HP 13255

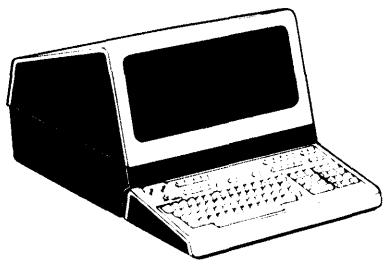
DISPLAY TEST MODULE

Manual Part No. 13255-91063

PRINTED

AUG-01-76

DATA TERMINAL
TECHNICAL INFORMATION



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1.0 INTRODUCTION.

The Display Test Module (DTM) is a diagnostic tool designed to aid in the repair of the Display Control and Display Timing PCA's. It enables the user to generate a dot or crosshatch pattern on the screen and to invoke the inverse video and half-bright features, all without processor intervention.

2.0 OPERATING PARAMETERS.

A summary of operating parameters for the Display Test Module is contained in tables 1.0 through 4.0.

Table 1.0 Physical Parameters

Part Number	Nomenclature	Size (L x W x D) +/-0.100 Inches	Weight (Pounds)
02640-60063	Display Test PCA	5.1 x 1.75 x 1.3	0.31

Number of Backplane Slots Required: NOT APPLICABLE

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NOTE: This document is part of the 264XX DATA TERMINAL product series Technical Information Package (HP 13255).

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Table 2.0 Reliability and Environmental Information

Environmental: (X) HP Class B ( ) Other:
Restrictions: Type tested at product level
Failure Rate: 0.064 (percent per 1000 hours)

Table 3.0 Power Supply and Clock Requirements - Measured
(At +/-5% Unless Otherwise Specified)

+5 Volt Supply	+12 Volt Supply	-12 Volt Supply	-42 Volt Supply
@ 20 mA	@ mA	@ mA	@ mA
	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE

115 volts ac	220 volts ac
@ A	@ A
NOT APPLICABLE	NOT APPLICABLE

Clock Frequency: MHz
NOT APPLICABLE

Table 4.0 Connector Information

Connector and Pin No.	Signal Name	Signal Description
J1 and J2 Pin - 1	$\overline{D0}$	Negative True, Character Dot Position 0
- 2	$\overline{D6}$	Negative True, Character Dot Position 6
- 3	$\overline{103}$	Negative True, Column Count 103
- 4		Not Used
- 5	$\overline{D1}$	Negative True, Character Dot Position 1
- 6	CLEN	Cursor Line Enable
- 7	VDR	Vertical Drive
- 8		Not
- 9		Used
-10	GVS	Vertical Sink
-11	CYEN	Cursor Y Position True
-12		Not Used
-13	$\overline{IV}$	Negative True, Inverse Video
-14		Not Used
-15	$\overline{BUF\ HLF\ BRT}$	Negative True, Buffered Half-Bright
-16		Not
-17		Used
-18	$\overline{81}$	Negative True, Column Count 81
-19		
-20		Not Used
-21		
-22	$\overline{XBITS1}$	Negative True, External Bit Stream 1

Table 4.0 Connector Information (Cont'd.)

Connector and Pin No.	Signal Name	Signal Description
J1 and J2 Pin - A	DSPY CLK	21.060 MHz Display Clock
- B	GND	Ground
- C	$\overline{D2}$	Negative True, Character Dot Position 2
- D	$\overline{D8}$	Negative True, Character Dot Position 8
- E	$\overline{14}$	Negative True, Scan Line Counter Reset
- F	L11	Scan Line Count 11
- H	VRTCLK	Scan Line Counter Clock
- J	VBLNK	Vertical Blanking
- K		}
- L		} Not Used
- M		}
- N	$\overline{CXS}$	Negative True, Cursor X Position Strobe
- P	$\overline{BIT0}$	Negative True, ASCII Bit 0
- R	$\overline{BIT1}$	Negative True, ASCII Bit 1
- S	$\overline{BIT2}$	Negative True, ASCII Bit 2
- T	$\overline{BIT3}$	Negative True, ASCII Bit 3
- U	$\overline{BIT4}$	Negative True, ASCII Bit 4
- V	$\overline{BIT5}$	Negative True, ASCII Bit 5
- W	$\overline{BIT6}$	Negative True, ASCII Bit 6
- X	$\overline{CYS}$	Negative True, Cursor Y Position Strobe
- Y	GND	Ground
- Z	$\overline{BITS}$	Negative True, Serial Bit Stream

3.0 FUNCTIONAL DESCRIPTION. Refer to the block diagram (figure 1), schematic diagram (figure 2), timing diagram (figure 3), component location diagram (figure 4), and parts list (02640-60063) located in the appendix.

The Display Test Module (DTM) connects to the Display Control and Display Timing PCA's by means of its built-in top connector. Power is obtained through P1 from the socket on the Display Timing PCA. The DTM consists of three major functional blocks; the dots and crosshatch generator, the inverse video generator, and the half-bright generator.

3.1 DOTS/CROSSHATCH GENERATOR. This block receives dot-related and line-related signals, $\overline{D2}$ and $\overline{14}$ respectively. Signal $\overline{D2}$ occurs once per character column and lasts for one dot duration. Signal $\overline{14}$ occurs once per character row and lasts for one scan line duration.

In the "crosshatch" mode, the two signals are ORed together. This causes a vertical and horizontal line to be displayed in each character position.

In the "dots" mode, the two signals are ANDed together. This causes the serial bit stream signal ($\overline{XBITS1}$) to become true for one dot in each character position on the screen. The center switch position inhibits both signals thus producing a blank screen.

3.2 INVERSE VIDEO GENERATOR. This block produces the inverse video feature which is applied to the pattern generated by the dots/crosshatch generator. When switch S2 is closed, the $\overline{IV}$ line is pulled to ground, thus invoking the inverse video feature over the entire screen.

3.3 HALF-BRIGHT GENERATOR. This block produces the half-bright feature which is applied to the pattern generated by the dots/crosshatch generator. When switch S3 is closed, the $\overline{BUF\ HLF\ BRT}$ line is pulled to ground, thus invoking the half-bright feature over the entire screen.

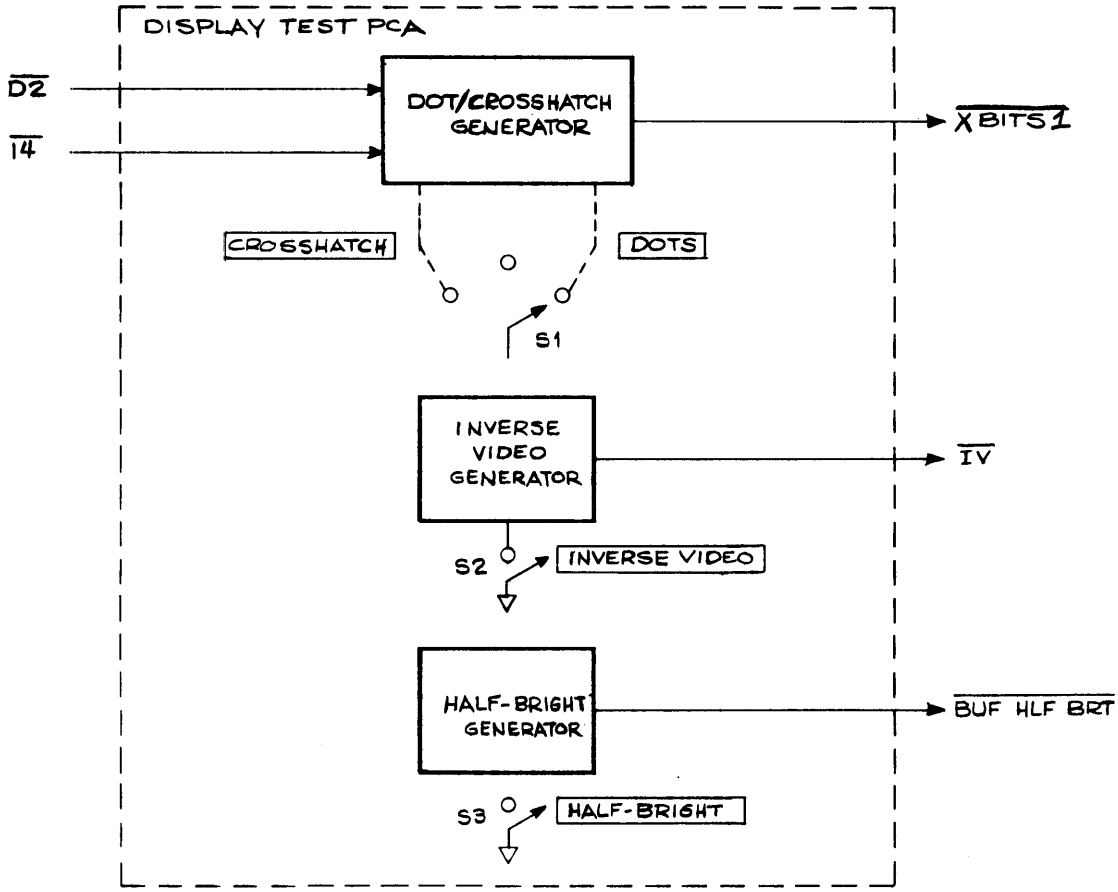

Figure 1
Display Test Block Diagram
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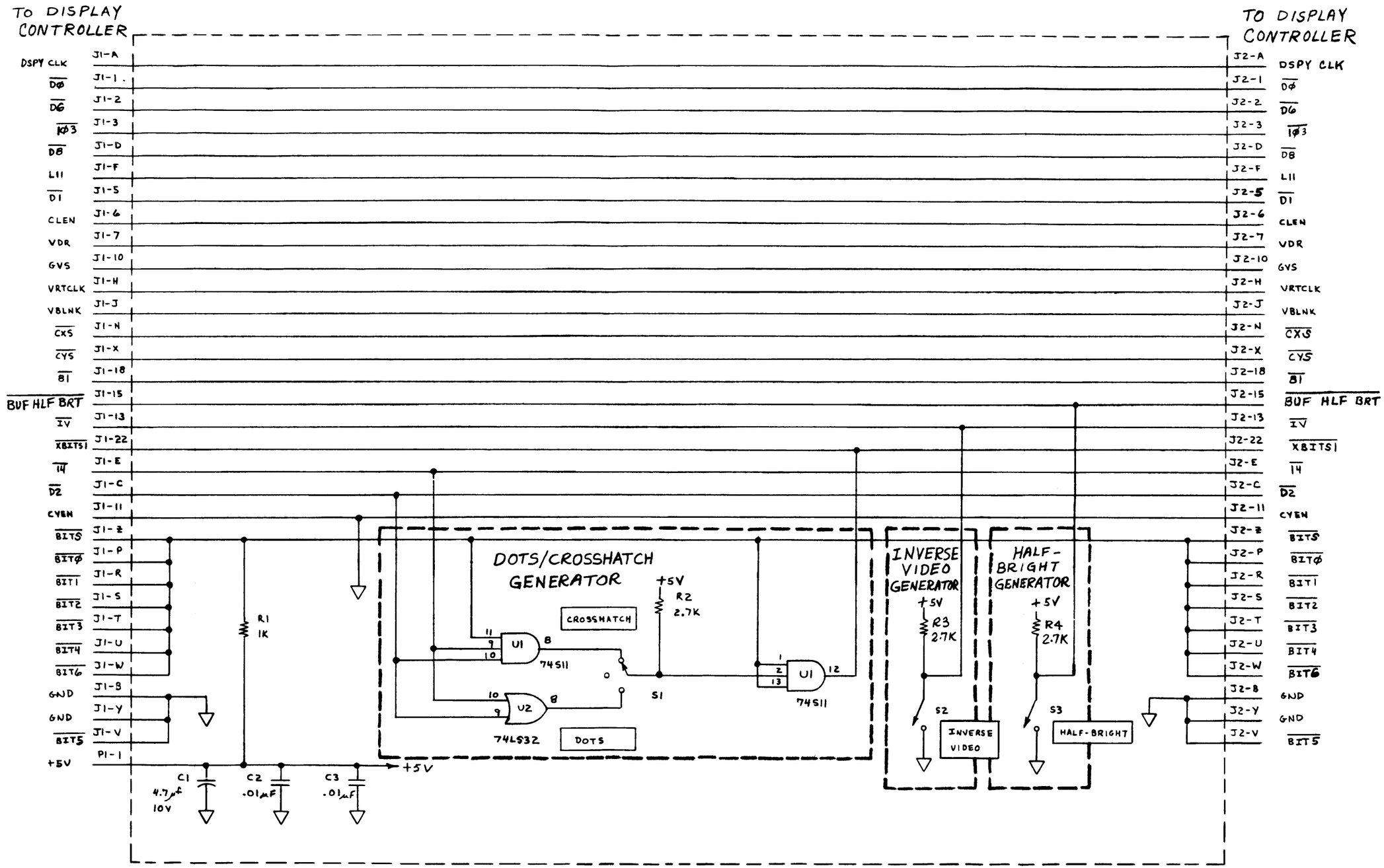

Figure 2
Display Test PCA Schematic Diagram
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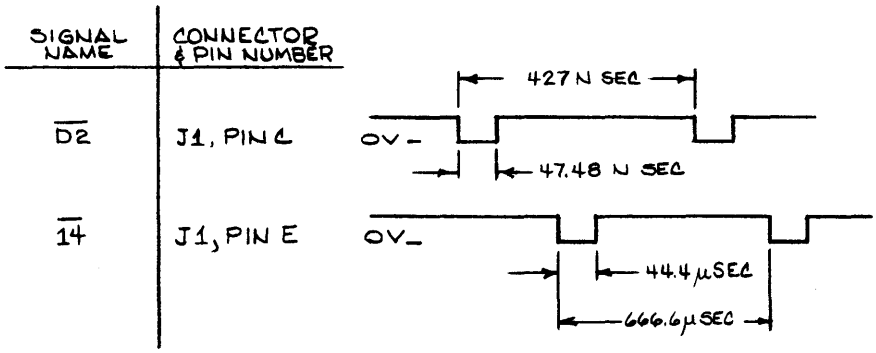

Figure 3
Display Test Timing Diagram
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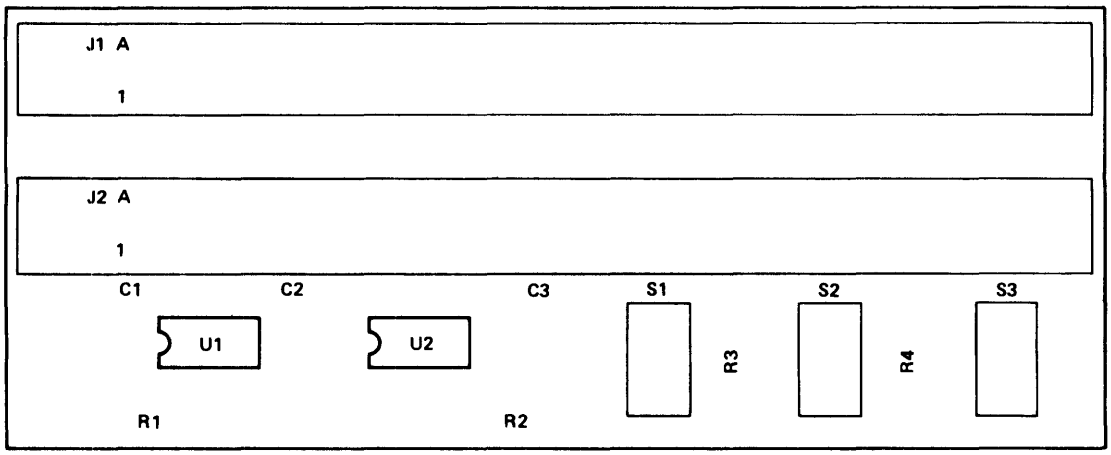

Figure 4
Display Test PCA Component Location Diagram
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Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
	02640-60063	1	DISPLAY TEST ASSEMBLY DATE CODE: A-1450-22 REVISION DATE: 04-15-76	28480	02640-60063
C1	0180-0309	1	CAPACITOR-FXD 4.7UF+-20% 10VDC TA	56289	150D475X0010A2
C2	0160-2055	2	CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
C3	0160-2055		CAPACITOR-FXD .01UF +80-20% 100WVDC CER	28480	0160-2055
J1	1251-1887	2	CONNECTOR-PC EDGE 22-CONT/ROW 2-ROWS	71785	252-22-30-340
J2	1251-1887		CONNECTOR-PC EDGE 22-CONT/ROW 2-ROWS	71785	252-22-30-340
P1	1251-3997	1	CONNECTOR-SGL CONT PIN .08-IN-BSC-SZ RND	74970	105-0772-001
R1	0683-1025	1	RESISTOR 1K 5% .25W FC TC=-400/+600	01121	CB1025
R2	0683-2725	3	RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
R3	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
R4	0683-2725		RESISTOR 2.7K 5% .25W FC TC=-400/+700	01121	CB2725
S1	3101-0963	1	SWITCH-TGL SUBMIN SPDT NS 5A 115VAC	09353	7103-SY
S2	3101-1258	2	SWITCH-TGL SUBMIN SPDT NS 2A 250VAC	09353	7101-I
S3	3101-1258		SWITCH-TGL SUBMIN SPDT NS 2A 250VAC	09353	7101-I
U1	1820-0686	1	IC-DIGITAL SN74S11N TTL S TPL 3 AND	01295	SN74S11N
U2	1820-1208	1	IC-DIGITAL SN74LS32N TTL LS QUAD 2 OR	01295	SN74LS32N
			MISCELLANEOUS		
	0380-0004	4	SPACER-RND .188LG .181D .250D BRS NI-PL	28480	0380-0005
	0890-0212		TUBING-FLEX .032-ID TFE .012-WALL	28480	0890-0215
	1400-0249	1	CABLE TIE .062-.625-DIA .091-WD NYL	59730	TY8-23M-8
	2190-0003	4	WASHER-LK HLCL NO.-4 .115-IN-ID	28480	2190-0003
	2260-0002	4	NUT-HEX-DBL-CHAM 4-40-THD .062-THK	28480	2260-0005
	8150-3255		WIRE 24AWG R 1000V RBR 45X40 75C	16428	8890 RED
	8151-0013		WIRE 22AWG 1X22	28480	8151-0014
	02640-00020	1	HANDLE, DTM	28480	02640-00020
	02640-00031	1	INSULATOR, DTM	28480	02640-00031