

HP 3000 COMPUTER SYSTEMS SYSTEM CONFIGURATION GUIDE



19111 Pruneridge Avenue, Cupertino, CA 95014

Part No. 5954-9354

Printed in U.S.A. 03/87

Federal Communications Commission (FCC)

The US Federal Communications Commission (in 47 CFR 15.818) has specified that the following notice be brought to the attention of the users of products in this document.

WARNING

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

Verband Deutscher Elektroniker (VDE)

This equipment has been certified to comply with the German standard VDE 0871 Level A.

NOTICE

The information contained in this document is subject to change without notice.

HEWLETT-PACKARD MAKES NO WARRANTY OF ANY KIND WITH REGARD TO THIS MATERIAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance or use of this material.

Hewlett-Packard assumes no responsibility for the use or reliability of its software on equipment that is not furnished by Hewlett-Packard.

This document contains proprietary information which is protected by copyright. All rights are reserved. No part of this document may be photocopied, reproduced or translated to another language without the prior written consent of Hewlett-Packard Company.

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

CONFIGURING HP 3000 SYSTEMS

This configuration guide is designed to help in the configuration of HP 3000 systems. It is comprised of separate sections for the MICRO 3000/3000XE, Series 42, Series 42XP, Series 52, Series 48, Series 58, Series 68, Series 70 and Series 930 and sections on upgrading and cabling. For each system type, a comprehensive checklist or "Configuration Worksheet" is provided for recording general configuration information, such as number and type of terminals, discs, tape drives, etc. The worksheet functions as a common reference guide for determining the hardware needed, for testing the validity of the configuration, and for subsequent ordering of the actual HP 3000 system.

The system configuration sections also provide a review of the standard and required equipment comprising a minimum and maximum system configuration along with general configuration guidelines to aid in the completion of the worksheets. These sections include products which are still supported on HP 3000 systems but may no longer be orderable from Hewlett-Packard. This allows greater flexibility in situations where customers may own older peripherals and accessories.

Using the worksheets and configuration guidelines, there are six steps required to correctly configure an HP 3000 system:

1. Decide What is Needed.

Before using any of the configuration aids provided in this portion of the manual, the characteristics of the desired configuration must already be determined. Specifically, the number and type of terminals, disc drives, magnetic tape drives, printers, data communication lines, card readers, memory size, and terminal connections must be known.

2. Fill out the Configuration Worksheet.

After determining the specific devices desired on the system, fill out the appropriate configuration

worksheets following the guidelines provided in this manual.

3. Verify the Configuration.

Use the guidelines and information provided on the worksheets and the text to double check that the proposed configuration is valid and does not violate any of the system maximums or physical limitations.

4. Order Options and Cables.

Cables and options for HP 3000 peripherals *must* be specified when ordering an HP 3000 system. Both the system configuration text and the peripherals and terminals cabling chapters of this manual provide information on cabling. Please check the peripherals and terminals cabling chapters for a detailed listing of different HP 3000 peripheral products and the options and requirements associated with each.

5. Order Optional Software.

Order optional software products separately. Note that Network Link products require separately ordered software packages.

6. Order Additional Computer Services.

Other Hewlett-Packard services which should be considered when ordering a new system include the following:

- Hardware and Software Support Services (Chapter 6)
- Training Courses
- Consulting
- Manuals
- Supplies provided by HP Computer Supplies Operation



Chapter 1. System Configuration Rules

MICRO 3000

SPU Alternatives	1-1
Minimum System Configuration	
Standalone System	1-1
Entry Level System	1-2
Full Size System	1-2
Maximum System Configuration	
Ordering the SPU	1-4
MPE Media Products	1-4
Memory Expansion	1-4
The Card Cage	1-5
Peripheral Interface Channel	1-5
Peripherals	
Disc Drives	1-6
Magnetic Tape Drives	1-6
Output Spooling	1-6
System Printers	1-7
Data Communications	
ATP/M and ATP37	1-7
Terminals	1-8
Serial Printers	1-8
System Console	1-8
Support Link Modem	1-9
INP Network Links	1-9
Local Area Networks (LANs)	1-9
Configuration Worksheets	
Standalone System	1-10
Entry Level System	1-17
Full Size System	1-24

MICRO 3000XE

SPU Alternatives	1-31
Minimum System Configuration	1-31
Maximum System Configuration	
Ordering the SPU	1-33
Ordering Additional System Cabinets	1-33
Peripheral Space	1-33
ATP/M Junction Panel Space	1-33
Ordering Upgrades	1-33
S/37 SPU Upgrade Alternatives	1-35
MPE Media Products	1-36
The Card Cage	1-36
Peripheral Interface Channel	1-37
Peripherals	
Disc Drives	1-39
Magnetic Tape Drives	1-39

MICRO 3000XE (Cont.)

Flexible Disc Drives	1-40
Output Spooling	1-40
System Printers	1-40
Data Communications	
ATP/M and ATP37	1-40
Terminals	1-41
Serial Printers	1-42
System Console	1-42
Support Link Modem	1-42
INP Network Links	1-42
Local Area Networks (LANs)	1-42
Configuration Worksheets	1-43

Series 42

Minimum System Configuration	1-51
Maximum System Configuration	
Ordering the SPU	1-52
MPE Media Products	1-52
The Card Cage	1-52
Memory Expansion	1-53
Junction Panels	1-53
LANIC	1-53
General I/O Channels	1-53
Peripherals	
Disc Drives	1-55
Integrated Storage Units	1-55
Magnetic Tape Drives	1-56
System Printers	1-56
Other Peripherals	
Flexible Disc Drive	1-57
Card Reader	1-57
Power Line Conditioners	1-57
Multiple System Access	1-57
Selector	
Data Communications	
Terminal Connection	1-57
Support Link Modem	1-58
System Console	1-58
ADCC	1-58
ATP	1-58
Output Spooling	1-59
Serial Connected Printers	1-60
and Plotters	
Network Links/INPs	1-61
Configuration Worksheets	1-62

CONTENTS (continued)

Series 42XP and 52

Minimum System Configuration	1-75
Maximum System Configuration	
Ordering the SPU	1-76
MPE Media Products	1-76
The Card Cage	1-76
Memory Expansion	1-77
Junction Panels	1-77
LANIC	1-77
General I/O Channels	1-77
Peripherals	
Disc Drives	1-79
Integrated Storage Units	1-79
Magnetic Tape Drives	1-80
System Printers	1-80
Other Peripherals	
Flexible Disc Drive	1-81
Card Reader	1-81
Power Line Conditioners	1-81
Multiple System Access Selector	1-81
Data Communications	
Terminal Connection	1-81
Support Link Modem	1-82
System Console	1-82
ADCC	1-82
ATP	1-83
Output Spooling	1-83
Serial Connected Printers and Plotters	1-84
Network Links/INPs	1-85
Configuration Worksheets	1-86

Series 48

Minimum System Configuration	1-101
Maximum System Configuration	
Ordering the SPU	1-102
MPE Media Products	1-102
Card Cages	1-102
Memory Expansion	1-103
Junction Panels	1-104
LANIC	1-105
General I/O Channels	1-105
Peripherals	
Disc Drives	1-107
Integrated Storage Units	1-107
Magnetic Tape Drives	1-108
System Printers	1-107
Other Peripherals	

Series 48 (Cont.)

Flexible Disc Drive	1-109
Card Reader	1-109
Power Line Conditioners	1-109
Multiple System Access Selector	1-109
Data Communications	
Terminal Connection	1-109
Support Link Modem	1-110
System Console	1-110
ADCC	1-110
ATP	1-110
Output Spooling	1-112
Serial Connected Printers and Plotters	1-113
Network Link Products	1-113
Configuration Worksheets	1-114

Series 58

Minimum System Configuration	1-131
Maximum System Configuration	
Ordering the SPU	1-132
MPE Media Products	1-132
Card Cages	1-132
Memory Expansion	1-134
Junction Panels	1-134
LANIC	1-135
General I/O Channels	1-135
Peripherals	
Disc Drives	1-137
Integrated Storage Units	1-137
Magnetic Tape Drives	1-138
System Printers	1-138
Other Peripherals	
Flexible Disc Drive	1-139
Card Reader	1-139
Power Line Conditioners	1-139
Multiple System Access Selector	1-139
Data Communications	
Terminal Connection	1-140
Support Link Modem	1-140
System Console	1-140
ADCC	1-140
ATP	1-141
Output Spooling	1-143
Serial Connected Printers and Plotters	1-144
Network Link Products	1-144
Configuration Worksheets	1-145

CONTENTS (continued)

Series 6x/70

Minimum System Configuration	1-161
Maximum System Configuration	
MPE-V	1-162
MPE Media Products	1-162
Memory Expansion	1-162
I/O Bay Card Cages	1-163
Junction Panels	1-165
LANIC	1-167
General I/O Channels	1-167
Peripherals	
Disc Drives	1-169
Integrated Storage Units	1-169
Magnetic Tape Drives	1-170
System Printers	1-171
Other Peripherals	
Flexible Disc Drive	1-171
Card Reader	1-172
Power Line Conditioners	1-172
Multiple System Access Selector	1-172
Data Communications	
Terminal Connection	1-172
System Console	1-174
ATP	1-174
Support Link Modem	1-174
Output Spooling	1-174
Spooled Output Devices	1-175
Serial Connected Printers and Plotters	1-177
Network Links/INPs	1-177
Configuration Worksheets	1-178

Series 930

Minimum System Configuration	1-193
Maximum System Configuration	
Memory Expansion	1-195
Floating Point Coprocessor	1-195
I/O Card Cages	1-196
HP-IB Channels	1-197
802.3 LANIC Cards	1-197
Peripherals	
Disc Drives	1-198
Magnetic Tape Drives	1-198
System Printers	1-199
Power Line Conditioners	1-199
Data Communications	
Workstation Connections	1-200
Distributed Terminal Controller	1-200

Series 930 (Cont.)

System Console	1-201
Support Link Modem	1-201
Output Spooling	1-202
Spooled Output Devices	1-202
Serial Printers	1-202
Configuration Worksheets	1-203

Remarketed Systems

Remarketed Systems	1-209
--------------------	-------

Chapter One Appendix

Attaching HP-IB Peripherals	1-211
HP 3000 Support Matrices	
Maximum Peripheral Configurations	1-218
Maximum Terminal Configurations	1-227
Supported Workstations	1-229
Disc Support Matrix	1-230
Supported Consoles	1-231
Supported Plotters	1-232
Supported System Software	1-233
Supported Languages	1-234
Supported Database Access	1-235
Supported HP Applications	1-236
Configuring the HP-IB Extender	1-240

Chapter 2. Upgrade Configuration Rules

Upgrading HP 3000 Systems Overview	2-1
Upgrading S/III to MPE V Systems	2-2
Example S/III to S/68 Upgrade	2-6
Upgrading MPE V to MPE V Systems	2-7
Example S/30 to S/48 Upgrade	2-13
Upgrading MPE V to MPE XL Systems	2-14
Example S/68 to S/930 Upgrade	2-17
Upgrade Ordering Matrix	2-18
Series 930 Upgrade	2-24
Series 70 Upgrade	2-26
Series 68 Upgrade	2-33
Series 58 Upgrade	2-36
Series 52 Upgrade	2-39
Series 39 Upgrade	2-41
Series 37XE Upgrade	2-41
Equipment to be Returned	2-43

CONTENTS (continued)

Chapter 3. System Sizing and Performance

Chapter 4. System Cabling

Peripheral Cabling	4-1
System Communications Products	4-21
Workstation Cabling	4-29
Eavesdrop and Slave Configurations	4-45

Peripheral Cabling

Disc Drives	4-1
Mass Storage Subsystems	4-6
Tape Drives	4-8
Printers	4-13
HP-IB Extenders	4-18
HP-IB Peripheral Selector	4-19

System Communication Products

HP 3000 Data Communications Products	4-21
Local Area Network	4-22
PBX Connections	4-23
HP 3000 to HP Systems Communications	4-25
HP 3000 to IBM Communications	4-27

Workstation Cabling

MPE XL HP 3000 Distributed Terminal Controller Cabling	4-29
MPE XL HP 3000 Console Cabling	4-32
MPE V HP 3000 Point-to-Point Terminal Cabling	4-34
2334 Statistical Multiplexer Cabling	4-41
X.25 Workstation Cabling	4-42
Multipoint (MTS) Cabling	4-43

Eavesdrop and Slave Communications

HP3000 Business Graphics	4-45
Eavesdrop Cabling	4-46
Graphics Tablet	4-47
Slaved HP-IB Plotters	4-48
Slaved Printers	4-49

Chapter 5. Manuals

HP 3000 System Manuals	5-1
Software Manuals	5-2
Languages	5-2
Data Communications: Network Services	5-3
Data Communications: Network Links	5-4
Programmer Productivity Tools	5-5
Personal Productivity Center	5-6
Software	5-6
Manufacturing Systems Application	5-8
Software	5-8
Financial Systems Applications Software	5-11
Semiconductor Productivity Network	5-13
Information Systems	5-13
Distribution Software	5-15
Additional Applications Software	5-16

Chapter 6. Software and Hardware Support

HP 3000 Software Support Services	6-1
Configuring Software Support	6-3
Hardware Maintenance Services	6-5
System Maintenance Services	6-5
Workstation Product Services	6-6
Hardware Maintenance Matrices	6-8

Chapter 7. Site Preparation Data

Environmental Specifications	7-1
SPU Dimensions	7-2
Electrical Characteristics	7-3
System Processor Units	7-3
Magnetic Tape Drives	7-4
Disc Drives	7-5
Printers	7-7
Terminals	7-9



1

System Configuration Rules

MIRCO 3000	1-1
MICRO 3000XE	1-31
Series 42	1-51
Series 42 XP/52	1-75
Series 48	1-101
Series 58	1-131
Series 6x/70	1-161
Series 930	1-193
Remarketed Systems	1-209
Appendix	1-211



MICRO 3000

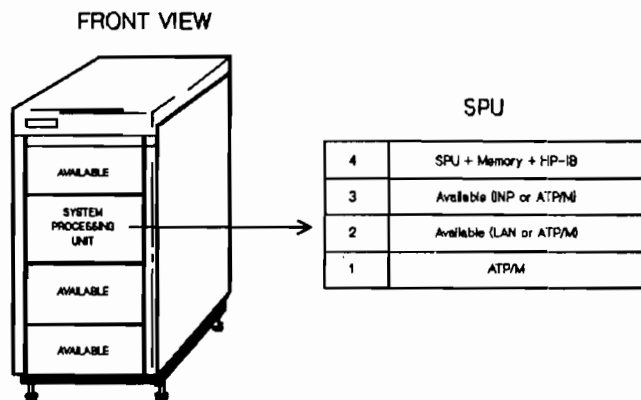
SPU Alternatives	1-1
Minimum System Configuration	
Standalone System	1-1
Entry Level System	1-2
Full Size System	1-2
Maximum System Configuration	
Ordering the SPU	1-4
MPE Media Products	1-4
Memory Expansion	1-4
The Card Cage	1-5
Peripheral Interface Channel	1-5
Peripherals	
Disc Drives	1-6
Magnetic Tape Drives	1-6
Output Spooling	1-6
System Printers	1-7
Data Communications	
ATP/M and ATP37	1-7
Terminals	1-8
Serial Printers	1-8
System Console	1-8
Support Link Modem	1-9
INP Network Links	1-9
Local Area Networks (LANs)	1-9
Configuration Worksheets	
Standalone System	1-10
Entry Level System	1-17
Full Size System	1-24



MICRO 3000 SPU ALTERNATIVES

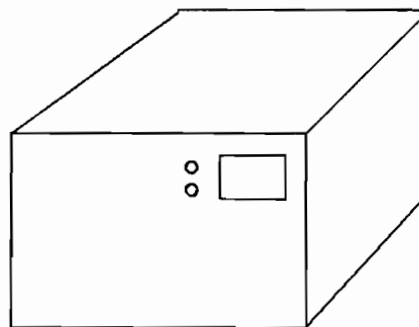
The MICRO 3000 Business Computer is available as a standalone system (32535A) or as an integrated system (32535E and 32535F). When purchased as a standalone system, only the system cabinet, system processing unit, memory and HP-IB interface are included. The integrated systems include all the necessary components for a functional unit: memory, HP-IB interface, ATP/M terminal controller, system console, disc drive and tape drive.

MICRO 3000 SPU



MICRO 3000 MINIMUM SYSTEM CONFIGURATION

I. STANDALONE SYSTEM



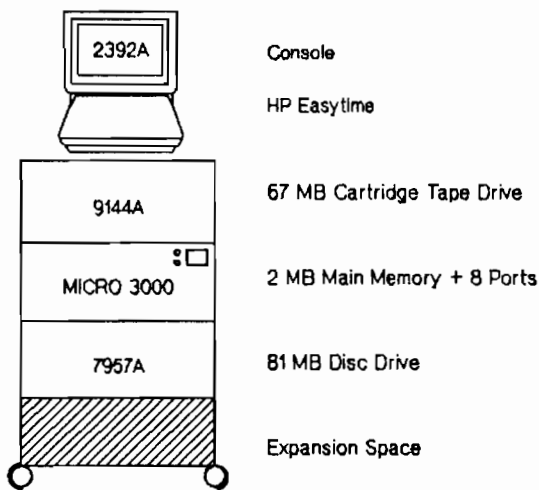
Standalone System (32535A). The MICRO 3000 standalone system product (32535A) includes the following hardware:

- System Processing Unit (SPU) four slot card cage with power supply.
- Central Processing Unit (CPU) with the following:
 - . System clock. system clock.
 - . 2Mb Main Memory.
 - . HP-IB Interface.
- System Cabinet with built in power tap.

The above hardware provides an SPU rack mounted in a System Cabinet. The system cabinet provides peripheral storage space for any 3 of the following: 9144A cartridge tape, 7957A disc or 7958A disc. When the cartridge tape autochanger (35401A) is utilized, it counts as 2 available peripheral locations.

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

II. ENTRY LEVEL SYSTEM



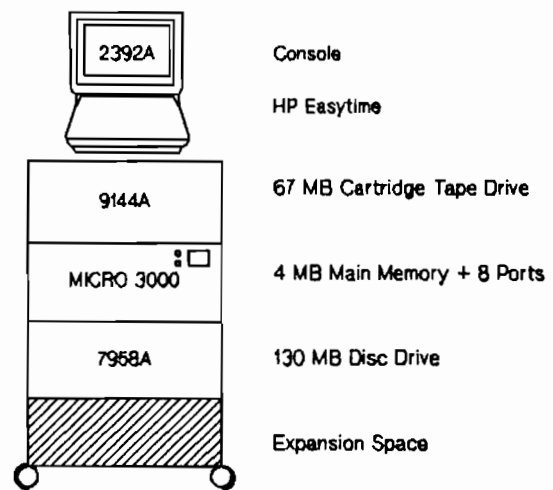
Entry Level System (32535E). The MICRO 3000 Entry Level System (32535E) includes the following hardware:

- System Processing Unit (SPU) four slot card cage with power supply.
- Central Processing Unit (CPU) with the following:
 - . System clock
 - . 2 Mb main memory
 - . HP-IB Interface
- System Cabinet with built in power tap.
- Advanced Terminal Processor (ATP/M with opt 125, 25 Pin Connectors)
- 2392A console terminal with cable
- 7957A (81 Mb) disc drive
- 9144A (67 Mb) cartridge tape drive

The system is shipped factory integrated with all components assembled, connected and configured. Additional options are available to add either an additional ATP/M or an additional disc drive (81 or 130 Mb). Only one ATP/M and one disc option may be ordered.

NOTE: HP Installation is included with the product. HP site preparation is not necessary with the 32535E. If any HP-IB peripherals are to be installed outside of the system cabinet, HP site preparation is required and must be ordered separately by the customer.

III. FULL SIZE SYSTEM



Full Size System (32535F). The MICRO 3000 Full Size System (32535F) includes the following hardware:

- System Processing Unit (SPU) four slot card cage with power supply.
- Central Processing Unit (CPU) with the following:
 - . System Clock
 - . 4 Mb main memory
 - . HP-IB interface
- System Cabinet with built in power tap.
- Advanced Terminal Processor (ATP/M with opt 125, 25 Pin Connectors).
- 2392A console terminal with cable.
- 7958A (130 Mb) disc drive.
- 9144A (67 Mb) cartridge tape drive.

The system is shipped factory intergrated with all components assembled, connected and configured. Additional options are available to add an additional ATP/M, an additional disc drive (81 or 130 Mb), or to substitute the cartridge tape autochanger (35401A) for the 9144A tape drive. Only one ATP/M and one disc option may be ordered. When the cartridge tape autochanger is included, no disc drive option may be ordered (due to lack of room in the system cabinet). A delete option is also available to reduce the main memory to 2 Mb.

NOTE: HP installation is included with the product. HP site preparation is not necessary with the 32535F. If any HP-IB peripherals are to be installed outside of the system cabinet, HP site preparation is required and must be ordered separately by the customer.

Required Hardware Ordered Separately

STANDALONE SYSTEM (32535A).

- One ATP/M (40290A) any option.
- One System Console.
- One Magnetic Tape Drive for System Backup and Software Updates: 9144A, 35401A, 7974A, or 7978B.
- One System Disc: 7957A, 7958A, 7936H, 7936XP, 7937H, or 7937XP.

ENTRY LEVEL SYSTEM (32535E)..

- None

FULL SIZE SYSTEM (32535F)..

- None

Supplied Software

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

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

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

The Entry Level System (32535E) and Full Size System (32535F) are shipped with MPE already loaded onto the system disc. For the standalone system (32535A), MPE will be loaded by HP personnel at time of installation.

All MICRO 3000s also include Disc Caching, an I/O performance product, which is not part of the Fundamental Operating Software.

Required Software Ordered Separately

HP Easytime (35303A). the menu-driven interface for MPE must be ordered separately.

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

Although Disc Caching is included with the MICRO 3000 systems, it may need to be ordered separately. If any subsystems are ordered, Disc Caching will be included on the Subsys tape. If no subsystems are ordered, Disc Caching must be ordered from SDC by the applications engineer.

MICRO 3000 MAXIMUM SYSTEM CONFIGURATION GUIDELINES

Ordering the System Processor Unit (SPU)

To obtain the MICRO 3000 System Processor Unit, order product number 32535A. This product includes the SPU with 2 Mb of memory, HP-IB interface, power supply and the system cabinet. HP installation and site preparation are also included. An option to the 32535A product is available for expanding memory to 4 Mb. One MPE Media Product for MPE-V/E (UB Delta 1 or later) must also be ordered. Disc caching is also included with this product.

To obtain the MICRO 3000 System Processor Unit in a factory integrated system order either 32535E or 32535F. These systems combine the 32535A with an ATP/M terminal controller, 2392A console terminal with cable, disc drive (81 Mb or 130 Mb), and 9144A cartridge tape drive. HP installation is included. The customer is responsible for site preparation to insure the environment falls within the specification range for the system. If HP-IB peripherals are to be installed outside of the system cabinet, HP site preparation is required and must be ordered separately. Options are available to add an additional disc drive, additional ATP/M, reduce memory, or replace the 9144A with the 35401A cartridge tape autochanger (32535F only).

MPE Media Products

One MPE Media Product **MUST** be ordered with every MICRO 3000 system to designate the media type (cartridge tape or 1600 cpi magnetic tape). The MPE Media Product for the MICRO 3000 is 51450A (MPE-V/E), Option 606. 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 3000 is the first HP 3000 to include main memory on the CPU board. The available memory configurations are 2 Mb or 4 Mb. The standalone system (32535A) comes standard with 2 Mb, with an option to upgrade to 4 Mb (opt 510). The Entry Level System (32535E) comes only with 2 Mb and may be upgraded to 4 Mb by ordering a 4 Mb memory upgrade (30535A). NOTE: This upgrade represents a board swap upgrade and is designed for customers that outgrow their 2 Mb configuration. The Full Size System (32535F) comes standard with 4 Mb with an option to reduce the memory to 2 Mb (opt 511). No add on memory boards are supported on the MICRO 3000.

Product	2 Mb	4 Mb
32535A	STD	Opt 510
32535E	STD	Order 30535A Upgrade
32535F	Opt 511	STD

The Card Cage

SPU

4	SPU + Memory + HP-IB
3	Available (INP or ATP/M)
2	Available (LAN or ATP/M)
1	ATP/M

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.

CARD CAGE RESTRICTIONS.

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

Peripheral Interface Channel

The MICRO 3000 differs from the Series 37 and the MICRO 3000XE in that it does not use the PIC to control HP-IB devices, but rather it has an HP-IB interface 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 therefore be configured on the MICRO 3000 is six (6).

Peripherals

DISC DRIVES.

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

MICRO 3000 Maximum Disc Drive Configuration:

7957A Disc	4
7958A Disc	4
7936H/XP Disc	4
7937H/XP Disc	4
Total Disc Drives	4

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

Magnetic Tape Drives

A 9144A cartridge tape, a 35401A cartridge tape autochanger, a 7974A or a 7978B magnetic tape unit is required for system backup and distribution of software updates for the MICRO 3000. Please see the table below for the specific device maximums.

MICRO 3000 Maximum Tape Drive Configuration:

9144A	2
35401A	2
7974A	2
7978B	2
Total Tape Drives	2

The 9144A is a 1/4" cartridge tape drive offering excellent backup performance and reliability. It can be used to backup on-line storage capacities up to 307Mb. The 35401A cartridge tape autochanger can provide unattended backup of up to 504Mb of on-line storage. It is also acceptable as a backup device for the 571Mb 7937H/XP as long as no more than 504Mb must be backed up unattended. On-line storage greater than 571Mb requires the use of 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 disc 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.

Of the serial connected printers, the 2932A and 2934A may be "local" or "remote" spooled. The 2603A, 2686A/D, and 33440A are supported in local spooled configuration only. (Modem connection is not supported).

System Printers

Four system line printers and one system page printer are available on the MICRO 3000 via HP-IB connection. The line printers supported on the MICRO 3000 are the 2563A/B (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 3000 is shown in the following table:

MICRO 3000 Maximum System Printer Configuration:

2563A/B, 2564B, 2566B, 2567B	2
2680A	2
Total System Printers	2

Data Communications

ADVANCED TERMINAL PROCESSORS

(ATP/M). All serial devices are connected to the MICRO 3000 through the Advanced Terminal Processor/Modem (ATP/M).

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	

With the standalone system (32535A), the ATP/M must be ordered separately and therefore the customer may choose the option of their choice. With the Entry Level System (32535E) and the Full Size System (32535F), all ATP/Ms (both standard and add-on through option 001) come only with option 125 (four 25-pin RS-232 ports with four 25-pin RS-232 modem ports).

The MICRO 3000 supports a maximum of two ATP/Ms, providing for the connection of a maximum of 16 terminals or serial devices. Up to 8 of these connections may be made with modems.

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

MICRO 3000 MAXIMUM TERMINAL CONFIGURATION.

	MICRO 3000
Direct Connect	16
Modem Connect	8
Total Ports	16

Note that the above maximums may not be achievable in combination with the support of other I/O cards.

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

Terminals

The 2392A Office Display terminal is the required system console for the MICRO 3000. For the Standalone System (32535A), the system console must be ordered separately with cable Option 301. The Entry Level System (32535E) and Full Size System (32535F) include a 2392A system console. Other terminals supported on the MICRO 3000 include the 2622A, 2393A, 2394A, 2397A, and the 2628A.

The HP150 Touchscreen, Vectra, HP110 and the HP110 Portable Plus Computers are supported as terminals on the MICRO 3000. Cabling information for all these workstations may be found in Chapter 4.

Serial Printers

The MICRO 3000 can support up to three remote spooled 2932A, and 2934A serial printers through the ATP/M. When used as remote spooled printers, they are connected to the ATP via a modem.

The MICRO 3000 can support the 2603A daisywheel printer via the ATP/M through local direct connection only. Modem connection is not supported. The 2603A, 2932A, and 2934A may also be attached as slave devices to terminals under the control of application programs.

The 2686A/D and 33440A desktop laser printers are available on the MICRO 3000 as a serial printer for local direct connection only. Cables must be ordered separately; see Chapter 4 for a list of available cables.

The following table shows individual device maximums.

MICRO 3000 Maximum Serial Printer Configuration:

2603A Daisywheel	3
2932A/2934A Dot Matrix	3
2686A/D/33440A Laser Jet	2
2563A/B Line Printer	3
2564B Line Printer	2
Total Serial Printers	3

System Console

The 2392A terminal and cable (Option 301) are required for use as the system console for the MICRO 3000 and must be ordered separately with the Standalone System (32535A). Ordering the console with this cable option will use one 25-pin direct connect ATP/M port. The Entry Level System (32535E) and Full Size System (32535F) include a 2392A system console and cable.

Support Link Modem

Under HP's Remote Support Program, MICRO 3000 customers will receive the Support Link II modem when they order Response Center Support (RCS) or Account Management Support (AMS) contracts (US only). 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 DS, NS, RJE, IMF or MRJE software. A maximum of one INP is supported on the MICRO 3000. An INP can only be ordered as part of a Network Link.

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 3000.

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 3000 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 3000. The LAN does not count as one of the six peripheral devices supported on the MICRO 3000.

MICRO 3000 Configuration Worksheet Standalone System

Product Number	Description	Quantity
I. System Processor Unit		
32535A	MICRO 3000 System Processor Unit with 2Mb of memory, HP-IB interface and HP site prep and installation.	1A _____
Opt. 510	Expands Memory to 4Mb (MAX=1)	1B _____
51450A	MPE-V/E Media Product	1C _____
Opt. 200	Latest FOS version	1D _____
Opt. 32x	MIT Release	1E _____
Opt. 606	MICRO 3000 CPU	1F _____
35303A	HP Easytime User Interface	1G _____

III. Disc Drives

7957A	81Mb Fixed Media Disc Drive. (MAX=4)	3A _____
7958A	130Mb Fixed Media Disc Drive. (MAX=4)	3B _____
7936H/XP	307Mb Fixed Media Disc Drive. (MAX=4)	3C _____
7937H/XP	571Mb Fixed Media Disc Drive. (MAX=4)	3D _____
Total Disc Drives (Sum of 3x; MAX=4)		3 _____

MICRO 3000 Configuration Worksheet Standalone System

Product Number	Description	Quantity
-------------------	-------------	----------

IV. Magnetic Tape Drives

9144A	1/4 inch Cartridge Tape. Order cable separately. (MAX=2)	4A _____
35401A	1/4 inch Cartridge Tape Autochanger. (MAX=2)	4B _____
7974A	1600 cpi Magnetic Tape Drive with 2m HP-IB cable. (MAX=2)	4C _____
7978B	6250 cpi Magnetic Tape Drive with 2m HP-IB cable. (MAX=2)	4D _____
Total Tape Drives (Sum of 4x; MAX=2)		4 _____

VI. System Printers

2563A/B	300 lpm Dot Matrix Printer (Opt 337 includes 4m HP-IB cable; MAX=2)	6A _____
2564B	600 lpm Dot Matrix Printer (Opt 337 includes 4m HP-IB cable; MAX=2)	6B _____
2566B	900 lpm Dot Matrix Printer (Opt 337 includes 4m HP-IB cable; MAX=2)	6C _____
2567B	1200 lpm Dot Matrix Printer (opt 337 includes 4m HP-IB cable; MAX=2)	6D _____
2680A	45 ppm Intelligent Page Printer (Opt 337 includes 4m HP-IB cable; MAX=2)	6E _____
Total System Printers (Sum of 6x; MAX=2)		6 _____

MICRO 3000 Configuration Worksheet Standalone System

VII. Data Communications.

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

NOTE: Cabling must be ordered separately for these devices!

Product	Connection Method					
	Pt-to-Pt with ATP				Terminal Attached	
	Direct Connect					
		Modem	Type 422	Type 232-C		
Workstations						
2392A		_____	_____	_____	N/A	
2393A		_____	_____	_____	N/A	
2394A		_____	_____	_____	N/A	
2397A		_____	_____	_____	N/A	
2622A		_____	_____	_____	N/A	
2628A		_____	_____	_____	N/A	
Touchscreen (150x)		_____	_____	_____	N/A	
Portable Plus		_____	N/A	_____	N/A	
VECTRA		_____	_____	_____	N/A	
Plotters						
7440A		_____	N/A	_____	_____	
7470A		_____	N/A	_____	_____	
7475A		_____	N/A	_____	_____	
7510A		_____	N/A	_____	_____	
7550A		_____	N/A	_____	_____	
Subtotal (this page)		7A _____	8A _____	9A _____	10A _____	

MICRO 3000 Configuration Worksheet

Standalone System

VII. Data Communications (cont.)

Connection Method					
		Pt-to-Pt with ATP			
			Direct Connect		
Product		Modem	Type 422	Type 232-C	Terminal Attached
Serial Printers					
2603A		N/A	N/A	_____	N/A
2932A		_____	_____	_____	N/A
2934A		_____	_____	_____	N/A
2686A/D		N/A	N/A	_____	N/A
2563A/B		N/A	_____	_____	N/A
2564B		N/A	_____	_____	N/A
33440A		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 _____

Line 7: MAX=8
 Line 8: MAX=14
 Line 9: MAX=16
 Line 7 + 8 + 9: MAX=16
 Line 7B + 8B + 9B: MAX=3
 Line 10: MAX=16

MICRO 3000 Configuration Worksheet Standalone System

Product Number	Description	Quantity
B. 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=2)	11A _____
40290A Opt 105	ATP/M with seven RS-422 ports and one 25-pin RS-232 modem port. (MIN=(line 8A)/7, MAX=2)	11B _____
40290A Opt 125	ATP/M with four 25-pin RS-232 direct connect ports and four 25-pin RS-232 modem port. (MAX=2)	11C _____
Total ATP/M (Sum of lines 11x; MAX=2)		11 _____

C. INP Network Links

30246A	SNA LINK for use with 30245A/R SNA MRJE and/or 30247A/R SNA IMF. (MAX = 1)	12A _____
30215A	BSC Link. For use with 30248A/R RJE, 30247A/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 _____
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 _____
Total number of INP Links (Sum of lines 12x; MAX=1)		12 _____

MICRO 3000 Configuration Worksheet Standalone System

Product Number	Description	Quantity
-------------------	-------------	----------

D. Local Area Network Links

30240A	Office Share LAN/3000 Link. (MAX=1)	13A _____
30242A	LAN/3000 Link. (MAX=1)	13B _____
30265A	STARLAN/3000 Link (MAX=1)	13C _____
	Total LAN Links (Sum of lines 13x; MAX=1)	13 _____

MICRO 3000 Configuration Worksheet Standalone System

Product Number	Description	Quantity
VIII. Cabinets		
A. Disc Cabinets		
7936 and 7937 Disc drives require a cabinet for each two drives ordered. All other disc drives are housed in the System Cabinet described below.		
	Total 7936/7937 drives (Sum of lines 3C & 3D)	16A _____
19511A	Disc Cabinet (One for each two of line 16A)	16 _____
B. System Cabinets		
One System Cabinet is supplied with the MICRO 3000. Additional system cabinets may be required depending on the number of peripherals included in the system.		
Peripheral Space Required (1/4 cabinet slots).		
	Discs - 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 <u>required</u>).	

MICRO 3000 Configuration Worksheet Entry Level System

Product Number	Description	Quantity
I. System Processor Unit		
32535E	MICRO 3000 Entry Level System Processor Unit includes 2Mb of memory, HP-IB interface one ATP/M (opt 125), one 2392A terminal and cable, one 7957A (81 Mb) disc drive, one 9144A (67 Mb) cartridge tape drive and HP installation.	1A _____
Opt. 001	Add on ATP/M with Option 125 (MAX=1)	1B _____
Opt. 007	Add on 7957A (81 Mb) disc drive (MAX=1)	1C _____
Opt. 008	Add on 7958A (130 Mb) disc drive (MAX=1)	1D _____
	Total add on disc drives (sum of lines 1C + 1D; MAX=1)	1E _____
51450A	MPE-V/E Media Product	1F _____
Opt. 200	Latest FOS version	1G _____
Opt. 32x	MIT Release	1H _____
Opt. 606	MICRO 3000 CPU	1I _____
35303A	HP Easytime User Interface	1J _____

III. Disc Drives

7957A	81Mb Fixed Media Disc Drive. (MAX=3)	3A _____
7958A	130Mb Fixed Media Disc Drive. (MAX=3)	3B _____
7936H/XP	307Mb Fixed Media Disc Drive. (MAX=3)	3C _____
7937H/XP	571Mb Fixed Media Disc Drive. (MAX=3)	3D _____
	Total Disc Drives (Sum of 3x + 1E; MAX=3)	3 _____

MICRO 3000 Configuration Worksheet Entry Level System

Product Number	Description	Quantity
IV. Magnetic Tape Drives		
9144A	1/4 inch Cartridge Tape. Order cable separately. (MAX=1)	4A _____
35401A	1/4 inch Cartridge Tape Autochanger. (MAX=1)	4B _____
7974A	1600 cpi Magnetic Tape Drive with 2m HP-IB cable. (MAX=1)	4C _____
7978B	6250 cpi Magnetic Tape Drive with 2m HP-IB cable. (MAX=1)	4D _____
Total Tape Drives (Sum of 4x; MAX=1)		4 _____

VI. System Printers		
2563A/B	300 lpm Dot Matrix Printer (Opt 337 includes 4m HP-IB cable; MAX=2)	6A _____
2564B	600 lpm Dot Matrix Printer (Opt 337 includes 4m HP-IB cable; MAX=2)	6B _____
2566B	900 lpm Dot Matrix Printer (Opt 337 includes 4m HP-IB cable; MAX=2)	6C _____
2567B	1200 lpm Dot Matrix Printer (opt 337 includes 4m HP-IB cable; MAX=2)	6D _____
2680A	45 ppm Intelligent Page Printer (Opt 337 includes 4m HP-IB cable; MAX=2)	6E _____
Total System Printers (Sum of 6x; MAX=2)		6 _____

MICRO 3000 Configuration Worksheet

Entry Level System

VII. Data Communications.

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

NOTE: Cabling must be ordered separately for these devices!

Product	Connection Method					
	Pt-to-Pt with ATP				Terminal Attached	
	Direct Connect			Type 232-C		
	Modem	Type 422	Type 232-C			
Workstations						
2392A	_____	_____	_____		N/A	
2393A	_____	_____	_____		N/A	
2394A	_____	_____	_____		N/A	
2397A	_____	_____	_____		N/A	
2622A	_____	_____	_____		N/A	
2628A	_____	_____	_____		N/A	
Touchscreen (150x)	_____	_____	_____		N/A	
Portable Plus	_____	N/A	_____		N/A	
VECTRA	_____	_____	_____		N/A	
Plotters						
7440A	_____	N/A	_____		_____	
7470A	_____	N/A	_____		_____	
7475A	_____	N/A	_____		_____	
7510A	_____	N/A	_____		_____	
7550A	_____	N/A	_____		_____	
Subtotal (this page)	7A _____	8A _____	9A _____	10A _____		

NOTE:

The Entry Level System comes standard with the ATP/M option 125 (4 Modem and 4 RS-232-C). To obtain RS-422 capability, a second ATP/M(40290A Opt 105) may be ordered. The ATP/M (40290A Opt 103) may also be ordered separately if 7 RS-232-C ports and 1 modem port are required. The maximum add-on ATP/M boards is one.

MICRO 3000 Configuration Worksheet

Entry Level System

VII. Data Communications (cont.)

Connection Method					
Pt-to-Pt with ATP					
Direct Connect					
Product		Modem	Type 422	Type 232-C	Terminal Attached
Serial Printers					
2603A		N/A	N/A	_____	N/A
2932A		_____	_____	_____	N/A
2934A		_____	_____	_____	N/A
2686A/D		N/A	N/A	_____	N/A
2563A/B		N/A	_____	_____	N/A
2564B		N/A	_____	_____	N/A
33440A		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 _____

Line 7: MAX=8

Line 8: MAX=7

Line 9: MAX=16

Line 7 + 8 + 9: MAX=16

Line 7B + 8B + 9B: MAX=3

Line 10: MAX=16

MICRO 3000 Configuration Worksheet Entry Level System

Product Number	Description	Quantity
----------------	-------------	----------

B. 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=1)	11A _____
40290A Opt 105	ATP/M with seven RS-422 ports and one 25-pin RS-232 modem port. (MAX=1)	11B _____
40290A Opt 125	ATP/M with four 25-pin RS-232 direct connect ports and four 25-pin RS-232 modem port. (MAX=1)	11C _____
Total ATP/M (Sum of lines 11x + 1B; MAX=1)		11 _____

C. INP Network Links

30246A	SNA LINK for use with 30245A/R SNA MRJE and/or 30247A/R SNA IMF. (MAX = 1)	12A _____
30215A	BSC Link. For use with 30248A/R RJE, 30247A/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 _____
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 _____
Total number of INP Links (Sum of lines 12x; MAX=1)		12 _____

MICRO 3000 Configuration Worksheet
Entry Level System

Product Number	Description	Quantity
D. Local Area Network Links		
30240A	Office Share LAN/3000 Link. (MAX=1)	13A _____
30242A	LAN/3000 Link. (MAX=1)	13B _____
30265A	STARLAN/3000 Link (MAX=1)	13C _____
	Total LAN Links (Sum of lines 13x; MAX=1)	13 _____

MICRO 3000 Configuration Worksheet Entry Level System

Product Number	Description	Quantity
-------------------	-------------	----------

VIII. Cabinets

A. Disc Cabinets

7936 and 7937 Disc drives require a cabinet for each two drives ordered. All other disc drives are housed in the System Cabinet described below.

Total 7936/7937 drives (Sum of lines 3C & 3D) 16A _____

19511A **Disc Cabinet** (One for each two of line 16A) 16 _____

B. System Cabinets

One System Cabinet is supplied with the MICRO 3000. Additional system cabinets may be required depending on the number of peripherals included in the system.

Peripheral Space Required (1/4 cabinet slots).

Discs - line 3A + line 3B + 1E 17A _____

Tapes - line 4A + 2*(line 4B) 17B _____

Total ADD-ON peripheral space required. 17C _____
(Line 17A plus line 17B minus 1)

92211R **Add-on System Cabinets required for peripherals.** 17 _____
(One required for each four of line 17C)

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

If additional HP-IB peripherals will be installed outside the system cabinet, or an additional cabinet is ordered, HP site preparation **MUST** be ordered separately.

MICRO 3000 Configuration Worksheet Full Size System

Product Number	Description	Quantity
I. System Processor Unit		
32535F	MICRO 3000 Full Size System Processor Unit includes 4Mb of memory, HP-IB interface one ATP/M (opt 125), one 2392A terminal and cable, one 7958A (130 Mb) disc drive, one 9144A (67 Mb) cartridge tape drive and HP installation.	1A _____
Opt. 001	Add on ATP/M with Option 125 (MAX=1)	1B _____
Opt. 007	Add on 7957A (81 Mb) disc drive (MAX=1)	1C _____
Opt. 008	Add on 7958A (130 Mb) disc drive (MAX=1)	1D _____
Opt. 009	Replaces 9144A with 35401A autochanger (MAX=1)	1E _____
	Total add on peripherals (sum of lines 1C + 1D + 1E; MAX=1)	1F _____
Opt. 511	Reduces Memory to 2 Mb (MAX=1)	1G _____
51450A	MPE-V/E Media Product	1H _____
Opt. 200	Latest FOS version	1I _____
Opt. 32x	MIT Release	1J _____
Opt. 606	MICRO 3000 CPU	1K _____
35303A	HP Easytime User Interface	1L _____

III. Disc Drives

7957A	81Mb Fixed Media Disc Drive. (MAX=3)	3A _____
7958A	130Mb Fixed Media Disc Drive. (MAX=3)	3B _____
7936H/XP	307Mb Fixed Media Disc Drive. (MAX=3)	3C _____
7937H/XP	571Mb Fixed Media Disc Drive. (MAX=3)	3D _____
	Total Disc Drives (Sum of 3x + 1C + 1D; MAX=3)	3 _____

MICRO 3000 Configuration Worksheet Full Size System

Product Number	Description	Quantity
----------------	-------------	----------

IV. Magnetic Tape Drives

9144A	1/4 inch Cartridge Tape. Order cable separately. (MAX=1)	4A _____
35401A	1/4 inch Cartridge Tape Autochanger. (MAX=1)	4B _____
7974A	1600 cpi Magnetic Tape Drive with 2m HP-IB cable. (MAX=1)	4C _____
7978B	6250 cpi Magnetic Tape Drive with 2m HP-IB cable. (MAX=1)	4D _____
Total Tape Drives (Sum of line 4x + 1E; Max=2)		4 _____

VI. System Printers

2563A/B	300 lpm Dot Matrix Printer (Opt 337 includes 4m HP-IB cable; MAX=2)	6A _____
2564B	600 lpm Dot Matrix Printer (Opt 337 includes 4m HP-IB cable; MAX=2)	6B _____
2566B	900 lpm Dot Matrix Printer (Opt 337 includes 4m HP-IB cable; MAX=2)	6C _____
2567B	1200 lpm Dot Matrix Printer (opt 337 includes 4m HP-IB cable; MAX=2)	6D _____
2680A	45 ppm Intelligent Page Printer (Opt 337 includes 4m HP-IB cable; MAX=2)	6E _____
Total System Printers (Sum of 6x; MAX=2)		6 _____

MICRO 3000 Configuration Worksheet

Full Size System

VII. Data Communications.

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

NOTE: Cabling must be ordered separately for these devices!

Product	Connection Method				Terminal Attached
		Pt-to-Pt with ATP			
		Modem	Direct Connect		
			Type 422	Type 232-C	
Workstations					
2392A		_____	_____	_____	N/A
2393A		_____	_____	_____	N/A
2394A		_____	_____	_____	N/A
2397A		_____	_____	_____	N/A
2622A		_____	_____	_____	N/A
2628A		_____	_____	_____	N/A
Touchscreen (150x)		_____	_____	_____	N/A
Portable Plus		_____	N/A	_____	N/A
VECTRA		_____	_____	_____	N/A
Plotters					
7440A		_____	N/A	_____	_____
7470A		_____	N/A	_____	_____
7475A		_____	N/A	_____	_____
7510A		_____	N/A	_____	_____
7550A		_____	N/A	_____	_____
Subtotal (this page)		7A _____	8A _____	9A _____	10A _____

NOTE:

The Full Size System comes standard with the ATP/M option 125 (4 Modem and 4 RS-232-C). To obtain RS-422 capability, a second ATP/M (40290A Opt 105) may be ordered. The ATP/M (40290A Opt 103) may also be ordered separately if 7 RS-232-C ports and 1 modem port are required. The maximum add-on ATP/M boards is one.

MICRO 3000 Configuration Worksheet

Full Size System

VII. Data Communications (cont.)

Product	Connection Method				Terminal Attached
	Pt-to-Pt with ATP				
	Direct Connect				
	Modem	Type 422	Type 232-C		
Serial Printers					
2603A	N/A	N/A	_____	N/A	
2932A	_____	_____	_____	N/A	
2934A	_____	_____	_____	N/A	
2686A/D	N/A	N/A	_____	N/A	
2563A/B	N/A	_____	_____	N/A	
2564B	N/A	_____	_____	N/A	
33440A	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 _____

Line 7: MAX=8
 Line 8: MAX=7
 Line 9: MAX=16
 Line 7 + 8 + 9: MAX=16
 Line 7B + 8B + 9B: MAX=3
 Line 10: MAX=16

MICRO 3000 Configuration Worksheet Full Size System

Product Number	Description	Quantity
B. 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=1)	11A _____
40290A Opt 105	ATP/M with seven RS-422 ports and one 25-pin RS-232 modem port. MAX=1)	11B _____
40290A Opt 125	ATP/M with four 25-pin RS-232 direct connect ports and four 25-pin RS-232 modem port. (MAX=1)	11C _____
	Total ATP/M (Sum of lines 11x + 1B; MAX=1)	11 _____

C. INP Network Links

30246A	SNA LINK for use with 30245A/R SNA MRJE and/or 30247A/R SNA IMF. (MAX = 1)	12A _____
30215A	BSC Link. For use with 30248A/R RJE, 30247A/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 _____
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 _____
	Total number of INP Links (Sum of lines 12x; MAX=1)	12 _____

MICRO 3000 Configuration Worksheet Full Size System

Product Number	Description	Quantity
-------------------	-------------	----------

D. Local Area Network Links

30240A	Office Share LAN/3000 Link. (MAX=1)	13A _____
30242A	LAN/3000 Link. (MAX=1)	13B _____
30265A	STARLAN/3000 Link (MAX=1)	13C _____
	Total LAN Links (Sum of lines 13x; MAX=1)	13 _____

MICRO 3000 Configuration Worksheet Full Size System

Product Number	Description	Quantity
-------------------	-------------	----------

VIII. Cabinets

A. Disc Cabinets

7936 and 7937 Disc drives require a cabinet for each two drives ordered. All other disc drives are housed in the System Cabinet described below.

Total 7936/7937 drives (Sum of lines 3C & 3D) 16A _____

19511A Disc Cabinet (One for each two of line 16A) 16 _____

B. System Cabinets

One System Cabinet is supplied with the MICRO 3000. Additional system cabinets may be required depending on the number of peripherals included in the system.

Peripheral Space Required (1/4 cabinet slots).

Discs - line 3A + line 3B + 1C + 1D

17A _____

Tapes - line 4A + 2*(line 4B) + 1E

17B _____

Total ADD-ON peripheral space required.

17C _____

(Line 17A plus line 17B minus 1)

92211R Add-on System Cabinets required for peripherals. 17 _____
(One required for each four of line 17C)

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

If additional HP-IB peripherals will be installed outside the system cabinet, or an additional cabinet is ordered, HP site preparation MUST be ordered separately.

MICRO 3000XE

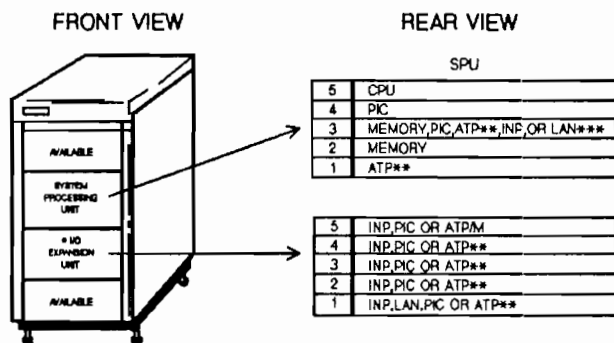
SPU Alternatives	1-31
Minimum System Configuration	1-31
Maximum System Configuration	
Ordering the SPU	1-33
Ordering Additional System Cabinets	1-33
Peripheral Space	1-33
ATP/M Junction Panel Space	1-33
Ordering Upgrades	1-33
S/37 SPU Upgrade Alternatives	1-35
MPE Media Products	1-36
Memory Expansion	1-36
The Card Cage	1-36
Peripheral Interface Channel	1-37
Peripherals	
Disc Drives	1-39
Magnetic Tape Drives	1-39
Flexible Disc Drives	1-40
Output Spooling	1-40
System Printers	1-40
Data Communications	
ATP/M and ATP37	1-40
Terminals	1-41
Serial Printers	1-42
System Console	1-42
Support Link Modem	1-42
INP Network Links	1-42
Local Area Networks (LANs)	1-42
Configuration Worksheets	1-43



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 ATPM on new systems and may be an ATPM or ATP37 on S/37 upgrades
- *** LAN not supported in slot 3 of SPU except in S/37 upgrades without I/O extender

MICRO 3000XE 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.

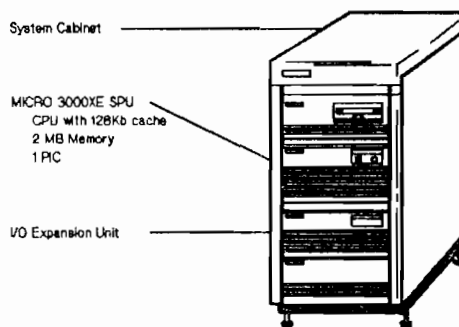
Supplied Hardware

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 128Kb Memory Cache and System Clock.
- 2Mb 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, 7957A Disc, or 7958A Disc.

MICRO 3000XE



SERIES 37 FIELD UPGRADE (30545A).

- Central Processing Unit (CPU) with 128Kb 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, 35401A, 7974A, or 7978B.
- One System Disc: 7957A, 7958A, 7936H, 7936XP, 7937H, or 7937XP.

SERIES 37 FIELD UPGRADE (30545A). The MICRO 3000XE requires a minimum of 2 Mb of memory, therefore a Series 37 with less than 2 Mb of memory requires memory expansion in order to be upgraded to a MICRO 3000XE. 512 Kb 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.
- Text Editor (EDIT/V).
- File Copying Utility (FCOPY/V).
- Sort and Merge Package (SORT-MERGE/V).
- Data Base Management System (TurboIMAGE/V).
- Data Base Inquiry Language (QUERY/V).
- Data Entry and Forms Management Software (VPLUS/V).
- Keyed Sequential Access Method Software (KSAM/V).
- A Complete User Manual Set Supplied with the System.

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

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

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.

MICRO 3000XE MAXIMUM SYSTEM CONFIGURATION GUIDELINES

Ordering the System Processor Unit (SPU)

To obtain the MICRO 3000XE System Processor Unit, order product number 32545A for new systems. This product includes the SPU with 2 Mb 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 Mb. One MPE Media Product for MPE-V/E (UB Delta 1 or later) must also be ordered. Disc Caching is also included with this product.

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, 7957A, or 7958A. Any additional peripherals will require an added cabinet. It should be noted that the 7936 and 7937 disc drives require a separate cabinet (19511A) for each two disc 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 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 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 30545A 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 HP3000 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 Mb of memory, therefore an upgrade to a Series 37 with less than 2 Mb 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.

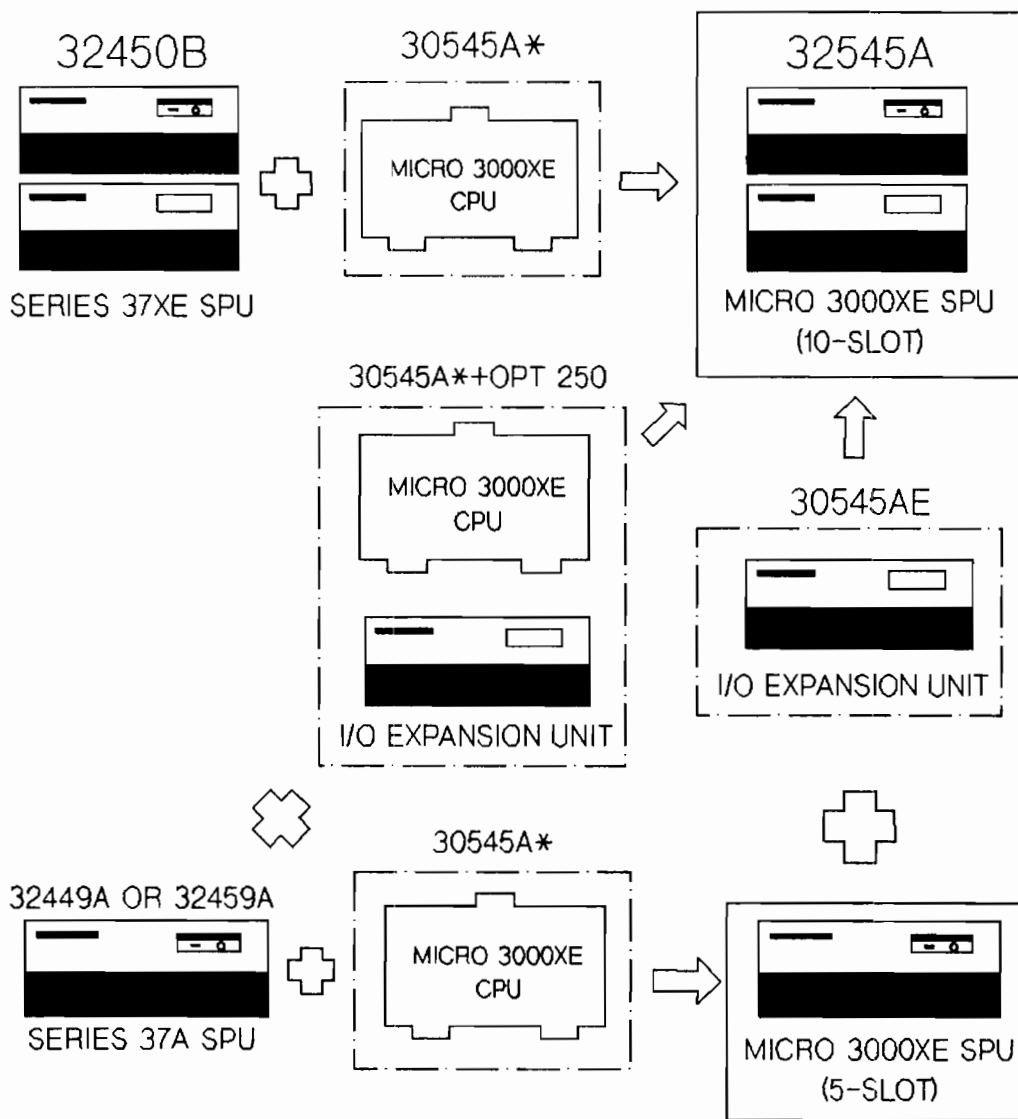
The MICRO 3000XE is supported only on UB Delta 1 or later versions of MPE-V/E. Series 37s on earlier versions of the operating system must include a MIT update prior to or with the MICRO 3000XE upgrade. To minimize upgrade complications it is highly recommended that MIT updates occur prior to the hardware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

S/37 SPU Upgrade Alternatives



* An additional 2 Mb or 4 Mb 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 Mb standard and supports a maximum of 8 Mb of main memory. The MICRO 3000XE supports a maximum of two memory boards in any combination of 2Mb (30462A) or 4 Mb (30482A) boards. Memory can be expanded for the MICRO 3000XE when initially ordering the SPU by specifying option 510 (replaces 2 Mb memory board with 4 Mb 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:

MICRO 3000XE SUPPORTED MEMORY CONFIGURATIONS.

Total Memory Capacity	Slot #2 Memory Board	Slot #3 Memory Board
2 Mb	1 Mb*	1 Mb*
2 Mb	2 Mb	
4 Mb	2 Mb	2 Mb
4 Mb	4 Mb	
6 Mb	2 Mb	4 Mb
8 Mb	4 Mb	4 Mb

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

On the MICRO 3000XE, 2 Mb (30462A) and 4 Mb (30482A) boards may be mixed on the same system. The 512 Kb board (30461A) is not supported and the 1 Mb board (30456A) may not be mixed with 2 Mb or 4 Mb boards. Return credits are available for memory upgrades. To obtain a return credit for the 512 Kb board order 30461AN, for the 1 Mb board return credit order 30456AN, and for the 2 Mb 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.

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, disc 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

DISC DRIVES.

One system disc is required on the MICRO 3000XE: 7945A, 7914P, 7914CT, 7914ST, 7957A, 7958A, 7933H/XP, 7935H/XP, 7936H/XP or 7937H/XP. The following table lists the maximum number of each type of disc drive that is supported on the MICRO 3000XE.

MICRO 3000XE Maximum Disc Drive Configuration:

*7945A Disc	4
*7914P Disc (Option 140)	8
*7914CT Storage Unit	4
*7914ST Storage Unit	4
7957A Disc	4
7958A Disc	4
*7933H/XP Disc	8
*7935H/XP Disc	8
7936H/XP Disc	8
7937H/XP Disc	8
Total Disc Drives	8

* These devices are supported for compatibility with the Series 37 and are not recommended for new systems.

Note: one disc cabinet (19511A) must be ordered with each two 7936/37 disc drives.

The 7958A, 7936H/XP and the 7937H/XP are the recommended disc drives for use with the MICRO 3000XE systems. The 7914ST is provided with a 2m cable, while the other drives are shipped with 1m HP-IB cables. These disc drives each have their own controllers and do not support slave drives.

INTEGRATED STORAGE UNITS.

The following integrated storage units are not recommended for use on the new MICRO 3000XE systems; however, they are available for compatibility with the Series 37.

Three Integrated Storage Units are supported on the MICRO 3000XE; the 7914P, the 7914CT and the 7914ST. However, the MICRO 3000XE does not support the Integrated Cartridge Tape in the 7914P or the 7914ST. When you order the 7914P, delete the cartridge tape unit with Option 140. The 7914ST combines into a single package a 7914P rackmounted disc drive and a 7974A tape drive. A second 7914P disc drive can be added to the same cabinet by specifying Option 114.

The 7914CT combines the 7914P disc drive with a 9144A 1/4" cartridge tape unit. Two 1m HP-IB cables are included for the disc drive and the tape unit.

Magnetic Tape Drives

A 9144A cartridge tape, a 35401A cartridge tape autochanger, a 7974A or 7978A/B magnetic tape, or a 7914ST or 7914CT integrated storage unit 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.

MICRO 3000XE Maximum Tape Drive Configuration:

9144A/7914CT	4
35401A	2
7974A/7914ST	4
7978A/B	4
Total Tape Drives	4

The 9144A is a 1/4" cartridge tape drive offering excellent backup performance and reliability. It can be used to backup on-line storage capacities up to 307Mb. The 35401A cartridge tape autochanger can provide unattended backup of up to 504Mb of on-line storage. It is also acceptable as a backup device for the 571Mb 7937H/XP as long as no more than 504Mb must be backed up unattended. On-line storage greater than 571Mb requires the use of a 1600 or 6250 cpi tape drive.

Flexible Disc Drive

The 9895A disc drive with Option 010 is used for data transfer from the IBM systems 3,32,34,36 and 38. Only one 1.02Mb 9895A drive is supported on the MICRO 3000XE. An HP-IB cable must be ordered separately.

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 disc 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.

Of the serial connected printers, the 2932A and 2934A may be "local" or "remote" spooled. The 2601A, 2602A, 2603A, 2686A/D, 2687A and 33440A are supported in local spooled configuration only. (Modem connection is not supported).

System Printers

Five system line printers and two system page printers are available on the MICRO 3000XE via HP-IB connection to the PIC. The line printers supported on the MICRO 3000XE are the 2563A/B (300 lpm dot matrix), the 2564B (600 lpm dot matrix), the 2565A (600 lpm dot matrix), the 2566A/B (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, and the 2688A is a 12 ppm Laser Desktop 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:

MICRO 3000XE Maximum System Printer Configuration:

2563A/B, 2564B, 2565A, 2566A/B, 2567B	4
2680A/2688A	2
Total System Printers	4

Data Communications

ADVANCED TERMINAL PROCESSORS

(ATP/M AND ATP37). All serial devices are connected to the MICRO 3000XE through the Advanced Terminal Processor/Modem (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 disc is housed in the cabinet.

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

MICRO 3000XE MAXIMUM TERMINAL CONFIGURATION.

	MICRO 3000XE (5-Slot)		MICRO 3000XE (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 2392A Office Display terminal is the required system console for the MICRO 3000XE. The 2392A is also available as an add-on terminal for the MICRO 3000XE. Other terminals supported on the MICRO 3000XE include the 2622A, 2623A, 2393A, 2394A, 2397A, 2624B, 2625A and the 2628A.

The HP150 Touchscreen, VECTRA, HP110 and the HP110 Portable Plus Computers are supported as terminals on the MICRO 3000XE. Cabling information for all these workstations may be found in Chapter 4.

Serial Printers

The MICRO 3000XE can support up to three remote spooled 2932A, 2933A, and 2934A serial printers through the ATP. When used as remote spooled printers, they are connected to the ATP via a modem.

The MICRO 3000XE can support 2601A, 2602A and 2603A daisywheel printers via the ATP through local direct connection only. Modem connection is not supported. The 2601A, 2602A, 2603A, 2932A, 2933A and 2934A may also be attached as slave devices to terminals under the control of application programs.

The 2686A/D, 2687A and 33440A desktop laser printers are available on the MICRO 3000XE as serial printers for local direct connection only. Cables must be ordered separately; see Chapter 4 for a list of available cables.

The following table shows individual device maximums.

MICRO 3000XE Maximum Serial Printer Configuration:

2601A/2602A/2603A Daisywheel	8
2932A/2933A/2934A Dot Matrix	8
2686A/D, 33440A Laser Jet	2
2687A Desktop Laser	2
2563A/B Line Printer	3
2564B Line Printer	2
Total Serial Printers	8

System Console

The 2392A 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.

Support Link Modem

Under HP's Remote Support Program, MICRO 3000XE customers will receive the Support Link II modem when they order Response Center Support (RCS) or Account Management Support (AMS) contracts (U.S. only). 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 DS, NS, RJE, IMF or MRJE software. 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.

MICRO 3000XE Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

I. System Processor Unit

32545A	MICRO 3000XE System Processor Unit with 2Mb of memory and PIC, I/O Expansion Unit, and HP site prep and installation.	1A _____
Opt. 510	Expands Memory to 4Mb (MAX=1)	1B _____
51450A	MPE-V/E Media Product	1C _____
Opt. 200	Latest FOS version	1D _____
Opt. 32x	MIT Release	1E _____
Opt. 607	MICRO 3000XE CPU	1F _____

II. Memory Expansion

Total Memory Size: Maximum memory size is 8Mb. Memory expansion options may also be ordered with the SPU (see section I.).

If 2A = 2Mb, select no memory options,
if 2A = 4Mb, then set line 1B=1,
if 2A = 6Mb, then set line 2C=1,
if 2A = 8Mb, then set line 1B=1 and line 2C=1

30462A	2MB Add-on Memory Card. (MAX=1)	2B _____
30482A	4Mb 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. Disc Drives		
7957A	81Mb Fixed Media Disc Drive. (MAX=4)	3A _____
7958A	130Mb Fixed Media Disc Drive. (MAX=4)	3B _____
7936H/XP	307Mb Fixed Media Disc Drive. (MAX=8)	3C _____
7937H/XP	571Mb Fixed Media Disc Drive. (MAX=8)	3D _____
Total Disc Drives (Sum of 3x; MAX=8)		3 _____

IV. Magnetic Tape Drives		
9144A	1/4 inch Cartridge Tape. Order cable separately. (MAX=4)	4A _____
35401A	1/4 inch Cartridge Tape Autochanger. (MAX=2)	4B _____
7974A	1600 cpi Magnetic Tape Drive with 2m HP-IB cable. (MAX=4)	4C _____
7978B	6250 cpi Magnetic Tape Drive with 2m HP-IB cable. (MAX=4)	4D _____
Total Tape Drives (Sum of 4x; MAX=4)		4 _____

V. Other Peripherals		
9895A	8-1/4 inch Flexible Disc Drive (Opt 010; order HP-IB cable separately; MAX=1)	5 _____
This unit is used only for media transfer from IBM System 3, 32, 34, 36, and 38. It is not supported as a backup device.		

MICRO 3000XE Configuration Worksheet

Product Number	Description	Quantity
VI. System Printers		
2563A/B	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 _____
2565A	600 lpm Dot Matrix Printer (Opt 337 includes 4m HP-IB cable; MAX=4)	6C _____
2566B	900 lpm Dot Matrix Printer (Opt 337 includes 4m HP-IB cable; MAX=4)	6D _____
2567B	1200 lpm Dot Matrix Printer (opt 337 includes 4m HP-IB cable; MAX=4)	6E _____
2680A	45 ppm Intelligent Page Printer (Opt 337 includes 4m HP-IB cable; MAX=2)	6F _____
2688A	12 ppm Desktop Laser Printer (Opt 337 includes 8m HP-IB cable; MAX=2)	6G _____
Total System Printers (Sum of 6x; MAX=4)		6 _____

MICRO 3000XE Configuration Worksheet

VII. Data Communications.

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

NOTE: Cabling must be ordered separately for these devices!

Product	Connection Method				Terminal Attached
		Pt-to-Pt with ATP			
			Direct Connect		
		Modem	Type 422	Type 232-C	
Workstations					
2392A		_____	_____	_____	N/A
2393A		_____	_____	_____	N/A
2394A		_____	_____	_____	N/A
2397A		_____	_____	_____	N/A
2622A		_____	_____	_____	N/A
2623A		_____	_____	_____	N/A
2624B		_____	_____	_____	N/A
2625A		_____	_____	_____	N/A
2628A		_____	_____	_____	N/A
Touchscreen (150x)		_____	_____	_____	N/A
Portable Plus		_____	N/A	_____	N/A
VECTRA		_____	_____	_____	N/A
Plotters					
7440A		_____	N/A	_____	_____
7470A		_____	N/A	_____	_____
7475A		_____	N/A	_____	_____
7510A		_____	N/A	_____	_____
7550A		_____	N/A	_____	_____
7580B		_____	N/A	_____	_____
7585B		_____	N/A	_____	_____
Subtotal (this page)		7A _____	8A _____	9A _____	10A _____

MICRO 3000XE Configuration Worksheet

VII. Data Communications (cont.)

Connection Method					
Pt-to-Pt with ATP					
Direct Connect					
Product		Modem	Type 422	Type 232-C	Terminal Attached
Serial Printers					
2601A		N/A	N/A	_____	N/A
2602A		N/A	N/A	_____	N/A
2603A		N/A	N/A	_____	N/A
2932A		_____	_____	_____	N/A
2933A		_____	_____	_____	N/A
2934A		_____	_____	_____	N/A
2686A/D		N/A	N/A	_____	N/A
2687A		N/A	_____	_____	N/A
2563A/B		N/A	_____	_____	N/A
2564B		N/A	_____	_____	N/A
33440A		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 _____

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
----------------	-------------	----------

B. 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 port. (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 _____

C. INP Network Links

30246A	SNA LINK. For use with 30245A/R SNA MRJE and/or 30247A/R SNA IMF. (MAX = 3)	12A _____
30215A	BSC Link. For use with 30248A/R RJE, 30247A/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 _____
32187A	X.25 Network Link for HP3000. Requires 32185A/R DS Network Service unless used solely for X.25 Terminal I/O. (MAX=3)	12E _____
Total number of INP Links (Sum of lines 12x; MAX=3)		12 _____

MICRO 3000XE Configuration Worksheet

Product Number	Description	Quantity
----------------	-------------	----------

D. Local Area Network Links

30240A	Office Share LAN/3000 Link. (MAX=1)	13A _____
30242A	LAN/3000 Link. (MAX=1)	13B _____
30265A	STARLAN/3000 Link (MAX=1)	13C _____
	Total LAN Links (Sum of lines 13x; MAX=1)	13 _____

VIII. 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
-------------------	-------------	----------

IX. Cabinets

A. Disc Cabinets

7936 and 7937 Disc drives require a cabinet for each two drives ordered. All other disc drives are housed in the System Cabinet described below.

Total 7936/7937 drives (Sum of lines 3C & 3D) 16A _____

19511A Disc 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).

Discs - 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 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

17I _____

(line 17I=1 if line 10> line 17H, else line 17I=0)

92211R Add-on System Cabinets. 17 _____
(sum of lines 17D and 17I)

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).

Series 42

Minimum System Configuration	1-51
Maximum System Configuration	
Ordering the SPU	1-52
MPE Media Products	1-52
The Card Cage	1-52
Memory Expansion	1-53
Junction Panels	1-53
LANIC	1-53
General I/O Channels	1-53
Peripherals	
Disc Drives	1-55
Integrated Storage Units	1-55
Magnetic Tape Drives	1-56
System Printers	1-56
Other Peripherals	
Flexible Disc Drive	1-57
Card Reader	1-57
Power Line Conditioners	1-57
Multiple System Access Selector	1-57
Data Communications	
Terminal Connection	1-57
Support Link Modem	1-58
System Console	1-58
ADCC	1-58
ATP	1-58
Output Spooling	1-59
Serial Connected Printers and Plotters	1-60
Network Links/INPs	1-61
Configuration Worksheets	1-62



HP 3000 SERIES 42 MINIMUM SYSTEM CONFIGURATION

Supplied Hardware:

- Central Processing Unit.
- System Clock.
- Control and Maintenance Processor.
- Two General I/O Channels (GICs) for System Disc and Backup Tape Drive. (These GICs are not included with box swap upgrade orders.)
- 1 Mb Fault Control Memory with Controller.
- System Mainframe Cabinet including Card Cage and Power Supplies Supporting the CPU, up to 3 Mb Memory, and 13 I/O Card Slots.
- Support Link Modem.

Additional Required Hardware:

- One System Console and Cable: Any HP 262x or 239x terminal.
- One Asynchronous Data Communications Controller (ADCC-Main) to connect the console.
- One Magnetic Tape Drive for System Backup: 7914ST, 7914TD, 7970E, 7971A, 7974A, or 7978A/B 1/2" tape drive or 35401A cartridge autochanger is required for systems with more than 220 Mb disc storage. A 9144A or 7914CT with 1/4" cartridge tape drive may be used for systems having 220 Mb or less disc storage. A 7911P, 7912P, or 7914P with integrated cartridge tape may be used for systems having 132 Mb or less disc storage.

- One System Disc: 7933H/XP, 7935H/XP, 7936H/XP, 7937H/XP, 7957A, 7958A, 7945A, 7911P, 7912P, 7914P, 7914CT, 7914TD, 7914ST Disc or 7925M/20M Master Disc.
- Integrated Storage Unit. When the Series 42 is ordered with Option 014, the corresponding integrated storage unit must be ordered with the cartridge tape unit.

Supplied Software:

Standard on each HP 3000 system is the Fundamental Operating Software which includes:

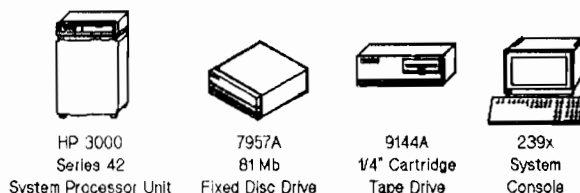
- Multiprogramming Executive (MPE) Operating System
- Text Editor (EDIT/V)
- File Copying Utility (FCOPY/V)
- Sort and Merge Package (SORT-MERGE/V)
- Data Base Mgmt System (TurboIMAGE/V)
- Data Base Inquiry Language (QUERY/V)
- Data Entry and Forms Mgmt Software (VPLUS/V)
- Keyed Sequential Access Method Software (KSAM/V)
- A complete User Manual Set is supplied.

All of the Fundamental Operating Software is included in the system but must still be ordered separately. Please see the section on MPE Media Products. Note, Series 42 systems may select previous MITs; however only U-MIT or later supports TurboIMAGE.

The Series 42 includes Disc Caching, an I/O performance product, which is not a part of the Fundamental Operating Software.

Note that the customer and CE will need to work together on site preparation prior to system installation.

HP 3000 Series 42 System Configuration Example



HP 3000 SERIES 42 MAXIMUM SYSTEM CONFIGURATION GUIDELINES

Ordering the System Processor Unit

The **Series 42** can be obtained by ordering either product number 32542B for new systems or 32542BH for box swap upgrades. The Series 42 runs MPE V/E as its standard operating system. MPE V/E (firmware), Option 409 with product 32542B or 32542BH, will need to be ordered to use the expanded table capabilities.

MPE Media Products

One MPE Media Product **MUST** be ordered with every HP 3000 system to designate MPE V/E and the media type (cartridge tape or 1600 bpi magnetic tape). The Media Product is 51450A, Option 602 designates the Series 42. To designate cartridge tape, you must specify Option 022; for 1600 bpi magnetic tape media, you must order Option 051. The latest version of the Fundamental Operating Software (FOS) is specified by Option 200. Please see a current Corporate Price List for ordering other versions of FOS.

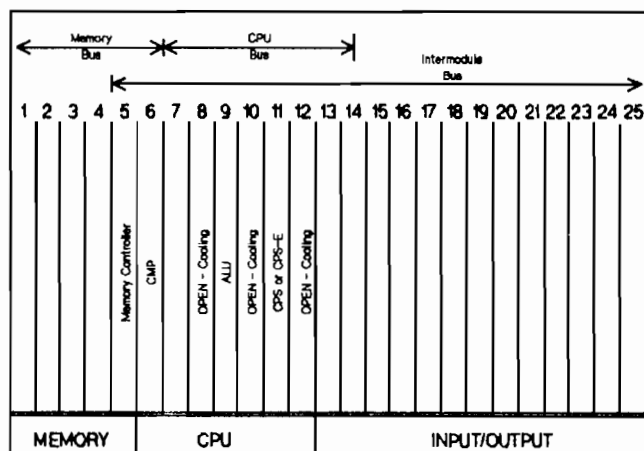
The Card Cage

The Series 42 contains 25 slots.

Slots 1 through 5 support system memory modules and the memory controller which is configured in slot 5. Slots 6 through 12 house the CPU cards. (For the purpose of correct ordering, it is not necessary to be concerned with the configuration of cards in the CPU portion of the card cage.) Slots 13 through 25 support the following I/O cards: Asynchronous Data Communications Controllers (ADCCs), Advanced Terminal Processors (ATPs), General I/O Channels (GICs), Intelligent Network Processors (INPs), Local Area Network Interface Controllers (LANICs), and 261X Line Printer Interface (LPI) cards (26069A).

All slots supply power. Slots 1 through 5 connect to the memory bus, and slots 6 through 12 connect to the CPU bus. The Intermodule Bus (IMB) connects slots 5 through 25 providing communications between the I/O cards, the memory subsystem, and the CPU. The Series 42 supports only one IMB, and this IMB does not require an interface card in the card cage. (For a more extensive discussion of the function of the IMB, please see the IMB section in the Series 6x/7x maximum configuration guide.) The following figure depicts the Series 42 card cage.

Please photocopy this page and use it as a worksheet:



Series 42 Card Cage

Card Cage Restrictions:

- ADCC-Main and ADCC-Extender cards must be adjacent to each other in alternating fashion.
- ATP/SIB and ATP/AIB cards must be adjacent to each other.
- Include the two standard GICs and the required and separately ordered ADCC-Main in your configuration.
- The LANIC must be placed in the I/O portion of the card cage in any of slots 13 through 25.
- If there is a DMA-capable card (GIC, LANIC, SIB) in slots 13 and/or 14 then there must be a DMA-capable card in slot 15.

Series 42 Memory Expansion

The **Series 42** comes with a 1 Mb memory board standard in the minimum configuration. System memory sizes of 1 Mb, 1.5 Mb, 2 Mb, and 3 Mb are supported. Memory can be expanded by ordering memory expansion modules including .5 Mb (30092AR), 1 Mb (30161A) and 2 Mb (30478A).

Junction Panels

The Series 42 does not have junction panels on the system cabinet. Cables connect directly to the edges of cards in the card cage and drop to the floor in the rear of the SPU. Cables from the ADCC cards terminate at small connection boxes that house four terminal ports and lie on the floor.

The ATP Expansion Packages (30273A or 30274A) provide a separate junction panel box which is connected by cables to the AIB cards.

The LANIC cable attaches directly to the edge of the LANIC card, and the other end of the cable attaches to the frame at the bottom of the SPU cabinet in the rear.

LANIC

The Local Area Network Interface Controller (LANIC) is the hardware controller that interfaces to the Local Area Network (LAN). A LANIC uses one I/O card slot and connects to one LAN. A maximum of one LANIC per system is supported.

The LANIC is a high-speed channel which is placed on the Intermodule Bus (IMB). The other type of high-speed channel is a GIC with one or more high-speed devices attached. The Series 42 system can support one LANIC and up to two high-speed GICs.

General I/O Channels

A General I/O Channel (GIC) is a hardware controller used to interface HP-IB (IEEE 488 protocol) peripherals to the Series 42. Each GIC is a board that uses one I/O card slot and supports one HP-IB cabling system. The number of peripherals which may be connected to a single GIC depends on maximum device limits, peripheral speed, cable length, and performance considerations. Please refer to the GIC discussion in the Chapter One Appendix for a complete explanation of these rules. Note that the internal HP-IB cabling length between the GIC and the outside of the system is 2m for the Series 42.

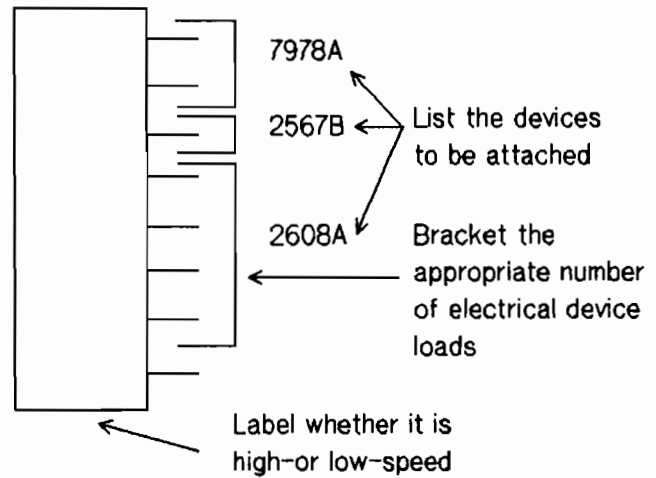
Order product 30079A to obtain additional GICs. You must also specify Option 040 to obtain the proper GIC cable for the Series 42.

A maximum of four GICs are supported on the Series 42. No more than two of these GICs may have high-speed devices attached to them. Please refer to the peripheral table in the Chapter One Appendix for a definition of high-speed devices and a high/low-speed classification of supported devices.

Summary: GIC Attachment Restrictions

- A maximum of six devices may be attached to a GIC with one or more high-speed devices attached.
- Unless other restrictions apply, low-speed peripherals can share a GIC with high-speed devices.
- Some low-speed devices require a dedicated GIC to which no other devices may be attached. (See the GIC Interface table in Chapter One Appendix.)
- The 2608A line printer cannot be attached to a GIC with high-speed devices.
- The 2608S line printer can share a GIC with all high-speed devices except the 7906M, 7920M, and 7925M family of disc drives.
- It is not recommended that the same GIC be used for connecting the main system backup tape drive and the system disc (LDEV1). System performance may be degraded with such a configuration when the tape drive is in use.

How to Use the GIC Worksheet



Please photocopy this page and use it as a GIC configuration worksheet:

S	
T	G
A	I
N	C
D	
A	1
R	
D	

S	
T	G
A	I
N	C
D	
A	2
R	
D	

O	
P	G
T	I
I	C
O	
N	3
A	
L	

O	
P	G
T	I
I	C
O	
N	4
A	
L	

Peripherals

Disc Drives

One 7945A (55 Mb), 7911P (28 Mb), 7912P (65 Mb), 7914P/CT (132 Mb), 7914TD (132 Mb), 7914ST (132 Mb), 7920M (50 Mb), 7925M (120 Mb), 7933H/35H (404 Mb), 7933XP/7935XP (404 Mb), 7937H/XP (571 Mb), 7936H/XP (307 Mb) 7957A (81 Mb) or 7958A (130 Mb) hard disc drive is required as the system disc (LDEV1).

The following table lists the maximum number of each type of disc drive that can be configured on the Series 42. When combining disc maximums, remember that only two high-speed GICs allowed with a maximum of six devices per high-speed GIC on a Series 42.

Series 42 Maximum Disc Drive Configuration:

7911P/7912P/7914P/7914TD/ 7914ST Discs w/Cartridge Tape	1
7914ST Storage Unit	4
7914TD Storage Unit	1
7914CT Storage Unit	4
Total 7911P/7912P Discs	4
Total 7914P Discs	8
792x Master Discs	2
792x Slave Discs	7
7945A Disc	4
793xH Disc	8
793xXP Disc	8
795x Disc	4
Total Discs	8

The 7920M and 7925M are master disc drives and can each support up to seven slave disc drives. These slave drives are ordered as 7920S or 7925S and do not have their own controllers. They connect to the controller in the master drive and are not part of the HP-IB cabling. Consult the CE organization for proper interface and cabling requirements for the 792x discs.

The 7945A, 7911P, 7912P, 7914P, 7914TD, 7914CT, 7914ST, 793xH, 793xXP and 795x disc drives each have their own controllers.

Disc performance may vary depending on the specific configuration of discs, controllers, and GICs. Check with an HP performance specialist if you have performance concerns.

Integrated Storage Units

The 7911P, 7912P, and 7914P are integrated storage units that include both a Winchester disc drive and an integral cartridge tape unit standard. *Only one 7911P, 7912P, or 7914P with the cartridge tape unit is supported on the Series 42.* A maximum of four 7911P or 7912P and a maximum of eight 7914P disc drives are supported. Because only one cartridge tape unit is allowed on the system, additional 7911P, 7912P, or 7914P units must be ordered with the cartridge tape delete Option, Number 140, specified.

The Winchester disc drive component in the 7911P, 7912P, and 7914P is shipped with a controller and a 1m HP-IB cable standard. If you order the cartridge tape unit on any of these integrated storage units, you must also order Option 001 which supplies a controller for the cartridge tape unit and a 1m HP-IB cable. *The cartridge tape unit requires its own dedicated GIC.*

The 7914TD and 7914ST combine into a single package a 7914 rackmounted disc drive, a half-inch tape drive, and an optional cartridge tape unit (Option 002). The 7914TD includes a 7970E master tape drive. The 7914ST includes a 7974A tape drive. A second 7914P type disc drive can be added to the same cabinet by specifying Option 114. (Option 114 will automatically delete the cartridge tape unit for the additional disc drive.)

The 7914TD and 7914ST are supplied with HP-IB cables standard--one 2m cable for the disc drive, a 6m cable with the 7970E drive, or a 2m cable with the 7974A. When Option 002 is ordered, the cartridge tape drive, a controller, and a 1m HP-IB cable are shipped.

The 7914CT combines the 7914P disc drive with a 9144A cartridge tape unit which does not require a dedicated GIC or separate controller. Two 1m HP-IB cables are shipped with the 7914CT. The Series 42 supports up to four 7914CT drives.

Magnetic Tape Drives

An integrated cartridge tape unit or a 9144A, 35401A, 7970E, 7914TD, 7971A, 7974A, 7914ST, 7976A or 7978A/B magnetic tape drive is required for system backup and distribution of software updates.

Only one 7970E master tape drive can be configured on the Series 42 and a dedicated GIC is required. Both the 7914TD and 7971A include 7970E tape drives. The 7914ST includes a 7974A tape drive. The 9144A, 35401A, 7970E, 7974A, 7976A, and 7978A/B do not support slave drives; each drive has its own controller.

The following table lists the maximum number of each type of tape drive that can be configured. You may have *one* integrated cartridge tape drive (in 7911P, 7912P, or 7914P) in addition to these maximums.

Series 42 Maximum Tape Drive Configuration:

9144A Cartridge Tape Drive	4
35401A Cartridge Autochanger Tape	2
7970E/7971A/7914TD Masters	1
7970E/7971A Slaves	3
7974A/7914ST Tape Drives	4
7976A Tape Drive	2
7978A/B Tape Drive	4
Total Tape Drives	4

The 7970E master tape drive comes standard with a 6m HP-IB cable.

The 7971A is a package of one or two 7970E tape drives in various master/slave drive configurations. Included with the options chosen are the appropriate cables. Note that the dual master drive 7971A Option 344 is not supported because only one master 7970E drive is allowed.

The 7974A, 7976A, and 7978A/B are shipped with a 2m HP-IB cable standard. When configuring a 7976A tape drive, consult the CE organization for proper interface and cables. The 7974A and 7978A/B do not require a system option. You must specify Option 800 to obtain the 800/1600 cpi capability on the 7974A.

The 9144A one-quarter inch cartridge tape drive is supported as a cold load device on the Series 42 with CPS-E microcode installed. The 9144A is shipped without an HP-IB cable for GIC connection. See Chapter 4 for cable information.

The 35401A one-quarter inch cartridge autochanger tape subsystem is shipped with a 1m HP-IB cable.

System Printers

The following table lists the maximum number of each type of system printer that can be configured:

Series 42 Maximum System Printer Configuration:

Line Printers:	
2608A/2608S	2
256x	4
2611A/2613A/2617A/2619A	2
Total Line Printers Supported	4
Intelligent Page Printers	
2680A	2
2688A	2(3)*
Total Page Printers	2(3)*
Total System Printers Supported	4

* HP-IB Extender support in parentheses.

The 261x family of line printers does not connect directly to a GIC; rather, each one uses a 1m HP-IB ribbon cable between the 26069A translator and the GIC card. The line printer itself can be up to 500 feet away. The printer is connected by a parallel differential current drive line to the interface card (26069A). Consult the CE organization for proper interface card, internal cable and parallel differential cable requirements. Consult Boise Division for cable requirements beyond 15 meters.

The 2608A, 2608S, and 256x are dot matrix line printers that attach directly to GICs. They do not require an interface card in the I/O card cage. The standard 2608A includes an HP-IB interface and a 2m HP-IB cable. For the 2608S and 256x, order Option 340 to obtain the HP-IB interface and 4m HP-IB cable. Note that the 2608S cannot share a GIC with a 7906M, 7920M or 7925M disc drive. Furthermore, the 2608A cannot be configured on a GIC with high-speed devices attached.

Order Option 340 with the 2680A or 2688A to obtain the Series 42 subsystem with 8m HP-IB cable. Specify Option 099 with the 2680A to replace the 8m cable with a 2m cable. This option is not available on the 2688A. The 2680A and 2688A attach directly to a GIC and do not require an interface card in the I/O card cage.

The 256x, 2680A, and 2688A printers may be connected via HP-IB Extenders. See the HP-IB Extender section in the Chapter One Appendix.

Other Peripherals

Flexible Disc Drive

Only one 1.2 Mb flexible disc drive is supported. Product 9895A must have Option 010 to specify a single master drive. The flexible disc drive attaches to a GIC. Order the HP-IB cable separately.

Card Reader

The 30106A 80-column card reader interfaces to the Series 42 through a dedicated GIC. You must have either Option 333 or the 30309A

upgrade kit to provide a 2m HP-IB cable. When a card reader is configured on the system, a power line conditioner is required. The 30106A and 30309A are no longer orderable. (They will be supported until December 31, 1989.)

Power Line Conditioners

In many areas AC power line disturbances can interfere with system operation, and possibly cause data corruption or even system failures. "Dirty" lines from local utilities or noise generated by electrical equipment on customer premises can cause these problems. 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 through local third parties.

Multiple System Access Selector

The 26075A Multiple System Access Selector is a switch box that allows up to three HP 3000s to share either a 2680A or a 7976A. An operator can manually switch the peripheral to be active on any one of the sharing systems. A maximum of one (1) 26075A may be connected to a system. Other devices on the same GIC must be "downed" when switching the 26075A. Therefore, the switchbox cannot be on the same GIC as a disc drive. When determining HP-IB cable length, include 0.5m for the 26075A.

Data Communications

Terminal Connection

Point-to-point connections are made to the Series 42 through either the Asynchronous Data Communications Controller (ADCC) or the Advanced Terminal Processor (ATP). The ADCC and ATP support local (RS-232) and remote (full duplex) terminal and serial printer connections. The ATP also supports local RS-422 point-to-point connections. ATP support is provided only through the ATP Expansion Package (30273A or 30274A).

Multipoint connections are made through the MTS Modem Link or the MTS Data Link in combination with Multipoint Terminal Support Service software. The Link products provide an Intelligent Network Processor (INP) board and related cables. The following table summarizes the number of terminals supported on the Series 42, with and without the ATP Expansion Package:

Series 42 Maximum Terminal Configuration:

	ADCC Only	ADCC/ ATP EXP
Direct Connect		
via ADCC	32	32
via ATP	0	48
total direct connect	32	60
Modem Connect		
via ADCC	31	32
via ATP	0	24
total modem connect	31	44
Multipoint	55	55
Maximum Terminal Support	56	92

There are a total of 8 I/O slots available for terminal connections. One of these slots must be reserved for an ADCC main to support the system console.

All 56 or 92 terminals can be logged on when the system is running either MPE V/P or MPE V/E. The maximum of 56 or 92 terminals includes all point-to-point, multipoint, system console, DS virtual, and X.25 PAD terminals. The number of terminals per multipoint line is normally determined by response time considerations, but may be restricted by the specific cabling option chosen. You may also use the 2333A multipoint or 2334A X.25 cluster controllers. The 2333A permits a group of up to 16 point-to-point devices to communicate with the system via the Data Link or via modems and phone lines. The 2334A permits a group of up to 16 devices to communicate via X.25 Packet Switched Networks.

Support Link Modem

Under the HP Remote Support Program, all new (non-upgrade) systems are shipped with a free HP Support Link Modem (35031A).

System Console

The system console MUST be configured on an ADCC. One point-to-point connected 262x or 2392A terminal must be ordered as the system console. A cable must also be ordered; order Option 301/303/305 for direct connect RS-232, Option 301 for U.S. modem connect, or Option 302 for Europe modem connect cables. (Remanufactured 2382AR, 264XR and 2635BR terminals are supported as system consoles and are orderable through FRD.)

Asynchronous Data Communications Controller

The ADCC on the Series 42 consists of two products: the ADCC-Main (30018A) and the ADCC-Extender (30019A). Option 040 must be ordered with each of these products to obtain the correct internal cable. Each ADCC card uses one slot in the I/O section of the card cage. ADCC-Mains and ADCC-Extenders must be ordered (and installed) in alternating fashion (e.g. Main, Extender, Main, Extender, etc.). Each ADCC supports four RS-232 devices. The Series 42 supports a maximum of eight ADCCs (32 devices). *A minimum of one ADCC-Main MUST be ordered with the system to attach the system console and up to three other RS-232 devices, including the Support Link Modem.*

Advanced Terminal Processor

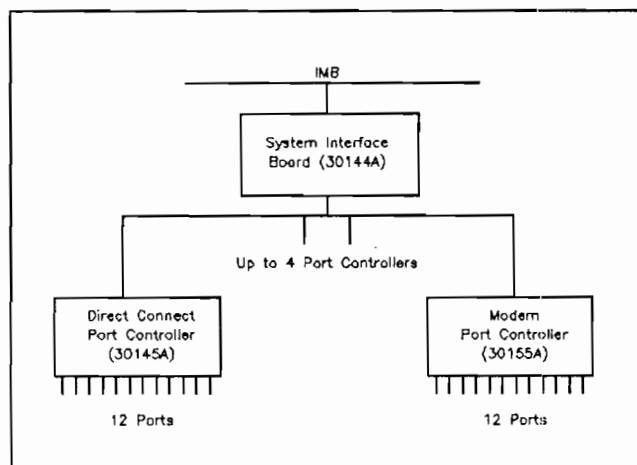
The ATP on the Series 42 is obtained by ordering either the ATP Direct Connect Expansion Package (30273A) or the ATP Modem Expansion Package (30274A). Each Expansion Package contains the System Interface Board (SIB), one Port Controller (either Direct Connect or Modem) which includes the Asynchronous Interface Board (AIB), and a free-standing junction panel box. The minimum ATP configuration supports twelve terminals and requires two card slots in the I/O section of the card cage.

Additional ports can be obtained in groups of twelve by ordering either the ATP Direct Connect Port Controller (30145A) or the ATP Modem Port Controller (30155A). Option 042 must be ordered with each of these products to provide the correct internal cable. Each Direct Connect Port Controller (AIB) supports both RS-232 and RS-422 terminal connections. Twelve RS-422 ports are provided standard with each AIB, but they can be converted to RS-232 ports in groups of four by ordering Option 002. For example, to get a Direct Connect Port Controller with twelve RS-232 ports, you would order one 30145A with three Option 002s.

The SIB and AIB each require a card slot in the I/O section of the card cage. Each AIB includes a terminal port miniboard which uses one junction panel cutout in the free-standing junction panel box. The Series 42 supports a maximum of four Direct Connect, two Direct Connect with one Modem, or two Modem Port Controllers (including the ATP Expansion Package).

ATP Subsystem Structure on Series 42

With the ATP Expansion Package



Output Spooling

For a discussion of output spooling and a description of spooled device categories, please see the section on Output Spooling

in the Series 6x/70 maximum configuration guidelines. Information on MTS printers can also be found in that section. The following table indicates the maximum number of spooled devices supported:

Series 42 Maximum Spooled Device Configuration:

SYSTEM PRINTERS:

Line Printers: (HP-IB)

2608A/2608S	2
256x	4
261x	2
Total Line Printers	4

Page Printers:

2680A	2
2688A	2(3)*
Total Page Printers	2(3)*

Total System Printers 4

SERIAL PRINTERS:

2601A/2602A/2603A/2631B	8
2932A/2933A/2934A	8
2563A/B/2564B (ADCC/ATP)	1(3)**
2686A/D/33440A	1(2)**
2687A Page Printer (ADCC/ATP)	1(2)**

Total Serial Connected Printers: 8

* HP-IB Extender support in parentheses.

** Two 2687As, two 2686A/D/33440As or three 2563As/2564Bs are supported when connected to the ATP, while only one is supported on the ADCC. The ATP uses direct memory access when offloading spoolfiles while the ADCC must run channel programs. Therefore, the ATP is more efficient and puts a smaller burden on the CPU.

The spooled device support numbers stated in the table above are based on performance considerations. If the system is running **MPE V/P**, operating system table sizes could limit the number of simultaneously active spooled printers.

In order to determine the maximum number of spooled devices which can be configured on an **MPE V/P** system, the following formula must be used:

Max. Spooled Devices =

$$[256 - (1.25 \times \text{\#Sessions and Jobs}) - \text{\#INPs}] / 16$$

where:

\#Sessions and Jobs = the maximum number of sessions and jobs which will be supported on the system

\#INP = the number of Network Links (INPs) which will be configured on the system

After plugging in the values for the number of sessions and jobs and also the number of INPs, the maximum number of spooled devices will have been derived. *Take the result and round it down to the nearest whole number.* It is evident from this formula that the number of spooled devices a system can support will vary with the customer's configuration and application mix.

With the expanded tables of **MPE V/E**, there is no longer a software tables limitation that further restricts the number of spooled devices on a Series 42 running **MPE V/E** beyond the number of devices listed in the table above. System performance considerations are responsible for restricting the number of spooled devices to these limits. Note that the appropriate table structure must be configured for this number of spooled devices to be supported.

Serial Printers and Plotters

The Series 42 supports up to eight remote spooled 293x or 2631B serial printers through the ADCC or through the ATP via RS-232-C connections. When used as remote spooled printers, they are connected to an ADCC or ATP direct connect port via hardwired cable or to an ADCC or ATP modem port via a modem. 2631B printers must include Option 331 to obtain the RS-232-C remote spooled printer capability.

The Series 42 can support 2601A, 2602A and 2603A daisywheel printers via the ADCC or ATP through local direct connection only. Modem connection is not supported. The 2601A, 2602A, 2603A, 2631B, and 293x printers can also be attached as slave devices to terminals under the control of application programs.

The 2563A/B/2564B line printer is also supported on the Series 42 in a serial configuration. RS-232-C (ADCC/ATP) and RS-422 (ATP) hardwire connections are available; modem connections are not supported. One must specify Option 049 for RS-232-C and Option 050 for RS-422 interfaces in the 2563A/B/2564B printer. Cables must be ordered separately; refer to Chapter 4 for further details. Do not order the subsystem option (Option 340) for the 2563A/B/2564B when it is being used as a serial printer.

The 2686A/D or 33440A is supported via hardwired RS-232-C connection. Remote operation over modem is not supported.

The 2687A laser printer is only available as a serial printer. RS-232-C hardwired connections is supported, but modem connection is not available. Option 340 must be specified to obtain the Series 42 subsystem. Cables need to be ordered separately; please refer to Chapter 4 for a list of available cables for the 2687A.

HP plotters can be configured as remote RS-232 devices, as slave devices to terminals and personal computers, or as eavesdrop devices between the terminal and the ADCC or ATP. As slave devices, both HP-IB and RS-232-C connections may be possible depending upon the individual plotter. Only RS-232-C connections are available in an eavesdrop configuration or when connected

point-to-point to an ADCC or ATP.

Network Link Products (INPs)

A maximum of three Network Link products may be used concurrently on a Series 42. Any number of links can be supported, but only three sets of Link hardware may be installed and/or configured. Each Network Link provides one communication line for use by one or more of the Network Services (DS, RJE, MRJE, IMF, NRJE, MTS, or NS).

Each set of Link hardware includes an Intelligent Network Processor (INP), and requires one I/O card slot in the card cage. The INP counts as one device load on a GIC and is considered a low-speed device.

A 1m HP-IB ribbon cable is included for connecting the INP to a GIC. An external cable is also included but must be specified by a particular option when ordering, based on the connection desired. Please refer to the latest HP 3000 Price Guide for a complete list of options.

Series 42 Configuration Worksheet

Product Number	Description	Quantity
----------------	-------------	----------

I. System Processor Unit.

32542B	Series 42 System Processor	1A _____
--------	----------------------------	----------

MPE MEDIA PRODUCT

A Media Product must be ordered with each HP 3000 system. Media Products for Series 42 systems contain version options and media options which must be selected to properly specify the correct FOS for your customer. Options indicated below apply to both 51450A and 51451A.

51450A	MPE V/E Media Product	1B _____
--------	-----------------------	----------

Opt. 2xx	MIT Release	1C _____
----------	-------------	----------

Opt. 602	Series 4x SPU	1D _____
----------	---------------	----------

II. Memory Expansion.

Total Memory Size (Standard memory on a Series 42 is 1 Mb; MAX=3; 2.5 Mb configurations are not supported.)

2A _____

For configurations above the standard memory support, please refer to the Memory Expansion section in the text to decide which are the appropriate options or products to order.

32542B Opt. 501	Add-on 1 Mb memory	2B _____
--------------------	--------------------	----------

Opt. 502	Add-on 2 Mb memory (2 1Mb memory arrays)	2C _____
----------	--	----------

30161A	1 Mb Memory Module for Series 4x	2D _____
--------	----------------------------------	----------

30092AR	512 Kb Memory Module for Series 4x	2E _____
---------	------------------------------------	----------

30171AR	256 Kb Memory Module for Series 4x	2F _____
---------	------------------------------------	----------

30478A	2 Mb Memory Module for Series 4x, 5x	2G _____
--------	--------------------------------------	----------

Series 42 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

III. Disc Drives.

A. Storage Units *with Integrated Cartridge Tape.*

One of the following may be included:

7911P	28 Mb Integrated Storage Unit <i>with</i> Cartridge Tape (Option 001) (MAX=1) (Two 1m HP-IB cables are included.)	3A _____
-------	--	----------

7912P	65 Mb Integrated Storage Unit <i>with</i> Cartridge Tape (Option 001) (MAX=1) (Two 1m HP-IB cables are included.)	3B _____
-------	--	----------

7914P	132 Mb Integrated Storage Unit <i>with</i> Cartridge Tape (Option 001) (MAX=1)* (Two 1m HP-IB cables are included.)	3C _____
-------	--	----------

* If ordered with Series 42 SPU, please specify Option 014 with product 32542B to receive the packaged system discount.

7914ST Opt. 002	132 Mb Mass Storage Subsystem <i>with Integrated</i> Cartridge Tape (Option 002) (MAX=1) Because the 7914ST may combine a Cartridge Tape, a 1/2" tape drive, and or two disc drives into a single package, you need to check Lines 5B and 11D to ensure that the totals for those lines do not violate device support maximums. HP-IB cables are included with each storage unit: cartridge tape (1m), disc drive (2m), and tape drive (2m). (Also enter on line 11D in Tape Drive section.)	3D _____
--------------------	--	----------

7914TD Opt. 002	132 Mb Mass Storage Subsystem <i>with Integrated</i> Cartridge Tape (Option 002) (MAX=1) Because the 7914TD may combine a Cartridge Tape, a 1/2" tape drive, and or two disc drives into a single package, you need to check Lines 5C and 11B to ensure that the totals for those lines do not violate device supp maximums. HP-IB cables are included with each storage unit: cartridge tape (1m), disc drive (2m), and tape drive (6m). (Also enter on line 11B in Tape Drive section.)	3E _____
--------------------	---	----------

	Total Integrated Storage Units <i>with Integrated Cartridge Tape</i> (Sum of Lines 3x, MAX=1)	3 _____
--	---	---------

Series 42 Configuration Worksheet

Product Number	Description	Quantity
B. Mass Storage Products (No Integrated Cartridge Tape).		
7911P	28 Mb Integrated Storage Unit (Option 140, Cartridge Tape Deleted, MA (A 1m HP-IB cable is included.)	4A _____
7912P	65 Mb Integrated Storage Unit (Option 140, Cartridge Tape Deleted, MA (A 1m HP-IB cable is included.)	4B _____
	Total 7911P/7912P Disc Drives (Sum of Lines 3A, 3B, 4A and 4B, MAX	4 _____
7914P	132 Mb Integrated Storage Unit (Option 140, Cartridge Tape Deleted) (A 1m HP-IB cable is included.)	5A _____
7914ST Discs	132 Mb Mass Storage Subsystem (MAX=4) (Without Option 114, this subsystem contains one drive. With Option 114, the subsystem contains two drives. Enter the total number of disc drives on Line 5B. The number of 7914ST products ordered may be less depending on the number of subsys with two drives.) (For cabling information, see Line 3D.) (Also enter on line 11D in Tape Drive section)	5B _____
7914TD Discs	132 Mb Mass Storage Subsystem (MAX=1) (Without Option 114, this subsystem contains one drive. With Option 114, the subsystem contains two drives. Enter the total number of disc drives on Line 5C. (For cabling information, see Line 3E.) (Also enter on line 11B in Tape Drive section)	5C _____
7914CT	132 Mb Integrated Storage Unit Containing 9144A Cartridge Tape (MAX=4) (Includes two 1m HP-IB cables.) (Also enter on line 11A in Tape Drive Section.)	5D _____
	Total 7914P/14TD/14ST/14CT Type Disc Drives (MAX=8, Total of Lines 3E, and 5x)	5 _____
7920M	50 Mb Master Disc Drive (A 2m HP-IB cable is included with Option 102	6A _____
7925M	120 Mb Master Disc Drive (A 2m HP-IB cable is included with Option 10	6B _____
	Total 7920/25 Master Disc Drives (Sum of Lines 6x) (MAX=2)	6 _____

Series 42 Configuration Worksheet

Product Number	Description	Quantity
7920S	50 Mb Slave Disc Drive (A 2.4m multiunit cable and a 15.2m data cable are included.)	7A _____
7925S	120 Mb Slave Disc Drive (A 2.4m multiunit cable and a 15.2m data cable are included.)	7B _____
Total 7920/25 Slave Disc Drives (Sum of Lines 7x, MAX=7. This maximum would also require a 7920/25 Master Disc Drive because a master drive is required to support up to seven Slave Drives.)		7 _____
7945A	55Mb Winchester Disc Drive (Includes 1m HP-IB Cable) (MAX=4)	8 _____
7933H/ 7935H	404 Mb Disc Drive (MAX=8) (A 1m HP-IB cable is included.)	9A _____
7936H	307 Mb Disc Drive (MAX=8) (a 1m HP-IB cable is included)(MAX=8)	9B _____
7937H	571 Mb Disc Drive (MAX=8) (a 1m HP-IB cable is included)	9C _____
7933XP/ 7935XP	404 Mb Disc Drive with 1 Mb Cache (MAX=8) (A 1m HP-IB cable is included)	9D _____
7936XP	307Mb Disc Drive with 2Mb Cache (a 1m HP-IB cable is included) (MAX=8)	9E _____
7937XP	571Mb Disc Drive with 2Mb Cache (a 1m HP-IB cable is included)	9F _____
7957A	81 Mb 5 1/4" Disc Drive (MAX=4)(a 1 Mb HP-IB cable is included)	9G _____
7958A	130 Mb 5 1/4" Disc Drive (MAX=4) (a 1 Mb HP-IB cable is included)	9H _____
Total 793x and 795x Disc Drives (sum of lines 9x, MAX=8)		9 _____
Total Disc Drives and Integrated Storage Units (Sum of Lines 4, 5, 6, 7, 8, 9; MAX=8)		10 _____

Series 42 Configuration Worksheet

Product Number	Description	Quantity
IV. Magnetic Tape Drives.		
9144A/ 7914CT	One-quarter (1/4) inch Cartridge Tape Drive (Order cable separately with 9144A. Two 1m HP-IB cables included with 7914CT.) (MAX=4)	11A _____
35401A	One-quarter (1/4) inch Cartridge Autochanger Tape Subsystem (MAX=2) (a 1m HP-IB cable is included)	11B _____
7970E/ 7971A/ 7914TD	1600 cpi Master Tape Drive Subsystem (MAX=1, each master supports up to three Slave Tape Drives; each tape drive includes a 6m HP-IB cable.) (Also, enter 7914TD on line 3E or 5C in Disc Drive Section.)	11C _____
7970E	Slave Tape Drive Subsystem (MAX=3); A 6.1m multiunit cable is included.	11D _____
7974A/ 7914ST	1600 cpi (800 cpi optional) Magnetic Tape Subsystem (MAX=4); A 2m HP-IB cable is included. (Also enter 7914ST on line 3D or 5B in Disc Drive Section.)	11E _____
7978A/ 7978B	6250/1600 cpi Magnetic Tape Subsystem (MAX=4); A 2m HP-IB cable is included.	11F _____
Total Magnetic Tape Drives (Sum of Lines 11x, MAX=4)		11 _____

V. System Printers.

2608S	400 lpm Dot Matrix Printer (MAX=2) Option 340 includes a 4m HP-IB cable.	12A _____
256x	300, 600, 900, 1200 and 1600 lpm Dot Matrix Printers (Option 340); (MAX=4); a 4m HP-IB cable is included.	12B _____
261xA	Line Printer Series (e.g., 2611A and 2619A) (MAX=2) (A 15m parallel differential cable is included with Option 340.)	12C _____
Total Line Printers (Sum of Lines 12x, MAX=4)		12 _____

Series 42 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

V. System Printers.

2680A/ 2688A	Intelligent Page Printers (MAX=2) (An 8m HP-IB cable is included with Option 340.) See the discussion in Chapter One Appendix regarding the connection of printers via HP-IB Extenders.	13 _____
Total System Printers (Sum of Lines 12 and 13, MAX=4)		14 _____

VI. Serial Printers.

2601A	40 cps Daisywheel Printer (MAX=8); (2601A includes RS-232 cable.)	15A _____
2602A	25 cps Daisywheel Printer (MAX=8); (order cable separately.)	15B _____
2603A	48 cps Daisywheel Printer (MAX=8); (order cable separately.)	15C _____
293x	200 cps Dot Matrix Printer (MAX=8); (Order cable separately.)	15D _____
2563A/B 2564B	Dot Matrix Printer (Option 049 for RS-232 or Option 050 for RS-422); (MAX=1 with ADCC and 3 with ATP); (order cable separately.)	15E _____
2686A/D 33440A	8ppm Laser Page Printer; (MAX=1 with ADCC or 2 with ATP); (order cable separately.)	15F _____
2687A	12ppm Laser Page Printer (Option 340); (MAX=1 with ADCC or 2 with ATP); (order cable separately.)	15G _____
Total Serial Printers (Sum of lines 15x, MAX=8)		15 _____

VII. Other Peripherals.

9895A	Flexible Disc Drive (Option 010, MAX=1) (Order HP-IB cable separately.)	16 _____
26075A	Multiple System Access Selector (MAX=1); (order cables separately.)	17 _____

Series 42 Configuration Worksheet

VIII. Data Communications.

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

NOTE: Cabling must be ordered separately for these devices!

	Connection Method					
	Pt-to-Pt with ATP or ADCC					
	Direct Connect					
Product	Daisychain* Multipoint	ADCC/ATP Modem	ATP Type 422	ADCC/ATP Type 232-C	Terminal Attached	
Display Terminals						
239x	N/A*	_____	_____	_____	N/A	
2623A	N/A*	_____	_____	_____	N/A	
2624B	_____	_____	_____	_____	N/A	
2625A	_____	_____	_____	_____	N/A	
2626A	_____	_____	_____	_____	N/A	
2626W	N/A**	_____	_____	_____	N/A	
2627A	N/A*	_____	_____	_____	N/A	
2628A	_____	_____	_____	_____	N/A	
Plotters						
7440A	N/A	_____	N/A	_____	_____	
7470A	N/A	_____	N/A	_____	_____	
7475A	N/A	_____	N/A	_____	_____	
7510A	N/A	_____	N/A	_____	_____	
7550A	N/A	_____	N/A	_____	_____	
7570A	N/A	_____	N/A	_____	_____	
7580A/B	N/A	_____	N/A	_____	_____	
7585A/B	N/A	_____	N/A	_____	_____	
7586B	N/A	_____	N/A	_____	_____	
Data Collection Terminals						
3075A	_____	_____	N/A	_____	N/A	
3076A	_____	_____	N/A	_____	N/A	
3077A	_____	_____	N/A	_____	N/A	
3081A	_____	_____	N/A	_____	N/A	
Subtotal (this page)	18A _____	19A _____	20A _____	21A _____	22A _____	

* The 2333A and 2334A Cluster Controller will support any RS-232-C device except the 2635B and 2382A.

** 2626W works as a multipoint terminal but not with HPWORD.

Series 42 Configuration Worksheet

	Connection Method					
	Pt-to-Pt with ATP or ADCC					
	Direct Connect					
Product	Daisychain* Multipoint	ADCC/ATP Modem	ATP Type 422	ADCC/ATP Type 232-C	Terminal Attached	
Serial Printers**						
2932A	_____	_____	_____	_____	_____	
2934A	_____	_____	_____	_____	_____	
2563A/B	_____	N/A	_____	_____	N/A	
2564B	N/A*	N/A	_____	_____	N/A	
2601A	N/A*	N/A	N/A	_____	_____	
2602A	N/A	N/A	N/A	_____	_____	
2603A	N/A	N/A	N/A	_____	_____	
Page Printers**						
2686A/D	N/A	N/A	N/A	_____	N/A	
2687A	N/A	N/A	N/A	_____	N/A	
33440A	N/A	N/A	N/A	_____	N/A	
Personal Office Computers						
Touchscreen (150x)	N/A*	_____	_____	_____	N/A	
Portable Plus	N/A*	_____	N/A	_____	N/A	
VECTRA	N/A*	_____	_____	_____	N/A	
Subtotal (this page)	18B _____	19B _____	20B _____	21B _____	22B _____	
Subtotal (previous page)	18A _____	19A _____	20A _____	21A _____	22A _____	
Totals (both pages)	18 _____	19 _____	20 _____	21 _____	22 _____	

Line 18: MAX = 55

Line 19: MAX = 44

Sum of lines 19, 20, and 21: MAX = 60

Sum of lines 18, 19, 20, and 21: MAX = 92

Sum of lines 20 and 21: MAX = 60

* The 2333A and 2334A Cluster Controller will support any RS-232-C device except the 2635B and 2382A.

** Note device maximums in Section VI of the worksheet.

Series 42 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

B. ATP Advanced Terminal Processors

The Series 42 supports one (1) ATP Expansion Package for ATP support. Either the 30273A Direct Connect ATP Expansion Package or the 30274A Modem Connect Expansion Package can be used. Each includes the first Direct Connect or Modem Port Controller (12 ports) plus one System Interface Board (SIB). Additional Port Controllers may be ordered for the Series 42 up to the following maximum combinations which include the initial 12 ports: 1) Maximum of four Direct Connect Port Controllers; 2) Maximum of two Direct Connect Port Controllers with one Modem Port Controller; 3) Maximum of two Modem Port Controllers.

Step #1:

Determine the number of ATP modem ports needed from line 19 (MAX=24).

23A _____

Determine the number of ATP direct connect ports needed (Sum of line 20 and line 21 (MAX=48)).

23B _____

(Note: The above maximums may not be reached simultaneously.)

Step #2:

Determine what products you should order using the following table. Select the appropriate column and row corresponding to your modem and direct connect port requirements and order the products indicated at their intersection. (Unused modem ports may be used for RS-232-C direct connections.)

Series 42 Configuration Worksheet

Product Number	Description	Quantity
----------------	-------------	----------

ATP Direct Connect Port Controllers Required	ATP Modem Port Controllers Required		
	0 (0 ports)	1 (up to 12 ports)	2 (up to 24 ports)
0 (0 ports)		1 30274A 1 Opt. 042	1 30274A 1 Opt. 042 1 30155A 1 Opt. 042
1 (up to 12 ports)	1 30273A 1 Opt. 042	1 30274A 1 Opt. 042 1 30145A 1 Opt. 042	Not Supported
2 (up to 24 ports)	1 30273A 1 Opt. 042 1 30145A 1 Opt. 042	1 30274A 1 Opt. 042 2 30145A 2 Opt. 042	Not Supported
3 (up to 36 ports)	1 30273A 1 Opt. 042 2 30145A 2 Opt. 042	Not Supported	Not Supported
4 (up to 48 ports)	1 30273A 1 Opt. 042 3 30145A 3 Opt. 042	Not Supported	Not Supported

** Note that additional direct connect and modem ports may be connected using the ADCC. (See Section C.)*

30274A	Modem Connect ATP Expansion Package (Option 042) includes 12 modem ports and one SIB. (MAX=1).	24A _____
30155A	ATP Modem Port Controller provides 12 RS-232 modem ports (Option 042).	24B _____
30273A	Direct Connect ATP Expansion Package (Option 042) includes 12 RS-422 ports and one SIB. (MAX=1).	24C _____
30145A	ATP Direct Connect Port Controller provides 12 RS-422 ports (Option 042).	24D _____

Series 42 Configuration Worksheet

Product Number	Description	Quantity
----------------	-------------	----------

Step #3:

For each 30273A and 30145A ordered above, you must order the appropriate number of Options 002 in order to obtain the right mix of RS-232-C versus RS-422 ports from line 20. Each Direct Connect Port Controller and Expansion Package comes standard with 12 RS-422 terminal connections. They are converted to RS-232 connections in groups of four by ordering Option 002 as indicated in the matrix below:

For each 30273A or 30145A (24C and 24D):

# Options 002	# RS-422 ports	# RS-232-C ports
0	12	0
1	8	4
2	4	8
3	0	12

Total Option 002s

24E _____

C. ADCC Asynchronous Data Communications Controller

If you require more than 24 modem ports or more than 48 direct connect ports, you must order the ADCC. At a minimum, you must order one (1) ADCC-Main to support the system console; it cannot be supported on the ATP.

ADCC ports required (Total of lines 19 and line 21 minus the number of RS-232-C ATP ports configured (line 24E multiplied by "4") and modem ATP ports configured (lines 24A and 24B multiplied by "12")). If zero, enter "1" for System Console.

25 _____

Total ADCC-Main and ADCC-Extender cards required (Divide line 25 by "4" and round up to the nearest integer; MIN=1; MAX=8)

26 _____

30018A ADCC-Main (Divide line 26 by "2" and round up to the nearest integer; internal cables included with Option 040; external cables for devices must be ordered separately.)

27 _____

30019A ADCC-Extender (line 26 minus line 27) (Internal cables included with Option 040; external cables for devices must be ordered separately.)

28 _____

Series 42 Configuration Worksheet

Product Number	Description	Quantity
IX. Network Links (INPs).		
	HP to HP System Lines (30270A, 30271A, 32187A, 32188A)	29A _____
	HP to IBM System Lines (30246A, 30251A)	29B _____
	Multipoint Lines (32026A, 32027A, 32028A)	29C _____
	Local Area Network (30242A) (MAX=1)	29D _____
	Total number of Links (INPs) (Sum of lines 29A, 29B, and 29C; MAX=3)*	29 _____

* Additional Links without hardware (Option 390) may be supported.

X. I/O Expansion.

A. General I/O Channels (GICs)

To determine the number of GICs required on the system, refer to the discussion on GICs in the Series 42 maximum system configuration section of this chapter.

(Note: To configure GICs you must take into consideration peripheral speed, electrical device loads, cable lengths, peripheral incompatibilities and system performance. These are discussed in detail in the Chapter One Appendix.)

A figure showing four (4) GICs has been included in the GIC section of this chapter for your use as a configuration worksheet.

30079A	Optional GICs (MAX=2). Two GICs are shipped standard with a new system order; box swap upgrade systems do not include the two standard GICs. Internal cables are included by ordering Option 040; external HP-IB cables are supplied with devices unless otherwise indicated.	30 _____
---------------	---	----------

B. Junction Mounting Panels

The Series 42 SPU only requires junction mounting panels when ATPs are configured. The ATP Expansion Package provides sufficient space on its junction mounting panel for the supported ATP configurations.

Series 42 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

C. I/O Card Slots

The sum of:

Line 12C -- 261x Line Printer Interface	31A	_____
Line 29 -- Network Links (INPs)	31B	_____
Line 26 -- ADCC Cards	31C	_____
Line 24B -- Modem Port Controllers (AIBs)	31D	_____
Line 24D -- Direct Connect Port Controllers (AIBs)	31E	_____
Port Controller provided with ATP Expansion Package (line 24A <u>or</u> line 24C)	31F	_____
One SIB provided with ATP Expansion Package (Enter zero (0) if both Line 31D and Line 31E are blank; otherwise, enter one (1).)	31G	_____
Line 30 -- Optional GICs	31H	_____
Standard GICs (2)	31I	_____
Line 29D - LANIC	31J	_____
Total of Lines 31x; MAX=13	31	_____

Series 42XP and 52

Minimum System Configuration	1-75
Maximum System Configuration	
Ordering the SPU	1-76
MPE Media Products	1-76
The Card Cage	1-76
Memory Expansion	1-77
Junction Panels	1-77
LANIC	1-77
General I/O Channels	1-77
Peripherals	
Disc Drives	1-79
Integrated Storage Units	1-79
Magnetic Tape Drives	1-80
System Printers	1-80
Other Peripherals	
Flexible Disc Drive	1-81
Card Reader	1-81
Power Line Conditioners	1-81
Multiple System Access Selector	1-81
Data Communications	
Terminal Connection	1-81
Support Link Modem	1-82
System Console	1-82
ADCC	1-82
ATP	1-83
Output Spooling	1-83
Serial Connected Printers and Plotters	1-84
Network Links/INPs	1-85
Configuration Worksheets	1-86



HP 3000 SERIES 42XP/52 MINIMUM SYSTEM CONFIGURATION

Supplied Hardware:

- Central Processing Unit.
- System Clock.
- Control and Maintenance Processor.
- Two General I/O Channels (GICs) for System Disc and Backup Tape Drive. (These GICs are not included with box swap upgrade orders.)
- 4 Mb Fault Control Memory with Controller.
- 32Kb Cache Memory
- System Mainframe Cabinet including Card Cage and Power Supplies Supporting the CPU, up to 8 Mb Memory, and 13 I/O Card Slots.
- Support Link Modem.

Additional Required Hardware:

- One System Console and Cable: Any HP 262x or 239x terminal.
- One Asynchronous Data Communications Controller (ADCC-Main) to connect the console to the system.
- One Magnetic Tape Drive for System Backup: 7914ST, 7914TD, 7970E, 7971A, 7974A, 7978A/B 1/2" tape drive or 35401A cartridge autochange tape required for systems with more than 220 Mb disc storage. A 9144A or 7914CT with 1/4" cartridge tape drive may be used for systems having 220 Mb or less disc storage. A 7911P, 7912P, or 7914P with integrated cartridge tape may be used for systems having 132 Mb or less disc storage.
- One System Disc: 7933H/XP, 7935H/XP, 7936H/XP, 7937H/XP 7957A, 7958A, 7945A, 7911P, 7912P, 7914P, 7914CT, 7914TD, 7914ST Disc or 7925M/20M Master Disc.

Supplied Software:

Standard on each HP 3000 system is the Fundamental Operating Software which includes:

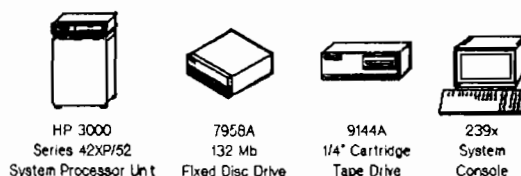
- Multiprogramming Executive (MPE) Operating System
- Text Editor (EDIT/V)
- File Copying Utility (FCOPY/V)
- Sort and Merge Package (SORT-MERGE/V)
- Data Base Mgmt System (TurboIMAGE/V)
- Data Base Inquiry Language (QUERY/V)
- Data Entry and Forms Mgmt Software (VPLUS/V)
- Keyed Sequential Access Method Software (KSAM/V)
- A complete User Manual Set is supplied (For a manual set listing, see Chapter 5).

All of the Fundamental Operating Software is included in the system but must still be ordered separately. Please see the section on MPE Media Products. Note, the Series 52 requires MPE V/E T-Delta-5 or UB MITs. The Series 42XP requires T-MIT or later for configurations with 6 Mb or less and requires T-Delta-5 or UB MITs for 7 Mb to 8 Mb. Only U-MIT or later will support TurboIMAGE.

The Series 42XP/52 includes Disc Caching, an I/O performance product, which is not a part of the Fundamental Operating Software.

Note that the customer and CE will need to work together on site preparation prior to system installation.

HP 3000 Series 42XP/52 System Configuration Example



HP 3000 SERIES 42XP, 52 MAXIMUM SYSTEM CONFIGURATION GUIDELINES

Ordering the System Processor Unit

The Series 52 can be obtained by ordering either product number 32552C for new systems or 32552CH for box swap upgrades. The Series 42XP and Series 52 run MPE V/E as its standard operating system.

A field upgrade is available from a Series 39, 40, or 42 to a Series 42XP by ordering product number 30550A. A field upgrade is available from a Series 39, 40, or 42 to a Series 52 by ordering product number 30552C.

30552C

MPE Media Products

One MPE Media Product MUST be ordered with every HP 3000 system to designate MPE V/E and the media type (cartridge tape or 1600 bpi magnetic tape). The Media Product is 51450A. Option 602 designates the Series 42XP and Option 603 designates the Series 52. To designate cartridge tape, you must specify Option 022; for 1600 bpi magnetic tape media, you must order Option 051. The latest version of the Fundamental Operating Software (FOS) is specified by Option 200. Please see a current Corporate Price List for ordering other versions of FOS.

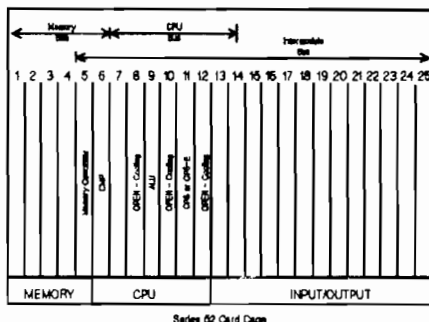
The Card Cage

The Series 42XP, 52 contain 25 slots.

Slots 1 through 5 support system memory modules and the memory controller which is configured in slot 5. Slots 6 through 12 house the CPU cards. (For the purpose of correct ordering, it is not necessary to be concerned with the configuration of cards in the CPU portion of the card cage.) Slots 13 through 25 support the following I/O cards: Asynchronous Data Communications Controllers (ADCCs), Advanced Terminal Processors (ATPs), General I/O Channels (GICs), Intelligent Network Processors (INPs), Local Area Network Interface Controllers (LANICs), and 261X Line Printer Interface (LPI) cards (26069A).

All slots supply power. Slots 1 through 5 connect to the memory bus, and slots 6 through 12 connect to the CPU bus. The Intermodule Bus (IMB) connects slots 5 through 25 providing communications between the I/O cards, the memory subsystem, and the CPU. The Series 42XP, 52 support only one IMB, and this IMB does not require an interface card in the card cage. (For a more extensive discussion of the function of the IMB, please see the IMB section in the Series 6x/7x maximum configuration guide.) The following figure depicts the Series 42XP, 52 card cage.

Please photocopy this page and use it as a worksheet:



Card Cage Restrictions:

- ADCC-Main and ADCC-Extender cards must be adjacent to each other in alternating fashion.
- ATP/SIB and ATP/AIB cards must be adjacent to each other.
- Include the two standard GICs and the required and separately ordered ADCC-Main in your configuration.
- The LANIC must be placed in the I/O portion of the card cage in any of slots 13 through 25.
- If there is a DMA-capable card (GIC, LANIC, SIB) in slots 13 and/or 14 then there must be a DMA-capable card in slot 15.

Series 42XP, 52 Memory Expansion

The Series 42XP, 52 come standard with 4 Mb of memory in the minimum configuration. System memory sizes of 4 Mb, 5 Mb, 6 Mb, 7 Mb and 8 Mb are supported. Memory can be expanded by ordering memory expansion modules including 1 Mb (30161A), 2 Mb (30173A or 30478A) and 4 Mb (30479A). A maximum of 4 memory boards are supported in the Series 42XP, 52 (see card cage).

Junction Panels

The Series 42XP, 52 does not have junction panels on the system cabinet. Cables connect directly to the edges of cards in the card cage and drop to the floor in the rear of the SPU. Cables from the ADCC cards terminate at small connection boxes that house four terminal ports and lie on the floor.

The ATP Expansion Packages (30273A or 30274A) provide a separate junction panel box which is connected by cables to the AIB cards.

LANIC

The Local Area Network Interface Controller (LANIC) is the hardware controller that interfaces to the Local Area Network (LAN). A LANIC uses one I/O card slot and connects to one LAN. A maximum of one LANIC per system is supported.

The LANIC cable attaches directly to the edge of the LANIC card, and the other end of the cable attaches to the frame at the bottom of the SPU cabinet in the rear. The LANIC is a high-speed channel which is placed on the Intermodule Bus (IMB). The other type of high-speed channel is a GIC with one or more high-speed devices attached. The Series 42XP, 52 systems can support one LANIC and up to two high-speed GICs.

General I/O Channels

A General I/O Channel (GIC) is a hardware controller used to interface HP-IB (IEEE 488 protocol) peripherals to the Series 42XP, 52. Each GIC is a board that uses one I/O card slot and supports one HP-IB cabling system. The number of peripherals which may be connected to a single GIC depends on maximum device limits, peripheral speed, cable length, and performance considerations. Please refer to the GIC discussion in the Chapter One Appendix for a complete explanation of these rules. Note that the internal HP-IB cabling length between the GIC and the outside of the system is 2m for the Series 42XP, 52.

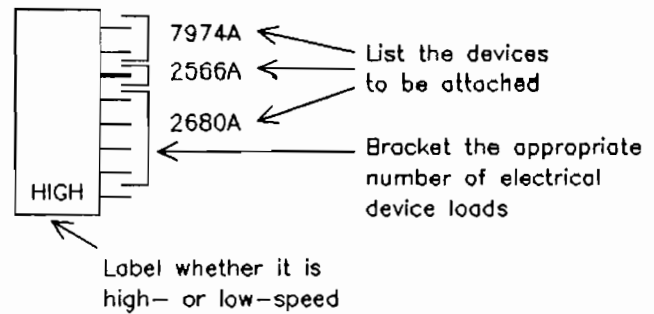
Order product 30079A to obtain additional GICs. You must also specify Option 040 to obtain the proper GIC cable for the Series 42XP, 52.

A maximum of four GICs are supported on the Series 42XP, 52. No more than two of these GICs may have high-speed devices attached to them. Please refer to the peripheral table in the Chapter One Appendix for a definition of high-speed devices and a high-low-speed classification of supported devices.

Summary: GIC Attachment Restrictions

- A maximum of six devices may be attached to a GIC with one or more high-speed devices attached.
- Unless other restrictions apply, low-speed peripherals can share a GIC with high-speed devices.
- Some low-speed devices require a dedicated GIC to which no other devices may be attached. (See the GIC Interface table in Chapter One Appendix.)
- The 2608A line printer cannot be attached to a GIC with high-speed devices.
- The 2608S line printer can share a GIC with all high-speed devices except the 7906M, 7920M, and 7925M family of disc drives.
- It is not recommended that the same GIC be used for connecting the main system backup tape drive and the system disc (LDEV1). System performance may be degraded with such a configuration when the tape drive is in use.

How to Use the GIC Worksheet



Please photocopy this page and use it as a GIC configuration worksheet:

S	
T	G
A	I
N	C
D	
A	1
R	
D	

S	
T	G
A	I
N	C
D	
A	2
R	
D	

O	
P	G
T	I
I	C
O	
N	3
A	
L	

O	
P	G
T	I
I	C
O	
N	4
A	
L	

Peripherals

Disc Drives

One 7945A (55 Mb), 7911P (28 Mb), 7912P (65 Mb), 7914P/CT (132 Mb), 7914TD (132 Mb), 7914ST (132 Mb), 7920M (50 Mb), 7925M (120 Mb), 7933H/35H (404 Mb), 7933XP/7935XP (404 Mb), 7937H/XP (571 Mb), 7936H/XP (307 Mb) 7957A (81 Mb) or 7958A (132 Mb) hard disc drive is required as the system disc (LDEV1).

The following table lists the maximum number of each type of disc drive that can be configured. When combining disc maximums, remember that only two high-speed GICs allowed with a maximum of six devices per high-speed GIC on a Series 42XP and 52.

Series 42XP, 52 Maximum Disc Drive Configuration:

7911P/7912P/7914P/7914TD/ 7914ST Discs w/Cartridge Tape	1
7914ST Storage Unit	4
7914TD Storage Unit	1
7914CT Storage Unit	4
Total 7911P/7912P Discs	4
 Total 7914P Discs	 8
 792x Master Discs	 2
 792x Slave Discs	 7
 7945A Disc	 4
 793xH Disc	 8
 793xXP Disc	 8
 795x Disc	 4
 Total Discs	 8

The 7920M and 7925M are master disc drives and can each support up to seven slave disc drives. These slave drives are ordered as 7920S or 7925S and do not have their own controllers. They connect to the controller in the master drive and

are not part of the HP-IB cabling. Consult the CE organization for proper interface and cabling requirements for 792x discs. The 7945A, 7911P, 7912P, 7914P, 7914TD, 7914CT, 7914ST, 793xH, 793xXP and 795x disc drives each have their own controllers.

Disc performance may vary depending on the specific configuration of discs, controllers, and GICs. Check with an HP performance specialist if you have performance concerns.

Integrated Storage Units

The 7911P, 7912P, and 7914P are integrated storage units that include both a Winchester disc drive and an integral cartridge tape unit standard. *Only one 7911P, 7912P, or 7914P with the cartridge tape unit is supported on the Series 42XP, 52.* A maximum of four 7911P or 7912P and a maximum of eight 7914P disc drives are supported. Because only one cartridge tape unit is allowed on the system, additional 7911P, 7912P, or 7914P units must be ordered with the cartridge tape delete Option, Number 140, specified.

The Winchester disc drive component in the 7911P, 7912P, and 7914P is shipped with a controller and a 1m HP-IB cable standard. If you order the cartridge tape unit on any of these integrated storage units, you must also order Option 001 which supplies a controller for the cartridge tape unit and a 1m HP-IB cable. *The cartridge tape unit requires its own dedicated GIC.*

The 7914TD and 7914ST combine into a single package a 7914 rackmounted disc drive, a half-inch tape drive, and an optional cartridge tape unit (Option 002). The 7914TD includes a 7970E master tape drive. The 7914ST includes a 7974A tape drive. A second 7914P type disc drive can be added to the same cabinet by specifying Option 114. (Option 114 will automatically delete the cartridge tape unit for the additional disc drive.) The 7914TD and 7914ST are supplied with HP-IB cables standard--one 2m cable for the disc drive, a 6m cable with the 7970E drive, or a 2m cable with the 7974A. When Option 002 is ordered, the cartridge tape drive, a controller, and a 1m HP-IB cable are shipped.

The 7914CT combines the 7914P disc drive with a 9144A cartridge tape unit which does not require a dedicated GIC or separate controller. Two 1m HP-IB cables are shipped with the 7914CT. The Series 42 supports up to four 7914CT drives.

Magnetic Tape Drives

An integrated cartridge tape unit or a 9144A, 35401A, 7970E, 7914TD, 7971A, 7974A, 7914ST, 7976A or 7978A/B magnetic tape drive is required for system backup and distribution of software updates.

Only one 7970E master tape drive can be configured on the Series 42XP, 52 and a dedicated GIC. Both the 7914TD and 7971A include 7970E tape drives. The 7914ST includes a 7974A tape drive. The 9144A, 7970E, 7974A, 7976A, and 7978A/B do not support slave drives; each drive has its own controller.

The following table lists the maximum number of each type of tape drive that can be configured. You may have *one* integrated cartridge tape drive (in 7911P, 7912P, or 7914P) in addition to these maximums.

Series 42XP, 52 Maximum Tape Drive Configuration:

9144A Cartridge Tape Drive	4
35401A Cartridge Autochanger Tape	2
7970E/7971A/7914TD Masters	1
7970E/7971A Slaves	3
7974A/7914ST Tape Drives	4
7976A Tape Drive	2
7978A/B Tape Drive	4
Total Tape Drives	4

The 7970E master tape drive comes standard with a 6m HP-IB cable.

The 7971A is a package of one or two 7970E tape drives in various master/slave drive configurations. Consult the CE organization for correct options. Note that the dual master drive 7971A Option 344 is not supported because only one master 7970E drive is allowed.

The 7974A, 7976A, and 7978A/B are shipped with a 2m HP-IB cable standard. When configuring a 7976A tape drive, consult the CE organization for proper interfaces and cables. The 7974A and 7978A/B do not require a system option. You must specify Option 800 to obtain the 800/1600 cpi capability on the 7974A.

The 9144A one-quarter inch cartridge tape drive is supported as a cold load device on the Series 42XP, 52 with CPS-E microcode installed. The 9144A is shipped without an HP-IB cable for GIC connection. See Chapter 4 for cable information.

The 35401A one-quarter inch cartridge autochanger tape subsystem is shipped with a 1m HP-IB cable.

System Printers

The following table lists the maximum number of each type of system printer that can be configured:

Series 42XP, 52 Maximum System Printer Configuration:

Line Printers:	
2608A/2608S	2
256x	4
2611A/2613A/2617A/2619A	2
Total Line Printers Supported	4
Intelligent Page Printers	
2680A	2
2688A	2(3)*
Total Page Printers	2(3)*
Total System Printers Supported	4

* HP-IB Extender support in parentheses.

The 261x family of line printers does not connect directly to a GIC; rather, each one uses a 1m HP-IB ribbon cable between the 26069A translator and the GIC card. The line printer itself can be up to 500 feet away. The printer is connected by a parallel differential current drive line to the interface card (26069A). Consult the CE organization for proper interface, internal cable and parallel differential cable requirements. Consult Boise Division for cable requirements beyond 15 meters.

The 2608A, 2608S, and 256x are dot matrix line printers that attach directly to GICs. They do not require an interface card in the I/O card cage. The standard 2608A includes an HP-IB interface and a 2m HP-IB cable. For the 2608S and 256x, order Option 340 to obtain the HP-IB interface and 4m HP-IB cable. Note that the 2608S cannot share a GIC with a 7906M, 7920M or 7925M disc drive. Furthermore, the 2608A cannot be configured on a GIC with high-speed devices attached.

Order Option 340 with the 2680A or 2688A to obtain the Series 42XP,52 subsystem with 8m HP-IB cable. Specify Option 099 with the 2680A to replace the 8m cable with a 2m cable. This option is not available on the 2688A. The 2680A and 2688A attach directly to a GIC and do not require an interface card in the I/O card cage.

The 256x, 2680A, and 2688A printers may be connected via HP-IB Extenders. See the HP-IB Extender section in the Chapter One Appendix.

Other Peripherals

Flexible Disc Drive

Only one 1.2 Mb flexible disc drive is supported. Product 9895A must have Option 010 to specify a single master drive. The flexible disc drive attaches to a GIC. Order the HP-IB cable separately.

Card Reader

The 30106A 80-column card reader interfaces to the Series 42XP,52 through a dedicated GIC. You must have either Option 333 or the 30309A

upgrade kit to provide a 2m HP-IB cable. When a card reader is configured on the system, a power line conditioner is required. The 30106A and 30309A are no longer orderable. (They will be supported until December 31, 1989.)

Power Line Conditioners

In many areas AC power line disturbances can interfere with system operation, and possibly cause 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 through local third parties.

Multiple System Access Selector

The 26075A Multiple System Access Selector is a switch box that allows up to three HP 3000s to share either a 2680A or a 7976A. An operator can manually switch the peripheral to be active on any one of the sharing systems. A maximum of one (1) 26075A may be connected to a system. Other devices on the same GIC must be "downed" when switching the 26075A. Therefore, the switchbox cannot be on the same GIC as a disc drive. When determining HP-IB cable length, include 0.5m for the 26075A.

Data Communications



Terminal Connection

Point-to-point connections are made to the Series 42XP, 52 through either the Asynchronous Data Communications Controller (ADCC) or the Advanced Terminal Processor (ATP). The ADCC and ATP support local (RS-232) and remote (full duplex) terminal and serial printer connections. The ATP also supports local RS-422 point-to-point connections. ATP support is provided only through the ATP Expansion Package (30273A or 30274A).

Multipoint connections are made through the MTS Modem Link or the MTS Data Link in combination with Multipoint Terminal Support Service software.

The Link products provide an Intelligent Network Processor (INP) board and related cables. The following table summarizes the number of terminals supported on the Series 42XP, 52, with and without the ATP Expansion Package:

Series 42XP, 52 Maximum Terminal Configuration:

	ADCC Only	ADCC/ ATP EXP
Direct Connect		
via ADCC	32	32
via ATP	0	48
total direct connect	32	60
Modem Connect		
via ADCC	31	32
via ATP	0	24
total modem connect	31	44
Multipoint	55	55
Maximum Terminal Support	56	92

There are a total of 8 I/O slots available for terminal connections. One of these slots must be reserved for an ADCC main to support the system console.

All 56 or 92 terminals can be logged on when the system is running either MPE V/P or MPE V/E. The maximum of 56 or 92 terminals includes all point-to-point, multipoint, system console, DS virtual, and X.25 PAD terminals. The number of terminals per multipoint line is normally determined by response time considerations, but may be restricted by the specific cabling option chosen. You may also use the 2333A multipoint or 2334A X.25 cluster controllers. The 2333A permits a group of up to 16 point-to-point devices to communicate with the system via the Data Link or via modems and phone lines. The 2334A permits a group of up to 16 devices to communicate via X.25 Packet Switched Networks.

Support Link Modem

Under the HP Remote Support Program, all new (non-upgrade) systems are shipped with a free HP Support Link Modem (35031A).

System Console

The system console MUST be configured on an ADCC. One point-to-point connected 262x or 2392A terminal must be ordered as the system console. A cable must also be ordered; order Option 301/303/305 for direct connect RS-232, Option 301 for U.S. modem connect, or Option 302 for Europe modem connect cables. (Remanufactured 2382AR, 264XR and 2635BR terminals are supported as system consoles and are orderable through FRD.)

Asynchronous Data Communications Controller

The ADCC on the Series 42XP, 52 consist of two products: the ADCC-Main (30018A) and the ADCC-Extender (30019A). Option 040 must be ordered with each of these products to obtain the correct internal cable. Each ADCC card uses one slot in the I/O section of the card cage. ADCC-Mains and ADCC-Extenders must be ordered (and installed) in alternating fashion (e.g. Main, Extender, Main, Extender, etc.). Each ADCC supports four RS-232 devices. The Series 42XP, 52 support a maximum of eight ADCCs (32 devices). *A minimum of one ADCC-Main MUST be ordered with the system to attach the system console and up to three other RS-232 devices, including the Support Link Modem.*

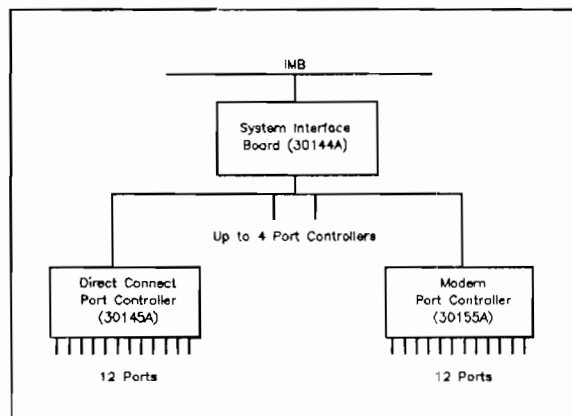
Advanced Terminal Processor

The ATP on the Series 42XP, 52 is obtained by ordering either the ATP Direct Connect Expansion Package (30273A) or the ATP Modem Expansion Package (30274A). Each Expansion Package contains the System Interface Board (SIB), one Port Controller (either Direct Connect or Modem) which includes the Asynchronous Interface Board (AIB), and a free-standing junction panel box. The minimum ATP configuration supports twelve terminals and requires two card slots in the I/O section of the card cage. Additional ports can be obtained in groups of twelve by ordering either the ATP Direct Connect Port Controller (30145A) or the ATP Modem Port Controller (30155A). Option 042 must be ordered with each of these products to provide the correct internal cable. Each Direct Connect Port Controller (AIB) supports both RS-232 and RS-422 terminal connections. Twelve RS-422 ports are provided standard with each AIB, but they can be converted to RS-232 ports in groups of four by ordering Option 002. For example, to get a Direct Connect Port Controller with twelve RS-232 ports, you would order one 30145A with three Option 002s.

The SIB and AIB each require a card slot in the I/O section of the card cage. Each AIB includes a terminal port miniboard which uses one junction panel cutout in the free-standing junction panel box. The Series 42XP, 52 support a maximum of four Direct Connect, two Direct Connect with one Modem, or two Modem Port Controllers (including the ATP Expansion Package).

ATP Subsystem Structure on Series 42XP, 52

With the ATP Expansion Package



Output Spooling

For a discussion of output spooling and a description of spooled device categories, please see the section on Output Spooling in the Series 6x/70 maximum configuration guidelines. Information on MTS printers can also be found in that section. The following table indicates the maximum number of spooled devices supported:

Series 42XP, 52 Maximum Spooled Device Configuration:

SYSTEM PRINTERS:

Line Printers: (HP-IB)	
2608A/2608S	2
256x	4
261x	2
Total Line Printers	4

Page Printers:

2680A	2
2688A	2(3)*
Total Page Printers	2(3)*

Total System Printers 4

SERIAL PRINTERS:

2601A/2602A/2603A/2631B	8
2932A/2933A/2934A	8
2563A/B/2564B (ADCC/ATP)	1(3)**
2686A/D/33440A	1(2)**
2687A Page Printer (ADCC/ATP)	1(2)**

Total Serial Connected Printers: 8

* HP-IB Extender support in parentheses.

** Two 2687As, two 2686A/D/33440As or three 2563As/2564Bs are supported when connected to the ATP, while only one is supported on the ADCC. The ATP uses direct memory access when offloading spoolfiles while the ADCC must run channel programs. Therefore, the ATP is more efficient and puts a smaller burden on the CPU.

The spooled device support numbers stated in the table above are based on performance considerations. If the system is running **MPE V/P**, operating system table sizes could limit the number of simultaneously active spooled printers.

In order to determine the maximum number of spooled devices which can be configured on an **MPE V/P** system, the following formula must be used:

Max. Spooled Devices =

$$[256 - (1.25 \times \text{\#Sessions and Jobs}) - \text{\#INPs}] / 16$$

where:

\#Sessions and Jobs = the maximum number of sessions and jobs which will be supported on the system

\#INP = the number of Network Links (INPs) which will be configured on the system

After plugging in the values for the number of sessions and jobs and also the number of INPs, the maximum number of spooled devices will have been derived. *Take the result and round it down to the nearest whole number.* It is evident from this formula that the number of spooled devices a system can support will vary with the customer's configuration and application mix.

With the expanded tables of **MPE V/E**, there is no longer a software tables limitation that further restricts the number of spooled devices on a Series 42XP, 52 running **MPE V/E** *beyond the number of devices listed in the table above.* System performance considerations are responsible for restricting the number of spooled devices to these limits. Note that the appropriate table structure must be configured for this number of spooled devices to be supported.

Serial Printers and Plotters

The Series 42XP, 52 supports up to eight remote spooled 293x or 2631B serial printers through the ADCC or through the ATP via RS-232-C connections. When used as remote spooled printers, they are connected to an ADCC or ATP direct connect port via hardwired cable or to an ADCC or ATP modem port via a modem. 2631B printers must include Option 331 to obtain the RS-232-C remote spooled printer capability.

The Series 42XP, 52 can support 2601A, 2602A and 2603A daisywheel printers via the ADCC or ATP through local direct connection only. Modem connection is not supported. The 2601A, 2602A, 2603A, 2631B, and 293x printers can also be attached as slave devices to terminals under the control of application programs.

The 2563A/B/2564B line printer is also supported on the Series 42XP, 52 in a serial configuration. RS-232-C (ADCC/ATP) and RS-422 (ATP) hardwire connections are available; modem connections are not supported. One must specify Option 049 for RS-232-C and Option 050 for RS-422 interfaces in the 2563A/B/2564B printer. Cables must be ordered separately; refer to Chapter 4 for further details. Do not order the subsystem option (Option 340) for the 2563A/B/2564B when it is being used as a serial printer.

The 2686A/D/33440A is supported via hardwired RS-232-C connection. Remote operation over modem is not supported.

The 2687A laser printer is only available as a serial printer. RS-232-C hardwired connection is supported, but modem connection is not available. Option 340 must be specified to obtain the Series 42XP, 52 subsystem. Cables need to be ordered separately; please refer to Chapter 4 for a list of available cables for the 2687A.

HP plotters can be configured as remote RS-232 devices, as slave devices to terminals and personal computers, or as eavesdrop devices between the terminal and the ADCC or ATP. As slave devices, both HP-IB and RS-232-C connections may be possible depending upon the individual plotter. Only RS-232-C connections are available in an eavesdrop configuration or when connected point-to-point to an ADCC or ATP.

Network Link Products (INPs)

A maximum of three Network Link products may be used concurrently on a Series 42XP, 52. Any of links can be supported, but only three sets of Link hardware may be installed and/or configured. Each Network Link provides one communication line for use by one or more of the Network Services (DS, RJE, MRJE, IMF, NRJE, MTS, or NS).

Each set of Link hardware includes an Intelligent Network Processor (INP), and requires one I/O card slot in the card cage. The INP counts as one device load on a GIC and is considered a low-speed device.

A 1m HP-IB ribbon cable is included for connecting the INP to a GIC. An external cable is also included but must be specified by a particular option when ordering, based on the connection desired. Please refer to the latest HP 3000 Price Guide for a complete list of options.

Series 42XP, 52 Configuration Worksheet

Product Number	Description	Quantity
----------------	-------------	----------

I. System Processor Unit.

32552C	Series 52 System Processor	1A _____
30550A	Series 39, 40, and 42 to S/42XP field upgrade	1B _____
30552C	Series 39,40, and 42 to S/52 field upgrade	1C _____

MPE MEDIA PRODUCT

A Media Product must be ordered with each HP 3000 system. Media Products for Series 42XP, 52 systems contain version options and media options which must be selected to properly specify the correct FOS for your customer. Options indicated below apply to both 51450A and 51451A.

51450A	MPE V/E Media Product	1D _____
Opt. 2xx	MIT Release	1E _____
Opt. 602	Series 4x SPU	1F _____
Opt. 603	Series 5x SPU	1G _____

II. Memory Expansion.

Total Memory Size (Standard memory on a Series 52 is 4 Mb, and 2 Mb on 42XP. Both support MAX= 8 Mb. 256 Kb configurations are not supported).

2A _____

For configurations above the standard memory support, please refer to the Memory Expansion section in the text to decide which are the appropriate options or products to order.

32552C Opt. 502	Add-on 2 Mb memory	2B _____
Opt. 503	Add-on 4 Mb memory	2C _____
30550A Opt.502	Add-on 2 Mb memory	2D _____
30161A	1 Mb Memory Module for Series 4x	2E _____
30273A	2 Mb Memory Module for Series 5x	2F _____

Series 42XP, 52 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

II. Memory Expansion (Cont.)

30478A	2 Mb Memory Module for Series 4x, 5x	2G _____
30479A	4 Mb Memory Module for Series 4x, 5x	2H _____

III. Disc Drives.

A. Storage Units *with Integrated Cartridge Tape.*

One of the following may be included:

7911P	28 Mb Integrated Storage Unit <i>with</i> Cartridge Tape (Option 001) (MAX=1) (Two 1m HP-IB cables are included.)	3A _____
-------	--	----------

7912P	65 Mb Integrated Storage Unit <i>with</i> Cartridge Tape (Option 001) (MAX=1) (Two 1m HP-IB cables are included.)	3B _____
-------	--	----------

7914P	132 Mb Integrated Storage Unit <i>with</i> Cartridge Tape (Option 001) (MAX=1)* (Two 1m HP-IB cables are included.)	3C _____
-------	--	----------

* If ordered with Series 42XP, 52 SPU, please specify Option 014 with product 32542B to receive the packaged system discount.

7914ST Opt. 002	132 Mb Mass Storage Subsystem <i>with Integrated</i> Cartridge Tape (Option 002) (MAX=1) Because the 7914ST may combine a Cartridge Tape, a 1/2" tape drive, and one or two disc drives into a single package, you need to check Lines 5B and 11D to ensure that the totals for those lines do not violate device support maximums. HP-IB cables are included with each storage unit: cartridge tape (1m), disc drive (2m), and tape drive (2m). (Also enter on line 11D in Tape Drive section.)	3D _____
--------------------	--	----------

7914TD Opt. 002	132 Mb Mass Storage Subsystem <i>with Integrated</i> Cartridge Tape (Option 002) (MAX=1) Because the 7914TD may combine a Cartridge Tape, a 1/2" tape drive, and one or two disc drives into a single package, you need to check Lines 5C and 11B to ensure that the totals for those lines do not violate device support maximums. HP-IB cables are included with each storage unit: cartridge tape (1m), disc drive (2m), and tape drive (6m). (Also enter on line 11B in Tape Drive section.)	3E _____
--------------------	--	----------

	Total Integrated Storage Units <i>with Integrated Cartridge Tape</i> (Sum of Lines 3x, MAX=1)	3 _____
--	---	---------

Series 42XP, 52 Configuration Worksheet

Product Number	Description	Quantity
B. Mass Storage Products (No Integrated Cartridge Tape).		
7911P	28 Mb Integrated Storage Unit (Option 140, Cartridge Tape Deleted, MAX=4) (A 1m HP-IB cable is included.)	4A _____
7912P	65 Mb Integrated Storage Unit (Option 140, Cartridge Tape Deleted, MAX=4) (A 1m HP-IB cable is included.)	4B _____
	Total 7911P/7912P Disc Drives (Sum of Lines 3A, 3B, 4A and 4B, MAX=4)	4 _____
7914P	132 Mb Integrated Storage Unit (Option 140, Cartridge Tape Deleted) (A 1m HP-IB cable is included.)	5A _____
7914ST Discs	132 Mb Mass Storage Subsystem (MAX=4) (Without Option 114, this subsystem contains one drive. With Option 114, the subsystem contains two drives. Enter the total number of disc drives on Line 5B. The number of 7914ST products ordered may be less depending on the number of subsystems with two drives.) (For cabling information, see Line 3D.) (Also enter on line 11D in Tape Drive section)	5B _____
7914TD Discs	132 Mb Mass Storage Subsystem (MAX=1) (Without Option 114, this subsystem contains one drive. With Option 114, the subsystem contains two drives. Enter the total number of disc drives on Line 5C. (For cabling information, see Line 3E.) (Also enter on line 11B in Tape Drive section)	5C _____
7914CT	132 Mb Integrated Storage Unit Containing 9144A Cartridge Tape (MAX=4) (Includes two 1m HP-IB cables.) (Also enter on line 11A in Tape Drive Section.)	5D _____
	Total 7914P/14TD/14ST/14CT Type Disc Drives (MAX=8, Total of Lines 3C, 3D, 3E, and 5x)	5 _____
7920M	50 Mb Master Disc Drive (A 2m HP-IB cable is included with Option 102.)	6A _____
7925M	120 Mb Master Disc Drive (A 2m HP-IB cable is included with Option 102.)	6B _____
	Total 7920/25 Master Disc Drives (Sum of Lines 6x) (MAX=2)	6 _____

Series 42XP, 52 Configuration Worksheet

Product Number	Description	Quantity
7920S	50 Mb Slave Disc Drive (A 2.4m multiunit cable and a 15.2m data cable are included.)	7A _____
7925S	120 Mb Slave Disc Drive (A 2.4m multiunit cable and a 15.2m data cable are included.)	7B _____
	Total 7920/25 Slave Disc Drives (Sum of Lines 7x, MAX=7. This maximum would also require a 7920/25 Master Disc Drive because a master drive is required to support up to seven Slave Drives.)	7 _____
7945A	55Mb Winchester Disc Drive (Includes 1m HP-IB Cable) (MAX=4)	8 _____
7933H/ 7935H	404 Mb Disc Drive (MAX=8) (A 1m HP-IB cable is included.)	9A _____
7936H	307 Mb Disc Drive (MAX=8) (a 1m HP-IB cable is included)(MAX=8)	9B _____
7937H	571 Mb Disc Drive (MAX=8) (a 1m HP-IB cable is included)	9C _____
7933XP/ 7935XP	404 Mb Disc Drive with 1 Mb Cache (MAX=8) (A 1m HP-IB cable is included.)	9D _____
7936XP	307Mb Disc Drive with 2Mb Cache (a 1m HP-IB cable is included) (MAX=8)	9E _____
7937XP	571Mb Disc Drive with 2Mb Cache (a 1m HP-IB cable is included)	9F _____
7957A	81 Mb 5 1/4" Disc Drive (MAX=4)(a 1 Mb HP-IB cable is included)	9G _____
7958A	130 Mb 5 1/4" Disc Drive (MAX=4) (a 1 Mb HP-IB cable is included)	9H _____
	Total 793x and 795x Disc Drives (sum of lines 9x, MAX=8)	9 _____
	Total Disc Drives and Integrated Storage Units (Sum of Lines 4, 5, 6, 7, 8, 9; MAX=8)	10 _____

Series 42XP, 52 Configuration Worksheet

Product Number	Description	Quantity
IV. Magnetic Tape Drives.		
9144A/ 7914CT	One-quarter (1/4) inch Cartridge Tape Drive (Order cable separately with 9144A. Two 1m HP-IB cables included with 7914CT.) (MAX=4)	11A _____
35401A	One-quarter (1/4) inch Cartridge Autochanger Tape Subsystem (MAX=2) (a 1m HP-IB cable is included)	11B _____
7970E/ 7971A/ 7914TD	1600 cpi Master Tape Drive Subsystem (MAX=1, each master supports up to three Slave Tape Drives; each tape drive includes a 6m HP-IB cable.) (Also, enter 7914TD on line 3E or 5C in Disc Drive Section.)	11C _____
7970E	Slave Tape Drive Subsystem (MAX=3); A 6.1m multiunit cable is included.	11D _____
7974A/ 7914ST	1600 cpi (800 cpi optional) Magnetic Tape Subsystem (MAX=4); A 2m HP-IB cable is included. (Also enter 7914ST on line 3D or 5B in Disc Drive Section.)	11E _____
7978A/ 7978B	6250/1600 cpi Magnetic Tape Subsystem (MAX=4); A 2m HP-IB cable is included.	11F _____
Total Magnetic Tape Drives (Sum of Lines 11x, MAX=4)		11 _____

Series 42XP, 52 Configuration Worksheet

Product Number	Description	Quantity
V. System Printers.		
2608S	400 lpm Dot Matrix Printer (MAX=2) Option 340 includes a 4m HP-IB cable.	12A _____
256x	300, 600, 900, 1200 and 1600 lpm Dot Matrix Printers (Option 340); (MAX=4); a 4m HP-IB cable is included.	12B _____
261xA	Line Printer Series (e.g., 2611A and 2619A) (MAX=2) (A 15m parallel differential cable is included with Option 340.)	12C _____
	Total Line Printers (Sum of Lines 12x, MAX=4)	12 _____
2680A/ 2688A	Intelligent Page Printers (MAX=2) (An 8m HP-IB cable is included with Option 340.) See the discussion in Chapter One Appendix regarding the connection of printers via HP-IB Extenders.	13 _____
	Total System Printers (Sum of Lines 12 and 13, MAX=4)	14 _____

VI. Serial Printers.		
2601A	40 cps Daisywheel Printer (MAX=8); (2601A includes RS-232 cable.)	15A _____
2602A	25 cps Daisywheel Printer (MAX=8); (order cable separately.)	15B _____
2603A	48 cps Daisywheel Printer (MAX=8); (order cable separately.)	15C _____
293x	200 cps Dot Matrix Printer (MAX=8); (Order cable separately.)	15D _____
2563A/B 2564B	Dot Matrix Printer (Option 049 for RS-232 or Option 050 for RS-422); (MAX=1 with ADCC and 3 with ATP); (order cable separately.)	15E _____
2686A/D 33440A	8ppm Laser Page Printer; (MAX=1 with ADCC or 2 with ATP); (order cable separately.)	15F _____
2687A	12ppm Laser Page Printer (Option 340); (MAX=1 with ADCC or 2 with ATP); (order cable separately.)	15G _____
	Total Serial Printers (Sum of lines 15x, MAX=8)	15 _____

Series 42XP, 52 Configuration Worksheet

Product Number	Description	Quantity
VII. Other Peripherals.		
9895A	Flexible Disc Drive (Option 010, MAX=1) (Order HP-IB cable separately.)	16 _____
26075A	Multiple System Access Selector (MAX=1); (order cables separately.)	17 _____

Series 42XP, 52 Configuration Worksheet

VIII. Data Communications.

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

NOTE: Cabling must be ordered separately for these devices!

Product	Connection Method				Terminal Attached
	Daisychain* Multipoint	ADCC/ATP Modem	Pt-to-Pt with ATP or ADCC		
			ATP Type 422	ADCC/ATP Type 232-C	
Display Terminals					
239x	N/A*	_____	_____	_____	N/A
2623A	N/A*	_____	_____	_____	N/A
2624B	_____	_____	_____	_____	N/A
2625A	_____	_____	_____	_____	N/A
2626A	_____	_____	_____	_____	N/A
2626W	N/A**	_____	_____	_____	N/A
2627A	N/A*	_____	_____	_____	N/A
2628A	_____	_____	_____	_____	N/A
Plotters					
7440A	N/A	_____	N/A	_____	_____
7470A	N/A	_____	N/A	_____	_____
7475A	N/A	_____	N/A	_____	_____
7510A	N/A	_____		_____	_____
7550A	N/A	_____	N/A	_____	_____
7570A	N/A	_____	N/A	_____	_____
7580A/B	N/A	_____	N/A	_____	_____
7585A/B	N/A	_____	N/A	_____	_____
7586B	N/A	_____	N/A	_____	_____
Data Collection Terminals					
3075A	_____	_____	N/A	_____	N/A
3076A	_____	_____	N/A	_____	N/A
3077A	_____	_____	N/A	_____	N/A
3081A	_____	_____	N/A	_____	N/A
Subtotal (this page)	18A _____	19A _____	20A _____	21A _____	22A _____

* The 2333A and 2334A Cluster Controller will support any RS-232-C device except the 2635B and 2382A.

** 2626W works as a multipoint terminal but not with HPWORD.

Series 42XP, 52 Configuration Worksheet

	Connection Method				
		Pt-to-Pt with ATP or ADCC			
			Direct Connect		
Product	Daisychain* Multipoint	ADCC/ATP Modem	ATP Type 422	ADCC/ATP Type 232-C	Terminal Attached
Serial Printers**					
2932A	_____	_____	_____	_____	_____
2934A	_____	_____	_____	_____	_____
2563A/B	_____	N/A	_____	_____	N/A
2564B	N/A*	N/A	_____	_____	N/A
2601A	N/A*	N/A	N/A	_____	_____
2602A	N/A	N/A	N/A	_____	_____
2603A	N/A	N/A	N/A	_____	_____
Page Printers**					
2686A/D	N/A	N/A	N/A	_____	N/A
2687A	N/A	N/A	N/A	_____	N/A
33440A	N/A	N/A	N/A	_____	N/A
Personal Office Computers					
Touchscreen (150x)	N/A*	_____	_____	_____	N/A
Portable Plus	N/A*	_____	N/A	_____	N/A
VECTRA	N/A*	_____	_____	_____	N/A
Subtotal (this page)	18B _____	19B _____	20B _____	21B _____	22B _____
Subtotal (previous page)	18A _____	19A _____	20A _____	21A _____	22A _____
Totals (both pages)	18 _____	19 _____	20 _____	21 _____	22 _____

Line 18: MAX = 55

Line 19: MAX = 44

Sum of lines 19, 20, and 21: MAX = 60

Sum of lines 18, 19, 20, and 21: MAX = 92

Sum of lines 20 and 21: MAX = 60

* The 2333A and 2334A Cluster Controller will support any RS-232-C device except the 2635B and 2382A.

** Note device maximums in Section VI of the worksheet.

Series 42XP, 52 Configuration Worksheet

**Product
Number**

Description

Quantity

B. ATP Advanced Terminal Processors

The Series 42XP, 52 supports one (1) ATP Expansion Package for ATP support. Either the 30273A Direct Connect ATP Expansion Package or the 30274A Modem Connect Expansion Package can be used. Each includes the first Direct Connect or Modem Port Controller (12 ports) plus one System Interface Board (SIB). Additional Port Controllers may be ordered for the Series 42XP, 52 up to the following maximum combinations which include the initial 12 ports: 1) Maximum of four Direct Connect Port Controllers; 2) Maximum of two Direct Connect Port Controllers with one Modem Port Controller; 3) Maximum of two Modem Port Controllers.

Step #1:

Determine the number of ATP modem ports needed from line 19 (MAX=24).

23A _____

Determine the number of ATP direct connect ports needed (Sum of line 20 and line 21 (MAX=48)).

23B _____

(Note: The above maximums may not be reached simultaneously.)

Step #2:

Determine what products you should order using the following table. Select the appropriate column and row corresponding to your modem and direct connect port requirements and order the products indicated at their intersection. (Unused modem ports may be used for RS-232-C direct connections.)

Series 42XP, 52 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

ATP Direct Connect Port Controllers Required	ATP Modem Port Controllers Required		
	0 (0 ports)	1 (up to 12 ports)	2 (up to 24 ports)
0 (0 ports)		1 30274A 1 Opt. 042	1 30274A 1 Opt. 042 1 30155A 1 Opt. 042
1 (up to 12 ports)	1 30273A 1 Opt. 042	1 30274A 1 Opt. 042 1 30145A 1 Opt. 042	Not Supported
2 (up to 24 ports)	1 30273A 1 Opt. 042 1 30145A 1 Opt. 042	1 30274A 1 Opt. 042 2 30145A 2 Opt. 042	Not Supported
3 (up to 36 ports)	1 30273A 1 Opt. 042 2 30145A 2 Opt. 042	Not Supported	Not Supported
4 (up to 48 ports)	1 30273A 1 Opt. 042 3 30145A 3 Opt. 042	Not Supported	Not Supported

** Note that additional direct connect and modem ports may be connected using the ADCC. (See Section C.)*

30274A	Modem Connect ATP Expansion Package (Option 042) includes 12 modem ports and one SIB. (MAX=1).	24A _____
30155A	ATP Modem Port Controller provides 12 RS-232 modem ports (Option 042).	24B _____
30273A	Direct Connect ATP Expansion Package (Option 042) includes 12 RS-422 ports and one SIB. (MAX=1).	24C _____
30145A	ATP Direct Connect Port Controller provides 12 RS-422 ports (Option 042).	24D _____

Series 42XP, 52 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

Step #3:

For each 30273A and 30145A ordered above, you must order the appropriate number of Options 002 in order to obtain the right mix of RS-232-C versus RS-422 ports from line 20. Each Direct Connect Port Controller and Expansion Package comes standard with 12 RS-422 terminal connections. They are converted to RS-232 connections in groups of four by ordering Option 002 as indicated in the matrix below:

For each 30273A or 30145A (24C and 24D):

# Options 002	# RS-422 ports	# RS-232-C ports
0	12	0
1	8	4
2	4	8
3	0	12

Total Option 002s

24E _____

C. ADCC Asynchronous Data Communications Controller

If you require more than 24 modem ports or more than 48 direct connect ports, you must order the ADCC. At a minimum, you must order one (1) ADCC-Main to support the system console; it cannot be supported on the ATP.

ADCC ports required (Total of lines 19 and line 21 minus the number of RS-232-C ATP ports configured (line 24E multiplied by "4") and modem ATP ports configured (lines 24A and 24B multiplied by "12")). If zero, enter "1" for System Console.

25 _____

Total ADCC-Main and ADCC-Extender cards required (Divide line 25 by "4" and round up to the nearest integer; MIN=1; MAX=8)

26 _____

30018A ADCC-Main (Divide line 26 by "2" and round up to the nearest integer; internal cables included with Option 040; external cables for devices must be ordered separately.)

27 _____

30019A ADCC-Extender (line 26 minus line 27) (Internal cables included with Option 040; external cables for devices must be ordered separately.)

28 _____

Series 42XP, 52 Configuration Worksheet

Product Number	Description	Quantity
IX. Network Links (INPs).		
	HP to HP System Lines (30270A, 30271A, 32187A, 32188A)	29A _____
	HP to IBM System Lines (30246A, 30251A)	29B _____
	Multipoint Lines (32026A, 32027A, 32028A)	29C _____
	Local Area Network (30242A) (MAX=1)	29D _____
	Total number of Links (INPs) (Sum of lines 29A, 29B, and 29C; MAX=3)*	29 _____

* Additional Links without hardware (Option 390) may be supported.

X. I/O Expansion.

A. General I/O Channels (GICs)

To determine the number of GICs required on the system, refer to the discussion on GICs in the Series 42XP, 52 maximum system configuration section of this chapter.

(Note: To configure GICs you must take into consideration peripheral speed, electrical device loads, cable lengths, peripheral incompatibilities and system performance. These are discussed in detail in the Chapter One Appendix.)

A figure showing four (4) GICs has been included in the GIC section of this chapter for your use as a configuration worksheet.

30079A	Optional GICs (MAX=2). Two GICs are shipped standard with a new system order; box swap upgrade systems do not include the two standard GICs. Internal cables are included by ordering Option 040; external HP-IB cables are supplied with devices unless otherwise indicated.	30 _____
---------------	---	----------

B. Junction Mounting Panels

The Series 42XP, 52 SPU only requires junction mounting panels when ATPs are configured. The ATP Expansion Package provides sufficient space on its junction mounting panel for the supported ATP configurations.

Series 42XP, 52 Configuration Worksheet

**Product
Number**

Description

Quantity

C. I/O Card Slots

The sum of:

Line 12C -- 261x Line Printer Interface	31A	_____
Line 29 -- Network Links (INPs)	31B	_____
Line 26 -- ADCC Cards	31C	_____
Line 24B -- Modem Port Controllers (AIBs)	31D	_____
Line 24D -- Direct Connect Port Controllers (AIBs)	31E	_____
Port Controller provided with ATP Expansion Package (line 24A <u>or</u> line 24C)	31F	_____
One SIB provided with ATP Expansion Package (Enter zero (0) if both Line 31D and Line 31E are blank; otherwise, enter one (1).)	31G	_____
Line 30 -- Optional GICs	31H	_____
Standard GICs (2)	31I	_____
Line 29D - LANIC	31J	_____
Total of Lines 31x; MAX=13	31	_____



Series 48

Minimum System Configuration	1-101
Maximum System Configuration	
Ordering the SPU	1-102
MPE Media Products	1-102
The Card Cage	1-102
Memory Expansion	1-103
Junction Panels	1-104
LANIC	1-105
General I/O Channels	1-105
Peripherals	
Disc Drives	1-107
Integrated Storage Units	1-107
Magnetic Tape Drives	1-108
System Printers	1-108
Other Peripherals	
Flexible Disc Drive	1-109
Card Reader	1-109
Power Line Conditioners	1-109
Multiple System Access Selector	1-109
Data Communications	
Terminal Connection	1-109
Support Link Modem	1-110
System Console	1-110
ADCC	1-110
ATP	1-110
Output Spooling	1-112
Serial Connected Printers and Plotters	1-113
Network Links/INPs	1-113
Configuration Worksheets	1-114



HP 3000 SERIES 48 MINIMUM SYSTEM CONFIGURATION

Supplied Hardware

- Central Processing Unit.
- System Clock.
- Control and Maintenance Processor.
- Two General I/O Channels (GICs) for System Disc and Backup Tape Drive. (These GICs are not included with box swap system upgrades.)
- 2 Mb Fault Control Memory with Controller.
- System Mainframe Cabinet including Card Cages and Power Supplies supporting the CPU, up to 4 Mb Memory, and 26 I/O Card Slots.
- Built-in Isolation Transformer.
- Support Link Modem.

Additional Required Hardware:

- System Console: Any 262x or 239x terminal.
- System Console Cable: See Chapter 4.
- One System Disc: 7945A, 7920M, 7925M, 7957A, 7958A, 7933H/XP, 7935H/XP, 7936H/XP or 7937H/XP Master Disc Drive or 7911P, 7912P, 7914P, 7914CT, 7914TD or 7914ST Integrated Storage Unit.
- One Asynchronous Data Communications Controller (ADCC-Main) to connect the console to the system.
- One Magnetic Tape Drive for System Backup: 7914TD, 7914ST, 7970E, 7971A, 7974A, or 7978A/B.

Supplied Software

Standard on each HP 3000 system is the Fundamental Operating Software which includes:

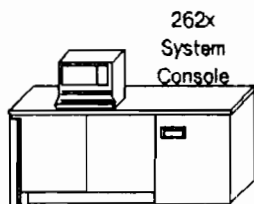
- Multiprogramming Executive (MPE) Operating System.
- Text Editor (EDIT/V).
- File Copying Utility (FCOPY/V).
- Sort and Merge Package (SORT-MERGE/V).
- Data Base Mgmt. System (TurboIMAGE/V).
- Data Base Inquiry Language (QUERY/V).
- Data Entry and Forms Management Software (VPLUS/V).
- Keyed Sequential Access Method Software (KSAM/V).
- A complete User Manual Set is supplied with the system hardware. (For a Manual Listing, please see the chapter on Manuals.)

All of the Fundamental Operating Software is included in the system, but still must be ordered separately. Please see the section on MPE Media Products. Note: Series 48 systems may select previous MITs; however, only U-MIT or later support TurboIMAGE.

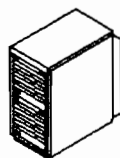
The Series 48 also includes Disc Caching, an I/O performance product, which is not a part of the Fundamental Operating Software.

Note that the customer and CE need to work together on site preparation prior to system installation.

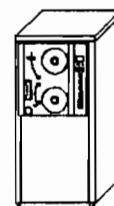
HP 3000 SERIES 48 SYSTEM CONFIGURATION EXAMPLE



HP 3000
Series 48



7936H
307 Mb
Fixed Disc Drive



7974A
1600 bpi
Tape Drive

HP 3000 SERIES 48 MAXIMUM SYSTEM CONFIGURATION GUIDELINES

Ordering the System Processor Unit (SPU)

To obtain the Series 48 System Processor Unit order product number 32548B for new systems or 32548BH for box swap upgrades.

The Series 48 runs MPE-V/E with disc caching as its standard operating system. MPE-V/E, Option 410 will need to be ordered to use the expanded table capabilities.

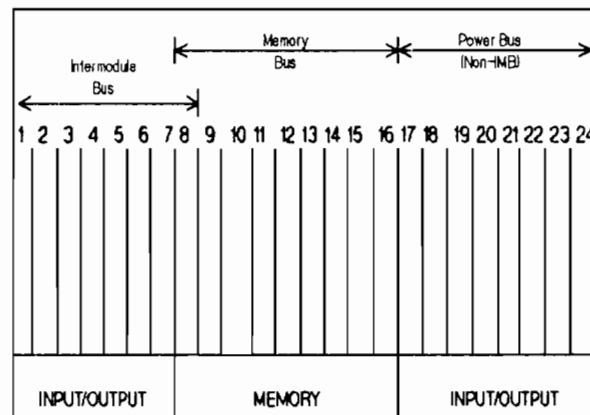
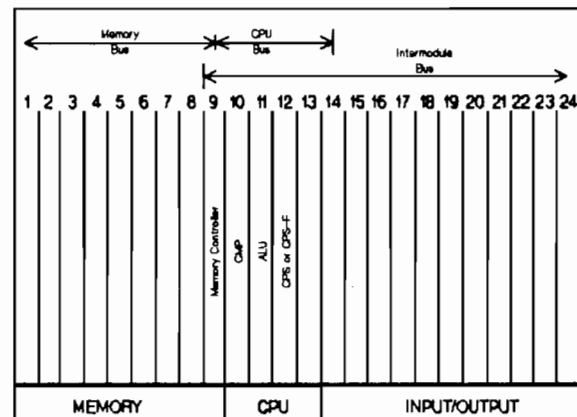
MPE Media Products

One MPE Media Product must be ordered with every HP 3000 system to designate V/E MPE and the media type (cartridge tape or 1600 bpi magnetic tape). The MPE Media Product is 51450A. Option 602 must be specified for the Series 48. To designate 1600 bpi magnetic tape, you must order Option 051; for cartridge tape media, you need to order Option 022. The latest version of the Fundamental Operating System (FOS) is specified by Option 200. Please see a current Corporate Price List for ordering other versions of FOS.

The Card Cages

The Series 48 comes standard with two side-by-side card cages. Each card cage has 24 card slots as shown in the figure below:

Please photocopy this page and use it as a worksheet:



Configuration Restrictions for I/O Portions of the Card Cages

- ADCC-Main and ADCC-Extender cards must be adjacent to each other.
- ATP/SIB and ATP/AIB cards must be adjacent to each other.
- A maximum of six ATP/AIB cards may be configured when the system includes two memory controllers.
- Remember also to include the two standard GICs and the required ADCC-Main in your configuration.

In the first card cage, slots 1 through 8 support system memory modules. The standard memory controller is configured in slot 9. Slots 10 through 13 house the CPU cards. (For the purpose of correct ordering, it is not necessary to be concerned with the configuration of cards in the CPU portion of the card cage.) Slots 14 through 24 support I/O cards including those cards for the Advanced Terminal Processor (ATP), Asynchronous Data Communications Controller (ADCC), the Local Area Network Interface Controller (LANIC), General I/O Channel (GIC), Intelligent Network Processor (INP), and 261X Line Printer Interface (LPI).

In the second card cage, slots 1 through 7 and 17 through 24 support I/O cards. Slots 1 through 7 will support any of the I/O cards listed in the previous paragraph. Slots 17 through 24 are not connected to the IMB and can support only INP and LPI cards. Slots 9 through 16 support memory modules when a separately-ordered memory controller is placed in slot 8.

There are a total of 26 slots in both card cages that support I/O cards. Of this total, 18 I/O slots are directly connected to the IMB.

All card cage slots supply power. In card cage 1, slots 1 through 9 connect to the memory bus, and slots 10 through 13 connect to the CPU bus. The Intermodule Bus (IMB) connects slots 9 through 24 in card cage 1 and slots 1 through 8 in card cage 2. This IMB provides communications between the I/O cards, the memory subsystem, and the CPU.

The Series 48 supports one IMB which does not require an interface card in either card cage. (For a more extensive explanation of the function of the IMB please see the IMB discussion in the Series 68 maximum configuration section.) Slots 8 through 16 in card cage 2 connect to another memory bus. Slots 17 through 24 provide power only.

The LANIC card must be placed in the I/O portion of the card cage to be connected to the IMB. The LANIC can be placed in slots 14 through 24 of card cage 1, or slots 1 through 7 of card cage 2.

Memory Expansion

The Series 48 comes with two 1 Mb memory boards standard in the minimum configuration. System memory sizes of 2 Mb, 2.5 Mb, 3 Mb, 3.5 Mb, and 4 Mb are supported.

Memory can be increased by ordering memory expansion modules including: 0.5 Mb (30092A), 1 Mb (30161A), 2 Mb (30478A) or 4 Mb (30479A). The 0.5 Mb memory product is comprised of two 256 Kb memory boards, each requiring a card slot. The 1 Mb, 2 Mb and 4 Mb products consist of a single 1 Mb board, each requiring one card slot.

Configurations with the 0.5 Mb product also require a separately-ordered memory controller (30094A, the Add-on Series 44/48 Memory Controller). This memory controller will be configured in slot 8 of card cage 2 and the 256 Kb boards will be placed adjacent to it. The following table indicates which products you should order to obtain a desired memory configuration:

An additional memory controller is needed whenever 256 Kb boards are used in a memory configuration exceeding 2 Mb. The additional memory controller must be installed in the second card cage.

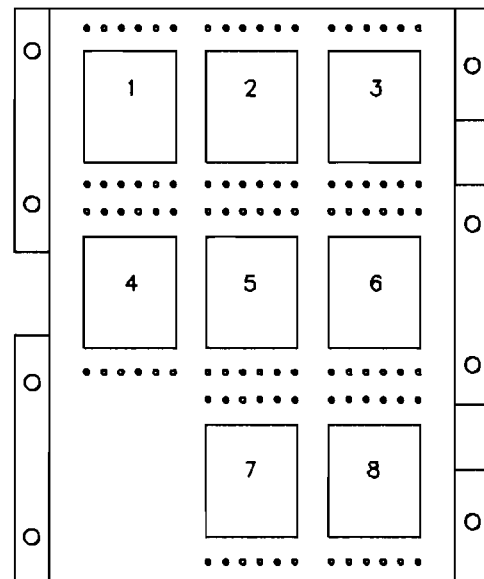
Junction Panels

Junction panels are used in the connection of GIC, INP, ADCC, ATP/AIB, LANIC and LPI cards to peripherals, terminals, and other systems. The number of these devices permitted in a configuration may be restricted by the amount of available junction panel space.

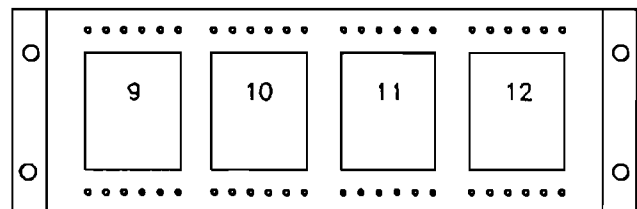
The Series 48 has two junction panels: one on the side and one on the rear. These panels allow external cabling for terminals, peripherals, and other systems to connect to internal system cabling.

Please photocopy this page and use it as a junction mounting panel worksheet:

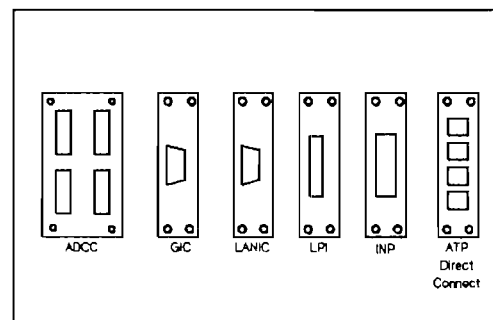
Side Junction Panel



Rear Junction Panel



Junction Mounting Panel Types



Junction Panel Rules:

The Series 48 junction panels are composed of 12 usable "cutouts" which are numbered from 1 to 12 in the preceding figures.

- Junction mounting panels that cover one-third of a cutout are used for each GIC, LPI, LANIC, and INP. One-third of a cutout is also required for each group of four ATP Direct Connect Ports.
- Junction mounting panels that cover one-half of a cutout are used for each ADCC-Main or ADCC-Extender.
- Cutout numbers 2, 3, 5, 6, 7, and 8 can be used for ATP terminal connections. Other cutouts cannot be used for the ATP because of inadequate space behind the junction panel for the ATP's junction mounting panel motherboard and the associated terminal port mini-boards.
- Only cutout numbers 2, 3, 5, 6, 7, and 8 can be used for the LANIC connection. Other cutouts cannot be used because they will cause the LANIC cable to bend.
- All cutouts may be used for ADCC connections, but not concurrently. A maximum of 15 ADCC boards are supported. Therefore, the largest number of cutouts that the ADCC could consume is 7.5.
- When using the ATP Expansion Package (30273A or 30274A), cables from the AIB cards terminate at a remote junction panel box. Modem Port Controller are mounted only on this remote junction panel.

LANIC

The Local Area Network Interface Controller (LANIC) is the hardware controller that interfaces to the Local Area Network (LAN). Each LANIC uses one I/O card slot and connects to one LAN. A maximum of one LANIC per system is supported. The LANIC is placed on the Intermodule Bus (IMB) and is a high-speed channel. The other type of high-speed channel is a GIC with one or more high-speed devices attached. Series 48 systems can support one LANIC and up to two high-speed GICs.

General I/O Channels

A General I/O Channel (GIC) is a hardware controller used to interface HP-IB (IEEE 488 protocol) peripherals to the Series 48. Each GIC is a board that uses one I/O card slot and supports one HP-IB cabling system. The number of peripherals which may be connected to a single GIC depends on maximum device limits, peripheral speed, cable length, and performance considerations. Please refer to the GIC discussion in the Chapter One Appendix for a complete explanation of these rules. Note that the internal HP-IB cabling length between the GIC and the junction panels is two meters for the Series 48.

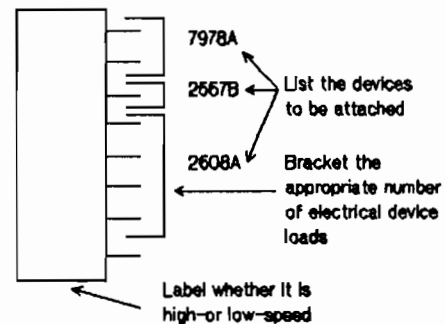
Order 30079A to obtain additional GICs. You must also specify Option 044 to obtain the proper GIC cable for the Series 48.

A maximum of five GICs are supported on the Series 48. No more than two of these GICs may have high-speed devices attached to them. Please refer to the peripheral table in the Appendix for a definition of high-speed devices and a high-low-speed classification of supported devices.

Summary: GIC Attachment Restrictions

- A maximum of six devices may be attached to a GIC with one or more high-speed devices attached.
- Unless other restrictions apply, low-speed peripherals can share a GIC with high-speed devices.
- Some low-speed devices require a dedicated GIC to which no other devices may be attached. (See the GIC Interface table in Chapter One Appendix.)
- The 2608A line printer cannot be attached to a GIC with high-speed devices.
- The 2608S line printer can share a GIC with all high-speed devices except the 7906M, 7920M, and 7925M family of disc drives.
- It is not recommended that the same GIC be used for connecting the main system backup tape drive and the system disc (LDEV1). System performance may be degraded with such a configuration when the tape drive is in use.

How to Use the GIC Worksheet



Please photocopy this page and use it as a GIC configuration worksheet:

S T A N D A R D	G I C	1	
S T A N D A R D	G I C	2	
O P T I O N A L	G I C	3	
O P T I O N A L	G I C	4	
O P T I O N A L	G I C	5	

Peripherals

Disc Drives

One 7945A (55 Mb), 7911P (28 Mb), 7912P (65 Mb), 7914P (132 Mb), 7914TD (132 Mb), 7914CT (132 Mb), 7914ST (132 Mb), 7920M (50 Mb), 7925M (120 Mb), 7933H/XP (404 Mb), 7935H/XP (404 Mb), 7936H/XP (307 Mb), 7937H/XP (571 Mb), 7957A (81 Mb) or 7958A (132 Mb) hard disc drive is required as the system disc (LDEV1).

The following table lists the maximum number of each type of disc drive that can be configured on the Series 48. When combining disc maximums, remember that only two high-speed GICs allowed with a maximum of six devices per high-speed GIC on a Series 48.

Series 48 Maximum Disc Drive Configuration:

7945A Disc	4
7911P/7912P/7914P/7914TD/ 7914ST Discs w/Cartridge Tape	1
Total 7911P/7912P Disc	4
7914CT Storage Unit	4
7914TD Storage Unit	2
7914ST Storage Unit	4
Total 7914P/7914TD/ 7914ST/7914CT	8
792x Master Discs	2
792x Slave Discs	14
793xH Discs	8
793x/XP Discs	8
795x Discs	4
Total Discs	16

The 7920M and 7925M are master disc drives and each can support up to seven slave disc drives. These slave drives are ordered as 7920S or 7925S and do not have their own controllers. They connect to the controller in the master drive and are not part of the HP-IB cabling. Consult the CE organization for proper interface and cabling requirement for 792x discs.

The 7945A, 7911P, 7912P, 7914P, 7914TD, 7914CT, 7914ST, 793xH, 793xXP and 795x disc drives each have their own controllers.

Disc performance may vary depending on the specific configuration of discs, controllers, and GICs. Check with an HP performance specialist if you have performance concerns.

Integrated Storage Units

The 7911P, 7912P, and 7914P are integrated storage units that include both a Winchester disc drive and an integral cartridge tape unit as standard. *Only one 7911P, 7912P, or 7914P with the cartridge tape unit is supported on the Series 48.* A maximum of four 7911P or 7912P and a maximum of eight 7914P disc drives are supported. Because only one cartridge tape unit is allowed on the system, additional 7911P, 7912P, or 7914P units must be ordered with the cartridge tape delete Option 140 specified.

The Winchester disc drive component in the 7911P, 7912P, and 7914P is shipped with a controller and a 1m HP-IB cable standard. If you order the cartridge tape unit on any of these integrated storage units, you must also order Option 001, which supplies a controller for the cartridge tape unit and a 1m HP-IB cable. *The cartridge tape unit requires its own dedicated GIC.*

The 7914TD and 7914ST combine into a single package a 7914 rackmounted disc drive, a half-inch tape drive, and an optional cartridge tape unit (Option 002). The 7914TD includes a 7970E master tape drive. The 7914ST includes a 7974A tape drive. A second 7914P disc drive can be added to the same cabinet by specifying Option 114. (Option 114 will automatically delete the cartridge tape unit for the additional disc drive.)

The 7914TD and 7914ST are supplied with HP-IB cables standard--one 2m cable for the disc drive, a 6m cable with the 7970E tape drive, or a 2m cable with the 7974E tape drive. When Option 002 is ordered, the cartridge tape drive, a controller, and a 1m HP-IB cable are shipped.

The 7914CT combines the 7914 disc drive with a 9144A cartridge tape unit which does not require a dedicated GIC (do not confuse 7914CT with cartridge tape in 7914P disc drive) or separate controller. Two 1m HP-IB cables are shipped with the 7914CT. A maximum of four 7914CT drives are supported on the Series 48.

Magnetic Tape Drives

A 7970E, 7914TD, 7971A, 7974A, 7914ST, 9144A, 35401A, 7976A, or 7978A/B magnetic tape drive is required for system backup for the Series 48.

The 7970E master tape drive requires a dedicated GIC and can support up to three slave tape drives. Both the 7914TD and 7971A include 7970E tape drives. The 7914ST includes a 7974A tape drive. The 9144A, 7974A, 7976A, and 7978A/B do not support slave drives; each drive has its own controller.

The following table lists the maximum number of each type of tape drive that can be configured on the Series 48. You may have one integrated cartridge tape drive in addition to these maximums.

Series 48 Maximum Tape Drive Configuration:

9144A Cartridge Tape Drive	4
35401A Cartridge Tape Drive	2
7970E/7971A/	
7914TD Masters	2
7970E/7971A Slaves	6
7974A/7914ST Tape Drives	4
7976A Tape Drives	2
7978A/B Tape Drive	4
Total Tape Drives	8

The 7970E master tape drive comes with a 6m HP-IB cable standard. Each 7970E slave drive comes with a 6.1m (non-HP-IB) multiunit cable for tape drives. The 7971A is a package of one or two 7970E drives in various master and/or slave drive configurations. Consult the CE organization for correct options.

The 7974A, 7976A and 7978A are shipped with a 2m HP-IB cable standard. When configuring a 7976A tape drive, consult the CE organization for proper interfaces and cables. The 7974A and 7978A do not require a system option. You must specify Option 800 to obtain the 800 cpi capability on the 7974A.

The 9144A one-quarter inch cartridge tape drive is supported as a cold load device on the S/48, with CPS-F microcode installed. The 9144A is shipped without an HP-IB cable. See Chapter 4 for cable information.

The 35401A one-quarter inch cartridge autochanger tape subsystem is shipped standard with 1m HP-IB cable.

System Printers

The following table lists the maximum number of each type of system printer that can be configured on the Series 48:

Series 48 Maximum Printer Configuration:

Line Printers:	
2608A/2608S	2
256x	4
261x	4
Total Line Printers Supported	4
Intelligent Page Printers:	
2680A	2
2688A	2(3*)
Total Page Printers	2(3*)
Total System Printers Supported	6

* HP-IB Extender Support.

The 261x family of line printers does not connect directly to a GIC; rather, each one uses a 1m HP-IB ribbon cable between the 26069A translator and the GIC card. The line printer itself can be up to 500 feet away. The printer is connected by a parallel differential current driven line to a separate junction mounting panel.

An internal cable connects the interface card to the junction mounting panel. Consult the CE organization for proper interface card, internal cable and parallel differential cable requirements. Cabling beyond 15 meters must be ordered as a special from Boise Division.

The 2608A, 2608S, and 256x are dot matrix line printers that attach directly to GICs. They do not require a separate interface card in the I/O card cage. The standard 2608A includes a HP-IB interface and a 2m HP-IB cable. For the 2608S, and 256x order Option 344 to obtain the HP-IB interface and 4m HP-IB cable. Note that the 2608S cannot share a GIC with a 7906M, 7920M, or 7925M disc drive. Furthermore, the 2608A cannot be configured on a GIC with high-speed devices attached.

To obtain the Series 48 subsystem with 8m HP-IB cable for the 2680A or 2688A, order Option 344. Specify Option 099 with the 2680A to replace the 8m cable with a 2m cable. This option is not available on the 2688A. The 2680A and 2688A attach directly to a GIC and do not require a separate interface card in the I/O card cage.

The 256xA, 2680A and 2688A printers may be connected via HP-IB Extenders. See the HP-IB Extender Section in the Chapter One Appendix.

Other Peripherals

Flexible Disc Drive

Only one 1.2 Mb flexible disc drive is supported on the Series 48. Product number 9895A must have Option 010 to specify a single master drive. The flexible disc drive attaches to a GIC. Order the HP-IB cable separately.

Card Reader

The 30106A 80-column card reader interfaces to the Series 48 through a dedicated GIC. You must have either Option 333 or the 30309A upgrade kit to provide a 2m HP-IB cable. When a card reader is configured on the system, a power line conditioner is required. The 30106A and 30309A are no longer orderable. (They will be supported until December 31, 1989.)

Power Line Conditioners

In many areas AC power line disturbances can interfere 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 through local third parties.

Multiple System Access Selector

The 26075A Multiple System Access Selector is a switch box that allows up to three HP-IB system processor units to share either a 2680A or a 7976A. An operator can manually switch the peripheral to be active on any one of the sharing systems. A maximum of one 26075A may be connected to a system. Other devices on the same GIC must be "downed" when switching the 26075A. Therefore, the switchbox cannot be on the same GIC as a disc drive. When determining HP-IB cable length, include 0.5m for the 26075A.

Data Communications

Terminal Connection

Point-to-point connections are made to the Series 48 through either the Asynchronous Data Communications Controller (ADCC) or the Advanced Terminal Processor (ATP). The ADCC and ATP support local (RS-232) and remote (full duplex) terminal and serial printer connections. The ATP also supports local RS-422 point-to-point connections. ATP modem support is provided only through the ATP Expansion Package (30274A).

Multipoint connections are made to the Series 48 through the MTS Modem Link or the MTS Data Link in combination with Multipoint Terminal Support Service Software. The Link products provide an Intelligent Network Processor (INP) board and related cables.

The following table summarizes the number of terminals supported on the Series 48, with and without the ATP Expansion Package.

Series 48 Maximum Workstation Terminal Configuration:

	Without ATP E/P	With ATP E/P
Direct Connect		
via ADCC	60	60
via ATP	72	96
total direct connect	104	120
Modem Connect		
via ADCC	60	60
via ATP	0	48
total modem connect	60	88
Multipoint	95	95
Maximum Terminal Support	152	152

There are a total of 15 I/O slots available for terminal connections. One of these slots must be reserved for an ADCC main to support the system console.

All 152 terminals can be logged on when the system is running MPE- V/E, while only 110 terminals can log on when running MPE-V/P. The maximum of 152 terminals includes all point-to-point, multipoint, system console, DS virtual, and X.25 PAD terminals. The number of terminals per multipoint line is normally determined by response time considerations, but may be restricted by the specific cabling option chosen. You may also use the 2333A multipoint or 2334A X.25 cluster controllers. The 2333A permits a group of up to 16 point-to-point devices to communicate with the Series 48 via the MTS Data Link or via modems and phone lines. The 2334A permits a group of up to 16 devices to communicate via X.25 Packet Switched Networks.

Support Link Modem

Under the HP Remote Support Program, all (non-upgrade) Series 48 systems are shipped with a free HP Support Link Modem (35031A).

System Console

The system console MUST be configured on an ADCC. One point-to-point connected 262x or 2392A terminal must be ordered as the system console. A cable must also be ordered; order Option 301/303 /305 for direct connect RS-232, Option 301 for U.S. modem connect, or Option 302 for European modem connect cables. (Although no longer orderable, the 2382A, 264x, and 2635B terminals are supported as system consoles.)

Asynchronous Data Communications Controller

The ADCC on the Series 48 consists of two products: The ADCC-Main (30018A) and the ADCC-Extender (30019A). Option 044 must be ordered with each of these products to obtain the correct internal cable. Each ADCC card uses one slot in the I/O section of the card cage. ADCC-Mains and ADCC-Extenders must be ordered (and installed) in alternating fashion (e.g. Main, Extender, Main, Extender, etc.). Each ADCC supports four RS-232 devices. The Series 48 supports a maximum of 15 ADCCs (60 devices). *A minimum of one ADCC-Main MUST be ordered with the system to attach the system console and up to three other RS-232 devices, including the Support Link Modem.*

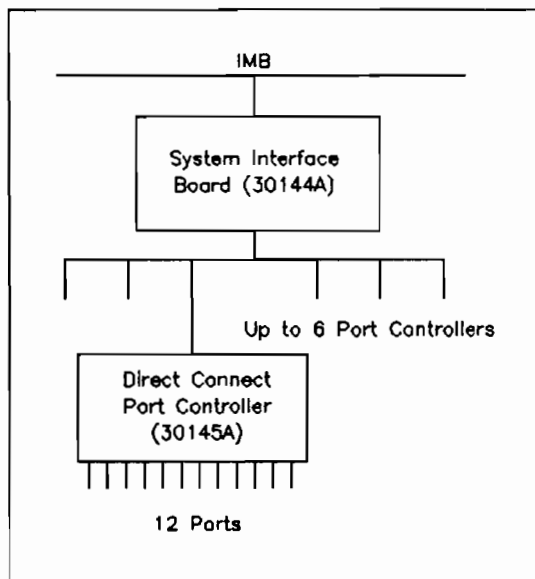
Advanced Terminal Processor

The ATP on the Series 48 consists of several combinations of the following five products: ATP System Interface Board (SIB) (30144A), ATP Direct Connect Port Controller (30145A), ATP Modem Port Controller (30155A), ATP Direct Connect Expansion Package (30273A), or the ATP Modem Expansion Package (30274A).

A basic ATP subsystem on the Series 48 consists of either a) the System Interface Board with one Direct Port Controller or b) one of the ATP Expansion Packages. This subsystem is then expanded through addition of Direct Connect or Modem Port Controller boards; however, the *Modem Port Controllers may only be used with the ATP Expansion Package.*

Each Direct Connect or Modem Port Controller product includes both an Asynchronous Interface Board (AIB), which occupies a slot in the card cage, and the associated junction mounting panel motherboard and terminal port mini-boards.

ATP Subsystem Structure *Without ATP Expansion Package*



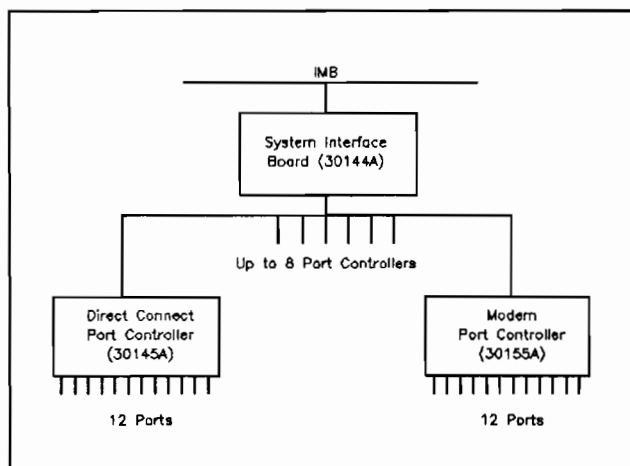
When the ATP is configured on the Series 48, the minimum required subsystem consists of one SIB and one AIB. The minimum ATP configuration requires two I/O slots, supports up to 12 terminals, and uses one junction panel cutout. Without use of the ATP Expansion Package, the maximum ATP subsystem on the Series 48 is one SIB and six Direct Connect Port Controllers, supporting 72 terminals and consuming seven I/O slots.

Each Direct Connect Port Controller (AIB) supports both RS-232 and RS-422 terminal connections. Twelve RS-422 ports are provided

standard with each AIB, but they can be converted to RS-232 ports in groups of four by ordering Option 002.

For example, to get a Direct Connect Port Controller with 12 RS-232 ports, you would order one 30145A with three Option 002's. If the Direct Connect Port Controller will be mounted on the system junction panel, do not order Option 048 on product 30145A.

ATP Subsystem Structure *With the ATP Expansion Package*



Each ATP Expansion Package contains the System Interface Board (SIB), one Port Controller (either Direct Connect or Modem) which includes the Asynchronous Interface Board (AIB), and a free-standing junction panel box. Additional ports can be obtained in groups of 12 by ordering either the ATP Direct Connect Port Controller (30145A) or the ATP Modem Port Controller (30155A). Option 048 must be ordered with each of these products (30145A, 30155A, 30273A, 30274A) to provide the correct internal cable.

A maximum subsystem on the Series 48 consists of one SIB and eight Direct Connect or four Modem Port Controllers. This maximum sub-system is available only when using the ATP Expansion Package (30273A or 30274A). This configuration supports a maximum of 96 direct connect or 48 modem ports, consuming nine or five I/O slots respectively. To achieve the system maximum of 120 point-to-point terminals, this maximum ATP subsystem of eight AIBs (96 direct connect ports) and six additional ADCCs (24 more ports) must be ordered.

Single bay models of the Series 44/48 must be expanded to two bays before installation of the ATP Expansion Package. If the system has two card cages but also contains two memory controllers (see Memory Expansion section), then a maximum of six AIBs will be supported on the system. These six AIBs may include up to four Modem Port Controllers.

Output Spooling

For a discussion of output spooling and description of spooled device categories, please see the section on Output Spooling in the Series 68 Configuration section. Information on MTS printers can also be found in that section.

The following table indicates the maximum number of spooled devices supported on the Series 48:

Series 48 Maximum Spooled Device Configuration:

SYSTEM PRINTERS:

Line Printers: (HP-IB)

2608A/2608S	2
256x	4
261x	4
Total Line Printers	4

Page Printers:

2680A	2
2688A	2(3*)
Total Page Printers	2(3*)

Total System Printers 6

SERIAL CONNECTED PRINTERS:

2601A/2602A/2603A//2631B	8
2932A/2933A/2934A	8
2563A/B (ADCC/ATP)	1(3)**
2686A/D/33440A	1(2)**
2687A Page Printer (ADCC/ATP)	1(2)**

Total Serial Connected Printers: 8

* HP-IB Extender support.

** Two 2687As, two 2686A/D/33440As or three 2563A/Bs are supported when connected to the ATP, while only one is supported on the ADCC. The ATP uses direct memory access when offloading spoolfiles while the ADCC must run channel programs. Therefore, the ATP is more efficient and puts a smaller burden on the CPU. The spooled device support numbers stated in the table above are based on performance considerations. If the system is running MPE-V/P, operating system table sizes could limit the number of simultaneously active spooled printers. In order to determine the maximum number of spooled devices which can be configured on an MPE-V/P system, the following formula must be used:

Max. Spooled Devices =

$$\frac{[256 - (1.25 \times \# \text{Sessions and Jobs}) - \# \text{INPs}]}{16}$$

where: #Sessions and Jobs= the maximum number of sessions and jobs which will be supported on the system

#INPs= the number of Network Links/ Intelligent Network Processors which will be configured on the system

After plugging in the values for the number of sessions and jobs and also the number of INPs, the maximum number of spooled devices will have been derived. Take the result and round it down to the nearest whole number. It is evident from this formula that the number of spooled devices a system can support will vary with the customer's configuration and application mix.

With the expanded tables of MPE-V/E, there is no longer a software tables limitation that further restricts the number of spooled devices on the Series 48 running MPE-V/E beyond the number of devices listed in the table on the previous page. System performance considerations are responsible for restricting the number of spooled devices to these limits. Note that the appropriate table structure must be configured for this number of spooled devices to be supported.

Serial Connected Printers and Plotters

The Series 48 supports up to eight remote spooled 293x or 2631B serial printers through the ADCC or through the ATP via RS-232 connections. When used as remote spooled printers, they are connected to an ADCC or ATP modem port via a modem. 2631B printers must include Option 331 to obtain the RS-232 remote spooled printer capability.

The Series 48 can support 2601A, 2602A and 2603A daisywheel printers via the ADCC or ATP through local direct connection only. Modem connection is not supported. The 2601A, 2602A, 2603A, 2631B, and 293x printers can also be attached as slave devices to terminals under the control of application programs.

The 2563A/B/2564B line printer is also supported on the Series 48 in a serial configuration. RS-232 (ADCC/ATP) and RS-422 (ATP) hardware connections are available; modem connections are not supported. One must specify Option 049 for RS-232 and Option 050 for RS-422 interfaces in the 2563A/B/2564B printer. Cables must be ordered separately; see Chapter 4 for further details. Do not order the subsystem option (Option 344) for the 2563A/B when it is being used as a serial printer.

The 2686A/D/33440A is supported via RS 232-C connection. Remote operation over modem is not supported.

The 2687A laser printer is available on the Series 48 as a serial printer only. RS-232 hardwired connection is supported, but modem connection is not available. Option 344 must be specified to obtain the Series 48 subsystem.

Cables need to be ordered separately; see Chapter 4 for a list of available cables for the 2687A.

HP plotters can be configured as remote RS-232 devices, as slave devices to terminals and personal computers, or as eavesdrop devices between the terminal and the ADCC or ATP. As slave devices, both HP-IB and RS-232 connections may be possible depending upon the individual plotter. Only RS-232 connections are available in an eavesdrop configuration or when connected point-to-point to an ADCC or ATP.

Network Link Products (INPs)

A maximum of seven Network Link products may be used concurrently on a Series 48. Any number of links can be supported, but only seven sets of Link hardware may be installed and/or configured. Each Network Link provides one communication line for use by one or more of the Network Services (DS, RJE, MRJE, IMF, NRJE, MTS, or NS).

Each set of Link hardware includes an Intelligent Network Processor (INP), and requires one I/O card slot in the Series 48 card cage. The INP counts as one device load on a GIC and is considered a low-speed device.

A 1m HP-IB ribbon cable is included for connecting the INP to a GIC. An external cable is also included but must be specified by a particular option when ordering, based on the connection desired. Please refer to the latest HP 3000 Price Guide for a complete list of options.

Series 48 Configuration Worksheet

Product Number	Description	Quantity
----------------	-------------	----------

I. System Processor Unit.

32548B	Series 48 System Processor	1A _____
--------	----------------------------	----------

MPE Media Product

A Media Product must be ordered with each HP 3000 system. Media Products for Series 48 systems contain version options and media options which must be selected to properly specify the correct FOS for the customer.

51450A	MPE V/E Media Product	1B _____
--------	-----------------------	----------

Opt. 2xx	MIT Release	1C _____
----------	-------------	----------

Opt. 602	Series 4x SPU	1D _____
----------	---------------	----------

II. Memory Expansion.

Total Memory Size (Standard memory is 2 Mb, MAX=4)

2A _____

32548B	Add-on 1Mb memory to 4x	2B _____
Opt. 501		

For configurations above the standard 2 Mb order:

30161A	1 Mb Memory Module for Series 4x	2C _____
--------	----------------------------------	----------

30092AR	512 Kb Memory Module for Series 4x	2D _____
---------	------------------------------------	----------

30478A	2 Mb Memory Module for Series 4x, 5x	2E _____
--------	--------------------------------------	----------

30479A	4 Mb Memory Module for Series 4x, 5x	2F _____
--------	--------------------------------------	----------

30094A	Add-on Series 4x Memory Controller (needed for 2.5 and 3.5 Mb configurations)	2G _____
--------	---	----------

III. Disc Drives.

A. Storage Units *with* Integrated Cartridge Tape.

One of the following may be included:

7911P	28 Mb Integrated Storage Unit <i>with</i> Cartridge Tape (Option 001, MAX=1) (Two 1m HP-IB cables are included.)	3A _____
-------	--	----------

Series 48 Configuration Worksheet

Product Number	Description	Quantity
7912P	65 Mb Integrated Storage Unit <i>with</i> Cartridge Tape (Option 001, MAX=1) (Two 1m HP-IB cables are included.)	3B _____
7914P	132 Mb Integrated Storage Unit <i>with</i> Cartridge Tape (Option 001, MAX=1) (Two 1m HP-IB cables are included.)	3C _____
7914ST Opt. 002	132 Mb Mass Storage Subsystem <i>with</i> Integrated Cartridge Tape (Option 002, MAX=1) Because the 7914ST may combine a Cartridge Tape, a 1/2" tape drive, and one or two disc drives into a single package, you need to check lines 5B and 11D to ensure that the totals for those lines do not violate device support maximums. HP-IB cables are included with each storage unit: cartridge tape (1m), disc drive (2m), and tape drive (2m). (Also enter on line 11D in Tape Drive section.)	3D _____
7914TD Opt. 002	132 Mb Mass Storage Subsystem <i>with</i> Integrated Cartridge Tape (Option 002, MAX=1). The 7914TD may combine a Cartridge Tape, a 1/2" tape drive, and one or two disc drives into a single package, so you will need to check lines 5C and 11B to ensure that the totals for those lines do not violate device support maximums (A 6m, a 2m, and a 1m HP-IB cable is included with each tape drive, disc drive, and cartridge tape, respectively.) (Also enter on line 11B in Tape Drive section.)	3E _____
Total Integrated Storage Units <i>with</i> Integrated Cartridge Tape (Sum of lines 3x, MAX=1)		3 _____
B. Mass Storage Products (No Integrated Cartridge Tape).		
7911P	28 Mb Integrated Storage Unit (Option 140, Cartridge Tape Deleted, MAX=4) (A 1m HP-IB cable is included.)	4A _____
7912P	65 Mb Integrated Storage Unit (Option 140, Cartridge Tape Deleted, MAX=4) (A 1m HP-IB cable is included.)	4B _____
Total 7911P/7912P Disc Drives (Total of Lines 3A, 3B, 4A and 4B, MAX=4)		4 _____
7914P	132 Mb Integrated Storage Unit (Option 140, Cartridge Tape Deleted, MAX=8) (A 1m HP-IB cable is included.)	5A _____
7914ST Discs	132 Mb Mass Storage Subsystem (MAX=4) (Without Option 114, this subsystem contains one drive. With Option 114, the subsystem contains two drives. Enter the total number of disc drives on Line 5B. (For cabling information, see Line 3D.) (Also enter on line 11D in Tape Drive section.)	5B _____

Series 48 Configuration Worksheet

Product Number	Description	Quantity
7914TD Discs	132 Mb Mass Storage Subsystem (MAX=2) (Without Option 114, this subsystem contains one drive. With Option 114, the subsystem contains two drives. Enter the total number of disc drives on Line 5B.) (For cabling information, see Line 3E.) (Also enter on line 11B in Tape Drive section.)	5C _____
7914CT	132 Mb Integrated Storage Unit containing 9144A cartridge tape drive. (MAX=4) (Includes two 1m HP-IB cables.) (Also enter on line 11A in Tape Drive section.)	5D _____
	Total 7914P/7914TD/7914ST/7914CT Disc Drives (MAX=8, total of lines 3C, 3D, 3E, and 5x.)	5 _____
7920M	50 Mb Master Disc Drive (A 2m HP-IB cable is included with Option 102.) (MAX=2)	6A _____
7925M	120 Mb Master Disc (A 2m HP-IB cable is included with Option 102.) (MAX=2)	6B _____
	Total 7920/7925 Master Disc Drives (Sum of Lines 6x), (MAX=2)	6 _____
7920S	50Mb Slave Disc Drive (A 2.4m multiunit cable and a 15.2m data cable are included.) (MAX=14)	7A _____
7925S	120 Mb Slave Disc Drive (A 2.4m multiunit cable and a 15.2m data cable are included.) (MAX=14)	7B _____
	Total 7920/7925 Slave Disc Drives (Sum of Lines 7x), (MAX=14). This maximum would also require two 7920/7925 Master Disc Drives because each Master Drive supports up to 7 Slave Drives.)	7 _____

Series 48 Configuration Worksheet

Product Number	Description	Quantity
7945A	55 Mb Winchester Disc Drive (includes 1m HP-IB cable) (MAX=4)	8 _____
7933H/ 7935H	404 Mb Disc Drive (MAX=8) (A 1m HP-IB cable is included.)	9A _____
7936H	307 Mb Disc Drive (MAX=8) (a 1m HP-IB cable is included)	9B _____
7937H	571 Mb Disc Drive (MAX=8) (a 1m HP-IB cable is included)	9C _____
7933XP/ 35XP	Disc Drive with 1mb Cache (MAX=8) (a 1m HP-IB cable is included)	9D _____
7936XP	307 Mb Disc Drive with 2 Mb Cache (MAX=8) (a 1m HP-IB cable is included)	9E _____
7937XP	571 Mb Disc Drive with 2 Mb Cache (MAX=8) (a 1m HP-IB cable is included)	9F _____
7957A	81 Mb Disc Drive (MAX=4) (a 1 Mb HP-IB cable is included)	9G _____
7958A	132 Mb Disc Drive (MAX=4) (a 1 Mb HP-IB cable is included)	9H _____
	Total 793X Disc Drives (Sum of line 9x, MAX=8)	9 _____
	Total Disc Drives & Integrated Storage Units (Sum of Lines 4, 5, 6, 7, 8 and 9) (MAX=16)	10 _____

IV. Magnetic Tape Drives.

9144A/ 7914CT	1/4 inch Cartridge Tape Drive (Order cable separately with 9144A. Two 1m cables included with 7914CT). (MAX=4)	11A _____
35401A	One-quarter (1/4) inch Cartridge Autochanger Tape subsystem (MAX=2) (a 1m HP-IB cable is included)	11B _____
7970E/ 7971A/ 7914TD	1600 cpi Magnetic Tape Master Drive Subsystem (MAX=2, each master supports up to 3 Slave Tape Drives) (Each tape drive includes a 6m HP-IB cable.) (Also enter 7914TD on line 3E or 5C in Disc Drive section.)	11C _____
7970E	Slave Tape Drive Subsystem (MAX=6) (A 6.1m multiunit cable is included.)	11D _____

Series 48 Configuration Worksheet

Product Number	Description	Quantity
7974A/ 7914ST	1600 cpi (800 cpi optional) Magnetic Tape Subsystem (MAX=4) (2m HP-IB cable included.) (Also enter 7914ST on line 3D or 5B in Disc Drive section.)	11E _____
7978A/B	6250/1600 cpi Magnetic Tape Subsystem (MAX=4); (2m HP-IB cable included.)	11F _____
Total Magnetic Tape Drives (Sum of lines 11x, MAX=8)		11 _____

Series 48 Configuration Worksheet

Product Number	Description	Quantity
V. System Printers.		
2608S	400 lpm Dot Matrix Printer (MAX=2). Option 344 includes a 4m HP-IB cable.	12A _____
256X	300, 600, 900, 1200 and 1600 lpm Dot Matrix Printers (Option 344) (MAX=4) (A 4m HP-IB cable is included.)	12B _____
261xA	Line Printer Series (e.g., 2611A and 2619A) (MAX=4) (A 15m parallel differential cable is included with Option 344.)	12C _____
	Total Line Printers (Sum of lines 12x, MAX=4)	12 _____
2680A/ 2688A	Intelligent Page Printers (MAX=2) (An 8m HP-IB cable is included with Option 344.) See discussion in Chapter One Appendix regarding connection of printers via HP-IB Extenders.	13 _____
	Total System Printers (Sum of Lines 12 and 13, MAX=6)	14 _____

VI. Serial Printers.

2601A	40 cps Daisywheel Printer (MAX=8) (2601A includes RS-232 cable.)	15A _____
2602A	25 cps Daisywheel Printer (MAX=8) (Order cable separately.)	15B _____
2603A	48 cps Daisywheel Printer (MAX=8) (order cable separately.)	15C _____
293x	200 cps Dot Matrix Printer (MAX=8) (Order cable separately.)	15D _____
2563A/B 2564B	Dot Matrix Printer (Option 049 for RS-232 or Option 050 for RS-422) (MAX=1 with ADCC or 3 with ATP) (Order cable separately.)	15E _____
2686A/D 33440A	8 ppm Laser Page Printer (MAX=1 with ADCC or 2 with ATP); (order cable separately)	15F _____
2687A	12 ppm Laser Page Printer (Option 344) (MAX=1 with ADCC, MAX=2 with ATP) (Order cable separately.)	15G _____
	Total Serial Printers (Sum of lines 15x, MAX=8)	15 _____

Series 48 Configuration Worksheet

Product Number	Description	Quantity
VII. Other Peripherals.		
9895A	Flexible Disc Drive (Option 010, MAX=1) (Order HP-IB cable separately.)	16 _____
26075A	Multiple System Access Selector (MAX=1) (Order cable separately.)	17 _____

Series 48 Configuration Worksheet



VIII. Data Communications.

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

NOTE: Cabling must be ordered separately for these devices!

Product	Connection Method				Terminal Attached
	Daisychain* Multipoint	ADCC/ATP Modem	Pt-to-Pt with ATP or ADCC		
			ATP Type 422	ADCC/ATP Type 232-C	
Display Terminals					
239x	N/A*	_____	_____	_____	N/A
2623A	N/A*	_____	_____	_____	N/A
2624B	_____	_____	_____	_____	N/A
2625A	_____	_____	_____	_____	N/A
2626A	_____	_____	_____	_____	N/A
2626W	N/A**	_____	_____	_____	N/A
2627A	N/A*	_____	_____	_____	N/A
2628A	_____	_____	_____	_____	N/A
Plotters					
7440A	N/A	_____	N/A	_____	_____
7470A	N/A	_____	N/A	_____	_____
7475A	N/A	_____	N/A	_____	_____
7510A	N/A	_____	N/A	_____	_____
7550A	N/A	_____	N/A	_____	_____
7570A	N/A	_____	N/A	_____	_____
7580A/B	N/A	_____	N/A	_____	_____
7585B	N/A	_____	N/A	_____	_____
7586B	N/A	_____	N/A	_____	_____
Data Collection Terminals					
3075A	_____	_____	N/A	_____	N/A
3076A	_____	_____	N/A	_____	N/A
3077A	_____	_____	N/A	_____	N/A
3081A	_____	_____	N/A	_____	N/A
Subtotal (this page)	18A _____	19A _____	20A _____	21A _____	22A _____

* The 2333A and 2334A Cluster Controller will support any RS-232-C device except the 2635B and 2382A.

** 2626W works as a multipoint terminal but not with HPWORD.

Series 48 Configuration Worksheet

	Connection Method					
	Pt-to-Pt with ATP or ADCC					
	Direct Connect					
Product	Daisychain* Multipoint	ADCC/ATP Modem	ATP Type 422	ADCC/ATP Type 232-C	Terminal Attached	
Serial Printers**						
2932A	N/A	_____	_____	_____	_____	
2934A	_____	_____	_____	_____	_____	
2563A/B/2564B	_____	N/A	_____	_____	N/A	
2601A	N/A*	N/A	N/A	_____	_____	
2602A	N/A*	N/A	N/A	_____	_____	
2603A	N/A	N/A	N/A	_____	_____	
Page Printers**						
2686A/D	N/A	N/A	N/A	_____	N/A	
2687A	N/A	N/A	N/A	_____	N/A	
33440A	N/A	N/A	N/A	_____	N/A	
Personal Office Computers						
Touchscreen (150)	N/A*	_____	_____	_____	N/A	
Portable Plus	N/A*	_____	N/A	_____	N/A	
VECTRA	N/A*	_____	_____	_____	N/A	
Subtotal (this page)	18B _____	19B _____	20B _____	21B _____	22B _____	
Subtotal (previous page)	18A _____	19A _____	20A _____	21A _____	22A _____	
Totals (both pages)	18 _____	19 _____	20 _____	21 _____	22 _____	

Line 18: MAX = 95

Line 19: MAX = 88

Sum of lines 19, 20, and 21: MAX = 120

Sum of lines 18, 19, 20, and 21: MAX = 152

Sum of lines 20 and 21: MAX = 120

* The 2333A and 2334A Cluster Controller will support any RS-232-C device except the 2635B and 2382A.

** Note device maximums in Section VI of worksheets.

Series 48 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

B. Advanced Terminal Processors (ATP).

Step #1:

Determine:

- a. Number of ATP modem ports needed from line 19 (MAX=48)
- b. Number of ATP direct connect ports needed; sum of lines 20 and 21 (MAX=96)
- c. Additional ports may be connected using the ADCC. (See Section C.)

23 _____

24 _____

Step #2:

Determine what products you should order to satisfy your *ATP modem port* requirement using the following table.

# ATP Modem Ports Required			
1-12	13-24	25-36	37-48
1 30274A 1 Opt. 048	1 30274A 1 Opt. 048 1 30155A 1 Opt. 048	1 30274A 1 Opt. 048 1 30274A 1 Opt. 001 1 Opt. 048 1 30155A 1 Opt. 048	1 30274A 1 Opt. 048 1 30274A 1 Opt. 001 1 Opt. 048 2 30155A 2 Opt. 048

Please note that ATP Modem Port Controllers are supported on the Series 48 ONLY if the system includes an ATP Expansion Package (either modem or direct connect). In addition, only 24 modem ports are supported per ATP Modem Expansion Package. The additional Modem Expansion Package must be ordered with Option 001 to delete the SIB.

30274A	ATP Modem Expansion Package (order Option 048) from table above.	25A _____
30155A	ATP Modem Port Controllers (order Option 048) from table above.	25B _____

Series 48 Configuration Worksheet

Step #3:

Determine what products you should order to satisfy your *ATP direct connect* port requirement using the following table. Select the appropriate column and row, corresponding to your modem and direct connect port requirements, and order the products indicated at their intersection. Unused modem ports may be used for RS-232-C direct connections. *Note that all columns indicating modem port requirements greater than zero (0) assume that you have already ordered Modem Port Controllers and the Modem Expansion Package in Step #2.*

# ATP Direct Connect Ports Required	# ATP Modem Ports Required				
	0 Modem Ports	1-12 Modem Ports	13-24 Modem Ports	25-36 Modem Ports	37-48 Modem Ports
1-12 Direct Ports	1 30273A 1 Opt. 048	1 30145A	1 30145A	1 30145A	1 30145A
13-24 Direct Ports	1 30273A 1 Opt. 048 1 30145A	2 30145A	2 30145A	2 30145A	2 30145A
25-36 Direct Ports	1 30273A 1 Opt. 048 2 30145A	3 30145A	3 30145A	3 30145A	3 30145A
37-48 Direct Ports	1 30273A 1 Opt. 048 3 30145A	4 30145A	4 30145A	4 30145A	4 30145A
49-60 Direct Ports	1 30273A 1 Opt. 048 4 30145A	5 30145A	5 30145A	5 30145A	N/S
61-72 Direct Ports	1 30273A 1 Opt. 048 5 30145A	6 30145A	6 30145A	N/S	N/S
73-84 Direct Ports	1 30273A 1 Opt. 048 6 30145A	6 30145A 1 30145A 1 Opt. 048	N/S	N/S	N/S
85-96 Direct Ports	1 30273A 1 Opt. 048 6 30145A 1 30145A 1 Opt. 048	N/S	N/S	N/S	N/S

Series 48 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

Notes:

- (1) The highest numbers for the row and column selected above will be the actual number of ports received (e.g. in the 13-24 port range, 24 ports will be provided).
- (2) Use your total ATP direct connect port requirement minus the number of ATP modem ports used for RS-232-C direct connections to select the appropriate row in the table on the previous page.
- (3) This table configures all add-on Direct Connect Port Controllers, whenever possible, on the system side junction panel in order to preserve the free-standing junction panel space for add-on Modem Port Controllers. However, you may install add-on Direct Connect Port Controllers on a free-standing junction panel. In that case you must order Option 048 with product 30145A to obtain the right cable. Note that there are no advantages in doing so.
- (4) If no modem ports are required, the ATP Expansion Package is not mandatory. Up to 72 direct connect ports may be configured with one SIB (30144A) and six Direct Connect Port Controllers (30145A).
- (5) N/S = Not Supported.

30145A	ATP Direct Connect Port Controller from preceding table.	25C _____
30273A	ATP Direct Connect Expansion Package from preceding table.	25D _____

Series 48 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

Step #4:

You must order the appropriate number of Option 002s for each 30273A and 30145A in order to obtain the right number of RS-232-C versus RS-422 ports from line 20. Use the following table to determine the number of Option 002s you should order per 30273A and 30145A.

Per 30273A or 30145A:

# Option 002s	# RS-422 ports	# RS-232-C ports
0	12	0
1	8	4
2	4	8
3	0	12

Total Option 002s: Line 25C plus 25D, times "12", minus line 20, divided by "4".

25E _____

Step #5:

30144A System Interface Board (SIB). Order ONLY if you have not ordered an ATP Expansion Package (30273A or 30274A) and are still ordering ATP Direct Connect Port Controllers. (MAX=1)

26 _____

Series 48 Configuration Worksheet

Product Number	Description	Quantity
C. ADCC Asynchronous Data Communications Controller.		
If you require more than 96 direct connect ports or more than 48 modem ports, you must order the ADCC (MAX=120 point-to-point devices). <i>At a minimum, you must order one ADCC-Main to support the system console; it cannot be supported on the ATP.</i> ADCC ports required [(Total of lines 19 and 21) minus the number of RS-232-C ATP direct connect ports configured and ATP modem ports configured, i.e., sum of (lines 24A and 24B times "12") and (line 25E times "4")].		
		27 _____
	Total ADCC-Main and ADCC-Extender cards required (Divide line 27 by "4" and round up to the nearest integer) (MIN=1; MAX=15)	28 _____
30018A	ADCC-Main (Divide line 28 by "2" and round up to the nearest integer; internal cables included with Option 044; external cables for devices must be ordered separately.)	29 _____
30019A	ADCC-Extender (line 28 minus line 29; internal cables included with Option 44; external cables for devices must be ordered separately.)	30 _____

IX. Network Links.

HP to HP System Lines (30270A, 30271A, 32187A and 32188A)	31A _____
HP to IBM System Lines (30246A and 30251A)	31B _____
Multipoint Lines (32026A, 32027A and 32028A)	31C _____
Local Area Network (30242A) (MAX=1)	31D _____
Total number of Links (INPs) (Sum of Lines 31A, 31B and 31C; MAX=7*)	31 _____

* Additional Links without hardware (Option 490) may be supported.

Series 48 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

X. I/O Expansion.

A. General I/O Channels (GICs).

To determine the number of GICs required on the system, refer to the discussion on GICs in the Series 48 maximum system configuration section of this chapter. *A figure showing five GICs has been included in the previous section on GICs for your use as a configuration worksheet.*

(Note: To configure GICs you must take into consideration peripheral speed, electrical device loads, cable lengths, peripheral incompatibilities and system performance. This information is contained in the Chapter One Appendix.)

30079A	Optional GICs (MAX=3. Note that two GICs are shipped standard with a new system order. Box swap upgrade systems do not include the two standard GICs; internal cables included by ordering Option 044; external HP-IB cables are supplied with devices.)	32 _____
--------	--	----------

Series 48 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

B. Junction Mounting Panels.

The sum of:

Line 12C - 261X Line Printer Series	33A	_____
Line 31 - Network Links/INPs	33B	_____
GICs included standard with system	33C	_____
Line 32 - Optional GICs	33D	_____
ATP Direct Connect Controllers (AIBs)		
Line 25C and line 25D times "3"	33E	_____
ADCCs:		
Line 28 times "1.5"	33F	_____
Line 31D - LANIC	33G	_____
 Total of lines 33x	 33	 _____

Each Series 48 has 12 junction panel cutouts. Three junction mounting panels for GICs, LPIs, or INPs can be configured on a cutout. Each direct connect AIB uses three junction mounting panels (12 ports) and consumes a full cutout. Junction mounting panels for Modem Port Controllers are housed only in the remote junction panel box of the ATP Expansion Package. Direct Connect Port Controllers may be mounted there as well. ADCCs have larger junction mounting panels than other devices. Two ADCC junction mounting panels (8 ports) consume a full cutout. *A figure accompanying junction panel configuration rules has been included in the section on junction panels. Please use this as a configuration worksheet to ensure that you have stayed within the limitations of the junction panel configuration rules.*

C. I/O Card Slots.

I/O Card Slots Required

The sum of:

Line 12C - 261x Line Printer Interface Cards	34A	_____
Line 31 - Network Links/INPs	34B	_____
Line 28 - ADCC Cards	34C	_____
Line 25A and 25B - Modem Port Controllers	34D	_____
Line 25C and 25D - Direct Connect Port Controllers (AIB)	34E	_____
Line 26, 25A or 25D - System Interface Boards (SIB) (MAX=1)	34F	_____
Line 32 - Optional GICs	34G	_____
GICs included standard	34H	_____
Line 31D - LANIC	34I	_____
 Total of lines 34x, (MAX=26)	 34	 _____



Series 58

Minimum System Configuration	1-131
Maximum System Configuration	
Ordering the SPU	1-132
MPE Media Products	1-132
The Card Cage	1-132
Memory Expansion	1-134
Junction Panels	1-134
LANIC	1-135
General I/O Channels	1-135
Peripherals	
Disc Drives	1-137
Integrated Storage Units	1-137
Magnetic Tape Drives	1-138
System Printers	1-138
Other Peripherals	
Flexible Disc Drive	1-139
Card Reader	1-139
Power Line Conditioners	1-139
Multiple System Access Selector	1-139
Data Communications	
Terminal Connection	1-140
Support Link Modem	1-140
System Console	1-140
ADCC	1-140
ATP	1-141
Output Spooling	1-143
Serial Connected Printers and Plotters	1-144
Network Links/INPs	1-144
Configuration Worksheets	1-145



HP 3000 SERIES 58 MINIMUM SYSTEM CONFIGURATION

Supplied Hardware

- Central Processing Unit.
- System Clock.
- Control and Maintenance Processor.
- Two General I/O Channels (GICs) for System Disc and Backup Tape Drive. (These GICs are not included with box swap system upgrades.)
- 4 Mb Fault Control Memory with Controller.
- 32 Kb Cache Memory
- System Mainframe Cabinet including Card Cages and Power Supplies supporting the CPU, up to 8 Mb Memory, and 26 I/O Card Slots.
- Built-in Isolation Transformer.
- Support Link Modem.

Additional Required Hardware:

- System Console: Any 262x or 239x terminal.
- System Console Cable: See Chapter 4.
- One System Disc: 7945A, 7920M, 7925M, 7957A, 7958A 7933H/XP, 7935H/XP, 7936H/XP or 7937H/XP Master Disc Drive or 7911P, 7912P, 7914P, 7914CT, 7914TD or 7914ST Integrated Storage Unit.
- One Asynchronous Data Communications Controller (ADCC-Main) to connect the console to the system.
- One Magnetic Tape Drive for System Backup: 7914TD, 7914ST, 7970E, 7971A, 7974A, or 7978A/B, or 9144A, 35401A cartridge tape drive..

Supplied Software

Standard on each HP 3000 system is the Fundamental Operating Software which includes:

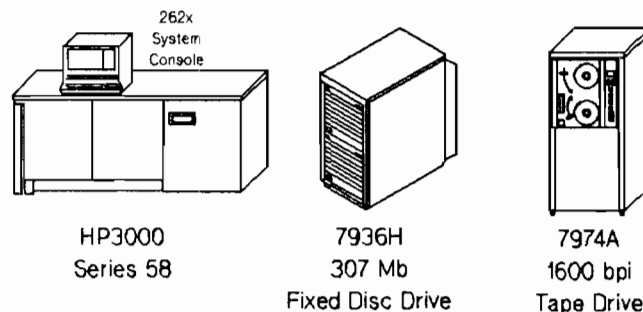
- Multiprogramming Executive (MPE) Operating System.
- Text Editor (EDIT/V).
- File Copying Utility (FCOPY/V).
- Sort and Merge Package (SORT-MERGE/V).
- Data Base Mgmt. System (TurboIMAGE/V)
- Data Base Inquiry Language (QUERY/V).
- Data Entry and Forms Management Software (VPLUS/V).
- Keyed Sequential Access Method Software (KSAM/V).
- A complete User Manual Set is supplied with the system hardware. (For a Manual Listing, please see the chapter on Manuals.)

All of the Fundamental Operating Software is included in the system, but still must be ordered separately. Please see the section on MPE Media Products. Note: Series 58 system is supported on T-MIT or later; however, only U-MIT or later support TurboIMAGE.

The Series 58 also includes Disc Caching, an I/O performance product, which is not a part of the Fundamental Operating Software.

Note that the customer and CE need to work together on site preparation prior to system installation.

HP 3000 SERIES 58 SYSTEM CONFIGURATION EXAMPLE



HP 3000 SERIES 58 MAXIMUM SYSTEM CONFIGURATION GUIDELINES

Ordering the System Processor Unit (SPU)

To obtain the Series 58 System Processor Unit order product number 32558C for new systems or 32558CH for box swap upgrades.

The Series 58 runs MPE-V/E with disc caching as its standard operating system.

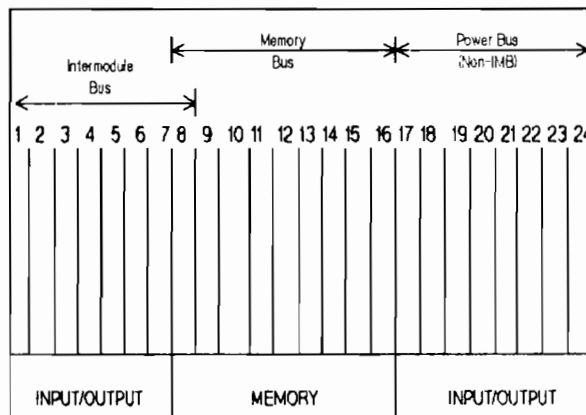
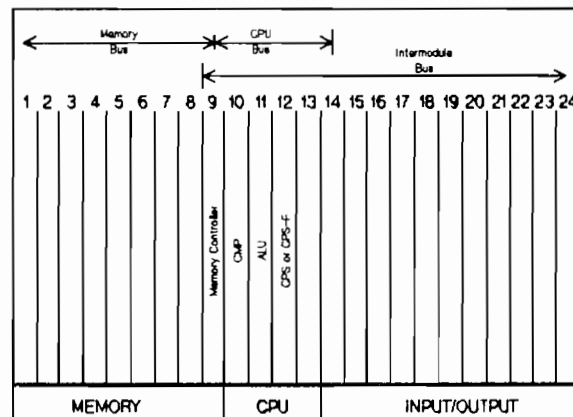
MPE Media Products

An MPE Media Product must be ordered with every HP 3000 system to designate MPE V/E and the media type (cartridge tape or 1600 bpi magnetic tape). The MPE Media Product is 51450A. Option 603 must be specified for the Series 58. To designate 1600 bpi magnetic tape, you must order Option 051; for cartridge tape media, you need to order Option 022. The latest versions of the Fundamental Operating System (FOS) is specified by Option 200. Please see a current Corporate Price List for ordering other versions of FOS. The Series 58 requires MPE V/E T-Delta-5 or later.

The Card Cages

The Series 58 comes standard with two side-by-side card cages. Each card cage has 24 card slots as shown in the figure below:

Please photocopy this page and use it as a worksheet:



Configuration Restrictions for I/O Portions of the Card Cages

- ADCC-Main and ADCC-Extender cards must be adjacent to each other.
- ATP/SIB and ATP/AIB cards must be adjacent to each other.
- A maximum of six ATP/AIB cards may be configured when the system includes two memory controllers.
- Remember also to include the two standard GICs and the required ADCC-Main in your configuration.

In the first card cage, slots 1 through 8 support system memory modules. The standard memory controller is configured in slot 9. Slots 10 through 13 house the CPU cards. (For the purpose of correct ordering, it is not necessary to be concerned with the configuration of cards in the CPU portion of the card cage.) Slots 14 through 24 support I/O cards including those cards for the Advanced Terminal Processor (ATP), Asynchronous Data Communications Controller (ADCC), the Local Area Network Interface Controller (LANIC), General I/O Channel (GIC), Intelligent Network Processor (INP), and 261X Line Printer Interface (LPI).

In the second card cage, slots 1 through 7 and 17 through 24 support I/O cards. Slots 1 through 7 will support any of the I/O cards listed in the previous paragraph. Slots 17 through 24 are not connected to the IMB and can support only INP and LPI cards. Slots 9 through 16 support memory modules.

There are a total of 26 slots in both card cages that support I/O cards. Of this total, 18 I/O slots are directly connected to the IMB.

All card cage slots supply power. In card cage 1, slots 1 through 9 connect to the memory bus, and slots 10 through 13 connect to the CPU bus. The Intermodule Bus (IMB) connects slots 9 through 24 in card cage 1 and slots 1 through 8 in card cage 2. This IMB provides communications between the I/O cards, the memory subsystem, and the CPU.

The Series 58 supports one IMB which does not require an interface card in either card cage. (For a more extensive explanation of the function of the IMB please see the IMB discussion in the Series 68 maximum configuration section.) Slots 8 through 16 in card cage 2 connect to another memory bus. Slots 17 through 24 provide power only.

The LANIC card must be placed in the I/O portion of the card cage to be connected to the IMB. The LANIC can be placed in slots 14 through 24 of card cage 1, or slots 1 through 7 of card cage 2.

Memory Expansion

The Series 58 comes with one 4 Mb memory board standard in the minimum configuration. System memory sizes of 5 Mb, 6 Mb, 7 Mb, and 8 Mb are supported.

Memory can be increased by ordering memory expansion modules including: 1 Mb (30161A), 2 Mb (30273A or 30478A) or 4 Mb (30479A). 256 Kb cards are NOT supported on the Series 58. The 1 Mb, 2 Mb and 4 Mb products are single array boards each requiring one card slot. The Series 58 supports 5 memory array cards.

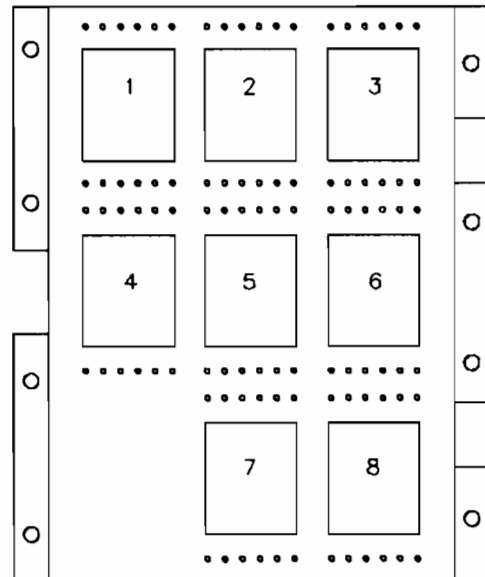
Junction Panels

Junction panels are used in the connection of GIC, INP, ADCC, ATP/AIB, LANIC and LPI cards to peripherals, terminals, and other systems. The number of these devices permitted in a configuration may be restricted by the amount of available junction panel space.

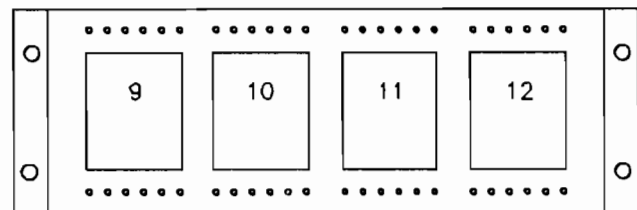
The Series 58 has two junction panels: one on the side and one on the rear. These panels allow external cabling for terminals, peripherals, and other systems to connect to internal system cabling.

Please photocopy this page and use it as a junction mounting panel worksheet:

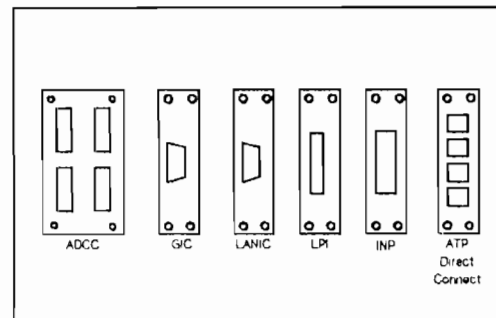
Side Junction Panel



Rear Junction Panel



Junction Mounting Panel Types



Junction Panel Rules:

The Series 58 junction panels are composed of 12 useable "cutouts" which are numbered from 1 to 12 in the preceding figures.

- Junction mounting panels that cover one-third of a cutout are used for each GIC, LPI, LANIC, and INP. One-third of a cutout is also required for each group of four ATP Direct Connect Ports.
- Junction mounting panels that cover one-half of a cutout are used for each ADCC-Main or ADCC-Extender.
- Cutout numbers 2, 3, 5, 6, 7, and 8 can be used for ATP terminal connections. Other cutouts cannot be used for the ATP because of inadequate space behind the junction panel for the ATPs junction mounting panel motherboard and the associated terminal port mini-boards.
- Only cutout numbers 2, 3, 5, 6, 7, and 8 can be used for the LANIC connection. Other cutouts cannot be used because they will cause the LANIC cable to bend.
- All cutouts may be used for ADCC connections, but not concurrently. A maximum of 15 ADCC boards are supported. Therefore, the largest number of cutouts that the ADCC could consume is 7.5.
- When using the ATP Expansion Package (30273A or 30274A), cables from the AIB cards terminate at a remote junction panel box. Modem Port Controller are mounted only on this remote junction panel.

LANIC

The Local Area Network Interface Controller (LANIC) is the hardware controller that interfaces to the Local Area Network (LAN). Each LANIC uses one I/O card slot and connects to one LAN. A maximum of one LANIC per system is supported. The LANIC is placed on the Intermodule Bus (IMB) and is a high-speed channel. The other type of high-speed channel is a GIC with one or more high-speed devices attached. Series 58 systems can support one LANIC and up to two high-speed GICs.

General I/O Channels

A General I/O Channel (GIC) is a hardware controller used to interface HP-IB (IEEE 488 protocol) peripherals to the Series 58. Each GIC is a board that uses one I/O card slot and supports one HP-IB cabling system. The number of peripherals which may be connected to a single GIC depends on maximum device limits, peripheral speed, cable length, and performance considerations. Please refer to the GIC discussion in the Chapter One Appendix for a complete explanation of these rules. Note that the internal HP-IB cabling length between the GIC and the junction panels is two meters for the Series 58.

Order 30079A to obtain additional GICs. You must also specify Option 044 to obtain the proper GIC cable for the Series 58.

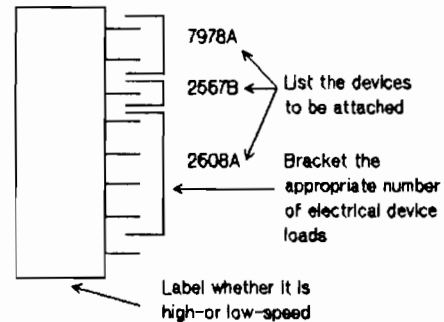
A maximum of five GICs are supported on the Series 58. No more than two of these GICs may have high-speed devices attached to them. Please refer to the peripheral table in the Appendix for a definition of high-speed devices and a high-/low-speed classification of supported devices.

Summary: GIC Attachment Restrictions

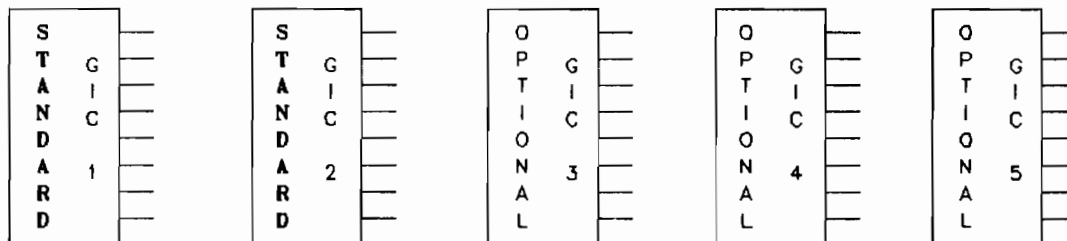
- A maximum of six devices may be attached to a GIC with one or more high-speed devices attached.
- Unless other restrictions apply, low-speed peripherals can share a GIC with high-speed devices.
- Some low-speed devices require a dedicated GIC to which no other devices may be attached. (See the GIC Interface table in Chapter One Appendix.)
- The 2608A line printer cannot be attached to a GIC with high-speed devices.
- The 2608S line printer can share a GIC with all high-speed devices except the 7906M, 7920M, and 7925M family of disc drives.

- It is not recommended that the same GIC be used for connecting the main system backup tape drive and the system disc (LDEV1). System performance may be degraded with such a configuration when the tape drive is in use.

How to Use the GIC Worksheet



Please photocopy this page and use it as a GIC configuration worksheet:



Peripherals

Disc Drives

One 7945A (55 Mb), 7911P (28 Mb), 7912P (65 Mb), 7914P (132 Mb), 7914TD (132 Mb), 7914CT (132 Mb), 7914ST (132Mb), 7920M (50Mb), 7925M (120 Mb), 7933H (404 Mb), or 7935H (404 Mb), 7936H (307 Mb), 7937H (571 Mb), 7957A (81 Mb) or 7958A (132 Mb) hard disc drive is required as the system disc (LDEV1).

The following table lists the maximum number of each type of disc drive that can be configured on the Series 58. When combining disc maximums, remember that only two high-speed GICs allowed with a maximum of six devices per high-speed GIC on a Series 58.

Series 58 Maximum Disc Drive Configuration:

7945A Disc	4
7911P/7912P/7914P/7914TD/ 7914ST Discs w/Cartridge Tape	1
Total 7911P/7912P Disc	4
7914CT Storage Unit	4
7914TD Storage Unit	2
7914ST Storage Unit	4
Total 7914P/7914TD/ 7914ST/7914CT	8
792x Master Discs	2
792x Slave Discs	14
793xH Discs	8
793xXP Discs	8
795x Disc	4
Total Discs	16

The 7920M and 7925M are master disc drives and each can support up to seven slave disc drives.

These slave drives are ordered as 7920S or 7925S and do not have their own controllers. They connect to the controller in the master drive and are not part of the HP-IB cabling. Consult the CE organization for proper interface and cabling requirements for 792x disc drives.

The 7945A, 7911P, 7912P, 7914P, 7914TD, 7914CT, 7914ST, 793xH, 793xXP and 795x disc drives each have their own controllers.

Disc performance may vary depending on the specific configuration of discs, controllers, and GICs. Check with an HP performance specialist if you have performance concerns.

Integrated Storage Units

The 7911P, 7912P, and 7914P are integrated storage units that include both a Winchester disc drive and an integral cartridge tape unit as standard. *Only one 7911P, 7912P, or 7914P with the cartridge tape unit is supported on the Series 58.* A maximum of four 7911P or 7912P and a maximum of eight 7914P disc drives are supported. Because only one cartridge tape unit is allowed on the system, additional 7911P, 7912P, or 7914P units must be ordered with the cartridge tape delete Option 140 specified.

The Winchester disc drive component in the 7911P, 7912P, and 7914P is shipped with a controller and a 1m HP-IB cable standard. If you order the cartridge tape unit on any of these integrated storage units, you must also order Option 001, which supplies a controller for the cartridge tape unit and a 1m HP-IB cable. *The cartridge tape unit requires its own dedicated GIC.*

The 7914TD and 7914ST combine into a single package a 7914 rackmounted disc drive, a half-inch tape drive, and an optional cartridge tape unit (Option 002). The 7914TD includes a 7970E master tape drive. The 7914ST includes a 7974A tape drive. A second 7914P disc drive can be added to the same cabinet by specifying Option 114. (Option 114 will automatically delete the cartridge tape unit for the additional disc drive.)

The 7914TD and 7914ST are supplied with HP-IB cables standard--one 2m cable for the disc drive, a 6m cable with the 7970E tape drive, or a 2m cable with the 7974A tape drive. When Option 002 is ordered, the cartridge tape drive, a controller, and a 1m HP-IB cable are shipped.

The 7914CT combines the 7914 disc drive with a 9144A cartridge tape unit which does not require a dedicated GIC (do not confuse 7914CT with cartridge tape in 7914P disc drive) or separate controller. Two 1m HP-IB cables are shipped with the 7914CT. A maximum of four 7914CT drives are supported on the Series 58.

Magnetic Tape Drives

A 9144A, 35401A, 7970E, 7914TD, 7971A, 7974A, 7914ST, 7976A, or 7978A/B magnetic tape drive is required for system backup for the Series 58.

The 7970E master tape drive requires a dedicated GIC and can support up to three slave tape drives. Both the 7914TD and 7971A include 7970E tape drives. The 7914ST includes a 7974A tape drive. The 9144A, 7974A, 7976A, and 7978A/B do not support slave drives; each drive has its own controller.

The following table lists the maximum number of each type of tape drive that can be configured on the Series 58. You may have one integrated cartridge tape drive in addition to these maximums.

Series 58 Maximum Tape Drive Configuration:

9144A Cartridge Tape Drive	4
35401A Cartridge Autochanger Tape	2
7970E/7971A/7914TD Masters	2
7970E/7971A Slaves	6
7974A/7914ST Tape Drives	4
7976A Tape Drives	2
7978A/B Tape Drive	4
Total Tape Drives	8

The 7970E master tape drive comes with a 6m HP-IB cable standard. Each 7970E slave drive comes with a 6.1m (non-HP-IB) multiunit cable for tape drives.

The 7971A is a package of one or two 7970E drives in various master and/or slave drive configurations. Consult the CE organization for correct options.

The 7974A, 7976A and 7978A/B are shipped with a 2m HP-IB cable standard. When configuring a 7976A tape drive, consult the CE organization for proper interface and cables. The 7974A and 7978A/B do not require a system option. You must specify Option 800 to obtain the 800 cpi capability on the 7974A.

The 9144A one-quarter inch cartridge tape drive is supported as a cold load device on the Series 58 with CPS-F microcode installed. The 9144A is shipped without an HP-IB cable. See Chapter for cable information.

The 35401A one-quarter inch cartridge autochanger tape subsystem is shipped standard with a 1m HPIB cable.

System Printers

The following table lists the maximum number of each type of system printer that can be configured on the Series 58:

Series 58 Maximum Printer Configuration:

Line Printers:	
2608A/2608S	2
256x	4
261x	4
Total Line Printers Supported	4
Intelligent Page Printers:	
2680A	2
2688A	2(3*)
Total Page Printers	2(3*)
Total System Printers Supported	6

* HP-IB Extender Support.

The 261x family of line printers does not connect directly to a GIC; rather, each one uses a 1m HP-IB ribbon cable between the 26069A translator and the GIC card. The line printer itself can be up to 500 feet away. The printer is connected by a parallel differential current driven line to a separate junction mounting panel.

An internal cable connects the interface card to the junction mounting panel. Consult the CE organization for proper interface card, internal cable and parallel differential cable requirements. Consult Boise Division for cable requirements beyond 15 meters.

The 2608A, 2608S, and 256x are dot matrix line printers that attach directly to GICs. They do not require a separate interface card in the I/O card cage. The standard 2608A includes a HP-IB interface and a 2m HP-IB cable. For the 2608S and 2566x order Option 344 to obtain the HP-IB interface and 4m HP-IB cable. Note that the 2608S cannot share a GIC with a 7906M, 7920M, or 7925M disc drive. Furthermore, the 2608A cannot be configured on a GIC with high-speed devices attached.

To obtain the Series 58 subsystem with 8m HP-IB cable for the 2680A or 2688A, order Option 344. Specify Option 099 with the 2680A to replace the 8m cable with a 2m cable. This option is not available on the 2688A. The 2680A and 2688A attach directly to a GIC and do not require a separate interface card in the I/O card cage.

The 256x, 2680A and 2688A printers may be connected via HP-IB Extenders. See the HP-IB Extender Section in the Chapter One Appendix.

Other Peripherals

Flexible Disc Drive

Only one 1.2 Mb flexible disc drive is supported on the Series 58. Product number 9895A must have Option 010 to specify a single master drive. The flexible disc drive attaches to a GIC. Order the HP-IB cable separately.

Card Reader

The 30106A 80-column card reader interfaces to the Series 58 through a dedicated GIC. You must have either Option 333 or the 30309A upgrade kit to provide a 2m HP-IB cable. When a card reader is configured on the system, a power line conditioner is required. The 30106A and 30309A are no longer orderable. (They will be supported until December 31, 1989.)

Power Line Conditioners

In many areas AC power line disturbances can interfere 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 through local third parties.

Multiple System Access Selector

The 26075A Multiple System Access Selector is a switch box that allows up to three HP-IB system processor units to share either a 2680A or a 7976A. An operator can manually switch the peripheral to be active on any one of the sharing systems. A maximum of one 26075A may be connected to a system. Other devices on the same GIC must be "downed" when switching the 26075A. Therefore, the switchbox cannot be on the same GIC as a disc drive. When determining HP-IB cable length, include 0.5m for the 26075A.

Data Communications

Terminal Connection

Point-to-point connections are made to the Series 58 through either the Asynchronous Data Communications Controller (ADCC) or the Advanced Terminal Processor (ATP). The ADCC and ATP support local (RS-232) and remote (full duplex) terminal and serial printer connections. The ATP also supports local RS-422 point-to-point connections. ATP modem support is provided only through the ATP Expansion Package (30274A).

Multipoint connections are made to the Series 58 through the MTS Modem Link or the MTS Data Link in combination with Multipoint Terminal Support Service Software. The Link products provide an Intelligent Network Processor (INP) board and related cables.

The following table summarizes the number of terminals supported on the Series 58, with and without the ATP Expansion Package.

Series 58 Maximum Workstation Terminal Configuration:

	Without ATP E/P	With ATP E/P
Direct Connect		
via ADCC	60	60
via ATP	72	96
total direct connect	104	120
Modem Connect		
via ADCC	60	60
via ATP	0	58
total modem connect	60	88
Multipoint	95	95
Maximum Terminal Support	152	152

There are a total of 15 I/O slots available for terminal connections. One of these slots must be reserved for an ADCC main to support the system console.

All 152 terminals can be logged on when the system is running MPE-V/E, while only 110 terminals can log on when running MPE-V/P. The maximum of 152 terminals includes all point-to-point, multipoint, system console, DS virtual, and X.25 PAD terminals. The number of terminals per multipoint line is normally determined by response time considerations, but may be restricted by the specific cabling option chosen. You may also use the 2333A multipoint or 2334A X.25 cluster controllers. The 2333A permits a group of up to 16 point-to-point devices to communicate with the Series 58 via the MTS Data Link or via modems and phone lines. The 2334A permits a group of up to 16 devices to communicate via X.25 Packet Switched Networks.

Support Link Modem

Under the HP Remote Support Program, all (non-upgrade) Series 58 systems are shipped with a free HP Support Link Modem (35031A).

System Console

The system console MUST be configured on an ADCC. One point-to-point connected 262x or 2392A terminal must be ordered as the system console. A cable must also be ordered; order Option 301/303 /305 for direct connect RS-232, Option 301 for U.S. modem connect, or Option 302 for European modem connect cables. (Although no longer orderable, the 2382A, 264x, and 2635B terminals are supported as system consoles.)

Asynchronous Data Communications Controller

The ADCC on the Series 58 consists of two products: The ADCC-Main (30018A) and the ADCC-Extender (30019A). Option 044 must be ordered with each of these products to obtain the correct internal cable. Each ADCC card uses one slot in the I/O section of the card cage. ADCC-Mains and ADCC-Extenders must be ordered (and installed) in alternating fashion (e.g. Main, Extender, Main, Extender, etc.). Each ADCC supports four RS-232 devices. The Series 58 supports a maximum of 15 ADCCs (60 devices). *A minimum of one ADCC-Main MUST be ordered with the system to attach the system console and up to three other RS-232 devices, including the Support Link Modem.*

Advanced Terminal Processor

The ATP on the Series 58 consists of several combinations of the following five products: ATP System Interface Board (SIB) (30144A), ATP Direct Connect Port Controller (30145A), ATP Modem Port Controller (30155A), ATP Direct Connect Expansion Package (30273A), or the ATP Modem Expansion Package (30274A).

A basic ATP subsystem on the Series 58 consists of either a) the System Interface Board with one Direct Port Controller or b) one of the ATP Expansion Packages. This subsystem is then expanded through addition of Direct Connect or Modem Port Controller boards; however, the *Modem Port Controllers may only be used with the ATP Expansion Package.*

Each Direct Connect or Modem Port Controller product includes both an Asynchronous Interface Board (AIB), which occupies a slot in the card cage, and the associated junction mounting panel motherboard and terminal port mini-boards.

When the ATP is configured on the Series 58, the minimum required subsystem consists of one SIB and one AIB. The minimum ATP configuration requires two I/O slots, supports up to 12 terminals, and uses one junction panel cutout. Without use of the ATP Expansion Package, the maximum ATP subsystem on the Series 58 is one SIB and six Direct Connect Port Controllers, supporting 72 terminals and consuming seven I/O slots.

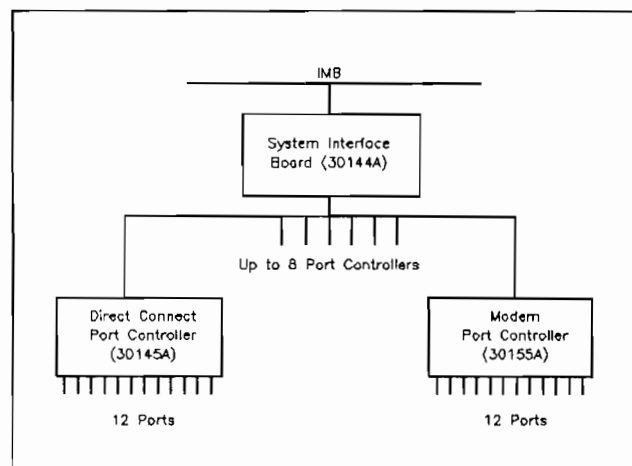
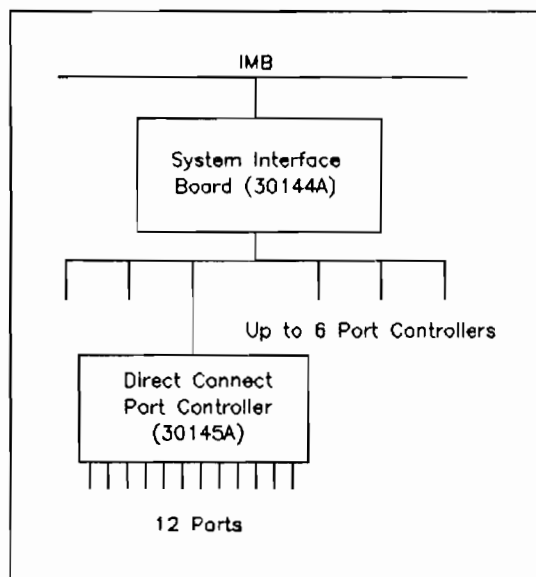
Each Direct Connect Port Controller (AIB) supports both RS-232 and RS-422 terminal connections. Twelve RS-422 ports are provided standard with each AIB, but they can be converted to RS-232 ports in groups of four by ordering Option 002. For example, to get a Direct Connect Port Controller with 12 RS-232 ports, you would order one 30145A with three Option 002's. If the Direct Connect Port Controller will be mounted on the system junction panel, do not order Option 048 on product 30145A.

ATP Subsystem Structure

With the ATP Expansion Package

ATP Subsystem Structure

Without ATP Expansion Package



Each ATP Expansion Package contains the System Interface Board (SIB), one Port Controller (either Direct Connect or Modem) which includes the Asynchronous Interface Board (AIB), and a free-standing junction panel box. Additional ports can be obtained in groups of 12 by ordering either the ATP Direct Connect Port Controller (30145A) or the ATP Modem Port Controller (30155A). Option 048 must be ordered with each of these products (30145A, 30155A, 30273A, 30274A) to provide the correct internal cable.

A maximum subsystem on the Series 58 consists of one SIB and eight Direct Connect or four Modem Port Controllers. This maximum sub-system is available only when using the ATP Expansion Package (30273A or 30274A). This configuration supports a maximum of 96 direct connect or 58 modem ports, consuming nine or five I/O slots respectively. To achieve the system maximum of 120 point-to-point terminals, this maximum ATP subsystem of eight AIBs (96 direct connect ports) and six additional ADCCs (24 more ports) must be ordered.

Output Spooling

For a discussion of output spooling and description of spooled device categories, please see the section on Output Spooling in the Series 68 Configuration section. Information on MTS printers can also be found in that section.

The following table indicates the maximum number of spooled devices supported on the Series 58:

Series 58 Maximum Spooled Device Configuration:

SYSTEM PRINTERS:

Line Printers: (HP-IB)

2608A/2608S	2
256x	4
261x	4
Total Line Printers	4

Page Printers:

2680A	2
2688A	2(3*)
Total Page Printers	2(3*)

Total System Printers 6

SERIAL CONNECTED PRINTERS:

2601A/2602A/2603A/2631B	8
2932A/2933A/2934A	8
2563A/B (ADCC/ATP)	1(3)**
2686A/D/33440A	1(2)**
2687A Page Printer (ADCC/ATP)	1(2)**

Total Serial Connected Printers: 8

* HP-IB Extender support.

** Two 2687As, two 2686A/D/33440As or three 2563As/2564Bs are supported when connected to the ATP, while only one is supported on the ADCC. The ATP uses direct memory access when offloading spoolfiles while the ADCC must run channel programs. Therefore, the ATP is more efficient and puts a smaller burden on the CPU.

The spooled device support numbers stated in the table above are based on performance considerations. If the system is running MPE-V/P, operating system table sizes could limit the number of simultaneously active spooled printers. In order to determine the maximum number of spooled devices which can be configured on an MPE-V/P system, the following formula must be used:

Max. Spooled Devices =

$$\frac{[256 - (1.25 \times \# \text{Sessions and Jobs}) - \# \text{INPs}]}{16}$$

where: #Sessions and Jobs= the maximum number of sessions and jobs which will be supported on the system

#INPs= the number of Network Links/ Intelligent Network Processors which will be configured on the system

After plugging in the values for the number of sessions and jobs and also the number of INPs, the maximum number of spooled devices will have been derived. *Take the result and round it down to the nearest whole number.* It is evident from this formula that the number of spooled devices a system can support will vary with the customer's configuration and application mix.

With the expanded tables of MPE-V/E, there is no longer a software tables limitation that further restricts the number of spooled devices on the Series 58 running MPE-V/E beyond the number of devices listed in the table on the previous page. System performance considerations are responsible for restricting the number of spooled devices to these limits. Note that the appropriate table structure must be configured for this number of spooled devices to be supported.

Serial Connected Printers and Plotters

The Series 58 supports up to eight remote spooled 293x or 2631B serial printers through the ADCC or through the ATP via RS-232 connections. When used as remote spooled printers, they are connected to an ADCC or ATP modem port via a modem. 2631B printers must include Option 331 to obtain the RS-232 remote spooled printer capability.

The Series 58 can support 2601A, 2602A and 2603A daisywheel printers via the ADCC or ATP through local direct connection only. Modem connection is not supported. The 2601A, 2602A, 2603A, 2631B, and 293x printers can also be attached as slave devices to terminals under the control of application programs.

The 2563A/B/2564B line printer is also supported on the Series 58 in a serial configuration. RS-232 (ADCC/ATP) and RS-422 (ATP) hardware connections are available; modem connections are not supported. One must specify Option 049 for RS-232 and Option 050 for RS-422 interfaces in the 2563A/B/2564B printer. Cables must be ordered separately; see Chapter 4 for further details. Do not order the subsystem option (Option 344) for the 2563A/B/2564B when it is being used as a serial printer.

The 2686A/D/33440A is supported via RS 232-C connection. Remote operation over modem is not supported.

The 2687A laser printer is available on the Series 58 as a serial printer only. RS-232 hardwired connection is supported, but modem connection is not available. Option 344 must be specified to obtain the Series 58 subsystem. Cables need to be ordered separately; see Chapter 4 for a list of available cables for the 2687A.

HP plotters can be configured as remote RS-232 devices, as slave devices to terminals and personal computers, or as eavesdrop devices between the terminal and the ADCC or ATP. As slave devices, both HP-IB and RS-232 connections may be possible depending upon the individual plotter.

Only RS-232 connections are available in an eavesdrop configuration or when connected point-to-point to an ADCC or ATP.

Network Link Products (INPs)

A maximum of seven Network Link products may be used concurrently on a Series 58. Any number of links can be supported, but only seven sets of Link hardware may be installed and/or configured. Each Network Link provides one communication line for use by one or more of the Network Services (DS, RJE, MRJE, IMF, NRJE, MTS, or NS).

Each set of Link hardware includes an Intelligent Network Processor (INP), and requires one I/O card slot in the Series 58 card cage. The INP counts as one device load on a GIC and is considered a low-speed device.

A 1m HP-IB ribbon cable is included for connecting the INP to a GIC. An external cable is also included but must be specified by a particular option when ordering, based on the connection desired. Please refer to the latest HP 3000 Price Guide for a complete list of options.

Series 58 Configuration Worksheet

Product Number	Description	Quantity
----------------	-------------	----------

I. System Processor Unit.

32558C	Series 58 System Processor	1A _____
--------	----------------------------	----------

MPE Media Product

A Media Product must be ordered with each HP 3000 system. Media Products for Series 58 systems contain version options and media options which must be selected to properly specify the correct FOS for the customer.

51450A	MPE V/E Media Product	1B _____
--------	-----------------------	----------

Opt. 2xx	MIT Release	1C _____
----------	-------------	----------

Opt. 603	Series 5x SPU	1D _____
----------	---------------	----------

II. Memory Expansion.

Total Memory Size (Standard memory is 4 Mb, MAX=8)

2A _____

32558C Opt 502	Add-on 2 Mb memory for 4x, 5x	2B _____
-------------------	-------------------------------	----------

Opt 503	Add on 4 Mb memory to 4x, 5x	2C _____
---------	------------------------------	----------

For configurations above the standard 4 Mb order:

30161A	1 Mb Memory Module for Series 4x, 5x	2D _____
--------	--------------------------------------	----------

30273A	2 Mb Memory Module for Series 5x	2E _____
--------	----------------------------------	----------

30478A	2 Mb Memory Module for Series 4x, 5x	2F _____
--------	--------------------------------------	----------

30479A	4 Mb Memory Module for Series 4x, 5x	2G _____
--------	--------------------------------------	----------

III. Disc Drives.

A. Storage Units *with* Integrated Cartridge Tape.

One of the following may be included:

7911P	28 Mb Integrated Storage Unit <i>with</i> Cartridge Tape (Option 001, MAX=1) (Two 1m HP-IB cables are included.)	3A _____
-------	--	----------

Series 58 Configuration Worksheet

Product Number	Description	Quantity
7912P	65 Mb Integrated Storage Unit <i>with</i> Cartridge Tape (Option 001, MAX=1) (Two 1m HP-IB cables are included.)	3B _____
7914P	132 Mb Integrated Storage Unit <i>with</i> Cartridge Tape (Option 001, MAX=1) (Two 1m HP-IB cables are included.)	3C _____
7914ST Opt. 002	132 Mb Mass Storage Subsystem <i>with</i> Integrated Cartridge Tape (Option 002, MAX=1) Because the 7914ST may combine a Cartridge Tape, a 1/2" tape drive, and one or two disc drives into a single package, you need to check lines 5B and 11D to ensure that the totals for those lines do not violate device support maximums. HP-IB cables are included with each storage unit: cartridge tape (1m), disc drive (2m), and tape drive (2m). (Also enter on line 11D in Tape Drive section.)	3D _____
7914TD Opt. 002	132 Mb Mass Storage Subsystem <i>with</i> Integrated Cartridge Tape (Option 002, MAX=1). The 7914TD may combine a Cartridge Tape, a 1/2" tape drive, and one or two disc drives into a single package, so you will need to check lines 5C and 11B to ensure that the totals for those lines do not violate device support maximums (A 6m, a 2m, and a 1m HP-IB cable is included with each tape drive, disc drive, and cartridge tape, respectively.) (Also enter on line 11B in Tape Drive section.)	3E _____
Total Integrated Storage Units <i>with</i> Integrated Cartridge Tape (Sum of lines 3x, MAX=1)		3 _____
B. Mass Storage Products (No Integrated Cartridge Tape).		
7911P	28 Mb Integrated Storage Unit (Option 140, Cartridge Tape Deleted, MAX=4) (A 1m HP-IB cable is included.)	4A _____
7912P	65 Mb Integrated Storage Unit (Option 140, Cartridge Tape Deleted, MAX=4) (A 1m HP-IB cable is included.)	4B _____
Total 7911P/7912P Disc Drives (Total of Lines 3A, 3B, 4A and 4B, MAX=4)		4 _____
7914P	132 Mb Integrated Storage Unit (Option 140, Cartridge Tape Deleted, MAX=8) (A 1m HP-IB cable is included.)	5A _____

Series 58 Configuration Worksheet

Product Number	Description	Quantity
7914ST Discs	132 Mb Mass Storage Subsystem (MAX=4) (Without Option 114, this subsystem contains one drive. With Option 114, the subsystem contains two drives. Enter the total number of disc drives on Line 5B. (For cabling information, see Line 3D.) (Also enter on line 11D in Tape Drive section.)	5B _____
7914TD Discs	132 Mb Mass Storage Subsystem (MAX=2) (Without Option 114, this subsystem contains one drive. With Option 114, the subsystem contains two drives. Enter the total number of disc drives on Line 5B.) (For cabling information, see Line 3E.) (Also enter on line 11B in Tape Drive section.)	5C _____
7914CT	132 Mb Integrated Storage Unit containing 9144A cartridge tape drive. (MAX=4) (Includes two 1m HP-IB cables.) (Also enter on line 11A in Tape Drive section.)	5D _____
	Total 7914P/7914TD/7914ST/7914CT Disc Drives (MAX=8, total of lines 3C, 3D, 3E, and 5x.)	5 _____
7920M	50 Mb Master Disc Drive (A 2m HP-IB cable is included with Option 102.) (MAX=2)	6A _____
7925M	120 Mb Master Disc (A 2m HP-IB cable is included with Option 102.) (MAX=2)	6B _____
	Total 7920/7925 Master Disc Drives (Sum of Lines 6x), (MAX=2)	6 _____
7920S	50Mb Slave Disc Drive (A 2.4m multiunit cable and a 15.2m data cable are included.) (MAX=14)	7A _____
7925S	120 Mb Slave Disc Drive (A 2.4m multiunit cable and a 15.2m data cable are included.) (MAX=14)	7B _____
	Total 7920/7925 Slave Disc Drives (Sum of Lines 7x), (MAX=14). This maximum would also require two 7920/7925 Master Disc Drives because each Master Drive supports up to 7 Slave Drives.)	7 _____

Series 58 Configuration Worksheet

Product Number	Description	Quantity
7945A	55 Mb Winchester Disc Drive (includes 1m HP-IB cable) (MAX=4)	8 _____
7933H/ 7935H	404 Mb Disc Drive (MAX=8) (A 1m HP-IB cable is included.)	9A _____
7936H	307 Mb Disc Drive (MAX=8) (a 1m HP-IB cable is included)	9B _____
7937H	571 Mb Disc Drive (MAX=8) (a 1m HP-IB cable is included)	9C _____
7933XP/ 35XP	Disc Drive with 1mb Cache (MAX=8) (a 1m HP-IB cable is included)	9D _____
7936XP	307 Mb Disc Drive with 2 Mb Cache (MAX=8) (a 1m HP-IB cable is included)	9E _____
7937XP	571 Mb Disc Drive with 2 Mb Cache (MAX=8) (a 1m HP-IB cable is included)	9F _____
7957A	81 Mb Disc Drive (MAX=4) (a 1 Mb HP-IB cable is included)	9G _____
7958A	132 Mb Disc Drive (MAX=4) (a 1 Mb Hp-IB cable is included)	9H _____
	Total 793X Disc Drives (Sum of line 9x,MAX=8)	9 _____
	Total Disc Drives & Integrated Storage Units (Sum of Lines 4, 5, 6, 7, 8 and 9) (MAX=16)	10 _____

Series 58 Configuration Worksheet

Product Number	Description	Quantity
IV. Magnetic Tape Drives.		
9144A/ 7914CT	1/4 inch Cartridge Tape Drive (Order cable separately with 9144A. Two 1m cables included with 7914CT). (MAX=4)	11A _____
35401A	One-quarter (1/4) inch Cartridge Autochanger Tape subsystem (MAX=2) (a 1m HP-IB cable is included)	11B _____
7970E/ 7971A/ 7914TD	1600 cpi Magnetic Tape Master Drive Subsystem (MAX=2, each master supports up to 3 Slave Tape Drives) (Each tape drive includes a 6m HP-IB cable.) (Also enter 7914TD on line 3E or 5C in Disc Drive section.)	11C _____
7970E	Slave Tape Drive Subsystem (MAX=6) (A 6.1m multiunit cable is included.)	11D _____
7974A/ 7914ST	1600 cpi (800 cpi optional) Magnetic Tape Subsystem (MAX=4) (2m HP-IB cable included.) (Also enter 7914ST on line 3D or 5B in Disc Drive section.)	11E _____
7978A/B	6250/1600 cpi Magnetic Tape Subsystem (MAX=4); (2m HP-IB cable included.)	11F _____
Total Magnetic Tape Drives (Sum of lines 11x, MAX=8)		11 _____

Series 58 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

V. System Printers.

2608S	400 lpm Dot Matrix Printer (MAX=2). Option 344 includes a 4m HP-IB cable.	12A _____
256X	300, 600, 900, 1200 and 1600 lpm Dot Matrix Printers (Option 344) (MAX=4) (A 4m HP-IB cable is included.)	12B _____
261xA	Line Printer Series (e.g., 2611A and 2619A) (MAX=4) (A 15m parallel differential cable is included with Option 344.)	12C _____
Total Line Printers (Sum of lines 12x, MAX=4)		12 _____
2680A/ 2688A	Intelligent Page Printers (MAX=2) (An 8m HP-IB cable is included with Option 344.) See discussion in Chapter One Appendix regarding connection of printers via HP-IB Extenders.	13 _____
Total System Printers (Sum of Lines 12 and 13, MAX=6)		14 _____

VI. Serial Printers.

2601A	40 cps Daisywheel Printer (MAX=8) (2601A includes RS-232 cable.)	15A _____
2602A	25 cps Daisywheel Printer (MAX=8) (Order cable separately.)	15B _____
2603A	48 cps Daisywheel Printer (MAX=8) (order cable separately).	15C _____
293x	200 cps Dot Matrix Printer (MAX=8) (Order cable separately.)	15D _____
2563A/B 2564B	Dot Matrix Printer (Option 049 for RS-232 or Option 050 for RS-422) (MAX=1 with ADCC or 3 with ATP) (Order cable separately.)	15E _____
2686A/D	8 ppm Laser Page Printer (MAX=1 with ADCC or 2 with ATP); (order cable separately)	15F _____
2687A	12 ppm Laser Page Printer (Option 344) (MAX=1 with ADCC, MAX=2 with ATP) (Order cable separately.)	15G _____
Total Serial Printers (Sum of lines 15x, MAX=8)		15 _____

Series 58 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

VII. Other Peripherals.

9895A	Flexible Disc Drive (Option 010, MAX=1) (Order HP-IB cable separately.)	16 _____
26075A	Multiple System Access Selector (MAX=1) (Order cable separately.)	17 _____

Series 58 Configuration Worksheet

VIII. Data Communications.

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

NOTE: Cabling must be ordered separately for these devices!

Product	Connection Method					
	Pt-to-Pt with ATP or ADCC				Terminal Attached	
	Daisychain* Multipoint	ADCC/ATP Modem	Direct Connect			
			ATP Type 422	ADCC/ATP Type 232-C		
Display Terminals						
239x	N/A*	_____	_____	_____	N/A	
2623A	N/A*	_____	_____	_____	N/A	
2624B	_____	_____	_____	_____	N/A	
2625A	_____	_____	_____	_____	N/A	
2626A	_____	_____	_____	_____	N/A	
2626W	N/A**	_____	_____	_____	N/A	
2627A	N/A*	_____	_____	_____	N/A	
2628A	_____	_____	_____	_____	N/A	
Plotters						
7440A	N/A	_____	N/A	_____	_____	
7470A	N/A	_____	N/A	_____	_____	
7475A	N/A	_____	N/A	_____	_____	
7510A	N/A	_____	N/A	_____	_____	
7550A	N/A	_____	N/A	_____	_____	
7570A	N/A	_____	N/A	_____	_____	
7580A/B	N/A	_____	N/A	_____	_____	
7585B	N/A	_____	N/A	_____	_____	
7586B	N/A	_____	N/A	_____	_____	
Data Collection Terminals						
3075A	_____	_____	N/A	_____	N/A	
3076A	_____	_____	N/A	_____	N/A	
3077A	_____	_____	N/A	_____	N/A	
3081A	_____	_____	N/A	_____	N/A	
Subtotal (this page)	18A _____	19A _____	20A _____	21A _____	22A _____	

* The 2333A and 2334A Cluster Controller will support any RS-232-C device except the 2635B and 2382A.

** 2626W works as a multipoint terminal but not with HPWORD

Series 58 Configuration Worksheet

	Connection Method					
	Pt-to-Pt with ATP or ADCC					
	Direct Connect					
Product	Daisychain* Multipoint	ADCC/ATP Modem	ATP Type 422	ADCC/ATP Type 232-C	Terminal Attached	
Serial Printers**						
2932A	N/A	_____	_____	_____	_____	
2934A	_____	_____	_____	_____	_____	
2563A/B/2564B	_____	N/A	_____	_____	N/A	
2601A	N/A*	N/A	N/A	_____	_____	
2602A	N/A*	N/A	N/A	_____	_____	
2603A	N/A	N/A	N/A	_____	_____	
Page Printers**						
2686A/D	N/A	N/A	N/A	_____	N/A	
2687A	N/A	N/A	N/A	_____	N/A	
33440A	N/A	N/A	N/A	_____	N/A	
Personal Office Computers						
Touchscreen (150)	N/A*	_____	_____	_____	N/A	
Portable Plus	N/A*	_____	N/A	_____	N/A	
VECTRA	N/A*	_____	_____	_____	N/A	
Subtotal (this page)	18B _____	19B _____	20B _____	21B _____	22B _____	
Subtotal (previous page)	18A _____	19A _____	20A _____	21A _____	22A _____	
Totals (both pages)	18 _____	19 _____	20 _____	21 _____	22 _____	

Line 18: MAX = 95

Line 19: MAX = 88

Sum of lines 19, 20, and 21: MAX = 120

Sum of lines 18, 19, 20, and 21: MAX = 152

Sum of lines 20 and 21: MAX = 120

* The 2333A and 2334A Cluster Controller will support any RS-232-C device except the 2635B and 2382A.

** Note device maximums in Section VI of worksheets.

Series 58 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

B. Advanced Terminal Processors (ATP).

Step #1:

Determine:

- a. Number of ATP modem ports needed from line 19 (MAX=58)
- b. Number of ATP direct connect ports needed; sum of lines 20 and 21 (MAX=96)
- c. Additional ports may be connected using the ADCC. (See Section C.)

23 _____

24 _____

Step #2:

Determine what products you should order to satisfy your *ATP modem port* requirement using the following table.

# ATP Modem Ports Required			
1-12	13-24	25-36	37-58
1 30274A	1 30274A	1 30274A	1 30274A
1 Opt. 048	1 Opt. 048	1 Opt. 048	1 Opt. 048
	1 30155A	1 30274A	1 30274A
	1 Opt. 048	1 Opt. 001	1 Opt. 001
		1 Opt. 048	1 Opt. 048
		1 30155A	2 30155A
		1 Opt. 048	2 Opt. 048

Please note that ATP Modem Port Controllers are supported on the Series 58 ONLY if the system includes an ATP Expansion Package (either modem or direct connect). In addition, only 24 modem ports are supported per ATP Modem Expansion Package. The additional Modem Expansion Package must be ordered with Option 001 to delete the SIB.

30274A ATP Modem Expansion Package (order Option 048) from table above. 25A _____

30155A ATP Modem Port Controllers (order Option 048) from table above. 25B _____

Series 58 Configuration Worksheet

Step #3:

Determine what products you should order to satisfy your *ATP direct connect* port requirement using the following table. Select the appropriate column and row, corresponding to your modem and direct connect port requirements, and order the products indicated at their intersection. Unused modem ports may be used for RS-232-C direct connections. *Note that all columns indicating modem port requirements greater than zero (0) assume that you have already ordered Modem Port Controllers and the Modem Expansion Package in Step #2.*

# ATP Direct Connect Ports Required	# ATP Modem Ports Required				
	0 Modem Ports	1-12 Modem Ports	13-24 Modem Ports	25-36 Modem Ports	37-58 Modem Ports
1-12 Direct Ports	1 30273A 1 Opt. 048	1 30145A	1 30145A	1 30145A	1 30145A
13-24 Direct Ports	1 30273A 1 Opt. 048 1 30145A	2 30145A	2 30145A	2 30145A	2 30145A
25-36 Direct Ports	1 30273A 1 Opt. 048 2 30145A	3 30145A	3 30145A	3 30145A	3 30145A
37-58 Direct Ports	1 30273A 1 Opt. 048 3 30145A	4 30145A	4 30145A	4 30145A	4 30145A
49-60 Direct Ports	1 30273A 1 Opt. 048 4 30145A	5 30145A	5 30145A	5 30145A	N/S
61-72 Direct Ports	1 30273A 1 Opt. 048 5 30145A	6 30145A	6 30145A	N/S	N/S
73-84 Direct Ports	1 30273A 1 Opt. 048 6 30145A	6 30145A 1 30145A 1 Opt. 048	N/S	N/S	N/S
85-96 Direct Ports	1 30273A 1 Opt. 048 6 30145A 1 30145A 1 Opt. 048	N/S	N/S	N/S	N/S

Series 58 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

Notes:

- (1) The highest numbers for the row and column selected above will be the actual number of ports received (e.g. in the 13-24 port range, 24 ports will be provided).
- (2) Use your total ATP direct connect port requirement minus the number of ATP modem ports used for RS-232-C direct connections to select the appropriate row in the table on the previous page.
- (3) This table configures all add-on Direct Connect Port Controllers, whenever possible, on the system side junction panel in order to preserve the free-standing junction panel space for add-on Modem Port Controllers. However, you may install add-on Direct Connect Port Controllers on a free-standing junction panel. In that case you must order Option 048 with product 30145A to obtain the right cable. Note that there are no advantages in doing so.
- (4) If no modem ports are required, the ATP Expansion Package is not mandatory. Up to 72 direct connect ports may be configured with one SIB (30144A) and six Direct Connect Port Controllers (30145A).
- (5) N/S = Not Supported.

30145A	ATP Direct Connect Port Controller from preceding table.	25C _____
30273A	ATP Direct Connect Expansion Package from preceding table.	25D _____

Series 58 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

Step #4:

You must order the appropriate number of Option 002s for each 30273A and 30145A in order to obtain the right number of RS-232-C versus RS-422 ports from line 20. Use the following table to determine the number of Option 002s you should order per 30273A and 30145A.

Per 30273A or 30145A:

# Option 002s	# RS-422 ports	# RS-232-C ports
0	12	0
1	8	4
2	4	8
3	0	12

Total Option 002s: Line 25C plus 25D, times "12", minus line 20, divided by "4".

25E _____

Step #5:

30144A System Interface Board (SIB). Order ONLY if you have not ordered an ATP Expansion Package (30273A or 30274A) and are still ordering ATP Direct Connect Port Controllers. (MAX=1)

26 _____

Series 58 Configuration Worksheet

Product Number	Description	Quantity
C. ADCC Asynchronous Data Communications Controller.		
If you require more than 96 direct connect ports or more than 58 modem ports, you must order the ADCC (MAX=120 point-to-point devices). <i>At a minimum, you must order one ADCC-Main to support the system console; it cannot be supported on the ATP.</i> ADCC ports required [(Total of lines 19 and 21) minus the number of RS-232-C ATP direct connect ports configured and ATP modem ports configured, i.e., sum of (lines 24A and 24B times "12") and (line 25E times "4")].		
	Total ADCC-Main and ADCC-Extender cards required (Divide line 27 by "4" and round up to the nearest integer) (MIN=1; MAX=15)	27 _____
30018A	ADCC-Main (Divide line 28 by "2" and round up to the nearest integer; internal cables included with Option 044; external cables for devices must be ordered separately.)	28 _____
		29 _____
30019A	ADCC-Extender (line 28 minus line 29; internal cables included with Option 44; external cables for devices must be ordered separately.)	30 _____

IX. Network Links.

HP to HP System Lines (30270A, 30271A, 32187A and 32188A)	31A _____
HP to IBM System Lines (30246A and 30251A)	31B _____
Multipoint Lines (32026A, 32027A and 32028A)	31C _____
Local Area Network (30242A) (MAX=1)	31D _____
Total number of Links (INPs) (Sum of Lines 31A, 31B and 31C; MAX=7*)	31 _____

* Additional Links without hardware (Option 490) may be supported.

Series 58 Configuration Worksheet

**Product
Number**

Description

Quantity

X. I/O Expansion.

A. General I/O Channels (GICs).

To determine the number of GICs required on the system, refer to the discussion on GICs in the Series 58 maximum system configuration section of this chapter. *A figure showing five GICs has been included in the previous section on GICs for your use as a configuration worksheet.*

(Note: To configure GICs you must take into consideration peripheral speed, electrical device loads, cable lengths, peripheral incompatibilities and system performance. This information is contained in the Chapter One Appendix.)

30079A Optional GICs (MAX=3. Note that two GICs are shipped standard with a new system order. Box swap upgrade systems do not include the two standard GICs; internal cables included by ordering Option 044; external HP-IB cables are supplied with devices.)

32 _____

Series 58 Configuration Worksheet

Product Number	Description	Quantity
----------------	-------------	----------

B. Junction Mounting Panels.

The sum of:

Line 12C - 261X Line Printer Series	33A _____
Line 31 - Network Links/INPs	33B _____
GICs included standard with system	33C _____
Line 32 - Optional GICs	33D _____
ATP Direct Connect Controllers (AIBs)	
Line 25C and line 25D times "3"	33E _____
ADCCs:	
Line 28 times "1.5"	33F _____
Line 31D - LANIC	33G _____
 Total of lines 33x	 33 _____

Each Series 58 has 12 junction panel cutouts. Three junction mounting panels for GICs, LPIs, or INPs can be configured on a cutout. Each direct connect AIB uses three junction mounting panels (12 ports) and consumes a full cutout. Junction mounting panels for Modem Port Controllers are housed only in the remote junction panel box of the ATP Expansion Package. Direct Connect Port Controllers may be mounted there as well. ADCCs have larger junction mounting panels than other devices. Two ADCC junction mounting panels (8 ports) consume a full cutout. *A figure accompanying junction panel configuration rules has been included in the section on junction panels. Please use this as a configuration worksheet to ensure that you have stayed within the limitations of the junction panel configuration rules.*

C. I/O Card Slots.

I/O Card Slots Required

The sum of:

Line 12C - 261x Line Printer Interface Cards	34A _____
Line 31 - Network Links/INPs	34B _____
Line 28 - ADCC Cards	34C _____
Line 25A and 25B - Modem Port Controllers	34D _____
Line 25C and 25D - Direct Connect Port Controllers (AIB)	34E _____
Line 26, 25A or 25D - System Interface Boards (SIB) (MAX=1)	34F _____
Line 32 - Optional GICs	34G _____
GICs included standard	34H _____
Line 31D - LANIC	34I _____
 Total of lines 34x, (MAX=26)	 34 _____

Series 6x/70

Minimum System Configuration	1-161
Maximum System Configuration	
MPE V	1-162
MPE Media Products	1-162
Memory Expansion	1-162
I/O Bay Card Cages	1-163
Junction Panels	1-165
LANIC	1-167
General I/O Channels	1-167
Peripherals	
Disc Drives	1-169
Integrated Storage Units	1-169
Magnetic Tape Drives	1-170
System Printers	1-171
Other Peripherals	
Flexible Disc Drive	1-171
Card Reader	1-172
Power Line Conditioners	1-172
Multiple System Access Selector	1-172
Data Communications	
Terminal Connection	1-172
System Console	1-174
ATP	1-174
Support Link Modem	1-174
Output Spooling	1-174
Spooled Output Devices	1-175
Serial Printers and Plotters	1-177
Network Links/INPs	1-177
Configuration Worksheets	1-178



HP 3000 SERIES 6x/70 MINIMUM SYSTEM CONFIGURATION

Supplied Hardware

- Central Processing Unit
- System Clock
- Diagnostic Control Unit (DCU)
- Two General I/O Channels (GICs): for System Disc and Backup Tape Drive (These GICs are not included with box swap system upgrade orders.)
- Eight (8) Megabytes Fault Control Memory with Controller (Series 70)
- Four (4) Megabytes Fault Control Memory with Controller (Series 68)
- 128 Kb Cache Memory (Series 70)
- System Mainframe Cabinet including Card Cage and Power Supplies for CPU, Cache, I/O Adapter, up to 8 Mb Main Memory, and Writeable Control Store
- Standard I/O Bay with Card Cage, includes 24 I/O Card Slots
- 60 Kb of Writeable Control Store (WCS)
- Built-in Isolation Transformers for the System Processor
- Support Link Modem
- A 2m HP-IB Cable to Increase Disc Cabling Flexibility

Additional Required Hardware:

- One System Console: HP 45851A Touchscreen II with 9123D Disc Drive.
- One System Console Cable (See Chapter 4.)
- One System Disc: 7914P, 7914CT, 7914TD, 7914ST, 7920M, 7925M, 7933H/XP, 7935H/XP, 7936H/XP, or 7937H/XP Master Disc Drive.
- One Advanced Terminal Processor (One System Interface Board and One Port Controller) to interface the system console.
- One Magnetic Tape Drive for System Backup: 7914TD, 7914ST, 7970E, 7971A, 7974A, or 7978A/B.

Supplied Software

Standard on each HP 3000 system is the Fundamental Operating Software which includes:

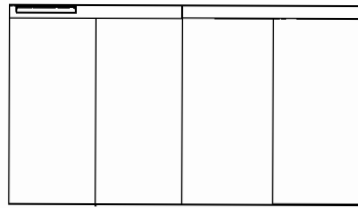
- Multiprogramming Executive (MPE) Operating System
- Text Editor (EDIT/V)
- File Copying Utility (FCOPY/V)
- Sort and Merge Package (SORT-MERGE/V)
- Data Base Mgmt. System (TurboIMAGE/V)
- Data Base Inquiry Language (QUERY/V)
- Data Entry and Forms Management Software (HP VPLUS/V)
- Keyed Sequential Access Method Software (KSAM/V)
- A complete User Manual Set and Diagnostic Set is supplied. (For a Manual listing, please see the Chapter on Manuals.)

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

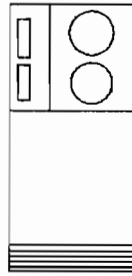
The Series 6x/70 includes Disc Caching, an I/O performance product, which is not a part of the Fundamental Operating Software. Also included is the Series 6x/70 Console Communications Program, which enables the Touchscreen II to function as the system console. This software is contained on a 3.5 inch diskette which is supplied with the system.

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

HP 3000 Series 68 or Series 70 Minimum System Configuration Example



HP 3000
Series 70
with Standard I/O Bay



7914ST
Tape and Disc
Drive Combination



Touchscreen II
System Console

HP 3000 SERIES 68 & Series 70 MAXIMUM SYSTEM CONFIGURATION GUIDELINES

MPE V

The Series 6x/70 runs MPE V/E UA-MIT as its standard operating system.

MPE Media Products

One MPE Media Product **MUST** be ordered with every Series 6x/70 system. The MPE Media Product is 51450A (MPE V/E). Option 604 must be ordered to designate the Series 6x and Option 605 must be ordered to designate the Series 70. 280 must be ordered for the Series 70 to specify UA-MIT; Option 051 should be ordered to specify 1600 cpi media. The operating system will then be shipped directly to the customer on 1600 cpi magnetic tape.

Note, Series 6x systems may select previous MITS; however, only U-MIT or later supports TurboIMAGE.

Memory Expansion

Two four megabyte modules using 256 Kb RAM fault-control memory are supplied with the Series 70 System Processor Unit. One four megabyte module using 256 Kb RAM fault-control memory is supplied with the Series 6x System Processor Unit. System memory sizes of 2 - 16 Mb are supported with any mix of 1 Mb and 4 Mb boards. *Note that the small memory configurations result from Series 6x upgrades; to achieve full performance Series 70 systems should be configured with a minimum of 8 Mb. (For S/6x systems expansion beyond 8 Mb requires MPE V/E U-MIT or later).*

Additional memory may be added by ordering product 30142A (1 Mb memory expansion module) or 30165A (4Mb memory expansion module). With initial orders option 500 may be ordered on the Series 70 to receive a discount on an additional 4 Mb board.

Memory boards are configured into the CPU card cage and do not use I/O bay card cage slots. A maximum of 8 memory boards may be placed in the CPU card cage, thus configurations above 8 Mb must contain some 4 Mb boards. Any 4 Mb boards must precede 1 Mb boards in the CPU card cage memory slots.

I/O Bay Card Cages

Ordering

The Series 70 can be obtained by ordering either product number 32471A for new systems or 32471AH for box swap upgrades. The Series 68 can be obtained by ordering either product number 32468C for new systems or 32468CH for box swap upgrades. Both systems come standard with one I/O bay including card cage. To order the optional second or "Auxiliary" I/O bay including card cage with the initial system order, please specify Option 250 on the SPU.

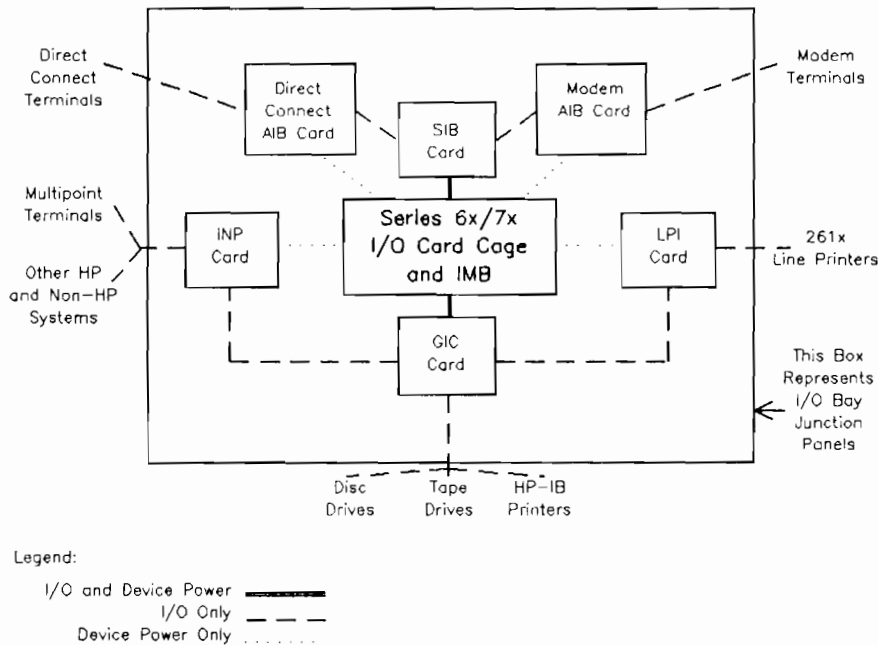
For a Series 6x/70 installed with only the standard I/O bay, the optional auxiliary I/O bay can be added later by ordering either product 30464A or 30464B. Check with your CE if there is any question as to which product to order. The "A" or "B" designation relates to the type of power supplies used. You will encounter an "A" system only when the system was a Series 64 and has been field upgraded to a Series 68/70. Note, however, that not all upgrades from the Series 64 have the "A" power supplies. "B" type Series 64s were first shipped in April, 1983.

Slot Availability

With the standard I/O bay card cage the SPU has a total of 24 I/O card slots; with the auxiliary I/O bay card cage, the total number of I/O slots increases to 48. These card slots are available to supply power to the following cards/boards:

- Network Link/Intelligent Network Processor (INP) cards (formerly product 30020B)
 - Local Area Network Interface Controller (LANIC) cards (included in 30242A)
 - 261x Line Printer Interface (LPI) cards (26069A, which are included with the 261x printer product)
- Five card cage slots in the standard I/O card cage will be filled by one IMB interface card (in slot 24), and two GICs, (all three of which are standard on the system) and by one SIB and one AIB (both of which must be ordered separately). When the two I/O bay configuration is ordered, these five cards are configured in the first I/O bay card cage, and one additional IMB interface card is configured in slot 24 of the second I/O bay card cage.
- Intermodule Bus (IMB) interface cards (30143A)
 - ATP/System Interface Boards (SIBs) (30144A)
 - ATP/Direct Connect or Modem Port Controllers (30145A and 30155A, respectively)
 - General I/O Channel (GIC) cards (30079A)

Conceptual Schematic of Series 6x/70 I/O Configuration



The Intermodule Bus (IMB)

IMBs allow GICs, SIBs, and the LANIC in the I/O bay card cage to communicate with the CPU and Memory Modules in the CPU card cage. INPs, AIBs, and 261X LPIs do not communicate directly with an IMB system. Through internal, inter-board cabling, INPs and 261X LPIs connect to GICs. In a similar manner, AIBs connect to SIBs.

Each Series 6x/70 I/O bay card cage requires at least one IMB to communicate with modules in the CPU card cage. These IMBs consist of an IMB interface card, a data path or bus embedded in the backplane, two cards configured in the CPU card cage (a central system bus interface card and an I/O buffer board), and two cables.

An IMB is supplied standard with each I/O bay ordered, and its interface card must be configured in slot 24 of each card cage. One additional IMB can be ordered as a separate product. This single, optional IMB can be installed as a second IMB on either one of the I/O bay card cages. (This IMB is known as the "I/O Adapter Module", product 30143A.) This optional IMB may help improve

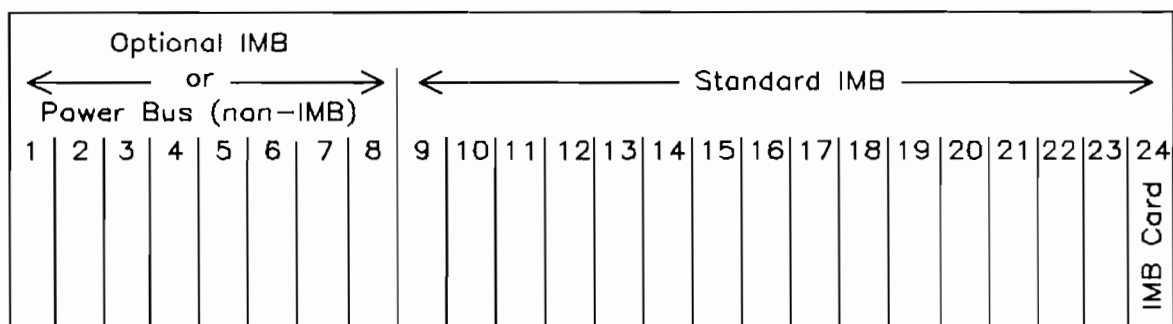
performance on large configuration systems and systems with heavy I/O usage. To determine whether your system would benefit from the optional IMB, please consult with an HP performance specialist.

A maximum of two IMBs are supported on a Series 6x/70 with one I/O bay. A maximum of three IMBs are supported on a Series 6x/70 with two I/O bays. *Any system with 3 IMBs must run MPE-V/E. A maximum of 2 IMBs are supported on a system running MPE-V/P regardless of whether it has one or two I/O bays.*

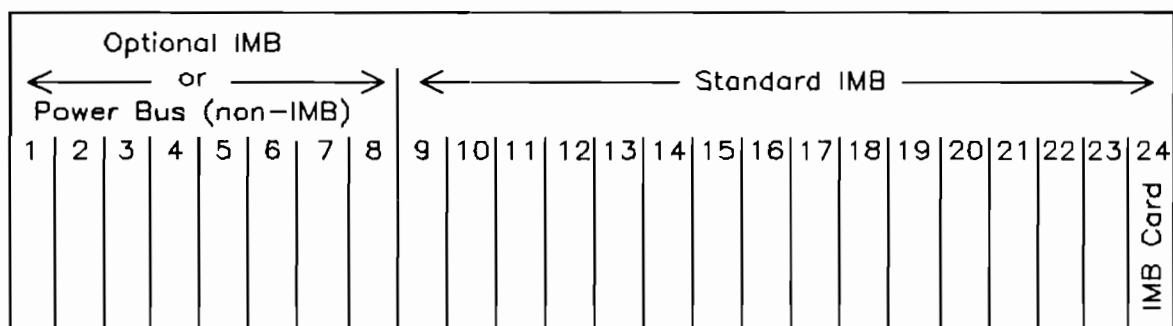
The optional IMB interface card must be configured in slot 8 of either I/O card cage for SIBs and GICs to be configured in slots 1 through 7. When there is no IMB interface card in slot 8, slots 1 through 8 act only as a power bus supplying power to AIB, INP, and 261X LPI cards.

Please photocopy this page and use it as an I/O bay card cage configuration worksheet:

Standard I/O Bay I/O Card Cage



Auxiliary I/O Bay I/O Card Cage



Please check to see that your configuration does not violate the following card cage rules. Except for the restrictions imposed by this set of rules, cards may be configured anywhere in the card cage.

I/O Bay Card Cage Rules

- IMB interface, GIC, SIB, AIB, INP, LANIC, and LPI cards each require one slot.
 - One IMB comes standard with each I/O card cage and must be placed in slot 24. One optional IMB can be configured in either (but not both) I/O card cage. This optional IMB must be placed in slot 8 in order for the GICs and SIBs to be configured in slots 1 to 7. When not configured with an IMB interface card, slots 1 through 8 simply supply power and support only AIBs, INPs, and 261x LPIs.
 - AIBs and their controlling SIB must be adjacent to one another.
 - INPs cannot be placed side-by-side in slots 1 and 2. The same is true of slots 9 and 10.
 - The LANIC card must be placed in the I/O portion of the card cage and be connected to the IMB.
- Remember to include the two standard GICs and the separately ordered SIB and AIB for the minimum system configuration.

Junction Panels

Junction panels are used in the connection of GIC, LANIC, INP, AIB, and LPI cards to peripherals, terminals, or other systems. The number of these devices permitted in a configuration may be restricted by the number of junction panel spaces available. Junction panels are found on the outside ends of each I/O bay and allow external cabling for terminals, peripherals and other systems to connect to internal system cabling.

Each I/O bay provides 48 junction mounting panels for a total of 96 junction mounting panels in the two I/O Bay Series 6x/70 configuration. On each bay the 48 mounting panels of the junction panel are separated into two sets of 24 mounting panels, one above the other.

Please photocopy this page and use it as a junction mounting panel worksheet.

Auxiliary I/O Bay Junction Panel

[illegible][illegible]

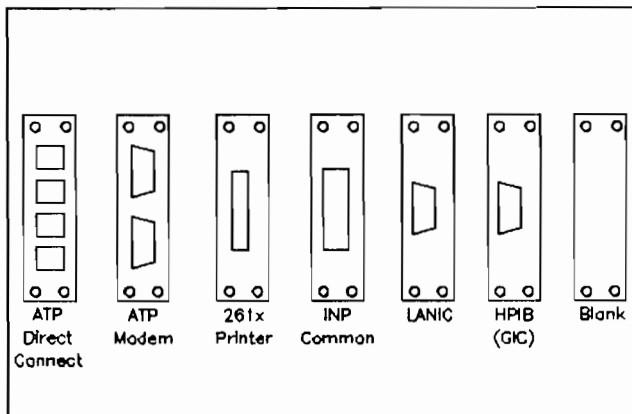
Junction Panel Rules

- There are 48 mounting panels per I/O bay junction panel.
- GIC, LANIC, INP, and LPI cards that are connected to external devices each require one mounting panel.
- Direct Connect ATP products each require 3 mounting panels that must be side-by-side. Each Direct Connect product supports up to 12 terminal ports or 4 terminal ports per mounting panel.
- Modem Port ATP products each require 6 mounting panels which must be side-by-side. Each Modem product supports up to 12 terminal ports or 2 terminal ports per mounting panel.
- Mounting panels can only be used to connect devices to GIC, LANIC, INP, AIB, and LPI cards that are in the same I/O card cage.
- *• The bottom 12 mounting panels on the standard I/O bay are reserved for connections to GICs, LANICs, INPs, and LPIs.

Standard I/O Bay Junction Panel

[illegible][illegible]

Junction Mounting Panel Types



LANIC

The Local Area Network Interface Controller (LANIC) is a hardware controller for interfacing to the Local Area Network (LAN). Each LANIC uses one I/O card slot and connects to one LAN. A maximum of one LANIC card per system is supported.

The LANIC connects directly to an Intermodule Bus (IMB) and is a high-speed channel. The other type of high-speed channel is a GIC with one or more high-speed devices attached.

A Series 6x/70 system supports up to three IMBs. *Each IMB can support a maximum of two high-speed channels.* This maximum can be either two high-speed GICs, or a high-speed GIC and a LANIC. A maximum system (three IMBs) can have either six high-speed GICs or five high-speed GICs and a LANIC.

General I/O Channels

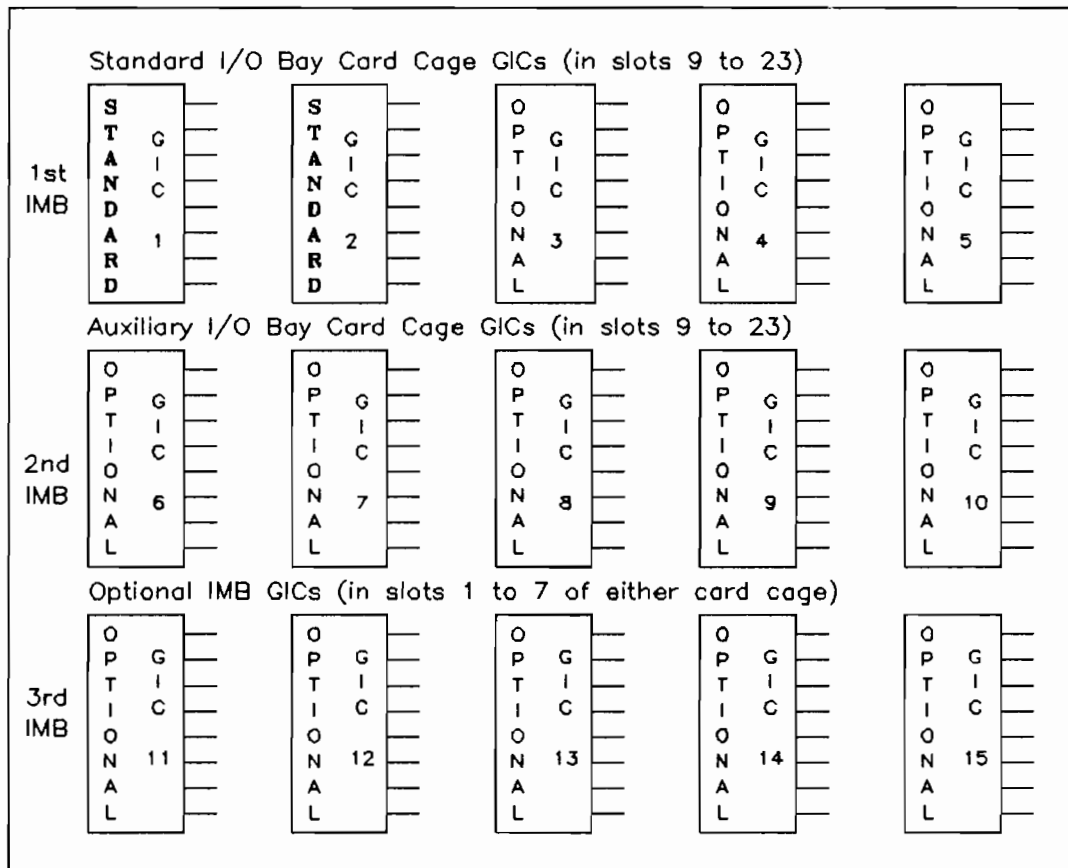
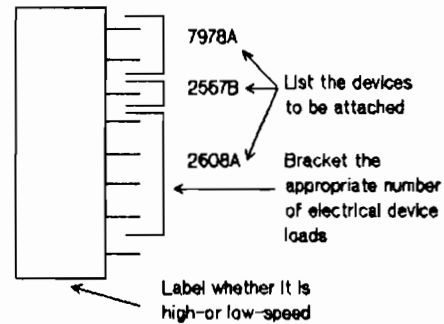
A General I/O Channel (GIC) is a hardware controller used to interface HP-IB (IEEE 488 protocol) peripherals to the Series 6x/70. Each GIC is a board that uses one I/O bay card slot, supports one HP-IB cabling system, and uses one junction mounting panel when connected directly to external devices. An HP-IB system may be used to connect from one to eight HP-IB peripherals. Peripherals connected to one GIC are linked together with HP-IB cables and connect to a single mounting panel. The number of peripherals which may be connected to a single GIC depends on peripheral speed, cable length restrictions, and performance considerations.

Up to five GICs are supported on each IMB. Thus, in the maximum configuration with two I/O bays and three IMBs, a maximum of 15 GICs are supported. Order product 30079A to obtain a GIC. You must also specify Option 064 to obtain the internal GIC cable for the Series 6x/70. See the Chapter One Appendix for details on supported peripherals and cabling requirements.

Summary: GIC Attachment Restrictions

- A maximum of six devices may be attached to a GIC with one or more high-speed devices attached.
- Unless other restrictions apply, low-speed peripherals can share a GIC with high-speed devices.
- Some low-speed devices require a dedicated GIC to which no other devices may be attached. (See the GIC Interface table in the Chapter One Appendix.)
- The 2608A line printer cannot be attached to a GIC with high-speed devices.
- The 2608S line printer can share a GIC with all high-speed devices except the 7906M, 7920M, and 7925M family of disc drives.
- It is not recommended that the same GIC be used for connecting the main system backup tape drive and the system disc (LDEV1). System performance may be degraded with such a configuration when the tape drive is in use.

How to Use the GIC Worksheet



PERIPHERALS

Disc Drives

One 7920M (50Mb), 7925M (120 Mb), 7914CT (132 Mb), 7914P (132 Mb), 7914TD (132 Mb), 7914ST (132 Mb), 7933H/35H (404 Mb), 7936H/XP (307 Mb), 7937H/XP (571 Mb), or 7933XP/35XP (404 Mb) disc drive is required as the system disc (LDEV1) and must be ordered separately for the Series 6x/70.

The following table lists the maximum number of each type of disc drive that can be configured on the Series 6x/70 with one or two I/O bays:

Series 6x/70 Maximum Disc Drive Configuration

	1 I/O Bay	2 I/O Bay
7911P/7912P/7914P/ 7914TD/7914ST Discs w/Cartridge Tape	1	1
Total 7911P/7912P	1	1
7914TD Discs	2	2
7914CT Discs	4	4
7914ST Discs	4	4
Total 7914TD/7914ST/ 7914P/7914CT Discs	8	8
7945A Discs	4	4
792x Master Discs	16	16
792x Slave Discs	14	14
793x Discs	16	24
793xXP Discs	16	24
795x Discs	4	4
Total Discs	16	24

The 7920M and 7925M are master disc drives and can each support up to seven slave disc drives. These slave drives are ordered as 7920S or 7925S and do not have their own controllers. They connect to the controller in the master drive and are not part of the HP-IB cabling. The 7945A, 7911P, 7912P, 7914P, 7914TD, 7914CT, 7914ST, 793x/XP and 795x disc drives each have their own controllers.

With the 7920M and 7925M, Option 102 must be ordered to obtain the HP-IB interface and a 2m HP-IB cable. Each 7920S and 7925S comes standard with two non-HP-IB cables, a disc drive multiunit cable and a data cable. Both are used to connect to 7920M or 7925M master drives.

Each 793x/XP and 795x disc drive is shipped with a 1m HP-IB cable standard. The 7945A, 7957A or 7958A are not supported as LDEV1 on the Series 6x/70.

Disc performance may vary depending on the specific configuration of discs, controllers, GICs, and IMBs. Check with an HP performance specialist if you have performance concerns.

Integrated Storage Units

The 7911P, 7912P, and 7914P are integrated storage units that include both a Winchester disc drive and an integral Cartridge Tape unit standard. Only one 7911P or 7912P is supported on the Series 6x/70; it must be ordered with the cartridge tape unit; and it cannot be configured as the system disc (LDEV1). A maximum of eight 7914Ps are supported. A 7914P hard disc drive can be configured as the system disc (LDEV1). Because only one cartridge tape unit is allowed on the system, additional 7914P units must be ordered with the cartridge tape delete Option 140 specified.

The Winchester disc drive component in the 7911P, 7912P, and 7914P is shipped with a controller and a 1m HP-IB cable standard. If you order the cartridge tape unit on any of these integrated storage units, you must also order Option 001 which supplies a controller for the cartridge tape unit and a 1m HP-IB cable. *The cartridge tape unit requires its own dedicated GIC.*

The 7914TD and 7914ST combine into a single package a 7914 rackmounted disc drive, a 1/2" tape drive, and an optional cartridge tape unit (Option 002). The 7914TD includes a 7970E master tape drive. The 7914ST includes a 7974A tape drive. A second 7914 disc drive can be added to the same cabinet by specifying Option 114. (Option 114 will automatically delete the cartridge tape unit for the additional disc drive.) The 7970E master tape drive will support up to three slave devices. The 7914TD and 7914ST are supplied with HP-IB cables standard -- one 2m cable for the disc drive, a 6m cable with the 7970E tape drive, or a 2m cable with the 7974A tape drive. When Option 002 is ordered, the cartridge tape drive, a controller, and a 1m HP-IB cable is shipped.

The 7914CT combines the 7914 disc drive with a 9144A cartridge tape unit which does not require a dedicated GIC or separate controller (do not confuse 7914CT with cartridge tape in 7914P disc drive). Two 1m HP-IB cables are shipped with the 7914CT. The 9144A cartridge tape unit is not supported as a cold load device on the Series 6x/70. In addition, it cannot be placed on the same GIC as either the system disc or the cold load device.

Magnetic Tape Drives

A 7970E, 7914TD, 7971A, 7974A, 7914ST, 7976A, or 7978A/B magnetic tape drive or a 9144A cartridge tape drive is required for system backup and distribution of software for all Series 68s and must be ordered separately. Both the 7914TD and 7971A include a 7970E tape drive. The 7970E master tape drive can support up to three slave tape drives. The 7914ST includes a 7974A tape drive. The 7974A, 7976A and 7978A/B do not support slave drives; each drive has its own controller.

The following table lists the maximum number of each type of tape drive that can be configured on the Series 68 with one or two I/O bays. You may have one integrated cartridge tape drive (in 7911P, 7912P, or 7914P) in addition to these maximums.

Series 6x/70 Maximum Tape Drive Configuration:

	1 or 2 I/O Bays
9144A Cartridge Tape Drive	4
35401A Cartridge Autochanger Tape	4
7970E/7971A/7914TD Masters	2
7970E/7971A Slaves	6
7974A/14ST Tape Drives	4
7976A Tape Drive	2
7978A/B Tape Drive	4
Total Tape Drives	8

The 7970E master tape drive comes with a 6m HP-IB cable standard. Each 7970E slave drive comes with a 6.1m (non-HP-IB) multiunit cable for tape drives.

The 7971A is a package of one or two 7970E tape drives in various master and/or slave drive configurations. Please see the HP 3000 Price Guide for the list of your options. Included with the options chosen are the appropriate cables.

The 7914TD includes a 7970E tape drive. The 7914ST includes a 7974A tape drive. For a description of the 7914TD and 7914ST configuration options see the paragraph in the Integrated Storage Unit section.

The 7974A, 7976A, and 7978A/B are shipped with a 2m HP-IB cable standard. Each 7976A must include Option 616 for the Series 68. The 7974A and 7978A/B do not require a system option. You may specify Option 800 to obtain the 800/1600 cpi capability on the 7974A.

The 9144A one-quarter inch cartridge tape drive is supported on the Series 68 as a cold load device. It can share a GIC with other coldload devices, but it's recommended that the 9144 be the 1st device on the shared GIC. Up to four 9144As are supported on the Series 6x/70. The 9144A is shipped without a HP-IB cable; please see Chapter 4 for cabling information.

The 35401A one-quarter inch cartridge autochanger tape subsystem is shipped with a 1m HP-IB cable. The 35401A is not supported on the S/6x,70 as a cold load device.

System Printers

The following table lists the maximum number of each type of system printer that can be configured on the Series 6x/70 with one or two I/O bays:

Series 6x/70 Maximum Printer Configuration:

	1 or 2 I/O Bays
Line Printers:	
2608A, 2608S,	4
256x	4
2611A/13A/17A/19A	4
Total Line Printers	8
Intelligent Page Printers:	
2680A	2
2688A	4(5)*
Total Page Printers	4(5)*
Total System Printers (Line Plus Page)	10

* HP-IB Extender support in parentheses.

The 261X family of line printers does not connect directly to a GIC; rather, each one uses a 1m HP-IB ribbon cable between the 26069A translator and the GIC card. The line printer itself can be up to 500 feet away. The printer is connected by a parallel differential current driven line to a separate junction mounting panel.

An internal cable connects the interface card to the junction mounting panel.

To obtain the 26069A interface card, internal cables, and external 15m parallel differential cable, order Option 364. Cabling beyond 15m must be ordered as a special from Boise Division.

The 2608A, 2608S, and 256x are dot matrix line printers that attach directly to GICs. They do not require an additional interface card in the I/O card cage, nor do they use an extra junction mounting panel space beyond the one used by the GIC. The standard 2608A includes an HP-IB interface and a 2m HP-IB cable. For the 2608S and 256x, order Option 364 to obtain the HP-IB interface and 4m HP-IB cable. Note that the 2608S cannot share a GIC with a 7920M or 7925M disc drive. Furthermore, the 2608A cannot be configured on a GIC with high-speed devices attached.

If the 2608S or 2563A/B is to be configured as a multipoint printer, it will be connected to an INP. Please see the Output Spooling section of this chapter.

Order Option 364 to obtain the Series 6x/70 subsystem with 8m HP-IB cable for the 2680A. Specify Option 099 with the 2680A to replace the 8m cable with a 2m cable. This option is not available on the 2688A. The 2680A and 2688A are similar to the 2608A/S in that they attach directly to a GIC and do not require an interface card in the I/O card cage.

The 2563A/B, 2564B, 2565A, 2566A/B, 2567B, 2680A, and 2688A printers may be connected via HP-IB Extenders. See the HP-IB Extender Section in the Chapter One Appendix.

Other Peripherals



Flexible Disc Drive

Only one 1.2 Mb flexible disc drive is supported on the Series 6x/70. Product 9895A must have Option 010 to specify a single master drive. The flexible disc drive attaches to a GIC. Order the HP-IB cable separately.

Card Reader

The 30106A 80-column card reader interfaces to the Series 6x/70 through a dedicated GIC. You must have either Option 333 or the 30309A upgrade kit to provide a 2m HP-IB cable. When a card reader is configured on the system, a power line conditioner is required. The 30106A and 30309A are no longer orderable. (They will be supported until December 31, 1989.)

Power Line Conditioners

In many areas AC power line disturbances can interfere 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 through local third parties.

Multiple System Access Selector

The 26075A Multiple System Access Selector is a switch box that allows up to three HP 3000s to share either a 2680A or a 7976A. An operator can manually switch the peripheral to be active on any one of the sharing systems. A maximum of one (1) 26075A may be connected to a system. Other devices on the same GIC must be "downed" when switching the 26075A. Therefore, the 26075A cannot be on the same GIC as a disc drive. When determining HP-IB cable length, include 0.5 meter for the 26075A.

Data Communications

Terminal Connection

Point-to-point connections are made to the Series 6x/70 through the Advanced Terminal Processor (ATP). The ATP supports modem, RS-232, and RS-422 connections. Multipoint connections are made to the Series 68 through the MTS Modem Link or the MTS Data Link in combination with Multipoint Terminal Support Service Software. The Link products provide an INP board and related cables.

The following table summarizes the number of terminals supported:

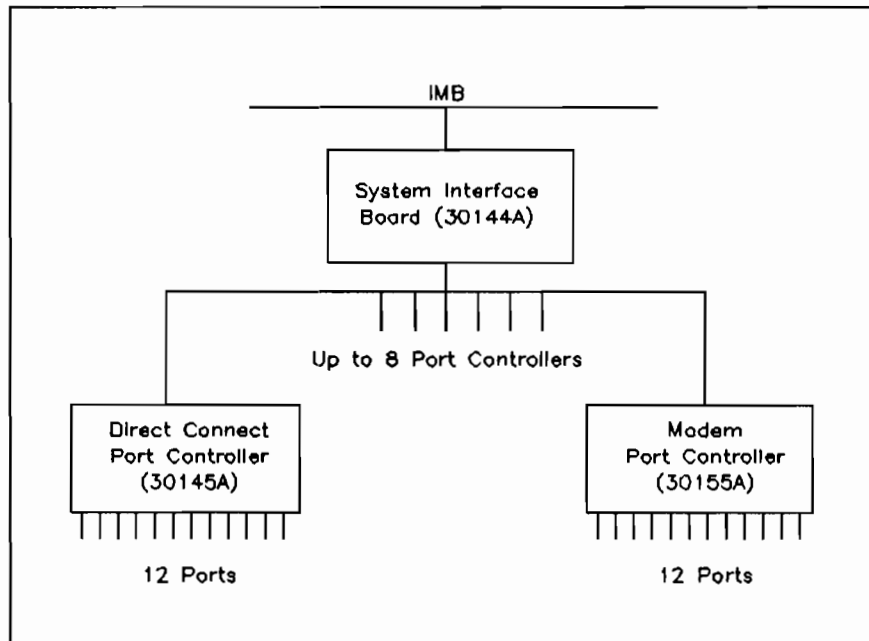
Series 6x/70 Maximum Terminal Configuration:

	1 I/O Bay		2 I/O Bay	
	MPE V/P	MPE V/E	MPE V/P	MPE V/E
Direct Connect	144	144	144	336
Modem	84	84	143	168
Total Pt-to-Pt	144	144	144	336
Multipoint	151	335	151	335
Total	152	400	152	400

When running MPE-V/P, a maximum of 110 terminals can be logged on the system. When running MPE V/E, 400 terminals can be logged on. While 400 terminals may be simultaneously logged on to a Series 6x/70 running MPE V/E, performance considerations may limit the number of simultaneous active sessions. The number of active sessions that can be supported is dependent on both the application and response time requirements. For many customer applications, 200 active sessions is a realistic maximum. This active session limit includes all point-to-point, multipoint, system console, and DS virtual terminals. Please consult with an HP performance specialist to determine the number of sessions that can be simultaneously active with a particular application.

The number of terminals per multipoint line is normally determined by response time considerations, but may be restricted by the specific cabling option chosen. You may also use the 2333A multipoint or 2334A X.25 cluster controllers. The 2333A permits a group of up to 16 point-to-point devices to communicate with the Series 68 via the MTS Data Link or via modems and phone lines. The 2334A permits a group of up to 16 devices to communicate with the Series 68 via X.25 Packet Switched Networks.

ATP Subsystem Structure



System Console

One point-to-point connected 45851A Touchscreen II with 9123D disc drive must be ordered as the system console. In addition, one of the following cables must be ordered: 13242x (direct connect RS-232), 13242P (direct connect RS-422), 13242N (U.S. Modem), or 13242M (European Modem). For console printing, the 2934A (Option 046) dot-matrix printer or the 2225A Thinkjet printer are supported with the Touchscreen II, and must be connected via the HP-IB interface.

The Series 6x/7x Console Communications Program is also required. It is contained on a 3.5-inch diskette which is supplied with the system or may be obtained by ordering P/N 32342-60002.

Also supported as the system console are the 2647F with Option 890 and the 2642A with Option 964.

Advanced Terminal Processor (ATP)

As shown in the preceding figure, the ATP on the Series 6x/7x consists of three products: ATP System Interface Board (SIB), 30144A; ATP Direct Connect Port Controller, 30145A; and ATP Modem Port Controller, 30155A. Each Direct Connect or Modem Port Controller product includes both an Asynchronous Interface Board (AIB) (which occupies a slot in the I/O bay card cage) and the associated junction mounting panel motherboard and terminal port mini-boards. *The ATP Expansion Packages (30273A and 30274A) are NOT supported on the Series 6x/7x.*

The minimum required ATP subsystem on the Series 6x/7x consists of one SIB and one Port Controller Product. One modem ATP product is recommended to connect the Support Link Modem for remote diagnostics; however, it is not required. If a Modem Port Controller is not configured, the Support Link Modem will be connected to the DCU port. This connection method will cause system hardware status reports to be unavailable while the diagnostics are being run.

The minimum ATP configuration requires two I/O slots, supports up to 12 terminals, and uses three junction mounting panels for the direct connect product or six junction mounting panels for the

modem product. A maximum subsystem consists of one SIB and eight port controller products, supporting 96 terminals and consuming nine I/O slots. For the maximum direct connect terminal configuration in two I/O bays (336 terminals), three maximum ATP subsystems and one partial ATP subsystem are needed.

Each Direct Connect Port Controller supports RS-422 and RS-232 connections. This direct connect product comes standard with 12 RS-422 ports which can be converted to RS-232 ports in groups of four by ordering Option 002, (which replaces an RS-422 mini-board with an RS-232 mini-board). Thus, 0, 4, 8, or 12 RS-232 ports may be ordered on a single Direct Connect Port Controller by specifying the appropriate quantity of Option 002 (0, 1, 2, or 3).

When ordering a Series 6x/7x, it is important to note that it does NOT automatically come with junction panels. The junction panel is ordered at the time the ATP is ordered. This is done by ordering either Option 001 or 003 with product 30145A or 30155A. The difference between Option 001 and Option 003 is that Option 001 provides the junction panel for the standard I/O Bay and Option 003 provides the junction panel for the auxiliary I/O Bay (30464A/B or SPU Option 250).

To add the Auxiliary I/O Bay (30464A/B) and the ATP to a Series 6x/7x system that has already been installed, specify Option 003 with product 30145A or 30155A. If ordering the Auxiliary I/O Bay without an ATP, you must specify Option 251 on either product 30443A/B, 30444A/B, 30464A/B, 30468A/B, 32468C/CH or 32471A/AH to obtain the junction panels.

Support Link Modem

Under the HP Remote Support Program, all non-upgrade system orders will be shipped with a free HP Support Link Modem (35031A).

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 disc file. When the print job has been spooled and the output device becomes available, MPE manages the printing. This leaves the terminal or batch process free to do other work.

Spooled Output Devices

There are several types of spooled output devices. This section discusses only printers. Note that any I/O device configured as a printer may be spooled; however, MPE will not necessarily support the full feature set of that printer.

A) SYSTEM PRINTERS

System printers are printers that guarantee data integrity, ensure print job independence, and report operational status to the system. System printers include the following HP-IB Printers: 256x, 261x type, 2608A, and 2608S line printers; and 2680A and 2688A page printers. These printers are connected to a GIC via HP-IB cabling.

B) MTS PRINTERS

MTS printers can be connected to the HP 3000 in one of three ways: (1) directly connected to the multipoint line using an MTS interface in the printer, (2) through a 2333A Multipoint Cluster Controller using a standard RS-232-C interface in the printer, or (3) to the second port of a 2624B terminal (connected directly to a multipoint line) using the Bypass Mode of the 2624B and a standard RS-232-C interface in the printer. Printers and terminals can be linked together to form a workstation network using either the MTS Data Link Connection or the MTS Synchronous Modem Link.

The 2563A/B, 2608S, 2933A and 2934A printers, with their respective multipoint interfaces, can all be attached directly to a multipoint line. Using the 2563A/B or the 2608S in this configuration provides a high-speed remote printing capability. A dedicated line of at least 9600 baud is recommended to achieve up to 300 lpm with the 2563A/B and a 19,200 baud line is recommended to achieve up to 400 lpm with the 2608S.

The 2333A Multipoint Cluster Controller provides local or remote control for up to 16 RS-232-C

point-to-point devices (or 32 model 3081A terminals connected to eight Port Current Loop Interface cards) when used in conjunction with either the MTS Data Link Connection or the MTS Synchronous Modem Link. The 2563A/B, 2601A/02A/03A/31B, and the 2932A/33A/34A printers with RS-232-C interfaces are supported by the 2333A as XON-XOFF printers. As with direct connect multipoint printers, printers on a 2333A can either be spooled or under the control of an application program.

Another way in which printers are supported in an MTS environment is through connection to the second port of a 2624B terminal. This is an RS-232-C printer connection that allows the user to work at a terminal while other users can access the printer by taking advantage of the Bypass Mode feature of the 2624B. Both spooling and dedicated application usage are supported. Character printers (as opposed to line printers) are supported in this configuration.

The number of MTS printers should be limited to four per MTS line, and a maximum of 16 MTS printers per system. The aggregate baud rate of the printers should not exceed the baud rate of the MTS line to which they are attached. The performance of printers on an MTS line is dependent upon the speed of that line, the printer's priority, the traffic pattern, and the processor load.

C) SERIAL PRINTERS

1) 2631B/293x Printers. These printers have an RS-232-C interface supplied standard. Referred to as "local" or "remote" spooled, these printers may be connected point-to-point either by modem or hardwired.

2) Generic Serial Printers (including 2601A, 2602A, and 2603A). These printers have RS-232-C data communications ports supplied standard. To use the MPE spooler, they must be attached in a local point-to-point configuration.

3) Serial Line Printers (2563A/B/64B). These can be spooled in a hardwired RS-232 (Option 049) or RS-422 (Option 050) configuration. Modem connection is not supported.

4) Serial Page Printers (2686A/D/33440A, 2687A). The 2686A/D/33440A can be spooled via hardwired RS-232-C connection. RS-422 is not available. Remote modem connection is not supported. The 2687A can be spooled in a hardwired RS-232-C or RS-422 configuration. Remote modem connection is not supported.

While printers usually are configured to use the spooler, most can also be configured to run "hot" under programmatic control. The 2680A and 2688A are the exceptions. They must be spooled; running "hot" is not permitted.

Series 6x/70 Maximum Spooled Device Configuration:

	1 or 2 I/O Bays
SYSTEM PRINTERS:	
Line Printers: (HP-IB)	
2608A/S	4
256x	4
261x	4
Total Line Printers	8
Page Printers:	
2680A	2
2688A	4(5)*
Total Page Printers	4(5)*
Total System Printers	10
SERIAL PRINTERS:	
2601A/2602A/2603A	16
2631B	
2932A/2933A/2934A	16
2563A/B/2564B	6
2686A/D/33440A	5
2687A Page Printer	4
Total Serial Printers:	16

* HP-IB Extender support in parentheses.

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

If the system is running MPE V/P, operating system table sizes could limit the number of simultaneously active spooled printers. MPE V/P operating system tables effectively limit the total number of spooled printers on the system to 16.

In order to determine the maximum number of spooled devices which can be configured on an MPE V/P system, the following formula must be used:

Max. Spooled Devices =

$$[256 - (1.25 \times \text{\#Sessions and Jobs}) - \text{\#INPs}] / 16$$

where:

#Sessions and Jobs = the maximum number of sessions and jobs which will be supported on the system

#INPs = the number of Network Links/INPs which will be configured on the system

After plugging in the values for the number of sessions and jobs and also the number of INPs, the maximum number of spooled devices will have been derived. Take the result and round it down to the nearest whole number. It is evident from this formula that the number of spooled devices a system can support will vary with the customer's configuration and application mix.

e.g. A system running at peak periods, with 28 sessions, 4 batch jobs and 3 INPs configured, can support the following number of spooled devices:

Max. Spooled Devices =

$$\frac{[256 - (1.25 \times 32) - 3]}{16} = 13.3$$

Rounding this result down means that a maximum of 13 spooled devices can be supported on the system.

With the expanded tables of **MPE V/E** there is no longer a software tables limitation that further restricts the number of spooled devices on a Series 6x/70 running **MPE V/E** beyond the number of devices listed in the table above. System performance considerations are responsible for restricting the number of spooled devices to these limits. Note that the appropriate table structure must be configured for this number of spooled devices to be supported.

Serial Printers and Plotters

The Series 6x/70 supports remote spooled 293x or 2631B serial printers through the ATP via RS-232-C connections. When used as remote spooled printers, they are connected to an ATP direct connect port via hardwired cable or to an ATP modem port via a modem. 2631B printers must include Option 331 to obtain the RS-232-C remote spooled printer capability.

The Series 6x/70 can support 2601A, 2602A and 2603A daisywheel printers via the ATP through local direct connection only. Modem connection is not supported. The 2601A, 2602A, 2631B, and 293x printers can also be attached as slave devices to terminals under the control of application programs.

The 2563A/B and 2564B line printers are also supported on the Series 6x/70 in a serial configuration. RS-232-C and RS-422 hardwire connections are available; modem connections are not supported. One must specify Option 049 for RS-232-C or Option 050 for RS-422 interfaces. Cables must be ordered separately; see Chapter 4 for further details. Do not order the subsystem option (Option 364) for the 2563A/B or 2564B when it is being used as a serial printer.

The 2686A/D/33440A is supported via hardwired RS-232-C connections. Remote operation over a modem is not supported. RS-422 connections are not available.

The 2687A laser printer is only available on the Series 6x/70 as a serial printer. Both RS-232-C and RS-422 hardwired connections are supported, but modem connection is not available. Option 364 must be specified to obtain the Series 6x/70 subsystem. Cables need to be ordered separately; see Chapter 4 for a list of available cables for the 2687A.

HP plotters can be configured as slave devices to terminals and personal computers or as eavesdrop devices between the terminal and the ATP. As slave devices, both HP-IB and RS-232-C connections may be possible depending upon the individual plotter. Only RS-232-C connections are available in an eavesdrop configuration or when connected point-to-point to an ATP.

Network Link Products (INPs)

A maximum of 16 Network Link products (sets of Link hardware) are supported on a Series 6x/70 with the standard I/O bay. An additional eight, for a total of 24, Links can be operated concurrently on the Series 6x/70 when the auxiliary I/O bay is used and the system is running **MPE V/E**. A maximum of 16 sets of Link hardware are supported on a Series 6x running **MPE V/P** regardless of whether the system has one or two I/O bays.

Each set of Link hardware includes an Intelligent Network Processor (INP), and requires one I/O card slot in the Series 6x/70 card cage and one junction mounting panel. The INP counts as one device load on a GIC and is considered a low-speed device.

A 1m HP-IB ribbon cable for connecting the INP to a GIC, and a non-HP-IB cable for connecting the INP to the junction mounting panel, are included. An external cable is also included but must be specified by a particular option when ordering based on the connection desired. Please refer to the latest HP 3000 Price Guide for a complete list of options.

Series 6x/70 Configuration Worksheet

Product Number	Description	Quantity
I. Memory Expansion.		
	Total Memory Size (Standard memory is 8 Mb on Series 70, MAX=16) (Standard memory is 4 Mb on series 6x, MAX=16)	1 _____
Opt. 500	Add-on 4 Mb Memory Module for Series 70.	2A _____
30142A	1 Mb Memory Module for Series 6x/70.	2B _____
30165A	4 Mb Memory Module for Series 6x/70.	2C _____

II. Disc Drives.

A. Storage Units *with* Integrated Cartridge Tape:

One of the following may be included:

7911P	28 Mb Integrated Storage Unit <i>with</i> Cartridge Tape (Opt. 001, MAX=1) (Two 1m HP-IB cables are included.)	3A _____
7912P	65 Mb Integrated Storage Unit <i>with</i> Cartridge Tape (Opt. 001, MAX=1) (Two 1m HP-IB cables are included.)	3B _____
7914P	132 Mb Integrated Storage Unit <i>with</i> Cartridge Tape (Opt. 001, MAX=1) (Two 1m HP-IB cables are included.)	3C _____
7914ST Opt. 002	132 Mb Mass Storage Subsystem <i>with</i> Cartridge Tape (Opt. 002, MAX=1.) Because the 7914ST may combine a Cartridge Tape, a 1/2" tape drive, and one or two disc drives into a single package, you need to check lines 4B and 9C to ensure that the totals for those lines do not violate device support maximums. HP-IB cables are included with each storage unit: cartridge tape (1m), tape drive (2m), and disc drive (2m). (Also enter on line 9C in Tape Drive section.)	3D _____
7914TD Opt. 002	132 Mb Mass Storage Subsystem <i>with</i> Cartridge Tape (Opt. 002, MAX=1.) Because the 7914TD may combine a Cartridge Tape, a 1/2" tape drive, and one or two disc drives into a single package, you need to check lines 4C and 9A to ensure that the totals for those lines do not violate device support maximums. HP-IB cables are included with each storage unit: cartridge tape (1m), tape drive (2m), and disc drive (6m). (Also enter on line 9A in Tape Drive section.)	3E _____
	Total Integrated Storage Units <i>with</i> Cartridge Tape (Sum of Lines 3x ,MAX=1)	3 _____

Series 6x/70 Configuration Worksheet

Product Number	Description	Quantity
B. Mass Storage Products (No Integrated Cartridge Tape):		
7914P	132 Mb Integrated Storage Unit (Opt. 140, Cartridge Tape Deleted, MAX=8) (A 1m HP-IB cable is included.)	4A _____
7914ST Disc	132 Mb Mass Storage Subsystem (MAX=4) (Without Opt. 114, this subsystem contains one drive. With Opt. 114, the subsystem contains <i>two</i> drives.) Enter the <i>total</i> number of disc drives on line 4B. The number of 7914ST products ordered may be less depending on the number of subsystems with two drives. (For cabling information, see line 3D.) (Also enter on line 9C in Tape Drive section.)	4B _____
7914TD Disc	132 Mb Mass Storage Subsystem (MAX=2) (Without Opt. 114, this subsystem contains one drive. With Opt. 114, the subsystem contains <i>two</i> drives.) Enter the <i>total</i> number of disc drives on line 4C. The number of 7914TD products ordered may be less depending on the number of subsystems with two drives. (For cabling information, see line 3E.) (Also enter on line 9A in Tape Drive section.)	4C _____
7914CT Disc	132 Mb Integrated Storage Unit containing 9144A Cartridge Tape. (MAX=4). Two 1m HP-IB cables are included. (Also enter on line 9E in Tape Drive section.)	4D _____
	Total 7914P/14ST/14TD/14CT Disc Drives (MAX=8, total of lines 3C, 3D, 3E, and 4x)	4 _____
7920M	50 Mb Master Disc Drive (A 2m HP-IB cable is included with Opt. 102.) (MAX=16)	5A _____
7925M	120 Mb Master Disc Drive (A 2m HP-IB cable is included with Opt. 102.) (MAX=16)	5B _____
	Total 7920/25 Master Disc Drives (Sum of Lines 5x) (MAX=16)	5 _____
7920S	50 Mb Slave Disc Drive (A 2.4m multiunit cable and a 15.2m data cable are included.) (MAX=14)	6A _____
7925S	120 Mb Slave Disc Drive (A 2.4m multiunit cable and a 15.2m data cable are included.) (MAX=14)	6B _____
	Total 7920/25 Slave Disc Drives (Sum of Lines 6x) (MAX=14. This maximum will require two 7920/25 Master Disc Drives because each master drive supports up to 7 Slave Drives)	6 _____

Series 6x/70 Configuration Worksheet (Continued)

Product Number	Description	Quantity
7933H/ 7935H	404 Mb Disc Drive (MAX=16 on a one I/O bay system and MAX=24 on a two I/O bay system) (A 1m HP-IB cable is included.)	7A _____
7933XP/ 7935XP	404 Mb Disc Drive with 1 Mb Cache (MAX=16 on a one I/O bay system and MAX=24 on a two I/O bay system) (A 1m HP-IB cable is included.)	7B _____
7936H/XP	307 Mb Disc Drive with 1 Mb Cache (MAX=16 on a one I/O bay system and MAX=24 on a two I/O bay system) (A 1m HP-IP cable is included)	7C _____
7937H/XP	571 Mb Disc Drive with 1 Mb Cache (MAX=16 on a one I/O bay system and MAX=24 on a two I/O bay system) (A 1m HP-IB cable is included)	7D _____
7957A	81 Mb Disc Drive (MAX=4) (a 1m HP-IB cable is included)	7E _____
7958A	132 Mb Disc Drive (MAX=4) (a 1m HP-IB cable is included)	7F _____
Total Disc Drives & Integrated Storage Units (Sum of lines 3A, 3B, 4, 5, 6, and 7x) (MAX=16 on a one I/O bay system and MAX=24 on a two I/O bay system)		7 _____

Series 6x/70 Configuration Worksheet

Product Number	Description	Quantity
III. Magnetic Tape Drives.		
7970E/ 7971A/ 7914TD	1600 cpi Master Tape Drive Subsystem (MAX=2) Each master supports up to three Slave Tape Drives. Each tape drive includes a 6m HP-IB cable. (Also enter 7914TD on line 3E or 4C.)	8A _____
7970E	Slave Tape Drive Subsystem (MAX=6) (A 6.1m multiunit cable is included.)	8B _____
7974A/ 7914ST	1600 cpi (800/600 cpi optional) Magnetic Tape Subsystem (MAX=4) (A 2m HP-IB cable is included.) (Also enter 7914ST on line 3D or 4B.)	8C _____
7978A/ 7978B	6250/1600 cpi Magnetic Tape Subsystem (MAX=4) (A 2m HP-IB cable is included.)	8D _____
9144A/ 7914CT	One-quarter (1/4) inch Cartridge Tape Drive. (Order cable separately with 9144A. Two 1m HP-IB cables are shipped with 7914CT.) (MAX=4)	8E _____
35401A	One-quarter (1/4) inch Cartridge Autochanger Tape System (MAX=4) (a 1m HP-IB cable is included.)	8F _____
Total Magnetic Tape Drives (Sum of lines 8x, MAX=8)		8 _____

IV. System Printers.

2608S	400 lpm Dot Matrix Printer (MAX=4). Option 364 includes a 4m HP-IB cable.	9A _____
256x	300, 600, 900 and 1200 lpm Dot Matrix Printers (MAX=4) (A 4m HP-IB cable is included.)	9B _____
261xA	Line Printer Series (e.g., 2611A and 2619A) (MAX=4) (A 15m parallel differential cable is included with Option 364.)	9C _____
Total Line Printers (Sum of lines 9x, MAX=8)		9 _____
2680A	Intelligent Page Printer (MAX=2) (An 8m HP-IB cable is included with Option 364.)	10A _____
2688A	Page Printer (MAX=4; 5 via Extenders) (An 8m HP-IB cable is included with Option 364.) See discussion in Chapter One Appendix regarding connection of 2688A via HP-IB Extenders.	10B _____
Total Page Printers (Sum of lines 10x, MAX=4)		10 _____
Total System Printers (Sum of Lines 9 and 10, MAX=10)		11 _____

Series 6x/70 Configuration Worksheet

Product Number	Description	Quantity
V. Serial Printers.		
2601A	40 cps Daisywheel Printer (MAX=16) (2601A includes RS-232 cable)	12A _____
2602A	25 cps Daisywheel Printer (MAX=16) (Order cable separately.)	12B _____
2603A	48 cps Daisywheel Printer (MAX=16) (Order cable separately.)	12C _____
293x	200 cps Dot Matrix Printer (MAX=16) (Order cable separately.)	12D _____
2563A/B	300 lpm Dot Matrix Printer (Opt. 049 for RS-232 or Opt. 050 for RS-422. Order cable separately.) (MAX=6)	12E _____
2564B	600 lpm Dot Matrix Printer (Opt. 049 for RS-232 or Opt. 050 for RS-422. Order cable separately.) (MAX=6)	12F _____
2686A/D	8 ppm Laser Page Printer (MAX=5) (Order cable separately)	12G _____
2687A	12 ppm Laser Page Printer (Opt. 364), (MAX=4) (Order cable separately.)	12H _____
Total Serial Printers (Sum of lines 12x, MAX=16)		12 _____

VI. Other Peripherals.

9895A	Flexible Disc Drive (Opt. 010, MAX=1) (Order HP-IB cable separately.)	13 _____
26075A	Multiple System Access Selector (MAX=1) (Order cables separately.)	14 _____

Series 6x/70 Configuration Worksheet

VII. Data Communications.

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

NOTE: Cabling must be ordered separately for these devices!

Product	Connection Method					Terminal Attached			
	Daisychain* Multipoint	Pt-to-Pt with ATP							
		Modem	Direct Connect						
			Type 422	Type 232-C					
Display Terminals									
239x	N/A*	_____	_____	_____		N/A			
2623A	N/A*	_____	_____	_____		N/A			
2624B	_____	_____	_____	_____		N/A			
2625A	_____	_____	_____	_____		N/A			
2626A	_____	_____	_____	_____		N/A			
2626W	N/A*	_____	_____	_____		N/A			
2627A	N/A*	_____	_____	_____		N/A			
2628A	_____	_____	_____	_____		N/A			
System Console (HP Touchscreen II)	N/A*	_____	_____	_____		N/A			
Plotters									
7440A	N/A	_____	N/A	_____	_____				
7470A	N/A	_____	N/A	_____	_____				
7475A	N/A	_____	N/A	_____	_____				
7510A	N/A	_____	N/A	_____	_____				
7550A	N/A	_____	N/A	_____	_____				
7570A	N/A	_____	N/A	_____	_____				
7580A/B	N/A	_____	N/A	_____	_____				
7585B	N/A	_____	N/A	_____	_____				
7586B	N/A	_____	N/A	_____	_____				
Data Collection Terminals									
3075A	_____	_____	N/A	_____		N/A			
3076A	_____	_____	N/A	_____		N/A			
3077A	_____	_____	N/A	_____		N/A			
3081A	_____	_____	N/A	_____		N/A			
Subtotal (this page)	15A _____	16A _____	17A _____	18A _____	19A _____				

* The 2333A and 2334A Cluster Controller will support any RS-232-C device except the 2635B and 2382A.

Series 70 Configuration Worksheet

	Connection Method					
		Pt-to-Pt with ATP				
			Direct Connect			
Product	Daisychain* Multipoint	Modem	Type 422	Type 232-C	Terminal Attached	
Serial Printers**						
2932A	N/A	_____	_____	_____	_____	
2934A	_____	_____	_____	_____	_____	
2563A/B	_____	N/A	_____	_____	N/A	
2564B	_____	N/A	_____	_____	N/A	
2601A	N/A*	N/A	N/A	_____	_____	
2602A	N/A*	N/A	N/A	_____	_____	
2603A	N/A*	N/A	N/A	_____	_____	
Page Printers**						
2686A/D	N/A	N/A	N/A	_____	N/A	
2687A	N/A	N/A	_____	_____	N/A	
33440A	N/A	N/A	N/A	_____	N/A	
Personal Office Computers						
Touchscreen (150x)	N/A*	_____	_____	_____	N/A	
Portable Plus	N/A*	_____	N/A	_____	N/A	
VECTRA	N/A*	_____	_____	_____	N/A	
Subtotal (this page)	15B _____	16B _____	17B _____	18B _____	19B _____	
Subtotal (previous page)	15A _____	16A _____	17A _____	18A _____	19A _____	
Totals (both pages)	15 _____	16 _____	17 _____	18 _____	19 _____	

Line 15: MAX=335 (one or two I/O bays); MAX=151 (one or two I/O bays with MPE V/P).

Line 16: MAX=84 (one I/O bay); MAX=168 (two I/O bays); MAX=143 (two I/O bays with MPE V/P).

Sum of lines 16, 17, and 18: MAX=144 (one I/O bay or two I/O bays with MPE V/P); MAX=336 (two I/O bays)

Sum of lines 15, 16, 17, and 18: MAX=400 (one or two I/O bays)

* The 2333A and 2334A Cluster Controller will support any RS-232-C device except the 2635B and 2382A.

** Note device maximums in Section V of worksheet.

Series 6x/70 Configuration Worksheet

Product Number	Description	Quantity
B. Network Links:		
	HP to HP System Lines (30270A, 30271A, 32187A, 32188A)	20A _____
	HP to IBM System Lines (30246A, 30251A)	20B _____
	Multipoint Lines (32026A, 32027A, 32028A)	20C _____
	Local Area Network (30242A)	20D _____
	Total number of Links (INPs) (Sum of lines 20A, 20B, and 20C; MAX=16 with one I/O bay; MAX=24 with two I/O bays and MPE-V/E.)*	20 _____
*Additional Links without hardware (with Opt. 490) are supported.		

VIII. I/O Expansion.

A. ATP Advanced Terminal Processors:

Step #1: Determine the number of modem connections desired and the appropriate number of Modem Port Controllers to order.

30155A	Modem Port Controller (Line 16 divided by "12" and rounded up to the next integer.) (Internal cables included; external cables for devices must be ordered separately.)	21 _____
--------	---	----------

Step #2: Determine the number of modem ports that are not to be used for modem connection and can be used for RS-232-C local direct connections to the Modem Port Controller.

(Note: Modem ports must be ordered in groups of 12. Therefore, you could have up to 11 available for RS-232-C direct connection.)

Unused modem ports ["12" times line 21) minus line 16]	22 _____
--	----------

Step #3: Based on the desired number of RS-422 connections, RS-232-C connections, and extra modem ports; calculate the number of Direct Connect Port Controllers required and the mix of RS-422 and RS-232-C ports on the controller. Allow room for expansion.

(Note: Each Direct Connect Port Controller supports 12 terminal connections. It is configured with RS-422 ports standard but can be converted to RS-232-C ports in groups of four (4) by ordering the appropriate number of Opt. 002s.)

Series 6x/70 Configuration Worksheet

Product Number	Description	Quantity
	Number of Direct Connect RS-232-C ports connected through Direct Connect Port Controllers (Line 18 minus line 22, enter "0" if the result is less than "0".)	23 _____
	Groups of 4 RS-232-C connections to Direct Connect Port Controllers. (Divide line 23 by "4" and round up to the next integer.)	24 _____
	Groups of 4 RS-422 connections to Direct Connect Port Controllers. (Divide line 18 by "4" and round up to the next integer.)	25 _____
30145A	Direct Connect Port Controller (Divide sum of lines 24 and 25 by "3" and round up to the next integer.) (Internal cables included; external cables for devices must be ordered separately.)	26 _____
	Quantity of Opt. 002s: Replaces 4 RS-422 ports with 4 RS-232 ports. (Equals line 24.)	27 _____
30144A	System Interface Board (SIB) (Divide the sum of lines 21 and 26 by "8" and round up to the next integer.) (Internal cables are included.)	28 _____
B. General I/O Channels:		
To determine the number of GICs required on the system, refer to the text and to the Appendix.		
(Note: To configure GICs you must take into consideration IMBs peripheral speed, electrical device loads, cable lengths, peripheral incompatibilities and system performance.)		
<i>A figure showing 15 GICs (the maximum supported configuration on a two I/O Bay Series 6x/7x) has been included in the section on GICs in this chapter for your use as a configuration worksheet.</i>		
30079A	Optional GICs (MAX=8 on a one I/O Bay system and MAX=13 on a two I/O Bay system. Two GICs are shipped standard with a new system order. Box swap upgrade systems do not include the two standard GICs.) Internal cables included by ordering Opt. 064; external HP-IB cables are supplied with devices.	29 _____

Series 6x/70 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

C. Junction Mounting Panels:

The sum of:

Line 9C - 261X Line Printer Series	30A	_____
Line 20 - Network Links/INPs	30B	_____
GICs included standard with system (zero if box swap upgrade)	30C	_____
Line 29 - Optional GICs	30D	_____
ATP Direct Connect and Modem Port Controllers:		
Line 21 times "6"	30E	_____
Line 26 times "3"	30F	_____
Line 20D - LANIC	30G	_____
 Total of lines 30x	30	_____

Each I/O Bay has 48 mounting panels. *A figure depicting the junction panel has been included in the section on junction panel configuration rules. Please use this as a configuration worksheet to ensure that you have stayed within the limitations of the junction panel configuration rules.* In addition, to plan the configuration of the ATP at installation, please see the following worksheet appendix.

D. I/O Card Slots:

I/O Card Slots Required

The sum of:

Line 9C - 261X Line Printer Interface Cards	31A	_____
Line 20 - Network Links/INP Cards	31B	_____
Line 21 - Modem Port Controllers (AIB)	31C	_____
Line 26 - Direct Connect Port Controllers (AIB)	31D	_____
Line 28 - System Interface Boards (SIB)	31E	_____
Line 29 - Optional GICs	31F	_____
GICs included standard (zero if box swap upgrade)	31G	_____
Line 32 - Optional IMB (See note below.)	31H	_____
Standard IMBs (one per I/O Bay) (See note below.)	31I	_____
Line 20D - LANIC	31J	_____
 Total of Lines 31x	31	_____

Each I/O Bay has a MAX of 24 Card Slots.

Series 6x/70 Configuration Worksheet

Product Number	Description	Quantity
----------------	-------------	----------

Note: At this point in configuring the Series 6x/7x, you should already have an idea whether you require the second I/O Bay because of: a) Discs (Line 7), b) INPs (Line 20), c) GICs (Line 29), d) Junction panel space (Line 30) or f) I/O Card Slots (Line 31). If, however, none of the above have required you to order the Auxiliary I/O Bay and you require a second IMB, you have a choice of obtaining that second IMB by ordering the Auxiliary I/O Bay or by ordering the optional IMB for configuration as a second IMB on the standard I/O Bay.

The "corner case" in this second IMB decision occurs when 21 I/O Card Cage slots are already filled. The two IMBs would each require one slot of the two remaining slots in the standard I/O Bay and all card slots would be full.

If your configuration is at all close to this corner case, it is highly recommended that you order the Auxiliary I/O Bay to obtain the second IMB rather than ordering the optional IMB for the standard bay. This will ensure room to expand the system easily in the future, as needs grow.

30143A	Optional I/O Adapter Module (the product name for the IMB) (MAX=1.) When product 30143A is ordered, it can be configured as a second IMB on either I/O Bay. (Cables are supplied.)	32 _____
--------	--	----------

IX. System SPU and I/O Bays.

Having completed Parts I through VIII of this configuration worksheet, you should know whether you require a one or a two I/O Bay configuration.

A. To Order an SPU with One I/O Bay, Order:

32471A	HP 3000 Series 6x/70 System Processor Unit
32468C	HP 3000 Series System 68 Processor Unit

The standard I/O Bay will include an IMB, card cage and power supply. You must also order Opt. 001 on the first ATP/AIB (30145A or 30155A) for the junction panels to be configured with the system. Please see the following worksheet appendix on Series 6x/7x ATP Junction Panel Pre-Configuration.

33 _____

Series 6x/70 Configuration Worksheet

Product Number	Description	Quantity
----------------	-------------	----------

B. To Order an SPU with Two I/O Bays, Order:

32471A	HP 3000 Series 6x/70 System Processor Unit	34A _____
--------	--	-----------

32469C	HP 3000 Series 6x/70 System Processor Unit	
--------	--	--

Plus

Opt. 250	Add expansion bay and I/O adapter (IMB)	34B _____
-------------	---	-----------

Each I/O Bay will include an IMB, card cage, and power supply. You must order both options 001 and 003 on the first ATP/AIB (30145A or 30155A) for the junction panels to be configured with the system on both I/O Bays. Please see the following worksheet appendix on the Series 6x/7x ATP Junction Panel Pre-Configuration.

X. MPE Media Products

A Media Product *must* be ordered with each HP 3000 Series 6x/70. (Series 6x may alternatively select Media Product 51451A).

51450A	MPE V/E Media Product	35A _____
--------	-----------------------	-----------

Opt.604 or 605	Series 6x SPU	35B _____
	Series 7x SPU	

Opt. 280	MPE V/E UA-MIT (or later)	35C _____
-------------	---------------------------	-----------

Opt. 051	1600 cpi Magnetic Tape Media	35D _____
-------------	------------------------------	-----------

Series 70 Configuration Worksheet Appendix

Series 6x/7x ATP Junction Panel

Pre-Configuration

When ordering a Series 6x/7x, it is important to note that it does not automatically come with junction panels. The junction panel is ordered at the time the ATP is ordered. This is done by ordering either Option 001 or 003 with product 30145A or 30155A. The difference between Option 001 and Option 003 is that Option 001 provides the junction panel for the standard I/O Bay and Option 003 provides the junction panel for the auxiliary I/O Bay (30464A/B or SPU Option 250).

The Series 6x/7x with two I/O Bays offers significant flexibility in I/O junction panel configuration. This includes great flexibility when installing ATP Subsystems. The following configurations show the recommended installations. The ATP configuration worksheet will help you plan for the installation.

ATP SIB Configuration

1. For a 1-SIB system, the SIB is installed on the Standard I/O Bay panel.
2. For a 2-SIB system, one SIB is installed on the Standard I/O Bay panel and one SIB is installed on the Auxiliary I/O Bay panel.
3. For a 3-SIB system, one SIB is installed on the Standard I/O Bay panel and two SIBs are installed on the Auxiliary I/O Bay panel.
4. For a 4-SIB system, two SIBs are installed on the Standard I/O Bay panel and two SIBs are installed on the Auxiliary I/O Bay panel.

To add the Auxiliary I/O Bay (30464A/B) and the ATP to a system that has already been installed at a customer's site, specify Option 003 with product 30145A or 30155A. Complete the worksheet on the following page using *only* the "Auxiliary I/O Bay Junction Panels".

(Note: If ordering the Auxiliary I/O Bay without an ATP, you must specify Option 251 on either product 30443A/B, 30444A/B, 30464A/B or 30468A/B (with Option 250) to obtain the junction panels.)

Series 70 Configuration Worksheet Appendix

ATP Configuration Worksheet

(Please Duplicate.)

Procedures:

For the appropriate Junction Panel, mark where the ATP should be installed. Use the legend below to indicate the placement of the products. GICs, LANICs, INPs, and 261X Line Printers should also be configured on the panels to ensure that you have adequate space.

G=GIC

(1 mounting panel each)

I=INP

(1 mounting panel each)

M=ATP Modem Connect

(6 mounting panels each)

LP= 261X Line Printer (1 mounting panel each)

D422=ATP Direct Connect Type 422 (3 mounting panels each)

D232=ATP Direct Connect Type 232 (3 mounting panels each)

L=LANIC

(1 mounting panel)

Standard I/O Bay Junction Panel

Auxiliary I/O Bay Junction Panel

[illegible][illegible]

Bottom Row
Reserved *

[illegible]

- * The bottom 12 mounting panels on the standard I/O bay are reserved for connections to GICs, LANICs, INPs, and LPIs.



Series 930

Minimum System Configuration	1-193
Maximum System Configuration	
Memory Expansion	1-195
Floating Point Coprocessor	1-195
I/O Card Cages	1-196
HP-IB Channels	1-197
802.3 LANIC Cards	1-197
Peripherals	
Disc Drives	1-198
Magnetic Tape Drives	1-198
System Printers	1-199
Power Line Conditioners	1-199
Data Communications	
Workstation Connections	1-200
Distributed Terminal Controller	1-200
System Console	1-201
Support Link Modem	1-201
Output Spooling	1-202
Spooled Output Devices	1-202
Serial Printers	1-202
Configuration Worksheets	1-203



HP 3000 SERIES 930 MINIMUM SYSTEM CONFIGURATION

Series 930 System Hardware

The SPU (product 32481A) includes:

- Central Processing Unit
- 16 Mb Error Correcting Memory with Controllers
- Dual I/O Busses
- Two HP-IB Channels: for HP-IB devices including System Disc and Backup Tape Drive
- One 802.3 LANIC card for communication with Distributed Terminal Controllers
- 6m AUI cable, MAU and tap for SPU attachment to ThickLAN cable; ThinMAU with integrated AUI cable for attachment to ThinLAN cable
- SPU Bay including Card Cages and Power Supplies for CPU, Cache, 2 CIB Adapters, 10 I/O Card Slots, and up to 24 Mb Main Memory
- I/O Bay with 1 Card Cage, Containing 9 I/O Card Slots
- System Clock
- Built-in Isolation Transformers for the System Processor
- Support Link II Modem
- 2 Console Attachment Boards, Cables and Synapse Box for console connection
- Hardware manual set

Required Software Ordered Separately

The Fundamental Operating System (FOS) software product (32650A) includes all the required software for an HP supported system.

- Multiprogramming Executive Operating System (MPE XL)
- MPE V/E U-MIT Compatibility Mode Software
- Text Editor (EDIT/V)
- File Copying Utility (FCOPY/XL)
- Sort and Merge Package (SORT-MERGE/XL)
- Network Model Database Mgmt System (TurboIMAGE)
- Database Inquiry Language (QUERY/V)
- Data Entry and Forms Management Software (VPLUS/V)
- Keyed Sequential Access Method Software (KSAM/V)
- Software manual set

Preconfigured System

For ordering convenience and economy, the Preconfigured System product (32480A) includes:

- Series 930 SPU (32481A)
- FOS software (32650A)
- Integrated Network and Relational Database Mgmt System (ALLBASE/XL, 36216A)
- System Dictionary/XL (32256A)

Required Hardware Ordered Separately

In addition to the SPU and FOS, the following items are required for an HP supported system.

- One System Console: HP 2392A Terminal with option 305 (EMP protect cable)
- One System Disc: 7933H, 7935H, or 7937H Disc Drive
- One Tape Drive for System Backup: 7978A/B or 7974A
- One Distributed Terminal Controller (product 2345A) with modem Interface product (option 625).
- 802.3 LAN Cabling: Thick or Thin (SPU includes both ThickLAN and ThinLAN MAUs and AUI cables. DTC includes ThickLAN MAU and AUI cable, ThinLAN connection may be substituted).

MPE Media Products

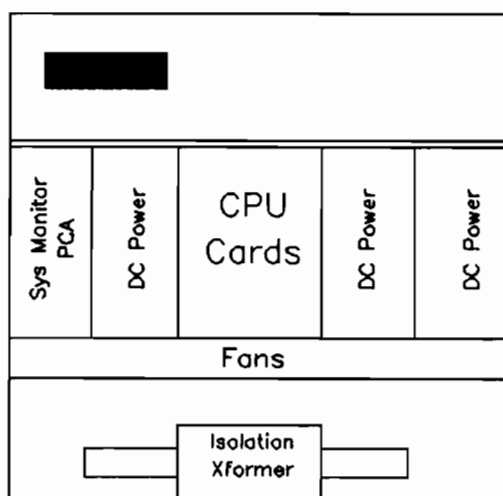
One MPE Media Product (51453A) MUST be ordered with every Series 930. One of options 630 and 730 is necessary. Option 630 designates the Preconfigured System, while option 730 designates the SPU alone. Option 051 specifies 1600 cpi media and Option 062 specifies 6250 cpi media. One of options 200 or 201 must also be ordered to select the release of MPE XL to deliver. The operating system will then be shipped directly to the customer.

The customer and CE will need to work together on site preparation prior to the installation of the Series 930, as the room must be prepared for the environmental and power requirements of the 930 system.

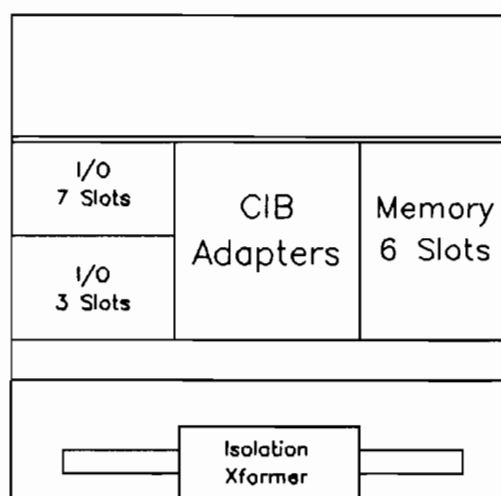
SERIES 930 PACKAGE

SPU BAY

Front View

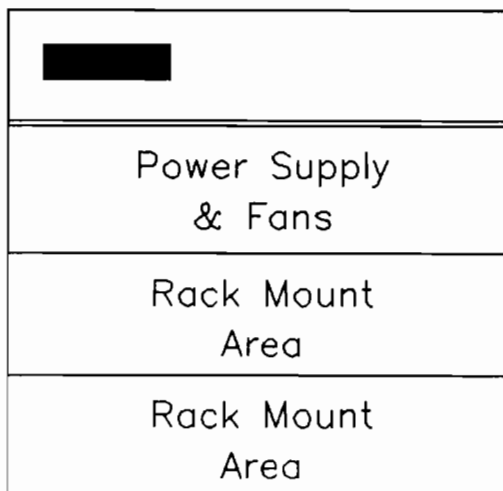


Rear View

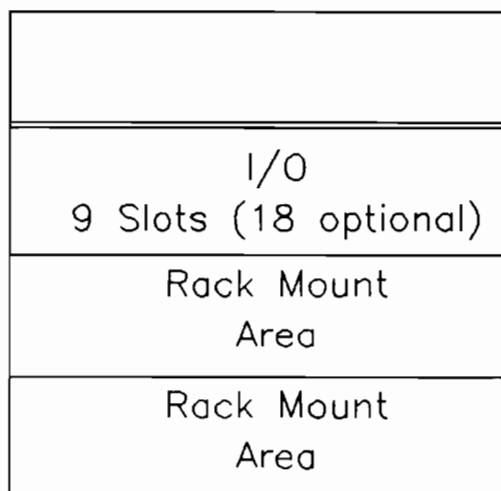


I/O BAY

Front View



Rear View



HP 3000 SERIES 930 MAXIMUM SYSTEM CONFIGURATION GUIDELINES

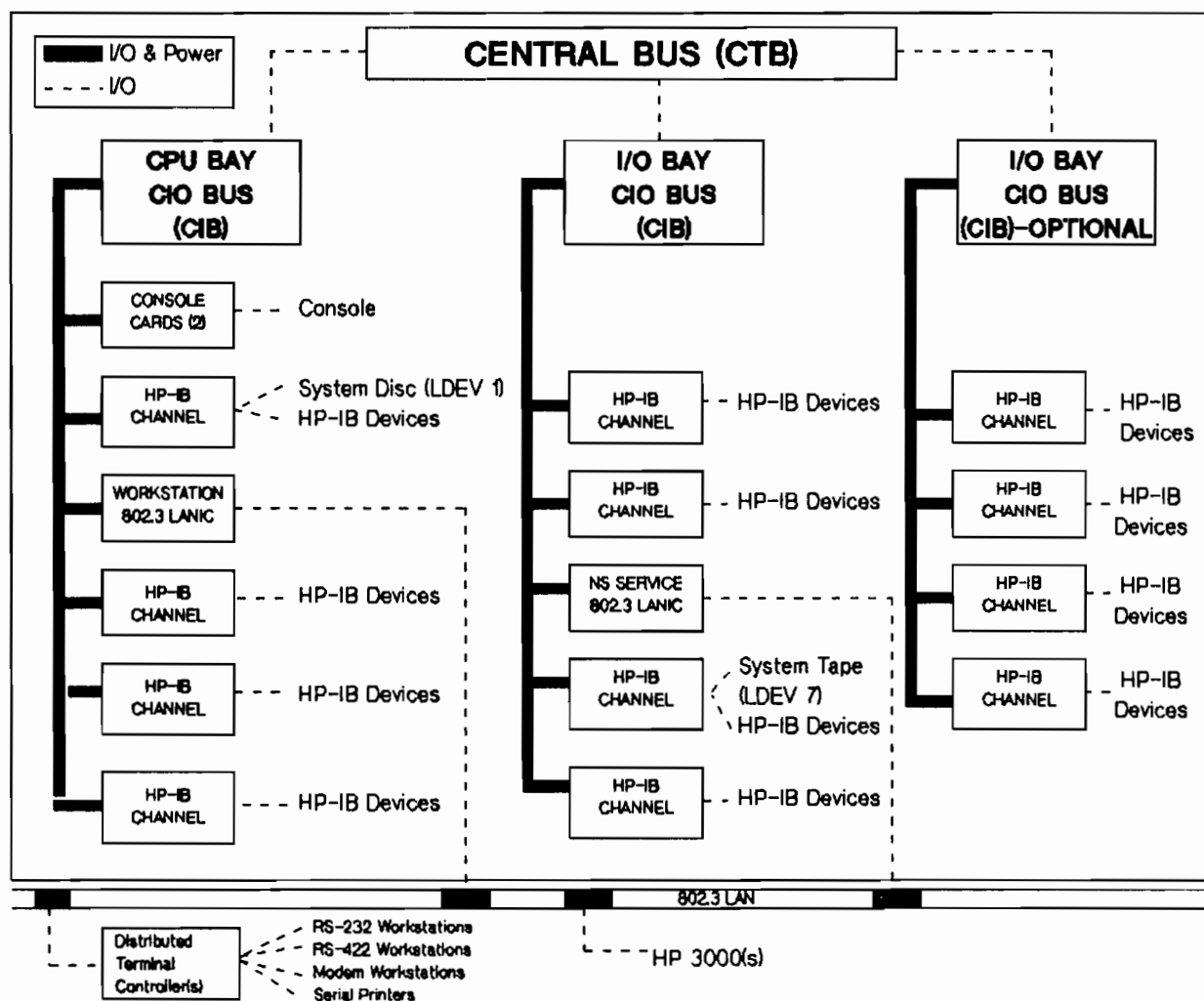
Memory Expansion

16 Mb of 256 Kb RAM error correcting memory are supplied with the System Processor Unit. System memory sizes of 16 Mb and 24 Mb are supported. An additional 8 Mb of main memory, consisting of a 2 board set with memory controller, may be purchased as a field upgrade (product 19748A or as option 500 to the product). These memory boards are configured into the CPU memory slots and do not use I/O card slots.

Floating Point Coprocessor

The standard SPU is capable of handling floating point calculations by software emulation. A hardware floating point coprocessor is available to accelerate floating point operations. For those systems that use floating point, generally technical or scientific applications, a floating point coprocessor is recommended (19742A). This board is configured into a reserved CPU slot and does not use I/O card slots.

Conceptual Schematic: Series 930 I/O Configuration



I/O

Channel I/O Bus

The Series 930 connects to peripheral devices and datacommunication networks via the Channel I/O Bus (CIB). Two CIBs are provided (a third is optional) and are connected to the CPU via the CIB Adapters (CIB Adapters have reserved slots in the SPU, so they do not affect I/O slot configuration). The 10 I/O slots in the SPU Bay comprise one CIB. The I/O Bay contains one or two CIBs with 9 or 18 I/O slots. *Note: There are additional slots in both the SPU Bay and I/O Bay CIBs which are not be used by MPE-XL systems. With current configuration limits, I/O slots are not a constraint.*

In general, the third CIB is appropriate for systems which have more than six channels installed (HP-IBs plus LAN cards), or which have more than 12 discs attached.

Slot Availability

Seven I/O cards are included with each system occupying seven I/O slots. Two CIB Adapters each connect to a CIB Attachment card on its Channel I/O Bus. Two boards are supplied on the SPU CIB for console attachment and system diagnostic support. One 802.3 LANIC board is included on the SPU CIB for workstation attachment. Two HP-IB Channel cards are supplied for peripheral attachment. This leaves 4 I/O slots in the SPU Bay and 8 I/O slots in the I/O Bay for additional HP-IB Channels (27113A) or LAN Links (36921A). A third CIB adapter (19744A) is optional and provides an additional 8 I/O slots in the I/O Bay for HP-IB channels only.

CIB Card Cage Rules

Each Card Cage must have a CIB Attachment card. This is placed in slot D of the CPU Bay CIB and in the first slot of the I/O Bay CIB (factory installed).

Console card #1 must be in slot C of the SPU Bay card cage (factory installed).

Console card #2 must be in slot 1 of the SPU Bay card cage (factory installed).

Factory installed HP-IB Channels are positioned for cold boot ability.

The factory installed workstation 802.3 LANIC and optional NS Service 802.3 LANIC are shown but may be moved.

Maximum of four HP-IB Channels per CIB.

Combined maximum of five HP-IB Channels and LANIC boards per CIB.

If the 3rd CIB is installed, at least one HP-IB channel must be placed in slot 8.

Slots 8 to B are not used in the SPU Bay CIB.

SPU BAY CIB CARD CAGE

0	1	2	3	4	5	6
Std HP-IB Channel	Console card #2	Std Workstation 802.3 LANIC				
7	B	9	A	B	C	D
	← Not Utilized By MPE-XL Systems →				Console Card #1	CIB Adapter Attachment Card

I/O BAY CIB CARD CAGE

	0	1	2	3	4	5	6	7			8	9	10	11	12	13	14	15
CIB Adapter Attachment Card			Opt NS Service 802.3 LANIC	Std HP-IB Channel				Occupied	Not Utilized	Opt CIB Adapter Attachment Card								
												←						→
														Only CIB installed	Used When	Opt		

HP-IB Channels

Each system is supplied with two HP-IB Channels as standard equipment. The HP-IB Channel (27113A) is a hardware controller used to interface HP-IB (IEEE 488 protocol) peripherals to the Series 930. Each HP-IB Channel is a board that uses one I/O card 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.

Up to 4 HP-IB Channels are supported per CIB. In the maximum configuration, 12 HP-IB Channels are possible. As a rule of thumb, you should not exceed 3 HP-IB Channels per CIB without consulting a performance specialist.

High-speed peripherals may be attached to all HP-IB Channels. (Note that all devices supported on the 900 Series are high-speed.) Order product 27113A to obtain additional HP-IB Channels. See the Chapter One Appendix for details on supported peripherals and cabling requirements.

HP-IB Channel Restrictions

A maximum of 6 devices may be attached to an HP-IB Channel.

There is a maximum of 8 electrical device loads per HP-IB Channel.

It is not recommended that the same HP-IB Channel be used for connecting the main system backup tape drive and the system disc (LDEV 1). System performance may be degraded with such a configuration when the tape drive is in use.

802.3 LANIC Cards

Each system is supplied with one IEEE 802.3 LAN Interface Channel (LANIC) card dedicated to workstation communication. The Asynchronous Serial Communication (ASC) software included with FOS uses this card and the 802.3 LAN to communicate between the SPU and the Distributed Terminal Controller.

Each system is supplied with both ThickLAN and ThinLAN Medium Attachment Units (MAU), taps and Attachment Unit Interface (AUI) cables. The DTC is supplied standard with a ThickLAN MAU, tap and AUI cable; but ThinLAN connections may be substituted.

For system-to-system communication via NS3000/XL, a second LANIC card must be purchased. Each LAN Link includes both the LANIC card and low-level communication software that operate in conjunction with the NS service.

Each LANIC board uses one I/O card slot and connects to one LAN. A maximum of two LANIC boards per system is supported. These Links may utilize the same or two separate 802.3 LAN cables.

Configuration Guidelines

For best performance the following I/O configuration guidelines are recommended.

- Discs should be connected to HP-IB channels configured in the highest priority CIB slots. In general, HP-IB channels to connect discs should be spread as evenly as possible across CIBs. NOTE: The lowest slot number for each CIB is the highest priority slot.
- LANIC I/O cards should be placed at the next highest priority slots and should be spread across CIBs.
- Tapes should be connected to HP-IB channels placed in lower priority slots than HP-IB channels for discs and LANIC I/O cards.
- Printers should be configured to have lower priority than tapes on the same HP-IB channel.
- Tapes or printers should not be on the same HP-IB channel as discs.

PERIPHERALS

Disc Drives

One 7933H (404 Mb), 7935H (404 Mb) or 7937H (571 Mb) disc drive is required as the system disc drive (LDEV1) and must be ordered separately.

The following table lists the maximum number of each type of disc drive that can be configured on the Series 930.

Series 930 Maximum Disc Drive Configuration

	Maximum
7933H Discs	16
7935H Discs	16
7937H Discs	24
Total Discs	24

Each 7933H and 7935H disc drive is shipped with a 1m HP-IB cable standard.

Disc performance may vary depending on the specific configuration of discs, HP-IB Channels and CIBs. As a rule of thumb, you may connect 3-4 disc drives per HP-IB Channel without significant performance degradation.

Magnetic Tape Drives

A 7978A/B or 7974A magnetic tape drive is required for system backup and distribution of software on each 900 Series system. This tape drive must be ordered separately.

The following table lists the maximum number of each type of tape drive that can be configured on the Series 930.

Series 930 Maximum Tape Drive Configuration

	Maximum
7974A	4
7978A/B	4
Total Tape Drives	8

The 7974A and 7978A/B are shipped with a 2m HP-IB cable standard. If desired, you may specify Option 800 to obtain the dual 800/1600 cpi capability on the 7974A.

System Printers

The following table lists the maximum number of each type of system printer that can be configured on the Series 930.

Series 930 Maximum Printer Configuration

	Maximum
Line Printers	
2566A/B	8
2565A	8
Subtotal Line Printers	8
Intelligent Page Printers	
2680A	4
2688A	4
Subtotal Page Printers	4
Total System Printers	12

The 2565A and 2566A/B are dot matrix line printers that attach directly to an HP-IB cable system. Order the Option 393 to obtain the HP-IB interface and a 4m HP-IB cable.

On the 2680A order option 393 to obtain the Series 930 subsystem with 8m HP-IB cable. You may specify Option 099 with the 2680A to replace the 8m HP-IB cable with a 2m cable. For the 2688A order Option 393, which includes an 8m HP-IB cable.

Power Line Conditioners

In many areas AC power line disturbances can interfere 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.

Data Communications

Workstation Connection

Point-to-point workstation (terminals, personal computers and serial printers) connections are made to the Series 930 through the Distributed Terminal Controller (DTC, p/n 2345A) which connects to the SPU via the 802.3 LAN. The DTC supports local RS-232-C & RS-422 connections and remote RS-232-C modem connections. The Series 930 supports a maximum of 400 ports. Although 400 sessions may be simultaneously logged on to a Series 930, performance considerations may limit the number of active sessions. The number of active sessions that are practical is dependent upon 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.

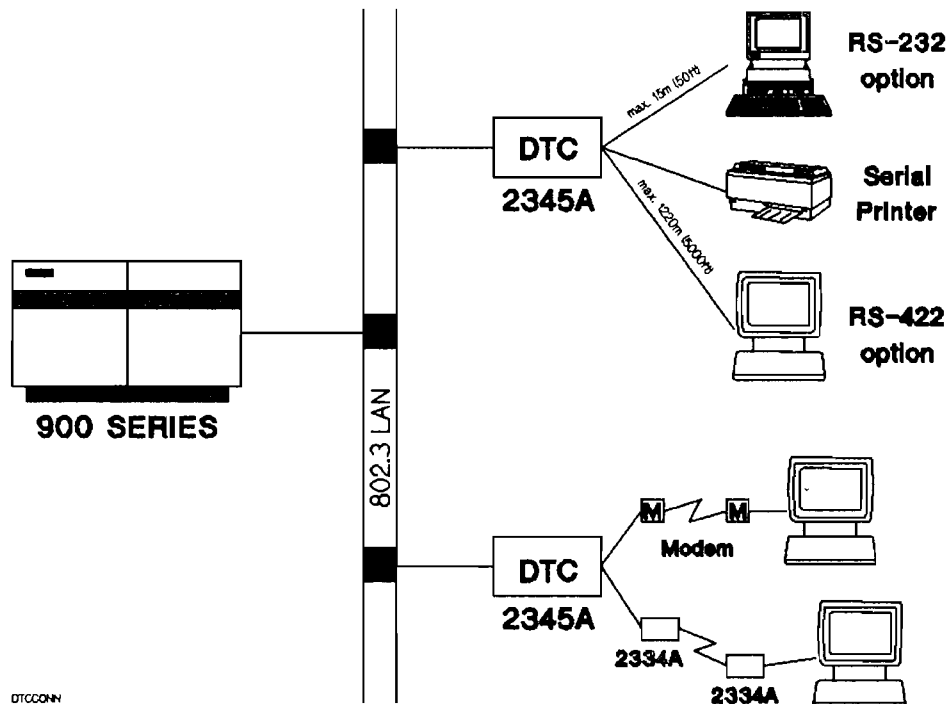
Distributed Terminal Controller

The Distributed Terminal Subsystem consists of three components. Two components reside on the 900 Series SPU; the Asynchronous Serial Communications (ASC) software and the workstation LANIC card. The third component of the subsystem is the Distributed Terminal Controller (DTC) which attaches to the 802.3 LAN.

Each DTC has six slots which can each accommodate one workstation interface product (2 board set).

The interface products available are:

- * 8 local RS-232-C ports
- * 8 local RS-422 ports
- * 6 remote RS-232-C modem ports



The minimum required Distributed Terminal subsystem for the 900 Series consists of the ASC software, one workstation LANIC card, one DTC with one modem interface and the 802.3 LAN cable (Thick or Thin) between the SPU and the DTC.

The maximum configuration consists of one terminal LAN channel, 16 DTCs, and 400 workstations (terminals, PCs and serial printers) attached to the DTCs. Each DTC can support up to 48 local ports (RS-232-C or RS-422) or 36 remote ports (RS-232-C modem). Local and remote interface products can be mixed in any combination resulting in port counts per DTC between 36 and 48. The Series 930 is delivered standard with the ASC software, workstation LANIC, and connection hardware for both Thick and Thin 802.3 LAN. For the ThickLAN, this connection hardware includes Media Access Unit (MAU), tap and 6m Attachment Unit Interface (AUI) cable. A ThinMAU with integral 1m AUI cable is provided for ThinLAN connection.

Each DTC also comes standard with a ThickLAN MAU, tap and 6m AUI for connection to the LAN (ThinLAN connections may be substituted). 802.3 10Base5 (Thick) or 10Base2 (Thin) LAN cable must be ordered separately if not already installed. For further cabling detail see Chapter 4.

System Console

One hardwired point-to-point 2392A terminal must be ordered as the system console. To connect this terminal, Option 305 (EMP Protect 40242Y cable) must be ordered.

The console connects to the Synapse Box (provided with the system). It has no direct connection to the Distributed 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 non-upgrade system orders will be shipped with a free HP Support Link Modem. Upgrade customers should keep their present modem. This modem connects to the Synapse Box. When not being used for support purposes, the modem is available for customer use.

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.

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 disc file. When the print job has been spooled and the output device becomes available, MPE manages the printing. This leaves the terminal or batch job free to do other work.

Spooled Output Devices

There are several types of spooled output devices. This section discusses only printers. Note that any I/O device configured as a printer will be spooled; however, MPE will not necessarily support the full feature set of that device. Note: "Hot" printing under direct programmatic control is not supported.

A) System Printers

System printers are printers that guarantee data integrity, ensure print job independence, and report operational status to the system. System printers include the following **HP-IB** printers: 2565/66 line printers; and 2680A and 2688A page printers. These printers connect to an **HP-IB** Channel.

B) Serial Printers

The 900 Series supports spooled serial printers through the DTC. They connect to a DTC port either via a hardwired RS-232/422 cable or via a modem. This is known as "local" or "remote" spooling respectively. Not all serial printers are supported via modem, see the text for details.

1) 2934A Printers. These printers have an RS-232-C interface supplied standard. RS-422 is also available. Both hardwire and modem connection is supported.

2) 2686A Printer. These printers have an RS-232-C interface supplied standard. RS-422 is also supported. Modem connection is not supported.

Series 930 Maximum Spooled Device Configuration

	Maximum
System Printers	
Line Printers (HP-IB)	
2565A	8
2566A/B	8
Total Line Printers	8
Page Printers	
2680A	4
2688A	4
Total Page Printers	4
Total System Printers	12
Serial Printers	
2934A	32
2686A	10
Total Serial Printers	32

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

Series 930 Configuration Worksheet

Product Number	Description	Quantity
----------------	-------------	----------

I. System Processor Unit.

32480A	Series 930 Preconfigured System (32481A for SPU only and 32650A for FOS)	1A _____
19742A	Floating Point Coprocessor	1B _____
51453A	MPE XL Media Product	1C _____
Opt 630	Series 930 Preconfigured System (Opt 730 for SPU only)	
Opt 062	6250 cpi Magnetic Tape Media (Opt 051 for 1600 cpi)	
Opt 200	Latest release of MPE XL (Opt 201 for release 1.0)	

II. Memory Expansion.



	Total Memory Size (Standard memory is 16 Mb, MAX=24)	2A _____
Opt 500	8 Mb Memory Module with initial order	2B _____
19748A	Series 930 Main Memory - 8 Mb (16 Mb to 24 Mb field upgrade)	2C _____

III. Disc Drives.

7933H	404 Mb Disc Drive (MAX=16) (1m HP-IB cable included)	3A _____
7935H	404 Mb Removable Media Disc Drive (MAX=16) (1m HP-IB cable included).	3B _____
7937H	571 Mb Disc Drive (MAX= 24) (1m HP-IB cable included)	3C _____
	Total Disc Drives (Sum of lines 3x, MAX=24)	3 _____

IV. Magnetic Tape Drives.

7974A	1600 cpi (800/1600 cpi optional) Magnetic Tape Subsystem (MAX=4) (2m HP-IB cable included)	4A _____
7978A/B	6250/1600 cpi Magnetic Tape Subsystem (MAX=4) (2m HP-IB cable included)	4B _____
	Total Magnetic Tape Drives (Sum of lines 4x, MAX=8)	4 _____

Series 930 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

V. System Printers.

2565A Opt 393	600 lpm Dot Matrix Printer (MAX=8) (4m HP-IB cable included)	5A _____
2566A/B Opt 393	900 lpm Dot Matrix Printer (MAX=8) (4m HP-IB cable included)	5B _____
	Total Line Printers (Sum of lines 5x, MAX=8)	5 _____
2680A Opt 393	Intelligent Page Printer (MAX=4) (8m HP-IB cable included with Option 393)	6A _____
2688A Opt 393	Page Printer (MAX=4) (8m HP-IB cable included with Option 393)	6B _____
	Total Page Printers (Sum of lines 6x, MAX=4)	6 _____
	Total System Printers (Sum of lines 5 and 6, MAX=12)	7 _____

VI. Serial Printers.

2934A	200 cps Dot Matrix Printer (MAX=32) (Order cable separately)	8A _____
2686A	8 ppm Laser Page Printer (MAX=10) (Order cable separately)	8B _____
	Total Serial Printers (Sum of lines 8x, MAX=32)	8 _____

VII. System Console

2392A Opt 305	Block Mode Terminal (MAX=1)(cable supplied with option 305)	9 _____
-------------------------	---	---------

Series 930 Configuration Worksheet

VIII. Data Communications.

A. Workstations and Serial Printers (Enter quantities in lines below):

	Connection Method				
		Distributed Terminal Controller			
Product		Modem	RS-422	RS-232-C	Terminal Attached
Remote Console		1	N/A	N/A	N/A
Display Terminals					
2392A		_____	_____	_____	N/A
2393A		_____	_____	_____	N/A
2397A		_____	_____	_____	N/A
2622A		_____	_____	_____	N/A
2624B		_____	_____	_____	N/A
2627A		_____	_____	_____	N/A
Personal Office computers					
Touchscreen/HP150		_____	_____	_____	N/A
Vectra		_____	_____	_____	N/A
PortablePLUS		_____	N/A	_____	N/A
Serial Printers**					
2934A		_____	_____	_____	_____
2686A		N/A	_____	_____	_____
Totals		10 _____	11 _____	12 _____	13 _____

Line 10: MAX=400

Line 11: MAX=400

Line 12: MAX=400

Sum of lines 10, 11, 12: MAX=400

Line 13: MAX=400

** Note device maximums in Section VI of worksheet.

Series 930 Configuration Worksheet

Product Number	Description	Quantity
B. 802.3 LANIC Cards:		
36921A	Optional LAN Links (MAX=1) (One LANIC card is included standard for workstation and serial printer attachment, optional LANIC card is required for NS3000/XL datacomm)	14 _____

IX. I/O Expansion.

A. Distributed Terminal Controllers and Interface Products

Because the DTCs may be distributed on a site, a configuration may require more DTCs than would be needed if they were centralized. This occurs because a DTC might only be partially filled by the needs of the particular location and the excess capacity may not be conveniently utilized by a second location. To account for this, it is suggested that this section be completed for each location at which one or more DTCs will be placed. Add the results to determine the total number of DTCs and interface products. This form has lines for four locations (A to D), up to sixteen DTCs are supported.

1. Determine the number of modem connections desired and the appropriate number of modem interface products to order. Interface products can be ordered either as an option to the DTC (Opt 625) or separately for add-ons (p/n 2346C). Note that one (1) modem interface product must be ordered for remote console support.

Opt 625 or 2346C	6 modem ports, RS-232-C. (line 10 divided by "6" and rounded up to next integer)(External cables for devices ordered separately)	15A _____
		15B _____
		15C _____
	Total - Sum of lines 15x	15D _____
		15 _____

2. Determine the number of modem ports that are not used for modem connections and can be used for RS-232-C local direct connections. Since the modem ports must be ordered in groups of six, you may have up to five available for this purpose.

	Unused Modem ports [("6" times line 15) minus line 10]	16A _____
		16B _____
		16C _____
		16D _____
	Total - Sum of lines 16x	16 _____

Series 930 Configuration Worksheet

Product Number	Description	Quantity
-------------------	-------------	----------

3. Determine the number of local RS-232 and RS-422 interface products to order. Interface products can be ordered as an option to the DTC (Opt 803 for RS-232-C or Opt 805 for RS-422) or separately for add-ons (p/n 2346A or 2346B).

Opt 803 or 2346A	8 RS-232 ports. [(line 12 minus line 16) divided by "8" and rounded up to next integer]	17A _____
		17B _____
		17C _____
		17D _____
		17 _____
	Total - Sum of lines 17x	

Opt 805 or 2346B	8 RS-422 ports (Line 11 divided by "8" and rounded up to next integer)	18A _____
		18B _____
		18C _____
		18D _____
		18 _____
	Total - Sum of lines 18x	

4. Determine the number of Distributed Terminal Controllers required.

	# of slots - 1st location (15A + 16A + 17A + 18A) - 2nd location (15B + 16B + 17B + 18B) - 3rd location (15C + 16C + 17C + 18C) - 4th location (15D + 16D + 17D + 18D)	19A _____
		19B _____
		19C _____
		19D _____
2345A	Distributed Terminal Controllers Location A (Line 19A divided by "6" and rounded up) Location B (Line 19B divided by "6" and rounded up) Location C (Line 19C divided by "6" and rounded up) Location D (Line 19D divided by "6" and rounded up) Total DTCs (Sum of lines 20x) (MAX=16)	20A _____
		20B _____
		20C _____
		20D _____
		20 _____

B. HP-IB Channels

To determine the number of HP-IB channels required on the system, refer to the text and to the Appendix. You must take into consideration the maximum number of devices per HP-IB channel, maximum number of HP-IB devices per CIB, electrical device loads, cable lengths, and system performance.

27113A	Optional HP-IB Channels (MAX=6) Two HP-IB Channels are shipped standard. The special HP-IB cable for connecting the card to the first device is included. External HP-IB cables are usually supplied with devices.	21 _____
---------------	--	----------



REMARKETED SYSTEMS

All systems remarketed by the Finance and Remarketing Division (FRD) are fully refurbished. This means that they are thoroughly inspected, cleaned, painted, tested and updated using the latest specifications of the original product division and HP service notes. A result of this process is that remarketed systems are functionally and cosmetically equivalent to new. As such, information found in this configuration guide is applicable to remarketed systems.

FRD sometimes sells older versions of some products, or products with slightly different configurations. These products are clearly identified by the alpha characters used in the product numbers. For example, at the time of this writing, FRD is selling an "R" version of the Series 42, defined as having 2 Mb in the standard configuration rather than the 1 Mb standard configuration used in the "B" version sold by the original manufacturing division. For this reason, care should be exercised when configuring remarketed systems at the time of sale. Assistance in this process can be obtained from FRD's Market Development Group. The process used to configure additions to installed systems should be no different than that used for systems originally sold as new.



1

APPENDIX

Attaching HP-IB Peripherals	1-211
HP 3000 Support Matrices	
Maximum Peripheral Configurations	1-218
Maximum Terminal Configurations	1-227
Supported Workstations	1-229
Disc Support Matrix	1-230
Supported Consoles	1-231
Supported Plotters	1-232
Supported System Software	1-233
Supported Languages	1-234
Supported Database Access	1-235
Supported HP Applications	1-236
Configuring the HP-IB Extender	1-240



ATTACHING HP-IB PERIPHERALS

HP-IB (IEEE 488 protocol) peripherals attach to HP 3000 systems via hardware controllers. On the Series 930, this controller is known as an HP-IB Channel. It is called a General I/O Channel (GIC) on the Series 70/6x/5x/4x/39. The controller is called a Peripheral Interface Channel (PIC) on the Series 37/37XE and MICRO 3000XE. The Controller on the MICRO 3000 is called an HP-IB interface and is integrated directly on the MICRO 3000 CPU board.

HP-IB Channels (Series 930)

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.

General I/O Channels (Series 39-70)

Each GIC is a board that uses one I/O card slot, supports one HP-IB cabling system, and uses one junction mounting panel when connected directly to external devices. An HP-IB system may be used to connect from one to eight HP-IB peripherals. Peripherals connected to one GIC are linked together with HP-IB cables and connect to a single mounting panel. The number of peripherals which may be connected to a single GIC depends on peripheral speed, cable length restrictions, and performance considerations.

Peripheral Interface Channel (Series 37/37XE and 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)

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.

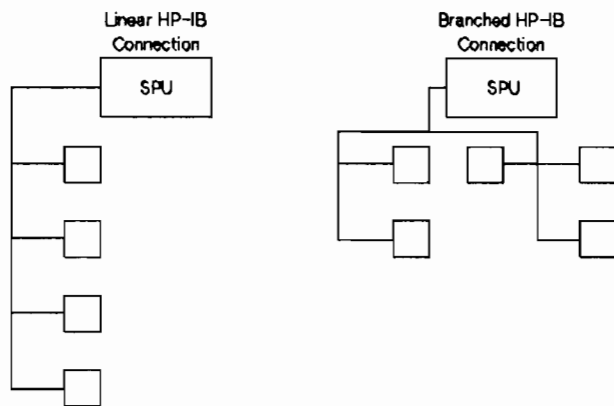
Electrical Device Loads

Up to eight HP-IB electrical device loads are allowed on a single HP-IB Channel, GIC 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. The reasons for this flexibility are illustrated below in an example.

Multiple peripherals may be connected to a HP-IB Channel, GIC 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 GIC to which other peripherals cannot be attached. (These peripherals are not supported on the HP-IB Channel or PIC.)

HP-IB Cable Length

The maximum total length of HP-IB cable linked together and connected to a single HP-IB Channel, GIC 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) (GIC, PIC and HP-IB Interface) Between the nearest peripheral and the junction panel.
- d) (GIC only) Inside the I/O card cage between the junction panel and the GIC (two meters for the Series 39,4x,5x,6x, and 70.
- e) (HP-IB Channel only) Between the HP-IB Channel card and the 1st device (two meters)

- f) (GIC) Between the GIC card and the INP or 261x cards in the card cage. (Such connections use flat ribbon HP-IB cables, and each has an effective length of one meter.)

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. (Internal HP-IB cable lengths are included in the peripheral table in the Appendix. 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- Versus Low-Speed Peripherals:

Note that there is only one GIC (30079A) and one PIC (30459A). Whether they are considered high- or low-speed depends solely upon which peripherals are attached to it. A GIC or 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.

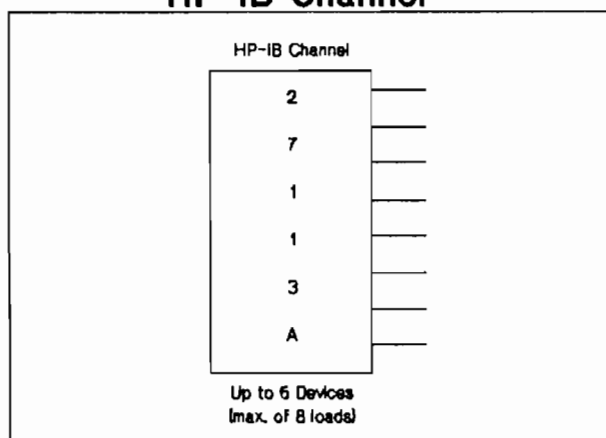
For the Series 39/4x/5x/6x/70 system, High-speed peripherals may be attached to no more than two GICs per IMB. Thus, with two IMBs, high-speed peripherals may be attached to as many as four GICs on the Series 6x with only the standard I/O bay. By ordering the auxiliary I/O bay which includes another IMB, two additional GICs for high-speed devices can be configured. The Series 39/4x/5x systems each support two high-speed GICs, since they have only one IMB.

For the Series 37 systems, two high-speed PICs are supported. On the Series 37XE and MICRO 3000XE, three PICs are supported, two of which are high-speed while the third supports low-speed INPs only.

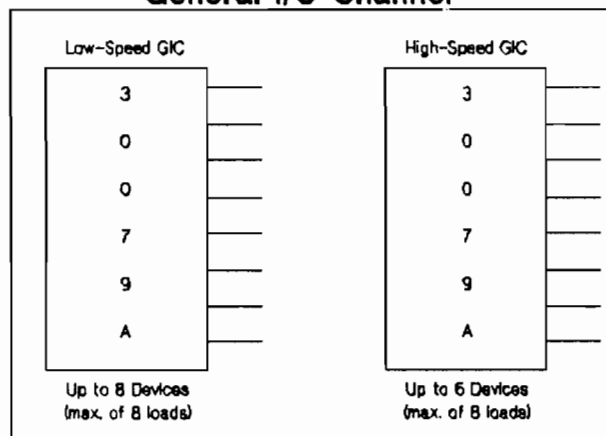
All HP-IB Channels on the Series 930 may be configured with high-speed peripherals.

A maximum of six devices may be attached to each HP-IB Channel or PIC (high- or low-speed). A maximum of six devices may be attached to each high-speed GIC. Up to eight low-speed devices may be attached to a low-speed GIC. 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, GIC, or PIC.

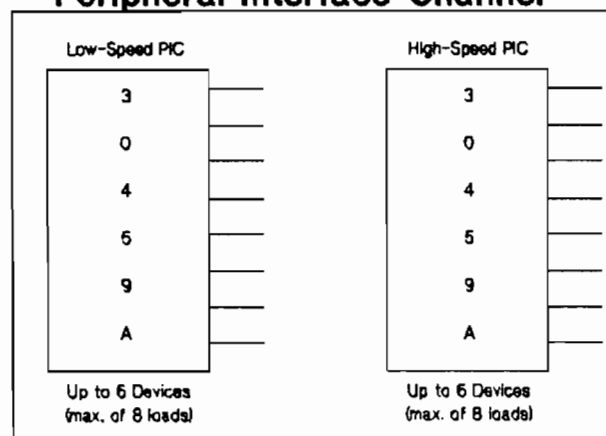
HP-IB Channel



General I/O Channel



Peripheral Interface Channel



HP-IB Interface Requirements of Peripherals:

The following table summarizes the requirements of peripherals and other devices using HP-IB Channels, GICs, or PICs with the Series 37/37XE/MICRO 3000/3000XE /39/4x/5x/6x/70/930. Note: Not all peripherals are supported on each system. See the Supported Peripherals table for details.

Peripherals	Peripheral Speed*	HP-IB Electrical Device Loads	Internal Device Cable Length (Meters)
Cartridge Tape in 7911P/ 7912P/7914P/7914TD/7914ST	Low	1 (Requires Dedicated GIC)	0
7945A/7957A/7958A Disc Drive	High	1	0
7911P/7912P Disc Drive	High	1	1
7914P/7914TD/7914CT Disc Drive	High	1	1
7920M/7925M Master Disc Drive	High	1	1
7933H/7935H Disc Drive 7936H/7937H Disc Drive	High	1	0
7970E/7971A/7914TD (Tape Portion) Master 1/2" Tape Drive	Low	1 (Requires Dedicated GIC)	0
7974A 1/2" Tape Drive	High	Shipped w/1 (Variable from 1 to 3)	1
9144A/7914CT (Tape Portion) 35401A 1/4" Autochanger	High	1	0
7914ST Integrated Storage Unit	High	Shipped w/1 (Variable from 1 to 3)	1
7976A 1/2" Tape Drive	High	Shipped w/2 (Variable from 1 to 4)	2
7978A/B 1/2" Tape Drive	High	Shipped w/1 (Variable from 1 to 3)	0
2611A/2613A/2617A/2619A Line Printer Interface Card (26069A)	Low	1	1

* A high-speed peripheral is one that has a data transfer rate on the HP-IB which exceeds 400Kbytes per second.

HP-IB Interface Requirements of Peripherals (Cont.):

Peripherals	Peripheral Speed*	HP-IB Electrical Device Loads	Internal Device Cable Length (Meters)
2608A Line Printer	Low (Do not mix with high)	1	0
2608S Line Printer	High (Do not mix w/ 7906/7920/7925)	Shipped w/1 (Variable from 1 to 7)	1
256x Line Printer	High**	Shipped w/1 (Variable from 1 to 7)	0
2680A/2688A Page Printer	High**	Shipped w/4 (Variable from 1 to 8)	1
Network Link/INP Card	Low	1	1
30106A Card Reader	Low	1 (Requires Dedicated GIC)	0
9895A (Opt. 010) Flexible Disc Drive	Low	1	1
26075A Multiple System Access Selector	High (Do not mix w/discs)	0	0.5

* A high-speed peripheral is one that has a data transfer rate on the HP-IB which exceeds 400Kbytes per second.

** Low-speed device when configured via HP-IB Extenders (37203A); HP-IB Extender requires dedicated GIC which can be shared by two Extender pairs.

Attaching HP-IB Peripherals, GIC Example:

Suppose you need to attach a 7937H disc drive, a 2619A line printer, and a 2680A page printer to a single GIC on a Series 70. Is this configuration allowed, and how much HP-IB cable can you have? (Note: Steps 1-4 also apply to HP-IB Channels and PICs)

1) Check number of devices, device speeds, and electrical device loads:

Yes, the configuration is allowed. The 2619A is a low-speed device; the 2680A and 7937H are high-speed devices; there will be six or fewer devices on this high-speed GIC; and the total number of electrical device loads that are configured at the factory is less than eight, i.e. six in this case.

2) Check the "Seven Meters Plus One Meter Per Electrical Device Load Rule:"

How much cable is allowed?

7 meters	
+ 1 meter	(7937H is configured with one electrical device load)
+ 1 meter	(2619A is configured with one electrical device load)
+ 4 meters	(2680A is configured with four electrical device loads)
13 meters	(maximum length allowed with electrical device load configuration as shipped from the factory)

3) Check the amount of HP-IB cable available for external wiring:

If you want to connect the peripherals in a straight line, for example, how far from the Series 70 junction panel can the farthest peripheral be? (Note that you could arrange these peripherals in any physical configuration within the total cabling length constraints; i.e., it does not have to be in a straight line — the external cabling layout can use branching.)

13 meters	(maximum length allowed)
- 1 meter	(ribbon cable between 2619A interface card and GIC; see the table above)
- 2 meters	(from GIC to junction panel; standard length allowed for the Series 70 I/O card cage)
- 0 meters	(no 7937H internal cabling; see the table above)
- 1 meter	(2680A internal cable; see the table above)
9 meters	(cable length remaining for external connections)

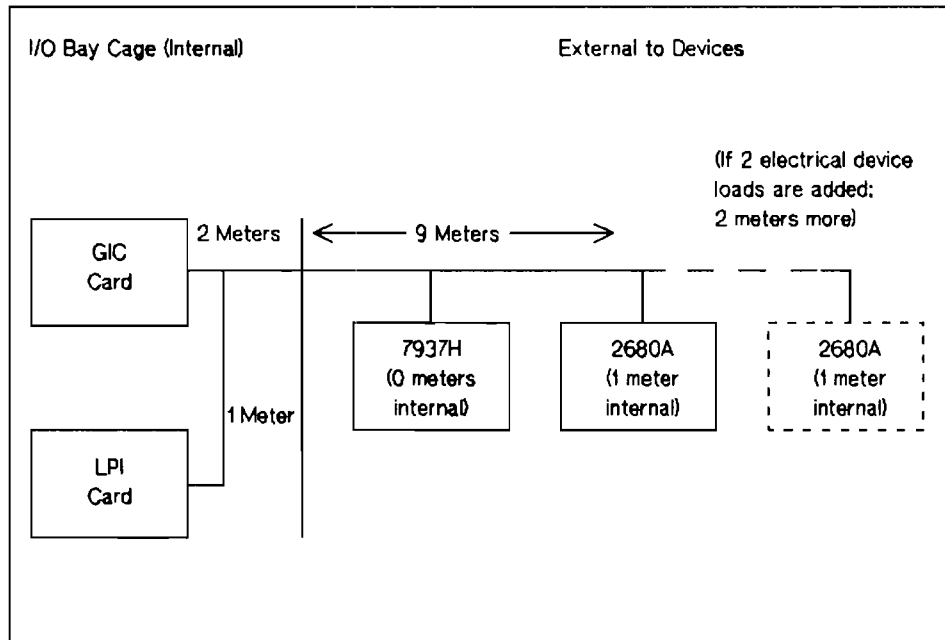
(Note that the 2619A, as well as other 261x line printers, uses HP-IB ribbon cable only between the interface card and the GIC. The line printer itself can be up to 500 feet away. It is connected by a parallel differential current-driven line that attaches to a separate junction mounting panel and hooks up to the interface card in the I/O card cage.)

4) Vary device loads if necessary and possible:

What if 9 meters is not enough; can you do anything?

Yes. A CE can reconfigure several peripherals in the field for a range of electrical device loads by rearranging resistor modules in the peripheral. For example, the 2680A could be reconfigured for six instead of four electrical device loads. This would allow the farthest peripheral to be placed two meters farther away or 11 meters away in this example. (Note, however, that by doing this, eight electrical device loads now have been configured on this GIC, leaving no more capacity for adding another peripheral later.)

HP-IB Cable Length Example:



HP 3000 Supported Peripherals

Maximum Peripheral Configurations

(See Configuration Guide Chapter 1 text for subtotal maximums)

(F = Future support planned, ? = Undetermined, 0 = Not supported)

Devices	37/37XE	MICRO 3000	MICRO 3000XE	39/42 42XP/52	48/58	Notes
A) Maximum CIBs	-	-	-	-	-	-
B) Maximum IMBs	-	-	-	1	1	13
C) Maximum HP-IB Interfaces	-	1	-	-	-	-
D) Max HP-IB Channels	-	1	-	-	-	5
E) Maximum GICs	-	-	-	4	5	3
F) Maximum PICs	2/3	0	3	-	-	4
G) Max High-Speed HP-IB Channels	-	1	-	-	-	5
H) Max High-Speed GICs	-	-	-	2	2	1,2
I) Max High-Speed PICs	2	-	2	-	-	4
J) Max LANIC Boards	1	1	1	1	1	-
K) StarLAN	-	1	1	-	-	-
L) Max G/H/I + J	2	1	4	3	3	-
M) Max INPs	3	1	3	3	7	10
N) Max DTCs	-	-	-	-	-	-
Dises:						
7933H	4	0	8	8	8	6
7935H	4	0	8	8	8	6
7936H	4	4	8	8	8	6
7937H	4	4	8	8	8	6
7933XP	0	0	8	8	8	6
7935XP	0	0	8	8	8	6
7936XP	4	4	8	8	8	6
7937XP	4	4	8	8	8	6
7957A	4	4	4	4	4	6,18
7958A	4	4	4	4	8	6,18
7914P	4	4	8	8	4	6,7
7914CT	2	0	4	4	4	6,17,18
7914ST	2	0	4	4	4	6
7945A	4	0	4	4	2	6,18
7920/7925M	0	0	0	2	14	
7920/7920S	0	0	0	7	2	
7914TD	0	0	0	1	4	
7911P/7912P	0	0	0	4	1	
7906M	0	0	0	1	6	
7906S	0	0	0	6		
Maximum Total Dises	8	4	8	8	16	-

HP 3000 Supported Peripherals (Cont.)

Maximum Peripheral Configurations

(See Configuration Guide Chapter 1 text for subtotal maximums)

(F = Future support planned, ? = Undetermined, 0 = Not supported)

Devices	68/70 2/3 IMBs	930				Notes
A) Maximum CIBs	-	2/3				-
B) Maximum IMBs	2/3	-				13
C) Maximum HP-IB Interfaces	-	-				-
D) Max HP-IB Channels	-	8/12				5
E) Maximum GICs	10/15	-				3
F) Maximum PICs	-	-				4
G) Max High-Speed HP-IB Channels	-	8/12				5
H) Max High-Speed GICs	4/6	-				1,2
I) Max High-Speed PICs	-	-				4
J) Max LANIC Boards	-	2				-
K) StarLAN	-	-				-
L) Max G/H/I + J	4/6	10/14				-
M) Max INPs	6/24	-				10
N) Max DTCs	-	16				-
Dises:						
7933H	16/24	16				6
7935H	16/24	16				6
7936H	16/24	F				6
7937H	16/24	24				6
7933XP	16/24	F*				6
7935XP	16/24	F*				6
7936XP	16/24	F				6
7937XP	16/24	F				6
7957A	4	F				6,18
7958A	4	F				6,18
7914P	8	F				7
7914CT	4	F				6,17,18
7914ST	4	F				6
7945A	4	0				6,17,18
7920/7925M	16	0				
7920/7920S	14	0				
7914TD	2	0				
7911P/7912P	1	0				
7906M	0	0				
7906S	0	0				
Maximum Total Dises	16/24	24				-

* At this time we are unable to determine whether these drives will be supported at first release.

HP 3000 Supported Peripherals (Cont.)

Maximum Peripheral Configurations

(See Configuration Guide Chapter 1 text for subtotal maximums)

(F = Future support planned, ? = Undetermined, 0 = Not supported)

Devices	37/37XE	MICRO 3000	MICRO 3000XE	39/42 42XP/52	48/58	Notes
1/2" Magnetic Tapes:						
7978A/B	2	2	4	4	4	6
7974A	2	2	4	4	4	6
7914ST	2	0	4	4	4	6
7976A	0	0	0	2	2	6,8
7970E Master/7914TD	0	0	0	1	2	7
7970E Slave	0	0	0	3	6	-
Maximum 1/2" Tapes	2	2	4	4	8	-
1/4" Cartridge Tapes						
35401A	?	2	2	2	2	6,17,18
9144A/7914CT	2	2	4	4	4	6,7,11,22
Integrated Tape	0	0	0	1	1	6,7,11,22
Maximum 1/4" Tapes	2	2	4	4	4	
Line Printers:						
2567B	2	2	4	4	4	6
2566A/B	2	2	4	4	4	6
2565A	2	0	4	4	4	6
2564B	2	2	4	4	4	6
2563A/B	2	2	4	4	4	6
2608S	0	0	0	2	2	6,14
2608A	0	0	0	2	3	9
2611A/2613A/2617A/ 2619A	0	0	0	2	4	-
Maximum Line Printers	2	2	4	4	4	-
Page Printers:						
2680A	2	2	2	2	2	6
2688A	2	0	2	2(3)	2(3)	6,16
Maximum Page Printers	2	2	4	2(3)	2(3)	16
Max Line + Page Printers	2	2	4	4	6	-

HP 3000 Supported Peripherals (Cont.)

Maximum Peripheral Configurations

(See Configuration Guide Chapter 1 text for subtotal maximums)
(F = Future support planned, ? = Undetermined, 0 = Not supported)

Devices	68/70 1/2 Bay	930				Notes
1/2" Magnetic Tapes:						
7978A/B	4	4				6
7974A	4	4				6
7914ST	4	F				6
7976A	2	0				6,8
7970E Master/7914TD	2	0				7
7970E Slave	6	0				-
Maximum 1/2" Tapes	8	8				-
1/4" Cartridge Tapes						
35401A	4	?				6,17,18
9144A/7914CT	4	F				6,17,18
Integrated Tape	1	0				7,11,22
Maximum 1/4" Tapes	4	F				-
Line Printers:						
2567B	4	F				6
2566A/B	4	8				6
2565A	4	8				6
2564B	4	F				6
2563A/B	4	F				6
2608S	4	0				6,14
2608A	4	0				9
2611A/2613A/2617A/ 2619A	4	0				-
Maximum Line Printers	8	8				-
Page Printers:						
2680A	2	4				6
2688A	4(5)	4				6,16
Maximum Page Printers	4(5)	4				16
Max Line + Page Printers	10	12				-

HP 3000 Supported Peripherals (Cont.)

Maximum Peripheral Configurations

(See Chapter 1 text for subtotal maximums)

(F = Future support planned, ? = Undetermined, 0 = Not supported)

Devices	37/37XE	MICRO 3000	MICRO 3000XE	39/42 42XP/52	48/58	Notes
Serial Printers:						
2686A/D RS-232	1	1	2	1(2)	1(2)	15,20
2686A/D Modem	0	0	0	0	0	-
2934A RS-232/422	3	3	8	8	8	15
2934A Modem	3	0	0	8	8	15
2933A RS-232/422	3	0	8	8	8	15
2933A Modem	3	0	0	8	8	15
2932A RS-232/422	3	3	8	8	8	15
2932A Modem	3	0	0	8	8	15
2564B RS-232/422	0	2	2	3(1)	8	15
2564B Modem	0	0	0	0	0	-
2563A/B RS-232/422	0	3	3	3(1)	3(1)	15,20
2563A/B Modem	0	0	0	0	0	-
2687A RS-232	1	0	2	2(1)	2(1)	15,20
2687A Modem	0	0	0	0	0	-
2631B RS-232/422	0	0	0	8	8	15
2631B Modem	0	0	0	8	8	15
2603A RS-232/422	3	3	8	8	8	-
2603A Modem	3	0	0	8	8	-
2602A RS-232/422	3	0	8	8	8	-
2602A Modem	3	0	0	8	8	-
2601A RS-232/422	3	0	8	8	8	-
2601A Modem	3	0	0	8	8	-
33440A RS-232	1	1	2	1(2)	1(2)	15,20
Max Serial Printers	3	3	8	8	8	-

() HP-IB Extender Support

HP 3000 Supported Peripherals (Cont.)

Maximum Peripheral Configurations

(See Chapter 1 text for subtotal maximums)

(F = Future support planned, ? = Undetermined, 0 = Not supported)

Devices	68/70 1/2 Bay	930				Notes
Serial Printers:						
2686A/D RS-232	5	10				20
2686A/D Modem	0	0				-
2934A RS-232/422	16	32				15
2934A Modem	16	32				15
2933A RS-232/422	16	F				15
2933A Modem	16	F				15
2932A RS-232/422	16	F				15
2932A Modem	16	F				15
2564B RS-232/422	6	F				15
2564B Modem	0	0				-
2563A/B RS-232/422	6	F				15,20
2563A/B Modem	0	0				-
2687A RS-232	4	F				15,20
2687A Modem	0	0				-
2631B RS-232/422	16	0				15
2631B Modem	16	0				15
2603A RS-232/422	16	F				-
2603A Modem	16	F				-
2602A RS-232/422	16	?				-
2602A Modem	16	?				-
2601A RS-232/422	16	?				-
2601A Modem	16	?				-
33440A RS-232	5	10				20
Max Serial Printers	16	32				-

() HP-IB Extender Support

HP 3000 Supported Peripherals (Cont.)

Maximum Peripheral Configurations

(See Chapter 1 text for subtotal maximums)

(F = Future support planned, ? = Undetermined, 0 = Not supported)

Devices	37/37XE	MICRO 3000	MICRO 3000XE	39/42 42XP/52	48/58	Notes
Other Devices:						
37203A HP-IB Extender	0	0	0	4	4	21
9895A-010 Flexible Disc Drive	1	0	1	1	1	-
30106A Card Reader	0	0	0	1	1	7
26075A Multiple System Access Selector	0	0	0	1	1	19

Devices	68/70 1/2 Bay	930				Notes
Other Devices:						
37203A HP-IB Extender	4	F				21
9895A-010 Flexible Disc Drive	1	0				-
30106A Card Reader	1	0				7
26075A Multiple System Access Selector	1	0				19

HP 3000 Supported Peripherals (Cont.)

Notes:

1. Maximum of six devices per high-speed GIC; this may be any mix of high- and low-speed devices (assuming no other restrictions). The number of devices may be limited further by cable lengths, loads and performance.
2. Only two high-speed GICs are allowed per IMB on the Series 6x. To achieve the system maximum of six high-speed GICs, the system must be configured with two I/O Bays, three IMBs, and MPE-V/E or later.
3. Up to five GICs per IMB on the Series 6x.
4. Maximum of six devices per high- or low-speed PIC. The number of devices may be further limited by cable lengths, loads and performance.
5. Maximum of six devices per HP-IB channel. All HP-IB channels may have high-speed devices attached. The number of devices may be further limited by cable length limitations, device loads, and performance considerations.
6. High-speed GIC or PIC only.
7. Requires a dedicated GIC.
8. The minimum main memory requirement for use of the 7976A is as follows:

1 drive	512 Kb
2 drives	768 Kb
9. Cannot share a GIC with high-speed devices.
10. Up to 16 INPs will function at 19.2K bps (2400 CPS); only 10 will run at 56K bps (7000 CPS) on the Series 68 with one I/O bay. On a two-bay Series 68 with MPE-V/E (or later), 24 INPs will function at 19.2K bps, and 15 INPs will run at 56K bps.
11. The Integrated Tape Cartridge is only supported as the primary backup device on the Series 39/40/42 for systems with less than 130 Mb of disc storage.
12. The 9144A is only supported as the primary backup device on the MICRO 3000/3000XE and Series 37/37XE/39/40/42 for systems with less than 307 Mb of disc storage.
13. On the Series 68, the third IMB requires the auxiliary I/O Bay and MPE-V/E or later.
14. Must be on a high-speed GIC, but cannot be on the same GIC as a 7906 or 792x disc.
15. These maximums are NOT additive; use of some printers, such as the 2687A, may impact usage of other printers on the Series 37 and MICRO 3000/3000XE. See the Output Spooling heading in the MICRO 3000/3000XE and Series 37,39,4x,5x, and 68/70 sections of this chapter. Serial-connected printers cannot be used as system printers.

HP 3000 Supported Peripherals (Cont.)

Notes:

16. Number of devices in parentheses indicates support on HP-IB Extenders. Printer is considered a low-speed device when configured via Extenders.
17. The 9144A is supported as a coldload device on Series 37/37XE, MICRO 3000/3000XE and on Series 39/4x/5x/6x/70 with CPS-E microcode installed. The 9144A is only supported as the primary backup device on the MICRO 3000/3000XE and Series 37/37XE/39/40/42 for systems with less than 307 Mb of disc storage.
18. On Series 68, cannot be placed on same GIC as system disc or cold load device.
19. Only supported with 7976 or 2680. Cannot be placed on any GIC that has disc drives attached.
20. Limits reduced on ADCC RS-232 to amount shown in parentheses.
21. Other limits may reduce total, see HP-IB Extender section in this Appendix.
22. Integrated cartridge tape ("Linus") is not supported on the 900 Series.

MPE V Maximum Terminal Configurations

(Note differences when using ATP Expansion Package.)

	37/37XE	MICRO 3000	MICRO 3000XE		39/42 42XP/52		
			5 Slot	10 Slot	No Exp Pkg	With Exp Pkg	
Terminals Attached*							
Direct Connect	28	16	16#	56#	32	60	
Modem Connect	4	8	8#	28#	31	44	
Total Point-to-Point	28	16	16#	56#	32	60	
Total Multipoint	--	--	--	--	55	55	
Total Terminals Attached	28	16	16#	56#	56	92	
Sessions***							
Total Sessions Logged On							
MPE-V/P	N/A				92		
MPE-V/E	28				92		

	48/58		68/70		68/70 3 IMBs		
	No Exp. Pkg.	With Exp. Pkg.	MPE V/E	MPE V/P	MPE V/E	MPE V/P	
Terminals Attached*							
Direct Connect	104	120	144	144	336	144	
Modem Connect	60	88	84	84	168	143	
Total Point-to-Point	104	120	144	144	336	144	
Total Multipoint	95	95	335	151	335	151	
Total Terminals Attached	152**	152	400	152	400	152	
Sessions***							
Total Sessions Logged On							
MPE-V/P	110		--	110			
MPE-V/E	152		400	N/A			

* This includes Serial Printers (2934A, 2686A, etc.)

** The maximum number of ADCC terminals on the Series 48 is 60. The maximum number of ATP direct-connect terminals on the Series 48 is 72.

*** The MPE-V session limits include all point-to-point multipoint, system console and DS virtual terminals. Please consult with a HP Performance Specialist for the number of sessions that can be running a particular application.

Only if all ATP/M boards are installed. Mixture of ATP 37's and APT/M's will reduce the maximum terminal/modem count.

MPE XL Maximum Terminal Configurations

(Console does not count toward these maximums.)

	930				
Terminals Attached*					
Direct Connect	400				
Modem Connect	400				
Total Point-to-Point	400				
Total Terminals Attached	400				
Sessions***					
Total Sessions Logged On	400				

* This includes Serial Printers (2934A, 2686A, etc.)

*** The MPE XL session limits include all point-to-point and virtual terminals. Please consult with a HP Performance Specialist for the number of sessions that can be running a particular application.

Supported Workstations

(S = Supported, F = Future support planned, ? = Undetermined, 0 = No Support)

Devices	37/37XE	MICRO 3000	MICRO 3000XE	39-70	930
Terminals					
2392A	S	S	S	S	S
2393A	S	S	S	S	S
2394A	S	S	S	S	F
2397A	S	S	S	S	S
2628A	S	S	S	S	F
2627A	0	0	0	S	S*
2626x	0	0	0	S	0
2625A	S	0	S	S	F
2624A	0	0	S	S	0
2624B	S	0	0	S	S**
2623A	S	0	S	S	F+
2622A	0	S	S	S	S**
2621A/B	0	0	0	S	0
2382A	0	0	0	S	0
264xx	0	0	0	S	0
2635x	0	0	0	S	0
2703A	0	0	0	S	0
307xx	0	0	?	S	0
308xx	0	S	?	S	0
Personal Computers					
HP 150A	S	S	S	S	S
HP 150B/Touchscreen	S	S	S	S	S
HP 150 II Touchscreen II	S	S	S	S	S
VECTRA	S	S	S	S	S
Portable	0	S	S	0	0
PortablePLUS	S	S	S	S	S

* ROM data code 3487 or later

** ROM date code 3139 or later

+ ROM date code 3223 or later

++ ROM date code 3199 or later

Disc Support Matrix

(* indicates that restrictions apply, see notes for details)

Disc	LDEV1	System Disc	Private Volume (7)	Serial Disc (7)	Notes
7906M/S*	No	Yes	Yes*	Yes*	1,2,3
7920/7925M*	Yes	Yes	Yes	Yes	1,2
7920/7925S*	No	Yes	Yes	Yes	1,2
7911/7912*	Yes*	Yes	Yes	Yes	1,2,4
7914*	Yes	Yes	Yes	No	2,5,8
7945A*	Yes*	Yes*	Yes	No	2,6,8
7933H	Yes	Yes	Yes	Yes	8
7935H	Yes	Yes	Yes	Yes	8
7933XP	Yes	Yes	Yes	Yes	5,8
7935XP	Yes	Yes	Yes	Yes	5,8
7936H	Yes	Yes	Yes	Yes	
7936XP	Yes	Yes	Yes	Yes	
7937H	Yes	Yes	Yes	Yes	
7937XP	Yes	Yes	Yes	Yes	
7957A	Yes*	Yes	Yes	No	2,6
7958A	Yes*	Yes*	Yes	No	2,6

1. Not supported on the Series MICRO 3000/3000XE or 37/37XE.
2. Not supported on the Series 930.
3. Only the 10 Mb removable portion of the 7906 disc drive is supported as a private volume or serial disc.
4. 7911/7912 only supported as LDEV1 on the Series 39/40/42/44/48/58.
5. Future support planned for Series 930.
6. 7945A, 7957A and 7958A not supported as System Disc (LDEV1) on Series 64/68/70.
7. NOTE: For the 900 Series systems, there is no distinction between Private Volumes and System Volumes. Serial Discs are not supported on the Series 930.
8. Not supported on MICRO 3000.

Supported Consoles

STATUS	37/37XE	MICRO 3000 or 3000XE	39 - 58		
current	2392A w/Opt. 304	2392	239x*		
no longer orderable			262x* 2382A* 264x* 2635B*		

STATUS	64 - 70	930			
current	45851A** Touchscreen II w/9123D disc drive	2392A w/Opt. 305			
no longer orderable	2647F w/Opt. 890 2642A w/Opt 961				

* ADCC connection only

** For use on Series 6x: install DCU ROM date code of 2522 or later, install MPE V/P Delta 1 (or later) or MPE V/E (or later), and order Console Communication Program (p/n 32342-6082, supplied standard with new systems).

Supported Plotters

(S = Supported, F = Future support planned, ? = Undetermined, 0 = No Support)

Devices	MICRO 3000 3000XE	37 - 37XE	39 - 70	Notes
Plotters				
7220A/C/S/T	0 0	-	S	
7221A/B/C/S/T	0 0	-	S	
7225A/B	0 0	-	S	
7240A	0 0	-	S	
7245A/B	0 0	-	S	
7440A	S S	-	S	
7470A	S S	-	S	
7475A	S S	-	S	
7510A	S S	-	S	
7550A (1)	S S	-	S	
7570A	0 0	0	S	
7580B	0 S	S	S	
7585A/B	0 S	S	S	
7586B (2)	0 -	-	S	
9872A/B/C/S/T	0 0	0	S	
Devices	930			Notes
Plotters				
7220A/C/S/T	0			
7221A/B/C/S/T	0			
7225A/B	0			
7240A	0			
7245A/B	0			
7440A	F			
7470A	?			
7475A	F			
7510A	?			
7550A (1)	F			
7570A	-			
7585A/B	?			
7586B (2)	?			
9872A/B/C/S/T	0			

- 1) HP Draw cannot utilize the replot feature of the 7550A
- 2) The 7586B only supports the 7585B features on the HP 3000

Supported System Software

(S = Supported, F = Future Support Planned, ? = Undetermined, 0 = No Support)

	MPE V/R	MPE V	MPE XL CM	MPE XL NM
Information Storage				
KSAM	S	S	S	F
IMAGE	S	S	0	0
TurboIMAGE	0	S*	0	S
ALLBASE (IMAGE & SQL)	0	0	0	S
HPSQL/V	0	S	0	0
DBchange	0	S*	S+++	?
Profiler	0	S*	S	?
Integration & Transparency				
HP Access Central	0	S	0	F
Dictionary	S	S	S	0
System Dictionary	0	S	0+	S
Application Development				
Toolset	S	S	?	S
**Transact	S	S	S	F
VPlus	S	S	S	S+
Reporting & Presentation				
**Report	S	S	S	0
**Business Report Writer	0	S*	F	F
**Inform	S	S	S	F
Easytime				
	0	S++	-	-

* U-MIT or later

++ UB-DELTA-3 for MICRO 3000

** The IV Versions of these products are coded differently between MPE V and MPE XL systems. They can not be copied between MPE V and MPE XL CM systems. This situation may arise when a customer purchases an "R" copy of the software.

+ Native mode intrinsics available from NM and CM.

+++DBchange runs in CM but is supported with TurboIMAGE/XL databases in NM

Supported Languages

(S = Supported, F = Future Support Planned, ? = Undetermined, 0 = No Support)

The 900 Series system have two types of compilers. Native Mode (NM) compilers emit NM object code. Compatibility Mode (CM) compilers produce MPE V object code.

	MPE V/R	MPE V	MPE XL CM	MPE XL NM
COBOL II	S	S	F*	S
COBOL	S	S	0*	0
HP Pascal	0	F	F	S
Pascal	S	S	F*	0
FORTTRAN 77	0	S	F*	S
FORTTRAN 66	S	S	F*	0
Business Basic	0	S	S	F
Basic	S	S	F*	0
RPG	S	S	S	F
HP C	0	0	0	F*
SPL	0	S	S	0
C/3000 (3rd Party)	0	S	F	0

* Run time support of object code at initial release.

Supported Database Access

(S = Supported, F = Future Support Planned, ? = Undetermined, 0 = No Support)

	KSAM	IMAGE MPE V	TurboIMAGE MPE V MPE XL CM		ALLBASE HPIMAGE HPSQL		HPSQL MPE V
Application Development							
Toolset	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Transact	S	S	S	S	S*	0	0
VPlus Forms	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FORTTRAN 66	S	S	S	S	S*	0	0
FORTTRAN 77	S	S	S	S	S	F	F
Basic	S	S	S	S	S*	0	0
HP Business Basic	S	S	S	S	S*	0	0
Pascal	S	S	S	S	S*	0	S
HP Pascal	-	-	F	F	S	S	F
COBOL	S	S	S	S	S*	0	S
COBOL II	S	S	S	S	S	S	S
SPL	S	S	S	S	S*	0	0
RPG	S	S	S	S	S*	0	0
HPC	0	0	0	0	F	F	0
Reporting & Presentation							
Report	S	S	S	S	S*	0	0
BRW	S	0**	S	F	F	F	F
Inform	S	S	S	S	S*	0	0
Integration & Transparency							
HP Access Central	0	S	S	F	F	?	?
Dictionary	S	S	S	S	0	0	0
System Dictionary	S	S	S	S	F	F	F

* Accessible through TurboWindow from program in Compatibility Mode

** Existing HPFA customers will receive support

Supported HP Applications

(S = Supported, F = Future support planned, ? = Undetermined, 0 = No Support)

Applications	37/37XE	MICRO 3000	MICRO 3000XE	39-70	
Manufacturing Systems					
Materials Mgmt/3000	S*	S	S	S	
Production Mgmt/3000	S*	S	S	S	
HP Maintenance Mgmt	S*	S	S	S	
HP Just-In-Time	S*	S	S	S	
HP Production Cost Mgmt	S	S	S	S	
HP Purchasing	0	0	0	S	
HP Pay	S	S	S	S	
Financial Systems					
HP Financial Accounting	S*	S	S	S	
HP Financial Budgeting	F	F	F	F	
HP IF	S	S	S	S	
GA/3000	0	0	0	S	
Semiconductor Information Systems					
SPN Products	S+	S+	S+	S	
Distribution Systems					
HP SFD I	S	S	S	S	
HP SFD II	S	S	S	S	
OM/3000	S	S	S	S	
HP INVISION	S	S	S	S	

* 2 Mb system, maximum of 8 terminals

** Future combined product (MM III) will be supported on the 900 Series

*** Ownership transferred to a third party who will determine support

+ Limited support of some modules

Supported HP Applications

(S = Supported, F = Future support planned, ? = Undetermined, 0 = No Support)

Applications	930 CM	930 NM			
Manufacturing Systems					
Materials Mgmt/3000	0	0**			
Production Mgmt/3000	0	0**			
HP Maintenance Mgmt	F	0			
HP Just-In-Time	0	0**			
HP Production Cost Mgmt	0	0**			
HP Purchasing	0	0**			
HP Pay	0	0			
Financial Systems					
HP Financial Accounting	F	F			
HP Financial Budgeting	F	F			
HP IF	F	F			
GA/3000	0	0			
Semiconductor Information Systems					
SPN Products	0	0			
Distribution Systems					
HP SFD I	***	***			
HP SFD II	***	***			
OM/3000	***	***			
HP INVISION	***	***			

* 2 Mb system, maximum of 8 terminals

** Future combined product (MM III) will be supported on the 900 Series

*** Ownership transferred to a third party who will determine support

+ Limited support of some modules

Supported HP Applications

(S = Supported, F = Future support planned, ? = Undetermined, 0 = No Support)

Applications	37/37XE	MICRO 3000	MICRO 3000XE	39-70	
Office					
DSG/3000	S	S	S	S	
HP Draw	S	S	S	S	
HP EasyChart	S	S	S	S	
HP Map/3000	S	S	S	S	
HP Menu	S	S	S	S	
HP Deskmanager	S	S	S	S	
HP Slate	S	S	S	S	
Deluxe VisiCalc/3000	S	S	S	S	
HP Word	S	S	S	S	
TDP/3000	S	S	S	S	
HP Spell	S	S	S	S	
HP ListKeeper	S	S	S	S	
HP Telex	S	S	S	S	
Print Central/3000	S	S	S	S	
HP ACCESS Central	S	S	S	S	
Performance Tools & Services					
APS/3000	S	S	S	S	
OPT/3000	S	S	S	S	
System Measurement Tool	0	0	0	0	
HP TREND	S	S	S	S	
HP SNAPSHOT	S	S	S	S	
HP CAPPLAN	S	S	S	S	
Miscellaneous					
CIS/3000	0	0	0	S	
SIS/3000	0	0	0	S	
IDS/3000	0	0	0	S	
IFS/3000	S	S	S	S	

* Replaced by System Measurement Tool (SMT).

** Functionally replaced by PC software.

*** text editor only, no graphics integration

+ intrinsics only, for programmatic access

Supported HP Applications

(S = Supported, F = Future support planned, ? = Undetermined, 0 = No Support)

Applications	930 CM	930 NM			
Office					
DSG/3000	F+	0			
HP Draw	0**	0**			
HP EasyChart	0**	0**			
HP Map/3000	0	0			
HP Menu	0	0			
HP Deskmanager	F	0			
HP Slate	0**	0**			
Deluxe VisiCalc/3000	0**	0**			
HP Word	0**	0**			
TDP/3000	S***	0			
HP Spell	0	0			
HP ListKeeper	0	0			
HP Telex	F	0			
Print Central/3000	F	0			
HP ACCESS Central	F	0			
Performance Tools & Services					
APS/3000	0	0			
OPT/3000	0*	0*			
System Measurement Tool	0	S			
HP TREND	0	0			
HP SNAPSHOT	S	S			
HP CAPPLAN	S	S			
Miscellaneous					
CIS/3000	0	0			
SIS/3000	0	0			
IDS/3000	S	0			
IFS/3000	S	0			

* Replaced by System Measurement Tool (SMT).

** Functionally replaced by PC software.

*** text editor only, no graphics integration

+ intrinsics only, for programmatic access

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 the HP 3000 Series 4x, 5x, 6x and 70. 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 from the HP 3000 processor, making printed output more accessible to end users in an office, manufacturing, or a dedicated "printer room" environment.

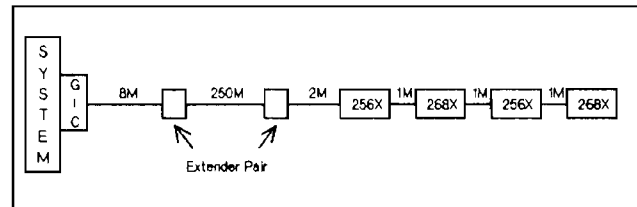
Fiber optic HP-IB Extenders are available by ordering 37203A with option 001 and 010. Fiber optic cabling allows for greater protection against electrical disturbance permitting cable lengths from distances of 250 to 1000 meters.

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. (See the table below for system printer maximums.) The Series 4x and 5x can support three 2688As with the HP-IB Extender. The Series 6x and 70 can support up to five 2688As, three via the Extenders and two connected directly to a GIC.

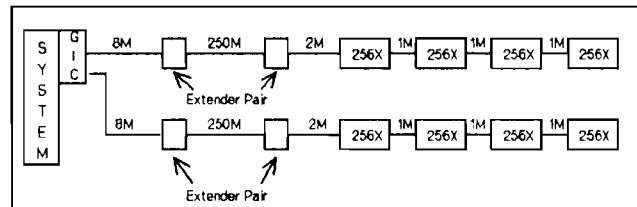
The following set of rules must be adhered to when using the Extender:

- 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.
- 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).



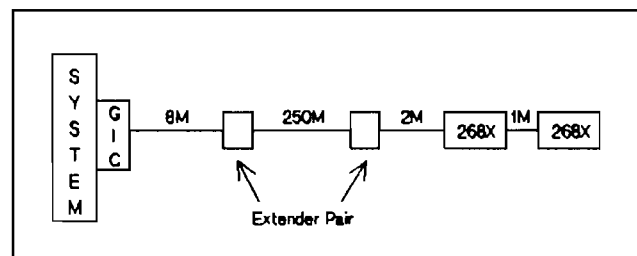
NOTE: A system with two GICs, each with one extender pair, follows the same rules. Do not exceed system printer maximums.

- Two sets of Extender pairs may be used on a single GIC, but only 256x printers can be installed on either Extender pair.

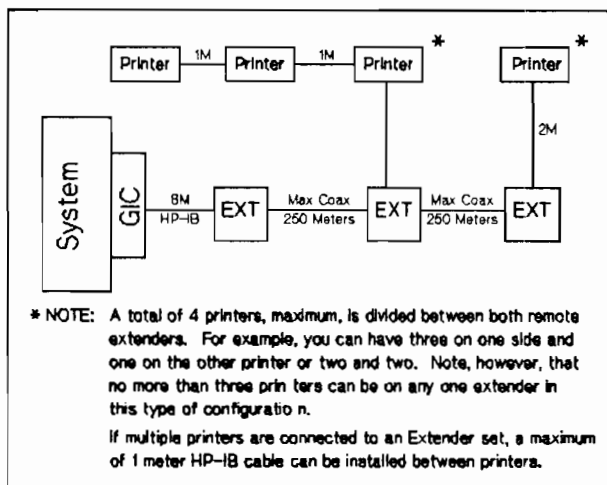


NOTE: A system with two GICs, each with two extender pairs, follows the same rules. Do not exceed system printer maximums.

- 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.



The HP-IB cable connecting the GIC to the first Extender of the Extender pair may be up to 8m in length. (This supersedes the 2m restriction published in previous documents.) The cable shipped with the printer may be used here. A maximum of 250m of coaxial cable (92179G) connects this Extender to the second Extender. Two BNC male connectors, 92226A, should be ordered with the 92179G cable. Another shielded 2m HP-IB cable (10833B) connects this second Extender to the first printer. The HP-IB cable length between printers is restricted to 1m (10833A).

SYSTEM PRINTER MAXIMUM

Cabling and Ordering

The 37203A HP-IB Extenders must be ordered in pairs and option 010 is required for use on the HP 3000. (Option 010 insures that the Extender will correctly recover from power fail.)

The 37204A/B HP-IB extender must be ordered in pairs.

The 37203A Fiber Optic HP-IB extender must be ordered in pairs and Option 010 and 001 are required for use on the HP 3000. (Option 010 insures that the extender will correctly recover from power fail. Option 001 specifies fiber optic cables.)

Printer	S/4x,5x	S/6x,70
2563A/B	4	4
2564B	4	4
2565A	4	4
2566A/B	4	4
2567B	4	4
2680A	2	2
2688A**	3*	5*

* With Extender.

** Note: Regular maximums for the 2688A are two on the S4x and four on the S6x; maximums are increased with Extenders.



2

Upgrade Configuration Rules

Upgrading HP 3000 Systems Overview	2-1
Upgrading S/III to MPE V Systems	2-2
Example S/III to S/68 Upgrade	2-6
Upgrading MPE V to MPE V Systems	2-7
Example S/30 to S/58 Upgrade	2-13
Upgrading MPE V to MPE XL Systems	2-14
Example S/68 to S/930 Upgrade	2-17
Upgrade Ordering Matrix	2-18
Series 930 Upgrade	2-24
Series 70 Upgrade	2-26
Series 68 Upgrade	2-33
Series 58 Upgrade	2-36
Series 52 Upgrade	2-39
Series 39 Upgrade	2-41
Series 37XE Upgrade	2-41
Equipment to be Returned	2-43





UPGRADING HP 3000 SYSTEMS

Overview

Upgrades to the current HP 3000 systems, are available from previous HP 3000 systems as well as from HP 300 and HP 250/260 systems. These upgrades are designed to provide a smooth growth path for applications and organizations which are expanding.

Upgrades can take one of two forms: the *field upgrade* or the *box swap upgrade*. In the case of a field upgrade, the customer's original hardware is retained, including peripherals, and additional hardware and software are added to the System Processing Unit (SPU). It is the simplest of upgrades and can be achieved with minimum cost and disruption.

The second upgrade path is the *box swap upgrade*, during which the original SPU is removed and a new one is put in its place. The original system is returned to Hewlett-Packard for credit toward the new one. In addition to replacing the SPU, a box swap upgrade may involve conversion or replacement of some peripherals. Support of peripherals is determined both by the peripherals interface (e.g. HP-IB) and by the version of the operating system on the new SPU. Please check the tables and the discussion following them in this chapter for specific details on peripheral conversion.

Installation and Deinstallation

The SPU being upgraded must have been installed at the customer's site for at least six months. Documentation of the installation or proof of support for at least six months may be required. Deinstallation of the original SPU and installation of the new SPU should take place at the same facility and at the same time. Normal deinstallation and installation charges are included in the price of the upgrade.

Site Preparation

When changing SPUs, the site preparation requirements could differ. It is important to have a site preparation specialist visit the site if there is a question as to its suitability.

Return Credits

Return credits towards box swap upgrade purchases are available for SPUs and for some peripherals and accessory equipment. For a current list, consult the latest Corporate Price List.

UPGRADING FROM SERIES III OR PRE-SERIES III SYSTEMS TO MPE V SYSTEMS

Many peripherals on the earlier HP 3000 systems will be incompatible with current systems because of the different I/O structures. An exception would be the peripherals on a Series III equipped

with an HP-IB interface module (30341A). In this case the peripherals attached to the interface module can be carried over to the new system.

The following table of Series III and Pre-Series III peripherals identifies at a glance which peripherals need conversion or are not supported on the newer systems.

Peripherals	Not Supp.	Supp.	Conversion Required
Discs			
7933H 404 Mb, fixed		X	
7935H 404 Mb, removable		X	
7925M 120 Mb Master		X	12745A
7925S 120 Mb Slave*		X	
7925A 120 Mb			13037U, Opt. 102
7920M 50 Mb Master			12745A
7920S 50 Mb Slave*		X	
7920A 50 Mb			13037U, Opt. 102
7905A (13180B) 15 Mb	X		
7900A (30110A) 5 Mb	X		
2888A (30102A) 47 Mb	X		
2600A (30103A) fixed head	X		
Magnetic Tape Drives			
7976A 6250 cpi		X	
7970E Master 1600 cpi			26072A
7970E Slave 1600 cpi		X	
7970B 800 cpi	X		
30215A additional Mag Tape Interface	X		
Page Printer			
2680A Page Printer		X	

* Slave versions of the 7920/7925 disc drive are supported on HP-IB systems only when the master drive (7920M/7925M) is included in the configuration. The 7920S/7925S may also be converted to master drives. (See disc discussion following.)

Peripherals	Not Supp.	Supp.	Conversion Required
Line Printers			
2619A 1000 lpm		X	26069A
2618A 1250 lpm	X		
2617A 600 lpm		X	26069A
2614A 600 lpm	X		
2613A 300 lpm		X	26069A
2611A 600 lpm		X	26069A
2610A 200 lpm	X		
2608A 400 lpm		X	26002A, Opt. 046
2607A 200 lpm	X		
Serial Printers			
2631A 180 cps		X	
2631B 180 cps		X	
+ 2601A Daisy Wheel		X	
+ 2602A Daisy Wheel		X	
2762A/B Printer Terminal	X		
2749B Teleprinter	X		
Terminals			
262x		X	
264x		X	
2382A		X	
2703A		X	
2641A in APL mode	X		
ASR 33/35/37	X		
Execuport	X		
Datapoint 3300	X		
Memorex 1240	X		
MiniBee	X		
Communications Interfaces			
30010A INP*	X		
30032A ATC	X		
30032B ATC	X		
3055A SSLC	X		
30360A HSI	X		
Other Products			
30104A Paper Tape Reader	X		
30105A Paper Tape Punch	X		
30119A Card Reader Punch	X		
30126A Calcomp Interface	X		
30300B Programmable Controller	X		
30301B Real-time Programmable Controller	X		
30106A Card Reader (non-HP-IB version)			30309A

* INPs are replaced by Network Link Products.

+ Supported on MICRO 3000XE. Not supported on MICRO 3000.

Peripheral and Accessory Conversion Notes: Series III to MPE-V Based System

Discs

There are two conversions possible for 7920/7925 master disc drives when moving from a Series III type system to an HP-IB system. Pre-Series III systems and the original two-bay Series III were configured with the disc controller in the SPU. To add the controller and the HP-IB interface to these drives, order a 13037U with Option 102. This upgrade will also convert a slave disc drive to a master drive. Later Series III models ("low-cost") had the disc controller in the drive rather than in the SPU. To convert these drives to HP-IB, you need to order a 12745A master disc drive interface upgrade.

Magnetic Tape Drives

There are also two possible conversions for 7970E master tape drives to HP-IB systems: either lo-boy or upright. Both require the 26072A Master Magnetic Tape Drive HP-IB Conversion Kit. If the drive is in a vertical mount, specify Option 001. In addition, if the serial number is less than 1822A-0000, order Option 002. A vertical mount tape drive will also require the 7971A cabinet, 26078A. Remember to order the dedicated GIC for every 7970E master tape drive.

Card Reader

The Series III 30106A Card Reader is supported on Series 4x, 5x, 6x and 70 systems with the 30309A upgrade kit. (The 30106A and 30309A are no longer orderable from HP.)

Line Printers

2611/13/17/19 line printers need a new line printer interface, 26069A, with the appropriate system option when converting to HP-IB systems.

The options are:

26069A Line Printer Interface
Opt. 340 Cable Set for Series 39,40,42
Opt. 344 Cable Set for Series 44,48
Opt. 364 Cable Set for Series 64,68

2608A printers need a 26002A Line Printer Interface for conversion. Include option 046 for the HP-IB interface.

Serial Printers

Although no conversion is necessary for the supported serial printers, new cables may be necessary. See the terminals cabling matrix in Chapter Four for more information.

Terminals

The MICRO 3000/3000XE, Series 37, 39, 4x, 5x, 6x, and 70 will support the following terminal types: 4, 6, 9, 10, 12-16, 18-22. Terminal types which are supported on Series III and pre-Series III systems but are not supported on current systems are 0-3, 5, and 11.

Communications Interfaces

For terminal communication, either ADCCs (Asynchronous Data Communications Controller) or ATPs (Advanced Terminal Processor) must be ordered to replace the ATC (Asynchronous Terminal Controller). See the appropriate system section in Chapter One for specific details on ADCCs and ATPs.

Intelligent Network Processors (INPs) must also be completely replaced with the appropriate Network Link products.

General I/O Channels

General I/O Channels (GICs) are not included with a system upgrade. When upgrading from a non-HP-IB system, a minimum of two GICs (30079A) must be ordered.

Peripheral Interface Channels

One peripheral interface channel (PIC) is included with upgrades to the MICRO 3000XE (32545AH).

Configuring the New System

Once you have determined what peripherals are available to be carried over to the new system, you are ready to complete the system configuration. Refer to Chapter One for information on configuring the system.

EXAMPLE OF A SERIES III TO SERIES 68 UPGRADE

Assume a Series III system with the following configuration:

- SPU
- 2 Mb memory
- 2645A System Console
- 32 terminal ports
- Discs:
 - 1 7920M
 - 1 7920S
 - 2 7925S
- 7970E tape drive with 30215A mag tape controller
- 2619A line printer
- 30010A INP (Used for HP to HP DS line)

The system is to be upgraded to a Series 68 with the following configuration:

- SPU
- 4 Mb memory
- 60 terminal ports
- Discs:
 - 1 7920M
 - 1 7920S
 - 2 7925M
- 7970E tape drive
- 2619A line printer
- Network Link (INP) for HP to HP Hardwired Connection

The following equipment will be returned for credit:

- SPU
- 30215A mag tape controller
- 256 Kb memory

The following should be ordered:

- | | |
|------------|--|
| 32468CH | Series 68 SPU with 3 Mb memory |
| Opt. 603 | Upgrade from Series III |
| 51450A | MPE Media Product |
| Opt. 604 | Series 68 SPU |
| 30165A | Additional 4 Mb of memory |
| 45851A | Series 6x System Console (Order cable.) |
| 9123D | Disc Drive |
| (3) 30079A | GICs |
| Opt. 064 | Internal cable |
| 30144A | SIB |
| 30145A | Direct connect port controller |
| Opt. 001 | First controller on system |
| (4) 30145A | Additional direct connect controllers port |
| * 26072A | Tape drive conversion (for 7970E) |
| 26069A | Printer interface (for 2619A) |
| Opt. 364 | Series 6x subsystem |
| ** 12745A | Disc drive conversion (for 7920M) |
| (2) 13037U | Disc drive conversion (for 7925S to 7925M) |
| Opt. 102 | HP-IB Interface |
| 30270A | DS Hardwired Link |
| Opt. 435 | Series 68 to HP 3000 Connection |

The following products cannot be used on the new system. Return credits may be available. Consult your HP 3000 Price Guide.

- 2645A System Console (can be used as a user terminal)
- 30032A ATC
- 30010A INP
- 1.5 Mb memory

* In addition, a new cabinet (26078A) may be required.

** If the Series III system to be upgraded was the older type with the controller in the SPU, an additional 13037U would be ordered instead of the 12745A.

UPGRADING FROM AN MPE V SYSTEM TO AN MPE V SYSTEM

When upgrading to an MPE 4x, 5x, 6x, 70 or MICRO 3000/3000XE system from a (Series 30, 33, 37, 37XE, MICRO 3000/3000XE) most peripherals will be supported on the new system.

Existing GICs can also be carried over except from the Series 37/37XE or MICRO 3000/3000XE. However, in many cases, new cables are required. The following table identifies which peripherals can be carried straight to the new system. If the peripheral needs conversion, the rightmost column contains the part number of the conversion product needed.

Peripherals	Not Supp.	Supp.	Conversion Required
Discs			
9895A, Opt. 010, 1.2 Mb		X	
+ 7933H/7935H, 404 Mb		X	
+ 7933XP/7935XP, 404 Mb, Controller Cache		X	
7936H/XP, 307 Mb		X	
7937H/XP, 571 Mb		X	
7957A, 81 Mb		X	
7958A, 132 Mb		X	
++ 7925M, Opt. 102, 120 Mb Master		X	
++ 7925S, 120 Mb Slave*		X	
++ 7920M, Opt. 102, 50 Mb Master		X	
++ 7920S, 50Mb Slave*		X	
7914P, Opt. 001, 132 Mb		X	
++ 7914TD, 132 Mb disc and 7970E tape driv		X	
7914ST, 132 Mb disc and 7974A tape drive		X	
++ 7912P, Opt. 001, 65 Mb		X	
7945A, 55 Mb		X	
++ 7911P, Opt. 001, 28 Mb		X	
++ 7906M, Opt. 102, 19.6 Mb, Master		X	
++ 7906S, 19.6 Mb, Slave		X	
++ 7902A, flexible disc	X		
Magnetic Tape Drives			
7978A/B, 6250/1600 cpi		X	
++ 7976A, 6250/1600 cpi		X	
7974A, 1600/800 cpi		X	
++ 7970E, Opt. 426,436;7971A, Opt. 340 serial number less than 2034A-0000			26072A, Opt. H01
serial number greater than 2034A-0000		X	
7970E, Opt. 421, slave		X	
9144A, 1/4" Cartridge Tape		X	
35401A, 1/4" Autochanger Tape		X	

* Remember to carry over a 7920M/7925M when carrying over any slave drives (7920S/7925).

+ Not supported on MICRO 3000/3000XE systems.

Peripherals	Not Supp.	Supp.	Conversion Required
Page Printer			
2680A, Page Printer		X	
2687A/2688, Desktop Page Printers		X	
Line Printers			
+ 2619A, 1000 lpm		X	26069A upgrade kit: see cable matrix on page 2-9 (2619/17/13/11 only)
+ 2617A, 600 lpm		X	
+ 2613A, 300 lpm		X	
+ 2611A, 600 lpm		X	
+ 2608A, 400 lpm		X	
+ 2608S, 400 lpm		X	
2563A/B, 300 lpm		X	
2564B, 600 lpm		X	
2565A/66A/B, 600/900 lpm		X	
2567B, 1200 lpm		X	

* Remember to carry over a 7920M/7925M when carrying over any slave drives (7920S/7925S).

+ Not supported on MICRO 3000/3000XE systems.

Peripherals	Not Supp.	Supp.	Conversion Needed
Serial Printers + 2631B 180 cps + 2631A 180 cps 2601A Daisy Wheel 2602A Daisy Wheel 2603A Daisy Wheel + 2672A/B Printing Terminal 2749B Teleprinter + 2563A/B 300 lpm 2932/33/34A Printer 2686A/D LaserJet	 X X X X	 X X X X X X X	
Terminals 239x 262x + 264x 2382A + 2703A + 2641A in APL mode + ASR 33/35/37 + Execuport + Datapoint 3300 + Memorex 1240 + MiniBee	 X X X X X X X	 X X X X X	
Communications Interfaces + 30144A ATP SIB + 30145A ATP Direct Connect Port Controller + 30155A Modem Port Controller + 30273A ATP Expansion Package + 30274A ATP Expansion Package + 30018A ADCC (Main) + 30019A ADCC (Extender) + 30020A INP* 30020B INP 40290A ATP/M 30240A LAN 30242A LAN 30265A StarLAN 30460A ATP37	 X	 X X** X** X* X* X* X	 30021C* 30021C*
General I/O Channels 30079A GIC (S/39,4X,6X) 30459A PIC (S/37)	 X++		 30022A
Other Products 30106A Card Reader, (HP-IB version) 26075A Multiple System Access Selector		 X X	

*Not supported on Series 68. **Cables may need to be ordered.

+Not supported on MICRO 3000 systems. ++Supported on MICRO 3000XE.

Peripheral and Accessory Conversion Notes: MPE V SYSTEM to MPE V SYSTEM

Discs

In most cases the HP-IB discs which were used on previous HP-IB systems can be carried over without conversion to the new system. The 7902A flexible disc is not supported on current systems.

If the customer is upgrading a Series 30/33 system with a built-in 7902A flexible disc drive and the customer wants a flexible disc on the new system, a new 9895A (with option 010) flexible disc drive must be ordered. The media for the 7902A disc drive should not be used with the 9895A flexible disc drive as it will damage the drive heads and itself because of its softer material. It should be used only once to copy its data to 9895A media.

Magnetic Tape Drives

Tape drives with HP-IB interfaces can be retained without conversion for the new systems with two exceptions; for 7970E option 426 tape drives with a serial number less than 2034A-0000, a conversion, 26072A option H01, is needed. Also, the 7976 is not supported on the MICRO 3000XE.

Line Printers

All HP-IB line printers are supported on the Series 39, 4x, 5x, 6x and 70 systems. Only the 2611A/13A/17A/19A printers need conversion (new cables) when transferring between HP-IB systems as indicated below. The 2608 is not supported on the MICRO 3000XE.

26069A Cable Matrix for 2611A/13A/17A/19A Printers

New System	Existing System			
	30	33	39/40/42	44/48
39/42/ 42XP/52	None	26069-60005	Same Cable	30090-60051 26069-60005
48/68 48/58/68/70	26069-60002 26069-60003	26069-00008	26069-60002 26069-60003	Same Cable

Terminals

The MICRO 3000XE and Series 4x, 5x, 6x and 70 will support the following terminal types: 4, 6, 9, 10, 12-16, 18-22. Terminal types which are not supported on current systems are 0-3, 5, and 11.

Although no conversion is necessary for supported terminal types, new cables may be required. See the terminal cabling section in Chapter Four for more information.

Communications Interfaces

When upgrading from one system with ADCCs (Asynchronous Data Communication Controller) to another, new cables (30021C) must be ordered for each ADCC Main and Extender beyond the first ADCC Main in the system. Note that ADCCs are not supported on the Series 6x/70.

The ATP37 or ATP/M cannot be transferred to systems other than the MICRO 3000XE. Therefore, either ADCCs or ATPs must be ordered when upgrading from MICRO 3000/3000XE or Series 37/37XE to Series 4x, 5x, 6x, 70 systems.

The ATP Expansion Package cannot be transferred from the Series 4x/5x to the Series 6x/70; however, SIBs and AIBs may be transferred.

The 30020A INP (Intelligent Network Processor) is supported on the Series 42 and 48 Network Link product. It is not supported on the Series 68 which requires the 30020B INP. All new INP-based Network Link products contain the 30020B INP.

General I/O Channels

General I/O Channels (GICs) may be transferred to all MPE V systems except the Series 37/37XE and the MICRO 3000/3000XE. For each GIC being carried over, order one 30022A cable with the proper system option number as indicated in the HP3000 Computer Systems Price Guide.

The Series 37/37XE and MICRO 3000XE Peripheral Interface Channel (PIC) is not transferable to other MPE V systems. One PIC must be returned with the system when upgrading, and a minimum of two GICs must be ordered with the new SPU (except MICRO 3000XE).

Memory

In most cases, memory cannot be switched between different size SPUs except within the Series 39/4X family and between the Series 37A/37XE and the MICRO 3000Xe systems. However, upgrading from a Series 39/4X to a Series 48 may result in a non-supported memory configuration. The final Series 48 memory size must be one of the following: 2, 2.5, 3, 3.5, or 4Mb. Since the Series 48 upgrade includes 2 Mb of main memory when shipped, the only combinations of memory which may be added are: .5, 1, 1.5, or 2 Mb. If the add-on memory configuration includes 256Kb boards (as in the .5Mb product 30092A), a separate memory controller (30094A) MUST be ordered. In addition, the MICRO 3000XE does not support the Series 37/37XE 0.5 Mb product. Also, since the Series 37 1 Mb boards cannot be mixed with 2 Mb or 4 Mb boards in the MICRO 3000XE, expansion of the MICRO 3000Xe above 2 Mb requires the removal of 1 Mb memory boards.

Refer to diagram below for supported memory.

Supported Memory

Memory	37/XE	Micro		4X	5X	6X	7X
		3000	3000XE				
30456A, 1 Mb	S	-	S	-	-	-	-
30461A, 512 Kb	S	-	-	-	-	-	-
30482A, 4 Mb	-	-	S	-	-	-	-
30462A, 2 Mb	S	-	S	-	-	-	-
30171A, 256 Kb	-	-	-	S	-	-	-
30092A, 512 Kb	-	-	-	S	-	-	-
30161A, 1 Mb	-	-	-	S	S	-	-
-	-	-	-	-	-	-	-
30173A, 2 Mb	-	-	-	-	S	-	-
30478A, 2 Mb	-	-	-	S	S	-	-
30479A, 4 Mb	-	-	-	S	S	-	-

S = supported
 - = not supported

NOTE

The 1 Mb board may not be mixed with any other board type on the MICRO 3000XE. In addition, a maximum of two memory boards are supported on the MICRO 3000XE.

The MICRO 3000 has memory on the SPU board. No Add-on memory boards are supported.

Configuring the New System

Once you have determined what peripherals are available to be carried over to the new system, you are ready to complete the system configuration. Refer to Chapter One for information on configuring the system.

EXAMPLE OF A SERIES 30 TO SERIES 58 UPGRADE

Assume a Series 30 system with the following configuration:

- SPU
- 1 Mb memory
- 2649E System Console
- 7902A built-in flexible disc
- 12 terminal ports (2 ADCC Main, 1 Extender)
- 2 GICs
- 7920M disc drive
- 7970E tape drive (serial number greater than 2034A-xxxx)
- 2608S line printer

The system is to be upgraded to a Series 58 with the following configuration:

- SPU
- 2 Mb memory
- 2392A System Console
- 24 terminal ports (12 modem, 12 direct connect)
- 7920M disc drive
- 7970E tape drive
- 2608S line printer

The following should be ordered:

32558BH	Series 58 SPU with 2 Mb memory
Opt. 607	Upgrade from Series 30A
51451A	MPE Media Product
Opt. 602	Series 58 SPU
Opt. 051	1600 cpi tape
2392A	System Console (order cable option)
2 30021C	ADCC cable (for second Main, Extender)
30144A	SIB
30145A	AIB direct connect port controller
2 30022A	GIC cables
Opt. 044	

The following equipment will be returned for credit:

- SPU
- 2649E System Console
- 7902A built-in flexible disc
- 256 Kb memory

The additional 768 Kb of memory cannot be carried over to the new system. All other equipment can be carried over.

UPGRADING FROM AN MPE V SYSTEM TO AN MPE XL SYSTEM

When upgrading from an MPE V based system, not all peripherals will be supported on the new system

due to changes in the I/O system. The following table identifies which peripherals are supported on the MPE XL based system and any conversion required. An F indicates that future support is planned.

Peripherals	Not Supp.	Supp.	Conversion Required
Discs:			
9895A, Opt. 010, 1.2 Mb	X		
7945A, 55 Mb	X		
7933XP/7935XP, 404Mb	F		
7933H/7935H, 404Mb		X	
7936H/XP, 307 Mb	X		
7937H/XP, 571 Mb		X	
7957A, 81 Mb	X		
7958A, 132 Mb	X		
7925M, Opt. 102, 120 Mb Master	X		
7925S, 120 Mb Slave	X		
7920M, Opt. 102, 50 Mb Master	X		
7920S, 50 Mb Slave	X		
7914CT	F		
7914P, Opt. xxx, 132 Mb	F		
7914P, with integrated tape	X		
7914ST, 132 Mb disc and 7974A tape drive	F		
7914TD, 132 Mb disc and 7970E tape drive	X		
7912P, Opt. 001, 65 Mb	X		
7911P, Opt. 001, 28 Mb	X		
7906M, Opt. 102, 19.6 Mb Master	X		
7906S, 19.6 Mb Slave	X		
7902A, flexible disc	X		
Magnetic Tapes:			
7978A/B, 6250/1600 cpi		X	
7976A, 6250/1600 cpi	X		
7974A, 1600/800 cpi		X	
7971A,	X		
7970B,	X		
7970E Master	X		
7970E, Opt. 421, Slave	X		
9144A Cartridge Tape	F		
Integrated Cartridge Tape	X		
35401A, Autochanger Tape	X		

Peripherals	Not Supp.	Supp.	Conversion Required
Page Printers:			
2680A		X	
2686A/D		X	
2687A	F		
2688A		X	
Line Printers:			
2567B 1200 1pm	F		
2566A/B, 900 1pm		X	
2565A, 600 1pm		X	
2564B 600 1pm	F		
2563A/B, 300 1pm	F		
2619A, 1000 1 pm	X		
2617A, 600 1pm	X		
2613A, 300 1pm	X		
2611A, 600 1pm	X		
2608A, 400 1pm	X		
2608S, 400 1pm	X		



Peripheral and Accessory Conversion Notes: MPE V System to MPE XL System

Discs

If supported, HP-IB discs which were used on previous MPE V systems can be carried over without conversion to the new system.

Magnetic Tape Drives

If supported, tape drives with HP-IB interfaces can be retained without conversion for the 900 Series systems.

Line Printers

If supported, HP-IB line printers can be moved to the new system without conversion.

Workstations

The 900 Series will support the following terminal types: 10, 18, 21, 22. Terminal types which are not supported are: 0-6, 9, 11-16, 19-20. See the support matrices in Chapter One Appendix to determine which workstations are supported.

Although no conversion is necessary for the supported workstations, new cables may be necessary if the terminals were previously attached via an ADCC. See the DTC workstation cabling section in Chapter Four for more information.

Note that some 262x workstations will require a ROM update in order to be supported. See the Supported Workstation matrix in Chapter One Appendix for details.

Communications Interfaces

ADCCs, ATPs, INPs, and LANICs from MPE V based systems cannot be transferred to the 900 Series.

Channels

General I/O Channels (GICs) and Peripheral Interface Channels (PICs) may not be carried over to the 900 Series.

Memory

Memory cannot be transferred from the MPE V systems to the 900 Series.

Configuring the New System

Once you have determined what peripherals are available to be carried over to the new system, you are ready to complete the system configuration. Refer to Chapter One for information on configuring the system.

EXAMPLE OF A SERIES 68 TO SERIES 930 UPGRADE

1. Assume a Series 68 system with the following configuration:

- SPU
- 8 Mb memory
- 2nd IMB
- 2649F System Console
- 70 terminal ports
- 3 GICs
- 5 7933H disc drives
- 1 7925M master disc drive
- 7978A tape drive
- 2619A line printer
- 20 2392A terminals
- 20 2624B terminals
- 20 2647A terminals
- 20 HP150 PCs
- 10 2934A serial printers

2. The system is to be upgraded to a Series 930 with the following configuration:

- SPU
- 16 Mb memory
- 2392A System Console
- 3 DTCs w/100 terminal ports (18 modem, 80 RS-232 direct connect)
- 50 HP150 PCs
- 30 2392A terminals
- 20 2624B terminals
- 10 2934A serial printers
- 6 7933H disc drives
- 7978A tape drive
- 2566B line printer

3. The following items will be carried over to the new system.

- 5 7933H disc drives
- 7978A tape drive
- 20 2392As
- 20 2624Bs (ROM date codes were OK)
- 20 HP150s

4. The following should be ordered:

- 1 32480AH Series 930 Preconfigured system with 16 Mb memory, 2 HP-IB Channels
- Opt 626 upgrade from S/68 w/8 Mb
- 1 19742A Floating Point Coprocessor
- 1 27113A HP-IB Channel
- 1 51453A MPE Media Product
- Opt 730 Preconfigured System
- Opt 200 Latest MPE XL release
- Opt 051 1600 cpi tape
- 1 2392A System Console
- Opt 305 (cable option)
- 1 2345A DTC (1st location)
- 3xOpt 803 8 RS-232 local ports
- Opt 625 6 Modem ports
- 1 2345A DTC (2nd location)
- 3xOpt 803 8 RS-232 local ports
- Opt 625 6 modem ports
- 1 2345A DTC (3rd location)
- 4xOpt 803 8 RS-232 local ports
- 1 7933H Disc Drive
- 1 2566B Printer
- Opt 393 for Series 930
- 30 2392A Block Mode Terminals
- 10 HP150 Personal Computers

5. The following equipment will be returned for credit. *Verify this list with each sale, return credit amounts and availability are subject to change.*

- SPU w/8 Mb, 2 GICs, 1 IMB (opt 626)
- 2619A Printer (2619AN return credit)
- 7925M Disc (7925MN return credit)
- ATP (SIB/AIBs)
- 1 GIC
- 1 IMB

UPGRADE ORDERING MATRIX

CURRENT SYSTEM	UPGRADE TO ORDER				
	Series 37XE	MICRO 3000XE	Series 42	Series 42XP/52	Series 48
Pre-Series II	N/A	Box Swap 32545AH Opt. 601	Box Swap 32542BH Opt. 601	Box Swap 32552CH Opt. 601	Box Swap 32548BH Opt. 601
Series II	N/A	Box Swap 32545AH Opt. 602	Box Swap 32542BH Opt. 602	Box Swap 32552CH Opt. 602	Box Swap 32548BH Opt. 602
Series III	N/A	Box Swap 32545AH Opt. 603 Opt. 613	Box Swap 32542BH Opt. 603 Opt. 613	Box Swap 32552CH Opt. 603 Opt. 613	Box Swap 32548BH Opt. 603 Opt. 613
Series 30	N/A	Box Swap 32545AH Opt. 607 Opt. 608	Box Swap 32542BH Opt. 607 Opt. 608	Box Swap 32552CH Opt. 607 Opt. 608	Box Swap 32548BH Opt. 607 Opt. 608
Series 33	N/A	Box Swap 32552CH Opt. 605 Opt. 606	Box Swap 32542BH Opt. 605 Opt. 606	Box Swap 32552CH Opt. 605 Opt. 607	Box Swap 32548BH Opt. 605 Opt. 606
Series 37	Field Upgrade 32450BH	Field Upgrade 30545AH	Box Swap 32542BH Opt. 617	Box Swap 32552CH Opt. 617	Box Swap 32548BH Opt. 617
Series 37XE	N/A	Box Swap 30545AH Opt. 617	Box Swap 32542BH Opt. 618	Box Swap 32552CH Opt. 618	Box Swap 32548BH Opt. 618

UPGRADE ORDERING MATRIX (Cont.)

MICRO 3000	N/A	Field Upgrade 30545AX	N/A	Box Swap 32552CH Opt. 632 Opt. 633	N/A
MICRO 3000XE	N/A	N/A	N/A	Box Swap 32552CH Opt. 634 Opt. 635	N/A
Series 39	N/A	N/A	N/A	Field Upgrade 30550C	Box Swap 32548BH Opt. 614
Series 39 High Performance	N/A	N/A	N/A	Field Upgrade 30550C Opt. 042	N/A
Series 40	N/A	N/A	Field Upgrade 30542B	Field Upgrade 30550C	Box Swap 32548BH Opt. 611

UPGRADE ORDERING MATRIX (Cont.)

CURRENT SYSTEM	UPGRADE TO ORDER			
	Series 58	Series 68	Series 70	Series 930
Pre-Series II	Box Swap 32558CH Opt. 601	Box Swap 32468CH Opt. 601	Box Swap 32471AH Opt. 601	Box Swap 32480AH Opt. 601
Series II	Box Swap 32558CH Opt. 602	Box Swap 32468CH Opt. 602	Box Swap 32471AH Opt. 602	Box Swap 32480AH Opt. 602
Series III	Box Swap 32558CH Opt. 603 Opt. 613	Box Swap 32468CH Opt. 603 Opt. 613	Box Swap 32471AH Opt. 603 Opt. 613	Box Swap 32480AH Opt. 603 Opt. 613
Series 30	Box Swap 32558CH Opt. 607 Opt. 608	Box Swap 32468CH Opt. 607 Opt. 608	Box Swap 32471AH Opt. 607 Opt. 608	Box Swap 32480AH Opt. 607 Opt. 608
Series 33	Box Swap 32558CH Opt. 605 Opt. 606	Box Swap 32468CH Opt. 605 Opt. 606	Box Swap 32471AH Opt. 605 Opt. 606	Box Swap 32480AH Opt. 605 Opt. 606
Series 37	Box Swap 32558CH Opt. 617	Box Swap 32468CH Opt. 617	Box Swap 32471AH Opt. 617	Box Swap 32480AH Opt. 617
Series 37XE	Box Swap 32558CH Opt. 618	Box Swap 32468CH Opt. 618	Box Swap 32471AH Opt. 618	Box Swap 32480AH Opt. 618

UPGRADE ORDERING MATRIX (Cont.)

	Series 58	Series 68	Series 70	Series 930
MICRO 3000	Box Swap 32558CH Opt. 632 Opt. 633	N/A	Box Swap 32471CH Opt. 632 Opt. 633	N/A
MICRO 3000XE	Box Swap 32558CH Opt. 634 Opt. 635	N/A	Box Swap 32471CH Opt. 634 Opt. 635	N/A
Series 39	Box Swap 32558CH Opt. 614	Box Swap 32468CH Opt. 614	Box Swap 32471AH Opt. 614	Box Swap 32480AH Opt. 614
Series 39 High Performance	Box Swap 32558CH Opt. 621	Box Swap 32468CH1 Opt. 621	Box Swap 32471AH Opt. 621	Box Swap 32480AH Opt. 621
Series 40	Box Swap 32558CH Opt. 611	Box Swap 32468CH Opt. 611	Box Swap 32471AH Opt. 611	Box Swap 32480AH Opt. 611

UPGRADE ORDERING MATRIX (Cont.)

CURRENT SYSTEM	UPGRADE TO ORDER				
	Series 37XE	MICRO 3000XE	Series 42	Series 42XP/52	Series 48
Series 42	N/A	N/A	N/A	Field Upgrade 30550C Opt. 042	Box Swap 32548BH Opt. 615
Series 42XP/52	N/A	N/A	N/A	N/A	N/A
Series 44	N/A	N/A	N/A	N/A	Field Upgrade 30548B
Series 48	N/A	N/A	N/A	N/A	N/A
Series 58	N/A	N/A	N/A	N/A	N/A
Series 64	N/A	N/A	N/A	N/A	N/A
Series 68	N/A	N/A	N/A	N/A	N/A
Series 70	N/A	N/A	N/A	N/A	N/A

UPGRADE ORDERING MATRIX (Cont.)

CURRENT SYSTEM	UPGRADE TO ORDER			
	Series 58	Series 68	Series 70	Series 930
Series 42	Box Swap 32558CH Opt. 615	Box Swap 32468CH Opt. 615	Box Swap 32471AH Opt. 615	Box Swap 32480AH Opt. 615
Series 42XP/52	N/A	Box Swap 32468CH Opt. 619	Box Swap 32471AH Opt. 619	Box Swap 32480AH Opt. 619
Series 44	Field Upgrade 30558A	Box Swap 32468CH Opt. 609	Box Swap 32471AH Opt. 609	Box Swap 32480AH Opt. 609
Series 48	Field Upgrade 30558A Opt. 048	Box Swap 32468CH Opt. 616	Box Swap 32471AH Opt. 616	Box Swap 32480AH Opt. 616
Series 58	N/A	Box Swap 32468CH Opt. 620 Opt. 622	Box Swap 32471AH Opt. 622	Box Swap 32480AH Opt. 622
Series 64	N/A	Field Upgrade 30468A/B*	Field Upgrade 30443A/B**	Box Swap 32480AH Opt. 623
Series 68	N/A	N/A	Field Upgrade 30444A/B**	Box Swap 32480AH Opt. 624 Opt. 625 Opt. 626
Series 70	N/A	N/A	N/A	Box Swap 32480AH Opt. 627 Opt. 628 Opt. 629

* There is no Series 64 to Series 68C field upgrade product. Instead, order 30468A/B and add memory as desired.

** Upgrade from a 64A/68A to 30443A/30444A. Upgrade from a 64B/(68B/68C) to 30443B/(30444B).

SERIES 930 UPGRADE PRODUCT DESCRIPTION

32480AH Upgrade to an HP 3000 Series 930 Preconfigured System

208V/60 Hz; single phase; 16 Mb error correcting memory; 2 CIO Busses; 2 HP-IB Channels; 1 802.3 LANIC, Thick & ThinLAN connection H/W; support modem; remote diagnostic capability; system cabinet; Fundamental Operating Software (MPE XL Operating System, EDIT/V, FCOPY/XL, SORT-MERGE/XL, TurboIMAGE/V, QUERY/V, VPLUS/V, KSAM/V), ALLBASE/XL; System Dictionary/XL; complete user manual set.

The following are required for the Series 930 and must be ordered separately or converted/transferred from the system being upgraded:

- MPE Media Product (51453A)
- One System disc drive (7933H, 7935H, 7936H or 7937H)
- One Distributed Terminal Controller (2345A) with modem Interface product (option 625)
- One System console (2392A) terminal with EMP protect cable (option 305)
- One Magnetic tape drive (7974A or 7978A/B)
- 802.3 LAN cabling; Thick or Thin

Options*:

- 601 Upgrade from pre-Series II w/128 Kb or HP 2000 w/128 kb
- 602 Upgrade from Series II w/128 Kb
- 603 Upgrade from Series III w/256 Kb
- 605 Upgrade from Series 33 A/B w/256 Kb, 2649E
- 606 Upgrade from Series 33 C/U w/256 Kb, 2649E
- 607 Upgrade from Series 30 A/B w/256 Kb, 2649E
- 608 Upgrade from Series 30 C/U w/256 Kb, 2649E
- 609 Upgrade from Series 44 w/1 Mb memory
- 611 Upgrade from Series 40 w/no memory
- 613 Upgrade from Series III w/256 Kb and 30341A HP-IB Adapter
- 614 Upgrade from Series 39 w/no memory
- 615 Upgrade from Series 42 w/no memory
- 616 Upgrade from Series 48 w/ 1 Mb
- 617 Upgrade from Series 37 w/no memory
- 618 Upgrade from Series 37XE w/no memory
- 619 Upgrade from Series 42XP or S/52 w/2 Mb
- 622 Upgrade from Series 58 w/2 Mb
- 621 Upgrade from Series 39HP w/no memory
- 623 Upgrade from Series 64 w/2 Mb
- 624 Upgrade from Series 68 w/2 Mb

SERIES 930 UPGRADE PRODUCT DESCRIPTION (CONT.)

Options*:

625	Upgrade from Series 68 w/4 Mb
626	Upgrade from Series 68 w/8 Mb
627	Upgrade from Series 70 w/2 Mb
628	Upgrade from Series 70 w/4 Mb
629	Upgrade from Series 70 w/8 Mb
632	Upgrade from MICRO 3000 w/2 Mb
633	Upgrade from MICRO 3000 w/4 Mb
634	Upgrade from MICRO 3000XE
635	Upgrade from MICRO 3000XE (5 slot)
636	Upgrade from HP250
637	Upgrade from HP260
640	Upgrade from Series 52 w/2 Mb
641	Upgrade from Series 52 w/4 Mb

* Note that these options are Rxx in Europe instead of 6xx, ie. Opt 624 = Opt R24.

SERIES 70 UPGRADE PRODUCT DESCRIPTION

32471AH Upgrade to an HP 3000 Series 70

208V/60 Hz; three phase; 8 megabytes fault control memory; 1 Intermodule Bus; support modem; remote diagnostic capability; system cabinet; disc caching; Series 70 Console Communication Program; Fundamental Operating Software (MPE-V/E Operating System, EDIT/V, FCOPY/V, SORT-MERGE/V, DEBUG/V, TURBOIMAGE/V, QUERY/V, VPLUS/V, KSAM/V, and facility to execute compiled programs without the source language compiler on the system); complete user manual set.

The following are required for the Series 70 and must be ordered separately or converted/transferred from the system being upgraded:

- MPE Media Product (51450A)
- Two General I/O Channels (30079A)
- System disc drive (7925M with Option 102; 7920M with Option 102; 793x; 7914P; 7914ST; 7914CT; 7914TD or 795x, 7933H, 7935H, 7933XP, 7935XP, 7936H, 7936XP, 7937H, 7937XP).
- Advanced Terminal Processor with one System Interface Board (30144A) and one port controller, [either modem (30155A) or direct connect (30145A)] with Option 001
- System console (45851A Touchscreen II PC, cable, and 9123D disc drive running Console Communication Program Software.)
- Magnetic tape drive (7970E with Option 426; 7971A with Option 340, 343 or 344; 7974A; 7978A/B; 7914ST, 7914TD, or 9144A)

Options:

- 015 380V/50 Hz, three phase operation
- 016 415V/50 Hz; three phase operation
- 250 Add Expansion Bay with I/O Adapter (IMB)
- 251 Junction panels, required if Expansion Bay is ordered and no ATP is ordered
- 601 Upgrade from pre-Series II w/128 Kb or HP 2000
- 602 Upgrade from Series II w/128 Kb
- 603 Upgrade from Series III w/256 Kb
- 605 Upgrade from Series 33 A/B w/256 Kb, 2649E
- 606 Upgrade from Series 33 C/U w/256 Kb, 2649E
- 607 Upgrade from Series 30 A/B w/256 Kb, 2649E
- 608 Upgrade from Series 30 C/U w/256 Kb, 2649E
- 609 Upgrade from Series 44 w/1 Mb memory
- 611 Upgrade from Series 40 w/no memory
- 613 Upgrade from Series III w/256 Kb and 30341A HP-IB Adapter
- 614 Upgrade from Series 39 w/no memory
- 615 Upgrade from Series 42 w/no memory
- 616 Upgrade from Series 48 w/ 1 Mb

SERIES 70 UPGRADE PRODUCT DESCRIPTION

617	Upgrade from Series 37 w/no memory
618	Upgrade from Series 37XE w/no memory
619	Upgrade from Series 42XP,52 w/2 Mb
620	Upgrade from Series 58 w/4 Mb
621	Upgrade from Series 39HP
622	Upgrade from Series 58 w/2 Mb
632	Upgrade from MICRO 3000 w/2 Mb memory
633	Upgrade from MICRO 3000 w/4 Mb memory
634	Upgrade from MICRO 3000XE w/no memory
635	Upgrade from MICRO 3000XE-5 card
636	Upgrade from HP250
637	Upgrade from HP260
640	Upgrade from Series 52 w/2 Mb memory
641	Upgrade from Series 52 w/4 Mb memory

SERIES 70 UPGRADE PRODUCT DESCRIPTION

51450A HP 3000 MPE V/E Media Product

Options:

051	1600 bpi Magnetic Tape Media
200	Latest FOS Version
280	Version MPE V/E UA-MIT (2612)
605	HP 3000 Series 70 SPU

*Note:
Order Option 200 or 280.

SERIES 70 UPGRADE PRODUCT DESCRIPTION

30443A Series 64A to Series 70 Field Upgrade

To be ordered when upgrading from a Series 64A (32460A).

Upgrade includes disc caching, a cache controller board, a cache memory array, a new frontplane for connection of these boards, as well as a new Series 70 name plate. Order MPE Media Product (51450A) separately. Options are available for discounted memory (4 Mb, 8 Mb) and an additional I/O bay.

Options:

- 250 Add Expansion Bay and I/O Adapter (IMB)
- 251 Add Junction Panel - required if ATP is not ordered
- 500 Add 4 Mb memory
- 501 Add 8 Mb memory

***Note:**

Only one of the discounted memory board options can be ordered.
Select Opt 500 or 501. Additional memory must be ordered as part number 30142A (1 Mb) or 30165A (4 Mb).

SERIES 70 UPGRADE PRODUCT DESCRIPTION

30443B Series 64B,C to Series 70 Field Upgrade

To be ordered when upgrading from a Series 64 B or C (32460B,C) using enhanced power supply.

Upgrade includes disc caching, a cache controller board, a cache memory array, a new frontplane for connection of these boards, as well as a new Series 70 name plate. Order MPE Media Product (51450A) separately. Options are available for discounted memory (4 Mb, 8 Mb) and an additional I/O bay.

Options:

- 250 Add Expansion Bay and I/O Adapter (IMB)
- 251 Add Junction Panel - required if ATP is not ordered
- 500 Add 4 Mb memory
- 501 Add 8 Mb memory

***Note:**

Only one of the discounted memory board options can be ordered. Select Opt 500 or 501. Additional memory must be ordered as part number 30142A (1 Mb) or 30165A (4 Mb).

SERIES 70 UPGRADE PRODUCT DESCRIPTION

30444A Series 68A to Series 70 Field Upgrade

To be ordered when upgrading from a Series 68A (30468A) using original power supply.

Upgrade includes a cache controller board, a cache memory array, a new frontplane for connection of these boards, as well as a new Series 70 name plate. Order MPE Media Product (51450A) separately. Options are available for discounted memory (4 Mb, 8~Mb), and an additional I/O bay.

Options:

- 250 Add Expansion Bay and I/O Adapter (IMB)
- 251 Add Junction Panel - required if ATP is not ordered
- 500 Add 4 Mb memory
- 501 Add 8 Mb memory

***Note:**

Only one of the discounted memory board options can be ordered. Select Opt 500 or 501. Additional memory must be ordered as part number 30142A (1 Mb) or 30165A (4 Mb).

SERIES 70 UPGRADE PRODUCT DESCRIPTION

30444B Series 68B,C to Series 70 Field Upgrade

To be ordered when upgrading from a Series 68B or C (30468B,C) using enhanced power supply.

Upgrade includes a cache controller board, a cache memory array, a new frontplane for connection of these boards, as well as a new Series 70 name plate. Order MPE Media Product (51450A) separately. Options are available for discounted memory (4 Mb, 8~Mb), and an additional I/O bay.

Options:

- 250 Add Expansion Bay and I/O Adapter (IMB)
- 251 Add Junction Panel - required if ATP is not ordered
- 500 Add 4 Mb memory
- 501 Add 8 Mb memory

***Note:**

Only one of the discounted memory board options can be ordered. Select Opt 500 or 501. Additional memory must be ordered as part number 30142A (1 Mb) or 30165A (4 Mb).

SERIES 68 UPGRADE PRODUCT DESCRIPTION

32468CH Upgrade to an HP 3000 Series 68

208V/60 Hz; three phase; 4 megabytes fault control memory; 1 Intermodule Bus; support modem; remote diagnostic capability; system cabinet; disc caching; Series 68 Console Communication Program; Fundamental Operating Software (MPE-V/E Operating System, EDIT/3000, FCOPY/3000, SORT-MERGE/3000, IMAGE/3000, QUERY/3000, VPLUS/3000, KSAM/3000, and facility to execute compiled programs without the source language compiler on the system); complete user manual set.

The following are required for the Series 68 and must be ordered separately or converted/transferred from the system being upgraded:

- MPE Media Product (51450A)
- Two General I/O Channels (30079A)
- System disc drive (7925M with Option 102; 7920M with Option 102; 793x; 7914P; 7914ST; 7914CT; 7914TD or 795x)
- Advanced Terminal Processor with one System Interface Board (30144A) and one port controller, [either modem (30155A) or direct connect (30145A)] with Option 001
- System console (45851A Touchscreen II PC, cable, and 9123D disc drive running Console Communication Program Software; 2647F with Option 890 and cable; or 2642A with Option 964).
- Magnetic tape drive (7970E with Option 426; 7971A with Option 340, 343 or 344; 7974A; 7978A/B; 7976A with Option 416; 7914ST; or 7914TD)

Options:

- 015 380V/50 Hz, three phase operation
- 016 415V/50 Hz; three phase operation
- 250 Add Expansion Bay with I/O Adapter (IMB)
- 251 Junction panels, required if Expansion Bay is ordered and no ATP is ordered
- 411 Substitute MPE-V/P for MPE-V/E
- 601 Upgrade from pre-Series II w/128 Kb or HP 2000
- 602 Upgrade from Series II w/128 Kb
- 603 Upgrade from Series III w/256 Kb
- 605 Upgrade from Series 33 A/B w/256 Kb, 2649E
- 606 Upgrade from Series 33 C/U w/256 Kb, 2649E
- 607 Upgrade from Series 30 A/B w/256 Kb, 2649E
- 608 Upgrade from Series 30 C/U w/256 Kb, 2649E
- 609 Upgrade from Series 44 w/1 Mb memory
- 611 Upgrade from Series 40 w/no memory
- 613 Upgrade from Series III w/256 Kb and 30341A HP-IB Adapter
- 614 Upgrade from Series 39 w/no memory
- 615 Upgrade from Series 42 w/no memory
- 616 Upgrade from Series 48 w/ 1 Mb
- 617 Upgrade from Series 37 w/no memory

SERIES 68 UPGRADE PRODUCT DESCRIPTION

- 618 Upgrade from Series 37XE w/no memory
- 619 Upgrade from Series 42XP,52 w/2 Mb
- 620 Upgrade from Series 58 w/4 Mb
- 621 Upgrade from Series 39HP
- 622 Upgrade from Series 58 w/2 Mb

SERIES 68 UPGRADE PRODUCT DESCRIPTION

30468A Series 64A to Series 68A Field Upgrade

To be ordered when upgrading from a 32460A Series 64, using original power supply.

Upgrade includes Disc Caching software and 1 megabyte of memory. Order MPE Media Product (51450A) separately.

Options:

- 190 Delete 1 Mb memory
 - 250 Add Expansion Bay and I/O Adapter (IMB)
 - 251 Junction panels, required if Expansion Bay is
ordered and no ATP is ordered
 - 411 Substitute MPE-V/P for MPE-V/E
-

30468B Series 64B to Series 68B Field Upgrade

To be ordered when upgrading from a 32460B Series 64, using enhanced power supply.

Upgrade includes Disc Caching software and 1 megabyte of memory. Order MPE Media Product (51450A) separately.

Options:

- 190 Delete 1 Mb memory
- 250 Add Expansion Bay and I/O Adapter (IMB)
- 251 Junction panels, required if Expansion Bay is
ordered and no ATP is ordered
- 411 Substitute MPE-V/P for MPE-V/E

SERIES 58 UPGRADE PRODUCT DESCRIPTION

32558CH Upgrade to an HP 3000 Series 58

220-240V/60 Hz; single phase; 4 megabytes fault control memory; support modem; remote diagnostic capability; system cabinet; isolation transformer; disc caching; Fundamental Operating Software (MPE-V/P operating system, EDIT/3000, FCOPY/3000, SORT-MERGE/3000, IMAGE/3000, QUERY/3000, VPLUS/3000, KSAM/3000, and facility to execute compiled programs without the source language compiler on the system); complete user manual set.

The following are required for the Series 58 and must be ordered separately or converted/transferred from the system being upgraded.

- MPE Media Product (51451A)
- Two General I/O Channels (30079A)
- System disc drive (7911P, 7912P, 7914P; 7914TD; 7914CT; 7914ST; 7925M with Option 102; 7920M with Option 102; 793x or 795x)
- ADCC-Main with cable (30018A with Option 044) to support the system console
- System console (2392A, 262x, 264x, 2382A or 2635B. Cable must be ordered separately except for 2635B.)
- Magnetic tape drive (7970E with Option 426; 7971A with Option 340, 343 or 344; 7976A with Option 416; 7974A; 7914TD, 7914ST, or 7978A.)

Options:

- 015 220-240V/50 Hz operation
- 022 Software on cartridge tape
- 502 Add-on 2 Mb memory
- 503 Add-on 4 Mb memory
- 601 Upgrade from pre-Series II w/128 Kb or HP 2000
- 602 Upgrade from Series II w/128 Kb
- 603 Upgrade from Series III w/256 Kb
- 605 Upgrade from Series 33 A/B w/256 Kb, 2649E
- 606 Upgrade from Series 33 C/U w/256 Kb, 2649E
- 607 Upgrade from Series 30 A/B w/256 Kb, 2649E
- 608 Upgrade from Series 30 C/U w/256 Kb, 2649E
- 611 Upgrade from Series 40 w/no memory
- 613 Upgrade from Series III w/256 Kb and 30341A
HP-IB Adapter
- 614 Upgrade from Series 39 w/no memory
- 615 Upgrade from Series 42 w/no memory
- 617 Upgrade from Series 37 with no memory
- 618 Upgrade from Series 37XE with no memory
- 619 Upgrade from Series 42XP, 52 w/2 Mb
- 632 Upgrade from Micro 3000 w/2 Mb
- 633 Upgrade from Micro 3000 w/4 Mb
- 634 Upgrade from Micro 3000XE w/no memory

SERIES 58 UPGRADE PRODUCT DESCRIPTION

- 635 Upgrade from Micro 3000XE 5-card
- 636 Upgrade from HP250
- 637 Upgrade from HP260
- 640 Upgrade from S/52 w/2 Mb
- 641 Upgrade from S/52 w/4 Mb



SERIES 58 UPGRADE PRODUCT DESCRIPTION

30558C Series 44 ,48 to Series 58 Field Upgrade

Upgrade includes Disc Caching software, 4 megabyte of memory. MPE V/E
T-Delta-5 or UB-MIT. 256 boards are not supported.

Options:

- 022 DVS on cartridge tape
 - 048 Price Adjustment for disc caching
 - 196 Delete 4 Mb memory
 - 502 Add-on 2 Mb memory
 - 503 Add-on 4 Mb memory
-

SERIES 52 UPGRADE PRODUCT DESCRIPTION

32552CH Upgrade to an HP 3000 Series 52

120V/60 Hz; single phase; 4 megabyte fault control memory; support modem; remote diagnostic capability; system cabinet; disc caching; Fundamental Operating Software (MPE-V/P operating system, EDIT/3000, FCOPY/3000, SORT-MERGE/3000, IMAGE/3000, QUERY/3000, VPLUS/3000, KSAM/3000, and facility to execute compiled programs without the source language compiler on the system); complete user manual set.

The following are required for the Series 52 and must be ordered separately or converted/transferred from the system being upgraded:

- MPE Media Product (51451A)
- Two General I/O Channels (30079A)
- System disc drive (7911P, 7912P, 7914P; 7914CT; 7914TD or 7914ST; 7925M with Option 102; 7920M with Option 102; 793x or 795x)
- ADCC-Main with cable (30018A with Option 040) to support the system console
- System console (2392A, 262x, 264x, 2382A or 2635B. Cable must be ordered separately except for 2635B.)
- Magnetic tape drive (7970E with Option 426; 7971A with Option 340, 343 or 344; 7976A with Option 416; 7974A; 7914TD; 7914ST, or 7978A) required for system with more than 132 Mb disc storage. A cartridge tape drive (integrated into the 7911P, 7912P, or 7914P with Option 001 or a 9144A) may be used for system with 132 Mb or less disc storage.

Options:

- 015 220-240V/50 Hz operation
- 022 Software on cartridge tape
- 502 Add-on 2 Mb memory
- 503 Add-on 4 Mb memory
- 601 Upgrade from pre-Series II w/128 Kb or HP 2000
- 602 Upgrade from Series II w/128 Kb
- 603 Upgrade from Series III w/256 Kb
- 605 Upgrade from Series 33 A/B w/256 Kb, 2649E
- 606 Upgrade from Series 33 C/U w/256 Kb, 2649E
- 607 Upgrade from Series 30 A/B w/256 Kb, 2649E
- 608 Upgrade from Series 30 C/U w/256 Kb, 2649E
- 617 Upgrade from Series 37 with no memory
- 618 Upgrade from Series 37XE with no memory
- 632 Upgrade from Micro 3000 w/2 Mb
- 633 Upgrade from Micro 3000 w/4 Mb
- 634 Upgrade from Micro 3000XE w/no memory
- 635 Upgrade from Micro 3000XE 5-card
- 636 Upgrade from HP250
- 637 Upgrade from HP260

SERIES 52 UPGRADE PRODUCT DESCRIPTION

30542B Series 40 to 42 Field Upgrade

Upgrade includes Disc Caching software, 1 megabyte of memory, and CPS CPU board (if Option 409 is ordered). Order MPE Media Product (51451A) separately.

Options:

- 190 Delete 1 Mb memory
 - 409 Substitute MPE-V/E for MPE-V/P
-

30076B HP 300 to Series 42 Upgrade

See preceding page for description of the Series 42 upgrade product. Order MPE Media Product (51451A) separately.

Options:

- 015 200-240V/50Hz operation
 - 022 Software on cartridge tape
 - 409 Substitute MPE-V/E for MPE-V/P
 - 610 Return credit for HP 300 Model 10 (31032A)
 - 615 Return credit for HP 300 (31033A)
 - 620 Return credit for HP 300 Model 20 (31034A)
 - 630 Return credit for HP 300 Model 30 (31035A)
 - 650 Return credit for HP 300 31204A 128 Kb memory module
 - 670 Return credit for 31030A HP 300 workstation
-

30552 Series 52 Field Upgrade with 4 Mb

Upgrade includes Disc Caching software, 4 megabyte of memory. MPE V/E T-Delta-5 or Ub-MIT. 256 Kb boards are not supported.

Options:

- 022 DUS on cartridge tape
 - 042 Adjustment of disc cache
 - 196 Delete 4 Mb
 - 502 Add 2 Mb memory
 - 503 Add 4 Mb memory
-

SERIES 39 AND SERIES 37XE FIELD UPGRADE DESCRIPTIONS

30539B Series 39 to High-Performance Series 39 Field Upgrade

Upgrade includes Disc Caching software, 512 Kb of memory (set of two 256 Kb boards) and CPS CPU board (if Option 408 is ordered). Order MPE Media Product (51451A) separately.

Options:

- 170 Delete 256 Kb memory
 - 180 Delete 512 Kb memory
 - 408 Substitute MPE-V/E for MPE-V/P
-

32450BH Series 37 to 37XE Field Upgrade

Upgrade includes I/O Expansion Unit with 1 megabyte of memory.

Options:

- 015 200-240 VAC System Operation
 - 190 Delete 1 megabyte of memory
-

30545A Series 37 & 37XE To MICRO 3000XE Field Upgrade

Upgrade includes CPU with 128 Kb cache.

Options:

- 015 200-240 VAC System Operation
 - 022 DUS software on cartridge tape
 - 051 DUS software on 1600 bpi tape media
 - 250 I/O Extender Box for S/37A
 - 502 Add 2 Mb memory
 - 503 Add 4 Mb memory
-

SERIES 39 AND SERIES 37XE FIELD UPGRADE DESCRIPTIONS

30545AX MICRO 3000 w/2 Mb to MICRO 3000XE Upgrade

Includes MICRO 3000XE SPU with I/O Extender, 2 Mb memory and PIC.

Options:

- 015 200-240 VAC System Operation
- 022 DUS software on cartridge tape
- 051 DUS software on 1600 bpi tape media
- 510 Expands memory to 4 Mb
- 633 Upgrade from 4 Mb MICRO 3000

EQUIPMENT TO BE RETURNED

When upgrading a system, the equipment being returned for credit must be deinstalled and shipped to Hewlett-Packard at the time the new system is being installed. The following list specifies the equipment that *must* be returned with each

system. Instructions on where to return equipment are included in the Installation Manual for the new system or in the Notice of Return (NOR) packet sent to the CE prior to deinstallation.

System Upgraded	Equipment to be Returned
Pre-Series II	SPU 128 Kb memory 1 30215A mag tape controller 1 13037 disc controller 1 30032A/B ATC
Series II	SPU 128 Kb memory 1 30215A mag tape controller 1 13037 disc controller 1 30032A/B ATC
Series III	SPU 256 Kb memory 1 30215A mag tape controller 1 13037 disc controller 1 30032A/B ATC
Series 33A/B	SPU 256 Kb memory 2649E System Console Built-in flexible disc drive
Series 33C/U	SPU 256 Kb memory 2649E System Console
Series 30A/B	SPU 256 Kb memory 2649E System Console Built-in flexible disc drive
Series 30C/U	SPU 256 Kb memory 2649E System Console

EQUIPMENT TO BE RETURNED (Cont.)

System Upgraded	Equipment to be Returned
Series 37/37XE	SPU PIC Cabinet I/O Extender* (Series 37XE only)
MICRO 3000 (Upgraded to anything but MICRO 3000XE)	SPU Cabinet
MICRO 3000XE	SPU PIC Cabinet I/O Extender
Series 40/42	SPU 0-2 Mb memory
Series 44/48/58	SPU 1-2 Mb memory
Series 64/68/70	SPU 2-8 Mb memory 2 GICs 1 1MB

EQUIPMENT TO BE RETURNED (Cont.)

Field Upgrade	Equipment to be Returned
Series 39 to High Performance Series 39 w/opt 408 for MPE-V/E	1 PCS CPU board 1 CTL CPU board
Series 40 to Series 42 w/ opt 409 for MPE-V/E	1 PCS CPU board 1 CTL CPU board
Series 44 to 48 w/ opt 410 for MPE-V/E	1 PCS CPU board 1 CTL CPU board
Series 39/40/42 to Series 42XP Series 44/48 to Series 58	1 ALU CPU board 1 CMP CPU board 2 CTL & PCS CPU boards or 1 CPS CPU board or 1 CPS-E CPU board Memory Controllers 256kb Memory boards
MICRO 3000 to MICRO 3000XE	1 CPU Board
S/37A, S/37XE to MICRO 3000XE	1 CPU Board



3

System Sizing and Performance

This section is for insertion of the HP 3000
Performance Guide or other materials.





4

System Cabling

Peripheral Cabling	4-1
System Communications Products	4-21
Workstation Cabling	4-29
Eavesdrop and Slave Configurations	4-45



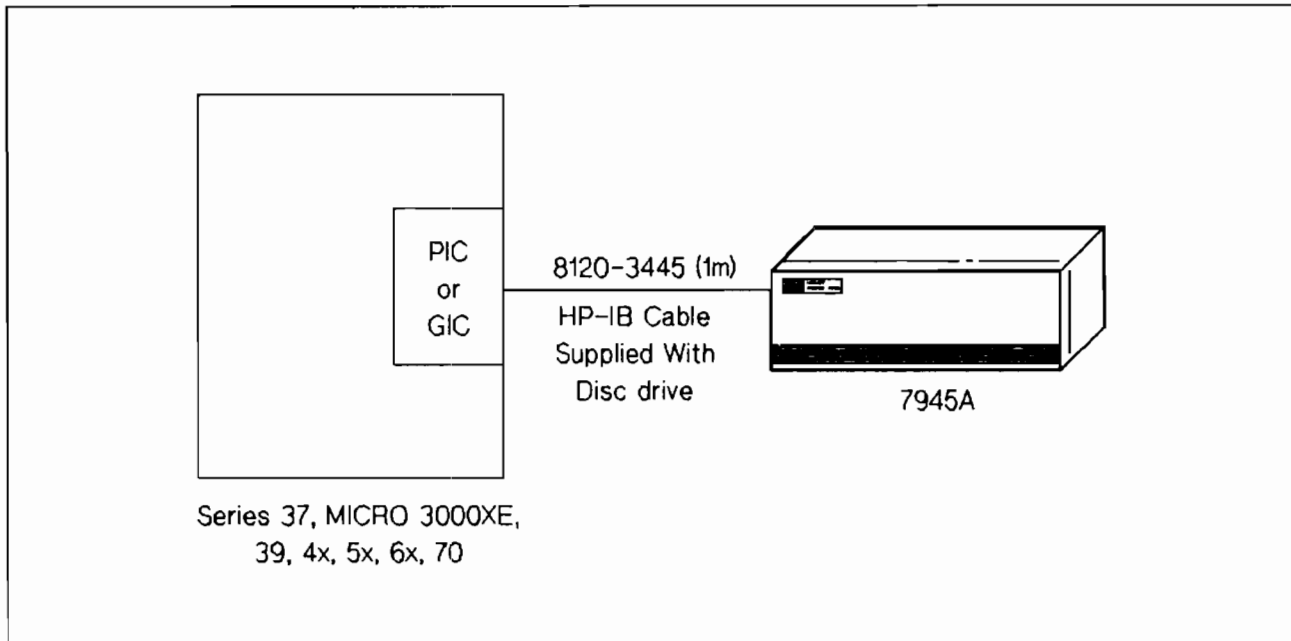
Peripheral Cabling

Disc Drives	4-1
Mass Storage Subsystems	4-6
Tape Drives	4-8
Printers	4-13
HP-IB Extenders	4-18
HP-IB Peripheral Selector	4-19



Disc Drives

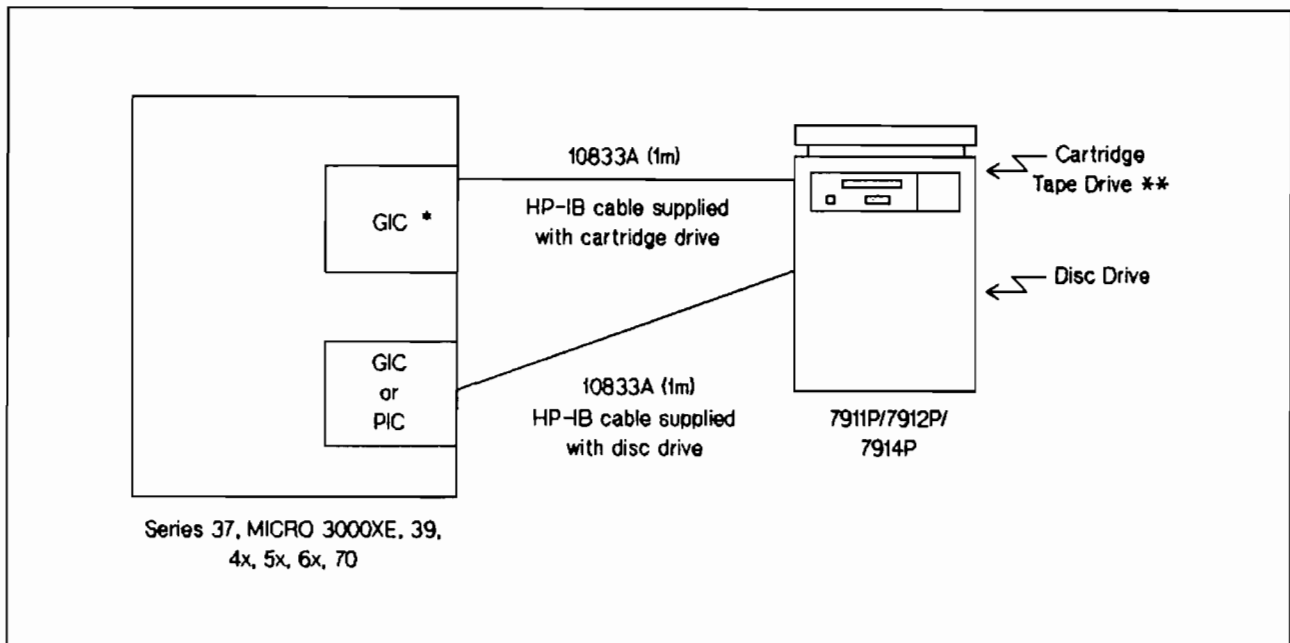
Cable Configuration for 7945A, 7957A, 7958A Disc Drive



- The 7945A, 7957A or 7958A is a high-speed device shipped with one device load.
- The 7945A, 7957A or 7958A is supported on MPE-V/E.
- Maximum of four 7945A, 7957A or 7958A drives per system.
- Series 6x, 70 only: The 7945A, 7957A or 7958A cannot be configured on the same GIC as the system disc or the cold load device. It cannot be used as the system disc.
- The 7945A has a 0.0m internal cable.
- The 7945A is not supported on the MICRO 3000.

Disc Drives

Cable Configuration for 7911P,7912P,7914P Disc Drives



* Dedicated GIC is required for cartridge tape drive. Maximum of one cartridge tape drive per system.

** Not supported on Series 37.

- Additional disc drives may be added to the configuration shown above.
- **Series 37, 37XE, MICRO 3000XE:** Maximum of four 7914P drives are supported per Series 37 or MICRO 3000XE system; however, the Integrated Cartridge Tape is NOT supported, so the deletion Option 140 must be specified.
- **Series 39, 4x, 5x:** Maximum of four 7911P,7912P and eight 7914P drives supported per Series 39, 4x and 5x systems.
- **Series 6x, 70:** Maximum of one 7911P,7912P and eight 7914P drives supported per system.

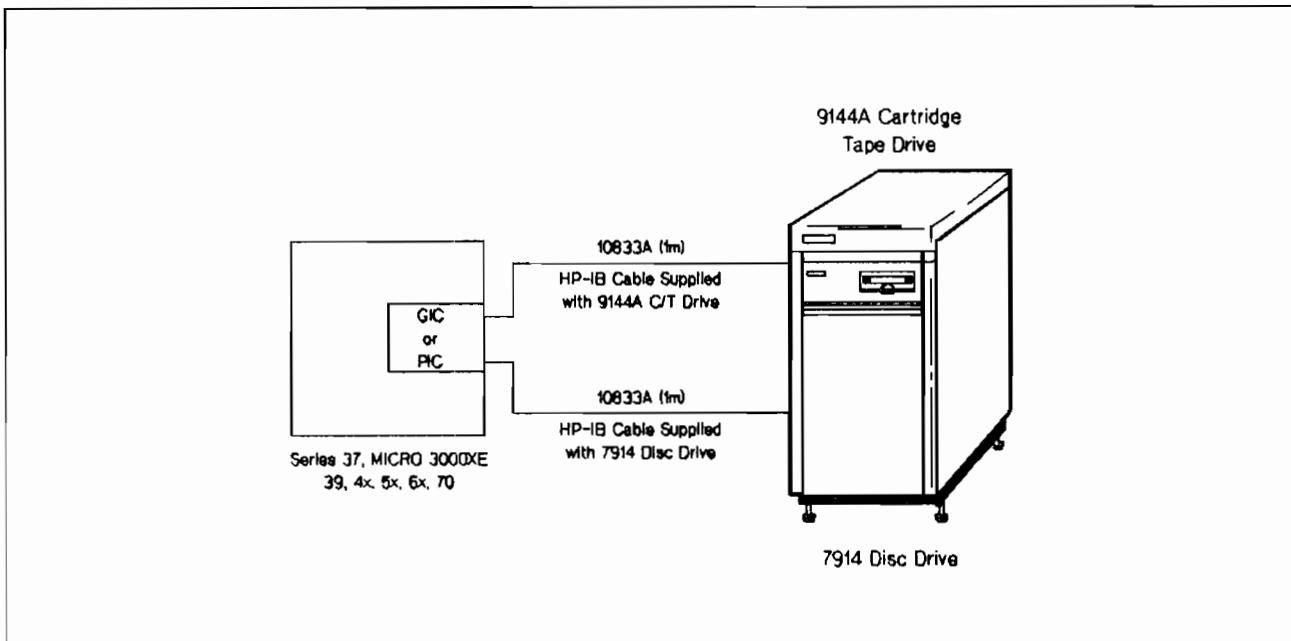
- See Chapter One Appendix for discussion of maximum HP-IB cable length rules. HP-IB expansion cables available are:

Cable Length	Product Number	Part Number
1m	10833A	8120-3445
2m	10833B	8120-3446
4m	10833C	8120-3447

- The 7911P,7912P, and 7914P also include 1.0m of cabling internal to the drive which must be considered for calculating maximum HP-IB cable length. The 7911P,7912P, and 7914P are high-speed devices.
- The 7911/12/14 are not supported on MICRO 3000.

Disc Drives

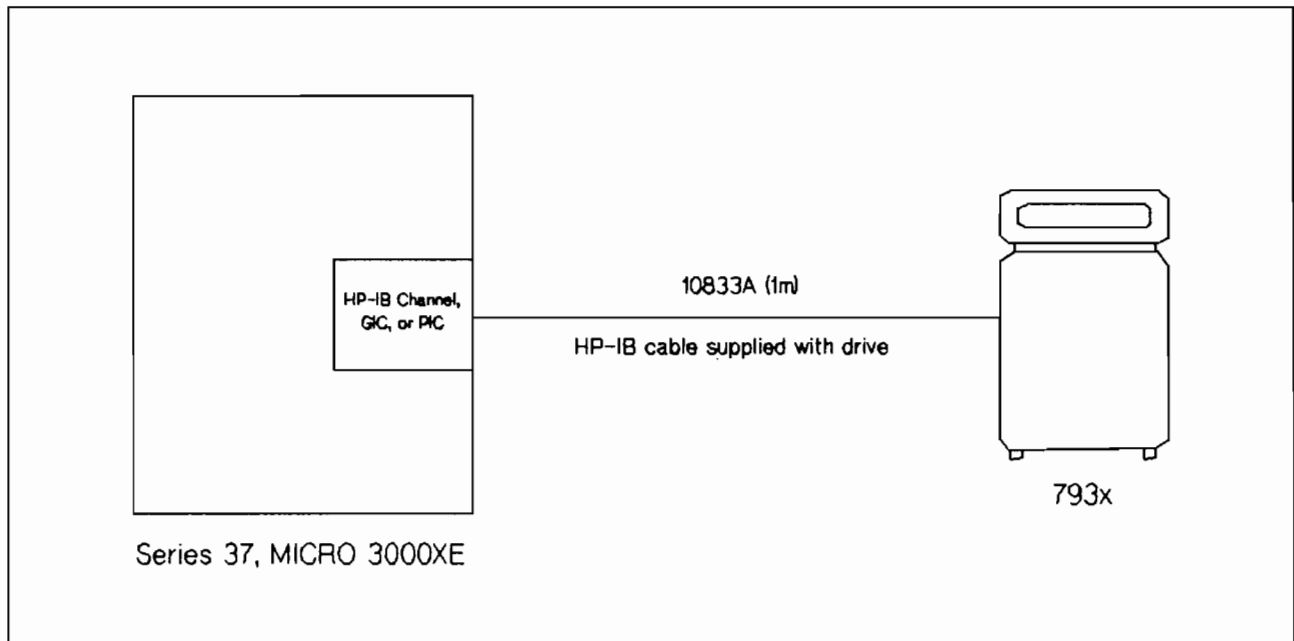
Cable Configuration for 7914CT Disc Drive



- The 7914CT includes a 9144A cartridge tape drive and a 7914 disc drive. Each component has one device load and both are high-speed devices.
- The 7914CT includes 1m of internal HP-IB cabling in the disc drive component which must be considered for calculating maximum HP-IB cable length.
- The 7914CT is not supported on MICRO 3000.
- **Series 37/37XE:** Maximum of two 7914CTs supported.
- **MICRO 3000XE:** Maximum of four 7914CTs supported.
- **Series 39, 4x, 5x, 6x, 70:** Maximum of four 7914CTs supported per system.
- The 7914CT requires MPE-V/E.

Disc Drives

Cable Configuration for 7933, 7935, 7936, 7937 Disc Drives

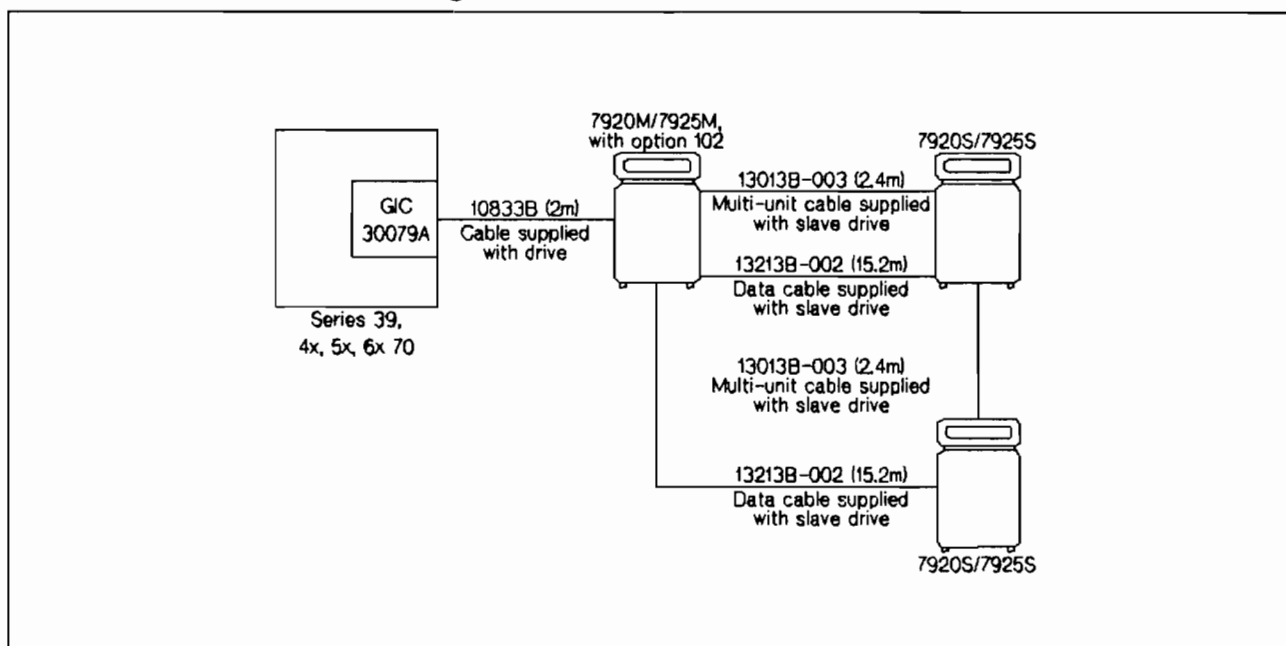


- The 7933H/XP, 7935H/XP, 7936H/XP, and 7937H/XP are high-speed devices with one device load.
- Additional disc drives may be added to the configuration shown above:
- The 7933/35 drives are not supported on MICRO 3000.
- The 7933H/XP, 7935H/XP, 7936H/XP, and 7937H/XP include 0.0m of internal HP-IB cable.
- See Chapter One Appendix for discussion of maximum HP-IB cable length rules. HP-IB expansion cables available are:

Cable Length	Product Number	Part Number
1m	10833A	8120-3445
2m	10833B	8120-3446
4m	10833C	8120-3447

Disc Drives

Cable Configuration for 7920, 7925 Disc Drives



- The 7920M and 7925M drives are high-speed devices with one device load.
- **Series 39, 40, 42, 42XP, 52:** Maximum of two master 7920M and 7925M drives supported per system. Up to seven slave drives are supported per system, all of which may be connected to a single master drive. (Two slave drives are shown connected in the above cable diagram.)
- **Series 44, 48, 58:** Maximum of two master 7920M and 7925M drives supported per system. Maximum of 14 slave drives per system. Up to seven slave drives are supported per master drive.
- **Series 6x, 70:** Maximum of 16 master 7920M and 7925M drives supported per system. Maximum of 14 slave drives are supported per system. Up to seven slave drives are supported per master drive.
- Cumulative HP-IB cable length cannot exceed 6.0m. See Chapter One Appendix for complete discussion of HP-IB cable length rules. HP-IB expansion cables available are:

- The 792x drives are not supported on Series 37/37XE, MICRO 3000 or MICRO 3000XE.

Cable Length	Product Number	Part Number
1m	10833A	8120-3445
2m	10833B	8120-3446
4m	10833C	8120-3447

- Maximum limit for multi-unit and data cables is 75 ft. (22.9m). Multi-unit expansion cables available are:

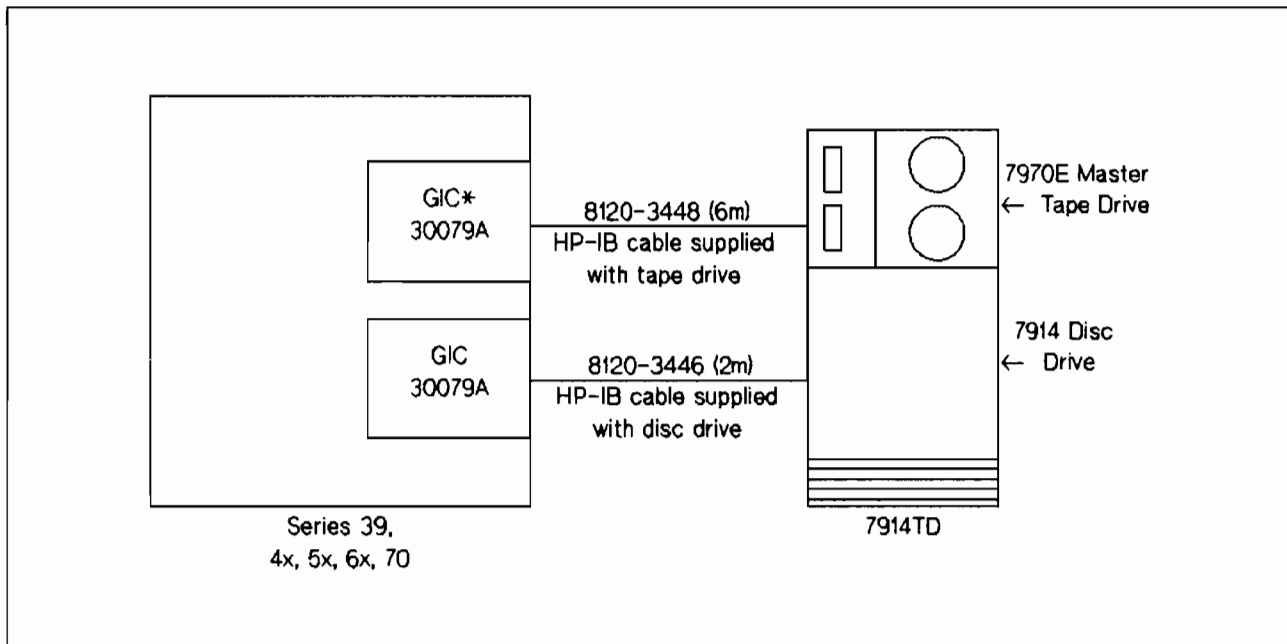
Cable Length	Product Number
1.8m	13013B
3.7m	13013B-001
5.5m	13013B-002

- Data cables available are:

Cable Length	Product Number
3m	13213B
7.6m	13213B-001
15.2m	13213B-002

Mass Storage Subsystems

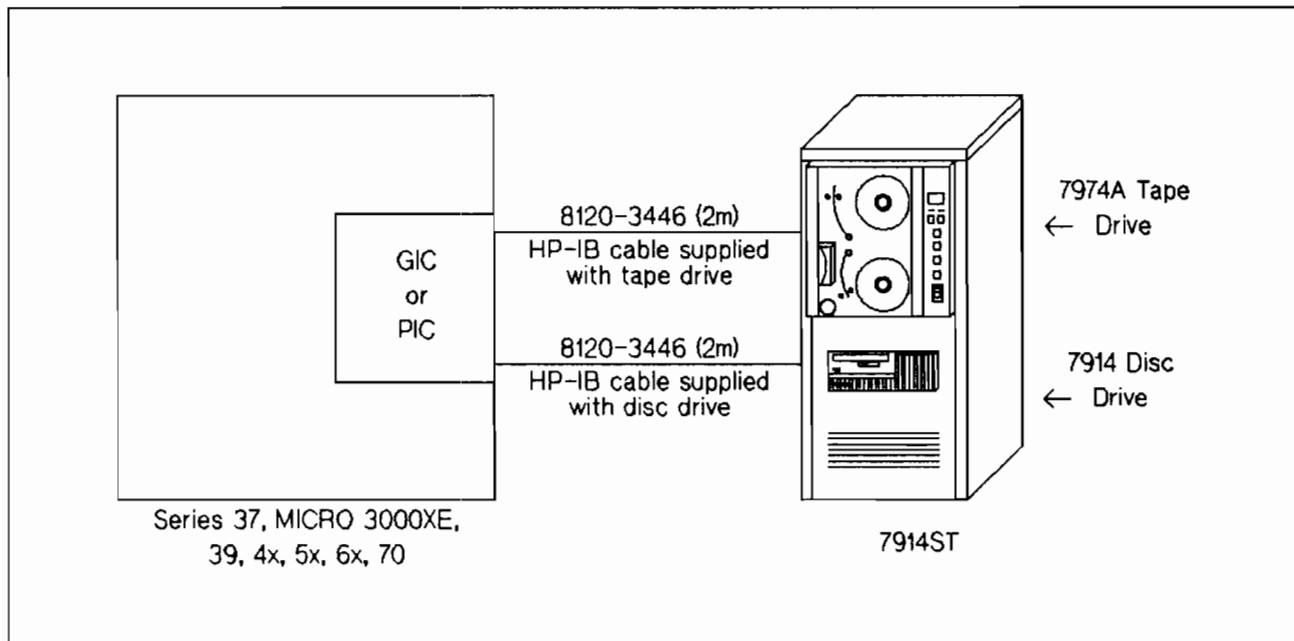
Cable Configuration for 7914TD Mass Storage Subsystem



- * Dedicated GIC is required for 7970E tape drive. Up to three slave tape drives may be supported on the 7970E master drive.
- A cartridge tape drive may also be supported in this configuration by ordering 7914TD option 002. The cartridge tape drive requires the addition of its own dedicated GIC.
- **Series 39, 40, 42, 42XP, 52:** Maximum of one 7914TD supported.
- **Series 48, 58, 6x 70:** Maximum of two 7914TDs supported.
- Additional disc drives may be supported on the disc GIC. Use standard configuration rules for additional disc drive support.
- The 7914TD is not supported on Series 37/37XE, MICRO 3000 or MICRO 3000XEs.
- See also cabling diagrams for 7914P and 7970E.

Mass Storage Subsystems

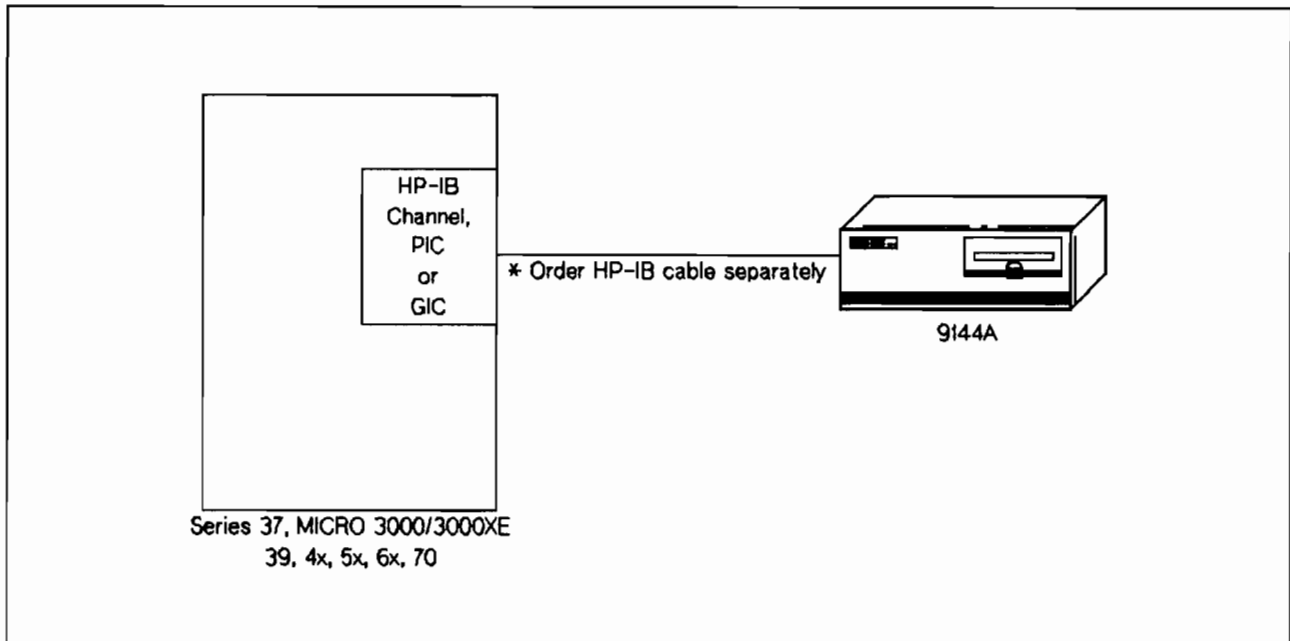
Cable Configuration for 7914ST Mass Storage Subsystem



- A cartridge tape drive may be added (except on Series 37) by ordering option 002 on the 7914ST. The cartridge tape drive requires a dedicated GIC.
- The 7914ST is not supported on MICRO 3000.
- **Series 37, 37XE;** Maximum of two 7914STs are supported per system.
- **MICRO 3000XE:** Maximum of four 7914STs are supported
- **Series 39, 4x, 5x, 6x and 70:** Maximum of four 7914STs are supported.
- See 7974A and 7914P cabling diagrams for additional information.

Tape Drives

Cable Configuration for 9144A Cartridge Tape Drive



* HP-IB Cables (order one, except with the factory integrated MICRO 3000 systems):

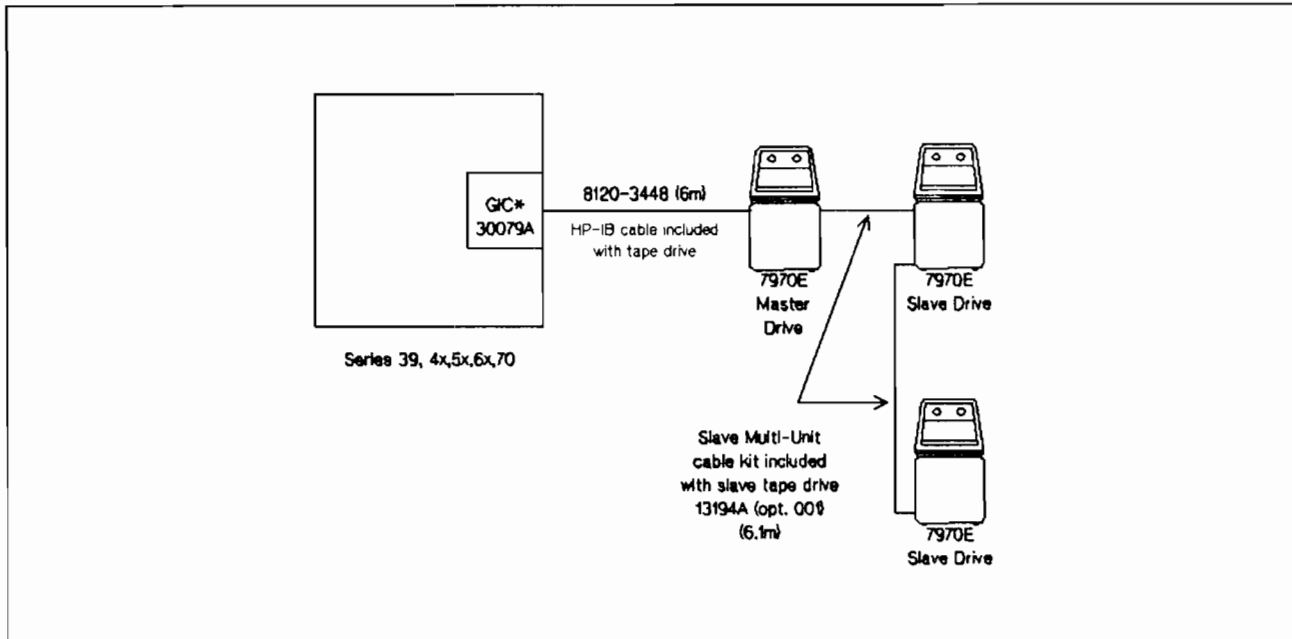
Cable Length	Product Number
0.5m	10833D
1m	10833A
2m	10833B

- **Series 44, 48, 58:** Maximum of four 9144As supported. Requires CPS-E microcode to be supported as cold load device.
- **Series 6x, 70:** Maximum of four 9144As supported. Requires CPS-E microcode to be supported as cold load device. Cannot share GIC with system disc or cold load device.

- The 9144A is a high-speed device with one device load.
- The 9144A is supported on MPE-V/E.
- **Series 37, 37XE, MICRO 3000:** Maximum of two 9144As supported.
- **MICRO 3000XE:** Maximum of four 9144As are supported
- **Series 39, 40, 40SX, 42, 42XP, 52:** Maximum of four 9144As supported. Requires CPS-E microcode to be supported as cold load device.

Tape Drives

Cable Configuration for 7970E Master Tape Drive



* Dedicated GIC is required for 7970E master drive.

- The 7907E is not supported on Series 37/37XE, MICRO 3000, or MICRO 3000XE.
- **Series 39, 40, 42, 42XP, 52:** Maximum of one master drive supported per system.
- **Series 44, 48, 58, 6x, 70:** Maximum of two master drives supported per system. Each master disc requires a dedicated GIC. Up to three slave drives are supported per master drive. (Two slave drives are shown connected in the above diagram.)

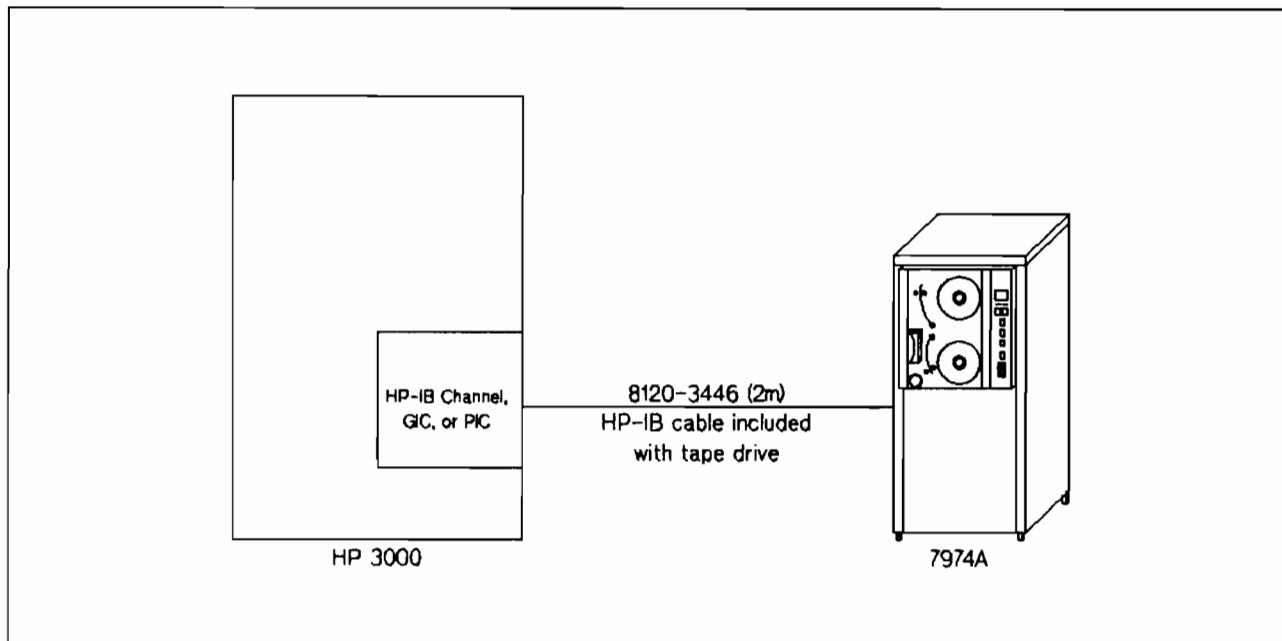
- See Chapter One Appendix for discussion of maximum HP-IB cable length rules. HP-IB expansion cables available are:

Cable Length	Product Number	Part Number
1m	10833A	8120-3445
2m	10833B	8120-3446
4m	10833C	8120-3447



Tape Drives

Cable Configuration for 7974A Tape Drive



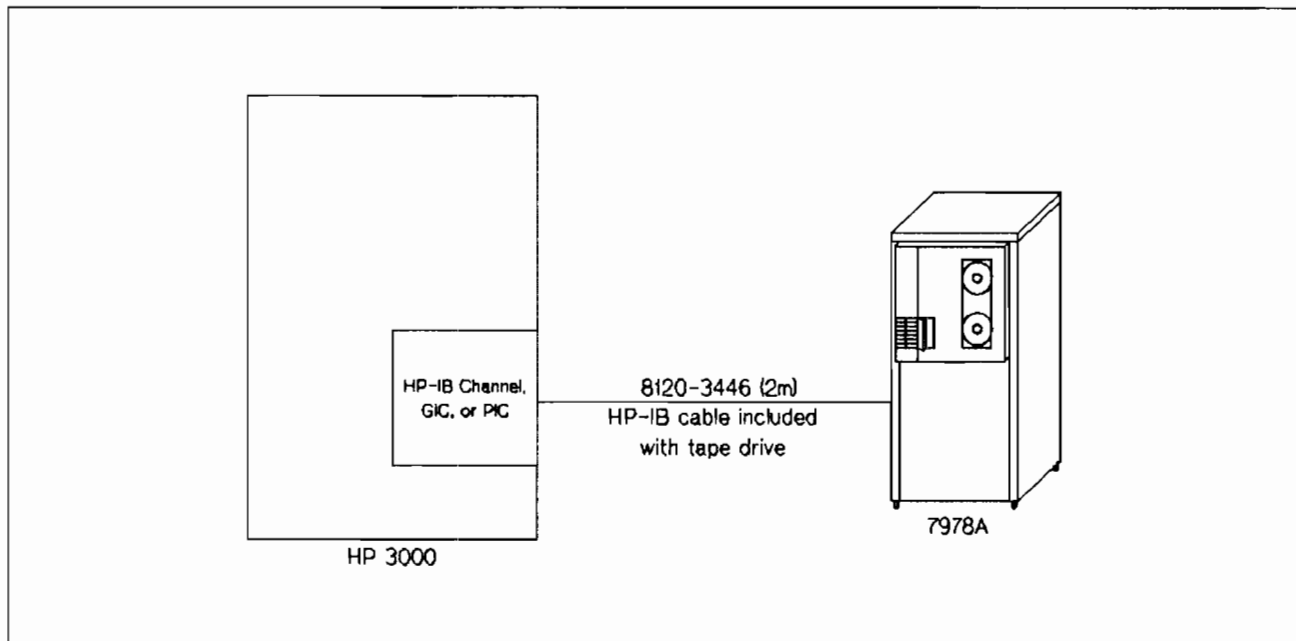
- See Chapter One Appendix for discussion of maximum HP-IB cable length rules. HP-IB expansion cables available are:

Cable Length	Product Number	Part Number
1m	10833A	8120-3445
2m	10833B	8120-3446
4m	10833C	8120-3447

- There is 1.0m of HP-IB cabling that is internal to the 7974A and must be considered when calculating maximum HP-IB cable length.
 - The 7974A is a high-speed device shipped with one device load (variable from 1 to 3).
- **MICRO 3000, Series 37/37XE:** Maximum of two master drives supported per system.
 - **MICRO 3000XE, Series 39,40,42,42XP,5x,6x,70:** Maximum of four master drives supported per system.

Tape Drives

Cable Configuration for 7978A/B Tape Drive



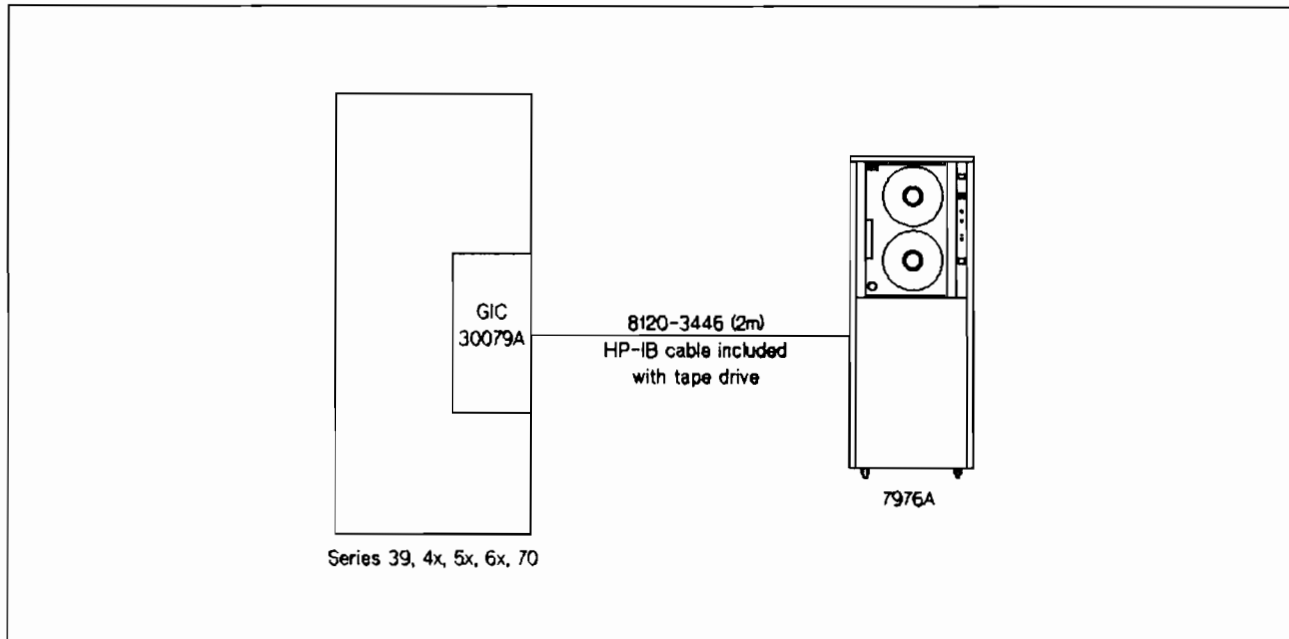
- The 7978A/B is a high-speed device shipped with one device load (variable from 1 to 3).
- There are 0.0m of HP-IB internal cabling in the 7978A/B.
- **MICRO 3000XE, Series 39,4x,5x,6x and 70:** Maximum of four master drives supported per system.
- **MICRO 3000, Series 37/37XE:** Maximum of two master drives supported per system.

- See Chapter One Appendix for discussion of maximum HP-IB cable length rules. HP-IB expansion cables available are:

Cable Length	Product Number	Part Number
1m	10833A	8120-3445
2m	10833B	8120-3446
4m	10833C	8120-3447

Tape Drives

Cable Configuration for 7976A Tape Drive

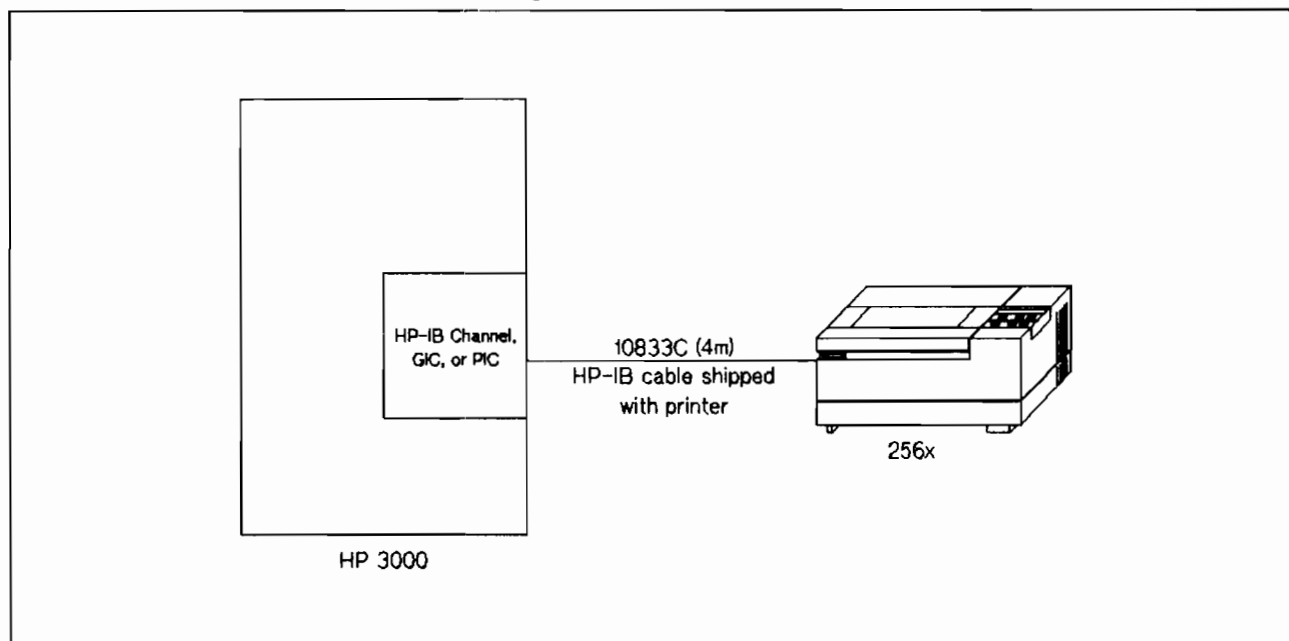


- Maximum of two 7976A drives supported per system.
- Not supported on Series 37/37XE or MICRO 3000/3000XE's.
- See Chapter One Appendix for discussion of maximum HP-IB cable length rules. HP-IB expansion cables available are:
 - There are 2.0m of HP-IB cabling that are internal to the 7976A and must be considered for calculating maximum HP-IB cable length.
 - The 7976A is a high-speed device shipped with two HP-IB loads (variable from 1 to 4 loads).

Cable Length	Product Number	Part Number
1m	10833A	8120-3445
2m	10833B	8120-3446
4m	10833C	8120-3447

Printers

Cable Configuration for 256x Printers



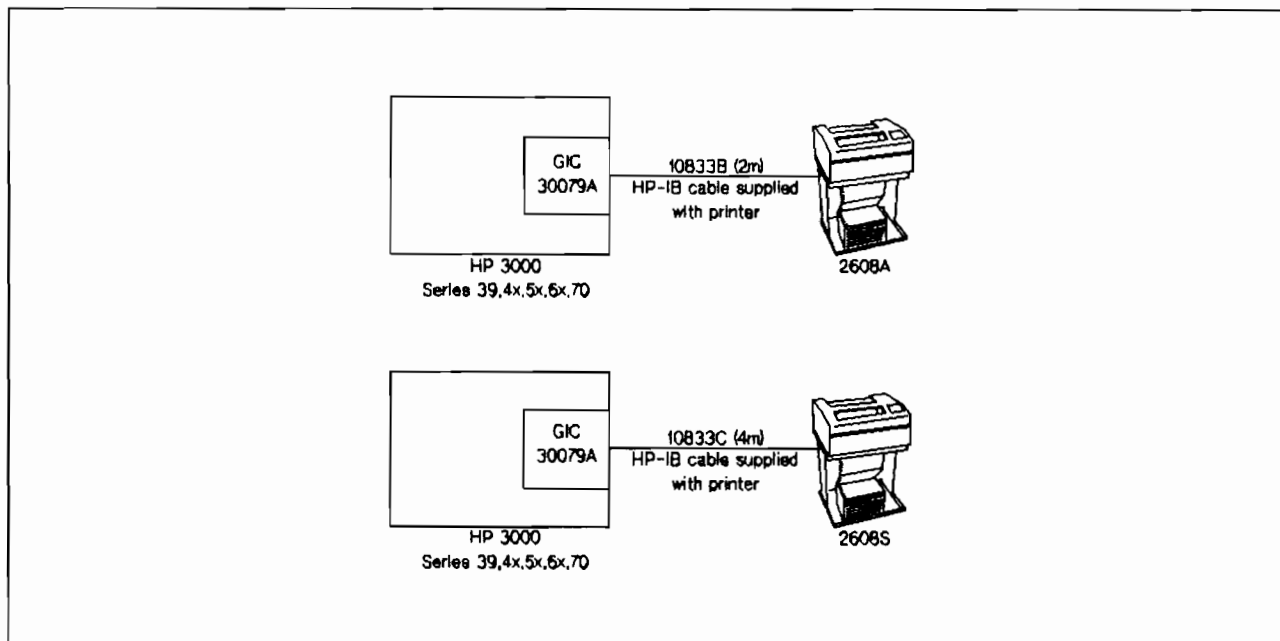
- The 256x printers are high-speed devices shipped with one device load (variable from 1 to 7). When configured via HP-IB extenders, however, they become low-speed devices. (See discussion on HP-IB extenders in Chapter One Appendix and HP-IB Extender Cabling diagram in Chapter 4).
- The 2563A/B (only) may be configured also on an MTS Network Link (by ordering Option 055) or as an RS-232-C or RS-422 serial printer on the MICRO 3000/3000XE and Series 39/4x/5x/6x/70 systems (by ordering options 049 (RS-232) or 050 (RS-422)).
- Connection of the 256x printers via HP-IB Extenders is supported. Refer to Chapter 4 or to the Chapter One Appendix.

- See Chapter One Appendix for discussion of maximum HP-IB cable length rules. HP-IB expansion cables available are:

Cable Length	Product Number	Part Number
1m	10833A	8120-3445
2m	10833B	8120-3446
4m	10833C	8120-3447

Printers

Cable Configuration for 2608A, 2608S Printers



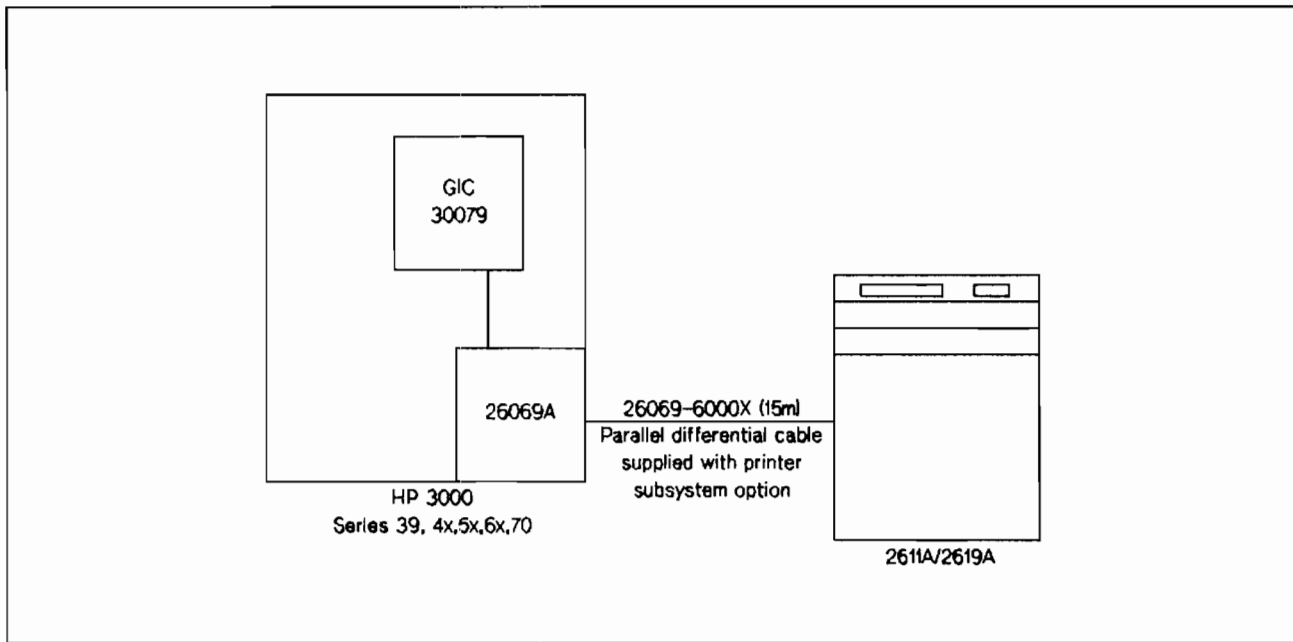
- The 2608A and 2608S are not supported on Series 37/37XE or MICRO 3000/3000XE.
- **2608A:** Maximum supported HP-IB cable length for 2608A is 6m. The 2608A is a low-speed device which cannot share a GIC with high-speed devices.
- **2608S:** The 2608S is a high-speed device, but cannot share the GIC with 7920, 7925 disc drives. It is shipped with one device load (variable from 1-7). Maximum supported HP-IB cable length for 2608S is 13.0m. A 1.0m internal cable is included.
- See Chapter One Appendix for discussion of maximum HP-IB cable length rules. HP-IB expansion cables available are:

Cable Length	Product Number	Part Number
1m	10833A	8120-3445
2m	10833B	8120-3446
4m	10833C	8120-3447

The 2608S with Option 055 may be configured on an MTS line. (See Chapter 4 for cabling diagrams.)

Printers

Cable Configuration for 2611A, 2619A Printers

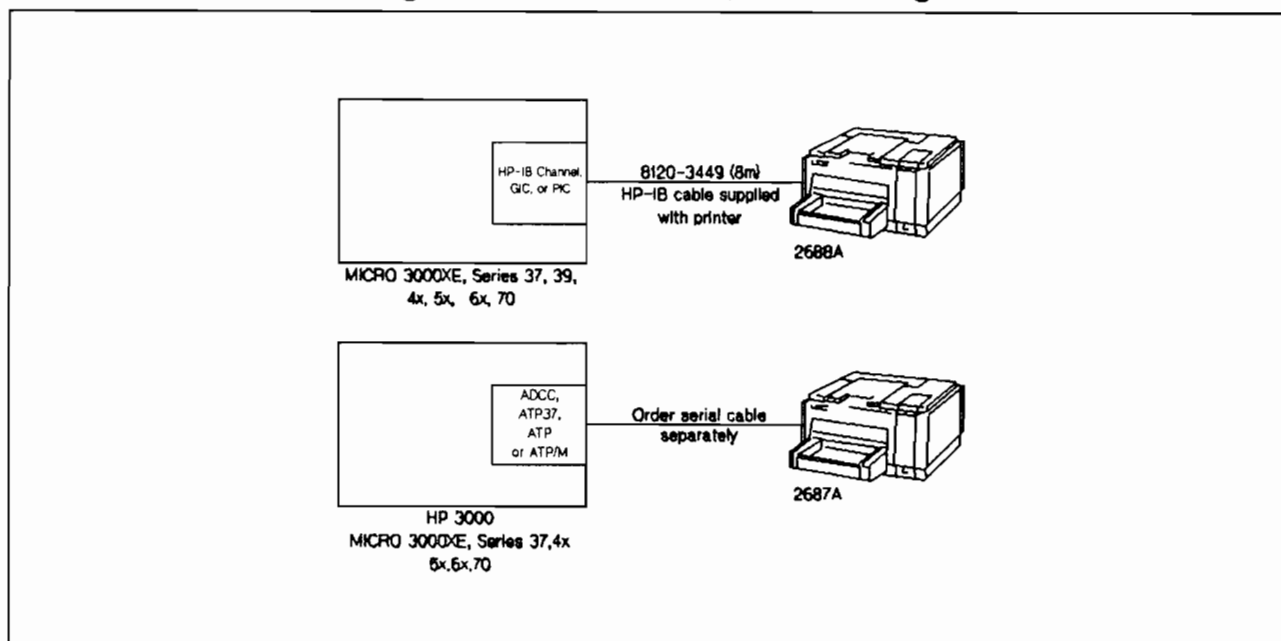


- The 26069A Line Printer Interface (LPI) is supplied with the 2611A and 2619A printer when the corresponding subsystem option is ordered. The 26069A is a board which requires a separate card slot and is connected to the GIC via an internal 1.0m HP-IB cable.
- The 2611A and 2619A are not supported on Series 37/37XE or MICRO 3000/3000XE.
- **Series 39,40,42,42XP,52:** Maximum of two 261x printers are supported.
- **Series 48, 58, 6x 70:** Maximum of four 261x printers.
- The external cable between the printer and the Line Printer Interface is system-dependent as follows:

Series 39: 26069-60005
Series 4x: 26069-60003
Series 5x: 26069-60003
Series 6x: 26069-60003
Series 70: 26069-60003

Printers

Cable Configuration for 2687A, 2688A Page Printers



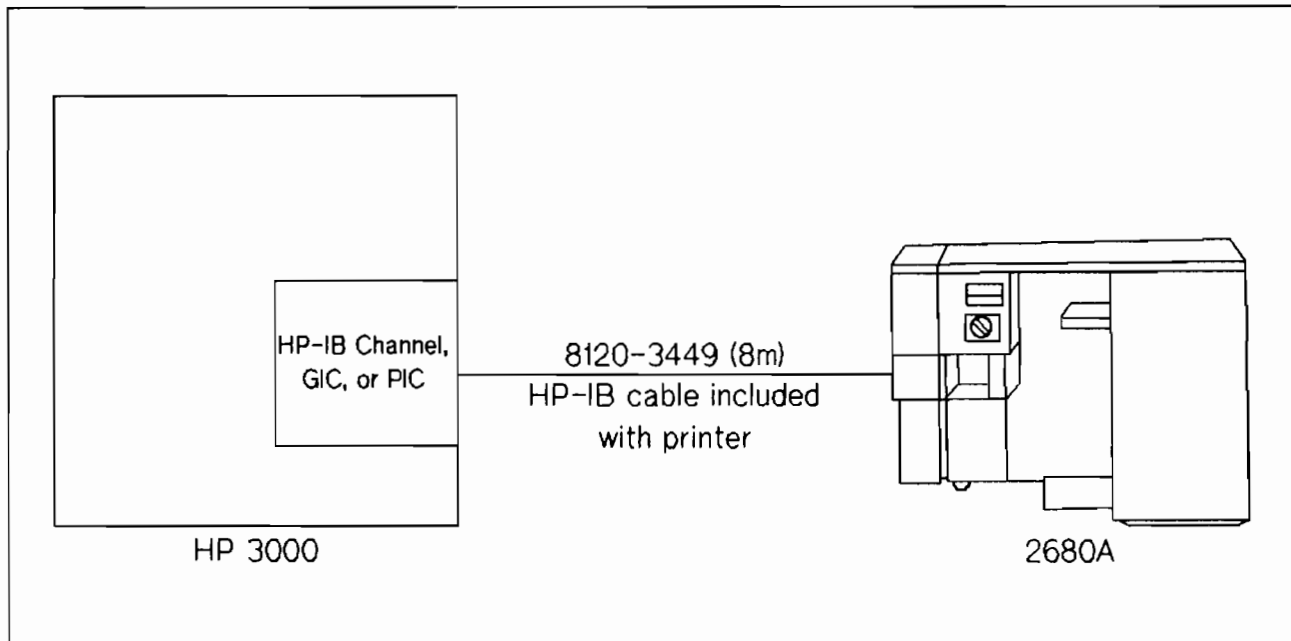
- The 2688A is a high-speed device which is shipped with four device loads (variable from 1 to 8). It includes a 1.0m internal HP-IB cable.
- See Chapter One Appendix for discussion of maximum HP-IB cable length rules. HP-IB expansion cables available are:
- Connection of the 2688A via HP-IB Extenders is supported. Information on HP-IB Extenders can be found in Chapter 4 and in the Chapter One Appendix.
- When the 2687A is used on the Series 37, no other serial printer may be configured.

Cable Length	Product Number	Part Number
1m	10833A	8120-3445
2m	10833B	8120-3446
4m	10833C	8120-3447

- Cable product numbers for the 2687A are listed in Chapter 4.

Printers

Cable Configuration for 2680A Page Printer

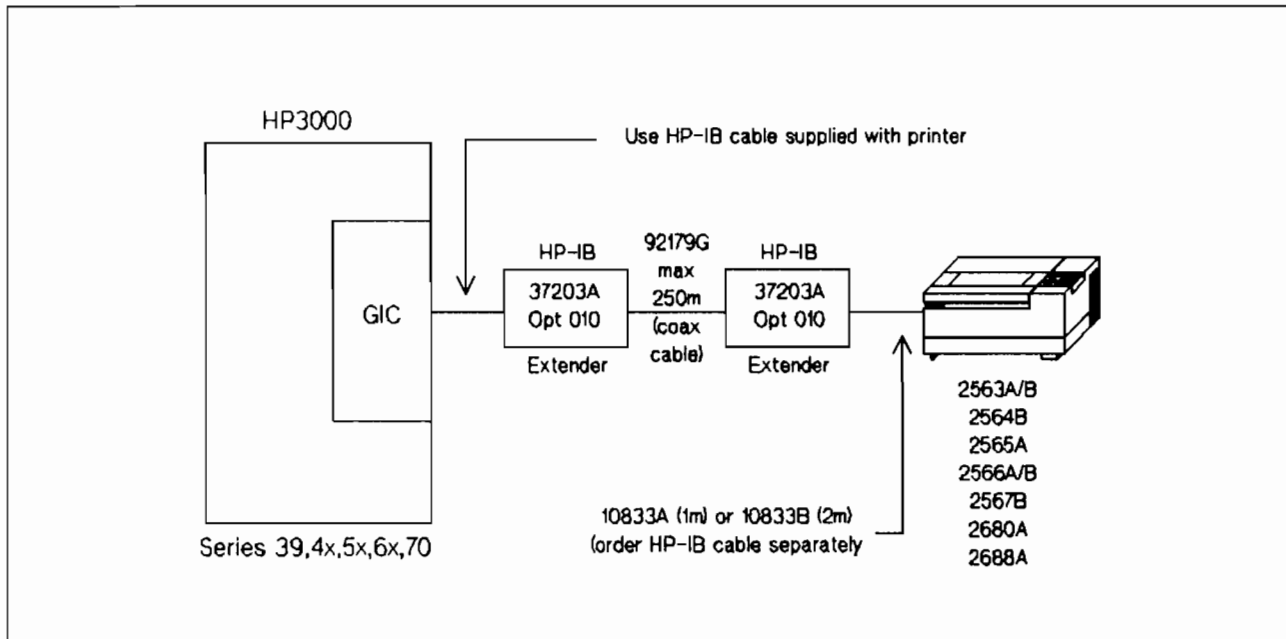


- The 2680A is a high-speed device shipped with four device loads (variable from 1 to 8).
- The 2680A has a 1.0m internal HP-IB cable. See Chapter One Appendix for discussion of maximum HP-IB cable length rules. HP-IB expansion cables available are:
 - Connection of the 2680A via HP-IB Extenders is supported. Information on HP-IB Extenders can be found on Page 4-18 and in the Chapter One Appendix.
 - For connection of a second 2680A, a 2.0m HP-IB cable is available by ordering the 2680A with Option 099.

Cable Length	Product Number	Part Number
1m	10833A	8120-3445
2m	10833B	8120-3446
4m	10833C	8120-3447

Printers

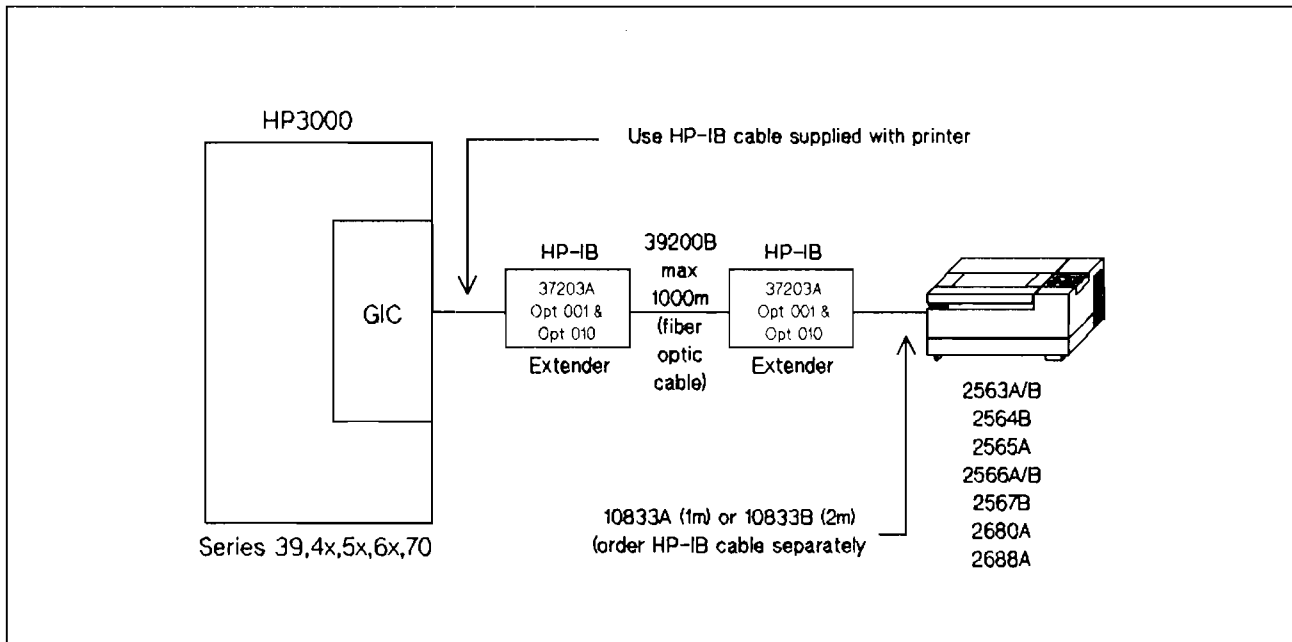
Single Printer Cabling with HP-IB Extenders (37203A/37204B)



- The Extender pair may be up to 250m apart. A separate coax cable (92179G) needs to be ordered. Please refer to the section on HP-IB Extenders in the Chapter One Appendix or consult your CE.
- The 1m or 2m HP-IB cable required from Extender to printer must be ordered separately (10833A=1m; 10833B=2m). The cable shipped with the printer may be used to connect an Extender to the GIC.
- Printers configured via HP-IB Extenders require a dedicated GIC which is considered low-speed.
- HP-IB Extender support for the 256x, 2680A, and the 2688A printers requires MPE-V/E (or later MIT).
- There are particular rules for HP-IB loads and cable length when configuring multiple printers on a single Extender pair which vary from standard GIC connection rules. The "Seven- plus-one-meter" rule for cabling does not apply. Please refer to the Chapter One Appendix and consult with your CE for each multiple printer situation.
- The HP-IB extender is not supported on the Series 37/37XE or MICRO 3000/3000XE.

Printers

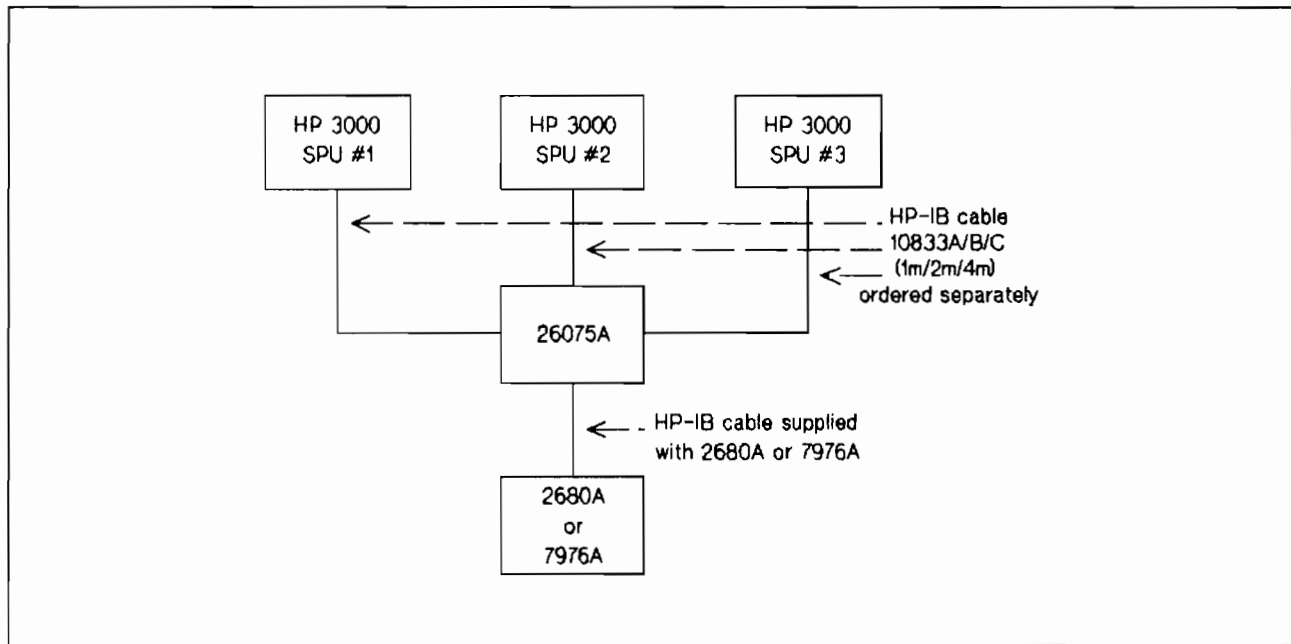
Single Printer Cabling with HP-IB Fiber Optic Extender (37203A with Opt 001 and Opt 010)



- The Extender pair may be up to 1000m apart. A separate fiber optic cable (39200B) needs to be ordered. Please refer to the section on HP-IB Extenders in the Chapter One Appendix or consult your CE.
- The 1m or 2m HP-IB cable required from Extender to printer must be ordered separately (10833A=1m; 10833B=2m). The cable shipped with the printer may be used to connect the Extender to the GIC.
- Printers configured via HP-IB Extenders require a dedicated GIC which is considered low-speed.
- HP-IB Extender support for the 256x, 2680A and the 2688A printers requires MPEV/E T-Delta-3 or later.
- There are particular rules for HP-IB loads and cable lengths when configuring multiple printers on a single Extender pair which vary from standard GIC connection rules. The "Seven-plus-one-meter rule for cabling does not apply. Please refer to the Chapter One Appendix and consult with your CE for each multiple printer situation.

HP-IB Peripheral Selector

Cable Configuration for 26075A Multiple System Access Selector (Maximum Configuration)



- The 26075A is an HP-IB switchbox designed to switch a 2680A or 7976A between up to three HP 3000 Series 39,4x,5x,6x or CPUs (not on Series 37/37XE or MICRO 3000/3000XE). An operator can switch the peripheral manually to be active on any of the sharing systems.
- The Selector includes 0.5m of internal HP-IB cable and represents no loads on the GIC.
- Only the 2680A, 7976A are supported.
- The 26075A CANNOT share a GIC with any other devices other than the one 2680A or 7976A assigned to it.

- See Chapter One Appendix for discussion of maximum HP-IB cable length rules. HP-IB expansion cables available are:

Cable Length	Product Number	Part Number
1m	10833A	8120-3445
2m	10833B	8120-3446
4m	10833C	8120-3447

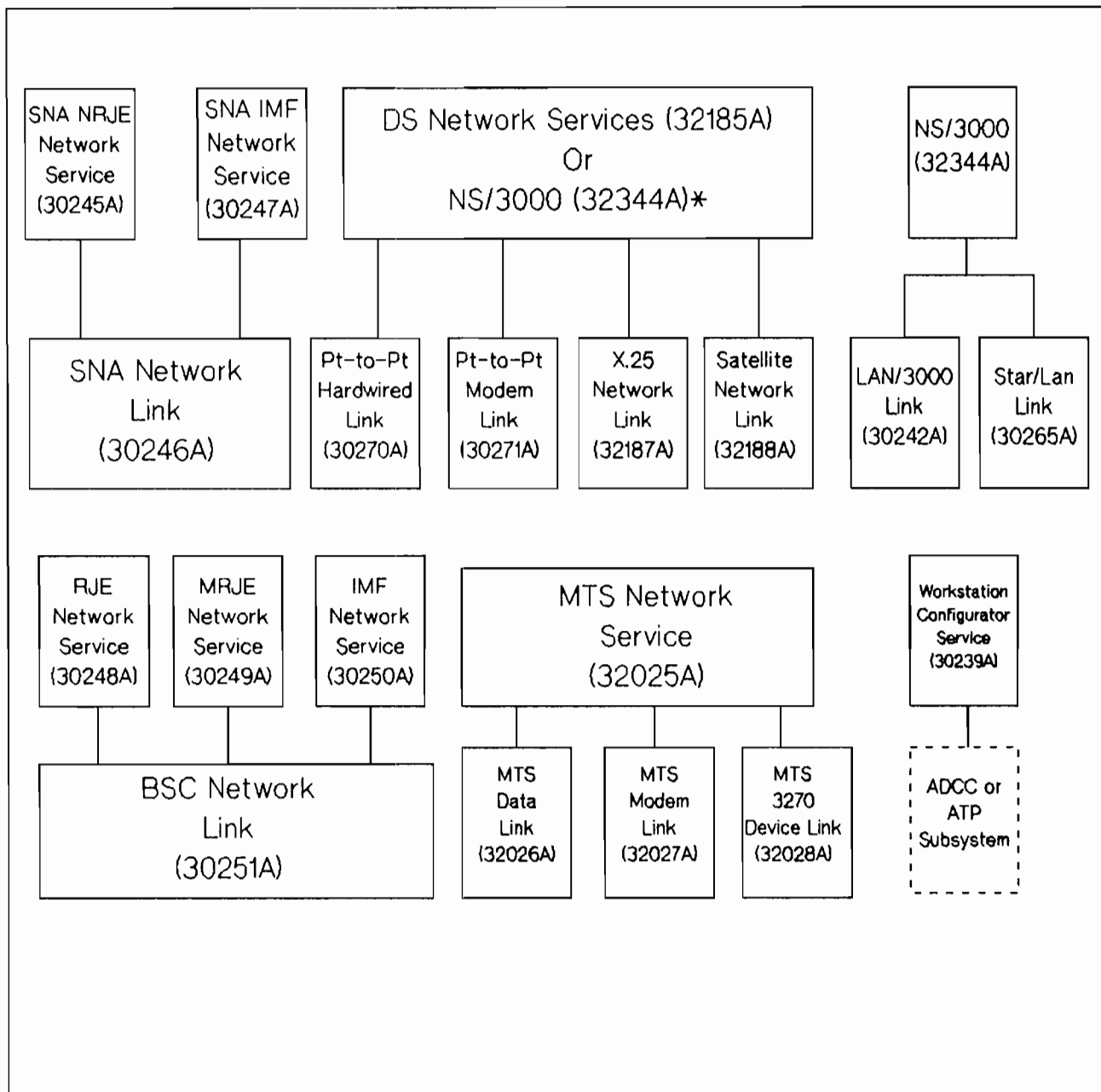
System Communication Products

HP 3000 Data Communication Products	4-21
Local Area Network	4-22
PBX Connections	4-23
HP 3000 to HP Systems Communications	4-25
HP 3000 to IBM Communications	4-27



HP 3000 Data Communication Products

Network Link and Service Products Matrix

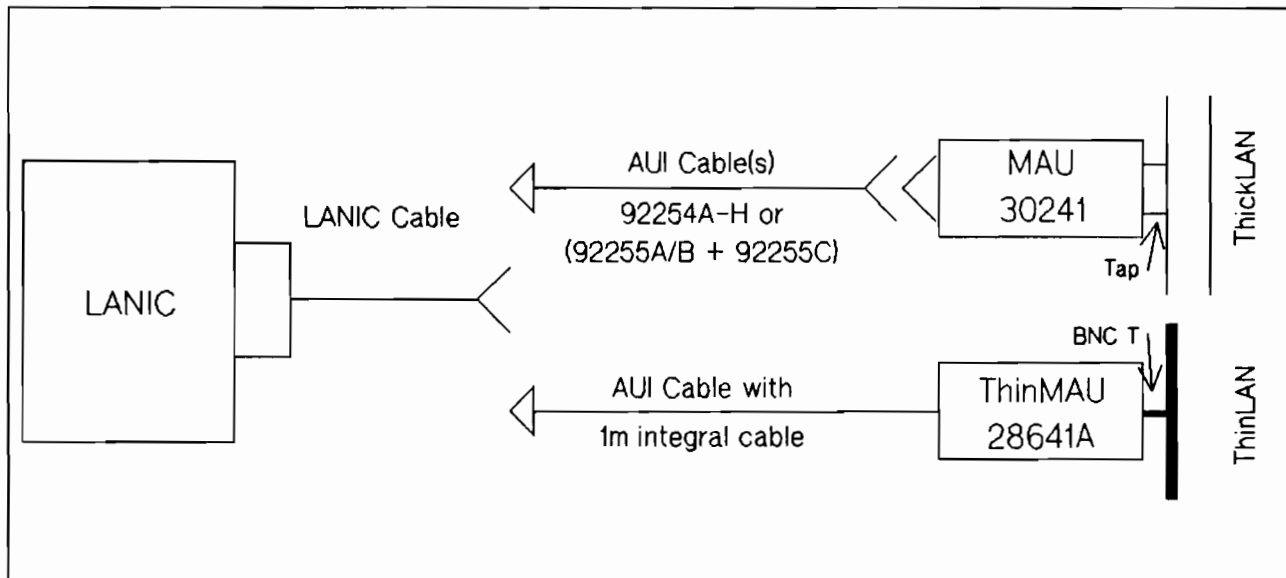


* NS/3000 requires the LAN/3000 Link (30242A) or StarLAN/3000 Link (30265A). The StarLAN/3000 Link is only supported on Series 37, Series 37XE and MICRO 3000/3000XE.

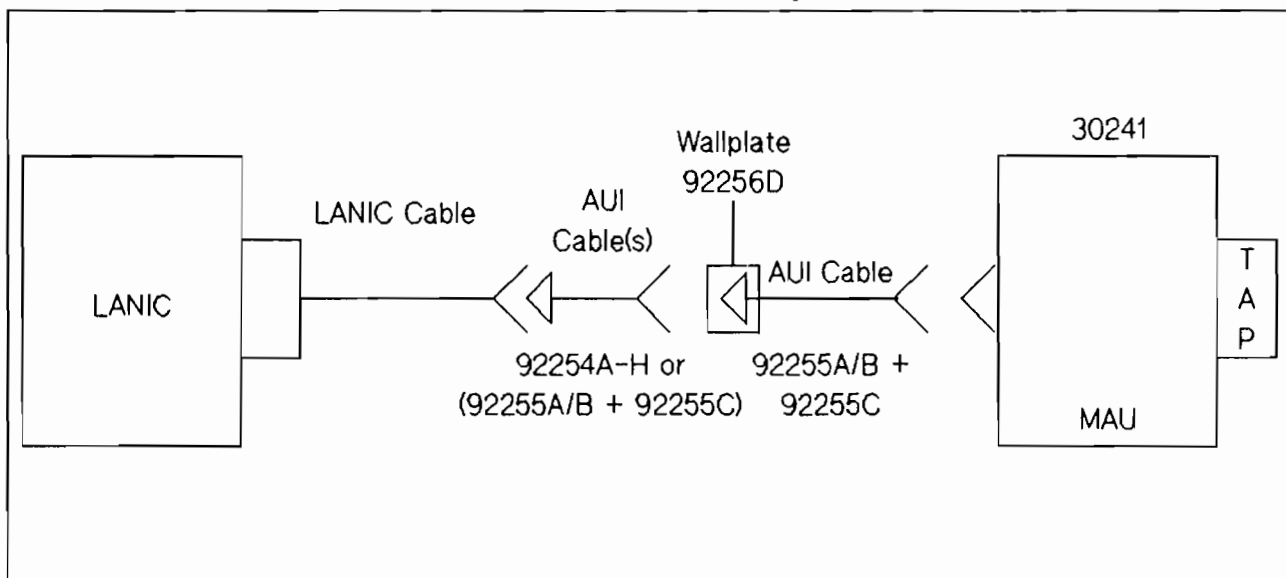
- Complete details on the products in this matrix can be found in the HP 3000 Data Communications Products Specification Guide.

Local Area Network

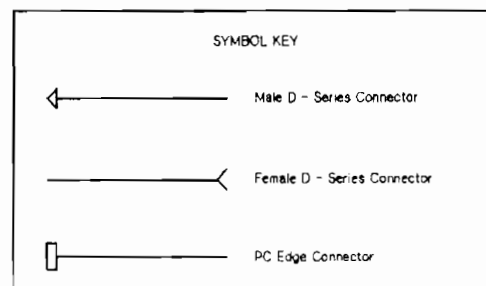
LANIC to MAU Connection (Thick and Thin Coax)



LANIC to MAU Connection with Wallplate (Thick Coax)

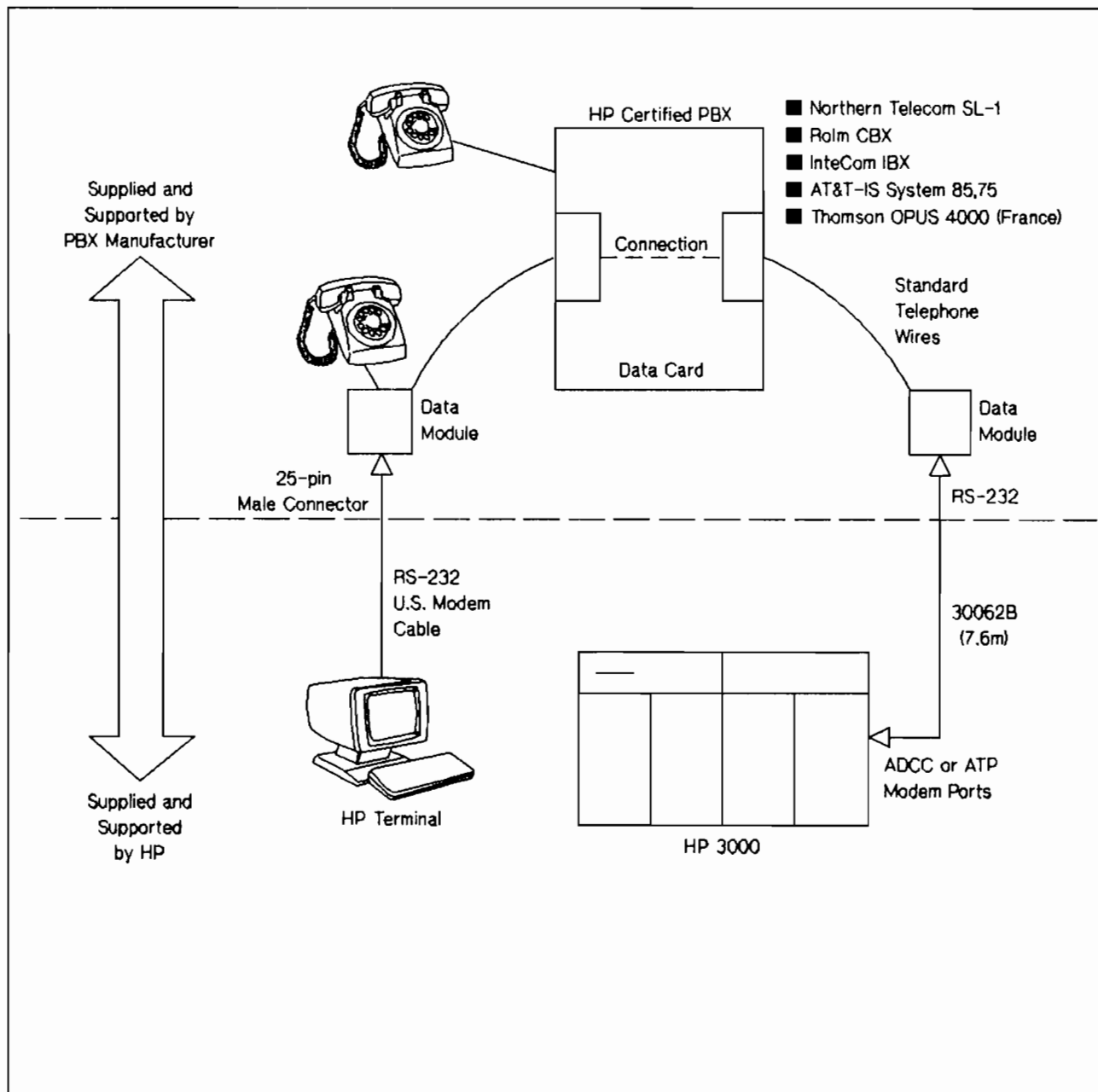


- Multiple cable segments can be used between the LANIC cable and the MAU. In the wallplate case, multiple segments can be used from the LANIC cable to the wallplate, and from the wallplate to the MAU. The segment with the male connector attached to the wallplate must be unconnected.



PBX Connections

Point-to-Point PBX Cable Configuration



- The appropriate modem cable to order for each of the terminal devices can be found in Chapter 4 and 4-34.
- ATP connection to the data module *must* be via Modem Connect Port Controllers.

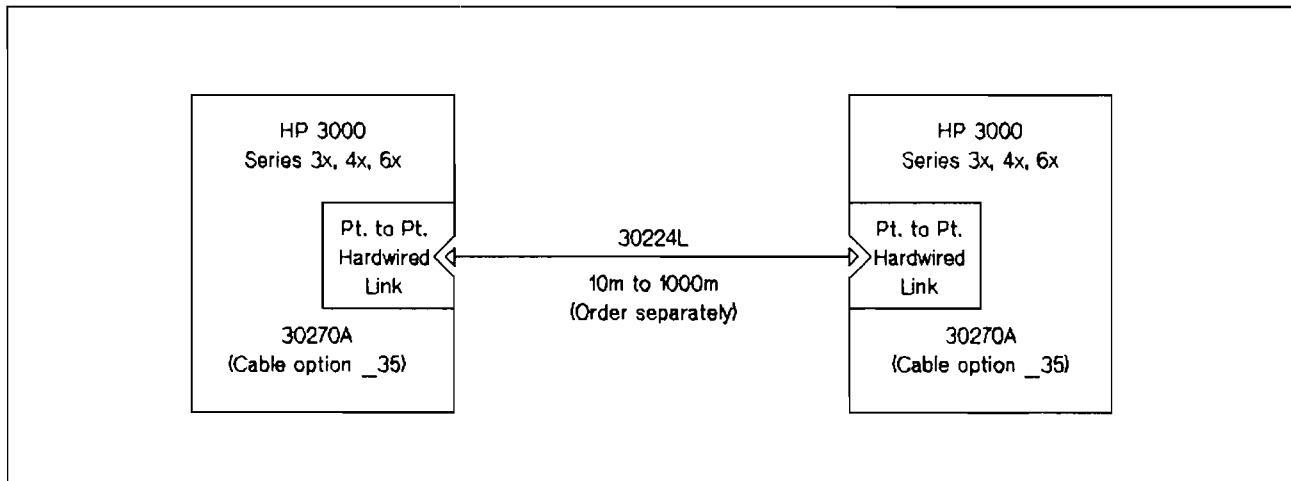
PBX Connections

Certified PBX Equipment

Manufacturer	PBX Model	Data Module
Northern Telecom	SL-1A, SL-1M, SL-1LE, SL-1VLE, SL-1XL, SL-IS, SL-1MS, SL-IN, SL-1XN, SL-1L, SL-IVL	Add-on Data Module (ADM) QMT-7, QMT-8, AIM, MCDS
ROLM Corporation	VSCBX, SCBX, MCBX, VLCBX	Data Terminal Interface (DTI)
InteCom, Inc.	IBX S/40	Intelligent Telephone Equipment (ITE) Data Interface Unit (DIU)
AT&T-IS	DIMENSION System 85 System 75	Data Modules PDM, DTDM
Thomson (France)	OPUS 4000	TNA 4020-U24

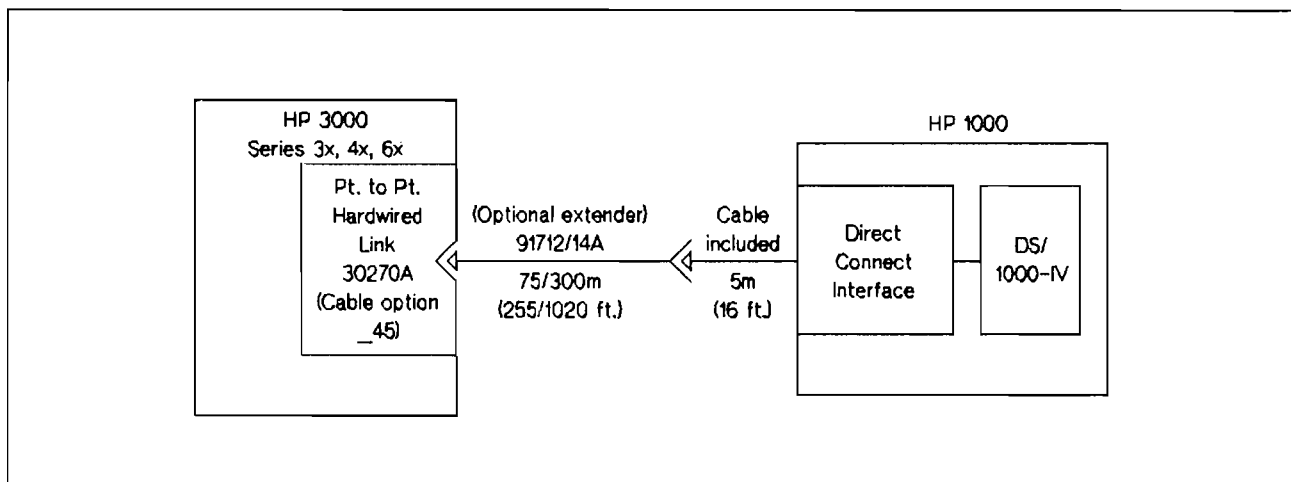
HP 3000 to HP Systems Communications

HP 3000 to HP 3000 Direct Connection Requires 32185A DS Network Service



- The 30270A Option 135 includes INP and 30224C internal cable. The 30270A Options 335 and 435 include INP and 30224B internal cable.

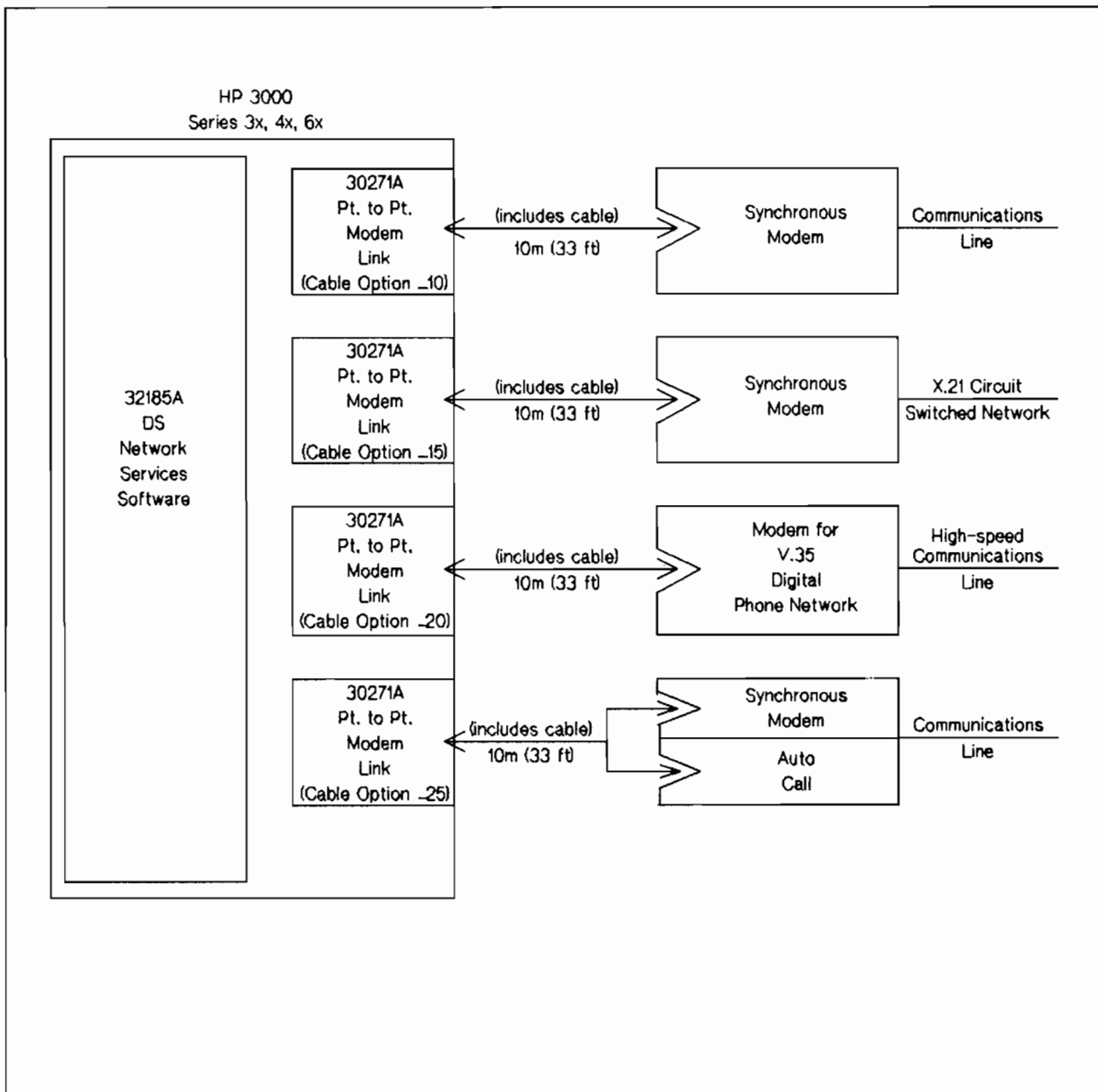
HP 3000 to HP 1000 Direct Connection Requires 32185A DS Network Service



- The 30270A with Option 145 includes 30244F cable and INP. The 30270A with Option 345 or 445 includes 30221F cable and INP.
- Supported maximum distance is 4,000 feet (1220 m).

HP 3000 to HP Systems Communications

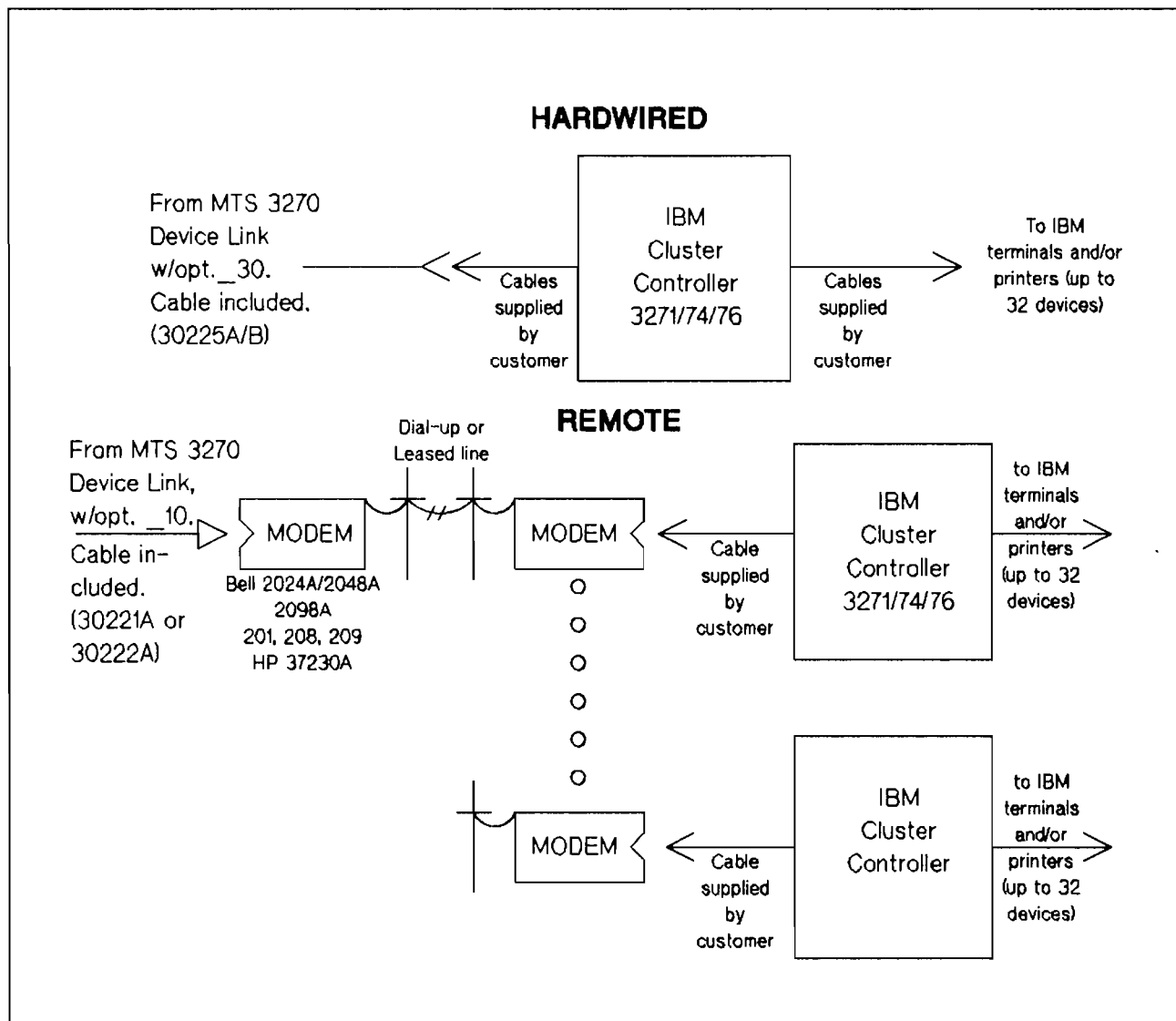
HP 3000 Point-to-Point Modem Link to HP 3000, HP 1000, HP 250, or HP 9845 Requires 32185A/R DS Network Services Software



- Modems supported are Bell 201C, 208A/B, 209A, 2024A, 2048A, 2096A, 500B and HP 37230A. For Auto Dial Capability, Bell 801C Auto Call Unit is supported.
- Point-to-Point Modem Link includes INP internal cables and 10m external cable.

HP 3000 to IBM Communications

MTS 3270 Device Link Connections



- MTS 3270 Device Link requires Multipoint Terminal Support Service Software (32025A/R).



Workstation Cabling

MPE XL HP 3000 Distributed Terminal Controller Cabling	4-29
MPE XL HP 3000 Console Cabling	4-32
MPE V HP 3000 Point-to-Point Terminal Cabling	4-34
2334 Statistical Multiplexor Cabling	4-41
X.25 Workstation Cabling	4-42
Multipoint (MTS) Cabling	4-43





Workstation Cabling

MPE XL Distributed Terminal Controller (DTC) Cabling

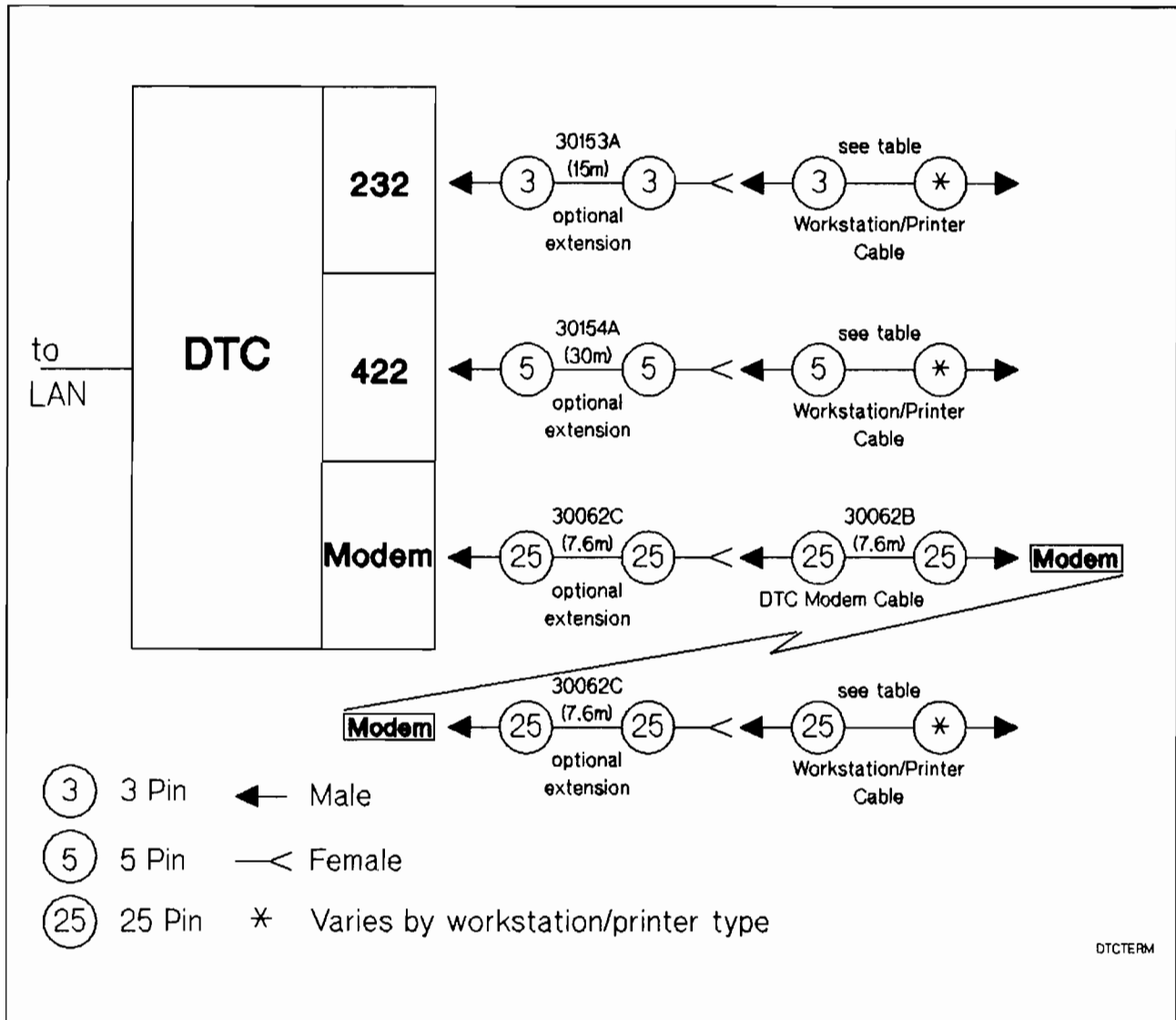
Most of the cables in the table below may be ordered as options on the terminal or printer product. Please refer to a current HP 3000 Price Guide for specific option numbers.

PRODUCT	RS-232-C (3-pin)	RS-422 (5-pin)	U.S. Modem (25-pin)	European Modem (25-pin)
239x (port 1)	40242X (5m)	40242P (5m)	40242M (5m)	40242M (5m)
239x (port 2)	40242X (5m)	N/A	40242M (5m)	40242M (5m)
2622A 2624B (port 1) 2627A (port 1)	13222X (5m)	13222P (5m)	13222N (5m)	13222M (5m)
2624B (port 2)	13242X (5m)	N/A	13242N (5m)	13242M (5m)
150/Touchscreen Vectra	13242X (5m)	13242P (5m)	13242N (5m)	13242M (5m)
PortablePLUS	92221M (1.5m) plus 30152A (5m)	N/A	92221M (1.5m)	92221M (1.5m)
2686A/D	92218D (1.5m)	92218C (1.5m)	N/A	N/A
2934A	13242X (5m)	13242P (5m)	13242N (5m)	13242M (5m)
Extension Cables	30153A (1.5m)	30154A (30m)	30062C (7.6m)	30062C (7.6m)

- RS-232 connections may not exceed 15m (50 ft); RS-422 connections may not exceed 1220m (4000 ft).

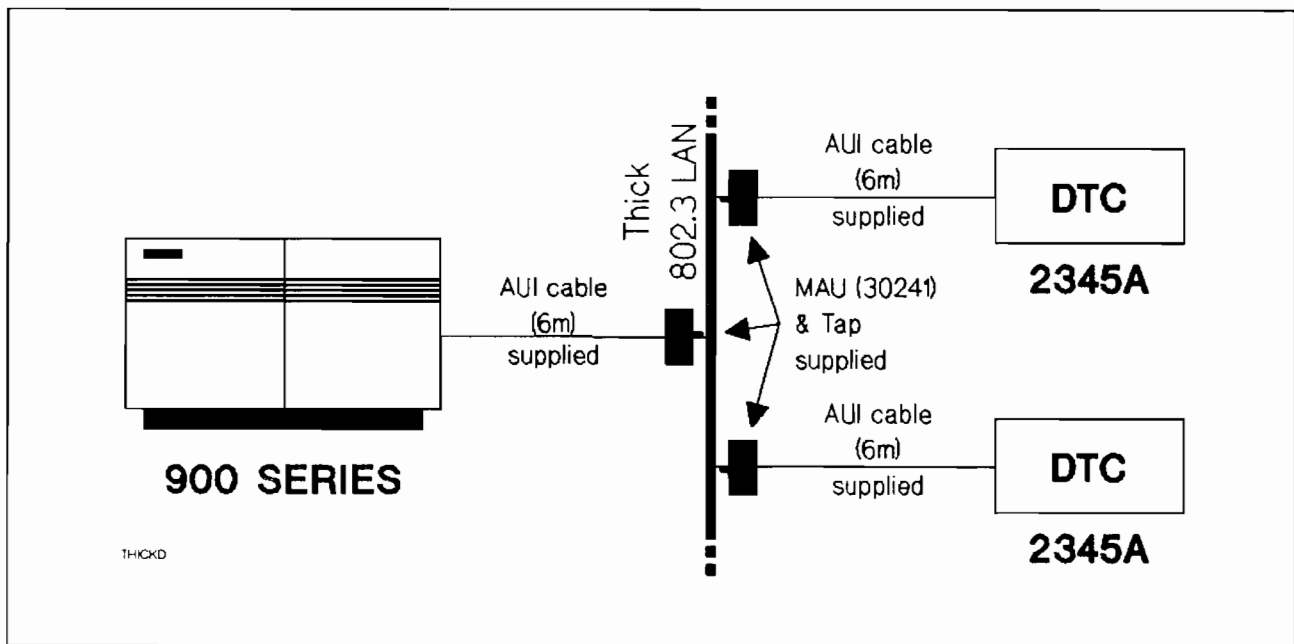
Workstation Cabling

DTC-to-Workstation/Serial Printer Cabling

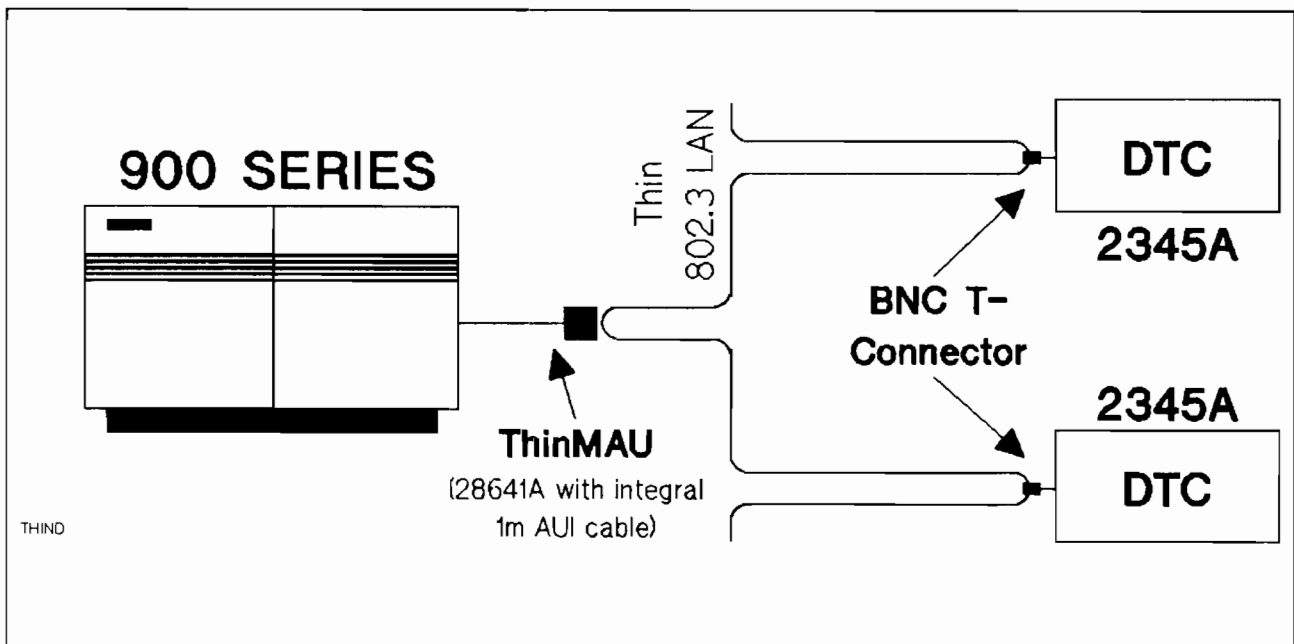


Workstation Cabling

DTC-to-SPU Thick (10Base5) LAN Connection

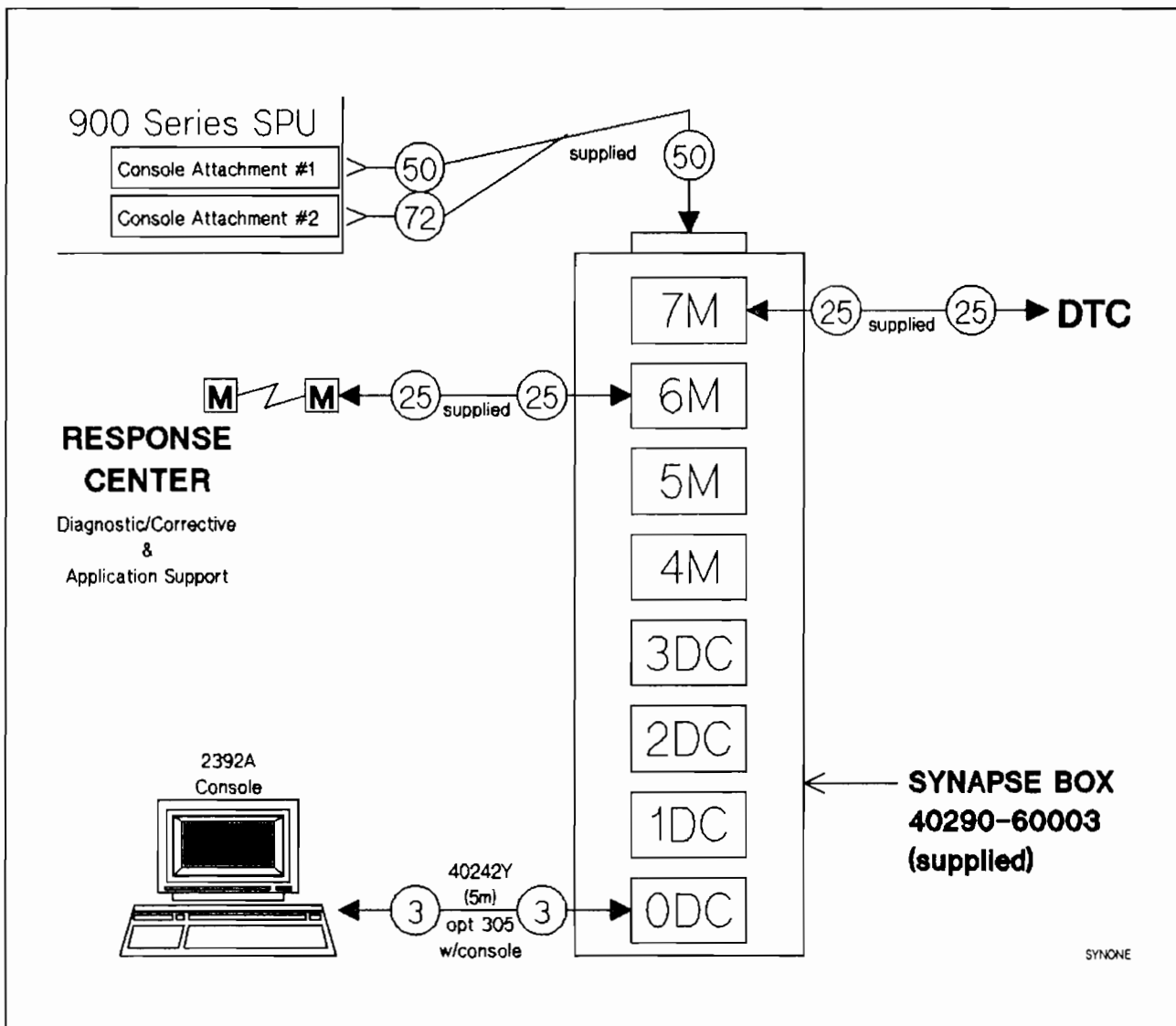


DTC-to-SPU Thin (10Base2) LAN Connection



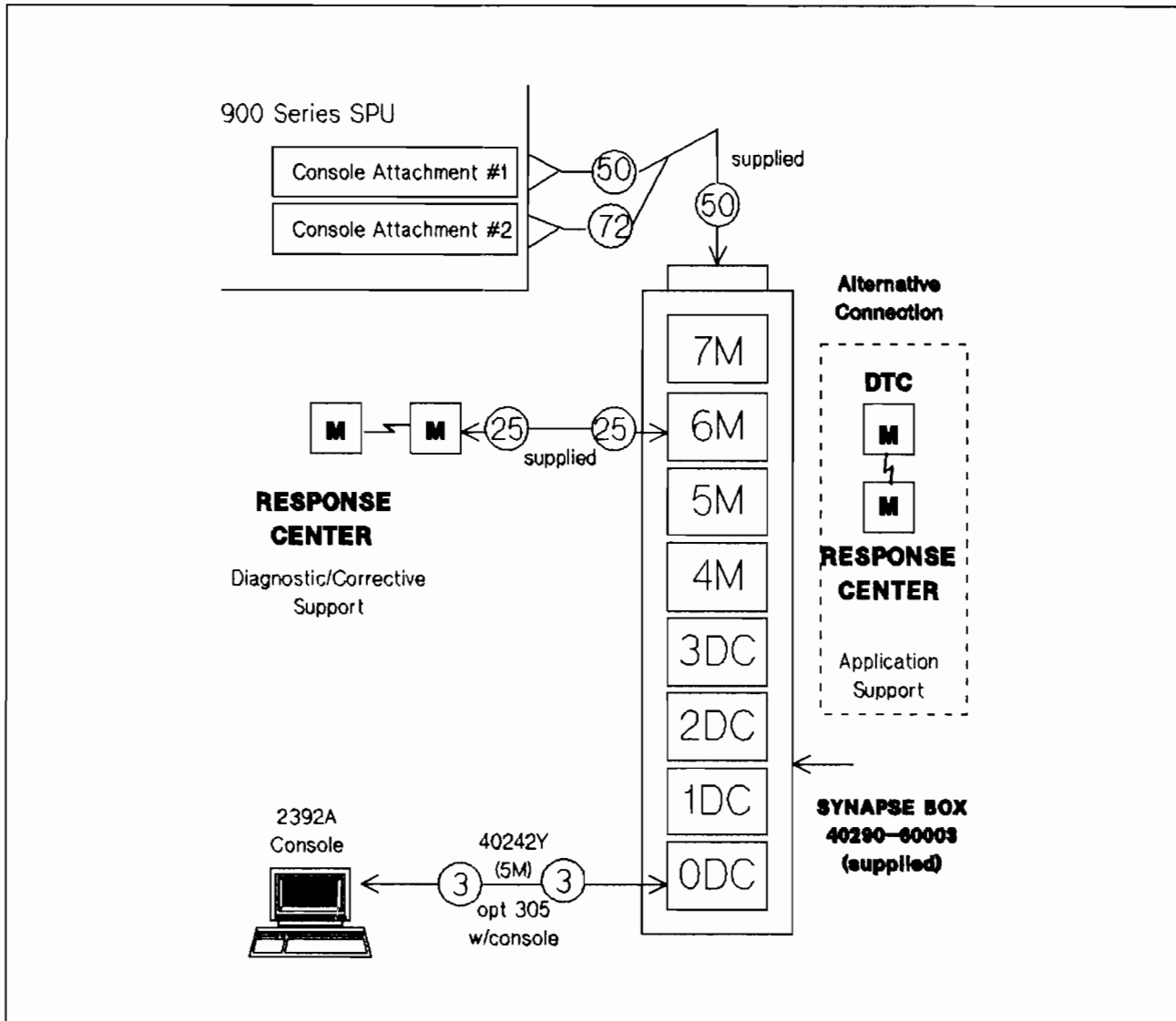
Console Cabling

DTC Console Connection (Preferred Method)



Console Cabling

Alternative DTC Console Connection



Workstation Cabling

MPE V HP 3000 Point-to-Point Terminal Cabling

Most of the cables in the table below may be ordered as options on the terminal or printer product. Please refer to a current HP 3000 Price Guide for specific option numbers.

Terminal or Printer	ADCC RS-232 (25-pin)	ATP/M, ATP37 RS-232 (3-pin)	ATP/M, RS-422 (5-pin)	U.S. Modem (25-pin)	European Modem (25-pin)
2382A* (port 1)	13242N/Y 40242C (5m)	13242X (5m)	N/A	13242N (5m)	13242M (5m)
239x (port 1)	40242M/C/Y (5m)	40242X (5m)	40242P (5m)	40242M (5m)	40242M (5m)
2392x (port 2 RS-232) 2621B*	40242M/C/Y (5m)	40242X (5m)	N/A	40242M (5m)	40242M (5m)
2622A 2623A+ 2624B+ 2626A* 2627A* (port 1)	13222N/C/Y (5m)	13222X (5m)	13222P (5m)	13222N (5m)	13222M (5m)
2625A+ 2628A (port 1)	13242N/Y 40242C (5m)	13242X (5m)	13242P (5m)	13242N (5m)	13242M (5m)
2624B+ 2626A* (port 2)	13242N/C/Y (5m)	13242X (5m)	N/A	13242N (5m)	13242M (5m)
264x* 307x*	13232N/Y/C ** (4.5m)	13232X (5m)	13232I (5m)	13232N (4.5m)	13232M (4.5m)

* Not supported on Series 37 or MICRO 3000/3000XE.

** Cable 13232Y not supported on 2647F.

- RS-232 connections may not exceed 15m (50 ft); RS-422 connections may not exceed 1220m (4000 ft).

+ Not supported on MICRO 3000.

Workstation Cabling

MPE V HP 3000 Point-to-Point Terminal Cabling (Cont.)

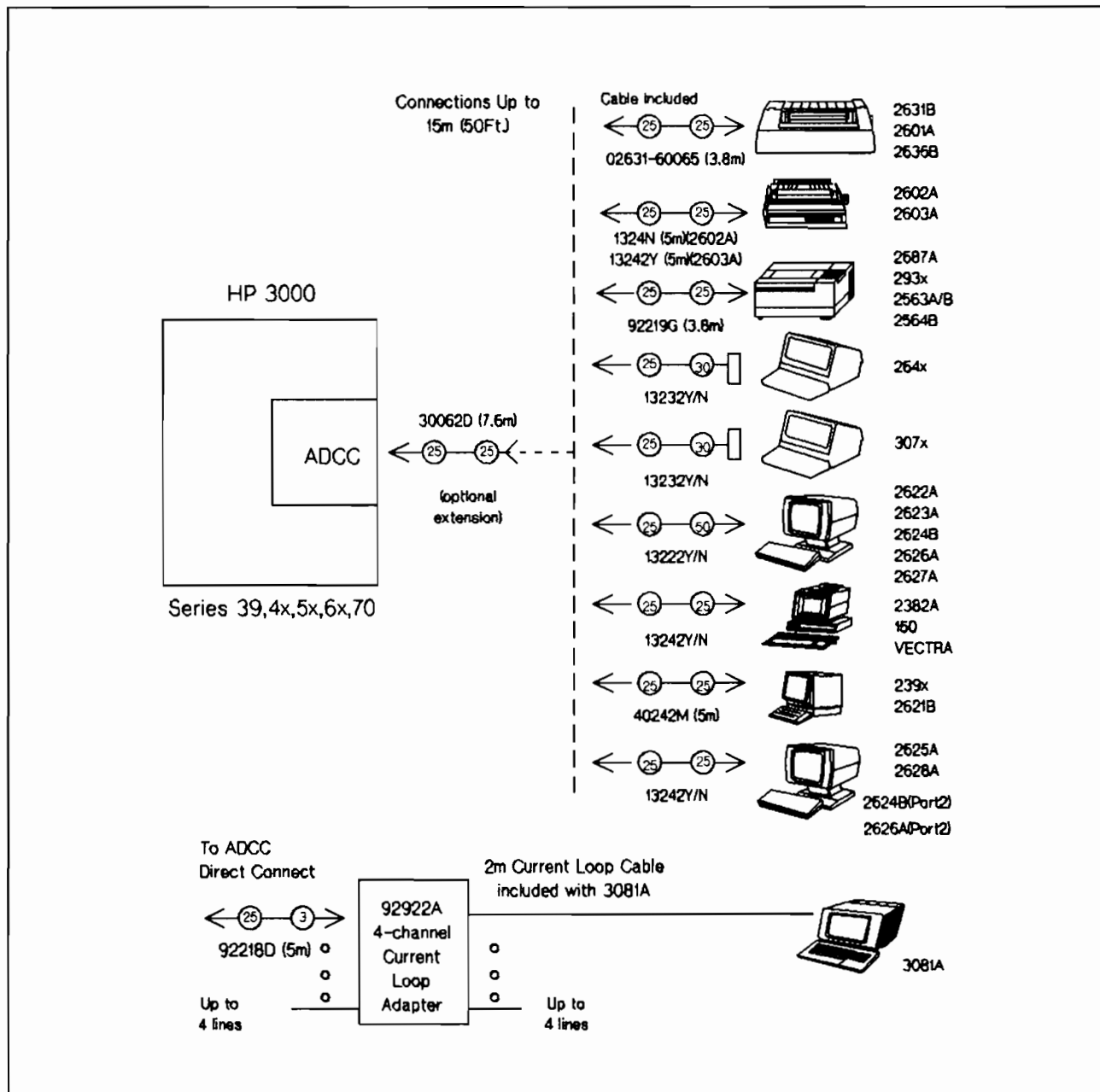
Most of the cables in the table below may be ordered as options on the terminal or printer product. Please refer to a current HP 3000 Price Guide for specific option numbers.

Terminal or Printer	ADCC RS-232 (25-pin)	ATP/M, ATP37 RS-232 (3-pin)	ATP/M RS-422 (5-pin)	U.S. Modem (25-pin)	European Modem (25-pin)
HP 150 (Touch- screen) Vectra	13242N/Y (5m)	13242X (5m)	13242P (5m)	13242N (5m)	N/A
2686A/D	13242N	92218D (5m) or 13242X	40242P	N/A	N/A
2601A	Cable included w/printer (3.8m)	13242X (5m)	N/A	N/A	N/A
2602A	13242N (5m)	13242X (5m)	N/A	N/A	N/A
2603A	13242X (5m)	13242X (5m)	N/A	N/A	N/A
293x	92219G (5m)	13242X (5m)	13242P (5m)	92219G (5m)	13242M (5m)
2687A/D	92219G (3.8m)	92218D (5m)	92216C (5m)	N/A	N/A
2563A/B 2564B	92219G (3.8m)	92218D (5m)	13242P (5m)	N/A	N/A
Extension Cables	30062D (7.6m)	30153A (15m)	30154A (30m)	30062C (7.6m)	30062C (7.6m)

- RS-232 connections may not exceed 15m (50 ft); RS-422 connections may not exceed 1220m (4000 ft).

Workstation Cabling

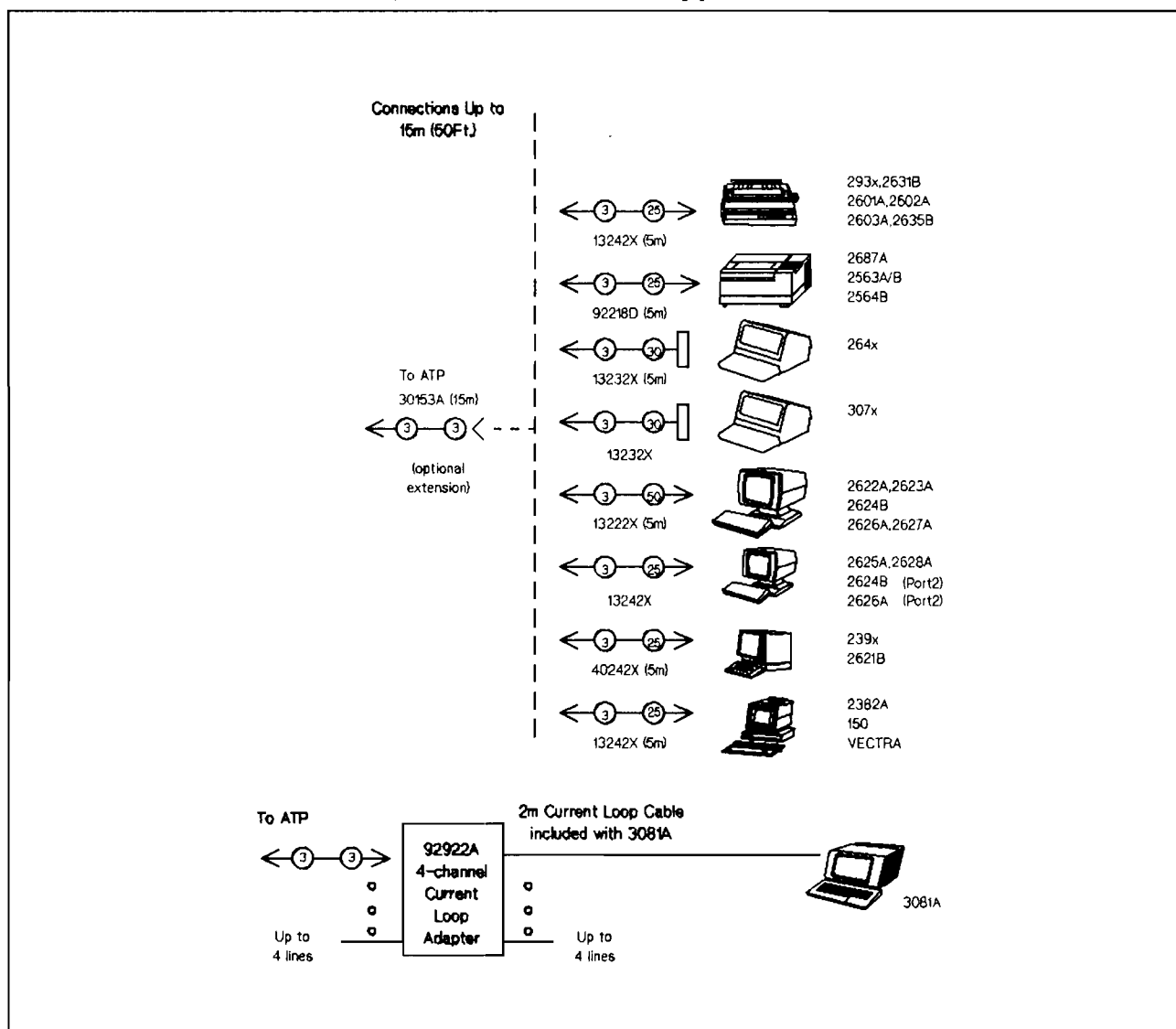
Point-to-Point Cable Configuration for ADCC (Direct Connect Type RS-232)



- The 3081A workstation is shipped with a 2m current loop cable to connect with either the 92922A four-channel or the 92923A single channel adapter. A longer cable may be substituted by ordering 92179H (maximum length: 150 meters).

Workstation Cabling

Point-to-Point Cable Configuration for ATP (Direct Connect Type RS-232)

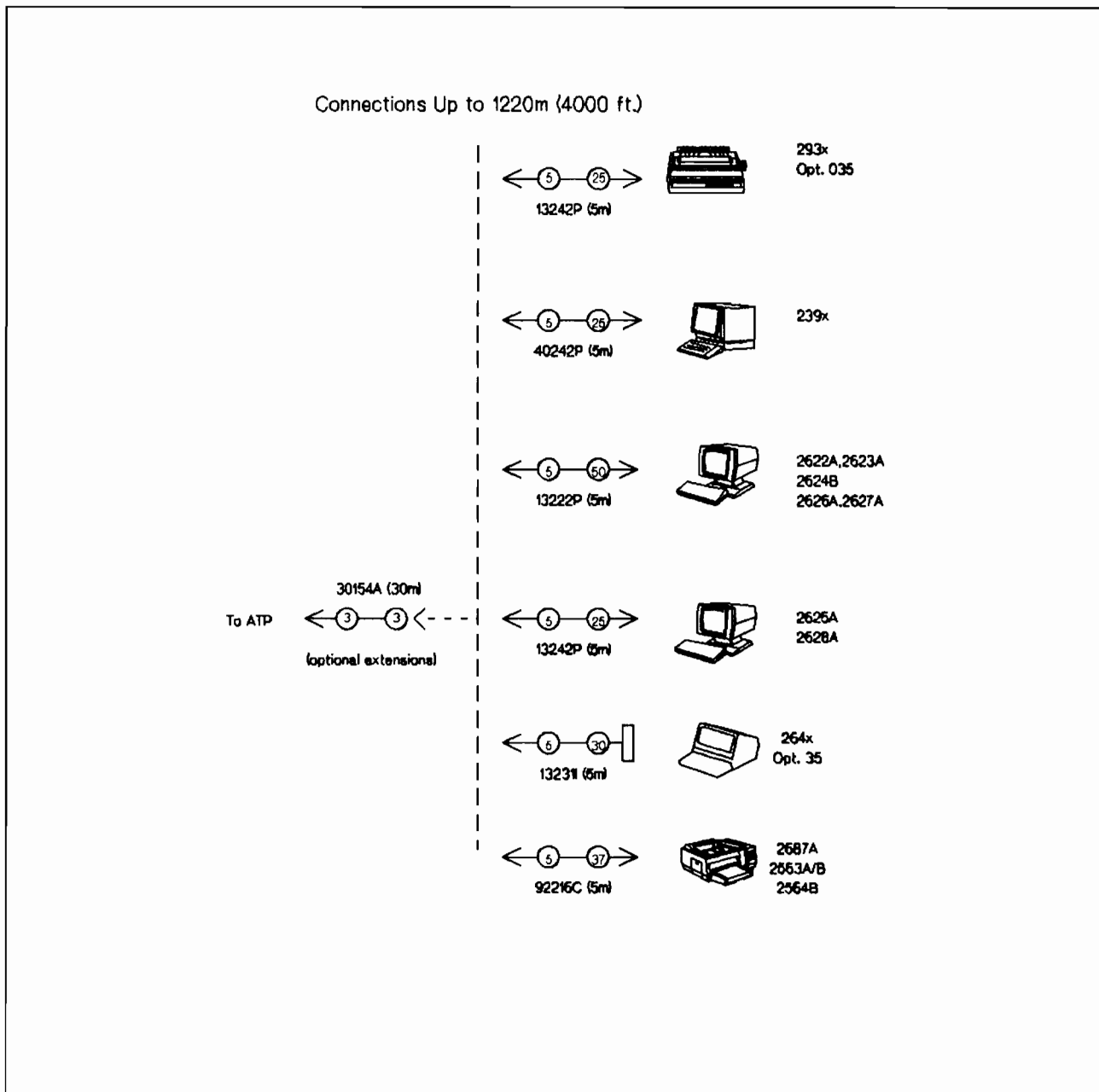


* An RS-232C interface cable for the ATP must be fabricated by the customer.

- Direct Connect Type 232 is an RS-232 implementation with a special HP three-pin connector.
- Adapter cable 30152A can convert installed terminals to an ATP configuration.
- The 3081A workstation is shipped with a 2m current loop cable to connect with either the 92922A four-channel or the 92923A single channel adapter. A longer cable may be substituted by ordering 92179H (maximum length: 150 meters).

Workstation Cabling

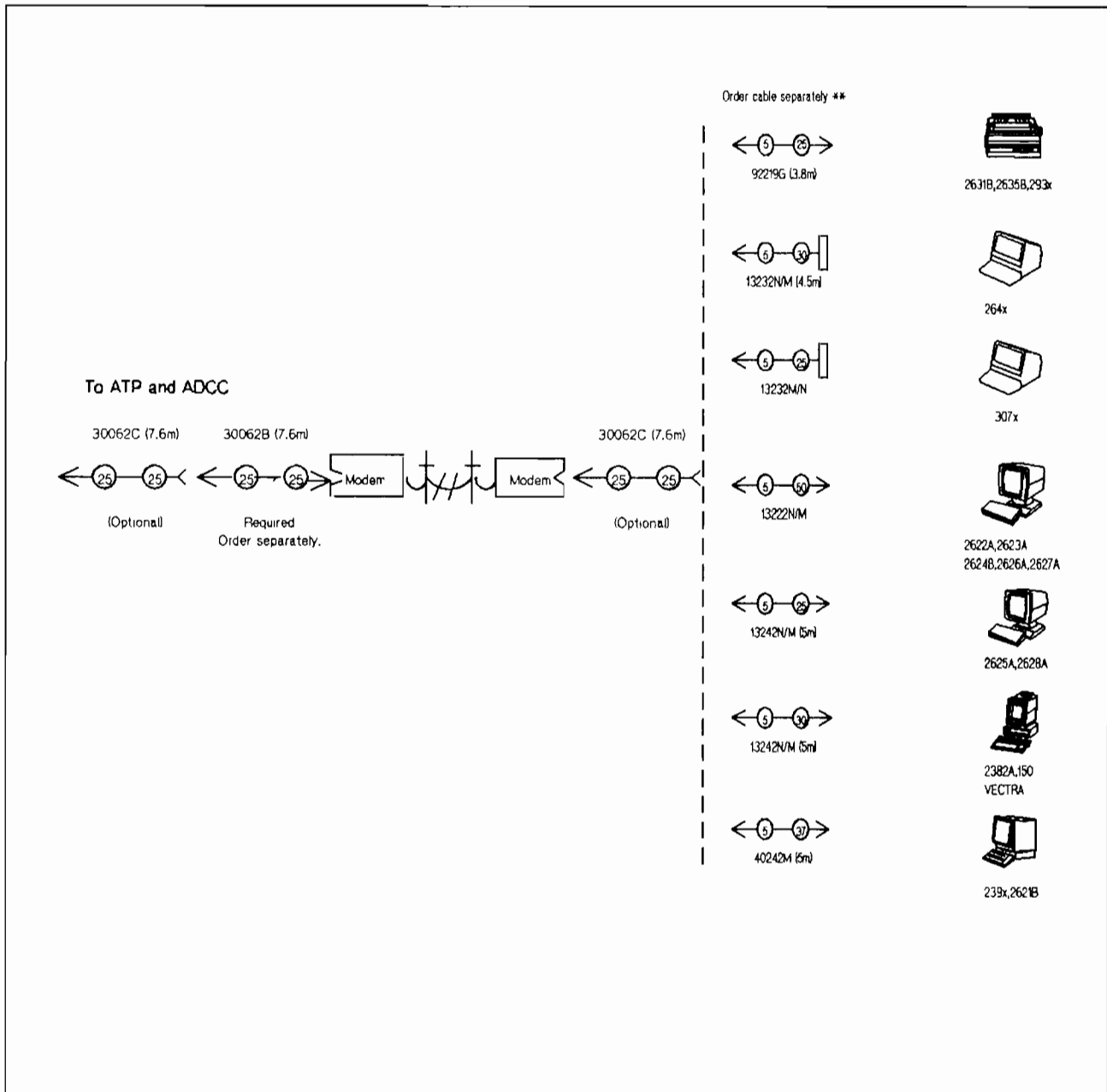
Point-to-Point Cable Configuration for ATP (Direct Connect Type RS-422)



- Direct Connect Type 422 is an RS-422 implementation with a special HP five-pin connector, available only on port 1 of terminal.
- HP Direct Connect Type 422 is not available on the 2621B or 2382A.
- Terminals must contain either 13266E, 13260E or Option 035 interface for use with HP Direct Connect Type 422. Exceptions are the 239x, 2625A, 2627A, and 2628A, which come standard with RS-422 capability.

Workstation Cabling

Point-to-Point Cable Configuration for ADCC and ATP (Remote)



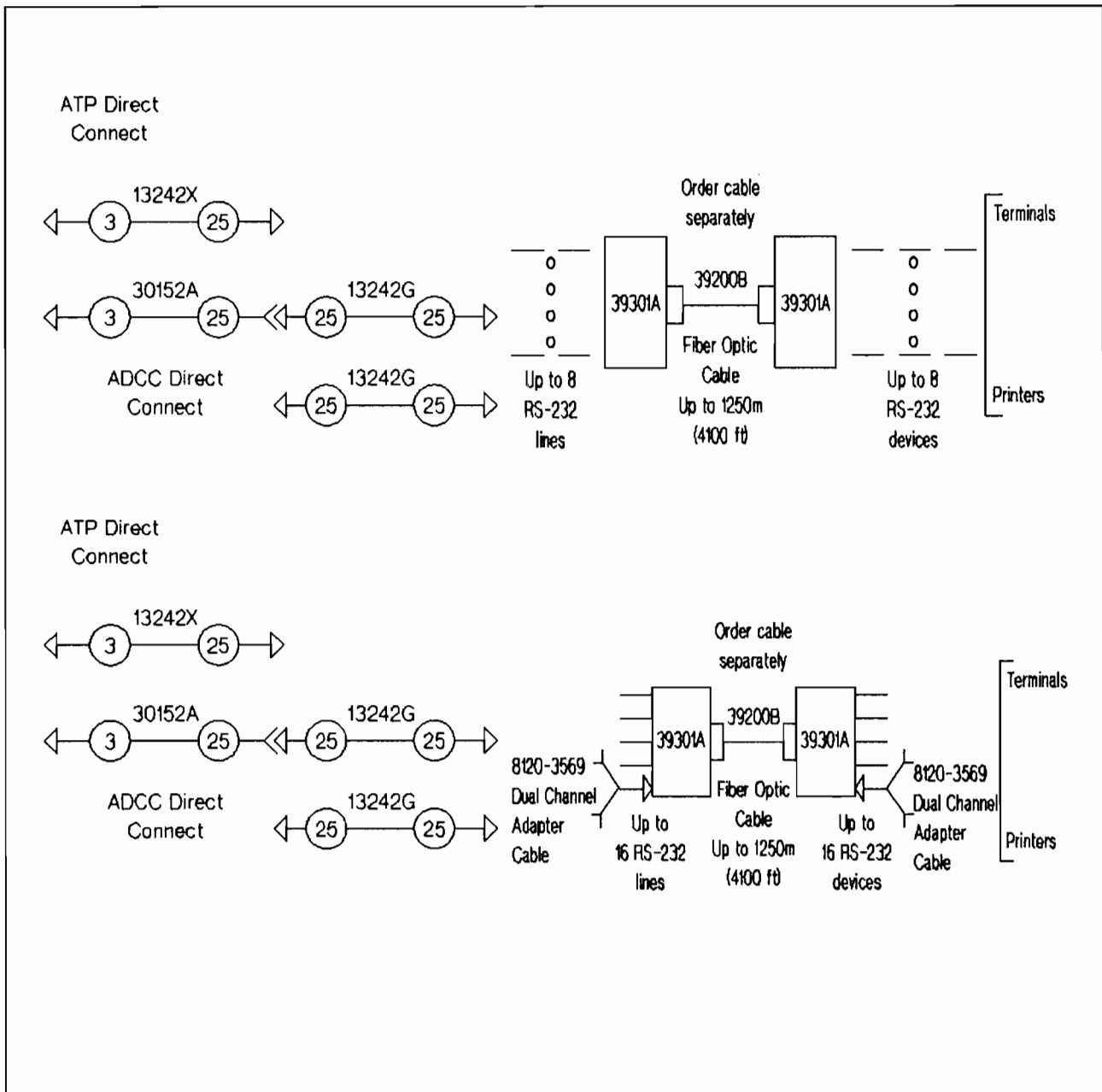
* For use with full duplex modems only.

** Cable included with 2631B and 2635B.

- For port 2 of 2626A/W, 2624A/B, and 2703A, order 13242M/N, male/male, 25-pin/25-pin, 5m.

Workstation Cabling

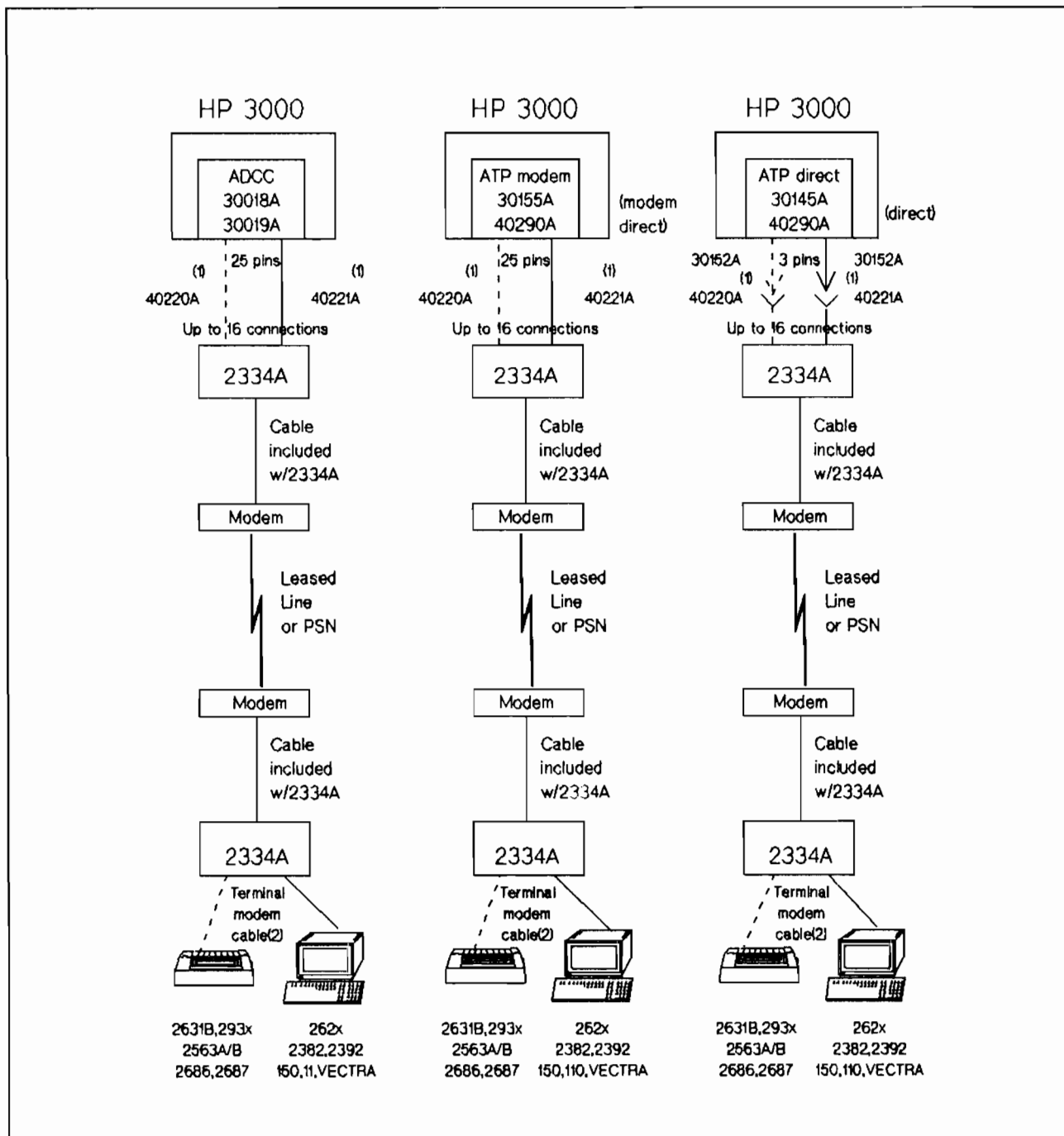
Point-to-Point Connections with RS-232 (v.24) Fiber Optic Multiplexer



- A 25-pin male RS-232 connector is required to connect with the 39301A Fiber Optic Multiplexer.
- Dual Channel Adapter Cable (8120-3569) allows up to 16 devices to be connected to a 39301A Fiber Optic Multiplexer. Eight cables per 39301A (16 per pair of 39301As) must be ordered to achieve this maximum.

Workstation Cabling

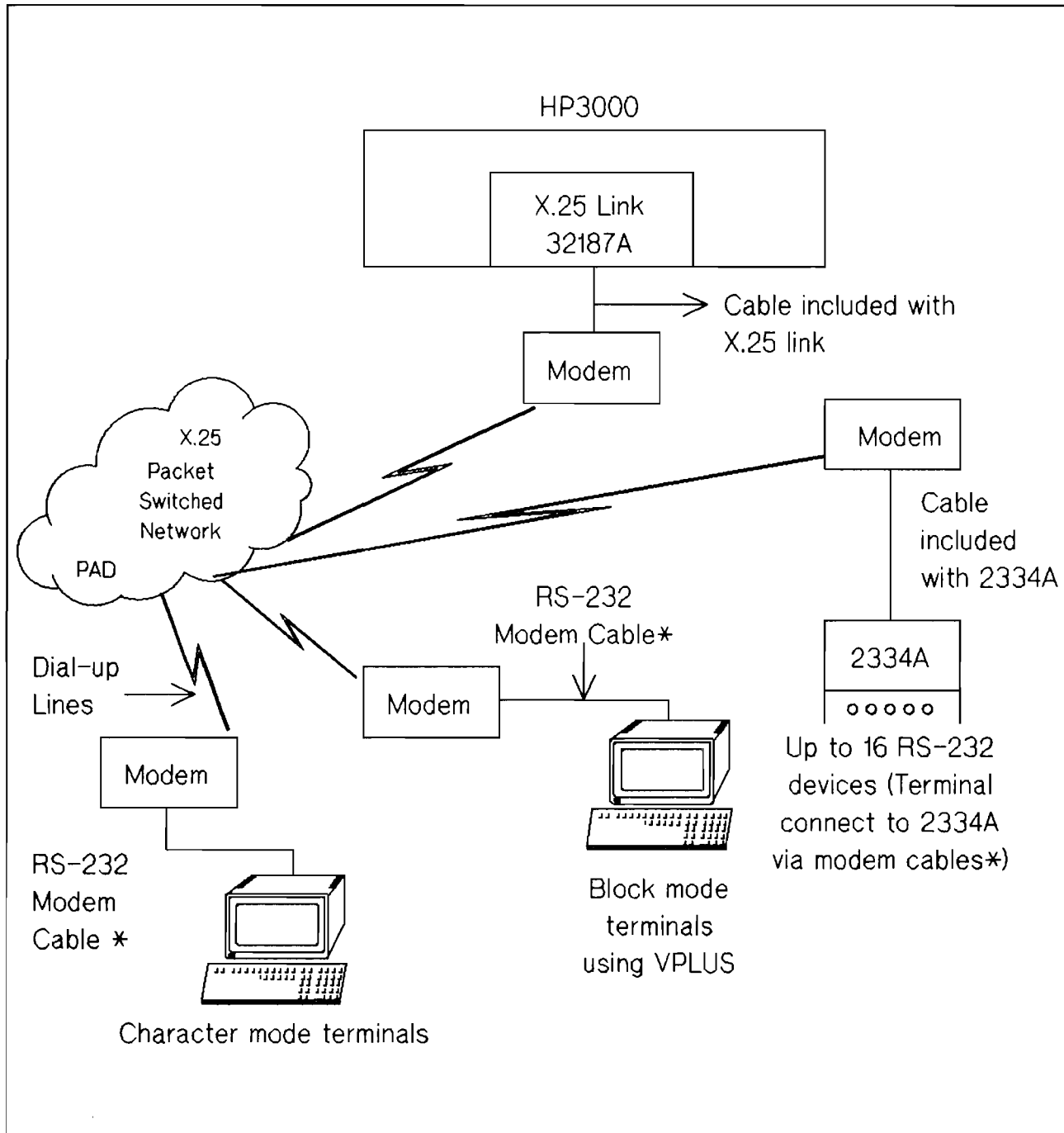
2334A Statistical Multiplexer Cabling



1. If the HP 3000 port is associated with an HP printer, use 40220A cable. If the HP 3000 port is associated with an HP terminal/PC, use 40221A cable.
2. See terminal cabling for correct modem cables for each RS-232-C line.

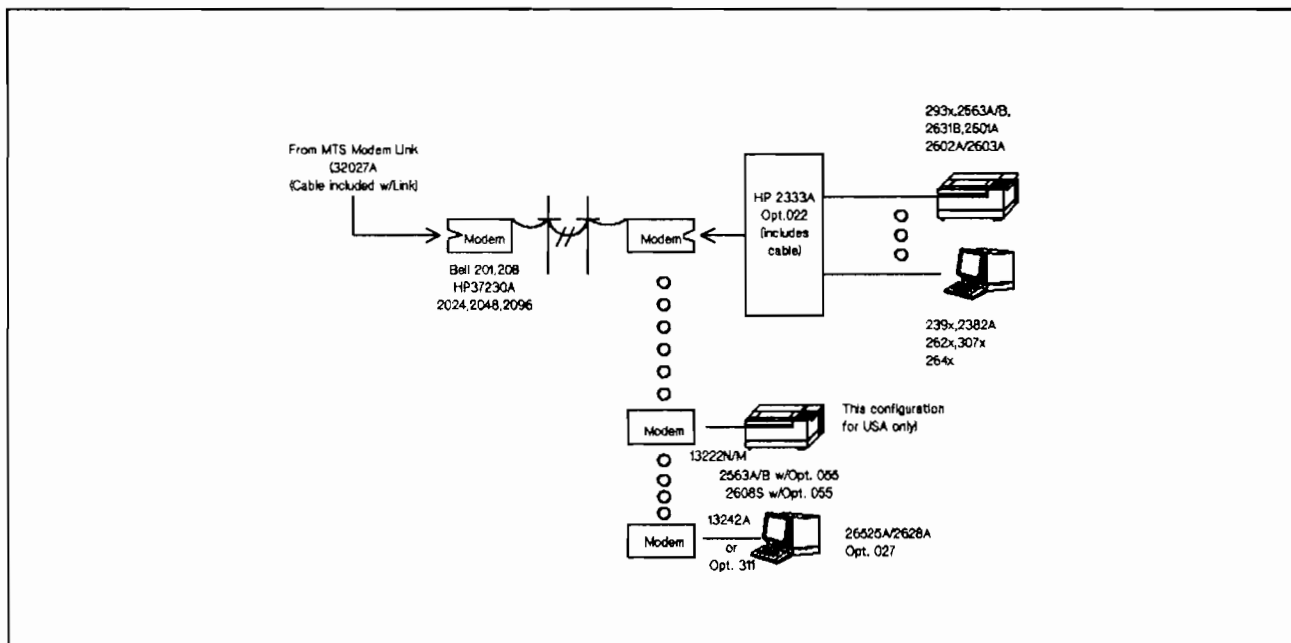
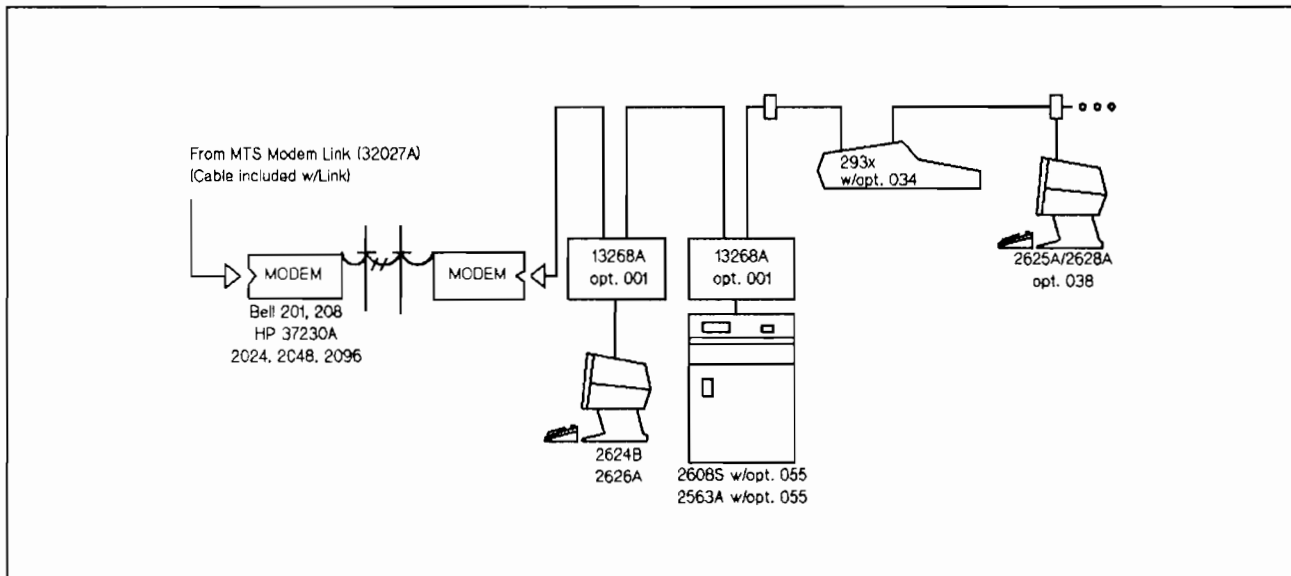
X.25 Workstation Cabling

X.25 Workstation Configurations via X.25 Network Link



Multipoint (MTS) Cabling

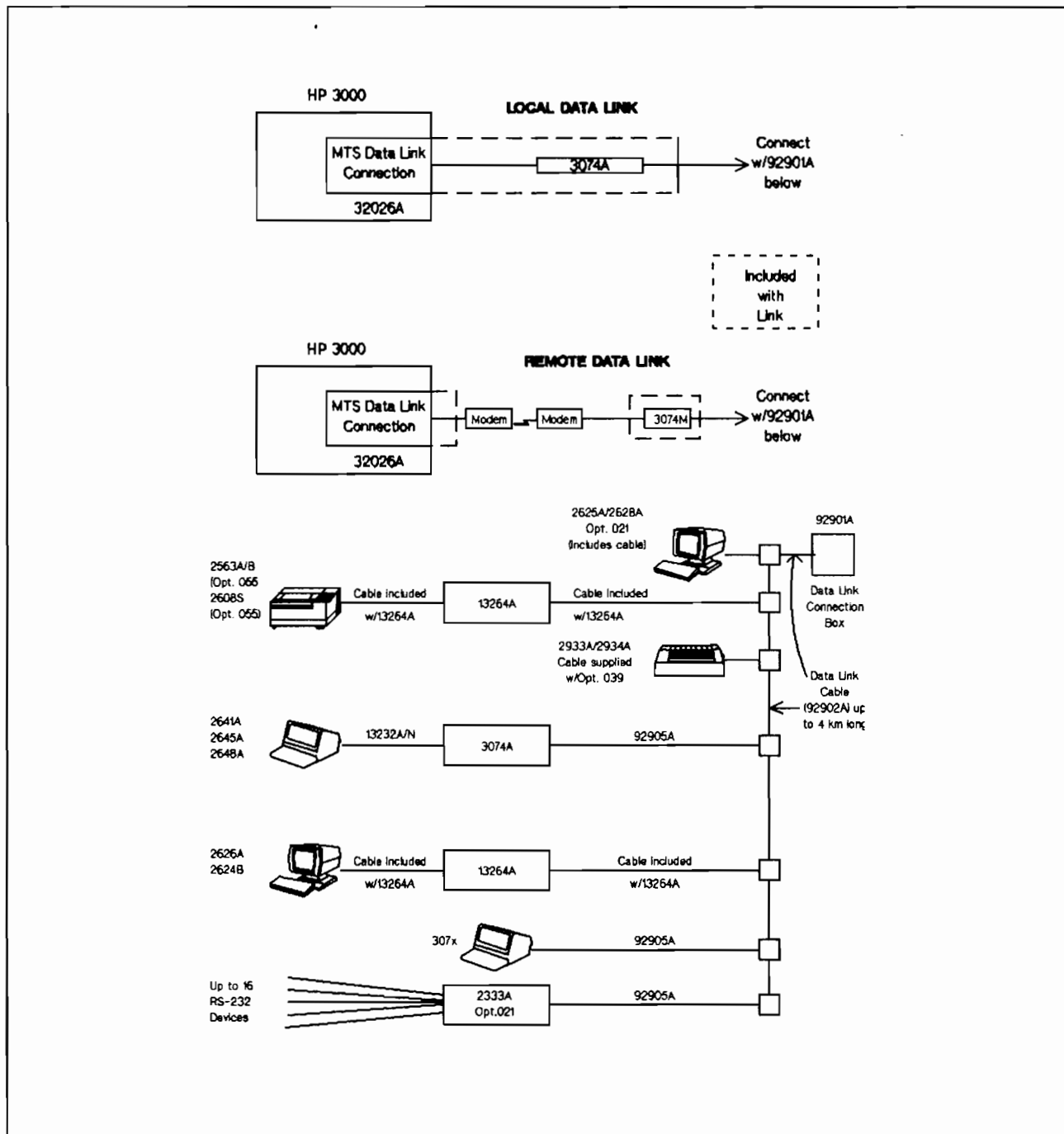
MTS Modem Link Connection (Synchronous)



- The MTS Modem Link (32027A) requires Multipoint Terminal Support Service Software (32025A/R).
- There can be only one 2608S printer on an MTS line.
- Multiple low-speed (serial) printers may be configured provided the aggregate printer speed does not exceed the line speed.
- Additional configuration examples may be found in the MTS Reference Manual (32193-90002).

Multipoint (MTS) Cabling

MTS Data Link Connection (32026A)



- The MTS Data Link requires Multipoint Terminal Support Service Software (32025A/R).
- Only one 2608S or 2563A is allowed on the Data Link when shared with terminals.
- Multiple low-speed (serial) printers may be configured provided the combined printer speed does not exceed the Data Link line speed.

Eavesdrop and Slave Configurations

HP 3000 Business Graphics	4-45
Eavesdrop Cabling	4-46
Graphics Tablet	4-47
Slaved HP-IB Plotters	4-48
Slaved Printers	4-49



HP 3000 Business Graphics Workstations

The HP 3000 Business Graphics Software products--HPEasyChart, DSG/3000, and HPDraw may be used with a variety of HP terminals, plotters, printer/plotters, printers, and graphics tablets.

A graphics workstation consists of any combination of the following products ordered separately:

1. A graphics terminal/workstation
2. A graphics plotter or printer/plotter
3. A graphics printer
4. A graphics tablet
5. A copy of graphics software

- HPEasyChart (32109A)
- DSG/3000 (32250A)
- HPDraw (32108A)
- or the HP 3000 Business Graphics Package (32110A) which includes all three of the products above.

The table below indicates which graphics terminals, plotters, printer/plotters, printers, and graphics tablets may be used in a graphics workstation.

DSG/3000 and HPEasyChart also support the following terminals for chart definition only (i.e., no screen graphics):

2382A
2622A
2624A/B
2626A/W
2641A
2642A
2645A

Hardware Supported Under HP 3000 Business Graphics Software-- HPEasyChart, DSG/3000, HPDraw

Graphics Terminals	Plotters and Printer/Plotters	Printers	Tablets ⁽¹⁾
2393A	7220A/C/S/T	2563A/B (3)	17623A
2623A	7221A/B/C/S/T	2564B (3)	
2625A (2)	7225A/B	2565A (3)	
2627A	7240A	2566A/B (3)	
2628A (2)	7245A/B	2567B (3)	
2647A/F	7440A	2608S (3)	
2648A	7470A	2680A (3)	
2703A	7475A	2688A	
HP 150	7550A (4)		
	7570A		
	7580A/B		
	7585A/B		
	7586B (5)		
	9872A/B/C/S/T		

(1) Tablet support applies only to HPDraw with the 2623A or 2627A terminal.

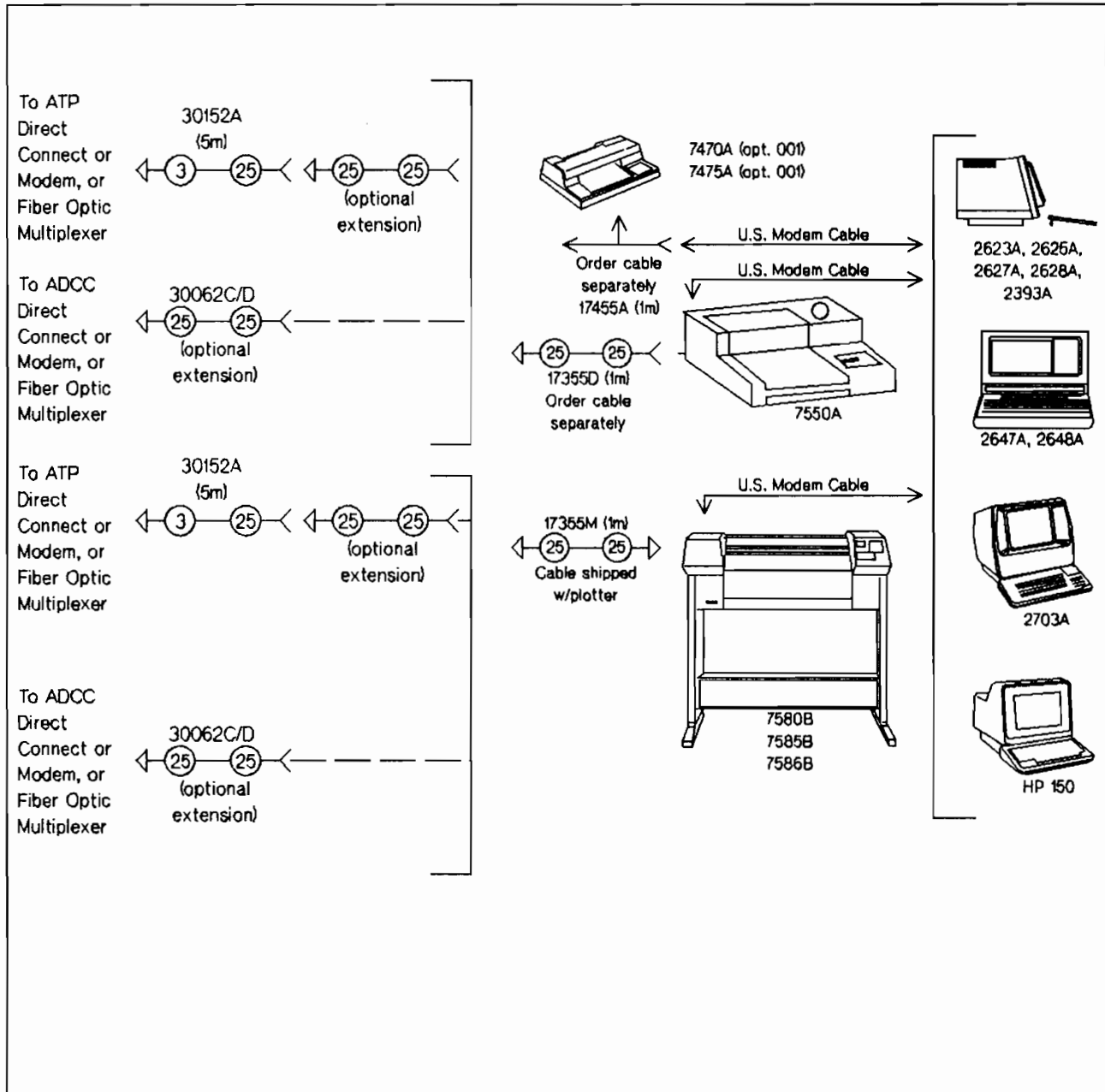
(2) Additional software is required to support graphics on these devices.

(3) HPDraw cannot utilize the replot feature of the 7550A.

(4) The 7586B only supports 7585B features on the HP 3000.

Eavesdrop Cabling

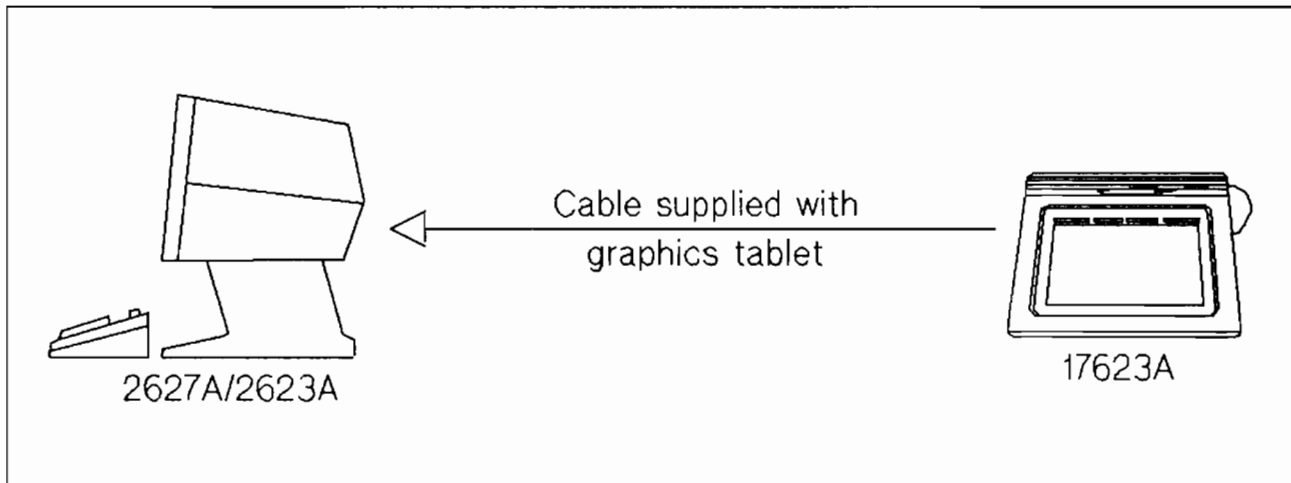
Eavesdrop Plotter Configuration



- Terminals and plotters may be supported via modem.

Graphics Tablet

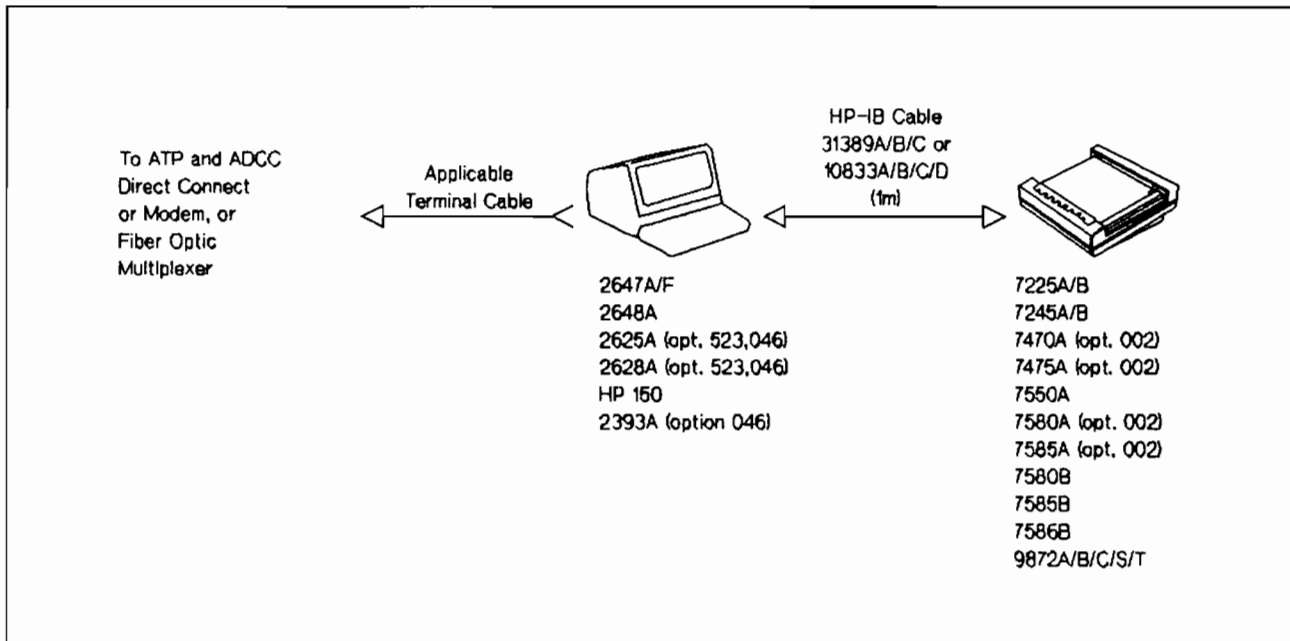
Graphics Tablet Configuration



- Tablet support applies only to HPDraw with the 2623A or 2627A graphics terminal. The 17623A Graphics Tablet can be used with HPDraw for function key selection, field value selection, figure sketching, and area filling of shapes.
- The tablet connects to an interface module which is mounted on the rear of the terminal. This module plugs into the keyboard receptacle on the terminal. The tablet and the keyboard both plug into the interface module.
- The terminal/tablet combination may be used with both the Direct Connect Terminal and Eavesdrop Plotter configurations.

Slaved HP-IB Plotters

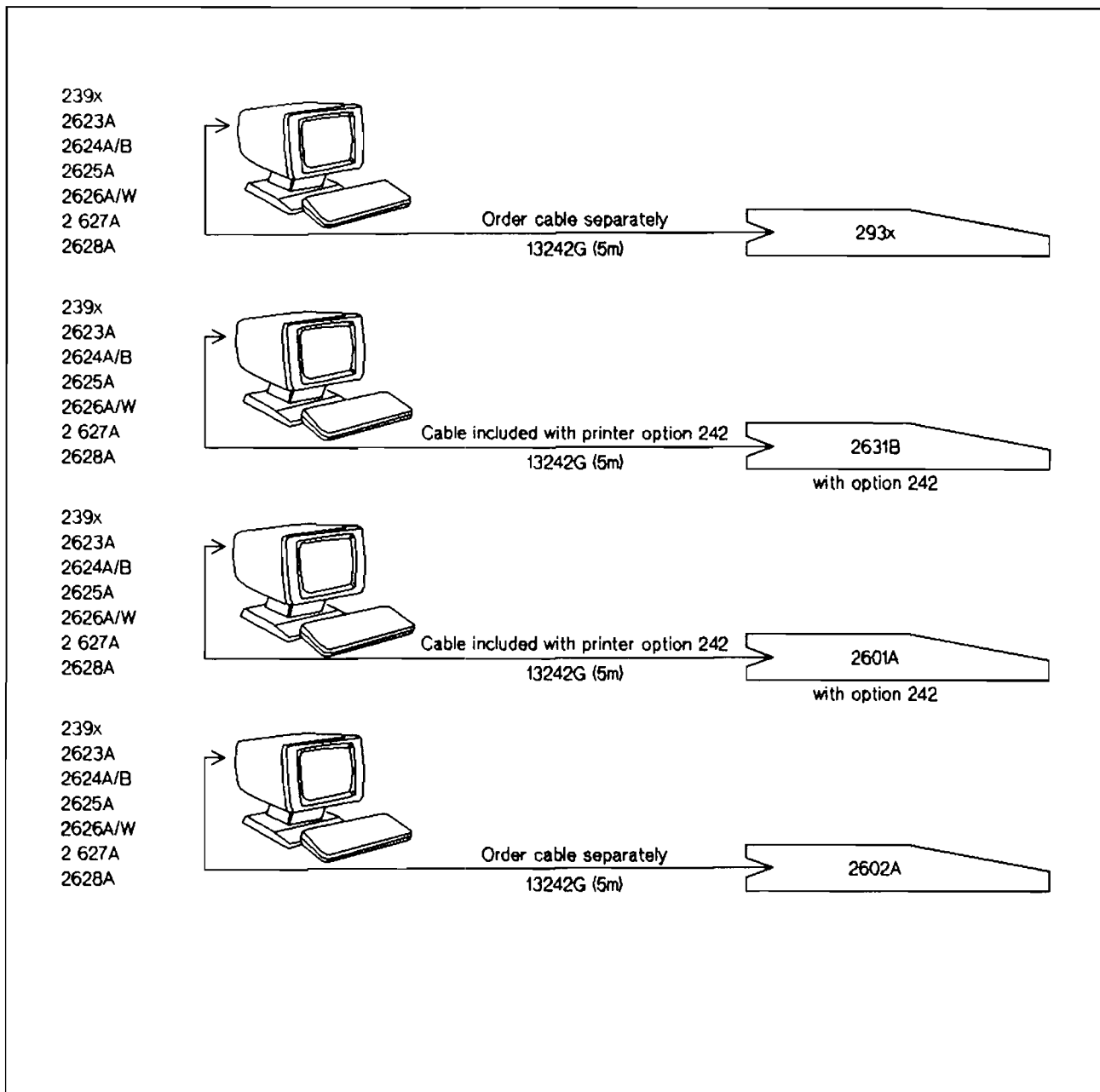
HP-IB Plotter Configuration



- Terminals and plotters may be supported via modem.
- See matrix for applicable terminal cables.
- The 7586B only supports 7585B features on the HP3000.

Slaved Printers

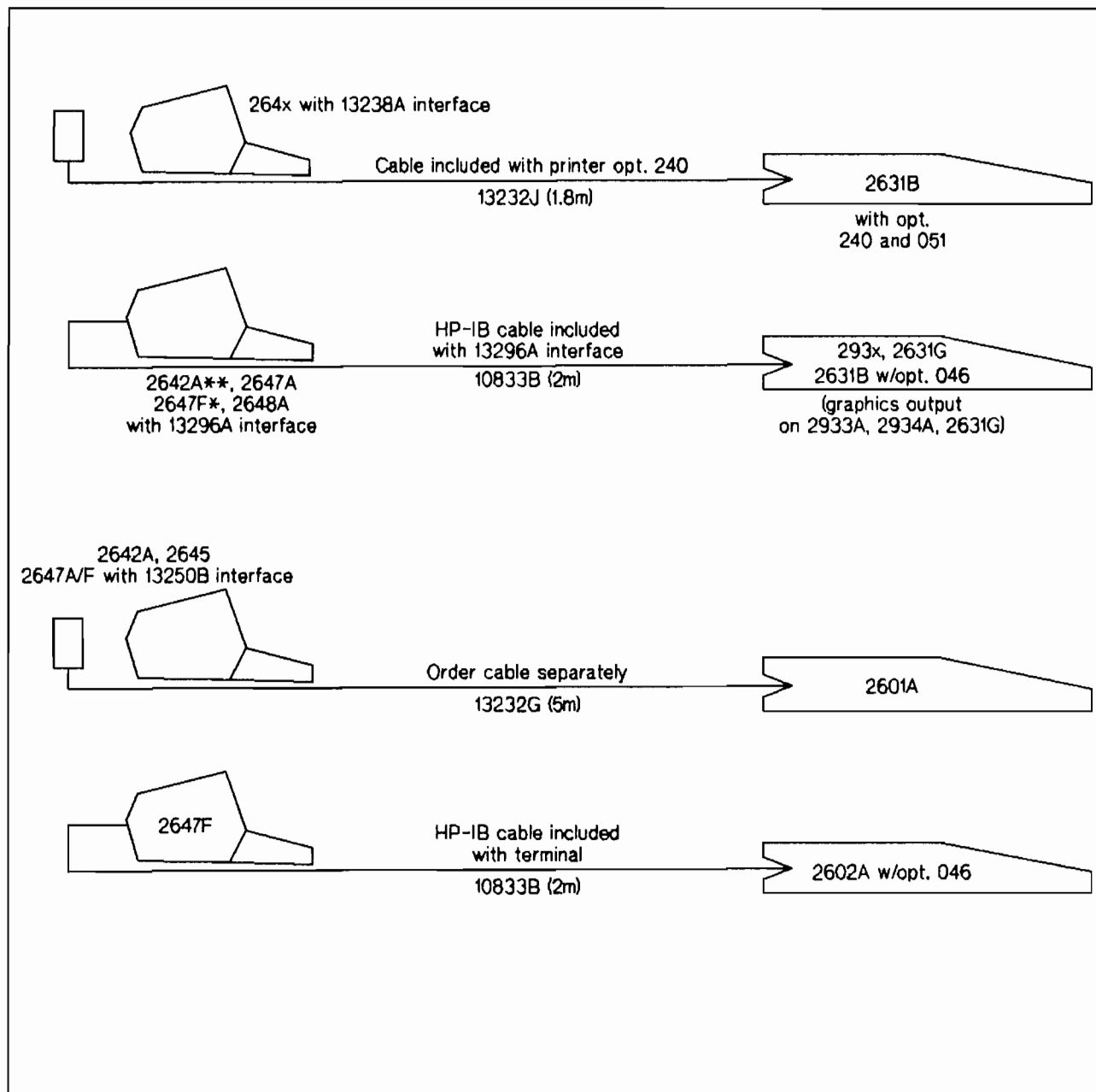
262x Workstations to Slave Printers



- Printer is interfaced to port 2 of 262x terminal, except on 2625A (port 1).
- The 2933A and 2934A printers support graphics output.
- Port 2 obtained on 239x by ordering Option 092.

Slaved Printers

264x Workstations to Slave Printers



* The 2647F has the 13296A HP-IB interface as standard.

** The 2642A does not support graphics.

- Option 240 for 2631B provides 13238A duplex register interfacing board for 264x terminal, 13232J cable, and substitutes 8-bit parallel interface for standard 2631B interface.

- The 2933A, 2934A, and 2631G printers support graphics output from the screens of the terminals indicated--not directly from the software used.

5

MANUALS

HP 3000 System Manuals	5-1
Software Manuals	5-2
Languages	5-2
Data Communications: Network Services	5-3
Data Communications: Network Links	5-4
Programmer Productivity Tools	5-5
Personal Productivity Center	
Software	5-6
Manufacturing Systems Application	
Software	5-8
Financial Systems Applications Software	5-11
Semiconductor Productivity Network	
Information Systems	5-13
Distribution Software	5-15
Additional Applications Software	5-16





HP 3000 System Manuals

In addition, the User Manual Set may be ordered as product number 30380M. (See the HP 3000 Price Guide for ordering and pricing information.)

Each HP 3000 system is shipped with a complete User Manual Set. Manuals included in the set are shown below.

Description	Manuals Included with System
Series 39,40,42,42XP,52,44,48,58, 64,68 and 70 User Manual Set	General Information Manual (5953-7583) DATACOMM Fundamentals (5957-4634) EDIT/V (03000-90012) FCOPY/V (03000-90064) Using the HP 3000 (03000-90121) MPE V System Operation and Resource Management Reference Manual (32033-90005) MPE V Commands Reference Manual (32033-90006) MPE V Intrinsic (32033-90007) MPE V Utilities Reference Manual (32033-90008) MPE V New User (32033-90009) New System User (32033-90021) MPE Quick Reference (32033-90023) MPE Segmenter (30000-90011) MPE Debug/Stack Dump (30000-90012) Compiler Library (30000-90028) QUERY/V Reference Manual (30000-90042) KSAM/V (30000-90079) MPE File System (30000-90236) HP VPLUS/V Reference Manual (32209-90001) VPLUS/V Forms (32209-90004) SORT-MERGE/V (32214-90002) Turbo IMAGE Reference Manual (32215-90050) NLS/V Reference (32414-90001) Site Planning and Preparation Set (30140-60085) (For Series 64, 68, and 70 only) Site Planning and Preparation Set (30000-60029) (For Series 39, 4x, 5x only) Diagnostic Manual (30070-60068) (For Series 39, 4x, 5x only) Installation Manual for Series 6x/70 (30140-90007) Installation Manual for Series 39, 40 and 42 (30170-90002) Installation Manual for Series 44 and 48 (30090-90002) Installation Manual for Series 52 (30179-90007) Installation Manual for Series 58 (30477-90013)

HP 3000 System Manuals

(Continued)

Description	Manuals Included with System
MICRO 3000/3000XE or Series 37/37XE	General Information Manual (5953-7583) MPE V System Operation and Resource Management Reference Manual (32033-90005) MPE V Commands Reference Manual (32033-90006) MPE V Utilities Reference Manual (32033-90008) MPE V New User (32033-90009) New System User (32033-90021) MPE Quick Reference (32033-90023) Site Planning and Preparation Set (30534-90002) (For MICRO 3000 only) Site Planning and Preparation Set (30474-90008) (For MICRO 3000/XE only) Diagnostic Manual (30070-60068) (For MICRO 3000/3000XE only) Installation Manual for MICRO 3000 (30534-90003) Installation Manual for MICRO 3000XE (30474-90001)

Software Manuals

Languages

Product Number	Description	Manuals Included with Software
32100A/R	SPL/V Compiler	SPL Pocket Guide (32100-90001) SPL Reference Manual (30000-90024) SPL Language Textbook (30000-90025)
32102B/R	FORTTRAN/V Compiler	FORTTRAN/V Reference Manual (32102-90001) FORTTRAN Pocket Guide (32102-90002)
32104A/R	RPG/V Compiler	RPG Reference Manual (32104-90001) RPG Listing Analyzer (32104-90003) RPG Utilities Reference Manual (32104-90006)
32105*/R	APL/V (runs on Series III only)	APL Reference Manual (32105-90002) APL Pocket Guide (32105-90003)
32106A/R	Pascal/V Compiler	Pascal Reference Manual (32106-90001) Pascal Pocket Guide (32106-90002)
31502A/R	HP Pascal/XL	HP Pascal Reference Manual (31502-90001) HP Pascal Quick Ref. Guide (31502-90003)
32111A/R	BASIC/V Compiler and Interpreter	BASIC for Beginners (03000-90025) BASIC Pocket Guide (03000-90050) BASIC Interpreter Manual (03000-90008) BASIC Compiler Reference Manual (32103-90001)
32116A/R Or 31501A/R	FORTTRAN 77 Compiler HP FORTRAN 77/XL	HP FORTRAN 77 Reference Manual (5957-4685) HP FORTRAN 77 Programmer's Guide (5957-4686) HP FORTRAN 77 Quick Reference Guide (5957-4687)
32213*/R	COBOL/V Compiler	Using COBOL: A Guide for the COBOL Programmer (32213-90003)
32233A/R Or 31500A/R	COBOL II/V Compiler COBOL II/XL	COBOL II Reference Manual (32233-90001)

A = "First Copy" of software

R = "Right-to-Copy" with sublicense

* The "First Copy" has been discontinued. The "Right-to-Copy" products will be supported until 1987.

Software Manuals

Data Communications: Network Services

Product Number	Description	Manuals Included with Software
30239A/R	Workstation Configurator	Workstation Configurator Reference Manual (30239-90001) Point-to-Point Workstation I/O Reference Manual (30000-90250)
30245A/R	SNA NRJE Network Remote Job Entry	SNA NRJE User/Programmer Reference Manual (30245-90001)
30247A/R	SNA IMF Interactive Mainframe Facility	SNA IMF User/Programmer Manual (30247-90001) SNA IMF Installation and Troubleshooting Manual (30247-90002)
30248A/R	RJE Remote Job Entry	2780/3780 Emulator Reference Manual (30000-90047)
30249A/R	MRJE Multileaving Remote Job Entry	MRJE Reference Manual (32191-90001) MRJE User/Programmer Reference Manual (30249-90001)
30250A/R	IMF Interactive Mainframe Facility (3270) Emulator	IMF Reference Manual (32229-90001)
32025A/R	MTS Multipoint Terminal Support	MTS Reference Manual (32193-90002)
32185A/R	DS Distributed Systems Software	DS HP 3000 to HP 3000 User/Programmer Reference Manual (32189-90001) DS HP 3000 to HP 1000 Reference Manual for the HP 3000 User (32189-90005)
32344A/R	Network Services/3000	NS/3000 User/Programmer Reference Manual (32344-90001)

A= "First Copy" of software

R = "Right-to-Copy" software

Software Manuals

Data Communications: Network Links

Product Number	Description	Manuals Included with Software
30242A	LAN Link	No manuals.
30246A	SNA Link	SNA Link Node Management for NRJE Reference Manual (30246-90001) Getting Started with SNA (30246-90002) SNA Link Services Reference Manual (30246-90003)
30251A	BSC Link	No manuals
30270A 30271A	Point-to-Point Hardwired/Modem Network Link	DS HP 3000 to HP 3000 Network Administrator Manual (32189-90002)
32187A	X.25 Network Link	X.25 for the HP 3000 Reference Manual (32191-90001) DS HP 3000 to HP 3000 Network Administrator Manual (32189-90002)

Software Manuals

Programmer Productivity Tools

Product Number	Description	Manuals Included with Software
32244A/R	Dictionary/V Data Dictionary	Dictionary/V Reference Manual (32244-90001)
32245A/R	Report/V Report Writer	Report/V User's Guide (32245-90001)
36070A/R	Business Report Writer	Business Report Writer Reference Manual (36070-90001)
32246A/R	Inform/V User's Report Generator	Inform/V User's Guide (32246-90001)
32247A/R	Transact/V Transaction Processing Language and Processor	Transact/V Reference Manual (32247-90001)
32248A/R	Programmer Productivity Package (Report/V, Dictionary/V, and Transact/V)	Dictionary/V Reference Manual (32244-90001) Report/V User's Guide (32245-90001) Transact/V Reference Manual (32247-90001)
32258A/R	HP Report Writer Package (Report/V, Inform/V, Dictionary/V)	Report/V User's Guide (32245-90001) Inform/V User's Guide (32246-90001) Dictionary/V Reference Manual (32244-90001)
32350A/R	HP Toolset Program Development System (Requires COBOLII/V or Pascal/V)	HP Toolset Reference Manual (32350-90001)
36044A/R	HP Toolset/XL (Requires COBOL II/XL, Pascal/XL, FORTRAN 77/XL)	Toolset Reference Manual (32350-90001)
32351A/R	COBOL Productivity Package (HPToolset, COBOLII, Dictionary)	HPToolset Reference Manual (32350-90001) COBOLII/V Reference Manual (32233-90001) Dictionary/V Reference Manual (32244-90001)

A = "First Copy" of software

R = "Right-to-Copy" with sublicense

Software Manuals

Personal Productivity Center Software

Product Number	Description	Manuals Included with Software
32108A/R	HPDraw Text and Figure Presentation Graphics	HPDraw Reference Manual (32108-90001)
32109A/R	HPEasyChart Chartmaker Graphics	HPEasyChart Reference Manual (32109-90001)
32112A/R	HPMENU Interactive Office Menu Facility	HPMENU Administration Manual (32112-90001) HPMENU Quick Reference Guide (32112-90002)
32113A/R	HPMap	HPMap Reference Guide (32113-90001) Mapping Application Casebook (32113-90002)
32119A/R	HPWORD Intrinsic	Programmatic Access to HPWORD Documents Manual (32119-90001)
32120A/R	HPWORD Word Processing *	Using HPWORD (32120-90035) Getting Started with HPWORD (32120-90032) Printing with HPWORD (32120-90034) HPWORD Quick Reference Guide (32120-90033) HPWORD Administrators Manual (32120-90022) HPWORD Self-paced Training Learning HPWORD Part One (32120-90020) Learning HPWORD Part Two (32120-90021)
32132A/R	HPListKeeper Personal Information Mgmt.	HPListKeeper User's Guide and Reference Manual (32132-90001)
32133A/R	Deluxe Visicalc/3000	Deluxe Visicalc/3000 User's Manual (32133-90005) Deluxe Visicalc/3000 Quick Reference Guide (32133-90006)
32250A/R	HP DSG/3000 Decision Support Graphics	HP DSG/3000 Reference Manual (32250-90001) HP DSG/3000 Quick Ref. Guide (32250-90002)

A = "First Copy" of software

R = "Right-to-Copy" with sublicense

* = Foreign language versions are available. Contact your HP sales representative for details.

Software Manuals

Personal Productivity Center Software (Cont.)

Product Number	Description	Manuals Included with Software
36561A/R	HPSPELL - American Dictionary	HPSPELL Handbook (36561-90001) HPSPELL Administration (36561-90002)
36561UA/R	HPSPELL - British Dictionary	HPSPELL Handbook (36561-90001) HPSPELL Administration (36561-90002)
36562A/R	HPSPELL - American & English Dictionary	HPSPELL Handbook (36561-90001) HPSPELL Administration (36561-90002)
36570A/R	HPDESKMANAGER Electronic Mail System	Using HPDESKMANAGER III (36570-90038) Programmatic Access to HPDESKMANAGER III Manual (36570-90040) HPDESKMANAGER Reference Cards (pack of ten) (36570-90039) Administrators Guide to HPDESKMANAGER III (36570-90004) HPDESKMANAGER III Trainer's Notes (36570-90029) Using HPSLATE (36570-90030)
36572A/R	HPTELEX Interface Software*	HPTELEX Reference Guide (36572-90001) HPTELEX Quick Reference Guide (36572-90002)
36573A	Series 100/Desklink	Series 100/Desklink Reference Manual (36573-90001)
36576A/R	HPSLATE Screen Based Word Processing*	HPSLATE Reference Guide (36576-90001) Learning HPSLATE (36576-90002)
36578A/R	TDP/3000 Text and Document Processor	TDP/3000 Reference Manual (36578-90001) Using TDP/3000 (36578-90002) TDP/3000 Quick Reference Guide (36578-90003)
36580A/R	IFS/3000 Interactive Formatting System	Format Design Reference Manual (36580-90001)
36581A/R	IDS/3000 Interactive Design System	Character & Logo Design Reference Manual (36581-90001) Forms Design Reference Manual (36581-90002)

A = "First Copy" of software

R = "Right-to-Copy" with sublicense

* = Foreign language versions are available. Contact your HP sales representative for details.

Software Manuals

Manufacturing Systems Application Software

Product Number	Description	Manuals Included with Software
32260A/R	Materials Mgmt/3000 Model 25 *	Same as 32916 without Factory Order.
32267A/R	Advanced Customization for MM/3000	System Reference Manual Set (32265-60001) Advanced Customization Guide (32267-90001)
32270A/R	Production Mgmt/3000 Model 30	System Administrator Manual (32270-90031)
32275A/R	HP Maintenance Management Model 20	Managing Parts Catalog and Work Orders- User Reference (32276-90001) Managing Parts Catalog and Work Orders- User Tutorial (32276-90002) System Reference Volume 1 (32276-90005) System Reference Volume 2 (32276-90006)
32276A/R	HP Maintenance Management Model 30	Managing Parts Catalog and Work Orders- User Reference (32276-90001) Managing Parts Catalog and Work Orders- User Tutorial (32276-90002) System Reference Volume 1 (32276-90005) System Reference Volume 2 (32276-90006) Managing Inventory and Purchase Orders- User Reference (32276-90003) Managing Inventory and Purchase Orders- User Tutorial (32276-90004)
32279A/R	Advanced Customization for HP Maintenance Mgmt.	Advanced Customization Guide (32267-90001) System Reference Manual Volume 1 (32276-90005) System Reference Manual Volume 2 (32276-90006)
32620A/M	HP JIT	HP JIT User Reference Manual (32620-90001) HP JIT System Reference Manual (32620-90002)
32630A/R	Advanced Customization for PM/3000	Advanced Customization Guide (32267-90001) System Reference Manual Volume 1 (32270-90038) System Reference Manual Volume 2 (32270-90043)

A = "First Copy" of software

R = "Right-to-Copy" with sublicense

M = "Right-to-Copy" without sublicense

* = "A" product not available in the U.S.

Foreign language versions of MM/3000 and PM/3000 are available except where noted otherwise.

Manufacturing Systems Application Software (Cont.)

Product Number	Description	Manuals Included with Software
32631A/R	Advanced Customization for HP JIT	Advanced Customization Guide (32267-90001) System Reference Manual (32620-90002)
32903A/R	Materials Mgmt/3000 Model 20	Parts and Bills of Materials (32260-90002) Routings and Workcenters (32260-90003) Managing Inventory and Orders (32260-90113) System Reference Manual Set (32265-60001)
32904A/R	Materials Mgmt/3000 Model 10	Parts and Bills of Materials (32260-90002) Routings and Workcenters (32260-90003) Managing Inventory and Orders (32260-90113) System Reference Manual Set (32265-60001)
32905A/R	Material Requirements Planning/3000	Material Requirements Planning (32260-90008)
32906A/R	Master Production Scheduling/3000	MPS and Rough Cut Resource Planning (32260-90001)
32907A/R	Standard Product Costing/3000	Standard Product Costing (32260-90009)
32908A/R	Factory Order Entry/3000 (English Only)	Factory Order Entry (32908-90001)
32909A/R	Lot Control and Traceability/3000	Managing Inv. and Orders for Lot Control (32909-90001) Genealogy Reporting and Archive Mgmt. (32909-90002) Parts and Bills for Lot Control (32909-90003)
32910A/R	Materials Mgmt/3000 Model 10 to 20 Upgrade	Customization and Operations (32265-90002)
32911A/R	Production Mgmt/3000 Model 20	Defining the Shop (32270-90001) Managing the Order (32270-90002) Data Capture Terminal (32270-90004) System Reference Manual Volume 1 (32270-90038) System Reference Manual Volume 2 (32270-90043)

A = "First Copy" of software

R = "Right-to-Copy" with sublicense

Foreign language versions of MM/3000 and PM/3000 are available except where noted otherwise.

Software Manuals

Manufacturing Systems Application Software (Cont.)

Product Number	Description	Manuals Included with Software
32912A/R	Production Mgmt/3000 Model 10	Defining the Shop (32270-90001) Managing the Order (32270-90002) Data Capture Terminal (32270-90004) System Reference Manual Volume 1 (32270-90038) System Reference Manual Volume 2 (32270-90043)
32913A/R	Capacity Requirements Planning/3000	CRP and IOA (32270-90003)
32914A/R	Production Mgmt/3000 Model 10 to 20 Upgrade	Customization and Operations (32265-90002)
32916A/R	Materials Mgmt/3000 Model 30	Parts and Bills of Material (32260-90002) Routings and Workcenters (32260-90003) Managing Inventory and Orders (32260-90113) Material Requirements Planning (32260-90008) Standard Product Costing (32260-90009) MPS and Rough Cut Resource Planning (32260-90001) Factory Order Entry (32908-90001) System Reference Manual Set (32265-60001)
32917A/R	Factory Order Entry/3000 for Existing Customers	Factory Order Entry (32908-90001)

A = "First Copy" of software

R = "Right-to-Copy" with sublicense

Foreign language versions of MM/3000 and PM/3000 are available except where noted otherwise.

Software Manuals

Financial Systems Applications Software

Product Number	Description	Manuals Included with Software
32296A/R	HPPay	HPPay User's Manual (32296-90001) HPPay user Reference Manual (32296-90002) HPPay System Reference Manual (32296-90003) HPPay Report Writer Manual (32296-90005)
32305A/R	HP General Ledger	HP Financial Accounting System Operation Manual (32304-90001) HP Financial Accounting System Customization Manual (32304-90002) HP General Ledger User's Manual (32305-90001) HP General Ledger System Customization Manual (32305-90002)
32306A/R	HP Dual Ledger	HP Dual Ledger User's Manual (32306-90001) HP Dual Ledger System Reference (32306-90002)
32307A/R	HP Allocator	HP Allocator User's Manual (32307-90001) HP Allocator System Ref. Manual (32307-90002)
32308A/R	HP Accounts Payable	HP Financial Accounting System Operation Manual (32304-90001) HP Financial Accounting System Customization Manual (32304-90002) HP Accounts Payable User's Manual (32308-90001) HP Accounts Payable System Reference Manual (32308-90002)
32309A/R	HP Accounts Receivable	HP Financial Accounting System Operation Manual (32304-90001) HP Financial Accounting System Customization Manual (32304-90002) HP Accounts Receivable User's Manual (32309-90001) HP Accounts Receivable System Reference Manual (32309-90002)
32310A/R	HP Report Facility	HP Report Facility User's Manual (32310-90001)
32311A/R	HP Interface Facility	HP Interface Facility User's Manual (32311-90001)

A = "First Copy" of software

R = "Right-to-Copy" with sublicense

Software Manuals

Financial Systems Applications Software (Cont.)

Product Number	Description	Manuals Included with Software
32312A/R	HP General Accounting	HP Financial Accounting Systems Operation Manual (32304-90001) HP General Ledger User's Manual (32305-90001) HP Accounts Payable User's Manual (32308-90001) HP Accounts Rec. User's Manual (32309-90001)
32920A/R	HP Production Cost Management	HP PCM Inventory Cost Control User Manual (32920-90001) HP PCM Implementation and Maintenance Manual (32920-90002) HP PCM System Reference Manual Volume 1 (32920-90003) HP PCM Variance Cost Control User Guide (32920-90006) HP PCM System Reference Manual Volume 2 (32920-90007) HP PCM Product Evaluation Guide (32920-90301)

A = "First Copy" of software

R = "Right-to-Copy" with sublicense

Software Manuals

Semiconductor Productivity Network Information Systems

Product Number	Description	Manuals Included with Software
33900A/R/Z	IC-10 Integrated Circuit Manufacturing System	IC-10 Volume 1, Setting Up (33900-90106) IC-10 Volume 2, Collecting Data (33900-90107) IC-10 Volume 3, Using Reports (33900-90109) IC-10 Installation/Maintenance (33900-90205)
33902A/R/Z	TD-10 Transaction and Display Processor	TD-10 Master Glossary of Terms (33902-90020) TD-10 User Manual (33902-90100) TD-10 Quick Reference Manual (33902-90500)
33903A/R/Z	EN-10 Engineering Data Collection Sys.	EN-10 User Manual (33903-90100)
33904A/R/Z	EA-10 Engineering Analysis System	EA-10 User Manual (33904-90100) EA-10 Operations Manual (33904-90200) EA-10 Stat Guide (33904-90900)
33911A/R/Z*	CA-10 Cost Accounting System Module I	CA-10 Volume 1, Getting Started (33912-90100) CA-10 Volume 2, Reporting Cycle (33912-90101) CA-10 Volume 3, Using Runjob (33912-90102) CA-10 Volume 4, Reports (33912-90103)
33912A/R*	CA-10 Cost Accounting System Module II	See 33911Z Manual Set.
33913A/R/Z	PL-10 Manufacturing Planning System	PL-10 User Manual (33913-90100) PL-10 System Administrator Manual (33913-90500) PL-10 Self-Paced Training (33913TA)
33920A/R/Z	OL-10 Operation Level Tracking System	OL-10 User Manual (33920-90201) OL-10 Field Description Guide (33920-90202)
33921A/R/Z	PC-10 Process Control/Equip. Supervision	PC-10 User Manual (33921-90100) PC-10 Field Description Guide (33921-90102)
33930A/R/Z	TC-10 Tester Collection/Data Stuffer	TC-10 User Manual (33930-90100)
33931A/Z	Nexus Utilities Source Code	Nexus Utilities Manual Set (33931-90100)

A = "First Copy" of software

R = "Right-to-Copy" with sublicense

Z = Manual without software.

* = Requires division approval.

Software Manuals

Semiconductor Productivity Network Information Systems (Cont.)

Product Number	Description	Manuals Included with Software
33942JA/JR	ENHANSYS LEA Extract Interface	Manuals shipped directly from ENHANSYS, Inc.
33943JA/JR	ENHANSYS Data Transport	Manuals shipped directly from ENHANSYS, Inc.
33944JA/JR	ENHANSYS Base System	Manuals shipped directly from ENHANSYS, Inc.

Software Manuals

Distribution Software

Product Number	Description	Manuals Included with Software
36401A/M	HP SFD II System for Distributors	Technical Document Set (36401K) includes: Sales Order Manual Inventory Management Manual Accounts Receivable Manual Purchase Order Manual Accounts Payable Manual General Ledger Manual Data Base Technical Manual User Manual Set (36401Z) includes: User's Guide Self Study Manual User's Guide Introduction Manual User's Guide Problems & Solutions
36403A/M	HP SFD I System for Distributors	All manuals listed for HP SFD II and System Manager's Reference Set (36403Z) includes: System Function Manual, Reports Manual, and the Operations Manual.
36414A/M	HP INVISON	Two copies (2) HP INVISON User Manual (36414Z)
36415A/M	OM/3000 Order Management	User Manual Set (36415Z) includes: User's Guide Self Study Manual User's Guide Introduction Manual User's Guide Problems & Solutions Technical Document Set (36415K) includes: Sales Order Manual Inventory Management Manual Accounts Receivable Manual Data Base Technical Manual

A = "First Copy" of software

M = "Right-to-Copy" without sublicense

Software Manuals

Additional Applications Software

Product Number	Description	Manuals Included with Software
30302A/M	Silhouette/3000	Silhouette Reference Manual (30302-90001)
32180A/R	APS/3000 Application Program Sampler	APS/3000 Reference Manual (32180-90001) APS/3000 Pocket Guide (32180-90003)
32199A/R	Flexible Disccopy/ 3000	Flexible Disccopy Manual (32199-90001)
32205B/R/M	Scientific Library	Scientific Library Reference Manual (30000-90027)
32238A/M	OPT/3000 On-Line Performance Tool	OPT/3000 Reference Manual (32238-90001) Two (2) OPT/3000 Pocket Cards (32238-90002)
32900B/R	SIS/3000 Student Information System	SIS/3000 Reference Manual (32900-90001) SIS/3000 Technical Manual (32900-90005) SAS/3000 Reference Manual (32901-90001) SAS/3000 Technical Manual (32901-90005)
32902A/R	CIS/3000 College Information System	CIS/3000 Reference Manual (32902-90003) CIS/3000 Technical Manual (32902-90005)

A = "First Copy" of software

R = "Right-to-Copy" with sublicense

M = "Right-to-Copy" without sublicense



6

Software and Hardware Support

HP 3000 Software Support Services	6-1
Configuring Software Support	6-3
Hardware Maintenance Services	6-5
System Maintenance Services	6-5
Workstation Product Services	6-6
Hardware Maintenance Matrices	6-8





HP 3000 SOFTWARE SUPPORT SERVICES

Hewlett-Packard offers a broad range of software support services, designed with flexibility and cost-effectiveness in mind, to ensure customer satisfaction with HP 3000 computer systems. Since support needs differ, a range of services is available to tailor a support plan appropriate to each customer.

Account Management Support (AMS)

The cornerstone of Account Management Support (AMS) is an account-assigned Systems Engineer (SE). The SE performs regularly scheduled Support Management Reviews at the customer's site, providing an opportunity to establish a comfortable, ongoing relationship. Software Release Planning sessions, conducted prior to each major software release, enable customers to better plan and manage the update process. These activities ensure that the customer successfully utilizes HP software and support services. In addition, Account Management Support customers receive all the benefits of Response Center Support.

Features

- Account-assigned Systems Engineer
 - Support Management Reviews
 - Software Release Planning
- Access to HP's Response Center for telephone assistance
- HP Remote Support
- HP TREND REPORT
- Software problem reporting and the Software Status Bulletin
- Right to use FOS software, firmware, and manual updates on one system
- HP 3000 Communicator (digest of articles relevant to programming the HP 3000)

Custom Support Plan (CSP)

For Account Management Support customers requiring support beyond the personalized assistance already included, HP now offers an annual support plan tailored to fit each customer's individual needs (subject to local availability). The Custom Support Plan (CSP) provides a means for delivering specific additional services such as extra account visits, multiple site support coordination, consulting services, or training courses. CSPs are available to all Account Management Support customers.

Response Center Support (RCS)

Response Center Support provides over the telephone from one of several HP Response Centers. The goal is to provide assistance to customers with critical problems within 15 minutes, while providing a two-hour response in all other cases. Actual response times are typically under one hour. RCS is an attractive alternative for customers performing little or no development work, or for customers experienced with HP systems that no longer require the personalized, local assistance provided with AMS.

Response Center Support customers also receive all FOS updates and material provided through Software Materials Subscription.

Features

- Access to HP's Response Center for telephone assistance
- HP Remote Support
- HP TREND REPORTS
- Software problem reporting and the Software Status Bulletin
- Right to use FOS software, firmware, and manual updates on one system
- HP 3000 Communicator (digest of articles relevant to programming the HP 3000)

Software Materials Subscription (SMS)

Software Materials Subscription keeps customers current on changes and improvements to HP software. Updated software and documentation material arrive by mail, while a technical periodical and bulletin for users provides application hints and current information on software. Since SMS includes no Software Engineering assistance, either on-site or by telephone, any customer selecting the service should be self-sufficient and prepared to pay separately for any needed HP assistance. Naturally, any Software Engineering assistance is available on a time and material basis.

Features

- Right to use software, firmware, and manual updates on one system.
- Software problem reporting through the mail and the Software Status Bulletin.
- HP 3000 Communicator (digest of articles relevant to programming the HP 3000).

HP Remote Support

HP Remote Support is a standard feature of AMS, RCS, and additional system coverage for the HP 3000. The HP Support Link II (dedicated support modem) is provided with most systems* to allow software assistance remotely. This ability increases uptime through quicker, more effective support. HP Remote Support includes many important benefits:

Rapid Assistance - Your HP Support Link II makes it possible to provide most software support without the additional time required for responding on-site. For example, software patches can easily be downloaded when needed. However, if on-site support is necessary to resolve problems, remote diagnostics provide for more rapid resolution because the Software Engineer has been briefed with the results of the remote interrogation of your system.

Access to the Worldwide Resources of the HP Support Network - with HP Remote Support, a team of hardware and software specialists can rapidly focus on complex problems.

NOTE: HP Remote Support may not be available in all locations. Consult the local HP office to determine availability.

Additional System Coverage (ACS)

Customers with more than one HP 3000 who want to support additional systems from a central location may order additional system coverage. All telephone and on-site assistance is provided through the central site system manager on behalf of problems identified at the additional system site.

Features

- On-site assistance through the central system
- Response Center coverage through the central system.
- HP Remote Support through the central system.
- Right to copy and use FOS support materials delivered to the central site (direct delivery of materials is also available).
- Delivery and installation of firmware updates

Additional Response Center Caller

This service provides an additional Response Center caller for AMS, RCS, and Additional System Coverage customers. Each additional caller is provided the same Response Center benefits as the System Manager. The service is orderable as many times as desired by personnel trained in the same manner as the System Manager; each person must be specified by name as the authorized caller. All callers must be HP trained.

*Series 37 and MICRO 3000/3000XE customers receive the HP Support Link II Modem if AMS or RCS support is ordered with the Operating System at the time of system purchase.

Product Structure

All subsystem software products are grouped into "Categories" such as Data Communications, Languages, and Utilities.

Applications software products are grouped into "Families" such as Manufacturing, Office, and Factory Automation Applications.

"Category" support extends the level of support on the operating system to all subsystem software products falling in that category. For Account Management customers this means the right to call the Response Center with questions or problems, and if the problem is still unresolved, their assigned System Engineer can provide assistance.

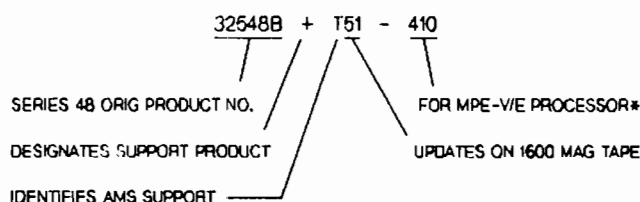
"Family" support performs the same function as category support, but is independent of the level of support on the operating system; that is, applications software may have a different level of support than the operating system. For example, a customer may purchase Response Center Support for their operating system and subsystems software, and purchase Account Management Support for their Manufacturing Applications such as MM/3000. If a customer orders Software Materials Subscription on the operating system, however, mixing support levels is not allowed.

If a customer orders Software Materials Subscription on the operating system, all subsystem and application software can only be supported on the SMS level.

CONFIGURING SOFTWARE SUPPORT

Support Services Product Numbering

As shown below, support products are ordered using the original product number and a plus (+) symbol followed by a three character suffix. The first character of the suffix is a letter that identifies the software support service.



* Processor options are required only for selected products.

Letter	Software Support Service
C	Category Support
H	Response Center Support
P	Additional Response Center Caller
Q	Manual Update Service
S	Software Materials Subscription
T	Account Management Support
V	Additional System Coverage
W	Extended Software Materials Subscription
J	Custom Support Plan
V	Extended Category Support
V	Extended Family Support
N	Software Notification Service
G	HP3000 Startup Response Center Support

The last two characters designate update media. A media option must always be specified for the operating system on the central system. All subsystem and application software updates are automatically delivered to customers on the same media as the operating system.

Software Support For Operating Systems

Central System

AMS (T) - Account Management Support -
Includes a local account SE, one Response Center caller (System Manager) and alternate for telephone assistance, and a Software Materials Subscription. The example above shows how to order AMS for a Series 48 running MPE-V/E.

RCS (H) - Response Center Support - Supports one Response Center caller and one alternate for telephone assistance and provides a Software Materials Subscription. RCS for a Series 48 running MPE-V/E would be ordered as 32548B+H51-410.

SMS (S) - Software Materials Subscription - Provides software and manual updates, Software Status Bulletin, and HP 3000 Communicator magazine. SMS for a Series 48 running MPE-V/E would be ordered as 32548B+S51-410.

Additional System Coverage and Additional Response Center Caller

ASC (V) - Additional System Coverage - Extends AMS or RCS coverage of the central site operating system to one additional system. All support is delivered through the central system manager. ASC includes the right to make one copy of the central site operating system material updates for use on an additional system. ASC for a Series 48 running MPE-V/E would be ordered as 32548B+V00-410. A media option is required for an additional system if:

- The customer wants Hewlett-Packard to provide material updates directly.
- If the additional system has software not found on the central system
- If the additional system is a different series than the central system.

Ext SMS (W) - Extended Software Materials Subscription - Provides the right to make one copy of all central system material updates for use on one additional system. Ext SMS for a Series 48 running MPE-V/E would be ordered as 32548B+W00-410. A separate set of updates on 1600 magnetic tape would require ordering 32548B+W51-410 in addition to 32548B+W00-410.

ARCC (P) - Additional Response Center Caller - Adds one Response Center caller to that included in the AMS or RCS support service.

Support For Subsystem And Application Software

Local Support and/or Telephone Assistance

Category and Family Support. All Hewlett-Packard software, except operating systems, is separated into software support groups. Groups of subsystem software are referred to as "Categories". Groups of application software are called "Families". If AMS or RCS support is ordered for the operating system, Category support products must be ordered for the subsystems and Family support must be ordered for the application software IN ADDITION to an SMS product for each software product.

CAT (C) - Category Support - Extends level of operating system support to the subsystem software. Support for the Language Category is ordered as 99081B+C00.

Ext CAT (V) - Extended Category Support - Extends Category Support on the central system to one additional system. All support is delivered through the central system. For the Language Category, this would be ordered as 99081B+V00.

AMS (T)/RCS (H) - Family Support - Provides Account Management or Response Center Support for application software. The customer receives a Response Center caller and one alternate for each family supported. AMS customers receive local assistance. Support for the Manufacturing Family would be ordered as 99101B+T00 for AMS or 99101B+H00 for RCS.

Ext FAM (V) - Extended Family Support - Extends Family Support on the central system to one additional system. All support is delivered through the central system. Support for the Manufacturing Family is extended to an additional system by ordering 99101B+V00, regardless of whether the service on the central system is AMS or RCS.

Materials Support Only

SMS (S) - Software Materials Subscription - Provides software and manual updates. SMS must be ordered for EACH subsystem and EACH item of application software on the system.

If AMS or RCS is ordered for the operating system, a Category or Family support product is ALSO required. SMS for HPSLATE would be ordered as 36576A+S00.

Ext SMS (W) – Extended Software Materials Subscription – Provides the right to make one copy of all central system material updates for use on one additional system. Ext SMS for HPSLATE would be ordered as 36576A+W00.

MUS (Q) – Manual Update Service – Provides one copy of updates to software reference manuals. MUS is ordered at the product level for application software and at the category level for subsystem software.

HARDWARE MAINTENANCE SERVICES

All Hewlett-Packard computer products can be covered by one of HP's hardware maintenance services. Provided by highly-skilled, HP-trained Customer Engineers, these services are designed to assure maximum effectiveness for the customer's system at a known monthly charge. Service coverage hours and response times can be selected to best fit the customer's system uptime requirements and different Maintenance Services are offered both for systems and for workstation products. The System Products Hardware Maintenance Service Matrix and the Workstation Products Hardware Maintenance Service Matrix summarize and compare the features of each maintenance service.

System Hardware Maintenance Services

Levels of system support required by a customer depends on their application and availability requirements. HP offers a wide range of services with various price/ performance levels to fit these needs. Although cost, hours of coverage and CE response time vary with different services, there are several important features included in all of HP's system maintenance services.

When you purchase an HP System Support Agreement, a Customer Engineer (CE) is personally assigned to your account to manage your maintenance program. As part of that account management, your CE will perform preventive maintenance. As part of the account management, a customer's CE will perform preventative maintenance, install additional system hardware on agreement, update the system with engineering improvements, monitor the site environment periodically and maintain a current system log.

HP Remote Support is another feature included in all system maintenance services. A communications link, via a phone line and an HP-provided Support Link II modem*, enables specialists in our Response Centers to access your system to run tests and diagnose functional problems remotely. Using this remote capability and additional proprietary software, HP now provides Predictive Support, which can identify problems before they affect system availability and thus reduce the need for inscheduled maintenance. (*HP 3000 Series 37 and MICRO 3000/3000XE customers receive the Support Link II modem when purchasing AMS or RCS on the Operating System at the time of system purchase. All other HP 3000 Series customers receive the modem with the system purchase. In addition, Predictive Support is not available on the Series 930 at first release.)

Should your system require emergency service, your HP Customer Engineer has the training and materials to resolve most problems rapidly. The CE will stay on-site until your problem is solved, even if this involves working beyond your coverage hours. For very difficult problems, your Customer Engineer initiates an escalation plan which enlists all HP resources necessary to provide a solution.

Additional features included in all system support agreements are detailed in the System Hardware Maintenance Service Matrix.

Guaranteed Uptime Service*

If your HP 3000 applications call for a very high level of system availability, Guaranteed Uptime Service provides a minimum of 99% uptime coverage for the system core (CPU and one or two system-domain disc drives). Whenever your uptime percentage for a three-month period is reported below 99%, you receive a credit equal to one month of the service charges for the products covered. Guaranteed Uptime Service assures you of a 4 hour on-site response time and service that provides around-the-clock, continuous coverage.

*(note that Guaranteed Uptime Service is not currently available on the HP 3000 Series 930).

Standard System Maintenance Service

Next to Guaranteed Uptime Service, this program provides the fastest response and most comprehensive hardware support for business and technical applications. This same-day service program provides on-site response within 4 coverage hours. Support coverage is from 8 a.m. to 9 p.m. every day of the standard workweek (excluding HP holidays). Extended coverage options are available which can provide service up to 7 days per week, 24 hours per day.

Basic System Maintenance Service

If your business operates primarily during standard working hours and can tolerate a one-workday service response, then this service is the economical choice for you. Coverage is from 8 a.m. to 5 p.m., Monday through Friday (excluding HP holidays) within 100 miles of a Service Responsible Office. Longer response times are offered beyond 100 miles (an improved response time and After Coverage Hours service are also available at additional cost on a per-incident basis).

Workstation Products Maintenance Services

A range of support is available for terminals, desktop or personal computers and their associated peripherals. The following contractual programs are specifically tailored to the support requirements of workstation products, providing them with time-effective and cost-effective support. All on-site services are available at specified response times within 100 miles of Service Responsible Offices.

Priority On-Site Service

This service gives you four-hour response on critical-use workstation products, between the hours of 8 a.m. and 5 p.m. Monday through Friday*. For workstations requiring extra hours of coverage, you can purchase extended hours contractually for workstations located with a system with the same extended coverage hours. You can also obtain After Coverage Hours support on a per-incident basis for stand-alone workstations.

Next Day On-Site Service

Next Day On-Site Service gives you next-day response between the hours of 8 a.m. and 5 p.m., Monday through Friday*. After Coverage Hours support and improved response time are also available on a per-incident basis.

Scheduled On-Site Service

This service offers the lowest on-site support costs for your HP workstation products. With a minimum of 25 eligible units, HP will make scheduled weekly visits to a single, central site which you may specify. "Units" include CPU's, mass storage devices and output devices, so a typical personal computer "system" may comprise three to four units. With the savings from this service, you can purchase one or more spare units to back up products used for critical applications.

* Begin and end times may vary by country.



Courier Return Service

This economical and user-convenient service provides on-site pickup of your workstation or personal computer. Our designated courier packs and delivers your product from your desk to our service center and, in most cases, returns it to you within four days of your call.

Customer Return Service

For sites not located within our Courier zones, our service centers offer return-to-HP service for your workstation products. Products returned by you to our service center will be repaired within three days of their arrival and shipped back to you prepaid via normal land freight.

Standard Coverage Per-Incident Service



This service improves the response time for Basic System, Next Day On-Site or Priority On-Site Service to that of Standard System Service for a fixed charge. For calls received between 8 a.m. and 5 p.m., Monday through Friday the per-incident charge gives you response within four hours, up until 9 p.m.

System Products

Hardware Maintenance Service Matrix

Maintenance Service Features	Guaranteed Uptime Service**	Standard System Maintenance Service	Basic System Maintenance Service
Remote Support Response Time	30 Minutes	30 Minutes	Next Day
On-Site Response Time Within 100 Miles* Within 200 Miles* Within 300 Miles*	99% Uptime Not Available Not Available	4 Hour 8 Hour 12 Hour	Next Day 2 Days 3 Days
Coverage Hours Per Day	24 Hour	13 Hr., 8AM-9PM 16 Hr., 8AM-12AM*** 24 Hour***	8AM-5PM
Coverage Days Per Week	7 Days	5 Days, Mon-Fri 6 Days, Mon-Sat*** 7 Days, Mon-Sun***	5 Days, Mon-Fri
Predictive Support**	YES	YES	YES
Preventive Maintenance	YES	YES	YES
Add-on Installation	YES	YES	YES
Engineering Improvements	YES	YES	YES
Account Assigned CE	YES	YES	YES
Site Surveys	YES	YES	YES
Warranty Enhancements	YES	YES	YES
Out-of-Coverage Option	NO	YES	YES
Upgrade Response Option	NO	NO	YES

* From an HP SRO (Service Responsible Office)

** (Not Available for 900 Series at First Release)

*** Extended hours available for additional charge

Workstation Products

Hardware Maintenance Service Matrix

Maintenance Service Features	Priority On-Site Service	Next Day On-Site Service	Scheduled On-Site Service
Remote Support Response Time	Not Available	Not Available	Not Available
On-Site Response Time Within 100 Miles* Within 200 Miles* Within 300 Miles*	Four working hours Eight working hours Twelve working hours	Next Day 2 Days 3 Days	Scheduled Weekly Visit Not Available Not Available
Coverage Hours Per Day	8AM-5PM	8AM-5PM	8AM-5PM
Coverage Days Per Week	Mon-Fri	Mon-Fri	Scheduled, Mon-Fri
Scheduled Preventive Maintenance	NO	NO	NO
Add-on Installation	NO	NO	NO
Engineering Improvements	YES	YES	YES
Account Assigned CE	NO	NO	NO
Site Surveys	NO	NO	NO
Warranty Enhancements***	SOME	SOME	SOME
Out-of-Coverage Option	YES	YES	YES
Upgrade Response Option	NO	YES	YES

* From an HP SRO (Service Responsible Office)

** Service from HP Customer Service Centers

*** Available for three-month-warranted products only

Workstation Products (continued)

Hardware Maintenance Service Matrix

Maintenance Service Features	Courier Return Service	Customer Return Service	
Remote Support Response Time	Not Available	Not Available	
On-Site Response Time Within 100 Miles* Within 200 Miles* Within 300 Miles*	N/A**	N/A**	
Coverage Hours Per Day	8AM-5PM	8AM-5PM	
Coverage Days Per Week	Mon-Fri	Mon-Fri	
Scheduled Preventive Maintenance	NO	NO	
Add-on Installation	NO	NO	
Engineering Improvements	YES	YES	
Account Assigned CE	NO	NO	
Site Surveys	NO	NO	
Warranty Enhancements***	SOME	NO	
Out-of-Coverage Option	NO	NO	
Upgrade Response Option	NO	NO	

* From an HP SRO (Service Responsible Office)

** Service from HP Customer Service Centers

*** Available for three-month-warranted products only

7

Site Preparation Data

Environmental Specifications	7-1
SPU Dimensions	7-2
Electrical Characteristics	
System Processor Units	7-3
Magnetic Tape Drives	7-4
Disc Drives	7-5
Printers	7-7
Terminals	7-9





Environmental Specifications

System Processor Units

	Relative Humidity (Operating) --recommended (non-condensing)	Recommended Operating Temperature	Line Voltage (VAC) and Frequency
Series 37/37XE	20-80%	50 ⁰ -104 ⁰ F (10 ⁰ -40 ⁰ C)	100-120 @ 48-66 Hz 200-240 @ 48-66 Hz
MICRO 3000/3000XE	20-80%	50 ⁰ -104 ⁰ F (10 ⁰ -40 ⁰ C)	100-120 @ 48-66 Hz 200-240 @ 48-66 Hz
Series 39/40/42/42XP/52	40-60%	68 ⁰ -78 ⁰ F (20 ⁰ -25.5 ⁰ C)	120 @ 50/60 Hz 220 @ 50/60 Hz Single Phase
Series 44/48/58	40-60%	68 ⁰ -78 ⁰ F (20 ⁰ -25.5 ⁰ C)	210 @ 60 Hz 220 @ 50 Hz Single Phase
Series 6x/70	40-60%	68 ⁰ -78 ⁰ F (20 ⁰ -25.5 ⁰ C)	208 @ 60 Hz 380 @ 50 Hz 415 @ 50 Hz Three Phase
Series 930	40-60%	68-77 ⁰ F (20-25 ⁰ C)	200-240 @ 50-60 Hz Single Phase

Note: The MICRO 3000/3000XE and Series 37 were designed for use in an office environment and are the only HP 3000 which are supported on carpet. All other HP 3000 Computer Systems should not be installed in a carpeted environment. Complete site preparation details can be found in the Site Planning and Preparation Guide.

Distributed Terminal Controller

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

Physical Dimensions

System Processor Units

Dimension	Height	Depth	Width	Weight
Series 37/37XE, (in system cabinet)	720 mm (29 in.)	711 mm (28.5 in.)	375 mm (15 in.)	33 Kg (73 lbs.)
MICRO 3000/3000XE (in system cabinet)	720 mm (29 in.)	711 mm (28.5 in.)	375 mm (15 in.)	33 Kg (73 lbs.)
Series 39/40	101.6 cm (40.0 in.)	56.9 cm (22.4 in.)	61.0 cm (24.0 in.)	86 Kg (190 lbs)
Series 42/42XP/52	101.6 cm (40.0 in.)	56.9 cm (22.4 in.)	61.0 cm (24.0 in.)	86 Kg (190 lbs)
Series 44/48/58 One Card Cage	72.4 cm (28.5 in.)	79.4 cm (31.25 in.)	183.5 cm (72.25 in.)	109 Kg (240 lbs)
Series 6x/70	122 cm (48 in.)	66 cm (26 in.)	176 cm (69 in.)	522 Kg (1150 lbs.)
Series 930	100 cm (39 in.)	80 cm (31.5 in.)	120 cm (47.2 in.)	318 Kg (700 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
Series 37/37XE	840 VA 960 VA	100-120 @ 48-66 Hz 200-240 @ 48-66 Hz	7.0A 4.0A
MICRO 3000	360 VA 480 VA	100-120 @ 50-60 Hz 200-240 @ 50-60 Hz	3.0 A 2.0 A
MICRO 3000XE	720 VA 960 VA	100-120 @ 48-66 Hz 220-240 @ 48-66 Hz	6.0 A 4.0 A
Series 39/40	1020 VA 990 VA	120 @ 50/60 Hz 220 @ 50/60 Hz	8.5A 4.5A
Series 42/42XP/52	1020 VA 990 VA	120 @ 50/60 Hz 220 @ 50/60 Hz	8.5A 4.5A
Series 48/58 Two Card Cages	2751 VA 2728 VA	210 @ 60 Hz 220 @ 50 Hz	13.1A 12.4A
Series 68B/70 UL Rated Values "B" Power Supply (2/3 bays fully loaded)	8657 VA 9225 VA 8636 VA	208 @ 60 Hz three-phase 380 @ 50 Hz three-phase 415 @ 50 Hz three-phase	24.0A/phase 14.0A/phase 12.0A/phase
Series 68B/70 Measured Values "B" Power Supply (2 bay fully loaded)	3968 3954 3958	208 @ 60 Hz three-phase 380 @ 50 Hz three-phase 415 @ 50 Hz three-phase	11.0A/phase 6.0A/phase 5.5A/phase
Series 68B/70 Measured Values "B" Power Supply (3 bay fully loaded)	4869 4942 4966*	208 @ 60 Hz three-phase 380 @ 50 Hz three-phase 415 @ 50 Hz three-phase	13.5A 7.5A 6.9A*
Series 68B/70 UL Rated Values Scott-T Power Supply (2/3 Bay fully loaded)	8657 8567 8636	208 @ 60 Hz three-phase 380 @ 50 Hz three-phase 415 @ 50 Hz three-phase	24.0A/phase 13.0A/phase 12.0A/phase
Series 930	2700 VA	200-240 @ 50-60 Hz	13.0A

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

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

Electrical Characteristics

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".

Magnetic Tape Drives

Product	Volt-Amps	Voltage (VAC) and Frequency	Maximum Steady State Current
9144A Cartridge Tape Drive	110 VA 110 VA	90-125 @ 48-66 Hz 180-250 @ 48-66 Hz	.88A .44A
35401A Autochanger Tape Drive			
7970E Magnetic Tape Drive	230 VA 391 VA	115 @ 60 Hz 230 @ 50 Hz	2.0A 1.7A
7970E Opt. 426 Magnetic Tape Drive (Master)	288 VA 322 VA	115 @ 60 Hz 230 @ 50 Hz	2.5A 1.4A
7974A Magnetic Tape Drive	450 VA 540 VA 418 VA 456 VA	100 @ 50/60 Hz 120 @ 50/60 Hz 220 @ 50/60 Hz 240 @ 50/60 Hz	4.5A 4.5A 1.9A 1.9A
7976A Magnetic Tape Drive	1849 VA 1804 VA	117 @ 60 Hz 220 @ 50 Hz	15.8A 8.2A
7978A/B Magnetic Tape Drive	313 VA 313 VA	90-125 @ 48-66 Hz 198-250 @ 48-66 Hz	2.5A 1.25A

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

Electrical Characteristics

Disc Drives

Product	Volt-Amps	Voltage (VAC) and Frequency	Maximum Steady State Current
7906S Disc Drive (Slave)	684 VA 704 VA	120 @ 60 Hz 220 @ 50 Hz	5.7A 3.2A
7906M Disc Drive (Master)	960 VA 990 VA	120 @ 60 Hz 220 @ 50 Hz	8.0A 4.5A
7911P Disc Drive	564 VA 572 VA	120 @ 60 Hz 220 @ 50 Hz	4.7A 2.6A
7912P Disc Drive	564 VA 572 VA	120 @ 60 Hz 220 @ 50 Hz	4.7A 2.6A
7914P** Disc Drive	564 VA 572 VA	120 @ 60 Hz 220 @ 50 Hz	4.7A 2.6A
7920S Disc Drive (Slave)	612 VA 660 VA	120 @ 60 Hz 220 @ 50 Hz	5.1A 3.0A
7920M Disc Drive (Master)	888 VA 946 VA	120 @ 60 Hz 220 @ 50 Hz	7.4A 4.3A
7925S Disc Drive (Slave)	528 VA 484 VA	120 @ 60 Hz 220 @ 50 Hz	4.4A 2.2A
7925M Disc Drive (Master)	804 VA 770 VA	120 @ 60 Hz 220 @ 50 Hz	6.7A 3.5A
7933H/XP Disc Drive	1580 VA 1628 VA	208 @ 60 Hz 220 @ 50 Hz	7.6A (9.3A*) 7.4A (9.0A*)
7935H/XP Disc Drive	1580 VA 1628 VA	208 @ 60 Hz 220 @ 50 Hz	7.6A (9.3A*) 7.4A (9.0A*)
7936H/XP Disc Drive	590 VA 1200 VA	90-132 @ 48-62 Hz 180-264 @ 48-62 Hz	3.5A 2.0A
7937H/XP Disc Drive	590VA 1200VA	90-132 @ 48-62 Hz 180-264 @ 48-62 Hz	3.5A 2.0A

Electrical Characteristics

Disc Drives

Product	Volt-Amps	Voltage (VAC) and Frequency	Maximum Steady State Current
7957A Disc Drive	184 VA	90-132 @ 48-62 Hz	0.8A
	230 VA	180-264 @ 48-62 Hz	0.5A
7958A Disc Drive	184 VA	90-132 @ 48-62 Hz	0.8A
	230 VA	180-264 @ 48-62 Hz	0.5A
7945A Disc Drive	106 VA	90-132 @ 47.5-66 Hz	0.8A
	132 VA	180-264 @ 47.5-66 Hz	0.5A
9895A Flexible Disc Drive	252 VA	120 @ 60 Hz	2.1A
	194 VA	220 @ 50 Hz	0.88A

* Includes drive and accessory outlets

** For 7914ST/TD/CT see component devices

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

Electrical Characteristics

Printers

Product	Volt-Amps	Voltage (VAC) and Frequency	Maximum Steady State Current
2601A Daisywheel Printer	200 VA 204 VA 198 VA 192 VA	100 @ 50/60 Hz 120 @ 50/60 Hz 220 @ 50/60 Hz 240 @ 50/60 Hz	2.0A 1.7A 0.9A 0.8A
2602A Daisywheel Printer	132 VA 132 VA 144 VA	120 @ 50/60 Hz 220 @ 50/60 Hz 240 @ 50/60 Hz	1.1A 0.6A 0.6A
2603A Daisywheel Printer			
2608A Line Printer	1260 VA 1166 VA	120 @ 60 Hz 220 @ 50 Hz	10.5A 5.3A
2608S Line Printer	1380 VA 1380 VA 1254 VA 1512 VA	100 @ 50/60 Hz 120 @ 50/60 Hz 220 @ 50/60 Hz 240 @ 50/60 Hz	13.8A 11.5A 5.7A 6.3A
* 2563A/B Line Printer	348 VA	120 @ 50/60 Hz	2.9A
* 2564B Line Printer	396 VA	120 @ 50/60 Hz	3.3A
* 2565A/66A/B Line Printers	696 VA	120 @ 50/60 Hz	5.8A
2611A Line Printer	700 VA 690 VA 700 VA 690 VA	100 @ 50/60 Hz 120 @ 50/60 Hz 200 @ 50/60 Hz 230 @ 50/60 Hz	7.0A 6.0A 3.5A 3.0A
* 2567B Line Printer	816 VA	120 @ 50/60 Hz	6.8A
2619A Line Printer	1438 VA 1449 VA	115 @ 60 Hz 230 @ 50 Hz	12.5A 6.3A

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

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

Electrical Characteristics

Printers (Cont.)

Product	Volt-Amps	Voltage (VAC) and Frequency	Maximum Steady State Current
2631B Serial Printer	204 VA	120 @ 60 Hz	1.7A
	198 VA	220 @ 50 Hz	0.9A
2631G Graphics Printer	270 VA	100 @ 50/60 Hz	2.7A
	264 VA	120 @ 50/60 Hz	2.2A
	264 VA	220 @ 50/60 Hz	1.2A
	264 VA	240 @ 50/60 Hz	1.1A
2635B Printing Terminal	204 VA	120 @ 60 Hz	1.7A
	220 VA	220 @ 50 Hz	1.0A
2680A Page Printer	4992 VA	208 @ 60 Hz	24A
	5280 VA	220 @ 50 Hz	24A
2686A/D Page Printer	719 VA	115 @ 60 Hz	6.25A
	750 VA	220 @ 50 Hz	3.41A
	840 VA	240 @ 50 Hz	3.5A
2687A Page Printer	851 VA	115 @ 60 Hz	7.4A
	770 VA	220 @ 50 Hz	3.5A
2688A Page Printer	1219 VA	115 @ 60 Hz	10.6A
	1144 VA	220 @ 50 Hz	5.2A
293x Serial Printer	240 VA	120 @ 60 Hz	2.0A
	374 VA	220 @ 50 Hz	1.7A

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

Electrical Characteristics

Terminals

Product	Volt-Amps	Voltage (VAC) and Frequency	Maximum Steady State Current
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
2626A CRT Terminal	96 VA	120 @ 60 Hz	0.8A
	88 VA	220 @ 50 Hz	0.4A

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

Electrical Characteristics

Terminals (Cont.)

Product	Volt-Amps	Voltage (VAC) and Frequency	Maximum Steady State Current
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