 kVA		
Voltage low range (V ac)		200 to 240		
high range (V ac)		380 to 480		
Frequency (hertz)		50 or 60		
Thermal output (Maximum) E10, F10		11000 Btu/hr		
Thermal output (Maximum) E20, F20		16000 Btu/hr		
Power factor		0.9		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements [2]	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	20 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[3]		**Operating**		
L_{WAd} All Models		7.5 to 7.75 bels		
Clearances	**Front**	**Back**	**Left**	**Right**
Service[4] **and Floor loading**	1145 mm (45 in)	1145 mm (45 in)	Note [4]	Note [4]

1. For more information see *Enterprise Storage Server Introduction and Planning Guide* Order Number GC26-7294.
2. The recommended operating temperature is 22°C (72°F) or lower. At lower temperatures, the risk of failure in the unit is reduced. If the operating temperature is above 22°C (72°F) for long periods of time, the unit will be exposed to a greater risk of failure from external causes.
3. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
4. Floor loading at 342 kg/m (70 lbs/sqft). See .

2105 Enterprise Storage Server Clearances

For more information on the 2105 Models E10, F10, E20, F20 see the table on page “2105 Models E10, F10, E20 and F20 Enterprise Storage Server™s” on page 105.

Service Clearances are 1145 mm (45 in) Front and 1145 mm (45 in) Back.

The following table shows service clearances, floor loading, and side clesrance requirements.

Configuration and Weight kg (lbs.)	Service Clearance		Floor Loading See notes 1 and 3)	Side Clearances (both Sides) See note 4	
	Front mm (in)	Rear mm (in)	kg/sq m (lbs/sq ft)	mm	inches
Model E10 of F10	1145 (45)	1145 (45)	522 (107)	0	0
980 (2160)			488 (100)	76	3
			440 (90)	178	7
			342 (70)	559	22
Models E20 and F20	1145 (45)	1145 (45)	610 (125)	0	0
1175 (2590)			488 (100)	229	9
			440 (90)	356	14
			342 (70)	762	30
Models E20 and F20 with Expansion Enclosure	1145 (45)	1145 (45)	586 (120)	0	0
2495 (5500)			488 (100)	406	16
			440 (90)	686	27
			342 (70)	See notes 2 and 5	See notes 2 and 5

Notes:

1. It is recommended that the Enterprise Storage Server (ESS) be installed on a floor with a minimum of 342 kilograms per sqare meter (kg/sq m) (70 pounds per square foot (lbs/sq ft)) strength.
2. If you install a Model E20 or F20 with an expansion enclosure, the minimum floor strength must be 440 kg/sq m (90 lbs/sq ft). At 342 (kg/sq m) (70 (lbs/sq ft)), the side clearance exceeds the 762 mm (30 in.) maximum allowed. Consult a structual engineer if you are unsure about correct placement and clearances of these machines for floor loading distribution. You need to install a 28 mm (11 in) spacer between a Model E20 or a Model F20 and an expansion enclosure.
3. Floor loadings are calculated for maximum weight of the storage server.
4. Side clearances are for both sides of an ESS expansion enclosure. Clearances on both sides are dedicated to the ESS. Adjoining expansion enclosures must have their own floor loading clearance.
5. Multiple expansion enclosures are bolted together using 28 mm (11 in) spacers. Move the side cover of the E20 or F20 to the side of the expansion enclosure.

2108 Model G07 Storage Area Network Data Gateway

Dimensions		
Height	89 mm	3.5 in. 2 EIA
Width	425 mm	16.73 in.
Depth	280 mm	11.0 in.
Weight		
Minimum	4.1 kg	9.0 lbs.
Maximum	4.1 kg	9.0 lbs.
Electrical		
Power source loading in active mode (typical in kVA)	0.2	
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	205 Btu/hr	
Power requirements (typical)	60 watts	
Power factor	0.65 120Vac - 0.53 240 Vac	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements [1]	**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)
Noise Emissions [2]	**Operating**	**Idle**
L_{WAd}	6.2 bels	N/A bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	45 dBA	N/A dBA
Impulsive or prominent discrete tones	No	No
Install/Air Flow.	When mounted in an enclosed rack, provision must be made to allow for a minimum of 24 cubic feet per minute of air flow to the exterior ofthe rack.	

1. The recommended operating temperature is 22°C (72°F) or lower.
2. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

2109 SAN Fiber Channel Switch

Model S08

Dimensions			
Height — Rack Mount		43.4 mm	1.71 in.
Height — Table Top		47.2 mm	1.86 in.
Width		428.6 mm	16.88 in.
Depth		450 mm	17.72 in.
Weight			
Single Power Supply		6.36 kg	14.0 lbs.
Dual Power Supply		7.73 kg	17.0 lbs.
Electrical			
Voltage range (V ac)		100 to 240	
Frequency (hertz)		50 or 60	
Maximum altitude		3000 m (9,800 ft.)	
Temperature Requirements	**Operating**		**Non-Operating**
	10 to 40°C (50 to 104°F)		–35 to 60°C (–31 to 147°F)
Humidity Requirements	**Operating**		**Non-Operating**
	5 to 80% Noncondensing @ 40°C		

Model S16

Dimensions			
Height — Rack Mount		87.3 mm	3.44 in.
Height — Table Top		91.2 mm	3.59 in.
Width		428.6 mm	16.88 in.
Depth		450 mm	17.72 in.
Weight			
Single Power Supply		11.59 kg	25.5 lbs.
Dual Power Supply		12.94 kg	28.5 lbs.
Electrical			
Voltage range (V ac)		100 to 240	
Frequency (hertz)		50 or 60	
Maximum altitude		3000 m (9,800 ft.)	
Temperature Requirements	**Operating**		**Non-Operating**
	10 to 40°C (50 to 104°F)		–35 to 60°C (–31 to 147°F)
Humidity Requirements	**Operating**		**Non-Operating**
	5 to 80% Noncondensing@ 40°C		

Chapter 5. Physical Characteristics of the 3000 Series

This section gives the physical characteristics for the 30xx series of external devices.The following information can help you plan for your external devices. You only have to do physical planning for the devices you have ordered. Footprints are not drawn to scale.

3490E Enhanced Magnetic Tape Subsystem C11 and C22

Dimensions				
Height		622 mm	24.5 in	
Width		479 mm	18.6 in	
Depth		885 mm	34.9 in	
Weight				
C11		90 kg	198 lbs	
C22		118 kg	260 lbs	
Electrical				
Power source loading (typical in kVA)				
C11		0.57		
C22		0.90		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements (Noncondensing) **Wet Bulb**	**Operating** 20 to 80 % 25.6°C (78°F)		**Non-Operating** 20 to 80 % 25.6°C (78°F)	
Noise Emissions* L_{WAd}	**Operating**		**Idle**	
C11	6.1 bels		5.8 bels	
C22	6.4 bels		6.3 bels	
Clearances	**Front**	**Back**	**Left**	**Right**
Service	Install so that it can be moved to an area providing 760 mm (30 in) on each side.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

3490E Enhanced Magnetic Tape Subsystem E01 and E11

Dimensions E01 (Table Top)				
Height		268 mm	10.8 in	
Width		220 mm	8.8 in	
Depth		801 mm	32.0 in	
Dimensions E01 (Rack Mounted)				
Height		336 mm	13.5 in	
Width		220 mm	8.8 in	
Depth		758 mm	30.3 in	
Weight				
E01		25.9 kg	57 lbs	
E11		36.0 kg	80 lbs	
Electrical				
Power source loading (typical in kVA)				
E01		0.39		
E11		0.39		
Thermal Output (max)		540 Btu/hr		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 40°C (50 to 104°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80 %		8 to 80 %	
Wet Bulb	27°C (80.6°F)		27°C (80.6°F)	
Noise Emissions*	**Operating**		**Idle**	
E01	58 dBA		53 dBA	
E11	58 dBA		53 dBA	
Clearances	**Front**	**Back**	**Left**	**Right**
Service	Install so that it can be moved to an area providing 760 mm (30 in) on each side.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

3514 Models 212, and 213

Dimensions		
Height	610 mm	24 in
Width		
Enclosure	260 mm	10.3 in
Base	345 mm	13.5 in
Depth	800 mm	31.5 in
Weight		
Minimum	58 kg	128 lbs
Maximum	64 kg	140 lbs
Electrical		
Power source loading (typical in kVA)	.33	
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	1024 Btu/hr	
Power requirements (typical)	300 watts	
Power factor	0.91	
Maximum altitude	2135 m (7000 ft.)	

Temperature Requirements**	**Operating**	**Non-Operating**
	16 to 32°C (50 to 90°F)	10 to 43°C (50 to 110°F)

Noise Emissions*	**Operating**	**Idle**
L_{WAd}	5.7 bels	5.5 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	38 dBA	36 dBA
Impulsive noise or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	1 mm(40 in)	50 mm(2 in)	25 mm(1 in)	25 mm(1 in)
Service	Must provide reasonable service access to front and rear of unit. Recommended clearance provides enough room to slide unit forward for access to rear.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
**(Below 914 m (3000 ft) altitude, operating range is extended to 35°C(95°F)

3570 Models B00, and C00

Dimensions	**Horizontal**	**Vertical**
Height	112 mm 4.4 in.	320 mm 12.6 in.
Width	320 mm 12.6 in.	112 mm 4.4 in.
Depth	338 mm 13.3 in.	338 mm 13.3 in.
Weight		
Minimum	8.4 kg 18.5 lbs.	8.4 kg 18.5 lbs.
Maximum (with stand)	8.5 kg 18.7 lbs.	8.5 kg 18.7 lbs.
Electrical		
Power source loading (typical in kVA)	0.06	
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	205 Btu/hr	
Power requirements (typical)	60 watts	
Power factor	0.99 (100 V ac) or 0.95 (200 V ac)	
Inrush current	30 amps at 100 V ac, 40 amps at 220 V ac	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 16 to 32°C (61 to 90°F)	**Non-Operating** 10 to 43°C (50 to 109°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	26°C(79°F)	27°C(81°F)
Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.5 bels	5.5 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	37dBA	37dBA
Impulsive noise	None	None
Prominent discrete tones	None	None

Clearances	**Front**	**Back**	**Left**	**Right**
Install Air Flow[2]	76 mm (3 in)	76 mm (3 in)	None	None
Service	No additional clearance is needed for service.			

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. Air flow is 25 CFM

3570 Models B01, and C01

Dimensions				
Height		217 mm	8.5 in.	
Height (with stand)		242.4 mm	9.5 in.	
Width		483 mm	19.0 in.	
Depth		771 mm	30.4 in.	
Weight				
Maximum		35.0 kg	77.1 lbs	
Maximum (with stand)		39.8 kg	87.7 lbs	
Electrical				
Power source loading (typical in kVA)		0.07		
Voltage range (V ac)		100 to 127 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		239 Btu/hr		
Power requirements (typical)		70 watts		
Power factor		0.99 (100 V ac) or 0.95 (200 V ac)		
Inrush current		30 amps at 120 V ac, 40 amps at 240 V ac		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements		**Operating** 16 to 32°C (61 to 90°F)		**Non-Operating** 10 to 43°C (50 to 109°F)
Humidity Requirements		**Operating**		**Non-Operating**
(Noncondensing)		8 to 80%		8 to 80%
Wet Bulb		26°C(79°F)		27°C(81°F)
Noise Emissions[1]		**Operating**		**Idle**
L_{WAd}		5.7 bels		5.3 bels
L_{pAm}		N/A		N/A
$<L_{pA}>_m$		41dBA		36dBA
Impulsive noise		None		None
Prominent discrete tones		None		None
Clearances	**Front**	**Back**	**Left**	**Right**
Install Air Flow[2]	76 mm (3 in)	76 mm (3 in)	None	None
Service	No additional clearance is needed for service.			

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. Air flow is 25 CFM

3570 Model B02, and C02

Dimensions				
Height		217 mm	8.5 in.	
Height (with stand)		242.4 mm	9.5 in.	
Width		483 mm	19.0 in.	
Depth		771 mm	30.4 in.	
Weight				
Maximum		40.0 kg	88.2 lbs	
Maximum (with stand)		44.8 kg	98.7 lbs	
Electrical				
Power source loading (typical in kVA)		0.13		
Voltage range (V ac)		100 to 127 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		444 Btu/hr		
Power requirements (typical)		130 watts		
Power factor		0.99 (100 V ac) or 0.95 (200 V ac)		
Inrush current[1]		30 amps at 120 V ac, 40 amps at 240 V ac		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements		**Operating** 16 to 32°C (61 to 90°F)		**Non-Operating** 10 to 43°C (50 to 109°F)
Humidity Requirements		**Operating**		**Non-Operating**
(Noncondensing)		8 to 80%		8 to 80%
Wet Bulb		26°C(79°F)		27°C(81°F)
Noise Emissions[2]		**Operating**		**Idle**
L_{WAd}		5.8 bels		5.5 bels
L_{pAm}		N/A		N/A
$<L_{pA}>_m$		43dBA		38dBA
Impulsive noise		None		None
Prominent discrete tones		None		None
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[3]	76 mm (3 in)	76 mm (3 in)	None	None
Service	No additional clearance is needed for service.			

1. Inrush current for each line cord. This model has two line cords.
2. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
3. Air flow is 50 CFM.

3570 Models B11, and C11

Dimensions				
Height		217 mm	8.5 in. (5EIA units)	
Width		444 mm	17.5 in.	
Depth		714 mm	28.1 in.	
Weight				
Maximum		24.0 kg	52.8 lbs	
Electrical				
Power source loading (typical in kVA)		0.07		
Voltage range (V ac)		100 to 127 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		239 Btu/hr		
Power requirements (typical)		70 watts		
Power factor		0.99 (100 V ac) or 0.95 (200 V ac)		
Inrush current		30 amps at 120 V ac, 40 amps at 240 V ac		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (61 to 90°F)		**Non-Operating** 10 to 43°C (50 to 109°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	26°C(79°F)		27°C(81°F)	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	5.5bels		5.1bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	39 dBA		34 dBA	
Impulsive noise	None		None	
Prominent discrete tones	None		None	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.			
Service	See service clearances for the “7015 System Rack R00” on page 40.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

3570 Models B12, and C12

Dimensions				
Height		217 mm	8.5 in. (5EIA units)	
Width		444 mm	17.5 in.	
Depth		714 mm	28.1 in.	
Weight				
Maximum		29.0 kg	63.9 lbs	
Electrical				
Power source loading (typical in kVA)		0.13		
Voltage range (V ac)		100 to 127 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		444 Btu/hr		
Power requirements (typical)		130 watts		
Power factor		0.99 (100 V ac) or 0.95 (200 V ac)		
Inrush current[1]		30 amps at 120 V ac, 40 amps at 240 V ac		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements		**Operating** 16 to 32°C (61 to 90°F)		**Non-Operating** 10 to 43°C (50 to 109°F)
Humidity Requirements		**Operating**		**Non-Operating**
(Noncondensing)		8 to 80%		8 to 80%
Wet Bulb		26°C(79°F)		27°C(81°F)
Noise Emissions[2]		**Operating**		**Idle**
L_{WAd}		5.6bels		5.3bels
L_{pAm}		N/A		N/A
$<L_{pA}>_m$		41 dBA		36 dBA
Impulsive noise		None		None
Prominent discrete tones		None		None
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.			
Service	See service clearances for the “7015 System Rack R00” on page 40.			

1. Inrush current for each line cord. This model has two line cords.
2. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

MAGSTAR® MP 3575 Tape Library Dataserver Model L06

Dimensions				
Height		991 mm	39 in.	
Width		355 mm	14 in.	
Depth		836 mm	37.9 in.	
Weight				
Maximum		71 kg	157 lbs	
Electrical				
Power source loading (typical in kVA)		0.175		
Voltage range (V ac)		100 to 127 or 200 to 240		
Frequency (hertz)		50 or 60		
Thermal output (typical)		600 Btu/hr		
Power requirements (typical)		175 watts		
Power factor		0.99		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	26°C(79°F)		27°C(80°F)	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	6.6 bels		5.6 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	47dBA		34dBA	
Impulsive noise	Yes		Yes	
Prominent discrete tones	No		No	

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)
Service	Install so that it can be moved to an area providing 760 mm (30 in) on each side.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

MAGSTAR MP 3575 Tape Library Dataserver Model L12

Dimensions				
Height		1029 mm	40.5 in.	
Width		1009 mm	39.7 in.	
Depth		861 mm	33.9 in.	
Weight				
Maximum		127 kg	280 lbs	
Electrical				
Power source loading (typical in kVA)		0.28		
Voltage range (V ac)		100 to 127 or 200 to 240		
Frequency (hertz)		50 or 60		
Thermal output (typical)		850 Btu/hr		
Power requirements (typical)		250 watts		
Power factor		0.89		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	26°C(79°F)		27°C(80°F)	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	6.7 bels		5.9 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	47dBA		34dBA	
Impulsive noise	Yes		Yes	
Prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)
Service	Install so that it can be moved to an area providing 760 mm (30 in) on each side.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

MAGSTAR MP 3575 Tape Library Dataserver Model L18

Dimensions				
Height		1029 mm	40.5 in.	
Width		1009 mm	39.7 in.	
Depth		861 mm	33.9 in.	
Weight				
Maximum		132 kg	290 lbs	
Electrical				
Power source loading (typical in kVA)		0.45		
Voltage range (V ac)		100 to 127 or 200 to 240		
Frequency (hertz)		50 or 60		
Thermal output (typical)		1200 Btu/hr		
Power requirements (typical)		350 watts		
Power factor		0.78		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	26°C(79°F)		27°C(80°F)	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	6.8 bels		6.2 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	47dBA		34dBA	
Impulsive noise	Yes		Yes	
Prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)
Service	Install so that it can be moved to an area providing 760 mm (30 in) on each side.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

MAGSTAR MP 3575 Tape Library Dataserver Model L24

Dimensions				
Height		1480 mm	58.3 in.	
Width		1009 mm	39.7 in.	
Depth		861 mm	33.9 in.	
Weight				
Maximum		195 kg	428 lbs	
Electrical				
Power source loading (typical in kVA)		0.45		
Voltage range (V ac)		100 to 127 or 200 to 240		
Frequency (hertz)		50 or 60		
Thermal output (typical)		1200 Btu/hr		
Power requirements (typical)		350 watts		
Power factor		0.78		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	26°C(79°F)		27°C(80°F)	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	6.8 bels		6.2 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	47dBA		34dBA	
Impulsive noise	Yes		Yes	
Prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)
Service	Install so that it can be moved to an area providing 760 mm (30 in) on each side.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

MAGSTAR MP 3575 Tape Library Dataserver Model L32

Dimensions				
Height		1480 mm	58.3 in.	
Width		1009 mm	39.7 in.	
Depth		861 mm	33.9 in.	
Weight				
Maximum		203 kg	446 lbs	
Electrical				
Power source loading (typical in kVA)		0.45		
Voltage range (V ac)		100 to 127 or 200 to 240		
Frequency (hertz)		50 or 60		
Thermal output (typical)		1200 Btu/hr		
Power requirements (typical)		350 watts		
Power factor		0.78		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	26°C(79°F)		27°C(80°F)	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	6.8 bels		6.2 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	47dBA		34dBA	
Impulsive noise	Yes		Yes	
Prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)
Service	Install so that it can be moved to an area providing 760 mm (30 in) on each side.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

3590 Magstar Tape System

3590 Magstar Tape System Models B11 and B1A

Dimensions	**B11 Rack**	**B1A Library**
Height	522 mm 20.6 in.	262 mm 10.5 in.
Width	230 mm 9.1 in.	221 mm 8.8 in.
Depth	988 mm 39.0 in.	750 mm 29.8 in.
Weight		
	49.5 kg 109 lbs.	28.6 kg 63 lbs.
Electrical		
Power source loading (typical in kVA)	0.3	
Thermal output (typical)	1024 Btu/hr	
Temperature Requirements		
(media in use)	16 to 32°C (60 to 90°F)	
Humidity Requirements		
(Noncondensing)	20 to 80%	
Wet Bulb	23°C (73°F)	

3590 Magstar Tape System Model C12 Frame

Dimensions	
Height	1803 mm 71.0 in.
Width	724 mm 28.5 in.
Depth	775 mm 30.5 in.
Weight	
	400 kg 880 lbs.
Electrical	
Power source loading (typical in kVA)	1.2
Thermal output (typical)	7830 Btu/hr *
Temperature Requirements	
(media in use)	16 to 32°C (60 to 90°F)
Humidity Requirements	
(Noncondensing)	20 to 80%
Wet Bulb	26°C (79°F)

Note: * Includes four B1A or E1A drives and associated cables

3590 Magstar Tape System Models E11 and E1A

Dimensions	**E11 Rack**	**E1A Library**
Height	522 mm 20.6 in.	262 mm 10.5 in.
Width	230 mm 9.1 in.	221 mm 8.8 in.
Depth	988 mm 39.0 in.	750 mm 29.8 in.
Weight		
	46.7 kg 103.0 lbs.	30.0 kg 66.0 lbs.
Electrical		
Power source loading (typical in kVA)	0.225	
Thermal output (typical)	770 Btu/hr	
Temperature Requirements		
(media in use)	16 to 32°C (60 to 90°F)	
Humidity Requirements		
(Noncondensing)	20 to 80%	
Wet Bulb	25°C (78°F)	

3995 Model 063

Dimensions				
Height		681 mm	26.8 in.	
Width		375 mm	14.8 in.	
Depth		805 mm	31.7 in.	
Weight				
Minimum		93 kg	205 lbs	
Maximum		N/A	N/A	
Electrical				
Power source loading (typical in kVA)		0.16		
Voltage range (V ac)		100 to 127 or 200 to 240 (selectable)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		350 Btu/hr		
Power requirements (typical)		100 watts		
Power factor		0.63		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements		**Operating** 10 to 38°C (50 to 100°F)		
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C(73°F)		27°C(80°F)	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	6.0 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	43 dBA		37 dBA	
Impulsive noise	Yes		No	
Prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	1020mm(40 in)	1020mm(40 in)	559mm(22 in)	559mm(22 in)
Service	Install so that it can be moved to an area providing 760 mm(30 in) on each side.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

3995 Model 163

Dimensions				
Height		1800 mm	70.9 in.	
Width		692 mm	27.3 in.	
Depth		943 mm	37.1 in.	
Weight				
Minimum		408 kg	900 lbs	
Maximum		N/A	N/A	
Electrical				
Power source loading (typical in kVA)		0.25		
Voltage range (V ac)		200 to 240		
Frequency (hertz)		50 or 60		
Thermal output (typical)		750 Btu/hr		
Power requirements		220 watts		
Power factor		0.89		
Inrush current		10 amps		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating**		**Non-Operating**	
	16 to 32°C (60 to 90°F)		10 to 43°C 10 to 43°C	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C(73°F)		27°C(80°F)	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	6.5 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	46 dBA		42 dBA	
Impulsive noise	Yes		No	
Prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	1020mm(40 in)	1020mm(40 in)	559mm(22 in)	559mm(22 in)
Service	Install so that it can be moved to an area providing 760 mm(30 in) on each side.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

3995 Model A63

Dimensions				
Height		492 mm	19.38 in.	
Width		220 mm	8.70 in.	
Depth		711 mm	28.00 in.	
Weight				
Minimum		32.2 kg	75.5 lbs	
Maximum		N/A	N/A	
Electrical				
Power source loading (typical in kVA)		0.11		
Voltage range (V ac)		100 to 127 or 200 to 240		
Frequency (hertz)		50 or 60		
Thermal output (typical)		250 Btu/hr		
Power requirements (typical)		60 watts		
Power factor		0.6 (100-127 V ac) or 0.55 (200-240 V ac)		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C(73°F)		27°C(80°F)	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	6.4 bels		5.1 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	47dBA		34dBA	
Impulsive noise	Yes		Yes	
Prominent discrete tones	No		No	

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)
Service	Install so that it can be moved to an area providing 760 mm (30 in) on each side.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

3995 Model C60

Dimensions				
Height		457 mm	18.0 in.	
Width		216 mm	8.5 in.	
Depth		737 mm	29.0 in.	
Weight				
Minimum (w/o cartridges)		28.0 kg	61 lbs	
Maximum (with 20 cartridges)		34.1 kg	75 lbs	
Typical weight of cartridge		0.32 kg	0.7 lbs	
Electrical				
Power source loading (typical in kVA) @ 120 V ac		0.14		
Voltage range (V ac)		100 to 127 or 200 to 240		
Frequency (hertz)		50 or 60		
Thermal output (typical)		275 Btu/hr		
Power requirements (typical)		80 watts		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 10 to 38°C (50 to 100.4°F)		**Non-Operating** 10 to 52°C (50 to 125.6°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	25.8°C(78.4°F)		27°C(80°F)	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	6 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	N/A		N/A	
Impulsive noise	Yes		Yes	
Prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air flow	leave open for operator panel	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)
Service	Install so that it can be moved to an area providing 760 mm (30 in) on each side.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

3995 Model C62

Dimensions				
Height		991 mm	39.0 in.	
Width		355 mm	14.0 in.	
Width (with stabilizers)		464 mm	18.3 in.	
Depth		737 mm	29.0 in.	
Weight				
Minimum (w/o cartridges)		69 kg	152 lbs	
Maximum (with 52 cartridges)		85.6 kg	188.4 lbs	
Typical weight of cartridge		0.32 kg	0.7 lbs	
Electrical				
Power source loading (typical in kVA) @ 120 V ac		0.16		
Voltage range (V ac)		100 to 127 or 200 to 240		
Frequency (hertz)		50 or 60		
Thermal output (typical)		310 Btu/hr		
Power requirements (typical)		90 watts		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 10 to 38°C (50 to 100.4°F)		**Non-Operating** 10 to 52°C (50 to 125.6°F)	
Humidity Requirements (Noncondensing)	**Operating** 8 to 80%		**Non-Operating** 8 to 80%	
Wet Bulb	25.8°C(78.4°F)		27°C(80°F)	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	6 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	N/A		N/A	
Impulsive noise	Yes		Yes	
Prominent discrete tones	No		No	

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air flow	leave open for operator panel	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)
Service	Install so that it can be moved to an area providing 760 mm (30 in) on each side.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

3995 Model C64

Dimensions				
Height		1029 mm	40.5 in.	
Width		813 mm	32.0 in.	
Depth		762 mm	30.0 in.	
Weight				
Minimum (w/o cartridges)		125 kg	275 lbs	
Maximum (with 104 cartridges)		158 kg	348 lbs	
Typical weight of cartridge		0.32 kg	0.7 lbs	
Electrical				
Power source loading (typical in kVA) @ 120 V ac		0.17		
Voltage range (V ac)		100 to 127 or 200 to 240		
Frequency (hertz)		50 or 60		
Thermal output (typical)		340 Btu/hr		
Power requirements (typical)		100 watts		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 10 to 38°C (50 to 100.4°F)		**Non-Operating** 10 to 52°C (50 to 125.6°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	25.8°C(78.4°F)		27°C(80°F)	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	6 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	N/A		N/A	
Impulsive noise	Yes		Yes	
Prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air flow	leave open for operator panel	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)
Service	Install so that it can be moved to an area providing 760 mm (30 in) on each side.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

3995 Model C66

Dimensions				
Height		1029 mm	40.5 in.	
Width		813 mm	32.0 in.	
Depth		762 mm	30.0 in.	
Weight				
Minimum (w/o cartridges)		125 kg	275 lbs	
Maximum (with 156 cartridges)		175 kg	384 lbs	
Typical weight of cartridge		0.32 kg	0.7 lbs	
Electrical				
Power source loading (typical in kVA) @ 120 V ac		0.31		
Voltage range (V ac)		100 to 127 or 200 to 240		
Frequency (hertz)		50 or 60		
Thermal output (typical)		475 Btu/hr		
Power requirements (typical)		140 watts		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 10 to 38°C (50 to 100.4°F)		**Non-Operating** 10 to 52°C (50 to 125.6°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	25.8°C(78.4°F)		27°C(80°F)	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	6 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	N/A		N/A	
Impulsive noise	Yes		Yes	
Prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air flow	leave open for operator panel	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)
Service	Install so that it can be moved to an area providing 760 mm (30 in) on each side.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

3995 Model C68

Dimensions				
Height		1480 mm	58.3 in.	
Width		813 mm	32.0 in.	
Depth		762 mm	30.0 in.	
Weight				
Minimum (w/o cartridges)		193 kg	425 lbs	
Maximum (with 258 cartridges)		275 kg	606 lbs	
Typical weight of cartridge		0.32 kg	0.7 lbs	
Electrical				
Power source loading (typical in kVA) @ 120 V ac		0.31		
Voltage range (V ac)		100 to 127 or 200 to 240		
Frequency (hertz)		50 or 60		
Thermal output (typical)		475 Btu/hr		
Power requirements (typical)		140 watts		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 10 to 38°C (50 to 100.4°F)		**Non-Operating** 10 to 52°C (50 to 125.6°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	25.8°C(78.4°F)		27°C(80°F)	
Noise Emissions*	**Operating**		**Idle**	
L_{WAd}	6 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	N/A		N/A	
Impulsive noise	Yes		Yes	
Prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air flow	leave open for operator panel	76 mm (3 in)	76 mm (3 in)	76 mm (3 in)
Service	Install so that it can be moved to an area providing 760 mm (30 in) on each side.			

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

Chapter 6. Physical Characteristics of the 7100 Series

This section gives the physical characteristics for the 71xx series of external devices.The following information can help you plan for your external devices. You only have to do physical planning for the devices you have ordered. Footprints are not drawn to scale.

Where a footprint is shown, the figure represents a top view of the device.

7131 Model 105 SCSI Multi-Storage Tower

Dimensions				
Height		407 mm	16.0 in.	
Width (at pedestal)		197 mm	7.8 in.	
Depth		483 mm	19.0 in.	
Weight				
Minimum		15.4 kg	34 lbs.	
Maximum		20.0 kg	44 lbs.	
Electrical				
Power source loading (typical in kVA)		0.76 to 0.96		
Voltage range (V ac)		100 to 125 or 200 to 240 (selectable)		
Frequency (hertz)		50 or 60		
Thermal output (max)		1638 Btu/hr		
Power requirements (max)		480 watts		
Power factor		0.5		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements (Noncondensing)	**Operating** 20 to 80%		**Non-Operating** 20 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd} (5 devices)	6.0 bels		5.6 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	50 dBA		46 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	25 mm(1 in)	25 mm(1 in)
Service	152 mm(6 in)	N/A	N/A	25 mm(1 in)
Footprint[2]	**Width** 250mm(9.8 in)		**Depth** 790mm(31 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7131 Model 405 SSA Multi-Storage Tower

Dimensions		
Height	407 mm	16.0 in.
Width (at pedestal)	197 mm	7.8 in.
Depth	483 mm	19.0 in.
Weight		
Minimum	15.4 kg	34 lbs.
Maximum	18.0 kg	40 lbs.
Electrical		
Power source loading (typical in kVA)	0.39	
Voltage range (V ac)	100 to 125 or 200 to 240 (selectable)	
Frequency (hertz)	50 or 60	
Thermal output (max)	785 Btu/hr	
Power requirements (max)	230 watts	
Power factor	0.5	
Maximum altitude	2135 m (7000 ft.)	

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (60 to 90°F)	10 to 43°C (50 to 110°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	20 to 80%	20 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd} (5 devices)	6.0 bels	5.6 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	50 dBA	46 dBA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	25 mm(1 in)	25 mm(1 in)
Service	152 mm(6 in)	N/A	N/A	25mm(1in)

Footprint[2]	**Width**	**Depth**
	250mm(9.8 in)	790mm(31 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7133 Models 010 and 020 Rack-Mounted SSA Subsystem

Dimensions		
Height	171 mm	6.7 in. (4 EIA units)
Width	444 mm	17.5 in.
Depth	665 mm	26.2 in.
Weight		
Minimum	36 kg	79 lbs.
Maximum	50 kg	110 lbs.
Electrical		
Power source loading:		
Maximum start-up	0.657 kVA	
Maximum operating	0.499 kVA	
Maximum idling	0.45 kVA	
Power factor	greater than 0.95	
Voltage range (V ac)	100 to 240	
Voltage optional (V dc)	240 to 375	
Frequency (hertz)	50 or 60	
DC Power Supply -48 V dc (Model 020 only)	-40 to -60	
Thermal output (Maximum)	2074 Btu/hr (See note 1)	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements (See note 2)	**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating** 10 to 52°C (50 to 125°F)
Humidity Requirements (Noncondensing)	**Operating** 8% to 80%	**Non-Operating** 8% to 80%
Wet Bulb	27°C (80°F)	27°C (80°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	6.15 bels	6.1 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	48 dBA	45 dBA
Impulsive or prominent discrete tones	No	No

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

1. Each 7133 rack-mounted unit requires an air flow of 2.46 cubic meters/minute (87 CFM). When racks containing many 7133 units are to be installed together, the following requirements must be met to ensure that the 7133 units are adequately cooled:
   - The airflow is in at the front of the rack and out at the back. To avoid moving exhaust air to the intake of another piece of equipment, racks should be positioned in alternate rows, back-to-back and front-to-front.
   - The front of racks should be positioned on floor-tile seams, with a full line of perforated tiles immediately in front of the racks. Each perforated tile should have an air flow of at least 11.34 m^3/min (400 CFM). The underfloor temperature must be at most 15°C (60°F).
   - Where racks are in rows front-to-front or back-to-back, there should be a gap of at least 1220 mm (48 in) separating the rows.
   - To ensure proper air flow within each rack, the rack filler plates must be installed in unused positions. Also, all the gaps in the front of the racks must be sealed, including the gaps between the 7133 units.
2. The recommended operating temperature is 22°C (72°F) or lower. At lower temperatures, the risk of failure in the unit is reduced. If the operating temperature is above 22°C (72°F) for long periods of time, the unit will be exposed to a greater risk of failure from external causes.

7133 Model D40 Rack-Mounted SSA Subsystem

Dimensions		
Height	171 mm	6.7 in. (4 EIA units)
Width	444 mm	17.5 in.
Depth	665 mm	26.2 in.
Weight		
Minimum	36 kg	79 lbs.
Maximum	50 kg	110 lbs.
Electrical		
Power source loading:		
Maximum start-up	0.756 kVA	
Maximum operating	0.636 kVA	
Maximum idling	0.532 kVA	
Power factor	greater than 0.95	
Voltage range (V ac)	88 to 264	
Voltage optional (V dc)	N/A	
Frequency (hertz)	50 to 60	
Thermal output (Maximum)	1880 Btu/hr (See note 1)	
Maximum altitude	2133 m (7000 ft.)	
Temperature Requirements (See note 2)	**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating** 10 to 40°C (50 to 104°F)
Humidity Requirements (Noncondensing)	**Operating** 8% to 80%	**Non-Operating** 8% to 80%
Wet Bulb	27°C (80°F)	27°C (80°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	6.15 bels	6.1 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	N/A	N/A
Impulsive or prominent discrete tones	N/A	N/A

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

1. Each 7133 rack-mounted unit requires an air flow of 2.46 cubic meters/minute (87 CFM). When racks containing many 7133 units are to be installed together, the following requirements must be met to ensure that the 7133 units are adequately cooled:
   - The airflow is in at the front of the rack and out at the back. To avoid moving exhaust air to the intake of another piece of equipment, racks should be positioned in alternate rows, back-to-back and front-to-front.
   - The front of racks should be positioned on floor-tile seams, with a full line of perforated tiles immediately in front of the racks. Each perforated tile should have an air flow of at least 11.34 m^3/min (400 CFM). The underfloor temperature must be at most 15°C (60°F).
   - Where racks are in rows front-to-front or back-to-back, there should be a gap of at least 1220 mm (48 in) separating the rows.
   - To ensure proper air flow within each rack, the rack filler plates must be installed in unused positions. Also, all the gaps in the front of the racks must be sealed, including the gaps between the 7133 units.
2. The recommended operating temperature is 22°C (72°F) or lower. At lower temperatures, the risk of failure in the unit is reduced. If the operating temperature is above 22°C (72°F) for long periods of time, the unit will be exposed to a greater risk of failure from external causes.

7133 Model T40 Deskside SSA Subsystem

Dimensions				
Height		610 mm	24.0 in.	
Width (at pedestal)		210 mm	8.3 in.	
Depth		820 mm	32.3 in.	
Weight				
Minimum		58.5 kg	129 lbs.	
Maximum		72.5 kg	160 lbs.	
Electrical				
Power source loading:				
Maximum start-up		0.756 kVA		
Maximum operating		0.636 kVA		
Maximum idling		0.532 kVA		
Power factor		greater than 0.95		
Voltage range (V ac)		88 to 264		
Frequency (hertz)		50 or 60		
Thermal output (Maximum)		1880 Btu/hr		
Maximum altitude		2133 m (7000 ft.)		
Temperature Requirements (See note)	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 10 to 40°C (50 to 104°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	27°C (80°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	6.6 bels		6.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	N/A		N/A	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow *	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

Note: * The recommended operating temperature is 22°C (72°F) or lower. At lower temperatures, the risk of failure in the unit is reduced. If the operating temperature is above 22°C (72°F) for long periods of time, the unit will be exposed to a greater risk of failure from external causes.

7133 Models 500 and 600 Deskside SSA Subsystem

Dimensions		
Height	610 mm	24.0 in.
Width (at pedestal)	210 mm	8.3 in.
Depth	820 mm	32.3 in.
Weight		
Minimum	58.5 kg	129 lbs.
Maximum	72.5 kg	160 lbs.
Electrical		
Power source loading:		
Maximum start-up	0.657 kVA	
Maximum operating	0.499 kVA	
Maximum idling	0.45 kVA	
Power factor	greater than 0.95	
Voltage range (V ac)	100 to 240	
Frequency (hertz)	50 or 60	
Thermal output (Maximum)	2074 Btu/hr	
Maximum altitude	2135 m (7000 ft.)	

Temperature Requirements (See note)	**Operating** 16 to 32°C (60 to 90°F)	**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity Requirements (Noncondensing)	**Operating** 8 to 80%	**Non-Operating** 8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)

Noise Emissions[1]	**Operating** Avg. Max.	**Idle** Avg. Max.
L_{WAd}	6.0 bels 6.8 bels	5.5 bels 6.6 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	50 dBA 59 dBA	45 dBA 56 dBA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by broken lines on the footprint.

Note: The recommended operating temperature is 22°C (72°F) or lower. At lower temperatures, the risk of failure in the unit is reduced. If the operating temperature is above 22°C (72°F) for long periods of time, the unit will be exposed to a greater risk of failure from external causes.

7134 Model 010 High-Density SCSI Disk Subsystem

Dimensions		
Height	171 mm	6.7 in. (4EIA units)
Width	444 mm	17.4 in.
Depth	665 mm	26.2 in.
Weight		
Minimum	69 kg	31.5 lbs.
Maximum	129 kg	58.5 lbs.
Electrical		
Power source loading (kVA)	0.021 plus 0.024 for each 2GB Disk Drive, or 0.028 for each 4.5GB Disk Drive	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (max)	68 Btu/hr plus 77 Btu/hr for each 2GB Disk Drive, or 90 Btu/hr for each 4.5 GB Disk Drive	
Power requirements	20 watts plus 22.5 watts for each 2GB Disk Drive, or 26.5 watts for each 4.5GB Disk Drive	
Power factor	0.95 minimum	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 10 to 40°C (50 to 110°F)	**Non-Operating** 10 to 52°C (50 to 125°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8% to 80%	8% to 80%
Wet Bulb	27°C (80°F)	27°C (80°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	5.8 bels	5.6 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	46 dBA	46 dBA
Impulsive or prominent discrete tones	No	No

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

7135 RAIDiant Array

Dimensions		
Height (control unit)	82 mm	3.4 in. (2 EIA units)
Height (disk drive units)	171 mm	6.7 in. (4 EIA units)
Width	444 mm	17.4 in.
Depth	665 mm	26.2 in.
Weight		
Empty	50.0 kg	110 lbs.
Maximum Configuration	128.5 kg	283 lbs.
Electrical		
Power source loading (kVA)	0.2 plus 0.03 for each disk drive	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output	648 Btu/hr plus 92 Btu/hr each disk drive	
Power requirements	190 watts plus 27 watts each disk drive	
Power factor	0.95	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 10 to 40°C (50 to 110°F)	**Non-Operating** 1 to 52°C (34 to 125°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8% to 80%	8% to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	6.35 bels	6.05 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	48 dBA	47.5 dBA
Impulsive or prominent discrete tones	No	No

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

7135 RAIDiant Array Deskside Mini-Rack

Dimensions				
Height		610 mm	24.0 in.	
Width		560 mm	23.1 in.	
Depth		750 mm	29.5 in.	
Weight				
Empty		54.5 kg	120 lbs.	
Maximum Configuration		177.0 kg	390 lbs.	
Electrical[1,3]				
Power source loading (kVA)		0.2 plus 0.03 for each disk drive		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (max)		648 Btu/hr plus 92 Btu/hr for each disk drive		
Power requirements (max)		190 watts plus 27 watts for each disk drive		
Power factor		0.95		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	20% to 80%		8% to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[2,3]	**Operating**		**Idle**	
L_{WAd}	N/A		0 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	N/A		0 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	1 m(39.4 in)	1 m(39.4 in)	N/A	1 m(39.4 in)

1. The Mini-Rack has a 10A fuse, these values indicate the maximum values for the Mini-Rack with installed devices. The actual values depend on which devices are installed.
2. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
3. Dependant on the devices installed in the 7135 Mini-Rack.

7137 Disk Array Subsystem Models 412, 413, 414, and 415

Dimensions		
Height	610 mm	24.0 in.
Width		
Enclosure	210 mm	8.3 in.
Base	310 mm	12.2 in.
Depth	820 mm	32.3 in.
Weight		
Empty	49 kg	109 lbs.
Maximum Configuration	54 kg	119 lbs.
Electrical		
Power source loading (kVA)	0.33	
Voltage range (V ac)	100 to 125 or 200 to 240	
Frequency (hertz)	50 or 60	
Thermal output	1050 Btu/hr	
Power requirements	308 watts	
Power factor	0.9	
Maximum altitude	2134m (7000 ft.)	
Temperature Requirements	**Operating** 10 to 40°C (50 to 110°F)	**Non-Operating** 1 to 52°C (34 to 125°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8% to 80%	8% to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	5.9 bels	5.8 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	37 dBA	37 dBA
(4.5GB)	43 dBA	No
Impulsive or prominent discrete tones	No	

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

7137 Disk Array Subsystem Models 512, 513, 514, and 515

Dimensions		
Height	178 mm	7.0 in.
Width		
Enclosure	483 mm	19.0 in.
Depth	716 mm	28.2 in.
Weight		
Empty	32 kg	70 lbs.
Maximum Configuration	35 kg	76 lbs.
Electrical		
Power source loading (kVA)	0.33	
Voltage range (V ac)	100 to 125 or 200 to 240	
Frequency (hertz)	50 or 60	
Thermal output	1050 Btu/hr	
Power requirements	308 watts	
Power factor	0.9	
Maximum altitude	2134m (7000 ft.)	
Temperature Requirements	**Operating** 10 to 40°C (50 to 110°F)	**Non-Operating** 1 to 52°C (34 to 125°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8% to 80%	8% to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)
Noise Emissions[1,2]	**Operating**	**Idle**
L_{WAd}	5.9 bels	5.8 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	39 dBA	38 dBA
(4.5GB)	44 dBA	(See Note 2)
Impulsive or prominent discrete tones	No	No

1. See “Noise Emission Notes” on page 199 for definitions of emissions positions.
2. The value for $<L_{pA}>_m$ not available at the time of publishing.

Chapter 7. Physical Characteristics of the 7200 Series

This section gives the physical characteristics for the 72xx series of external devices.The following information can help you plan for your external devices. This section also gives the physical characteristics for the 4869 Model 002 5 1/4-inch 1.2MB external diskette drive. You only have to do physical planning for the devices you have ordered. Footprints are not drawn to scale.

Where a footprint is shown, the figure represents a top view of the device.

7202 Model 900 Expansion Rack

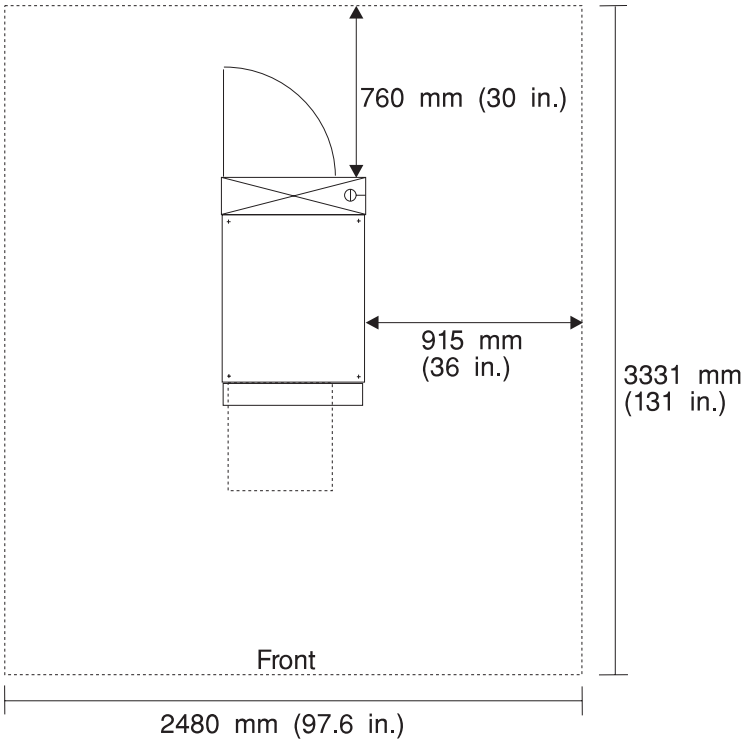
Dimensions				
Height		1578 mm	62.0 in.	
Width		650 mm	25.5 in.	
Depth		921 mm	36.0 in.	
Weight				
Minimum		136 kg	300 lbs.	
Maximum		470 kg	1035 lbs.	
Electrical[1]				
Power source loading (typical in kVA)		0 .004		
Voltage range (V ac)		200 to 240 or -48V dc		
Frequency (hertz)		50 or 60		
Thermal output (typical)		15 Btu/hr		
Power requirements (typical)		4 watts		
Power factor		0.5 to 0.7		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements		**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 10 to 52°C (50 to 125°F)
Humidity Requirements (Noncondensing)		**Operating** 8 to 80%		**Non-Operating** 8 to 80%
Wet Bulb		27°C (80°F)		27°C (80°F)
Noise Emissions[2 3]		**Operating**		**Idle**
L_{WAd}		6.2 bels		6.0 bels
L_{pAm}		N/A		N/A
$<L_{pA}>_m$		48 dBA		46 dBA
Impulsive or prominent discrete tones		No		No
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	Maintenance of a proper service clearance should allow proper air flow.			
Service	1650 mm(65 in)	760 mm(30 in)	915 mm(36 in)	915 mm(36 in)

1. No features installed.
2. See “Noise Emission Notes” on page 199 for definitions of emissions positions.
3. Noise emissions data for the 7202 Model 900 is based on the following configuration:
   - two 9334 Model 10 Drawers with two disk drives in each and
   - two 9334 Model 10 Drawers with three disk drives in each.

7202 Model 900 Service Clearances

The amount of space needed by the unit during normal operation is indicated by broken lines on the footprint.

For multiple racks placed side by side, the left and right clearances apply only to the leftmost and rightmost rack. For five to six racks placed side by side, the left and right clearances need to be increased to 1525 mm (60 in). Having more than six racks side by side is not recommended.



Footprint for the 7202 Model 900

Note: Rack units are large and heavy and are not easily moved. Because maintenance activities require access at both the front and back, extra room needs to be allowed. The footprint shows the radius of the swinging door on the rear of the rack and a drawer in the extended position. The illustration shows the minimum space required.

7203 Model 001 External Portable Disk Drive

Dimensions				
Height		160 mm	6.3 in.	
Width		280 mm	11.0 in.	
Depth		345 mm	13.6 in.	
Weight				
Minimum		6.12 kg 13.5 lbs.(without module)		
Maximum		10.3 kg 22.6 lbs.(with a 355 or 670MB module)		
Electrical				
Power source loading (typical in kVA)		0.08		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		155 Btu/hr		
Power requirements (typical)		45 watts		
Power factor		0.5 to 0.7		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.8 bels		5.6 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	42 dBA		41 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 280mm(11 in)		**Depth** 649mm(25.6 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7204 Model 010 1GB External Disk Drive

Dimensions				
Height		79 mm	3.13 in.	
Width		280 mm	11.0 in.	
Depth		287 mm	11.3 in.	
Weight				
Minimum		3.9 kg	8.45 lbs.	
Maximum		3.9 kg	8.45 lbs.	
Electrical				
Power source loading (typical in kVA)		0.07		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		110 Btu/hr		
Power requirements (typical)		32 watts		
Power factor		0.5 to 0.7		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.3 bels		5.3 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	45 dBA		44 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm (6 in)	152 mm (6 in)	N/A	N/A
Service	152 mm (6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 280mm(11 in)		**Depth** 591mm(23.3 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7204 Models 112, 113, 114, 317, and 325 External Disk Drives

Dimensions		
Height	60 mm	2.36 in.
Width	250 mm	9.84 in.
Depth	275 mm	10.8 in.
Weight		
Minimum	3.3 kg	7.3 lbs.
Maximum	3.3 kg	7.3 lbs.
Electrical		
Power source loading (typical in kVA)	0.02	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	225 Btu/hr	
Power requirements (typical)	46 watts	
Power factor	0.5 to 0.7	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)	**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)
Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.3 bels	5.3 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	45 dBA	44 dBA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm (6 in)	152 mm (6 in)	N/A	N/A
Service	152 mm (6 in)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
	250mm(9.84 in)	580mm(22.8 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7204 Models 118 and 418 18.0GB External Disk Drives

Dimensions		
Height	55 mm	2.2 in.
Width	250 mm	9.8 in.
Depth	275 mm	10.8 in.
Weight		
Minimum	3.5 kg	7.8 lbs.
Maximum	3.5 kg	7.8 lbs.
Electrical		
Power source loading (typical in kVA)	0.05 @ 120 V ac	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	95 Btu/hr	
Power requirements (typical)	28 watts	
Power factor	0.4 to 0.6	
Inrush Current[3]	51 amps at 120 Vac, 99 amps at 208 Vac	
Maximum altitude	3048 m (10000 ft.)	
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating** 10 to 52°C (50 to 126°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	20 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (81°F)
Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.52 bels	5.48 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	39 dBA	38.9 dBA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
	250mm(9.8 in)	575mm(22.6 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during a normal power off-on cycle.

7204 Models 139, and 339 9.1GB External Disk Drives

Dimensions				
Height		55 mm	2.2 in.	
Width		250 mm	9.8 in.	
Depth		275 mm	10.8 in.	
Weight				
Minimum		3.5 kg	7.8 lbs.	
Maximum		3.5 kg	7.8 lbs.	
Electrical				
Power source loading (typical in kVA)		0.05 @ 120 V ac		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		95 Btu/hr		
Power requirements (typical)		28 watts		
Power factor		0.4 to 0.6		
Inrush Current[3]		51 amps at 120 Vac, 99 amps at 208 Vac		
Maximum altitude		3048 m (10000 ft.)		
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 10 to 52°C (50 to 126°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	20 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (81°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.52 bels		5.48 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	39 dBA		38.9 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 250mm(9.8 in)		**Depth** 575mm(22.6 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during a normal power off-on cycle.

7204 Models 215 and 315 External Disk Drives

Dimensions				
Height		79 mm	3.13 in.	
Width		280 mm	11.0 in.	
Depth		287 mm	11.3 in.	
Weight				
Minimum		4.2 kg	9.25 lbs.	
Maximum		4.2 kg	9.25 lbs.	
Electrical				
Power source loading (typical in kVA)		0.07		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		110 Btu/hr		
Power requirements (typical)		32 watts		
Power factor		0.5 to 0.7		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.3 bels		5.3 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	45 dBA		44 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm (6 in)	152 mm (6 in)	N/A	N/A
Service	152 mm (6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 280mm(11 in)		**Depth** 591mm(23.3 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7204 Models 402, and 404 External Disk Drives

Dimensions				
Height		55 mm	2.2 in.	
Width		250 mm	9.8 in.	
Depth		275 mm	10.8 in.	
Weight				
Minimum		3.0 kg	6.6 lbs.	
Maximum		3.4 kg	7.5 lbs.	
Electrical				
Power source loading (typical in kVA)		0.06 @ 120 V ac		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		107 Btu/hr		
Power requirements (typical)		31.5 watts		
Power factor		0.5 to 0.6		
Inrush Current[3]		47.6 amps at 120 Vac, 85.7 amps at 208 Vac		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.5 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	38 dBA		38 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 250mm(9.8 in)		**Depth** 579mm(22.8 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during a normal power off-on cycle.

7204 Models 409, and 419 External Disk Drives

7204 model 404 external

Dimensions		
Height	55 mm	2.2 in.
Width	250 mm	9.8 in.
Depth	275 mm	10.8 in.
Weight		
Minimum	3.0 kg	6.6 lbs.
Maximum	3.4 kg	7.5 lbs.
Electrical		
Power source loading (typical in kVA)	0.06 @ 120 V ac	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	107 Btu/hr	
Power requirements (typical)	31.5 watts	
Power factor	0.5 to 0.6	
Inrush Current[3]	47.6 amps at 120 Vac, 85.7 amps at 208 Vac	
Maximum altitude	2135 m (7000 ft.)	

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (60 to 90°F)	10 to 43°C (50 to 110°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.5 bels	5.5 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	38 dBA	38 dBA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
	250mm(9.8 in)	579mm(22.8 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.
3. Inrush currents occur only at initial application of power, no inrush occurs during a normal power off-on cycle.

7205 Model 311 External DLT Tape Drive

Dimensions		
Height	114 mm	4.8 in.
Width	280 mm	11.0 in.
Depth	292 mm	11.5 in.
Weight		
Minimum	6.63 kg	15 lbs.
Maximum	6.63 kg	15 lbs.
Electrical		
Power source loading (typical in kVA)	0.135	
Voltage range (V ac)	100 to 127 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	208 Btu/hr	
Power requirements (typical)	61 watts	
Power factor	0.8	
Maximum altitude	2135 m (7000 ft.)	

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (60 to 90°F)	10 to 43°C (50 to 110°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	20 to 80%	20 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.8 bels	5.5 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	42 dBA	39 dBA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152mm(6 in)	152mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
	280mm(11 in)	597mm(23.5 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7205 Model 440 External DLT Tape Drive

Dimensions				
Height		122 mm	4.8 in.	
Width		250 mm	9.8 in.	
Depth		290 mm	11.5 in.	
Weight				
Minimum		6.0 kg	13 lbs.	
Maximum		6.0 kg	13 lbs.	
Electrical				
Power source loading (typical in kVA)		0.047		
Voltage range (V ac)		100 to 127 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		150 Btu/hr		
Power requirements (typical)		44 watts		
Power factor		0.9		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	20 to 80%		20 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.6 bels		5.3 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	41 dBA		38 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152mm(6 in)	152mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 255mm(10 in)		**Depth** 597mm(23.5 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7206 Model 005 External 4-mm Tape Drive

Dimensions				
Height		80 mm	3.3 in.	
Width		280 mm	11.0 in.	
Depth		285 mm	11.3 in.	
Weight				
Minimum		5 kg	11 lbs.	
Maximum		5 kg	11 lbs.	
Electrical				
Power source loading (typical in kVA)		0.08		
Voltage range (V ac)		100 to 127 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		110 Btu/hr		
Power requirements (typical)		32 watts		
Power factor		0.5 to 0.7		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	20 to 80%		20 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.9 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	46 dBA		40 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152mm(6 in)	152mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 432mm(17 in)		**Depth** 589mm(23.3 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7206 Model 110 External 4-mm DDS-3 Tape Drive

Dimensions				
Height		55 mm	2.2 in.	
Width		250 mm	9.8 in.	
Depth		275 mm	10.8 in.	
Weight				
Minimum		3.7 kg	8 lbs.	
Maximum		3.7 kg	8 lbs	
Electrical				
Power source loading (typical in kVA)		0.07		
Voltage range (V ac)		100 to 127 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (average)		100 Btu/hr		
Power requirements (typical)		30 watts		
Power factor		0.3 to 0.5		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	20 to 80%		20 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.9 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	46 dBA		40 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152mm(6 in)	152mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 250mm(9.8 in)		**Depth** 579mm(22.8 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7206 Model 220 External 4-mm DDS-4 Tape Drive

Dimensions				
Height		55 mm	2.2 in.	
Width		250 mm	9.8 in.	
Depth		275 mm	10.8 in.	
Weight				
Minimum		3.7 kg	8 lbs.	
Maximum		3.7 kg	8 lbs.	
Electrical				
Power source loading (typical in kVA)		0.07		
Voltage range (V ac)		100 to 127 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		120 Btu/hr		
Power requirements (typical)		35 watts		
Power factor		0.6		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	20 to 80%		20 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	<5.9 bels		<5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	N/A		N/A	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152mm(6 in)	152mm(6 in)	N/A	N/A
Service	152mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 250mm(9.8 in)		**Depth** 579mm(22.8 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7207 Model 012 1.2GB External 1/4-Inch Cartridge Tape Drive

Dimensions				
Height		80 mm	3.3 in.	
Width		280 mm	11.0 in.	
Depth		285 mm	11.3 in.	
Weight				
Minimum		4.5 kg	10.0 lbs.	
Maximum		4.5 kg	10.0 lbs.	
Electrical				
Power source loading (typical in kVA)		0.07		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		140 Btu/hr		
Power requirements (typical)		40 watts		
Power factor		0.5 to 0.7		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	20 to 80%		20 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	6.6 bels		5.3 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	46 dBA		40 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 280mm(11 in)		**Depth** 589mm(23.3 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7207 Model 122 4GB External SIRS 1/4-Inch Cartridge Tape Drive

Dimensions				
Height		55 mm	2.2 in.	
Width		250 mm	9.8 in.	
Depth		275 mm	10.8 in.	
Weight		3.4kg	7.5 lbs	
Electrical				
Power source loading (typical in kVA)		0.03 @ 120 V ac		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		76 Btu/hr		
Power requirements (typical)		22 watts		
Power Factor		0.3 to 0.6		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 5 to 45°C (41 to 113°F)		**Non-Operating** -40 to 60°C (-40 to 140°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		10 to 90%	
Wet Bulb	26°C (79°F)		29°C (84°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	6.6 bels		5.3 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	46 dBA		40 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 250mm(9.8 in)		**Depth** 579mm(22.8 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7207 Model 315 13GB External 1/4-Inch Cartridge Tape Drive

Dimensions				
Height		55 mm	2.2 in.	
Width		250 mm	9.8 in.	
Depth		275 mm	10.8 in.	
Weight				
Minimum		3.6 kg	7.9 lbs.	
Maximum		3.6 kg	7.9 lbs.	
Electrical				
Power source loading (typical in kVA)		0.029 @ 120 V ac		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		50 Btu/hr		
Power requirements (typical)		16 watts		
Power Factor		0.3 to 0.5		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	20 to 80%		20 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.48 bels		5.3 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	37.4 dBA		37 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 250mm(9.8 in)		**Width** 575mm(22.6 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7208 Model 001 2.3GB External 8-mm Tape Drive

Dimensions		
Height	123 mm	4.8 in.
Width	280 mm	11.0 in.
Depth	285 mm	11.3 in.
Weight		
Minimum	6 kg	13.3 lbs.
Maximum	6 kg	13.3 lbs.
Electrical		
Power source loading (typical in kVA)	0.06	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	120 Btu/hr	
Power requirements (typical)	35 watts	
Power factor	0.5 to 0.7	
Maximum altitude	2135 m (7000 ft.)	

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (60 to 90°F)	10 to 43°C (50 to 110°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	20 to 80%	20 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.9 bels	5.5 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	46 dBA	40 dBA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	152 mm(6 in)
Service	152 mm(6 in)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
	432mm(17 in)	589mm(23.3 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7208 Model 011 5/10GB External 8-mm Tape Drive

Dimensions				
Height		80 mm	3.3 in.	
Width		280 mm	11.0 in.	
Depth		285 mm	11.3 in.	
Weight				
Minimum		4.7 kg	10.3 lbs.	
Maximum		4.7 kg	10.3 lbs.	
Electrical				
Power source loading (typical in kVA)		0.06		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		120 Btu/hr		
Power requirements (typical)		35 watts		
Power factor		0.5 to 0.7		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	20 to 80%		20 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.9 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	46 dBA		40 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152mm(6 in)	152mm(6 in)	N/A	N/A
Service	152mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 280mm(11 in)		**Depth** 589mm(23.3 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7208 Model 341 20/40GB External 8-mm Tape Drive

Dimensions				
Height		55 mm	2.2 in.	
Width		250 mm	9.8 in.	
Depth		275 mm	10.8 in.	
Weight				
Minimum		5 kg	11 lbs.	
Maximum		5 kg	11 lbs.	
Electrical				
Power source loading (typical in kVA)		0.041		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		67 Btu/hr		
Power requirements (typical)		20 watts		
Power factor		0.58		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	20 to 80%		20 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.6 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	38 dBA		38 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152mm(6 in)	152mm(6 in)	N/A	N/A
Service	152mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 250mm(9.8 in)		**Depth** 575mm(22.6 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7208 Model 345 External 8-mm Tape Drive

Dimensions				
Height		55 mm	2.2 in.	
Width		250 mm	9.8 in.	
Depth		275 mm	10.8 in.	
Weight				
Minimum		3.7 kg	8 lbs.	
Maximum		3.7 kg	8 lbs.	
Electrical				
Power source loading (typical in kVA)		0.023		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		44 Btu/hr		
Power requirements (typical)		30 watts		
Power factor		0.58		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 1 to 60°C (34 to 140°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	20 to 80%		20 to 95%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.9 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	38 dBA		38 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152mm(6 in)	152mm(6 in)	N/A	N/A
Service	152mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 250mm(9.8 in)		**Depth** 575mm(22.6 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7209 Model 002 External Rewritable Optical Disk Drive

Dimensions				
Height		123 mm	4.8 in.	
Width		280 mm	11.0 in.	
Depth		290 mm	11.5 in.	
Weight				
Minimum		6.3 kg	14 lbs.	
Maximum		6.3 kg	14 lbs.	
Electrical				
Power source loading (typical in kVA)		0.053		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		110 Btu/hr		
Power requirements (typical)		33 watts		
Power factor		0.5 to 0.7		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 1 to 60°C (34 to 140°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	10 to 80%		10 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.5 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	45 dBA		45 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 280mm(11 in)		**Depth** 597mm(23.5 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7209 Model 003 External 2.6GB Rewritable Optical Disk Drive

Dimensions				
Height		55 mm	2.2 in.	
Width		250 mm	9.8 in.	
Depth		275 mm	10.5 in.	
Weight				
		4.0 kg	8.8 lbs.	
Electrical				
Power source loading (kVA)		0.045 @ 120 Vac		
Voltage range (V ac)		100 to 125 or 200 to 240 (auto-ranging)		
Frequency (hertz)		50 or 60		
Thermal output (maximum)		100 Btu/hr @ 230 Vac		
Thermal output (typical)		55 Btu/hr		
Power requirements (typical)		16 watts		
Power factor		0.4 to 0.6		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 52°C (50 to 126°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	20 to 80%		8 to 80%	
Wet Bulb	27°C (80°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.5 bels		5.5 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	45 dBA		45 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 250mm(9.8 in)		**Depth** 579mm(22.8 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7210 Model 001 External CD-ROM Drive

Dimensions				
Height		80 mm	3.3 in.	
Width		280 mm	11.0 in.	
Depth		285 mm	11.3 in.	
Weight				
Minimum		4.9 kg	10.8 lbs.	
Maximum		4.9 kg	10.8 lbs.	
Electrical				
Power source loading (typical in kVA)		0.05		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		85 Btu/hr		
Power requirements (typical)		25 watts		
Power factor		0.5 to 0.7		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	10 to 80%		10 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.1 bels		5.1 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	36 dBA		36 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	52 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 280mm(11 in)		**Depth** 590mm(23.3 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7210 Model 005 External CD-ROM Drive

Dimensions				
Height		50 mm	1.94 in.	
Width		183 mm	7.2 in.	
Depth		312 mm	12.3 in.	
Weight				
Minimum		2.0 kg	4.4 lbs.	
Electrical				
Power source loading (typical in kVA)		0.03		
Voltage range (V ac)		100 to 125 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (max)		50 Btu/hr		
Power requirements (max)		18 watts		
Power factor (minimum)		0.6		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	10 to 80%		10 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	4.7 bels		4.7 bels	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow	N/A	N/A	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 183mm(7.2 in)		**Depth** 464mm(18.3 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7210 Model 010 External Quad Speed CD-ROM Drive

Dimensions		
Height	55 mm	2.2 in.
Width	250 mm	9.8 in.
Depth	275 mm	10.8 in.
Weight		
	3.6 kg	7.9 lbs.
Electrical		
Power source loading (typical in kVA)	0.07	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	110 Btu/hr	
Power requirements (max)	18 watts	
Power factor	0.5 to 0.7	
Maximum altitude	2135 m (7000 ft.)	

Temperature Requirements	**Operating**	**Non-Operating**
	16 to 32°C (60 to 90°F)	10 to 43°C (50 to 110°F)

Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	10 to 80%	10 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.1 bels	5.1 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	36 dBA	36 dBA
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
	250mm(9.8 in)	579mm(22.8 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7210 Model 015 External 8X to 20X Speed SCSI-2 CD-ROM Drive

Dimensions		
Height	55 mm	2.2 in.
Width	250 mm	9.8 in.
Depth	275 mm	10.8 in.
Weight		
	3.2 kg	7.1 lbs.
Electrical		
Power source loading (kVA)	0.023 @ 120 Vac	
Voltage range (V ac)	100 to 125 or 200 to 240 (auto-ranging)	
Frequency (hertz)	50 or 60	
Thermal output (maximun)	42 Btu/hr @240 Vac	
Power requirements (typical idle)	06 watts	
Power requirements (typical seek/read)	18 watts	
Power factor	0.4 to 0.6	
Maximum altitude	2135 m (7000 ft.)	

Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)	**Non-Operating** 10 to 52°C (50 to 126°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	20 to 80%	8 to 80%
Wet Bulb	27°C (80°F)	27°C (80°F)
Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	4.8 bels	4.5 bels
L_{pAm}	N/A	N/A
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
	250mm(9.8 in)	579mm(22.8 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7210 Model 020 External 32X Speed SCSI-2 CD-ROM Drive

Dimensions				
Height		55 mm	2.2 in.	
Width		250 mm	9.8 in.	
Depth		275 mm	10.8 in.	
Weight				
		3.2 kg	7.1 lbs.	
Electrical				
Power source loading (kVA)		0.023 @ 120 Vac		
Voltage range (V ac)		100 to 125 or 200 to 240 (auto-ranging)		
Frequency (hertz)		50 or 60		
Thermal output (maximum)		42 Btu/hr @240 Vac		
Power requirements (typical idle)		06 watts		
Power requirements (typical seek/read)		18 watts		
Power factor		0.4 to 0.6		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 52°C (50 to 126°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	20 to 80%		8 to 80%	
Wet Bulb	27°C (80°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	4.8 bels		4.5 bels	
L_{pAm}	N/A		N/A	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 250mm(9.8 in)		**Depth** 579mm(22.8 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7210 Model 025 External SCSI-2 DVD-RAM Drive

Dimensions				
Height		55 mm	2.2 in.	
Width		250 mm	9.8 in.	
Depth		275 mm	10.8 in.	
Weight				
		3.6 kg	8 lbs.	
Electrical				
Power source loading (kVA)		0.023 @ 120 Vac		
Voltage range (V ac)		100 to 125 or 200 to 240 (auto-ranging)		
Frequency (hertz)		50 or 60		
Thermal output (maximum)		42 Btu/hr @240 Vac		
Power requirements (typical idle)		06 watts		
Power requirements (typical seek/read)		12.5 watts		
Power factor		0.4 to 0.6		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 52°C (50 to 126°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	20 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		23°C (73°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	4.8 bels		4.5 bels	
L_{pAm}	46 dBA		41 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 250mm(9.8 in)		**Depth** 579mm(22.8 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7235 POWER GTO™ Models 01i and 02i Graphics Subsystem

Dimensions	**Desktop**	**Deskside**
Height	160 mm 6.3 in.	466 mm 18.3 in.
Width	460 mm 18.0 in.	160 mm 6.3 in.
Width at pedestal (deskside)		241 mm 9.5 in.
Depth	525 mm 21.0 in.	525 mm 21.0 in.
Weight		
Minimum	16 kg 35 lbs.	16 kg 35 lbs.
Maximum	16 kg 35 lbs.	16 kg 35 lbs.
Electrical		
Power source loading (typical in kVA)	0.5	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	850 Btu/hr	
Power requirements (typical)	250 watts	
Power factor	0.5 to 0.7	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)	**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity Requirements (Noncondensing)	**Operating** 8 to 80%	**Non-Operating** 8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)
Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.8 bels	5.5 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	54 dBA	N/A
Impulsive or prominent discrete tones	No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
Desktop	460mm(18 in)	830mm(33 in)
Deskside	241mm(9.5 in)	830mm(33 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

7250 POWER GXT1000 Graphics Accelerator

Dimensions	**Desktop**	**Deskside**
Height	160 mm 6.3 in.	466 mm 18.3 in.
Width	460 mm 18.0 in.	160 mm 6.3 in.
Width (at pedestal for deskside)		241 mm 9.5 in.
Depth	525 mm 21.0 in.	525 mm 21.0 in.
Weight		
Minimum	13.6 kg 30 lbs.	13.6 kg 30 lbs.
Maximum	13.6 kg 30 lbs.	13.6 kg 30 lbs.
Electrical		
Power source loading (typical in kVA)	0.5	
Voltage range (Vac)[2]	100 to 125 or 200 to 240 (autoranging)	
Frequency (Hertz)	50 or 60	
Thermal output (typical)	850 Btu/hr	
Power requirements (typical)	250 Watts	
Power factor	0.5 to 0.7	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)	**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)
Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	5.2 bels	5.2 bels
L_{pAm}	N/A	N/A
Impulsive or prominent discrete tones	No	No
Noise Emissions[1]		
$<L_{pA}>_m$	36.8 dBA	

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[3]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A

Footprint[3]	**Width**	**Depth**
Desktop	460mm(18 in)	830mm(33 in)
Deskside	241mm(9.5 in)	830mm(33 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The power supply may be autoranging or switchable. The switchable type has a red voltage selection switch near the power cord connector.
3. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

4869 Model 002 5 1/4-Inch 1.2MB External Diskette Drive

Dimensions		
Height	62.5 mm	2.5 in.
Width	227.0 mm	8.9 in.
Depth	408.0 mm	16.0 in.
Weight		
Minimum	2.1 kg	4.6 lbs.
Maximum	2.1 kg	4.6 lbs.
Electrical		
Power source loading (typical in kVA)	0.02	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	35 Btu/hr	
Power requirements (typical)	10 watts	
Power factor	N/A	
Maximum altitude	2135 m (7000 ft.)	

Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating** 10 to 52°C (50 to 125°F)

Humidity Requirements (Noncondensing)	**Operating**	**Non-Operating**
ANSI Media	8 to 80%	5 to 95%
ISO Media	20 to 80%	5 to 95%
Wet Bulb	23°C (73°F)	27°C (80°F)

Noise Emissions[1]	**Operating**	**Idle**
L_{WAd}	6.0 bels	N/A
L_{pAm}	54 dBA	N/A
$<L_{pA}>_m$	42 dBA	N/A
Impulsive or prominent discrete tones	Yes	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A

Footprint[2]	**Width** 227mm(8.9 in)	**Depth** 712mm(28 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

Chapter 8. Physical Characteristics of the 7300 Series

This section gives the physical characteristics for the 73xx series of external devices.The following information can help you plan for your external devices. You only have to do physical planning for the devices you have ordered. Footprints are not drawn to scale.

7318 Serial Communications Network Server Models P10, and S20

Dimensions		
Height	44 mm	1.73 in.
Width	381 mm	15.00 in.
Depth	229 mm	9.00 in.
Weight		
Maximum	2.6 kg	5.7 lbs.
Electrical		
Power source loading (typical in kVA)	0.085	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	170 Btu/hr	
Power requirements (max)	50 watts	
Maximum altitude	2135 meters (7000 ft.)	
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)	**Non-Operating** 10 to 50°C (50 to 125°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	4.9 bels	4.9 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	54 dBA	54 dBA
Impulsive or prominent discrete tones	No	No

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

7319 Models 100, and 110 Fibre Channel Switches

Dimensions		
Height	86 mm	3.39 in.
Width	483 mm	19.00 in.
Depth	495 mm	19.50 in.
Weight		
Maximum	12.2 kg	27 lbs.
Electrical		
Power source loading (typical in kVA)	0.18	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	570 Btu/hr	
Power requirements (typical)	170 watts	
Power factor	0.98	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 0 to 40°C (32 to 104°F)	**Non-Operating** 0 to 50°C (32 to 125°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	0 to 90%	0 to 90%
Wet Bulb	27°C (80°F)	27°C (80°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	4.9 bels	4.9 bels
L_{pAm}	N/A	N/A
Impulsive or prominent discrete tones	No	No

1. * See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

7329 Model 308 QIC 1/4 Tape Autoloader

Dimensions		
Height	174 mm	6.8 in.
Width	224 mm	8.8 in.
Depth	578 mm	22.8 in.
Weight	15.5 kg	34 lbs.
Electrical		
Power source loading (kVA)	0.07	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	208 Btu/hr	
Power requirements (typicial)	23.1 watts	
Power factor	0.6	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)	**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	20 to 80%	20 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	<5.8 bels	<5.0 bels
L_{pAm}	54 dBA	48 dBA
Impulsive or prominent discrete tones	No	No

* See “Noise Emission Notes” on page 199 for definitions of emissions positions.

7331 Model 205 140/280GB or Model 305 400/800GB 8-mm Tape Library

Dimensions		
Height	637.0 mm	25.1 in.
Width	322.5 mm	12.7 in.
Depth	723.0 mm	28.5 in.
Weight		
Minimum	45 kg	92.5 lbs.
Maximum	45 kg	92.5 lbs.
Electrical		
Power source loading (kVA)	0.34	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output	580 Btu/hr for two drives	
Power requirements	340 watts	
Power factor	0.95	
Maximum altitude	3048 m (10,000 ft.)	
Temperature Requirements	**Operating** 5 to 40°C (41 to 110°F)	**Non-Operating** 5 to 32°C (41 to 90°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	20% to 80%	20% to 80%
Wet Bulb	26°C (79°F)	26°C (79°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	6.2 bels	5.5 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	46 dBA	43 dBA
Impulsive or prominent discrete tones	No	No

* See “Noise Emission Notes” on page 199 for definitions of emissions positions

7332 Model 005 4-mm DDS-2 Autoloading Tape

Dimensions		
Height	122 mm	4.8 in.
Width	280 mm	11.0 in.
Depth	290 mm	11.5 in.
Weight	6.4 kg	14 lbs.
Electrical		
Power source loading (kVA)	0.07	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (average)	120 Btu/hr	
Power requirements	35 watts	
Power factor	0.3 to 0.6	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)	**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	20 to 80%	20 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	5.3 bels	5.3 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	39 dBA	39 dBA
Impulsive or prominent discrete tones	No	No

* See “Noise Emission Notes” on page 199 for definitions of emissions positions.

7332 Model 110 4-mm DDS-3 Autoloading Tape

Dimensions		
Height	122 mm	4.8 in.
Width	280 mm	11.0 in.
Depth	290 mm	11.5 in.
Weight	6.4 kg	14 lbs.
Electrical		
Power source loading (kVA)	0.07	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (average)	120 Btu/hr	
Power requirements (typcial)	35 watts	
Power factor	0.3 to 0.6	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)	**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	20 to 80%	20 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	5.3 bels	5.3 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	39 dBA	39 dBA
Impulsive or prominent discrete tones	No	No

* See “Noise Emission Notes” on page 199 for definitions of emissions positions.

7332 Model 220 4-mm DDS-4 Autoloading Tape

Dimensions		
Height	122 mm	4.8 in.
Width	280 mm	11.0 in.
Depth	290 mm	11.5 in.
Weight	6.4 kg	14 lbs.
Electrical		
Power source loading (kVA)	0.07	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output (typical)	208 Btu/hr	
Power requirements (typicial)	61 watts	
Power factor	0.6	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)	**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	20 to 80%	20 to 80%
Wet Bulb	23°C (73°F)	27°C (80°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	<5.3 bels	<5.3 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	N/A	N/A
Impulsive or prominent discrete tones	No	No

* See “Noise Emission Notes” on page 199 for definitions of emissions positions.

7334 Model 410 8-mm Tape Library

Dimensions		
Height	220.0 mm	8.7 in.
Width	438.0 mm	17.2 in.
Depth	612.0 mm	24.1 in.
Weight		
Minimum	34.5 kg	76 lbs.
Maximum	34.5 kg	76 lbs.
Electrical		
Power source loading (kVA)	0.03	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output	427 Btu/hr	
Power requirements	125 watts	
Power factor	0.3 to 0.6	
Maximum altitude	3048 m (10,000 ft.)	
Temperature Requirements	**Operating** 5 to 35°C (41 to 95°F)	**Non-Operating** –20 to 60°C (–4 to 140°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	20% to 80%	10% to 90%
Wet Bulb	26°C (79°F)	29°C (84°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	6.3 bels	5.8 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	46 dBA	43 dBA
Impulsive or prominent discrete tones	No	No

* See “Noise Emission Notes” on page 199 for definitions of emissions positions

7336 Model 205 4-mm Tape Library

Dimensions		
Height	637.0 mm	25.1 in.
Width	322.5 mm	12.7 in.
Depth	723.0 mm	28.5 in.
Weight		
Minimum	45 kg	92.5 lbs.
Maximum	45 kg	92.5 lbs.
Electrical		
Power source loading (kVA)	0.34	
Voltage range (V ac)	100 to 125 or 200 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output	580 Btu/hr for two drives	
Power requirements	340 watts	
Power factor	0.95	
Maximum altitude	3048 m (10000 ft.)	
Temperature Requirements	**Operating** 5 to 40°C (41 to 110°F)	**Non-Operating** 5 to 32°C (41 to 90°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	20 to 80%	20 to 80%
Wet Bulb	26°C (79°F)	26°C (79°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	6.2 bels	5.5 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	46 dBA	43 dBA
Impulsive or prominent discrete tones	No	No

* See “Noise Emission Notes” on page 199 for definitions of emissions positions.

7337 Model 305 DLT Tape Library

Dimensions		
Height	23.5 mm	9.25 in.
Width	47.9 mm	18.9 in.
Depth	67.3 mm	26.5 in.
Weight		
Minimum	41.8 kg	92 lbs.
Maximum	41.8 kg	92 lbs.
Electrical		
Power source loading (kVA)	0.34	
Voltage range (V ac)	100 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output	445 Btu/hr for two drives	
Power requirements	130 watts	
Power factor	TBD	
Maximum altitude	2438 m (6000 ft.)	
Temperature Requirements	**Operating** 10 to 35°C (50 to 95°F)	**Non-Operating** 5 to 32°C (40 to 90°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	20 to 80%	20 to 80%
Wet Bulb	23°C (73.4°F)	46°C (114°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	5.5 bels	5.14 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	46 dBA	43 dBA
Impulsive or prominent discrete tones	No	No

* See “Noise Emission Notes” on page 199 for definitions of emissions positions.

7337 Model 306 DLT Tape Library

Dimensions		
Height	22.2 mm	8.75 in.
Width	48.0 mm	18.9 in.
Depth	67.3 mm	26.5 in.
Weight		
Maximum	33 kg	72 lbs.
Electrical		
Power source loading (kVA)	0.34	
Voltage range (V ac)	100 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output	445 Btu/hr for two drives	
Power requirements	130 watts	
Power factor	TBD	
Maximum altitude	1828 m (6000 ft.)	
Temperature Requirements	**Operating** 10 to 35°C (50 to 95°F)	**Non-Operating** 5 to 32°C (40 to 90°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	20 to 80%	20 to 80%
Wet Bulb	23°C (73.4°F)	46°C (114°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	5.3 bels	6.0 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	46 dBA	43 dBA
Impulsive or prominent discrete tones	No	No

* See “Noise Emission Notes” on page 199 for definitions of emissions positions.

7337 Model 360 DLT Tape Library

Dimensions		
Height	68.5 cm	27.0 in. (w/casters)
Width	48.1 cm	18.9 in.
Depth	73.5 cm	28.9 in.
Weight		
Minimum	65.8 kg	145 lbs.
Maximum	116.6 kg	257 lbs.
Electrical		
Power source loading (kVA)	0.72	
Voltage range (V ac)	100 to 240 (autoranging)	
Frequency (hertz)	50 or 60	
Thermal output	1920 Btu/hr	
Power requirements	562 watts	
Power factor	0.55 - 0.8	
Maximum altitude	2135 m (7000 ft)	
Temperature Requirements	**Operating** 10 to 38°C (50 to 100°F)	**Non-Operating** 5 to 32°C (40 to 90°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	20 to 80%	20 to 80%
Wet Bulb	26°C (79°F)	46°C (114°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	6.8 bels	6.6 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	46 dBA	43 dBA
Impulsive or prominent discrete tones	No	No

* See “Noise Emission Notes” on page 199 for definitions of emissions positions.

Chapter 9. Physical Characteristics of the 9000 Series

This section gives the physical characteristics for the 9xxx series of external devices.The following information can help you plan for your external devices. You only have to do physical planning for the devices you have ordered. Footprints are not drawn to scale.

Where a footprint is shown, the figure represents a top view of the device.

9291 Models 010, and 020 Single Digital Trunk Processors

Dimensions				
Height		110 mm	4.33 in.	
Width		220 mm	8.66 in.	
Depth		430 mm	16.9 in.	
Weight				
Minimum		7.5 kg	16.5 lbs.	
Maximum		7.5 kg	16.5 lbs.	
Electrical				
Power source loading (typical in kVA)		0.06		
Voltage range (V ac)		100 to 127 or 200 to 240 (autoranging)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		170 Btu/hr		
Power requirements (typical)		50 watts		
Power factor		0.5 to 0.8		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements (Noncondensing) **Wet Bulb**	**Operating** 8 to 80% 27°C (80°F)		**Non-Operating** 8 to 80% 27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	4.8 bels		4.8 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	40 dBA		40 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 220mm(8.66 in)		**Depth** 734mm(28.9 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

9295 Multiple Digital Trunk Processor With AC Power Supply

Dimensions	**Base Unit**	**Each T1 or CEPT feature**	**Second Power Supply feature**
Height	266 mm 10.5 in.	264 mm 10.3 in.	264.0 mm 10.3 in.
Width	449 mm 17.6 in.	50 mm 1.9 in.	69.5 mm 2.7 in.
Depth	400 mm 15.7 in.	373 mm 14.6 in.	373.0 mm 14.6 in.
Weight			
Minimum	13.2 kg 29.2 lbs.	2.1 kg 4.6 lbs.	5.0 kg 11.0 lbs.
Maximum	13.2 kg 29.2 lbs.	2.1 kg 4.6 lbs.	5.0 kg 11.0 lbs.
Electrical			
Power source loading per power supply (typical in kVA)		0.40	
Voltage range (V ac)		100 to 127 or 200 to 240 (autoranging)	
Frequency (hertz)		50 or 60	
Thermal output per power supply		1030 Btu/hr	
Power requirements per power supply		300 watts	
Power factor		0.5 to 0.8	
Maximum altitude		2135 m (7000 ft.)	
Temperature Requirements		**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity Requirements		**Operating**	**Non-Operating**
(Noncondensing)		8 to 80%	8 to 80%
Wet Bulb		27°C (80°F)	27°C (80°F)
Noise Emissions[1]		**Operating**	**Idle**
L_{WAd}		6.0 bels	6.0 bels
L_{pAm}		N/A	N/A
$<L_{pA}>_m$		42 dBA	42 dBA
Impulsive or prominent discrete tones		No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
	449mm(17.6 in)	704mm(27.7 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

9295 Multiple Digital Trunk Processor With DC Power Supply

Dimensions	**Base Unit**	**Each T1 or CEPT feature**	**Second Power Supply feature**
Height	266 mm 10.5 in.	264 mm 10.3 in.	264.0 mm 10.3 in.
Width	449 mm 17.6 in.	50 mm 1.9 in.	69.5 mm 2.7 in.
Depth	400 mm 15.7 in.	373 mm 14.6 in.	373.0 mm 14.6 in.
Weight			
Minimum	13.2 kg 29.2 lbs.	2.1 kg 4.6 lbs.	5.0 kg 11.0 lbs.
Maximum	13.2 kg 29.2 lbs.	2.1 kg 4.6 lbs.	5.0 kg 11.0 lbs.
Electrical			
Voltage range (V dc)		-48 to -60 Vdc	
Thermal output per power supply		1030 Btu/hr	
Power requirements per power supply		300 watts	
Maximum altitude		2135 m (7000 ft.)	
Temperature Requirements		**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating** 10 to 43°C (50 to 110°F)
Humidity Requirements		**Operating**	**Non-Operating**
(Noncondensing)		8 to 80%	8 to 80%
Wet Bulb		27°C (80°F)	27°C (80°F)
Noise Emissions[1]		**Operating**	**Idle**
L_{WAd}		6.0 bels	6.0 bels
L_{pAm}		N/A	N/A
$<L_{pA}>_m$		42 dBA	42 dBA
Impulsive or prominent discrete tones		No	No

Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A

Footprint[2]	**Width**	**Depth**
	449mm(17.6 in)	704mm(27.7 in)

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

9333 Models 010, and 011 Drawer High-Performance Subsystem

Dimensions		
Height	171 mm	6.7 in. (4 EIA units)
Width	443 mm	17.4 in.
Depth	686 mm	27.0 in.
Weight		
Minimum	25 kg	55 lbs.
Maximum	49 kg	108 lbs.
Electrical		
Power source loading (typical in kVA)	0.36	
Voltage range for Model 010 (V ac)	200 to 240	
Voltage range for Model 011	200 to 240 V ac or -48 V dc	
Frequency (hertz)	50 or 60	
Thermal output (typical)	680 Btu/hr	
Power requirements (typical)	200 watts	
Power factor	0.5 to 0.7	
Maximum altitude	2135 m (7000 ft.)	
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)	**Non-Operating** 10 to 52°C (50 to 125°F)
Humidity Requirements	**Operating**	**Non-Operating**
(Noncondensing)	8 to 80%	8 to 80%
Wet Bulb	27°C (80°F)	27°C (80°F)
Noise Emissions*	**Operating**	**Idle**
L_{WAd}	5.5 bels	5.2 bels
L_{pAm}	N/A	N/A
$<L_{pA}>_m$	42 dBA	40 dBA
Impulsive or prominent discrete tones	No	No

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

9333 Models 500, and 501 Deskside High-Performance Subsystem

Dimensions				
Height		610 mm	24.0 in.	
Width (at pedestal)		270 mm	10.6 in.	
Depth		780 mm	30.7 in.	
Weight				
Minimum		39 kg	85 lbs.	
Maximum		63 kg	138 lbs.	
Electrical				
Power source loading (typical in kVA)		0.37		
Voltage range (V ac)		100 to 125 or 200 to 240 (selectable)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		680 Btu/hr		
Power requirements (typical)		200 watts		
Power factor		0.5 to 0.7		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.5 bels		5.3 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	44 dBA		42 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 270mm(10.6 in)		**Depth** 1085mm(42.7 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

9334 Models 010, and 011 Drawer Expansion Units

Dimensions			
Height		171 mm	6.7 in. (4 EIA units)
Width		443 mm	17.4 in.
Depth		686 mm	27.0 in.
Weight			
Minimum		25 kg	55 lbs.
Maximum		43 kg	95 lbs.
Electrical			
Power source loading (typical in kVA)		0.34	
Voltage range for Model 010 (V ac)		200 to 240	
Voltage range for Model 011		200 to 240 V ac or -48 V dc	
Frequency (hertz)		50 or 60	
Thermal output (typical)		580 Btu/hr	
Power requirements (typical)		170 watts	
Power factor		0.5 to 0.7	
Maximum altitude		2135 m (7000 ft.)	
Temperature Requirements	**Operating** 10 to 40°C (50 to 104°F)		**Non-Operating** 10 to 52°C (50 to 125°F)
Humidity Requirements (Noncondensing)	**Operating** 8 to 80%		**Non-Operating** 5 to 80%
Wet Bulb	27°C (80°F)		27°C (80°F)
Noise Emissions*	**Operating**		**Idle**
L_{WAd}	5.5 bels		5.2 bels
L_{pAm}	N/A		N/A
$<L_{pA}>_m$	42 dBA		40 dBA
Impulsive or prominent discrete tones	No		No

* See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.

9334 Models 500, and 501 Deskside Expansion Units

Dimensions				
Height		610 mm	24.0 in.	
Width (at pedestal)		270 mm	10.6 in.	
Depth		780 mm	30.7 in.	
Weight				
Minimum		39 kg	85 lbs.	
Maximum		65 kg	142 lbs.	
Electrical				
Power source loading (typical in kVA)		0.4		
Voltage range (V ac)		100 to 125 or 200 to 240 (selectable)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		650 Btu/hr		
Power requirements (typical)		190 watts		
Power factor		0.5 to 0.7		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	8 to 80%		8 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	5.5 bels		5.3 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	44 dBA		42 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[2]	152 mm(6 in)	152 mm(6 in)	N/A	N/A
Service	152 mm(6 in)	N/A	N/A	N/A
Footprint[2]	**Width** 270mm(10.6 in)		**Depth** 1085mm(42.7 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

9348 Model 012 Magnetic Tape Unit

Dimensions				
Height		222 mm	8.75 in.	
Width		483 mm	19.0 in.	
Depth		673 mm	26.5 in.	
Weight				
Minimum		48.2 kg	105 lbs.	
Maximum		48.2 kg	105 lbs.	
Electrical				
Power source loading (typical in kVA)		0.27		
Voltage range (V ac)		100 to 125 or 200 to 240 (selectable)		
Frequency (hertz)		50 or 60		
Thermal output (typical)		410 Btu/hr		
Power requirements (typical)		120 watts		
Power factor		0.5 to 0.7		
Maximum altitude		2135 m (7000 ft.)		
Temperature Requirements	**Operating** 16 to 32°C (60 to 90°F)		**Non-Operating** 10 to 43°C (50 to 110°F)	
Humidity Requirements	**Operating**		**Non-Operating**	
(Noncondensing)	20 to 80%		20 to 80%	
Wet Bulb	23°C (73°F)		27°C (80°F)	
Noise Emissions[1]	**Operating**		**Idle**	
L_{WAd}	7.0 bels[2]		6.8 bels	
L_{pAm}	N/A		N/A	
$<L_{pA}>_m$	51 dBA[2]		50 dBA	
Impulsive or prominent discrete tones	No		No	
Clearances	**Front**	**Back**	**Left**	**Right**
Install/Air Flow[3]	152mm(6 in)	152mm(6 in)	N/A	N/A
Service	152mm(6 in)	N/A	305mm(12 in)	305mm(12 in)
Footprint[3]	**Width** 483mm(19 in)		**Depth** 977mm(38.5 in)	

1. See “Noise Emission Notes” on page 199 for definitions of noise emissions positions.
2. Data applies when the tape unit is in streaming operating mode.
3. The amount of space needed by the unit during normal operation is indicated by the footprint dimensions.

Noise Emission Notes

1. L_{WAd} is the declared sound power emission level for a production series of machines.
2. L_{pAm} is the mean value of the sound pressure emission levels at the operator position (if any) for a production series of machines.
3. $<L_{pA}>_m$ is the mean value of the space-averaged sound pressure emission levels at the one-meter positions for a production series of machines.
4. N/A = Not Applicable (no operator position).
5. All measurements are made in accordance with ISO DIS 779 and reported in conformance with ISO DIS 7574/4.
6. NA - not available.

Chapter 10. Power Cords and Electrical Needs

General Considerations

In planning for your electrical needs, consider the following:

- You must have adequate power to meet the requirements of the devices.
- Electrical receptacles must be near enough to be reached by the power cords supplied with the devices.
- Electrical outlets must be compatible with the electrical plugs supplied with the devices.
- Electrical outlets must be functional and properly grounded.
- Paths of power cords should be arranged to prevent damage to power cords or tripping hazards to personnel.
- Depending on the computing environment, you may need surge protection devices.
- Radio, radar, or other strong radio frequency transmitters close to your location may cause computer malfunctions. Consult your sales representative if abnormally high radio frequency noise is anticipated.
- Functionality and capacity of uninterruptible power source (UPS), if used.
- Varying magnetic fields from high current electrical power distribution systems, elevators, or equipment employing high currents or magnets may cause annoying motion on video displays. Check for acceptable operation of video displays if varying magnetic fields may be encountered.

Power Cords

Power cords with attached plugs are provided for most AC powered systems. Power cords are 1.8 m (6 ft.) minimum length. Rack mounted products are normally supplied with 4.3 m (14 ft) power cords. All products shipped to Chicago, are provided with 1.8 m (6 ft.) power cords to comply with local electrical standards

The power cord that is supplied with the system has an attached plug. The plug that is provided corresponds to the power-outlet receptacle most commonly used in the country to which the product is being shipped. A different plug may be selected by specifying its feature code from the following table when the product is ordered. You, the customer, must supply the corresponding power outlet receptacles.

Plugs

The table at the end of this section presents information concerning system unit plugs for various countries. The plugs are listed in order of feature code. Consult your sales representative for information on which type of plug is used in your area or country.

Notes:

1. Feature codes 6173, 6174, 9173 and 9174 are for a rack mounted power distribution and include a power cord and plug that attaches to the power distribution bus (PDB). It is not necessary to order a power cord when one of these feature codes is selected.

   Single phase PDBs 6171, and 9171 must have a power cord specified.
2. In the United States, raised floor installations involving racks may require a Russell and Stoll (R & S) watertight plug/connector/receptacle (feature code 9801 or 9987).
3. A combination of AC power distribution busses and DC power distribution panels (PDPs) in one rack will only be provided on a special order basis.

System Input Power

Most of these input power considerations apply to all system units, except for the ″Power Phase Imbalance″ and ″Power Phase Rotation″ sections, which apply only to the rack mounted or large systems.

Electrical Considerations

These topics should be considered before installing a system.

Primary Computer Power Service

While a dedicated power supply is not necessary, for maximum reliability the computer power panel should connect to feeders that do not serve other loads. Connect electrical noise-producing devices to panels separate from those feeding the system units.

Grounding

A system unit or device must be properly grounded. It is recommended that an insulated green wire ground, the same size as the phase wire, be installed between the branch circuit panel and the receptacle.

To ensure proper grounding, a licensed electrician should check the grounding and receptacles for conformance with the country electrical codes.

Computer Room Emergency Power-Off Controls

As a safety precaution, you should provide room emergency power-off controls for disconnecting the main service wiring that supplies the computer equipment. Install these controls at a convenient place for the operator and next to the main exit doors of the room.

Lightning Protection

You should install lightning protection devices when:

- An overhead power service supplies the primary power.
- The area is subject to electrical storms or equivalent-type power surges.

Power Phase Imbalance

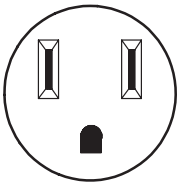
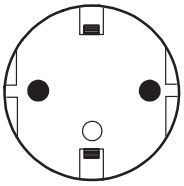
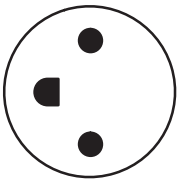
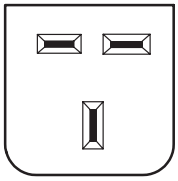
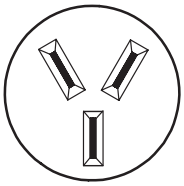
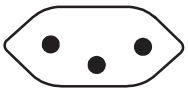
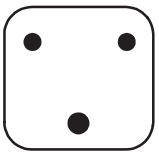
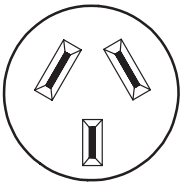
Three versions of rack power distribution units are available. The single-phase PDB, has a detachable line cord and can accept single-phase power or power from one phase of a three-phase source. Multiphase PDBs connect to two and three phases of a three-phase power source.

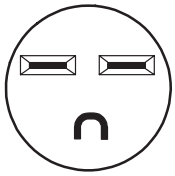
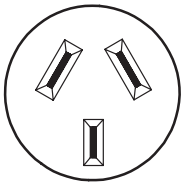
Systems with any of the power distribution units can cause a load imbalance when connected to a three-phase power source. You should consult a licensed electrician to properly balance the loads when new or additional systems are to be connected to a three-phase source.

Power Phase Rotation

The phase rotation (sequence) is not critical for the rack multiphase power distribution units. The system will operate correctly with a multiphase distribution unit connected to a 200- to 240-volt single-phase power source (all phases connected to one side of the power source, neutral to the other).

Desktop and Deskside System Unit Power Plugs

Feature Code	Plug	Standard Compliance or Type
9116 9800 9986		NEMA WD-1 5-15P 125 V, 15 A
9820		CEE7 VII 250 V, 16 A
9821		Afsnit 107 250 V, 10 A
9825		BS 1363 250 V, 13 A
9827		SII-32-1971 250 V, 16 A
9828		SEV 1011.1959 250 V, 10 A
9829		SABS 164, BS 546 250 V, 16 A
9830		CEI 23-16/VII 250 V, 10 A
9831		AS 3122-1981 250 V, 10 A

Feature Code	Plug	Standard Compliance or Type
9833		NEMA WD-1 6#15P 250 V, 15 A
9834		IEC 83-A5 1957 250 V, 10 A

Rack-Type System Unit Power

The racks for rack-type system units are supplied with a power distribution bus (PDB) and a pluggable power cord. One to three PDBs may be added to the rack. Each PDB will have a power cord and the customer must provide a power outlet for each PDB.

Multiphase PDBs and Power Cords

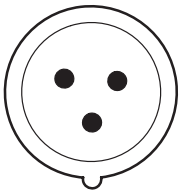
The feature codes in the table below have a power distribution bus (PDB) and a system power cord. The PDB and system power cord have the same plug as shown in the table. The system power cord has a receptacle for connection to the PDB plug.

PDB and System Power Cord Feature Code	Plug	Standard Compliance or Type
6173 9173 Except for S70, S7A, and S80 CEC Racks. See notes.		IEC 309 380-415 V, 32 A
6174 9174 For S70, S7A, and S80 Racks. See Notes.		IEC 309 380-415 V, 16 A

Note: When an S70, S7A, S80, or S85 CEC is ordered with feature code (FC) 9173, it is supplied with a 16 amp IEC 309 plug. All other racks ordered with FC 9173 are supplied with a 32 amp IEC 309 plug.

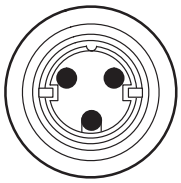
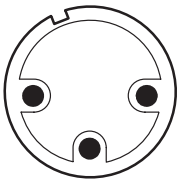
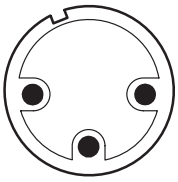
Single Phase PDB with Feature Code 9823

System Power cord feature code 9823 may be ordered with a single phase PDB 9171 or 6171. For this feature code, the plug on the PDB will be a 32 Amp IEC 309 identical to the plug on the system power cord. The system power cord has a compatible IEC 309 receptacle for connection to the PDB.

PDB and System Power Cord Feature Code	Plug	Standard Compliance or Type
9823		IEC 309 220 to 240 V, 32 A

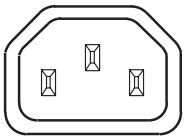
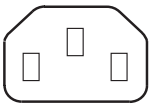
Single Phase PDBs and Power Cords

The feature codes in the table maybe specified with a 6171, or 9171 single phase PDB. For feature codes in the table below, the PDB will have a NEMA WD-5 L6-30 style plug as shown in feature code 9800. The system power cord has a NEMA WD-5 L6-30 style receptacle that plugs on to the PDB on one end. The other end of the system power cord has a plug as shown in the drawing with the feature code in the following table.

System Power Cord Feature Code	Plug	Standard Compliance or Type
9800 9824 9986		NEMA WD-5 L6-30P 250 V, 30 A
9801 9987		R & S 3750 250 V, 30 A
9822		Wilco Weatherproof WIP130 250 V, 30 A
9826		PDL Insulated 56PA330 250 V, 30 A
9835		Korean Standard KS C 8305-1990 250 V, 30 A

Rack-Type System Internal Power Distribution Cable

AC power distribution from PDBs to system components is accomplished with cords using IEC 320/C14 plugs. Additional cords for customer installed equipment can be provided by feature code 6095. Each outlet on the PDB is limited to 8 amps. The PDB is limited to a total of 24 amps. The cable is 2.8 m (9 ft.) in length. Voltage from the PDB will be 200 to 240 volts as provided by the customers AC power system. The plug and output connector for power cable feature code 6095 are shown in the table below.

Feature Code	Plug	Standard Compliance or Type
6095		IEC 320/C14 250 V, 10 A This plug is used for all power outlets from a PDB.
		IEC 320/C13 250 V, 10 A For connection to customer installed equipment

-48 Volt DC Rack Power Distribution

System Racks with -48V DC power distribution (feature codes 6115, 6116, or 6117) have provision for ring terminal connection of power to the power distribution panel (PDP) at the top of the rack. The PDP has two independent sections for power input and output. Each section of the PDP has a -48 Volt bus bar and a -48 Volt Return bus bar. Two holes are provided in each bus bar for input power connection. The input power connection holes are sized for 3/8 inch bolts that are approximately 10 mm in diameter. Bolts, ring terminals and wire for -48 volt input power connection are not provided with the rack.

Properly sized circuit breakers, connectors, and cables to distribute the -48 volts from the PDP to the drawers in the rack are provided with the drawers.

Chapter 11. Cable Planning

Before shipment, the customer is asked to provide specific planning information concerning the physical layout of the installation.

This section can help you plan your layout by presenting planning information on some cables used to interconnect the system units and devices. This chapter includes information on cable length and measuring techniques and some sample cable planning charts. Other cable planning charts can be laid out as necessary. The *Adapters, Devices, and Cable Information (ADCI) for Micro Channel Bus Systems* , order number SA23-2764 or *ADCI for Multiple Bus Systems* , order number SA23-2778 has detailed information on cable feature codes, part numbers, and pin-out charts for cables available to be purchased and customer-supplied cables.

You must plan the type of cable, cable path, and cable length. Consider not only your current needs, but also your anticipated growth and the relocation of personnel.

You should note cable paths on your office layout as this will assist with the installation of your system.

The customer is responsible for planning for the installation of interconnecting cables including the proper lightning and surge protection as necessary and should contact the appropriate contractor for guidance and assistance as required. If the cables discussed in the cable publication do not meet your needs, you should talk to your sales representative or cabling vendor about custom cabling alternatives.

General Considerations

In preparing for cabling, consider the following:

- Where applicable, electrical and physical specifications of cables you currently have and plan to use with the new system must be compatible with the standards mentioned in this book. If no standard is specifically mentioned in this book, the standards for the interface on that adapter must be met.
- Lengths and paths of cables. See ″Cable Measuring″ on page “Cable Measuring” on page 210.
- Communication signal cables should be installed away from power lines or other sources of electrical interference.
- Toroid and shielding considerations. Shielded cables should be used in applications where a shielded connection is provided. Toroid kits should be applied to cables when provided.
- Labeling of cables and ports you currently have in order to indicate which devices you want attached to them. See ″Cable Labeling″ on page “Chapter 12. Cable Labeling” on page 225.
- Electrostatic discharge (ESD) considerations. In particular, unprotected patch panels, punch blocks, or other intermediate routing or switching devices used in cabling can allow ESD into the network.

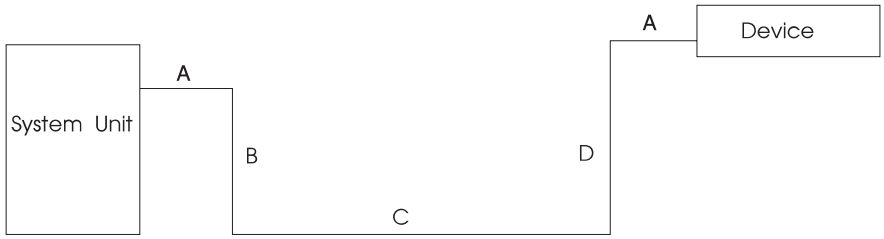
Note: Lightning protection must be provided on any cable which travels outside of the building in which the system or device such as a terminal or printer is installed. Contact a cabling vendor about providing lightning protection for those cables. Fiber-optic cables do not require lightning protection.

Cable Measuring

Accurate measuring of cables is critical to a successful and efficient installation. Do not guess or estimate your cable lengths.

In determining the cable lengths you need, be sure to consider the following:

- A=length allowed for service access, 51 mm (2 ft.) on both system unit and device ends.
- B=length from system unit to floor.
  - Tabletop to floor for desktop models.
  - 46 mm (1.5 ft.) for deskside units.
  - See ″7015 Considerations″ for rack-mounted system units.
- C=horizontal and vertical cable runs. Be sure to route cables around furniture to avoid tripping hazards.
- D=distance from floor to device. (This can include distance between floors, between buildings, etc., depending on complexity of installation.)

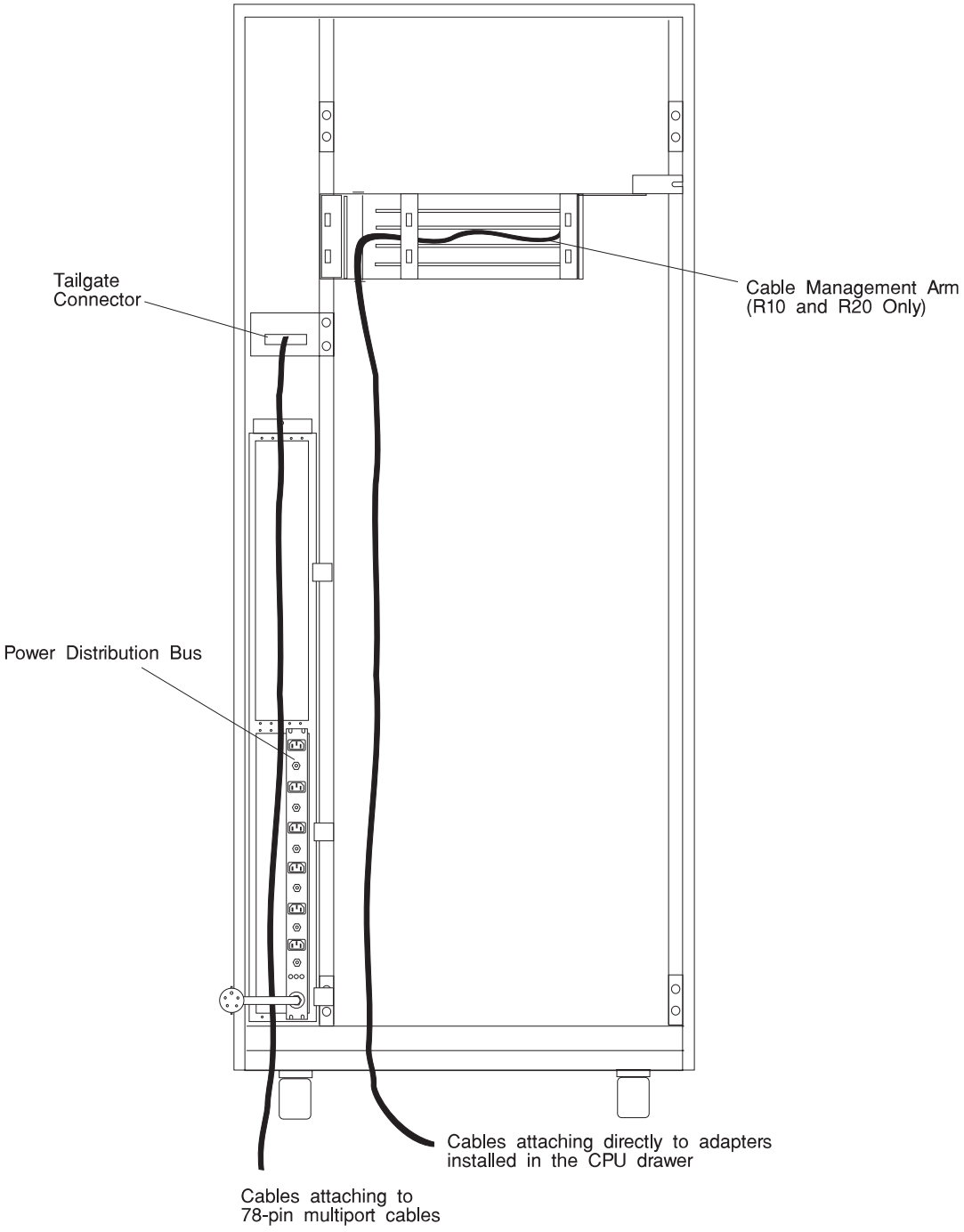


7015 Considerations

The 78-pin multiport interface cables for the 8-or 16-port Async Adapters when used with the 7015 Models R10 and R20 attach to the system tailgate connect rather than to the adapter itself. Internal cables not shown in the cable diagram run from the adapter through the cable management arm to the tailgate connector. You should begin your cable measurements at the tailgate connector for the 8-or 16-port Async Adapter multiport cables.

Other cables used with the 7015 Models R10 and R20 are routed through a cable management arm. The management arm is designed to ensure that the cables do not kink, stretch, or accidentally disconnect when a drawer is pulled out for service.

When planning the necessary lengths of cables routed through this arm, add 2.3 m (7.5 ft.) to the measured distance from the base of the rack.



Rear view of a 7015 system unit, showing system tailgate connector and cable management arm (Models R10 and R20). The EIA scale, which provides a standard unit of measure, is located on the inside right of the rack.

Cable Planning Charts

Cable planning charts help your electrician or cable vendor understand your master plan for cabling. These are particularly useful for large, complex installations.

For information about the cables see the following publications:

- *Adapters, Devices and Cable Information, for Micro Channel Bus Systems* , order number SA23-2764.
- *Adapters, Devices and Cable Information, for Multiple Bus Systems* , order number SA23-2778.
- For more information on asynchronous communications software, hardware, and cabling see *AIX Versions 3.2 and 4 Asynchronous Communications Guide* order number SC23-2488.

Your responsibilities are as follows:

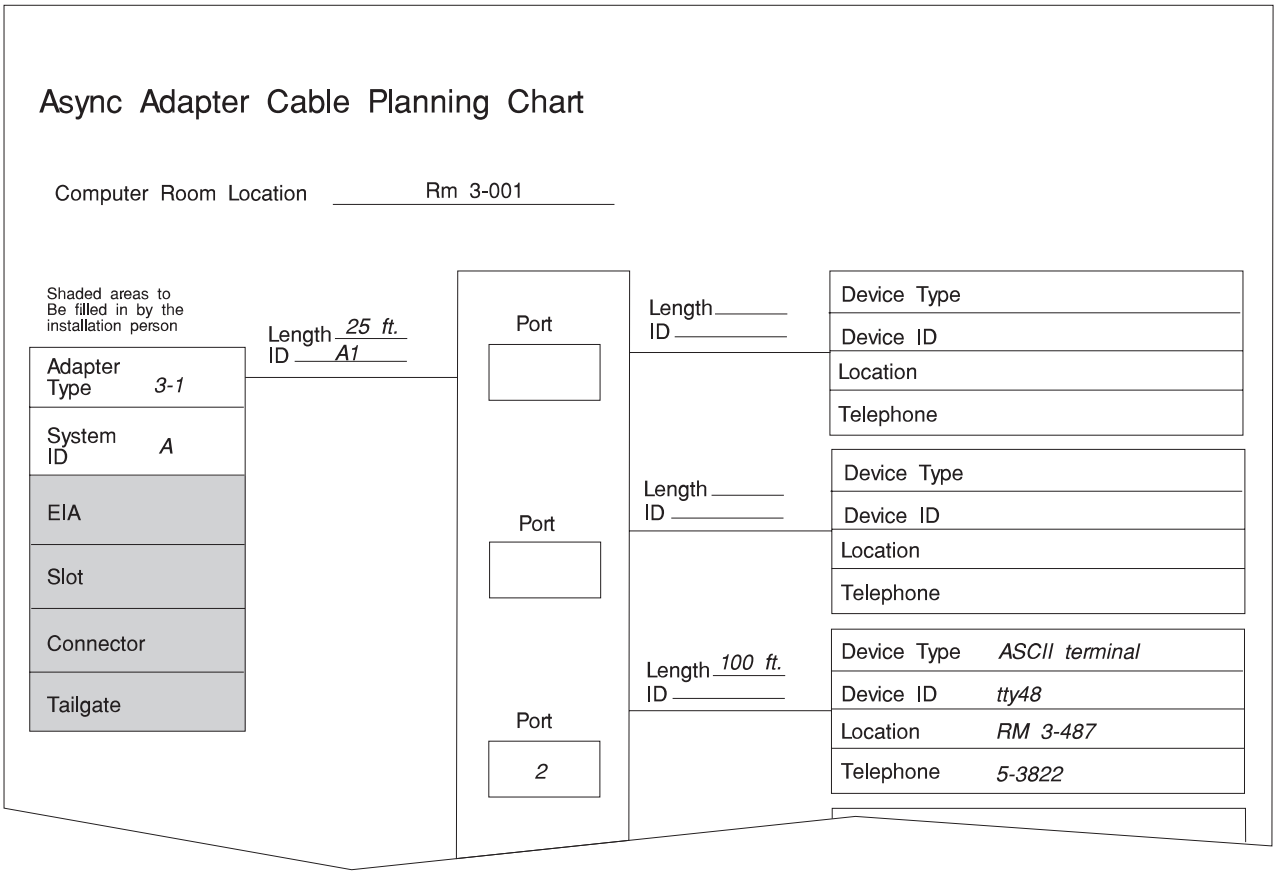
- Fill in each chart, except for the shaded areas, which will be completed by the electrician or cable vendor installing your system. You can make copies of the charts as needed. To help you complete the charts, samples are provided on the following pages.
- Verify that the proper cabling has been ordered and installed.
- Prepare and attach cable labels using the information from the completed charts.
- Once you have completed your sections, give the charts to your electrician or cable vendor who can use them to understand your cabling needs.

Note: Following the installation, the charts should be kept to help you remember the cabling scheme. These charts, in addition to the cable labels that are available (see Chapter 5), will be invaluable in the future as you move system units or devices and need to keep cabling in order.

There are four unique charts, one for each of the following adapters or adapter types:

- Asynchronous adapters
- Standard I/O adapters
- 4-Port Multiprotocol Communications Controller
- Other adapters

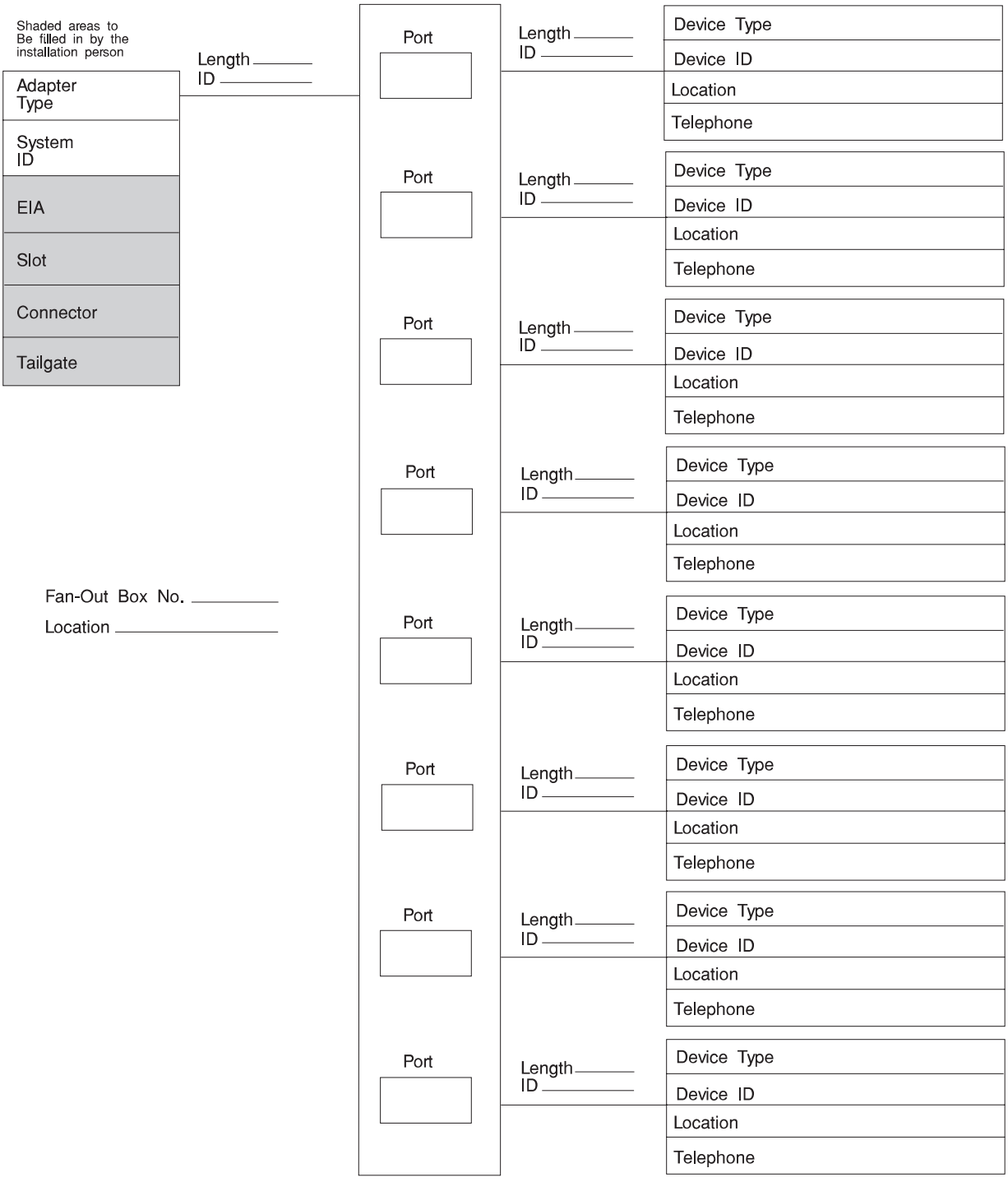
Asynchronous Adapter Planning Charts Example



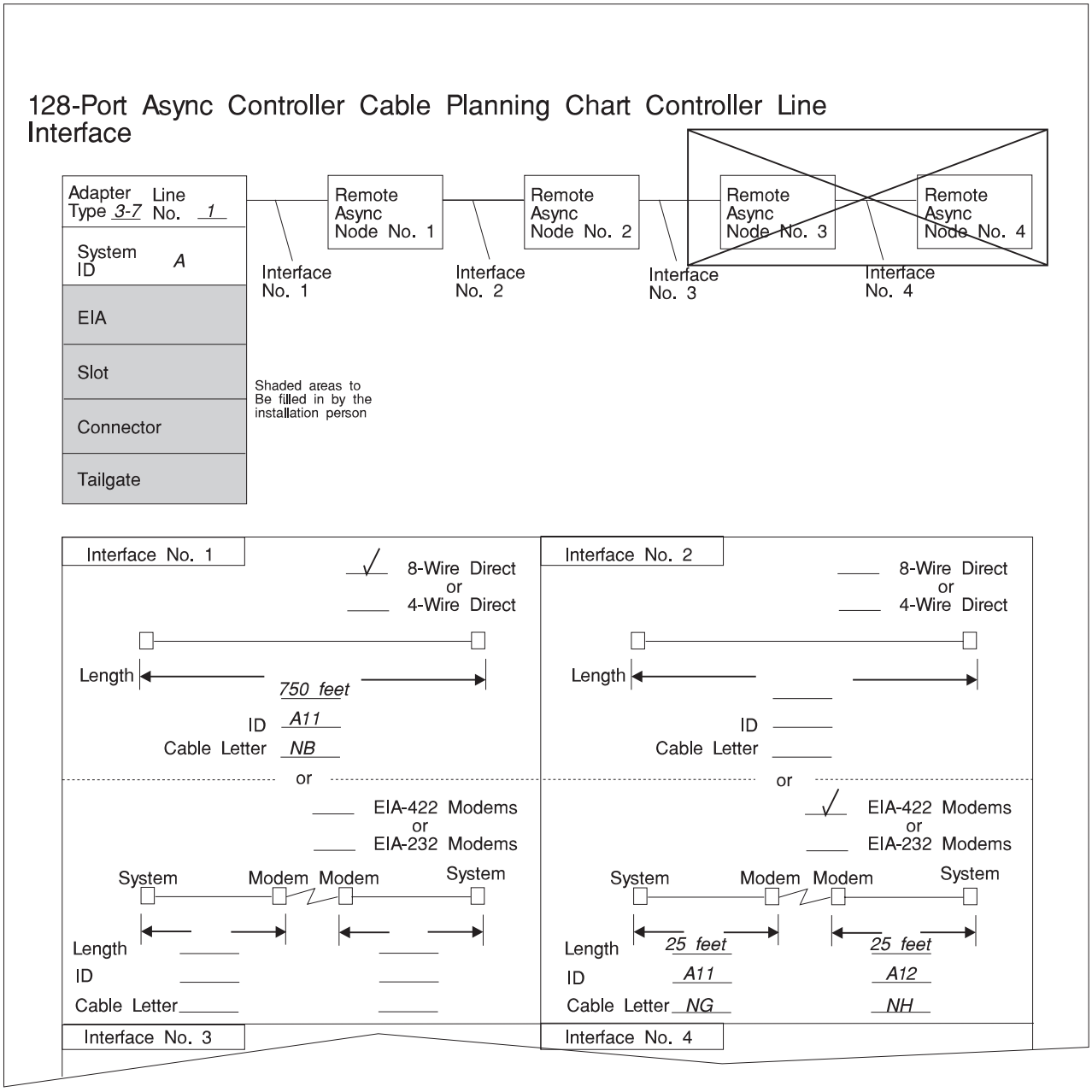
An example of an Async Cable Planning Chart for the 8 port async adapter complete for an ASCII terminal. In this example, the terminal is attached to Port 2. This chart can be used for 8-port or 16-port asynchronous adapters.

Async Adapter Cable Planning Chart

Computer Room Location _____

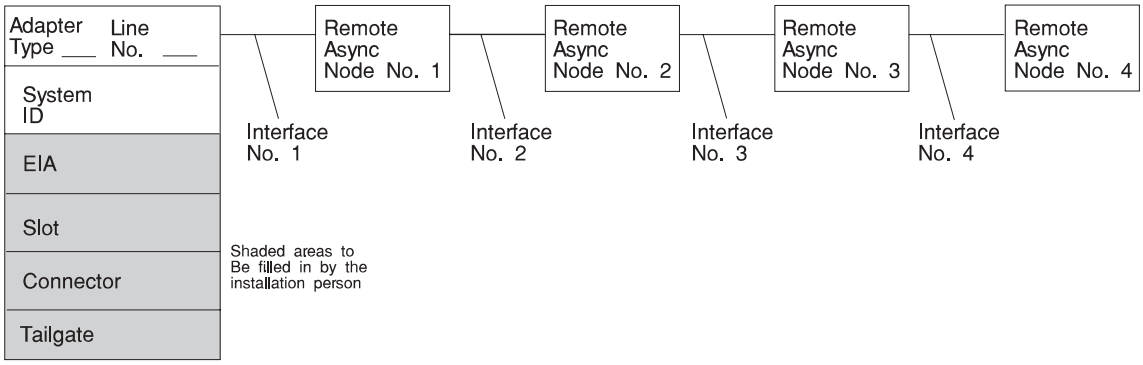


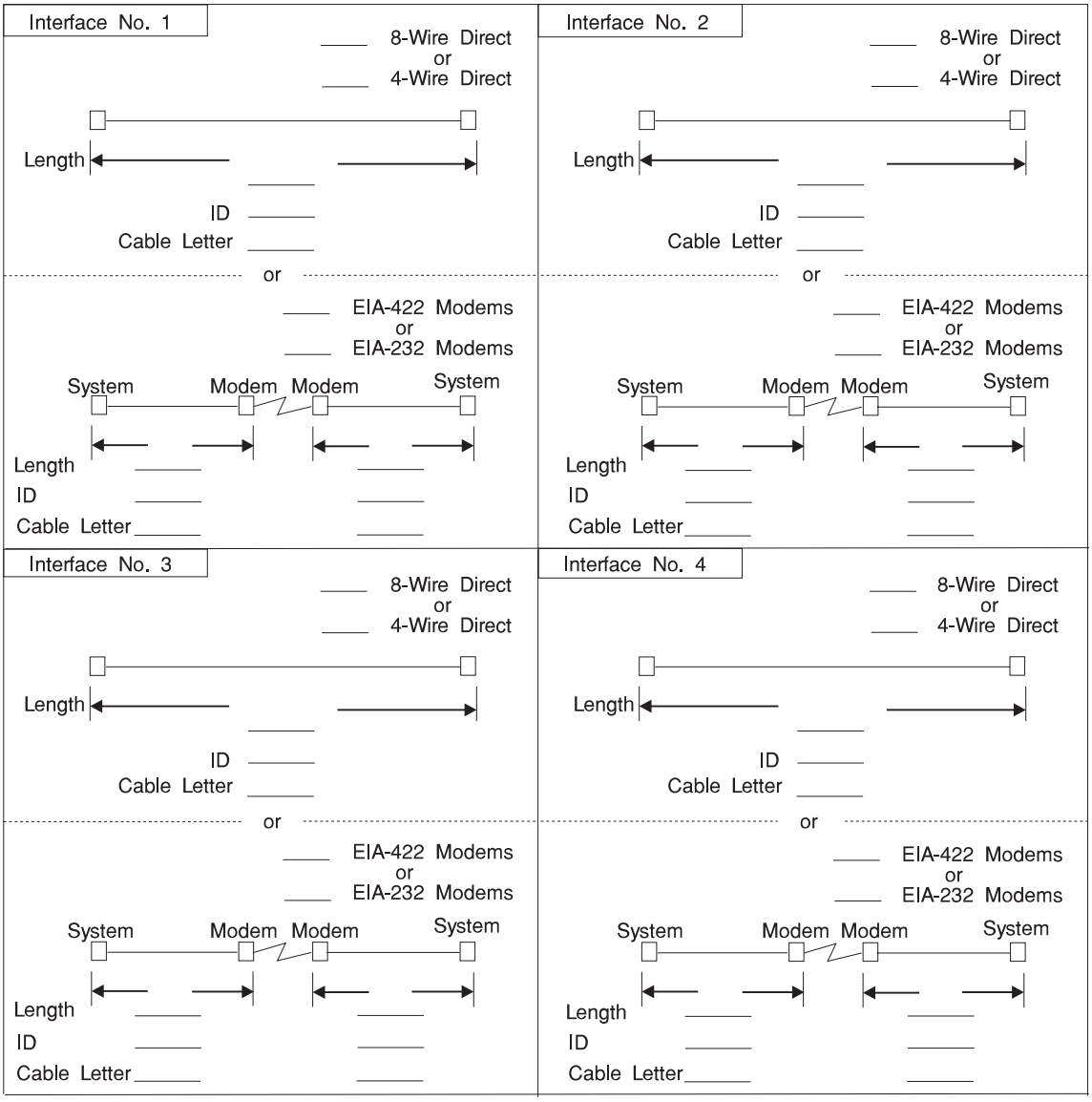
128-Port Async Controller Cable Planning Chart Example



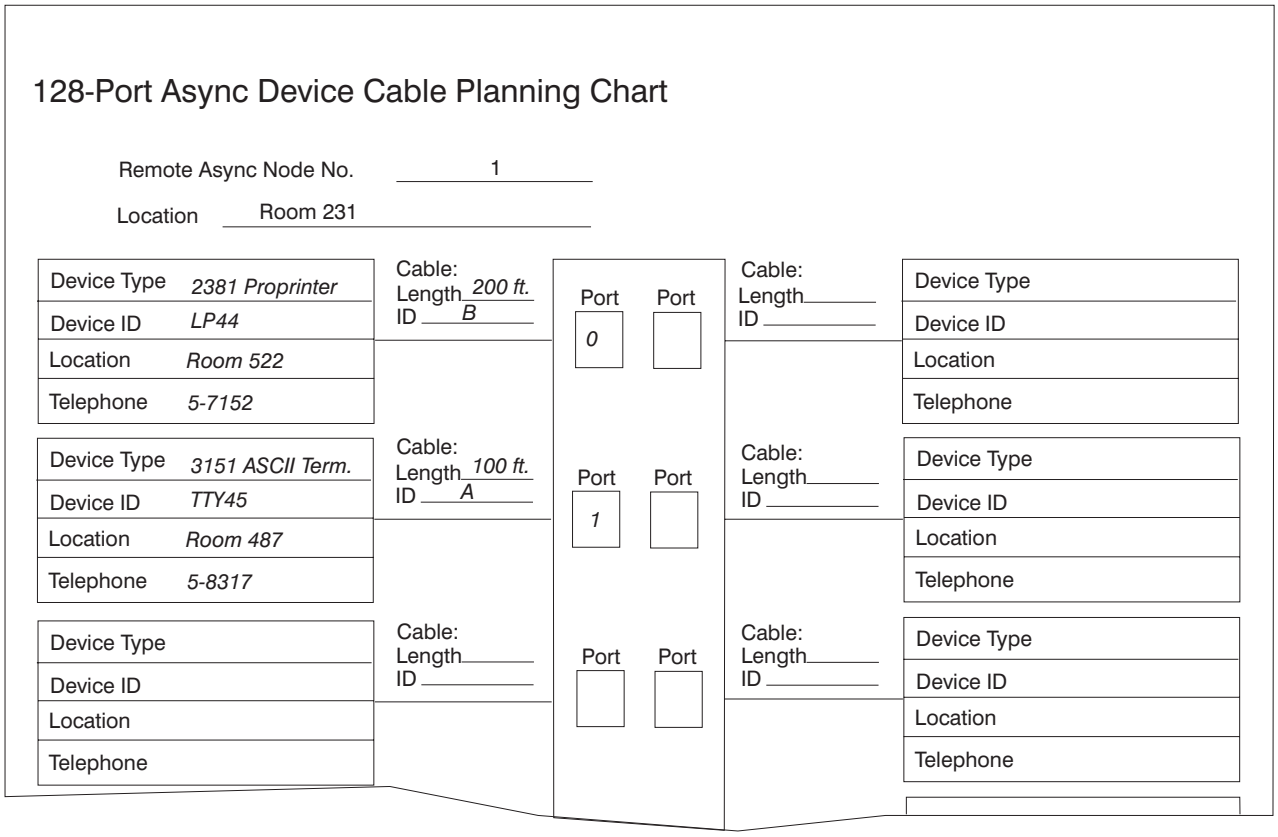
An example of a 128-Port Async Controller Cable Planning Chart, Controller Line Interface, completed for two interfaces. In this example, interface number 1 uses a 750-foot 8-wire cable, and interface number 2 uses two EIA-422 synchronous modems and associated cables. Cable IDs are assigned by the customer. For information about the cables represented by the cable letters shown in the example above, see *"Adapters and Cabling Chapters" for the 128-Port Async Controller* in the *Adapters, Devices and Cable Information, for Micro Channel Bus Systems*, order number SA23-2764 or *Adapters, Devices and Cable Information, for Multiple Bus Systems*, order number SA23-2778.

128-Port Async Controller Cable Planning Chart Controller Line Interface





128-Port Async Device Cable Planning Chart Example

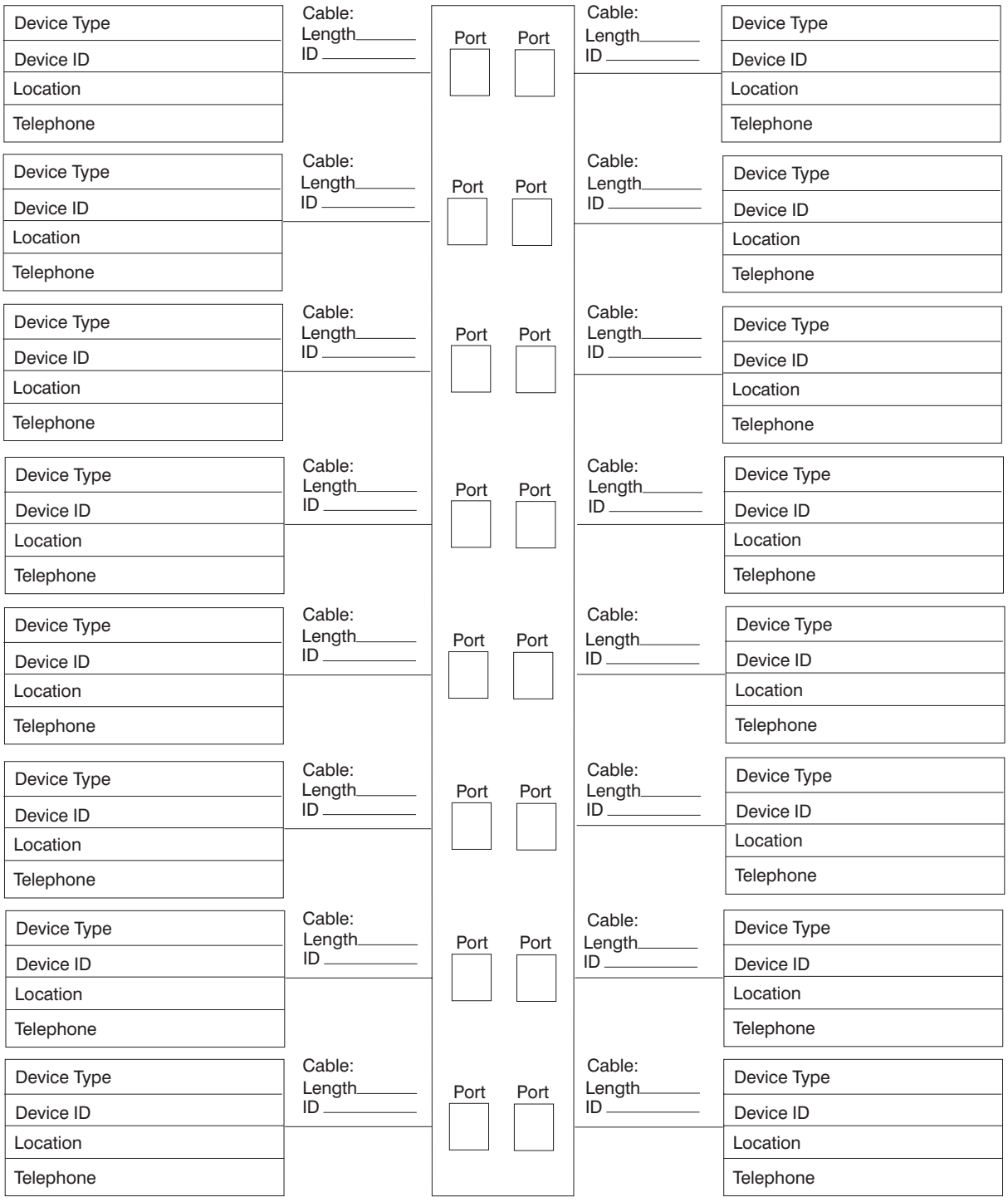


An example of a 128-Port Async Device Cable Planning Chart, Remote Async Node, completed for a 2381 Proprinter® and a 3151 ASCI terminal. In this example, the terminal is attached to Port 1 on Remote Async Node number 1, and the printer is connected to port 0. Cable IDs are assigned by the customer.

128-Port Async Device Cable Planning Chart

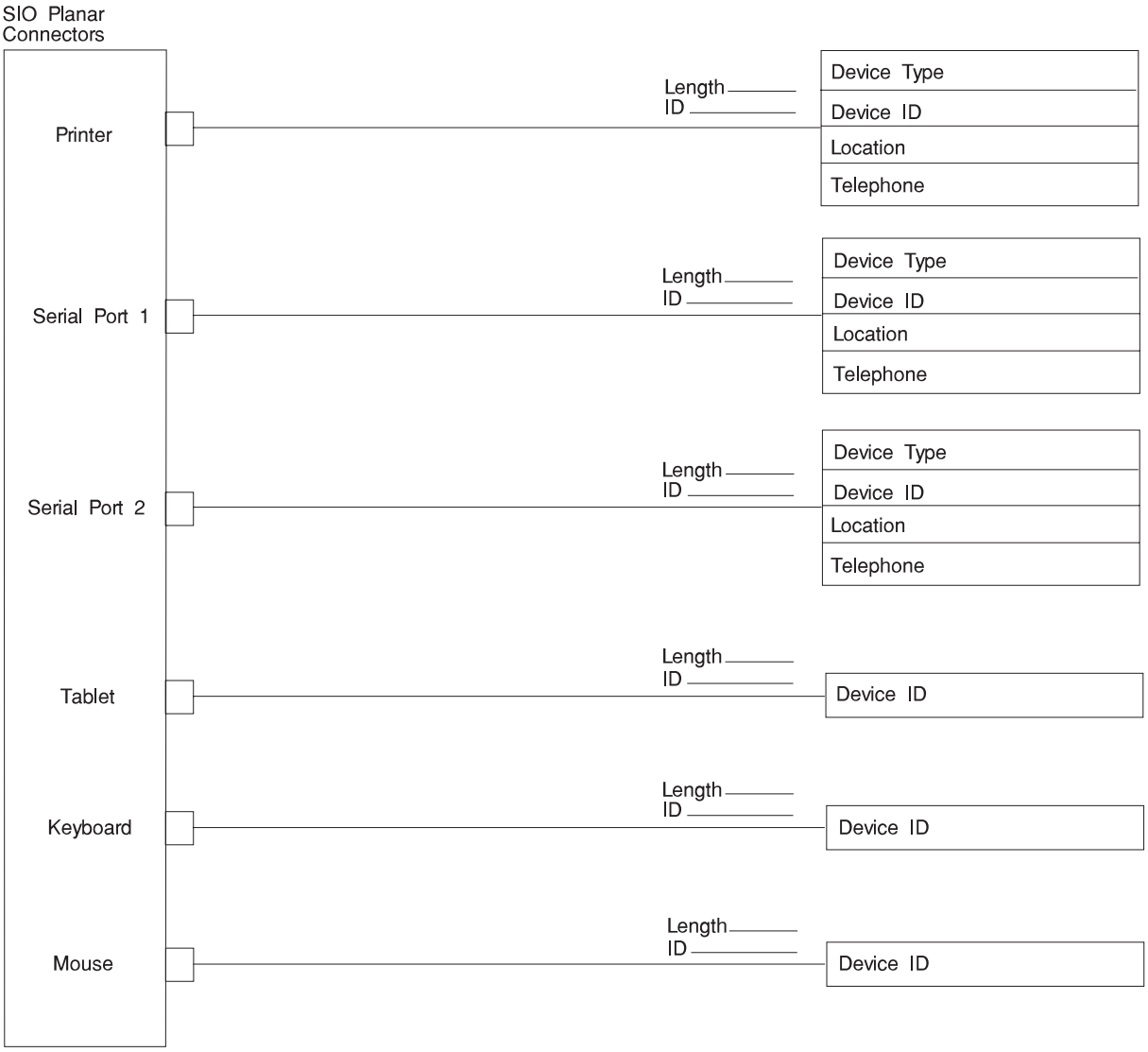
Remote Async Node No. _____

Location _____

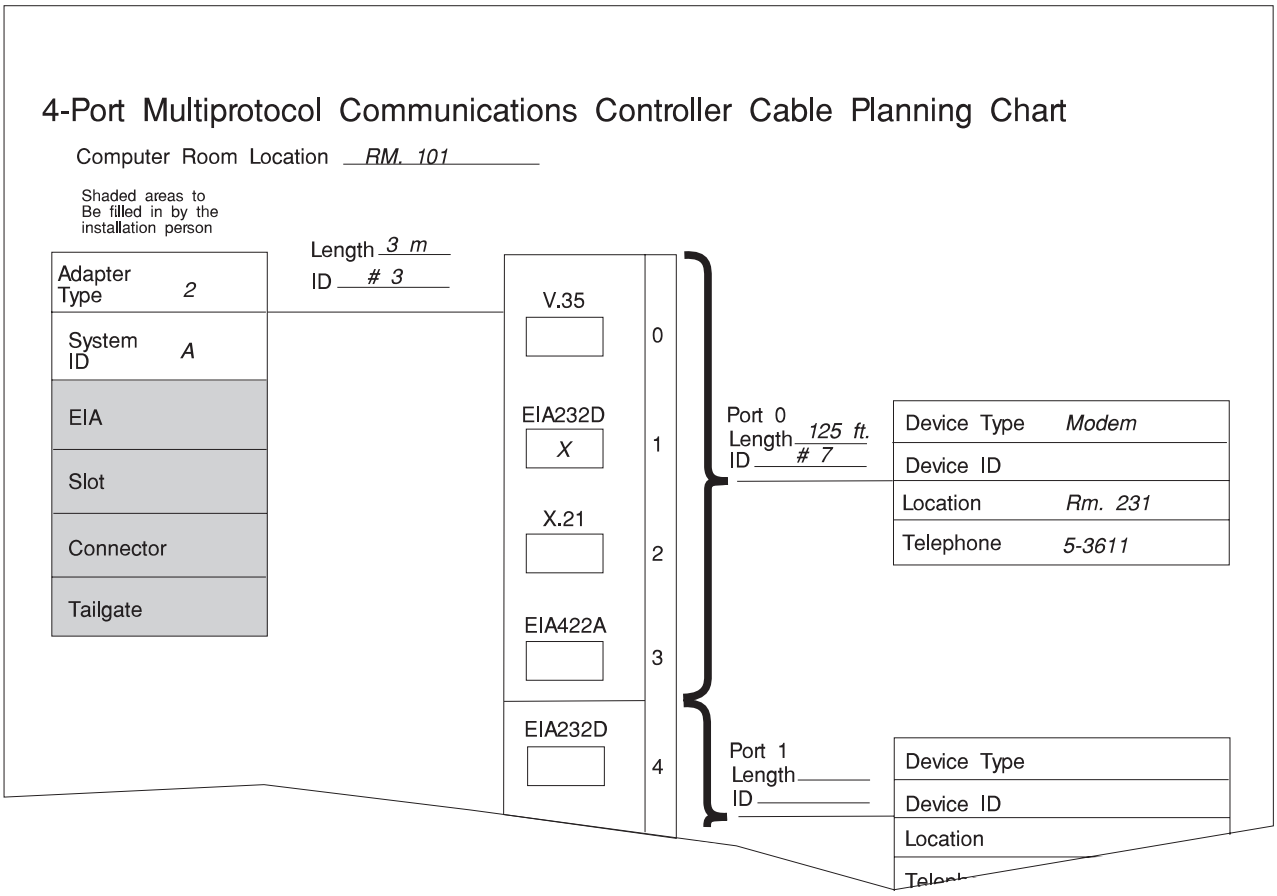


Standard I/O Cable Planning Chart

Customer Room Location _____

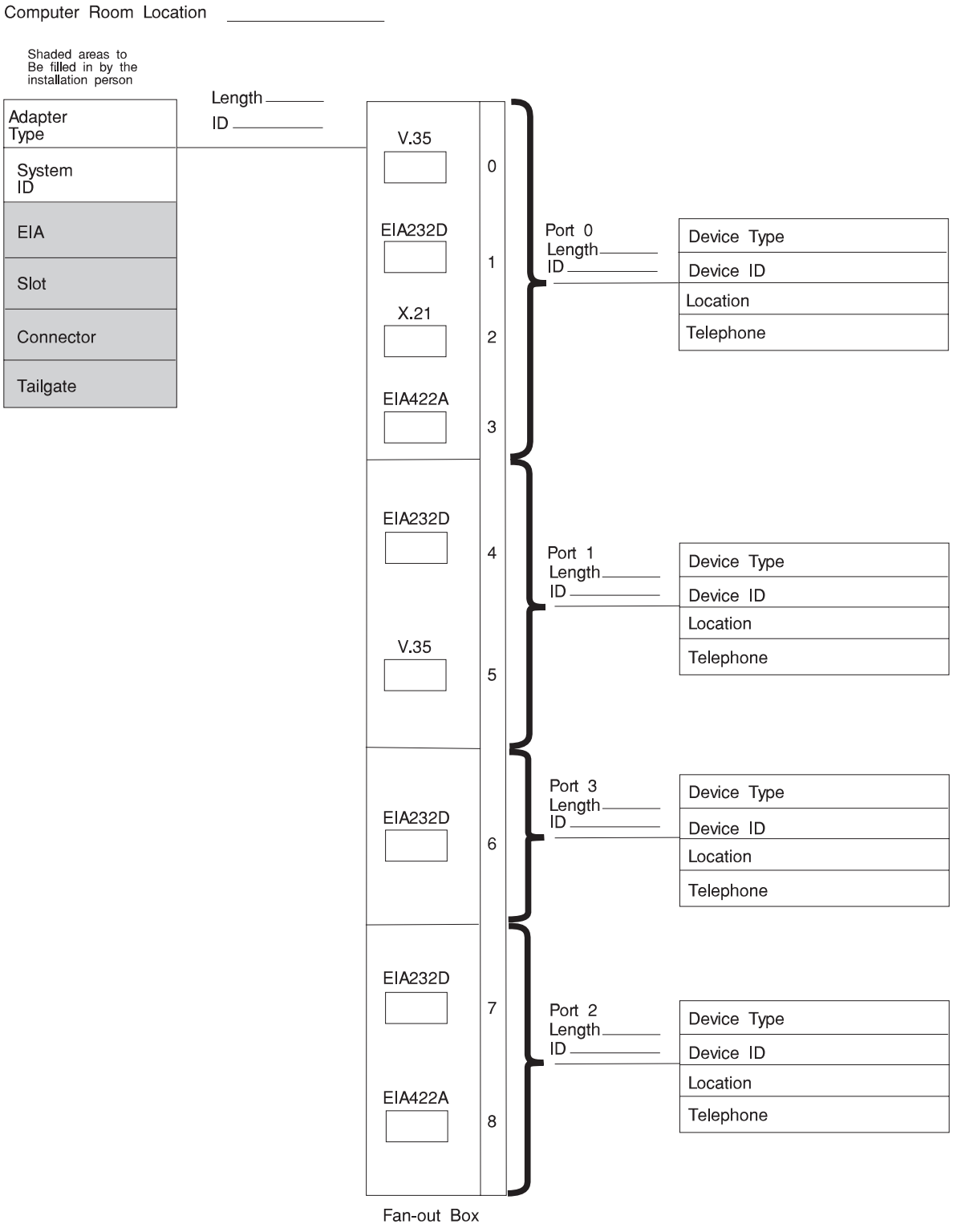


4-Port Multiprotocol Communications Controller Cable Planning Chart Example



An example of a 4-Port Multiprotocol Communications Controller Cable Planning Chart completed for a modem. In this example, the terminal is attached to Port 0. Protocol type, in this case EIA-232D, is noted with an X.

4-Port Multiprotocol Communications Controller Cable Planning Chart



Note: Select only one interface per port.

Cable Planning Chart Other Adapters

Computer Room Location ____________

Shaded areas to Be filled in by the installation person

Adapter Type
System ID
Drawer
Slot
Tailgate

Length ______
ID ______

Interface
____ X.21
____ V.24
____ V.35

Device Type
Device ID
Location
Telephone

Adapter Name ________

Adapter No. ______ of ______

Adapter Type
System ID
Drawer
Slot
Tailgate

Length ______
ID ______

Interface
____ X.21
____ V.24
____ V.35

Device Type
Device ID
Location
Telephone

Adapter Name ________

Adapter No. ______ of ______

Adapter Type
System ID
Drawer
Slot
Tailgate

Length ______
ID ______

Interface
____ X.21
____ V.24
____ V.35

Device Type
Device ID
Location
Telephone

Adapter Name ________

Adapter No. ______ of ______

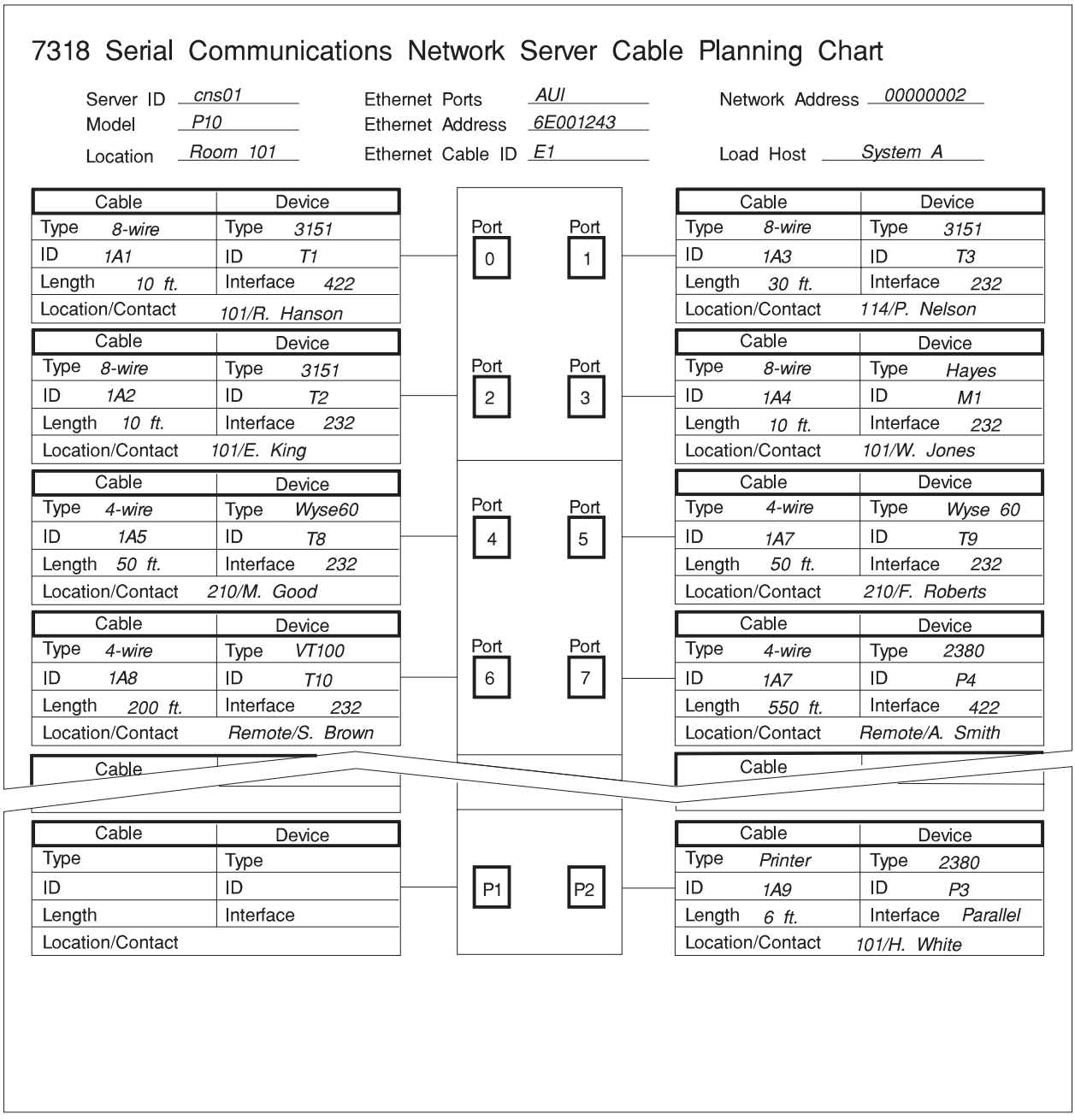
Adapter Type
System ID
Drawer
Slot
Tailgate

Length ______
ID ______

Interface
____ X.21
____ V.24
____ V.35

Device Type
Device ID
Location
Telephone

7318 Models P10 and S20 Cable Planning Chart Example



7318 Serial Communications Network Server Cable Planning Chart

Server ID: cns01 | Ethernet Ports: AUI | Network Address: 00000002
Model: P10 | Ethernet Address: 6E001243
Location: Room 101 | Ethernet Cable ID: E1 | Load Host: System A

Cable		Device	
Type	8-wire	Type	3151
ID	1A1	ID	T1
Length	10 ft.	Interface	422
Location/Contact	101/R. Hanson		

Port 0

Cable		Device	
Type	8-wire	Type	3151
ID	1A3	ID	T3
Length	30 ft.	Interface	232
Location/Contact	114/P. Nelson		

Port 1

Cable		Device	
Type	8-wire	Type	3151
ID	1A2	ID	T2
Length	10 ft.	Interface	232
Location/Contact	101/E. King		

Port 2

Cable		Device	
Type	8-wire	Type	Hayes
ID	1A4	ID	M1
Length	10 ft.	Interface	232
Location/Contact	101/W. Jones		

Port 3

Cable		Device	
Type	4-wire	Type	Wyse60
ID	1A5	ID	T8
Length	50 ft.	Interface	232
Location/Contact	210/M. Good		

Port 4

Cable		Device	
Type	4-wire	Type	Wyse 60
ID	1A7	ID	T9
Length	50 ft.	Interface	232
Location/Contact	210/F. Roberts		

Port 5

Cable		Device	
Type	4-wire	Type	VT100
ID	1A8	ID	T10
Length	200 ft.	Interface	232
Location/Contact	Remote/S. Brown		

Port 6

Cable		Device	
Type	4-wire	Type	2380
ID	1A7	ID	P4
Length	550 ft.	Interface	422
Location/Contact	Remote/A. Smith		

Port 7

Cable		Device	
Type		Type	
ID		ID	
Length		Interface	
Location/Contact			

Cable		Device	
Type		Type	
ID		ID	
Length		Interface	
Location/Contact			

P1

Cable		Device	
Type	Printer	Type	2380
ID	1A9	ID	P3
Length	6 ft.	Interface	Parallel
Location/Contact	101/H. White		

P2

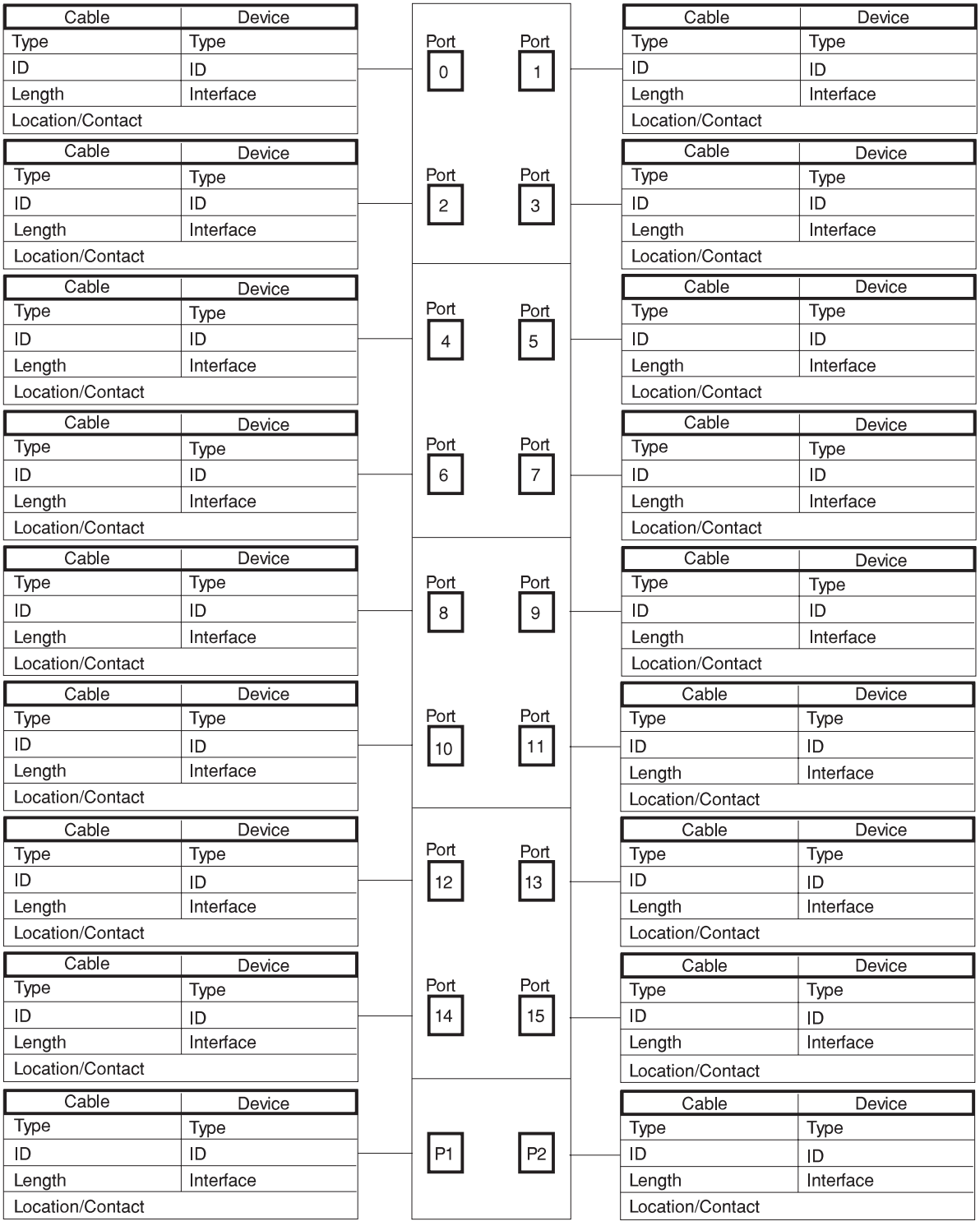
An example of the 7318 Terminal Server Cable Planning Chart showing connection of six terminals, 1 modem, 1 serial printer, and 1 parallel printer. The IDs assigned in the example above are assigned by the configuration planner. Refer to the *7318 Serial Communications Network Server Guide and Reference*, order number SC23-2542 for information about slew rates, interface types and 7318 configurations.

7318 Serial Communications Network Server Cable Planning Chart

Server ID _____ Ethernet Ports _____ Network Address _____

Model _____ Ethernet Address _____

Location _____ Ethernet Cable ID _____ Load Host _____



Chapter 12. Cable Labeling

Cable Lableing Reference Information

This chapter has general information on lableing cables. It is to assist in cable planning and installation so it will be known where a cable is going to or comming from.

Reasons for Labeling Cables

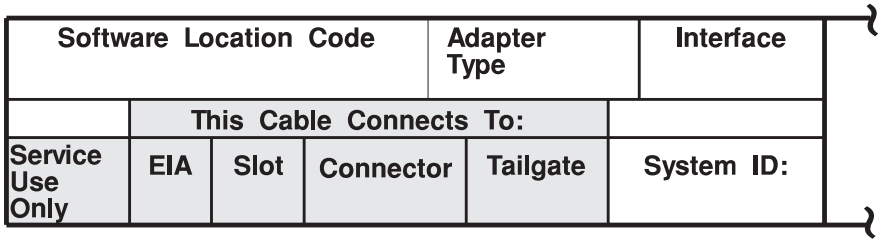
For system installations requiring cabling between rooms and use a variety of different interfaces, cable labelling is especially important. This is because there are several different interfaces that have cable connectors which are identical in appearance. Cable labeling can help you keep track of how each cable is being used and provide correct location data. By attaching a cable label to each end of a cable, you can always know the source and destination of any cable. This information will facilitate installation and the inevitable moving of devices that occurs in any office.

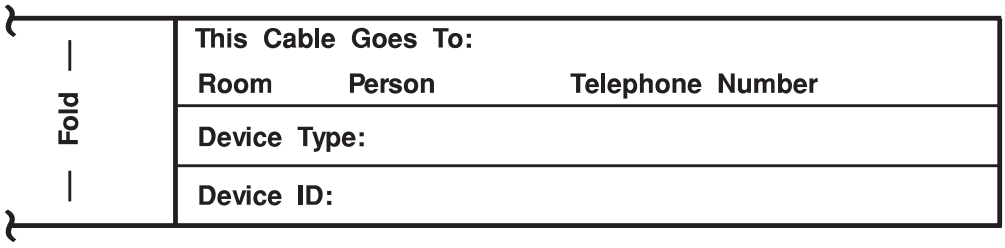
Cable labels can be ordered using order number GX23-0819 from your sales representative. The 7015 system units have several sheets of cable labels shipped with them. However, if you would like to label the cables before your system arrives, they will need to be ordered. If you attach the cable labels in advance, the installer can make connections to match your cable planning charts. See “Chapter 11. Cable Planning” on page 209 for more details on cable planning charts.

Process for Labeling Cables

As a customer, you are primarily interested in the side of the label that describes the cable’s destination. However, each side is shown and explained so you can understand the labels.

The cable label is designed to fold around a cable and stick to itself.





Cable labels can be ordered using order number GX23-0819.

The following topics describe the information in each area of the label.

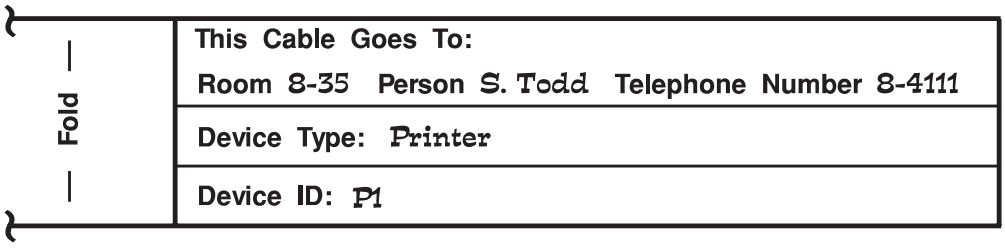
This Cable Goes To:

Prior to shipment, the customer is asked to provide specific planning information concerning the physical layout of the installation.

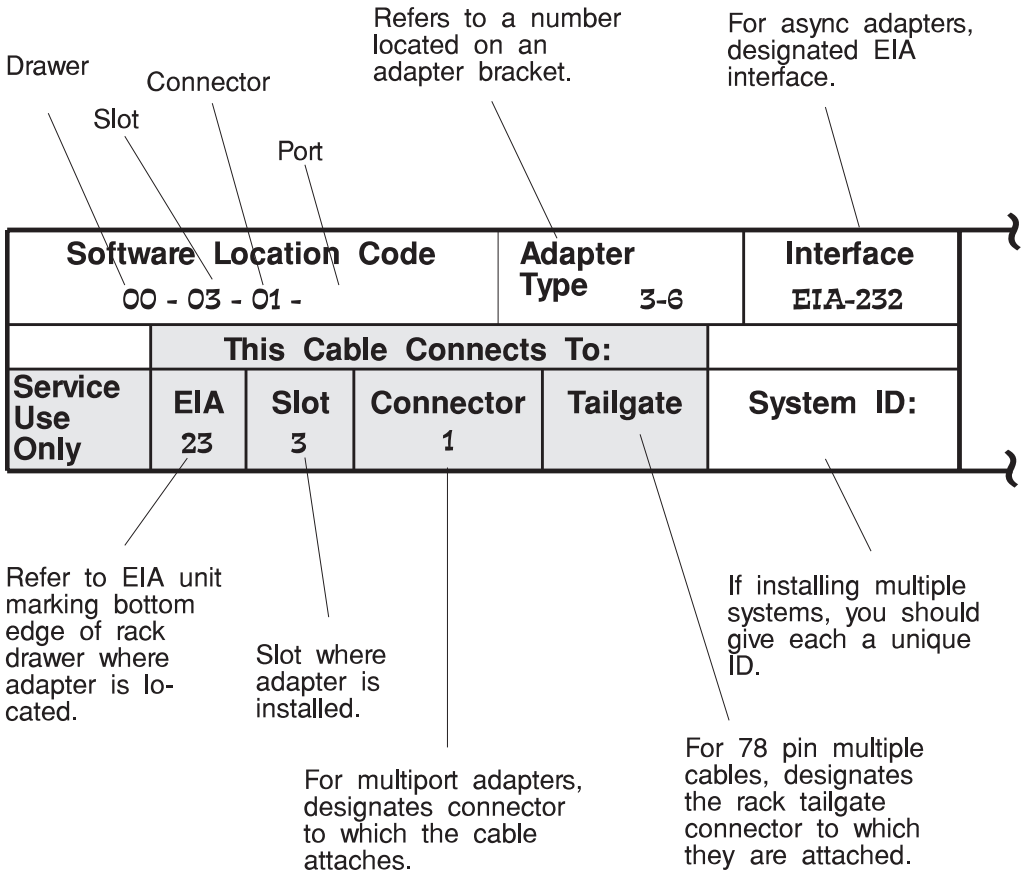
This task includes tagging each of the cables that are installed prior to the system unit installation. The cables should be identified with information describing the type and location of the device it attaches.

Use that information to fill out the right hand side of the label.

Room	The room number, or other information about the physical location of the device.
Person	The name of the person who uses the device.
Telephone #	The nearest telephone number to the device.
Device Type	This could be a printer, plotter, TTY, or similar device.
Device ID	The device ID is determined at the time the software is configured on the system.



The right side of the cable label.



The left side of the cable label, which has shaded areas, is primarily for use by the customer engineer installing your system.

Software Location Code

The software location code is the link between the hardware and software. This code appears in the software configuration menus and in the hardware diagnostic menus.

Note: Refer to the Diagnostic Information manual for your system:

- *Diagnostic Information for Micro Channel Bus Systems* order number SA23-2765 (formally Common Diagnostics Information Manual).
- *Diagnostics Information for Multiple Bus Systems* , order number SA23-2769

for specific location code information.

Because the same diagnostic programs are used on all of the system units, a software location code is used to physically locate a failing device or unit. The software location code is displayed along with the service request number (SRN) when the diagnostic programs isolate a failure. The information you are instructed to record appears in the software configuration menus and in the hardware diagnostics menus. The software location code identifies the path from the adapter in the system unit through the signal cables to the device. Without this information it may be difficult to determine which adapter controls a device.

There are two types of software location codes:

- The non-SCSI device location code. These include all built-in adapters and all other adapters except the SCSI controller.
- The SCSI device location code. This is used to identify SCSI devices.

Adapter Type

The adapter type is two digits separated by a hyphen. This number is on a label attached to the end of the adapter. Refer to chapter1 of one *Adapters, Devices, and Cable Information for Multiple Bus Systems Systems* , order number SA23-2778 or *Adapters, Devices, and Cable Information for Micro Channel Bus Systems* , order number SA23-2764 for a listing of adapter types.

Note: Some of the adapters in the multiple bus systems do not have an adapter type.

Interface

The name of the asynchronous adapters, and some network adapters, generally includes the name of the interface.

Since several different types of cables have the same kind of connectors, it is easy to connect them incorrectly because the connectors match. Therefore, it becomes an important check to write the name of the interface on the label. Examples of common interfaces are X.25, EIA-232, and EIA-422.

EIA The EIA number is used in a rack-type system unit to identify the physical location of the drawer within the rack. There is a label along the right side of the rack (with rear cover open) numbered from 1, at the bottom, to 32, at the top of the rack. The number at the bottom right corner of the drawer is the EIA location for this drawer.

Slot The slot number is the physical position within the system unit or drawer where the adapter is located. Each adapter slot is identified by a single digit number. Usually, the number is embossed in the adapter mounting frame.

Connector

This is the connector number on the adapter. Most adapters have only one connect so this number is 1. Refer to Chapter 8 in this book for more information about the adapter you are connecting.

Tailgate

This number is only used on a rack-type system unit. Record the number of the tailgate connector to which this cable is attached.

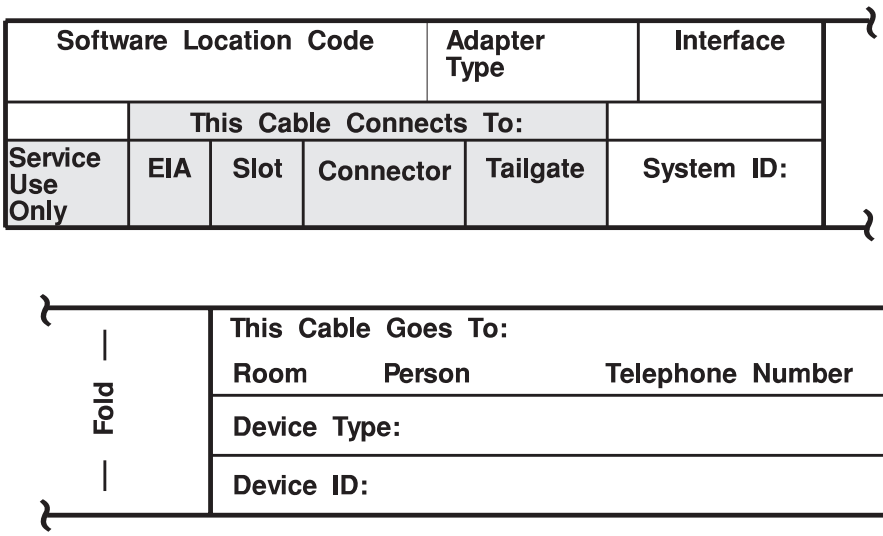
System ID

If an installation has more than one system unit, each one must be identified to prevent connecting devices to the wrong system unit. The customer should determine the System ID.

Attaching the Cable Label

1. Type or print the information for the labels you need for a given set of cables.
2. Peel the label off of the sheet and place it on the cable with the words ″-Fold -″ parallel to the cable; then fold the label around and stick it to itself.

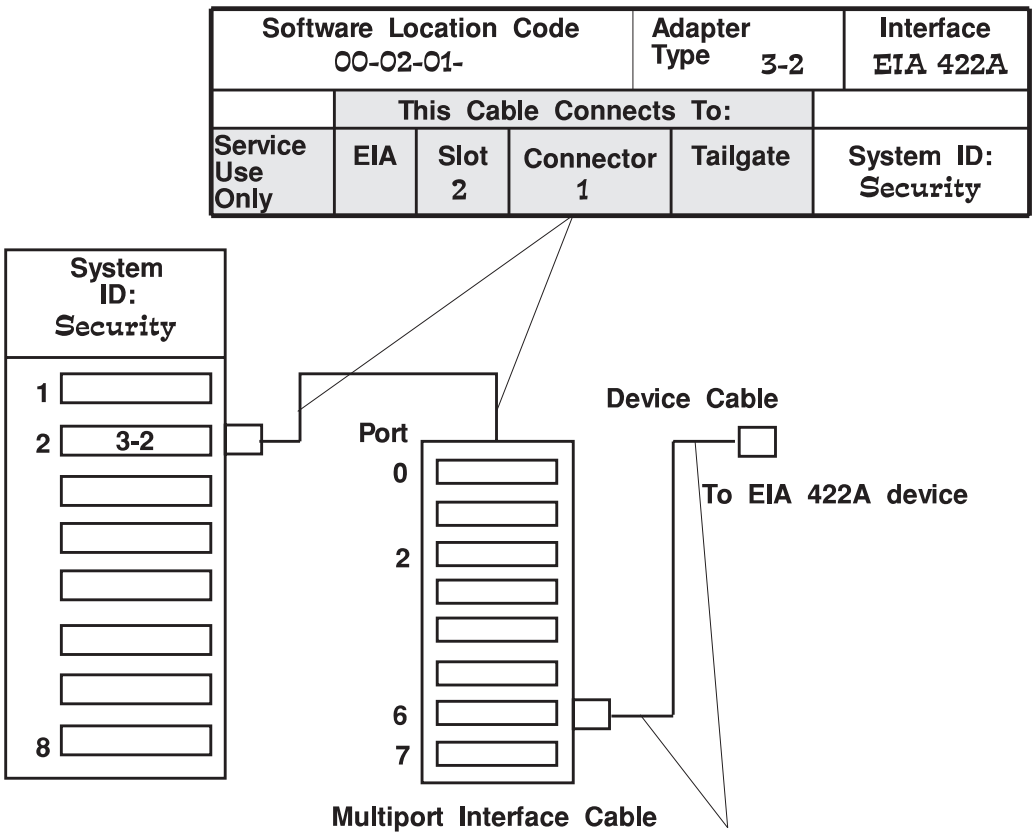
Note: The glue on the label is designed to pull apart if you need to remove and reinstall the label when the cable is exchanged.



Example of 8-Port Async Adapter EIA-422A in Slot 2

This example shows the filled-in cable labels for a Multiport Interface Cable attached to an 8-Port Async Adapter EIA-422A in slot 2. The second cable label has the port number for the interface cable added to the software location code.

You may want to use a label at each end of a cable (as shown here) if the cable is long.



Chapter 13. High Availability Cluster Server Information

This chapter presents information on high availability cluster servers with cluster server cabling information.

Reference Information

This section has general information about systems or subsystems that can be used in high availability cluster configurations.

7133 Serial Disk Systems

High Availability Cluster Servers consist of a minimum of two systems in a cluster with two 7133 Serial Disk Systems. Each system in the cluster comes with AIX operating system software and HACMP high availability cluster software. The systems use and share the external SSA disks in the 7133 SSA Disk Storage Systems.

Each system in the cluster has a minimum of two SSA PCI adapters to allow redundant connection to the 7133 SSA Disk Storage Subsystems.

It is highly recommended that a 3153 ASCII terminal (or equivalent) be purchased even if graphics adapters or remote workstations are used as the control console. This allows a software or service person to work on one of the cluster servers through the serial port without affecting the other server. If a graphical display is preferred to the 3153 display, a low cost workstation can be connected through an ethernet connection or a local network.

The 7133 Serial Disk System comes with eight SSA disk drives on two loops and a redundant AC power supply

Up to four SSA adapters can be put in each cluster server.

The HA cluster server systems offer configuration flexibility. Since cluster servers are comprised of systems that can operate independently, all normally available features are supported.

Configuring the HA Cluster Server System With No Single Points of Failure

Redundant adapters and mirrored disks are the only way to guarantee redundancy in the 7133 serial disk system. In this configuration, no single hardware component failure can cause the serial disk system to be unavailable.

Refer to the *High Availability Cluster Multi-Processing for AIX, Version 4.3: Enhanced Scalability Installation and Administration Guide*, order number SC23-4284, and the *High Availability Cluster Multi-Processing for AIX, Version 4.3: Planning Guide* , order number SC23-4277, for HACMP/ES planning information.

The following table describes outages and their impacts for the minimum cluster server configuration with mirrored SSA adapters (2 ethernet adapters, 2 SSA adapters, mirrored disk, HACMP, external SSA and two power distribution units (PDUs) per I/O rack).

Hardware Failure Description	Failure Behavior If HACMP Is Not Configured	Extra Work Required To Provide Recovery Action (in addition to normal HACMP configuration)	Recovery Action and Behavior If HACMP Is Configured
Node Outage or AIX crash	Node unavailable	None	HACMP fallover. Application(s) unavailable for brief time during fallover.
Ethernet adapter failure	Access to node through ethernet lost, error log entry.	None	HACMP swap adapter event moves IP address to spare adapter. Node ethernet IP address unavailable for an extremely brief period as address is swapped.
SSA Drawer Power Supply Failure	None seen, error log entry	None	N/A (no fallover)
SSA adapter failure[1]	None seen, error log entry	None	N/A (no fallover)
CPU power supply or cooling subsystem failure.	Node available, N+1 redundancy	None	N/A (no fallover)
CPU power cord or power supply circuit failure	Node unavailable	None	HACMP fallover, application(s) unavailable for a brief time during fallover.
I/O drawer power supply or cooling subsystem failure.	Node available, N+1 redundancy	None	N/A (no fallover)
I/O drawer power cord failure	Fallover does not happen if the redundant power supplies are cabled to separate I/O rack power distribution units which are powered by different supply circuits.	None	N/A (no fallover).
I/O power distribution unit power cord failure.	None	None	N/A (no fallover).

[1] Assumes “Quorum off” for volume group.

High Availability Cluster Server System Cabling

This section provides cabling information for the base HA Cluster Server. The two systems should be installed before cabling the HA Cluster Server. There are four areas of cabling that you need to consider to ensure the redundancy required for no single points of failure:

- Cabling for server system consoles and cluster administration workstations
- Heartbeat connections between HA Cluster Servers
- SSA cable connections between HA Cluster Servers and 7133 Serial Disk Subsystems
- Power cable connections.

Cabling For System Consoles and Cluster Administration Workstations

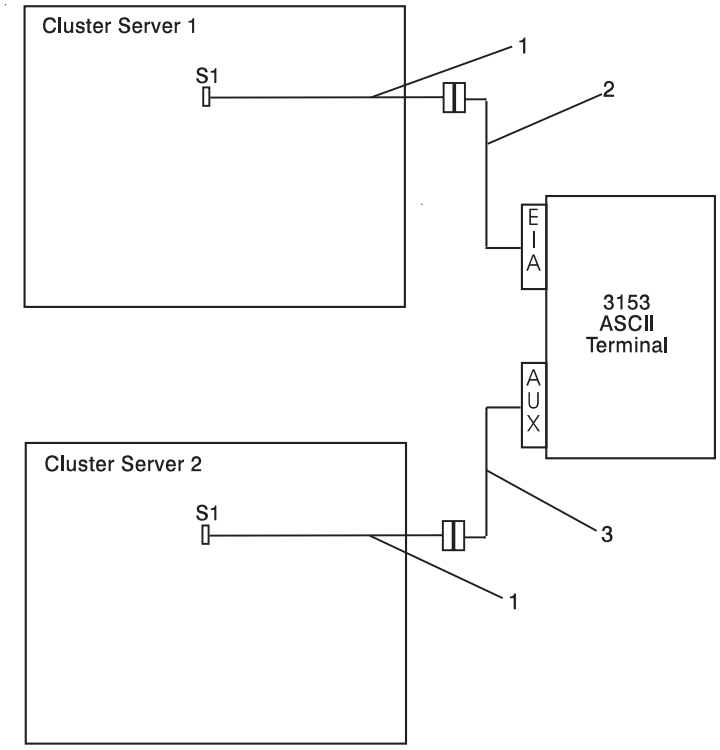
The system console for a High Availability Cluster Server can be either an ASCII terminal connection to the S1 serial port or a graphics terminal connected to a graphics display adapter with keyboard and mouse connections directly to the keyboard and mouse ports on the server.

A cluster administration workstation is connected through a LAN connection.

This section shows the cabling requirements for these connections.

HA Cluster Server with ASCII System Console

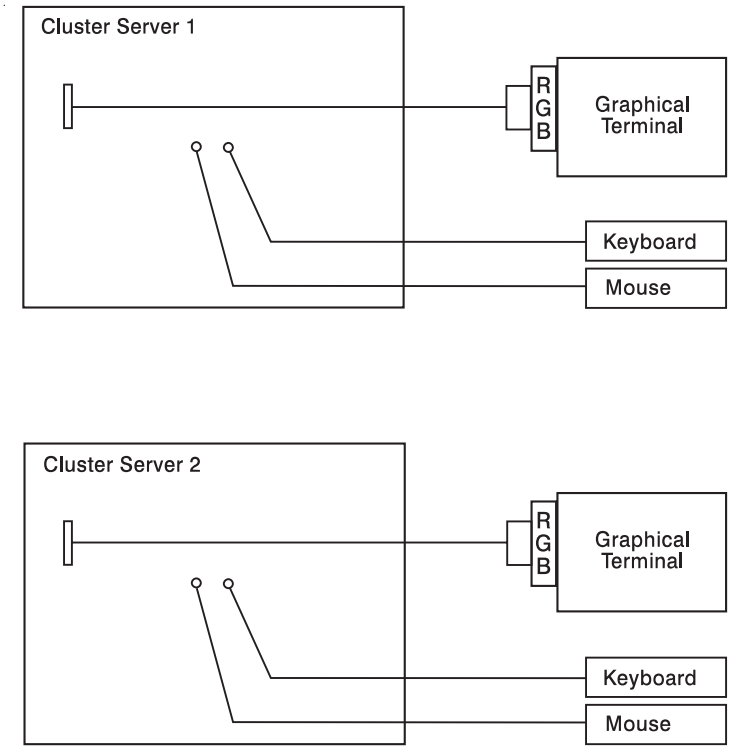
A single ASCII terminal connected to both servers in the cluster allows a system administrator or the service representative to work on one server or the other without disrupting the operation of the cluster.



Index	Description
1	Cable adapter DB9f--DB25M (9 pin to 25 pin) (PN 40H6328)
2	Serial cable with internal null modem (PN 12H1204)
3	Serial cable without internal null modem (PN 88G0093)

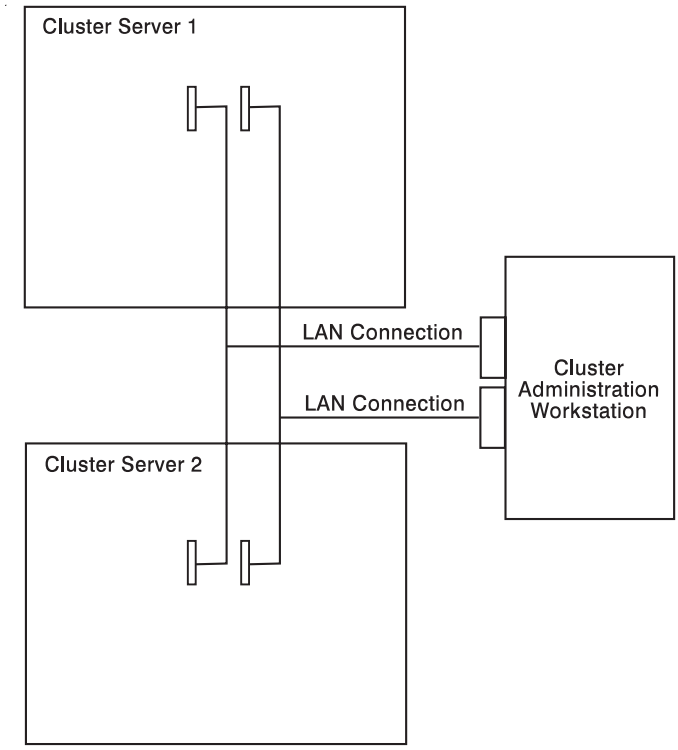
HA Cluster Server With Graphical System Console

If graphical system console is used for system administration or service representative tasks, each cluster server must have its own console.



HA Cluster Server Graphical Cluster Administration Workstation

In addition to the system consoles described in the previous sections, a LAN attached cluster administration workstation is required. Two Local area networks are required to eliminate a single point of failure.

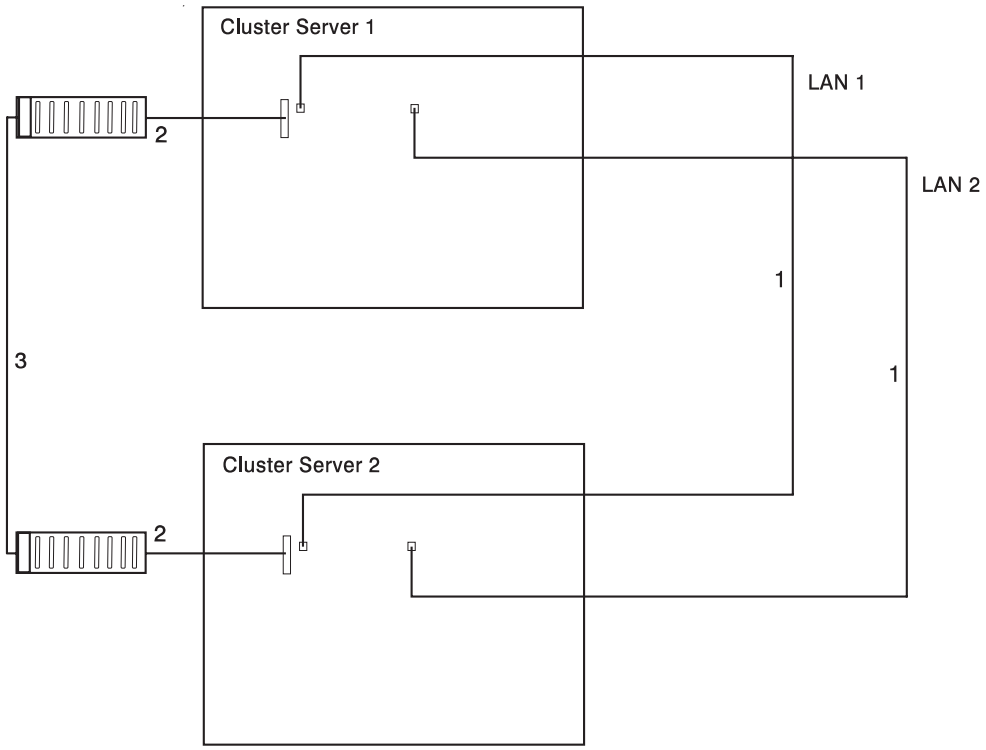


High Availability Cluster Server Heartbeat Connections

The primary heartbeat connections between two HA Cluster Servers are made through a serial connection and the LAN connections. These connections are shown below.

The serial connection is made using an 8-Port Asynchronous PCI Adapter or an optional 128-Port Asynchronous PCI Adapter. The LAN connections are made using a pair of Ethernet, FDDI, Token Ring, or ATM connections.

The figure below shows an HA cluster server using the 8-Port Asynchronous PCI Adapter and Ethernet connections.

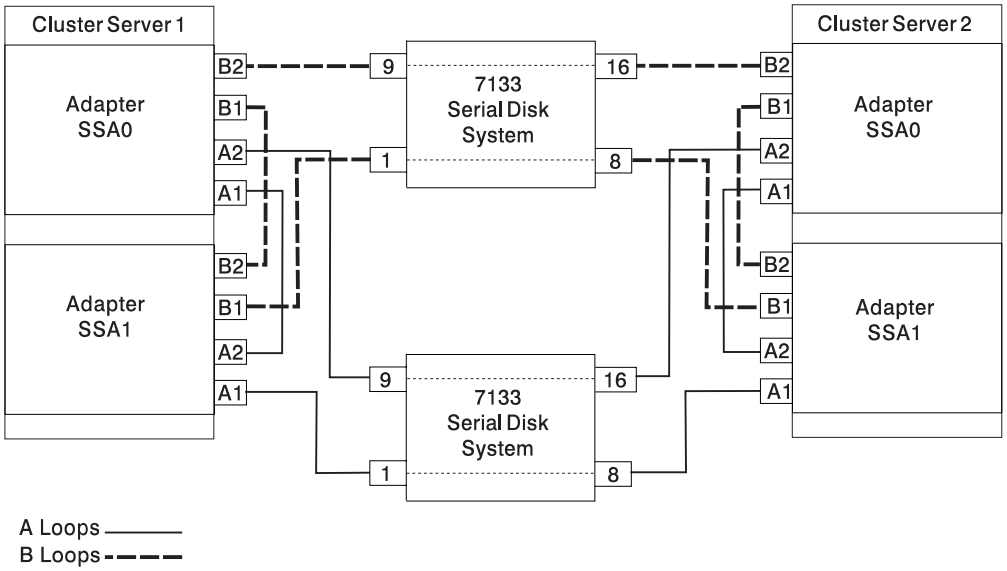


Index	Description
1	Ethernet Connections, the customer is responsible for furnishing the cabling to the Ethernet. (T2, T5 and 10baseT are all available.
2	8-Port DB-25 connector box (PN 11H5967) supplied with 8-Port Asynchronous EIA-232E/RS-422A PCI Adapter
3	Serial Port to Serial Port Cable (Rack to Rack, FC 3125)

SSA Cabling Connections

This section shows how to connect the cables from the HA Cluster Server and the 7133 Serial Disk Systems.

SSA From Cluster Servers to Double Looped 7133

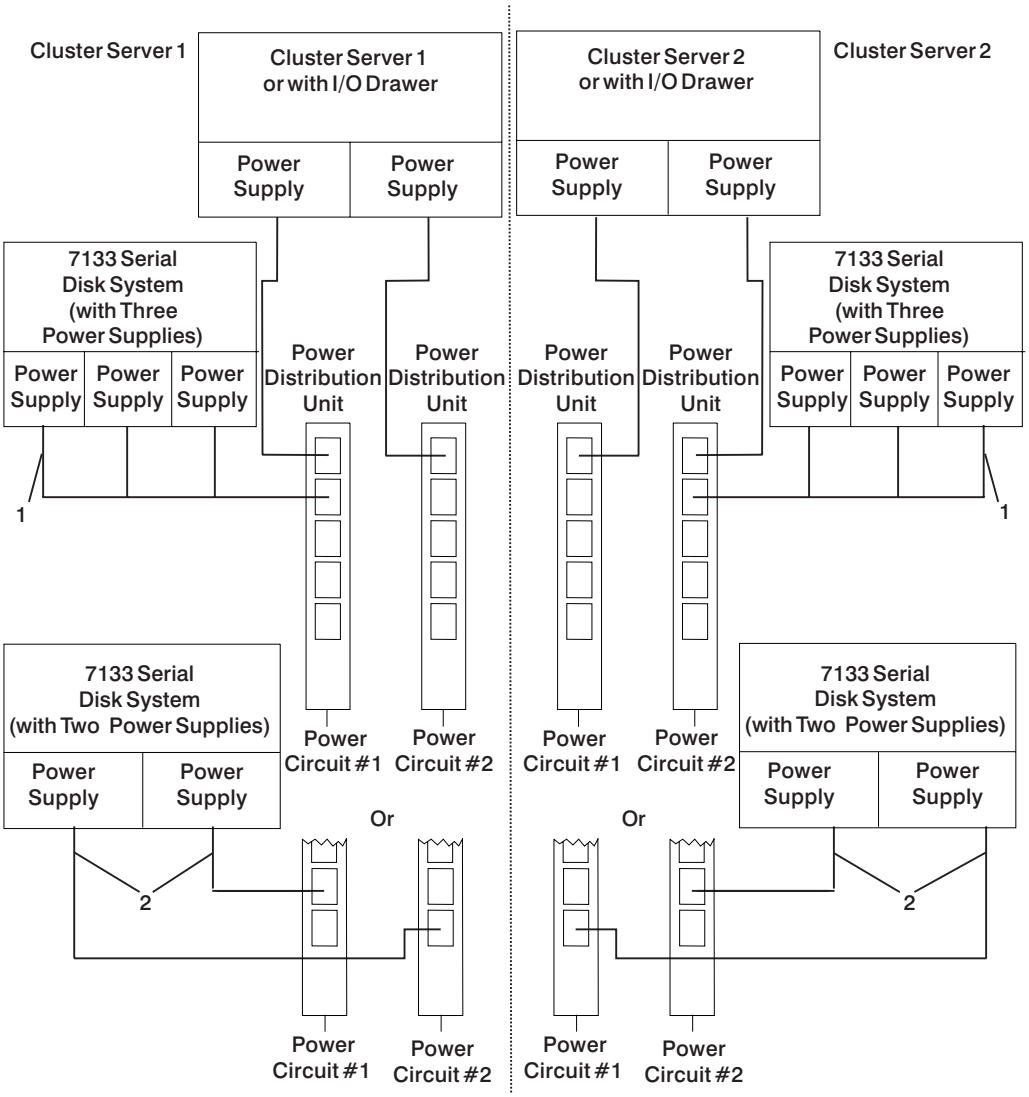


Note: The figure above shows cabling for a fully populated 7133 (16 disk drives installed). Configuration with fewer disk drives, may use different port numbers.

Index	Description
1	7133 SSA Cable (FC 5050, PN 88G6404)

HA Cluster Server AC Power Connections

When installing an HA cluster server, care must be taken to ensure that power is also connected in a redundant manner. The figure below shows an example of how power can be connected to ensure that your cluster has separate power connections.



Note: Redundant input power can only be configured on systems with two power cords.

Index	Description
1	Power Cable, PDU to 7133 with three power supplies
2	Power Cable, PDU to 7133 with two power supplies

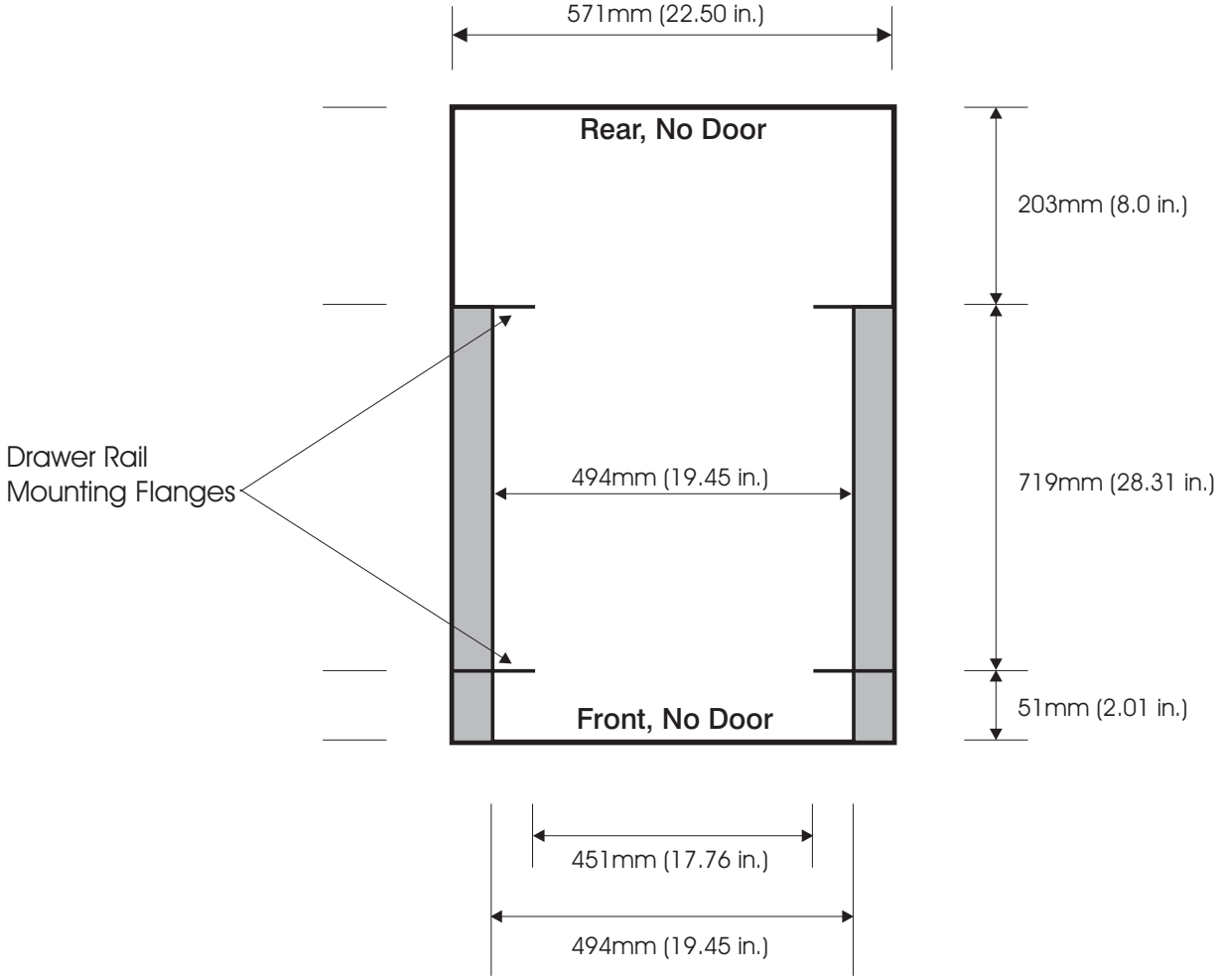
Chapter 14. Specifications For OEM Rack Installation

This section provides requirements and specifications for 19″ racks used by certain products in this document.

OEM Rack Specifications

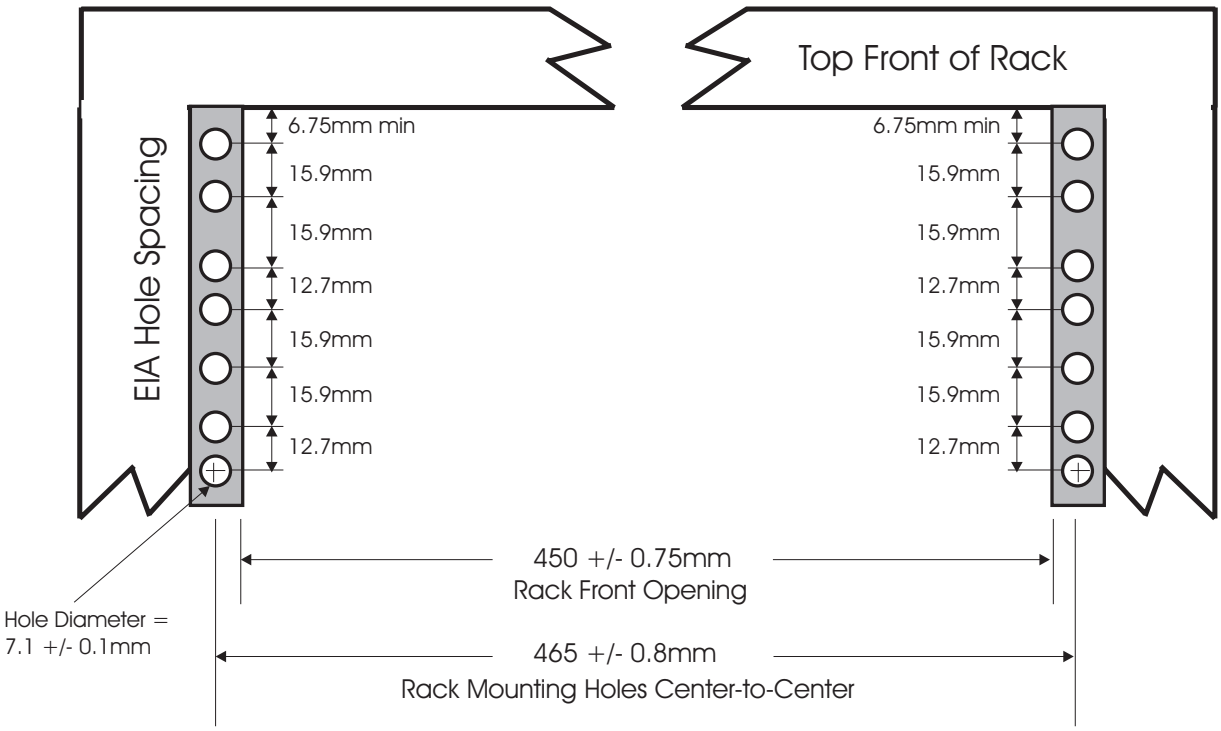
1. **The rack/cabinet must meet the EIA Standard EIA-310-D for 19 inch racks.**

   The front rack opening must be 451 mm wide + 0.75 mm (17.75″ + 0.03″), and the rail mounting holes must be 465 mm + 0.8 mm (18.3″ + 0.03″) apart on center (horizontal width between vertical columns of holes on the two front mounting flanges and on the two rear mounting flanges). Rail mounting holes must be 7.1 mm + 0.1 mm (0.28″ + 0.004″) in diameter.

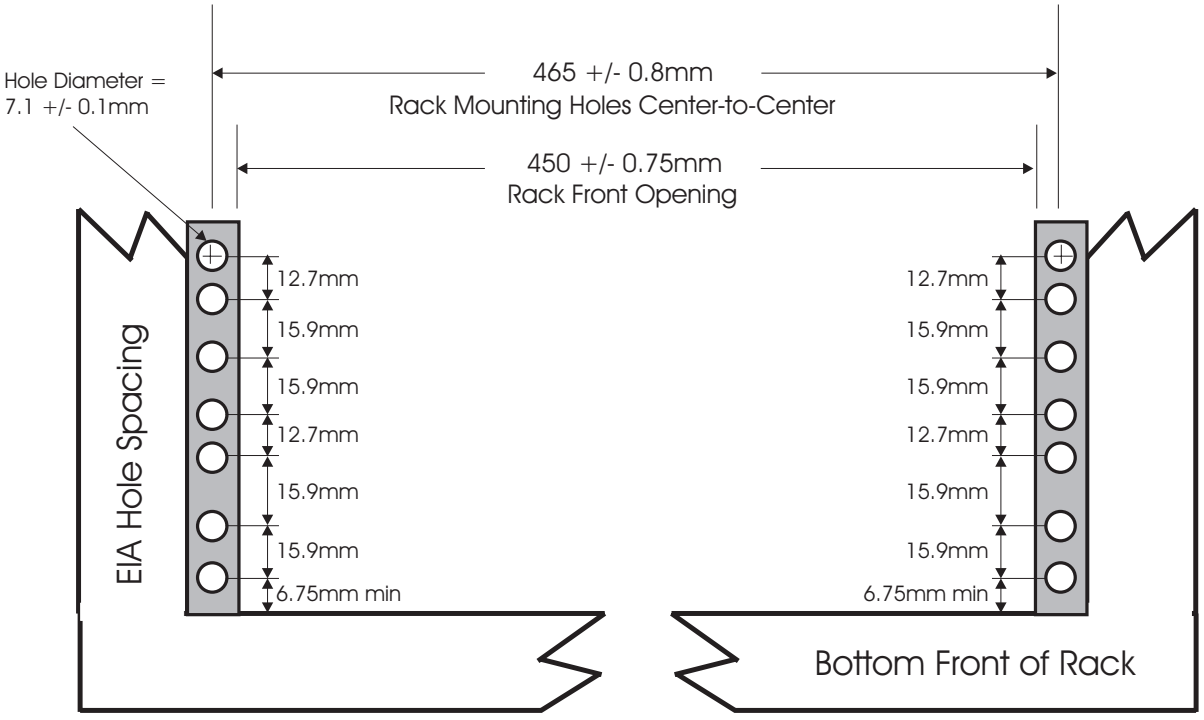


Top View of non-pSeries Rack Spec Dimensions

The vertical distance between mounting holes must consist of sets of 3 holes spaced (from bottom to top) 15.9 mm (0.625″), 15.9 mm (0.625″), and 12.67 mm (0.5″) on center (making each 3 hole set of vertical hole spacing 44.45 mm (1.75″) apart on center).



Rack Spec Dimensions, Top Front View



Rack Spec Dimensions, Bottom Front View

2. **The rack/cabinet must be capable of supporting an average load of 15.9 kg (35 lbs.) of product weight per EIA unit.**

   For example, a 4 EIA drawer will have a maximum drawer weight of 63.6 kg (140 lb.).

3. **Only AC power drawers are supported in the rack/cabinet. It is strongly recommended to use a Power Distribution Unit (PDU) that meets the same specifications as IBM PDU's to supply rack power. Each Power Distribution Bus installed in a rack requires a dedicated power line of 200 to 240 V ac and 30 A. Rack/cabinet power distribution device(s) must meet the drawer power requirements as well as that of any additional products that will be connected to the same power distribution device.**

   The rack/cabinet power receptacle (PDU, UPS or Multi-Outlet Strip) must have a compatible plug type for your drawer or device.

   Note: Refer to the sales manual for 7014 racks if you wish to use power distribution units (PDU) that are designed for 7014 racks. The customer is responsible for ensuring the PDU is compatible with the rack/cabinet and assumes responsibility for any/all agency certifications required.

4. **The rack/cabinet must be compatible with drawer mounting rails, including a secure and snug fit of the rail mounting pins and screws into the rack/cabinet rail support hole.**

   Note: If the rack/cabinet has square holes, a plug-in hole adapter may be required.

   This is due to the fact that the rails have been designed and tested to safely support the weight of your drawer or device and to facilitate service access by allowing the drawer to be safely extended forwards, and for some models, also backwards. They also provide drawer specific anti-tip brackets, rear lock down brackets and cable management guides that require clearance on the rear side of the rails.

   The front and rear mounting flanges in the rack/cabinet must be 719 mm (28.3″) apart and the internal width bounded by the mounting flanges at least 494 mm (19.45″), for the IBM pSeries rails to fit in your rack/cabinet (see figure, *Top View of non-pSeries Rack Spec Dimensions* on page 239).

5. **The rack/cabinet must have stabilization feet or brackets installed both in the front and rear of the rack, or have another means of preventing the rack/cabinet from tipping while the drawer or device is pulled into its extreme front or rear service positions.**

   Examples of some acceptable alternatives: The rack/cabinet may be securely bolted to the floor, ceiling or walls, or to adjacent racks/cabinets in a long and heavy row of racks/cabinets. Refer to 7014 Rack Installation Guides and the individual drawer installation guides for additional information.

6. **There must be adequate front and rear service clearances (in and around the rack/cabinet).**

   The rack/cabinet must have sufficient horizontal width clearance in the front and rear to allow the drawer to be fully slid into the front and, if applicable, the rear service access positions (typically this requires 914.4 mm (36″) clearance in both the front and rear).

   If present, front and rear doors must be able to open far enough to provide unrestrained access for service or be easily removable. If doors must be removed for service it is the customer's responsibility to remove them prior to service.

7. **The rack/cabinet must provide adequate clearance around the rack drawer.**

   There must be adequate clearance around the drawer bezel so that it can be opened and closed, per the product specifications (refer to the 7014 Rack Installation Guides and the individual drawer installation guides).

   Front or rear doors must also maintain a minimum of 51 mm (2″) front, 203 mm (8″) rear, door to mounting flange clearance, and 494 mm (19.4″) front, 571 mm (22.5″) rear, side-to-side clearance for drawer bezels and cables (see figure, *Top View of non-pSeries Rack Spec Dimensions* on page 239).

8. **The rack/cabinet must provide adequate front to back ventilation.**

   For optimum ventilation, it is recommended the rack/cabinet not have a front door. If the rack/cabinet has doors, the doors must be fully perforated such that there is proper front to back airflow to maintain the required drawer ambient inlet temperature between 10 °C and 40 °C (50 °F and 104 °F), with an ideal 22 °C (72 °F), inside the rack. The perforations must yield 34% minimum open area per square inch.

General Safety Requirements for IBM Products Installed in an OEM Rack/Cabinet

1. **Any product or component which plugs into either an IBM Power Distribution Unit (PDU) or main power (via a power cord), or uses any voltage over 42 VAC or 60 VDC (considered to be hazardous voltage) must be Safety Certified by a Nationally Recognized Test Laboratory (NRTL) for the country in which it will be installed.**

   Some of the items that require safety certification may include: the rack/cabinet (if it contains electrical components integral to the rack/cabinet), fan trays, PDU, Uninterruptable Power Supplies (UPS), Multi-Outlet Strips, or any other products installed in the rack/cabinet that connect to hazardous voltage.

   Examples of OSHA approved NRTLs for the USA:

   - UL
   - ETL
   - CSA (with CSA NRTL or CSA US mark)

   Examples of approved NRTLs for Canada:

   - UL (Ulc mark)
   - ETL (ETLc mark)
   - CSA

   The European Union requires a CE mark and a Manufacturer's Declaration of Conformity (DOC).

   Certified products should have the NRTL logos or marks somewhere on the product or product label. However, proof of certification must be made available to IBM upon request. Proof consists of such items as copies of the NRTL license or certificate, a CB Certificate, a Letter of Authorization to apply the NRTL mark, the first few pages of the NRTL certification report, Listing in an NRTL publication, or a copy of the UL Yellow Card. Proof should contain the Manufacturer's name, product type and model, standard to which it was certified, the NRTL name or logo, the NRTL file number or license number, and a list of any Conditions of Acceptance or Deviations. A Manufacturer's Declaration is not proof of certification by an NRTL.

2. **The rack/cabinet must meet all electrical and mechanical safety legal requirements for the country in which it is installed.**

   The rack/cabinet must be free of exposed hazards (voltages over 60 VDC or 42 VAC, energy over 240 VA, sharp edges, mechanical pinch points, hot surfaces, etc.).

3. **There must be an accessible and unambiguous disconnect device for each product in the rack, including any PDU.**

   A disconnect device may consist of either the plug on the power cord (if the power cord is no longer than 6 feet long), the appliance inlet receptacle (if the power cord is of a detachable type), or a power on/off switch, or an Emergency Power Off switch on the rack, provided all power is removed from the rack or product by the disconnect device.

   If the rack/cabinet has electrical components (such as fan trays or lights), then the rack must have an accessible and unambiguous disconnect device.

4. **The rack/cabinet, PDU and Multi-Outlet Strips, and products installed in the rack/cabinet must all be properly grounded to the customer facility ground.**

   There must be no more than 0.1 Ohms between the ground pin of the PDU or rack plug and any touchable metal or conductive surface on the rack and on the products installed in the rack. Grounding method must comply with applicable country's electric code (NEC, CEC, etc.). Ground continuity can be verified by your IBM Service personnel, once the installation is completed, and should be verified prior to the first service activity.

5. **The voltage rating of the PDU and Multi-Outlet Strips must be compatible with the products plugged into them.**

   The PDU or Multi-Outlet Strips current and power ratings must be at least 1.25 times the sum of the ratings of the products that will plug into it. The current rating of the PDU or Multi-Outlet strip must be less than 0.80 of the rating for the building supply circuit (as required by the NEC and CEC). Example: A PDU rating of 12A for a 15A wall breaker, and sum of product ratings does not exceed 9.6A.

   If a UPS is installed, it must meet all the above electrical safety requirements as described for a PDU (including certification by an NRTL).

6. **The rack/cabinet, PDU, UPS, Multi-Outlet Strips and all products in the rack/cabinet must be installed according to the manufacturers instructions, and in accordance with all national, state or province, and local codes and laws.**

   The rack/cabinet, PDU, UPS, Multi-Outlet Strips and all products in the rack/cabinet must used as intended by the manufacturer (per manufacturer's product documentation and marketing literature).

7. **All documentation for use and installation of the rack/cabinet, PDU, UPS, and all products in the rack/cabinet, including safety information, must be available on-site.**

8. **If there is more than one source of power in the rack/cabinet, there must be clearly visible safety labels for ″Multiple Power Source″ (in the languages required for the country in which the product is installed).**

9. **If the rack/cabinet or any products installed in the cabinet had safety or weight labels applied by the manufacturer, they must be intact and translated into the languages required for the country in which the product is installed.**

10. **If the rack/cabinet has doors, the rack becomes a fire enclosure by definition and must meet the applicable flammability ratings (V-0 or better). Totally metal enclosures at least 1 mm (0.04″) thick are considered to comply.**

    Non-enclosure (decorative) materials must have a flammability rating of V-1 or better. If glass is used (such as in rack doors) it must be safety glass. If wood shelves are used in the rack/cabinet, they must be treated with a UL Listed flame retardant coating.

11. **The rack/cabinet configuration must comply with all IBM requirements for ″safe to service″. (Contact your IBM Installation Planning Representative if in doubt.)**

    There must be no unique maintenance procedures or tools required for service.

    Elevated service installations, where the product(s) to be serviced are installed between 1.5 m and 3.7 m (5' and 12') above the floor, require the availability of an OSHA and CSA approved nonconductive step ladder. If a ladder is required for service, the customer must supply the OSHA and CSA approved nonconductive step ladder (unless other arrangements have been made with the local IBM Service Branch Office). Products installed over 2.9 m (12') above the floor require a Special Bid to be completed before they can be serviced by IBM Service personnel.

    For products not intended for rack-mounting to be serviced by IBM, the products and parts which will be replaced as part of that service must not weigh over 11.4 kg (25 lbs.) (contact your Installation Planning Representative if in doubt).

    There must not be any special education or training required for safe servicing of any of the product(s) installed in the racks (contact your Installation Planning Representative if in doubt).

12. **Any rack/cabinet must have stabilization feet or brackets installed, or have another means of preventing the rack/cabinet from tipping during product operation or service.**

    Examples of some acceptable alternatives: The rack/cabinet may be securely bolted to the floor, ceiling or walls, or to adjacent racks/cabinets in a long and heavy row of racks/cabinets.

13. **It is strongly recommended to use the mounting rails which ship with the product to install it in the rack.**

    The mounting rails that ship with IBM products have been designed and tested to safely support the product during operation and service activities. The mounting rails used on products to be serviced by IBM must be Certified for use with the products by an NRTL to UL 1950 or equivalent country applicable safety standard.

    Note: UL 1950 requires that mounting rails must be able to support four times the maximum rated product weight in its worst case position (fully extended front and rear positions) for 1 full minute without catastrophic failure.

Chapter 15. Additional Planning Considerations

The following topics provide guidance for additional planning steps that may be necessary.

Create or Modify Communications Networks

If you intend to use the system in a network environment, appoint a central site or system administrator to help design and maintain a system that provides maximum availability of all devices in the network. The system administrator may need to consider the following:

- Types of networks with which your network users must communicate (for example, local and wide area networks, asynchronous, coaxial).
- Types of communications functions your network users need (for example, file transfer, mail, 3278/79 emulation, X-Window server support, data conversion, printing).
- Communications software that is required to communicate between systems within your own network and with systems on external networks.
- International language considerations, if any, between communicating systems.
- Network management functions that you wish to use within your network, including error isolation procedures and performance and monitoring tools.
- Information needed to properly configure your system. The following list provide some of the types of information needed:
  - Transmission speed (in bits per second)
  - Parity checking (whether none, odd, or even)
  - Pacing protocols required or allowed by remote system
  - Dialing or calling protocols, such as autoanswer and autocall, and information such as phone numbers (including back-up phone numbers in case no connection is possible)
  - Times you can call and communicate with the remote systems
  - Naming and addressing requirements within your network and between your systems and remote systems
  - Security relationships within your network and between your systems and remote systems
  - Gateway or bridge requirements
  - Information needed to configure the system software for correct operation in the network.
- Any necessary cables, control units, or other specialized communications hardware.
- Preparation of communications lines:
  - Number of concurrent communications users
  - Amount of data to be transmitted
  - Communications software licensing restrictions.

Perform Building Alterations as Needed

Perform any building alterations that you determine are necessary to accommodate your new computing equipment. These may include the following:

- Electrical wiring modifications to accommodate the added computing equipment.
- Network cabling additions to accommodate the replaced or added computing equipment.
- Fire protection measures to protect your data and equipment.
- Antistatic measures to protect your data and equipment.
- Radio or radar shields if you are installing near transmitters.
- Installation of uninterruptable power source (UPS), if required.
- Air conditioning installation.

Prepare Maintenance, Recovery, and Security Plans

Maintenance, recovery, and security plans can help protect your investment and maximize productivity. The system administrator may need to formulate the following plans:

- System maintenance program for both hardware and software
- System recovery and availability plan
- Logical security plan
- Physical security plan.

Develop an Education Plan

Depending on the applications you will be using, your employees may need formal and/or informal training. You should discuss this with your sales representative.

Order Any Needed Supplies

You may need to order some of the following items:

- Publications *AIX and Related Products Documentation Overview* , order number SC23-2456, lists publications available for AIX and the system.
- InfoExplorer, a hypertext database of documentation that provides an alternative to hardcopy books, is also described in the *AIX and Related Products Documentation Overview* , order number SC23-2456.
- Tapes or diskettes for backing up software and data.
- Printer supplies (paper, printer toner, printer ribbons).
- Plotter supplies (paper, vellum, film, pens).

Note: Where x.x.x is the current level of AIX.

Prepare for System Delivery

Once your system unit arrives, you are responsible for moving it to the installation location. Some systems such as Machine Types 7006, 7009 and 7011, you are also responsible for setting up the system unit. Check your system information or with your sales representative to find out who sets up your system. This section explains how to both identify and inventory your shipment.

Identifying Your Shipment

If you have more than one machine being delivered at the same time, it is import to keep their components separate. Your order, for example, may come from various locations, software from one place and hardware from another.

The shipping label on each box has several numbers that will help you keep everything organized. No matter where they come from, the parts of the order, from the display to the system unit, have the same system number. The serial number identifies all components that come with a particular system unit's processor. The figure below is an example of a shipping Label, with the system number and the serial number indicated.

Customer No.	Sched Date	CL	System Number	Mach Type	Serial No.	Br. Off
			340045		2600512	

If you have any difficulty identifying your order or which products are for a particular system, contact your sales representative.

Appendix. Notices

This information was developed for products and services offered in the U.S.A.

The manufacturer may not offer the products, services, or features discussed in this document in other countries. Consult the manufacturer's representative for information on the products and services currently available in your area. Any reference to the manufacturer's product, program, or service is not intended to state or imply that only that product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any intellectual property right of the manufacturer may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any product, program, or service.

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