Handler Simulator (PN 04278-65001)

Operation Note

Second Edition

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CONTENTS

1. INTRODUCTION

This operating note provides information on the optional Handler Simulator for the HP 4278A. The Handler Simulator is shown in Figure 1, and its specifications are listed in Table 1.

2. DESCRIPTION

The Handler Simulator is designed to evaluate the operation of the 4278A's Handler Interface Option. When an interfacing problem occurs, the handler simulator is used to isolate the problem by replacing the handler.

The handler simulator's scanning is synchronized with the handler interface signals, so you can check the handler interface function by using the handler simulator in place of the handler.

The handler simulator has an LED for each signal line between the 4278A's handler interface and the handler simulator. An LED will light when the signal it represents is asserted LOW, so the state of each signal can be checked by observing the appropriate LED.

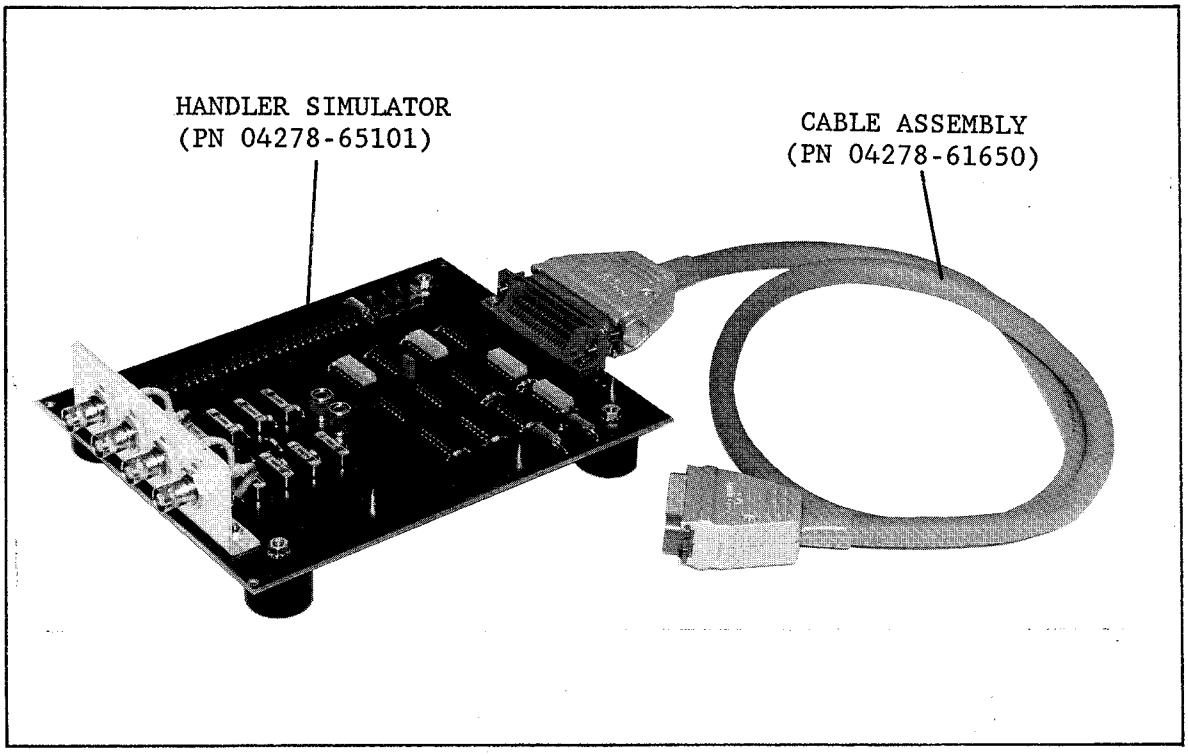

Figure 1. Handler Simulator

Table 1. Specifications

Measurement terminal:	4-terminal pair
Handler I/F connector:	36-pin female Amphenol
Scanner function:	
Channel:	4-channel
DUT:	
CH.1:	DUT between binding posts
CH.2:	Capacitor 82pF
CH.3:	Capacitor 100pF
CH.4:	Capacitor 150pF
Required power voltage:	+5V (supplied by the 4278A's handler interface)
Indicators:	LED indicators
Channel:	CH.1 to CH.4
Input signal:	/BIN1 to /BIN9, /OUT_OF_BINS, /AUX_BIN, /UNBAL, /SREJ, /PLO, /PHI, /ALARM, /INDEX, /EOM
Output signal:	EXT.TRIG (Rising Edge)
Switches:	START/STOP switch CH.RESET switch KEYLOCK switch
Environment:	
Operating environment:	
Temperature:	5 °C to 45 °C
Humidity:	up to 95% (at 40 °C)
Storage environment:	
Temperature:	-20 °C to 60 °C
Humidity:	up to 95% (at 40 °C)
Dimension of Handler Simulator:	158mm(W) × 42mm(H) × 200mm(D)
Weight:	
Handler Simulator Board:	Approximately 0.34kg (0.75lb.)
Cable:	Approximately 0.24kg (0.53lb.)

3. OPERATION

This section describes the switch functions on the handler simulator and gives an operational example.

3-1. SWITCH FUNCTIONS

The handler simulator has three switches as shown in Figure 2.

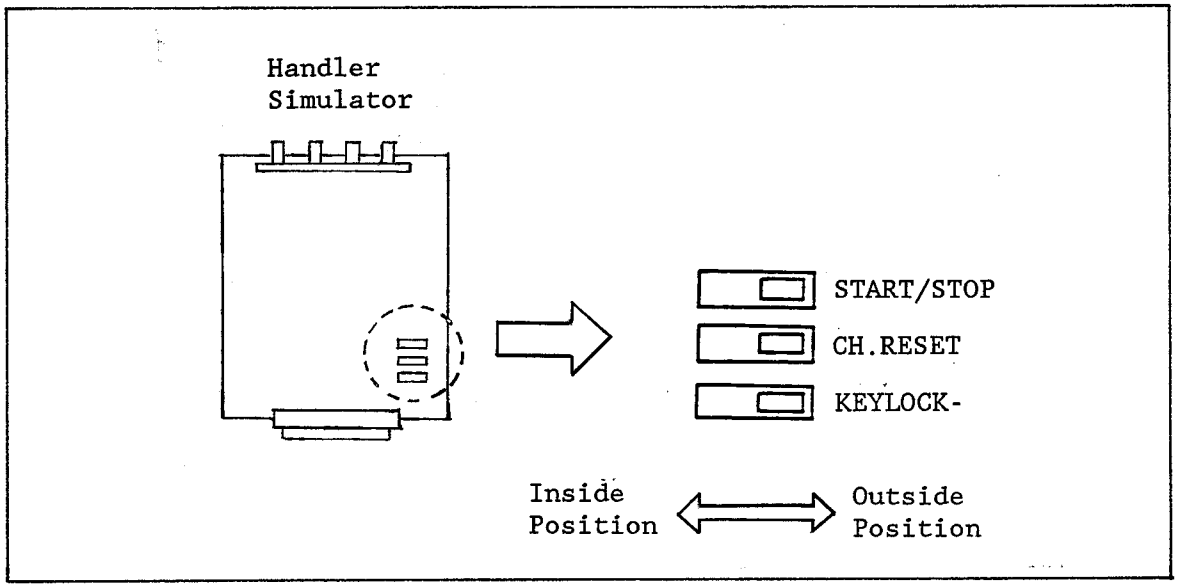

Figure 2. Switch Locations

The function of each switch is as follows:

START/STOP Switch

The **START/STOP** switch is used to start and stop measurement channel scanning and can be used only when the 4278A's trigger mode is set to the **External Mode.**

Switch Position

Inside Position:	**START**
Outside Position:	**STOP**

CH.RESET Switch

The **CH.RESET** switch is used to reset the measurement channel to **CH.1**. When **CH.RESET** is left in the ON position scanning will stop and **CH.1** will be measured continuously.

Switch Position

Inside Position:	**CH.RESET OFF**
Outside Position:	**CH.RESET ON**

KEYLOCK Switch

This switch is used to disable front panel operation of the 4278A.

Switch Position

Inside Position:	**KEYLOCK OFF**
Outside Position:	**KEYLOCK ON**

3-2. MEASUREMENT CHANNEL SCANNING

When you connect the handler simulator measurement terminals to the 4278A **UNKNOWN** terminals, you can scan the DUTs mounted on the handler simulator. Measurement channel scanning is synchronized to the /**INDEX** signal from the handler interface. Measurement channel scanning can be verified by watching the CH.1 ~ CH.4 LEDs on the handler simulator board.

You can reset the scanner to CH.1 and continuously measure CH.1 by switching the **CH.RESET** switch to the ON position. Then you can mount and measure your own DUT using the binding post provided on the simulator board. The following DUTs are connected to the four measurement channels on the handler simulator board.

CH.1	User Selected
CH.2	Capacitor 82pF
CH.3	Capacitor 100pF
CH.4	Capacitor 150pF

3-3. HANDLER SIMULATOR OPERATIONAL EXAMPLE

The following operational example explains how to use the handler simulator switch functions.

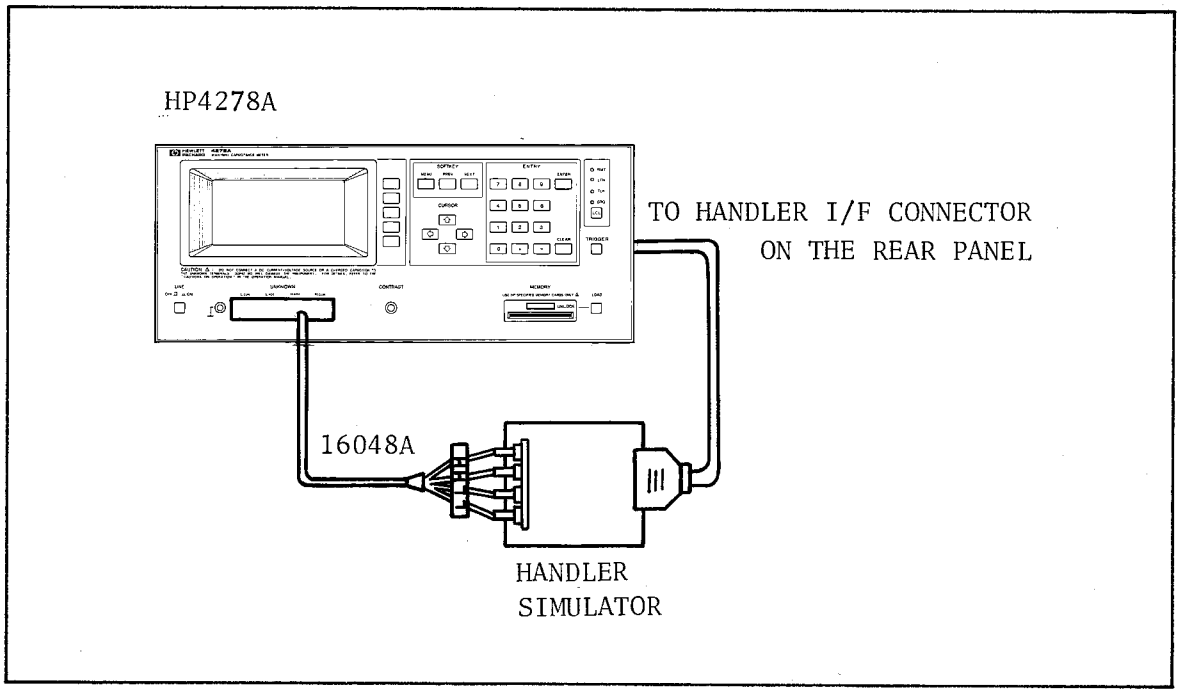

Figure 3. Handler Simulator Connection

EQUIPMENT:

Handler Simulator	HP PN 04278-65001
Test Leads	HP 16048A

PROCEDURE:

1. Turn the 4278A off.
2. Set the jumpers on the handler interface board as follows. (For more detail information, refer to the HP 4278A operation manual).

   Option 201: Install jumper at W4, W7, and W11 (same as installed when shipped)

   Option 202: Install jumper at W2, W3, W6, W9, W10, and W13 (not the same as installed when shipped)

3. Connect the handler simulator to the 4278A as shown in Figure 3.

NOTE

When the handler simulator is connected to the rear panel connector of the 4278A with the option 202, the cable (PN 04278-61635) must be connected between the furnished cable of the handler simulator and the 4278A rear panel connector.

4. Set the handler simulator's switches as follows:

START/STOP	Outside position (STOP)
CH.RESET	Outside position (ON)
KEYLOCK	Inside position (OFF)

5. Turn the 4278A on.

6. Set up the 4278A as follows:

Trigger Mode	EXT.TRIG
Cable Length	1m
Comparator Function	ON

[Channel Scanning]

7. Set the **CH.RESET** switch on the handler simulator to the inside position (OFF).

8. Set the **START/STOP** switch on the handler simulator to the inside position (START). Confirm that each channel is being scanned by watching the LEDs for CH.1 ~ CH.4.

NOTE

When you enter the limit values into the limit table, the bin sorting results for the DUT connected to the measurement channels can be confirmed by watching the LEDs on the handler simulator.

[Channel Reset]

9. Set the **CH.RESET** switch on the Handler Simulator to the outside position (ON). Watch the CH.1 LED to confirm that CH.1 is selected.

[Keylock]

10. Set the **KEYLOCK** switch on the Handler Simulator to the outside position (ON). Confirm that all keys on 4278A's front panel are disabled.

4. SERVICING

To help with identifying parts, an exploded view of the handler simulator is shown in Figure 4. Component locations are shown in Figure 5. The schematic diagram of the handler simulator is shown in Figure 6. Table 2 lists the replaceable parts which can be ordered from your nearest Hewlett-Packard Sales and Service Offices. Ordering information should include the HP part number, instrument model number, and quantity required.

Reference Designation	HP Part Number	Qty.	Description
1	0515-0983	4	Screw M4
2	2190-0586	4	Washer
3	0403-0004	4	BMPR FT-SCR
4	0535-0043	4	NUT
5	1252-2022	1	CONN 36 CONT F
6	1510-0130	2	Binding post
7	04278-61652	4	Cable assy.
8	1250-0252	4	BNC connector
9	5040-3325	4	Insulator
10	0515-1550	2	Screw M3
11	04278-01250	1	Angle
12	5040-3325	4	Insulator
13	2950-0035	4	Nut
14	2950-0006	2	Nut
15	2190-0084	2	Washer

Figure 4. Parts Identification (1 of 2)

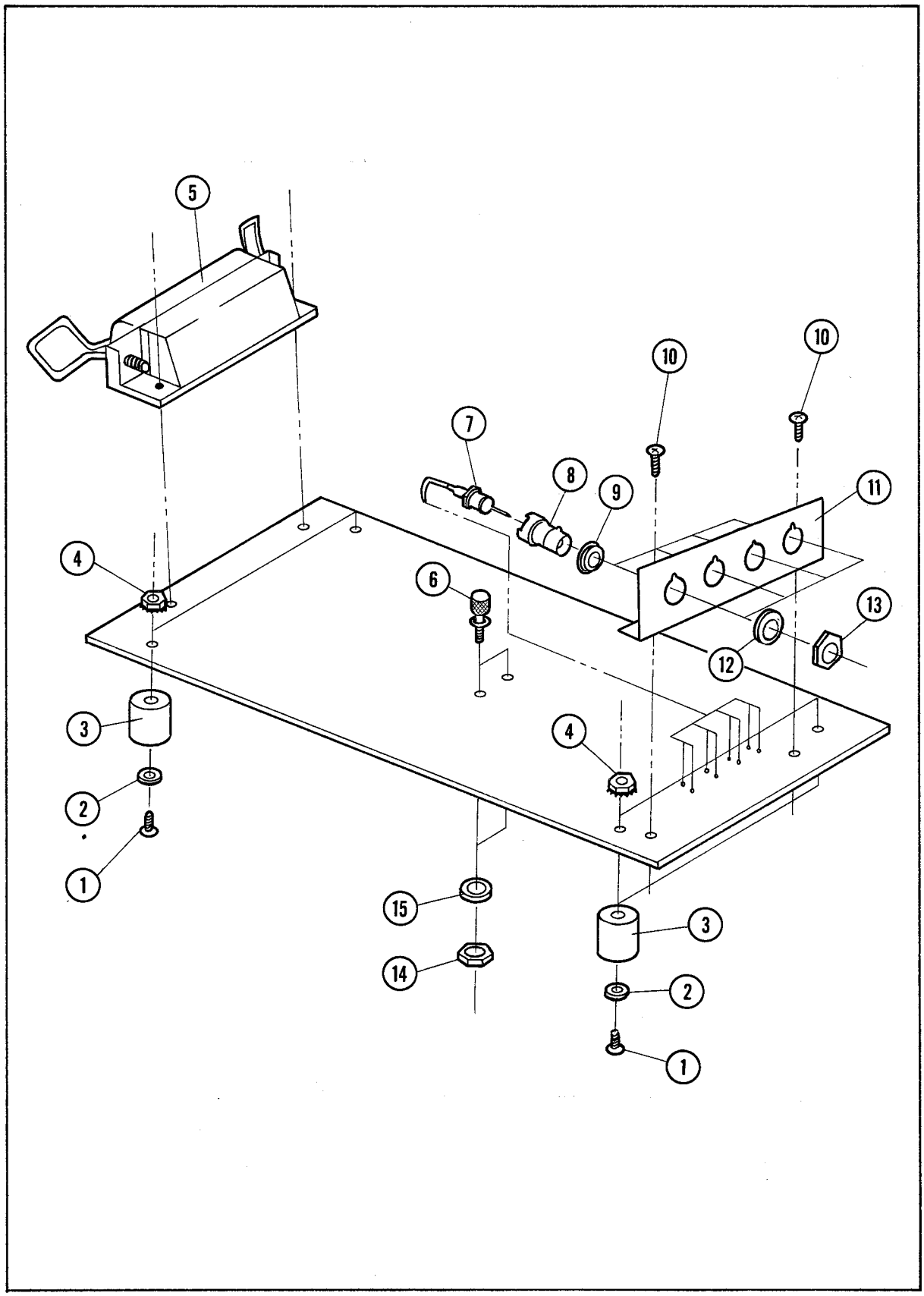

Figure 4. Parts Identification (2 of 2)

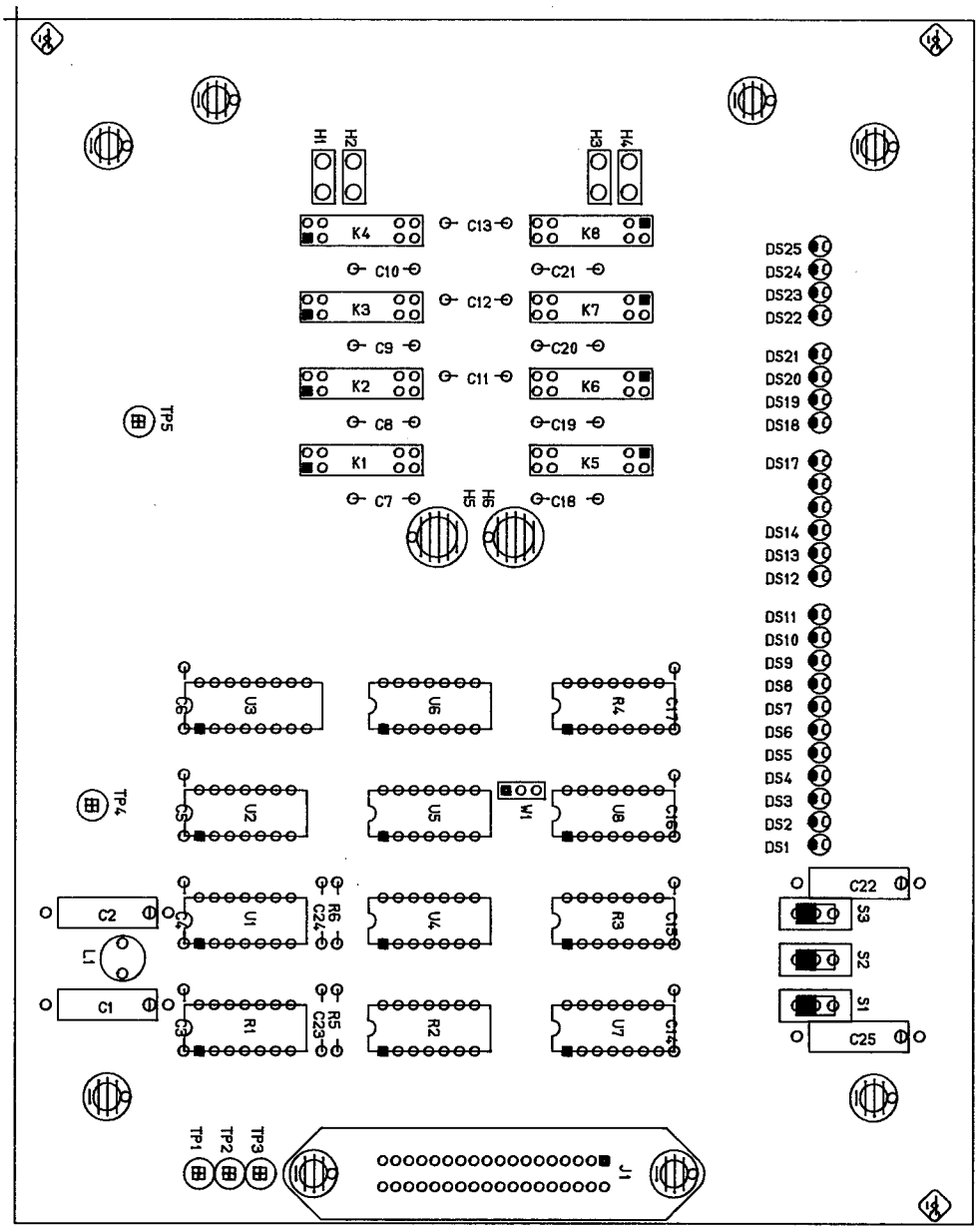

Figure 5. Component Location

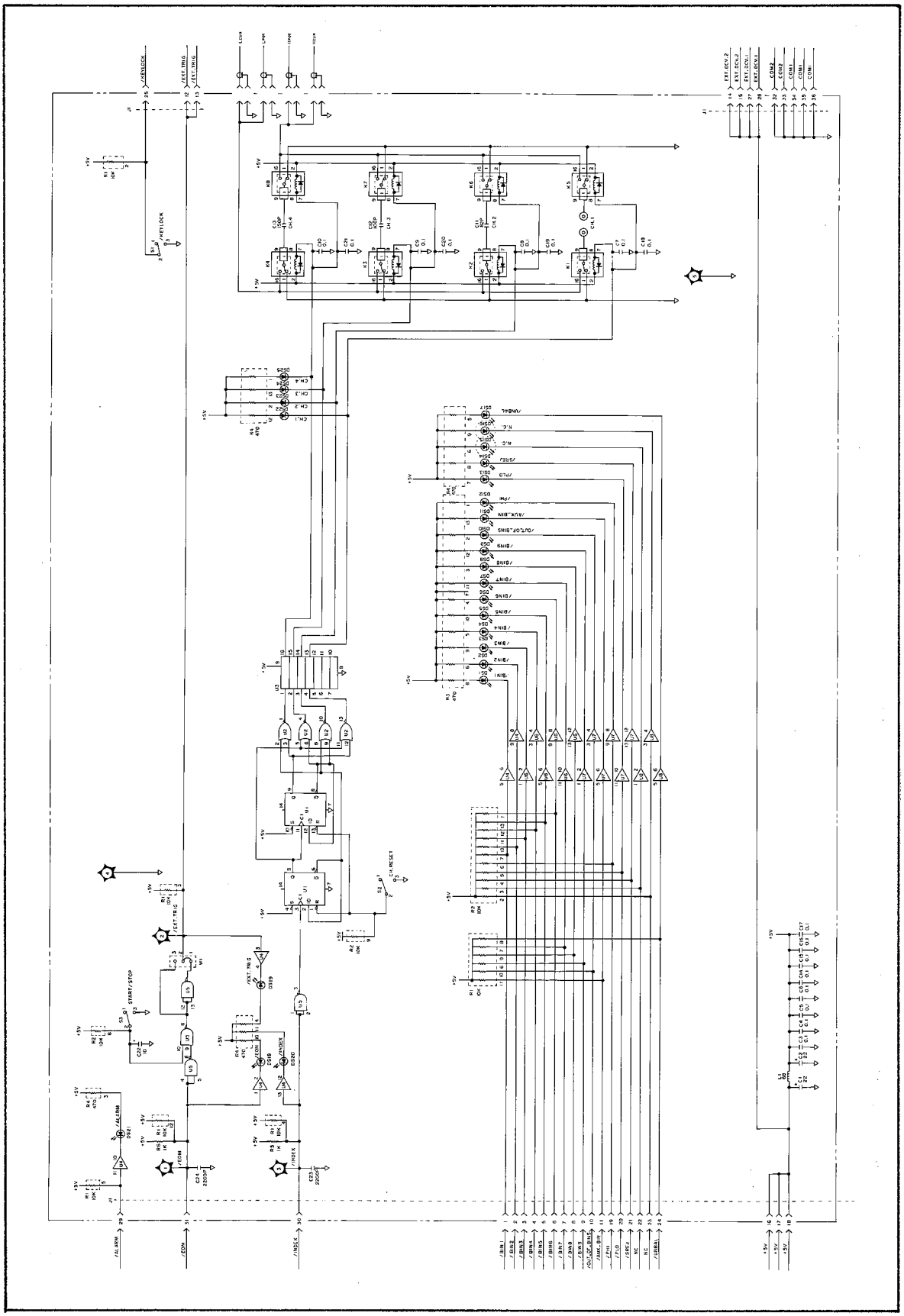

Figure 6. Schematic Diagram

Table 2. Replaceable Parts (1 of 2)

Reference Designation	HP Part Number	Qty.	Description
C1	0180-0228	1	CAPACITOR FXD. 22µF 15V TA
C2	0180-0228	1	CAPACITOR FXD. 22µF 15V TA
C3	0160-6561	1	CAPACITOR FXD. 0.1µF ±20% 50VD
C4	0160-6561	1	CAPACITOR FXD. 0.1µF ±20% 50VD
C5	0160-6561	1	CAPACITOR FXD. 0.1µF ±20% 50VD
C6	0160-6561	1	CAPACITOR FXD. 0.1µF ±20% 50VD
C7	0160-6561	1	CAPACITOR FXD. 0.1µF ±20% 50VD
C8	0160-6561	1	CAPACITOR FXD. 0.1µF ±20% 50VD
C9	0160-6561	1	CAPACITOR FXD. 0.1µF ±20% 50VD
C10	0160-6561	1	CAPACITOR FXD. 0.1µF ±20% 50VD
C11	0160-4802	1	CAPACITOR FXD. 82pF ±5% 100V
C12	0160-4801	1	CAPACITOR FXD. 100pF ±5%
C13	0160-4814	1	CAPACITOR FXD. 150pF ±5%
C14	0160-6561	1	CAPACITOR FXD. 0.1µF ±20% 50VD
C15	0160-6561	1	CAPACITOR FXD. 0.1µF ±20% 50VD
C16	0160-6561	1	CAPACITOR FXD. 0.1µF ±20% 50VD
C17	0160-6561	1	CAPACITOR FXD. 0.1µF ±20% 50VD
C18	0160-6561	1	CAPACITOR FXD. 0.1µF ±20% 50VD
C19	0160-6561	1	CAPACITOR FXD. 0.1µF ±20% 50VD
C20	0160-6561	1	CAPACITOR FXD. 0.1µF ±20% 50VD
C21	0160-6561	1	CAPACITOR FXD. 0.1µF ±20% 50VD
C22	0180-0374	1	CAPACITOR FXD. 10µF ±20% 50VD
C23	0160-4830	1	CAPACITOR FXD. 2200pF ±10%
C24	0160-0374	1	CAPACITOR FXD. 2200PF ±10%
DS1	1990-0486	1	LED-VSBL
DS2	1990-0486	1	LED-VSBL
DS3	1990-0486	1	LED-VSBL
DS4	1990-0486	1	LED-VSBL
DS5	1990-0486	1	LED-VSBL
DS6	1990-0486	1	LED-VSBL
DS7	1990-0486	1	LED-VSBL
DS8	1990-0486	1	LED-VSBL
DS9	1990-0486	1	LED-VSBL
DS10	1990-0486	1	LED-VSBL
DS11	1990-0486	1	LED-VSBL
DS12	1990-0486	1	LED-VSBL
DS13	1990-0486	1	LED-VSBL
DS14	1990-0486	1	LED-VSBL
DS15			NOT ASSIGNED
DS16			NOT ASSIGNED
DS17	1990-0486	1	LED-VSBL
DS18	1990-0486	1	LED-VSBL
DS19	1990-0486	1	LED-VSBL
DS20	1990-0486	1	LED-VSBL
DS21	1990-0486	1	LED-VSBL
DS22	1990-0486	1	LED-VSBL
DS23	1990-0486	1	LED-VSBL
DS24	1990-0486	1	LED-VSBL
DS25	1990-0486	1	LED-VSBL

Table 2. Replaceable Parts (2 of 2)

Reference Designation	HP Part Number	Qty.	Description
K1	0490-1596	1	RELAY-READ
K2	0490-1596	1	RELAY-READ
K3	0490-1596	1	RELAY-READ
K4	0490-1596	1	RELAY-READ
K5	0490-1596	1	RELAY-READ
K6	0490-1596	1	RELAY-READ
K7	0490-1596	1	RELAY-READ
K8	0490-1596	1	RELAY-READ
L1	9140-1278	1	COIL 68µH 0.73A
R1	1810-0126	1	NETWORK-RES 10K
R2	1810-0126	1	NETWORK-RES 10K
R3	1810-0441	1	NETWORK-RES 470
R4	1810-0441	1	NETWORK-RES 470
R5	0757-0280	1	RES 1K 1% .125W
R6	0757-0280	1	RES 1K 1% .125W
S1	3101-2125	1	SW-SL SPOT-NS
S2	3101-2125	1	SW-SL SPOT-NS
S3	3101-2125	1	SW-SL SPOT-NS
TP1	0360-1653	1	TERM-SGL-PIN
TP2	0360-1653	1	TERM-SGL-PIN
TP3	0360-1653	1	TERM-SGL-PIN
TP4	0360-1653	1	TERM-SGL-PIN
TP5	0360-1653	1	TERM-SGL-PIN
U1	1820-1112	1	IC MB74LS74AM
U2	1820-1144	1	IC MB74LS02M
U3	1858-0047	1	XSTR ULN2003A
U4	1820-0668	1	IC SN7407N
U5	1820-1425	1	IC SN74LS132N
U6	1820-0668	1	IC SN7407N
U7	1820-0668	1	IC SN7407N
U8	1820-0668	1	IC SN7407N
	1251-4822	1	CONN 3-PIN M
	1258-0141	1	JUMPER-REM

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