

64000

**HP64000
Logic Development
System**

**Model 64515C
PROM Programmer
Module**

 **HEWLETT
PACKARD**

CERTIFICATION

Hewlett-Packard Company certifies that this product met its published specifications at the time of shipment from the factory. Hewlett-Packard further certifies that its calibration measurements are traceable to the United States National Bureau of Standards, to the extent allowed by the Bureau's calibration facility, and to the calibration facilities of other International Standards Organization members.

WARRANTY

This Hewlett-Packard system product is warranted against defects in materials and workmanship for a period of 90 days from date of installation. During the warranty period, HP will, at its options, either repair or replace products which prove to be defective.

Warranty service of this product will be performed at Buyer's facility at no charge within HP service travel areas. Outside HP service travel areas, warranty service will be performed at Buyer's facility only upon HP's prior agreement and Buyer shall pay HP's round trip travel expenses. In all other cases, products must be returned to a service facility designated by HP.

For products returned to HP for warranty service. Buyer shall prepay shipping charges to HP and HP shall pay shipping charges to return the product to Buyer. However, Buyer shall pay all shipping charges, duties, and taxes for products returned to HP from another country.

HP warrants that its software and firmware designated by HP for use with an instrument will execute its programming instructions when properly installed on that instrument. HP does not warrant that the operation of the instrument, or software, or firmware will be uninterrupted or error free.

LIMITATION OF WARRANTY

The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance.

NO OTHER WARRANTY IS EXPRESSED OR IMPLIED. HP SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

EXCLUSIVE REMEDIES

THE REMEDIES PROVIDED HEREIN ARE BUYER'S SOLE AND EXCLUSIVE REMEDIES. HP SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER BASED ON CONTRACT, TORT, OR ANY OTHER LEGAL THEORY.

ASSISTANCE

Product maintenance agreements and other customer assistance agreements are available for Hewlett-Packard products.

For any assistance, contact your nearest Hewlett-Packard Sales and Service Office. Addresses are provided at the back of this manual.

FOLD HERE



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY CARD
FIRST CLASS PERMIT NO. 1303 COLORADO SPRINGS, COLORADO

POSTAGE WILL BE PAID BY ADDRESSEE

HEWLETT-PACKARD
Logic Product Support Dept.
Attn: Technical Publications Manager
Centennial Annex - D2
P.O. Box 617
Colorado Springs, Colorado 80901-0617



FOLD HERE

Your cooperation in completing and returning this form
will be greatly appreciated. Thank you.

READER COMMENT SHEET

Service Manual, Model 64515C
PROM Programmer Module
64515-90903, November 1983

Your comments are important to us. Please answer this questionnaire and return it to us. Circle the number that best describes your answer in questions 1 through 7. Thank you.

1. The information in this book is complete:

Doesn't cover enough
(what more do you need?)

1 2 3 4 5

Covers everything

2. The information in this book is accurate:

Too many errors

1 2 3 4 5

Exactly right

3. The information in this book is easy to find:

I can't find things I need

1 2 3 4 5

I can find info quickly

4. The Index and Table of Contents are useful:

Helpful

1 2 3 4 5

Missing or inadequate

5. What about the "how-to" procedures and examples:

No help

1 2 3 4 5

Very helpful

Too many now

1 2 3 4 5

I'd like more

6. What about the writing style:

Confusing

1 2 3 4 5

Clear

7. What about organization of the book:

Poor order

1 2 3 4 5

Good order

8. What about the size of the book:

too big/small

1 2 3 4 5

Right size

Comments: _____

Particular pages with errors?

Name (optional): _____

Job title: _____

Company: _____

Address: _____

Note: If mailed outside U.S.A., place card in envelope. Use address shown on other side of this card.

FOLD HERE



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY CARD
FIRST CLASS PERMIT NO. 1303 COLORADO SPRINGS, COLORADO

POSTAGE WILL BE PAID BY ADDRESSEE

HEWLETT-PACKARD
Logic Product Support Dept.
Attn: Technical Publications Manager
Centennial Annex - D2
P.O. Box 617
Colorado Springs, Colorado 80901-0617



FOLD HERE

Your cooperation in completing and returning this form
will be greatly appreciated. Thank you.

READER COMMENT SHEET

Service Manual, Model 64515C
PROM Programmer Module
64515-90903, November 1983

Your comments are important to us. Please answer this questionnaire and return it to us. Circle the number that best describes your answer in questions 1 through 7. Thank you.

1. The information in this book is complete:

Doesn't cover enough
(what more do you need?)

1 2 3 4 5

Covers everything

2. The information in this book is accurate:

Too many errors

1 2 3 4 5

Exactly right

3. The information in this book is easy to find:

I can't find things I need

1 2 3 4 5

I can find info quickly

4. The Index and Table of Contents are useful:

Helpful

1 2 3 4 5

Missing or inadequate

5. What about the "how-to" procedures and examples:

No help

1 2 3 4 5

Very helpful

Too many now

1 2 3 4 5

I'd like more

6. What about the writing style:

Confusing

1 2 3 4 5

Clear

7. What about organization of the book:

Poor order

1 2 3 4 5

Good order

8. What about the size of the book:

too big/small

1 2 3 4 5

Right size

Comments: _____

Particular pages with errors?

Name (optional): _____

Job title: _____

Company: _____

Address: _____

Note: If mailed outside U.S.A., place card in envelope. Use address shown on other side of this card.

SERVICE MANUAL
MODEL 64515C
PROM PROGRAMMER MODULE

© COPYRIGHT HEWLETT-PACKARD COMPANY 1981, 1982, 1983
LOGIC SYSTEMS DIVISION
COLORADO SPRINGS, COLORADO, U.S.A.

ALL RIGHTS RESERVED

Manual Part Number: 64515-90903

Printed: November 1983

SAFETY SUMMARY

The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the instrument. Hewlett-Packard Company assumes no liability for the customer's failure to comply with these requirements.

GROUND THE INSTRUMENT.

To minimize shock hazard, the instrument chassis and cabinet must be connected to an electrical ground. The instrument is equipped with a three-conductor ac power cable. The power cable must either be plugged into an approved three-contact electrical outlet or used with a three-contact to two-contact adapter with the grounding wire (green) firmly connected to an electrical ground (safety ground) at the power outlet. The power jack and mating plug of the power cable meet International Electrotechnical Commission (IEC) safety standards.

DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE.

Do not operate the instrument in the presence of flammable gases or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.

KEEP AWAY FROM LIVE CIRCUITS.

Operating personnel must not remove instrument covers. Component replacement and internal adjustments must be made by qualified maintenance personnel. Do not replace components with power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.

DO NOT SERVICE OR ADJUST ALONE.

Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.

DO NOT SUBSTITUTE PARTS OR MODIFY INSTRUMENT.

Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modification of the instrument. Return the instrument to a Hewlett-Packard Sales and Service Office for service and repair to ensure that safety features are maintained.

DANGEROUS PROCEDURE WARNINGS.

Warnings, such as the example below, precede potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed.

WARNING

**Dangerous voltages, capable of causing death, are present in this instrument.
Use extreme caution when handling, testing, and adjusting.**

Table of Contents

Section	Title	Page
I	General Information.....	1-1
	1-1. Introduction.....	1-1
	1-3. Safety Considerations.....	1-1
	1-5. Instruments Covered by this Manual.....	1-1
	1-10. Application.....	1-2
II	Installation and Removal.....	2-1
III	Operation.....	3-1
IV	Performance Verification.....	4-1
	4-1. Introduction.....	4-1
	4-2. Procedure.....	4-1
V	Adjustments.....	5-1
VI	Replaceable Parts.....	6-1
	6-1. Introduction.....	6-1
	6-3. Abbreviations.....	6-1
	6-5. Replaceable Parts List.....	6-1
	6-7. Ordering Information.....	6-2
	6-10. Direct Mail Order System.....	6-2
VII	Manual Changes.....	7-1
VIII	Theory and Schematics.....	8-1
	8-1. Introduction.....	8-1
	8-4. Theory.....	8-1

Model 64515C - Table of Contents

List of Illustrations

Figure	Title	Page
1-1.	Model 64515C PROM Programmer Module.....	1-1
4-1.	Model 64515C Illustrated Parts Breakdown.....	4-3
8-1.	Timing Diagram for the 2564.....	8-6
8-2.	Timing Diagram for the 27256.....	8-7
8-3.	Timing Diagram for the 2764/27128 and 2764A/27128A.....	8-8
8-4.	Model 64515C Illustrated Parts Breakdown.....	8-9
8-5.	Component Locator.....	8-10
8-6.	Schematic.....	8-11

List of Tables

Table	Title	Page
1-1.	Applicable PROM Devices.....	1-2
6-1.	Abbreviations and Reference Designators.....	6-3
6-2.	Replaceable Parts	6-4
6-3.	Manufacturers' Codes.....	6-5
8-1.	MODE selection.....	8-2
8-2.	Program/Verify Sequence for the 2564.....	8-3
8-3.	Program/Verify Sequence for the 2764/27128 and 2764A/27128A.....	8-4
8-4.	Program/Verify Sequence for the 27256.....	8-5

SECTION I

GENERAL INFORMATION

1-1. INTRODUCTION.

1-2. This manual contains technical information concerning the application, troubleshooting, replacing failed parts, and the theory-of-operation for the Model 64515C PROM Programmer Module as used in the 64000 Logic Development System. The module is shown in figure 1-1.



Figure 1-1. Model 64515C PROM Programmer Module

1-3. SAFETY CONSIDERATIONS.

1-4. There are no electrical shock hazards associated with the Model 64515C since there are no high voltages present. There are, however, high voltages associated with the 64100A Mainframe and appropriate warnings are given in the Mainframe Tab where these hazards exist.

1-5. INSTRUMENTS COVERED BY THIS MANUAL.

1-6. This manual covers the model 64515C PROM Programmer Module with the 64515-66504 or 64515-66505 PC board installed. A module manufactured after the print date of this manual may contain a PC board with a later revision letter.

Model 64515C - General Information

1-7. The manual for a modified module will be accompanied by a "Manual Change" supplement. This supplement will be delivered with each modified module and will contain change information that explains how to adapt this manual to the newer modified module.

1-8. In addition to change information, the supplement will contain information for correcting errors in this manual. To keep this manual as current as possible, Hewlett-Packard recommends that you periodically request the latest manual changes supplement. The supplement for this manual is identified with the model number and manual print date both of which appear on the title page. Complimentary copies of the supplement are available from Hewlett-Packard Sales/Service Office.

1-9. For information concerning the applicability of this manual or the Manual Changes supplement, contact your nearest Hewlett-Packard Sales/Service Office.

1-10. APPLICATION.

1-11. The Model 64515C will program and/or readout the integral EPROMs listed in table 1.

Table 1-1. Applicable EPROM Devices

EPROM	Mfg.	Description
2564	TI	The TMS 2564 is a 65,536 bit, ultra-violet light erasable, electronically programable read only memory.
2764/2764A	Intel	The Intel 2764/2764A is a 65,536 bit ultraviolet light erasable and electronically programable read-only memory.
27128/27128A	Intel	The Intel 27128/27128A is a 5v only, 131,072 bit ultraviolet erasable and electronically programmable read-only memory.
27256	Intel	The Intel 27256 is a 262,144 bit ultra-violet erasable and electronically programmable read-only memory.

SECTION II

INSTALLATION AND REMOVAL

2-1. A 50-pin ribbon cable (HP P/N 8120-3346) connects the 64501A Programmer Controller PCB to the 64515C Programmer Module. The cable end with the single connector is connected to the Controller PCB and the end with the double connector is connected to the Programmer Module.

2-2. The cable should be routed across the top of the cardcage and down behind the front panel such that the two connectors are visible in the opening for the programmer module. Connect the cable to the PCB in the Programmer Module using the connector on the extreme end of the cable.

NOTE

The PCB and cable connectors are keyed and fit only one way.

```
***** CAUTION *****
*
*
* To prevent possible damage to the PROM Programmer *
* circuits, turn Mainframe power OFF before install- *
* ing or removing the Programmer Module. *
*
*****
```


SECTION III

OPERATION

The operation of the 64515C is a function of the system software. Complete operation from the keyboard of the system is beyond the scope of the Service Manual. Please refer to the Operator's Manual for the procedure.

```
***** CAUTION *****
*
* The proper operation of the positive PROM
* programmer requires that a PROM be inserted
* ONLY AFTER the PROM programmer software
* module is called and that the PROM be RE-
* MOVED before the PROM programmer software
* module is exited. Damage to the PROM may
* result if this procedure is not followed!
*
*****
```

NOTE

The PROM programmer software module is called by pressing the "prom_prog" softkey then the Return key. To exit the PROM programmer software module, press the "end" softkey, then the Return key.

SECTION IV

PERFORMANCE VERIFICATION

4-1. INTRODUCTION.

4-2. This section normally contains the information for running the Performance Verification. However, due to the relative low cost of the PROM Programmer PC board, in this module, it is most likely more economical to discard it if it fails than to have the Hewlett-Packard Sales/Service repair it. The basic troubleshooting approach is to first determine if the Prom Controller PC board is at fault, or if the problem is in the module. This is done by using the 64502A PROM Programmer Module in conjunction with the 64501A controller board and running the PROM Performance Verification Tests.

4-3. PROCEDURE.

4-4. If a PROM programming problem is apparent (i.e., you can't successfully program and verify a particular PROM chip), perform the following troubleshooting procedure:

- a. Turn OFF the mainframe power.
- b. Install a 64502A PROM Programmer Module in place of the currently installed 64515C model.

```
***** CAUTION *****  
*                                                                 *  
*                                                                 *  
* The Model 64502A PROM Module is the ONLY *  
* module that is compatible with the PROM *  
* PV tests. All other models are subject to *  
* damage due to component overstressing if *  
* the PV test is attempted with any other *  
* module installed. *  
*                                                                 *  
*****
```

- c. Turn ON the mainframe power.
- d. Refer to Section IV of the 64500S Positive PROM Programmer Tab and run the PV tests described in that Section.
- e. If there are no error messages while running the PV test, it is reasonable to assume that this PROM Programmer Module has failed. In this case, refer to the Illustrated Parts Breakdown (figure 4-1) and replace the PC board assembly (HP P/N 64515-66504 or 64515-66505).

Model 64515C - Performance Verification

NOTE

Section VIII describes the functions performed by the 64515C PC board.

- d. Verify that the problem has been fixed by attempting to program and verify from a PROM chip like the type that was originally causing problems.

Model 64515C - Performance Verification

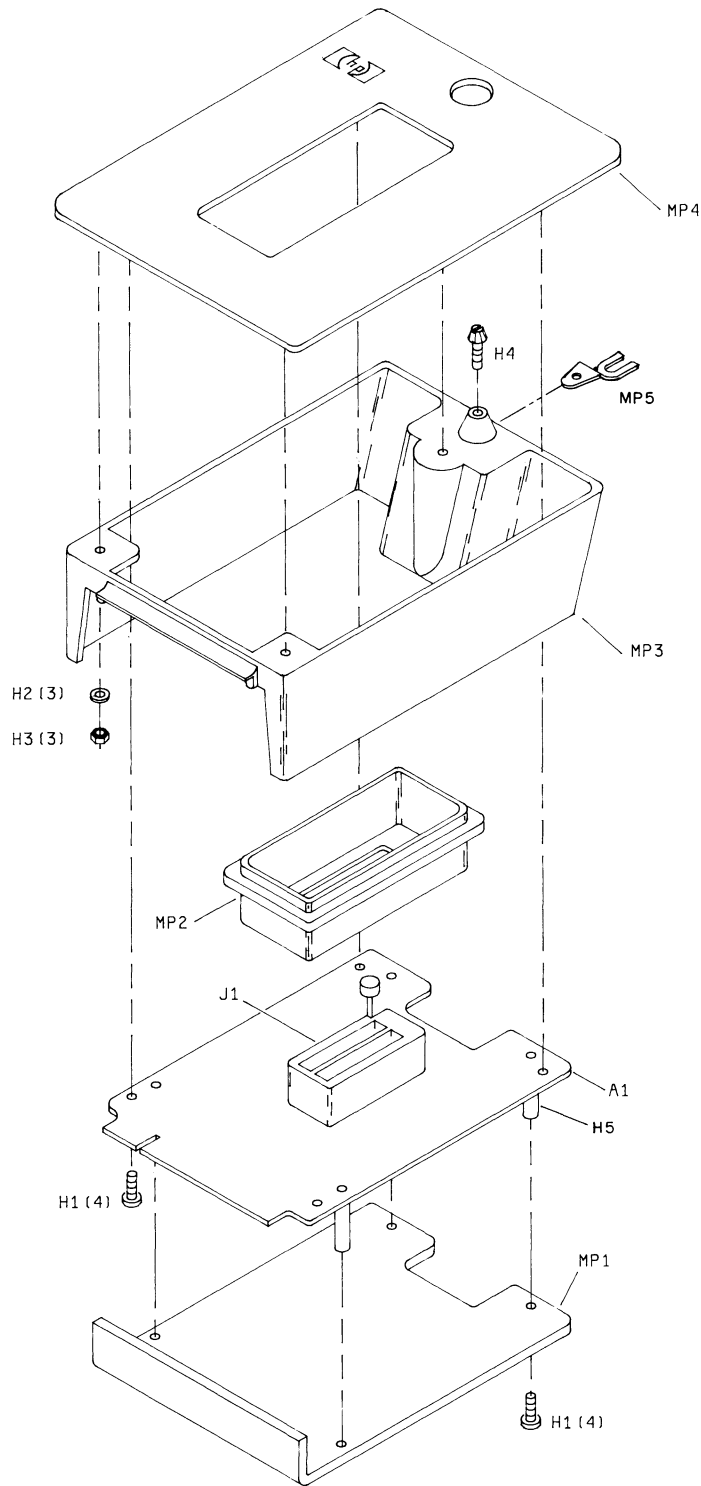


Figure 4-1. Model 64515C Illustrated Parts Breakdown

SECTION V
ADJUSTMENTS

5-1. The 64515C PROM Programmer Module has no adjustments.

SECTION VI
REPLACEABLE PARTS

6-1. INTRODUCTION.

6-2. This section contains information for ordering parts. Table 6-1 lists abbreviations used in the parts list and throughout the manual. Table 6-2 lists all replaceable parts in reference designator order. Table 6-3 contains the names and addresses that correspond to the manufacturers' five-digit code numbers.

6-3. ABBREVIATIONS.

6-4. Table 6-1 lists abbreviations used in the parts list, the schematics and throughout the manual. In some cases, two forms of the abbreviation are used: one all in capital letters, and one partial or no capitals. This occurs because the abbreviations in the parts list are always capitals. However, in the schematics and other parts of the manual, other abbreviation forms are used with both lowercase and uppercase letters.

6-5. REPLACEABLE PARTS LIST.

6-6. Table 6-2 is the list of replaceable parts and is organized as follows:

- a. Chassis-mounted parts in alphanumerical order by reference designation.
- b. Electrical assemblies and their components in alphanumerical order by reference designation.
- c. Miscellaneous parts.

The information given for each part consists of the following:

- a. The Hewlett-Packard part number and the check digit.
- b. The total quantity (Qty) in the instrument.
- c. The description of the part.
- d. A five-digit code that indicates the manufacturer.
- e. The manufacturer's part number.

The total quantity for each part is given only once - at the first appearance of the part number in the list.

Model 64515C - Replaceable Parts

6-7. ORDERING INFORMATION.

6-8. To order a part listed in the replaceable parts table, quote the Hewlett-Packard part number and check digit, indicate the quantity required, and address the order to the nearest Hewlett-Packard Sales/Service office.

6-9. To order a part that is not listed in the replaceable parts table, include the instrument model number, instrument repair number, the description and function of the part, and the number of parts required. Address the order to the nearest Hewlett-Packard Sales/Service office.

6-10. DIRECT MAIL ORDER SYSTEM.

6-11. Within the U.S.A., Hewlett-Packard can supply parts through a direct mail order system. Advantages of using the system are as follows:

- a. Direct ordering and shipment from the HP Parts Center in Mountain View, California.
- b. No maximum or minimum on any mail order (there is a minimum order amount, for parts ordered through a local HP office when the orders require billing and invoicing).
- c. Prepaid transportation (there is a small handling charge for each order).
- d. No invoices - to provide these advantages, a check or money order must accompany each order.

6-12. Mail-order forms and specific ordering information are available through your local HP office. Addresses and phone numbers are located at the back of this manual.

Table 6-1. Reference Designators and Abbreviations

REFERENCE DESIGNATORS							
A	= assembly	F	= fuse	MP	= mechanical part	U	= integrated circuit
B	= motor	FL	= filter	P	= plug	V	= vacuum tube, neon bulb, photocell, etc
BT	= battery	IC	= integrated circuit	Q	= transistor	VR	= voltage regulator
C	= capacitor	J	= jack	R	= resistor	W	= cable
CP	= coupler	K	= relay	RT	= thermistor	X	= socket
CR	= diode	L	= inductor	S	= switch	Y	= crystal
DL	= delay line	LS	= loud speaker	T	= transformer	Z	= tuned cavity network
DS	= device signaling (lamp)	M	= meter	TB	= terminal board		
E	= misc electronic part	MK	= microphone	TP	= test point		
ABBREVIATIONS							
A	= amperes	H	= henries	N/O	= normally open	RMO	= rack mount only
AFC	= automatic frequency control	HDW	= hardware	NOM	= nominal	RMS	= root-mean square
AMPL	= amplifier	HEX	= hexagonal	NPO	= negative positive zero (zero temperature coefficient)	RWV	= reverse working voltage
BFO	= beat frequency oscillator	HG	= mercury	NPN	= negative-positive-negative	S-B	= slow-blow
BE CU	= beryllium copper	HR	= hour(s)	NRFR	= not recommended for field replacement	SCR	= screw
BH	= binder head	HZ	= hertz	NSR	= not separately replaceable	SE	= selenium
BP	= bandpass					SECT	= section(s)
BRS	= brass	IF	= intermediate freq			SEMICON	= semiconductor
BWO	= backward wave oscillator	IMPG	= impregnated			SI	= silicon
		INCD	= incandescent			SIL	= silver
CCW	= counter-clockwise	INCL	= include(s)	OBD	= order by description	SL	= slide
CER	= ceramic	INS	= insulation(ed)	OH	= oval head	SPG	= spring
CMO	= cabinet mount only	INT	= internal	OX	= oxide	SPL	= special
COEF	= coefficient					SST	= stainless steel
COM	= common	K	= kilo=1000			SR	= split ring
COMP	= composition			P	= peak	STL	= steel
COMPL	= complete	LH	= left hand	PC	= printed circuit		
CONN	= connector	LIN	= linear taper	PF	= picofarads= 10 ⁻¹² farads	TA	= tantalum
CP	= cadmium plate	LK WASH	= lock washer	PH BRZ	= phosphor bronze	TD	= time delay
CRT	= cathode-ray tube	LOG	= logarithmic taper	PHL	= phillips	TGL	= toggle
CW	= clockwise	LPF	= low pass filter	PIV	= peak inverse voltage	THD	= thread
				PNP	= positive-negative-positive	TI	= titanium
DEPC	= deposited carbon	M	= milli=10 ⁻³	P/O	= part of	TOL	= tolerance
DR	= drive	MEG	= meg=10 ⁶	POLY	= polystyrene	TRIM	= trimmer
ELECT	= electrolytic	MET FLM	= metal film	PORC	= porcelain	TWT	= traveling wave tube
ENCAP	= encapsulated	MET OX	= metallic oxide	POS	= position(s)		
EXT	= external	MFR	= manufacturer	POT	= potentiometer	U	= micro=10 ⁻⁶
		MHZ	= mega hertz	PP	= peak-to-peak	VAR	= variable
F	= farads	MINAT	= miniature	PT	= point	VDCW	= dc working volts
FH	= flat head	MOM	= momentary	PWV	= peak working voltage	W/	= with
FIL H	= fillister head	MOS	= metal oxide substrate			W	= watts
FXD	= fixed	MTG	= mounting	RECT	= rectifier	WIV	= working inverse voltage
		MY	= "mylar"	RH	= round head or right hand	WW	= wirewound
G	= giga (10 ⁹)	N	= nano (10 ⁻⁹)			W/O	= without
GE	= germanium	N/C	= normally closed				
GL	= glass	NE	= neon				
GRD	= ground(ed)	NI PL	= nickel plate				

Model 64515C - Replaceable Parts

Table 6-2. Replaceable Parts

Ref. HP Part Des. Number	C Qty D	Description	Mfr. Code	Mfr. Part Number
A1 64515-66505	0 1	PC BOARD ASSEMBLY	28480	64515-66505
C1 0180-0374	5 1	CF TA 10UF 20V	28480	0180-0374
C2,4 0160-5321	5 2	CF CE .01UF 100V	28480	0160-5321
C3 0160-5315	0 1	CF CE 3300PF 100V	28480	0160-5315
H1 2360-0113	2 8	MS 6-32 .250LG	28480	2360-0113
H2 3050-0425	3 3	WFL .125 .312 .04	28480	3050-0425
H3 2260-0009	3 3	NUTH 4-40 .093	28480	2260-0009
H4 0570-0661	8 1	SCREW-THUMB	28480	0570-0661
H5 0380-0162	1 4	SPRC 6-32 .750	28480	0380-0162
J1 1200-0870	9 1	ZIF SCKT 28 PIN	28480	1200-0870
MP1 64500-04101	5 1	COVER-SAFETY	28480	64500-04101
MP2 64500-45205	6 1	BATHTUB 28	28480	64500-45205
MP3 5041-1576	0 1	PANEL-SUPPORT	28480	5041-1576
MP4 64515-00204	8 1	PANEL INTEL 27256	28480	64515-00204
MP5 64500-09101	5 1	GROUND CLIP	28480	00180-09104
R1 0757-0401	0 1	RF .12MF 100	28480	0757-0401
R2 0757-0412	3 1	RF .12MF 365	28480	0757-0412
R3 0757-0420	3 1	RF .12MF 750	28480	0757-0420
RP1 1810-0279	5 1	RES NET-4.7K x 9	01121	210A472
RP2 1810-0280	8 1	RES NET-10K x 9	01121	210A103
U1 1820-1416	5 1	IC INVERTER	18324	74LS14
U2 1820-2102	8 1	IC 8 BIT LATCH	18324	74LS373N

Table 6-3. Manufacturers' Codes

Mfr. No.	Manufacturer Name	Address	Zip Code
28480	Hewlett-Packard Corp.	Palo Alto	Ca 94304
01121	Allen-Bradley Co.	Milwaukee	Wi 53204
18324	Signetics Corp.	Sunnyvale	Ca 94086
04222	AVX Ceramics Corp.	Myrtle Beach	SC 29577
19613	Textool Products INC.	Irving	Tx 75060
24546	Corning Glass Works	Bradford	Pa 16701

SECTION VII

BACKDATING

7-1. There is no backdating information applicable to the 64515C PROM Programmer Module at the publication date of this manual.

SECTION VIII

SERVICE

8-1. INTRODUCTION.

8-2. The 64515C PROM Programmer Module provides the electrical interface between the 64501A PROM Programmer Controller and the PROM chip being programmed, verified or read. The PROM programmer circuits are contained on one PC board (HP P/N 64515-66504 or 64515-66505).

8-3. Figure 8-1, 8-2 and 8-3 are timing diagrams, figure 8-5 is a detailed schematic diagram and figure 8-4 is the component locator for the 64515C PC board.

8-4. THEORY.

8-5. GENERAL. The PROM Programmer circuits provide the following basic functions:

- a. Multiplexes via latch U1 the low order address bits to provide 14 address bits (A0 out - A13 out) to the EPROM chip. The Intel 2764/2764A and TMS 2564 use only 13 of the address bits.

Since the Intel 27128/27128A is a 128K EPROM, an extra address bit is provided (A13) and the Intel 27256 requires 2 extra address bits (A13 and A14) to address its 256K memory locations (8 X 32K).

- b. Uses the programming voltage signal (VP3) from the Controller PCB in conjunction with control bits A13 in, A14 in, and LP2 (2564 uses A4 in also) to generate the control signals necessary to program the EPROM chip.
- c. Generates the "1D HEX" ID code (ID0-ID4).
- d. Routes "programming" data (DW0-DW7) from the Controller PCB to the EPROM chip.
- e. Provides current sinking thru RP2 and current sourcing thru RP1 in the quiescent state for DW0-DW7 and DR0-DR7 data lines.
- f. Routes "read" data (DR0-DR7) from EPROM chip back to the Controller PCB during verification and normal reading. It should be noted that the verification of all data programmed into the EPROM takes place after the chip has been programmed and not during the programming sequence.

8-6. ADDRESSING, WRITING and READING CIRCUITS. Thirteen bits of addressing (A0 out - A12 out) are used for selecting any one of the 8192 internal memory locations in the 2564 and 2764/2764A memories. A fourteenth bit A13 out is provided to address the 16K bytes of memory in 27128/27128A EPROM and address bits A13 and A14 out are provided to address the 32K bytes of memory in the Intel 27256 EPROM.

8-7. The low-order bits (A0 out - A7 out) are latched from the Controller PCB using Latch U1 on the 64515C PCB ,then the high-order bits (A8 out - A12 out) are multiplexed with low addresses A0-A4 and bypasses Latch U1 so that thirteen address lines address the EPROM on only eight address lines. The 27128/27128A chip uses A10 in from the EPROM Programmer Controller board for A13 out due to the chip size (16K x 8). The 27256 chip uses also A13 out and A14 out (32K x 8).

8-8. PROM MODULE ID. The final function provided by the 64515C PCB is the generation of the 1D HEX ID code. This is done by grounding ID0, ID2, ID3 and ID4 while tying ID1 to +5 V. Since ID0 is the LSB, this produces 00010 which becomes 11101 since the ID signals are low true. This is equivalent to decimal 29 (1D HEX).

8-9. PROGRAMMING SEQUENCE. In brief, the programming process consists of: 1) activating the program mode, 2) applying the lower 8 bits of address and latching them into U2, 3) applying the upper 5 bits of address via the lower 5 bits A0-A4 (multiplexing 13 bits on 8 lines), 4) applying data and VPP, 5) applying the programming pulse. Each 8-bit word is programmed completely into a specific location before moving on to the next and repeating steps 1 thru 5.

Table 8-1. MODE Selection

MODE	\overline{CE}	\overline{OE}	\overline{PGM}	VPP	VCC	OUTPUTS
Read	V low	V low	V hi	Vcc	Vcc	D out
Standby	V hi	X	X	Vcc	Vcc	High Z
** Program	V low	V hi	V low	Vpp	Vcc	D in
Program Verify	V low	V low	V hi	Vpp	Vcc	D out
Program Inhibit	V hi	X	X	Vpp	Vcc	High Z

X can be either V low or V hi

NOTE

There is no "Program" pin on the 27256

Table 8-2. Program/Verify Sequence for the 2564

1. Press the [prom_prog] softkey. Select the 2564 EPROM (softkey).
2. Initial conditions:
 - a) VPP = +1.2 VDC
 - b) $\overline{\text{CE}}$ = +5 VDC
 - c) $\overline{\text{CS1}}/\overline{\text{CS2}}$ = 0 VDC
 - d) $\overline{\text{PGM}}$ = 0 VDC
3. Insert EPROM chip into ZIF socket J1.
4. VPP (VP3) gets raised to +5 VDC.
5. Apply address for bit location to be programmed.
6. Latch lower 8 bits of address then pass upper bits of address.
7. Apply data to Bus (bits DW0-DW7).
8. Apply programming power. VPP goes to +21 Volts.
9. $\overline{\text{PGM}}$ is the programming signal and is brought low for 50 mS.
10. Lower programming power (VPP goes to +5 VDC).
11. Repeat step 4 through 8 to program remaining data into PROM memory.
12. The Verify Sequence will begin and run through all the previously programmed locations of memory. A failure message will be displayed if any memory location was not programmed correctly.

NOTE

Programmer should be at conditions of step 1 when PROM chip is removed from ZIF socket J1.

Table 8-3. Program/Verify Sequence for the 2764/2764A, 27128/27128A

1. Press the [prom_prog] softkey. Select the 2764, 2764A, 27128, or the 27128A EPROM (softkey).
2. Initial conditions:
 - a) VPP = +1.2 VDC
 - b) $\overline{\text{CE}}$ = +5 VDC
 - c) $\overline{\text{OE}}$ = +5 VDC
 - d) $\overline{\text{PGM}}$ = 0 VDC
3. Insert EPROM chip into ZIF socket J1.
4. VPP gets raised to +5 VDC.
5. Apply address for bit location to be programmed.
6. Latch lower 8 bits of address then pass upper bits of address.
7. Apply data to Bus (bits DW0-DW7).
8. Apply programming power. VPP goes to +21 volt (11.5 volts for 2764A/27128A).
9. $\overline{\text{CE}}$ goes low for duration of programming sequence
9. $\overline{\text{PGM}}$ is the programming signal and goes low for 1 mS initially.
10. $\overline{\text{OE}}$ goes low and a Verify Sequence takes place. If the Verify Sequence fails, the PROM is reprogrammed and a Verify Sequence takes place again. The Programm/Verify Sequence (steps 9 and 10) will occur for up to 15 failures and then drop out of the program mode. When/if the PROM passes the verify test, it then will be programmed X number of times (X = the number of times the PROM went through the program/verify sequence).
11. Lower programming power (VPP goes to +5 VDC).
12. Repeat step 4 through 11 to program remaining data into PROM memory.
13. The Read/Verify Sequence will begin and run through all the previously programmed locations of memory. A failure message will be displayed if any memory location was not programmed correctly.

Table 8-4. Program/Verify Sequence for the 27256

1. Press the [prom_prog] softkey. Select the 27256 EPROM (softkey).
2. Initial conditions:
 - a) VPP = +1.2 VDC
 - b) $\overline{\text{CE}}$ = +5 VDC
 - c) $\overline{\text{OE}}$ = +5 VDC
 - d) $\overline{\text{PGM}}$ = 0 VDC
3. Insert EPROM chip into ZIF socket J1.
4. VPP gets raised to +5 VDC.
5. Apply address for bit location to be programmed.
6. Latch lower 8 bits of address then pass upper bits of address.
7. Apply data to Bus (bits DW0-DW7).
8. Apply programming power. VPP goes to +12 Volt.
9. $\overline{\text{CE}}$ is the programming signal and goes low for 1 mS initially.
10. $\overline{\text{OE}}$ goes low and a Verify Sequence takes place. If the Verify Sequence fails, the PROM is reprogrammed and a Verify Sequence takes place again. The Programm/Verify Sequence (steps 9 and 10) will occur for up to 15 failures and then drop out of the program mode. When/if the PROM passes the verify test, it then will be programmed X number of times (X = the number of times the PROM went through the program/verify sequence).
11. Lower programming power (VPP goes to +5 VDC).
12. Repeat step 4 through 11 to program remaining data into PROM memory.
13. The Verify Sequence will begin and run through all the previously programmed locations of memory. A failure message will be displayed if any memory location was not programmed correctly.

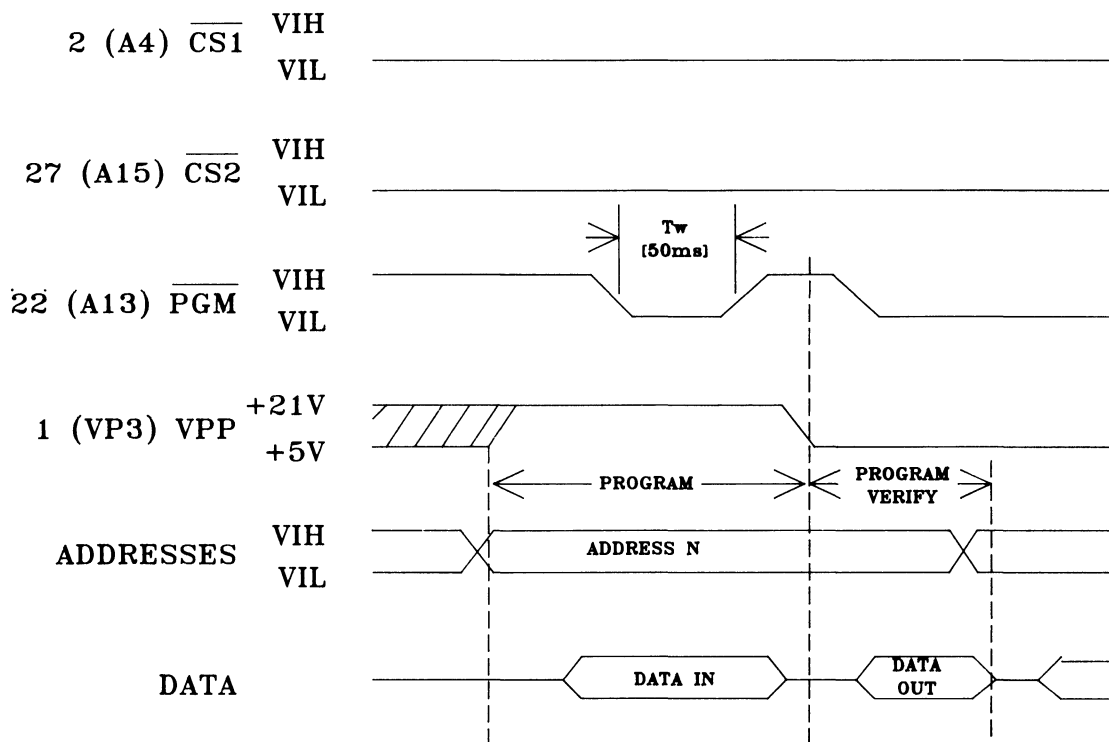
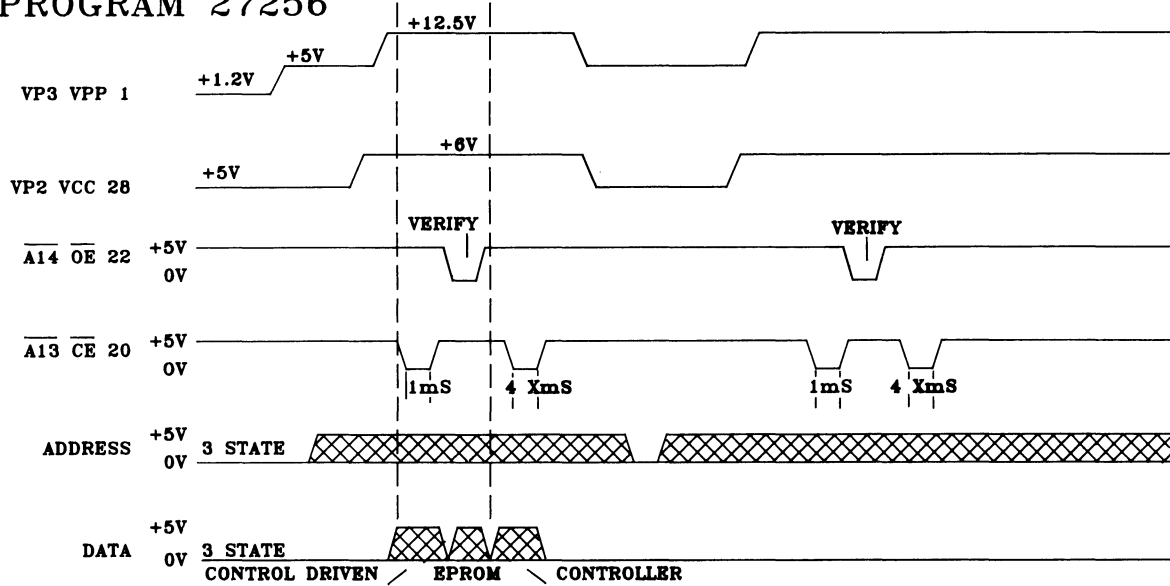


Figure 8-1. Timing Diagram for the 2564

PROGRAM 27256



READ 27256

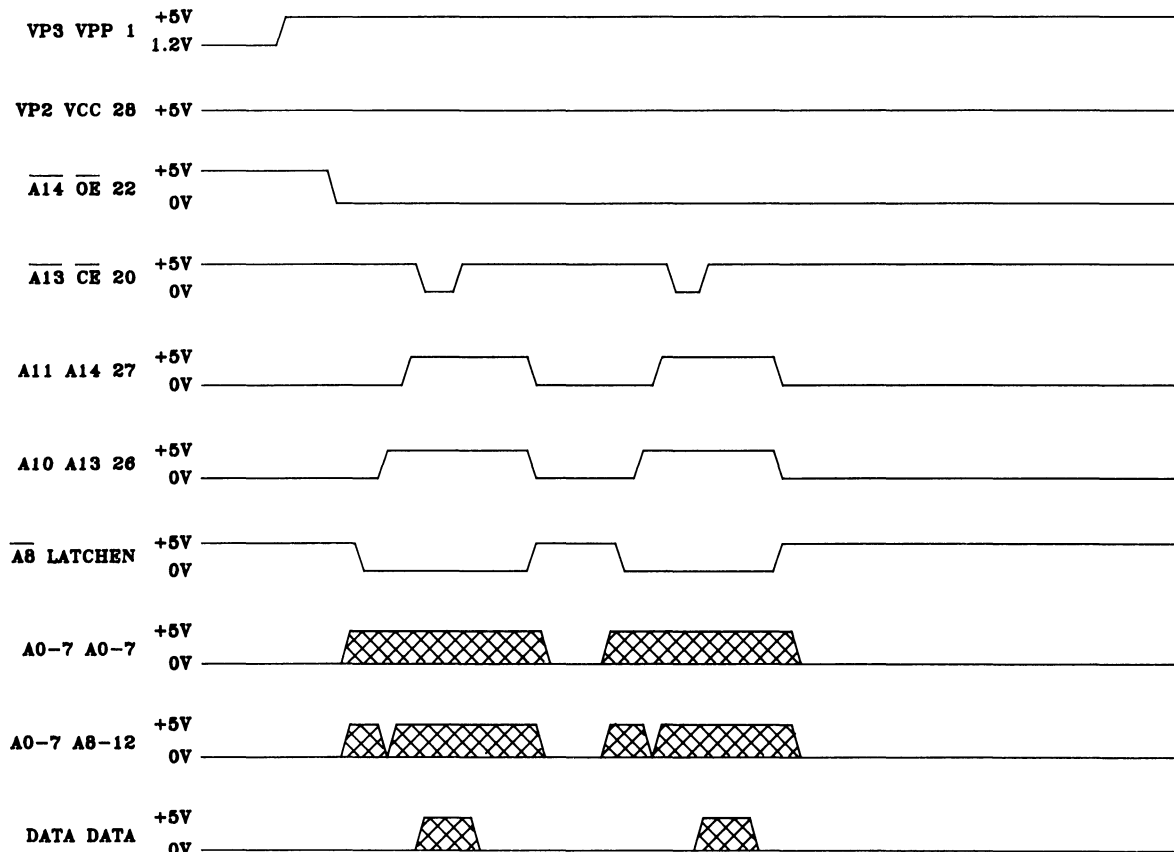
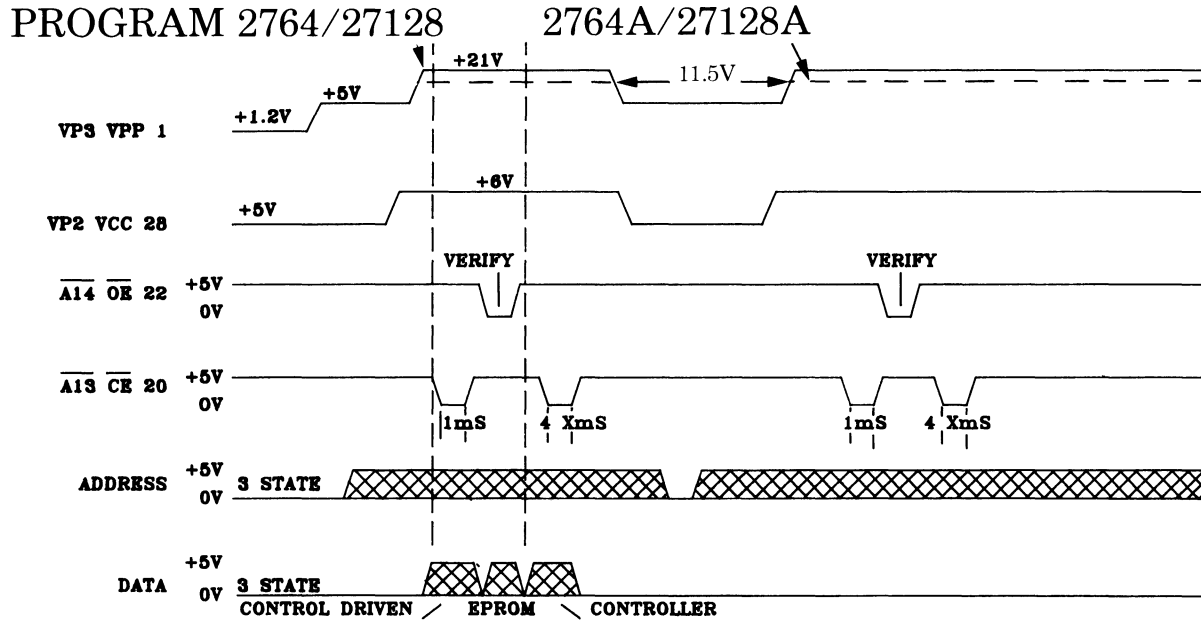


Figure 8-2. Timing Diagram for the 27256



READ 2764/27128

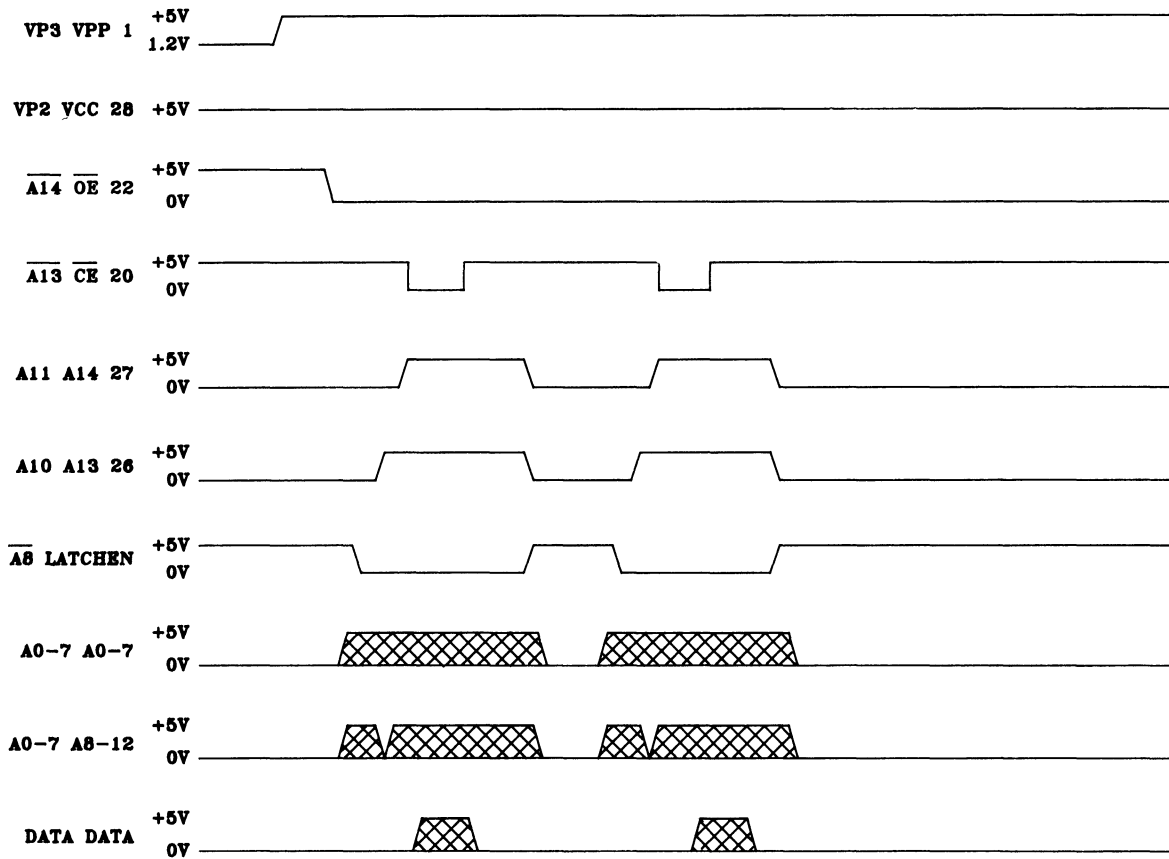


Figure 8-3. Timing Diagram for the 2764/2764A and 27128/27128A

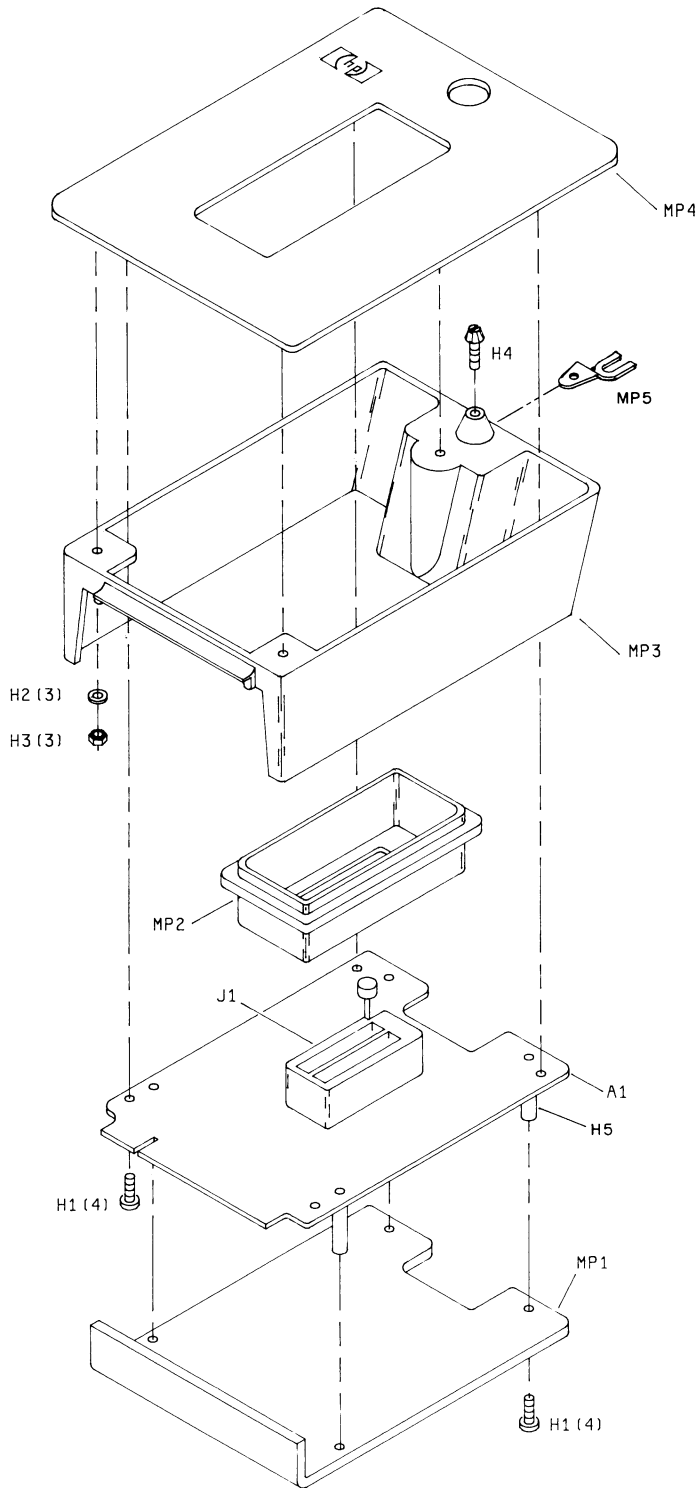


Figure 8-4. Model 64515C Illustrated Parts Breakdown

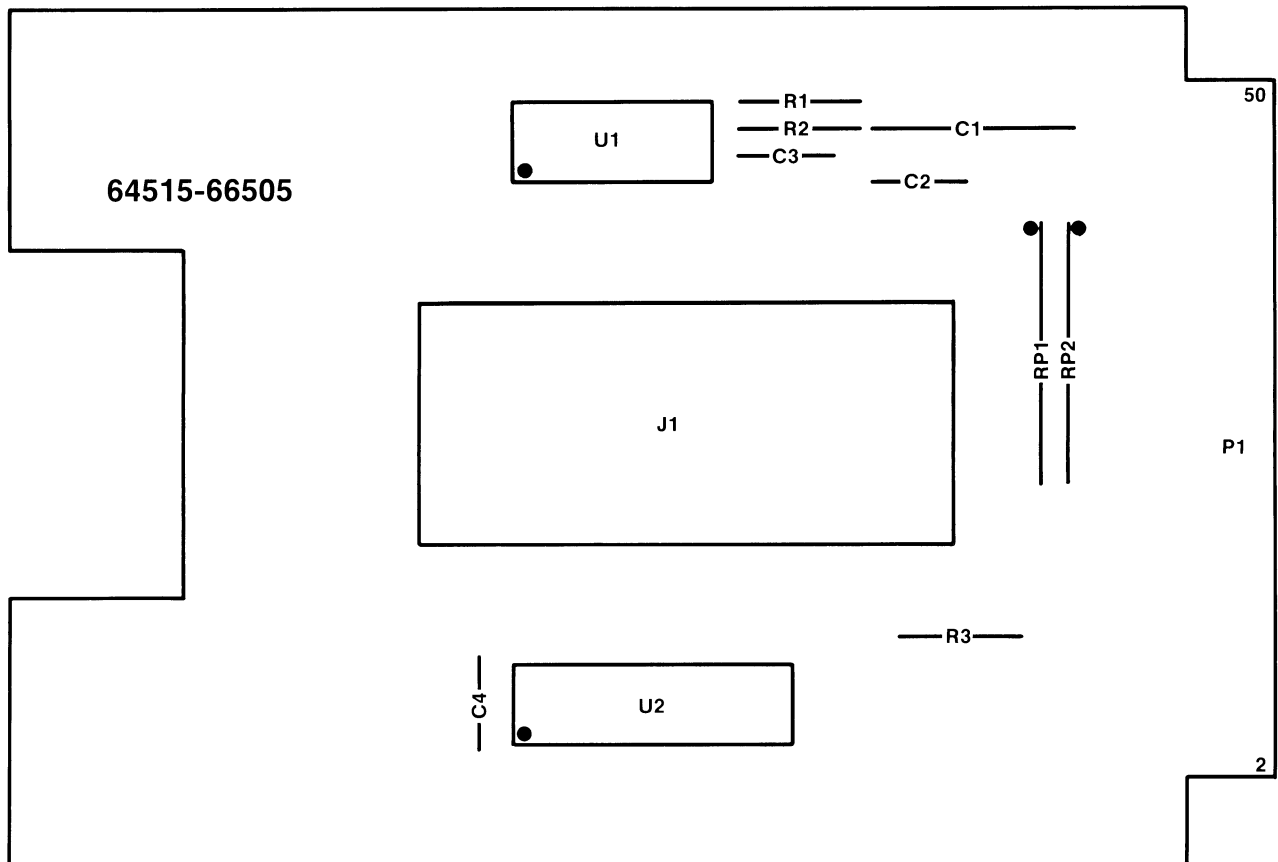
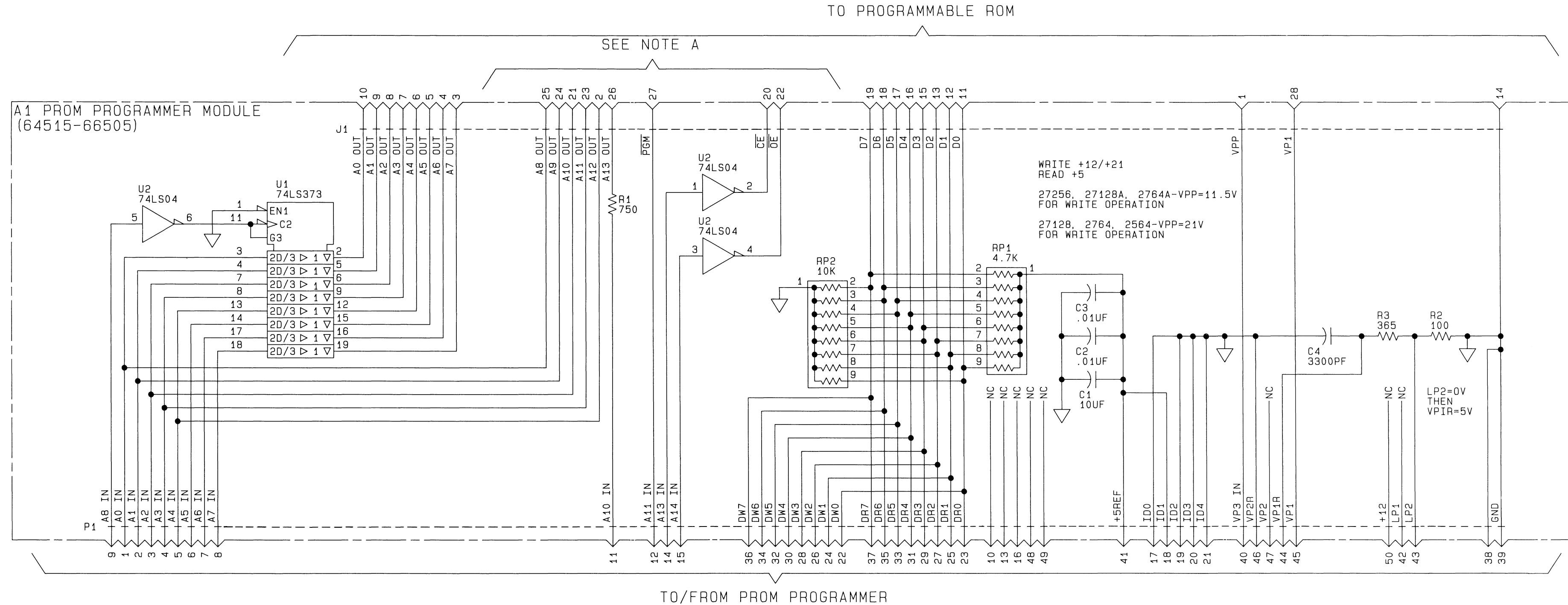


Figure 8-5. Model 64515C Component Locator



ICs ON THIS SCHEMATIC

Ref Desig	HP Part No.	Mfr Part No.
U1	1820-2102	74S373
U2	1820-1149	74S04

PARTS ON THIS SCHEMATIC

C1-4
J1
R1-3
RP1,2
U1,2

NOTE "A"

IC	Pin To Function
2764 2764A	22 OE
	20 CE
	27 PGM
	26 NC
	2 A12
2564	2 A12
	23 A11
	21 A10
	22 PD/PGM
	20 A11
27128 27128A	27 CE
	20 PGM
	26 A13
	2 A12
	23 A11
27256	21 A10
	23 A11
	2 A12
	26 A13
	20 OE

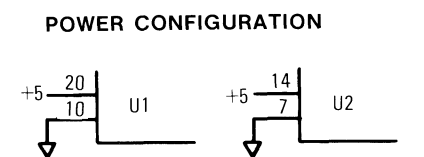


Figure 8-6.
Model 64515C Schematic
PROM MOD 8-11

SALES & SUPPORT OFFICES

Arranged alphabetically by country



Product Line Sales/Support Key

Key Product Line

- A** Analytical
- CM** Components
- C** Computer Systems Sales only
- CH** Computer Systems Hardware Sales and Services
- CS** Computer Systems Software Sales and Services
- E** Electronic Instruments & Measurement Systems
- M** Medical Products
- P** Personal Computation Products
- * 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 office for information regarding locations where HP support is available for specific products.

HP distributors are printed in italics.

HEADQUARTERS OFFICES

If there is no sales office listed for your area, contact one of these headquarters offices.

AFRICA AND MIDDLE EAST

Hewlett-Packard S.A.
Mediterranean and Middle East Operations
Atrina Centre
32 Kifissias Ave.
Paradissos-Amarousion, **ATHENS**
Greece
Tel: 682 88 11
Telex: 21-6588 HPAT GR
Cable: HEWPACKSA Athens

NORTH/CENTRAL AFRICA

Hewlett-Packard S.A.
7, Rue du Bois-du-Lan
CH-1217 **MEYRIN** 2, Switzerland
Tel: (022) 83 12 12
Telex: 27835 hpse
Cable: HEWPACKSA Geneve

ASIA

Hewlett-Packard Asia Ltd.
47/F, 26 Harbour Rd.,
Wanchai, **HONG KONG**
G.P.O. Box 863, Hong Kong
Tel: 5-8330833
Telex: 76793 HPA HX
Cable: HPASIAL TD

CANADA

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

EASTERN EUROPE

Hewlett-Packard Ges.m.b.h.
Lieblgasse 1
P.O.Box 72
A-1222 **VIENNA**, Austria
Tel: (222) 2365110
Telex: 1 3 4425 HEPA A

NORTHERN EUROPE

Hewlett-Packard S.A.
Uilenstede 475
P.O.Box 999
NL-1180 **AZ AMSTELVEEN**
The Netherlands
Tel: 20 437771

SOUTH EAST EUROPE

Hewlett-Packard S.A.
World Trade Center
110 Avenue Louis Carol
1215 Cointrin, **GENEVA**, Switzerland
Tel: (022) 98 96 51
Telex: 27225 hpse.

EASTERN USA

Hewlett-Packard Co.
4 Choke Cherry Road
ROCKVILLE, MD 20850
Tel: (301) 258-2000

MIDWESTERN USA

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

SOUTHERN USA

Hewlett-Packard Co.
2000 South Park Place
P.O. Box 105005
ATLANTA, GA 30348
Tel: (404) 955-1500

WESTERN USA

Hewlett-Packard Co.
3939 Lankershim Blvd.
P.O. Box 3919
LOS ANGELES, CA 91604
Tel: (213) 506-3700

OTHER INTERNATIONAL AREAS

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

ANGOLA

Telectra
Empresa TAEcnica de Equipamentos
R. Barbosa Rodrigues, 41-I DT.
Caixa Postal 6487
LUANDA
Tel: 35515,35516
E,P

ARGENTINA

Hewlett-Packard Argentina S.A.
Avenida Santa Fe 2035
Martinez 1640 **BUENOS AIRES**
Tel: 798-5735, 792-1293
Cable: HEWPACKARG
A,E,CH,CS,P

AUSTRALIA

Adelaide, South Australia Office

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

Brisbane, Queensland Office

Hewlett-Packard Australia Ltd.
10 Payne Road
THE GAP, Queensland 4061
Tel: 30-4133
Telex: 42133
Cable: HEWPARD Brisbane
A,CH,CS,CM,E,M,P

Canberra, Australia Capital Territory Office

Hewlett-Packard Australia Ltd.
121 Wollongong Street
FYSHWICK, A.C.T. 2609
Tel: 80 4244
Telex: 62650
Cable: HEWPARD Canberra
C,CH,CM,CS,E,P

Melbourne, Victoria Office

Hewlett-Packard Australia Ltd.
31-41 Joseph Street
BLACKBURN, Victoria 3130
Tel: 895-2895
Telex: 31-024
Cable: HEWPARD Melbourne
A,CH,CM,CS,E,M,P

Perth, Western Australia Office

Hewlett-Packard Australia Ltd.
261 Stirling Highway
CLAREMONT, W.A. 6010
Tel: 383-2188
Telex: 93859
Cable: HEWPARD Perth
A,CH,CM,CS,E,M,P

Sydney, New South

Wales Office
Hewlett-Packard Australia Ltd.
17-23 Talavera Road
P.O. Box 308
NORTH RYDE, N.S.W. 2113
Tel: 888-4444
Telex: 21561
Cable: HEWPARD Sydney
A,CH,CM,CS,E,M,P

AUSTRIA

Hewlett-Packard Ges.m.b.h.
Grottenhofstrasse 94
A-8052 **GRAZ**
Tel: (0316) 291 5 66
Telex: 32375
CH,E

Hewlett-Packard Ges.m.b.h.

Lieblgasse 1
P.O. Box 72
A-1222 **VIENNA**
Tel: (0222) 23 65 11-0
Telex: 134425 HEPA A
A,CH,CM,CS,E,M,P

BAHRAIN

Green Salon
P.O. Box 557
Manama
BAHRAIN
Tel: 255503-255950
Telex: 84419
P

Wael Pharmacy

P.O. Box 648
BAHRAIN
Tel: 256123
Telex: 8550 **WAEI BN**
E,M

BELGIUM

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,CH,CM,CS,E,M,P

BERMUDA

Applied Computer Technologies
Atlantic House Building
Par-La-Ville Road
Hamilton 5
Tel: 295-1616
P

BRAZIL

Hewlett-Packard do Brasil
I.e.C. Ltda.
Alameda Rio Negro, 750
Alphaville
06400 **BARUERI SP**
Tel: (011) 421.1311
Telex: (011) 33872 HPBR-BR
Cable: HEWPACK Sao Paulo
A,CH,CM,CS,E,M,P



SALES & SUPPORT OFFICES

Arranged alphabetically by country

BRAZIL (Cont'd)

Hewlett-Packard do Brasil
I.e.C. Ltda.
Avenida Epitacio Pessoa, 4664
22471 **RIO DE JANEIRO**-RJ
Tel: (021) 286.0237
Telex: 021-21905 HPBR-BR
A,CH,HEWPACK Rio de Janeiro
C,HE,CM,E,M,P*

Convex/Van Den
Rua Jose Bonifacio
458 Todos Os Santos
CEP 20771

RIO DE JANEIRO, RJ
Tel: 249-7121, 591-4946
Telex: 33487

ANAMED I.C.E.I. Ltda.
Rua Bage, 103
04012 SAO PAULO
Tel: (011) 570-5726
Telex: 021-21905 HPBR-BR
M

CANADA

Alberta

Hewlett-Packard (Canada) Ltd.
3030 3rd Avenue N.E.
CALGARY, Alberta T2A 6T7
Tel: (403) 235-3100
A,CH,CM,E*,M,P*

Hewlett-Packard (Canada) Ltd.
11120-178th Street
EDMONTON, Alberta T5S 1P2
Tel: (403) 486-6666
A,CH,CM,CS,E,M,P

British Columbia

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

Hewlett-Packard (Canada) Ltd.
121 - 3350 Douglas Street
VICTORIA, British Columbia V8Z 3L1
Tel: (604) 381-6616
CH,CS

Manitoba

Hewlett-Packard (Canada) Ltd.
1825 Inkster Blvd.
WINNIPEG, Manitoba R3H 0Y1
Tel: (204) 786-6701
A,CH,CM,E,M,P*

New Brunswick

Hewlett-Packard (Canada) Ltd.
37 Shediac Road
MONCTON, New Brunswick E1A 2R6
Tel: (506) 855-2841
CH,CS

Nova Scotia

Hewlett-Packard (Canada) Ltd.
Suite 111
900 Windmill Road
DARTMOUTH, Nova Scotia B2Y 3Z6
Tel: (902) 469-7820
CH,CM,CS,E*,M,P*

Ontario

Hewlett-Packard (Canada) Ltd.
3325 N. Service Rd., Unit 6
BURLINGTON, Ontario P3A 2A3
Tel: (416) 335-8644
CS,M*

Hewlett-Packard (Canada) Ltd.
496 Days Road
KINGSTON, Ontario K7M 5R4
Tel: (613) 384-2088
CH,CS

Hewlett-Packard (Canada) Ltd.
552 Newbold Street
LONDON, Ontario N6E 2S5
Tel: (519) 686-9181
A,CH,CM,E*,M,P*

Hewlett-Packard (Canada) Ltd.
6877 Goreway Drive
MISSISSAUGA, Ontario L4V 1M8
Tel: (416) 678-9430
A,CH,CM,CS,E,M,P

Hewlett-Packard (Canada) Ltd.
2670 Queensview Dr.
OTTAWA, Ontario K2B 8K1
Tel: (613) 820-6483
A,CH,CM,CS,E*,MS,P*

Hewlett-Packard (Canada) Ltd.
1855 Lasalle Boulevard
SUDBURY, Ontario, P3A 2A3
Tel: (705) 560-5450
CH

Hewlett-Packard (Canada) Ltd.
220 Yorkland Blvd. Unit #11
WILLOWDALE, Ontario M2J 1R5
Tel: (416) 499-9333
CH

Quebec

Hewlett-Packard (Canada) Ltd.
17500 South Service Road
Trans-Canada Highway
KIRKLAND, Quebec H9J 2M5
Tel: (514) 697-4232
A,CH,CM,CS,E,M,P*

Hewlett-Packard (Canada) Ltd.
1150 Rue Claire Fontaine
QUEBEC CITY, Quebec G1R 5G4
Tel: (418) 648-0726
CH,CS

Hewlett-Packard (Canada) Ltd.
#7-130 Robin Crescent
SASKATOON, Saskatchewan S7L 6M7
Tel: (306) 242-3702
CH,CS

CHILE

ASC Ltda.
Austria 2041
SANTIAGO
Tel: 223-5946, 223-6148
Telex: 340192 ASC CK
P,C

Jorge Calcagni y Cia. Ltda.
Av. Italia 634 Santiago
Casilla 16475
SANTIAGO 9
Tel: 222-0222
Telex: 440283 JCYCL CZ
CM,E,M

Metrolab S.A.
Monjitas 454 of. 206
SANTIAGO
Tel: 395752, 398296
Telex: 340866 METLAB CK
A

Olympia (Chile) Ltda.
Av. Rodrigo de Araya 1045
Casilla 256-V
SANTIAGO 21
Tel: 225-5044
Telex: 340892 OLYMP
Cable: Olympiachile Santiagochile
CH,CS,P

CHINA, People's Republic of

China Hewlett-Packard Co., Ltd.
6th Floor, Sun Hung Kai Centre
30 Harbour Road
HONG KONG
Tel: 5-8323211
Telex: 36678 HEWPA HX
A,C,CH,CS,E,M,P

China Hewlett-Packard Rep. Office
P.O. Box 418
1A Lane 2, Luchang St.
Beiwei Rd., Xuanwu District
BEIJING
Tel: 33-1947, 33-7426
Telex: 22601 CTSHP CN
Cable: 1920

A,CH,CM,CS,E,P

COLOMBIA

InstrumentaciAO n
H. A. Langebaek & Kier S.A.
Carrera 4A No. 52A-26
Apartado Aereo 6287
BOGOTA 1, D.E.
Tel: 212-1466
Telex: 44400 INST CO
Cable: AARIS Bogota
CM,E,M

Nefromedicas Ltda.
Calle 123 No. 9B-31
Apartado Aereo 100-958
BOGOTA D.E., 10
Tel: 213-5267, 213-1615
Telex: 43415 HEGAS CO
A

Procesa, S.A.
CRA 7 No. 24-89 Piso 25
Torre Colpatria
Apartado Aereo No. 49667
BOGOTA D.E.
Tel: 2344925, 2344958, 2344742
Telex: 43127 COVER CO
C,P

Compumundo
Avenida 15 # 107-80
BOGOTA D.E.
Tel: 214-4458
Telex: 45466 MARICO
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 CR
CM,E,M

CYPRUS

Telexera Ltd.
P.O. Box 4809
14C Stassinou Avenue
NICOSIA
Tel: 62698
Telex: 2894 LEVIDO CY
E,M,P

DENMARK

Hewlett-Packard A/S
Datavej 52
DK-3460 **BIRKEROD**
Tel: (02) 81-66-40
Telex: 37409 hpas dk
A,CH,CM,CS,E,M,P
Hewlett-Packard A/S
Rolighedsvej 32
DK-8240 **RISSKOV**, Aarhus
Tel: (06) 17-60-00
Telex: 37409 hpas dk
CH,E

DOMINICAN REPUBLIC

Microprog S.A.
Juan Tomás Mejía y Cotes No. 60
Arroyo Hondo
SANTO DOMINGO
Tel: 565-6268
Telex: 4510 ARENTA DR (RCA)
P

ECUADOR

CYEDE Cia. Ltda.
Avenida Eloy Alfaro 1749
y Belgica
Casilla 6423 CCI
QUITO
Tel: 450-975, 243-052
Telex: 2548 CYEDE ED
CM,E,P
Hospitalar S.A.
Robles 625
Casilla 3590
QUITO
Tel: 545-250, 545-122
Telex: 2485 HOSPTEL ED
Cable: HOSPITALAR-Quito
M

QUITO

Tel: 2-238-951
Telex: 2298 ECUAME ED

EGYPT

Egyptian International
Office for Foreign Trade
P.O. Box 2558
42 El-Zahraa Street
Dokki, CAIRO,
Tel: 712230
Telex: 93337 EGPOR UN
Cable: EGYPOR
P,A

EGYPT (Cont'd)

INFORMATIC FOR SYSTEMS

22 Talaat Harb Street

CAIRO,

Tel: 759006

Telex: 93697 SAFLM UN

CS

International Engineering Associates

24 Hussein Hegazi Street

Kasr-el-Aini

CAIRO,

Tel: 23829, 21641

Telex: 93830 IEA UN

Cable: INTEGASSO

E

S.S.C. Medical

40 Gezerat El Arab Street

Mohandessin

CAIRO,

Tel: 803844, 805998, 810263

Telex: 20503 SSC UN

*M**

EL SALVADOR

IPESA de El Salvador S.A.

29 Avenida Norte 1216

SAN SALVADOR

Tel: 26-6858, 26-6868

Telex: 20539 IPESASAL

A,CH,CM,CS,E,P

FINLAND

Hewlett-Packard Oy

Piispankalliontie 17

02200 ESPOO

Tel: 00358-0-88721

Telex: 121563 HEWPA SF

CH,CM,SS,P

Hewlett-Packard Oy

(Olarinluoma 7)

PL 24

02101 ESPOO 10

Tel: (90) 4521022

A,E,M

Hewlett-Packard Oy

Aatoksenkatu 10-C

SF-40720-72 JYVASKYLA

Tel: (941) 216318

CH

Hewlett-Packard Oy

Kainuntie 1-C

SF-90140-14 OULU

Tel: (981) 338785

CH

FRANCE

Hewlett-Packard France

Z.I. Mercure B

Rue Berthelot

F-13763 Les Milles Cedex

AIX-EN-PROVENCE

Tel: (42) 59-41-02

Telex: 410770F

*A,CH,E,M,P**

Hewlett-Packard France

64, rue Marchand Saillant

F-61000 ALENCON

Tel: (33) 29 04 42

Hewlett-Packard France

Boite Postale 503

F-25026 BESANCON

28 rue de la Republique

F-25000 BESANCON

Tel: (81) 83-16-22

Telex: 361157

CH,M

Hewlett-Packard France

13, Place Napoleon III

F-29000 BREST

Tel: (98) 03-38-35

Hewlett-Packard France

Chemin des Mouilles

Boite Postale 162

F-69130 ECULLY Cedex (Lyon)

Tel: (78) 833-81-25

Telex: 310617F

A,CH,CS,E,M

Hewlett-Packard France

Parc d'Activite du Bois Briard

Ave. du Lac

F-91040 EVRY Cedex

Tel: 6 077-8383

Telex: 692315F

E

Hewlett-Packard France

5, Avenue Raymond Chanas

F-38320 EYBENS (Grenoble)

Tel: (76) 62-67-98

Telex: 980124 HP GRENOB EYBE

CH

Hewlett-Packard France

Centre d'Affaire Paris-Nord

Bâtiment Ampère 5 étage

Rue de la Commune de Paris

Boite Postale 300

F-93153 LE BLANC MESNIL

Tel: (1) 865-44-52

Telex: 211032F

CH,CS,E,M

Hewlett-Packard France

Parc d'Activités Caderea

Quartier Jean Mermoz

Avenue du Président JF Kennedy

F-33700 MERIGNAC (Bordeaux)

Tel: (56) 34-00-84

Telex: 550105F

CH,E,M

Hewlett-Packard France

Immueble "Les 3 B"

Nouveau Chemin de la Garde

ZAC de Bois Briard

F-44085 NANTES Cedex

Tel: (40) 50-32-22

Telex: 711085F

*CH***

Hewlett-Packard France

125, rue du Faubourg Bannier

F-45000 ORLEANS

Tel: (38) 68 01 63

Hewlett-Packard France

Zone Industrielle de Courtaboeuf

Avenue des Tropiques

F-91947 Les Ulis Cedex ORSAY

Tel: (6) 907-78-25

Telex: 600048F

A,CH,CM,CS,E,M,P

Hewlett-Packard France

Paris Porte-Maillot

15, Avenue de L'Amiral Bruix

F-75782 PARIS CEDEX 16

Tel: (1) 502-12-20

Telex: 613663F

CH,M,P

Hewlett-Packard France

124, Boulevard Tourasse

F-64000 PAU

Tel: (59) 80 38 02

Hewlett-Packard France

2 AllAe de la Bourgonnette

F-35100 RENNES

Tel: (99) 51-42-44

Telex: 740912F

*CH,CM,E,M,P**

Hewlett-Packard France

98 Avenue de Bretagne

F-76100 ROUEN

Tel: (35) 63-57-66

Telex: 770035F

*CH**,CS*

Hewlett-Packard France

4 Rue Thomas Mann

Boite Postale 56

F-67033 STRASBOURG Cedex

Tel: (88) 28-56-46

Telex: 890141F

*CH,E,M,P**

Hewlett-Packard France

Le PAEripole

20, Chemin du Pigeonnier de la

CAEpiGEere

F-31083 TOULOUSE Cedex

Tel: (61) 40-11-12

Telex: 531639F

*A,CH,CS,E,P**

Hewlett-Packard France

9, rue Baudin

F-26000 VALENCE

Tel: (75) 42 76 16

Hewlett-Packard France

Carolor

ZAC de Bois Briand

F-57640 VIGY (Metz)

Tel: (8) 771 20 22

CH

Hewlett-Packard France

Immeuble PEricentre

F-59658 VILLENEUVE D'ASCQ Cedex

Tel: (20) 91-41-25

Telex: 160124F

*CH,E,M,P**

GERMAN FEDERAL

REPUBLIC

Hewlett-Packard GmbH

Geschäftsstelle

Keithstrasse 2-4

D-1000 BERLIN 30

Tel: (030) 24-90-86

Telex: 018 3405 hpbln d

A,CH,E,M,P

Hewlett-Packard GmbH

Geschäftsstelle

Herrenberger Strasse 130

D-7030 BÖBLINGEN

Tel: (7031) 14-0

Telex: 07265739

A,CH,CM,CS,E,M,P

Hewlett-Packard GmbH

Geschäftsstelle

Emanuel-Leutze-Strasse 1

D-4000 DUSSELDORF

Tel: (0211) 5971-1

Telex: 085/86 533 hpdd d

A,CH,CS,E,M,P

Hewlett-Packard GmbH

Geschäftsstelle

Schleefstr. 28a

D-4600 DORTMUND-Aplerbeck

Tel: (0231) 45001

Hewlett-Packard GmbH

Vertriebszentrale Frankfurt

Berner Strasse 117

Postfach 560 140

D-6000 FRANKFURT 56

Tel: (0611) 50-04-1

Telex: 04 13249 hpfm d

A,CH,CM,CS,E,M,P

Hewlett-Packard GmbH

Geschäftsstelle

Aussenstelle Bad Homburg

Louisenstrasse 115

D-6380 BAD HOMBURG

Tel: (06172) 109-0

Hewlett-Packard GmbH

Geschäftsstelle

Kapstadtring 5

D-2000 HAMBURG 60

Tel: (040) 63804-1

Telex: 021 63 032 hphh d

A,CH,CS,E,M,P

Hewlett-Packard GmbH

Geschäftsstelle

Heidering 37-39

D-3000 HANNOVER 61

Tel: (0511) 5706-0

Telex: 092 3259

A,CH,CM,E,M,P

Hewlett-Packard GmbH

Geschäftsstelle

Rosslauer Weg 2-4

D-6800 MANNHEIM

Tel: (0621) 70050

Telex: 0462105

A,C,E

Hewlett-Packard GmbH



SALES & SUPPORT OFFICES

Arranged alphabetically by country

GREECE

Hewlett-Packard A.E.
178, Kifissias Avenue
6th Floor
Halandri-ATHENS
Greece
Tel: 6471673, 6471543, 6472971
A,CH,CM** ,CS* ,E,M,P

Kostas Karaynnis S.A.
8 Omirou Street
ATHENS 133
Tel: 32 30 303, 32 37 371
Telex: 215962 RKAR GR
A,CH,CM,CS,E,M,P

PLAISIO S.A.
Eliopoulos Brohers Ltd.
11854

ATHENS

Tel: 34-51-911
Telex: 216286
P

GUATEMALA

IPESA
Avenida Reforma 3-48, Zona 9

GUATEMALA CITY
Tel: 316627, 314786
Telex: 4192 TELTRO GU
A,CH,CM,CS,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: HEWPACK HONG KONG
E,CH,CS,P

CET Ltd.

10th Floor, Hua Asia
Bldg. Gloucester
64-66 Gloucester Road

HONG KONG

Tel: (5) 200922
Telex: 85148 CET HX
CM

Schmidt & Co. (Hong Kong) Ltd.
18th Floor, Great Eagle Centre
23 Harbour Road, Wanchai

HONG KONG

Tel: 5-8330222
Telex: 74766 SCHMC HX
A,M

ICELAND

Elding Trading Company Inc.
Hafnarnvoll-Tryggvagotu
P.O. Box 895

IS-REYKJAVIK

Tel: 1-58-20, 1-63-03
M

INDIA

Computer products are sold through Blue Star Ltd. All computer repairs and maintenance service is done through Computer Maintenance Corp.

Blue Star Ltd.

Sabri Complex II Floor
24 Residency Rd.

BANGALORE 560 025

Tel: 55660
Telex: 0845-430
Cable: BLUESTAR
A,CH* ,CM,CS* ,E

Blue Star Ltd.

Band Box House
Prabhadevi

BOMBAY 400 025

Tel: 422-3101
Telex: 011-3751
Cable: BLUESTAR
A,M

Blue Star Ltd.

Sahas
414/2 Vir Savarkar Marg
Prabhadevi

BOMBAY 400 025

Tel: 422-6155
Telex: 011-71193
Cable: FROSTBLUE
A,CH* ,CM,CS* ,E,M

Blue Star Ltd.

Kalyan, 19 Vishwas Colony
Alkapuri, BORODA, 390 005

Tel: 65235
Cable: BLUE STAR

A

Blue Star Ltd.

7 Hare Street
CALCUTTA 700 001

Tel: 12-01-31
Telex: 021-7655
Cable: BLUESTAR
A,M

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,CH* ,CM,CS* ,E,M

Blue Star Ltd.

15/16: C Wellesley Rd.
PUNE 411 011

Tel: 22775
Cable: BLUE STAR
A

Blue Star Ltd.

2-2-47/1108 Bolarum Rd.
SECUNDERABAD 500 003

Tel: 72057
Telex: 0155-459
Cable: BLUEFROST
A,E

Blue Star Ltd.

2-2-47/1108 Bolarum Rd.
SECUNDERABAD 500 003

Tel: 72057
Telex: 0155-459
Cable: BLUEFROST
A,E

Blue Star Ltd.

T.C. 7/603 Poornima
Maruthankuzhi

TRIVANDRUM 695 013

Tel: 65799
Telex: 0884-259
Cable: BLUESTAR
E

Computer Maintenance Corporation Ltd.

115, Sarojini Devi Road
SECUNDERABAD 500 003

Tel: 310-184, 345-774

Telex: 031-2960

CH**

INDONESIA

BERCA Indonesia P.T.

P.O. Box 496/Jkt.
Jl. Abdul Muis 62

JAKARTA

Tel: 21-373009
Telex: 46748 BERSAL IA
Cable: BERSAL JAKARTA
P

BERCA Indonesia P.T.

P.O. Box 2497/Jkt
Antara Bldg., 17th Floor
Jl. Medan Merdeka Selatan 17

JAKARTA-PUSAT

Tel: 21-344-181
Telex: BERSAL IA

A,CS,E,M

BERCA Indonesia P.T.

P.O. Box 174/SBY.
Jl. Kutei No. 11

SURABAYA

Tel: 68172
Telex: 31146 BERSAL SB
Cable: BERSAL-SURABAYA
A* ,E,M,P

IRAQ

Hewlett-Packard Trading S.A.
Service Operation

Al Mansoor City 9B/3/7

BAGHDAD

Tel: 551-49-73
Telex: 212-455 HEPAIRAQ IK

CH,CS

IRELAND

Hewlett-Packard Ireland Ltd.
82/83 Lower Leeson Street

DUBLIN 2

Tel: 0001 608800
Telex: 30439

A,CH,CM,CS,E,M,P

Cardiac Services Ltd.

Kilmore Road
Artane

DUBLIN 5

Tel: (01) 351820
Telex: 30439

M

ISRAEL

Eidan Electronic Instrument Ltd.
P.O. Box 1270

JERUSALEM 91000

16, Ohaliav St.

JERUSALEM 94467

Tel: 533 221, 553 242
Telex: 25231 AB/PAKRD IL

A,M

Computation and Measurement Systems (CMS) Ltd.

11 Masad Street
67060

TEL-AVIV

Tel: 388 388
Telex: 33569 Motil IL
CH,CM,CS,E,P

ITALY

Hewlett-Packard Italiana S.p.A.
Traversa 99C

Via Giulio Petroni, 19

I-70124 BARI

Tel: (080) 41-07-44

M,CH

Hewlett-Packard Italiana S.p.A.

Via Martin Luther King, 38/III

I-40132 BOLOGNA

Tel: (051) 402394

Telex: 511630

CH,CS,E,M

Hewlett-Packard Italiana S.p.A.

Via Principe Nicola 43G/C

I-95126 CATANIA

Tel: (095) 37-10-87

Telex: 970291

CH

Hewlett-Packard Italiana S.p.A.

Via G. Di Vittorio 9

I-20063 CERNUSCO SUL

NAVIGLIO

(Milano)

Tel: (02) 923691

Telex: 334632

A,CH,CM,CS,E,M,P

Hewlett-Packard Italiana S.p.A.

Via C. Colombo 49

I-20090 TREZZANO SUL

NAVIGLIO

(Milano)

Tel: (02) 4459041

Telex: 322116

CH,CS

Hewlett-Packard Italiana S.p.A.

Via Nuova San Rocco a

Capodimonte, 62/A

I-80131 NAPOLI

Tel: (081) 7413544

Telex: 710698

A* ,CH,CS,E,M

Hewlett-Packard Italiana S.p.A.

Viale G. Modugno 33

I-16156 GENOVA PEGLI

Tel: (010) 68-37-07

Telex: 215238

E,C

Hewlett-Packard Italiana S.p.A.

Via Pelizzo 15

I-35128 PADOVA

Tel: (049) 664888

Telex: 430315

A,CH,CS,E,M

Hewlett-Packard Italiana S.p.A.

Viale C. Pavese 340

I-00144 ROMA EUR

Tel: (06) 54831

Telex: 610514

A,CH,CS,E,M,P*



ITALY (Cont'd)

Hewlett-Packard Italiana S.p.A.
Via di Casellina 57/C
I-50018 **SCANDICCI-FIRENZE**
Tel: (055) 753863
CH,E,M

Hewlett-Packard Italiana S.p.A.
Corso Svizzera, 185
I-10144 **TORINO**
Tel: (011) 74 4044
Telex: 221079
A*,CS,CH,E

JAPAN

Yokogawa-Hewlett-Packard Ltd.
152-1, Onna
ATSUGI, Kanagawa, 243
Tel: (0462) 28-0451
CM,C*,E

Yokogawa-Hewlett-Packard Ltd.
Meiji-Seimei Bldg. 6F
3-1 Hon Chiba-cho
CHIBA, 280
Tel: 472 25 7701
E,CH,CS

Yokogawa-Hewlett-Packard Ltd.
Yasuda-Seimei Hiroshima Bldg.
6-11, Hon-dori, Naka-ku
HIROSHIMA, 730
Tel: 82-241-0611

Yokogawa-Hewlett-Packard Ltd.
Towa Building
2-3, Kaigan-dori, 2 Chome Chuo-ku
KOBE, 650
Tel: (078) 392-4791
C,E

Yokogawa-Hewlett-Packard Ltd.
Kumagaya Asahi 82 Bldg
3-4 Tsukuba
KUMAGAYA, Saitama 360
Tel: (0485) 24-6563
CH,CM,E

Yokogawa-Hewlett-Packard Ltd.
Asahi Shinbun Daiichi Seimei Bldg.
4-7, Hanabata-cho
KUMAMOTO, 860
Tel: (0963) 54-7311
CH,E

Yokogawa-Hewlett-Packard Ltd.
Shin-Kyoto Center Bldg.
614, Higashi-Shiokoji-cho
Karasuma-Nishiiru
Shiokoji-dori, Shimogyo-ku
KYOTO, 600
Tel: 075-343-0921
CH,E

Yokogawa-Hewlett-Packard Ltd.
Mito Mitsui Bldg
4-73, Sanno-maru, 1 Chome
MITO, Ibaraki 310
Tel: (0292) 25-7470
CH,CM,E

Yokogawa-Hewlett-Packard Ltd.
Meiji-Seimei Kokubun Bldg. 7-8
Kokubun, 1 Chome, Sendai
MIYAGI, 980
Tel: (0222) 25-1011
Telex:
C,E

Yokogawa-Hewlett-Packard Ltd.
Sumitomo Seimei 14-9 Bldg.
Meieki-Minami, 2 Chome
Nakamura-ku
NAGOYA, 450
Tel: (052) 571-5171
CH,CM,CS,E,M

Yokogawa-Hewlett-Packard Ltd.
Chuo Bldg.,
4-20 Nishinakajima, 5 Chome
Yodogawa-ku
OSAKA, 532
Tel: (06) 304-6021
Telex: YHPOSA 523-3624
A,CH,CM,CS,E,M,P*

Yokogawa-Hewlett-Packard Ltd.
27-15, Yabe, 1 Chome
SAGAMIHARA Kanagawa, 229
Tel: 0427 59-1311

Yokogawa-Hewlett-Packard Ltd.
Daiichi Seimei Bldg.
7-1, Nishi Shinjuku, 2 Chome
Shinjuku-ku, **TOKYO** 160
Tel: 03-348-4611
CH,E

Yokogawa-Hewlett-Packard Ltd.
29-21 Takaide-Higashi, 3 Chome
Suginami-ku **TOKYO** 168
Tel: (03) 331-6111
Telex: 232-2024 YHPTOK
A,CH,CM,CS,E,M,P*

Yokogawa-Hewlett-Packard Ltd.
Daiichi Asano Building
2-8, Odori, 5 Chome
UTSUNOMIYA, Tochigi 320
Tel: (0286) 25-7155
CH,CS,E

Yokogawa-Hewlett-Packard Ltd.
Yasuda Seimei Nishiguchi Bldg.
30-4 Tsuruya-cho, 3 Chome
YOKOHAMA 221
Tel: (045) 312-1252
CH,CM,E

JORDAN

Scientific and Medical Supplies Co.
P.O. Box 1387

AMMAN

Tel: 24907, 39907
Telex: 21456 SABCO JO
CH,E,M,P

KENYA

ADCOM Ltd., Inc., Kenya
P.O. Box 30070

NAIROBI

Tel: 331955
Telex: 22639
E,M

KOREA

Samsung Hewlett-Packard Co. Ltd.
12 Fl. Kinam Bldg.
San 75-31, Yeoksam-Dong
Kangnam-Ku
Yeongdong P.O. Box 72
SEOUL
Tel: 555-7555, 555-5447
Telex: K27364 SAMSAN
A,CH,CM,CS,E,M,P

KUWAIT

Al-Khaldiya Trading & Contracting
P.O. Box 830

SAFAT

Tel: 424910, 411726
Telex: 22481 AREEG KT
Cable: VISCOUNT
E,M,A

Photo & Cine Equipment
P.O. Box 270

SAFAT

Tel: 2445111
Telex: 22247 MATIN KT
Cable: MATIN KUWAIT
P

W.J. Towell Computer Services
P.O. Box 75

SAFAT

Tel: 2462640/1
Telex: 30336 TOWELL KT
C

LEBANON

Computer Information Systems
P.O. Box 11-6274

BEIRUT

Tel: 89 40 73
Telex: 42309
C,E,M,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,CH,CM,CS,E,M,P

MALAYSIA

Hewlett-Packard Sales (Malaysia)
Sdn. Bhd.
1st Floor, Bangunan British
American
Jalan Semantan, Damansara Heights
KUALA LUMPUR 23-03
Tel: 943022

Telex: MA31011
A,CH,E,M,P*

Protel Engineering

P.O. Box 1917
Lot 6624, Section 64
23/4 Pending Road
Kuching, **SARAWAK**
Tel: 36299

Telex: MA 70904 PROMAL
Cable: PROTELENG
A,E,M

MALTA

Philip Toledo Ltd.
Notabile Rd.

MRIHEL

Tel: 447 47, 455 66
Telex: Media MW 649
E,P,M

MEXICO

Hewlett-Packard Mexicana, S.A.
de C.V.
Av. Periferico Sur No. 6501
Tepepan, Xochimilco
16020 **MEXICO D.F.**
Tel: 6-76-46-00
Telex: 17-74-507 HEWPACK MEX
A,CH,CS,E,M,P

Hewlett-Packard Mexicana, S.A.
de C.V.
Czda. del Valle
409 Ote. 1 °Piso
Colonia del Valle
Municipio de Garza García
66220 **MONTERREY**, Nuevo LeAOn
Tel: 78 42 41
Telex: 038 410
CH

Equipos Cientificos de Occidente, S.A.
Av. Lazaro Cardenas 3540

GUADALAJARA

Tel: 21-66-91
Telex: 0684186 ECOME
A

Infograficas y Sistemas del Noreste, S.A.
Rio Orinoco #171 Oriente

Despacho 2001

Colonia Del Valle

MONTERREY

Tel: 782499, 781259A
A

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

Sema-Maroc

Rue Lapebie

CASABLANCA

Tel: 26.09.80
CH,CS,P

NETHERLANDS

Hewlett-Packard Nederland B.V.

Van Heuven Goedhartlaan 121

NL 1181KK **AMSTELVEEN**

P.O. Box 667

NL1180 AR **AMSTELVEEN**

Tel: (020) 47-20-21

Telex: 13 216 HEPA NL

A,CH,CM,CS,E,M,P

Hewlett-Packard Nederland B.V.

Bongerd 2

NL 2906VK **CAPELLE A/D IJSSEL**

P.O. Box 41

NL 2900AA **CAPELLE A/D IJSSEL**

Tel: (10) 51-64-44

Telex: 21261 HEPAC NL

A,CH,CS,E

Hewlett-Packard Nederland B.V.

Pastoor Petersstraat 134-136

NL 5612 LV **EINDHOVEN**

P.O. Box 2342

NL 5600 CH **EINDHOVEN**

Tel: (040) 326911

Telex: 51484 hepae nl

A,CH**,E,M



SALES & SUPPORT OFFICES

Arranged alphabetically by country

NEW ZEALAND

Hewlett-Packard (N.Z.) Ltd.

5 Owens Road
P.O. Box 26-189

Epsom, **AUCKLAND**
Tel: 687-159

Cable: HEWPAK Auckland
CH,CS,CM,E,P*

Hewlett-Packard (N.Z.) Ltd.

4-12 Cruickshank Street
Kilbirnie, **WELLINGTON 3**

P.O. Box 9443

Courtenay Place, **WELLINGTON 3**
Tel: 877-199

Cable: HEWPACK Wellington
CH,CS,CM,E,P

Northrop Instruments & Systems Ltd.

369 Khyber Pass Road

P.O. Box 8602

AUCKLAND

Tel: 794-091

Telex: 60605

A,M

Northrop Instruments & Systems Ltd.

110 Mandeville St.

P.O. Box 8388

CHRISTCHURCH

Tel: 488-873

Telex: 4203

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

NORTHERN IRELAND

See United Kingdom

NORWAY

Hewlett-Packard Norge A/S

Folke Bernadottes vei 50

P.O. Box 3558

N-5033 **FYLLINGSDALEN** (Bergen)

Tel: 0047/5/16 55 40

Telex: 16621 hpnas n

CH,CS,E,M

Hewlett-Packard Norge A/S

UCOsterndalen 16-18

P.O. Box 34

N-1345 **OCUSTERÅS**

Tel: 0047/2/17 11 80

Telex: 16621 hpnas n

A,CH,CM,CS,E,M,P

OMAN

Khimjil Ramdas

P.O. Box 19

MUSCAT

Tel: 722225, 745601

Telex: 3289 **BROKER MB MUSCAT**

P

Suhail & Saud Bahwan

P.O. Box 169

MUSCAT

Tel: 734 201-3

Telex: 3274 **BAHWAN MB**

E

Imtac LLC

P.O. Box 8676

MUTRAH

Tel: 601695

Telex: 5741 **Tawoos On**

A,C,M

PAKISTAN

Mushko & Company Ltd.

House No. 16, Street No. 16

Sector F-6/3

ISLAMABAD

Tel: 824545

Cable: **FEMUS Islamabad**

A,E,M,P*

Mushko & Company Ltd.

Oosman Chambers

Abdullah Haroon Road

KARACHI 0302

Tel: 524131, 524132

Telex: 2894 **MUSKO PK**

Cable: **COOPERATOR Karachi**

A,E,M,P*

PANAMA

ElectrOnico Balboa, S.A.

Calle Samuel Lewis, Ed. Alfa

Apartado 4929

PANAMA 5

Tel: 63-6613, 63-6748

Telex: 3483 **ELECTRON PG**

A,CM,E,M,P

PERU

Cía Electro Médica S.A.

Los Flamencos 145, San Isidro

Casilla 1030

LIMA 1

Tel: 41-4325, 41-3703

Telex: Pub. Booth 25306

CM,E,M,P

SAMS

Río De La Plata 305

SAN ISIDRO

Tel: 419928

Telex: 394 20450 **PELIBERTAD**

P

PHILIPPINES

The Online Advanced Systems

Corporation

Rico House, Amorsolo Cor. Herrera

Street

Legaspi Village, Makati

P.O. Box 1510

Metro **MANILA**

Tel: 815-38-11 (up to 16)

Telex: 63274 **Online PN**

A,CH,CS,E,M

Electronic Specialists and

Proponents Inc.

690-B Epifanio de los Santos

Avenue

CUBAO, QUEZON CITY

P.O. Box 2649 Manila

Tel: 98-96-81, 98-96-82, 98-96-83

Telex: 40018, 42000 **ITT GLOBE MAC-**

KAY BOOTH

P

PORTUGAL

Mundinter

Intercambio Mundial de ComAercio

S.A.R.L.

P.O. Box 2761

Av. Antonio Augusto de Aguiar 138

P-LISBON

Tel: (19) 53-21-31, 53-21-37

Telex: 16691 **munter p**

M

Soquímica

Av. da Liberdade, 220-2

1298 **LISBOA Codex**

Tel: 56 21 81/2/3

Telex: 13316 **SABASA**

P

Telectra-Empresa Técnica de

Equipmentos Eléctricos S.A.R.L.

Rua Rodrigo da Fonseca 103

P.O. Box 2531

P-LISBON 1

Tel: (19) 68-60-72

Telex: 12598

CM,E

Rarcentro Ltda

R. Costa Cabral 575

4200 **PORTO**

Tel: 499174/495173

Telex: 26054

CH,CS

PUERTO RICO

Hewlett-Packard Puerto Rico

101 MuAñoz Rivera Av

Esu. Calle Ochoa

HATO REY, Puerto Rico 00918

Tel: (809) 754-7800

A,CH,CS,CM,M,E,P

QATAR

Computer Arabia

P.O. Box 2750

DOHA

Tel: 883555

Telex: 4806 **CHPARB**

P

Nasser Trading & Contracting

P.O. Box 1563

DOHA

Tel: 422170

Telex: 4439 **NASSER DH**

M

SAUDI ARABIA

Modern Electronic Establishment

Hewlett-Packard Division

P.O. Box 281

Thuobah

AL-KHOBAR

Tel: 895-1760, 895-1764

Telex: 671 106 **HPMEEK SJ**

Cable: **ELECTA AL-KHOBAR**

CH,CS,E,M

Modern Electronic Establishment

Hewlett-Packard Division

P.O. Box 1228

Redec Plaza, 6th Floor

JEDDAH

Tel: 644 38 48

Telex: 4027 12 **FARNAS SJ**

Cable: **ELECTA JEDDAH**

A,CH,CS,CM,E,M,P

Modern Electronic Establishment

Hewlett-Packard Division

P.O. Box 22015

RIYADH

Tel: 491-97 15, 491-63 87

Telex: 202049 **MEERYD SJ**

CH,CS,E,M

Abdul Ghani El Ajou

P.O. Box 78

RIYADH

Tel: 40 41 717

Telex: 200 932 **EL AJOU**

P

SCOTLAND

See United Kingdom

SINGAPORE

Hewlett-Packard Singapore (Sales)

Pte. Ltd.

#08-00 Inchcape House

450-2 Alexandra Road

P.O. Box 58 Alexandra Rd. Post

Office

SINGAPORE, 9115

Tel: 631788

Telex: HPSGSO RS 34209

Cable: HEWPACK, Singapore

A,CH,CS,E,MS,P

Dynamar International Ltd.

Unit 05-11Block 6

Kolam Ayer Industrial Estate

SINGAPORE 1334

Tel: 747-6188

Telex: RS 26283

CM

SOUTH AFRICA

Hewlett-Packard So Africa (Pty.) Ltd.

P.O. Box 120

Howard Place **CAPE PROVINCE 7450**

Pine Park Center, Forest Drive, Pine-

lands

CAPE PROVINCE 7405

Tel: 53-7954

Telex: 57-20006

A,CH,CM,E,M,P

Hewlett-Packard So Africa (Pty.) Ltd.

P.O. Box 37099

Overport Drive 92

DURBAN 4067

Tel: 28-4178

Telex: 6-22954

CH,CM

Hewlett-Packard So Africa (Pty.) Ltd.

6 Linton Arcade

511 Cape Road

Linton Grange

PORT ELIZABETH 6001

Tel: 041-301201

CH

Hewlett-Packard So Africa (Pty.) Ltd.

Fountain Center

Kalkden Str.

Monument Park

Ext 2

PRETORIA 0105

Tel: 45-5723

Telex: 32163

CH,E



SOUTH AFRICA (Cont'd)

Hewlett-Packard So Africa (Pty.) Ltd.
Private Bag Wendywood
SANDTON 2144
Tel: 802-5111, 802-5125
Telex: 4-20877
Cable: HEWPACK Johannesburg
A,CH,CM,CS,E,M,P

SPAIN

Hewlett-Packard Española S.A.
Calle Entenza, 321
E-BARCELONA 29
Tel: 322.24.51, 321.73.54
Telex: 52603 hpbee
A,CH,CS,E,M,P

Hewlett-Packard Española S.A.
Calle San Vicente S/No
Edificio Albia II 7B
E-BILBAO 1
Tel: 423.83.06
A,CH,E,M

Hewlett-Packard Española S.A.
Crta. de la Coruña, Km. 16, 400
Las Rozas
E-MADRID
Tel: (1) 637.00.11
Telex: 23515 HPE
CH,CS,M

Hewlett-Packard Española S.A.
Avda. S. Francisco Javier, S/no
Planta 10. Edificio Sevilla 2,
E-SEVILLA 5
Tel: 64.44.54
Telex: 72933
A,CS,M,P

Hewlett-Packard Española S.A.
C/Isabel La Católica, 8
E-46004 VALENCIA
Tel: 0034/6/351 59 44
CH,P

SWEDEN

Hewlett-Packard Sverige AB
Sunnanvagen 14K
S-22226 LUND
Tel: (046) 13-69-79
Telex: (854) 17886 (via Spånga office)
CH

Hewlett-Packard Sverige AB
Östra Tullgatan 3
S-21128 MALMÖ
Tel: (040) 70270
Telex: (854) 17886 (via Spånga office)

Hewlett-Packard Sverige AB
Västra Vintergatan 9
S-70344 ÖREBRO
Tel: (19) 10-48-80
Telex: (854) 17886 (via Spånga office)
CH

Hewlett-Packard Sverige AB
Skalholtsgatan 9, Kista
Box 19
S-16393 SPÅNGA
Tel: (08) 750-2000
Telex: (854) 17886
Telefax: (08) 7527781
A,CH,CM,CS,E,M,P

Hewlett-Packard Sverige AB
Frötällsgatan 30
S-42132 VÄSTRA-FRÖLUNDA
Tel: (031) 49-09-50
Telex: (854) 17886 (via Spånga office)
CH,E,P

SWITZERLAND

Hewlett-Packard (Schweiz) AG
Clarastrasse 12
CH-4058 BASEL
Tel: (61) 33-59-20
A

Hewlett-Packard (Schweiz) AG
7, rue du Bois-du-Lan
Case Postale 365
CH-1217 MEYRIN 2
Tel: (0041) 22-83-11-11
Telex: 27333 HPAG CH
CH,CM,CS

Hewlett-Packard (Schweiz) AG
Allmend 2
CH-8967 WIDEN
Tel: (0041) 57 31 21 11
Telex: 53933 hpag ch
Cable: HPAG CH
A,CH,CM,CS,E,M,P

SYRIA

General Electronic Inc.
Nuri Basha Ahnaf Ebn Kays Street
P.O. Box 5781
DAMASCUS
Tel: 33-24-87
Telex: 411 215
Cable: ELECTROBOR DAMASCUS
E

Middle East Electronics
P.O.Box 2308
Abu Rummaneh
DAMASCUS
Tel: 33 45 92
Telex: 411 304
M

TAIWAN

Hewlett-Packard Taiwan
Kaohsiung Office
11/F 456, Chung Hsiao 1st Road
KAOSHIUNG
Tel: (07) 2412318
CH,CS,E

Hewlett-Packard Taiwan
8th Floor Hewlett-Packard Building
337 Fu Hsing North Road

TAIPEI

Tel: (02) 712-0404
Telex: 24439 HEWPACK
Cable: HEWPACK Taipei
A,CH,CM,CS,E,M,P
Ing Lih Trading Co.
3rd Floor, 7 Jen-Ai Road, Sec. 2

TAIPEI 100

Tel: (02) 3948191
Cable: INGLIH TAIPEI
A

THAILAND

Unimesa
30 Patpong Ave., Suriwong
BANGKOK 5
Tel: 235-5727
Telex: 84439 Simonco TH
Cable: UNIMESA Bangkok
A,CH,CS,E,M
Bangkok Business Equipment Ltd.
5/5-6 Dejo Road
BANGKOK
Tel: 234-8670, 234-8671
Telex: 87669-BEQUIPT TH
Cable: BUSIQUIPT Bangkok
P

TOGO

Societe Africaine De
Promotion
B.P. 12271
LOME
Tel: 21-62-88
Telex: 5304
P

TRINIDAD & TOBAGO

Caribbean Telecoms Ltd.
Corner McAllister Street &
Eastern Main Road, Laventille
P.O. Box 732
PORT-OF-SPAIN
Tel: 624-4213
Telex: 22561 CARTEL WG
Cable: CARTEL, PORT OF SPAIN
CM,E,M,P

Computer and Controls Ltd.
P.O. Box 51
66 Independence Square
PORT-OF-SPAIN
Tel: 623-4472
Telex: 3000 POSTLX WG
P

TUNISIA

Tunisie Electronique
31 Avenue de la Liberte
TUNIS
Tel: 280-144
CH,CS,E,P

Corema
1 ter. Av. de Carthage

TUNIS

Tel: 253-821
Telex: 12319 CABAM TN
M

TURKEY

E.M.A
Mediha Eldem Sokak No. 41/6
Yenisehir
ANKARA
Tel: 319175

Telex: 42321 KTX TR
Cable: EMATRADE ANKARA
M

Kurt & Kurt A.S.
Mithatpasa Caddesi No. 75
Kat 4 Kizilay

ANKARA

Tel: 318875/6/7/8
Telex: 42490 MESR TR
A

Saniva Bilgisayar Sistemleri A.S.
Buyukdere Caddesi 103/6
Gayrettepe
ISTANBUL
Tel: 1673180
Telex: 26345 SANI TR
C,P

Teknim Company Ltd.

Iran Caddesi No. 7
Kavaklidere
ANKARA
Tel: 275800
Telex: 42155 TKNM TR
E,CM

UNITED ARAB EMIRATES

Emitac Ltd.
P.O. Box 1641
SHARJAH,
Tel: 591181
Telex: 68136 EMITAC EM
Cable: EMITAC SHARJAH
E,C,M,P,A

Emitac Ltd.
P.O. Box 2711

ABU DHABI,
Tel: 820419-20
Cable: EMITACH ABUDHABI

Emitac Ltd.
P.O. Box 8391

DUBAI,
Tel: 377951

Emitac Ltd.
P.O. Box 473

RAS AL KHAIMAH,
Tel: 28133, 21270

UNITED KINGDOM

GREAT BRITAIN
Hewlett-Packard Ltd.
Trafalgar House
Navigation Road

ALTRINCHAM
Cheshire WA14 1NU
Tel: 061 928 6422
Telex: 668068
A,CH,CS,E,M,M,P

Hewlett-Packard Ltd.
Miller House
The Ring, **BRACKNELL**
Berks RG12 1XN
Tel: 44344 424898
Telex: 848733
E

Hewlett-Packard Ltd.
Elstree House, Elstree Way
BOREHAMWOOD, Herts WD6 1SG
Tel: 01 207 5000
Telex: 8952716
E,CH,CS,P

Hewlett-Packard Ltd.
Oakfield House, Oakfield Grove
Clifton **BRISTOL,** Avon BS8 2BN
Tel: 0272 736806
Telex: 444302
CH,CS,E,P



SALES & SUPPORT OFFICES

Arranged alphabetically by country

GREAT BRITAIN (Cont'd)

Hewlett-Packard Ltd.
Bridewell House
Bridewell Place
LONDON EC4V 6BS
Tel: 01 583 6565
Telex: 298 163
CH,CS,P

Hewlett-Packard Ltd.
Fourier House
257-263 High Street
LONDON COLNEY
Herts. AL2 1HA, St. Albans
Tel: 0727 24400
Telex: 1-8952716
CH,CS

Hewlett-Packard Ltd.
Pontefract Road
NORMANTON, West Yorkshire WF6 1RN
Tel: 0924 895566
Telex: 557355
CH,CS,P

Hewlett-Packard Ltd.
The Quadrangle
106-118 Station Road
REDHILL, Surrey RH1 1PS
Tel: 0737 68655
Telex: 947234
CH,CS,E,P

Hewlett-Packard Ltd.
Avon House
435 Stratford Road
Shirley, SOLIHULL, West Midlands
B90 4BL
Tel: 021 745 8800
Telex: 339 105
CH,CS,E,P

Hewlett-Packard Ltd.
West End House
41 High Street, West End
SOUTHAMPTON
Hampshire SO3 3DQ
Tel: 04218 6767
Telex: 477 138
CH,CS,P

Hewlett-Packard Ltd.
King Street Lane
Winnersh, WOKINGHAM
Berkshire RG11 5AR
Tel: 0734 784774
Telex: 847 178
A,CH,CS,E,M,P

Hewlett-Packard Ltd.
Nine Mile Ride
Easthampstead, WOKINGHAM
Berkshire, 3RG11 3LL
Tel: 0344 773100
Telex: 848805
CH,CS,E,P

IRELAND

NORTHERN IRELAND

Hewlett-Packard Ltd.
Cardiac Services Building
95A Finaghy Road South
BELFAST BT10 OBY
Tel: 0232 625-566
Telex: 747626
CH,CS

SCOTLAND

Hewlett-Packard Ltd.
SOUTH QUEENSFERRY
West Lothian, EH30 9TG
Tel: 031 331 1188
Telex: 72682
CH,CM,CS,E,M,P

UNITED STATES

Alabama

Hewlett-Packard Co.
700 Century Park South, Suite 128
BIRMINGHAM, AL 35226
Tel: (205) 822-6802
C,CH,CS,P*

Hewlett-Packard Co.
420 Wynn Drive
P.O. Box 7700
HUNTSVILLE, AL 35807
Tel: (205) 830-2000
C,CH,CM,CS,E,M*

Alaska

Hewlett-Packard Co.
3601 C St., Suite 1234
ANCHORAGE, AK 99503
Tel: (907) 563-8855
CH,CS,E

Arizona

Hewlett-Packard Co.
8080 Pointe Parkway West
PHOENIX, AZ 85044
Tel: (602) 273-8000
A,CH,CM,CS,E,M

Hewlett-Packard Co.
2424 East Aragon Road
TUCSON, AZ 85706
Tel: (602) 573-7400
CH,E,M**

California

Hewlett-Packard Co.
99 South Hill Dr.
BRISBANE, CA 94005
Tel: (415) 330-2500
CH,CS

Hewlett-Packard Co.
P.O. Box 7830 (93747)
5060 E. Clinton Avenue, Suite 102
FRESNO, CA 93727
Tel: (209) 252-9652
CH,CS,M

Hewlett-Packard Co.
1421 S. Manhattan Av.
FULLERTON, CA 92631
Tel: (714) 999-6700
CH,CM,CS,E,M

Hewlett-Packard Co.
320 S. Kellogg, Suite B
GOLETA, CA 93117
Tel: (805) 967-3405
CH

Hewlett-Packard Co.
5400 W. Rosecrans Blvd.
LAWDALE, CA 90260
P.O. Box 92105
LOS ANGELES, CA 90009
Tel: (213) 643-7500
Telex: 910-325-6608
CH,CM,CS,M

Hewlett-Packard Co.
3155 Porter Drive
PALO ALTO, CA 94304
Tel: (415) 857-8000
CH,CS,E

Hewlett-Packard Co.
4244 So. Market Court, Suite A
P.O. Box 15976
SACRAMENTO, CA 95813
Tel: (916) 929-7222
A*,CH,CS,E,M

Hewlett-Packard Co.
9606 Aero Drive
P.O. Box 23333
SAN DIEGO, CA 92123
Tel: (619) 279-3200
CH,CM,CS,E,M

Hewlett-Packard Co.
2305 Camino Ramon 'C'
SAN RAMON, CA 94583
Tel: (415) 838-5900
CH,CS

Hewlett-Packard Co.
3005 Scott Boulevard
SANTA CLARA, CA 95050
Tel: (408) 988-7000
Telex: 910-338-0586
A,CH,CM,CS,E,M

Hewlett-Packard Co.
5703 Corsa Avenue
WESTLAKE VILLAGE, CA 91362
Tel: (213) 706-6800
E*,CH*,CS*

Colorado

Hewlett-Packard Co.
24 Inverness Place, East
ENGLEWOOD, CO 80112
Tel: (303) 649-5000
A,CH,CM,CS,E,M

Connecticut

Eff. Dec. 1, 1984
Hewlett-Packard Co.
500 Sylvan Av.
BRIDGEPORT, CT 06606
Tel: (203) 371-6454
CH,CS,E

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

Florida

Hewlett-Packard Co.
2901 N.W. 62nd Street
P.O. Box 24210
FORT LAUDERDALE, FL 33307
Tel: (305) 973-2600
CH,CS,E,M,P*

Hewlett-Packard Co.
4080 Woodcock Drive, Suite 132
JACKSONVILLE, FL 32207
Tel: (904) 398-0663
C*,CH*,M**

Hewlett-Packard Co.
6177 Lake Ellenor Drive
P.O. Box 13910
ORLANDO, FL 32859
Tel: (305) 859-2900
A,C,CH,CM,CS,E,P*

Hewlett-Packard Co.
4700 Bayoue Blvd.
Building 5
PENSACOLA, FL 32505
Tel: (904) 476-8422
A,C,CH,CM,CS,M

Hewlett-Packard Co.
5550 Idlewild, #150
P.O. Box 15200
TAMPA, FL 33684
Tel: (813) 884-3282
A*,C,CH,CS,E*,M*,P*

Georgia

Hewlett-Packard Co.
2000 South Park Place
P.O. Box 105005
ATLANTA, GA 30348
Tel: (404) 955-1500
Telex: 810-766-4890
A,C,CH,CM,CS,E,M,P*

Hawaii

Hewlett-Packard Co.
Kawaihahao Plaza, Suite 190
567 South King Street
HONOLULU, HI 96813
Tel: (808) 526-1555
A,CH,E,M

Illinois

Hewlett-Packard Co.
304 Eldorado Road
P.O. Box 1607
BLOOMINGTON, IL 61701
Tel: (309) 662-9411
CH,M**

Hewlett-Packard Co.
525 W. Monroe, #1300
CHICAGO, IL 60606
Tel: (312) 930-0010
CH,CS

Hewlett-Packard Co.
1200 Diehl
NAPERVILLE, IL 60566
Tel: (312) 357-8800
CH*,CS

Hewlett-Packard Co.
5201 Tollview Drive
ROLLING MEADOWS, IL 60008
Tel: (312) 255-9800
Telex: 910-687-1066
A,CH,CM,CS,E,M

Indiana

Hewlett-Packard Co.
11911 N. Meridian St.
CARMEL, IN 46032
Tel: (317) 844-4100
A,CH,CM,CS,E,M

Iowa

Hewlett-Packard Co.
4070 22nd Av. SW
CEDAR RAPIDS, IA 52404
Tel: (319) 390-4250
CH,CS,E,M



UNITED STATES (Cont'd)

Hewlett-Packard Co.
4201 Corporate Dr.
WEST DES MOINES, IA 50265
Tel: (515) 224-1435
A**,CH,M**

Kentucky

Hewlett-Packard Co.
10300 Linn Station Road, #100
LOUISVILLE, KY 40223
Tel: (502) 426-0100
A,CH,CS,M

Louisiana

Hewlett-Packard Co.
160 James Drive East
ST. ROSE, LA 70087
P.O. Box 1449
KENNER, LA 70063
Tel: (504) 467-4100
A,C,CH,E,M,P*

Maryland

Hewlett-Packard Co.
3701 Koppers Street
BALTIMORE, MD 21227
Tel: (301) 644-5800
Telex: 710-862-1943
A,CH,CM,CS,E,M
Hewlett-Packard Co.
2 Choke Cherry Road
ROCKVILLE, MD 20850
Tel: (301) 948-6370
A,CH,CM,CS,E,M

Massachusetts

Hewlett-Packard Co.
1775 Minuteman Road
ANDOVER, MA 01810
Tel: (617) 682-1500
A,C,CH,CS,CM,E,M,P*
Hewlett-Packard Co.
32 Hartwell Avenue
LEXINGTON, MA 02173
Tel: (617) 861-8960
CH,CS,E

Michigan

Hewlett-Packard Co.
4326 Cascade Road S.E.
GRAND RAPIDS, MI 49506
Tel: (616) 957-1970
CH,CS,M
Hewlett-Packard Co.
39550 Orchard Hill Place Drive
NOVI, MI 48050
Tel: (313) 349-9200
A,CH,CS,E,M
Hewlett-Packard Co.
1771 W. Big Beaver Road
TROY, MI 48084
Tel: (313) 643-6474
CH,CS

Minnesota

Hewlett-Packard Co.
2025 W. Larpentour Ave.
ST. PAUL, MN 55113
Tel: (612) 644-1100
A,CH,CM,CS,E,M

Missouri

Hewlett-Packard Co.
1001 E. 101st Terrace
KANSAS CITY, MO 64131
Tel: (816) 941-0411
A,CH,CM,CS,E,M
Hewlett-Packard Co.
13001 Hollenberg Drive
BRIDGETON, MO 63044
Tel: (314) 344-5100
A,CH,CS,E,M

Nebraska

Hewlett-Packard
10824 Old Mill Rd., Suite 3
OMAHA, NE 68154
Tel: (402) 334-1813
CM,M

New Jersey

Hewlett-Packard Co.
120 W. Century Road
PARAMUS, NJ 07652
Tel: (201) 265-5000
A,CH,CM,CS,E,M
Hewlett-Packard Co.
20 New England Av. West
PISCATAWAY, NJ 08854
Tel: (201) 981-1199
A,CH,CM,CS,E

New Mexico

Hewlett-Packard Co.
11300 Lomas Blvd.,N.E.
P.O. Box 11634
ALBUQUERQUE, NM 87112
Tel: (505) 292-1330
CH,CS,E,M

New York

Hewlett-Packard Co.
5 Computer Drive South
ALBANY, NY 12205
Tel: (518) 458-1550
A,CH,E,M
Hewlett-Packard Co.
9600 Main Street
P.O. Box AC
CLARENCE, NY 14031
Tel: (716) 759-8621
CH,CS,E
Hewlett-Packard Co.
200 Cross Keys Office Park
FAIRPORT, NY 14450
Tel: (716) 223-9950
A,CH,CM,CS,E,M
Hewlett-Packard Co.
7641 Henry Clay Blvd.
LIVERPOOL, NY 13088
Tel: (315) 451-1820
A,CH,CM,CS,E,M
Hewlett-Packard Co.
No. 1 Pennsylvania Plaza
55th Floor
34th Street & 8th Avenue
MANHATTAN NY 10119
Tel: (212) 971-0800
CH,CS,M*
Hewlett-Packard Co.
15 Myers Corner Rd.
WAPPINGER FALLS, NY 12590
CM,E

Hewlett-Packard Co.
250 Westchester Avenue
WHITE PLAINS, NY 10604
Tel: (914) 684-6100
CM,CH,CS,E
Hewlett-Packard Co.
3 Crossways Park West
WOODBURY, NY 11797
Tel: (516) 921-0300
A,CH,CM,CS,E,M

North Carolina

Hewlett-Packard Co.
305 Gregson Dr.
CARY, NC 27511
Tel: (919) 467-6600
C,CH,CM,CS,E,M,P*
Hewlett-Packard Co.
9600-H Southern Pine Blvd.
CHARLOTTE, NC 28210
Tel: (704) 527-8780
CH*,CS*
Hewlett-Packard Co.
5605 Roanne Way
P.O. Box 26500
GREENSBORO, NC 27420
Tel: (919) 852-1800
A,C,CH,CM,CS,E,M,P*

Ohio

Hewlett-Packard Co.
9920 Carver Road
CINCINNATI, OH 45242
Tel: (513) 891-9870
CH,CS,M
Hewlett-Packard Co.
16500 Sprague Road
CLEVELAND, OH 44130
Tel: (216) 243-7300
A,CH,CM,CS,E,M
Hewlett-Packard Co.
980 Springboro Pike
MIAMISBURG, OH 45343
Tel: (513) 859-8202
A,CH,CM,E*,M
Hewlett-Packard Co.
675 Brooksedge Blvd.
WESTERVILLE, OH 43081
Tel: (614) 436-1041
CH,CM,CS,E*

Oklahoma

Hewlett-Packard Co.
304 N. Meridian, Suite A
P.O. Box 75609
OKLAHOMA CITY, OK 73147
Tel: (405) 946-9499
C,CH,CS,E*,M
Hewlett-Packard Co.
3840 S. 103rd E. Ave., #100
P.O. Box 35747
TULSA, OK 74153
Tel: (918) 665-3300
A**,C,CH,CS,M*,E,P*

Oregon

Hewlett-Packard Co.
9255 S. W. Pioneer Court
P.O. Box 328
WILSONVILLE, OR 97070
Tel: (503) 682-8000
A,CH,CS,E*,M

Pennsylvania

Hewlett-Packard Co.
50 Dorchester Rd.
P.O. Box 6080
HARRISBURG, PA 17111
Tel: (717) 657-5900
C
Hewlett-Packard Co.
111 Zeta Drive
PITTSBURGH, PA 15238
Tel: (412) 782-0400
A,CH,CS,E,M
Hewlett-Packard Co.
2750 Monroe Boulevard
P.O. Box 713
VALLEY FORGE, PA 19482
Tel: (215) 666-9000
A,CH,CM,CS,E,M

South Carolina

Hewlett-Packard Co.
Brookside Park, Suite 122
1 Harbison Way
P.O. Box 21708
COLUMBIA, SC 29221
Tel: (803) 732-0400
A,C,CH,CS,M
Hewlett-Packard Co.
100 Executive Cntr. Dr.
Koger Executive Center
Chesterfield Bldg., Suite 124
GREENVILLE, SC 29615
Tel: (803) 297-4120
C

Tennessee

Hewlett-Packard Co.
One Energy Cntr. #200
Pellissippi Pkwy.
P.O. Box 22490
KNOXVILLE, TN 37933
Tel: (615) 966-4747
A,C,CH,CS,M
Hewlett-Packard Co.
3070 Directors Row
MEMPHIS, TN 38131
Tel: (901) 346-8370
A,C,M
Hewlett-Packard Co.
220 Great Circle Road, Suite 116
NASHVILLE, TN 37228
Tel: (615) 255-1271
C,M,P*

Texas

Hewlett-Packard Co.
11002-B Metric Boulevard
AUSTIN, TX 78758
Tel: (512) 835-6771
C,CM,E,P*
Hewlett-Packard Co.
5700 Cromo Dr
P.O. Box 12903
EL PASO, TX 79913
Tel: (915) 833-4400
CH,E*,M**



SALES & SUPPORT OFFICES

Arranged alphabetically by country

UNITED STATES (Cont'd)

Hewlett-Packard Co.
3952 Sand Shell St
FORT WORTH, TX 76137
Tel: (817) 232-9500
A,C,CH,E,M

Hewlett-Packard Co.
10535 Harwin Drive
P.O. Box 42816
HOUSTON, TX 77042
Tel: (713) 776-6400
A,C,CH,CS,E,M,P*

Hewlett-Packard Co.
511 W. John W. Carpenter Fwy.
Royal Tech. Center #100
IRVINE, TX 75062
Tel: (214) 556-1950
C,CH,CS,E

Hewlett-Packard Co.
930 E. Campbell Rd.
P.O. Box 83/1270
RICHARDSON, TX 75083-1270
Tel: (214) 231-6101
A,CH,CM,CS,E,M,P*

Hewlett-Packard Co.
1020 Central Parkway South
P.O. Box 32993
SAN ANTONIO, TX 78232
Tel: (512) 494-9336
A,C,CH,CS,E,M,P*

Utah

Hewlett-Packard Co.
3530 W. 2100 South
P.O. Box 26626
SALT LAKE CITY, UT 84126
Tel: (801) 974-1700
A,CH,CS,E,M

Virginia

Hewlett-Packard Co.
4305 Cox Road
GLEN ALLEN, VA 23060
P.O. Box 9669
RICHMOND, VA 23228
Tel: (804) 747-7750
A,C,CH,CS,E,M,P*

Washington

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

Hewlett-Packard Co.
708 North Argonne Road
P.O. Box 3808
SPOKANE, WA 99220-3808
Tel: (509) 922-7000
CH,CS

West Virginia

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

Wisconsin

Hewlett-Packard Co.
275 N. Corporate Dr.
BROOKFIELD, WI 53005
Tel: (414) 784-8800
A,CH,CS,E*,M

URUGUAY

Pablo Ferrando S.A.C. e I.
Avenida Italia 2877
Casilla de Correo 370
MONTEVIDEO
Tel: 80-2586
Telex: Public Booth 901
A,CM,E,M

Mini Computadores, Ltda.
Avda. del Libertador Brig
Gral Lavalleja 2071
Local 007

MONTEVIDEO

Tel: 29-55-22
Telex: 901 P BOOTH UY
P

Olympia de Uruguay S.A.
Maquinas de Oficina
Avda. del Libertador 1997
Casilla de Correos 6644

MONTEVIDEO

Tel: 91-1809, 98.-3807
Telex: 6342 OROU UY
P

VENEZUELA

Hewlett-Packard de Venezuela C.A.
3RA Transversal Los Ruices Norte
Edificio Segre 1, 2 & 3
Apartado 50933
CARACAS 1071

Tel: 239-4133
Telex: 251046 HEWPACK
A,CH,CS,E,M,P

Hewlett-Packard de Venezuela C.A.
Residencias Tia Betty Local 1
Avenida 3 y con calle 75
MARACAIBO, Estado Zulia
Apartado 2646
Tel: (061) 75801-75805-75806-80304

Telex: 62464 HPMAR
C,E*

Hewlett-Packard de Venezuela C.A.
Urb. Lomas de Este
Torre Trebol — Piso 11

VALENCIA, Estado Carabobo
Apartado 3347
Tel: (041) 222992/223024
CH,CS,P

Albis Venezolana S.R.L.
Av. Las Marias, Ota. Alix,
El Pedregal
Apartado 81025

CARACAS 1080A

Tel: 747984, 742146
Telex: 24009 ALBIS VC
A

Tecnologica Medica del Caribe, C.A.
Multicentro Empresarial del Este
Ave. Libertador
Edif. Libertador
Nucleo "C" - Oficina 51-52

CARACAS

Tel: 339867/333780
M

CIZUCA

Cientifica Zulia C.A.
Calle 70, Los Olivos
No. 66-86
Apartado 1843
MARACAIBO
Tel: 54-64-37, 54-63-85, 54-64-94
Telex: 62144
A

YUGOSLAVIA

Do Hermes
General Zdanova 4
Telex: YU-11000 BEOGRAD
A,CH,E,P

Hermes

Titova 50
Telex: YU-61000 LJUBLJANA
CH,CS,E,M,P

Elektrotehna

Titova 51
Telex: YU-61000 LJUBLJANA
CM

ZAMBIA

R.J. Tilbury (Zambia) Ltd.
P.O. Box 32792
LUSAKA
Tel: 215590
Telex: 40128
E

ZIMBABWE

Field Technical Sales
45 Kelvin Road, North
P.B. 3458

SALISBURY

Tel: 705 231
Telex: 4-122 RH
E,P

August 1984

HP distributors are printed in italics.

