

CHAPTER 5 MISCELLANEOUS ROUTINES

This routine acquires a single character from the keyboard. If used in a program, GET_CHAR does NOT make the program pause and wait for input (unlike the INPUT statement of BASIC). Instead, it returns a character only if one was received since the last time the program retrieved input.

If a character was previously typed, GET_CHAR stores it in a specified string variable. If no character was typed, this variable will be a "null" (empty) string.

In certain application programs, GET_CHAR can be useful because it allows you to interrogate the operator of the program without requiring that he respond at any particular point in the program's execution. An example follows at the end of this section.

GET_CHAR(Character)

Character The name of a string variable. We suggest a mnemonic name such as C\$. This variable will be set by GET_CHAR either to the null string or to the character detected by the routine. CHARACTER cannot be omitted from the statement.

1. SYS(1) takes on the numeric code of the next ASCII character received by the terminal. However, you must type an entire line terminated by a **RET** before even the first character is available to SYS(1).

GET_CHAR: ACQUIRE SINGLE CHARACTER FROM TERMINAL

Operation

Statement Form

Argument
Descriptions

Related Routines

Restrictions

1. Unlike the FIND_CURSOR routine, GET_CHAR echoes any character you type. Some characters may not be echoed if the GET_CHAR statement is in a tight loop.
2. GET_CHAR properly retrieves the character SPACE (ASCII 32). However, comparison statements in MINC BASIC generally fail to distinguish SPACE from NULL (ASCII 0).

Consider:

```
10 GET_CHAR (C$)\REM Get a character
20 IF C$><CHR$(0) THEN 100
30 GO TO 10

.
.
.

100 REM Process received character
```

In this sequence, C\$ will be a SPACE if one was typed, but the program will not branch to line 100, because line 20 will fail to distinguish SPACE from NULL.

Error

?MINC-F-Variable name required for argument x
The argument you entered was not a valid string variable name.
Repeat the statement with a valid name.

Example

```
10 REM DEMONSTRATION OF GET_CHAR ROUTINE
20 REM *****
30 FOR I=0 TO 10000
40 GET_CHAR(C$)
50 IF C$='S' THEN 100
60 PRINT I,SIN(I*PI/50)
70 NEXT I
80 REM *****
90 REM GOES TO LINE 100 IF CHARACTER 'S' IS TYPED
100 STOP
```

This program prints 10001 sine values unless interrupted by a stroke of the S key. Any character you type while the program is running is received by the GET_CHAR statement on line 40. The IF statement on line 50 checks to see whether an S was typed. If S was typed, the program branches to line 100 and stops; otherwise, the program keeps printing I and the sine expression.

CHAPTER 6

CHANGING OPERATING MODES ON THE MiniMINC TERMINAL (SETUP)

The MiniMINC terminal is a member of a new generation of computer-related devices that not only give their users a large number of useful operating characteristics but also have a significant amount of built-in intelligence and memory. The latter two attributes permit you to choose operating characteristics by keyboard command rather than by setting hardware switches. Selecting these characteristics is accomplished in what is called setup mode.

Enter setup mode whenever you become aware that the terminal is set to a parameter that is inconsistent with your immediate objectives — when you want to change the background shade, for example, or increase or decrease screen contrast. You may have to change the setup parameters when a previous user has abandoned the system without restoring the terminal to its normal operating state. Checking the setup parameters is a routine step in troubleshooting the system (see “TROUBLESHOOTING,” below).

You should have access to a MiniMINC terminal while reading the following section so that you can execute the commands in question and get first-hand evidence of their effect.

You can enter setup mode at any time by pressing the SETUP key at the upper left corner of the MiniMINC keyboard. This causes the Setup A display to appear on the screen, as shown in Figure 4. At this point, all transmissions from MiniMINC to the

WHEN TO USE SETUP MODE

HOW TO USE SETUP MODE

terminal are suspended until you strike the SETUP key again. There is also a secondary display, Setup B, which is discussed later in this section.

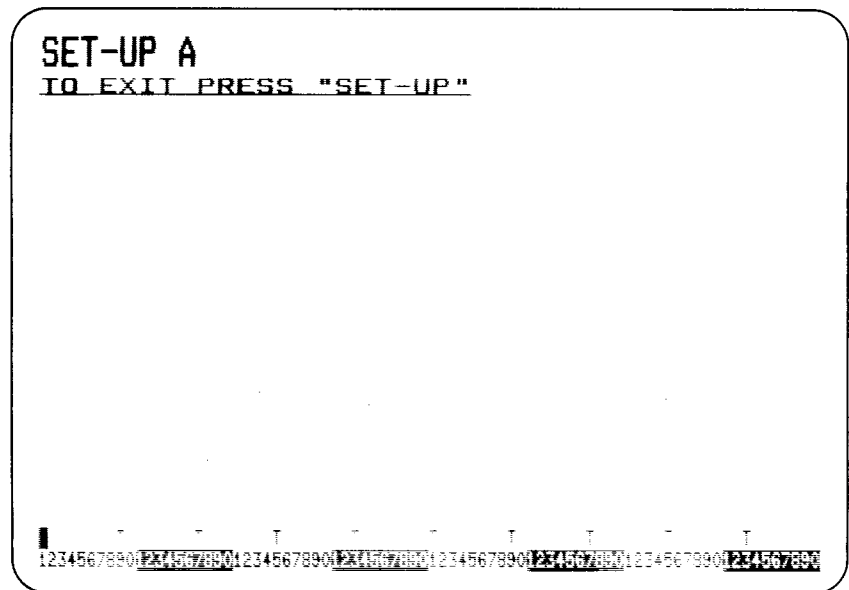


Figure 4. Setup A Display

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You can leave setup mode at any time by pressing the SETUP key a second time. For the present, leave the setup A display on the screen.

NOTE

Entering setup mode does not erase your text from the character storage memory in the terminal but only replaces it temporarily on the screen with the setup displays. (Note that any graphics display details remain on the screen with the setup information.) When you press the SETUP key a second time to leave setup mode, your former text is restored. The only setup mode keys that DO erase the terminal character storage memory are the 9 key, the 0 key, and the SHIFT/R key. These keys are described in this section.

Setup A

* Screen contrast. The contrast of the screen is increased by the up-arrow key (↑) and decreased by the down-arrow key (↓). Hold down each of these keys and notice the change in the screen contrast.

- * Tab stops.

NOTE

Tab stop settings on the terminal are ignored by the MiniMINC system. The tab stop setting procedure is given here for completeness, but you should not expect these settings to affect text output by your MiniMINC programs.

You can change the tab stop setting by pressing the 2 key. Tab stops are shown on the screen by the letter T, which appears at various points along the list of numbers (the Ruler) at the bottom of the Setup A display. This Ruler defines the number of character columns on the screen. To change a tab stop, move the cursor to the position above the desired column and then press the 2 key. (The left- and right-arrow keys, the tab key, the return key, and the space bar all move the cursor without affecting setup conditions.) If there is already a tab stop at the column when you press the 2 key, that stop is cleared. If there is no previous tab in the column, a T appears, meaning that a tab stop is set at that position. You can repeat this operation as many times as there are character columns on the screen.

- * Tab clear. See note under "Tab stops," above. To clear all tab stops, press the 3 key.

- * Local mode. The MiniMINC terminal can operate in two modes, local and remote. In the former, the screen image can be modified by operating the keyboard, but no data are transmitted to or received from the MiniMINC system. In remote mode, anything displayed on the screen (even the characters that you type) is received from a remote source — in this case, the MiniMINC system. Since a terminal that will operate properly in local mode will normally operate properly in remote, local mode is useful for confirming that display problems are not the fault of the terminal.

To put the terminal in local mode, press the 4 key. This action will turn on the LOCAL lamp at the top of the keyboard. If you leave setup mode with the terminal set to local, the characters you type will appear on the screen but will not be sent to the MiniMINC system.

The normal MiniMINC terminal operating mode — allowing standard communication with the MiniMINC system — is re-

mote. To return to remote mode, press the 4 key again. This will cause the on line lamp to turn on.

* Screen width. The 9 key controls the width of the screen in columns. Press this key and observe that the ruler along the bottom of the screen changes. The screen is now 132 columns wide. Press the key again and the ruler reverts to its normal width of 80 columns. THE NORMAL 80-COLUMN WIDTH IS EXPECTED BY MiniMINC GRAPHIC ROUTINES. The graphic routine `DISPLAY_MODE` allows you to select screen widths of 80 or 132 characters; use `DISPLAY_MODE` rather than setup mode for this purpose.

NOTE

Character data is lost from the character storage area when the 9 key is pressed.

* Terminal test. The 0 key starts a test procedure inside the MiniMINC terminal which checks the keyboard and portions of the terminal's memory. Pressing this key generates a rapid series of character displays on the screen. If the test is successful, it ends by restoring the permanent setup mode parameters (see the next item) and exiting from setup mode.

If the test fails, error information is generated on the keyboard lamps and the terminal screen. See "Troubleshooting MiniMINC" for more information.

NOTE

Pressing the 0 key also erases any text (but not graphics) that was in the terminal character storage memory before you entered setup mode.

* Saving setup conditions. The `SHIFT/S` key saves in the terminal's control memory whatever terminal conditions are currently specified. These parameters will remain in the control memory even when the terminal is turned off. Saved parameters are restored when the power is turned on again, at the completion of the terminal test, and when you press `SHIFT/R` in setup mode.

CHANGING OPERATING MODES ON THE MiniMINC TERMINAL

NOTE

Be careful with the SHIFT/S key. Do not save setup mode parameters unless you are sure that they will not interfere with the needs of other users of the MiniMINC system. See Figures 4 and 5 for standard MiniMINC parameters.

* Restoring previously saved setup conditions. The SHIFT/R key RESTORES to control memory whatever operating parameters have been previously saved — in the case of a new machine on which no variant parameters have been saved, those shown in Figures 4 and 5.

* Answer back message. SHIFT/A elicits "A=" from the terminal, after which the user of certain non-MiniMINC systems may enter an answer-back message for system use. This feature is not used by the MiniMINC system. If you inadvertently type SHIFT/A, respond to "A=" with a carriage return.

The remaining features of setup mode are accessed by means of Setup B, which you enter by pressing the 5 key. This causes the screen to display the pattern shown in Figure 5. You can restore the Setup A display by pressing the 5 key a second time — but leave the Setup B display on the screen while you read the following.

Setup B

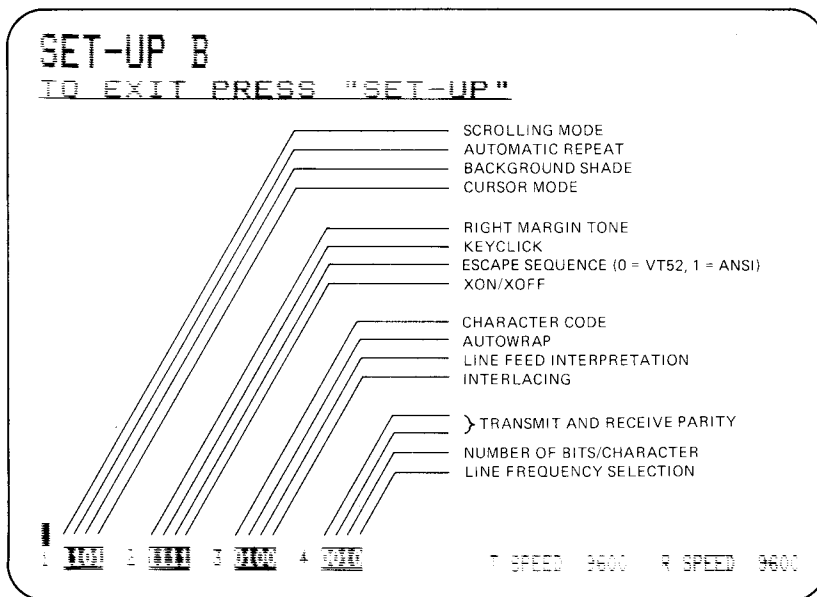


Figure 5. Setup B Display

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NOTE

If you wish only to verify that your terminal is properly set up for MiniMINC programming, compare the Setup B display on your screen with Figure 5, which shows a set of values that is compatible with all MiniMINC routines.

If your screen reveals a different setup from that indicated in Figure 5, press SHIFT/R and then press the 5 key again. If your setup still differs from that defined in Figure 5 in some positions, reset these positions according to the instructions in this section.

Notice that, in Setup B, the cursor is located at the left end of the groups of 0's and 1's at the bottom of the screen. Each of these digits represents what amounts to an on-off switch, with 0 signifying *off* and 1 signifying *on*. To control the remaining setup mode parameters, move the cursor with the left arrow (←) or right-arrow (→) keys until it is located over a digit you want to change; then press the 6 key. This action changes the number under the cursor either from 0 to 1 or from 1 to 0. Numbering of groups and digits within groups is from left to right and begins with 1.

The effect of each control digit in Setup B is discussed below. Control digits are identified for quick reference in Figure 5.

* Scrolling mode. Digit 1 of group 1 controls scrolling mode. If the scrolling digit is 0, the terminal scrolls by jumping each line of characters up one line. If the scrolling digit is 1, the terminal scrolls with a smooth continuous movement of all affected lines. Smooth scrolling displays characters at a slower rate than "jump" scrolling.

Set this digit to 1 on all MiniMINC systems.

The graphic routine DISPLAY_MODE allows you to select either smooth or jump scrolling; use DISPLAY_MODE rather than setup mode for this purpose.

* Automatic repeat. Digit 2 of group 1 controls the automatic repeat feature for the terminal keys. If this digit is 0, none of the keys repeat. If this digit is 1, most keys will repeat automatically if you hold them down instead of depressing them momentarily. The keys that do not repeat in either case are SETUP, ESC, NO SCROLL, TAB, RETURN, and CTRL. You may choose the set-

ting that you find most convenient.

- * Background shade of screen. Digit 3 of group 1 controls the figure-ground relationship of characters on the screen. If this digit is 1, the screen displays black characters on a white background. If the digit is 0 (the normal setting), the terminal displays white characters on a black background. MiniMINC GRAPHIC ROUTINES INITIALLY EXPECT BLACK BACKGROUND SHADING.

- * Cursor mode. Digit 4 of group 1 controls cursor mode. When this digit is 0, the cursor appears as a flashing underscore character. When this digit is 1, the cursor is a flashing white square on a black ground or vice versa. You can use either setting with MiniMINC.

- * Right margin tone. Digit 1 of group 2 controls the right margin tone. When this digit is 1, a tone sounds when your typed line comes within eight columns of the right margin. The tone does not sound if this digit is 0. You can use either setting with MiniMINC.

- * Keyclick. Digit 2 of group 2 controls the "keyclick" feature of the terminal. If the digit is 1, any keystroke on the terminal produces an audible click. This click provides audible feedback for users who are accustomed to typewriters. If the digit is 0, all the keys are silent. You can use either setting with MiniMINC.

- * Escape sequence mode. Digit 3 of group 2 MUST be set to 1, to comply with the ANSI standard for escape sequences. THIS SETTING IS REQUIRED BY MiniMINC. (If the digit is 0, the terminal emulates the escape sequences used by Digital's VT52 terminal, and MiniMINC routines will not function properly.)

- * Automatic XON/XOFF. Digit 4 of group 2 MUST be set to 1, enabling this feature. REQUIRED FOR ALL MiniMINC OPERATIONS. (With this feature enabled, the processor is automatically commanded to suspend data transmission when the data handling speed of the terminal is exceeded. When the terminal catches up, the processor is automatically commanded to resume data transmission.)

- * Character code selection. Digit 1 of group 3 MUST be set to 0, for ASCII code. REQUIRED FOR ALL MiniMINC OPERATIONS. (A setting of 1 selects the United Kingdom code, which is incompatible with the MiniMINC routines.)

* Autowrap feature. Digit 2 of group 3 **MUST** be set to 1, enabling this feature. (A setting of 1 causes all lines exceeding the width of the screen to “wrap around” to the following line and thus permits displaying lines whose length exceeds the selected screen width.)

* Interpretation of RETURN key. Digit 3 of group 3 **MUST** be set to 0. **REQUIRED FOR ALL MiniMINC OPERATIONS.** (The 0 setting creates a single carriage return character in response to a RETURN keystroke. A setting of 1 appends a LINE FEED character as well, causing the RETURN key to be interpreted as a “new line” function; that is, the carriage return moves the cursor back to the left margin of the current line, and the subsequent line feed moves the cursor down to the beginning of the next, or “new” line.) The MINC system appends a line feed character to all carriage return characters, so when digit 3 is set to 0, the net effect is to generate a new line for each stroke of the RETURN key.

* Interlacing. Digit 4 of group 3 controls the number of scan lines on the screen. If you look closely at characters on the screen, you can see the scan lines running through them. If the interlacing digit is 0, there are 240 scan lines between the top and bottom of the screen. If this digit is 1, an additional 240 lines are interlaced between the normal lines. Interlacing makes characters look smoother, since more lines are used to form characters of the same size. Interlacing may cause a slight apparent jitter in the screen image; this is normal and should be no source of concern. The increased resolution that interlacing provides is useful when photographs of the screen are being made since it reduces the amount of undefined space within each character and thereby increases character definition. You can use either setting with MiniMINC.

* Transmission and reception parity. Set both digits 1 and 2 of group 4 to 0 (no parity). **REQUIRED FOR ALL MiniMINC OPERATIONS.**

* Number of bits per character. Digit 3 of group 4 **MUST** be set to 1 to indicate 8 bits. **REQUIRED FOR ALL MiniMINC OPERATIONS.** (A setting of 0 indicates 7 bits.)

* Line frequency selection. Setting digit 4 of group 4 to 0 configures the terminal appropriately for a 60-Hz AC line; setting this bit to 1 configures the terminal for a 50-Hz line. Users in North America should set this digit to 0.

CHANGING OPERATING MODES ON THE MiniMINC TERMINAL

* Transmission speed of terminal (T SPEED). If you hold the 7 key down, T SPEED cycles through a range of baud rates from 50 to 19,200. T SPEED MUST be set to 9600. REQUIRED FOR ALL MiniMINC OPERATIONS.

* Reception speed of terminal (R SPEED). Controlled similarly to T SPEED, but with the 8 key. R SPEED MUST be set to 9600. REQUIRED FOR ALL MiniMINC OPERATIONS.

Now return your terminal to normal operation by pressing the SETUP key again. Be sure that you have left all the setup mode parameters in their required states (see Figures 4 and 5).

CHAPTER 7 TROUBLESHOOTING

Trouble, for a MiniMINC user, is any system response that violates that user's expectation about how the system should behave. Much more often than not, trouble occurs because you have issued incompatible or inappropriate commands to the system. Assistance in identifying such errors is provided in Book 2, Chapter 16. Make sure you fully understand each command and routine that you use. Pay particular attention to the Restrictions section associated with the discussion of each routine in Books 3 and 4.

Less likely for MiniMINC users, but not to be overlooked, is trouble caused by improper hardware configuration. If the MiniMINC system is to operate correctly, all system interconnections must be appropriately and completely made, power switches must be on, and the system terminal must be set up with the proper operating parameters (see "Changing Operating Modes on the MiniMINC Terminal," above).

MiniMINC systems are fabricated from high quality computer grade components, and all electrical subassemblies are operated under power for an extended period prior to final calibration and testing. This screens out the vast majority of potential failures before the system ever leaves the factory. However, no fault prevention procedure can be perfect, and, over a period of time, faults may develop. For that reason, testing and diagnosing aids are provided with the MiniMINC system. These are discussed below.

1. VT105 self-test. The Setup A 0 command causes the terminal to check the keyboard and its own memory (see

“Changing Operating Modes on the MiniMINC Terminal”). Errors are indicated by the keyboard lamps L1-L4 and/or the presence on the screen of any character other than the cursor after completion of the self-test. If an error is indicated, record the exact lamp condition and screen condition and notify Digital. (Check first to be sure that the keyboard is properly connected to the terminal.)

The VT105 self-test also executes automatically whenever a TEXT_INIT statement is executed.

2. Self-test. Each MiniMINC system is equipped with a diagnostic program in read-only memory that causes the system to exercise and evaluate most of the internal components each time the system is powered up. This program permits, at the user's discretion, exercising the disk drives and the I/O ports.

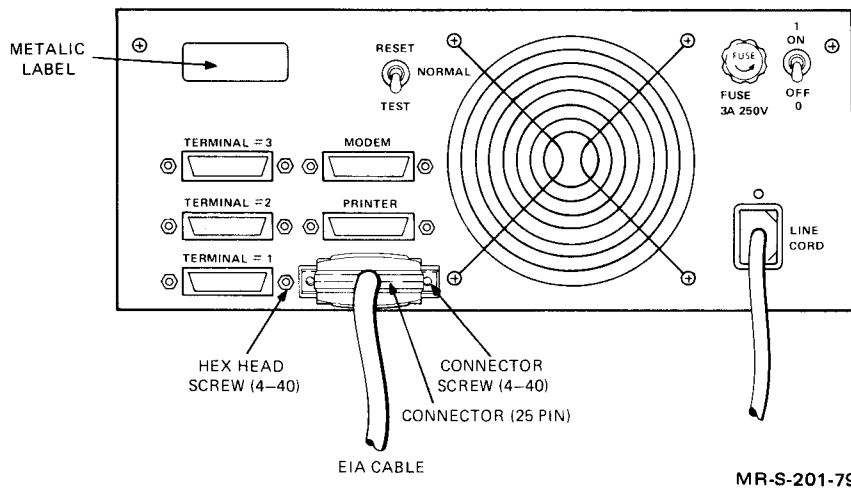
NOTE

More extensive testing is available for the MiniMINC internal components. See Appendix A for information on using the PDT-11/150 System Exerciser program.

TROUBLESHOOTING PROCEDURE

The following list enumerates the more common user-correctable sources of trouble with the MiniMINC system. These should be checked first when the system fails to operate or operates in what appears to be a strange or sporadic fashion.

1. Main power cable is disconnected or loose.
2. A fuse has blown on the terminal or the MiniMINC chassis. To check for a blown fuse, disconnect the system or terminal power cord, remove the fuse holder and visually inspect the fuse. If a fuse has blown, replace it with a fuse of an *identical rating and type*, reconnect the power cord, and turn the system or terminal on. If the fuse blows again, contact your MINC Customer Support Center (see MiniMINC Release Notes).
3. Signal cables between the system and peripheral equipment are disconnected or loose. See Figure 6 for cable connection information.
4. External apparatus is not operating according to expectation and is monopolizing or overrunning the system.



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Figure 6. MiniMINC Cable Connections

5. Diskette is improperly inserted.
6. Wrong diskette has been inserted.
7. Bad diskette has been inserted.
8. System terminal has been set up with inappropriate parameters (see "Changing Operating Modes on the MiniMINC Terminal").

To run the diagnostic program stored in the MiniMINC read-only memory, proceed as follows (references are to Figure 6):

1. Set the MiniMINC terminal power switch to ON. Wait 30 seconds for the terminal to warm up.

If the flashing cursor appears in the upper left hand screen area, go to Step 2. If anything other than a flashing cursor appears on the screen, turn the terminal off, then on. If the fault condition persists, make a record of the screen pattern, and contact your MINC Customer Support Center.

2. Confirm that the disk drive doors are up.
3. Set the MiniMINC mode switch to TEST.
4. Set the chassis power switch to ON.

All chassis lamps except RUN should turn on initially. Then lamps 1 and 2 should blink for 10 to 15 seconds. After

EXECUTING THE MiniMINC SELF-TEST

this interval, lamp 1 should turn off and lamp 2 remain on, indicating a successful preliminary test. If this activity does not occur as described, set power switch off, then on. If test fails three times, contact your MINC Customer Support Center.

5. Press "@" ("SHIFT/2") on the keyboard two or three times at half-second intervals. This action allows the MiniMINC chassis to set its baud rate to match that of the terminal.

Lamp 2 should turn off and the terminal should display:

SCRATCH FLOPPY INSTALLED?

If this does not occur, set chassis power switch off, then on, and repeat the sequence to this point. If the prescribed events do not occur within three tries, contact your MINC Customer Support Center.

6. Insert an initialized diskette in each drive and close doors.

WARNING

This portion of the self-test writes and reads test data over the entire surface of the diskette. **DO NOT USE DISKETTES CONTAINING USEFUL PROGRAM OR DATA FILES.**

7. Type "Y **RET**" on the keyboard. This affirms your wish to run the disk test. The system will respond with:

EIA LOOPBACK TEST?

The loopback test requires a 7421963 loopback connector, not normally provided with MiniMINC systems. Type "N **RET**" to signify that you do not want to run the loopback test.

NOTE

A significant amount of testing of the serial input/output electronics is performed automatically by the self-test before the loopback test is offered. If executed, the loopback test would add to what has already been done by testing the line drivers and receivers.

8. The system now writes and reads data on selected tracks, first on drive 0, then on drive 1. Allow approximately 2 minutes to complete the disk test.

If the disk test is successfully completed, the system displays:

"xxxxxx" (the six digits may have any value)

In this case, go to step 9.

If an error is encountered during the disk test, lamp 1 will turn on. In this case, set the chassis power switch off, then on, and repeat entire test procedure. If an error-free pass cannot be achieved in three tries, contact your MINC Customer Support Center.

9. Momentarily set the mode switch to RESET, then allow to return to NORMAL. Lamps 1 and 2 should blink slowly for several seconds, then lamp 2 should remain on. This signifies that the internal processor and memory tests have been successfully executed. If lamp 1 remains on, repeat this step. If an error-free pass cannot be achieved in three tries, contact Digital Field Service.
10. Press "@" ("SHIFT/2") two or three times at half second intervals. This causes the MiniMINC chassis to set itself to a baud rate that matches that of the terminal. Lamp 2 should turn off and the terminal should display:

READ ERROR

Type start unit number (0 or 1):

or

NO BOOT ON VOLUME

Type start unit number (0 or 1):

Neither of these messages signify an error at this point. After setting its baud rate, the system automatically tries to start itself on the expectation that a diskette with a valid self-starting (bootstrap) routine resides in drive 0. If you have just finished the disk drive test, drive 0 contains a blank diskette and the system so informs you with the "NO BOOT ON VOLUME" message. If no diskette is present, the system issues the "READ ERROR" message and waits for you to insert a system diskette containing an appropri-

MiniMINC SUPPLEMENT

ate bootstrap routine. If one of the above messages does not appear, repeat steps 9 and 10. If you are not successful after three tries, contact your MINC Customer Support Center.

CHAPTER 8 SYSTEM SPECIFICATIONS

MiniMINC CHASSIS

Mechanical

Overall dimensions

20.08" (51 cm) long by 13" (33 cm) wide
by 13.42" (34.1 cm) high

Weight

55 lbs (25.75 kilos)

Temperature

Environmental

Operating

15° to 32° C (59° to 90° F) ambient.

Temperature is derated 1.8° C per 1000 m or 1° F per 1000 ft
for altitude.

Maximum gradient: 11° C per hr (20° F per hr).

Nonoperating

-35° to +60° C

(-30° to +140° F)

Humidity

Operating

Maximum wet bulb: 25° C (77° F)

Minimum dew point: 2° C (36° F)

Relative Humidity: 20% to 80%

Nonoperating

Relative Humidity: 5% to 95% (noncondensing)

**SYSTEM
RELIABILITY**

Disk Life

3 million revolutions/track
with head loaded. The head contacts
5 tracks when loaded.

Seek Error Rate

1 in 10(6) seeks

Soft Read Error Rate

1 in 10(9) bits read

Hard Read Error Rate

1 in 10(12) bits read

NOTE

The above error rates only apply to diskettes that are properly cared for. Seek error and soft read errors are usually attributable to random effects in the head/diskette interface such as dirt or dust. These errors are also sometimes attributable to electrical noise. Errors are called "soft" if they can be recovered from in ten additional tries or less. Otherwise, they are called "hard." Seek error retries should be preceded by an INITIALIZE or RESTORE command.

**DRIVE
PERFORMANCE**

Data Transfer Rate (Disk to RAM Module)

32 μ s/16-bit word (nominal)

Track-to-Track-Move

10 ms/track max

Head Settle Time

20 ms max

Rotational Speed

360 r/min $\pm 2.5\%$; 166 ms/rev nominal

Recording Surfaces per Disk

1

Tracks per Disk

77 (0-76)

Sectors per Track

26 (1-26)

Recording Technique

Double frequency

Bit Density

3200 bits/in at inner track

Track Density

48 tracks/in

Average Access

488 ms

115 V/60 Hz Input: 3.0 A

90-130 V/50 Hz Input: 3.0 A

180-264 V/50 Hz Input: 2.0 A

**POWER
REQUIREMENTS**

DEVICE SIGNALS

All device signals are serial line and compatible with EIA standard RS-232-C. Furthermore, MiniMINC requires the signal DTR (Data Terminal Ready) but does not issue DSR (Data Set Ready). MiniMINC neither requires nor provides CTS (Clear to Send) nor RTS (Request to Send).

Signal designations on 25-pin EIA connectors:

PIN 2: TERM XMIT DATA

PIN 3: TERM RCV DATA

PIN 20: TERM RDY (DTR)

PIN 1: CHASSIS GROUND

PIN 7: SIGNAL GROUND

FLEXIBLE DISKETTES

Description

Mylar base, oxide-coated diskette

Dimensions

Disk: 19.8 cm (7.8 in) diameter

Jacket: 20.26 cm (7.94 in) square

Recording Format

Single-side, industry-compatible according to IBM 3740 floppy disk format, 77 data/address tracks.

Operating

Temperature/Humidity: Diskette temperature must be within operating range before use.

Storage

Temperature: -34° to 52° C (-30° to 125° F)

Relative Humidity: 10% to 80% (noncondensing)

Magnetic Field: Exposure to magnetic field strength of 50 oersteds or greater may result in loss of data.

**KEYBOARD/
MONITOR WITH
GRAPHICS
DISPLAY (VT105)**

**Alphanumeric Terminal
Characteristics**

- * Detached keyboard with plug-in coil cord
- * Screen size: 80 columns by 24 lines or 132 columns by 24 lines
- * Double-width, or double-height double-width characters, selectable on a line-by-line basis
- * Selectable smooth or jump scrolling
- * Blinking cursor, selectable as either underline or reverse video at cursor location
- * Split screen capability
- * 7 x 9 dot matrix characters with descenders
- * Normal or reverse video
- * Nonvolatile RAM storage of terminal operating characteristics
- * Single character underline, boldface, flashing, or reverse attributes accomplished on a whole screen basis whereby all selected characters are given the same attribute. The cursor position is identified by blinking the selected attribute at the cursor location.
- * Composite video output — standard RS170 output for an auxiliary monitor (via BNC connector on rear of terminal)
- * Built-in self-test
- * P4 phosphor (white)

Size

- * Keyboard: 45.7 cm W x 8.9 cm H x 20.3 cm D (18" x 3.5" x 8")
- * Combined depth: 51.4 cm (20.25")

Weight

- * Keyboard: 2.3 kg (5 lbs)
- * Monitor: 14 kg (31 lbs)

Video Connections

- * Composite video output (external BNC connector): Pro-

vides EIA RS170-compatible output generated by combining the video signal with a composite sync signal.

NOTE

Video output does not meet RS170 2-ma DC short circuit requirements.

- * Output impedance: 75 ohms, DC coupled
- * Sync level: 0 volts
- * Black level: approx 0.3 volts with 75 ohm load
- * White level: approx 1.0 volts with 75 ohm load
- * Composite sync waveform: composed of 6 equalizing pulses, 6 vertical sync pulses, and 6 equalizing pulses

Equalizing pulse width: $2.33 \mu\text{sec} \pm 50 \text{ nsec}$

Vertical pulse width: $27.28 \mu\text{sec} \pm 200 \text{ nsec}$

Horizontal pulse width: $4.71 \mu\text{sec} \pm 50 \text{ nsec}$

Horizontal blanking width: $11.84 \mu\text{sec} \pm 50 \text{ nsec}$ (80 column mode) $12.34 \mu\text{sec} \pm 50 \text{ nsec}$ (132 column mode)

- * Front porch: $1.54 \mu\text{sec} \pm 50 \text{ nsec}$
- * Video input (external BNC connector):

External video input signal is "OR'ed" with the internal video signal in such a way that the intensity of the beam at any point on the screen will correspond to the intensity of whichever signal would tend to make the beam brighter at that point.

Input must sync to VT105; the VT105 will not sync to input.

Input impedance: 75 ohms, DC coupled

Black level: 0 volts

White level: 1.0 volts

Maximum continuous input: $\pm 2.0 \text{ volts}$

CHAPTER 9 OPTIONAL SERIAL ASCII EQUIPMENT

Applicable routines:

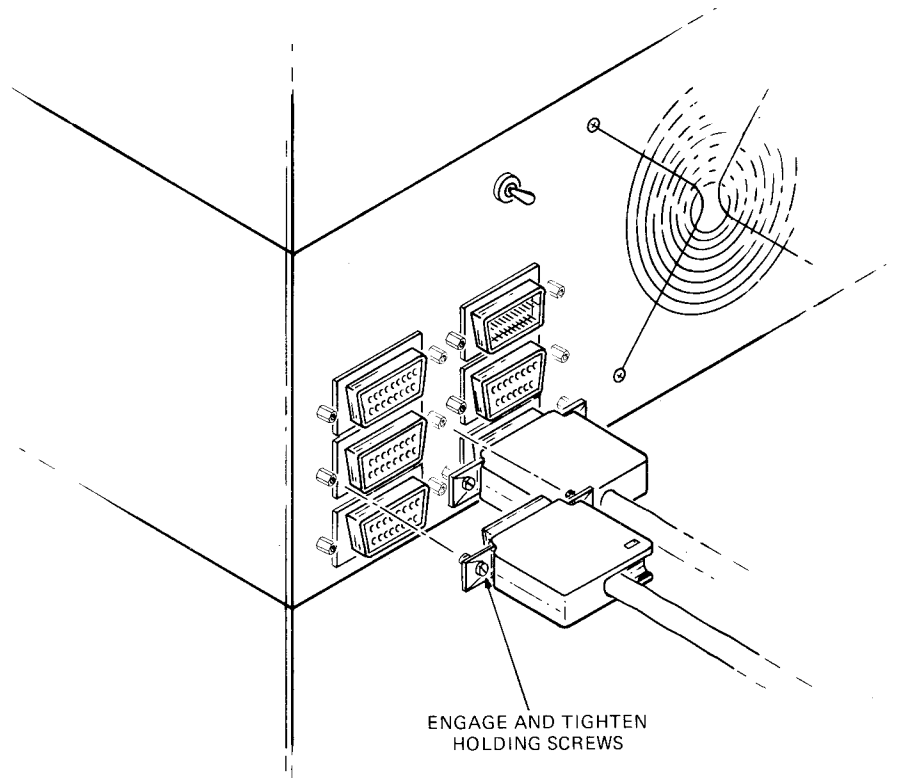
SAVE
COPY
OPEN
SET_SERIAL

MiniMINC can communicate with the following Digital Equipment Corporation printers (configured for EIA, RS-232-C, full duplex transmission):

LA35 DECwriter
LA36 DECwriter II
DECwriter IV

Attach the connector terminating the printer cable to the selected MiniMINC port as shown in Figure 7. If the connector does not mate with the PRINTER or TERMINAL ports, the printer is not configured for EIA RS-232-C transmission and will require modification by Digital Field Service.

Refer to the printer user's manual for information about printer operation.



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Figure 7. Attaching the Serial Input/Output Cable