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VT110 user's guide

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VT110 user's guide

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FIGURES

TABLES

CHAPTER 1
GENERAL INFORMATION

1.1 PURPOSE AND USE

This document provides information for the installation, use, and maintenance of the VT110.

1.2 SUPPORT DOCUMENTS

The following support documents are required.

DPM Terminals System Application Programmer's Manual	AA-C878A-TC
DECdataway User's Guide	EK-ISB11-UG
VT110 Maintenance Print Set	MP00678
VT110 User Guide	EK-VT100-UG

1.3 GENERAL DESCRIPTION

The VT110 comprises a VT100 video terminal and a DPM01 DECdataway terminal multiplexer housed in a common enclosure. The VT100 and the DPM01 are logically separate; they share only a common power supply. The VT100 terminal may be connected to a system via one of the DPM01's I/O ports, or it may be used separately as a standard terminal with no connection to the DPM01. Figure 1-1 shows in block diagram form how the VT110 may be used in either of these configurations. The VT100 video terminal is fully described in the *VT100 User Guide*. The information contained in that manual is fully applicable to the VT110 when the video terminal portion is not connected to the DPM01.

The DPM01 is a microprocessor-based peripheral interface device that provides four logically and physically separate ports for connecting serial I/O devices to a DECdataway. Either a 20 mA current loop or an EIA RS232-C interface may be used on these ports. As part of a Distributed Plant Management (DPM) system, the DPM01 may be used both as a remote electrical interface and as a data preprocessor for interactive terminals such as DEC LA36, VT52, or VT100. When used as a preprocessor, the DPM01 services character interrupts and performs functions normally done by a software terminal driver. The DPM01 is not limited to ASCII terminals. Transparency modes and the wide range of terminal attributes that can be accommodated allow the DPM01 to function as a data communications interface between a DPM host and many UART-compatible serial data I/O devices. The *DPM Terminals System Applications Programmer's Manual* presents the full range of DPM01 applications.

In keeping with the reliability, availability, and maintainability objectives of DPM systems, the DPM01 has no switches or jumpers that require setting. Unit swapping can be done readily without regard to the DPM system configuration. All necessary information is contained either in the form of jumpers in the connectors that attach to the DPM01 or is down-line loaded from the host processor.

The DPM01 block diagram in Figure 1-2 shows a microcontroller module and two interface modules. The microcontroller module contains a microprocessor and the ROM-resident programs that operate the DPM01 and perform diagnostic testing when a maintenance mode is selected. The two interface modules handle the communication paths between the DPM01's associated terminals and the host processor.

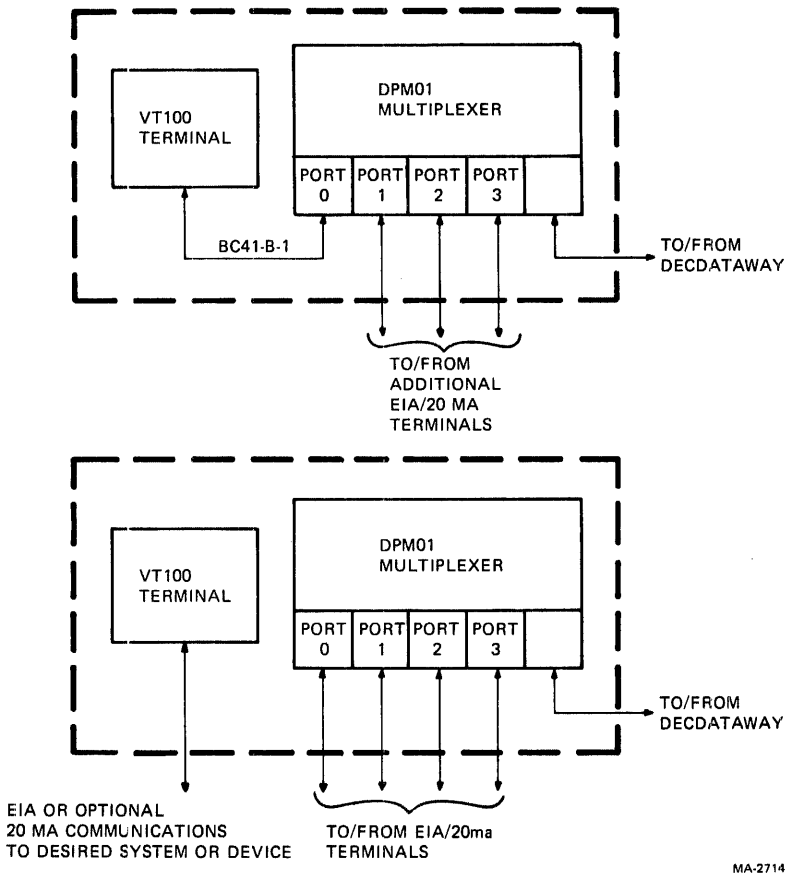

Figure 1-1 Typical VT110 Applications

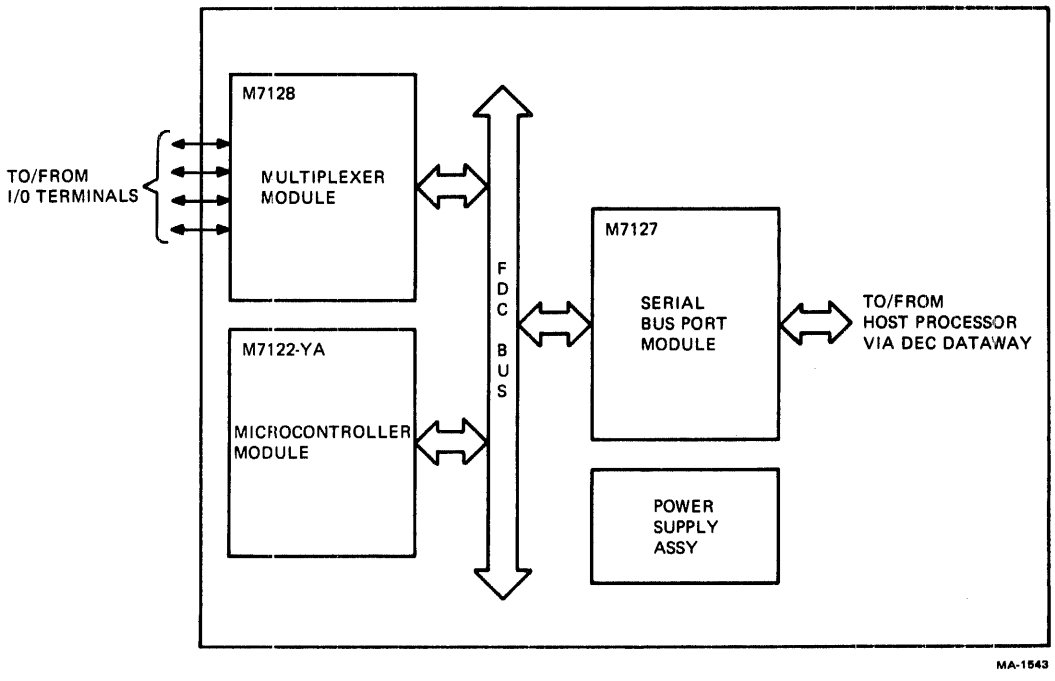

Figure 1-2 DPM01 Block Diagram

Normally, DPM01 operation is controlled by the host processor, thus there are no operator controls required. Every time the DPM01 is turned on, the microcontroller runs a series of resident diagnostic programs to ensure that the DPM01 is operating correctly. After the test routine has been successfully completed, the DPM01 goes on-line to the host processor via the DECdataway. The host processor then runs a program which down-line loads the DPM01 to set the appropriate terminal characteristics for each port. When the DPM01 is operating, the terminals communicate with the microcontroller module that handles all terminal service routines (echoing, character deletion, character recognition, etc.). A message buffer is also set up by the microcontroller and data is stored in the buffer until an appropriate termination character is received (e.g., a carriage return) at which time the data is reformatted into a message and sent via the DECdataway to the host processor. In a similar manner, communication from the host to the DPM01's terminals is reformatted and transferred to the terminals by the microcontroller.

Figure 1-3 shows how a DPM system might be configured with several DPM01s or VT110s installed on a DECdataway. With the arrangement shown, the following address scheme could be used.

0	System broadcast address; not wired into any connector
1–4	Reserved for Field Service use. Address 1 wired to connector per FDM addendum.
5	DPM01 No. 1 port 0 address; wired into connector.
6–8	DPM01 No. 1 ports 1–3 addresses; not wired into any connector.
9	DPM01 No. 2 port 0 address; wired into connector.
10–12	DPM01 No. 2 ports 1–3 addresses; not wired into any connector.

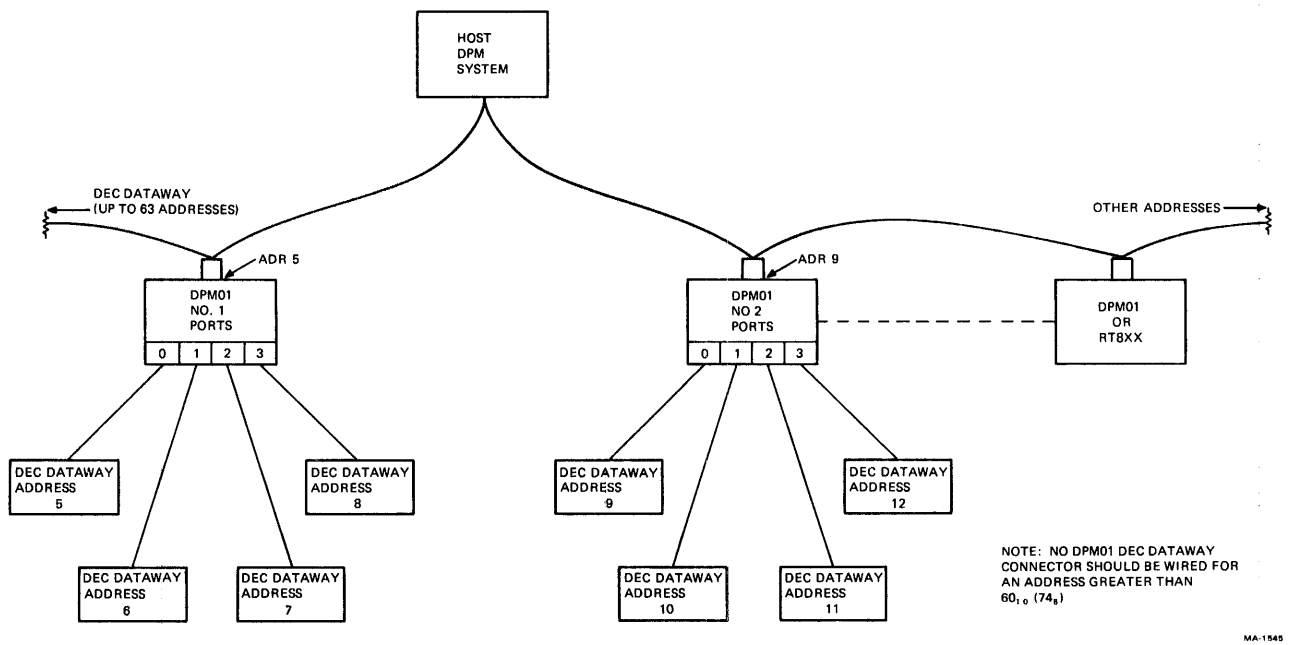

Figure 1-3 Typical DECdataway Addressing Scheme Using DPM01s

A DPM01 DECdataway connector cannot be wired for an address greater than 60 decimal (75 octal); otherwise one or more of the ports of that DPM01 will fall outside the DECdataway addressing range.

1.4 SPECIFICATIONS

Electrical

Line voltage	115 Vac ± 10% or 230 Vac ± 10% nominal
Power line frequency	50–60 Hz nominal
Input current	3 A (typical) @ 115 V 1.5 A (typical) @ 230 V
Power dissipation	50 W

Environmental

Ambient operating temperature limits	0° to 40° C (32° to 104° F)
Ambient nonoperating temperature limits	–40° to 66° C (–40° to 151° F)
Humidity limits	10% to 95%, wet bulb @ 32° C (90° F)

Physical

	Keyboard	Monitor
Height	8.8 cm (3.5 inches)	36.8 cm (14.5 inches)
Width	45.7 cm (18 inches)	45.7 cm (18 inches)
Depth	20.3 cm (8 inches)	36.2 cm (14.25 inches)
Weight	16.8 Kg (37 lbs) total	
Mounting	Two free-standing units, separable up to 1.9 m (6 ft) of coiled keyboard plug cord.	

Terminal interface

Data rate	50–9600 baud
Data format	Asynchronous one start bit, five to eight data bits, one to two stop bits.
Level	20 mA neutral current loop (active or passive) or EIA RS-232-C (signals AA, AB, BA, BB; CCITT V.24 signals 101, 102, 103, 104).

1.5 CONTROLS AND INDICATORS

Mode Switch
A three-position mode switch sets NORM, MAINT, and SUPVR. MAINT position is used for diagnostics; SUPVR position is used for special maintenance features.

Indicators

P0	status of port 0
P1	status of port 1
P2	status of port 2
P3	status of port 3

1.6 APPLICATION NOTES

The operating characteristics of both the VT100 terminal and the DPM01 must be carefully considered if the VT110 is to be used with the VT100 connected to one of the DPM01's ports. The effective use of this configuration requires a thorough knowledge of software operation; consult the DPM Terminals System Applications Programmer's Manual.

No significant operating problems are anticipated except in two instances; when it is desired to receive escape sequences at the terminal, and when the DPM01 CRT delete function is desired. Escape se quences sent by the terminal require transparency or translucency mode in the DPM01.

To use the DPM01 CRT delete function certain restrictions are imposed on the VT100. The 132-column capability, programmable tab stops, or wraparound functions are unusable, and escape sequences sent to the terminal by the host require careful observance of software rules. These restrictions exist because the CRT delete function assumes a VT52 terminal which has only an 80-column display capacity, fixed tab stops every 8 columns, and no auto wraparound function. Therefore, the VT100 characteristics must be set to emulate a VT52.

Display width – 80 columns
Tab stops – every 8 columns
Auto line feed – off
Wraparound – off

Since the DPM01 keeps track of the cursor position in order to delete tabs and generate auto wraparound, escape sequences sent to the terminal from the host must be terminated with a carriage return to reset the cursor position counter.

CHAPTER 2
INSTALLATION

2.1 GENERAL

This chapter contains information required to unpack, inspect, install, and test the VT110. Prior to user installation of the VT110, DEC Field Service personnel must perform an acceptance procedure to ensure that all warranted equipment is operational after delivery. Upon completion of this procedure, the equipment is installed by the user and connected to the DECdataway.

Physical installation of the VT110 consists only of mounting the equipment and connecting power and data cables to the external connectors. There are no internal jumpers or switch settings required. Device addresses on the DECdataway are determined by jumpers in the DECdataway connector. The VT110 assumes that its ports occupy consecutive addresses beginning with port 0 that is the address wired into the connector. Figure 2-1 shows the location of DPM01 connectors, controls, and indicators.

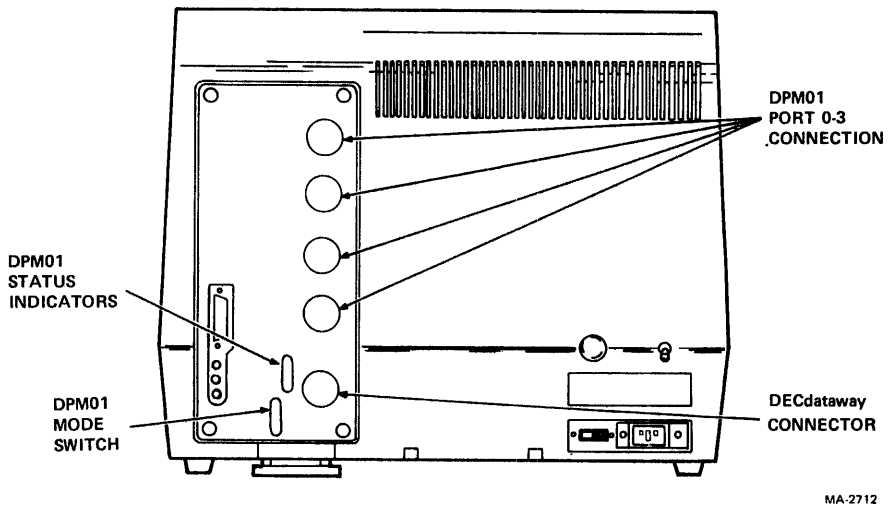

Figure 2-1 VT110 Rear Panel Connectors, Controls, and Indicators

The VT110 is shipped with a short cable for connecting the VT100 to the DPM01 and three sets of cable connectors and pins so that cables can be fabricated for use with terminals having either a male 8-pin Mate-N-Lok connector or a male 25-pin EIA style connector. Connections for the terminals and the DECdataway are made through five 16-pin connectors on the rear of the cabinet. Two prefabricated cables are also available: a BC41-B 9 m (35 ft) EIA null modem cable and a BC41-C 30 m (100 ft) current loop (DPM01 active) cable.

Terminals operated in current-loop interface mode may have cable runs up to 600 m (2000 ft) between them and the VT110. The actual distance permissible varies with data rate and local noise conditions. Table 2-1 is a guide for determining the maximum cable runs permissible for the installation. The cable recommended is three 22 AWG twisted pairs individually shielded (Belden no. 8777, DEC part no. 91-07723). However, since only two pairs are used, an equivalent two-pair cable may be substituted.

Table 2-1 Maximum Cable Length vs Baud Rate

Baud Rate	Cable Length
Up to 600	600 m (2000 ft)
Up to 2400	300 m (1000 ft)
Up to 4800	60 m (200 ft)
Up to 9600	30 m (100 ft)

Refer to the *DECdataway User's Guide,* EK-ISB11-UG, for DECdataway installation instructions.

If an EIA (or CCITT V.24) interface is used between the VT110 and a terminal, the maximum recommended cable run is 10 m (40 ft) regardless of the baud rate.

The VT110 is intended for desk or tabletop mounting in any convenient location. The following factors should determine mounting locations:

Service accessability
Primary power availability
Environmental limitations (Paragraph 1.4)
Routing of data signal cables
Local factors (building codes, personnel safety, etc.).

2.2 UNPACKING

The VT110 should be unpacked by a DEC Field Service representative according to the following procedure:

1. Inspect the shipping container and note obvious signs of damage for possible reporting.
2. Remove the VT110 from its shipping container. Save the container and the packing material in case it is necessary to return the equipment.
3. Remove the polyethelene cover from the equipment.
4. Remove any tape or foreign materials from the cabinet.
5. Inspect the VT110 for any damage that may have occurred during shipment. Report any damage to the carrier and DIGITAL.
6. Check the contents of the shipping container against the packing list. Report any discrepancies to the carrier and DIGITAL.
7. Place the VT110 where it will be tested.

2.3 FIELD ACCEPTANCE PROCEDURE

1. Set the keyboard in front of the terminal and plug the keyboard coil cord into the receptacle on the rear of the terminal.

2. Set the power selector switch to correspond with the line voltage and the power switch to off (down).

3. Connect the power cord to the power cord receptacle on the rear of the terminal and plug the other end of the power cord into a nearby power outlet.

4. Turn the power switch on. The VT110 automatically performs the power-up self test and either the ON LINE or LOCAL light on the keyboard illuminates. After approximately one minute the cursor will be visible in the upper-left corner of the screen. If the VT110 does not come on refer to the self-test instructions in Chapter 1, part 4 of the *VT100 User Guide.*

5. Set the DPM01 mode switch to NORM. Verify that the DPM01 runs a power-up diagnostic. Indicators P0–P2 will illuminate in sequence as the diagnostic runs.

6. Set the mode switch to MAINT and verify that the DPM01 restarts the diagnostic.

7. Attach a 20 mA loopback plug (DEC part no. 7015625) to connector P0 and observe that indicator P3 illuminates in sequence, indicating a successful pass through the external loop test.

8. Repeat step 7 with the loopback plug attached to connector P1.

9. Repeat step 7 with the loopback plug attached to connector P2.

10. Repeat step 7 with the loopback plug attached to connector P3.

11. Attach an EIA loopback plug (DEC part no. 7015626) to connector P0 and observe that indicator P3 illuminates in sequence, indicating a successful pass through the external loop test.

12. Repeat step 11 with the loopback plug attached to connector P1.

13. Repeat step 11 with the loopback plug attached to connector P2.

14. Repeat step 11 with the loopback plug attached to connector P3.

15. Set the mode switch to NORM. Connect the VT110 to the DPM host system using the DECdataway controller test cable (DEC part no. 7014152). Use either port connector.

NOTE

The user's DECdataway cable may be used in place of the test cable if convenient. If a problem occurs, revert to using the test cable for terminal acceptance.

16. Boot the RSX11-M test system or use the diagnostic tasks with the user's software. Run MAINDEC-11-DZKCH and MAINDEC-11-DZKCI error free for a minimum of five minutes each.

17. Connect the 20 mA port-to-port test cable (DEC part no. 7015627) between P0 and P1. Connect the EIA port-to-port test cable (DEC part no. 7015628) between P2 and P3.

18. Run DPMTST in loopback mode to perform a complete host-to-VT110 external loopback system test (about 30 minutes).

19. Attach connector VT COMM to connector P1 on the rear access cover using the BC41-B-1 cable supplied with the VT110.

20. Refer to Chapter 1, part 2 of the *VT100 User Guide.* Set up the terminal attributes as follows:

ANSI/VT52 Mode	**VT52**
Bits per character	8
Characters per line	80
Parity	Off
Receive speed	300 baud
Transmit speed	300 baud
Tabs	Columns 8,16,24,32,40,48,56,64,72
Wraparound	Off

The setting of all other attributes does not affect the operation of the test.

21. Exit from set-up mode and place the terminal on-line.

22. Set the mode switch to MAINT, then immediately to SUPVR. Observe that the DPM01 runs the diagnostic sequence. At the completion of the sequence a message will be displayed on the screen giving the DECdataway octal address of P0 if a DECdataway connector is installed, or address 77 if no connector is present.

23. Return the mode switch to NORM. The terminal may now be demonstrated on-line using the DPMTST diagnostic in the terminal demonstration mode.

2.4 INSTALLATION

1. Determine the mounting location for the VT110. The keyboard and display units may be separated up to 1.9 m (6 ft).

2. Refer to the *DECdataway Installation and Cable Routing Guide,* Chapter 2 (EK-ISB11-UG) to prepare the DECdataway port connector. Wire the address jumpers to coincide with the DECdataway address assigned to P0 of the VT110. The address cannot be greater than 60 decimal (73 octal).

3. Prepare each terminal cable at the VT110 end as follows:

   a. Strip approximately 3 cm (1-1/4 inches) of sheath from the cable end. Remove the exposed foil shields.

   b. Strip approximately 16 mm (5/8 inch) from each red and black signal wire in the red and green shields. The blue shielded pair is not used.

   c. Twist the drain (bare) wires together and insulate them with a 25 mm (1 inch) length of tubing.

   d. Crimp a female large gold contact pin (AMP P/N 66592-2) onto the drain wires.

   e. If an EIA interface is to be used, twist the two black wires together; otherwise proceed to step f.

   f. Crimp a female contact pin onto each of the remaining wires (three or four depending on step e).

g. Slide a cable clamp (AMP P/N 206322-1) over the assembled cable end. Ensure that all leads are inside the cable clamp body.

h. Refer to Table 2-2. Fabricate and insert jumpers if required; otherwise proceed to step i.

Table 2-2 VT110 Connector Pin Assignments

Interface	Signal	Pin No.
20 mA active (VT110 provides current)	Transmit data source (+)	8
	Transmit data return (-)	6
	Receive data source (+)	12
	Receive data return (-)	10
	Jumper	5-7
	Jumper	9-11
20 mA passive (terminal provides current)	Transmit data positive (+)	7
	Transmit data negative (-)	8
	Receive data positive (+)	11
	Receive data negative (-)	12
EIA	Transmit data	3
	Receive data	4
	Signal ground	6
	Protective ground	16

i. Refer to Table 2-2. Insert the contact pins into the appropriate connector holes, with the red-shielded pair to transmit and the green-shielded pair to receive. Red wires go to + and black wires go to - for a 20 mA interface, or both black wires go to signal ground (pin 6) for an EIA interface.

j. Insert the contact pin on the drain (bare) wires into connector hole 16.

k. Slide the cable clamp and secure it to the cable clamp body using the screws provided. Ensure that the clamp is sufficiently tightened to provide strain relief for the pin connectors.

m. Ensure that all connections are secure in the connector assembly.

4. Prepare the terminal ends of each cable to be used with a 20 mA current loop terminal as follows:

a. Remove approximately 5 cm (2 inches) of sheath from the cable end.

b. Remove the foil shields and drain (bare) wires from the red and green twisted pairs. Cut off the blue pair flush with the end of the sheath; it will not be used.

c. Strip approximately 16 cm (5/8 inch) of insulation from each of the conductors.

d. Crimp a female large silver contact pin onto each of the wires.

e. Insert the pins into the Mate-N-Lok connector body as follows:

Shield Color	Wire Color	Pin No.	Signal
Red	Red	5	Transmit +
	Black	2	Transmit -
Green	Red	7	Receive +
	Black	3	Receive -

5. Prepare the terminal ends of each cable to be used with an EIA terminal as follows:

   a. Remove approximately 5 cm (2 inches) of sheath from the cable end.

   b. Remove the foil shields from the red and green twisted pairs. Cut off the blue pair flush with the end of the sheath; it will not be used.

   c. Twist the two drain (bare) wires together and insulate them with 4 cm (1-1/2 inches) of tubing.

   d. Strip approximately 6 mm (1/4 inch) of insulation from each of the conductors.

   e. Crimp a female small gold pin onto each of the conductors. Insert the pins into the connector body according to the following table.

Shield Color	Wire Color	Pin No.	Signal
Red	Red	3	Received data
	Black	7	Signal ground
Green	Red	2	Transmitted data
	Black	7	Signal ground
Drain wires	Bare	1	Protective ground

CHAPTER 3
OPERATOR'S GUIDE

3.1 GENERAL

This chapter contains instructions for operating the DPM01 multiplexer portion of the VT110 and for running and interpreting the operator's diagnostics.

There are three operating modes for the DPM01: normal, diagnostic, and supervisory. A switch controls mode selection.

Diagnostic mode is entered whenever the DPM01 is powered up or the mode switch is set to MAINT. In this mode, the functions of the microprocessor module, the DECdataway communications module, and the terminal interface module are checked. The tests are performed by the microprocessor module. The status and progress of the tests are indicated by the LEDs on the rear panel. If the keyswitch is left in MAINT position, the DPM01 will continue to cycle through the diagnostic routines as long as no errors are detected. If an error is detected, the unit will halt or exit to normal mode.

Normal mode is entered if the mode switch is set to NORM and the unit has completed running a diagnostic cycle. In this operating mode the ports attempt to come on-line to the host processor. However, if during the running of tests in diagnostic mode, a failure was detected on any of the ports, the affected ports will not come on-line.

Supervisory mode is used to facilitate testing. There are two variations of this mode: mode 1 and mode 2. In mode 1, only port 0 will come on-line; it will do so regardless of any terminal interface hardware failures.

Mode 1 permits the host-resident diagnostic programs to exercise a DPM01 without requiring four DECdataway addresses. Also in mode 1, the address jumpers in the DECdataway connector plug can be verified. Mode 1 is entered by setting the mode switch first to MAINT then immediately to SUPV. In mode 2, all DPM01 parts are dropped off-line and characters entered from the attached terminals will be echoed back to them. This provides an off-line test capability for the terminals and cabling. Mode 2 is entered by setting the mode switch to SUPV while the DPM01 is operating in normal mode.

3.2 INDICATORS

Four indicators on the DPM01 show the state of the four terminal ports when the DPM01 is in normal or supervisory mode. In diagnostic mode these indicators show the progress and status of the diagnostic test routines. Operation of the indicators is summarized in Tables 3-1 and 3-2.

Table 3-1 Normal and Supervisory Mode 1 Indicators

Indicator	Function
P0	State of port 0
P1	State of port 1
P2	State of port 2
P3	State of port 3

Table 3-2 Diagnostic Mode Indicators

Indicator	Function when Lit
P0	M7122YA microprocessor test in process.
P1	M7127 DECdataway communications module test in process.
P2	M7128 terminal multiplexer module test in process.
P3	M7128's terminal cable driver and receiver test in process. At least one loopback test plug must be installed for this test to function.
In normal mode and supervisory 1 mode, each LED indicates that the port is in one of four states:	
Off = reset	Diagnostics have detected an error on that port. It is off-line and the hardware is reset.
On = active	The port is on-line and an application task is reading or writing on the port.
Mostly off, blinking on = off-line idle	The port has not communicated with the host since entering normal mode.
Mostly on, blinking off = on-line idle	The port has communicated with the host since entering normal mode but no applications task is presently reading or writing on the port.

In supervisory mode 2, the LEDs will be either off or on. Off indicates that a failure has been detected by the diagnostic; on indicates that echoing will occur. No port will go on-line in this mode.

3.3 TROUBLESHOOTING

This section contains information for isolating troubles in a malfunctioning unit. The primary troubleshooting tool is the built-in diagnostic routines of the DPM01. The procedures given in this section describe the operation of the diagnostic tests and how to interpret the results.

3.3.1 General Diagnostic Testing

Figure 3-1 shows the procedure to follow if a nonapparent failure occurs. This procedure usually localizes the problem to one of the DPM01's modules or a terminal. The diagnostic test routine should complete within 10 seconds and will continue as long as the mode switch is set to MAINT. If only one loopback plug is available, it should be plugged into successive ports for each pass of the diagnostics until all four ports have been tested. The loopback plug may be moved without generating an error during the test as long as the P2 or P3 LED is not lit while the loopback plug is being removed or inserted. If the DPM01 halts during the diagnostic routine, one of the LEDs should be lit, indicating a failure has occurred on the corresponding module (Table 3-2). If a port failure occurs, the LED which corresponds to that port will not be lit and the DPM01 will return to normal mode.

3.3.2 Echo Test (Supervisory Mode 2)

The echo test is used to test the DPM01's terminals and cabling, and the interface module. This test is initiated whenever the mode switch is set to SUPVR while the DPM01 is in normal mode. The DPM01 is dropped off-line while the echo test is running. All printable characters are echoed as long as the characteristics of the terminals agree with the characteristics for the port in the DPM01. If the DECdataway cable was disconnected or the host processor was not running when the DPM01 entered normal mode and then supervisory mode, the default characteristics will be set for each port. These are 300 baud, 8-bit characters and no parity (LA36).

3.3.3 DECdataway Address Verification

This test ensures that the physical device address wired into the DECdataway connector agrees with the assigned device address. The test is initiated whenever the mode switch is set to SUPVR while the DPM01 is in diagnostic mode. At the completion of the test routine the octal address of port 0 will be printed on a terminal connected to port 1 if it is a 300 baud LA36 type terminal. The DECdataway cable connector must be installed for this test. The test results should be address 77 (octal) if the connector is not installed. Refer to Figure 3-2 for a flowchart of this procedure.

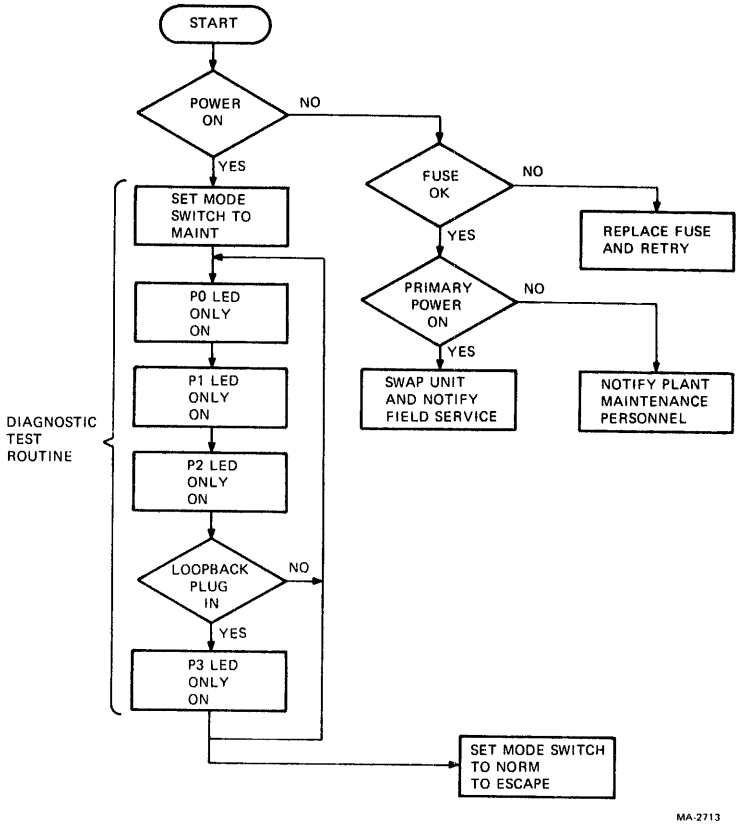

Figure 3-1 Operator's Troubleshooting Flowchart

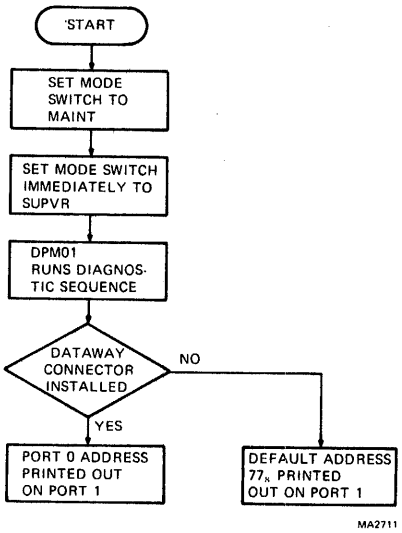

Figure 3-2 DECdataway Address Test Flowchart

APPENDIX A
FDM SERVICE ADDENDUM

An FDM service addendum policy is available as a rider to the service contract on the DPM host system. The FDM addendum pertains only to terminals connected to the DECdataway. The general terms of the FDM addendum are:

> The customer assumes responsibility for first level maintenance by identifying any malfunctioning terminal and replacing it with a spare terminal which the customer has purchased for that purpose. DEC Field Service personnel will maintain a stock of spare parts and effect the actual repair of any fault.

Customer's Responsibilities

1. To purchase one or more DPM01 terminal multiplexers defined in the agreement. They will be extra terminals, kept only as spare units, and therefore no maintenance charge will be made for them.

2. To provide storage space for the spare terminals and a maintenance area near the distributed plant management (DPM) host system. The maintenance area should have a work surface, several ac power receptacles, and adequate lighting. An area like this may be necessary even without the FDM addendum, since in many cases a terminal will be operating in an environment where it should not be opened for service. The maintenance area should have a DECdataway port, with address one, available at the workbench in order to use on-line diagnostic tasks in the DPM host system to verify the on-line operation of a repaired terminal.

3. To assign maintenance personnel who will replace a malfunctioning terminal, return the failing unit to the maintenance area, and notify the local DEC Field Service office.

DEC Responsibilities

1. To keep sufficient spare parts on hand, and expertise, to repair FDM terminals.

2. To repair any malfunctioning VT110 that the customer has returned to his maintenance area, by replacing the defective field replaceable unit.

3. To perform complete operational checks, including necessary cleaning on any repaired VT110, so that unit can be effectively used as a spare.

Normal Sequence of Events

1. The FDM terminal operator notifies supervisory or maintenance personnel of any fault.

2. The fault is verified and identified by use of the internal diagnostics.

3. The defective VT110 is removed and a replacement is installed. If the unit is malfunctioning, the customer's maintenance personnel will get a spare of the same type from storage and replace the malfunctioning on-line unit.

4. The customer's maintenance personnel return the malfunctioning unit to the work area and notify the local DEC Field Service office.

5. The local DEC office schedules a service representative to repair the unit and check it out so that it can be stored for use as a spare unit.

NOTE

This procedure under the FDM addendum does not preclude the DEC Field Service representative from troubleshooting any FDM terminal problem at the terminal on-line location if that becomes necessary.

APPENDIX B
DECdataway CONNECTOR ADDRESSING DATA

Terminal Address		Address Jumper (Fig. 2-5)	Terminal Address		Address Jumper (Fig. 2-5)
Octal	Decimal	Connected Between Contacts	Octal	Decimal	Connected Between Contacts
1	1	3&4, 5&6, 7&8, 9&10, 12&15	41	33	5&6, 7&8, 9&10, 12&15
2	2	3&4, 5&6, 7&8, 9&10, 12&16	42	34	5&6, 7&8, 9&10, 13&16
3	3	3&4, 5&6, 7&8, 9&10	43	35	5&6, 7&8, 9&10
4	4	3&4, 5&6, 7&8, 12&15, 13&16	44	36	5&6, 7&8, 12&15, 13&16
5	5	3&4, 5&6, 7&8, 12&15	45	37	5&6, 7&8, 12&15
6	6	3&4, 5&6, 7&8, 13&16	46	38	5&6, 7&8, 13&16
7	7	3&4, 5&6, 7&8	47	39	5&6, 7&8
10	8	3&4, 5&6, 9&19, 12&15, 13&16	50	40	5&6, 9&10, 12&15, 13&16
11	9	3&4, 5&6, 9&10, 12&15	51	41	5&6, 9&10, 12&15
12	10	3&4, 5&6, 9&10, 13&16	52	42	5&6, 9&10, 13&16
13	11	3&4, 5&6, 9&10	53	43	5&6, 9&10
14	12	3&4, 5&6, 12&15, 13&16	54	44	5&6, 12&15, 13&16
15	13	3&4, 5&6, 12&15	55	45	5&6, 12&15
16	14	3&4, 5&6, 13&16	56	46	5&6, 13&16
17	15	3&4, 5&6	57	47	5&6
20	16	3&4, 7&8, 9&10, 12&15, 13&16	60	48	7&8, 9&10, 12&15, 13&16
21	17	3&4, 7&8, 9&10, 12&15	61	49	7&8, 9&10, 12&15
22	18	3&4, 7&8, 9&10, 13&16	62	50	7&8, 9&10, 13&16
23	19	3&4, 7&8, 9&10	63	51	7&8, 9&10
24	20	3&4, 7&8, 12&15, 13&16	64	52	7&8, 12&15, 13&16
25	21	3&4, 7&8, 12&15	65	53	7&8, 12&15
26	22	3&4, 7&8, 13&16	66	54	7&8, 13&16
27	23	3&4, 7&8	67	55	7&8
30	24	3&4, 9&10, 12&15, 13&16	70	56	9&10, 12&15, 13&16
31	25	3&4, 9&10, 12&15	71	57	9&10, 12&15
32	26	3&4, 9&10, 13&16	72	58	9&10, 13&16
33	27	3&4, 9&10	73	59	9&10
34	28	3&4, 12&15, 13&16	74	60	12&15, 13&16
35	29	3&4, 12&15	75	61	12&15
36	30	3&4, 13&16	76	62	13&16
37	31	3&4	77	63	No jumpers used
40	32	5&6, 7&8, 9&10, 12&15, 13&16			

NOTES

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