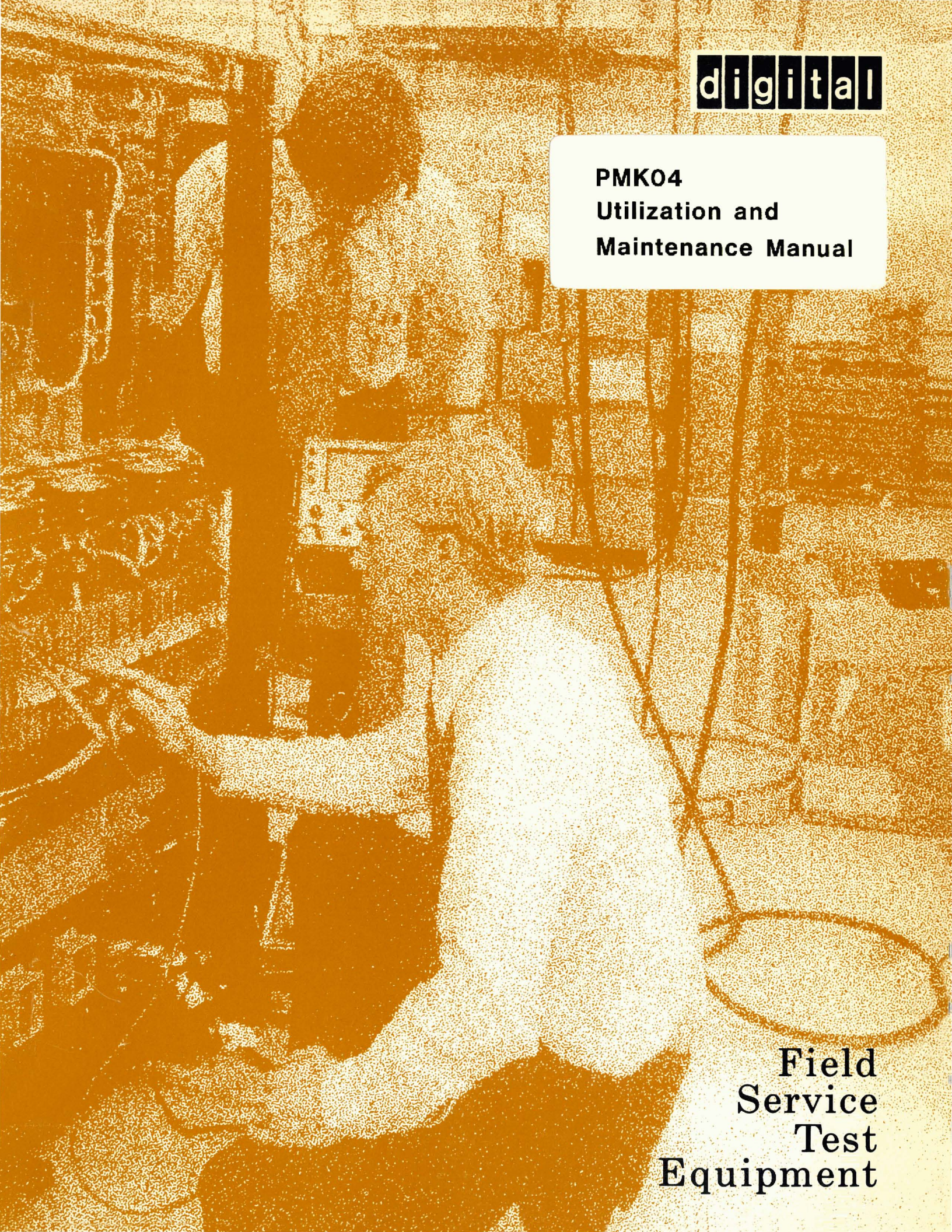

digital

PMK04
Utilization and Maintenance Manual

Field
Service
Test
Equipment

PMK04
Utilization and Maintenance Manual

EK-PMK04-MM-PRE

PRELIMINARY

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PMK04 Off-Line Terminal Tester

CHAPTER 1
INTRODUCTION

1.1 SCOPE OF MANUAL

This manual provides the information required to operate the Off-Line Terminal Tester (PMK04) and to use it to troubleshoot serial ASCII terminals and associated interface cabling. The manual also contains self-test procedures for checking the tester to ensure that it is functioning correctly.

1.2 FUNCTION AND PURPOSE

The Off-Line Terminal Tester is a portable unit used to exercise serial ASCII terminals. The tester supplies properly formatted asynchronous serial data to any serial ASCII terminal including DIGITAL manufactured terminals such as the VT50/52 and the LA30/36.

The PMK04 gives the user flexibility in testing terminals. The tester can be used at remote locations with only a single terminal or at large installations with numerous terminals. At remote locations, the tester can be used to determine if the fault exists in the modem or other interface device, or in the cable and terminal. If the fault is found to be in the cable or terminal the tester can also be used to troubleshoot the fault. At large installations, the faulty terminal can be exercised by the tester without disturbing the system.

The tester can be used to exercise terminals in numerous ways. When testing a newly installed terminal, the tester can be used to rapidly exercise all functions at all transmit and receive speeds including split baud rates. This ensures that the terminal is completely functional. When repairing a faulty terminal, each function can be tested at each speed until the fault is found. The tester can then be set up to rapidly exercise the faulty circuits while troubleshooting the circuit using an oscilloscope and other test equipment.

The tester takes parallel data from the front panel switches, or from an incrementing 7-bit register, converts it to a serial data format, adds parity if selected, and transmits the character one bit at a time to the serial terminal. The tester also transmits a line feed and a carriage return when the selected column count is reached. The data is transmitted via EIA voltage levels or a 20 mA current loop. It also receives characters from the terminal keyboard, checks parity if selected, displays the ASCII code on the front panel indicator and echoes the character back to the terminal.

The tester parameters can be matched to the terminal parameters via switches on the tester front panel. LED indicators display the status of DATA TERMINAL READY and REQUEST TO SEND lines when using an EIA interface with the terminal. LED indicators also display the ASCII code received from the terminal to verify operation of the tester when in the test loop back modes of operation. A single LED indicator signals parity error.

1.3 FUNCTIONAL SPECIFICATIONS

All of the following tester device functions are selected via front panel switches:

Baud Rate	110, 150, 300, 600, 1200, 2400, 4800, and 9600, including split-speed capability
Stop Bits	2 at 110 baud, 1 at all other speeds
Character Rate	10/sec or full speed supported by selected baud rate
Fill Characters	0 or 10
Parity	Odd, even, or none
Character Mode	7-bit character from switches, or auto-incrementing characters from 64/96-character set
Transmission Mode	Full-duplex or echoplex
Column Count	1–255 columns
Line Over Print	0 or jumper-selectable up to 8. The jumper is set to 8 by the manufacturer. Refer to Paragraph 2.4 to change configuration.
Single/Continuous Mode	One character from switches or incrementing register sent in single-character mode; continuous stream of characters from switches or incrementing register sent in continuous mode.
Monitor Lights	LED indicators for status of Data Terminal Ready (DTR) and Request To Send (RTS) lines in EIA interface from terminal, and for PARITY ERROR if parity is selected.
Test Mode	Loops back off-line tester "transmitted data" to "receive data" at EIA or 20 mA interface to verify correct operation of the tester.

1.4 MECHANICAL AND ELECTRICAL SPECIFICATIONS

The tester is designed for use in the field. It is small (9-1/2 in. × 13 in. × 5-1/2 in.), light (8 lbs), rugged, and self-contained. It requires 115 or 230 Vac (+10%), 50 or 60 Hz single phase power and dissipates less than 5 watts of power.

CHAPTER 2
UNPACKING AND ACCEPTANCE TEST

2.1 UNPACKING

Unpack the unit from the shipping container and inspect it for damage. If any damage is discovered, report it immediately to the responsible carrier and to Digital Equipment Corporation. Save the shipping container and all packing material for use during repacking.

2.2 POWER WIRING CHECK

The tester is set up by the manufacturer to operate on 115 V, 60 Hz. Customers wishing to operate the tester on 230 V, 50 Hz should proceed as follows:

1. Disassemble tester (see Paragraph 5.4).
2. Check internal switch (2) (Figure 2-1) for correct voltage setting. If necessary, change switch setting to match ac source voltage being used.
3. Assemble tester.

2.3 ACCEPTANCE TESTING

2.3.1 General

When the tester is received, the acceptance test should be performed in its entirety to ensure that the tester is in good working order. If the tester fails to pass the acceptance test, it must be returned to Digital Equipment Corporation, Maynard, for repair.

To perform the acceptance test proceed as follows. The callouts in this procedure reference Figure 3-1.

2.3.2 Acceptance Test Procedure

1. Make a complete visual check of the tester. Look for broken or damaged wires, bad connections, and loose or broken knobs and switches.
2. Plug the power cord into an ac power source and turn the PWR switch on. PWR LED should light. If PWR LED does not light, refer to Paragraph 5.3 to replace the fuse.

CAUTION

Make sure switch position matches the ac source voltage before plugging tester into outlet. Check switch position for 115 Vac or 230 Vac setting, (Figure 2-1).

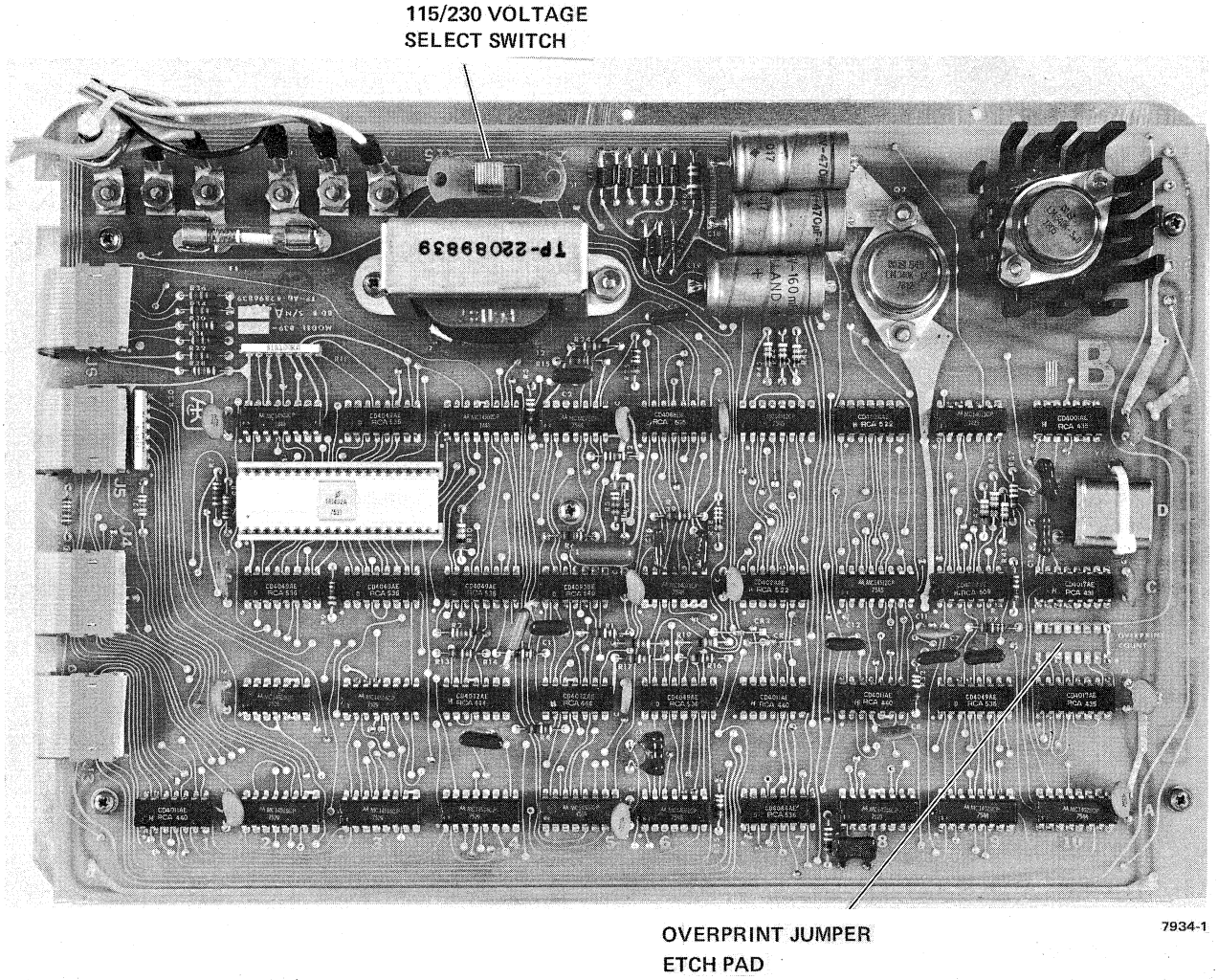

Figure 2-1 Internal View

3. Place all switches down.

4. Place OUTPUT (7) switch to LOOP BACK EIA.

5. Set COLUMN COUNT (19) switches to 200_8.

6. Put CHARACTER INCREMENT/DATA REGISTER (15) switch to INCREMENT.

7. Put the TRANSMIT CHARACTER (10) switch to OFF and then to the CONTINUOUS position. Returning the switch to OFF from CONTINUOUS is called "initializing" the tester. The tester must be initialized after changing any switch position on the tester.

NOTE

The tester will not operate as specified unless it is initialized each time one or more switch positions are changed.

8. Observe that the register does a continuous binary count starting from the least significant bit and increments at a visible rate.

9. Put all BAUD (17 and 18) switches up (9600 baud).

10. Put CHARACTER RATE (16) switch to MINIMUM and initialize.

    a. The data register should function as described in step 8 .

11. Put the TRANSMIT CHARACTER (10) switch to OFF.

12. Put the TRANSMIT CHARACTER (10) switch to SINGLE several times. The SINGLE position is spring-loaded.

13. Observe that the binary count in the data register increments each time the TRANSMIT CHARACTER (10) switch is placed in the SINGLE position.

14. Put CHARACTER RATE (16) to MAXIMUM.

15. Put CHARACTER INCREMENT/DATA REGISTER (15) to DATA REGISTER.

16. Put TRANSMIT CHARACTER (10) to CONTINUOUS.

17. Observe that when DATA REGISTER SWITCH (2) is placed in its 1 or 0 position, the corresponding LED turns on or off.

18. Put all switches down.

19. Ensure that the OUTPUT (7) switch is in the LOOP BACK 20 mA position.

20. Repeat steps 5 through 11.

2.4 OVERPRINT SELECT JUMPER CONFIGURATION

The overprint select jumper is configured to determine the number of times characters are printed on the same line before a line feed operation is performed. When the tester is shipped, the jumper is installed at position 8 on an 8-position, 16-pin IC etchpad (Figure 2-1). With the jumper at that position, and the LINE OVER PRINT/NORM (11) switch set to LINE OVER PRINT, the tester causes the terminal under test to overprint eight times and then issues a line feed command. If the user removes (unsolders) the jumper and installs it at position 1 (the other end of the etchpad), the terminal will reprint only once. Thus, the jumper can be installed at any one of eight positions (1–8) to select the desired number of overprints.

To select the desired overprint:

1. Disassemble the tester (Paragraph 5.4).

2. Carefully unsolder the jumper and place in desired position on etchpad. Carefully solder the jumper into place.

3. Reassemble the tester (Paragraph 5.4).

CHAPTER 3
OPERATION AND USE

3.1 SCOPE
This chapter covers complete operation of the PMK04, Off-Line Terminal Tester, including a description of front panel controls and indicators and a utilization procedure.

3.2 CONTROLS AND INDICATORS
All controls and indicators for the Off-Line Terminal Tester are located on the front panel of the unit (Figure 3-1). The functions of each control and indicator are listed in Table 3-1 and are keyed to Figure 3-1.

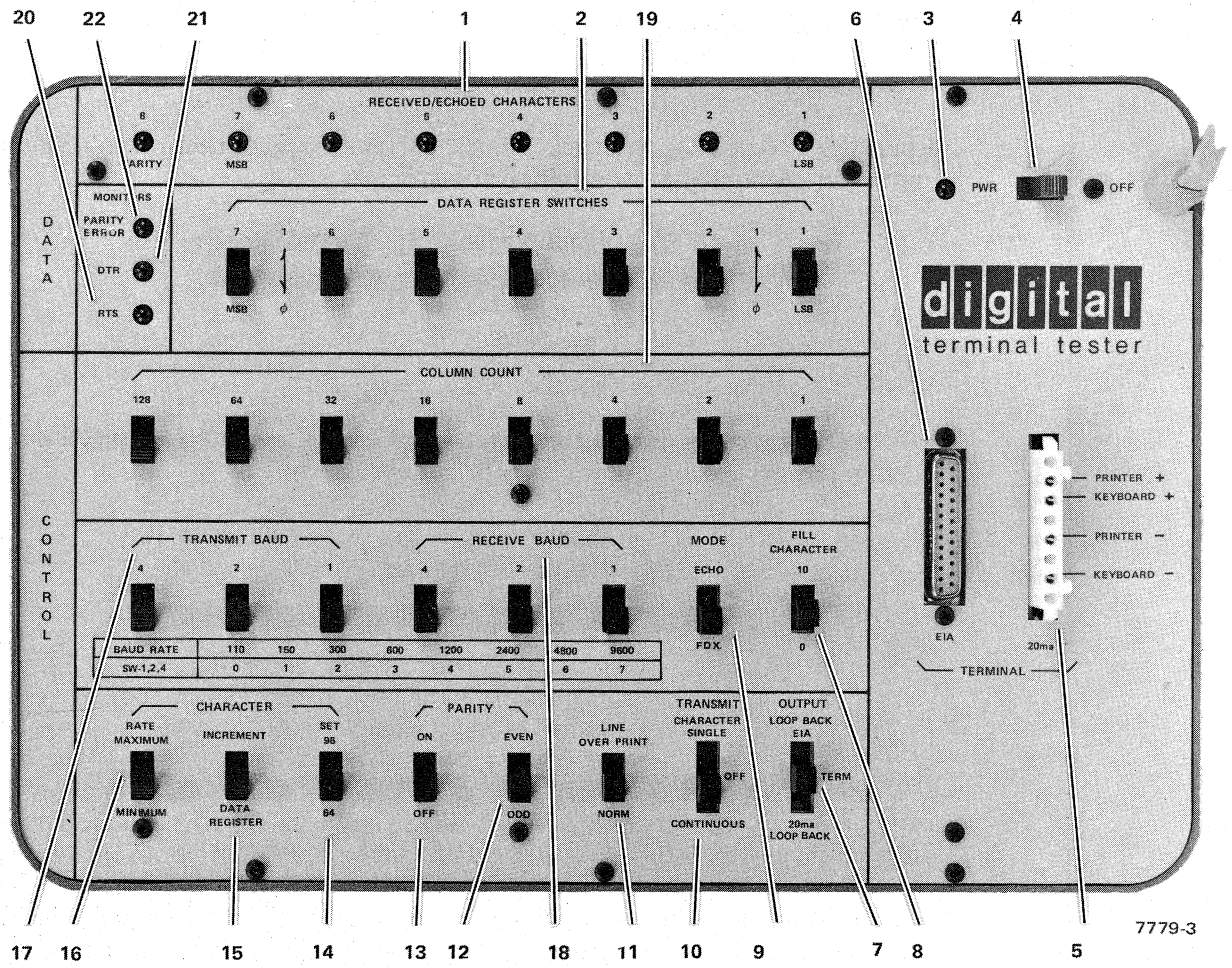

Figure 3-1 Controls and Indicators

Table 3-1 Off-Line Terminal Tester Controls and Indicators

Index No.	Function
1.	RECEIVED/ECHOED CHARACTERS – Displays the 8-bit ASCII code (7 bits and 1 parity bit, or 8 data bits) received from terminal when operating in ECHO (9) mode with PARITY (13) off. When operating in LOOP BACK (5) mode with PARITY off, bit 8 (PARITY) remains lit and the remaining seven indicators display the code generated internally. With PARITY on, PARITY LED (bit 8) remains off and the remaining seven LEDs display code received, whether in LOOP BACK or TERMinal mode.
2.	DATA REGISTER SWITCHES – Selects the 7 data bit ASCII code to be sent if operating in DATA REGISTER mode. If operating in INCREMENT mode, selects starting character of character string to be transmitted.
3.	PWR – Lights when tester is on.
4.	OFF – Applies ac power to tester.
5.	8 pin Mate-N-Lok Connector – 20 mA current loop connection to terminal under test. Assigned pins in connector are: **Signal Name** / **Connector Pin** Printer – 5 Printer + 2 Keyboard – 7 Keyboard + 3
6.	DBM 255 (cannon) data set connector – EIA voltage level connections to terminal under test. Assigned pins in connector are: DEVICE RECEIVE DEVICE TRANSMIT **Signal Name** / **Connector Pin** Protective Ground 1 ~~Transmitted~~ Data 2 ~~Receive~~ Data 3 Signal Ground 7 Request to Send 4 Data Terminal Ready 20
7.	OUTPUT LOOP BACK/EIA/20 mA/TERM – Allows loop back at the serial interface for self-testing. When this switch is in the EIA position, characters transmitted will be looped back through the EIA circuit to the receiver and displayed on the LEDs. When the switch is in the 20 mA position, loop back will occur at the 20 mA current loop interface. In either position, the transmitted and received baud rate must be the same. Parity will be generated and checked if so selected. See RECEIVER/ECHOED CHARACTERS (1).

Table 3-1 Off-Line Terminal Tester Controls and Indicators (Cont)

Index No.	Function
8.	FILL CHARACTER 10/0 – Selects ten or zero fill characters to be transmitted after a carriage return/line feed (or carriage return if in OVER PRINT mode) signal is transmitted.
9.	MODE ECHO/FDX – When set to ECHO position, any character received from the terminal under test will be retransmitted to the terminal and the ASCII bit pattern appears on the RECEIVED/ECHOED CHARACTERS display. This position disables all character generation circuits (data switch register and incrementing register) but allows all other transmission parameters to remain (baud rate, parity, fill characters, etc.). When set to FDX position, character generation circuits are enabled and characters will be transmitted to the terminal under test. When set to FDX position, characters received from the terminal under test will be displayed on the LEDs. See RECEIVED/ECHOED CHARACTERS (1).
10.	TRANSMIT CHARACTER SINGLE/OFF/CONTINUOUS – When in the center OFF position, no characters will be sent. When in the CONTINUOUS position, a steady stream of characters will be transmitted from either the switch register or the incrementing register, at the speed and baud rate selected. When the switch is moved to the spring-loaded SINGLE position, only one character is transmitted from either the switch register or the incrementing register, at the baud rate selected. Repeated operation of this switch will send one character for each switch operation. This switch is taller than all other switches on the tester, which facilitates locating the switch.
11.	LINE OVER PRINT/NORM – In NORM mode, a carriage return is followed by a line feed. The OVER PRINT mode substitutes a null character for line feed for the number of lines selected by the jumper on the logic board. A maximum of eight overprints is selectable. The jumper is set to eight overprints by the manufacturer. Refer to Paragraph 2.4 to change jumper position.
12.	PARITY EVEN/ODD – Selects even or odd parity generation and monitoring.
13.	PARITY ON/OFF – When OFF, parity is transmitted as a marked bit. Received parity bit is ignored. When ON, correct parity bit is transmitted. Received parity is checked and the PARITY ERROR monitor light is illuminated if an error is detected.
14.	CHARACTER SET 96/64 – Selects ASCII character set (96 or 64) to be transmitted.
15.	CHARACTER MODE INCREMENT/DATA REGISTER – Selects characters to be transmitted. When in INCREMENT, each line will consist of a sequence of characters beginning with the character selected by the DATA REGISTER SWITCHES. When in DATA REGISTER, the character selected by the DATA REGISTER SWITCHES will be sent repeatedly.

Table 3-1 Off-Line Terminal Tester Controls and Indicators (Cont)

Index No.	Function
16.	CHARACTER RATE MAXIMUM/MINIMUM – When set to MAXIMUM, characters are sent at full speed supported by selected baud rate. When set to MINIMUM, about ten characters per second are sent at the selected baud rate. The MINIMUM mode allows visual interpretation of high baud rates.
17.	TRANSMIT BAUD – Selects transmitting baud rate of tester via octal code. Selection is as follows:

Octal Digit	Baud Rate
0	110
1	150
2	300
3	600
4	1200
5	2400
6	4800
7	9600

18.	RECEIVE BAUD – Selects receiving baud rate of tester via octal code. Selection is same as TRANSMIT BAUD (17).
19.	COLUMN COUNT – Selects the number of characters to be printed on a given line. A minimum of 1 and a maximum of 255 characters may be selected using all 8 switches. When the column count is exceeded, a carriage return and line feed is transmitted to the terminal.
20.	MONITOR RTS – Indicates status of Request to Send line when using EIA interface.
21.	MONITOR DTR – Indicates status of Data Terminal Ready line when using EIA interface.
22.	MONITOR PARITY ERROR – Indicates parity error if parity is selected.

3.3 UTILIZATION PROCEDURE

This section discusses the setup and operation of the PMK04 when it is being used to troubleshoot a faulty serial ASCII terminal. Paragraph 3.3.1 includes an abbreviated listing of operating procedures for an operator already familiar with the tester. Paragraph 3.3.2 is a set of detailed operating procedures for an operator not familiar with the tester, or an operator testing a new or unusual terminal.

This section does not contain any instructions for setting up the tester to check any specific terminal, nor does it contain any listings of individual terminal operating speeds, functions, and parameters. For operating speed, functions, and parameters for a specific terminal, consult the documentation supplied with the terminal. Callouts in this section refer to Figure 3-1.

3.3.1 Operating Instruction Summary

To set up and test a terminal proceed as follows:

1. Turn terminal off.
2. Disconnect terminal from system.
3. Plug tester in.
4. Connect terminal to tester via correct interface connector (5 or 6).
5. Using DATA REGISTER SWITCHES (2) select character to be transmitted or to be used as the starting code of incrementing tranmission.
6. Set correct COLUMN COUNT (19).
7. Set correct TRANSMIT BAUD (17) rate and RECEIVE BAUD (18) rate. Split speed is allowed.
8 Select ECHO or FDX (Full-duplex) MODE (9).
9. Select FILL CHARACTER (8) if needed.
10. Select CHARACTER parameter via switches RATE MAXIMUM/MINIMUM (16), INCREMENT/DATA REGISTER (15), and SET 64/96 (14).
11. If parity check and/or transmission is desired, turn PARITY ON (13) and select EVEN/ODD (12).
12. Select LINE OVER PRINT/NORM (11).
13. Place OUTPUT (7) to TERM (center position).
14. Place TRANSMIT CHARACTER (10) to OFF (center position).
15. Turn tester on, PWR (4).
16. Turn terminal on and place on-line.
17. Use TRANSMIT CHARACTER (10) to start selected data transmissions.

NOTE

Before changing any tester parameters, place TRANSMIT CHARACTER (10) to OFF.

3.3.2 Detailed Operating Instructions

To set up and test a terminal, first turn the terminal off and disconnect it from the system; then proceed as follows. Refer to Table 3-1 for detailed controls and indicator information.

1. TERMINAL TO TESTER INTERFACE – The tester can interface with terminals requiring either EIA voltage levels or 20 mA current loop. To connect the tester to a terminal via EIA levels, remove the connector from the interface and plug it into the DBM 255 data set connector (6) on the tester. To connect the tester to a terminal via 20 mA current loop, remove the connector from the interface and plug it into the Mate-N-Lok connector (5) on the tester.

   The tester uses an 8 pin Mate-N-Lok connector for the 20 mA current loop interconnections. The labeling on the tester Mate-N-Lok is referenced to conventional current flow. When using the tester to exercise a non-DIGITAL terminal, the interconnection should be made as follows:

   a. Connect pin 2 of tester (PRINTER +) to "Receive –" (also called "Printer –") of terminal.

   b. Connect pin 5 of tester (PRINTER –) to "Receive +" (also called "Printer +") of terminal.

   c. Connect pin 3 of tester (KEYBOARD +) to "Transmit –" (also called "Keyboard –") of terminal.

   d. Connect pin 7 of tester (KEYBOARD –) to "Transmit +" (also called "Keyboard +") of terminal.

2. DATA REGISTER SWITCHES – Set the DATA REGISTER SWITCHES to desired starting character.

   The DATA REGISTER SWITCHES allow the operator to select the code that will be transmitted to the terminal. Each of the seven switches sets one bit of the 7-bit ASCII code. The switches can select control functions (000_8 – 037_8) such as bell, carriage return, or line feed; or printable characters (040_8 – 177_8). The printable characters include the digits 0–9, upper case alphabet (A–Z), lower case alphabet (a–z), and special characters such as: , ; ' ? [. (Appendix A contains a full listing of the ASCII code.) When INCREMENT/DATA REGISTER (15) is in INCREMENT, the DATA REGISTER SWITCHES select the first character to be transmitted. Internal circuitry then increments and transmits the next character. When in DATA REGISTER, the code selected by the DATA REGISTER SWITCHES will be transmitted continuously.

3. COLUMN COUNT (19) – Set the COLUMN COUNT switches for the desired column count.

   If the known count is octal or binary, the eight switches can be set as three octal digits or eight binary digits. Otherwise, merely add up the label numbers over each raised COLUMN COUNT switch to select the column width.

4. TRANSMIT BAUD (17) and RECEIVE BAUD (18) - Set TRANSMIT BAUD (17) and RECEIVE BAUD (18) switches to desired baud rates.

There are eight transmit baud rates and eight receive baud rates selected via the TRANSMIT BAUD (17) switches and the RECEIVE BAUD (18) switches, respectively. The switch positions and associated baud rates are as follows:

Switches and Settings			**Receive or Transmit**
4	**2**	**1**	**Baud Rate**
down	down	down	110
down	down	up	150
down	up	down	300
down	up	up	600
up	down	down	1200
up	down	up	2400
up	up	down	4800
up	up	up	9600

Both the TRANSMIT AND RECEIVE BAUD switches must select transmit and receive rates compatible with the terminal being exercised. Some terminals have switch-selectable baud rates; the tester switch settings must be compatible with the terminal switch settings.

The PMK04 has split speed capability. This means that it can transmit data at one baud rate and receive data at another baud rate. When using split speed, the operator must ensure that the transmit/receive rates of the tester are compatible with the receive/transmit rates of the terminal.

5. MODE: ECHO/FDX (9) - Select either ECHO or FDX mode.

When set to the ECHO position, any character received from the terminal under test will be retransmitted to the terminal and the ASCII bit pattern displayed on the LED. This position disables all character generation circuits (data switch register, incrementing register) but allows all other transmission parameters to remain (baud rate, parity, fill characters, etc.). When set to the FDX position, character generation circuits are enabled and characters are generated and transmitted to the terminal under test, while received characters from the terminal under test will be displayed on the LED.

6 FILL CHARACTER (8) - The FILL CHARACTER switch should be set to meet the requirements of the terminal being exercised.

When in the 10 position (up) 10 null characters are transmitted after each carriage return. This gives the print head or carriage a chance to return to the beginning of the next line before resuming the transmission of printable characters. When in the 0 position (down) no null characters are transmitted after each carriage return and transmission of printable characters begins immediately after CR/LF.

7 CHARACTER RATE: MAXIMUM/MINIMUM (16) – Select either MAXIMUM or MINIMUM character transmission rate.

When set to MAXIMUM, characters are transmitted continually at the selected baud rate. When set to MINIMUM, characters are transmitted at the selected baud rate until 10 characters are output, then transmission of characters ceases until approximately one second has passed. The minimum position facilitates the interpretation of data at high baud rates when it would otherwise be difficult to interpret the data. This is particularly valuable when exercising display type terminals.

8 CHARACTER INCREMENT/DATA REGISTER (15) – Set to desired position.

When in the DATA REGISTER position, the character will be transmitted each time it is selected by the DATA REGISTER SWITCHES. In the INCREMENT position, the character selected by the DATA REGISTER SWITCHES will be the first character transmitted in a series of characters. Each new line will begin with the character selected by the DATA REGISTER SWITCHES.

9 CHARACTER SET 64/96 – Select the ASCII character set to be transmitted (64 or 96). The character set selected on the tester must match the character set of the terminal being exercised.

10. PARITY ON/OFF (13) and EVEN/ODD (12) – Select PARITY, if desired, by putting ON/OFF to ON, and choosing EVEN or ODD. The tester will generate and transmit the correct parity to the terminal. It will also monitor the parity of the received data and illuminate the PARITY ERROR indicator if an error is detected.

It should be noted, however, that the 8th bit (called PARITY) of RECEIVED/ECHOED CHARACTERS rarely displays true parity. The 8th bit remains unlit when PARITY is ON, and lit if PARITY is OFF and LOOP BACK is selected. Only when PARITY is OFF and the tester is receiving data from a terminal will the 8th bit display the data received from the terminal. The PARITY ERROR indicator does however monitor the selected parity and will light if the received parity is wrong, regardless of what is displayed as the 8th bit.

11. LINE OVER PRINT/NORM – Set to desired position.

In the NORM position, when the end of a column is reached, a carriage return followed by a line feed is transmitted by the tester. The LINE OVER PRINT position causes the transmission of a null character instead of a line feed for the number of times selected by a jumper on the logic board. A maximum of eight overprints is selectable. Selection of OVER PRINT will save between 50 and 90% (depending on the position of the jumper on the logic board) of the paper normally used when testing a hard copy terminal.

12. OUTPUT (7) – Place the OUTPUT switch to TERM (center position). When in TERM, the tester transmits the selected data to the terminal. In either the EIA LOOP BACK (top position) or 20 mA LOOP BACK (bottom position) the data from the transmitter section of the tester is looped backed to the receiver section.

13. TRANSMIT CHARACTER (10) – Place TRANSMIT CHARACTER to OFF (center position). This stops the tester from transmitting anything to the terminal when the tester is turned on.

14. PWR (4) – To turn the tester on move PWR (4) to the left. The indicator to the left of the switch will illuminate.

15. TRANSMIT CHARACTER (10) – Use TRANSMIT CHARACTER to start selected data transmission. When OFF (center position) no character will be sent and the output signal will be marking. When moved to the CONTINUOUS position, a steady stream of characters will be transmitted from either the switch register or the incrementing register at the speed and baud rate selected. When the switch is moved to the spring-loaded SINGLE CHARACTER position, one character is transmitted from either the switch register or the incrementing register at the baud rate selected. Repeated SINGLE CHARACTER operation of this switch will send one character for each switch operation.

NOTE
Before changing any tester parameter, place TRANSMIT CHARACTER (10) to OFF.

CHAPTER 4
THEORY OF OPERATION

TO BE SUPPLIED

NOTE
If you would like to receive this information, please complete and mail the Request for Final Manual card at the rear of this manual.

CHAPTER 5
MAINTENANCE

5.1 SCOPE
This section contains preventive and corrective maintenance information, and tester assembly/disassembly instructions.

5.2 PREVENTIVE MAINTENANCE
Preventive maintenance consists of tasks performed at periodic intervals, or whenever the tester is shipped, to ensure proper equipment operation. These tasks include visual inspection and operational checks. Table 5-1 provides a recommended preventive maintenance schedule.

Table 5-1 Preventive Maintenance Schedule

Performance Interval	Test or Procedure
Monthly	Clean externally
Monthly	Visually inspect all cables, repair if required.
Monthly	Perform acceptance test procedure (Paragraph 2.3)

5.3 CORRECTIVE MAINTENANCE
If the tester fails the acceptance test or fails while testing a terminal, check the PWR (3) indicator. If it illuminates when the PWR (4) switch is in the on position (to the left), the line fuse is not blown and the tester must be returned to Digital Equipment Corporation, Maynard, Massachusetts for repair. If it fails to illuminate, the line fuse could be blown. To replace the fuse proceed as follows:

1. Unplug the tester.
2. Disassemble the tester (Paragraph 5.4).
3. Replace the line fuse with a new 1/2 amp slow blow fuse. See Figure 5-1 for location of line fuse on logic board.
4. Reassemble the tester.
5. Plug tester in.
6. Turn tester on. If the PWR (3) indicator illuminates, run the acceptance test. If the PWR (3) indicator fails to illuminate, return the tester to Digital Equipment Corporation, Maynard.

5.4 ASSEMBLY/DISASSEMBLY
Disassemble the tester by removing the six screws indicated on Figure 5-2. The front panel and chassis can now be removed from the case by tipping the case forward.

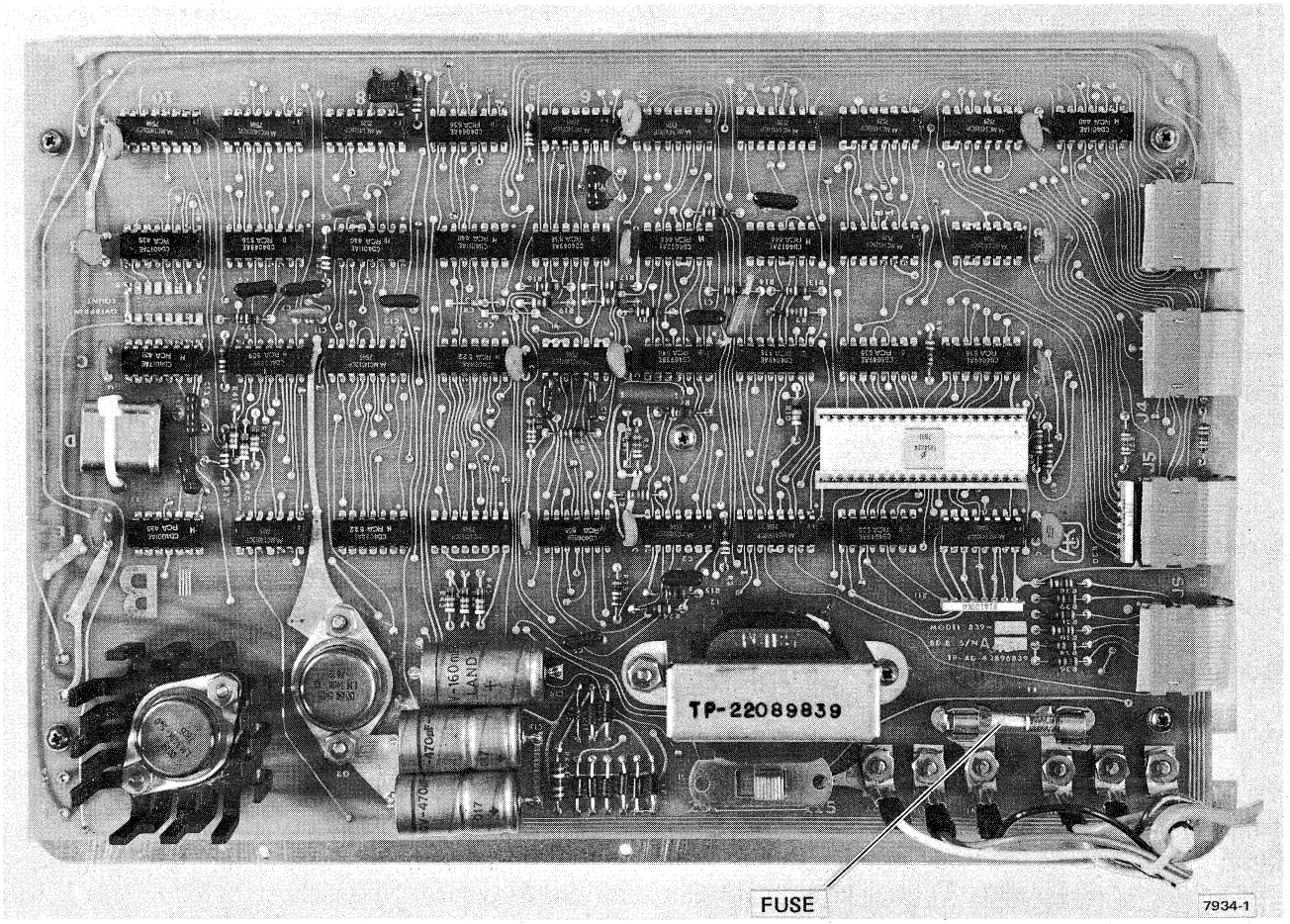

Figure 5-1 Fuse Replacement

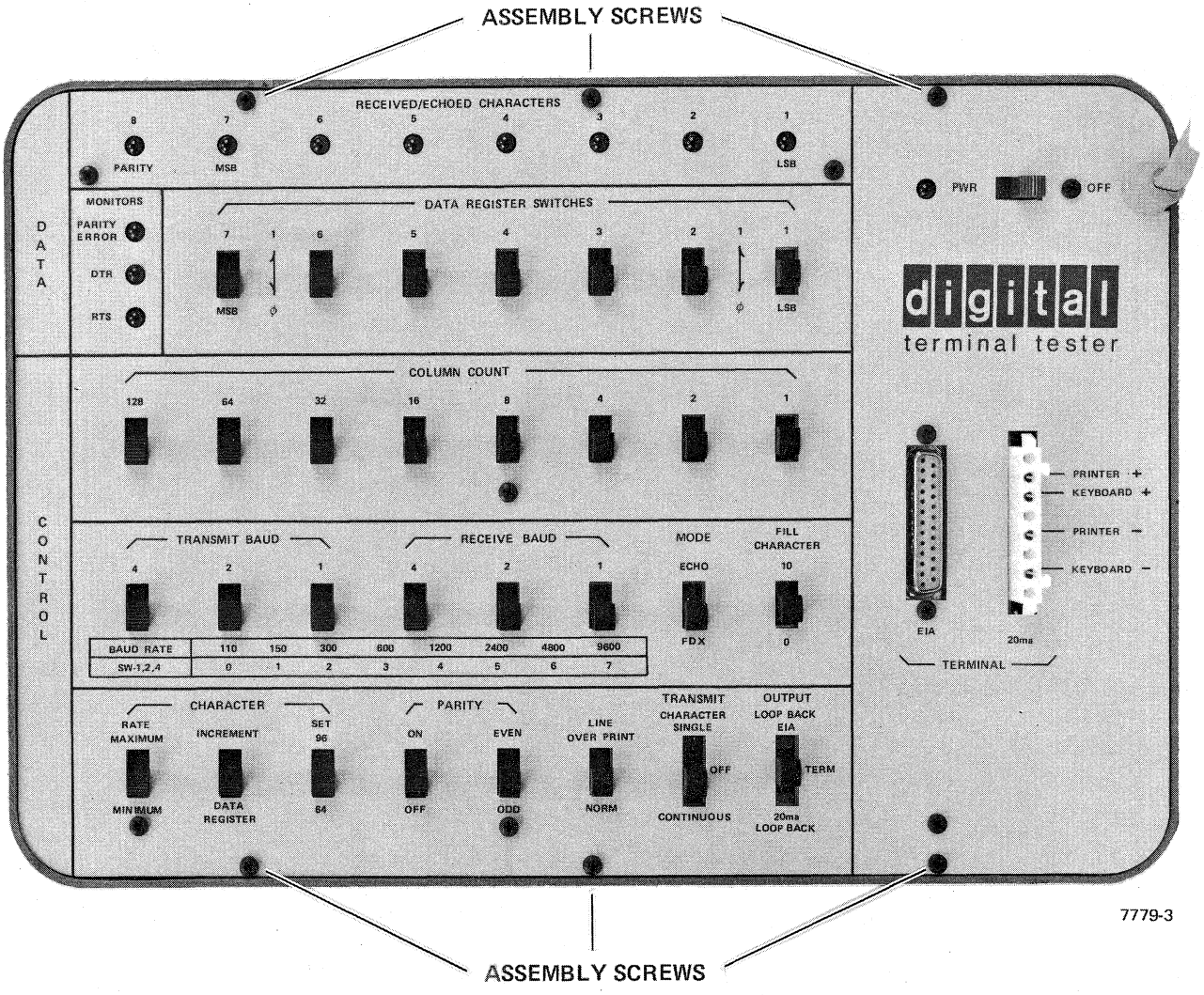

Figure 5-2 Assembly/Disassembly

APPENDIX A
7-Bit ASCII CODE

Table A-1 consists of control functions and printable characters. The control functions use octal numbers 000_8 – 037_8. The printable characters use octal numbers 040_8 – 177_8.

The 64-character ASCII code consists of 26 upper case letters, 10 digits, and 27 special characters. It uses octal numbers 040_8 – 137_8.

The 96-character ASCII code set consists of the 64-character code set, 26 lower case letters and 6 more special characters. It uses additional octal numbers 140_8 – 177_8.

Octal character 177_8 is called delete. It causes nothing to be printed and does not advance the carriage. It is, however, called a printable character.

Table A-1 7-Bit ASCII Code

Octal Code	Char	Octal Code	Char	Octal Code	Char	Octal Code	Char
000	NUL	040	SP	100	@	140	\
001	SOH	041	!	101	A	141	a
002	STX	042	"	102	B	142	b
003	ETX	043	#	103	C	143	c
004	EOT	044	$	104	D	144	d
005	ENQ	045	%	105	E	145	e
006	ACK	046	&	106	F	146	f
007	BEL	047	'	107	G	147	g
010	BS	050	(	110	H	150	h
011	HT	051	)	111	I	151	i
012	LF	052	*	112	J	152	j
013	VT	053	+	113	K	153	k
014	FF	054	,	114	L	154	l
015	CR	055	-	115	M	155	m
016	SO	056	.	116	N	156	n
017	SI	057	/	117	O	157	o
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021	DC1	061	1	121	Q	161	q
022	DC2	062	2	122	R	162	r
023	DC3	063	3	123	S	163	s
024	DC4	064	4	124	T	164	t
025	NAK	065	5	125	U	165	u
026	SYN	066	6	126	V	166	v
027	ETB	067	7	127	W	167	w
030	CAN	070	8	130	X	170	x
031	EM	071	9	131	Y	171	y
032	SUB	072	:	132	Z	172	z
033	ESC	073	;	133	[	173	{
034	FS	074	<	134	\	174	|
035	GS	075	=	135	]	175	}
036	RS	076	>	136	^	176	~
037	US	077	?	137	_	177	DEL

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