



HEWLETT
PACKARD

System Introduction Manual

HP 2250
Measurement and Control

HP 2250 Measurement and Control Processor System Introduction



HEWLETT-PACKARD COMPANY
Roseville Division
P.O. Box 909
Roseville, California 95678

Library Index No.
2250.005.02250-90011

MANUAL PART NO. 02250-90011
Printed in U.S.A.
March 1981

PRINTING HISTORY

The Printing History below identifies the Edition of this Manual and any Updates that are included. Periodically, update packages are distributed which contain replacement pages to be merged into the manual, including an updated copy of this Printing History page. Also, the update may contain write-in instructions.

Each reprinting of this manual will incorporate all past updates; however, no new information will be added. Thus, the reprinted copy will be identical in content to prior printings of the same edition with its user-inserted update information. New editions of this manual will contain new information, as well as all updates.

To determine what manual edition and update is compatible with your current software revision code, refer to the appropriate Software Numbering Catalog, Software Product Catalog, or Diagnostic Configurator Manual.

First edition March 1981

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 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 program language without the prior written consent of Hewlett-Packard Company.

Preface

This manual contains a brief description of the HP 2250 Measurement and Control Processor and its components. For ease of reference, the manual is divided into three sections, as follows;

Section I -- Introducing the HP 2250

This section contains a description of the HP 2250 and all its components. Photographs of each item are included.

Section II -- MCL/50 Measurement and Control Language

The HP 2250 is programmed in Hewlett-Packard Measurement and Control Language, HP-MCL/50. This section provides a brief description of the language, a list of all its commands, and a simple programming example.

Section III -- Documentation

This section contains a list of all HP 2250 documentation. To assist the new user, a table is provided which lists various topics and the manual in which the topic is covered.

Additional manuals for the HP 2250 are as follows:

HP 2250 Programmer's Manual, part no 25580-90001

HP 2250 Programmer's Reference Manual, part no 25580-90005

HP 25581A Automation Library Manual, part no 25581-90001

HP 2250 Measurement and Control Processor Site Preparation Manual,
part no 02250-90010

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

Preface

HP 2250 Measurement and Control Processor Installation and Start-Up Manual, part no 02250-90012

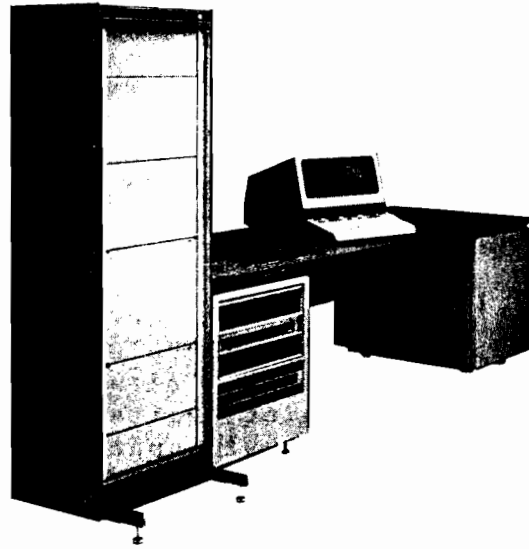
HP 2250 Measurement and Control Processor Hardware Reference Manual, part no 02250-90001

HP 25595 Diagnostics and Verification Manual, part no 25595-90001

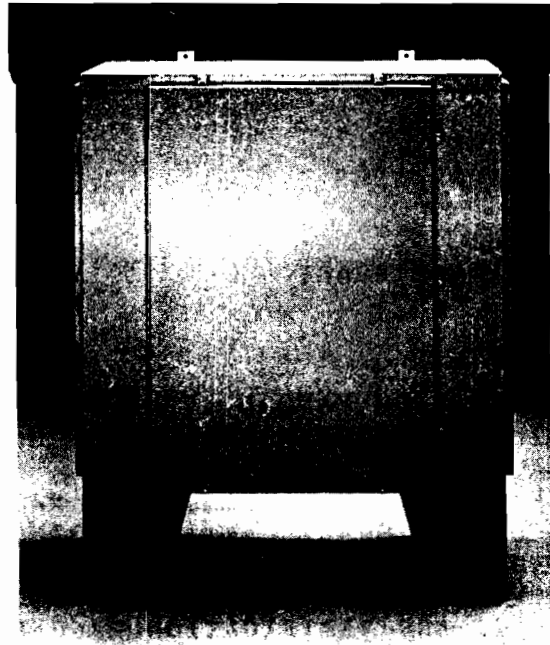
HP 25590 Diagnostic Interface Unit Operating and Service Manual, part no 25590-90001

Table of Contents

1	Introducing the HP 2250	
1.1	TYPICAL MEASUREMENT AND CONTROL SYSTEM	1-1
1.2	HP 2250 GENERAL DESCRIPTION	1-2
1.2.1	HP 2104 PROCESSOR UNIT	1-4
1.2.2	HP 2251 MEASUREMENT AND CONTROL UNIT	1-9
1.2.3	FUNCTION CARDS	1-9
1.2.3.1	HP 25501A 16-Channel High-Speed Analog Input	1-12
1.2.3.2	HP 25502A 32-Channel High-Level Multiplexer	1-12
1.2.3.3	HP 25503A 32-Channel Low-Level Multiplexer	1-12
1.2.3.4	HP 25504A 16-Channel Relay Multiplexer	1-13
1.2.3.5	HP 25510A 4-Channel Voltage/Current Analog Ou	1-13
1.2.3.6	HP 25511A 32-Point Digital Input	1-13
1.2.3.7	HP 25512A 4-Channel Counter	1-13
1.2.3.8	HP 25513A 32-Point Digital Output	1-14
1.2.3.9	HP 25514A 16-Point Relay Output	1-14
1.2.3.10	HP 25515A 4-Channel Pulse Output	1-14
1.2.3.11	HP 25516A 16-Point Digital Multifunction	1-14
1.3	HP 25594A THERMOCOUPLE REFERENCE CONNECTOR	1-15
1.4	SIGNAL CONDITIONING MODULES	1-15
1.5	SPECIFICATIONS	1-17
2	MCL/50 Measurement and Control Language	
2.1	GENERAL DESCRIPTION	2-1
2.2	HP-IB COMMUNICATIONS	2-1
2.3	INPUT AND OUTPUT ADDRESSES	2-2
2.4	MCL/50 COMMANDS	2-3
2.5	PROGRAMMING EXAMPLE	2-9
2.6	HP 25581A AUTOMATION LIBRARY	2-10
3	Documentation	
3.1	HP 2250 MANUAL SET	3-1
3.2	HP 2250 SITE PREPARATION MANUAL, PART NO 02250-90010	3-2
3.3	HP 2250 SYSTEM INTRODUCTION MANUAL, PART NO 02250-90011	3-2
3.4	HP 2250 INSTALLATION AND START-UP MANUAL, PART NO 02250-9	3-2
3.5	HP 2250 HARDWARE REFERENCE MANUAL, PART NO 02250-90001	3-3
3.6	HP 2250 PROGRAMMER'S MANUAL, PART NO 25580-90001	3-3
3.7	HP 2250 PROGRAMMER'S REFERENCE MANUAL, PART NO 25580-9000	3-3
3.8	HP 25581A AUTOMATION LIBRARY MANUAL, PART NO 25581-90001	3-4
3.9	HP 25595 DIAGNOSTIC AND VERIFICATION MANUAL, PART NO 2559	3-4
3.10	HP 25590A DIAGNOSTIC INTERFACE UNIT, PART NO 25590-90001	3-4
3.11	HP 1000 L-SERIES MANUALS	3-4
3.12	USING THE MANUALS	3-4



HP-2250R
Rack-mounted for
laboratory, control room,
and light industrial
applications.
It is shown here with an
HP 1000 Model 4-5
Computer System.



HP 2250N
NEMA-12 sealed enclosure
for factory floor application.

2250-1H

Figure 1-1. HP 2250 Measurement and Control Processors

SECTION I

INTRODUCING THE HP 2250

The HP 2250 Measurement and Control Processor is a programmable interface between a controller and an external process. The controller can be a full-size computer such as an HP 1000 or a desktop computer such as an HP 9835. The external process could be the control of a steel mill or supervision of an oil refinery.

The HP 2250 can be mounted in racks, panels, or industrial cabinets. Typical HP 2250 systems are shown on the facing page.



1.1 TYPICAL MEASUREMENT AND CONTROL SYSTEM

Figure 1-1 is a simplified diagram showing a typical measurement and control system.

As stated above, the controller can be any HP-IB (IEEE-488) compatible desktop, mini, or mainframe computer system.

The interface to an HP 2250 is the Hewlett-Packard Interface Bus (HP-IB). The HP-IB is the Hewlett-Packard implementation of IEEE Standard 488-1975, "Digital Interface for Programmable Instrumentation," and ANSI Standard MC 11. The HP-IB is a standard method of communication for HP computers and HP-IB bus-compatible instruments.

The HP 2250 sends and receives all measurement and control signals through special function cards. Every HP 2250 installation includes a specific number of these digital and/or analog function cards as required to perform the particular application.

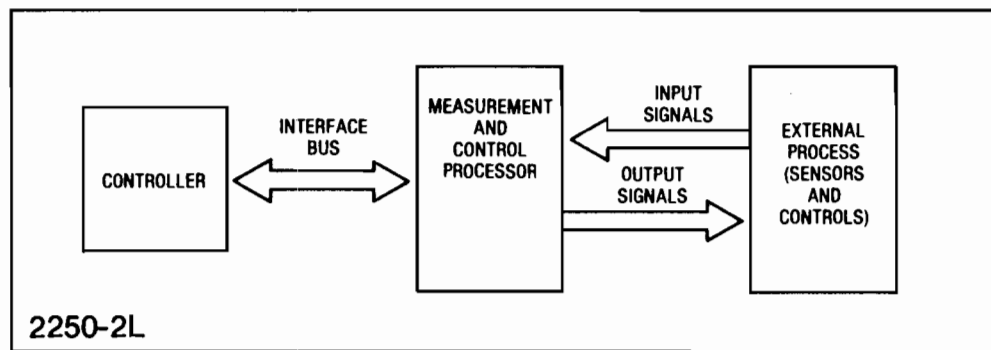


Figure 1-1 Measurement and Control System

1.2 HP 2250 GENERAL DESCRIPTION

Figure 1-2 shows the components of an HP 2250. These components are an HP 2104 Processor Unit, at least one HP 2251 Measurement and Control Unit (MCU), and I/O function cards.

2250 ⇒ (2104 Processor + 2251 M/C)

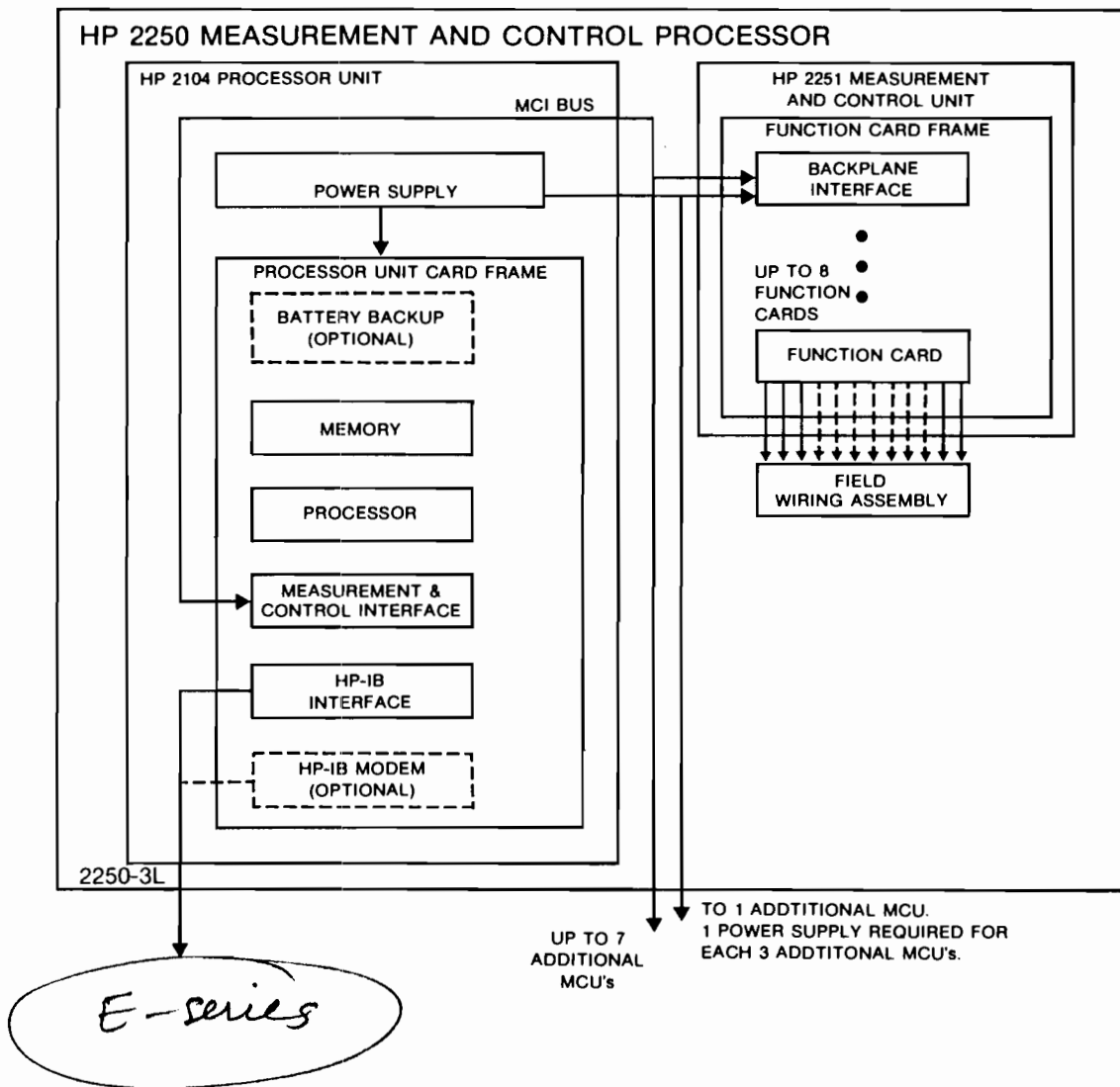


Figure 1-2 HP 2250 Components

1.2.1 HP 2104 Processor Unit

The HP 2104 Processor Unit, shown in figure 1-3, contains the following components:

HP 12001B Processor Card

HP 12070A Memory Card (also referred to as the ROM/RAM STACK or "RRACK" Memory Card)

HP 12071A Measurement and Control Interface (MCI) Card

HP 12009A HP-IB Interface Card

HP 12035A Power Supply

Power Supply to Backplane Interface (BIF) Card Cable, part no 25572-60001

MCI Card to External Pacer Input Cable, part no 12071-60004

MCI Card to Backplane Interface Card Cable, part no 25570-60004

Optional cards available for the processor unit are:

HP 12013A Battery Backup Card

HP 37203L HP-IB Link

There are two models of the HP 2104:

HP 2104AR Processor Unit:

Consists of modules for mounting in 19-inch rack. It may be used in HP rack-mounting cabinets, or other standard 19-inch racks.

HP 2104AN Processor Unit:

Consists of modules for panel mounting. The HP 2104AN is used in the HP Industrial Measurement and Control Processor which includes an industrial enclosure meeting NEMA Type-12 specifications.

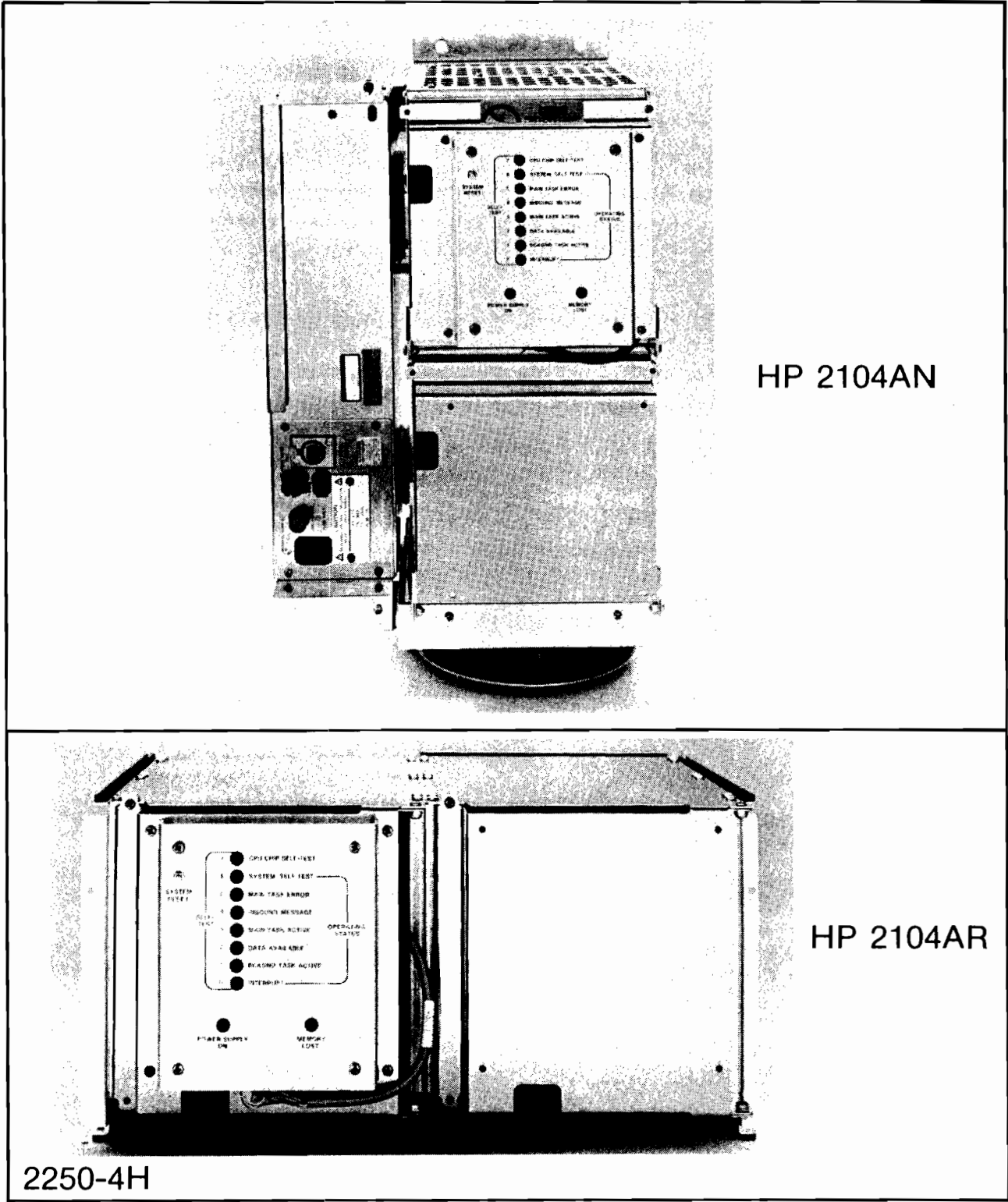


Figure 1-3 HP 2104AN and HP 2104AR Processor Units

Introducing the HP 2250

HP 2104 cards are shown in figure 1-4

The HP 12001B processor card compiles and executes requests from the HP-IB bus and reduces and converts measurement and control data resulting from these requests

The HP 12070A memory card contains Read Only Memory (ROM) chips, and Random Access Memory (RAM) chips. The HP 2250 firmware is stored on the ROM chips. The RAM chips are user memory, which are used to store tasks that implement a particular measurement and control process, and to store the data resulting from the tasks

The HP 12071A measurement and control interface (MCI) provides interface between the processor unit backplane and the measurement and control unit (MCU) backplane. The MCU backplane connects to the function cards which provide the input/output capability for measurement and control

The MCI contains a time-of-day clock and other internal times for various measurement pacing modes. The internal timers are supplemented by an external pacing line to precisely control the rate at which measurement and control events occur, independently of processor timing

The HP 12009A HP-IB interface card connects to an HP-IB bus cable and carries control signals and data to and from the host computer. Up to 14 other HP-IB devices also can be connected to this bus

The HP 12035A power supply provides the processor unit backplane with dc voltages and a 25 kHz voltage source to the measurement and control units (MCUs) via the backplane interface (BIF) card

Additional supplies are required when extra measurement and control units (MCUs) are added to the system. For example, after one processor unit and two MCUs, the next three MCUs require one supply, and the last three MCUs require the third and last supply

Optional cards which can be included in the processor unit are:

HP 12013A Battery Backup Card Protects memory contents up to 30 minutes if power fails (Saves some data and preserves a power-up task for execution when power is restored)

HP 37203L HP-IB Link Extends the transmission distance (a maximum of 1000 metres) of the HP-IB bus to remote locations via either coax or fiber optic cables

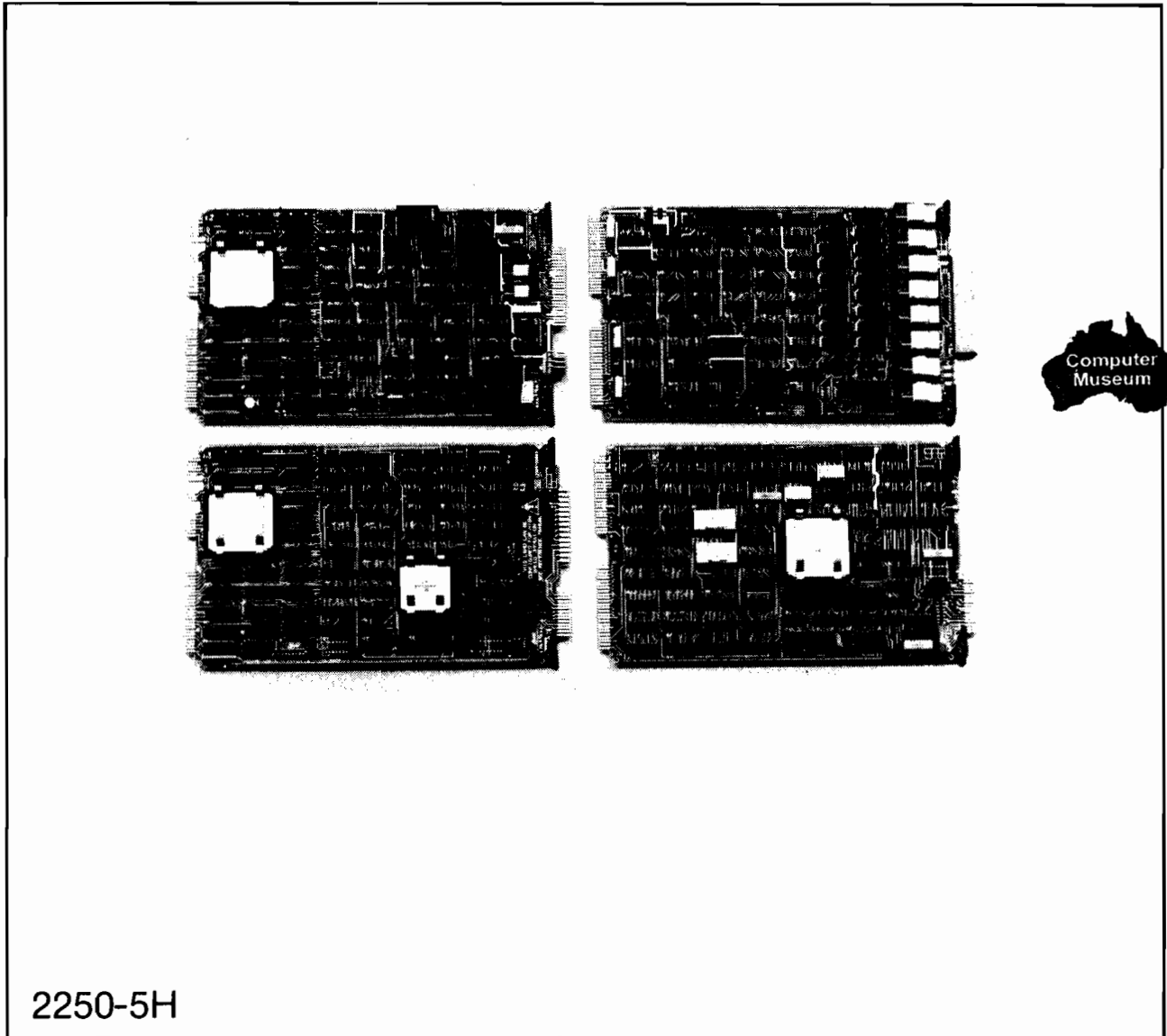


Figure 1-4 HP 2104 Processor Unit Cards

Introducing the HP 2250

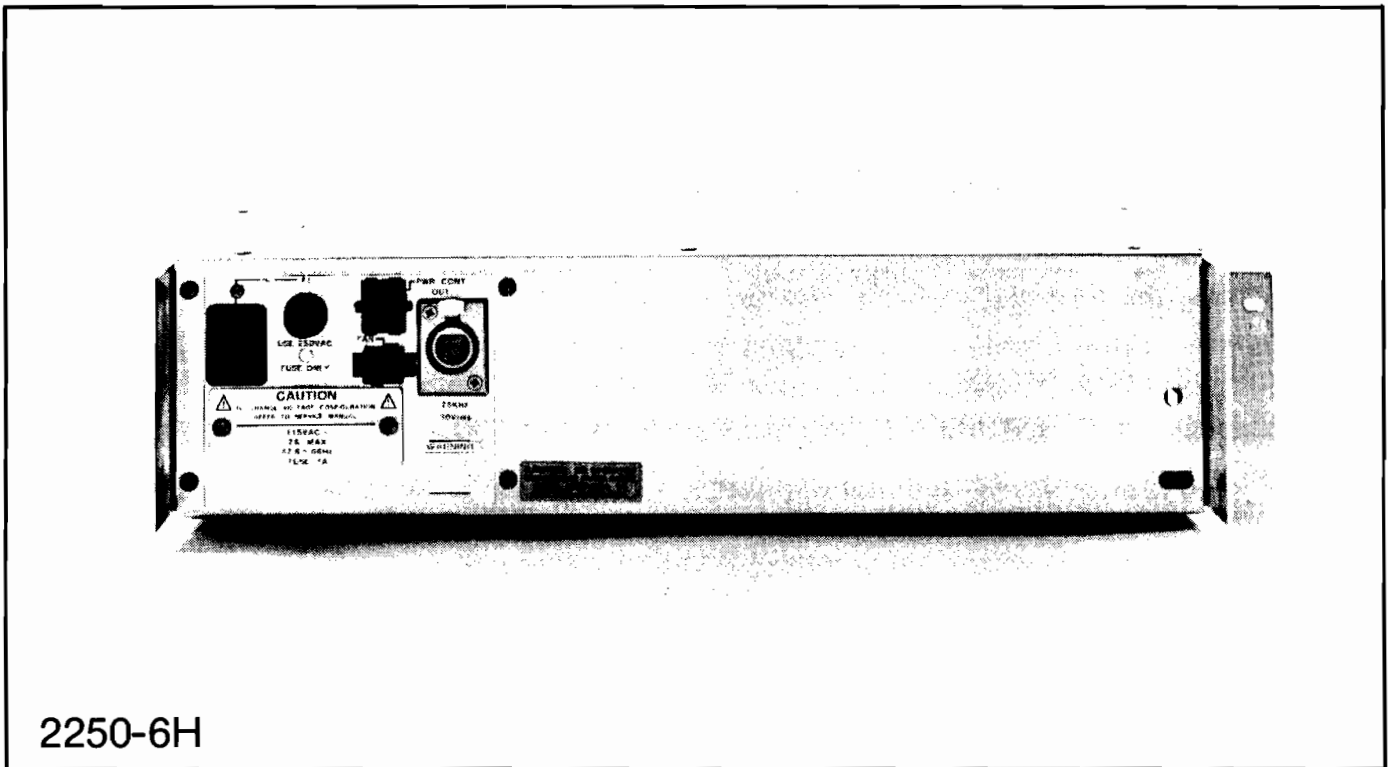


Figure 1-5 HP 12035A Power Supply

The HP 2250 is provided with a self-contained Hewlett-Packard Measurement and Control Language (MCL/50) to monitor and analyze external events and to generate appropriate responses. Refer to Section II for information about MCL/50.

1.2.2 HP 2251 Measurement and Control Unit

The HP 2251AR and HP 2251AN Measurement and Control Units, shown in figure 1-6, are card frames designed to hold the backplane interface (BIF) card and up to eight I/O (function) cards. The HP 2251AN has vertically-stacked card slots for a panel-mount configuration, and the HP 2251AR has horizontally-stacked slots for a rack-mount configuration.

Each measurement and control card frame has a backplane interface (BIF) card to interface the function card backplane to the measurement and control interface (MCI) card.

1.2.3 Function Cards

Function cards match the type of sensor or actuator in the external process. The principal function card types are analog input, analog output, digital input, and digital output. Some cards provide multiple functions or specialized functions (count or pulse) or special signal conditioning (relays).

Note that digital inputs and outputs are called "points." Analog inputs and outputs, and counter inputs and pulse outputs, are called

A function card accommodates up to 32 external points or channels (depending on card type) and occupies one slot in an HP 2251 Measurement and Control Unit. The card may be connected to "Field Wiring" via up to four "Field Wiring Assemblies" (FWAs), or four user-supplied interconnection connectors (using unterminated cables).

Several different function cards are shown in figure 1-7.

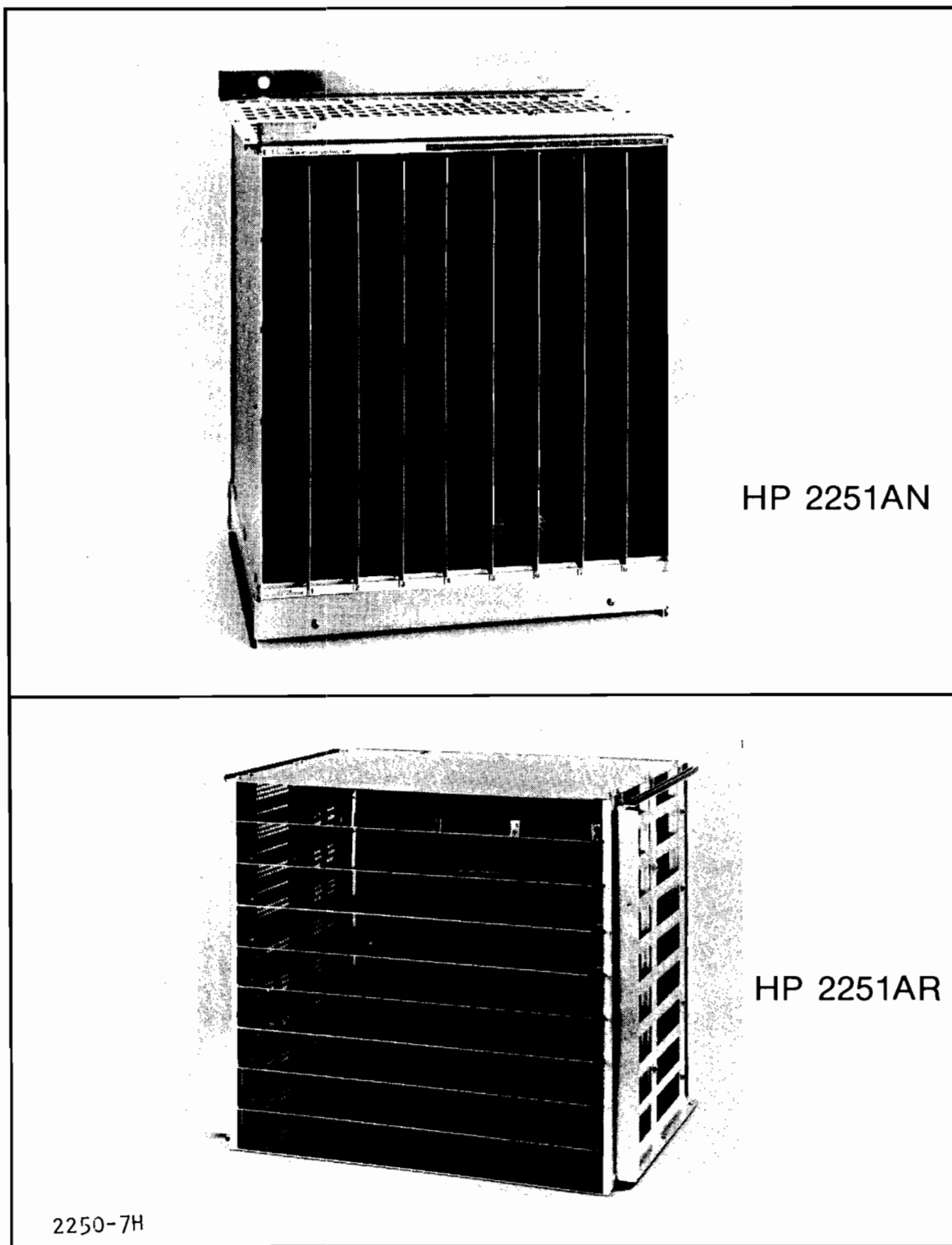


Figure 1-6 HP 2551AR and HP 2551AN Measurement and Control Units

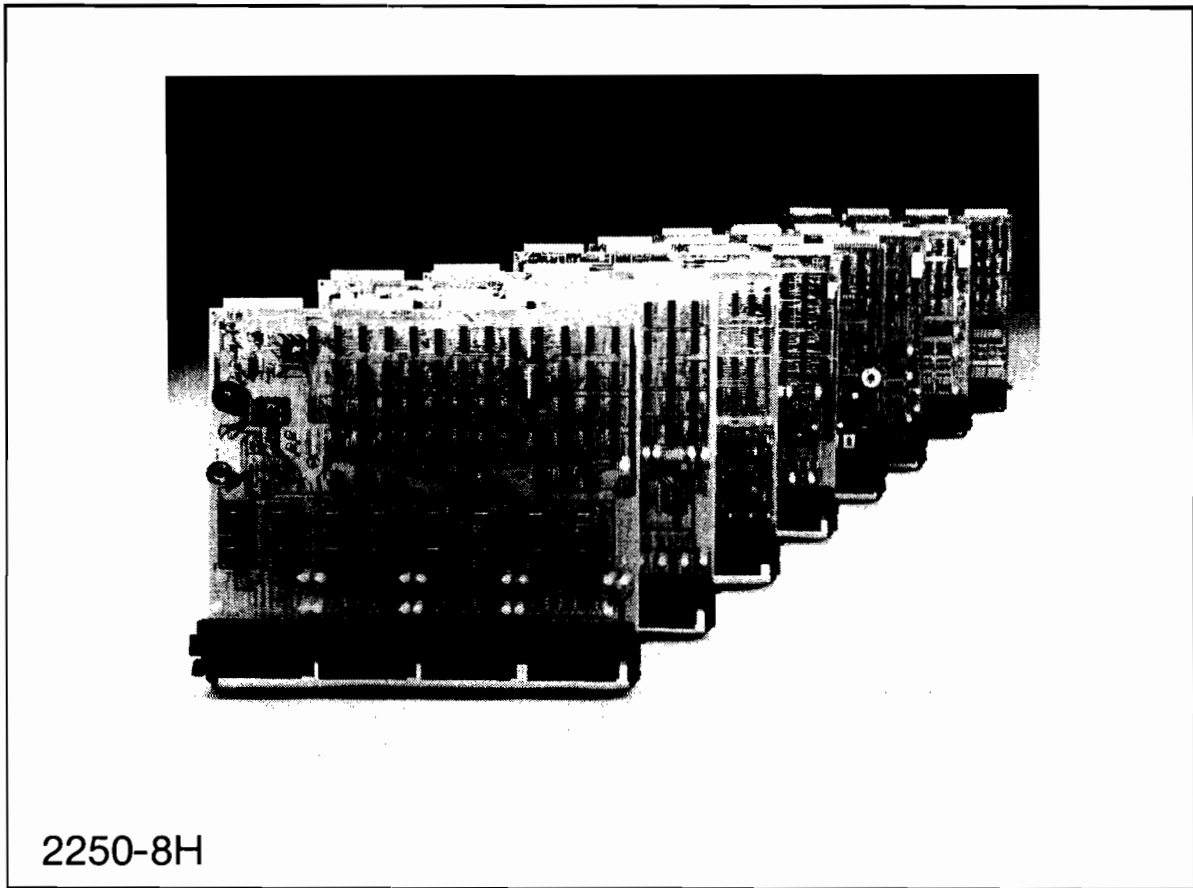


Figure 1-7 Function Cards

1.2.3.1 HP 25501A 16-Channel High-Speed Analog Input

The HP 25501A function card provides the HP 2250 with basic analog input capability

The HP 25501 has 16 addressable input channels which can be expanded up to a maximum of 240 input channels by the installation of up to 7 HP 25502A 32-Channel High-Level Multiplexer cards, and/or HP 25503A 32-Channel Low-Level Multiplexer cards, and/or HP 25504A 16-Channel Relay Multiplexer cards, in any combination

The basic HP 25501 card is a 14-bit, 50,000 sample-per-second scanning or on-channel analog-to-digital converter with autoranging at speed over an 8 to 1 gain range (1, 2, 4, 8) It has a high-speed sample and hold suitable for scanning or signal reconstruction applications

1.2.3.2 HP 25502A 32-Channel High-Level Multiplexer

The HP 25502 function card is a high-level analog signal multiplexer, providing 32 channels of differential analog input multiplexed to one differential channel, which connects to a special input on the analog input card through the backplane The HP 25502 has unity gain, thus, when used with the HP 25501 analog input card, signal gain and autoranging characteristics are the same as those of the HP 25501 The sampling rate is 50,000 samples per second, either scanning or single channel

1.2.3.3 HP 25503A 32-Channel Low-Level Multiplexer

The HP 25503 function card provides low-level input and channel expansion for the HP 25501A analog input card, down to 12.5 millivolts full scale, and a resolution of 1.56 microvolts When used with the HP 25501, there are 12 programmable ranges, with the HP 25501 autoranging over four ranges This card provides a maximum sampling rate of 50,000 samples per second when on a single channel, or 20,000 samples per second when scanning multiple channels

1.2.3.4 HP 25504A 16-Channel Relay Multiplexer

The HP 25504 function card provides fully isolated channel expansion for the HP 25501A analog input card, with sixteen 3-wire driven guard input channels per multiplexer card. There are 16 programmable ranges, from 12.5 millivolts to 100 volts, with the HP 25501 autoranging over four contiguous ranges. This card provides a maximum sampling rate of 10,000 samples per second when on a single channel or 1,000 samples per second when scanning multiple channels.

1.2.3.5 HP 25510A 4-Channel Voltage/Current Analog Output

The HP 25510 function card provides four channels of digital-to-analog output capability for the HP 2250, with 12-bit resolution, and voltage or current output on each channel. The voltage range is 10 volts positive or negative; the current range is 20 milliamperes.

1.2.3.6 HP 25511A 32-Point Digital Input

The HP 25511 function card provides 32 digital input points to the HP 2250. Signal conditioning options interface with a wide range of ac and dc voltages. The input state can be read for any individual point or for a field of 16 points.

Individual points can be programmed to interrupt the HP 2250 and, if desired, the host computer. Event interrupt, enable, and transition direction are programmable. In addition, the card can be programmed for strobed input, thus permitting an external strobe signal to determine when the point or field read shall occur. (Multiple cards can be strobed simultaneously.)

1.2.3.7 HP 25512A 4-Channel Counter

The HP 25512 function card provides four identical dual-channel counters that are independently programmable to different modes, among which are totalize, extended totalize, up-down count, period, time interval, frequency, and ratio.

Interrupts can be programmed to occur on measurement completion, on overflow, or, for up-down count, on underflow. Response can be on the rising or falling edge of the input signal.

1.2.3.8 HP 25513A 32-Point Digital Output

The HP 25513 function card provides switching of 32 output points. Signal conditioning options interface with a variety of ac and dc control actuators.

The output points can be programmed independently or as two 16-point fields. Data in the output registers is maintained until new data is programmed to the card or until an external strobe signal is received by the card from the external system. The card can be programmed to change outputs upon receipt of either an internal HP 2250 control signal or an external strobe signal.

1.2.3.9 HP 25514A 16-Point Relay Output

The HP 25514 function card provides form C relay output. The 16 channels can be programmed as independent points or as a 16-point field. The card can be programmed to change outputs upon receipt of either an internal HP 2250 signal or an external strobe signal. Both normally open and normally closed positions are available to the user.

1.2.3.10 HP 25515A 4-Channel Pulse Output

The HP 25515 function card generates a programmable number of pulses independently on each of four channels. The initial pulse rate, acceleration, final pulse rate, and the pulse width are programmable. Alternatively, the card can be put in frequency-generator mode to provide pulses for an indefinite length of time. An external synchronization input is provided for initiating the pulse train, and two limit inputs can be programmed to stop the pulse train.

1.2.3.11 HP 25516A 16-Point Digital Multifunction

The HP 25516 function card provides 16 digital input points and 16 digital output points for the HP 2250.

Each input point on this card has an event counter which can be preset with a count of up to a maximum of 255. Each counter can be programmed to automatically repeat counting from the preset value, or to automatically continue counting from zero after the preset number of counts. Interrupts can occur from counter overflow.

An event is defined for each point by enabling the point to interrupt, and programming the sense and sense override, which specify the desired direction of transition

1.3 HP 25594A THERMOCOUPLE REFERENCE CONNECTOR

The HP 25594A Thermocouple Reference Connector (see figure 1-8) provides connection points for up to 15 thermocouples. Because a thermocouple function measures the temperature difference between a measured point and a reference point, you always need two values in order to establish the temperature of the thermocouple. The HP 25594A provides this reference temperature for the 15 thermocouple connection points.

The HP 25594A interfaces with the HP 25503A 32-Channel Low-Level Multiplexer and the HP 25504A 16-Channel Relay Multiplexer.

1.4 SIGNAL CONDITIONING MODULES

Signal conditioning modules (SCMs) are small printed circuit assemblies that plug onto digital function cards and the HP 25502A and HP 25503A high-level and low-level multiplexer cards.

SCMs tailor the function cards for interfacing to many types of sensors and actuators.

Signal conditioning modules allow function cards to perform such functions as:

- Measuring 120 VAC up to 100 W

- Measuring DC signals up to 60 V, 300 mA

- Driving TTL logic

- Driving +12 V MOS/CMOS logic

- Driving high-voltage devices



2250-9H

Figure 1-8 HP 25594A Thermocouple Reference Connector

In addition, SCMs:

Isolate function cards from high-voltage switching

Reduce noise and prevent possible damage to function cards by isolating voltage spikes which accompany the switching of inductive loads

Provide 200 ohm current loop termination, and 2-pole low pass filters

Several types of SCMs are shown in figure 1-9

1.5 SPECIFICATIONS

Specifications for the HP 2250 are presented in table 1-1

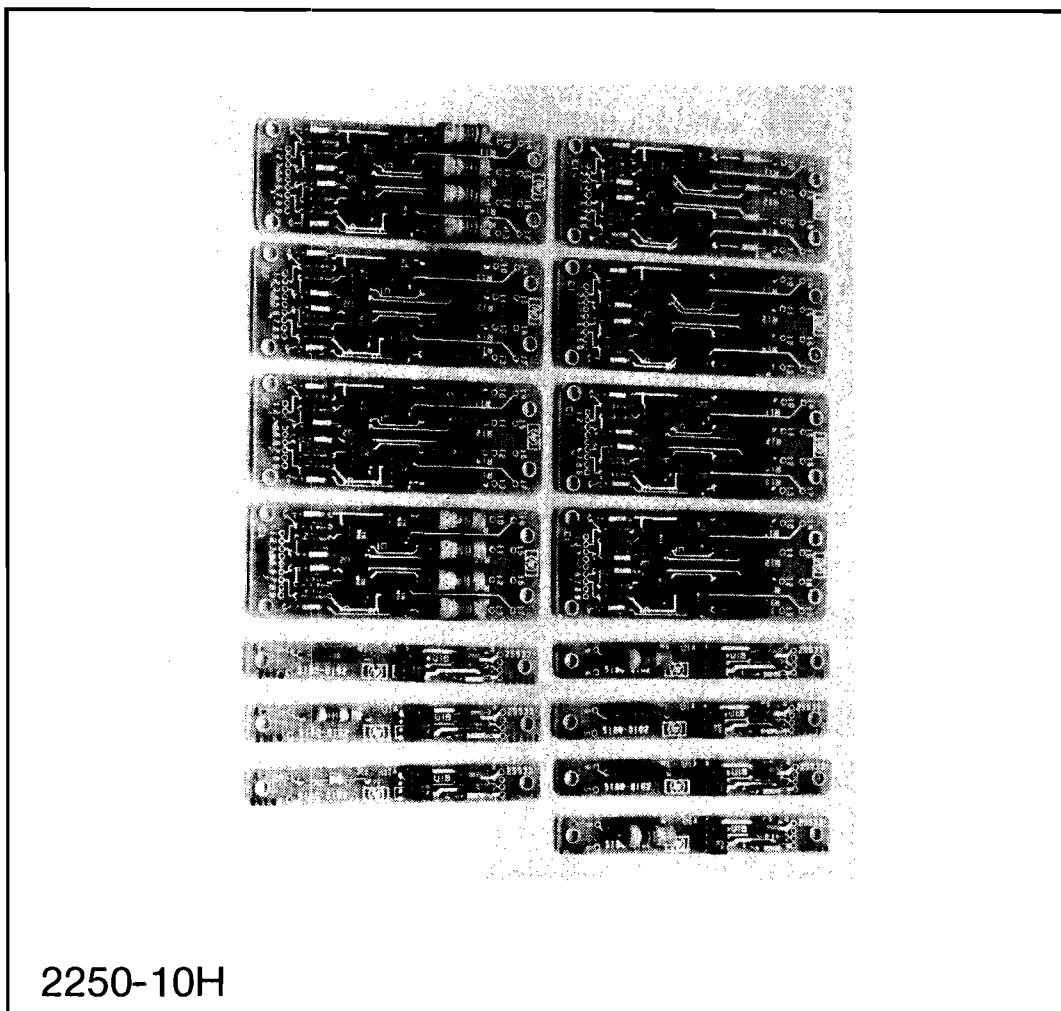


Figure 1-9 Signal Conditioning Modules

Table 1-1 HP 2250 Specifications

AMBIENT TEMPERATURE**NEMA Cabinet Industrial Systems:**

Operating: 0 to 50 degrees C (32 to 131 degrees F)
 Non-Operating: -40 to 75 degrees C (-40 to 167 degrees F)

Laboratory and Non-NEMA Industrial Systems:

Operating: 0 to 40 degrees C (32 to 104 degrees F)
 Non-Operating: -40 to 75 degrees C (-40 to 167 degrees F)

ALTITUDE

Operating: 4,600 metres (15,000 feet)
 Non-Operating: 15,300 metres (50,000 feet)

RELATIVE HUMIDITY

10 to 95% at 40 degrees C (104 degrees F), without
 condensation

MAINFRAME POWER REQUIREMENTS**Voltage (range switch selected):**

115 Vac (nominal): range 86 to 127 Vac at 47 to 66 Hz
 230 Vac (nominal): range 195 to 253 Vac at 47 to 66 Hz

Power:

Input: 500 Watts, maximum

Input Fuse:

115 Vac range: 7A, 3AG

230 Vac range: 3 5A, 3AG

Table 1-1. Measurement and Control Processor HP 2250 Specifications
(Continued)

DIMENSIONS			
	HP 2250M	HP 2250N	HP 2250R
Weight:	100 kg (220 lbs)	170 kg (375 lbs)	98 kg (215 lbs)
Height:	92.7 cm (36.5 in.)	182.88 cm (72 in.)	163.2 cm (64.25 in.)
Width:	73.4 cm (29.0 in.)	121.92 cm (48 in.)	53.3 cm (21 in.)
Depth:	81.3 cm (32.0 in.)	50.80 cm (20 in.)	99.1 cm (39 in.)
MAXIMUM NUMBER OF DIGITAL POINTS AVAILABLE			
2048			
MAXIMUM NUMBER OF ANALOG CHANNELS AVAILABLE			
1920			
BATTERY BACKUP TIME			
30 minutes			
TIME OF DAY CLOCK			
Resolution:			
Accuracy:			

MCL/50 MEASUREMENT AND CONTROL LANGUAGE

SECTION II

2.1 GENERAL DESCRIPTION

The HP 2250 contains programs in ROM that allow it to accept streams of commands and data from the host computer, compile the commands, and then execute the commands in the real-time environment of the external system

The commands received from the computer are written in MCL/50, which is a high-level measurement and control language used for writing application programs for the HP 2250. MCL/50 commands are represented by mnemonics, and may include parameters and/or data. A distinction is made between command parameters and data: a command's parameters give the details the HP 2250 needs to execute the command; data is the information the command reads in or writes out as part of the command execution

To program the HP 2250, "tasks" are written in MCL/50, then these tasks are transmitted to and from the HP 2250 by the host computer in the input/output statements of a programming language such as FORTRAN or BASIC, or a computer-specific language such as HPL for the HP 9825 desk top computer. These input/output statements then are transmitted over the HP-IB bus to the HP 2250

2.2 HP-IB COMMUNICATIONS

HP-IB-compatible devices describe their bus operations in terms of an "HP-IB Message" in order to provide a common reference point for computers and the devices they control over the HP-IB bus. There are 12 such messages, of which the HP 2250 uses the six shown on the next page

1 DATA MESSAGE

Transfers tasks and data, including status data

2 REQUIRE SERVICE MESSAGE

Also called Service Request, enables interrupts of the host computer

3 STATUS BYTE MESSAGE

Informs the computer whether or not the HP 2250 has sent the Require Service message

4 TRIGGER MESSAGE

Lets the computer signal the HP 2250

5 ABORT MESSAGE

Gives the computer immediate control of the HP-IB, terminating any current bus transmission from the HP 2250 or any other device on the bus

6 CLEAR MESSAGE

Gives the computer immediate control of the HP-IB and the HP 2250; terminates all bus and HP 2250 activity



2.3 INPUT AND OUTPUT ADDRESSES

MCL/50 specifies the source of an input signal or the destination of an output signal by an addressing convention. This convention consists of a "slot" number, then an analog channel or digital point number.

A slot number defines a physical card slot in the card frame. An analog channel refers to a specific channel on a function card; and a digital point refers to a specific digital point on a function card.

For example, a task to specify the MCL/50 Analog Input (AI) command for measuring an analog input at slot 1, starting at channel 2, and continuing for four sequential channels would be specified as follows:

```
AI(1,2,4)!
```

where the mnemonic AI specifies the command, and the parameters 1, 2, and 4 correspond to the slot, start channel, and number of channels, respectively

2.4 MCL/50 COMMANDS

A list of MCL/50 command mnemonics, and a description of the commands represented by the mnemonics, is presented in table 2-1

Table 2-1 MCL/50 Commands

COMMAND	DESCRIPTION
AAVERAGE	Average analog input data
ABORT	Enable task abort
AI	Read analog input (single integer)
AIC	Read analog input (corrected raw data)
AID	Read analog input (double integer)
AIM	Read analog input (single integer microvolts)
AIR	Read analog input (HP 1000 real format)
AIT	Read reference temperature
AOFF	Auto-ranging off
AON	Auto-ranging on

Table 2-1 MCL/50 Commands (Continued)

COMMAND	DESCRIPTION
BLOCK	Block mode
BTEMP	B-type thermocouple readings 385 to 1820 degrees C)
CALL	Call downloaded subroutines
CASE	Multi-path branching
CBUFFER	Specify delayed conversion buffers
CCONTROL	Counter control
CDA	Continuous data acquisition mode
CFN	Counter channel configuration
CLB	Calibrate analog input slot
CNUMBER	Set counter channel average
CO	Output single word integer current
CONVERT	Perform delayed conversion
COUNT	Read single word count
CPACE	Set pacer frequency
CTIMER	Clear time elapsed
CTL	Write card configuration register
DCOUNT	Read double word count without restart
DI	Read sequential digital inputs
DIMENSION	Dimension buffers and variables
DO	Write sequential digital outputs
DREAD	Double word read

Table 2-1 MCL/50 Commands (Continued)

COMMAND	DESCRIPTION
DWRITE	Double word write
ECFN	Extended counter channel configuration
ECHO	Echo data
EOFF	Delay measurement execute
EON	Re-enable data transfer execute
ETEMP	E-type thermocouple readings (-220 to 1000 degrees C)
EXECUTE	Execute measurement transfer
EXIT	Exit repeat loop
FCI	Global enable/disable function card interrupts
FI	Read sequential input fields
FO	Write sequential output fields
GAIN	Set analog gain
GOSUB	Run a task as a subroutine
GOTO	Unconditional transfer of program control
ID	Card identification
IF	IF THEN *** ELSE *** ENDIF
IN	Store input data
INTERRUPT	Enable/disable card interrupts
ITASK	Action on card interrupt
JTEMP	J-type thermocouple readings (-210 to 1200 degrees C)

Table 2-1 MCL/50 Commands (Continued)

COMMAND	DESCRIPTION
KTEMP	K-type thermocouple readings (-210 to 1372 degrees C)
LABEL	Task label
NEXT	Mark end of REPEAT loop
NTASKS	Allocate space for tasks and down-loaded
ONERROR	Go to LABEL on run-time error
OUT	Output stored data
PACE	Set pacer frequency (scan to scan)
PAUSE	Suspend background task
PCONTROL	Pulse output channel control
PNUMBER	Set number of pulses
POC	Pulse output channel configuration
PRATE	Pulse output channel rate configuration
PRESET	Write multifunction counter preset
PTIMER	Suspend resident task for timed period
RAM	Read amount of memory currently available
RANGE	Set analog range
RBIT	Read bits from function card register
RCFN	Read current counter channel configuration
RCLOCK	Read clock
RCNUMBER	Read counter channel average
RCOUNT	Read single word count with restart

Table 2-1. MCL/50 Commands (Continued)

COMMAND	DESCRIPTION
RCS	Read card status
RDCOUNT	Read double word count with restart
RDO	Read sequential digital outputs
READ	Single word read
REF	Read thermocouple reference
RELEASE	Release buffer (for transmission to HP-IB secondary address)
REPEAT	Repeat *** n times
RESET	Reset firmware and memory
REWIND	Rewind buffer
RFO	Read current digital output fields
RGAIN	Read analog gain
RINTERRUPT	Read interrupt enable state
ROLLOVER	Multifunction counter rollover
RPRESET	Read counter preset
RREM	Read number of remaining pulses for pulse channel
RTEMP	R-type thermocouple readings (-44 to 1768 degrees C)
RTIMER	Read time elapsed
SCLOCK	Set clock
SENSE	Define function card interrupt sense
SKIP	Skip words in buffer

Table 2-1 MCL/50 Commands (Continued)

COMMAND	DESCRIPTION
SOVER	Define function card interrupt sense override
SRQ	Request for service from computer
START	Start background task
STEMP	S-type thermocouple readings (-50 to 1768 degrees C)
STOP	Stop resident task
SYN	System normalize
TASK	Define resident task
TRANSFER	Set up transfer mode for delayed conversion
TREF	Set thermocouple reference
TSTAT	Check task status
TTEMP	T-type thermocouple readings (-240 to 400 degrees C)
VO	Output single word integer voltage
WATCHDOG	Watchdog timer
WBIT	Write bits to function card register
WEXT	Wait for external trigger pulse
WNOW	Wait now
WPACE	Wait for pace pulse
WPOINT	Wait for digital input point
WRITE	Single word write
WTIMER	Wait until time elapsed

2.5 PROGRAMMING EXAMPLE

A simple program using FORTRAN and MCL/50 is shown below:

```

PROGRAM ECHO
IMPLICIT INTEGER(A-Z)
DIMENSION RESULT(2)
MAC=51
WRITE(MAC,11)
11  FORMAT("ECHO(1)77!")
LU=1
READ(MAC,IOSTAT=IERR)RESULT
  IF(IERR NE 0 AND IERR NE 496) STOP 1
  IF(RESULT(1) EQ 0 AND RESULT(2) EQ 77) THEN
12    WRITE(LU,12)
      FORMAT("Echo check O K ")
  ELSE
13    WRITE(LU,13)
      FORMAT("Echo check failed")
  ENDIF
END

```

In the example, MAC is the system unit number for the HP 2250. The characters "ECHO(1)77!" define an MCL/50 task. ECHO is an MCL/50 command which echoes the data given to the result buffer. ECHO is used mainly to test HP 2250 communications. The character "!" marks the end of the task.

The two-word array RESULT is for the HP 2250 response. The instruction in this case is simply to send back the number 77. The first word of the result will be the main task error code, always zero if there is no error. If there is no error, the second word of the result will be the number 77. If there is an error, the error code will be the only data returned.

The statement

```
READ(MAC,IOSTAT=IERR)RESULT
```

is an unformatted binary read, since the HP 2250 returns all data in binary. IOSTAT=IERR is the FORTRAN 4X error-handling parameter. If the FORTRAN read fails and the error code in IERR is 496, FORTRAN has found end-of-data before satisfying the READ list (the two-word buffer RESULT). This means either the READ list is too large, or, as in this case, that the HP 2250 has returned only the main task error code.

If there is no data at all, including no error code, then the READ will time out, returning no error code

2.6 HP 25581A AUTOMATION LIBRARY

The HP 25581A Automation Library is a software set that contains various routines for accessing the HP 2250. One of these routines is an exerciser program called MCX. MCX allows you to talk to the HP 2250 without the necessity of including the MCL/50 commands in the I/O statements of a FORTRAN or BASIC program. When you run MCX, it prompts you for MCL/50 commands, then returns the results after the commands are entered.

For additional information on the automation library and the MCX program, refer to the HP 25581A Automation Library Manual, part number 25581-90001.

SECTION III DOCUMENTATION

3.1 HP 2250 MANUAL SET

The manuals included with an HP 2250 system are shown in figure 3-1 and described in the following paragraphs. Included are descriptions of the contents of each manual, and information as to what type of user each manual is written for.

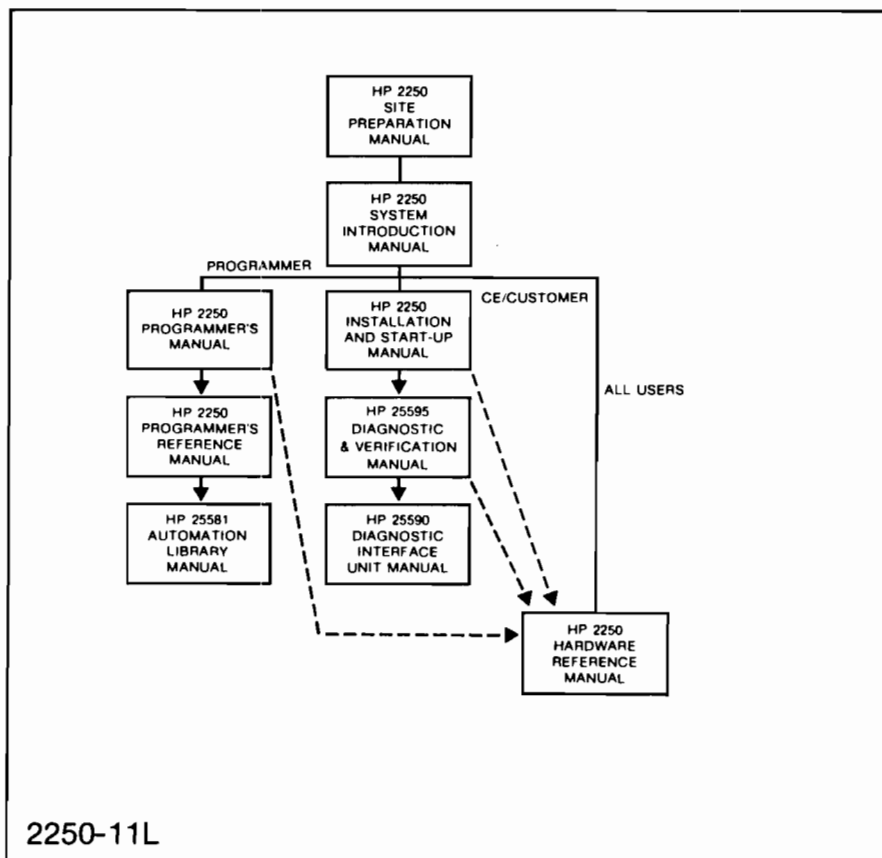


Figure 3-1 HP 2250 Manual Set

3.2 HP 2250 SITE PREPARATION MANUAL, PART NO. 02250-90010

The HP 2250 Site Preparation Manual is written for the new user and the HP Customer Engineer (CE) who will be preparing the customer's facility to receive the HP 2250 system. This manual covers such items as cooling requirements, power requirements, static electric conditions, etc.

3.3 HP 2250 SYSTEM INTRODUCTION MANUAL, PART NO. 02250-90011

The HP 2250 System Introduction Manual (this manual) is written for the new user and will allow such a user to learn the function of the HP 2250 system and the names and functions of all system components. In addition, this manual lists and defines the entire manual set for the HP 2250.

3.4 HP 2250 INSTALLATION AND START-UP MANUAL, PART NO. 02250-90012

The HP 2250 Installation and Service Manual is written for the customer, the Hewlett-Packard Customer Engineer (CE), and the customer Plant electrician.

This manual:

Provides a checklist of equipment needed to install a system, and describes what is needed to set up and support a system.

Describes the enclosure and connector systems to enable a customer to change mechanical and electrical configuration (for example, add an extender).

Includes information necessary to run exerciser programs and confidence tests, and verify correct interconnections.

Provides a quick reference to descriptions which will be used after initial familiarization.

3.5 HP 2250 HARDWARE REFERENCE MANUAL, PART NO. 02250-90001

This manual serves as a reference document for:

A programmer who needs to know how data passes through function cards to the processor, or other hardware interfaces

A CE who may be attempting to diagnose a difficult problem not specified by diagnostic results

Anyone who needs to quickly find information on any HP 2250 hardware product, such as part numbers, accessories, etc

3.6 HP 2250 PROGRAMMER'S MANUAL, PART NO. 25580-90001

This manual is a programmer's guide to the HP 2250 and provides the following:

Enables an automation engineer to learn MCL/50

Illustrates major applications of the HP 2250 in MCL/50 code

Describes the use of a computer system as a controller for the HP 2250

Leads a first-time user through the HP 2250 system

The manual contains full descriptions of all MCL/50 commands and statements, and applications examples using MCL/50

3.7 HP 2250 PROGRAMMER'S REFERENCE MANUAL, PART NO. 25580-90005

This manual is a condensed version of the HP 2250 Programmer's Reference Manual, described in the preceding paragraph

3.8 HP 25581A AUTOMATION LIBRARY MANUAL, PART NO. 25581-90001

Provides information on HP 2250 library routines and enables a new user to learn the routines via a tutorial presentation

3.9 HP 25595 DIAGNOSTIC AND VERIFICATION MANUAL, PART NO. 25595-90001

The diagnostics manual enables a customer or CE to execute diagnostics and interpret the results. A knowledge of MCL/50 is not necessary. Any required maintenance procedures are specified.

3.10 HP 25590A DIAGNOSTIC INTERFACE UNIT, PART NO. 25590-90001

This manual provides operating and service instructions for the diagnostic interface unit (DIU). The DIU is used to run diagnostics and troubleshoot the HP 2250.

3.11 HP 1000 L-SERIES MANUALS

If the HP 1000 L-Series Computer System is installed as part of the HP 2250, a Reference Manual (part no xxxxx-xxxxx), and a Diagnostics Manual (part no xxxxx-xxxxx) will be provided for all the interface cards. These manuals are in addition to the standard HP 1000 L-Series manuals.

3.12 USING THE MANUALS

Table 3-1 is a cross-reference table for the HP 2250 manuals. If you require information on a particular aspect of the system, refer to the table to determine which manual you should use.

Table 3-1 Information Look-Up

SUBJECT	REFER TO
Applications	HP 2250 Programmer's Manual, part no 25580-90001 HP 2250 Programmer's Reference Manual, part no 25580-90005
Calibration	HP 2250 Hardware Reference Manual, part no 02250-90001
Card Descriptions	HP 2250 Hardware Reference Manual, part no 02250-90001
Confidence Tests	HP 2250 Installation and Start-Up Manual, part no 02250-90012
Description cards functional general	HP 2250 Hardware Reference Manual, part no 02250-90001 HP 2250 Hardware Reference Manual part no 02250-90001 HP 2250 Introduction Manual, part no 02250-90011
Diagnostics	HP 25595A Diagnostics Manual, part no 25595-90001 HP 25590 Diagnostics Interface Unit Manual, part no 25590-90001
Error Codes	HP 2250 Installation and Start-Up Manual, part no 02250-90012 HP 2250 Programmer's Manual, part no 25580-90001 HP 2250 Programmer's Reference Manual, part no 25580-90005
Field Wiring Interconnects	HP 2250 Installation and Start-Up Manual, part no 02250-90012
Functional Description	HP 2250 Hardware Reference Manual, part no 02250-90001



Table 3-1 Information Look-Up (Continued)

SUBJECT	REFER TO
General Description	HP 2250 Introduction Manual, part no 02250-90011
Initial Set-Up	HP 2250 Installation and Start-Up Manual, part no 02250-90012
Installation	HP 2250 Installation and Start-Up Manual, part no 02250-90012
Library Routines	HP 25581A Automation Library Manual, part no 25581-90001
Maintenance	HP 2250 Hardware Reference Manual, part no 02250-90001
MCL/50	HP 2250 Programmer's Manual, part no 25580-90001 HP 2250 Programmer's Reference Manual, part no 25580-90005
Programming	HP 2250 Programmer's Manual, part no 25580-90001 HP 2250 Programmer's Reference Manual, part no 25580-90005
Self Test	HP 2250 Installation and Start-Up Manual, part no 02250-90012
Site Preparation	HP 2250 Site Preparation Manual, part no 02250-90010
Reconfiguration	HP 2250 Installation and Start-Up Manual, part no 02250-90012
Troubleshooting	HP 25595A Diagnostics and Verification Manual, part no 25595-90001 HP 25590 Diagnostic Interface Unit Manual, part no 25590-90001 HP 2250 Hardware Reference Manual, part no 02250-90001

16-channel relay multiplexer, 1-13

16-point

digital multifunction, 1-14

relay output card, 1-14

32-channel

high-level multiplexer, 1-12

low-level multiplexer, 1-12

32-point

digital input, 1-13

digital output, 1-14

4-channel

counter, 1-13

pulse output card, 1-14

voltage/current analog output, 1-13

A

Abort message, 2-2

Addresses, 2-2

Analog Input Card, 1-12

ANSI Standard MC 1 1, 1-1

Applications, 3-5

Automation

library, 2-10

library manual, 3-4

B

Backplane Interface Card, 1-9

BIF, 1-9

C

Cables, 1-4

Calibration, 3-5

Card descriptions, 3-5

Channels, 1-9

Clear message, 2-2
Confidence tests, 3-5
Configuration, 3-6
Controller, 1-1
Counter, 1-13

D

Data message, 2-2
Description, 3-5
Diagnostic
 interface unit manual, 3-4
 manual, 3-4
Diagnostics, 3-5
Digital output, 1-14
Documentation, 3-1

E

Error codes, 3-5

F

Field
 wiring, 1-9
 wiring interconnects, 3-5
Function cards, 1-1, 1-9
Functional description, 3-5
FWAs, 1-9

G

General description, 3-6

H

Hardware reference manual, 3-3
HP 1000, 1-1
HP 12001B Processor Card, 1-4, 1-6
HP 12009A HP-IB Interface Card, 1-4, 1-6
HP 12013A Battery Backup Card, 1-4, 1-6
HP 12035A Power Supply, 1-4, 1-6
HP 12070A Memory Card, 1-4, 1-6
HP 12071A MCI Card, 1-4, 1-6
HP 2104, 1-2, 1-4

- HP 2250
 - applications, 3-5
 - calibration, 3-5
 - card descriptions, 3-5
 - components, 1-3
 - confidence tests, 3-5
 - configuration, 3-6
 - description, 3-5
 - diagnostics, 3-5
 - error codes, 3-5
 - field wiring interconnects, 3-5
 - functional description, 3-5
 - general description, 1-1, 3-6
 - initial set-up, 3-6
 - installation, 3-6
 - interconnects, 3-5
 - interrupts, 1-13
 - library routines, 3-6
 - maintenance, 3-6
 - manual set, 3-1
 - mounting, 1-1
 - panel mounting, 1-4
 - programming, 3-6
 - rack mounting, 1-4
 - reconfiguration, 3-6
 - self test, 3-6
 - site preparation, 3-6
 - specifications, 1-17
 - troubleshooting, 3-6
 - typical systems, 1-1
- HP 2251, 1-2, 1-9
- HP 25501A 16-Channel High-Speed Analog Input, 1-12
- HP 25502A 32-Channel High-Level Multiplexer, 1-12
- HP 25503A 32-Channel Low-Level Multiplexer, 1-12
- HP 25504A 16-Channel Relay Multiplexer, 1-13
- HP 25510A 4-Channel Voltage/Current Analog Output, 1-13
- HP 25511A 32-Point Digital Input, 1-13
- HP 25512A 4-Channel Counter, 1-13
- HP 25513A 32-Point Digital Output, 1-14
- HP 25514A 16-Point Relay Output, 1-14
- HP 25515A 4-Channel Pulse Output, 1-14
- HP 25516A 16-Point Digital Multifunction, 1-14
- HP 25594A Thermocouple Reference Connector, 1-15
- HP 37203L HP-IB Link, 1-4, 1-6
- HP 9835, 1-1
- HP-IB
 - bus, 1-1
 - communications, 2-1

I

IEEE Standard 488-1975, 1-1
Information look-up, 3-5
Initial set-up, 3-6
Input and output addresses, 2-2
Installation, 3-6
 manual, 3-2
Interconnects, 3-5
Interface, 1-1

L

L-Series manuals, 3-4
Library routines, 3-6
Look-up table, 3-5



M

Maintenance, 3-6
 manual set, 3-1
 manuals, 3-4
MCL/50, 1-9
 addresses, 2-2
 commands, 2-3
 description, 2-1
 messages, 2-2
 program example, 2-9
 tasks, 2-1
MCX routine, 2-10
Messages, 2-2
Multifunction card, 1-14
Multiplexer
 high-level, 1-12
 low-level, 1-12
 relay, 1-13

O

Optional cards, 1-4, 1-6

P

Points, 1-9
Power supply, 1-4, 1-6

Index-4

Programmer's
 manual, 3-3
 reference manual, 3-3
Programming, 3-6
Pulse output card, 1-14

R

Rack mounting, 1-4
Reconfiguration, 3-6
Relay output card, 1-14
Require service message, 2-2
RRACK, 1-4

S

SCMs, 1-15
Self test, 3-6
Signal Conditioning Modules, 1-15
Site
 preparation, 3-6
 preparation manual, 3-2
Slot number, 2-2
Specifications, 1-17
Status byte message, 2-2
System introduction manual, 3-2

T

Tasks, 2-1
Thermocouple reference connector, 1-15
TRC, 1-15
Trigger message, 2-2
Troubleshooting, 3-6

U

Using the manuals, 3-4

SALES & SUPPORT OFFICES

Arranged alphabetically by country



Product Line Sales/Support Key

Key	Product Line
A	Analytical
CM	Components
C	Computer Systems
CP	Computer Systems Primary Service Responsible Office (SRO)
CS	Computer Systems Secondary SRO
E	Electronic Instruments & Measurement Systems
M	Medical Products
MP	Medical Products Primary SRO
MS	Medical Products Secondary SRO
P	Consumer Calculators

* Sales only for specific product line
 ** Support only for specific product line

IMPORTANT: These symbols designate general product line capability. They do not insure sales or support availability for all products within a line, at all locations. Contact your local sales offices for information regarding locations where HP support is available for specific products.

HP distributors are printed in italics.

ANGOLA

Telebra
Empresa Técnica de Equipamentos
Eléctricos, S.A.R.L.
R. Barbosa Rodrigues, 41-1 DT.
Caixa Postal 6487
LUANDA
 Tel: 35515,35516
 A*,E,M,P

ARGENTINA

Hewlett-Packard Argentina S.A.
 Avenida Santa Fe 2035
 Martínez 1640 BUENOS AIRES
 Tel: 798-5735, 792-1293
 Telex: 122443 AR CIGY
 Cable: HEWPACKARG
 A,E,CP,P

Biotron S.A.C.I.y.M
Avenida Paseo Colon 221
9 Piso
1399 BUENOS AIRES
 Tel: 30-4846, 30-1851, 30-8384
 Telex: (33)17595 BIONAR
 Cable: BIOTRON Argentina
 M

Fate S.A. Electronica
Barlolomeu Milre 833
1036 BUENOS AIRES
 Tel: 74-41011, 74-49277,
 74-43459
 Telex: 18137, 22754
 P

AUSTRALIA

Adelaide, South Australia Pty. Ltd.
 Hewlett-Packard Australia Pty.Ltd.
 153 Greenhill Road
PARKSIDE, S.A. 5063
 Tel: 272-5911
 Telex: 82536
 Cable: HEWPARD Adelaide
 A*,CM,CS,E,MS,P

Brisbane, Queensland Office

Hewlett-Packard Australia Pty.Ltd.
 5th Floor
 Teachers Union Building
 495-499 Boundary Street
SPRING HILL, Queensland 4000
 Tel: 229-1544
 Telex: 42133
 Cable: HEWPARD Brisbane
 A,CM,CS,E,MS,P

Canberra, Australia Capital Office

Hewlett-Packard Australia Pty.Ltd.
 121 Wollongong Street
FYSHWICK, A.C.T. 2609
 Tel: 952733
 Telex: 62650
 Cable: HEWPARD Canberra
 A*,CM,CS,E,MS,P

Melbourne, Victoria Office

Hewlett-Packard Australia Pty.Ltd.
 31-41 Joseph Street
BLACKBURN, Victoria 3130
 Tel: 89-6351
 Telex: 31-024
 Cable: HEWPARD Melbourne
 A,CM,CP,E,MS,P

Perth, Western Australia Office

Hewlett-Packard Australia Pty.Ltd.
 141 Stirling Highway
NEDLANDS, W.A. 6009
 Tel: 386-5455
 Telex: 93859
 Cable: HEWPARD Perth
 A,CM,CS,E,MS,P

Sydney, New South Wales Office

Hewlett-Packard Australia Pty.Ltd.
 17-23 Talavera Road
NORTH RYDE, N.S.W. 2113
 P.O. Box 308
 Tel: 887-1611
 Telex: 21561
 Cable: HEWPARD Sydney
 A,CM,CP,E,MS,P

AUSTRIA

Hewlett-Packard Ges.m.b.h.
 Grollenhofstrasse 94
 Verkaufsburo Graz
8052 GRAZ
 Tel: 21-5-66
 Telex: 32375
 CM,C*,E*
 Hewlett-Packard Ges.m.b.h.
 Wehlstrasse 29
 P O Box 7
 A-1205 VIENNA
 Tel: (222) 35-16-210
 Telex: 135823/135066
 A,CM,CP,E,MS,P

BAHRAIN

Green Salon
P.O. Box 557
BAHRAIN
 Tel: 5503
 Telex: 88419
 P

Wael Pharmacy
P.O. Box 648

BAHRAIN
 Tel: 54886, 56123
 Telex: 8550 WAEL GJ
 M

BELGIUM

Hewlett-Packard Belgium S.A./N.V.
Blvd de la Woluwe, 100
Wohuwedal
B-1200 BRUSSELS
 Tel: (02) 762-32-00
 Telex: 23-494 paloben bru
 A,CM,CP,E,MP,P

BRAZIL

Hewlett-Packard do Brasil I.e.C.
 Ltda.
 Alameda Rio Negro, 750
ALPHAVILLE 06400 Barueri SP
 Tel: 421-1311
 Telex: 011 23602 HPBR-BR
 Cable: HEWPACK Sao Paulo
 A,CM,CP,E,MS

Hewlett-Packard do Brasil I.e.C.
 Ltda.
 Rua Padre Chagas, 32
90000-PORTO ALEGRE-RS
 Tel: 22-2998, 22-5621
 Cable: HEWPACK Porto Alegre
 A*,CM,E,MS,P*
 Hewlett-Packard do Brasil I.e.C.
 Ltda.
 Avenida Epitacio Pessoa, 4664
22471 RIO DE JANEIRO-RJ
 Tel: 286-0237
 Telex: 021-21905 HPBR-BR
 Cable: HEWPACK Rio de Janeiro
 A,CM,E,MS,P*

BURUNDI

Typomeca S.P.R.L.
 B.P. 553
BUJUMBURA
 Tel: 2659
 P

CANADA

Alberta
 Hewlett-Packard (Canada) Ltd.
 210, 7220 Fisher Street S.E.
CALGARY, Alberta T2H 2H8
 Tel: (403) 253-2713
 Telex: 610-821-6141
 A,CM,CP,E*,MS,P*

Hewlett-Packard (Canada) Ltd.
 11620A-168th Street
EDMONTON, Alberta T5M 3T9
 Tel: (403) 452-3670
 Telex: 610-831-2431
 A,CM,CP,E,MS,P*

British Columbia

Hewlett-Packard (Canada) Ltd.
 10691 Shellbridge Way
RICHMOND, British Columbia
 V6X 2W7
 Tel: (604) 270-2277
 Telex: 610-922-5059
 A,CM,CP,E*,MS,P*

Manitoba

Hewlett-Packard (Canada) Ltd.
 380-550 Century Street
WINNIPEG, Manitoba R3H 0Y1
 Tel: (204) 786-7581
 Telex: 610-671-3531
 A,CM,CS,E,MS,P*

Nova Scotia

Hewlett-Packard (Canada) Ltd.
 P.O. Box 931
 900 Windmill Road
DARTMOUTH, Nova Scotia B2Y 3Z6
 Tel: (902) 469-7820
 Telex: 610-271-4482
 CM,CP,E*,MS,P*

Ontario

Hewlett-Packard (Canada) Ltd.
 552 Newbold Street
LONDON, Ontario N6E 2S5
 Tel: (519) 686-9181
 Telex: 610-352-1201
 A,CM,CS,E*,MS,P*

Hewlett-Packard (Canada) Ltd.
 6877 Goreway Drive
MISSISSAUGA, Ontario L4V 1M8
 Tel: (416) 678-9430
 Telex: 610-492-4246
 A,CM,CP,E,MP,P

Hewlett-Packard (Canada) Ltd.
 1020 Morrison Drive
OTTAWA, Ontario K2H 8K7
 Tel: (613) 820-6483
 Telex: 610-563-1636
 A,CM,CP,E*,MS,P*

Quebec

Hewlett-Packard (Canada) Ltd.
 17500 South Service Road
 Trans-Canada Highway
KIRKLAND, Quebec H9J 2M5
 Tel: (514) 697-4232
 Telex: 610-422-3022
 A,CM,CP,E,MP,P*

CHILE

Jorge Calcagni y Cia. Ltda.
Arluro Buttle 065
Casilla 16475
Correo 9, SANTIAGO
 Tel: 220222
 Telex: JCALCAGNI
 A,E,M,P
Olympia (Chile) Ltd.
Rodrico de Araya 1045
Casilla 256-V
SANTIAGO 21
 Tel: 25-50-44
 Telex: 40-565
 P

COLOMBIA

Instrumentación
H. A. Langebaek & Kier S.A.
Apartado Aéreo 6287
BOGOTÁ 1, D.E.
Carrera 7 No. 48-75
BOGOTÁ, 2 D.E.
 Tel: 287-8877
 Telex: 44400
 Cable: AARIS Bogota
 A,E,M,P
Instrumentación
H. A. Langebaek & Kier S.A.
Edif. Camacot, Local 105
Carrera 63 NO. 49-A-31
Apartado 54098
MEDELLIN
 Tel: 304475
 A,E,M,P

COSTA RICA

Cientifica Costarricense S.A.
Avenida 2, Calle 5
San Pedro de Montes de Oca
Apartado 10159
SAN JOSÉ
 Tel: 24-38-20, 24-08-19
 Telex: 2367 GALGUR
 Cable: GALGUR
 A,E,M

CYPRUS

Telexera Ltd.
P.O. Box 4809
14C Slassinos Avenue
NICOSIA
 Tel: 45628
 Telex: 2894
 E,M,P

CZECHOSLOVAKIA

Hewlett-Packard
Obchodni Zastupitelstvi v CSSR
Pisemny Slyk
Post. schranka 27
CS-118 01 PRAHA 011
 Tel: 66-296
 Telex: 121353 IHC

DENMARK

Hewlett-Packard A/S
 Datavej 52
DK-3460 BIRKEROD
 Tel: (02) 81-66-40
 Telex: 37409 hpas dk
 A,CM,CP,E,MS,P
 Hewlett-Packard A/S
 Navervej 1
DK-8600 SILKEBORG
 Tel: (06) 82-71-66
 Telex: 37409 hpas dk
 CM,CS,E

ECUADOR

CYEDE Cia. Ltda.
P.O. Box 6423 CCI
Avenida Eloy Alfaro 1749
QUITO
 Tel: 450-975, 243-052
 Telex: 2548 CYEDE ED
 Cable: CYEDE-Quito
 A,E
Hospitalar S.A.
Casilla 3590
Robles 625
QUITO
 Tel: 545-250, 545-122
 Cable: HOSPITALAR-Quito
 M

EGYPT

Samiro
Sami Amin Trading Office
18 Abdel Aziz Gawish
ABDINE-CAIRO
 Tel: 24-932
 P
International Engineering Associates
24 Hussein Hegazi Street
Kasr-el-Amn
CAIRO
 Tel: 23-829
 Telex: 93830
 E,M
Informatic For Computer Systems
22 Talaat Harb Street
CAIRO
 Tel: 759006
 Telex: 93938 FRANK UN
 C

SALES & SUPPORT OFFICES

Arranged alphabetically by country

EL SALVADOR

IPESA
Boulevard de los Heroes
Edificio Sarah 1148
SAN SALVADOR
Tel: 252787
A*,C,E,P

FINLAND

Hewlett-Packard Oy
Revontulentie 7
SF-02100 **ESPOO** 10
Tel: (90) 455-0211
Telex: 121563 hewpa sf
A,CM,CP,E,MS,P

FRANCE

Hewlett-Packard France
Le Ligoures
Bureau de Vente de
Aix-en-Provence
Place Romée de Villeneuve
F-13090 **AIX-EN-PROVENCE**
Tel: (42) 59-41-02
Telex: 410770F
A,CM,CS,E,MS,P*

Hewlett-Packard France
Boite Postale No. 503
F-25026 **BESANCON**
28 Rue de la Republique
F-25000 **BESANCON**
Tel: (81) 83-16-22
C,M

Hewlett-Packard France
Bureau de Vente de Lyon
Chemin des Mouilles
Boite Postale No. 162
F-69130 **ECULLY** Cédex
Tel: (78) 33-81-25
Telex: 310617F
A,CM,CP,E,MP

Hewlett-Packard France
Immeuble France Evry
Tour Lorraine
Boulevard de France
F-91035 **EVRY** Cédex
Tel: (60) 77-96-60
Telex: 692315F
C,M,E

Hewlett-Packard France
5th Avenue Raymond Chanas
F-38320 **EYBENS**
Tel: (76) 25-81-41
Telex: 980124 HP GRENOB EYBE
C,M,CS

Hewlett-Packard France
Bâtiment Ampère
Rue de la Commune de Paris
Boite Postale 300
F-93153 **LE BLANC MESSIL**
Tel: (01) 865-44-52
Telex: 211032F
C,M,CP,E,MS

Hewlett-Packard France
Le Montesquieu
Avenue du Président JF Kennedy
F-33700 **MERIGNAC**
Tel: (56) 34-00-84
Telex: 550105F
C,M,CP,E,MS

Hewlett-Packard France
32 Rue Lothaire
F-57000 **METZ**
Tel: (87) 65-53-50
C,M,CS

Hewlett-Packard France
Zone d'activités de Courtaboeuf
Avenue des Tropiques
Boite Postale 6
F-91401 **ORSAY** Cédex
Tel: (1) 907-78-25
Telex: 600048F
A,CM,CP,E,MP,P

Hewlett-Packard France
Paris Porte-Maillot
13, 15 25 Boulevard De L'Amiral
Bruix
F-75782 **PARIS** Cédex 16
Tel: (01) 502-12-20
Telex: 613663F
C,M,CP,MS,P

Hewlett-Packard France
2 Allée de la Bourgonette
F-35100 **RENNES**
Tel: (99) 51-42-44
Telex: 740912F
C,M,CS,E,MS,P*

Hewlett-Packard France
4 Rue Thomas Mann
Boite Postale 56
F-67200 **STRASBOURG**
Tel: (88) 28-56-46
Telex: 890141F
C,M,CS,E,MS,P*

Hewlett-Packard France
20 Chemin de la Cèpière
F-31081 **TOULOUSE** Cédex
Tel: (61) 40-11-12
Telex: 531639F
A,CM,CS,E,P*

Hewlett-Packard France
Bureau de Vente de Lille
Immeuble Péricentre
Rue Van Gogh
F-59650 **VILLENEUVE D'ASO**
Tel: (20) 91-41-25
Telex: 160124F
C,M,CS,E,MS,P*

GERMAN FEDERAL REPUBLIC

Hewlett-Packard GmbH
Technisches Büro Berlin
Keithstrasse 2-4
D-1000 **BERLIN** 30
Tel: (030) 24-90-86
Telex: 018 3405 hpbln d
A,CM,CS,E,X,M,P

Hewlett-Packard GmbH
Technisches Büro Böblingen
Herrenberger Strasse 110
D-7030 **BÖBLINGEN**
Tel: (07031) 667-1
Telex: 07265739 bbn or 07265743
A,CM,CP,E,MP,P

Hewlett-Packard GmbH
Technisches Büro Dusseldorf
Emanuel-Leutze-Strasse 1
D-4000 **DUSSELDORF**
Tel: (0211) 5971-1
Telex: 085/86 533 hpdd d
A,CM,CP,E,MS,P

Hewlett-Packard GmbH
Vertriebszentrale Frankfurt
Berner Strasse 117
Postfach 560 140
D-6000 **FRANKFURT** 56
Tel: (0611) 50-04-1
Telex: 04 13249 hpffm d
A,CM,CP,E,MP,P

Hewlett-Packard GmbH
Technisches Büro Hamburg
Kapsladring 5
D-2000 **HAMBURG** 60
Tel: (040) 63804-1
Telex: 21 63 032 hphh d
A,CM,CP,E,MS,P

Hewlett-Packard GmbH
Technisches Büro Hannover
Am Grossmarkt 6
D-3000 **HANNOVER** 91
Tel: (0511) 46-60-01
Telex: 092 3259
A,CM,CS,E,MS,P

Hewlett-Packard GmbH
Technisches Büro Mannheim
Rosslauer Weg 2-4
D-6800 **MANNHEIM**
Tel: (621) 70050 Telex: 0462105
A,C,E

Hewlett-Packard GmbH
Technisches Büro Neu Ulm
Messerschmittstrasse 7
D-7910 **NEU ULM**
Tel:
Telex:

Hewlett-Packard GmbH
Technisches Büro Nürnberg
Neumeyersstrasse 90
D-8500 **NÜRNBERG**
Tel: (0911) 56-30-83
Telex: 0623 860
C,M,CS,E,MS,P

Hewlett-Packard GmbH
Technisches Büro München
Eschenstrasse 5
D-8021 **TAUFKIRCHEN**
Tel: (089) 6117-1
Telex: 0524985
A,CM,CP,E,MS,P

GREAT BRITAIN

Hewlett-Packard Ltd.
Trafalgar House
Navigation Road
ALTRINCHAM
Cheshire WA14 1NU
Tel: (061) 928-6422
Telex: 668068
A,C,E,M

Hewlett-Packard Ltd.
Oakfield House, Oakfield Grove
Clifton
BRISTOL BS8 2BN
Tel: 36806
Telex: 444302
P

Hewlett-Packard Ltd.
14 Wesley Street
CASTLEFORD
Yorkshire WF10 1AE
Tel: (0977) 550016
Telex: 5557355
C

Hewlett-Packard Ltd.
Fourier House
257-263 High Street
LONDON COLNEY
Herts., AL2 1HA
Tel: (0727) 24400
Telex: 1-8952716
C,E

Hewlett-Packard Ltd
Tradax House, St. Mary's Walk
MAIDENHEAD
Berkshire, SL6 1ST
Tel: (0628) 39151
E,P

Hewlett-Packard Ltd.
308/314 Kings Road
READING, Berkshire
Tel: 61022
Telex: 84-80-68
C,M,P

Hewlett-Packard Ltd.
Quadrangle
106-118 Station Road
REDHILL, Surrey
Tel: (0737) 68655
Telex: 947234
C,E

Hewlett-Packard Ltd.
Westminster House
190 Stratford Road
SHRLEY, Solihull
West Midlands B90 3BJ
Tel: (021) 7458800
Telex: 339105
C

Hewlett-Packard Ltd.
King Street Lane
WIMBURNHAM, Wokingham
Berkshire RG11 5AP
Tel: (0734) 784774
Telex: 847178
A,C,E,M

GREECE

Kostas Karayannis
8 Omirou Street
ATHENS 133
Tel: 32-30-303, 32-37-371
Telex: 21 59 62 RKAR GR
E,M,P

"Plaiso"
G. Gerados
24 Stournara Street
ATHENS
Tel: 36-11-160
Telex: 21 9492
P

GUATEMALA

IPESA
Avenida Reforma 3-48
Zona 9
GUATEMALA CITY
Tel: 316627, 314786, 664715
Telex: 4192 Teletro Gu
A,C,E,M,P

HONG KONG

Hewlett-Packard Hong Kong, Ltd.
G.P.O. Box 795
5th Floor, Sun Hung Kai Centre
30 Harbour Road
HONG KONG
Tel: 5-8323211
Telex: 66678 HEWPA HX
Cable: HP ASIA LTD Hong Kong
E,CP,P

Schmidt & Co. (Hong Kong) Ltd.
Wing On Centre, 28th Floor
Connaught Road, C.
HONG KONG
Tel: 5-455644
Telex: 74766 SCHMX HX
A,M

ICELAND

Elding Trading Company Inc
Hafnarvöll-Tryggvagölu
P.O. Box 895
IS-REYKJAVIK
Tel: 1-58-20, 1-63-03
M

INDIA

Blue Star Ltd.
Bhavdeep
Stadium Road
AHMEDABAD 380 014
Tel: 42932
Telex: 012-234
Cable: BLUEFROST
E

Blue Star Ltd.
11 Magaral Road
BANGALORE 560 025
Tel: 55668
Telex: 0845-430
Cable: BLUESTAR
A,CM,C,E

Blue Star Ltd.
Band Box House
Prabhadevi
BOMBAY 400 025
Tel: 45-73-01
Telex: 011-3751
Cable: BLUESTAR
A,M

Blue Star Ltd.
Sahas
414/2 Vir Savarkar Marg
Prabhadevi
BOMBAY 400 025
Tel: 46-65-55
Telex: 011-4093
Cable: FROSTBLUE
A,CM,C,E,M

Blue Star Ltd.
7 Hare Street
CALCUTTA 700 001
Tel: 12-01-31
Telex: 021-7655
Cable: BLUESTAR
A,M

Blue Star Ltd.
Meenakshi Mandiram
XXXXV/1379-2 Mahatma Gandhi
Road
COCHIN 682-016
Tel: 32069
Telex: 085-514
Cable: BLUESTAR
A*

Blue Star Ltd.
133 Kodambakkam High Road
MADRAS 600 034
Tel: 82057
Telex: 041-379
Cable: BLUESTAR
A,M

Blue Star Ltd.
Bhandari House, 7th/8th Floors
91 Nehru Place
NEW DELHI 110 024
Tel: 682547
Telex: 031-2463
Cable: BLUESTAR
A,CM,C,E,M

Blue Star Ltd.
1-1-117/1 Sarojini Devi Road
SECUNDERABAD 500 033
Tel: 70126
Telex: 0155-459
Cable: BLUESTAR
A,E

Blue Star Ltd.
T.C. 7/603 Poornima
Maruthankuzhi
TRIVANDRUM 695 013
Tel: 65799
Telex: 0884-259
Cable: BLUESTAR
E

INDONESIA

BERCA Indonesia P.T.
P.O.Box 496/Jk1.
Jin. Abdul Muis 62
JAKARTA
Tel: 373009
Telex: 31146 BERSAL IA
Cable: BERSAL JAKARTA
A,E,M,P

BERCA Indonesia P.T.
P.O. Box 174/Sby.
J.L. Kutei No. 11
SUBABE-SURABAYA
Tel: 68172
Telex: 31146 BERSAL SD
Cable: BERSAL-SURABAYA
A*,E,M,P

SALES & SUPPORT OFFICES

Arranged alphabetically by country

3

IRAQ

Hewlett-Packard Trading S.A.
Mansoor City 9B/3/7
BAGHDAD
Tel: 551-49-73
Telex: 2455 HEPAIRAQ IK
CP

IRELAND

Hewlett-Packard Ireland Ltd.
Kestrel House
Clanwilliam Court
Lower Mount Street
DUBLIN 2, Eire
Tel: 680424, 680426
Telex: 30439
A,C,CM,E,M,P
Cardiac Services Ltd.
Kilmore Road
Arlane
DUBLIN 5, Eire
Tel: (01) 35 1820
Telex: 30439
M

ISRAEL

Electronics Engineering Division
Motrola Israel Ltd.
16 Kremenetski Street
P.O. Box 25016
TEL-AVIV 67899
Tel: 38973
Telex: 33569 Motil IL
Cable: BASTEL Tel-Aviv
A,C,CM,E,M,P

ITALY

Hewlett-Packard Italiana S.p.A.
Traversa 99C
Giulio Petrone, 19
I-70124 **BARI**
Tel: (080) 41-07-44
M
Hewlett-Packard Italiana S.p.A.
Via Martin Luther King, 38/111
I-40132 **BOLOGNA**
Tel: (051) 402394
Telex: 511630
CM,CS,E,MS
Hewlett-Packard Italiana S.p.A.
Via Principe Nicola 43G/C
I-95126 **CATANIA**
Tel: (095) 37-10-87 Telex: 970291
C,P
Hewlett-Packard Italiana S.p.A.
Via G. Di Vittorio 9
I-20063 **CERNUSCO SUL NAVIGLIO**
Tel: (2) 903691
Telex: 334632
A,CM,CP,E,MP,P
Hewlett-Packard Italiana S.p.A.
Via Nuova San Rocco A
Capodimonte, 62/A
I-80131 **NAPOLI**
Tel: (081) 7413544
A,CM,CS,E
Hewlett-Packard Italiana S.p.A.
Viale G. Modugno 33
I-16156 **GENOVA PEGLI**
Tel: (010) 68-37-07
E,C
Hewlett-Packard Italiana S.p.A.
Via Turazza 14
I-35100 **PADOVA**
Tel: (49) 664888
Telex: 430315
A,CM,CS,E,MS
Hewlett-Packard Italiana S.p.A.
Viale C. Pavese 340
I-00144 **ROMA**
Tel: (06) 54831
Telex: 610514
A,CM,CS,E,MS,P*

Hewlett-Packard Italiana S.p.A.
Corso Giovanni Lanza 94
I-10133 **TORINO**
Tel: (011) 682245, 659308
Telex: 221079
CM,CS,E

JAPAN

Yokogawa-Hewlett-Packard Ltd.
Inoue Building
1348-3, Asahi-cho
ATSUGI, Kanagawa 243
Tel: (0462) 24-0451
CM,C*E
Yokogawa-Hewlett-Packard Ltd.
3-30-18 Tsuruya-cho
Kanagawa-ku, Yokohama-Shi
KANAGAWA, 221
Tel: (045) 312-1252
Telex: 382-3204 YHP YOK
CM,CS,E
Yokogawa-Hewlett-Packard Ltd.
Sannomiya-Daichi Seimei-Bldg. 5F
69 Kyo-Machi Ikuta-Ku
KOBE CITY 650 Japan
Tel: (078) 392-4791
C,E

Yokogawa-Hewlett-Packard Ltd.
Kumagaya Asahi Yasoji Bldg 4F
4-3 Chome Tsukuba
KUMAGAYA, Saitama 360
Tel: (0485) 24-6563
CM,CS,E

Yokogawa-Hewlett-Packard Ltd.
Mito Mitsui Building
4-73, San-no-maru, 1-chome
MITO, Ibaragi 310
Tel: (0292) 25-747Q
CM,CS,E

Yokogawa-Hewlett-Packard Ltd.
Sumitomo Seimei Bldg.
11-2 Shimo-sasajima-cho
Nakamura-ku
NAGOYA, Aichi 450
Tel: (052) 581-1850
CM,CS,E,MS

Yokogawa-Hewlett-Packard Ltd.
Chuo Bldg., 4th Floor
5-4-20 Nishinakajima, 5-chome
Yodogawa-ku, Osaka-shi
OSAKA, 532
Tel: (06) 304-6021
Telex: YHPOSA 523-3624
A,CM,CP,E,MP,P*

Yokogawa-Hewlett-Packard Ltd.
29-21 Takaido-Higashi 3-chome
Suginami-ku **TOKYO 168**
Tel: (03) 331-6111
Telex: 232-2024 YHPTOK
A,CM,CP,E,MP,P*

JORDAN

Mouasher Cousins Company
P.O. Box 1387
AMMAN
Tel: 24907, 39907
Telex: 21456 SABCO JO
E,M,P

KOREA

Samsung Electronics
4759 Singil, 6 Dong
Young Deung Po Ku,
SEOUL
Tel: 8334311, 8330002
Telex: SAMSAN 27364
A,C,E,M,P

KUWAIT

Al-Khalidya Trading & Contracting
P.O. Box 830 Safat

KUWAIT
Tel: 42-4910, 41-1726
Telex: 2481 Areeg kt
A,E,M

Photo & Cine Equipment

P.O. Box 270 Safat
KUWAIT
Tel: 42-2846, 42-3801
Telex: 2247 Malin
P

LUXEMBOURG

Hewlett-Packard Belgium S.A./N.V.
Blvd de la Woluwe, 100
Woluwedal
B-1200 BRUSSELS
Tel: (02) 762-32-00
Telex: 23-494 paloben bru
A,CM,CP,E,MP,P

MALAYSIA

Hewlett-Packard Sales (Malaysia)
Sdn Bhd.
Suite 2.2/12.22
Bangunan Angkasa Raya
Jalan Ampang
KUALA LUMPUR
Tel: 483544
Telex: MA31011
A,CP,E,M,P*

Protel Engineering
P.O. Box 1917
Lot 319, Salok Road
Kuching, SARAWAK
Tel: 53544
Telex: MA 70904 PROMAL
Cable: PROTELENG
A,E,M

MEXICO

Hewlett-Packard Mexicana, S.A. de
C.V.
Avenida Periferico Sur No. 6501
Tepepan, Xochimilco
MEXICO CITY 23, D.F.
Tel: (905) 676-4600
Telex: 017-74-507
A,CP,E,MS,P

Hewlett-Packard Mexicana, S.A. de
C.V.
Rio Volga 600
Colonia del Valle
MONTERRREY, N.L.
Tel: 78-42-93, 78-42-40, 78-42-41
Telex: 038-410
CS

MOROCCO

Dolbeau
81 rue Karatchi
CASABLANCA
Tel: 3041-82, 3068-38
Telex: 23051, 22822
E
Gerep
2 rue d'Agadir
Boite Postale 156
CASABLANCA
Tel: 272093, 272095
Telex: 23 739
P

MOZAMBIQUE

A.N. Goncalves Ltd.
162, 1 Apt. 14 Av. D. Luis
Caixa Postal 107
MAPUTO
Tel: 27091, 27114
Telex: 6-203 NEGON Mo
Cable: NEGON
A,E,M,P

NETHERLANDS

Hewlett-Packard Nederland B.V.
Van Heuven Goedhartlaan 121
NL 1181KK AMSTELVEEN
P.O. Box 667
NL 1080 AR AMSTELVEEN
Tel: (20) 47-20-21
Telex: 13 216
A,CM,CP,E,MP,P
Hewlett-Packard Nederland B.V.
Bongerd 2
NL 2906VK CAPPELLE, A/D IJssel
P.O. Box 41
NL 2900 AA CAPELLE, IJssel
Tel: (10) 51-64-44
Telex: 21261 HEPAC NL
A,CM,CP

NEW ZEALAND

Hewlett-Packard (N.Z.) Ltd.
169 Manukau Road
P.O. Box 26-189
Epsom, AUCKLAND
Tel: 68-7159
Cable: HEWPACK Auckland
CM,CS,E,P*
Hewlett-Packard (N.Z.) Ltd.
4-12 Cruickshank Street
P.O. Box 9443
Kilbirnie, WELLINGTON 3
Tel: 877-199
Cable: HEWPACK Wellington
CM,CP,E,P
Northrop Instruments & Systems
Ltd.
Eden House, 44 Khyber Pass Road
P.O. Box 9682
Newmarket, AUCKLAND
Tel: 794-091
A,M

Northrop Instruments & Systems
Ltd.
Terrace House, 4 Oxford Terrace
P.O. Box 8388
CHRISTCHURCH
Tel: 64-165
A,M
Northrop Instruments & Systems
Ltd.
Sturdee House
85-87 Ghuznee Street
P.O. Box 2406
WELLINGTON
Tel: 850-091
Telex: NZ 3380
A,M

NIGERIA

The Electronics Instrumentations
Ltd.
NGB/S70 Oyo Road
Oluseun House
P.M.B. 5402
IBADAN
Tel: 461577
Telex: 31231 TEIL NG
A,E,M,P
The Electronics Instrumentations
Ltd.
144 Agege Motor Road, Mushin
P.O. Box 6645
Mushin, LAGOS
A,E,M,P

NORTHERN IRELAND

Cardiac Services Company
95A Finaghy Road South
BELFAST BT 10 OBY
Tel: (0232) 625-566
Telex: 747626
M

NORWAY

Hewlett-Packard Norge A/S
Folke Bernadottesvei 50
P.O. Box 3558
N-5033 FYLLINGSDALEN (BERGEN)
Tel: (05) 16-55-40
Telex: 16621 hpnas n
CM,CS,E
Hewlett-Packard Norge A/S
Oestendalen 18
P.O. Box 34
N-1345 OESTERAAAS
Tel: (02) 17-11-80
Telex: 16621 hpnas n
A*,CM,CP,E,MS,P

OMAN

Khimji Ramdas
P.O. Box 19
MUSCAT
Tel: 72-22-17, 72-22-25
Telex: 3289 BROKER MB MUSCAT
P

PAKISTAN

Mushko & Company Ltd.
10, Bazar Road
Sector G-6/4
ISLAMABAD
Tel: 28624
Cable: FEMUS Rawalpindi
A,E,M
Mushko & Company Ltd.
Oosman Chambers
Abdullah Haroon Road
KARACHI 0302
Tel: 511027, 512927
Telex: 2894 MUSHKO PW
Cable: COOPERATOR Karachi
A,E,M,P*

PANAMA

Electrónico Balboa, S.A.
Apartado 4929
Panama 5
Calle Samuel Lewis
Edificio "Alfa" No. 2
CIUDAD DE PANAMA
Canal Zone
Tel: 64-2700
Telex: 3480380
Cable: ELECTRON Panama
A,E,M
Folo Internacional, S.A.
P.O. Box 2068
Free Zone of Colon
COLON 3
Tel: 45-2333
Telex: 3485126
Cable: IMPORT COLON/Panama
P

PERU

Cómpania Electro Médica
S.A.
Los Flamencos 145, San Isidro
Casilla 1030
LIMA 1
Tel: 41-4325
Telex: Pub. Booth 25424 SISIDRO
Cable: ELMED Lima
A,E,M

PHILIPPINES

The Online Advanced Systems
Corporation
Rico House, Amorsolo Cor. Herrera
Street
Legaspi Village, Makati
P.O. Box 1510
Metro MANILA
Tel: 85-35-81, 85-34-91, 85-32-21
Telex: 3274 ONLINE
A,C,E,M

SALES & SUPPORT OFFICES

Arranged alphabetically by country

PHILIPPINES (Cont'd)

Electronic Specialists and Proponents Inc.
690-B Epitanio de los Santos Avenue
Cubao, QUEZON CITY
P.O. Box 2649 Manila
Tel: 98-96-81, 98-96-82, 98-96-83
Telex: 742-40287
P

POLAND

Buro Informacji Technicznej Hewlett-Packard
Ul Slawki 2, 6P
PL00-950 WARSZAWA
Tel: 39-59-62, 39-67-43
Telex: 812453 hepa pl

PORTUGAL

Telectra-Empresa Técnica de Equipamentos Eléctricos S.a.r.l.
Rua Rodrigo da Fonseca 103
P.O. Box 2531
P-LISBON 1
Tel: (19) 68-60-72
Telex: 12598
A,C,E,P
Mundinter
Intercambio Mundial de Comércio S.a.r.l.
P.O. Box 2761
Avenida Antonio Augusto de Aguiar 138
P-LISBON
Tel: (19) 53-21-31, 53-21-37
Telex: 16691 munter p
M

PUERTO RICO

Hewlett-Packard Puerto Rico
P.O. Box 4407
CAROLINA, Puerto Rico 00630
Calle 272 Edificio 203
Urb. Country Club
RIO PIEDRAS, Puerto Rico 00924
Tel: (809) 762-7255
Telex: 345 0514
A,CP

QATAR

Nasser Trading & Contracting
P.O. Box 1563
DOHA
Tel: 22 170
Telex: 4439 NASSER
M
Scilecharabia
P.O. Box 2750
!DOHA
Tel: 3295 15
Telex: 4806 CMPARB
P

ROMANIA

Hewlett-Packard Reprezentantia
Boulevard Nicolae Balcescu 16
BUCURESTI
Tel: 130725
Telex: 10440

SAUDI ARABIA

Modern Electronic Establishment
P.O. Box 193
AL-KHOBAR
Tel: 44-678, 44-813
Telex: 670136
Cable: ELECTA AL-KHOBAR
C,E,M,P
Modern Electronic Establishment
P.O. Box 1228, Baghdadiah Street
JEDDAH
Tel: 27-798
Telex: 401035
Cable: ELECTA JEDDAH
C,E,M,P

Modern Electronic Establishment
P.O. Box 2728
RIYADH
Tel: 62-596, 66-232
Telex: 202049
C,E,M,P

SCOTLAND

Hewlett-Packard Ltd.
Royal Bank Buildings
Swan Street
BRECHIN, Angus, Scotland
Tel: 3101, 3102
CM,CS
Hewlett-Packard Ltd.
SOUTH QUEENSFERRY
West Lothian, EH30 9TG
GB-Scotland
Tel: (031) 3311000
Telex: 72682
A,CM,E,M

SINGAPORE

Hewlett-Packard Singapore (Pty.) Ltd.
P.O. Box 58 Alexandra Post Office
SINGAPORE, 9115
6th Floor, Inchcape House
450-452 Alexandra Road
SINGAPORE 0511
Tel: 631788
Telex: HPSGSO RS 34209
Cable: HEWPACK, Singapore
A,CP,E,MS,P

SOUTH AFRICA

Hewlett-Packard South Africa (Pty.) Ltd.
P.O. Box 120
Howard Place
Pine Park Center, Forest Drive,
Pinelands
CAPE PROVINCE 7450
Tel: 53-7955, 53-7956, 53-7957
Telex: 57-0006
A,CM,CS,E,MS,P
Hewlett-Packard South Africa (Pty.) Ltd.
P.O. Box 37066
Overport
DURBAN 4067
Tel: 28-4178, 28-4179, 28-4110
CM,CS
Hewlett-Packard South Africa (Pty.) Ltd.
Daphny Street
Private Bag Wendywood
SANDTON 2144
Tel: 802-5111, 802-5125
Telex: 89-84782
Cable: HEWPACK Johannesburg
A,CM,CP,E,MS,P

SPAIN

Hewlett-Packard Española S.A.
c/Entenza, 32 1
E-BARCELONA 29
Tel: (3) 322-24-51, 321-73-54
Telex: 52603 hpbee
A,CM,CP,E,MS,P
Hewlett-Packard Española S.A.
c/San Vicente S/N
Edificio Albia II, 7 B
E-BILBAO 1
Tel: (944) 423-8306, 423-8206
A,CM,E,MS
Hewlett-Packard Española S.A.
Calle Jerez 3
E-MADRID 16
Tel: 458-2600
Telex: 23515 hpe
A,CM,E,MP,P

Hewlett-Packard Española S.A.
Colonia Mirasierra
Edificio Juban
c/o Costa Brava 13, 2.
E-MADRID 34
Tel: 734-8061, 734-1162
CM,CP

Hewlett-Packard Española S.A.
Av Ramón y Cajal 1-9
Edificio Sevilla 1,
E-SEVILLA 5
Tel: 64-44-54, 64-44-58
Telex: 72933
A,CM,CS,MS,P
Hewlett-Packard Española S.A.
C/Ramon Gordillo, 1 (Entlo.3)
E-VALENCIA 10
Tel: 361-1354, 361-1358
CM,CS,P

SWEDEN

Hewlett-Packard Sverige AB
Enighetsvägen 3, Fack
P.O. Box 20502
S-16120 BROMMA
Tel: (08) 730-0550
Telex: (854) 10721 MESSAGES
Cable: MEASUREMENTS
STOCKHOLM
A,CM,CP,E,MS,P
Hewlett-Packard Sverige AB
Sunnanvagen 14K
S-22226 LUND
Tel: (46) 13-69-79
Telex: (854) 10721 (via BROMMA office)
CM,CS
Hewlett-Packard Sverige AB
Vasstra Vintergatan 9
S-70344 OREBRO
Tel: (19) 10-48-80
Telex: (854) 10721 (via BROMMA office)
CM,CS
Hewlett-Packard Sverige AB
Fröfallisgatan 30
S-42132 VÄSTRA-FRÖLUNDA
Tel: (031) 49-09-50
Telex: (854) 10721 (via BROMMA office)
CM,CS,E,P

SWITZERLAND

Hewlett-Packard (Schweiz) AG
Clarasrasse 12
CH-4058 BASLE
Tel: (61) 33-59-20
A,CM
Hewlett-Packard (Schweiz) AG
47 Avenue Blanc
CH-1202 GENEVA
Tel: (022) 32-30-05, 32-48-00
CM,CP
Hewlett-Packard (Schweiz) AG
29 Chemin Château Bloc
CH-1219 LE LIGNON-Geneva
Tel: (022) 96-03-22
Telex: 27333 hpag ch
Cable: HEWPACKAG Geneva
A,CM,E,MS,P
Hewlett-Packard (Schweiz) AG
Zürcherstrasse 20
Allmend 2
CH-8967 WIDEN
Tel: (57) 50-111
Telex: 59933 hpag ch
Cable: HPAG CH
A,CM,CP,E,MS,P

SYRIA

General Electronica Inc.
Nuri Basha-Ahna Ebn Kays Street
P.O. Box 578 1
DAMASCUS
Tel: 33-24-87
Telex: 11215 ITIKAL
Cable: ELECTROBOR DAMASCUS E
Sawah & Co.
Place Azmé
Boite Postale 2308
DAMASCUS
Tel: 16-367, 19-697, 14-268
Telex: 11304 SATACO SY
Cable: SAWAH, DAMASCUS M

TAIWAN

Hewlett-Packard Far East Ltd.
Kaohsiung Branch
68-2, Chung Cheng 3rd Road
Shin Shin, Chu
KAOHSIUNG
Tel: 24-2318, 26-3253
CS,E,MS,P
Hewlett-Packard Far East Ltd.
Taiwan Branch
5th Floor
205 Tun Hwa North Road
TAIPEI
Tel:(02) 751-0404
Cable:HEWPACK Taipei
A*,CP,E,MS,P
Hewlett-Packard Far East Ltd.
Taichung Branch
#33, Cheng Yih Street
10th Floor, Room 5
TAICHUNG
Tel: 289274
San Kwang Instruments Co., Ltd.
20 Yung Sui Road
TAIPEI
Tel: 361-5446, 361-5447,
361-5448
Telex: 22894 SANKWANG
Cable: SANKWANG Taipei A

THAILAND

UNIMESA Co. Ltd.
Elcom Research Building
2538 Sukhumvit Ave.
Bangchak, BANGKOK
Tel: 393-2387, 393-0338
Telex: THB1160, 82938, 81038
Cable: UNIMESA Bangkok A,E,M
Bangkok Business Equipment Ltd.
5/5-6 Dejo Road
BANGKOK
Tel: 234-8670, 234-8671,
234-8672
Cable: BUSIQUIPT Bangkok P

TRINIDAD & TOBAGO

CARTEL
Caribbean Telecoms Ltd.
P.O. Box 732
50/A Jerningham Avenue
PORT-OF-SPAIN
Tel: 624-4213, 624-4214
A,E,M,P

TUNISIA

Tunisie Electronique
31 Avenue de la Liberté
TUNIS
Tel: 280-144
E,P
Corema
1 ter. Av. de Carthage
TUNIS
Tel: 253-821
Telex: 12319 CABAM TN M

TURKEY

Teknim Company Ltd.
Riza Sah Pehievi
Caddesi No. 7
Kavakdere, ANKARA
Tel: 275800
Telex: 42155
E
EMA, Muhendislik Kolektif Sirketi
Mediha Eldem
Sokak 4/1/6
Yüksel Caddesi, ANKARA
Tel: 17-56-22
Cable: Emaltrade M

UNITED ARAB EMIRATES

Emilac Ltd.
P.O. Box 1641
SHARJAH
Tel: 354121, 354123
Telex: 68136
E,M,P,C

UNITED KINGDOM

see: GREAT BRITAIN

NORTHERN IRELAND

SCOTLAND

UNITED STATES

Alabama
Hewlett-Packard Co.
700 Century Park South
Suite 128
BIRMINGHAM, AL 35226
Tel: (205) 822-6802
CM,CS,MP
Hewlett-Packard Co.
P.O. Box 4207
8290 Whitesburg Drive, S.E.
HUNTSVILLE, AL 35802
Tel: (205) 881-4591
CM,CP,E,M*

Alaska
Hewlett-Packard Co.
1577 "C" Street, Suite 252
ANCHORAGE, AK 99510
Tel: (206) 454-3971
CM,CS**

Arizona
Hewlett-Packard Co.
2336 East Magnolia Street
PHOENIX, AZ 85034
Tel: (602) 273-8000
A,CM,CP,E,MS
Hewlett-Packard Co.
2424 East Aragon Road
TUCSON, AZ 85702
Tel: (602) 889-4631
CM,CS,E,MS**

Arkansas
Hewlett-Packard Co.
P.O. Box 5646
Brady Station
LITTLE ROCK, AR 72215
Tel: (501) 376-1844, (501)
664-8773
CM,MS

SALES & SUPPORT OFFICES

Arranged alphabetically by country

UNITED STATES (Cont'd)

California

Hewlett-Packard Co.
7621 Canoga Avenue
CANOGA PARK, CA 91304
Tel: (213) 702-8300
A,CM,CP,E,P

Hewlett-Packard Co.
1579 W. Shaw Avenue
FRESNO, CA 93771
Tel: (209) 224-0582
CM,MS

Hewlett-Packard Co.
1430 East Orangethorpe
FULLERTON, CA 92631
Tel: (714) 870-1000
CM,CP,E,MP

Hewlett-Packard Co.
5400 W. Rosecrans Boulevard
LOS ANGELES, CA 90260
Tel: (213) 970-7500
CM,CP,MP

Hewlett-Packard Co.
3939 Lankershim Blvd.
NORTH HOLLYWOOD, CA 91604
Tel: (213) 877-1282
regional headquarters

Hewlett-Packard Co.
3200 Hillview Avenue
PALO ALTO, CA 94304
Tel: (415) 857-8000
CM,CP,E

Hewlett-Packard Co.
646 W. North Market Boulevard
SACRAMENTO, CA 95834
Tel: (916) 929-7222
A*,CM,CP,E,MS

Hewlett-Packard Co.
9606 Aero Drive
P.O. Box 23333
SAN DIEGO, CA 92123
Tel: (714) 279-3200
CM,CP,E,MP

Hewlett-Packard Co.
3003 Scott Boulevard
SANTA CLARA, CA 95050
Tel: (408) 988-7000
A,CM,CP,E,MP

Hewlett-Packard Co.
454 Carlton Court
SO. SAN FRANCISCO, CA 94080
Tel: (415) 877-0772
CM,CP

Colorado
Hewlett-Packard Co.
24 Inverness Place, East
ENGLEWOOD, CO 80112
Tel: (303) 771-3455
A,CM,CP,E,MS

Connecticut
Hewlett-Packard Co.
47 Barnes Industrial Road South
P.O. Box 5007
WALLINGFORD, CT 06492
Tel: (203) 265-7801
A,CM,CP,E,MS

Florida
Hewlett-Packard Co.
P.O. Box 24210
2727 N.W. 62nd Street
FORT LAUDERDALE, FL 33309
Tel: (305) 973-2600
CM,CP,E,MP

Hewlett-Packard Co.
4080 Woodcock Drive, #132
Brownell Building
JACKSONVILLE, FL 32207
Tel: (904) 398-0663
CM,C*,E*,MS**

Hewlett-Packard Co.
P.O. Box 13910
6177 Lake Ellenor Drive
ORLANDO, FL 32809
Tel: (305) 859-2900
A,CM,CP,E,MS

Hewlett-Packard Co.
6425 N. Pensacola Blvd.
Suite 4, Building 1
PENSACOLA, FL 32575
Tel: (904) 476-8422
A,CM,MS

Hewlett-Packard Co.
110 South Hoover, Suite 120
Vanguard Bldg.
TAMPA, FL 33609
Tel: (813) 872-0900
A*,CM,CS,E*,M*

Georgia
Hewlett-Packard Co.
P.O. Box 105005
2000 South Park Place
ATLANTA, GA 30339
Tel: (404) 955-1500
Telex: 810-766-4890
A,CM,CP,E,MP

Hewlett-Packard Co.
Executive Park Suite 306
P.O. Box 816
AUGUSTA, GA 30907
Tel: (404) 736-0592
CM,MS

Hewlett-Packard Co.
P.O. Box 2103
1172 N. Davis Drive
WARNER ROBINS, GA 31098
Tel: (912) 922-0449
CM,E

Hawaii
Hewlett-Packard Co.
Kawaiahao Plaza, Suite 190
567 South King Street
HONOLULU, HI 96813
Tel: (808) 526-1555
A,CM,CS,E,MS

Idaho
Hewlett-Packard Co.
11311 Chinden Boulevard
BOISE, ID 83707
Tel: (208) 376-6000
CM,CS,M*

Illinois
Hewlett-Packard Co.
211 Prospect Road
BLOOMINGTON, IL 61701
Tel: (309) 663-0383
CM,CS,MS**

Hewlett-Packard Co.
1100 31st Street
DOWNERS GROVE, IL 60515
Tel: (312) 960-5760
CM,CP

Hewlett-Packard Co.
5201 Tollview Drive
ROLLING MEADOWS, IL 60008
Tel: (312) 255-9800
A,CM,CP,E,MP

Indiana
Hewlett-Packard Co.
P.O. Box 50807
7301 No. Shadeland Avenue
INDIANAPOLIS, IN 46250
Tel: (317) 842-1000
A,CM,CS,E,MS

Iowa
Hewlett-Packard Co.
2415 Heinz Road
IOWA CITY, IA 52240
Tel: (319) 351-1020
CM,CS,E*,MS

Kansas
Hewlett-Packard Co.
514 South Westview
P.O. Box 159
DERBY, KA 67037
Tel: (316) 265-5200
CM,CS

Kentucky
Hewlett-Packard Co.
10170 Linn Station Road
Suite 525
LOUISVILLE, KY 40223
Tel: (502) 426-0100
A,CM,CS,MS

Louisiana
Hewlett-Packard Co.
P.O. Box 1449
3229 Williams Boulevard
KENNER, LA 70062
Tel: (504) 443-6201
A,CM,CS,E,MS

Maryland
Hewlett-Packard Co.
7121 Standard Drive
HANOVER, MD 21076
Tel: (301) 796-7700
A,CM,CP,E,MS

Hewlett-Packard Co.
2 Choke Cherry Road
ROCKVILLE, MD 20850
Tel: (301) 948-6370
Telex: 710-828-9685
A,CM,CP,E,MP

Massachusetts
Hewlett-Packard Co.
32 Hartwell Avenue
LEXINGTON, MA 02173
Tel: (617) 861-8960
A,CM,CP,E,MP

Michigan
Hewlett-Packard Co.
23855 Research Drive
FARMINGTON HILLS, MI 48024
Tel: (313) 476-6400
A,CM,CP,E,MP

Hewlett-Packard Co.
4326 Cascade Road S.E.
GRAND RAPIDS, MI 49506
Tel: (616) 957-1970
CM,CS,MS

Minnesota
Hewlett-Packard Co.
2025 W. Larpenteur Ave.
ST. PAUL, MN 55113
Tel: (612) 644-1100
A,CM,CP,E,MP

Mississippi
Hewlett-Packard Co.
P.O. Box 5028
322 N. Mart Plaza
JACKSON, MS 39216
Tel: (601) 982-9363
CM,MS

Missouri
Hewlett-Packard Co.
11131 Colorado Avenue
KANSAS CITY, MO 64137
Tel: (816) 763-8000
Telex: 910-771-2087
A,CM,CS,E,MS

Hewlett-Packard Co.
1024 Executive Parkway
ST. LOUIS, MO 63141
Tel: (314) 878-0200
A,CM,CP,E,MP

Nebraska
Hewlett-Packard Co.
7101 Mercy Road
Suite 101, IBX Building
OMAHA, NE 68106
Tel: (402) 392-0948
CM,MS

Nevada
Hewlett-Packard Co.
Suite D-130
5030 Paradise Blvd.
LAS VEGAS, NV 89119
Tel: (702) 736-6610
CM,MS**

New Jersey
Hewlett-Packard Co.
Crystal Brook Professional Building
Route 35
EATONTOWN, NJ 07724
Tel: (201) 542-1384
A*,CM,C*,E*,P*

Hewlett-Packard Co.
W120 Century Road
PARAMUS, NJ 07652
Tel: (201) 265-5000
A,CM,CP,E,MP

Hewlett-Packard Co.
60 New England Avenue West
PISCATAWAY, NJ 08854
Tel: (201) 981-1199
A,CM,CP,E

New Mexico
Hewlett-Packard Co.
P.O. Box 11634
11300 Lomas Blvd.,N.E.
ALBUQUERQUE, NM 87123
Tel: (505) 292-1330
Telex: 910-989-1185
CM,CP,E,MS

New York
Hewlett-Packard Co.
5 Computer Drive South
ALBANY, NY 12205
Tel: (518) 458-1550
Telex: 710-444-4691
A,CM,CS,E,MS

Hewlett-Packard Co.
9600 Main Street
CLARENCE, NY 14031
Tel: (716) 759-8621
Telex: 710-523-1893

Hewlett-Packard Co.
200 Cross Keys Office
FAIRPORT, NY 14450
Tel: (716) 223-9950
Telex: 510-253-0092
CM,CP,E,MS

Hewlett-Packard Co.
No. 1 Pennsylvania Plaza
55th Floor
34th Street & 8th Avenue
NEW YORK, NY 10119
Tel: (212) 971-0800
CM,CP,E*,M*

Hewlett-Packard Co.
5858 East Molloy Road
SYRACUSE NY 13211
Tel: (315) 455-2486
A,CM,CS,E,MS

Hewlett-Packard Co.
3 Crossways Park West
WOODBURY, NY 11797
Tel: (516) 921-0300
Telex: 510-221-2183
A,CM,CP,E,MS

North Carolina
Hewlett-Packard Co.
P.O. Box 15579
2905 Guess Road (27705)
DURHAM, NC 27704
Tel: (919) 471-8466
C,M

Hewlett-Packard Co.
5605 Roanne Way
GREENSBORO, NC 27409
Tel: (919) 852-1800
A,CM,CP,E,MS

Ohio
Hewlett-Packard Co.
9920 Carver Road
CINCINNATI, OH 45242
Tel: (513) 891-9870
CM,CP,MS

Hewlett-Packard Co.
16500 Sprague Road
CLEVELAND, OH 44130
Tel: (216) 243-7300
Telex: 810-423-9430
A,CM,CP,E,MS

Hewlett-Packard Co.
962 Crupper Ave.
COLUMBUS, OH 43229
Tel: (614) 436-1041
CM,CP,E*

Hewlett-Packard Co.
330 Progress Rd.
DAYTON, OH 45449
Tel: (513) 859-8202
A,CM,CP,E*,MS

Oklahoma
Hewlett-Packard Co.
P.O. Box 366
1503 W. Gore Blvd., Suite #2
LAWTON, OK 73502
Tel: (405) 248-4248
C

Hewlett-Packard Co.
P.O. Box 32008
304 N. Meridian Avenue, Suite A
OKLAHOMA CITY, OK 73107
Tel: (405) 946-9499
A*,CM,CP,E*,MS

Hewlett-Packard Co.
Suite 121
9920 E. 42nd Street
TULSA, OK 74145
Tel: (918) 665-3300
A**,CM,CS,M*

Oregon
Hewlett-Packard Co.
1500 Valley River Drive, Suite 330
EUGENE, OR 97401
Tel: (503) 683-8075
C

Hewlett-Packard Co.
9255 S. W. Pioneer Court
WILSONVILLE, OR 97070
Tel: (503) 682-8000
A,CM,CP,E*,MS

Pennsylvania
Hewlett-Packard Co.
1021 8th Avenue
King of Prussia Industrial Park
KING OF PRUSSIA, PA 19406
Tel: (215) 265-7000
Telex: 510-660-2670
A,CM,CP,E,MP

Hewlett-Packard Co.
111 Zela Drive
PITTSBURGH, PA 15238
Tel: (412) 782-0400
A,CM,CP,E,MP



SALES & SUPPORT OFFICES

Arranged alphabetically by country

UNITED STATES (Cont'd)

South Carolina

Hewlett-Packard Co.
P.O. Box 6442
6941-O N. Trenholm Road
COLUMBIA, SC 29260
Tel: (803) 782-6493
CM,CS,E,MS

Hewlett-Packard Co.
814 Wade Hampton Blvd.
Suite 10
GREENVILLE, SC 29609
Tel: (803) 232-0917
C

Tennessee

Hewlett-Packard Co.
P.O. Box 32490
224 Peters Road
Suite 102
KNOXVILLE, TN 37922
Tel: (615) 691-2371
A*,CM,MS

Hewlett-Packard Co.
3070 Directors Row
MEMPHIS, TN 38131
Tel: (901) 346-8370
A,CM,CS,MS

Hewlett-Packard Co.
Suite 103
478 Craighead Street
NASHVILLE, TN 37204
Tel: (615) 383-9136
CM,MS**

Texas

Hewlett-Packard Co.
Suite 310W
7800 Shoalcreek Blvd.
AUSTIN, TX 78757
Tel: (512) 459-3143
CM,E

Hewlett-Packard Co.
Suite C-110
4171 North Mesa
EL PASO, TX 79902
Tel: (915) 533-3555
CM,CS,E*,MS**

Hewlett-Packard Co.
5020 Mark IV Parkway
FORT WORTH, TX 76106
Tel: (817) 625-6361
CM,C*

Hewlett-Packard Co.
P.O. Box 42816
10535 Harwin Street
HOUSTON, TX 77036
Tel: (713) 776-6400
A,CM,CP,E,MP
Hewlett-Packard Co.
3309 67th Street
Suite 24
LUBBOCK, TX 79413
Tel: (806) 799-4472
M

Hewlett-Packard Co.
P.O. Box 1270
930 E. Campbell Rd.
RICHARDSON, TX 75081
Tel: (214) 231-6101
A,CM,CP,E,MP

Hewlett-Packard Co.
205 Billy Mitchell Road
SAN ANTONIO, TX 78226
Tel: (512) 434-8241
CM,CS,E,MS

Utah

Hewlett-Packard Co.
3530 W. 2100 South Street
SALT LAKE CITY, UT 84119
Tel: (801) 974-1700
A,CM,CP,E,MS

Virginia

Hewlett-Packard Co.
P.O. Box 9669
2914 Hungary Spring Road
RICHMOND, VA 23228
Tel: (804) 285-3431
A,CM,CP,E,MS
Hewlett-Packard Co.
P.O. Box 4786
3110 Peters Creek Road, N.W.
ROANOKE, VA 24015
Tel: (703) 922-7000
CM,CS,E**

Hewlett-Packard Co.
P.O. Box 12778
5700 Thurston Avenue
Suite 111
VIRGINIA BEACH, VA 23455
Tel: (804) 460-2471
CM,CS,MS

Washington

Hewlett-Packard Co.
15815 S.E. 37th Street
BELLEVUE, WA 98006
Tel: (206) 643-4000
A,CM,CP,E,MP

Hewlett-Packard Co.
Suite A
708 North Argonne Road
SPOKANE, WA 99206
Tel: (509) 922-7000
CM,CS

West Virginia

Hewlett-Packard Co.
4604 MacCorkle Ave., S.E.
CHARLESTON, WV 25304
Tel: (304) 925-0492
A,CM,MS

Wisconsin

Hewlett-Packard Co.
150 S. Sunny Slope Road
BROOKFIELD, WI 53005
Tel: (414) 784-8800
A,CM,CS,E*,MP

URUGUAY

Pablo Ferrando S.A.C. e.l.
Avenida Italia 2877
Casilla de Correo 370
MONTEVIDEO
Tel: 403102
Telex: 901 Public Booth Para Pablo
Ferrando 919520
Cable: RADIUM Montevideo
A,E,M

Guillermo Kraft del Uruguay S.A.
Avda. Libertador Brig. Gral.
Lavalleja 2083
MONTEVIDEO
Tel: 234588, 234808, 208830
Telex: 6245 ACTOUR UY
P

U.S.S.R.

Hewlett-Packard Co.
Representative Office
Pokrovsky Blvd. 4/17 KV12
MOSCOW 101000
Tel: 294-2024
Telex: 7825 HEWPACK SU

VENEZUELA

Hewlett-Packard de Venezuela C.A.
Apartado 50933
3A Transversal Los Ruices Norte
Edificio Segre 2Y3
CARACAS 1071
Tel: 239-4133, 239-4777,
239-4244
Telex: 25146 HEWPACK
Cable: HEWPACK Caracas
A,CP,E,MS,P

YUGOSLAVIA

Iskra-Commerce-Representation of
Hewlett-Packard
Sava Centar Delegacija 30
Milenija Popovica 9
11170 BEOGRAD
Tel: 638-762
Telex: 12042, 12322 YU SAV CEN
Iskra-Commerce-Representation of
Hewlett-Packard
Kopraska 46
61000 LJUBLJANA
Tel: 321674, 315879
Telex:

EUROPEAN AREAS NOT LISTED, CONTACT

Hewlett-Packard S.A.
7 Rue du Bois-du-Lan
CH-1217 MEYRIN 2, Switzerland
Tel: (022) 83-81-11
Telex: 27835 hpse
Cable: HEWPACKSA Geneve

EAST EUROPEAN AREAS NOT LISTED, CONTACT

Hewlett-Packard Ges.m.b.h.
Wehlstrasse 29
P.O. Box 7
A-1205 VIENNA
Tel: (222) 35-16-210
Telex: 135823/135066

MEDITERRANEAN AND MIDDLE EAST AREAS NOT LISTED, CONTACT

Hewlett-Packard S.A.
Mediterranean & Middle East
Operations
35, Kolokotroni Street
Platia Kefallariou
GR-Kifissia, ATHENS, Greece
Tel: 808-0359, 808-0429
Telex: 21-6588
Cable: HEWPACKSA Athens

INTERNATIONAL AREAS NOT LISTED, CONTACT

Hewlett-Packard Co.
Intercontinental Headquarters
3495 Deer Creek Road
PALO ALTO, CA 94304
Tel: (415) 857-1501
Telex: 034-8300
Cable: HEWPACK