User Manual

Tektronix

VMREMGR
Video Measurement Remote Graphics

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Preface

Purpose and Audience

This manual explains how to install and use the VMREMGR software package. It is addressed to users of the Tektronix VM700 family of Video Measurement Sets and to system administrators where Video Measurement Sets are used.

Terms and Conventions

PC refers to a personal computer that runs the DOS operating system. Commands you must enter on the computer are shown on a separate line, as shown below:

```
command_name
```

When you are instructed to “enter a command,” it means to type the specified command on the PC keyboard and press the Enter key.

For More Information

For information on installation and use of any one the VM700 family of Video Measurement Sets or its communication capabilities and requirements, refer to the *Option 01 and Option 11 User Manual* of your Video Measurement Set.

For information on installing and using a personal computer or its communication capabilities and requirements, refer to the installation and user’s manuals for your personal computer.

License Statement

Getting Started

Getting Started

This section is two parts: *Getting Started* and *Installation and Setup*. Getting Started describes the capabilities of the software and the requirements for using the software. Installation and Setup describes installing the software and how the Video Measurement Set and PC must be set up for operation of the software.

Capabilities

VMREMGR stands for "Video Measurement Set Remote Graphics," a software package created by Tektronix that turns a personal computer (PC) into an accessory to the Tektronix VM700 family of Video Measurement Sets. This family includes the VM700, the VM700A, and the newest member of the family, the VM700T. In the text, use of the term VM700 implies any of the Video Measurement Sets. Any exceptions are noted where they occur. VMREMGR lets you perform the following VM700 tasks from a properly connected PC:

- display video waveforms being captured by the VM700
- perform most VM700 front panel operations (The only exceptions are the Configure key and the Function key operations.)
- choose options and edit parameters for waveform displays
- issue remote commands to the VM700 from the PC keyboard
- query the VM700 and display its reply on the PC

The VM700 redirects graphics from its display to one of its serial communications ports. The graphics are transmitted through a communications cable to a connected PC as binary encoded data that is unique and proprietary to the VM700. The VMREMGR software interprets the data and displays the graphics on its VGA display.

Requirements

To use the VMREMGR software package, you must have the following items:

- a VM700 Video Measurement set (Version 2.02 PAL or 2.01 NTSC and above)
- a IBM PC or DOS compatible personal computer (XT or better)
- a VGA display

- a two or three-button mouse correctly installed for your PC
- a communication cable configured as specified in *Installation and Setup* on page 1–3
- the VMREMGR software package

Contents of the VMREMGR Package

The VMREMGR package consists of the following items:

- two floppy diskettes labelled “VMREMGR”

  You have been provided with two diskettes, one 5 1/4 inch and one 3 1/2 inch, so you can install the program using either size of disk drive. The contents of the two diskettes are the same: two files, one named vmremgr.exe, which is the program itself, and read.me, which contains a brief description of the VMREMGR program.

- the *VMREMGR Video Measurement Remote Graphics User Manual*

Installation and Setup

This section explains how to install the VMREMGR remote graphics software package, and how to set up the VM700 family of Video Measurement Sets for remote control using this software.

Communications Cable

VMREMGR software requires communication between the VM700 and the PC over a null modem RS232C communications cable connected to their serial communication ports. If you are making your own cable, its connectors must have the connections shown in Table 1–1. These are the minimum connections. The cable must include the RTS and CTS lines; the VMREMGR program uses them to control data flow.

Table 1–1: Typical RS-232C Cable Connections

VM700T (DTE) to Terminal (DTE) (null modem cable)			
VM700 or VM700A Pin No. (DB-25 Female)	**VM700T Pin No. (DB-9 Female)**	**PC Cable End Pin No. (DB-9 Female)**	**PC Cable End Pin No. (DB-25 Female)**
3 (RD)	2 (RD)	3 (TD)	2 (TD)
2 (TD)	3 (TD)	2 (RD)	3 (RD)
7 (Chassis GND)	5 (Chassis GND)	5 (Chassis GND)	7 (SG)
4 (RTS)	7 (RTS)	8 (CTS)	5 (CTS)
5 (CTS)	8 (CTS)	7 (RTS)	4 (RTS)

Installing VMREMGR

To install the VMREMGR software, insert the VMREMGR diskette into a floppy disk drive. (This discussion assumes you are using drive A; but, depending on the type of diskette or computer you are using, it could be drive B.)

Copy the contents of the VMREMGR diskette into the desired directory on the disk drive of your computer, as shown in the following example:

```
copy a:\*.* c:\remote
```

In this example, the contents of the program diskette have been copied to a directory named “REMOTE” on the C drive.

Setting up the VM700

1. Display the Communication Setup screen on the VM700.
   a. Press the Configure button on the VM700. This displays a menu screen with three soft keys at the bottom.
   b. Press the Configure Files soft key. This displays a menu of configuration soft keys.
   c. Press the Communication Setup soft key. This displays the Communication setup screen.
2. Select the Remote Control Port.
   a. Scroll the display up by rotating the control dial until you get to the Remote Control heading. Scroll down one line to the Port: entry. (The default setting is None.)
   b. Touch at the text entry next to the Port: entry. A selection box appears around the text. Now you can select other choices.
   c. By rotating the control dial, display the available serial port choices (Serial Port 0 and Serial Port 1). Leave displayed the one you want to use for communications. Set it by either pressing the text naming the port, or by pressing the Accept Input soft key at the bottom of the screen.
3. Set the communications protocol to None.
   a. Scroll down to the port heading for the remote control port you have selected. For example, if you selected Port 0, scroll down to the Port 0 heading on the screen. Scroll down one line from there to the Protocol entry.
   b. Be sure the text entry for protocol is None (*not* SLIP, which is used for other communication applications). If you need to change the entry, select the text by touching it on the screen. Display the None option by rotating the control dial, and set it by touching the text again or by touching the Accept Input soft key.
4. Select the Baud rate (9600 recommended).
   a. Scroll down one line to the Baud Rate: entry.
   b. Select this item by touching the text. Turn the control dial until the rate you want to use is displayed. A baud rate of 9600 is the optimum rate for the VMREMGR program, though a higher baud rate setting may work.
   c. Set the chosen rate by touching the text entry or the Accept Input soft key.

When running VMREMGR, if the display on the PC appears distorted or inconsistent with what you expect, it indicates a communication problem with the VM700. If you rarely see this problem, the baud rate setting is acceptable. Refresh the display by reselecting the measurement application from the Configure menu.

However, if the display problem occurs often, it could be due to too fast a baud rate. To test this possibility, set up the VM700 remote port communications and the PC with a lower baud rate.

5. Select CTS/RTS flow control.

a. Scroll down another line to the “Flow Control:” entry.

b. Be sure the text entry for flow control is CTS/RTS (Clear to Send/ Request to Send). If you need to change the entry, select the text by touching it on the screen. Display the CTS/RTS option by rotating the control dial, and set it by touching the text again or by touching the Accept Input soft key.

6. Save Settings and Exit Communication Setup.

If you have made any changes to the default Communication settings, save the changes by touching the Update & Exit soft key. You are returned to the ConfigFiles directory.

7. Exit the ConfigFiles Directory.

To exit this directory and return to the last signal display screen, press the Configure button on the front panel. Exit the Communication setup screen by pressing any of the function buttons on the front panel of the VM700.

Operating Basics

Operating Basics

This section explains how to use VMREMGR remote graphics software to perform operations on the VM700 family of Video Measurement Sets from a connected personal computer. The Video Measurement Set family includes the VM700, the VM700A, and the newest member of the family, the VM700T. The text references to VM700 apply, in general, to all members of the family, Any exceptions between instruments are explained in the text.

Requirements

In order to run VMREMGR, you must first do the following tasks:

- Set up communications between a personal computer and a VM700, as described in Installation and Setup.
- Install the VMREMGR software (described in *Installation and Setup*).
- You must either set the search path of the connected PC to find the directory in which you have installed the VMREMGR software, or else change to that directory each time you want to run VMREMGR.
- You set the search path with the DOS command, PATH. You might want to automate this by editing the autoexec.bat file of the PC to include the appropriate PATH command. Refer to your DOS manual for more information on the PATH command and autoexec.bat file.
- Power up the connected VM700.

The rest of this section assumes you have met these requirements.

Starting VMREMGR

To start running VMREMGR, enter the following command (in either upper or lower case) on the PC.

```
vmremgr
```

This starts the program with its default settings. You can change the default settings by entering the command with one of several optional arguments. To display the available arguments on the PC, start VMGEMGR with the `-h` argument (for help) as shown below:

```
vmremgr -h
```

The available arguments are described in the *VMREMGR Arguments* on page 2–3.

When you enter the vmremgr command, if any of the communication parameters are not correctly specified, an error message appears listing the parameters that may need to be adjusted, as shown in Figure 2–1.

```
                        WARNING

Communications with the VM700 is not set correctly.
Any of the following conditions can cause a problem:

VM700 Remote Control port not set for Serial Port 0
VM700 Protocol set for SLIP
VM700 Baud rate not set for 9600
VM700 Flow Control not set for CTS/RTS
RS-232C cable not connected to a pc's COM1
Defective RS-232C cable or cable not connected
VM700 not turned on
```

Figure 2–1: Communication parameters error message

The VMREMGR Display

When VMREMGR is running the PC displays a replication of the current display on the connected VM700. The display refreshes every couple of seconds. The speed at which it refreshes depends on the baud rate and the complexity of the graphics data.

In addition, a special VM cursor (shown in Figure 2–2) appears on the PC screen. You can perform VM700 graphics operations remotely by moving the cursor with the mouse and pressing the appropriate mouse buttons. The available remote operations and associated mouse buttons are described in *PC Remote Controls* on page 2–5.

Figure 2–2: Special VM cursor

VMREMGR Arguments

The VMREMGR command has a number of optional arguments that let you control how the program runs. These arguments are summarized in Table 2–1. The # character represents a number you append to the alpha character. The content and format of the graphics data transmitted to the PC is subject to change with future revisions of the VM700 firmware. Some of the options let you set display colors using numbers that represent various colors. The color index is shown in Table 2–2.

When you start running VMREMGR, the program automatically creates a file named *vmremgr.def* that stores the current argument values and preserves them from one session to the next. So, if you specify an argument, the value you supply becomes the new default; you do not have to specify it again unless you want to change its value.

If you have modified the argument values but want to restore the factory defaults, either delete or change the name of the *vmremgr.def* file, then start VMREMGR. A new *vmremgr.def* file with the factory default values will be created.

Table 2–1: VMREMGR Arguments

Argument	What It Specifies
–p#	The PC serial port to use for communications with the VM700. Use –p1 for COM1 port, and –p2 for COM2 port. The default is 2.
–r#	The VM700 serial port to use for communications with the PC. Use –r1 for Port 0, and –r2 for Port 1. The default is –r1 (Port 0).
–b#	The baud rate at which the PC should communicate with the VM700. The default is 9600.
–f#	Sets the Flow Control type to communicate with the VM700. Setting must match the VM700. Use 1 for CTS/RTS or 0 for XON/XOFF. Default is 1 (CTS/RTS)
–i#	Sets the Parity to match the VM700. Use 0 for None, 1 for Odd, or 2 for Even. Default is 0 (None).
–o#	Sets the Time-out value in seconds. This is the time the system will wait for a response before deciding there is a communications problem. For links such as satellite links with a long delay time, increase this value. Default is 10 seconds.
–m	Sets the phone number that the modem should call when the program initiates a modem connection. If modems are not used, this parameter should be set to None. Default is None.
–a	Names a Modem Initialization File. This file should contain modem setup commands. This file may be created using any text editor. If the –n argument is set to None, this argument is ignored.
–n#	Sets the modem dialing method for either Tone or PUlse. Use 1 for Tone or 0 for Pulse. Default is 1 (Tone).

Table 2–1: VMREMGR Arguments (Cont.)

Argument	What It Specifies
–c#	Sets the Carrier Detect method (how the VMREMGR knows that a connection is made). Use 1 for Carrier Detect and 0 for a response string containing the phrase “CONNECT.” Default is 1 (Tone).
–H	Specifies a SLIP host. The VMBKUP SLIP driver must be installed and operating. A string argument naming the TCP/IP host to connect to is required. Use a space between the “–H” and the host name. Default is None.
–s	Mouse present. This argument is a flag; it is not remembered fro session to session. If this flay is set (that is, if the argument is used), you can use VMREMGR without the mouse, but you lose some of the functionality (such as the ability to use the VM700 soft keys). Default is present.
–k#	The percent of the maximum background intensity at which to display VM700 graphics. For example to specify one quarter the maximum intensity, enter –k25. Default is 50.
–g#	The percent of the maximum graticule intensity at which to display VM700 graphics. For example to specify half the maximum intensity, enter –g50. The default is 80.
–d#	The percent of the maximum intensity of the waveform display at which to display VM700 graphics.
–x#	Index number for the background color. Valid values are 0 to15. The default is 0 (black). See Table 2–2 Color Index.
–y#	Index number for the graticule color. Valid values are 0 to15. The default is 7 (white). See Table 2–2 Color Index.
–z#	Index number for the display color. Valid values are 0 to15. The default is 2 (green). See Table 2–2 Color Index.
–l#	Sets the PC port to use for line printing. This is used in conjunction with the VM700 Configure Copy port. The Copy port should be set the same as the Remote Control port. The format of the Copy port should be set to the type of printer connected to the PC. Access to local printing is accomplished with the hard key menu that is brought up by the mouse or by pressing the PC F6 function key. Use 0 for no local printer, 1 for LPRT1, 2 for LPT2, or 3 for LPT3.
–t	Starts VMREMGR in terminal emulation mode (used for displaying textual output from the VM700. Refer to *Using Terminal Mode* on page 2–10.
–h	Displays a help message describing these arguments.

Table 2–2: Color Index

Index Number	Color
0	Black
1	Blue
2	Green
3	Cyan
4	Red
5	Magenta
6	Brown
7	White
8	Gray
9	Light Blue
10	Light Green
11	Light Cyan
12	Light Red
13	Light Magenta
14	Yellow
15	High Intensity White

PC Remote Controls

To emulate the VM700 controls from the PC, use the mouse and keystrokes shown in Table 2–3.

Table 2–3: PC Controls for VMREMGR

Action on Display	PC Controls
Show VM700 hard key display	3-button mouse: Click center mouse button. 2-button mouse: Click both mouse buttons. Or press the F1 function key.
“Push” a soft key	Put cursor on desired soft key and click left mouse button.
Move Display Horizontally	Hold right mouse button, move cursor horizontally.
Move Display Vertically	Hold shift-right mouse button, move cursor vertically.
Expand or Contract Display Horizontally	Hold left mouse button, move cursor right or left.
Expand or Contract Display Vertically	Shift-left mouse button, move cursor up or down.

NOTE. *When performing actions that involve moving the VM cursor, do not move it wildly across the PC display. This is like spinning the dial back and forth on the VM700. It sends many unnecessary signals back and forth between the instruments, causing delays and unintended changes in values.*

Choosing VM700 Applications

To choose a VM700 application, first display the VM700 hard key display by pressing the center (or left and right) mouse button. The hard key display represents the front panel of the VM700, as shown in Figure 2–3.

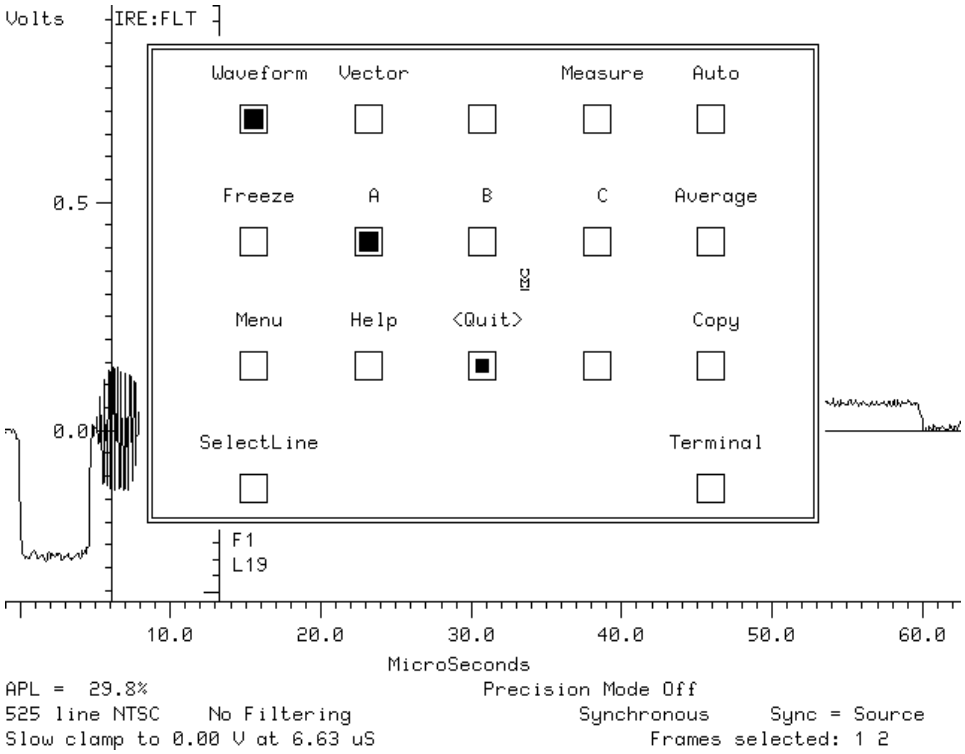

Figure 2–3: VM700 hard key display

To push one of the hard key representations on the menu, put the VM cursor on the hard key and click the left mouse button. For example, pushing the Measure hard key displays a replica of the Measurements submenu, as shown in Figure 2–4.

Controlling Waveform Expansion

Expansion and contraction of the Waveform display occur with respect to the starting location of the cursor. For example, if you begin a vertical expansion from a location above the displayed waveform, the waveform expands, but also shifts upward. But if you start a vertical expansion at the zero volt line, there is no shift.

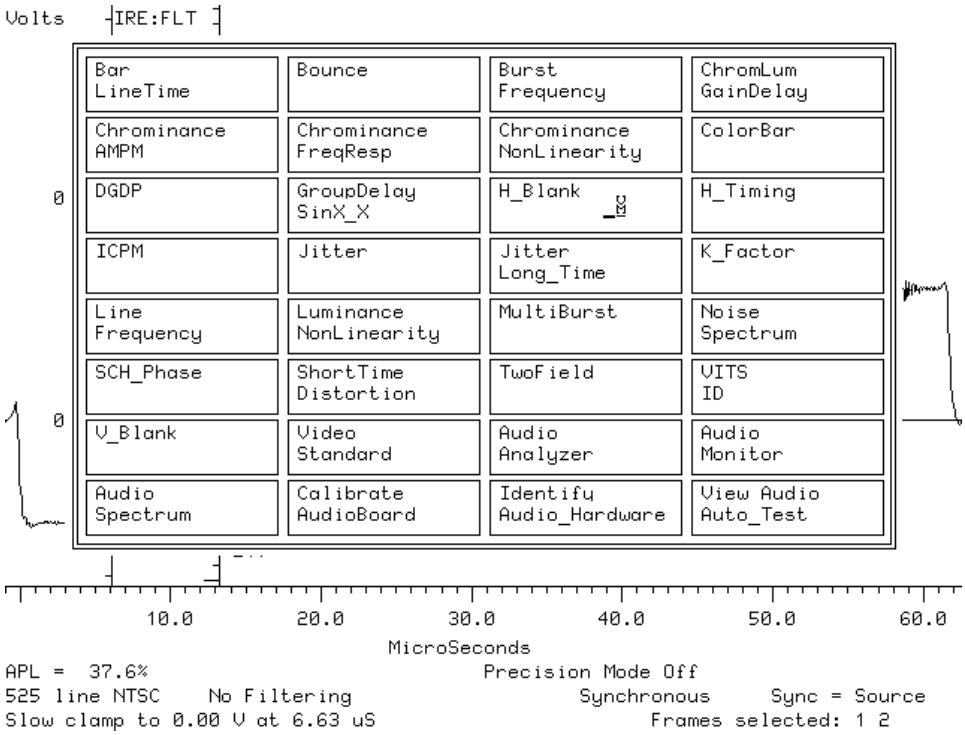

Figure 2–4: The measurements submenu

Controlling Other Measurement Displays

For each type of measurement display, the mouse buttons and keyboard are defined to allow the appropriate type of action.

For example, for the Vector display, the available actions on the VM700 are rotation and expansion, but not vertical or horizontal movement. Thus, when you display the Vector on the PC, the left mouse button performs expand actions, as usual, but the right mouse button performs rotation actions.

As another example, for the ColorBar measurement, the VM700 supports vertical movement and expansion or contraction. Thus, when you display the ColorBar measurement on the PC, the unshifted left mouse button performs a vertical move action, and the unshifted right mouse button a performs vertical expand or contract action.

Displaying Soft Key Options

Some VM700 displays offer choices and parameters you can specify for controlling the display. To display these choices and parameters on the VM700, you press the Menu button on the front panel, and they appear at the bottom of the display as soft keys.

To display the soft key options from the PC, do the following steps:

1. Display the VM700 hard key menu and select the desired waveform or measurement.
2. When the selected waveform or measurement is displayed, display the VM700 Hard key menu again and select the Menu button. The waveform or measurement display reappears with the available soft keys at the bottom of the screen, as shown in Figure 2–5.

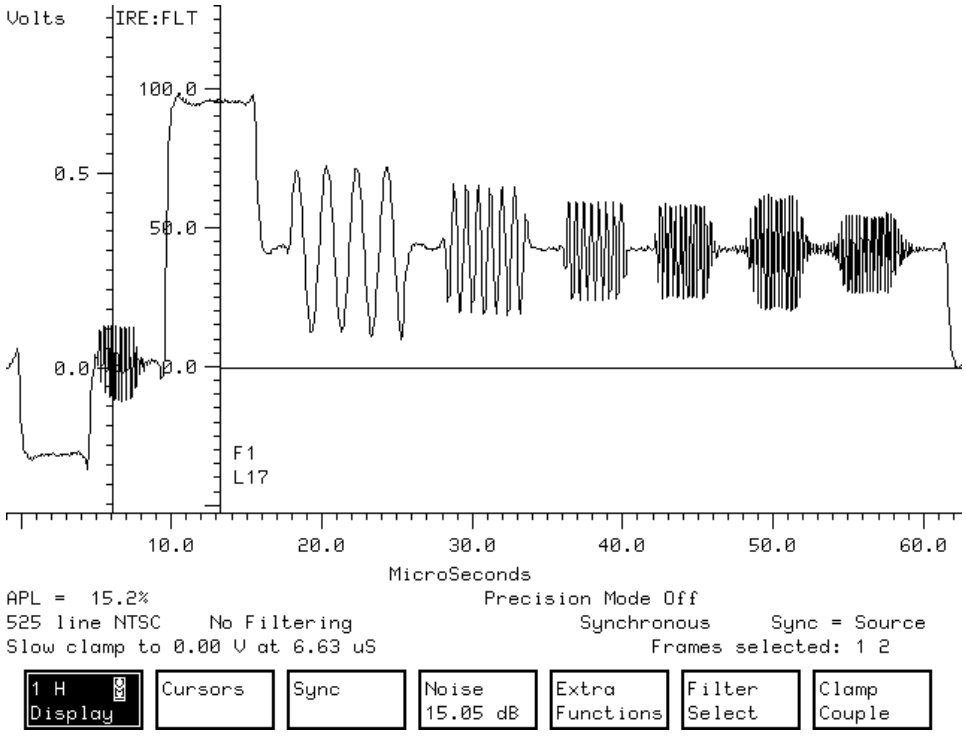

Figure 2–5: Soft key parameters on the PC display

Selecting Soft Keys

On the VM700, you select soft keys by touching them. Selected soft keys are highlighted. If a soft key has a set of sub-choices associated with it, touching that soft key displays the sub-choices as soft keys.

To select a soft key from the PC, put the VM cursor on it and click the left mouse button.

Changing Parameter Values

On the VM700, you modify the value of a parameter-type soft key by touching the soft key and turning the dial. In some cases you keep touching the soft key as you turn the dial; the value is set when you stop touching the soft key. An example is the H Display soft key available for the Waveform function display.

In other cases, you touch the soft key momentarily, turn the dial, then touch the soft key again to set the displayed value. An example is the Noise soft key available with the Vector function display.

To change parameter values for "hold and dial" soft keys from the PC, do the following steps:

1. Put the VM cursor on the desired soft key.
2. Press and hold the left mouse button and move the cursor (left to right to increase the value, right to left to decrease it).
3. Release the left mouse button to set the value.

To change parameter values for "touch and dial" soft keys from the PC, do the following steps:

1. Select the desired parameter-type soft key by putting the cursor on it and clicking the left mouse key. The soft key highlights.
2. Press and hold the right mouse button and move the cursor (left to right to increase the value, right to left to decrease it).
3. When you are satisfied with the displayed parameter value, put the cursor on the highlighted soft key and click the left mouse button. This sets the new value.

Keying In Commands

You can enter VM700 commands from the PC by keying them in on the PC keyboard. When you begin typing on the PC keyboard, a text entry box appears on the PC display showing the characters you type, as shown in Figure 2–6.

The complete set of remote commands you can enter are documented in the *VM700T Video Measurement Set RS-232 Interface Programmer Manual* and in the *VM700A Programmers Reference Manual.*

You can edit the text entry just as you do any PC command entry. To re-display previous command entries, press the up and down arrow keys on the PC keyboard. The up arrow moves the text display back through the previous entries, and the down arrow moves it up toward the most recent entry.

Remote commands involving VM700 graphics and directory displays produce the same display on the PC as the corresponding VM700 commands would produce on the VM700. However, to display the output of remote commands requesting textual information from the VM700, you must first enter Terminal mode, as explained next.

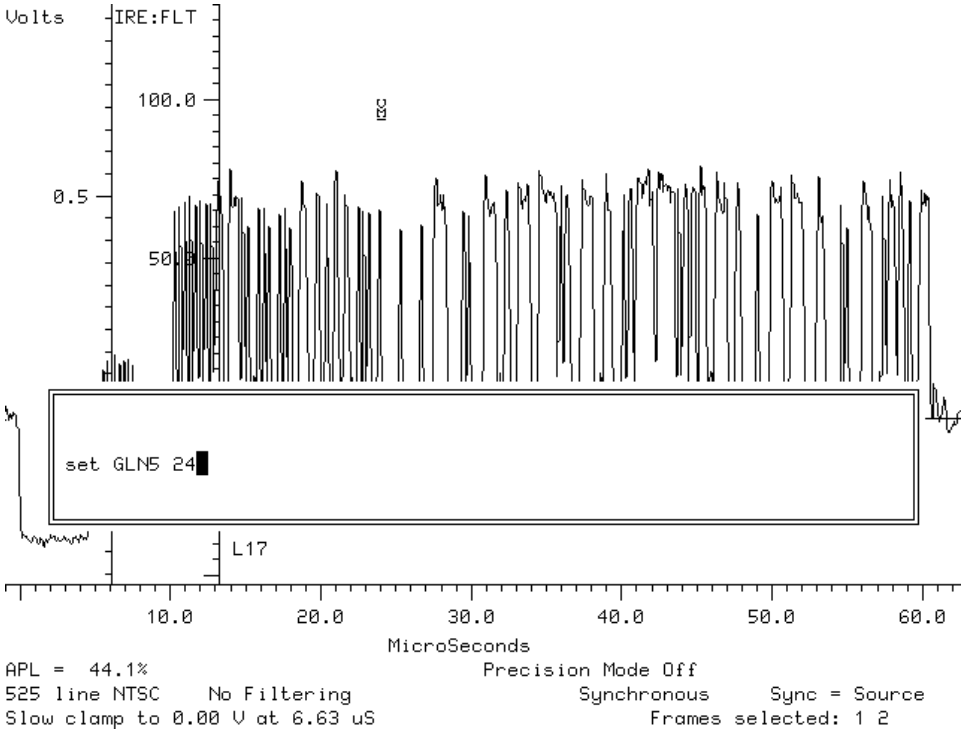

Figure 2–6: Remote command text entry box

Using Terminal Mode

To enter Terminal mode, display the hard key menu and select the Terminal hard key. This hides the graphics display and displays the VM700> prompt, as shown in Figure 2–7.

Enter the remote command, as shown in the preceding examples. The returned textual information is displayed on the PC screen.

To exit Terminal mode and return to Graphics mode, bring up the hard key Display, put the cursor on the Terminal hard key, and click the left mouse button.

Getting Auto Results Remotely

Display Auto results on the PC just as you do on the VM700, by pressing the Auto button. Only, on the PC display, bring up the hard key display and select the Auto Hard key representation. The results of the currently specified VM700 test are displayed in a table on the PC screen. For this function, you do not have to first enter Terminal mode, (as you do for remote commands that request textual feedback).

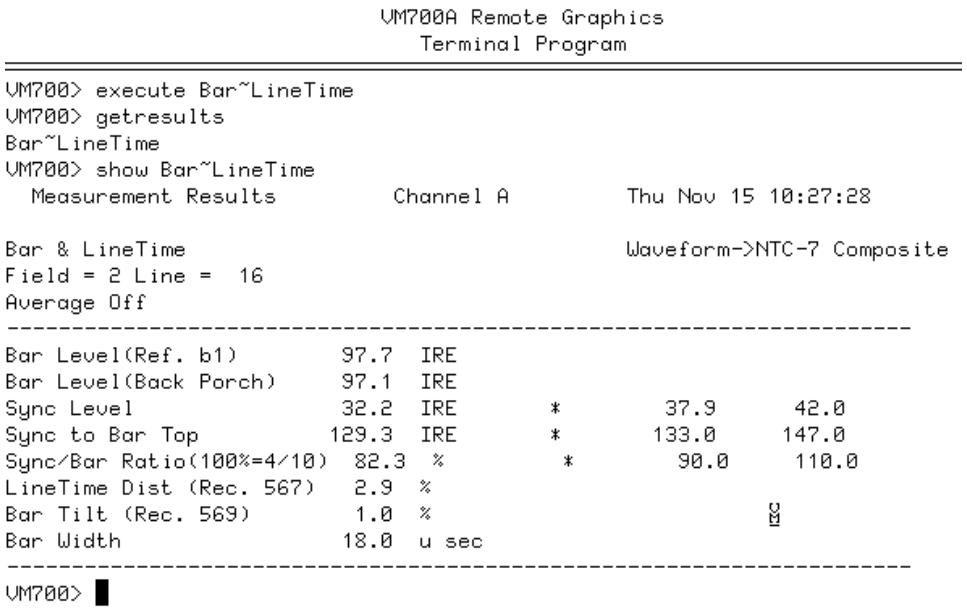

Figure 2–7: Display of VM700 textual information in terminal mode

Scrolling Textual Feedback Displays

If a textual display of VM700 data on the PC exceeds screen height, you can scroll up or down through the text by holding the left mouse button and moving the cursor-left to scroll up and right to scroll down.

Exiting VMREMGR

To terminate VMREMGR and return to the PC operating system, bring up the hard key display and select the Quit hard key.

Non-Remote VM700 Function

The VM700 Picture function cannot be performed from a connected PC. If you start running VMREMGR while the connected VM700 is in Picture mode, the program halts at its title screen. A note informing you of this halt and suggestion that you choose a different remote option is displayed. To make a different selection, bring up the hard key display and select one of the hard keys.

PC Function Keys

Several of the function keys of the PC have special uses to help control the operation of VMREMGR, capture VM700 screens to a PC in PCX format, and send screen copy to a local printer.

F5: Screen Copy into a PCX File

Each time this function key is pressed, a copy of the current display is captured into a file. The output file is PCX compatible. Naming of the file is automatic. It starts with RG0000.PCX and increments with each new file. The next file would be RG0001.PCX. Erasing all the PCX files returns the count to 0000.

F6: Screen Copy to Local Printer

The printer connected to the PC must be of a type directly supported by the VM700 Copy formats, and the –l argument must be used to set the PC printer port. When the F6 key is pressed, the VM700 will exit graphics and perform a hardkey copy. The graphics, formatted according to the Copy format, will be sent to the PC and passed on to the printer port.

F8: Remote versus Local Control

When VMREMGR is running, the F8 function key on the PC keyboard toggles control of the connected VM700 between the PC and the VM700.

For example, suppose that while you are running VMREMGR, someone takes control of the VM700 from its front panel (by pressing the Configure button). You can resume control from the PC by pressing the F8 function key. Likewise, you can relinquish control to the VM700 front panel by pressing F8 again.

F10: Terminate the Program

The F10 key is a shortcut way to terminate the VMREMGR program. Its action is the same as bringing up the hard key menu and selecting QUIT.

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