

## VT101 Hot Line Troubleshooting Card

These troubleshooting procedures are the latest hot line information. For more information refer to the *VT101 Series Pocket Service Guide* (EK-VT101-PS-001).

### SET-UP FEATURES

To change parity, hold the **SHIFT** key down then press the **P** key. Each time the **P** key is pressed, it advances to the next setting (Figure 1).

#### Modem

SET-UP on the VT102 and VT131 (Figure 2).

To change the modem features, hold down the **SHIFT** key then press the left arrow (←) key.

To change the parity within the modem feature, hold down the **SHIFT** key and press the **P** key. Each time the **P** key is pressed, it advances to the next setting.

The transmit and the receive baud rate are changed in the normal manner.

To change the modem control feature, hold down the **SHIFT** key and then press the **M** key. Each time the **M** key is pressed, it advances to the next setting.

#### Printer

To change the printer features, hold down the **SHIFT** key and then press the right arrow (→) key.

To change the parity within the printer features, hold down the **SHIFT** key and then press the **P** key. Each time the **P** key is pressed, it advances to the next setting.

The transmit and receive baud rate is changed by pressing either the transmit or the receive key.

# SET UP B

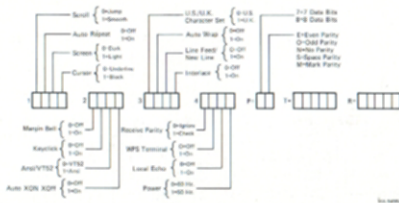


Figure 1 Set-Up B (VT101)

# SET UP B

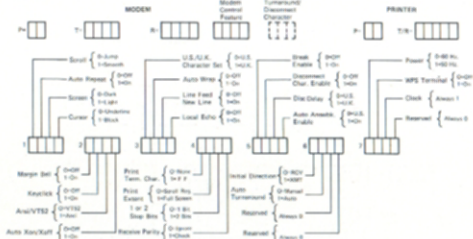


Figure 2 Set-Up B (VT102 and VT131)

SET-UP C

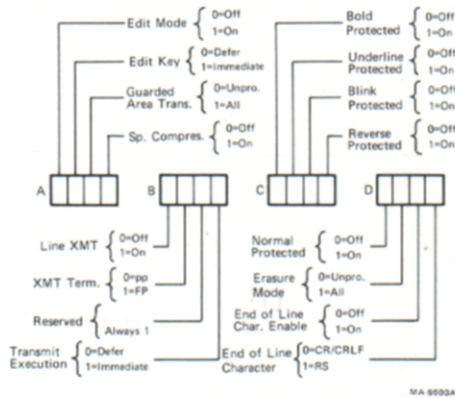


Figure 3 Set-Up C (VT131)

## TROUBLESHOOTING AND TESTING THE VT101 SERIES VIDEO TERMINAL

Table 1 VT101 Self-Test Error Codes

Error Code Character	Terminal Controller Board	Replace	
		Keyboard	Incorrect Escape Sequence
2	X	-	-
4	-	X	-
6	X	X	-
8	X	-	-
:	X	-	-
>	X	X	-
<	X	X	-
@	-	-	X
B	-	-	X
D	-	-	X
F	-	-	X
H	-	-	X
J	-	-	X
L	-	-	X
N	-	-	X

Table 2 VT102 and VT131 Self-Test Error Codes

Error Code Character	Terminal Controller Board	Replace	
		Keyboard	
2	X	-	
4	-	X	
6	X	X	
8	X	-	
:	X	-	
>	X	X	
<	X	X	
@	X	-	
B	X	-	
D	X	X	
F	X	X	
H	X	-	
J	X	-	
L	X	X	
N	X	X	
P	X	-	
R	X	-	
T	X	-	
V	X	-	
X	X	-	
Z	X	-	
/	X	-	
'	X	-	
b	X	-	
d	X	-	
f	X	-	
h	X	-	
j	X	-	
l	X	-	
n	X	-	

### Terminal Not Plugged In, or No Power at Wall Socket

1. Turn terminal power off.
2. If unplugged, plug in power cord.
3. Check for power at wall socket with your VOM (volt ohmmeter).



### Power Cord Has Internal Short or Open

1. Turn terminal power off.
2. Unplug power cord from wall outlet and then from rear of terminal.
3. Use your VOM to check power cord for continuity.

### Fuse Is Blown

1. Turn terminal power off.
2. Remove fuse from rear of terminal.
3. Use your VOM to check fuse.
4. Replace fuse with a 0.75 A fuse if it is bad. Reinstall fuse if it is good and perform ac voltage check.

### No AC Voltage to Power Supply

1. Turn terminal power off.
2. Remove top cover.
3. Disconnect transformer primary cable from power supply board.
4. Turn terminal power on.
5. Use your VOM to check the ac voltage across pins 1 and 2 on the power supply board primary connector. You should get an ac voltage reading of about 115 Vac (U.S.) or the applicable wall outlet voltage. You can compare this voltage reading to the voltage at the wall outlet.
6. If voltage is incorrect, replace power supply board.

If voltage is correct, turn terminal power off and connect primary ac cable to power supply board.

7. Perform secondary ac voltage check.

### No Secondary Voltage From Transformer

1. Turn terminal power off and disconnect transformer secondary cable from power supply board.
2. Turn terminal power on and check ac voltage across pins 12 and 6 of transformer secondary cable. You should get a voltage of 16 Vac.
3. Check ac voltage across pins 3 and 1 of transformer secondary cable. You should get a voltage reading of 10 Vac.

4. If voltages in steps 2 and 3 are not present, replace transformer.

If voltages are present, turn terminal power off and connect transformer secondary cable to power supply board.

5. Perform terminal controller board voltage checks.

### Incorrect or No DC Voltage to Controller Board

1. Turn terminal power on and check for the following voltages on terminal controller board.\*

+12 Vdc at pin 5  
 -12 Vdc at pin 7  
 -23 Vdc at pin 8  
 +5 Vdc at pin 12

2. If all voltages are present, power supply board is supplying correct dc voltages.

If negative voltages are not present, replace power supply board.

If positive voltages are not present, go to next paragraph.

---

\* For pin 1 through pin 12 voltages, see Physical Functional Diagram.



### Keyboard Voltage Check

1. Disconnect keyboard cable from rear of terminal.
2. Turn terminal power on and check for +12 Vdc at pin 5 of terminal controller board connector.
3. If +12 Vdc is present, replace keyboard.

If +12 Vdc is not present, go to next paragraph.

### Terminal Controller Board Voltage Checks

1. Remove terminal controller board.
2. Turn terminal power on and check for +12 Vdc at pin 5 on power supply board connector.
3. If +12 Vdc is present, replace terminal controller board.

If +12 Vdc is not present, go to next paragraph.

### Video Monitor Board Voltage Check

1. With terminal controller board still removed, turn terminal power off and disconnect video monitor board cable from top of power supply board.
2. Turn terminal power on and check for +12 Vdc at pin 5 on power supply board connector.
3. If +12 Vdc is not present, replace power supply board.

If +12 Vdc is present, replace video monitor board.

#### NOTE

If after replacing the video monitor board the +12 Vdc is still not present, go to next paragraph.

### Flyback Assembly and/or CRT Cable Shorting or Bad

1. Turn terminal power off and disconnect 8-pin flyback transformer and vertical choke cable from video monitor board.
2. Turn terminal power on and check for +12 Vdc at pin 5 on power supply board connector.
3. If +12 Vdc is present, replace flyback assembly.

If +12 Vdc is not present, turn terminal power off and reconnect 8-pin flyback transformer and vertical choke cable.

4. Disconnect 4-pin yoke cable from video monitor board.
5. Disconnect circular cable connector from neck of CRT by pulling connector straight out.
6. Turn terminal power on and check for +12 Vdc at pin 5 on terminal controller board connector.
7. If +12 Vdc is not present, replace video monitor board.

If voltage is present, replace CRT assembly.

### INCORRECT RESPONSE AT POWER-UP

The following paragraphs describe how to troubleshoot various incorrect responses at power-up.

#### Cursor Does Not Appear in Upper Left Corner of Screen

1. Screen brightness may be too low. Enter SET-UP and adjust screen brightness by pressing brightness key ( ).
2. Video monitor board is bad.
3. CRT or flyback is bad.

### **Random LEDs Flash, Cursor Does Not Appear on Screen**

1. Check position of voltage switch.
2. If voltage switch is set correctly, go to paragraph describing No AC Voltage to Power Supply.

If voltage switch is not set correctly, turn terminal power off and use a small screwdriver to set voltage switch to correct voltage.

3. If a problem still exists, it may be an error in the power-up self-test indicating a bad ROM. Replace terminal controller board.

### **Random Characters Appear on Screen**

1. Replace terminal controller board.

### **Cursor Appears on Screen but Terminal is Inoperable**

1. Press **SET-UP** key.
2. If terminal cannot enter SET-UP, replace terminal controller board.

If terminal enters SET-UP, then

- a. Remove the top cover.
- b. Turn terminal on and check for the following voltage on the terminal controller board.

+12 Vdc at pin 5

-12 Vdc at pin 7

-23 Vdc at pin 8

+5 Vdc at pin 12

### **BOARD CONFIGURATIONS**

When installing a substitute main character ROM, remove jumper W6 and insert the ROM in socket E4.

If replacing VT131 controller, be sure to remove this ROM from old board and install it on new controller.

## PHYSICAL FUNCTIONAL DIAGRAM

### PHYSICAL FUNCTIONAL DIAGRAM BOARD PINS AND SIGNALS

#### NOTE

All voltage readings are based on a line voltage of 115 Vac. Your readings may vary according to any difference in your line voltage.

#### Video Monitor Board

##### S102 (Flyback Assembly Cable Connector)

Pin	1	Grid supply
	2	Focus
	3	Horizontal drive
	4	+12 Vdc
	5	Boost
	7	Ground

##### S103 (CRT Yoke Cable Connector)

Pin	1	Vertical
	2	Horizontal
	3	Horizontal
	4	Vertical

#### Power Supply Board

##### J2 (Video Monitor Board Connector)

Pin	1	+12 return
	2	Ground
	3	Direct drive video
	4	+12 Vdc
	5	Vertical drive
	6	Horizontal drive
	7	Video ground

##### P3 (Secondary Cable Connector)

Pin	1-2	20 Vac
	1-3	10 Vac
	2-3	10 Vac
	6-9	32 Vac
	6-12	16 Vac
	9-12	16 Vac
	7-10	18 Vac
	8-11	30 Vac
	5	Ground

##### J4 (Primary Cable Connector)

Pin	1-2	Primary
	3	Primary
	4	Primary
	5	Primary

#### Terminal Controller Board

##### J1 (Controller to Power Supply Board Connector)

Pin	1	Direct drive video
	2	Video ground
	3	Vertical drive
	4	Horizontal drive
	5	+12 Vdc
	6	Return (ground)
	7	-12 Vdc
	8	-23 Vdc
	9	Return (ground)
	10	Return (ground)
	11	+5 Vdc
	12	+5 Vdc

##### J4 (Printer Connector – VT102 and VT131)

Pin	1	Protective ground
	2	Transmitted data
	3	Received data
	6	Data set ready
	7	Signal ground
	20	Data terminal ready

##### J2 (EIA Connector)

Pin	1	Protective ground
	2	Transmitted data
	3	Received data
	4	Request to send
	5	Clear to send (not VT101)
	6	Data set ready (ignored in VT101)
	7	Signal ground
	8	Carrier detect
	11	Secondary request to send
	12	Speed indicator (FDX B) or secondary receive line signal detect (HDX A)
	13	Secondary clear to send (not VT101)
	14	Secondary transmit data (not VT101)
	19	Secondary request to send (not VT101)
	20	Data terminal ready
	22	Ring indicator (not VT101)
	23	Speed select



## Keyboard

### J2 (Keyboard)

Pin	1	Speaker
	2	Speaker
	3	+12 Vdc
	4	Ground
	5	Data

### 20 mA Board (Option)

#### J5 (20 mA Board)

Pin	1	Protective ground
	2	Transmit
	3	+12 Vdc
	4	Receive
	5	Signal ground
	6	+5 Vdc
	7	-12 Vdc

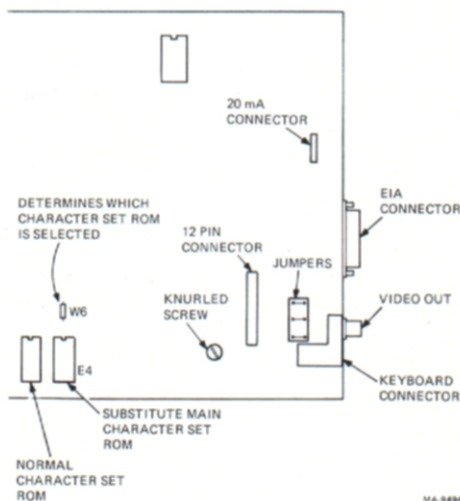


Figure 4 VT101 Terminal Controller

When replacing the terminal controller board, check to see if a substitute main character set is installed (E4) and jumper W6 is removed.

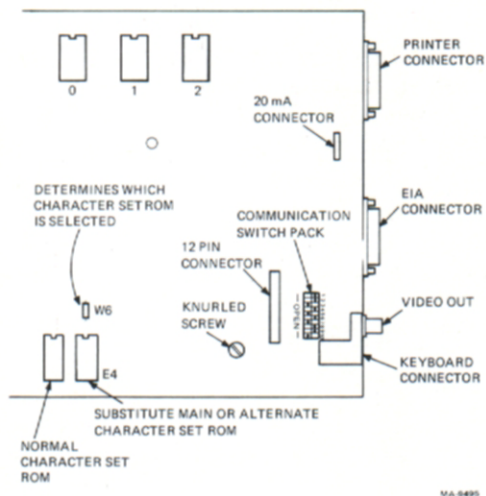


Figure 5 VT102 Terminal Controller

When replacing the terminal controller board, check the following.

When installing a substitute main character set (E4), check that jumper W6 is removed.

When installing an alternate character set (E4), do not remove W6.

Check that the communication switch is set to the same position as the old terminal controller board.

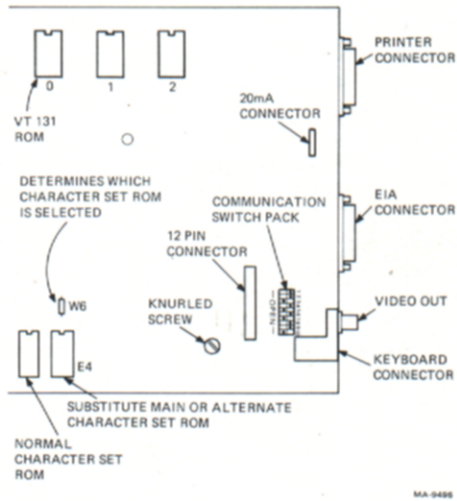


Figure 6 VT131 Terminal Controller

When removing the terminal controller board on a VT131, remove ROM 0 from the bad controller board. ROM 0 is then installed into socket 0 of the new terminal controller board.

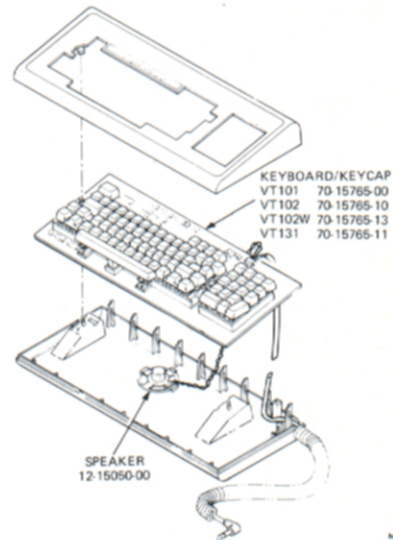


Figure 7 Terminal

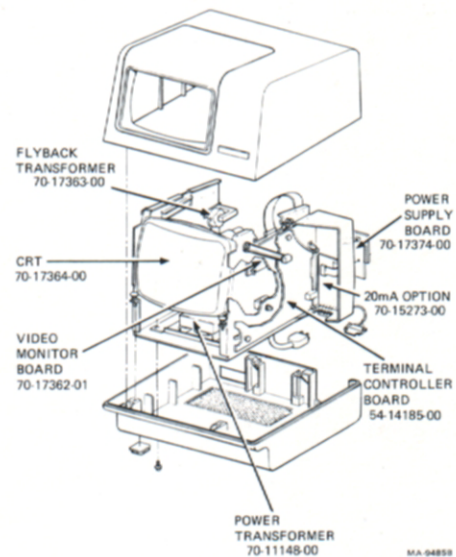
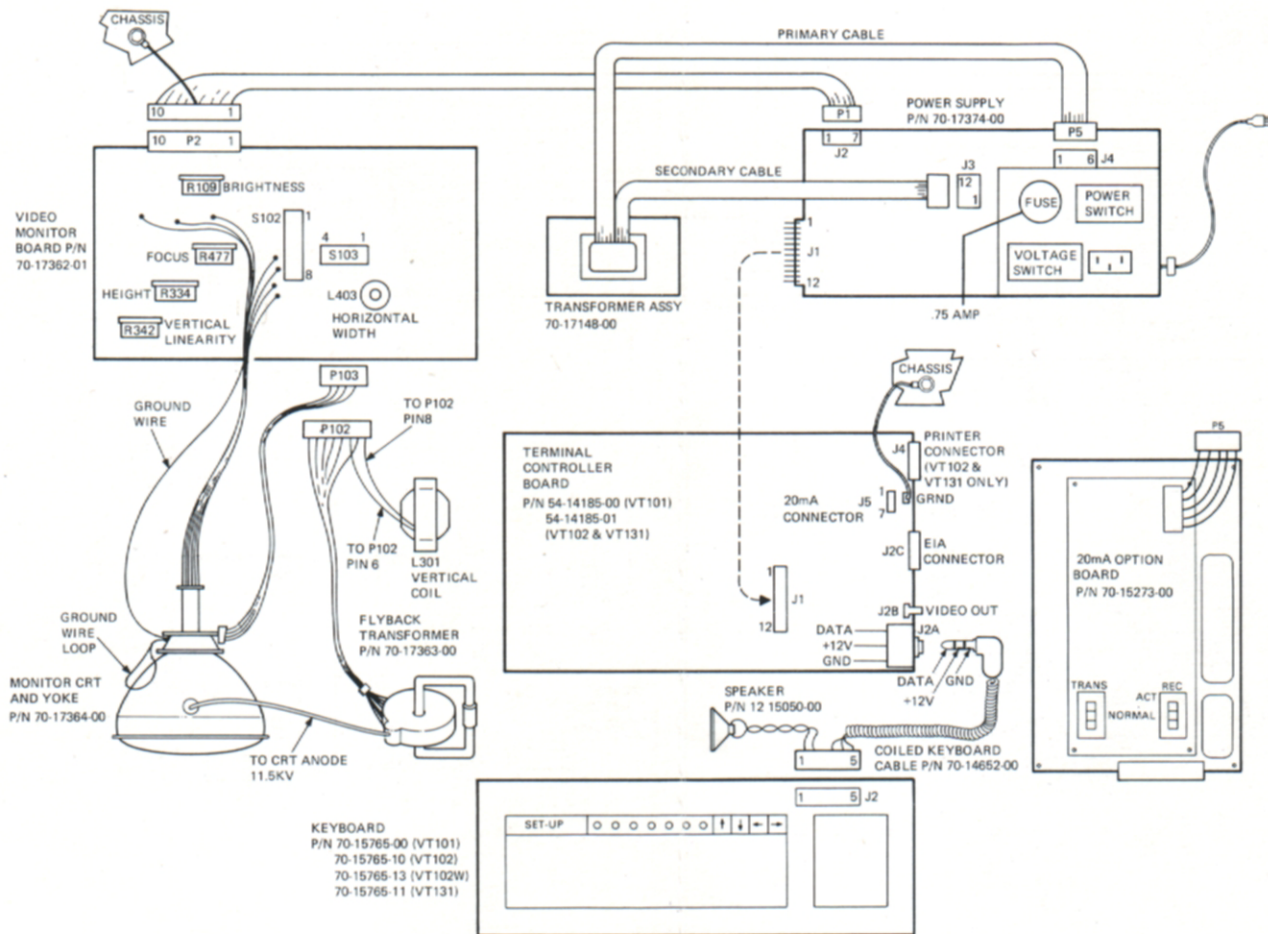


Figure 8 Keyboard



MA-9501

Figure 9 Block Diagram

1st Edition, February 1983

Copyright © 1983 by Digital Equipment Corporation  
All Rights Reserved.

Printed in U.S.A.