

**THE DATAMEDIA 4000 DNLS TERMINAL USERS' GUIDE:**

**How To Use It and How To Install It**

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## INTRODUCTION

The Datamedia 4000 DNLS Terminal is a CRT display terminal designed especially for NLS users. The terminal includes a standard Datamedia 4000 display that has been programmed for special features, the NLS keyboard, the mouse, and the keyset. With your right hand on the mouse and your left hand on the keyset, you CTRL-the system without moving your hands back to the keyboard. You can work with your eyes on the screen while rapidly and easily specifying commands, moving around in files, and changing views.

## HOW TO USE THE TERMINAL

**STEP 1:** Check to see that the seventh button (counting from the top down) on the lower-right front of the terminal is pushed in.

**STEP 2:** Turn the power on by pressing the on/off switch on the left side of the terminal to on. Roll the mouse across the table and check to see that the cursor moves across the screen correspondingly.

**STEP 3:** Press the CTRL C button on the keyboard and log in to the computer. (For information on how to log in to the computer, contact the NLS architect in your organization.)

**STEP 4:** Adjust the contrast of the text on the screen by turning the button located on the right side of the display labeled "c". Adjust the brightness of the background by turning the button located on the right side of the display labeled "b".

**STEP 5:** After logging off the computer, press the on/off switch located at the left side of the terminal to off.

### Standard Features

**MOUSE:** A hand-sized device with three buttons on the top. When you are working in DNLS, use your right hand to roll the mouse on a flat surface, moving the cursor (or travelling mark) on the display screen correspondingly. The three buttons on top of the mouse can be used alone or in combination with the keyset or keyboard to enter commands and information in NLS (see the back of the viewspec card that is attached to the keyboard).

**KEYSET:** A device with five piano-like keys for entering characters into NLS at a display terminal. The keyset is an alternative to the keyboard and facilitates rapid editing. With the keyset and the buttons on the mouse you can enter commands and characters quickly while moving the cursor with the mouse (see the back of the viewspec card that is attached to the keyboard). The keyset allows you to keep your eyes on the screen while quickly specifying commands, moving around in files, and changing views.

## KEYBOARD

**Alphanumeric Typewriter:** You can type text or enter commands with the keyboard.

### NLS Command Buttons:

**BACK SPACE (CTRL-A):** When you press the BACK SPACE key, the system removes the last character you typed. You can also cancel the last bug or command word with the BACK SPACE key.

**BACK SPACE STATEMENT (CTRL-P):** Press this key to erase the entire statement that you are in the process of typing.

**BACK SPACE WORD (CTRL-W):** Press this key to remove the last word typed in or the last command word.

**CMD DELETE (CTRL-X):** Press this key to abort any NLS command before you finish specifying it.

**HELP (CTRL-Q):** Type this key at any point in a command to see a description about what you were doing. The system places you in the Help command which allows you to ask for the meanings of other terms.

**INSERT (CTRL-E):** Type this key at the end of an Insert Statement command to enter the Insert mode--you can continue to enter statements following the one you just inserted without giving the command over and over again. The Insert Statement command will continue to repeat until you type a Command Delete. If you type the Insert key at BASE C:, you will be prompted to insert a statement to follow the last statement you modified.

**LINE FEED (CTRL-J):** Type this key at BASE C: in TNLS to print or display the statement immediately following (below) the statement where you are.

**LITERAL (CTRL-V):** Typing this key allows you to insert a special character as part of some text so it no longer has a special meaning. For example, <CTRL-A> can be entered as text for the Back Space key.

**LOAD AVG (CTRL-T):** Typing this key will print the current date, time, your computer status, the system load average, and how much CPU time and real time you have used. It does this without disturbing anything you are doing, even if you are in the middle of a command.

**NULL (CTRL-N):** This key specifies null content--if you want to specify "nothing" in the part of a command prompting you to type some text, press this key.

**OK keys (CTRL-D):** Press this key to indicate that you are finished specifying an NLS command or part of a command (such as viewspecs or text your type in).

**OPT (CTRL-U):** There are optional parts in some NLS commands that will not be available unless you specifically ask for them. Type this key when prompted by something in square brackets, for example, [A], or OPT.

**RPT CMD (CTRL-B):** Type this key at the end of a command to execute the command and automatically repeat the same command from the beginning. Each command word will be repeated until the system reaches the part that you have to specify. Once in the repeat mode, the command will continue until you type Command Delete. If you type this key instead of a command, the last command you specified will be repeated one time only.

**STOP (CTRL-O):** Type this key to stop a process, such as printing or searching. Pressing the key one time is enough, but it sometimes takes a while to take effect.

**SYNTAX (CTRL-S):** Type this key to show the syntax for the command you are specifying.

#### Function Buttons:

**BACKSPACE WORD (CTRL-W):** In the executive system or in NLS, press this key to delete the last word typed in or the last command word.

**CONTROL KEYS:** By holding down the CTRL-key while typing a specific letter, you can produce special characters called CTRL-characters. Control characters have specific functions and ordinarily do not print.

**CTRL-C:** Typing this key gets the attention of the executive system, TOPS-20 or TENEX.

**DEL or RUBOUT KEY:** Use this key to backspace over one character of input when working in the TOPS-20 system (for example, when using SNDMSG).

**ESCAPE:** Type this key to have the system automatically fill out a file name or a directory name when you

have typed enough characters to make the name unique. If you do not type enough characters to make the name unique or the file does not exist, "<ESC>" will echo. You can also use this key to fill out commands or sections of commands in TOPS-20 or TENEX.

**FIELD FILLOUT (CTRL-F):** The field fillout key works like the escape key (above) for a single part of the file name.

**GRAPHICS:** Press this button to move the cursor from the DNLS Display screen to the Tektronix Graphics Display screen. To move the cursor back to the DNLS Display, simply press the button again.

**LOCAL RESET:** Press this button to erase everything on your display screen. If you were working in DNLS and the system is operating, your text will be reappear. Any commands you did not finish will be aborted.

**SAVE:** This button enables you to store your current screen image to be recalled for future viewing. The system saves only the most recent image (one at a time). Note that you cannot save the screen image when you are using the copy printer or the Graphics display. To display a "saved" image, use the SWITCH button as described below.

**SWITCH:** Press this button to display the screen image that you stored with the SAVE key. You can only display the image; no commands will take effect on the text. As you view a saved imaged, the third light from the top in the light panel on the display will go on. To return to your current image, simply continue with your current command or press the switch button again. Pressing the SWITCH button while the copy printer or Graphics display is in use will display the activity of the printer port buffer.

**TELNET KEY (CTRL-Y):** Use this key to get the attention of TELNET.

**DISPLAY:** This piece of equipment is the television-like screen on which the user can see part of the contents of a file. There is an on/off switch on the left side of the display. You can adjust the contrast between the characters and the background with the contrast and brightness buttons on the right side of the display, labeled "c" and "b." On the lower-left front of the display is a panel of six lights. The significance of the lights, from top down, is as follows:

Light 1: This light flashes when the terminal is receiving data from the computer.

Light 2: This light flashes when the terminal is sending data to the computer.

Light 3: This light is on when you are viewing a "saved" image. See above for a description of the function of the SAVE button.

Light 4: This light flashes when the terminal is sending data to the copy printer.

Light 5: At present, this light has no significance.

Light 6: This light comes on when you are in DNLS, signifying that the terminal is accepting commands from the mouse.

There are eight push-switches on the lower-right front of the display. Their function, from top down, is as follows:

Switch 1: To stop the copy printer, push this switch in. When you restart the printer, release the switch.

Switch 2: In general, this switch should remain out. The function of this switch is to disable lineprocessor protocol reception.

Switch 3: Use this switch to view the carriage returns in your text as visible characters. Push the switch in and recreate your display by pressing the Local Reset button on the keyboard. To make the carriage returns invisible, release this switch and recreate your display again.

Switch 4: Generally, this switch should remain out. (There are three CTRL-characters that normally cannot be sent from the terminal--depressing this button allows them to be sent. Their octal codes are: 34, 35, and 36.)

Switch 5: This switch duplicates the function of the local reset button on the keyboard. To recreate the display, simply press this switch--it will be released automatically.

Switch 6: This is the local button and should normally remain released. To work in a local mode (typing characters on the screen do not go to the computer), push this switch in.

Switch 7: This switch should ALWAYS remain pushed in.

Switch 8: Normally, this switch should be released. Push it in to switch from the copy printer to the Graphics terminal if you have the special order, printer-port speed switch option.

### Optional Features

**Copy Printer:** The copy printer is a device used to make paper copies of online information. To print a file or part of a file at your work station, use the LP Output subsystem not the NLS Output to Printer commands. For further information, send a message to FEEDBACK.

**Graphics Display (Tektronix Model 4012 or 4014):** This is a high-resolution display terminal that can be used for the NLS Graphics and Proof subsystems. See the "Experimental Graphics Users' Guide" for information about installing and using the Graphics display.

## HOW TO INSTALL THE TERMINAL

### Connection to the External Processor

The terminal can be connected directly to a local computer or to a remote computer via an ARPANET TIP or a modem (for information on ARPANET TIPS, see TIP user's manual). It can connect to any teletype line that will work with an EIA-type TTY terminal (TI 700 series, GE terminette, etc.). To connect the terminal to the external processor system, a ten-foot cable is provided. The mating connector for the cable is an EIA standard 25-pin female connector. It is available from TRW-Cinch Corp. as P/N DB25S. The following signals should be attached with the pins on the female connector:

Pins 1 and 7	Ground
Pin 2	Data sent from the terminal (EPS)
Pin 3	Data received by the terminal (EPR)
Pin 20	Data terminal RDY-"on" condition indicates that the display power is on.

You must set the data transmission rates to match your line. The switches that CTRL-the rate of transmission are inside the terminal. To set the switches, remove the metal panel on the lower-front of the terminal by unfastening the screw in each corner. Behind the panel is a group of six logic cards. Pull out the third card from the bottom. On this card there is a group of eight switches that are numbered one through eight. Switches four, three, two, and one CTRL-the transmission rate. Set the switches according to the appropriate pattern in the following table.

Data Rate	Switch 4	Switch 3	Switch 2	Switch 1
300 Baud	On	Off	On	Off
600 Baud	On	Off	Off	On
1200 Baud	On	Off	Off	Off
2400 Baud	Off	On	On	Off
4800 Baud	Off	Off	On	On
9600 Baud	Off	Off	Off	On

Switches eight, seven, six, and five CTRL-the transmission rate for the copy printer or graphics port. For a Graphics terminal or if you have the special printer port speed switch option, the transmission rate should be set to 9600. Set the transmission rate for the copy printer according to the specifications for the printer you are using. The switches should be set according to the appropriate pattern in the following table.

Data Rate	Switch 8	Switch 7	Switch 6	Switch 5
300 Baud	On	Off	On	Off
600 Baud	On	Off	Off	On
1200 Baud	On	Off	Off	Off
2400 Baud	Off	On	On	Off
4800 Baud	Off	Off	On	On
9600 Baud	Off	Off	Off	On

Return the third card to its place in the terminal and pull out the fourth card from the bottom. Switches one, two, three, and four on this logic card CTRL-the number of padding characters. Set the switches according appropriate pattern in the following table.

Data Rate	Switch 4	Switch 3	Switch 2	Switch 1
300 Baud	On	Off	On	Off
600 Baud	On	Off	Off	On
1200 Baud	On	Off	Off	Off
2400 Baud	Off	On	On	Off
4800 Baud	Off	Off	On	On
9600 Baud	Off	Off	Off	On

Return the fourth logic card to its place in the terminal and replace the cover on the lower-front of the terminal.

**Optional:** A special reverse video feature for the display enables you to change the white background to black and change the black text to white and back again. Inside the terminal, on the second logic card from the bottom, there are eight switches that are numbered one through eight. To change the white background to black, simply push switch 5

to off. To change the black background back to white, simply push switch 5 to on.

#### Assembling the Work Station

Set up the work station on a low table--the ideal height is 26 inches. The table should be large enough to accommodate books, papers, pencils, and an adjustable lamp as well as the terminal. A good working environment will contribute to the effectiveness of the people who use the work station.

There are five female connectors on the back of the display. Assemble the work station as follows:

- \* Connect the external processor, as described above, to the connector labeled "line."
- \* Connect the copy printer to the connector labeled "printer" (this is optional).
- \* Connect the plug from the keyboard to the connector labeled "keyboard."
- \* Connect the plug from the mouse to the connector labeled "mouse."
- \* Connect the plug from the keyset to the connector labeled "keyset."

## APPENDIX: Troubleshooting

Scan the problems listed here for the symptom that best fits your situation.

**PROBLEM 1:** Nothing happens when you type on the keyboard.

Usually, when nothing happens when you type, the characters are going to the computer, but there is a delay in processing them. To see if this is the case, type the LOAD AVERAGE key or <CTRL> T.

If you see a status message, the system is running. If you do not see a status message within a few seconds, the computer or the connection to the computer is not working (see Problem 4 below). If the message says "Running...", be patient. If the message is "IO wait...", try typing an extra Command Accept or a new command. If you are still not able to work within a minute or two, try the following solution:

Type <CTRL-C> to go to the executive system, TOPS-20 or TENEX. If you see the at-sign, you have reached the executive and you should then press the Local Reset button on the keyboard. Type "reset <CR>" and then enter DNLS again. If you are not able to get the attention of the executive system, see problem 4.

**PROBLEM 2:** The cursor doesn't move.

First, check to see if the rest of the terminal is working properly--it is if you can type commands or text from the keyboard or keyset. If there is no response from the keyboard, see Problem 1. Make sure that the mouse is plugged into the socket labeled "mouse" at the back of the display. The best way to see whether or not the mouse is defective is to try plugging a second mouse into the terminal. If the second mouse works, you should request a replacement for the defective mouse from ARC. If the second mouse does not work, the terminal may be defective. Seek technical assistance from ARC.

**PROBLEM 3:** The keyset doesn't input commands or text.

First, check to see if the rest of the terminal is working properly--it is if you can type commands or text from the keyboard. If there is no response from the keyboard, see

Problem 1. Make sure that the keyset is plugged into the socket labeled "keyset" at the back of the display. The best way to see whether or not the keyset is defective is to try plugging a second keyset into the terminal. If the second keyset does not work, the terminal may be defective. Seek technical assistance from ARC. If the second keyset works, the first keyset may be defective. Check to see if any of the keys are stuck. Press each key, one by one, and listen for a little click. If one of the keys doesn't click, check to see if there is paper, cardboard, gum, or anything else underneath the key. You should also make sure that the keyset is clean--coke or coffee with sugar in it can make the keys stick. If you cannot fix the keyset, you should request a replacement from ARC.

PROBLEM 4: The computer, the connection to the computer, or the terminal doesn't seem to be working.

Check the top two lights in the light panel on the display. If neither light flashes as you type, check to see that the power switch on the left side of the display is set to on and the keyboard is properly connected. If the power is on and the keyboard is connected, the terminal may be defective--seek technical help from ARC.

If both of the lights are flashing as you type, indicating that data is going to and from the terminal, and you still do not see anything on your screen, the baud rate switches may not be set at the right speed. See the installations instructions in this guide for setting the switches and double check to see that they are set correctly.

If only the second light is flashing, there is no data coming back from the computer. This could be because the computer or the connection to the computer is "down" (not working)--check with a person knowledgeable about using the system or call your client coordinator at ARC to see if it is. If the computer is not down, try pushing in Switch 6 on the display to put the terminal in local mode and then type a few characters on the keyboard. If the characters are displayed on the screen, check to see if the terminal is properly connected to the computer (see installation instructions in this users' guide). If the characters do not echo, this indicates that there may be a problem with the terminal. Double check to see that the keyboard is plugged in properly and try pushing the Local Reset button again. If characters still do not appear when you type in local mode, seek technical help from ARC.