

HP 3000 Computer Systems Configuration Guide



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Federal Communications Commission (FCC)

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Printing History

The previous edition of the HP 3000 System Configuration Guide (June 1988) contains configuration information for MPE V/E systems. The previous edition has been placed on the InfoROM CD internal support subscription service and appears on the December 1989 InfoROM. Individuals requiring reference information on MPE V/E systems which are no longer marketed as new systems should retain the previous edition of the Configuration Guide or obtain an InfoROM subscription. For information or questions about ordering an InfoROM subscription, send an HPDesk message to INFOROM / HP4700/M2.



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Preface

This configuration guide is designed to help in the configuration of HP 3000 systems including:

- MICRO 3000 LX/GX/RX/XE
- Series 922LX, 922RX, 922 and 932
- Series 925LX, 925, 935 and 949
- Series 950, 955, 960 and 980

The system configuration sections provide a review of the standard and required equipment comprising a minimum and maximum system configuration along with general configuration guidelines. Use the guidelines and information provided to check that a proposed configuration is valid and does not violate any of the system maximums or physical limitations.



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MICRO 3000LX/GX/RX

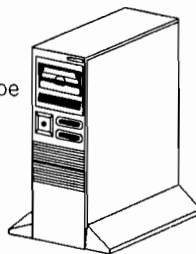
SPU ALTERNATIVES

MICRO 3000LX/GX/RX Business Computers are available as complete systems (32520A, 32536A, or 32543A) with ports, embedded disk mechanism, 700/92 terminal/console, cartridge tape drive, and external HP-IB interface (GX and RX only). Larger or additional disk mechanisms, higher capacity tape drive, or additional ports are available as options or field upgrades. External peripherals may not be added to the MICRO 3000LX since no external HP-IB is offered on that system.

These integrated systems come fully configured and assembled at the factory with MPE V/E FOS pre-loaded onto the disk. HP Easytime/V and disk caching are included with the system but must be ordered separately at no charge (P/N 35303A, option 635).

MICRO 3000LX/GX/RX SPU

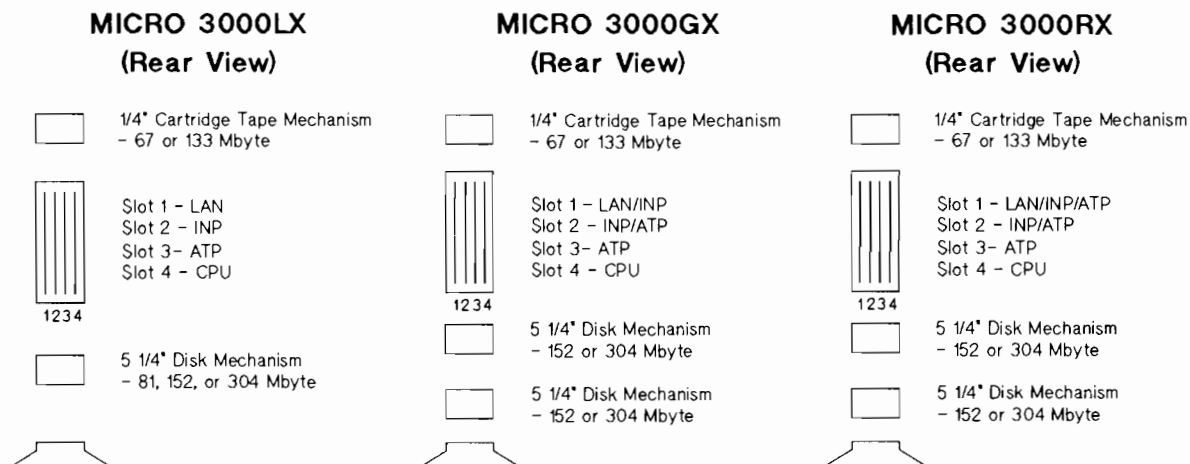
- 67 Mbyte Cartridge Tape
- CPU
- 81Mbyte or 152 Mbyte Disk Mechanism



- Console
- HP Easytime
- Disk Caching
- FOS



MINIMUM SYSTEM CONFIGURATION



Supplied Hardware

The MICRO 3000LX/GX/RX systems product includes the following hardware:

- System Processing Unit (SPU) four slot card cage with power supply.
- Central Processing Unit (CPU) with the following:
 - System clock.
 - 2 Mbytes Main Memory.
 - External HP-IB Interface (GX-RX only).
- System Cabinet
- 5 port (LX), 8 port (GX), or 16 port (RX) controller (25 pin connectors)
- 700/92 console terminal with cable
- 81 Mbyte (LX), 152 Mbyte (GX and RX) embedded disk mechanism
- 9144S (67 Mbyte) embedded cartridge tape mechanism

Each system is shipped factory integrated with all components assembled, connected and configured. Additional options are available to provide 4 Mbytes of memory on the CPU board, add an additional ATP/M, add an additional disk drive (152 or 304 Mbytes), replace the 9144S with 9145S (133 Mbyte) cartridge tape drive, and add casters for easy transportability. Only one ATP/M and one disk option may be ordered.

The above hardware provides an SPU rack mounted on its side in a System Cabinet. The system cabinet provides storage space for 3 peripherals: the 9144S or 9145S cartridge tape, one 81 Mbyte (LX), 152 Mbyte or 304 Mbyte embedded disk mechanism. An optional, additional 152 Mbyte or 304 Mbyte embedded disk mechanism may be added to the MICRO 3000GX/RX. The MICRO GX and RX support a maximum of two embedded disk mechanisms. As an option, the tape may be deleted. The MICRO RX offers an option to delete 8 ports.

Note

HP installation and site preparation are included with the product. the customer and the CE need to work together on site preparation prior to installation.

Required Hardware Ordered Separately

MICRO 3000LX (32520A)/MICRO 3000GX (32536A)/MICRO 3000RX (32543A)

- None

Optional Hardware Ordered Separately

MICRO 3000LX (32520A)/MICRO 3000GX (32536A)/MICRO 3000RX (32543A)

- If easy transportability is desired with the MICRO 3000LX/GX/RX, a caster base may be ordered with P/N 30523A or as an option to the MICRO 3000LX/GX/RX (option 002 on the MICRO LX/GX and option 005 on the MICRO RX). P/N 30523A replaces the stationary base with a new base with wheels. This is a separate product and not included with the price of the system (unless ordered as an option). This product is customer installable and may be ordered at any time.

Supplied Software

Standard on all MICRO 3000LX/GX/RXs is the Fundamental Operating Software (FOS), V Delta 1 MIT or later, which includes:

- Multiprogramming Executive (MPE) Operating System.
- Network Model Database Mgmt System (TurboIMAGE/V).
- Keyed Sequential Access Method Software (KSAM/V).
- Data Base Inquiry Language (QUERY/V).
- Data Entry and Forms Management Software (VPLUS/V).
- Sort and Merge Package (SORT-MERGE/V).
- File Copying Utility (FCOPY/V).
- Text Editor (EDIT/V).
- An Optimized Manual Set is supplied with the System, which is a subset of the full manual set (See Section 5 Manuals).

All of the Fundamental Operating Software is included in the system, but must be ordered separately with P/N 51450A, option 606. Please see the section on MPE Media Products.

All MICRO 3000LX/GX/RXs also include Disk Caching, an I/O performance product, and HP Easytime/V, an easy-to-use MPE user interface. Both of these are not part of the Fundamental Operating Software and must be ordered at no charge with P/N 35303A, option 635.

Required Software Ordered Separately

The Fundamental Operating Software (FOS) must be ordered separately (see section on MPE Media Products).

HP Easytime/V, the menu-driven interface for MPE V/E, and MPE Disk Caching must be ordered separately using one product number 35303A option 635.

MAXIMUM SYSTEM CONFIGURATION GUIDELINES

Ordering the System

To obtain the MICRO 3000LX, order product number 32520A; the MICRO 3000GX, order product number 32536A; the MICRO 3000RX, order product number 32543A. These products include an SPU with 2Mb of memory, 700/92 console/terminal, embedded disk mechanism, 1/4-inch cartridge tape drive, ports, power supply, and system cabinet. The MICRO 3000GX and 3000RX also include an external HP-IB interface. HP installation and site preparation are also included.

One MPE Media Product for MPE V/E (V Delta 1 or later) must also be ordered. HP Easytime/V and Disk Caching are included with this product and must be ordered using P/N 35303A option 635.

Options are available to choose alternative disk capacities, cartridge tape drive, increased memory, additional ports, or to add casters for easy transportability.

MPE Media Products

One MPE Media Product MUST be ordered with every MICRO 3000LX/GX/RX system to designate the media type (cartridge tape or 1600 bpi magnetic tape). The MPE Media Product for the MICRO 3000LX/GX/RX is 51450A (MPE-V/E), Option 606. To designate cartridge tape media, order option 022 or to designate 1600 bpi media, order option 051. The Fundamental Operating Software must be the V Delta 1 version or later. The V Delta 1 version may be selected by ordering option 341 or the latest version may be selected by ordering option 200.

Note An optimized set of MPE manuals is shipped with the operating system.



Memory Expansion

The MICRO 3000LX/GX/RX includes main memory on the CPU board. The available memory configurations are 2 Mbytes or 4 Mbytes. The MICRO 3000LX/GX/RX systems come standard with 2 Mbytes, with an option to upgrade to 4 Mbytes (opt 510). No add-on memory boards are support on the MICRO 3000LX/GX/RX.

The Card Cage

MICRO 3000LX (Rear View)



1 2 3 4

Slot 1 - LAN
Slot 2 - INP
Slot 3 - ATP
Slot 4 - CPU

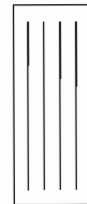
MICRO 3000GX (Rear View)



1 2 3 4

Slot 1 - LAN/INP
Slot 2 - INP/ATP
Slot 3 - ATP
Slot 4 - CPU

MICRO 3000RX (Rear View)



1 2 3 4

Slot 1 - LAN/INP/ATP
Slot 2 - INP/ATP
Slot 3 - ATP
Slot 4 - CPU

CARD CAGE RESTRICIONS

- No add on memory boards are supported.
- No PIC (Peripheral Interface Channel) boards are supported.
- No ATP37s are supported.
- A maximum of 1 ATP/M (LX), 2 ATP/Ms (GX), or 3 ATP/Ms (RX) are supported (the first must go in slot 3).
- A maximum of 1 LAN (ThinLan and StarLan are supported, and must go in slot 1) .
- A maximum of 1 INP (and must go in slot 1 (LX), and in slot 1 or 2 (GX/RX)).

Note



An INP and LAN may be used concurrently. If so, only 1 ATP is available yielding an 8 port system. If 3 ATPs are used in a MICRO 3000RX. No INP or LAN can be used.

Peripheral Interface Channel

The MICRO 3000LX/GX/RX differ from the Series 37 and the MICRO 3000XE in that they do not use the PIC to control HP-IB devices, but rather they have an HP-IB interface on the CPU board. The channel is essentially integrated on the CPU board. Only one such interface is supported, and no add-on PICs are supported. The maximum number of HP-IB devices that can be configured on the MICRO 3000GX/RX is six (6). No external HP-IB devices are supported on the MICRO 3000LX.

The maximum length of cable that can be used to connect a group of devices within one HP-IB system is 7m plus 1m per device. The maximum length of cable, 15m, may be distributed among the devices in a linear daisy-chain configuration. This allows the user some flexibility in locating the HP-IB devices at varying distances from the SPU by adjusting the device loads. Caution should be taken if individual cable length exceeds 4 meters. Peripheral cabling information can be found in Chapter Four and in the Chapter One Appendix.

Peripherals

Disk Drives

One embedded disk mechanism is required on the MICRO 3000LX/GX/RX : 81 Mbyte (LX only), 152 Mbyte, or 304 Mbyte. The following table lists the maximum number of each type of disk drive that is supported on the MICRO 3000LX/GX/RX.

Table 1a-1.

Maximum Disk Drive Configurations		
	MICRO 3000LX	MICRO 3000GX/RX
7957A Disk	0	3
7958A Disk	0	3
7959B Disk	0	3
97962M (internal disk)	1	2
97963M (internal disk)	1	2
7963B (w/up to 3 mechanisms)	0	1
7936H/XP Disk	0	3
7937H/XP Disk	0	3
C2200A Disk	0	3
C2202A Disk	0	3
C2203A Disk	0	3
C2281A Disk	0	0
C2282A Disk	0	0
Total Disk Drives	1	4

Note



No external HP-IB peripherals are supported on the MICRO 3000LX.

A maximum of four disk mechanisms (internal and external combined) are supported on the MICRO 3000GX/RX.

One disk cabinet (19511A) must be ordered with each two 7936/7937 disk drives.

Magnetic Tape Drives

A 9144S or 9145S cartridge tape drive is required for system backup and distribution of software updates for the MICRO 3000LX. The MICRO 3000GX/RX require either a 9144A, 9144S, 9145A, 9145S cartridge tape drive; a 35401A cartridge tape autochanger; or a 7979A, 7980A, 7980XC magnetic tape unit for system backup and distribution of software updates. A C1511A DDS tape drive may be used for system backup. Please see the table below for the specific device maximums.

Table 1a-2.

Maximum Tape Drive Configurations		
	MICRO 3000LX	MICRO 3000GX/RX
9144A/9145A	0	2
9144S/9145S	1	1
35401A	0	2
C1511A	0	2
7979A	0	2
7980A/XC	0	2
Total Tape Drives	1	2

The 9144S (67 Mbyte) and 9145S (133 Mbyte) are 1/4-inch integrated cartridge tape mechanisms offering excellent backup performance and reliability. The 9144S may be used to backup on-line storage capacities up to 300 Mbytes. The 9145S may be used to backup on-line storage capacities up to 600 Mbytes. The 35401A cartridge tape autochanger can provide unattended backup of up to 504 Mbytes of on-line storage. It is also acceptable as a backup device for the 571 Mbyte 7937H/XP as long as no more than 504 Mbytes must be backed up if in unattended mode. On-line storage greater than 600 Mbytes requires the use of a DDS cartridge tape drive or a 1600 or 6250 cpi tape drive.

Output Spooling

To avoid having a terminal or batch process tied up as a real time printer server, and to allow multiple processes access to a printer, MPE can "spool" output to a print file or "spool file". When output is spooled, the SPU is not delayed by a low-speed output device; instead, the output is written to a temporary disk file. When the print job has been spooled and the output device becomes available, MPE manages the printing. This leaves the terminal or process free to do other work.

There are several types of spooled output devices. Any I/O device configured as a printer may be spooled; however, MPE will not necessarily support the full feature set of that printer. The HP-IB system printers discussed in the next section are spooled devices.

System Printers

System printers are printers that guarantee data integrity, ensure print job independence and report operational status to the system.

No system line printers are available on the MICRO 3000LX since no external HP-IB is available. Printers must be connected to the MICRO 3000LX with RS-232 connections.

A combination of up to two system line printers and page printers are supported on the MICRO 3000GX/RX via HP-IB connection. The line printers supported on the MICRO 3000GX/RX are the 2562C, 2563B (300 lpm dot matrix), the 2564B (600 lpm dot matrix), the 2566B (900 lpm dot matrix) and the 2567B (1200 lpm dot matrix). To obtain a 4m cable for each of these, order Option 337.

The 2680A is a 45 ppm Laser Printer. An 8m HP-IB cable is included with Option 337.

The maximum number of each type of system printer that can be supported on the MICRO 3000LX/GX/RX is shown in the following table:

Table 1a-3.

Maximum System Printer Configurations		
	MICRO 3000LX	MICRO 3000GX/RX
2562C, 2563B, 2564B, 2566B, 2567B	0	2
2680A	0	2
Total System Printers	0	2

Serial Printers

The MICRO 3000LX can support only one serial printer via an RS-232 connection. Possible printers are 2562C, 2563B, 2934A, LaserJet series II or IID, or the LaserJet 2000.

The MICRO 3000GX/RX can support up to three spooled serial printers through the ATP/M. When used as remote spooled printers, the printers are connected to the ATP via a modem. Modem connection is only supported with the 2934A. The LaserJet and 256x printers must be connected directly to the system. Cables must be ordered separately; see Chapter 4 for a list of available cables.

The following table shows individual device maximums.

Table 1a-4.

Maximum Serial Printer Configurations		
	MICRO 3000LX	MICRO 3000GX/RX
2934A Dot Matrix	1	3
LaserJet series II	1	2
LaserJet IID	1	2
2563B Line Printer (RS-232)	1	3
2564B Line Printer (RS-232)	1	2
Total Serial Printers	1	3

Data Communications

Advanced Terminal Processors (ATP/M)

All serial devices are connected to the MICRO LX/GX/RX through the Advanced Terminal Processor/Model M (ATP/M).

Port connections are provided for the MICRO 3000LX/GX/RX via a special device that attaches to the standard ATP/M board. The special component, called a passive distribution panel (PDP), provides connectors through the back panel via a 50 pin connector.

The MICRO 3000LX supports a maximum of one ATP/M, providing for the connection of up to 8 terminals or serial devices. The MICRO 3000GX supports a maximum of two ATP/Ms, for a maximum of 16 terminals or serial devices. The MICRO 3000RX supports up to three ATP/Ms, allowing for a maximum of 24 terminal or serial devices.

The table below summarizes terminal support on the MICRO 3000LX/GX/RX. Note that multipoint, RS-422, or 3-pin RS-232 terminal configurations are not supported.

Table 1a-5.

Maximum Terminal Configurations			
	MICRO 3000LX	MICRO 3000GX	MICRO 3000RX
Direct Connect	8	16	24
Modem Connect	4	8	12
Total Ports	8	16	24

Note



The above maximums may not be achievable in combination with the support of other I/O cards. For example, no INP or LAN cards can be used in a three ATP/M (24 user) MICRO 3000RX.

To determine the actual limitations for your specific situation, refer to the "Card Cage Restrictions" section.

Terminals

The 700/92 Display terminal is the required system console for the MICRO 3000LX/GX/RX and is included with the system. Other terminals supported on the MICRO 3000LX/GX/RX include the 2393A, 2397A, 3081A, 3082B, 700/94, 700/96 and 700/98.

The Vectra CS/ES/RS/QS Personal Computers are supported as terminals on the MICRO 3000LX/GX/RX via AdvanceLink. Cabling information for all these workstations may be found in Chapter 4.

System Console

The 700/92 terminal and cable are required for use as the system console for the MICRO 3000LX/GX/RX and is included with the system. With HP Easytime/V, a dedicated console is not necessary. The 700/92 can be used as an application workstation when not active as the console.

Support Link Modem

Under the HP remote Support Program, all new (non-upgrade) systems with a qualifying HP support agreement are supplied with an HP Support Link Modem. This modem is loaned to the customer for support purposes during the time period that the support agreement is in effect, and remains the property of Hewlett-Packard Co. Please see Chapter Six for a discussion of Hewlett-Packard support products.

INP Network Links

An INP (Intelligent Network Processor) provides one communication line that can be used by BSC Link, SNA Link, or NS Point-to-Point Link. A maximum of one INP is supported on the MICRO 3000LX/GX/RX.

Since the INP connects to the system through the HP-IB interface, it counts as one of the six peripheral devices supported on the MICRO 3000LX/GX/RX.

Each Network Link includes both a 1m HP-IB cable, for connecting the INP to the HP-IB interface, and an external cable (which must be specified by a Network Link option). Refer to the latest Corporate Price List for a list of current Network Link products and their options.

Local Area Networks (LANs)

Local area networks are available for the MICRO 3000LX/GX/RX supporting ThickLAN, ThinLAN, and StarLAN versions of the 802.3 Local Area Network standard. A Local Area Network can be used to provide NS and server capabilities. A maximum of one Local Area Network is supported on the MICRO 3000LX/GX/RX. The LAN does not count as one of the six peripheral devices supported on the MICRO 3000LX/GX/RX.

CONFIGURATION WORKSHEETS

MICRO 3000LX/GX/RX Configuration Worksheet

Product Number	Description	Quantity
I. System Processor Unit		
32520A	MICRO 3000LX System Processor Unit with 2 Mbyte of memory, internal HP-IB interface, 5 port asynchronous controller, 700/92 terminal and cable, 81 Mbyte disk mechanism, 9144S (67 Mbyte) cartridge tape mechanism and HP installation.	1A _____
32536A	MICRO 3000GX System Processor Unit with 2 Mbytes of memory, external HP-IB interface, 8-port asynchronous controller, 700/92 terminal and cable, 152 Mbyte disk mechanism, 9144S (67 Mbyte) cartridge tape mechanism, and HP site prep and installation.	1A _____
32543A	MICRO 3000RX System Processor Unit with 2 Mbytes of memory, external HP-IB interface, 16-port asynchronous controller, 700/92 terminal and cable, 152 Mbyte disk mechanism, 9144S (67 Mbyte) cartridge tape mechanism, and HP site prep and installation.	1A _____
MICRO LX/GX/RX options		
Opt. 001	MICRO LX: Additional 3 asynchronous ports for total of 8 ports (direct connect and 4 with modem capability) Must also order option 510	1B _____
Opt. 001	MICRO GX/RX: Additional 8 asynchronous ports for total of 24 ports (direct connect and 12 with modem capability) Must also order option 510	1B _____
Opt. 002	MICRO LX/GX: Casters	1C _____
Opt. 002	MICRO RX: Delete 8 ports	1C _____
Opt. 005	MICRO RX: Casters	1D _____
Opt. 008	MICRO LX: Substitute 152 Mbyte disk for 81 Mbyte disk	1D _____
Opt. 009	MICRO GX/RX: Substitute 304 Mbyte embedded disk drive for 152 Mbyte embedded disk drive	1E _____

MICRO 3000LX/GX/RX Configuration Worksheet

Opt. 010	MICRO GX/RX: Add 304 Mbyte embedded disk drive for total of 456 Mbytes.	1F _____
Opt. 011	MICRO GX/RX: Substitute two 304 Mbyte embedded disk drives (608 Mbyte total) for 152 Mbyte embedded disk drive.	1G _____
	Total embedded disk drives (choice of 1D, 1E, or 1F, MAX=2)	1H _____
Opt. 015	200-240 VAC system operation	1I _____
Opt. 051	DUS on 1600 bpi tape	1J _____
Opt. 510	Expands Memory to 4Mbytes (MAX=1)	1K _____
Opt. 544	Delete embedded cartridge tape drive	1L _____
Opt. 545	Substitute 133 Mbyte cartridge tape for 67 Mbyte cartridge tape drive	1M _____
Opt. 1AO	Delete console	1L _____
Localized Console Options		
Opt. ABA	English localized display	_____
Opt. ABB	English/Europe localized display	_____
Opt. ABD	German localized display	_____
Opt. ABE	Spanish localized display	_____
Opt. ABF	French localized display	_____
Opt. ABH	Dutch localized display	_____
Opt. ABM	Spanish/Latin American localized display	_____
Opt. ABN	Norwegian localized display	_____
Opt. ABP	Swiss/German localized display	_____
Opt. ABQ	Swiss/French localized display	_____
Opt. ABS	Swedish localized display	_____
Opt. ABV	Arabic/English localized display	_____
Opt. ABU	English (UK) localized display	_____
Opt. ABW	Flemish localized display	_____
Opt. ABX	Finnish localized display	_____
Opt. ABY	Danish localized display	_____
Opt. ABZ	Italian localized display	_____

MICRO 3000LX/GX/RX Configuration Worksheet

II. MPE V/E Media Product		
51450A	MPE V/E Media Product	-----
Opt. 200	Latest FOS version	-----
Opt. 34x	MIT Specific Release	-----
Opt. 606	MICRO 3000LX/GX/RX CPU	-----
35303A	HP Easytime User Interface	-----
Opt. 635	MICRO 3000LX/GX/RX CPU	-----

Product Number	Description	Drives	Mechanisms
III. Disk Drives			
7957A	81 Mbyte Fixed Media Disk Drive. (MAX=3)	2A -----	3A -----
7958A	130/152 Mbyte Fixed Media Disk Drive. (MAX=3)	2B -----	3B -----
7959B	304 Mbyte Fixed Media Disk Drive. (MAX=3)	2C -----	3C -----
7963B	304 Mbyte Fixed Disk Drive w/upgrade capability. (MAX=1 with up to 3 mechanisms)	2D -----	3D -----
7936H/XP	307 Mbyte Fixed Media Disk Drive. (MAX=3)	2E -----	3E -----
7937H/XP	571 Mbyte Fixed Media Disk Drive. (MAX=3)	2F -----	3F -----
C2200A	335 Mbyte Fixed Media Disk Drive. (MAX=3)	2G -----	3G -----
C2202A	670 Mbyte Fixed Media Disk Drive. (MAX=3)	2H -----	3H -----
C2203A	670 Mbyte Fixed Media Disk Drive. (MAX=3)	2I -----	3I -----
	Total Disk Drives (Sum of 2x; MAX=4)	2 -----	
	Total Disk Mechanisms (Sum of 3x; MAX=4)		3 -----

Note No external peripherals are supported on the MICRO 3000LX.



MICRO 3000GX/RX Configuration Worksheet

Product Number	Description	Quantity
IV. Magnetic Tape Drives		
9144A/S	1/4-inch Cartridge Tape. Order cable separately. (MAX=2)	4A _____
9145A/S	1/4-inch Cartridge Tape. Order cable separately. (MAX=2)	4B _____
35401A	1/4 inch Cartridge Tape Autochanger. (MAX=2)	4C _____
C1511A	DDS DAT Cartridge Tape. (MAX=2)	4D _____
7979A	1600 cpi Magnetic Tape Drive with 2m HP-IB cable. (MAX=2)	4E _____
7980A	6250 cpi Magnetic Tape Drive with 2m HP-IB cable. (MAX=2)	4F _____
7980XC	6250 cpi Data Compression Magnetic Tape Drive. (MAX=2)	4G _____
Total Tape Drives (Sum of 4x; MAX=2)		4 _____
VI. System Printers		
2562C	300 lpm Dot Matrix Printer. Opt 337	6A _____
2563B	300 lpm Dot Matrix Printer. Opt 337 includes 4m HP-IB cable. (MAX=2)	6B _____
2564B	600 lpm Dot Matrix Printer. Opt 337 includes 4m HP-IB cable. (MAX= 2)	6C _____
2566B	900 lpm Dot Matrix Printer. Opt 337 includes 4m HP-IB cable. (MA X=2)	6D _____
2567B	1200 lpm Dot Matrix Printer. Opt 337 includes 4m HP-IB cable. (MAX=2)	6E _____
2680A	45 ppm Intelligent Page Printer. Opt 337 includes 4m HP-IB cable. (MAX=1)	6F _____
Total (Sum of 6x; MAX=2)		6 _____

Note



No external peripherals are supported on the MICRO 3000LX.

MICRO 3000GX/RX Configuration Worksheet

VII. Data Communications.

A. Workstations, Plotters, and Printers (Enter quantities in line below):

NOTE: Cabling must be ordered separately for these devices.

	Connection Method				
		Point-to-Point with ATP			
			Direct Connect		
Product		Modem	RS-422	RS-232C	Terminal Attached
Workstations					
2393A		_____	N/A	_____	N/A
2397A		_____	N/A	_____	N/A
700/92 (C1001A,G,W)		_____	N/A	_____	N/A
700/94 (C1002A,G,W)		_____	N/A	_____	N/A
3081A		_____	N/A	_____	N/A
3082B		_____	N/A	_____	N/A
Vectra PC		_____	N/A	_____	N/A
Other PC		_____	N/A	_____	N/A
Other Terminal		_____	N/A	_____	N/A
Plotters					
7440A		_____	N/A	_____	_____
7475A		_____	N/A	_____	_____
7550A		_____	N/A	_____	_____
Subtotal (this page)		7A _____	8A _____	9A _____	10A _____

Note



The MICRO 3000LX comes standard with a 5 port ATP/M (direct connect with 4 modem capable). Option 001 adds an additional 3 asynchronous ports for a total of 8 direct connections with 4 modem capable.

The MICRO 3000GX comes standard with the ATP/M option 125 (4 modem and 4 RS-232-C). Option 001 for P/N 32536A adds an additional 8 ports. Additional ports are added via the passive distribution panel (PDP) and an additional ATP/M board. An 8 to 16 port upgrade is also available (P/N 30522A).

The MICRO 3000RX comes standard with two 8 port ATP/M option 125 (4 modem and 4 RS-232-C for a total of 16 ports). Option 001 adds an additional 8 ports. Option 002 deletes 8 ports for a total of 8 ports. A 16 to 24 port upgrade is also available (P/N 30528A).

A. Workstations, Plotters, and Printers (cont.)

	Connection Method				
		Point-to-Point with ATP			
			Direct Connect		
Product		Modem	RS-422	RS-232C	Terminal Attached
Serial Printers					
2562C		N/A	N/A	----	N/A
2563B		N/A	N/A	----	N/A
2564B		N/A	N/A	----	N/A
2934A		----	N/A	----	N/A
LaserJet II		N/A	N/A	----	N/A
LaserJet IID		N/A	N/A	----	N/A
LaserJet 2000		N/A	N/A	----	N/A
Subtotal (this page)		7B ----	8B ----	9B ----	10B ----
Subtotal (previous page)		7A ----	8A ----	9A ----	10A ----
Total (both pages)		7 ----	8 ----	9 ----	10 ----

	MICRO 3000LX	MICRO 3000GX	MICRO 3000RX
Line 7 maximum	4	8	12
Line 8 maximum	0	0	0
Line 9 maximum	8	16	14
Line 7+8+9 maximum	8	16	24
Line 7B+8B+9B maximum	1	3	3
Line 10 maximum	8	16	24

Note No 3-pin RS-232 connections via ATP/M



MICRO 3000GX/RX Configuration Worksheet

Product Number	Description	Quantity
B. INP Network Links		
30246A	SNA LINK for use with 30245A/R SNA NRJE and/or 30247A/R SNA IMF. (MAX = 1) and/or 30253 LU 6.2 API	12A _____
30251A	BSC Link. For use with 30248A/R RJE, 30249A/R MRJE, or 30250A/R IMF. (MAX=1)	12B _____
30270A	Point-to-Point Hardwired Link for HP3000. Requires 32185A/R DS Network Service. (MAX=1)	12C _____
30271A	Point-to-Point Modem Link for HP3000. Requires 32185A/R DS Network Service (MAX=1)	12D _____
30284A	Point-to-Point Link for HP 3000. Requires 32344A NS 3000/V Network Services. (MAX=1)	12D _____
32187A	X.25 Network Link for HP3000. Requires 32185A/R DS Network Service unless used solely for X.25 Terminal I/O. (Max=1)	12E _____
24405A	X.25 Network Link for HP 3000. Requires 32344A/R NS 3000/V Network Services (MAX=1)	12F _____
32003A	Asynchronous Serial Network Link for use with 32344A/R NS 3000/V Network Services (MAX=1)	12G _____
	Total number of INP Links (Sum of lines 12x; MAX=1)	12 _____
C. Local Area Network Links		
30240A	ThinLAN 3000/V (MAX=1)	13A _____
30265A	StarLAN/3000 Link (MAX=1)	13C _____
	Total LAN Links (Sum of lines 13x; MAX=1)	13 _____

MICRO 3000GX/RX Configuration Worksheet

Product Number	Description	Quantity
VIII. Cabinets		
A. Disk Cabinets		
7936 and 7937 Disk drives require a cabinet for each two drives ordered. All other disk drives are housed in the System Cabinet described below.		
	Total 7936/7937 drives (Sum of lines 3C & 3D)	16A _____
19511A	Disk Cabinet (One for each two of line 16A)	16 _____
B. System Cabinets		
One System Cabinet is supplied with the MICRO 3000LX/GX/RX.		
Peripheral Space Required (1/4 cabinet slots).		
	Disks - line 3A plus line 3B	17A _____
	Tapes - line 4A plus 2*(line 4B)	17B _____
	Total ADD-ON peripheral space required. (Line 17A plus line 17B minus 3)	17C _____
92211R	Add-on System Cabinets required for peripherals. (One required for each four of line 17C)	17 _____

Note



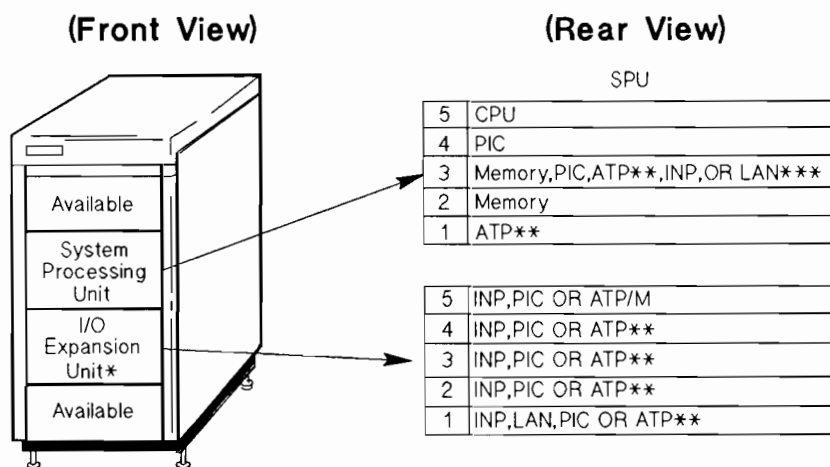
The 92211R provides the system cabinet only. Accessories available are the 92211S mounting rail and module lock kit, 92211T filler panel kit, and 92199B power supply strip (92211S is required).

MICRO 3000XE

SPU ALTERNATIVES

HP's MICRO 3000XE Business Computer is available as a new system (32545A) or as a field upgrade to the Series 37A or Series 37XE (30545A). When purchased as a new system or as a field upgrade to the Series 37XE, the MICRO 3000XE will always include the I/O Expansion Unit for a total of ten card slots. When purchased as a field upgrade to the Series 37A, the MICRO 3000XE may not include the I/O Expansion Unit and may therefore include only five card slots. As described in "Ordering Upgrades to the MICRO 3000XE", the I/O Expansion Unit may be added to the Series 37A upgrade product, providing the full ten card slot connectability of the MICRO 3000XE new system. For the remainder of this section, all references to the MICRO 3000XE will refer to the ten card slot version unless otherwise specified. The five card slot version will be referred to as the "MICRO 3000XE (5-slot)."

MICRO 3000XE SPU



* Upgrade from Series 37A may not include I/O Expansion Unit
(If so, this is a MICRO 3000XE (5-slot))

** ATP will be ATP/M on new systems and may be an ATP/M or ATP37 on
S/37 upgrades

*** LAN not supported in slot 3 of SPU except in S/37 upgrades without I/O
extender

MINIMUM SYSTEM CONFIGURATION

As described, the MICRO 3000XE is available as a new system or as a field upgrade to a Series 37A or Series 37XE. These are described separately below.

Supplied Hardware

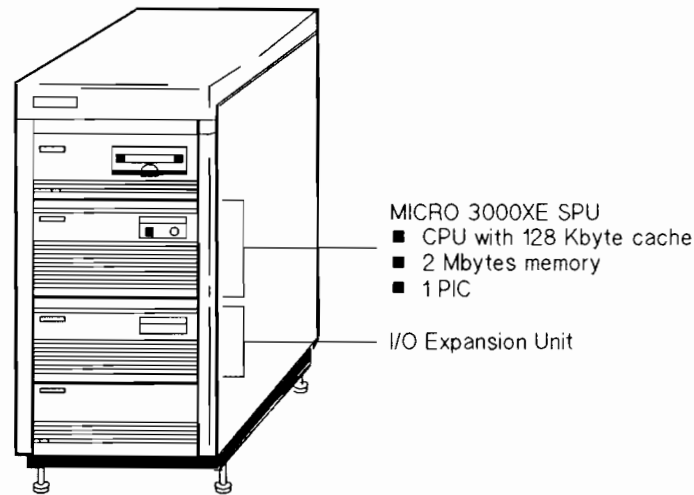
NEW SYSTEM (32545A)

The MICRO 3000XE new system product (32545A) includes the following hardware:

- System Processing Unit (SPU) five slot card cage with power supply.
- Central Processing Unit (CPU) with 128 Kbyte Memory Cache and System Clock.
- 2 Mbyte Error Correcting Memory.
- One Peripheral Interface Channel (PIC).
- I/O Expansion Unit with power supply providing five additional card slots.
- System Cabinet with built in power tap.

The above hardware provides an SPU with seven I/O expansion slots rack mounted in a System Cabinet. The System Cabinet provides peripheral space for a Cartridge Tape Autochanger (35401A) or any two of the following: 9144A Cartridge Tape, 9145A Cartridge Tape, 7957A Disk, 7958A Disk, 7959B Disk, or 7963B Disk.

MICRO 3000XE



SERIES 37 FIELD UPGRADE (30545A)

- Central Processing Unit (CPU) with 128 Kbyte Memory Cache and System Clock.

Required Hardware Ordered Separately

NEW SYSTEM (32545A)

- One ATP/M (40290A).
- One System Console.
- One Magnetic Tape Drive for System Backup and Software Updates: 9144A, 9145A, 35401A, 7979A, 7980A or 7980XC.
- One System Disk: 7957A, 7958A, 7936H, 7936XP, 7937H, 7937XP, or 7963B.

SERIES 37 FIELD UPGRADE (30545A)

The MICRO 3000XE requires a minimum of 2 Mbytes of memory, therefore a Series 37 with less than 2 Mbytes of memory requires memory expansion in order to be upgraded to a MICRO 3000XE. 512 Kbyte Series 37 memory boards are not supported. Refer to the Memory Expansion section for specific alternatives for memory expansion.

With the exception of memory (described above), the MICRO 3000XE supports all peripherals supported on the Series 37 and the minimum system requirements are the same as those for the Series 37. Therefore, no additional hardware is required to upgrade a Series 37 with sufficient memory to a MICRO 3000XE.

Supplied Software

Standard on the MICRO 3000XE is the Fundamental Operating Software (FOS), UB Delta 1 MIT or later, which includes:

- Multiprogramming Executive (MPE) Operating System.
- Network Model Database Mgmt System (TurboIMAGEV).
- Keyed Sequential Access Method Software (KSAM/V).
- Data Base Inquiry Language (QUERY/V).
- Data Entry and Forms Management Software (VPLUS/V).
- Sort and Merge Package (SORT-MERGE/V).
- File Copying Utility (FCOPY/V).
- Text Editor (EDIT/V).
- A Complete User Manual Set Supplied with the System.

All of the Fundamental Operating Software is included in the system, but must be ordered separately. Please see the section on MPE Media Products.

The MICRO 3000XE also includes Disk Caching, an I/O performance product, which is not part of the Fundamental Operating Software. If any subsystems are ordered, Disk Caching will be included on the Subsys tape. If no subsystems are ordered, Disk Caching must be ordered from SDC by the application engineer.

HP Easytime/V is included with the MICRO 3000XE. The menu-driven interface for MPE must be ordered separately at no charge (PN 35303A). V-Delta-2 or later is the required MIT for MICRO 3000XE support.

Installation and consultation on site preparation are included with the product. The customer and the CE need to work together on site preparation prior to installation.

MAXIMUM SYSTEM CONFIGURATION GUIDELINES

Ordering The System Processor Unit (SPU)

To obtain the MICRO 3000XE System Processor Unit, order product number 325454A for new systems. This product includes the SPU with 2 Mbytes of memory, one I/O channel (PIC), the I/O Expansion Unit with five additional card slots, power supplies, and the System Cabinet. HP installation and site prep consultation are also included. An Option to the 32545A product is available for expanding initial memory to 4 Mbytes. One MPE Media Product for MPE-V/E (UB Delta 1 or later) must also be ordered. Disk Caching is also included with this product HP Easytime/V (V-Delta-2 or later) must also be ordered (PN 35303A).

Ordering Additional System Cabinets

One System Cabinet is supplied with the MICRO 3000XE SPU. An additional system cabinet (92211R) may be required for added peripherals or to house ATP/M junction panels.

Peripheral Space

In addition to space for the SPU, the System Cabinet supplied with the MICRO 3000XE has space for either the 35401A cartridge tape autochanger or any two of the following peripherals: 9144A, 9145A, 7957A, 7958A, 7959B, or 7963B. Any additional peripherals will require an added cabinet. It should be noted that the 7936 and 7937 disk drives require a separate cabinet (19511A) for each two disk drives.

ATP/M Junction Panel Space

The System Cabinet supplied with the MICRO 3000XE has space to house four ATP/M junction panels. If the 35401A cartridge tape autochanger is housed in this system cabinet, the space available for ATP/M junction panels is reduced to three. The 7936B may not be placed in the cabinet's bottom slot.

The 7936/7937 cabinet (19511A) may be used to house two ATP/M junction panels if only one 7936 or 7937 is in the same cabinet. If there are more ATP/Ms in the system than there is space available in the cabinets described above, an additional system cabinet (92211R) must be ordered.

Ordering Upgrades To The MICRO 3000XE

Box Swap Upgrades

To obtain a box swap upgrade to the MICRO 3000XE from a MICRO 3000LX, MICRO 3000GX, from another HP3000 (Series 33 or before), or from the HP 250/260, order product number 32545AH. The components of this product are identical to the 32545A product described in "Ordering the System Processor Unit (SPU)" above.

MICRO 3000 to MICRO 3000XE Upgrades

In order to upgrade a MICRO 3000 to a MICRO 3000XE, order product number 30545AX. The components of this product are identical to the 32545A product described in "Ordering the System Processor Unit (SPU)" above except that the 30545AX product does not include the System Cabinet. With this upgrade, the MICRO 3000XE utilizes the System Cabinet of the existing MICRO 3000. Since the MICRO 3000XE occupies more space in the System Cabinet than does the MICRO 3000, an additional System Cabinet may need to be ordered with this upgrade.

Series 37 to MICRO 3000XE Upgrades

An upgrade from the HP 3000 Series 37A or Series 37XE to the MICRO 3000XE is available as a simple field upgrade by ordering product number 30545A with appropriate options.

The MICRO 3000XE requires a minimum of 2 Mbytes of memory, therefore an upgrade to a Series 37 with less than 2 Mbytes of memory **MUST** include appropriate memory expansion. Memory expansion is available as options to the 30545A product and return credits are available for existing memory. See "Memory Expansion" for supported memory configurations.

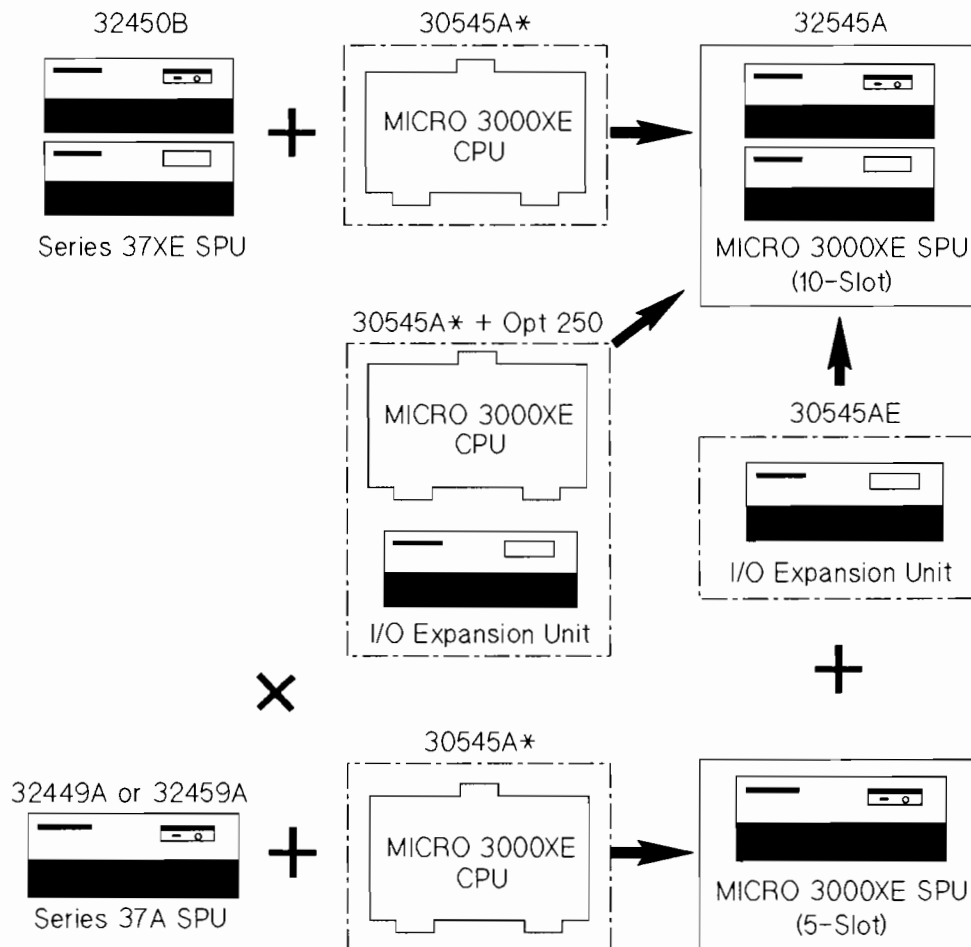
The MICRO 3000XE is supported only on UB Delta 1 or later versions of MPE V/E. Series 37s on earlier versions of the operating system must include a MIT update prior to or with the MICRO 3000XE upgrade. To minimize upgrade complications it is highly recommended that MIT updates occur several weeks prior to the hardware upgrade.

The possible Series 37 upgrade paths are illustrated in the figure "S/37 Upgrade Alternatives." All upgrade alternatives include the MICRO 3000XE CPU with 128 Kbyte of memory cache to be exchanged for the Series 37 CPU. In addition, any upgrade may include memory expansion by selecting the appropriate memory options.

Series 37A upgrades needing the full expansion capabilities of the MICRO 3000XE may add the I/O Expansion Unit by selecting option 250 with the 30545A upgrade product. This will result in an upgrade to the full 10 card slot MICRO 3000XE (identical to new system product number 32545A). The Series 37A customer may also choose to upgrade to the MICRO 3000XE CPU without adding the I/O Expansion Unit. The resulting system will be a 5 card-slot version of the MICRO 3000XE, providing the same connectability as the Series 37A but with added performance. This 5 card-slot version of the MICRO 3000XE is only available as an upgrade to the Series 37A and is not available as a new system. A customer initially choosing to upgrade to the 5 card-slot version of the MICRO 3000XE may add the I/O Expansion Unit at a later date by purchasing product number 30545AE. Note that adding an I/O Expansion Unit to an existing Series 37A system may require the addition of a second System Cabinet.

Series 37XE upgrades to the MICRO 3000XE require only the CPU upgrade and any selected memory options. Since the Series 37XE already contains the I/O Expansion Unit, an additional I/O Expansion Unit CANNOT be added (neither as option 250 to the upgrade product nor as the 30545AE expansion product). There are a maximum of ten card slots on the MICRO 3000XE.

SERIES 37 SPU UPGRADE ALTERNATIVES



* An additional 2 Mbytes or 4 Mbytes of memory may be added with upgrade product 30545A by selecting options 502 or 503.

MPE Media Products

One MPE Media Product MUST be ordered with every MICRO 3000XE system to designate the media type (cartridge tape or 1600 cpi magnetic tape). The MPE Media Product for the MICRO 3000XE is 51450A (MPE-V/E), Option 607. To designate cartridge tape media, order option 022, or to designate 1600 cpi media, order option 051. The Fundamental Operating Software must be the UB Delta 1 version or later. The UB Delta 1 version may be selected by ordering option 320 or the latest version may be selected by ordering option 200. NOTE: MPE manuals are included in the MPE Media Product.

Memory Expansion

The MICRO 3000XE comes with 2 Mbytes standard and supports a maximum of 8 of Mbytes main memory. The MICRO 3000XE supports a maximum of two memory boards in any combination of 2 Mbyte (30462A) or 4 Mbyte (30482A) boards. Memory can be expanded for the MICRO 3000XE when initially ordering the SPU by specifying option 510 (replaces 2 Mbyte memory board with 4 Mbyte board). An additional add-on memory board (30462A or 30482A) may be ordered with the initial order or at a later date. The following table illustrates which memory configurations are supported on the MICRO 3000XE:

Supported Memory Configurations		
Total Memory Capacity	Slot #2 Memory Board	Slot #3 Memory Board
2 Mbyte	1 Mbyte *	1 Mbyte *
2 Mbyte	2 Mbyte	
4 Mbyte	2 Mbyte	2 Mbyte
4 Mbyte	4 Mbyte	
6 Mbyte	2 Mbyte	4 Mbyte
8 Mbyte	4 Mbyte	4 Mbyte

*1 Mbyte memory board only supported in upgrades from Series 37A/XE

On the MICRO 3000XE, 2 Mbyte (30462A) and 4 Mbyte (30482A) boards may be mixed on the same system. The 512 Kbyte board (30461A) is not supported and the 1 Mbyte board (30456A) may not be mixed with 2 Mbyte or 4 Mbyte boards. Return credits are available for memory upgrades. To obtain a return credit for the 512 Kbyte board order 30461AN, for the 1 Mbyte board return credit order 30456AN, and for the 2 Mbyte board return credit order 30462AN. A maximum of two return credits can be applied to a memory upgrade. Please consult the latest Corporate Price List for current ordering instructions.

The Card Cage

The MICRO 3000XE includes two card cages, the 5 card-slot SPU card cage and an additional 5 card-slot I/O Expansion Unit card cage. A MICRO 3000XE purchased as an upgrade to the Series 37A may or may not include the I/O Expansion Unit card cage. The contents of four of the SPU card slots are predetermined and the fifth is available for additional memory or I/O expansion. All card slots supply power and connect to the Synchronous Intermodule Bus (SIMB) located on the backplane. The SIMB is the communication link between the I/O cards, the memory subsystem, and the CPU.

MICRO 3000XE CARD CAGES

SPU	
5	CPU *
4	PIC *
3	Memory, PIC, ATP **, INP or LAN ***
2	Memory *
1	ATP **

I/O Expansion Unit	
5	INP, PIC, or ATP/M
4	INP, PIC, or ATP **
3	INP, PIC, or ATP **
2	INP, PIC, or ATP **
1	INP, PIC, ATP ** or LAN

* CPU, one PIC, and one memory card are provided with the 32545A/AH and 30545AX products and are installed at the factory.

** The ATP will be an ATP/M on new systems and may be an ATP/M or ATP37 on Series 37 upgrades.

*** A LAN is supported in slot 3 of the SPU card cage only when the I/O Expansion Unit card cage is not present in the system (some upgrades from the Series 37). When the I/O Expansion Unit card cage is present, if a LAN is installed it must go in slot 1 of the I/O Expansion Unit card cage.

CARD CAGE RESTRICTIONS

- A maximum of two memory boards are supported on the MICRO 3000XE. The first memory board is installed in slot 2 of the SPU. The second memory board **MUST** be installed in slot 3 of the SPU card cage.
- Slots 2,4 and 5 of the SPU card cage are predetermined and loaded at the factory.
- Slot 1 of the SPU card cage must contain an ATP37 (Series 37 upgrades) or an ATP/M (new systems).
- Because ATP37s have junction panels which require 2 card cage slots, they cannot be placed adjacent to one another.
- An ATP/M cannot be placed directly above an ATP37.
- INPs cannot be placed directly above an ATP37.
- ATP37s cannot be placed in slot 5 of the I/O Expansion Unit card cage.
- A LAN, if installed, must be placed in slot 1 of the I/O Expansion Unit if the I/O Expansion Unit is present. If not (some upgraded Series 37A's), the LAN must go in slot 3 of the SPU card cage.
- At least one I/O board must be in the I/O Expansion Unit for the system to come up.

Peripheral Interface Channel

The Peripheral Interface Channel (PIC) is a hardware controller used to interface HP-IB (IEEE-488 protocol) devices to the MICRO 3000XE. Each PIC is a board that uses one card slot and supports up to six devices and eight electrical device loads. These devices include: tape drives, disk drives, system printers, and Network Links (INPs). Their HP-IB cables daisy-chain to the PIC's 25-pin connector. The number of peripherals which may practically be connected to a single PIC depends on peripheral speed, cable length, and performance considerations not to exceed a maximum of six. One Peripheral Interface Channel is standard with each MICRO 3000XE.

Three PICs are supported on the MICRO 3000XE, two of which are high speed while the third supports INPs only. A maximum of two PICs (both may be high speed) are supported on the 5-slot MICRO 3000XE (some upgraded Series 37A's). Whether a PIC is high speed or low speed is simply a function of the speed of the device attached to a PIC. A PIC is considered high speed if it has one or more high speed devices which attach to it. For example, a MICRO 3000XE with its maximum number of PICs would contain two high speed PICs and a third PIC attached to INPs only. To obtain additional PICs, order 30459A.

The maximum length of cable that can be used to connect a group of devices within one HP-IB system is 7m plus 1m per device. The maximum length of cable, 15m, may be distributed among the devices in a linear daisy-chain configuration. This allows the user some flexibility in locating the HP-IB devices at varying distances from the SPU by adjusting the device loads. For many peripherals, the electrical device load is fixed; however, several currently supported peripherals can be configured for a range of electrical device loads by a CE at the customer site. Caution should be taken if individual cable length exceeds 4 meters. Peripheral cabling information can be found in Chapter Four and in the Chapter One Appendix.

Peripherals

Disk Drives

One system disk is required on the MICRO 3000XE: 7957A, 7958A, 7936H/XP or 7937H/XP, 7959B, or 7963B. The following table lists the maximum number of each type of disk drive that is supported on the MICRO 3000XE.

Table 1b-1.

Maximum Disk Drive Configuration	
7957A Disk	8
7958A Disk	8
7959B Disk	8
7936H/XP Disk	8
7963B Disk Mechanisms	8
7937H/XP Disk	8
C2200A Disk	8
C2202A Disk	8
C2203A Disk	8
Total Disk Drives	8

Note



One disk cabinet (19511A) must be ordered with each two 7936/37 disk drives. The 7958A, 7959B, 7963B, 7936H/XP and the 7937H/XP are the recommended disk drives for use with the MICRO 3000XE systems.m cable.

Magnetic Tape Drives

A 9144A cartridge tape, 9145A cartridge tape drive, 35401A cartridge tape autochanger, C1511A DDS tape drive, 7979A, 7980A, or 7980XC is required for system backup and distribution of software updates for the MICRO 3000XE. These tape devices do not support slave drives. Please see the table below for the specific device maximums.

Table 1b-2.

Maximum Tape Drive Configuration	
9144A/9145A	4
35401A	2
7979A	4
7980A/XC	4
C1511A	4
Total Tape Drives	4

The 9144A is a 1/4-inch cartridge tape drive that can be used to backup on-line storage capacities up to 300 Mbytes. The 9145A can be used to backup online storage up to 600 Mbytes. The 35401A cartridge tape autochanger can provide unattended backup of up to 504 Mbytes of on-line storage. It is also acceptable as a backup device for the 571 Mbyte 7937H/XP as long as no more than 504 Mbytes must be backed up unattended. On-line storage greater than 571 Mbytes requires the use of a DDS cartridge tape drive or a 1600 or 6250 cpi tape drive.

Output Spooling

To avoid having a terminal or batch process tied up as a real time printer server, and to allow multiple processes access to a printer, MPE can “spool” output to a print file or “spool file”. When output is spooled, the SPU is not delayed by a low-speed output device; instead, the output is written to a temporary disk file. When the print job has been spooled and the output device becomes available, MPE manages the printing. This leaves the terminal or processor free to do other work.

There are several types of spooled output devices. Any I/O device configured as a printer may be spooled; however, MPE will not necessarily support the full feature set of that printer. The HP-IB system printers discussed in the next section are spooled devices.

Of the serial connected printers, 2684A, 2563B, 2564B, and 2934A may be “local” or “remote” spooled.

System Printers

System printers are printers that guarantee data integrity, ensure print job independence and report operational status to the system.

The HP-IB system line printers supported on the MICRO 3000XE include the 2562C, 2563B (300 lpm dot matrix), the 2564B (600 lpm dot matrix), the 2566B (900 lpm dot matrix) and the 2567B (1200 lpm dot matrix). To obtain a 4m cable for each of these, order Option 337.

The 2680A is a 45 ppm page printer. An 8m HP-IB cable is included with Option 337.

The maximum number of each type of system printer that can be supported on the MICRO 3000XE is shown in the following table:

Table 1b-3.

Maximum System Printer Configuration	
2562C, 2563B, 2564B, 2566B, 2567B	4
2680A	1
Total System Printers	4

Serial Printers

The MICRO 3000XE can support up to 8 serial printers via RS-232 connection. Possible printers are 2562C, 2563B, 2934A, LaserJet series II or IID, or the LaserJet 2000.

The MICRO 3000XE can support up to three spooled serial printers through the ATP/M. When used as remote spooled printers, the printers are connected to the ATP via a modem. Modem connection is only supported with the 2934A. The LaserJet and 256x printers must be connected directly to the system. Cables must be ordered separately; see Chapter 4 for a list of available cables.

The following table shows individual device maximums.

Table 1b-4.

Maximum Serial Printer Configuration	
2934A Dot Matrix	8
2684A/D/P LaserJet	2
2563B Line Printer	3
2564B Line Printer	3
Total Serial Printers	8

Data Communications

Advanced Terminal Processors (ATP/M AND ATP37)

All serial devices are connected to the MICRO 3000XE through the Advanced Terminal Processor/Model M (ATP/M) or the Advanced Terminal Processor (ATP37). The ATP/M is the preferred method of connecting serial devices to the MICRO 3000XE while the ATP37 is supported for compatibility with the Series 37 upgrade.

Each ATP/M provides eight serial ports. It is available in three configurations as shown in the table below:

ATP/M Port Options				
	25 Pin Modem	3 Pin RS-232	25 Pin RS-232	5 Pin RS-422
Option 103	1	7		
Option 105	1			7
Option 125	4		4	

The MICRO 3000XE supports a maximum of seven ATP/Ms, providing for the connection of a maximum of 56 terminals or serial devices. Up to 28 of these connections may be made with modems by selecting the appropriate options when purchasing the ATP/Ms. Due to the junction panel space requirements of the ATP37, Series 37 upgrades can support a maximum of four ATP37s (28 ports including four modem ports). Series 37 upgrades can add ATP/Ms for additional connectability or replace all ATP37s with ATP/Ms for the full connectability of the MICRO 3000XE.

An additional system cabinet may be required to house ATP/M junction panels. The MICRO 3000XE system cabinet has space for four ATP/M junction panels (three if the 35401A cartridge tape autochanger is included in the system cabinet). The 7936/7937 cabinet has space for two ATP/M junction panels if only one 7936/7937 disk is housed in the cabinet.

The following table summarizes terminal support on the MICRO 3000XE. Note that multipoint terminal configurations are not supported.

Maximum Terminal Configuration				
	MICRO 3000XE		MICRO 3000XE	
	(5-Slot)		(10-slot)	
	ATP37	ATP/M	ATP37	ATP/M
Direct Connect	14	16	28	56
Modem Connect	2	8	4	28
Total Ports	14	16	28	56



Note that the above maximums may not be achievable in combination with the support of other I/O cards. In addition, the maximum number of ports available on a Series 37 upgrade

which uses a combination of ATP37s and ATP/Ms will be between the maximum shown above for the ATP37 and that shown for the ATP/M.

To determine the actual limitations for your specific situation, refer to the "Card Cage Restrictions" section.

Terminals

The 700/92 Office Display terminal is the required system console for the MICRO 3000XE. The 700/92 is also available as an add-on terminal for the MICRO 3000XE. Other terminals supported on the MICRO 3000XE include the 2393A, 2397A, and the 700/94.

The VECTRA family of personal computers are supported as terminals on the MICRO 3000XE. Cabling information for all these workstations may be found in Chapter 4.

Support Link Modem

Under the HP Remote Support Program, all new (non-upgrade) systems with a qualifying HP support agreement are supplied with an HP Support Link Modem. This modem is loaned to the customer for support purposes during the time period that the support agreement is in effect, and remains the property of Hewlett-Packard. Please see Chapter Six for a discussion of Hewlett-Packard support products.

INP Network Links

An INP (Intelligent Network Processor) provides one communication line that can be used by BSC Link, SNA Link, or NS Point-to-Point Link. A maximum of three INPs are supported on the MICRO 3000XE (only one INP is supported on the 5-slot version of the MICRO 3000XE). An INP can only be ordered as part of a Network Link.

Each Network Link includes an INP, and requires one I/O card slot in the MICRO 3000XE card cage. The INP counts as one device load on a PIC and is considered a low speed device (and counts as one of the six supported on the PIC).

Each Network Link includes both a 1m HP-IB cable, for connecting the INP to a PIC, and an external cable (which must be specified by a Network Link option). Refer to the latest Corporate Price List for a list of current Network Link products and their options.

Local Area Networks (LANs)

Local area networks are available for the MICRO 3000XE supporting ThickLAN, ThinLAN, and StarLAN versions of the 802.3 Local Area Network standard. A Local Area Network can be used to provide NS and server capabilities. A maximum of one Local Area Network is supported on the MICRO 3000XE. The LAN does not count as one of the six peripheral devices supported on the PIC.

System Console

The 700/92 terminal and cable are required for use as the system console for the MICRO 3000XE but must be ordered separately. The console will use one direct connect ATP port, typically port zero. With HP Easytime/V, a dedicated console is not necessary.

CONFIGURATION WORKSHEETS

MICRO 3000XE Configuration Worksheet

Product Number	Description	Quantity
I. System Processor Unit		
32545A	MICRO 3000XE System Processor Unit with 2 Mbytes of memory and PIC, I/O Expansion Unit, and HP site prep and installation.	1A _____
Opt. 510	Expands Memory to 4 Mbytes (MAX=1)	1B _____
51450A	MPE-V/E Media Product	1C _____
Opt. 200	Latest FOS version	1D _____
Opt. 34x	MIT specific Release	1E _____
Opt. 607	MICRO 3000XE CPU	1F _____
35303A	HP Easytime/V	1G _____
II. Memory Expansion		
	Total Memory Size: Maximum memory size is 8 Mbytes. Memory expansion options may also be ordered with the SPU (see section I). If 2A = 2 Mbyte, select no memory options, if 2A = 4 Mbyte, then set line 1B=1, if 2A = 6 Mbyte, then set line 2C=1, if 2A = 8 Mbyte, then set line 1B=1 and line 2C=1	2A _____
30462A	2 Mbyte Add-on Memory Card. (MAX=1)	2B _____
30482A	4 Mbyte Add-on Memory Card. (MAX=1)	2C _____
	Total Add-on Memory Boards (sum of lines 2B & 2C; MAX=1).	2 _____

MICRO 3000XE Configuration Worksheet

Product Number	Description	Quantity
III. Disk Drives		
7957A	81 Mbyte Fixed Media Disk Drive. (MAX=8)	3A _____
7958A	130 Mbyte Fixed Media Disk Drive.(MAX=8)	3B _____
7959B	304 Mbyte Fixed Media Disk Drive. (MAX=8)	3C _____
7936H/XP	307 Mbyte Fixed Media Disk Drive. (MAX=8)	3D _____
7937H/XP	571 Mbyte Fixed Media Disk Drive. (MAX=8)	3E _____
7963B	304 Mbyte Fixed Disk Drive w/upgrade capability. (MAX=2) 8 mechanisms	3F _____
C2200A	335 Mbyte Fixed Media Disk Drive. (MAX=8)	3G _____
C2202A	670 Mbyte Fixed Media Disk Drive. (MAX=8)	3H _____
C2203A	670 Mbyte Fixed Media Disk Drive. (MAX=8)	3I _____
Total Disk Drives (Sum of 3x; MAX=8)		3 _____
IV. Magnetic Tape Drives		
9144A	1/4-inch Cartridge Tape. Order cable separately. (MAX=4)	4A _____
9145A	1/4-inch Cartridge Tape. Order cable separately. (MAX=4)	4B _____
35401A	1/4-inch Cartridge Tape Autochanger. (MAX=2)	4C _____
7979A	1600 cpi Magnetic Tape Drive with 2m HP-IB cable (MAX=4)	4D _____
7980A/XC	6250 cpi Magnetic Tape Drive with 2m HP-IB cable. (MAX=4)	4E _____
Total Tape Drives (Sum of 4x; MAX=4)		4 _____

MICRO 3000XE Configuration Worksheet

Product Number	Description	Quantity
V. System Printers		
2563B	300 lpm Dot Matrix Printer (Opt 337 includes 4m HP-IB cable; MAX=4)	6A _____
2564B	600 lpm Dot Matrix Printer (Opt 337 includes 4m HP-IB cable; MAX=4)	6B _____
2566B	900 lpm Dot Matrix Printer (Opt 337 includes 4m HP-IB cable; MAX=4)	6C _____
2567B	1200 lpm Dot Matrix Printer (opt 337 includes 4m HP-IB cable; MAX=4)	6D _____
2680A	45 ppm Intelligent Page Printer (Opt 337 includes 4m HP-IB cable; MAX=1)	6E _____
Total System Printers (Sum of 6x; MAX=4)		6 _____

VI. Data Communications.

A. Workstations, Plotters, and Printers (Enter quantities in line below):

NOTE: Cabling must be ordered separately for these devices!

	Connection Method				
		Pt-to-Pt with ATP			
			Direct Connect		
Product		Modem	Type 422	Type 232-C	Terminal Attached
Workstations					
2393A		_____	_____	_____	N/A
2397A		_____	_____	_____	N/A
700/92		_____	_____	_____	N/A
700/94		_____	_____	_____	N/A
Vectra PC		_____	_____	_____	N/A
Plotters					
7440A		_____	N/A	_____	_____
7475A		_____	N/A	_____	_____
7550A		_____	N/A	_____	_____
Subtotal		7A _____	8A _____	9A _____	10A _____
Serial Printers					
2934A		_____	_____	_____	N/A
2563B		N/A	_____	_____	N/A
2564B		N/A	_____	_____	N/A
2684A		N/A	N/A	_____	N/A
Subtotal		7B _____	8B _____	9B _____	10B _____
Total		7 _____	8 _____	9 _____	10 _____

Line 7: MAX=28

Line 8: MAX=49

Line 9: MAX=56

Line 7 + 8 + 9: MAX=56

Line 7B + 8B + 9B: MAX=8

Line 10: MAX=56

MICRO 3000XE Configuration Worksheet

Product Number	Description	Quantity
VII. Advanced Terminal Processor (ATP/M)		
Each ATP/M provides eight serial ports. It is available in three configurations as described below.		
40290A Opt 103	ATP/M with seven 3-pin RS-232 direct connect ports and one 25-pin RS-232 modem ports. (MAX=7)	11A _____
40290A Opt 105	ATP/M with seven RS-422 ports and one 25-pin RS-232 modem ports. (MIN=[line 8]/7, MAX=7)	11B _____
40290A Opt 125	ATP/M with four 25-pin RS-232 direct connect ports and four 25-pin RS-232 modem port. (MAX=7)	11C _____
Total ATP/M (Sum of lines 11x; MAX=7)		11 _____
VIII. INP Network Links		
30246A	SNA LINK. For use with 30245A/R SNA NRJE and/or 30247A/R SNA IMF. (MAX = 3) and/or 30253 LU6.2 API	12A _____
30251A	BSC Link. For use with 30248A/R RJE, 30249A/R MRJE, or 30250A/R IMF. (MAX=3)	12B _____
30270A	Point-to-Point Hardwired Link for HP3000. Requires 32185A/R DS Network Service. (MAX=3)	12C _____
30271A	Point-to-Point Modem Link for HP3000. Requires 32185A/R DS Network Service (MAX=3)	12D _____
30284A	Point-to-Point Link for HP 3000. Requires 32344A NS 3000/V Network Services. (MAX=1)	_____
32187A	X.25 Network Link for HP 3000. Requires 32185A/R DS Network Service unless used solely for X.25 Terminal I/O. (MAX=3)	12E _____
24405A	X.25 Network Link for HP3000. Requires 32344A/R NS 3000/V Network Services (MAX=3)	12F _____
Total number of INP Links (Sum of lines 12x; MAX=3)		12 _____

MICRO 3000XE Configuration Worksheet

Product Number	Description	Quantity
IX. Local Area Network Links		
30240A	ThinLAN 3000/V Link. (MAX=1)	13A _____
30265A	StarLAN/3000 Link (MAX=1)	13C _____
	Total LAN Links (Sum of lines 13x; MAX=1)	13 _____
X. I/O Expansion		
A. Peripheral Interface Channels (PICs)		
	High Speed HP-IB devices (sum of lines 3,4,5 & 6; MAX=12)	14A _____
	Total HP-IB devices (sum of lines 12 & 14A; MAX=18)	14B _____
	Total PICs required (MIN=one for each 6 of line 14B, MAX=3)	14C _____
30259A	Optional PICs. One PIC is supplied standard with the MICRO 3000XE. To configure PICs, you must consider peripheral speed, electrical device loads, cable lengths, and system performance. Only two high speed PICs are supported; a third PIC may be ordered to support INPs only. (MIN=line 14C minus 1, MAX=2)	14 _____
B. Card Slots		
The sum of:		
	Line 2 - Add-on Memory Boards	15A _____
	Line 11 - ATPs	15B _____
	Line 12 - INPs	15C _____
	Line 13 - LANs	15D _____
	Line 14 - Add-on PICs	15E _____
	Total I/O Card Slots (Sum of lines 15x; MAX=7)	15 _____

MICRO 3000XE Configuration Worksheet

Product Number	Description	Quantity
	XI. Cabinets	
	A. Disk Cabinets	
	7936 and 7937 Disk drives require a cabinet for each two drives ordered. All other disk drives are housed in the System Cabinet described below.	
	Total 7936/7937 drives (Sum of lines 3C & 3D)	16A ____
19511A	Disk Cabinet (One for each two of line 16A)	16 ____
	B. System Cabinets	
	One System Cabinet is supplied with the MICRO 3000XE. Additional system cabinets may be required depending on the number of peripherals and ATP/Ms included in the system.	
	Peripheral Space Required (1/4 cabinet slots).	17A ____
	Disks - line 3A plus line 3B	17B ____
	Tapes - line 4A plus 2 *(line 4B)	
	Total ADD-ON peripheral space required. (Line 17A plus line 17B minus 2)	17C ____
	Add-on System Cabinets required for peripherals. (One required for each four of line 17C)	17D ____
	ATP/M Junction Panel space available: System Cabinet - line 17E=4 if line 4B=0 else line 17E=3	17E ____
	7936/7937 Cabinet-line 17F=2 if line 16A=odd number, else line 17F=0	17F ____
	Add-on Peripheral Cabinet - line 17G=4 if line 17D>0, else line 17G=0	17G ____
	Total Junction Panel space (sum of line 17E,17F and 17G)	17H ____
	Add-on System Cabinets required for ATP/M Junction Panels (line 17I=1 if line 10> line 17H, else line 17I=0)	17I ____
92211R	Add-on System Cabinets. (sum of lines 17D and 17I)	17 ____

Note

The 92211R provides the system cabinet only. Accessories available are the 92211S mounting rail and module lock kit, 92211T filler panel kit and 92199B power strip (92211S is required).

922LX, 922RX, 922, 932

MINIMUM SYSTEM CONFIGURATIONS

Supplied Hardware

- Central Processing Unit
- 24 Mbytes (922LX) or 32 Mbytes (922RX, 922, 932) Error Correcting Memory with Controllers
- Single Channel I/O Bus (CIB)
- One CIB adapter
- One HP-IB device adapter (922LX, 922RX, 922) or two HP-IB device adapters (932)
- One 802.3 LAN interface channel for network and Datacommunications and Terminal Controller (DTC) communication
- 6 meter AUI cable, ThickMAU and tap for SPU attachment for ThickLAN cable; ThinMAU with integrated AUI cable for attachment to ThinLAN cable
- Integrated disk drive(s): 670 Mbytes (922LX), 1340 Mbytes (922RX, 922, 932)
- Integrated DDS cartridge tape drive with 1.3 Gbytes capacity per cartridge
- Console attachment hardware and one 700/92 terminal
- Power supply
- Hardware manual set
- Battery backup unit
- System cabinet including card cages and power supplies supporting the CPU, memory, and I/O card slots and additional mass storage

Supplied Software

The Fundamental Operating System (FOS) software product (3265xB), ALLBASE/XL (36216A) and System Dictionary/XL (32256A) are provided as part of the preconfigured systems and include all the required software for an HP supported system:

- Multiprogramming Executive Operating System (MPE XL)
- MPE V/E V-MIT compatibility mode software
- ALLBASE/XL database management system including network model (TurboIMAGE) and relational model (ALLBASE/SQL) databases
- Keyed sequential access method software (KSAM/XL)
- TurboIMAGE Database inquiry language (QUERY/V)
- Data entry and forms management (VPLUS/XL)
- Sort and merge software (SORT-MERGE/XL)
- File copying utility (FCOPY/XL)
- Text editor (EDIT/XL)
- System debug utility (DEBUG/XL)
- Dictionary software (SYSTEM DICTIONARY/XL)
- System Management Core manual set

Preconfigured Systems

For ordering convenience and economy, preconfigured systems are available including:

- One of the following SPUs: 922LX (A1027A), 922RX (A1046A), 922 (A1033A), 932 (A1041A)
- FOS software (32650B)
- ALLBASE/XL (36216A) database management system including ALLBASE/SQL and TurboIMAGE
- System Dictionary/XL (32256A)

One or more of the Series 922 or 932 preconfigured systems' database management systems may be deleted by specifying one of the following preconfigured system options. It is also possible to delete both database management systems and FOS for all systems leaving a hardware only system.

- Option 910: ALLBASE/SQL only (deletes TurboIMAGE and System Dictionary).
- Option 920: MPE XL only (deletes ALLBASE/SQL, TurboIMAGE and System Dictionary).
- Option 930: SPU hardware only (deletes ALLBASE/SQL, TurboIMAGE, System Dictionary and FOS). The FOS software product (3265xB) must be ordered separately when ordering option 930.

Note



Options 910-930 are available after February 1, 1990. Option 910 and option 920 are not available for Series 922LX and 922RX systems. Option 930 is available for all system. If option 930 is specified, **you must order FOS (3265xB) separately**. An MPE media product (51453A) also must be ordered for each system. See the section below for a description of MPE media product options.

Ordering FOS Separately

When ordering system option 930 (SPU hardware only), after February 1, 1990, FOS must be ordered separately.

- **After February 1, 1990:** When system option 930 is specified, order FOS product 32651B to receive MPE XL only **or** order FOS product 32652B to receive MPE XL, ALLBASE/SQL, TurboIMAGE and System Dictionary. Ordering FOS product 32651B creates an **MPE XL only system**. Ordering FOS product 32652B creates a **preconfigured system**. Order the appropriate 51453A MPE media product and options.

MPE Media Products

One MPE media product (51453A) **MUST** be ordered with each system. Use the following tables as a guide to ordering the appropriate MPE media product options. Order one option from Group A, one option from Group B, one option from Group C and one option from Group D.

Before February 1, 1990**Table 1c-1.****Series 922LX, 922RX, 922, 932 MPE Media (51453A) Options (before February 1, 1990):**

	922LX	922RX	922	932
GROUP A - SYSTEM				
Preconfigured System	819	821	822	832
GROUP B - MPE RELEASE				
Latest release	200	200	200	200
Specific release	2xx	2xx	2xx	2xx
GROUP C - MEDIA TYPE				
DDS Cartridge	AAH	AAH	AAH	AAH
1600 bpi	051	051	051	051
6250 bpi	062	062	062	062
GROUP D - MANUALS				
English Manuals	ABA	ABA	ABA	ABA
German Manuals	ADA	ADA	ADA	ADA
French Manuals	AFA	AFA	AFA	AFA

After February 1, 1990**Table 1c-2.****Series 922LX, 922RX, 922, 932 MPE Media (51453A) Options (after February 1, 1990):**

	922LX	922RX	922	932
GROUP A - FOS/DATABASE				
Preconfigured System	810	810	810	810
ALLBASE/SQL only			800	800
MPE XL only			900	900
GROUP B - MPE RELEASE				
Latest release	200	200	200	200
Specific release	2xx	2xx	2xx	2xx
GROUP C - MEDIA TYPE				
DDS Cartridge	AAH	AAH	AAH	AAH
1600 bpi	AA1	AA1	AA1	AA1
6250 bpi	AA2	AA2	AA2	AA2
GROUP D - MANUALS				
English Manuals	ABA	ABA	ABA	ABA
German Manuals	ADA	ADA	ADA	ADA
French Manuals	AFA	AFA	AFA	AFA

For preconfigured systems the operating system will be installed at the factory and the software tape(s) and license will ship with the system.

Server Option

A server version of each system may be ordered. Ordering option 100 "Server Version" as part of the preconfigured system will configure the Series 922LX, 922RX, 922 or 932 as a server. Server versions do not allow terminals (or PCs configured as terminals) to establish a log-on via the DTC. DTCs are supported on the server for X.25 and serial device connections. PCs connected to the server via a local area network can access the server using NetIPC communications and virtual terminal emulation.

Required Hardware Ordered Separately

In addition to the preconfigured system, the following items are required for an HP supported system:

- One Datacommunications and Terminal Controller (product 2345A) with one modem interface product (option 625) for remote support. Not required for server systems.
- 802.3 LAN cabling: Thick or Thin (system includes both ThickLAN and ThinLAN connections). The Datacommunications and Terminal Controller (DTC) has options for either ThickLAN or ThinLAN.

Site Preparation

The customer and CE will need to work together on site preparation prior to installation as the site must be prepared for the power requirements of the system.

SYSTEM CONFIGURATION MAXIMUMS

Memory Expansion

Error correcting memory is supplied with each SPU. Standard memory includes 24 Mbytes for the 922LX and 32 Mbytes for the 922RX, 922 and 932. All systems may be configured with a maximum memory of 64 Mbytes. 8 Mbyte memory boards can be obtained by ordering options 504-508 with the system, or by ordering the standalone product A1401A.

Each 8 Mbyte memory card is a half-size board which occupies a full slot.

Floating Point Coprocessor

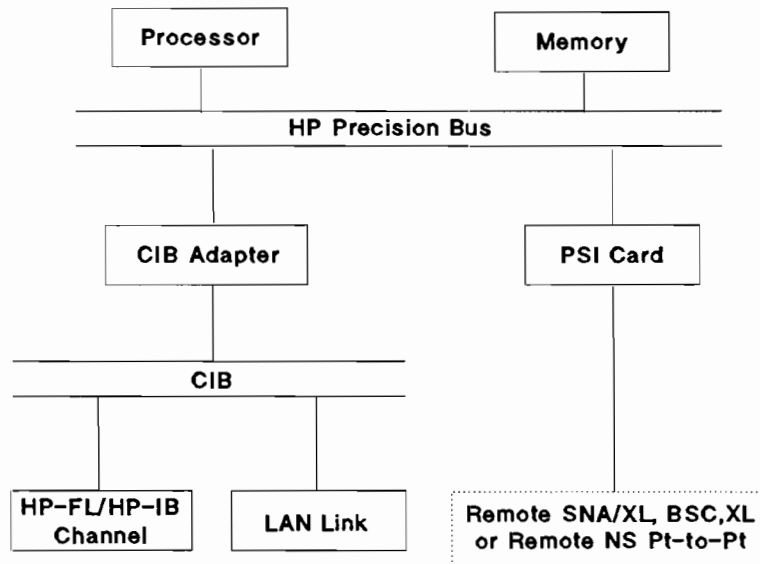
The Series 922LX, 922RX, 922 and 932 come standard with an IEEE floating point coprocessor for high performance in numerical applications. The coprocessor is built into the SPU so no installation is required.

I/O

Channel I/O Bus

The Series 900 connects to peripheral devices and data communication networks via the Channel I/O Bus (CIB) which is connected to the SPU via the CIB adapter. The series 922LX, 922RX, 922 and 932 come standard with the maximum configuration of one CIB adapter and one CIB.

The Series 922LX, 922RX, 922 and 932 each support a maximum combination of 5 HP-FL, HP-IB, LAN cards. The 922LX, 922RX and 922 come standard with one HP-IB channel and one 802.3 LAN card making three slots available for HP-IB or HP-FL expansion. The Series 932 comes standard with two HP-IB channels and one 802.3 LAN interface channel making two additional CIB slots available for expansion.



I/O Expansion Conceptual Diagram

Expansion Slot Availability

Rear	
Processor	
8Mb or PSI	8Mb or PSI
8Mb or PSI	8Mb or PSI
* Optional 8Mb or PSI	Optional 8Mb or PSI
Optional 8Mb or PSI	Optional 8 Mb/PSI/HP-IB/HP-FL
	Optional 8 Mb/PSI/HP-IB/HP-FL
	Optional** 8 Mb/PSI/HP-IB/HP-FL
	LANIC
	HP-IB

* 8 Mb optional on 922LX; standard on 922RX, 922 and 932

** HP-IB optional on 922LX, 922RX, 922; standard on 932

Front
Access Port
HP-PB Adapter
Console MUX
8 Mb

Series 922LX, 922RX, 922, 932 Expansion Slot Availability

Peripheral Channels

HP-IB Channels

The Series 922LX, 922RX and 932 are preconfigured with one HP-IB channel; the Series 932 is preconfigured with two HP-IB channels.

The HP-IB channel (27113A) is a hardware controller used to interface HP-IB (IEEE 488 protocol) peripherals to the Series 900 systems. Each HP-IB channel is a board that uses one I/O card (CIB) slot and supports one HP-IB cabling system. Each HP-IB cabling system may be used to connect from one to six HP-IB peripherals. Peripherals connected to one HP-IB channel are linked together with HP-IB cables. The number of peripherals which may be practically connected to a single HP-IB channel depends on cable length restrictions and performance considerations.

In the maximum configuration, three HP-IB channels are supported on the Series 922LX, 922RX, 922 and 932. Order product 27113A with the appropriate 922/932 option to obtain additional HP-IB channels. Add-on HP-IB channels for the Series 922LX, 922RX, 922 and 932 include an adapter to interface with the HP Precision Bus. This adapter is unique to the Series 922LX, 922RX, 922 and 932.

High-speed peripherals may be attached to all HP-IB channels. All devices supported on the Series 900 are high-speed.

HP-IB Channel Restrictions

A maximum of six devices may be attached to an HP-IB channel. There is a maximum of 8 electrical device loads per HP-IB channel.

HP Fiber-optic Link Channels

HP's Fiber-optic link, HP-FL, is an interface channel (27115A) used to connect HP-FL disk drives to the Series 900 systems.

Each interface uses one I/O (CIB) slot and attaches one fiber-optic cable. The cable needed to connect the channel to its first disk drive is included with the HP-FL channel. Each channel may support up to 8 disks in a daisy-chain using a disk-to-disk bus called P-Bus.

A maximum of two HP-FL channels are supported on Series 922LX, 922RX, 922 and 932 systems. Order product 27115A with the appropriate 922/932 option to obtain HP-FL channels. Add-on HP-FL channels for the Series 922LX, 922RX, 922 and 932 include an adapter to interface with the HP Precision Bus. This adapter is unique to the Series 922LX, 922RX, 922 and 932.

802.3 LANIC (ThinLAN Link)

Each 922LX, 922RX, 922 and 932 preconfigured system is supplied with one IEEE 802.3 LAN interface channel (36923A ThinLAN Link) which is required for DTC access, for LAN workstation connections and for system-to-system communications.

System-to-system communication requires ordering product 36923A opt 310 for the 922LX; opt 315 for the 922RX; 320 for the 922/932. Since the ThinLAN link is already installed as part of the preconfigured system, ordering product 36923A and the appropriate option provides the downloadable software for the card to support system-to-system communication.

Each system is supplied with both ThickLAN and ThinLAN Medium Attachment Units (MAU), taps and Attachment Unit Interface (AUI) cables. The DTC has options for either ThickLAN or ThinLAN connection.

Each LAN card uses one I/O (CIB) card slot and connects to one Local Area Network. The Series 922LX, 922RX, 922 and 932 support a maximum of one LAN interface channel.

Network Link Products (PSI)

HP Network Link Products include a software and a hardware component. For MPE XL systems the PSI card is the hardware component for SNA Link/XL, BSC Link/XL and NS Point to Point 3000/XL remote communications and is included with each order of the appropriate Network Link product.

The PSI cards for the Series 922LX, 922RX, 922 and 932 interface to the HP Precision Bus and are supported in all available expansion slots. A maximum of three PSI cards are supported in the Series 922LX, 922RX, 922 and 932.

Each PSI card for the 922LX - 932 is a half-size board which occupies a full slot. Unlike HP-IB, HP-FL and LANIC cards, PSI cards are not interchangeable among all Series 900 systems. Order option 002 for a remote network link product in order to specify the correct PSI hardware for a Series 922LX, 922RX, 922 or 932.

X.25 Network Link Products

X.25 and PAD communications are provided by the DTC/X.25 XL Network Link which is part of the same Datacommunications and Terminal Controller subsystem used for terminal and serial device communications. X.25 configuration requirements may be found in the *Datacommunications and Terminal Controller* chapter.

Each Series 900 system supports up to 11 DTC/X.25 Network Links.

X.400/3000

X.400 connections are provided by the X.400/3000 Server. The server system can connect single or multiple HP DeskManager nodes into an X.400 environment. The X.400/3000 server (32057A) includes an HP 9000 Series 360 system with the hardware and software needed to run X.400. The X.400/3000 server offers options to connect to ThickLAN, ThinLAN or X.25. X.400 connection also requires HP X.400/HPDesk software (32055A opt 3xx).

Peripherals

Disk Drives

The Series 922LX preconfigured system is shipped with one 670 Mbyte internal disk drive mechanism. The series 922RX, 922 and 932 preconfigured systems are shipped with two 670 Mbyte internal disk drive mechanisms. Additional internal disk drives may be ordered by specifying preconfigured system options 003-008. Additional internal disk mechanisms may also be ordered as product number C2281A (335 Mbyte disk) or product number C2282A (670 Mbyte disk).

Note 	It is required that 400 Mbytes of disk space be allocated for exclusive use of the operating system.
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The following table lists the maximum number of each current disk drive that can be configured with the Series 922LX, 922RX, 922 and 932.

Table 1c-3.

Series 922LX, 922RX, 922, 932 Maximum Disk Drive Configurations:

	922LX	922RX	922	932
7937H HP-IB	9	8	8	16
7937FL HP-FL	9	8	8	16
7963B (see note)	9	8	8	16
C2200A HP-IB	9	8	8	16
C2201A HP-FL	9	8	8	16
C2203A HP-IB	9	8	8	16
C2204A HP-FL	9	8	8	16
C2281A (internal)	3	3	3	3
C2282A (internal)	4	4	4	4
Total Disk Drives	10	10	10	18

Note 	Each 7963B unit may hold up to 3 disk drives each with a separate controller. Support is for the total number of disk drives. Each C2204A unit holds two disk mechanisms which share a controller. Each C2204A unit is considered a single disk drive.
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Each external HP-IB disk drive is shipped with a 1 meter HP-IB cable. Each HP-FL disk drive is shipped with a .8 meter PBus cable. A longer PBus cable, 13367A, can be ordered for longer distances. Internal disks ordered separately are shipped with the required cables.

Disk performance may vary depending on the specific configuration of disks, and HP-IB channels. As a rule of thumb, you may connect 3-4 disk drives per HP-IB channel without significant performance degradation. HP-FL allows you to connect the maximum of 8 disk drives per channel without significant performance degradation.

Magnetic Tape Drives

Each 922LX, 922RX, 922 or 932 preconfigured system is shipped with an integrated DDS cartridge tape drive (C1501A). The integrated DDS cartridge tape drive may be deleted by specifying option 301 with the preconfigured system. The 922LX, 922RX, 922 and 932 support external DDS and 1/2-inch tape drives. The internal DDS cartridge tape or a C1511A standalone DDS cartridge tape drive or a 7979A, 7980A, 7980XC 1/2-inch tape drive is required for system backup and software distribution.

The 7980XC is a high performance streaming tape drive which can fully utilize the available bandwidth of an HP-IB channel. To achieve the full performance potential in a multiple tape configuration with TurboSTORE/XL software, each tape drive must be configured to a separate HP-IB channel.

The following table lists the maximum number of each current model of tape drive that can be configured with the Series 922LX, 922RX, 922 and 932.

Table 1c-4.

Series 922LX, 922RX, 922, 932 Maximum Tape Drive Configurations:

	922LX	922RX	922	932
7979A	4	4	4	4
7980A	4	4	4	4
7980XC	4	4	4	4
C1511A	4	4	4	4
C1501A (internal)	1	1	1	1
Total Tape Drives	4	4	4	4

System Printers

System printers are printers that guarantee data integrity, ensure print job independence and report operational status to the system. The following table lists the maximum number of each current type of system printer that can be configured on the Series 922LX, 922RX, 922 and 932.

Table 1c-5.**Series 922LX, 922RX, 922, 932 Maximum System Printer Configurations:**

	922LX	922RX	922	932
Line Printers				
2562C	4	4	4	6
2563B	4	4	4	6
2564B	4	4	4	6
2566B	4	4	4	6
2567B	4	4	4	6
Page Printers				
2680A	4	4	4	4
Total System Printers	4	4	4	6

The 256x are dot matrix line printers which attach directly to an HP-IB cable system. Order printer option 393 to obtain the HP-IB interface and a 4m HP-IB cable. Note that 256x printers require the HP-IB interface to meet the definition of a system printer discussed above.

On the 2680A page printer, order option 395 to receive a 8 meter HP-IB cable. You may specify option 099 to replace the 8 meter cable with a 2 meter HP-IB cable.

Serial Printers

The Series 922LX, 922RX, 922 and 932 support spooled serial printers through the Datacommunications and Terminal Controller (DTC). Serial printers connect to a DTC port either via a hardwired RS-232/422 cable or via a modem. Printers connected via a RS-232 or RS-422 connection are considered local spooled printers. Printers connected via a modem are considered remote spooled printers.

Note**Remote Spooled Printing**

In order to support remote spooled printing, the printer must be supported via a modem. Note that not all serial printers are supported via a modem.

293x printers support RS-232C and RS-422 connections. Both hardware and modem connections to these printers are supported

256x printers support RS-232C and RS-422 connections. Modem connections are not supported.

LaserJet printers support RS-232C and RS-422 connections. Modem connections are not supported.

Table 1c-6.**Series 922LX, 922RX, 922, 932 Maximum Serial Printer Configurations:**

	922LX	922RX	922	932
2562C	4	4	4	4
2563B	4	4	4	4
2564B	4	4	4	4
2934A	16	16	16	28
LaserJet II/IID	5	5	5	8
LaserJet 2000	2	2	2	3
Total Serial Printers	16	16	16	28

Note

The spooled device support totals stated in the table above are based on performance considerations. Full spooled support (status checking) for the LaserJet IID requires the addition of a 26013A I/O card to the LaserJet IID.

Data Communications**Workstation Connections**

Point-to-point workstation (terminals, personal computers and serial printers) connections are made to the Series 922LX, 922RX, 922 and 932 through the Datacommunications and Terminal Controller (DTC, HP 2345A) which connects to the SPU via the 802.3 LAN. The DTC supports local RS-232C and RS-422 connections and remote RS-232C modem connections.

Server versions do not allow terminals (or PCs configured as terminals) to establish a log-on via the DTC. DTCs are supported on the server for X.25 and serial device connections. PCs are connected to the server via a local area network and can access the server using NetIPC communications and virtual terminal emulation.

Table 1c-7.**Series 922LX, 922RX, 922, 932 Maximum DTC/Workstations Support**

	922LX	922RX	922	932
Max DTCs	6	6	6	12
Max Workstations	32	64	152	240

The table above shows maximum workstation connections. Performance considerations may limit the number of active sessions. The number of active sessions that are practical is dependent on the application mix and response time/throughput requirements. Please consult with an HP performance specialist to determine the number of sessions that can be concurrently active with a particular application.

System Console

One hardwired point-to-point 700/92 terminal must be used as the system console. Each Series 922LX, 922RX, 922 and 932 preconfigured system is shipped with the required console and hardware.

The console connects directly to the system. It has no direct connection to the Datacommunications and Terminal Controller.

Console printing is accomplished via a terminal attached serial printer.

Support Link Modem

Under the HP Remote Support Program, all new (non-upgrade) systems with a qualifying HP support agreement are supplied with an HP Support Link Modem. This modem is loaned to the customer for support purposes during the time period that the support agreement is in effect, and remains the property of Hewlett-Packard Company.

An additional connection is required for the remote console to simulate a user workstation. There are two ways to do this; 1) Connect the console MUX to a nearby DTC via the 15 ft RS-232 modem cable included with the system. 2) Alternatively, customers may purchase a second modem for attachment to any DTC. HP personnel would log on to this second modem for application support. Note that either method of connection requires the DTC to have a modem interface card. For server versions which may not require a DTC, the Support Link Modem is connected directly to the remote console port.

Power Line Conditioners

In many areas AC power line disturbances can interfere with system operation, possibly causing interference with system operation, possibly causing data corruption or even system failures. "Dirty" lines from local utilities or noise generated by electrical equipment on customer premises can cause these problems. Please consult with your site preparation CE concerning any such power line conditioner needs you may have. Your CE will have a list of recommended power line conditioners that may be purchased from local third parties.

925LX, 925, 935, 949

MINIMUM SYSTEM CONFIGURATIONS

Supplied Hardware

- Central Processing Unit
- 24 Mbytes (925LX) or 32 Mbytes (925) or 48 Mbytes (935) or 64 Mbytes (949) Error Correcting Memory with Controllers
- Single Channel I/O Bus (CIB)
- One CIB adapter (925LX, 925) or two CIB adapters (935, 949)
- Two HP-IB device adapters (925LX, 925, 935, 949)
- One 802.3 LAN interface channel for Datacommunications and Terminal Controller communication
- 6 meter AUI cable, ThickMAU and tap for SPU attachment for ThickLAN cable; ThinMAU with integrated AUI cable for attachment to ThinLAN cable
- Console attachment hardware consisting of cables, a synapse box, an access port, and a MUX.
- Power supply
- Hardware manual set
- Battery backup unit

Supplied Software

The Fundamental Operating System (FOS) software product (3265xB), includes all the required software for an HP supported system. FOS, ALLBASE/XL, and System Dictionary/XL are provided as part of the available preconfigured systems and include all the required software for an HP supported system including:

- Multiprogramming Executive Operating System (MPE XL)
- MPE V/E V-MIT compatibility mode software
- ALLBASE/XL database management system including network model (TurboIMAGE) and relational model (ALLBASE/SQL) databases
- Keyed sequential access method software (KSAM/XL)
- TurboIMAGE database inquiry language (QUERY/V)
- Data entry and forms management (VPLUS/XL)
- Sort and merge software (SORT-MERGE/XL)
- File copying utility (FCOPY/XL)
- Text editor (EDIT/XL)
- System debug utility (DEBUG/XL)
- Dictionary software (SYSTEM DICTIONARY/XL)
- System Management Core manual set

Preconfigured Systems

For ordering convenience and economy, preconfigured systems are available including:

- One of the following SPUs: 925LX (A1032A), 925 (A1007A), 935 (A1060A), 949 (A1600A)
- FOS software (3265xB)
- ALLBASE/XL (36216A) database management system including ALLBASE/SQL and TurboIMAGE
- System Dictionary/XL (32256A)

One or more of the Series 925, 935 or 949 preconfigured systems' database management systems may be deleted by specifying one of the following preconfigured system options. It is also possible to delete both database management systems and FOS for all systems leaving a hardware only system.

- Option 910: ALLBASE/SQL only (deletes TurboIMAGE and System Dictionary).
- Option 920: MPE XL only (deletes ALLBASE/SQL, TurboIMAGE and System Dictionary).
- Option 930: SPU hardware only (deletes ALLBASE/SQL, TurboIMAGE, System Dictionary and FOS). The FOS software product (3265xB) must be ordered separately when ordering option 930.

Note



Options 910-930 are available after February 1, 1990. Options 910-930 are not available for the Series 925LX. If option 930 is specified for the 925, 935 or 949 **you must order FOS (3265xB) separately.** An MPE media product (51453A) also must be ordered for each system. See the section below for a description of MPE media product options.

Ordering FOS Separately

When ordering an unconfigured system (SPU hardware only) prior to February 1, 1990 or when ordering system option 930 (SPU hardware only), after February 1, 1990, FOS must be ordered separately.

- **Before February 1, 1990:** Order FOS product 32650B with option 4xx and the appropriate pre-February 1, 1990 51453A MPE media product and options.
- **After February 1, 1990:** When system option 930 is specified, order FOS product 32651B to receive MPE XL only **or** order FOS product 32652B to receive MPE XL, ALLBASE/SQL, TurboIMAGE and System Dictionary. Ordering FOS product 32651B creates an **MPE XL only system**. Ordering FOS product 32652B creates a **preconfigured system**. Order the appropriate 51453A MPE media product and options.

MPE Media Products

One MPE media product (51453A) **MUST** be ordered with each system. Use the following tables as a guide to ordering the appropriate MPE media product options. Order one option from Group A, one option from Group B, one option from Group C and one option from Group D.

Before February 1, 1990

Table 1d-1.

Series 925LX, 925, 935, 949 MPE Media (51453A) Options (before February 1, 1990):				
	925LX	925	935	949
GROUP A - SYSTEM				
Preconfigured system	820	825	835	849
SPU only		925	935	949
GROUP B - MPE RELEASE				
Latest release	200	200	200	200
Specific release	2xx	2xx	2xx	2xx
GROUP C - MEDIA TYPE				
DDS Cartridge	AAH	AAH	AAH	AAH
1600 bpi	051	051	051	051
6250 bpi	062	062	062	062
GROUP D - MANUALS				
English Manuals	ABA	ABA	ABA	ABA
German Manuals	ADA	ADA	ADA	ADA
French Manuals	AFA	AFA	AFA	AFA

After February 1, 1990

Table 1d-2.

Series 925LX, 925, 935, 949 MPE Media (51453A) Options (after February 1, 1990):				
	925LX	925	935	949
GROUP A - FOS/DATABASE				
Preconfigured System	810	810	811	811
ALLBASE/SQL only		800	801	801
MPE XL only		900	901	901
GROUP B - MPE RELEASE				
Latest release	200	200	200	200
Specific release	2xx	2xx	2xx	2xx
GROUP C - MEDIA TYPE				
DDS Cartridge	AAH	AAH	AAH	AAH
1600 bpi	AA1	AA1	AA1	AA1
6250 bpi	AA2	AA2	AA2	AA2
GROUP D - MANUALS				
English Manuals	ABA	ABA	ABA	ABA
German Manuals	ADA	ADA	ADA	ADA
French Manuals	AFA	AFA	AFA	AFA

For preconfigured systems the software tape(s) and license will ship with the system.

Server Option

A server version of each system may be ordered. Ordering option 100 "Server Version" as part of the preconfigured system will configure the Series 925, 935 or 949 as a server. Server versions do not allow terminals (or PCs configured as terminals) to establish a log-on via the DTC. DTCs are supported on the server for X.25 and serial device connections. PCs are connected via a local area network can access the server using NetIPC communications and virtual terminal emulation.

Note Option 100 is not available for the Series 925LX.



Required Hardware Ordered Separately

In addition to the preconfigured system, the following items are required for an HP supported system:

- One Datacommunications and Terminal Controller (product 2345A) with one modem interface product (option 625) required for remote support. Not required for server versions.
- 802.3 LAN cabling: Thick or Thin (system includes both ThickLAN and ThinLAN connections. The Datacommunications and Terminal Controller (DTC) has options for either ThickLAN or ThinLAN

Site Preparation

The customer and CE will need to work together on site preparation prior to installation as the site must be prepared for the power requirements of the system.

SYSTEM CONFIGURATION MAXIMUMS

Memory Expansion

Error correcting memory is supplied with each SPU. Standard memory includes 24 Mbytes for the 925LX, 32 Mbytes for the 925, 48 Mbytes for the 935 and 64 Mbytes for the 949. The 925LX, 925 and 935 may be configured with a maximum memory of 96 Mbytes; the 949 may be configured with a maximum of 192 Mbytes. Memory consists of 1 Mbit RAM Error Correcting Memory configured on 8 Mbyte and 16 Mbyte boards or 4 Mbit RAM configured on 32 Mbyte boards. Additional memory may be obtained by ordering options 501, 516, 521 (Series 935 only) or 532 with the system, or by ordering the standalone products A1010A (8 Mbyte), A1037A (16 Mbyte) or A1623A (32 Mbyte).

Table 1d-3.

Series 925LX, 925, 935, 949 Maximum Memory Configurations (Mbytes):

	Minimum	Maximum	Add-on Memory
925LX	24*	96	8, 16, 32 Mb
925	32**	96	8, 16, 32 Mb
935	48***	96	8, 16, 32 Mb
949	64**	192	8, 16, 32 Mb

* One 16 Mbyte and one 8 Mbyte memory array.

** One 32 Mbyte memory array (925) or two (949).

*** One 32 Mbyte and one 16 Mbyte memory array.

Floating Point Coprocessor

The Series 925LX, 925, 935 and 949 come standard with an IEEE floating point coprocessor for high performance in numerical applications. The coprocessor is built into the SPU so no installation is required.

I/O

Channel I/O Bus

The Series 900 connects to peripheral devices and data communication networks via the Channel I/O Bus (CIB) which is connected to the SPU via the CIB adapter. The Series 925LX and 925 come standard with one CIB adapter and one CIB. Another CIB adapter and CIB can be added to the Series 925 (not the 925LX) by ordering either option 003 with the system, or by ordering the standalone product A1013A.

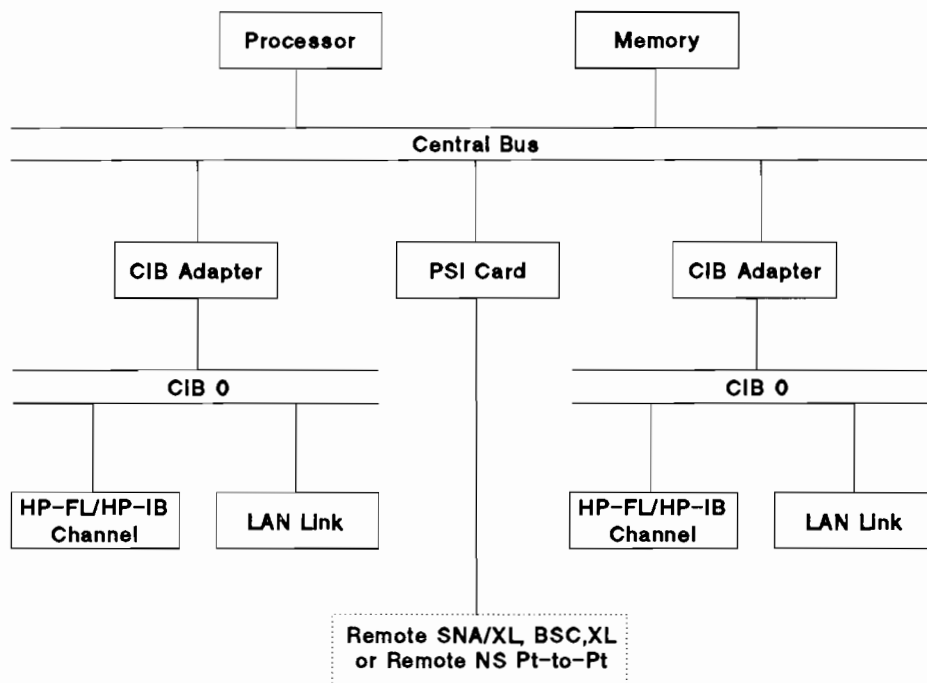
The Series 935 and 949 come standard with two CIB adapters on the system board. Unlike the Series 925, the second CIB adapter does not use an I/O slot. The Series 935 and 949 come standard with one CIB. An additional CIB for the Series 935 and 949 can be obtained by either ordering option 003 with the system, or by ordering the standalone product A1065A.

The Series 925LX and single CIB 925/935/949 support a maximum of 2 additional I/O cards (HP-FL, HP-IB, PSI or LANIC). The dual CIB Series 925 supports a maximum of 1 additional I/O card (HP-FL, HP-IB, PSI or LANIC) in the first CIB. For the Series 935 and 949 two additional I/O cards can be placed in the first CIB. The optional CIB for the 925, 935 and 949 can each hold 5 additional I/O cards (HP-IB, HP-FL, or LANIC).

Note



There are restrictions regarding the placement and maximums for each of the individual I/O cards (HP-FL, HP-IB, PSI and LANIC). See the following text for restrictions on each individual card type.



I/O Expansion Conceptual Diagram

Expansion Slot Availability

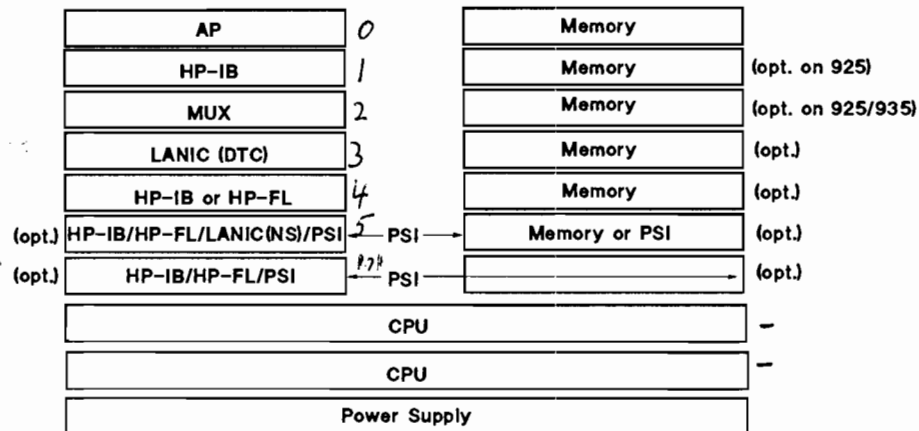
Five I/O cards are included with each system including two cards for console attachment and system diagnostic support, one LANIC for interfacing with the DTC and two HP-IB channels for peripheral connection. Two I/O slots are left for additional HP-IB, HP-FL, PSI or LANIC cards.

Five additional I/O slots can be obtained by adding the appropriate CIB expander to the Series 925, 935 or 949. Note that adding the optional CIB expander to the Series 925 requires the use of a CIB adapter card which occupies both a CIB and a CTB slot in the system's first CIB.

Series 925LX or Single CIB 925/935

7 CIB slots in total
(2 slots available)

7 CTB slots in total
(5 slots available on 925)
(4 slots available on 935)



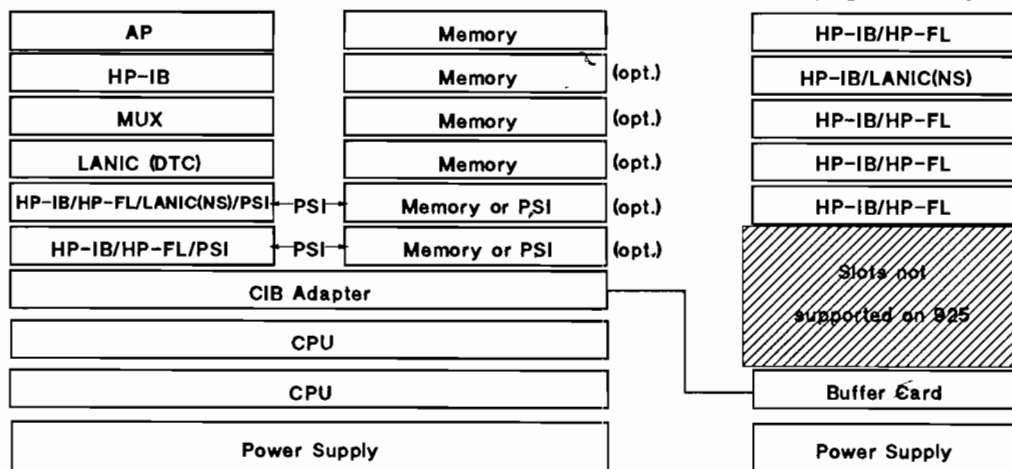
* Note: Actual order of cards WILL vary depending upon configuration.

Series 925 Two CIB System

6 CIB slots in total
(2 slots available)

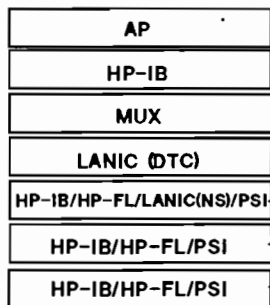
7 CTB slots in total
(2 slots available)

5 CIB slots

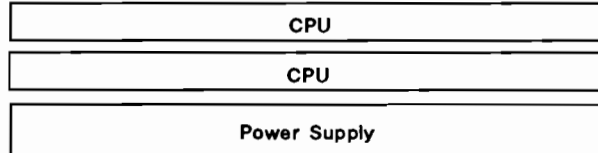
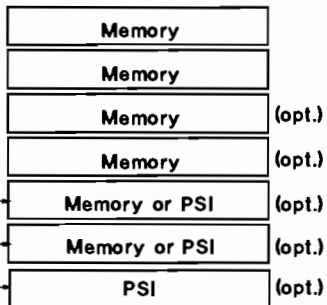


Series 935 Two CIB System

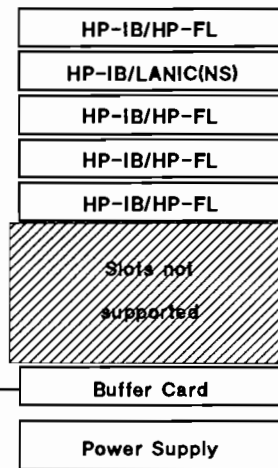
6 CIB slots in total
(2 slots available)



7 CTB slots in total
(4 slots available)

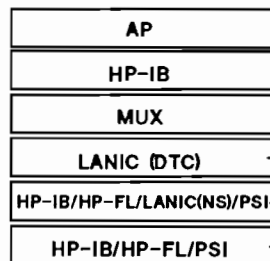


5 CIB slots

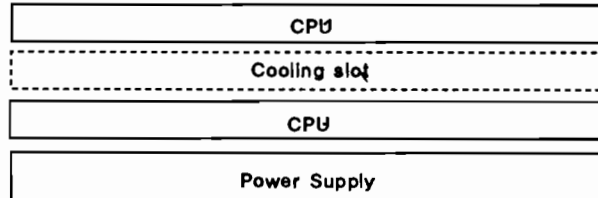
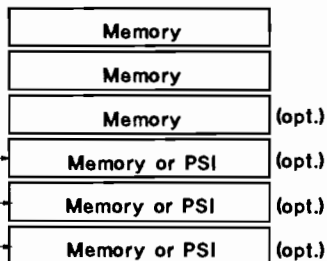


Series 949 Two CIB System

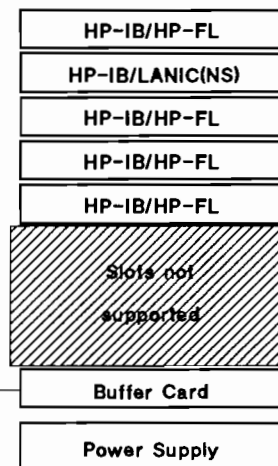
6 CIB slots in total
(2 slots available)



7 CTB slots in total
(4 slots available)



5 CIB slots



Peripheral Channels

HP-IB Channels

The Series 925LX, 925, 935 and 949 are preconfigured with two HP-IB channels. System option 550 will delete one HP-IB channel and replace it with an HP-FL channel.

The HP-IB channel (27113A) is a hardware controller used to interface HP-IB (IEEE 488 protocol) peripherals to the Series 900 systems. Each HP-IB channel is a board that uses one I/O card (CIB) slot and supports one HP-IB cabling system. Each HP-IB cabling system may be used to connect from one to six HP-IB peripherals. Peripherals connected to one HP-IB channel are linked together with HP-IB cables. The first device in the chain utilizes a special 2m HP-IB cable (included with the HP-IB channel) to connect directly to the HP-IB channel card. The number of peripherals which may be practically connected to a single HP-IB channel depends on cable length restrictions and performance considerations.

In the maximum configuration, 4 HP-IB channels are supported on the Series 925LX, 7 on the Series 925 and 8 on the 935 and 949. Order product 27113A to obtain additional HP-IB channels.

High-speed peripherals may be attached to all HP-IB channels. All devices supported on the Series 900 are high-speed.

HP-IB Channel Restrictions

A maximum of six devices may be attached to an HP-IB channel. There is a maximum of 8 electrical device loads per HP-IB channel.

HP Fiber-optic Link Channels

HP's Fiber-optic link, HP-FL, is an interface channel (27115A) used to connect HP-FL disk drives to the Series 900 systems.

Each interface uses one I/O (CIB) slot and attaches one fiber-optic cable. The cable needed to connect the channel to its first disk drive is included with the HP-FL channel. Each channel may support up to 8 disks in a daisy-chain using a disk-to-disk bus called P-Bus.

A maximum of two HP-FL channels are supported on each CIB. The Series 925LX supports a maximum of 1 HP-FL channel. The Series 925 supports a maximum of 2 HP-FL channels with the optional CIB expander. The Series 935 supports a maximum of 3 HP-FL channels; the Series 949 supports a maximum of 4 HP-FL channels. Order product 27115A to obtain HP-FL channels, or system option 550 to replace one of the preconfigured HP-IB channels with an HP-FL channel.

802.3 LANIC (ThinLAN Link)

Each 925LX, 925, 935 and 949 preconfigured system is supplied with one IEEE 802.3 LAN interface channel (36923A) which is required for workstation communications. The Asynchronous Serial Communication (ASC) software included with FOS uses this card and the 802.3 LAN to communicate between the SPU and the Datacommunications and Terminal Controller (DTC). System-to-system communication is supported by ordering a second ThinLAN link and the appropriate network software.

Each system is supplied with both ThickLAN and ThinLAN Medium Attachment Units (MAU), taps and Attachment Unit Interface (AUI) cables. The DTC has options for either ThickLAN or ThinLAN connection.

Each LAN card uses one I/O (CIB) card slot and connects to one Local Area Network. The Series 925LX, 925, 935 and 949 support a maximum of two LAN interface channels.

X.25 Network Link Products

X.25 and PAD communications are provided by the DTC/X.25 XL Network Link which is part of the same Datacommunications and Terminal Controller subsystem used for terminal and serial device communications. X.25 configuration requirements may be found in the *Datacommunications and Terminal Controller* chapter.

Each Series 900 system supports up to 11 DTC/X.25 Network Links.

X.400/3000

X.400 connections are provided by the X.400/3000 Server. The server system can connect single or multiple HP DeskManager nodes into an X.400 environment. The X.400/3000 server (32057A) includes an HP 9000 Series 360 system with the hardware and software needed to run X.400. The X.400/3000 server offers options to connect to ThickLAN, ThinLAN or X.25. X.400 connection also requires HP X.400/HPDesk software (32055A opt 3xx).

Network Link Products (PSI)

HP Network Link Products include a software and a hardware component. For MPE XL systems the Programmable Serial Interface (PSI) card is the hardware component for SNA Link/XL, BSC Link/XL and NS Point to Point Link 3000/XL remote communications and is included with each order of the appropriate Network Link product.

PSI cards interface to the CTB, but they are wide and also cover a CIB slot. PSI cards are not supported in the optional CIB expander. A maximum of two PSI cards are supported in the Series 925LX and 925. A maximum of three PSI cards are supported on the Series 935 and 949.

Installation of the maximum PSI cards in a Series 949 may reduce the maximum available memory. Installation of PSI cards in a Series 925LX, 925, 935 or 949 may require the use of 32 Mbyte memory cards in order to realize the full memory capability of each system.

On a Series 925LX and a single CIB Series 925/935/949, the first PSI card installed does not affect the number of memory cards that can be installed since it can be installed in the lowest CIB/CTB slot. However, if a second PSI card is installed on a single CIB system, it will reduce the maximum number of memory cards that can be installed by one.

On a two CIB Series 925, the first PSI card installed reduces the maximum number of memory cards that may be installed by one. If two PSI cards are installed the maximum number of memory cards that can be installed is reduced by two. This is because the CIB adapter card must be installed in the lowest CIB/CTB slot on dual CIB Series 925 systems.

On a two CIB Series 935 or 949 system, the first PSI card installed does not affect the number of memory cards that can be installed. If two PSI cards are installed, the maximum number of memory cards that can be installed on a is reduced by one.

Unlike HP-IB, HP-FL and LANIC cards, PSI cards are not interchangeable among all Series 900 systems. Because a PSI card varies depending on the system in which it will be installed, be sure to order the correct remote network link hardware option.

Table 1d-4.**Series 925LX-949 Memory/PSI Maximum Configuration:**

	PSI Cards	Maximum Memory
925LX and 925 with 1 CIB	0	96
	1	96
	2	96
925 with 2 CIBs*	0	96
	1	96
	2	96
935 with 1 or 2 CIBs	0	96
	1	96
	2	96
	3	96
949 with 1 or 2 CIBs	0	192
	1	192
	2	160
	3	128

* Although PSI cards are not supported in the CIB expander, 2 CIB scenarios are provided to illustrate the impact on memory of the Series 925 Channel Adapter card in conjunction with PSI cards.

Note

Obtaining the maximum memory listed in the table above may require use of 32 Mbyte memory cards.

Peripherals

Disk Drives

400 Mbytes of disk space must be allocated for exclusive use of the operating system. System disk (LDEV 1) support is limited to the following disk drives:

- C2201A (670 Mbytes HP-FL), C2203A (670 Mbytes HP-IB), C2204A (1.34 Gbytes HP-FL)
- 7937H, 7937XP, 7937FL (571 Mbytes)
- 7933H, 7933XP, 7935H, 7935XP (404 Mbytes)

The following table lists the maximum number of each type of current disk drive that can be configured with the Series 925LX, 925, 935 and 949. For a complete listing of current and obsolete disk drives supported, see Appendix 1.

Table 1d-5.

Series 925LX, 925, 935, 949 Maximum Disk Drive Configurations:

	925LX	925	935	949
C2200A HP-IB	8	16	24	24
C2201A HP-FL	8	16	24	32
C2203A HP-IB	8	16	24	24
C2204A HP-FL	8	16	24	32
7937H/XP HP-IB	8	16	24	24
7937FL HP-FL	8	16	24	32
7963B HP-IB	8	16	24	24
HP-IB Disk Drives	8	16	24	24
HP-FL Disk Drives	8	16	24	32
Total Disk Drives	8	16	24	32

Note



Each 7963B unit may hold up to 3 disk drives each with a separate controller. Support is for the total number of disk drives.

Each C2204A unit holds two disk mechanisms which share a controller. Each C2204A unit is considered a single disk drive.

Each external HP-IB disk drive is shipped with a 1 meter HP-IB cable. Each HP-FL disk drive is shipped with a .8 meter PBus cable. A longer PBus cable, 13367A, can be ordered for longer distances.

Disk performance may vary depending on the specific configuration of disks, HP-IB channels and HP-FL channels. As a rule of thumb, you may connect 3-4 disk drives per HP-IB channel without significant performance degradation. HP-FL allows you to connect the maximum of 8 disk drives per channel without significant performance degradation.

Mirrored Disk

Mirrored Disk/XL support is limited to disks with an HP-FL interface. Mirrored disks must not share the same HP-FL interface channel (27115A). A mirrored disk pair must be made up of identical disk drives.

Magnetic Tape Drives

A 7980A, 7980XC, 7979A, 7978A/B, 7974A or C1511A magnetic tape drive is required for system backup and distribution of software on Series 925LX, 925, 935 and 949 systems. The tape drive must be ordered separately.

The following table lists the maximum number of each current model of tape drive that can be configured with the Series 925LX, 925, 935 and 949.

Table 1d-6.

Series 925LX, 925, 935, 949 Maximum Tape Drive Configurations:

	925LX	925	935	949
7979A	4	4	4	4
7980A	4	4	4	4
7980XC	4	4	4	4
C1511A	4	4	4	4
Total Tape Drives	4	4	4	5

The 7980XC is a high performance streaming tape drive which can fully utilize the available bandwidth of an HP-IB channel. To achieve the full performance potential in a multiple tape configuration with TurboSTORE/XL software, each tape drive must be configured to a separate HP-IB channel.

The 7980A, 7980XC and 7979A are shipped with a 2 meter HP-IB cable.

System Printers

System printers are printers that guarantee data integrity, ensure print job independence and report operational status to the system. The following table lists the maximum number of each type of system printer that can be configured on the Series 925LX, 925, 935 and 949.

Table 1d-7.

Series 925LX, 925, 935, 949 Maximum System Printer Configurations:

	925LX	925	935	949
Line Printers				
2562C	4	4	6	8
2563B	4	4	6	8
2564B	4	4	6	8
2566B	4	4	6	8
2567B	4	4	6	8
Page Printers				
2680A	4	4	4	4
Total System Printers	4	4	6	8

The 256x are dot matrix line printers which attach directly to an HP-IB cable system. Order option 393 to obtain the HP-IB interface and a 4m HP-IB cable. Note that 256x printers require the HP-IB interface to meet the definition of a system printer.

On the 2680A page printer, order option 395 to receive a 8 meter HP-IB cable. You may specify option 099 to replace the 8 meter cable with a 2 meter HP-IB cable.

Serial Printers

The Series 925LX, 925, 935 and 949 support spooled serial printers through the Datacommunications and Terminal Controller (DTC). Serial printers connect to a DTC port either via a hardwired RS-232/422 cable or via a modem. Printers connected via a RS-232 or RS-422 hardwired connection are considered local spooled printers. Printers connected via a modem are considered remote spooled printers.

Note



In order to support remote spooled printing, the printer must be supported via a modem. Note that not all serial printers are supported via a modem.

293x printers support RS-232C and RS-422 connections. Both hardware and modem connections to these printers are supported

256x printers support RS-232C and RS-422 connections. Modem connections are not supported.

LaserJet printers support RS-232C and RS-422 connections. Modem connections are not supported.

Table 1d-8.**Series 925LX, 925, 935, 949 Maximum Serial Printer Configurations:**

	925LX	925	935	949
2562C	4	4	4	4
2563B	4	4	4	4
2564B	3	3	4	4
2934A	14	14	32	48
LaserJet II/IID	4	4	8	15
LaserJet 2000	1	1	3	5
Total Serial Printers	14	14	32	48

Note

The spooled device support totals stated in the table above are based on performance considerations. Full spooled support (status checking) for the LaserJet IID requires the addition of a 26013A I/O card to the LaserJet IID.

Data Communications**Workstation Connections**

Point-to-point workstation (terminals, personal computers and serial printers) connections are made to the Series 925LX, 925, 935 and 949 through the Datacommunications and Terminal Controller (DTC, HP 2345A) which connects to the SPU via the 802.3 LAN. The DTC supports local RS-232C and RS-422 connections and remote RS-232C modem connections.

Table 1d-9.**Series 925LX, 925, 935, 949 Maximum DTC/Workstations Support**

	925LX	925	935	949
Max DTCs	1	6	12	16
Max Workstations	40	152	240	400

The table above shows maximum workstation connections. Performance considerations may limit the number of active sessions. The number of active sessions that are practical is dependent on the application mix and response time/throughput requirements. Please consult with an HP performance specialist to determine the number of sessions that can be concurrently active with a particular application.

It should be noted that each of the HP PC LAN based applications utilize system resources including processes, Network Services (NS) sessions, as well as physical resources such as CPU. The maximum number of PCs that can be supported via LAN connection is directly related to number of applications each PC will run and the way those applications utilize system resources. MPE XL systems currently support a maximum of 300 NS sessions. When configuring a system with greater than 300 PC connections, utilize an HP Dedicated Network SE to ensure the viability of the configuration.

System Console

One hardwired point-to-point 700/92 terminal must be used as the system console. The 700/92 console (C1001A,G or W) must be ordered separately. To connect the 700/92 terminal as a console a 40242M cable also must be ordered.

The console connects to the Synapse Box (provided with the system). The console has no direct connection to the Datacommunications and Terminal Controller. The two console attachment boards and their respective cables (provided with the system) also connect to the Synapse box. These connections are made at the factory. For further detail on the console connection, refer to the following Support Link II modem section and the cabling diagram in Chapter 4.

Console printing is accomplished via a terminal attached serial printer.

Support Link Modem

Under the HP Remote Support Program, all new (non-upgrade) systems with a qualifying HP support agreement are supplied with an HP Support Link Modem. This modem is loaned to the customer for support purposes during the time period that the support agreement is in effect, and remains the property of Hewlett-Packard.

An additional connection is required for the remote console to simulate a user workstation. There are two ways to do this; 1) Connect the Synapse Box to a nearby DTC via the 15 ft RS-232 modem cable included with the system. 2) Alternatively, customers may purchase a second modem for attachment to any DTC. HP personnel would log on to this second modem for application support. Note that either method of connection requires the DTC to have a modem interface card. For server versions which may not require a DTC, the Support Link Modem is connected to the remote console port.

Power Line Conditioners

In many areas AC power line disturbances can interfere with system operation, possibly causing interference with system operation, possibly causing data corruption or even system failures. "Dirty" lines from local utilities or noise generated by electrical equipment on customer premises can cause these problems. Please consult with your site preparation CE concerning any such power line conditioner needs you may have. Your CE will have a list of recommended power line conditioners that may be purchased from local third parties.

Series 925LX, 925, 935, 949 Cabinets

The HP 3000 Series 949/935/925/925LX must be mounted in a cabinet which is ordered separately from the SPU. Two cabinets are available. The smaller cabinet (.53 meter) is designed to hold the 949/935/925/925LX SPU (including Battery Backup), and, for the Series 925/935, an optional CIB Expander. The larger cabinet provides room for the above, plus additional peripherals. Racking rails must be ordered for each peripheral to be placed in a cabinet. See the "Small Cabinet" and "Large Cabinet" text for details.

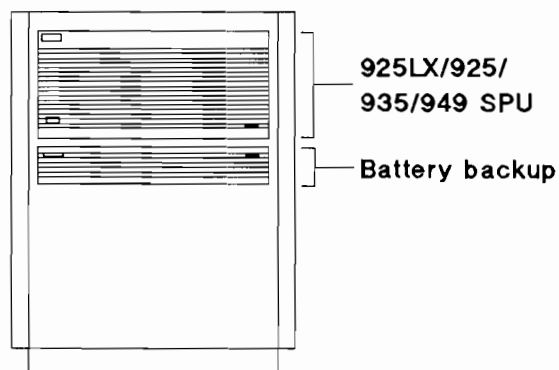
Small Cabinet

The smaller cabinet (P/N 92211R) allows the configurations shown below. The first allows the SPU and Battery Backup Unit (BBU, included with all orders) to be mounted. The second adds the optional CIB Expander (supported on the Series 925/935 only, one HPC22XXA disk drive may be racked in place of the CIB adapter. The small cabinet DOES NOT provide enough room for the addition of a 7936/7937 disc drive once the Series 935/925/925LX SPU and BBU are added (Note that the DTC cannot be rack mounted in the small 92211R cabinet)

The 92211R does not have a power supply - each component in the cabinet has its own power cord out the back. Thus, it is not necessary to order any options with the cabinet to specify its voltage, etc.

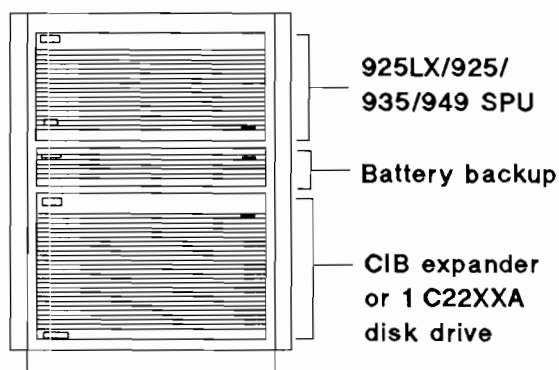
When ordering the SPU, order option 1A5 to receive the 92211S racking hardware kit for racking the SPU in the 92211R cabinet. It automatically provides enough rails to rack the Battery Backup Unit and the optional CIB Expander or HPC22XXA disk drive. "Filler panels" are available to cover empty space in the cabinet by ordering product 92211T from the Direct Marketing Division (DMK).

Small Configuration 1



Front View

Small Configuration 2



Front View

Large Cabinet

A large (1.6 meter) cabinet (P/N A1001A) is also available. It supports the three configurations shown below only.

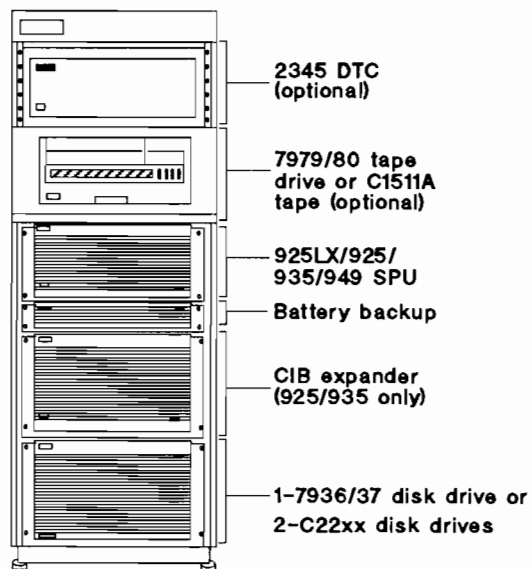
To obtain racking hardware for the SPU and other peripherals, order option 1A4 when ordering those products. Option 1A4 is not available for the C1511A DDS cartridge tape drive nor is option 1A4 available for the C22xxA disk drives nor is it available for the DTC.

Installation of the C1511A tape drive in the large cabinet requires racking hardware 19500B and a front bezel for the tape drive (C1511A option 1A6). Installation of a C22xxA disk drive in the large cabinet requires racking hardware 35199C. To obtain racking hardware for the DTC order option 1A4 **when ordering the A1001A cabinet.**

For configurations that do not include a 7979/7980, a panel is provided with the cabinet to take its place. The A1001A cabinet comes standard with 115 volt power supply. Note that the power source from the wall must be adjusted to supply 30 amps. Site preparation and verification are always required for the 1.6 meter cabinet. 208/230 volt versions of the cabinet are available (option 0E3), but **ARE NOT SUPPORTED IN THE US OR CANADA.**

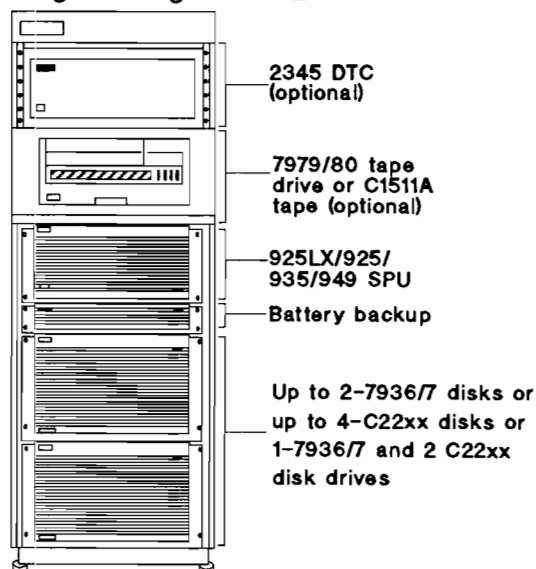
The SPU and other components in the cabinet plug into a central Power Distribution Unit (PDU), with just two cables coming out from the back of the cabinet to the wall. One cable is for power, and the second provides an auxiliary ground. All 208/230 volt cabinets must be hardwired to the wall.

Large Configuration 1



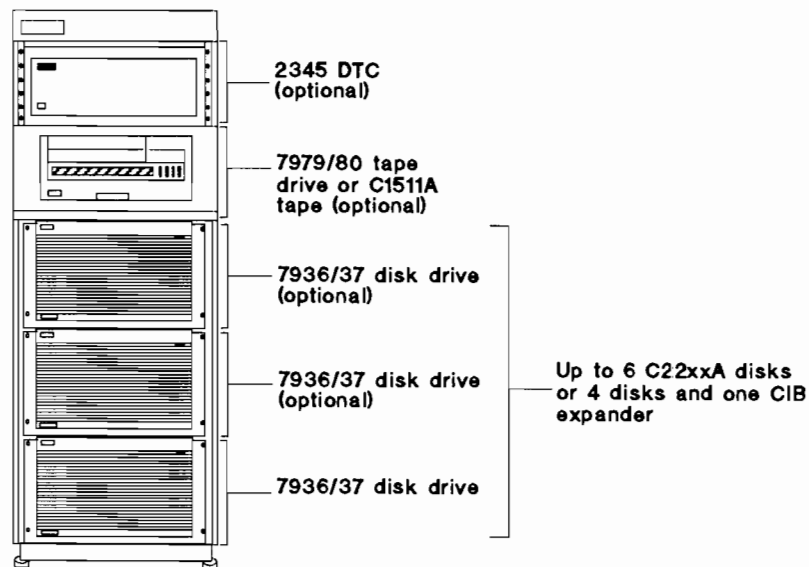
Front View

Large Configuration 2



Front View

Large Configuration 3



Front View

Shock Hazard Warning

An electric shock hazard may exist in some system configurations after disconnecting the system power plug. The configurations would include the disc drives below.

DISC DRIVE MODELS

7911 with suffix R or P

7912 with suffix R or P

7936 with suffix A through Z

7937 with suffix A through Z

DISC DRIVE SERIAL NUMBERS: ALL

Sufficient voltage and current to create an electric shock hazard may be present on the pins of the systems power plug for a few seconds after disconnecting the plug from the main power source. This situation may occur if all of the following conditions exist:

The disc drive(s) is (are) connected in parallel with other equipment (for example, by using a power distribution strip or power distribution unit), such that the system has a single power plug, and

The system power plug is disconnected from the main power source while one or more of the disc drive power switches are still in the "on" position, and

The system power source is nominally 200 or more volts, and

Within 3 seconds after disconnection, an individual touches or otherwise makes electrical contact with both of the AC power pins of the system power plug at the same time.

To avoid this situation, either:

Connect the disc drive(s) directly to a wall receptacle, or

Connect the disc drives to a power strip or unit connected only to Hewlett-Packard disc drives, or

Ensure that all of the disc drive switches are in the off position prior to disconnecting the system power plug from the wall receptacle, or

Disconnect all of the individual disc drive power plugs from the power distribution strip or unit prior to disconnecting the system plug, or

Isolate the pins of the system plug from contact for at least 3 seconds upon disconnection from the wall receptacle.

950, 955, 960, 980/100, 980/200

MINIMUM SYSTEM CONFIGURATIONS

Supplied Hardware

The SPU product includes:

- Central Processing Unit
- 64 Mbytes (Series 950) or 96 Mbytes (Series 955) or 128 Mbytes (Series 960) or 192 Mbytes (Series 980/100) or 256 Mbytes (Series 980/200)
- Dual Channel I/O Busses (CIBs)
- Two CIB adapters and 10 I/O card slots
- Two HP-IB device adapters for HP-IB devices
- One 802.3 LANIC (ThinLAN Link) card for Datacommunications and Terminal Controller communication
- 6 meter AUI cable, ThickMAU and tap for SPU attachment for ThickLAN cable; ThinMAU with integrated AUI cable for attachment to ThinLAN cable
- SPU Bay including card cages and power supplies for CPU, cache, up to four CIB adapters, up to 20 I/O card slots and up to 192 Mbytes of main memory (Series 950) or 256 Mbytes (Series 955-960) or 512 Mbytes (Series 980/100) or 1024 Mbytes (Series 980/200)
- Console attachment hardware
- Power supply
- Hardware manual set
- Battery backup unit



Supplied Software

The Fundamental Operating System (FOS) software product (3265xB), includes all the required software for an HP supported system. FOS, ALLBASE/XL, and System Dictionary/XL are provided as part of the preconfigured systems and include:

- Multiprogramming Executive Operating System (MPE XL)
- MPE V/E V-MIT compatibility mode software
- ALLBASE/XL database management system including network model (TurboIMAGE) and relational model (ALLBASE/SQL) databases
- Keyed sequential access method software (KSAM/XL)
- TurboIMAGE database inquiry language (QUERY/V)
- Data entry and forms management (VPLUS/XL)
- Sort and merge software (SORT-MERGE/XL)
- File copying utility (FCOPY/XL)
- Text editor (EDIT/XL)
- System debug utility (DEBUG/XL)
- Dictionary software (SYSTEM DICTIONARY/XL)
- System Management Core and System Management Core Plus manual set

Preconfigured Systems

For ordering convenience and economy, preconfigured systems are available including:

- One of the following SPUs: 950 (32490B), 955 (A1109A), 960 (A1130A), 980/100 (A1134A), 980/200 (A1149A)
- FOS software described above
- ALLBASE/XL (36216A) database management system including ALLBASE/SQL and TurboIMAGE
- System Dictionary/XL (32256A)

One or more of the Series 950, 955, 960 or 980 preconfigured systems' database management systems may be deleted by specifying one of the following preconfigured system options. It is also possible to delete both database management systems and FOS for all systems leaving a hardware only system.

- Option 910: ALLBASE/SQL only (deletes TurboIMAGE and System Dictionary).
- Option 920: MPE XL only (deletes ALLBASE/SQL, TurboIMAGE and System Dictionary).
- Option 930: SPU hardware only (deletes ALLBASE/SQL, TurboIMAGE, System Dictionary and FOS). The FOS software product (3265xB) must be ordered separately when ordering option 930.

Note



Options 910-930 are available after February 1, 1990. If option 930 is specified, **you must order FOS (3265xB) separately**. An MPE media product (51453A) also must be ordered for each system. See the section below for a description of MPE media product options.

Ordering FOS Separately

When ordering an unconfigured system (SPU hardware only) prior to February 1, 1990 or when ordering system option 930 (SPU hardware only), after February 1, 1990, FOS must be ordered separately.

- **Before February 1, 1990:** Order FOS product 32650B with option 4xx and the appropriate pre-February 1, 1990 51453A MPE media product and options.
- **After February 1, 1990:** When system option 930 is specified, order FOS product 32651B to receive MPE XL only **or** order FOS product 32652B to receive MPE XL, ALLBASE/SQL, TurboIMAGE and System Dictionary. Ordering FOS product 32651B creates an **MPE XL only system**. Ordering FOS product 32652B creates a **preconfigured system**. Order the appropriate 51453A MPE media product and options.

MPE Media Products

One MPE media product (51453A) **MUST** be ordered with each system. Use the following tables as a guide to ordering the appropriate MPE media product options. Order one option from Group A, one option from Group B, one option from Group C and one option from Group D.

Before February 1, 1990

Table 1e-1.

Series 950, 955, 960, 980 MPE Media (51453A) Options (before February 1, 1990):

	950	955	960	980/100	980/200
GROUP A - SYSTEM					
Preconfigured system	850	855	860	880	882
SPU only	950	955	960	980	982
GROUP B - MPE RELEASE					
Latest release	200	200	200	200	200
Specific release	2xx	2xx	2xx	2xx	2xx
GROUP C - MEDIA TYPE					
DDS Cartridge	AAH	AAH	AAH	AAH	AAH
1600 bpi	051	051	051	051	051
6250 bpi	062	062	062	062	062
GROUP D - MANUALS					
English Manuals	ABA	ABA	ABA	ABA	ABA
German Manuals	ADA	ADA	ADA	ADA	ADA
French Manuals	AFA	AFA	AFA	AFA	AFA

After February 1, 1990

Table 1e-2.

Series 950, 955, 960, 980 MPE Media (51453A) Options (after February 1, 1990):

	950	955	960	980/100	980/200
GROUP A - FOS/DATABASE					
Preconfigured System	811	811	811	811	811
ALLBASE/SQL only	801	801	801	801	801
MPE XL only	901	901	901	901	901
GROUP B - MPE RELEASE					
Latest release	200	200	200	200	200
Specific release	2xx	2xx	2xx	2xx	2xx
GROUP C - MEDIA TYPE					
DDS Cartridge	AAH	AAH	AAH	AAH	AAH
1600 bpi	AA1	AA1	AA1	AA1	AA1
6250 bpi	AA2	AA2	AA2	AA2	AA2
GROUP D - MANUALS					
English Manuals	ABA	ABA	ABA	ABA	ABA
German Manuals	ADA	ADA	ADA	ADA	ADA
French Manuals	AFA	AFA	AFA	AFA	AFA

For preconfigured systems the software tape(s) and license will ship with the system.

Server Option

A server version of each system may be ordered. Ordering option 100 "Server Version" as part of the preconfigured system will configure the Series 950, 955, 960 or 980 as a server. Server versions do not allow terminals (or PCs configured as terminals) to establish a log-on via the DTC. DTCs are supported on the server for X.25 and serial device connections. PCs are connected via a local area network can access the server using NetIPC communications and virtual terminal emulation.

Required Hardware Ordered Separately

In addition to the SPU and FOS or in addition to a preconfigured system, the following items are required for an HP supported system:

- One system disk: C2201A, C2202A, C2203A, C2204A, 7937H/XP/FL, 7935H/XP.
- One user disk: C2200A, C2201A, C2202A, C2203A, C2204A, 7937H/XP/FL, 7936H/XP/FL, 7935H/XP, or 7963B.
- One tape drive for system backup: 7979A, 7980A, 7980XC, or C1511A
- One system console: 700/92 (C1001A/G) and a 40242M cable
- One Datacommunications and Terminal Controller (product 2345A) with one modem interface product (option 625) for remote support. Not required for server systems.
- 802.3 LAN cabling: Thick or Thin (system includes both ThickLAN and ThinLAN connections). The Datacommunications and Terminal Controller (DTC) has options for either ThickLAN or ThinLAN

Site Preparation

The customer and HP Customer Engineer will need to work together prior to the installation in order to ensure the site is prepared for the environmental and power requirements of the system.

SYSTEM CONFIGURATION MAXIMUMS

Memory Expansion

Table 1e-3.

Series 950, 955, 960, 980 Maximum Memory Configurations (Mbytes):		
	Minimum	Maximum
950	64	192
955	96	256
960	128	256
980/100	192	512
980/200	256	1024

Memory consists of 1 Mbit RAM Error Correcting Memory configured on 16 Mbyte memory cards or 4 Mbit memory configured on 64 Mbyte cards. The Series 950, 955 and 960 only support 16 Mbyte memory cards. The Series 980 supports both 16 Mbte and 64 Mbyte

memory cards. Memory cards may be obtained by ordering multiple option 50x with the system or as standalone products.

Note


Configuration of a Series 950/955/960 system with greater than 128 Mbytes of memory requires the installation of an additional memory controller (system option 504 on Series 960 or product number A1103A for all systems). Series 980 systems and upgrades are provided two memory controllers which support up to 512 Mbytes each. Series 950-960 and Series 980 memory controllers are not interchangeable.

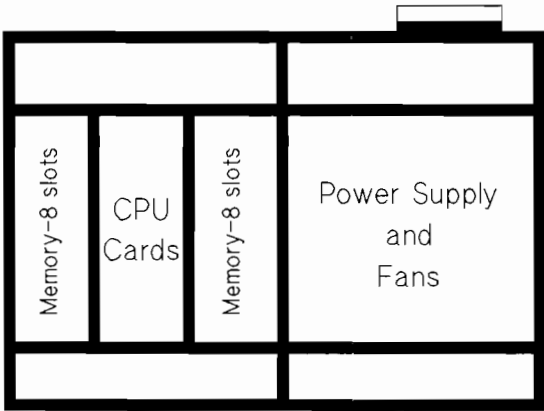
Floating Point Coprocessor

The Series 950, 955 and 960 come standard with an IEEE floating point coprocessor for high performance in numerical applications. The coprocessor is built into the SPU so no installation is required.

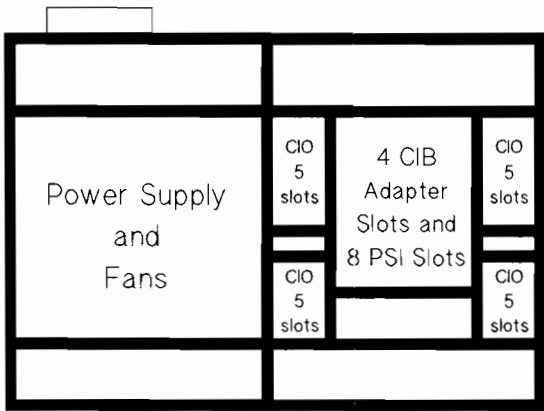
I/O Expansion

System Packaging

Front View



Rear View



Series 950, 955, 960 and 980 Package

connections. This leaves five I/O slots for additional HP-IB, HP-FL or LANIC cards. A third and fourth CIB adapter (A1101A) are optional. Each provides an additional 5 I/O slots.

HP 3000 Series 950-980 SPU (Back)																
CIO-A		CTB-1						SMB		CTB-0				CIO-C		
5 CIO Slots		Optional Channel Adapter	Optional Channel Adapter	PSI (Optional)	PSI (Optional)	PSI (Optional)	PSI (Optional)		PSI (Optional)	PSI (Optional)	PSI (Optional)	PSI (Optional)	Channel Adapter for C	Channel Adapter for D	5 CIO Slots	
5 CIO Slots															5 CIO Slots	
CIO-B		1	2	3	4	5	6								6	5

HP 3000 Series 950-980 SPU (Back)

CIB Card Cage Rules

Console card #1 (Access Port PCA) must be in slot 4 of the CIB 0_1 card cage (factory installed). Console card #2 (MUX PCA) must be in slot 1 of the CIB 0_1 card cage (factory installed). Factory installed HP-IB channels are positioned for MPE XL auto-boot capability.

The factory installed workstation 802.3 LANIC and optional NS Service 802.3 LANIC are shown in slot 2 of CIB 0_1 and slot 2 of CIB 1_1 respectively. There is a maximum of four HP-IB channels per CIB. There is a maximum of two HP-FL channels per CIB and a combined maximum of five HP-IB, HP-FL and 802.3 LANIC boards per CIB.

CIB Card Cage

CIB 1_2

0	1	2	3	4

CIB 0_2

0	1	2	3	4

CIB 1_1

0	1	2	3	4
		Opt. NS Service 802.3 LANIC	Std HP-IB Channel (Tape)	

CIB 0_1

0	1	2	3	4
Std HP-IB Channel (Disc - LDEV 1)	Console Card #2 (MUX)	Std Workstation 802.3 LANIC		Console Card #1 (Access Port)

CIB Card Cage

Peripheral and Network I/O Channels

HP-IB Channels

The Series 950, 955 and 960 are supplied with two HP-IB channels as standard equipment. Additional HP-IB channels may be ordered as product number 27113A. System option 550 will delete one HP-IB channel and replace it with an HP-FL channel.

The HP-IB channel (27113A) is a hardware controller used to interface HP-IB (IEEE 488 protocol) peripherals to the 900 Series systems. Each HP-IB channel is a board that uses one I/O card (CIB) slot and supports one HP-IB cabling system. Each HP-IB cabling system may be used to connect up to six HP-IB peripherals. Peripherals connected to one HP-IB channel are linked together with HP-IB cables. The first device in the chain utilizes a special 2 meter HP-IB cable (included with the HP-IB channel) to connect directly to the HP-IB channel card. The number of peripherals which may be practically connected to a single HP-IB channel depends on cable length restrictions and performance considerations.

In the maximum configuration, twelve HP-IB channels are supported on the Series 950, 955 and 960. Up to 4 HP-IB channels are supported on each CIB. As a rule of thumb, you should not exceed 3 HP-IB channels per CIB without consulting a performance specialist. Order product 27113A to obtain additional HP-IB channels.

High-speed peripherals may be attached to all HP-IB channels. All devices supported on the Series 900 are high-speed.

HP-IB Channel Restrictions

A maximum of six devices may be attached to an HP-IB channel. There is a maximum of 8 electrical device loads per HP-IB channel.

Note

Connecting the system disk (LDEV 1) and backup tape drives to the same HP-IB channel is not recommended. System performance may be degraded when both devices share the same HP-IB channel.

HP Fiber-Optic Link Channels

HP's Fiber-optic link, HP-FL, is an interface channel (27115A or system option 550 on Series 960-980) is used to connect HP-FL disk drives to the Series 900 systems.

Each interface uses one I/O (CIB) slot and attaches one fiber-optic cable. The fiber-optic cable needed to connect the channel to its first disk drive is included with the HP-FL channel. Each channel may support up to 8 disks in a daisy-chain connection using a disk-to-disk bus called P-Bus.

A maximum of twelve HP-FL channels are supported on the Series 950, 955, 960, 980/100 and 980/200. Each system supports a maximum of 3 HP-FL channels per CIB. As a rule of thumb, you should not exceed 2 HP-FL channels per CIB without consulting a performance specialist.

802.3 LANIC Cards (ThinLAN Link)

Each 950, 955, 960, 980/100 and 980/200 system is supplied with one IEEE 802.3 LAN interface channel (36923A, ThinLAN Link) which is required for workstation communications. The Asynchronous Serial Communication (ASC) software included with FOS uses this card and the 802.3 LAN to communicate between the SPU and the Datacommunications and Terminal Controller (DTC). System-to-system communication is supported with the addition of a second ThinLAN Link and the appropriate network software.

Each system is supplied with both ThickLAN and ThinLAN Medium Attachment Units (MAU), taps and Attachment Unit Interface (AUI) cables. The DTC has options for either ThickLAN or ThinLAN connection.

Each ThinLAN Link uses one I/O (CIB) card slot and connects to one Local Area Network. The Series 950, 955 and 960 support a maximum of two LAN interface channels.

X.25 Network Link Products

X.25 and PAD communications are provided by the DTC/X.25 XL Network Link which is part of the same Datacommunications and Terminal Controller subsystem used for terminal and serial device communications. X.25 configuration requirements may be found in the *Datacommunications and Terminal Controller* chapter.

Each Series 900 system supports up to 11 DTC/X.25 Network Links.

X.400/3000

X.400 connections are provided by the X.400/3000 Server. The server system can connect single or multiple HP DeskManager nodes into an X.400 environment. The X.400/3000 server (32057A) includes an HP 9000 Series 360 system with the hardware and software needed to run X.400. The X.400/3000 server offers options to connect to ThickLAN, ThinLAN or X.25. X.400 connection also requires HP X.400/HPDesk software (32055A opt 3xx).

Network Link Products (PSI)

HP Network Link Products include software and hardware components. For MPE XL systems the PSI card is the hardware component for SNA Link/XL, BSC Link/XL and NS Point to Point 3000/XL and is included with each order of a remote communications network link product.

Each network link PSI card requires one CTB slot. The Series 950, 955, 960, 980/100 and 980/200 support a maximum of 8 remote link PSI cards. Unlike HP-IB, HP-FL and LANIC cards, PSI cards are not interchangeable among all Series 900 systems. Because a PSI card varies depending on the system in which it will be installed, be sure to order the correct remote network link hardware option.

Peripherals

Disk Drives

400 Mbytes of disk space must be allocated for exclusive use of the operating system. System disk (LDEV 1) support is limited to the following disk drives:

- C2201A (670 Mbytes HP-FL), C2203A (670 Mbytes HP-IB), C2204A (1.34 Gbytes HP-FL)
- 7937H, 7937XP, 7937FL (571 Mbytes)
- 7933H, 7933XP, 7935H, 7935XP (404 Mbytes)

The following table lists the maximum number of each type of current disk drive that can be configured with the Series 950, 955 and 960.

Table 1e-4.

Series 950, 955, 960, 980/100, 980/200 Maximum Disk Drive Configurations:

	950	955	960	980/100	980/200
C2200A HP-IB	24	24	24	24	24
C2201A HP-FL	48	64	64	64	64
C2203A HP-IB	24	24	24	24	24
C2204A HP-FL	48	64	64	64	64
7937H/XP HP-IB	24	24	24	24	24
7937FL HP-FL	48	64	64	64	64
7963B HP-IB	24	24	24	24	24
HP-IB Disks	24	24	24	24	24
HP-FL Disks	48	64	64	64	64
Total Disk Drives	48	64	64	64	64

Note

Each 7963B unit may hold up to 3 disk mechanisms. Support is for the total number of 7963B mechanisms.

Each C2204A unit holds two disk mechanisms. Support is for the total number of C2204A units.

Each external HP-IB disk drive is shipped with a 1 meter HP-IB cable. Each HP-FL disk drive is shipped with a .8 meter PBus cable. A longer PBus cable, 13367A, can be ordered for longer distances.

Disk performance may vary depending on the specific configuration of disks, HP-IB channels and HP-FL channels. As a rule of thumb, you may connect 3-4 disk drives per HP-IB channel without significant performance degradation. HP-FL allows you to connect the maximum of 8 disk drives per channel without significant performance degradation.

Mirrored Disk

Mirrored Disk/XL support is limited to disks with an HP-FL interface. Mirrored disks must not share the same HP-FL interface channel (27115A). A mirrored disk pair must be made up of identical disk drives.

Magnetic Tape Drives

A 7980A, 7980XC, 7979A, 7978A/B, 7974A or C1511A magnetic tape drive is required for system backup and distribution of software on Series 950, 955 and 960 systems. The tape drive must be ordered separately.

The following table lists the maximum number of each current model of tape drive that can be configured with the Series 950, 955 and 960.

Table 1e-5.

Series 950, 955, 960, 980/100, 980/200 Maximum Tape Drive Configurations:

	950	955	960	980/100	980/200
7979A	8	8	8	8	8
7980A	8	8	8	8	8
7980XC	8	8	8	8	8
C1511A	8	8	8	8	8
Total Tape Drives	8	8	8	8	8

The 7980XC is a high performance streaming tape drive which can fully utilize the available bandwidth of an HP-IB channel. To achieve the full performance potential in a multiple tape configuration with TurboSTORE/XL software, each tape drive must be configured to a separate HP-IB channel.

The 7980A, 7980XC and 7979A are shipped with a 2 meter HP-IB cable.

System Printers

System printers are printers that guarantee data integrity, ensure print job independence and report operational status to the system. The following table lists the maximum number of each type of system printer that can be configured on the Series 950, 955 and 960.

Table 1e-6.

Series 950, 955, 960, 980/100, 980/200 Maximum System Printer Configurations:

	950	955	960	980/100	980/200
Line Printers					
2562C	8	8	8	8	8
2563B	8	8	8	8	8
2564B	8	8	8	8	8
2566B	8	8	8	8	8
2567B	8	8	8	8	8
Page Printers					
2680A	4	4	4	4	4
Total System Printers	12	12	12	12	12

The 256x are dot matrix line printers which attach directly to an HP-IB cable system. Order option 393 to obtain the HP-IB interface and a 4 meter HP-IB cable. Note that 256x printers require the HP-IB interface to meet the definition of a system printer.

On the 2680A page printer, order option 395 to receive a 8 meter HP-IB cable. You may specify option 099 to replace the 8 meter cable with a 2 meter HP-IB cable.

Serial Printers

The Series 950, 955 and 960 support spooled serial printers through the Datacommunications and Terminal Controller (DTC). Serial printers connect to a DTC port either via a hardwired RS-232/422 cable or via a modem. Printers connected via a RS-232 or RS-422 hardwired connection are considered local spooled printers. Printers connected via a modem are considered remote spooled printers.

Note



In order to support remote spooled printing, the printer must be supported via a modem. Note that not all serial printers are supported via a modem.

293x printers support RS-232C and RS-422 connections. Both hardware and modem connections to these printers are supported

256x printers support RS-232C and RS-422 connections. Modem connections are not supported.

LaserJet printers support RS-232C and RS-422 connections. Modem connections are not supported. Full spooled support (status checking) for the LaserJet IID requires the addition of a 26013A I/O card to the LaserJet IID.

Table 1e-7.**Series 950, 955, 960, 980/100, 980/200 Maximum Serial Printer Configurations:**

	950	955	960	980/100	980/200
Line Printers					
2562C	4	4	4	>4	>4
2563B	4	4	4	>4	>4
2564B	4	4	4	>4	>4
2934A	32	48	64	>64	>64
Page Printers					
LaserJet II/IID	10	15	20	>20	>20
LaserJet 2000	3	5	7	>7	>7
Total Serial Printers	32	48	64	>64	>64

Note

The spooled device support totals stated in the table above are based on performance considerations.

Data Communications**Workstation Connections**

Point-to-point workstation (terminals, personal computers and serial printers) connections are made to the Series 950, 955 and 960 through the Datacommunications and Terminal Controller (DTC, HP 2345A) which connects to the SPU via the 802.3 LAN. The DTC supports local RS-232C and RS-422 connections and remote RS-232C modem connections.

Table 1e-8.**Series 950, 955, 960, 980/100, 980/200 Maximum DTC/Workstations Support**

	950	955	960	980/100	980/200
Max DTCs	16	16	16	24	24
Max Workstations	400	600	600	>=600	>=600

The table above shows maximum workstation connections. Performance considerations may limit the number of active sessions. The number of active sessions that are practical is dependent on the application mix and response time/throughput requirements. Please consult with an HP performance specialist to determine the number of sessions that can be concurrently active with a particular application.

It should be noted that each of the HP PC LAN based applications utilize system resources including processes, Network Services (NS) sessions, as well as physical resources such as CPU. The maximum number of PCs that can be supported via LAN connection is directly related to number of applications each PC will run and the way those applications utilize system resources. MPE XL systems currently support a maximum of 300 NS sessions. When

configuring a system with greater than 300 PC connections, utilize an HP Dedicated Network SE to ensure the viability of the configuration.

System Console

One hardwired point-to-point 700/92 terminal must be used as the system console. The 700/92 console (C1001A,G or W) must be ordered separately. To connect the 700/92 terminal as a console a 40242M cable also must be ordered.

The console connects to the Synapse Box (provided with the system). The console has no direct connection to the Datacommunications and Terminal Controller. The two console attachment boards and their respective cables (provided with the system) also connect to the Synapse box. These connections are made at the factory. For further detail on the console connection, refer to the following Support Link II modem section and the cabling diagram in Chapter 4.

Console printing is accomplished via a terminal attached serial printer.

Support Link Modem

Under the HP Remote Support Program, all new (non-upgrade) systems with a qualifying HP support agreement are supplied with an HP Support Link Modem. This modem is loaned to the customer for support purposes during the time period that the support agreement is in effect, and remains the property of Hewlett-Packard.

An additional connection is required for the remote console to simulate a user workstation. There are two ways to do this; 1) Connect the Synapse Box to a nearby DTC via the 15 ft RS-232 modem cable included with the system. 2) Alternatively, customers may purchase a second modem for attachment to any DTC. HP personnel would log on to this second modem for application support. Note that either method of connection requires the DTC to have a modem interface card. For server versions which may not require a DTC, the Support Link Modem is connected to the remote console port.

Power Line Conditioners

In many areas AC power line disturbances can interfere with system operation, possibly causing interference with system operation, possibly causing data corruption or even system failures. "Dirty" lines from local utilities or noise generated by electrical equipment on customer premises can cause these problems. Please consult with your site preparation CE concerning any such power line conditioner needs you may have. Your CE will have a list of recommended power line conditioners that may be purchased from local third parties.

Datacommunications and Terminal Controller

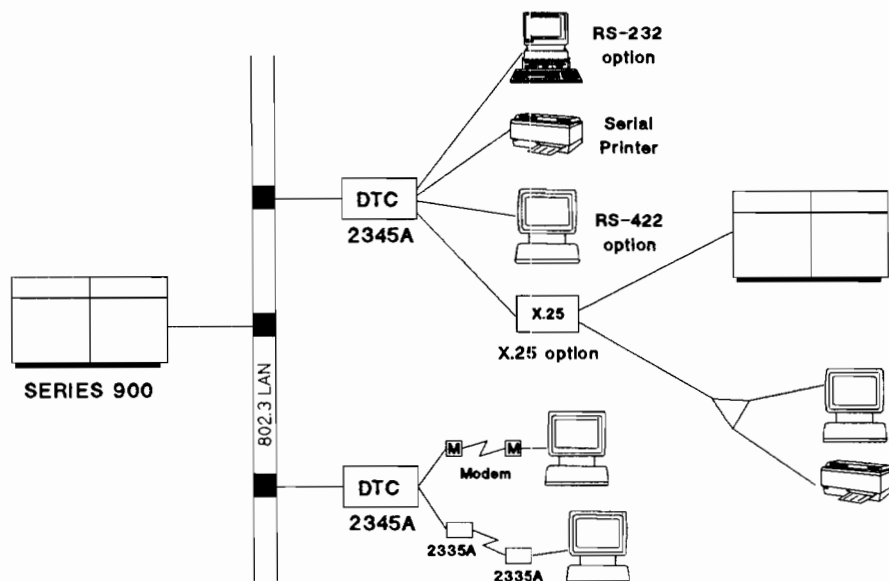
Point-to-point workstation (terminal, personal computer and serial printer) connections are made to the Series 900 through the Datacommunications and Terminal Controller (DTC). The DTC is also used to provide access to X.25 packet-switching networks for communications with remote HP 3000s and PAD devices. The DTC is connected to the Series 900 SPU via the 802.3 LAN and may access a single system or multiple systems on the LAN. DTCs may be located centrally or may be distributed along the LAN cable.

A DTC may access a single system or multiple systems. If access is required to a single system, that system will download and manage all the DTCs for that system. If access is required to multiple systems, an HP Vectra OpenView Windows Workstation (32054A) and OpenView DTC Manager Software (D2355A) is required to download and manage the DTCs. The OpenView Workstation also may be used to manage single system DTC access.

Note



HP 3000 server versions do not allow terminals or PCs configured as terminals to establish a log-on via the DTC. DTCs are supported on the server for X.25 and serial output device connections. PCs must be connected to the server via a local area network connection and can access the server using NetIPC communications and virtual terminal emulation.



Workstation, Serial Device and X.25 Communication

Datacommunications and Terminal Controller/Terminal Access

The Datacommunications and Terminal Subsystem consists of four components:

- 802.3 LANIC (ThinLAN link) installed in the Series 900 SPU
- Asynchronous Serial Communications software residing on the Series 900 SPU
- One or more DTCs attached to the 802.3 LAN
- Workstation interface card(s) installed in the DTC

Each DTC has six available slots each of which can accommodate one workstation interface card or one X.25 network access card. See the following section for details on the X.25 card.

The available workstation interface cards for the DTC include:

- 8 local RS-232C 3-pin ports (DTC option 803 or product 2346B)
- 8 local RS-422 5-pin ports (DTC option 805 or product 2346C)
- 6 remote RS-232C 25-pin modem ports (DTC option 625 or product 2346A)

The minimum required terminal communications subsystem for Series 900 systems consists of the 802.3 LANIC, the ASC software, one DTC with one modem port card (for remote support) and 802.3 LAN cabling (Thick or Thin). The DTC is not required for server versions. If DTC access to multiple systems is desired, an HP Vectra OpenView Windows Workstation and OpenView DTC Manager Software is required.

Each Series 900 system is delivered with the 802.3 LANIC, the ASC software and connection hardware for both Thick and Thin 802.3 LAN. For the ThickLAN, this connection hardware includes Medium Access Unit (MAU), tap and 6 meter Attachment Unit Interface (AUI) cable. A ThinMAU with integral 1 meter AUI cable is provided for ThinMAU connection.

Each Series 900 SPU has maximum DTC and workstation support limitations. See the *Workstation Connections* section in the preceding chapters for details on numbers of DTCs supported and numbers of workstations supported for each SPU.

Datacommunications and Terminal Controller/X.25 Network Link

The DTC/X.25 XL Network Link provides access to public and private X.25 packet-switching networks for communications with remote HP 3000s and PAD (packet assembler-disassembler) devices. The DTC/X.25 XL Network Link consists of five components.

- 802.3 LANIC (ThinLAN link) installed in the Series 900 SPU
- X.25 XL System Access software residing on the Series 900 SPU (36939A option 3xx)
- One or more DTCs attached to the 802.3 LAN (2345A)
- DTC/X.25 Network Access card (2345A opt 3xx or 2346D-G) installed in the DTC
- HP OpenView Windows workstation (32054A) with OpenView DTC Manager software (D2355A) used to control the entire DTC configuration

Each DTC has six available slots each of which can accommodate one workstation interface card or one X.25 network access card. Each DTC supports a maximum of three X.25 network access cards and total maximum of six interface cards. The available DTC/X.25 Network Access cards include:

- DTC/X.25 Network Access card with RS-232 interface (DTC option 310 or 2346D)
- DTC/X.25 Network Access card with V.35 interface (DTC option 320 or 2346E)
- DTC/X.25 Network Access card with V.36 interface (DTC option 330 or 2346F)
- DTC/X.25 Network Access card with RS-422 interface (DTC option 335 or 2346G)

The minimum required X.25 communications subsystem for Series 900 systems consists of the 802.3 LANIC, the X.25 XL System Access software, one DTC with one DTC/X.25 Network Access card, 802.3 LAN cabling (Thick or Thin) and one OpenView Windows Workstation with OpenView DTC Manager software.

Note



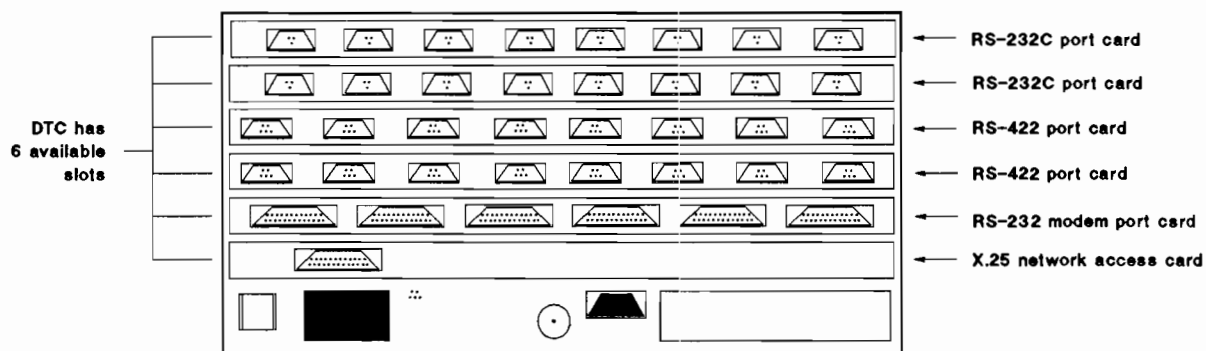
Operation of DTC/X.25 Network Access requires X.25 XL System Access software for system-to-system communication. If PAD functionality is all that is required, X.25 XL System Access software is unnecessary.

The Series 900 system defines a Network Interface (NI) for each DTC/X.25 Network Access card utilized. A maximum configuration of 11 Network Interfaces and DTC/X.25 Network Access cards is supported on each Series 900 SPU.

Configuring the DTC

When ordering the DTC, a LAN interface option must be specified (option 24x). Workstation and X.25 interface cards may be ordered as options to the DTC or as standalone products. From one to six interface cards may be ordered with the DTC. Each DTC supports a maximum of six interface cards including no more than three DTC/X.25 Network Access cards.

DTC Configuration Example



Ordering the DTC and DTC Interface Cards

Table 1f-1.

DTC for Series 900 Systems:

Product/Option	Description
2345A	DTC
opt. 240	Configure DTC for ThickLAN (type 10BASE5 cable). Includes 6 meter AUI, MAU and tap
opt. 241	Configure DTC for ThickLAN (type 10BASE5 cable). Does not include AUI, MAU or tap
opt. 242	Configure DTC for ThinLAN (type 10BASE2 cable). Includes BNC T-Connector
opt. 310	DTC/X.25 Network Access card with RS-232 interface
opt. 320	DTC/X.25 Network Access card with V.35 interface
opt. 330	DTC/X.25 Network Access card with V.36 interface
opt. 335	DTC/X.25 Network Access card with RS-422 interface
opt. 625	6 remote RS-232C 25-pin modem ports
opt. 803	8 local RS-232C 3-pin ports
opt. 805	8 local RS-422 5-pin ports
Standalone Products	
2346A	6 remote RS-232C 25-pin modem ports
2346B	8 local RS-232C 3-pin ports
2346C	8 local RS-232C 5-pin ports
2346D	DTC/X.25 Network Access card with RS-232 interface
opt. 001	ROM upgrade for DTC with date code < 2851
2346E	DTC/X.25 Network Access card with V.35 interface
opt. 001	ROM upgrade for DTC with date code < 2851
2346F	DTC/X.25 Network Access card with V.36 interface
opt. 001	ROM upgrade for DTC with date code < 2851
2346G	DTC/X.25 Network Access card with RS-422 interface
opt. 001	ROM upgrade for DTC with date code < 2851

Note



For the add-on DTC/X.25 Network Access cards, you must order option 001 if the card is to be installed in a DTC with a date code less than 2851. Option 001 is a ROM upgrade for the DTC.

Series 900 System Peripheral Support

Supported Peripherals Tables

The following tables list all peripherals supported on Series 900 systems with MPE XL version 2.0. See the preceding chapters for specific configuration information and support exceptions.

Disk Drives

Table 1g-1.

Series 922LX, 922RX, 922, 932 Maximum Disk Drive Configurations:

	922LX	922RX	922	932	Notes
7933H	9	8	8	16	
7933XP	9	8	8	16	
7935H/XP	9	8	8	16	
7936H/XP	9	8	8	16	1
7936FL	9	8	8	16	1
7937H/XP	9	8	8	16	
7937FL	9	8	8	16	
7962B	9	8	8	16	1
7963B	9	8	8	16	1,2
97963M	9	8	8	16	1
C2200A	9	8	8	16	1
C2201A	9	8	8	16	
C2202A	9	8	8	16	
C2203A	9	8	8	16	
C2204A	9	8	8	16	3
C2281A	3	3	3	3	1
C2282A	4	4	4	4	
Total Disk Drives	10	10	10	18	

Table 1g-2.

Series 925LX, 925, 935, 949 Maximum Disk Drive Configurations:

	925LX	925	935	949	Notes
7933H	8	16	24	24	
7933XP	8	16	24	24	
7935H/XP	8	16	24	24	
7936H/XP	8	16	24	24	1
7936FL	8	16	24	32	1
7937H/XP	8	16	24	24	
7937FL	8	16	24	32	
7962B	8	16	24	24	1
7963B	8	16	24	24	1,2
C2200A	8	16	24	24	1
C2201A	8	16	24	32	
C2202A	8	16	24	24	
C2203A	8	16	24	24	
C2204A	8	16	24	32	3
Total Disk Drives	8	16	24	32	

Table 1g-3.

Series 950, 955, 960, 980 Maximum Disk Drive Configurations:

	950	955	960	980/100	980/200	Notes
7933H	24	24	24	24	24	
7933XP	24	24	24	24	24	
7935H/XP	24	24	24	24	24	
7936H/XP	24	24	24	24	24	1
7936FL	48	64	64	64	64	1
7937H/XP	24	24	24	24	24	
7937FL	48	64	64	64	64	
7962B	24	24	24	24	24	1
7963B	24	24	24	24	24	1,2
C2200A	24	24	24	24	24	1
C2201A	48	64	64	64	64	
C2202A	24	24	24	24	24	
C2203A	24	24	24	24	24	
C2204A	48	64	64	24	24	3
Total Disk Drives	48	64	64	64	64	

Tape Drives

Table 1g-4.

Series 922LX, 922RX, 922, 932 Maximum Tape Drive Configurations:

	922LX	922RX	922	932	Notes
7974A	4	4	4	4	
7978A/B	4	4	4	4	
7980A	4	4	4	4	
7980XC	4	4	4	4	4
C1501A	1	1	1	1	5
C1511A	4	4	4	4	
Total Tape Drives	4	4	4	4	

Table 1g-5.

Series 925LX, 925, 935, 949 Maximum Tape Drive Configurations:

	925LX	925	935	949	Notes
7974A	4	4	4	4	
7978A/B	4	4	4	4	
7980A	4	4	4	4	
7980XC	4	4	4	4	4
C1511A	4	4	4	4	
Total Tape Drives	4	4	4	5	

Table 1g-6.

Series 950, 955, 960, 980 Maximum Tape Drive Configurations:

	950	955	960	980/100	980/200	Notes
7974A	8	8	8	8	8	
7978A/B	8	8	8	8	8	
7980A	8	8	8	8	8	
7980XC	8	8	8	8	8	4
C1511A	8	8	8	8	8	
Total Tape Drives	8	8	8	8	8	

System Printers

Table 1g-7.

Series 922LX, 922RX, 922, 932 Maximum System Printer Configurations:

	922LX	922RX	922	932	Notes
2562C	4	4	4	6	
2563A/B	4	4	4	6	
2564B	4	4	4	6	
2565A	4	4	4	6	
2566A/B	4	4	4	6	
2567B	4	4	4	6	
2680A	4	4	4	4	
2688A	4	4	4	4	
Total System Printers	4	4	4	6	6

Table 1g-8.

Series 925LX, 925, 935, 949 Maximum System Printer Configurations:

	925LX	925	935	949	Notes
2562C	4	4	6	8	
2563A/B	4	4	6	8	
2564B	4	4	6	8	
2565A	4	4	6	8	
2566A/B	4	4	6	8	
2567B	4	4	6	8	
2680A	4	4	4	4	
2688A	4	4	4	4	
Total System Printers	4	4	6	8	6

Table 1g-9.

Series 950, 955, 960, 980 Maximum System Printer Configurations:

	950	955	960	980/100	980/200	Notes
2562C	8	8	8	8	8	
2563A/B	8	8	8	8	8	
2564B	8	8	8	8	8	
2565A	8	8	8	8	8	
2566A/B	8	8	8	8	8	
2567B	8	8	8	8	8	
2680A	4	4	4	4	4	
2688A	4	4	4	4	4	
Total System Printers	12	12	12	12	12	6

Serial Printers

Table 1g-10.

Series 922LX, 922RX, 922, 932 Maximum Serial Printer Configurations:

	922LX	922RX	922	932	Notes
2562C RS-232/422	4	4	4	4	9
2563A/B RS-232/422	4	4	4	4	9
2564B RS-232/422	4	4	4	4	9
2932A RS-232/422	16	16	16	28	10
2933A RS-232/422	16	16	16	28	10
2934A RS-232/422	16	16	16	16	10
2684A/D LaserJet 2000	2	2	2	3	8,9
2686A/D LaserJet	5	5	5	8	9
2687A RS-232	2	2	2	3	9
33440A LaserJet s/II	5	5	5	8	9
33447A LaserJet IID	5	5	5	8	7,8,9
C1200A RS-232/422	4	4	4	4	9,11
C1202A RS-232/422	4	4	4	4	9,11
7550A Plotter RS-232	4	4	4	4	12
Total Serial Printers	16	16	16	28	

Table 1g-11.

Series 925LX, 925, 935, 949 Maximum System Printer Configurations:

	925LX	925	935	949	Notes
2562C RS-232/422	4	4	4	4	9
2563A/B RS-232/422	4	4	4	4	9
2564B RS-232/422	4	4	4	4	9
2932A RS-232/422	14	14	32	48	10
2933A RS-232/422	14	14	32	48	10
2934A RS-232/422	14	14	32	48	10
2684A/D LaserJet 2000	1	1	3	5	8,9
2686A/D LaserJet	4	4	8	15	9
2687A RS-232	1	1	3	5	9
33440A LaserJet s/II	4	4	8	15	9
33447A LaserJet IID	4	4	8	15	7,8,9
C1200A RS-232/422	4	4	4	4	9,11
C1202A RS-232/422	4	4	4	4	9,11
7550A Plotter RS-232	4	4	4	4	12
Total Serial Printers	14	14	32	48	

Table 1g-12.**Series 950, 955, 960, 980 Maximum Serial Printer Configurations:**

	950	955	960	980/100	980/200	Notes
2562C RS-232/422	4	4	4	>4	>4	9
2563A/B RS-232/422	4	4	4	>4	>4	9
2564B RS-232/422	4	4	4	>4	>4	9
2932A RS-232/422	32	48	64	>64	>64	10
2933A RS-232/422	32	48	64	>64	>64	10
2934A RS-232/422	32	48	64	>64	>64	10
2684A/D LaserJet 2000	3	5	7	7	>7	8,9
2686A/D LaserJet	10	15	20	>20	>20	9
2687A RS-232	3	5	7	7	>7	9
33440A LaserJet s/II	10	15	20	>20	>20	9
33447A LaserJet IID	10	15	20	>20	>20	7,8,9
C1200A RS-232/422	4	4	4	>4	>4	9,11
C1202A RS-232/422	4	4	4	>4	>4	9,11
7550A Plotter RS-232	4	4	4	4	4	12
Total Serial Printers	32	48	64	>64	>64	

Workstations

Table 1g-13.

HP 3000 Series 900 Supported Workstations

Supported Workstation

2392A	
2393A	
2394A	
2397A	
2628A	
2627A	ROM 1818-3487 or later
2625A	
2624B	ROM 1818-3139 or later
2623A	ROM 1818-3223 or later
2622A	ROM 1818-3199 or later
700/92	
700/94	
3081A	
3082A/B	
Vectra/CS/ES/RS/LS/QS	
Portable Vectra CS	
HP 150/Touchscreen II	
Portable PLUS	
IBM PS/2 30,50,60,80	

HP-IB Extenders

Table 1g-14.

HP 3000 Series 900 Supported HP-IB Extenders:

Supported HP-IB Extender

37203A	Support for 256x, 2680A, 2688A printers only
37204A/B	Support for 256x, 2680A, 2688A printers only

NOTES

Table 1g-15.

HP 3000 Series 900 Supported Peripherals, NOTES:

- 1 Disk drive not supported as system disk (LDEV 1).
 - 2 Each 7963B unit may hold up to 3 disk drives each with a separate controller. Support is for the total number of disk drives.
 - 3 Each C2204A unit holds two disk mechanisms which share a controller. Each C2204A unit is considered a single disk drive.
 - 4 Highest performance with TurboSTORE/XL requires configuring each 7980XC to a separate HP-IB channel.
 - 5 The C1501A is an internal DDS tape drive.
 - 6 When configuring printers with HP-IB extenders a maximum of 4 printers with no more than two 268x printer is allowed.
 - 7 Printer type 18 support only. Support for printer type 26 (status checking) requires the addition of the HP 26013A I/O card.
 - 8 Duplex support planned for mid-1990.
 - 9 No modem support.
 - 10 Modem connections supported.
 - 11 Supported in Asian countries only.
 - 12 Printer type 18 support only.
-

Attaching HP-IB Peripherals

HP-IB (IEEE 488 protocol) peripherals attach to HP 3000 systems via hardware controllers. On the 900 Series, this controller is the HP-IB Channel. The Controller on the MICRO 3000s is called an HP-IB interface and is integrated directly on the CPU board.

HP-IB Channels - Series 900

Each HP-IB Channel is a board that uses one I/O card slot and supports one HP-IB cabling system. From one to six HP-IB peripherals can be supported by a single HP-IB Channel. These peripherals are linked together by HP-IB cables. The first device in the chain utilizes a special 2m HP-IB cable (included with the HP-IB Channel) to connect directly to the HP-IB Channel card. The practical number of peripherals which may be connected to a single HP-IB Channel depends on cable length restrictions and performance considerations.

Peripheral Interface Channel - MICRO 3000XE

Each PIC is a board that uses one card slot and supports one HP-IB cabling system. Each PIC supports up to six devices. The HP-IB cables daisy-chain to the PIC's 25-pin connector. The number of peripherals which may practically be connected to a single PIC depends on peripheral speed, cable length, and performance considerations.

HP-IB Interface - MICRO 3000 GX/RX

Since the HP-IB interface is integrated with the MICRO 3000 CPU, no additional HP-IB interfaces are supported. The HP-IB supports up to six devices. The HP-IB cable daisy-chains to the SPU's 25 pin connector. The number of peripherals which may practically be connected to the HP-IB interface depends on peripheral speed, cable length and performance considerations.

Electrical Device Loads

Up to eight HP-IB electrical device loads are allowed on a single HP-IB Channel or PIC. Each peripheral may generate between one and eight HP-IB electrical device loads. For many peripherals, the electrical device load is fixed; however, several current peripherals can be configured for a range of electrical device loads by a CE at the customer site.

Multiple peripherals may be connected to a HP-IB Channel, or PIC as long as the sum of the electrical device loads does not exceed eight and as long as the combination does not violate other configuration constraints. Note: Some peripherals require a dedicated HP-IB channel.

HP-IB Cable Length

The maximum total length of HP-IB cable linked together and connected to a single HP-IB Channel or PIC is 15 meters. Multiple peripherals can be linked together along the portion of this cable that is external to the SPU and the peripherals. Peripherals can be linked together either in a line or in a branched layout.

The maximum allowable length of cable is often less than 15 meters in a particular configuration, depending upon the number of electrical device loads connected. (These rules are discussed below.) The total cable length is the sum of the length of all HP-IB cables:

- a. Inside the peripheral devices
- b. Between peripherals
- c. (PIC and HP-IB Interface) Between the nearest peripheral and the junction panel.
- d. (HP-IB Channel only) Between the HP-IB Channel card and the 1st device (two meters)

All HP-IB cables inside the system and inside the peripheral devices are supplied standard with each product ordered. External HP-IB cables usually are supplied with system peripherals, but watch for exceptions. External cables are shown in the Chapter Four cabling diagrams. To increase cabling flexibility, HP-IB cables also can be ordered separately in lengths of one, two, or four meters by ordering product numbers 10833A, 10833B, and 10833C, respectively.

The Seven Plus One Rule

The length of allowable HP-IB cable is a function of the electrical device loads generated by the attached peripherals. By relating electrical device loads to cable length, we are able to optimize data transfer rates, ensuring correct performance. *The total HP-IB cable length may not exceed seven meters plus one meter for each electrical device load attached to the HP-IB cable, up to a 15 meter maximum.*

High- vs. Low-Speed Peripherals

A PIC is considered high-speed if it has one or more high-speed devices attached to it. No distinction is made for the HP-IB channel because all supported devices are high-speed.

On the MICRO 3000XE, three PICs are supported, two of which are high-speed while the third supports low-speed INPs only.

All HP-IB Channels on the 900 Series may be configured with high-speed peripherals.

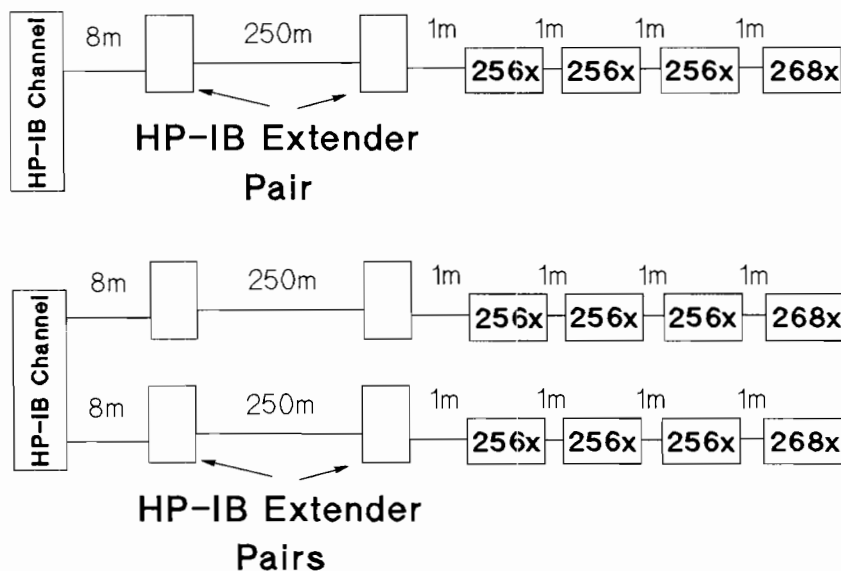
A maximum of six devices may be attached to each HP-IB Channel or PIC (high- or low-speed). These maximums relate to the number of devices and not to electrical device loads. The electrical device load maximum remains at eight per HP-IB Channel, HP-IB Interface or PIC.

Configuring the HP-IB Extender on the HP 3000

The 37203A HP-IB Extender with option 010 and 37204A/B HP-IB Extender support the 256x, 2680A, and 2688A printers on HP 3000 Series 4x, 5x, 6x and 70 and on HP 3000 Series 900 systems. A pair of Extenders (i.e., two Extenders connected by coaxial cable) is required to connect these printers to a system. The HP-IB Extender increases the distance that a printer can be located from the HP 3000 processor, making printed output more accessible to end users in an office, manufacturing, or a dedicated "printer room" environment.

Configuration Limits

With the exception of the 2688A, the maximum number of system printers supported per system remains the same when using the HP-IB Extender.



HP-IB Extender Configuration Examples

The following set of rules must be adhered to when using the Extender:

- HP-IB Extenders are supported on the HP 3000 4x, 5x, 6x, and 70 systems only, using MPE V/E (G.A0.00) or later. (Option 010 Extenders sold before March 15, 1985, connecting 2688As running Q-Delta-2 (C.01.02) MIT or later are still supported.)
- A maximum of two GICs per system may have HP-IB Extenders connected to them and these GICs become low speed, dedicated (to one or two Extender pairs) channels.
- HP-IB Extenders are supported on HP 3000 Series 900 systems running MPE XL version 1.2 or later.
- A maximum of four printers are supported on a pair of Extenders, with any combination of 256xs, 2680As, and 2688As, EXCEPT that no more than two printers may be non-impact (2680A or 2688A).
- Two sets of Extender pairs may be used on a single HP-IB channel but only 256x printers can be installed on either Extender pair.
- When configuring the 268x printer with Extenders, one pair of Extenders is supported per GIC.

- Coax cable lengths of up to 250 meters are supported between an Extender pair.
- Fiber optic cable lengths of up to 1000 meters are supported between an Extender pair.
- If multiple printers are connected to an Extender pair, a maximum of 1m HP-IB cable can be installed between printers. For complete details on HP-IB cable length and HP-IB device loading restrictions with Extenders, your CE should see Boise Division Service Notes on the HP-IB Extender.

Note

For Series 900 HP-IB channel adapters with firmware 27113-81002 (Rev 2733) a firmware upgrade is required to support HP-IB extenders. See service note number 27113A-02 for details.

Upgrade Configuration Rules

This chapter is in the process of being updated and will be distributed when it is completed.





System Sizing and Performance

This chapter is in the process of being updated and will be distributed when it is completed.



System Cabling

This chapter is in the process of being updated and will be distributed when it is completed.

As an interim reference, see the previous edition of the HP 3000 Systems Configuration Guide. The previous edition is also available on the InfoROM internal support subscription. Information about ordering InfoROM may be obtained by sending an HPDesk message to INFOROM / HP4700/M2.



FOS Manual Sets

System Management Core 36367A

These manuals allow for efficient operation of an MPE XL system. This set ships automatically all Series 900 systems. Additional sets can be ordered separately by using product number 36367A. Individual manuals can be ordered by using the corresponding part number provided in the table below.

System Management Core 36367A

Manual Name	Use this part number to order the individual manual:
MPE XL Documentation Guide	32650-60043
MPE XL Quick Reference Guide	32650-60045
MPE XL General User's Reference Manual	32650-60001
Guide for the New System Operator	32650-60040
Guide for the New System Manager	32650-60042
MPE XL Error Messages Manual	32650-60016
EDIT/3000 Reference Manual	32650-60027
TurboIMAGE/XL Database Management System Reference Manual	32215-60002
QUERY/V Reference Manual	32216-60001
KSAM/3000 Reference Manual	32208-60001
Using the 900 Series HP 3000: Fundamental Skills	32650-60037
Using the 900 Series HP 3000: Advanced Skills	32650-60039



System Management Core Plus 36368A

This set provides additional detail for the management of complex MIS centers and large networks, as well as more advanced system management and administration tasks. This set ships automatically with 935, 949, 950, 955, 960 and 980 systems. Additional sets can be ordered separately by using product number 36368A. Individual manuals can be ordered by using the corresponding part number provided in the table below.

System Management Core Plus 36368A

Manual Name	Use this part number to order the individual manual:
MPE XL Glossary of Terms and Acronyms	32650-60044
MPE XL Commands Reference Manual	32650-60002
FCOPY Reference Manual	32650-60028
SORT-MERGE/XL General User's Guide	32214-60001
MPE XL System Utilities Reference Manual	32650-60029
System Administrator's Quick Reference Guide	32650-60008
System Startup, Configuration, and Shutdown Reference Manual	32650-60005
Controlling System Activity	32650-60031
Storing Files and Backing Up the System Reference Manual	32650-60025
Volume Management	32650-60006
ALLBASE/SQL Reference Manual	36216-60006
Getting Started with the DTC	32098-61000
Using the Node Management Services (NMS) Utilities	32022-61005
Configuring Systems for Terminals, Printers, and other Serial Devices	32022-61000
Troubleshooting Terminal, Printer, and Serial Device Connections	32022-61002

Programming Core 36369A

This set is designed for basic programming environments. It describes the mechanics of compiling and linking as well as other MPE XL programming techniques. This set does not ship with any system. It must be ordered separately by the customer. Use product number 36369A to order this set. Individual manuals can be ordered by using the corresponding part number provided in the table below.

Programming Core 36369A

Manual Name	Use this part number to order the individual manual:
Getting Started as an MPE XL Programmer	32650-60009
HP Compiler Library/XL Reference Manual	32650-60014
HP Link Editor/XL Reference Manual	32650-60015
MPE Segmenter Reference Manual	32650-60026

Programming Core Plus 36370A

This is a general reference set for larger, more advanced programming environments. This set does not ship with any system. It must be ordered separately by the customer. Use product number 36370A to order this set. Individual manuals can be ordered by using the corresponding part number provided in the table below.

Programming Core Plus 36370A

Manual Name	Order Number
Accessing Files, Trap Handling, and Data Types Conversion	32650-60010
Process Management, Management, and Interprocess Communication	32650-60011
Native Language, Message Catalogs, and User Logging	32650-60012
System Information, Command Interpreter, and SORT-MERGE Programming	32650-60021
VPLUS/XL Reference Manual	32209-60002
Hi-Li/XL Reference Manual	32424-60001
MPE XL Asynchronous Serial Communications Programmer's Reference Manual	32022-61001
MPE XL Intrinsics Reference Manual	32650-60013
KSAM/3000 Reference Manual	32208-60001
TurboIMAGE/XL Database Management System Reference Manual	32215-60002
QUERY/V Reference Manual	32216-60001

System Dictionary Set 36371A

This set helps programmers use the HP System Dictionary/XL product. This set does not ship with any system. It must be ordered separately by the the customer. Use product number 36371A to order this set. Individual manuals can be ordered by using the corresponding part number provided in the table below.

System Dictionary Set 36371A

Manual Name	Use this part number to order the individual manual:
HP System Dictionary/XL SDMAIN Reference Manual	32256-61000
HP System Dictionary/XL Intrinsic Reference Manual	32256-61001
HP System Dictionary/XL Utilities Reference Manual	32256-61002
HP System Dictionary/XL General Reference Manual Volume 1	32256-61003
HP System Dictionary/XL General Reference Manual Volume 2	32256-61004
HP System Dictionary/XL COBOL Definition Extractor Reference Manual	32257-61000
HP System Dictionary Self-Paced Customer Training	32254-61000
Data Dictionary Managing Information Networks Primer	5958-8527

ALLBASE Set 36372A

This set is designed for programmers who will use ALLBASE, Hewlett-Packard's relational database management system. This set does not ship with any system. It must be ordered separately by the customer. Use product number 36372A to order this set. Individual manuals can be ordered by using the corresponding part number provided in the table below.

ALLBASE Set 36372A

Manual Name	Use this part number to order the individual manual:
ALLBASE/SQL Reference Manual	36216-60005
ALLBASE/SQL Quick Reference Guide	36216-60018
ALLBASE/SQL Reference Manual	36216-60006
ALLBASE/SQL Database Administration Guide	36216-60007
ALLBASE/SQL Master Index	36216-60014
ALLBASE/SQL Message Manual	36216-60011
ALLBASE/SQL Pascal Application Programming Guide	36216-60008
ALLBASE/SQL COBOL Application Programming Guide	36216-60009
ALLBASE/SQL FORTRAN Application Programming Guide	36216-60015
ALLBASE/SQL C Application Programming Guide	36216-60017

General Usage Set 36373A

This set provides basic information about the usage of MPE XL systems for additional users. This set does not ship with any system. It must be ordered separately by the customer. Use product number 36373A to order this set. Individual manuals can be ordered by using the corresponding part number provided in the table below.

General Usage Set 36373A

Manual Name	Use this part number to order the individual manual:
MPE XL Quick Reference Guide	32650-60045
MPE XL Commands Reference Manual	32650-60002
Using the 900 Series HP 3000: Fundamental Skills Training	32650-60037
Using the 900 Series HP 3000: Advanced Skills Training	32650-60039

Migration Set 30231A

This set is designed to aid in the migration from MPE V systems to MPE XL systems. This set does not ship with any system. It must be ordered separately by the customer. Use product number 30231A to order this set. Individual manuals can be ordered by using the corresponding part number provided in the table below.

Migration Set 30231A

Manual Name	Use this part number to order the individual manual:
Introduction to MPE XL for MPE V System Administrators	30367-60001
MPE V to MPE XL: Getting Started	30367-60002
MPE XL Languages Migration Guide	31502-60004
SPL to HP C/XL Migration Guide	30231-60001
Migration Process Guide	30367-60003
Switch Programming Guide	32650-60030
Introduction to MPE XL for MPE V Programmers	30367-60004

Additional Manuals

The following manuals are purchasable separately using the part numbers below.

Languages

HP RPG/XL Programmer's Guide	30318-60001
HP RPG/XL Reference Manual	30318-60002
HP RPG/XL Utilities Reference Manual	30318-60003
HP RPG/XL Pocket Guide Card	30318-90002
HP Pascal Reference Manual	31502-60005
HP Pascal Programmer's Guide	31502-60006
HP Pascal Quick Reference Guide	31502-60007
HP COBOL II Reference Manual	31500-60001
HP COBOL II/XL Programmer's Guide	31500-60002
HP COBOL II Quick Reference Guide	31500-60003
HP FORTRAN 77/XL Reference Manual	31501-60002
HP FORTRAN 77/XL Programmer's Guide	31501-60004
HP FORTRAN 77/XL Quick Reference Guide	31501-60003
HP Symbolic Debugger/XL User's Guide	31508-60003
HP Symbolic Debugger/XL Quick Reference Guide	31508-60004
HP C/XL Reference Manual	31506-60001
HP C/XL Programmer's Guide	31506-60002
HP Business BASIC/XL Reference Manual	32715-60001
HP Business BASIC/XL Migration Guide	32715-60002

Data Communications

Getting Started with NS3000/XL	36923-61001
NS3000/XL User/Programmer Reference Manual	36920-61000
NS3000/XL Local Area Network Configuration Guide	36922-61000
NS3000/XL Configuration Planning and Design Guide	36922-61002
NS3000/XL NMMGR Screens Reference Manual	36922-61003
NS3000/XL Operations and Maintenance Manual	36922-61005
NS3000/XL Error Messages Reference Manual	36923-61000
NS Point-To-Point 3000/XL Network Configuration Guide	36922-61001
NetIPC 3000/XL Programmer's Reference Manual	36920-61005
NS Cross-System NFT Reference Manual	36920-61003
NS Cross-System Network Manager's Reference Manual	36920-61004
NS X.25 3000/V System Link Guide	24405-90002
HP SNA Server/Access User's Guide	30254-61000
HP SNA Link/XL Node Manager's Guide	30291-61000
HP SNA NRJE User/Programmer's Guide	30292-61001
HP SNA NRJE Node Manager's Guide	30292-61000
HP SNA IMF User/Programmer's Guide	30293-61001
HP SNA IMF/XL Node Manager's Guide	30293-61000
SNA DHCF/XL User's Support Guide	36935-61001
SNA DHCF/XL Node Manager's Guide	36935-61002
SNA DHCF/XL Application Programmer's Manual	36935-61003
SNA DHCF/XL Diagnostic Message Manual	36935-61004
APPC Subsystem Node Manager's Guide	30394-61002

Programmer Productivity Tools

HP Toolset/XL Reference Manual	36044-60001
INFORM/V User's Guide	32246-60002
REPORT/V Reference Manual	32245-60001
Getting Started With TRANSACT	32247-60002
TRANSACT Reference Manual	32247-60003
TRANSACT/XL Migration Guide	32247-60004
Virtuoso COBOL Sample Library Reference Manual	30426-60001
Virtuoso Code Generator Reference Manual	30422-60001
HP EDIT Reference Manual	30316-60002
HP SRC User's Guide	30234-60002
TurboIMAGE DBCHANGE/V User's Guide	36020-60002

Other Manuals Available

Silhouette Reference Manual	30302-60003
ALLBASE/NET User's Guide	36216-60016
VISOR Tutorial	32425-60001
Dictionary/3000 Reference Manual	32244-61000
SORT-MERGE/XL Programmer's Guide	32650-60059
System Debug Reference Manual	32650-60017
The HP 3000: Logging On and Off	32650-90098



Software and Hardware Support

This chapter is in the process of being updated and will be distributed when it is completed.





Site Preparation Data

Environmental Specifications

System Processor Units

	Relative Humidity (Operating)—recommended (non-condensing)	Recommended Operating Temperature	Line Voltage (VAC) and Frequency
MICRO LX/GX/RX	20-80%	40°-104°F (4°-40°C)	100-120 @ 47-63 Hz 200-240 @ 47-63 Hz
MICRO XE	20-80%	50°-104°F (10°-34°C)	100-120 @ 48-66 Hz 200-240 @ 48-66 Hz
Series 922-932	20-80%	41-104°F (5-40°C)	100-120 @ 47-63 Hz
Series 925-949	15-95%	32-131°F (0-55.°C)	90-110 @ 48-66 Hz 108-132 @ 48-66 Hz 180-264 @ 48-66 Hz
Series 950-980	40-60%	68-78°F (20-25.5°C)	208 @ 60 Hz 380 @ 50 Hz 415 @ 50 Hz Three Phase

Distributed Terminal Controller

	Relative Humidity (Operating)—recommended (non-condensing)	Recommended Operating Temperature	Line Voltage (VAC) and Frequency
DTC	5-95% @ 40°C	32-131°F (0-55°C)	115 @ 50/60 Hz 230 @ 50/60 Hz

Physical Dimensions

System Processor Units

Dimension	Height	Depth	Width	Weight
MICRO 3000LX/GX/RX (in system cabinet)	609 mm (24 in.)	539 mm (21.2 in.)	212-360 mm (8.4-14.2 in.)	18.6 Kg (93 lbs.*)
MICRO 3000XE (in system cabinet)	720 mm (29 in.)	711 mm (28.5 in.)	375 mm (15 in.)	33 Kg (73 lbs.)
Series 922-932	750 cm (29.5 in.)	710 cm (27.9 in.)	375 cm (14.8 in.)	110 Kg (244 lbs.)
Series 925-949	234 cm (9.21 in.)	500 cm (19.7 in.)	325 cm (12.8 in.)	23 Kg (51 lbs.)
Series 950-980	100 cm (39 in.)	71 cm (28 in.)	130 cm (51 in.)	400 Kg (880 lbs.)

Distributed Terminal Controller

Dimension	Height	Depth	Width	Weight
DTC	22.2 cm (8.7 in.)	44 cm (17.3 in.)	42.5 cm (16.7 in.)	16-22 Kg (35-48 lbs.)

Electrical Characteristics

System Processor Units

Product	Volt-Amps	Voltage (VAC) and Frequency	Maximum Steady State Current
MICRO 3000LX/GX/RX	480 VA	100-120 @ 47-63 Hz	4.0 A
	600 VA	200-240 @ 47-63 Hz	2.5 A
MICRO 3000XE	720 VA	100-120 @ 48-66 Hz	6.0 A
	960 VA	220-240 @ 48-66 Hz	4.0 A
Series 922-932	1584 VA	90-132 @ 47-63 Hz	12 A
	1584 VA	180-264 @ 47-63 Hz	6.3A
	1663 VA		
Series 925-949	1045 VA	90-110 @ 48-66 Hz	9.5A
	1056 VA	108-132 @ 48-66 Hz	8.0A/
	1399 VA	180-264 @ 48-66 Hz	5.3A/
Series 950-980	2282 VA	208 @ 60 Hz three-phase	8.0A/phase
	2896 VA+	380 @ 50 Hz three-phase	4.4A/phase
	2875 VA+	415 @ 50 Hz three-phase	4.0A/phase

Estimated value (not measured). The volt-amp product is constant between 380 and 415 volts, thus allowing the use of the following formula:

$$415V \text{ A/phase} = (380v \text{ A/phase} / 415V) * 380V$$

+ Estimated value.

Distributed Terminal Controller

Product	Volt-Amps	Voltage (VAC) and Frequency	Maximum Steady State Current
DTC	150 VA	115 @ 50/60 Hz 230 @ 50/60 Hz	1.3A 0.65A

Note: A power factor of ".85" should be used for all HP3000 power supplies except the Scott-T and the "B" power supply which should use ".95" when calculating watts.

To calculate total system BTU output, add up the volt-amps for all products configured and use the following equation:

$$\text{Total BTU/HR} = (\text{Total VOLTAMPS} * .85 \text{ or } .95) * 3.414$$

If the power factor is known, it should be substituted for ".85" or ".95".

Disk Drives

Product	Volt-Amps	Voltage (VAC) and Frequency	Maximum Steady State Current
C2200A Disk Drive	105 VA	90-132 @ 47.5-66 Hz 180-264 @ 47.5-66 Hz	.84A .42A
C2201A Disk Drive	150 VA	90-132 @ 47.5-66 Hz 180-264 @ 47.5-66 Hz	1.16A .58A
C2202A Disk Drive	125 VA	90-132 @ 47.5-66 Hz 180-264 @ 47.5-66 Hz	.98A .49A
C2203A Disk Drive	105 VA	90-132 @ 47.5-66 Hz 180-264 @ 47.5-66 Hz	.84A .42A
C2204A Disk Drive	90 VA	90-132 @ 47.5-66 Hz 180-264 @ 47.5-66 Hz	1.5A .75A
7937H/XP/FL Disk Drive	590 VA 1200 VA	90-132 @ 48-62 Hz 180-264 @ 48-62 Hz	3.5A 2.0A
7963B Disk Drive	184 VA 230 VA	90-132 @ 48-62 Hz 180-264 @ 48-62 Hz	0.8A 0.5A
7959B Disk Drive	184 VA 230 VA	90-132 @ 48-62 Hz 180-264 @ 48-62 Hz	0.8A 0.5A
7958B Disk Drive	184 VA 230 VA	90-132 @ 48-62 Hz 180-264 @ 48-62 Hz	0.8A 0.5A

Note: BTU/HR - (VOLTAMPS* .85)* 3.414

Magnetic Tape Drives

Product	Volt-Amps	Voltage (VAC) and Frequency	Maximum Steady State Current
9144A Cartridge	110 VA	90-125 @ 48-66 Hz	.88A
Tape Drive	110 VA	180-250 @ 48-66 Hz	.44A
9145A Cartridge	110 VA	90-125 @ 48-66 Hz	.88A
Tape Drive	110 VA	180-250 @ 48-66 Hz	.44A
C1511A Cartridge	110 VA	90-125 @ 48-66 Hz	.88A
Tape Drive	110 VA	180-250 @ 48-66 Hz	.44A
35401A Autochanger	110 VA	90-125 @ 48-66 Hz	.88A
Tape Drive	110 VA	180-250 @ 48-66 Hz	.44A
7979A Magnetic	250 VA	100-120 @ 50-60 Hz	2.08A
Tape Drives	250 VA	200-240 @ 50-60 Hz	1.04A
7980A/XC Magnetic	250 VA	100-120 @ 50-60 Hz	2.08A
Tape Drive	250 VA	200-240 @ 50-60 Hz	1.04A

Note: BTU/HR - (VOLTAMPS* .85)* 3.414

Electrical Characteristics

Printers

Product	Volt-Amps	Voltage (VAC) and Frequency	Maximum Steady State Current
* 2562C Line Printer	348 VA	120 @ 50/60 Hz	2.9A
* 2563B Line Printer	348 VA	120 @ 50/60 Hz	2.9A
* 2564B Line Printer	396 VA	120 @ 50/60 Hz	3.3A
* 2566B Line Printer	696 VA	120 @ 50/60 Hz	5.8A
* 2567B Line Printer	816 VA	120 @ 50/60 Hz	6.8A
2680A Page Printer	4992 VA	208 @ 60 Hz	24A
	5280 VA	220 @ 50 Hz	24A
293x Serial Printer	240 VA	120 @ 60 Hz	2.0A
	374 VA	220 @ 50 Hz	1.7A

Note: $\text{BTU/HR} = (\text{VOLTAMPS} * .85) * 3.414$

These printers are tested at 120 @ 50/60 Hz. For other voltages, please contact Boise Division.

Electrical Characteristics

Terminals

Product	Volt-Amps	Voltage (VAC) and Frequency	Maximum Steady State Current
700/92 CRT Terminal	37 VA	100-240 @ 47-64 Hz	.75A @ 100 VAC .35A @ 240 VAC
700/94 CRT Terminal	37 VA	100-240 @ 47-64 Hz	.75A @ 100 VAC .35A @ 240 VAC
2382A CRT Terminal	75 VA	100 @ 50/60 Hz	0.75A
	90 VA	120 @ 50/60 Hz	0.75A
	165 VA	220 @ 50/60 Hz	0.75A
	180 VA	240 @ 50/60 Hz	0.75A
2392A CRT Terminal	92 VA	115 @ 47/66 Hz	0.8A
	92 VA	230 @ 47/66 Hz	0.4A
2393A CRT Terminal	120 VA	120 @ 47/66 Hz	1.0A
	110 VA	220 @ 47/66 Hz	0.5A
2394A CRT Terminal	92 VA	115 @ 47/66 Hz	0.8A
	92 VA	230 @ 47/66 Hz	0.4A
2621B CRT Terminal	52 VA	120 @ 60 Hz	0.43A
	55 VA	220 @ 50 Hz	0.25A
2622A CRT Terminal	152 VA	110 @ 60 Hz	1.38A
	253 VA	220 @ 50 Hz	1.15A
2623A CRT Terminal	170 VA	100 @ 50/60 Hz	1.7A
	168 VA	120 @ 50/60 Hz	1.4A
	154 VA	220 @ 50/60 Hz	0.7A
	168 VA	240 @ 50/60 Hz	0.7A
2624A CRT Terminal	132 VA	110 @ 60 Hz	1.2A
	132 VA	220 @ 50 Hz	0.6A
2624B CRT Terminal	170 VA	100 @ 50/60 Hz	1.7A
	168 VA	120 @ 50/60 Hz	1.4A
	154 VA	220 @ 50/60 Hz	0.7A
	168 VA	240 @ 50/60 Hz	0.7A
2625A CRT Terminal	170 VA	100 @ 50/60 Hz	1.7A
	168 VA	120 @ 50/60 Hz	1.4A
	154 VA	220 @ 50/60 Hz	0.7A
	168 VA	240 @ 50/60 Hz	0.7A

Note: BTU/HR = (VOLTAMPS * .85) * 3.414

Electrical Characteristics

Terminals (Cont.)

Product	Volt-Amps	Voltage (VAC) and Frequency	Maximum Steady State Current
2626A CRT Terminal	96 VA	120 @ 60 Hz	0.8A
	88 VA	220 @ 50 Hz	0.4A
2626W CRT Terminal	170 VA	100 @ 50/60 Hz	1.7A
	168 VA	120 @ 50/60 Hz	1.4A
	154 VA	220 @ 50/60 Hz	0.7A
	168 VA	240 @ 50/60 Hz	0.7A
2627A CRT Terminal	280 VA	100 @ 50/60 Hz	2.8A
	288 VA	120 @ 50/60 Hz	2.4A
	308 VA	220 @ 50/60 Hz	1.4A
	312 VA	240 @ 50/60 Hz	1.3A
2628A CRT Terminal	170 VA	100 @ 50/60 Hz	1.7A
	168 VA	120 @ 50/60 Hz	1.4A
	154 VA	220 @ 50/60 Hz	0.7A
	168 VA	240 @ 50/60 Hz	0.7A
2641A CRT Terminal	138 VA	115 @ 60 Hz	1.2A
	138 VA	230 @ 50 Hz	0.6A
2645A/N/R/S CRT Terminal	480 VA	120 @ 50/60 Hz	4A
	440 VA	220 @ 50/60 Hz	2A
2647F CRT Terminal	180 VA	120 @ 50/60 Hz	1.5A
	184 VA	230 @ 50 Hz	0.8A
2648A CRT Terminal	196 VA	115 @ 60 Hz	1.7A
	207 VA	230 @ 50 Hz	0.9A
2703A CRT Terminal	660 VA	120 @ 50/60 Hz	5.5A
	770 VA	220 @ 50/60 Hz	3.5A

Note: BTU/HR = (VOLTAMPS * .85) * 3.414







