M46-100
CRT
INSTRUCTION MANUAL

CONSISTS OF:

Installation Specification  02-310A20
Programming Specification  02-310R01A22
Schematic                  02-310B08

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M46-100
CRT (LOW END)
INSTALLATION SPECIFICATION

1. GENERAL

The low-end CRT has two Marketing Numbers; M46-100 for the 115V/60 Hz version and M46-101 for 240V/50 Hz. Each product consists of the desk-top CRT with keyboard. No other hardware is included. The cables and interfaces which are required may be purchased separately. Table 1 relates Marketing and hardware numbers. The interconnections are shown in Figures 1 and 2.

TABLE 1. CRT MARKETING/HARDWARE NUMBERS

<table>
<thead>
<tr>
<th>MARKETING NUMBER</th>
<th>HARDWARE NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>M46-100</td>
<td>27-053F00</td>
<td>CRT-TTY Replacement, 115V, 60 Hz</td>
</tr>
<tr>
<td>M46-101</td>
<td>27-053F01</td>
<td>CRT-TTY Replacement, 240V, 50 Hz</td>
</tr>
<tr>
<td>M46-104</td>
<td>17-273</td>
<td>CABLE, CRT-TTY INF, 25 Ft.</td>
</tr>
<tr>
<td>M46-107</td>
<td>02-324</td>
<td>CRT/TTY 7&quot; INF, 1200 Baud</td>
</tr>
<tr>
<td>M46-102</td>
<td>02-279</td>
<td>PASLA 7&quot; INF, RS-232</td>
</tr>
<tr>
<td></td>
<td>29-327</td>
<td>CRT VENDOR's Manual</td>
</tr>
</tbody>
</table>

Figure 1. PASLA—CRT Connection
2. INSTALLATION

The CRT Terminal has been carefully packed to insure its arrival in operating condition; however, use the following procedures to establish the mechanical integrity of the unit and prepare it for operation.

2.1 Unpacking

Inspect the shipping carton for external damage. As the equipment is unpacked, check for signs of damage or missing parts.

2.2 Equipment Placement

The CRT Terminals are self-contained and include an attractive enclosure and non-scuffing rubber feet for protection of desk and table tops. Connectors are provided for power (2-wire plus ground), detachable keyboard, video output for remote TV monitor, and communication line (telephone modem or direct connection to Processor.) Clearance is required for convection cooling of the electronics.

2.3 Options

Optional features are normally enabled at the factory. If the features are specified at time of order, they are pre-set at the factory. If, however, the CRT is not purchased with an interface or if the customer does not specify options, it is necessary to inspect the PC boards in the CRT and adjust the option switches for the individual requirement. In order to do this, proceed as follows:

1. Release the three 1/4 turn fasteners on the back panel, pull back the two slide latches (at the bottom rear corners), and push forward and upward (enclosure rotates from the bottom front).

2. Remove the FUNCTION CONTROL (Position 5) and TTY INTERFACE (Position 6) printed circuit boards from the card cage.

3. Check the vendor manual, 29-327, for each switch identification and implement the required options. See Section 4.1 and 4.2.

4. Replace the two PC boards and check the remaining PCs for socket engagement.

5. Verify that the AC power switch on the top cross-member in the housing is set properly for 115 or 240V operation. Note that this switch selects AC input for the high voltage power supply only.

2.4 115/240V, 50/60 Options

The 50/60 Hz option is implemented by changing the switch position on the TIMING GENERATOR board. With the P C component side up, card edge connector to the right, adjust the switch for 60 Hz and for 50 Hz.

The 115/240 V option is implemented by adjusting the switch at the left of the POWER switch UP for 240 V and DOWN for 115V.
3. APPLYING POWER

Before connecting power to the Terminal:

1. Turn the POWER switch on the back panel to OFF.

2. Plug the keyboard cable into KB-J3 on the back panel. Insure that the slide locks on the connector are securely fastened.

3. Attach the appropriate interface cable to J1 and fasten securely with the two 4-40 screws.

4. Attach the power cord to the POWER CONNECTOR on the back panel and to a standard 115VAC, 60 Hz, 3 wire grounded outlet (or to 240VAC if so ordered).

WARNING
CUTTING THE SAFETY GROUND PIN ON THE POWER CORD FOR USE WITH A 2-HOLE SOCKET WILL PRESENT A SHOCK HAZARD. USE A 3 PRONG ADAPTER WITH SAFETY GROUND PROPERLY CONNECTED.

5. Turn the POWER switch to ON. When power is applied to the unit, the POWER switch is illuminated. If the switch fails to light, check the 2 amp fuse on the back panel.

6. Allow approximately one minute for the CRT filament to warm up. The blinking cursor should appear in the lower left corner of the screen. If it does not, adjust the BRIGHTNESS control on the front panel below the screen. If the cursor still does not appear, a malfunction is indicated.

7. Set the 80/72 switch to 80; the FDX/HDX switch to FDX and SEL/TTY to SEL. The 06-146 CRT Test Program may now be executed.

4. INTERFACE CONNECTIONS

The CRT may be interfaced to an INTERDATA Processor through the PASLA or any of the TTY interfaces (Model 70 or 80 built-in or the 7 inch TTY interface), or with the 7 inch TTY interface (M46-010) which is modified to run at 1200 baud.

4.1 PASLA Interconnect

The PASLA contains the hardware to receive and transmit most of the normal RS-232C lines in an asynchronous mode. These lines include: RING, DSRDY, CARRIER, DTR, RD2S, CL2S, TDATA, RDATA, REV CHAN REC, and REV CHAN TRANS.

When connecting the PASLA to a CRT (or most other local terminals), it is necessary to disable (force to zero) the RS-232 status bits which are not equipped on the terminal. The PASLA has wire-wrap stakes equipped for this purpose. The following is a summary of PASLA straps required for operation with the M46-100 or M46-101 CRT.

<table>
<thead>
<tr>
<th>STRAP</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-8 (Add)</td>
<td>FDX option</td>
</tr>
<tr>
<td>CF-GO (Add)</td>
<td>Force CARR Status = 0</td>
</tr>
<tr>
<td>CB-G3 (Add)</td>
<td>Force CL2S active</td>
</tr>
<tr>
<td>HD-G4 (REMOVE)</td>
<td>FDX Option</td>
</tr>
</tbody>
</table>
In addition, the straps A1-K1 must be equipped to select the required baud rate. This may be in the range of 75 to 9600 baud and is described in the PASLA Instruction Manual, Publication Number 29-301, which is included with the PASLA. Note that the character format/baud rate of PASLA is programmable. The CRT must be strapped to match these programmed characteristics.

4.2 TTY Interface Connect

The CRT contains the current loop interface required to connect to any of the INTERDATA TTY Interfaces. The TTY Interfaces have a fixed character format/baud rate and the switches in the CRT must be implemented to match these characteristics. The following is a summary of required switch-implemented options in the CRT.

| RECEIVER SPEED | 110/1200* |
| TRANSMITTER SPEED | 110/1200* |
| PARITY | EVEN |
| STOP BITS | 10 BITS/CHARACTER (1 STOP BIT) |
| INTERFACE | CURRENT LOOP |
| AUTO-CARRIAGE RETURN | LOCAL ONLY |

* 1200 Baud for M46-107 only.
M46-100 CRT
PROGRAMMING SPECIFICATION

1. INTRODUCTION

This specification contains a description of the CRT and the information necessary to program the system. The CRT interfaces to the Multiplexor Bus or Selector Channel Bus through the M46-102 Programmable Asynchronous Single Line Adapter (PASLA) or any of the TTY interfaces (Model 70 or 80 built-in or a 7 inch TTY Interface or a 7 inch CRT/TTY Interface).

The PASLA comprises one full duplex interface with an even device address for the Receive side and an odd address for the Transmit side. There is an Interrupt flip-flop associated with each side.

2. CONFIGURATION

The CRT can be used on any Model 50, 70, 74, 80, 85 Processor or equivalent.

3. OPERATING PROCEDURES

3.1 Power

Before applying power to the terminal, turn the POWER Switch on the back panel to OFF. See Figure 1. Plug the keyboard cable into the KB-J3 Connector on the back panel. Attach the power cord to the POWER CONNECTOR on the back panel and to a standard 115 VAC, 60 Hz grounded outlet.

3.2 Keyboard

The CRT terminal uses the basic keyboard arrangement of a Teletypewriter. Figure 2 shows the keyboard layout. As displayable keys are depressed, the characters appear above the cursor on the bottom line of the screen and the cursor is moved right one position. Near the end of a line, the bell in the keyboard rings. The cursor remains at the end of the line until a Carriage Return is received.
Refer to Table 1 for the ASCII codes generated for each key.

The codes in Columns 0 and 1 of Table 1 are generated by use of the CTRL key plus the corresponding keys in Columns 4 and 5 respectively. Codes in brackets in Column 0 are used within the Terminal. Codes in parenthesis in Columns 0 and 1 are also generated directly on the keyboard. All other codes in Columns 0 and 1 are ignored by the Terminal.

### TABLE 1. TERMINAL CODE CHART

<table>
<thead>
<tr>
<th>Row</th>
<th>Column</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0 0 0 0 0 NUL DLE SPACE 0 @ P</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0 0 1 1 1 SOH DC1 ! 1 A Q</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0 0 1 0 2 STX DC2 &quot; 2 B R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0 0 1 1 3 ETX DC3 # 3 C S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0 1 0 0 4 EOT DC4 $ 4 D T</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0 1 0 1 5 ENQ NAK % 5 E U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>0 1 1 0 6 ACK SYN &amp; 6 F V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>0 1 1 1 7 [BEL] ETB ' 7 G W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1 0 0 0 8 [BS] CAN ( 8 H X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1 0 0 1 9 HT EOM ) 9 I Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1 0 1 0 A [(LF)] SUB * 1 J Z</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1 0 1 1 B VT (ESC) + : K</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>1 1 0 0 C FF FS , &lt; L \</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>1 1 0 1 D [(CR)] GS - = M ]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>1 1 1 0 E SO RS . &gt; N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>1 1 1 1 F SI US / ? O ← RUB OUT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. DATA FORMAT

The PASLA may be programmed to accommodate a variety of character formats and baud rates. See the PASLA Programming Specification, 02-270A22, in the 29-301 PASLA Instruction Manual. The TTY Interface operates at 110 baud or 1200 baud for M46-107 with a fixed character format. The Programming Specification, 02-262A22, in the 29-288 TTY Interface Instruction Manual contains TTY Programming information. In addition, the CRT has switch options to select parity, number of stop bits, and baud rate. This information is in Manual 29-327 which is included with the CRT.

The following lists the standard characteristics:

<table>
<thead>
<tr>
<th></th>
<th>PASLA</th>
<th>TTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAUD RATE</td>
<td>9600</td>
<td>*110</td>
</tr>
<tr>
<td>DATA BITS</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>PARITY</td>
<td>EVEN</td>
<td>EVEN</td>
</tr>
<tr>
<td>STOP BITS</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

*1200 baud for M46-107.

Figure 3 shows the Character Format:

```
<table>
<thead>
<tr>
<th>STOP BIT</th>
<th>PARITY</th>
<th>DATA</th>
<th>START BIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>7</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
```

5. PROGRAMMING INSTRUCTIONS

The Processor I/O instructions are used to communicate with the CRT Terminal through the PASLA/TTY. The following paragraphs describe how Processor I/O instructions may be used with the system.

5.1 Program Instructions

5.1.1 Sense Status (SS or SSR). The Sense Status instruction is used to determine if character transfers are complete and correct.

5.1.2 Output Command (OC or OCR). The Output Command instruction is used to set the PASLA to the Receive or Transmit Mode and to select character format. Two command bytes are required to perform these functions with PASLA. If TTY, only one Output Command is required to establish read or write mode.

5.1.3 Write Data (WD or WDR). The Write Data instruction is used to output characters to the CRT terminal screen.

5.1.4 Read Data (RD or RDR). The Read Data instruction is used to input characters from the CRT terminal keyboard.

5.1.5 Acknowledge Interrupt (AI or AIR). The Acknowledge Interrupt instruction is used to service interrupts. Execution of this instruction returns the address and status of the interrupting line.

5.1.6 Communications Instructions (PASLA only). The PASLA accommodates the Communication Instructions in the Communications Processors.
5.2 Status and Command Bytes

Table 2 contains the PASLA and TTY Interface Status and Command Byte Data applicable to the CRT Terminal.

<table>
<thead>
<tr>
<th>BIT NUMBER</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STATUS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(REC)</td>
<td>OV</td>
<td>PF</td>
<td>FR</td>
<td>ERR</td>
<td></td>
<td>BSY</td>
<td>EX</td>
<td>0</td>
</tr>
<tr>
<td>(TRANS)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>BSY</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>COMMAND</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>DIS</td>
<td>EN</td>
<td>DTR</td>
<td></td>
<td>ECHO-PLEX</td>
<td></td>
<td>TRANS.</td>
<td>WRT/ RD</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>CLK</td>
<td></td>
<td>DATA</td>
<td>STOP</td>
<td>BITS</td>
<td></td>
<td>PARITY</td>
</tr>
<tr>
<td><strong>STATUS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>COMMAND</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIS</td>
<td>EN</td>
<td>UN-BLOCK</td>
<td>BLOCK</td>
<td>WRT</td>
<td>READ</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**STATUS**

*OV

The Overflow status bit is set if the previously received character is not read before the present character is assembled. Overflow is reset at the end of the next Read Data only if the failure condition disappears (i.e. a Read Data is issued).

*PF

This bit is set when the received parity disagrees with the programmed parity (EVEN parity). The PF status is reset at the end of the next character if the failure condition disappears. The PASLA is normally programmed for no parity checking (Bits 5 and 6 of Command 2 = 00) so PF will never set.

*FRERR

This bit is set to indicate that the received character has no stop bits. If the assembled character is zero, then a line break sequence is indicated. This occurs when the Break key is depressed. This bit will reset only when a 'valid character with stop bits is received.

*BRK

This bit is set whenever the serial data line remains at zero for longer than one character time. This occurs when the Break Key is depressed.

BSY

When this bit is inactive, the device is ready to transfer data. This bit is forced active if the CRT Terminal is Off-Line. In the Read Mode, BSY is active when a character is not assembled; in the Write Mode, BSY is active if the CRT Terminal has not yet accepted a character. If enabled, an interrupt is generated when BSY goes inactive. In the Read Mode, when an OV occurs and the BSY status bit is zero, a Read Data instruction must be issued to set the BSY bit to its correct (ONE) state.

EX

This bit is set whenever OV, PF, FRERR or BRK is set on the Receive side. This bit is always zero on the Transmit side.

DU

This bit is set whenever the CRT Terminal is Off-Line or Powered Down. An interrupt is generated, if enabled, when DU goes active.

With PASLA, to determine whether the CRT Terminal is On-Line or not, the status of the Receive side must be examined. If the status byte is ‘OC’ (BUSY and EX), a Device Unavailable condition is indicated.

*These status bits are set at End of Character time when the BUSY drops. Since the resetting of BUSY causes an interrupt (if enabled), these bits do not generate individual interrupts. At this point a Read Data instruction must be issued to set the Busy bit to its correct (ONE) state.
In the PASLA Command 1, the LTR, ECHOPLEX, and WRT/RD bits are shared by the Transmitter and Receiver, however, the EN/DIS bits are separate for Transmit and Receive. In FDX operation, the EN/DIS must be independently programmed as follows. To change EN/DIS on the Receive side, issue a Command with the WRT/RD bit = 0. To change the EN/DIS on the Transmit side, issue a Command with the WRT/RD bit = 1.

CLK
Setting this bit selects the highest strapped clock rate. Resetting this bit selects the lowest strapped clock rate.

DATA BITS
These two command bits select the number of data bits transferred per character as follows:

<table>
<thead>
<tr>
<th>BIT 2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0</td>
<td>5 Data Bits</td>
</tr>
<tr>
<td>0 1</td>
<td>6 Data Bits</td>
</tr>
<tr>
<td>1 0</td>
<td>7 Data Bits</td>
</tr>
<tr>
<td>1 1</td>
<td>8 Data Bits</td>
</tr>
</tbody>
</table>

STOP BITS
This command bit selects the number of stop bits transferred per character.

<table>
<thead>
<tr>
<th>BIT 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

PARITY
These two command bits select the parity checking logic in the PASLA.

<table>
<thead>
<tr>
<th>BIT 5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 0</td>
<td>None</td>
</tr>
<tr>
<td>0 1</td>
<td>None</td>
</tr>
<tr>
<td>1 0</td>
<td>Odd</td>
</tr>
<tr>
<td>1 1</td>
<td>Even</td>
</tr>
</tbody>
</table>

The second PASLA command is shared by both the Transmit and Receive Sides, and consequently may be issued to either device number. The second command has the preferred value of X'66' that conditions the PASLA to the following:

1. Highest strapped baud rate (9600 baud standard)
2. 8 data bits per character
3. Even Parity
4. Two stop bits

<table>
<thead>
<tr>
<th>DISABLE</th>
<th>ENABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

TRANS LB
Transmits a continuous space (zero) to the Terminal. This bit should always be a zero.

DTR
This bit must always be a one to enable character transfers between PASLA and the CRT.

ECHO-PLEX
When this bit is active, it causes data received from the CRT Keyboard to be transmitted back to the CRT on the TRANSMITTED DATA (BA) line. The PASLA also assembles the character as in the normal data mode. This feature is normally used to provide visual verification of the data received by the CRT. This command must not be issued while transmitting a character. When this bit is inactive, characters read from the Keyboard are not displayed.
UNBLOCK
Setting this bit causes characters read from the keyboard to be displayed on the CRT screen in addition to being assembled by the TTY Interface.

BLOCK
Setting this bit prevents characters read from the keyboard from being displayed. These characters, however, are assembled by the TTY Interface.

WRT/RD
Setting this bit places the PASLA in the Write Mode. Clearing this bit places the PASLA in the Read Mode. This bit should always be set in FDX except as noted in commands above.

WRITE
Setting this bit places the interface in the Write Mode, allowing data to be output from the Processor to the CRT.

READ
Setting this bit places the interface in the Read Mode, allowing data to be transferred from the CRT to the Processor.

6. PROGRAMMING SEQUENCES

6.1 Table 3 shows a sample program for transferring data from the CRT keyboard using PASLA.

6.2 Table 4 shows a sample program for transferring data to the CRT screen using PASLA.

7. INTERRUPTS
An interrupt will occur, if enabled, when BSY—0 for either the PASLA or TTY Interface. In addition, the TTY Interface generates an interrupt when DU changes state.

8. INITIALIZATION
When the Initialize Switch on the Display Panel is engaged (or power failure restart sequence), the PASLA is placed in the Disable Mode. The OV, PF, and BRK status bits cannot be guaranteed. Because of this, the programmer should take precautions to ignore these bits on the first interrupt. A Read Data (RD or RDR) should be issued to insure that BUSY is equal to a one (1).

<table>
<thead>
<tr>
<th>TABLE 3. SAMPLE PROGRAM FOR DATA INPUT FROM THE KEYBOARD</th>
</tr>
</thead>
</table>

"INPUT VIA PASLA"
"A BYTE WILL BE INPUT TO R4 FROM THE KEYBOARD.
"REGISTERS R3, R4 AND R15 WILL BE USED.
"CALLING SEQUENCE IS BAL, R15, INPUT"

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<tbody>
<tr>
<td></td>
<td>LHI</td>
<td>R3, DEVNO</td>
</tr>
<tr>
<td>OC</td>
<td>R3, COMND</td>
<td></td>
</tr>
<tr>
<td>OC</td>
<td>R3, COMND+1</td>
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<tr>
<td>SENS</td>
<td>SSR</td>
<td>R3, R4</td>
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<tr>
<td></td>
<td>BTBS</td>
<td>15, 1</td>
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<tr>
<td></td>
<td>RDR</td>
<td>R3, R4</td>
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<tr>
<td></td>
<td>BR</td>
<td>R15</td>
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"INPUT"
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<tbody>
<tr>
<td>R3</td>
<td>EQU</td>
<td>3</td>
</tr>
<tr>
<td>R4</td>
<td>EQU</td>
<td>4</td>
</tr>
<tr>
<td>R15</td>
<td>EQU</td>
<td>15</td>
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<tr>
<td>DEVNO</td>
<td>EQU</td>
<td>10</td>
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<tr>
<td>COMND</td>
<td>DC</td>
<td>X'9366'</td>
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<tr>
<td>END</td>
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</table>

LOAD DEVICE NUMBER
SET UP
PASLA MODE
TEST STATUS
LOOP
INPUT BYTE
RETURN
REGISTER ASSIGNMENTS
PASLA DEVICE NUMBER
9. DEVICE NUMBER

The PASLA is normally strapped for addresses X'10' and X'11'. The even address is for the receive side and the odd address is for the transmit side.

10. SAMPLE PROGRAMS

See Section 6.

11. TESTING

The PASLA is tested independently at INTERDATA using the PASLA OFF-LINE TEST PROGRAM, 06-127. The PASLA and CRT Terminal are then tested together using the CRT TEST PROGRAM, 06-146.
TERMINAL MONITOR
I WIRING ID.SX-XA VIEW A VIEW B
VIEW A VIEW B
SIGNAL WIRING FROM CARD CAGE

NOTE:
The revision level of this sheet is 70.

SHEET NUMBER REVOLUTION
GRAY WIRE & CABLE
J. BERRY
H. W. H. MT.
J. PINARL
DATE 09-27-71

INTERDATA
RELEASED FOR PRODUCTION
ENG. Rev.
DATE 09-27-71

NOTE:
THE REVISION LEVEL OF THIS SHEET IS 70 TO BE THE REVISION LEVEL OF THE DOCUMENT.
NOTES

1. APPLICABLE DASH NUMBER AND REVISION LEVEL TO BE MARKED ON BOARD AT ASSEMBLY
2. INSERT GRIPPLES IN HOLES WITH SQUARE LAND AREA BEFORE COMPONENT INSERTION
3. SOLDER COMPONENTS TO CIRCUIT SIDE OF BOARD PER PARAGRAPH 4.32 OF TEC WORKMANSHIP MANUAL
4. 050 MAX SOLDER OR LEAD PROJECTION ON CIRCUIT SIDE OF BOARD
5. Q1 - Q4: 2N3741 MAY BE SUBSTITUTED FOR 2N3740.

PARTS LIST ISSUED

SNT 10F1

P.W. ASSY-
POWER SUPPLY
NOTES:
1. ALL RESISTORS AND DIODES ARE ON .400 CENTERS.
2. ALL DIODES ARE TEC-102.
3. COMPONENTS MUST BE INSTALLED SO THEY LAY FLAT ON PRINTED CIRCUIT BOARD.
4. INSERT DRIPLETS IN HOLES WITH SQUARE LAND AREA BEFORE COMPONENT INSERTION.
5. SOLDER COMPONENTS TO CIRCUIT SIDE OF PCB PER PARAGRAPH 4.3.2 OF TEC WORKMANSHIP MANUAL.
6. .050 MAX SOLDER OR LEAD PROJECTION ON CIRCUIT SIDE OF BOARD.
NOTES
1. APPLICABLE DASH NUMBER AND REVISION LEVEL "FA" ARE MARKED ON BOARD AT ASSEMBLY.
2. INSERT GRIPPLES IN HOLES WITH SQUARE LAND AND AREA BEFORE COMPONENT INSERTION.
3. SOLDER COMPONENTS TO CIRCUIT SIDE OF BOARD.
   PER REFERENCE 1.52 "TEC WORKMANSHIP MANUAL.
4. USE MAX SOLDER PASTE PROJECTED ON CIRCUIT SIDE "U" FIGURE.
   CEMENT CRYSTAL TO BOARD USING S-254 RESINWELD.
5. POSITION SWITCH AS SHOWN TO SELECT 60 Hz.

PARTS LIST ISSUED

SHT 10F1
PCB ASSY - TIMING
GENERATOR TTY
02-310
NOTES:

1. APPlicable DASH NUMBER AND REVISION LEVEL TO BE MARKED ON BOARD AT ASSEMBLY.
2. INSERT GRIPPLETS IN HOLES WITH SQUARE LAND AREA BEFORE COMPONENT INSERTION.
3. SOLDER COMPONENTS TO CIRCUIT SIDE OF BOARD PER PARAGRAPH 4.3.2 OF TEC WORKMANSHIP MANUAL.
4. OSG MAX SOLDER OR LEAD PROJECTION ON CIRCUIT SIDE OF BOARD.
5. ALL TRANSISTOR CANS TO HAVE SPACERS UNDERNEATH.

PARTS LIST ISSUED

PCB ASSY—LINE MEM & CHAR GEN—TTY

SN: 933061

CAPACITORS—SELECTED FOR CABLE MATCHING
(LONG COAX RUNS = USERS OPTION)
NORMAL CONFIGURATION: A60, A61, A62 NOT USED

JUMPER (NEAR A152 PIN 7) IS USED
R7, R20, R21 NOT USED.
NORMAL CONFIGURATION: JUMPER INSTALLED.

COMPONENTS A80, A81, A92, R7, R20 & R21 ARE NOT USED FOR NORMAL CONFIGURATION.

NOTES

△ APPLICABLE DASH NUMBER AND REVISION LEVEL TO BE MARKED ON BOARD AT ASSEMBLY.

1 INSERT GRIPLETS IN HOLES WITH SQUARE LAND AREA BEFORE COMPONENT INSERTION.

2 SOLDER COMPONENTS TO CIRCUIT SIDE OF BOARD.

3 PER PARAGRAPH 4.52 OF TEC WORKMANSHIP MANUAL.

4 ONLY MAXIMUM CUSTOMER PROJECTION ON CIRCUIT IS REQUIRED.

△ ALL TRANSISTOR CANS TO HAVE SPACERS UNDERNEATH.

△ HEAT SINK 740025 TO BE INSTALLED ON ALL 1404 UNITS. (12)

PARTS LIST ISSUED

SHT 10F1

PW ASSY
PAGE MEMORY
TTY
NOTES
1. APPLICABLE DASH NUMBER AND REVISION LEVEL TO BE MARKED ON BOARD AT ASSEMBLY
2. INSERT GRIPESTS IN HOLES WITH SQUARE LAND AREA BEFORE COMPONENT INSERTION
3. SOLDER COMPONENTS TO CIRCUIT SIDE OF BOARD PER PARAGRAPH 4.32 OF TECH WORKMANSHIP MANUAL
4. 050 MAX SOLDER OR LEAD PROJECTION ON CIRCUIT SIDE OF BOARD

PARTS LIST ISSUED
NOTES:
1. APPROPRIATE DASH NUMBER AND REVISION LEVEL TO BE MARKED ON BOARD AT ASSEMBLY.
2. INSERT GRIPPLES IN HOLES WITH SQUARE LAND AREA BEFORE COMPONENT INSERTION.
3. SOLDER COMPONENTS TO CIRCUIT SIDE OF BOARD, PER PARAGRAPH 4.3.2 OF TECHNICAL WORKMANSHIP MANUAL.
4. DO NOT SOLDER OR LEAD PROJECTION ON CIRCUIT SIDE OF BOARD.
5. CEMENT CRYSTAL TO BOARD USING S-254 RESIN WELD.
6. ALL TRANSISTOR CANS TO HAVE SPACERS UNDERNEATH.

PARTS LIST ISSUED

S/P B ASSY
FUNCTION CONTROL TTY
NOTES:

1. APPLICABLE DASH NUMBER AND REVISION LEVEL TO BE MARKED ON BOARD AT ASSEMBLY.
2. INSERT GRIPILETS IN HOLES WITH SQUARE LAND AREA BEFORE COMPONENT INSERTION.
3. SOLDER COMPONENTS TO CIRCUIT SIDE OF BOARD PER PARAGRAPH 4.3.2 OF TEC WORKMANSHIP MANUAL.
4. DO NOT SOLDER OR LEAD PROJECTIONS ON CIRCUIT SIDE OF BOARD.
5. ALL TRANSISTOR CANS TO HAVE SPACERS UNDERNEATH.

PARTS LIST ISSUED

JHT 10F1

PC.B. ASSY—TTY INTERFACE
NOTES:
1. APPLICABLE DASH NUMBER AND REVISION LEVEL TO BE MARKED ON BOARD AT ASSEMBLY.
2. SOLDER COMPONENTS TO CIRCUIT SIDE OF BOARD PER PARAGRAPH 4.32 OF TEC WORKMANSHIP MANUAL.