

VENUS^R 80
MESSAGE SYSTEM
OPERATOR'S MANUAL

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FOR PROGRAM VERSION 5 OR GREATER

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1. INTRODUCTION

The Venus^R 80 message system has been designed using the latest microprocessor technology with straightforward and easy to learn operation as a primary consideration. Please take a few minutes to study the operator's manual, paying particular attention to the special notes in the introduction and to the sections on the video display and how the computer decides what to put on the lampbank. Then turn to the section on examples for help in putting up your first words.

You will find that the system tells you what to do next at each stage of a command.

You will find the "Quick Reference Sheet" in Appendix A helpful for refreshing your memory after you have read through the entire manual one time.

1.1 GENERAL SYSTEM DESCRIPTION

The Venus^R 80 message system consists of three main parts:

1.1.1 Display

The display is made up of a matrix of indicators and "driver circuits" which control the indicators. The indicators can be lamps, LEDs, or reflective indicators.

The matrix of indicators controlled by a Venus^R 80 message system is seven rows high; the length may vary from 16 to 128 columns wide (in 16-column increments).

1.1.2 Controller

The controller is a small cabinet containing a printed circuit board which has a microprocessor that controls the display.

1.1.3 Video Terminal

The video terminal (also called operator's console) is a video display and keyboard that is used for data entry into the controller.

1.2 SPECIAL NOTES ON CONTROLLER OPERATION

1.2.1 Power

There is no power switch on the controller cabinet. Plugging in the power cord will apply power to the microcomputer. Fuse F@ is for 120 VAC power and fuse F1 is for battery power. The video terminal must be turned on and connected to the controller to enter messages or other information into the microcomputer. The microcomputer inside the cabinet can operate independently from

the video terminal so it is strongly recommended that the video terminal be turned off when the system is not being programmed to extend the life of the video screen and related components.

1.2.2 Initial Turn On

Make sure the controller cabinet plug P3 is connected to the video terminal and jack J1 has a cable that connects it to the wall jack. It is important that it is connected to the wall jack on power up because the wall jack has lampbank length information coded in it. Each time the video screen is turned on, press any key once to have the computer write the current status onto the screen. If the video screen does not look like the screens shown in this manual, switch the TERMINAL SELECT switch on the controller cabinet to the other mode. The TERMINAL SELECT switch selects which type of terminal is being used.

1.2.3 Terminal Configuration

The video terminal is configured correctly (through sets of small switches) at the factory. A listing of the switch settings for different terminals are given in Appendix F for use in verifying that the switches are still correct.

1.2.4 Special Notes on Battery Backup

A small toggle switch on the controller cabinet controls the internal battery's connection to the microcomputer circuit. With the battery switch **ON**, the internal battery will be continually charged by a small battery charger on the microcomputer circuit and the fully charged battery will "keep up" the memory on the microcomputer for about two hours during an interruption of the 120 volt power.

If the power cord on the controller is disconnected, or if the power to the controller will be interrupted for a long time, the battery switch must be turned **OFF** or the battery will eventually go dead and may be damaged. The signal "beeper" will sound to remind the operator that the battery switch should be turned off when 120 volt power is not connected.

2. VIDEO DISPLAY

One of the important features of the Venus^R 80 message system is the video display. The video display shows all of the messages currently stored in the memory as well as the complete status of the system. Look at the drawing that follows and study the following pages which explain each of the items.

Each of the 32 messages has the same format:

The message **NUMBER** (ranging from 01 through 32) is shown at the beginning of each message.

The message **STATUS** (either an E or a D) tells whether the message is currently enabled or disabled.

The next two characters show the **DISPLAY MODE** for the message. This is an abbreviation for words describing how the information is brought on to the lampbank.

The message **DATA** is the main part of each message. Each message may contain up to 20 characters of data which make up the words of the message (and optionally some control information). Note that each message may be made up of one or more "frames". A "frame" is a group of characters that is shown at one time on the lampbank. Note in the video display on page 3 that message 20 has four words divided by back-slashes (\). Each of these words is shown separately on the lampbank.

The "messages" section of the video display shows some other information to the operator.

The **CURRENT MESSAGE POINTER** points to the message currently being displayed on the lampbank. The example on page 3 shows message number 03 currently being displayed.

The **SEQUENCE DESIGNATORS** are the small dashes found on either side of the message status (E or D) on some messages. These dashes show the operator that these messages are not in the "SEQUENCE" as currently programmed and will not be displayed until the sequence is changed.

2.3 TEMPERATURE

The temperature is displayed in both fahrenheit and celsius scales if the optional temperature sensor is connected. If a temperature sensor is not connected, this section of the video display will show: NO TEMP.

2.4 SYSTEM STATUS/TIMES

This section of the video display shows the following system status:

- Current time of day and day of the week (SUN=1, SAT=7).
- Currently programmed daily ON and OFF times. (When in the :AUTO: LAMPBANK mode, the lampbank will automatically turn off and on at these times every day).
- A small pointer just to the left of the words ON and OFF shows

whether the lampbank is currently ON or OFF.

- The LAMPBANK STATUS (directly to the right of the word "LAMPBANK") shows how the lampbank is currently being controlled:

AUTO The lampbank will automatically turn on and off at the specified times.

ON The lampbank is manually on and will remain on.

OFF The lampbank is manually off and will remain off.

- The brightness status has three states:

HIGH The bulbs are fully on.

LOW The bulbs are dim (about 2/3 of full brightness). The LOW (dim) function will operate only with lampbanks that include dimmer circuits.

AUTO The lampbank brightness is controlled by the optional external PHOTOCELL. The letter D or B will be printed after the word AUTO to indicate that the lampbank is dim or bright respectively.

2.5 AUTOMATIC SCHEDULING SYSTEM

The section of the video display with a heading of AUTO-E/D shows the current status of the automatic scheduling system. The system can be either OFF (in which case it does nothing) or ON. When turned ON, the systems operates in this manner:

The eight (8) rows of numbers and letters represent eight different times during the week at which different sets of messages can be turned on or off. Each line has the same format:

- The first four digits represent a time of day.
- The next character is either A or P for AM (morning) or PM (afternoon).
- The next number represents the day of the week.

(0=ANY DAY SUN-1, MON-2, TUES-3, WED-4, THURS-5, FRI-6, SAT=7)

The next letter is either E, D, or X.

E means that the group of messages will be enabled (turned on).
D means that the group of messages will be disabled (turned off).
X means that the group of messages will be exclusively enabled (all others will be disabled).

- The last two numbers represent the first and last messages in the group of messages that will be either enabled, disabled or exclusively enabled.

2.6 RATES

This section on the video display shows the currently programmed rates.

- FL: shows the flashing rate in flashes per second (05/SEC means 5 flashes per second).
- CH: shows the changing rate in tenths of a second (10/10 means that each frame will be displayed for 10/10 or 1.0 second).
- TR: shows the traveling rate in columns per second (10 COL/SEC means that a message will travel all the way across a 64 column lampbank in about 64/10 or 6.4 seconds).

2.7 PROMPTING AREA

The bottom three lines of the video display are used by the computer to tell the operator what choices or commands are currently available. The bottom line lists some keys that are always "legal" and also the meanings of some special characters.

3. HOW THE COMPUTER DECIDES WHAT TO PUT ON THE LAMPBANK

This section of the manual explains how the computer decides what messages to put on the lampbank and when to put them on.

This section will also be helpful if you feel that the system is not operating the way you think it should or if you have problems displaying a message.

The computer looks at all data in the system in a definite order of priority when displaying messages.

3.1 LAMPBANK - ON/OFF

If the lampbank is OFF, the lampbank will remain blank regardless of any other conditions. (Check that the small pointer in the upper right corner of the video display is pointing to the word ON. If it is not, use the L (LAMPBANK) command to set the lampbank ON.)

NOTE: When the lampbank is in the AUTO mode, ON and OFF will be controlled by the clock and the pre-set "Turn On" and "Turn Off" times.

3.2 MESSAGE - NUMBER ORDER

In general, when the lampbank is ON, the computer displays the enabled messages one after another in sequential order from number

01 through number 32 and then repeats back to number 01.

3.3 IN-THE-SEQUENCE

The computer will display only messages that are in the currently programmed sequence. Note that the "SEQUENCE DESIGNATORS" (the dashes on either side of the E or D in each message) tell which messages are in the currently programmed sequence. If a message has DASHES on either side of E or D, it is not in the sequence and WILL NOT BE DISPLAYED. Use the S (SEQUENCE) command to change the current sequence.

To help remember how this works, think of the dashes as blocking the path of the CURRENT MESSAGE POINTER so that it cannot point to messages that are not in the sequence.

3.4 DISPLAYING "SPECIAL CHARACTERS"

Special characters (including: celsius temperature, fahrenheit temperature, time of day, AM/PM and Graphics) are displayed only when available. If the temperature sensor is not connected or working, temperature will be displayed as "---" on the lampbank. If the time of day has not been set it will be displayed as 00:00 AM on the upper right corner of the screen. Time and AM/PM will be displayed as "---AM" on the lampbank. If graphic characters are not programmed nothing will be displayed.

3.5 LAMPBANK SIZE

If the messages are not properly centered on the lampbank check that the lampbank size (number of columns) displayed on the top line of the video display matches the actual size of the lampbank. Make sure the controller was connected to the wall jack when the line cord was plugged in. If it was not connected to the wall jack then connect it and reapply power making sure the batteries are off. If the size is still incorrect check the wall signal connector for the proper jumpers as explained in the Venus^R 80 Installation/Technical manual. After the jumpers are corrected, you will have to reset the computer by disconnecting power (including turning off the battery backup) and then reconnecting power.

NOTE: The computer will skip any messages that have no message data. To put a blank on the lampbank, insert a message (or frame) that has only a "space" as message data.

4. COMMANDS

The following pages explain and give examples of the commands by which the operator controls the computer.

4.1 GENERAL PHILOSOPHY

Each of the commands was designed using a general philosophy which includes these points.

- The computer will "PROMPT" the operator with the currently available choices at each step of each command.
- All commands are started by typing the first letter of the command word. The computer then will "prompt" the operator through the rest of the command.
- If the operator makes an error or enters illegal values or characters, the computer will print an "ERROR MESSAGE" explaining why the computer cannot accept the entry. After the operator has read the error message, the SPACE BAR must be pressed before continuing with the command.
- The ESC (ESCAPE) key may be pressed at any time to escape from the current command sequence and go back to the "New Command" prompt. Some parts of data already entered may be lost if the operator ESCAPES from the middle of a command. If this happens the computer will simply use the previously entered data for the lost values.
- The RETURN key may be used to skip over various parts of a command sequence if the operator wishes to leave them unchanged. The RETURN key also moves the command to the next step of a multi-step command.
- You will note that the clock, temperature, current message pointer, and other values will not be updated on the video display while a command is in progress. Time and temperature however, will be displayed on the lampbank correctly updated. If the keyboard is left alone for more than 20 minutes, the system will automatically execute an ESCAPE which causes the current command to be aborted and return to the "New Command" screen at which point the video display will be updated.
- At the "New Command" prompt only the keys corresponding to commands will be accepted by the controller.
- Backspace and delete are functional only during the entry of messages.
- Holding the CTRL key down while pressing BREAK (some terminals only require pressing BREAK) will cause the screen to be

rewritten when the next key is pressed.

4.2 OPERATOR COMMANDS/DETAILS

The operator commands are:

A	Auto E/D	Allows changing the automatic scheduling system.
B	Brightness	Controls the lampbank brightness.
C	Calibrate	Allows minor adjustments in the temperature.
G	Graphic	Allows entry of user generated graphics.
L	Lampbank	Controls the turning on and off of the lampbank and lampstest.
M	Messages	Changes a message (message status, display mode, and message data).
R	Rates	Changes the rates used by the display modes.
S	Sequence	Controls the sequencing of messages onto the lampbank also controls the E/D checking.
T	Times	Changes the time of day and the automatic on and off times.
Z	Ztest	Allows a test of Ram, Rom, and Temp sensor.

Some conventions have been adopted in order to make reading this section of the manual as easy as possible:

- A system response is indicated by all capital letters. An example of a system response is:

ENTER COMMAND:

- An operator input is indicated by all capital letters in parenthesis (). An example of an operator input is:

ENTER COMMAND: (M)

- <CR> is used to represent pressing the return key. Note: CR is an abbreviation for carriage return.

4.2.1 (A) AUTO E/D COMMAND

The AUTO E/D command controls the automatic scheduling system. This feature provides the ability to change the message status of a message (or group of messages) automatically at a preset time. The system's clock includes "day of the week" so the scheduling can be done up to one week in advance or a weeks particular schedule can be repeated week after week with no operator input.

The auto-scheduling system has eight lines. Thus, up to eight different message status changes at up to eight different times can be programmed.

The AUTO E/D feature can be ON or OFF. If OFF, no action is taken. If ON, when the current time and day

match the entered time and day for a line the corresponding message or group of messages is enabled or disabled as specified.

EXAMPLE: To use this command, type and "A" in response to the command prompt:

ENTER COMMAND: (A)

The controller will display on the CRT:

ENTER AUTO-E/D 1=ON 2=OFF

A response of 1 will cause the auto E/D feature to be turned ON. A response of 2 will cause the auto E/D feature to be turned OFF. After the desired response is entered, the controller will display on the screen:

ENTER AUTO-E/D NUMBER:

The operator now types the number of the Auto E/D line that needs to be changed. <CR> entered at this point will go to line 1. The controller responds by moving the cursor to the correct auto E/D line.

The desired data is not typed onto the line.

- Enter the time of day.
- Enter A or P for AM or PM.
- Enter the number corresponding to the day of the week:
(1=SUN, 2=MON, 3=TUES, 4=WED, 5=THURS, 6=FRI, 7=SAT)
(0=ANY DAY).
- Enter E, D, or X (E if the messages are to be enabled, D if disabled, X if exclusively enabled). Exclusive enable will enable those specified and disable all others.
- Enter the first and the last message numbers on the group to be changed. (If only one message is to be enabled or disabled enter that message number twice).

When all of the above items have been entered, the line will be stored in the system's memory. The controller will now respond:

ENTER AUTO-E/D NUMBER:

This allows the operator to change another line if desired. A <CR> at this point will just move to the next line. Pressing the ESC key will return to the "ENTER COMMAND" prompt. NOTE: Remember messages must be IN-THE-SEQUENCE to be displayed.

```

VENUSR 80    MESSAGE SYSTEM  VER.06   64 COL.  +74°F  TIME-DAY 08:02AM-2
DAKTRONICS INC., BROOKINGS, SD                +23°C    >ON    06:00AM
01 E CH <BAND\CONCERT\TONIGHT> 17-D-CH <>          OFF    11:00PM
02 E CH <AT\8:00 PM\AT THE>     18-D-CH <>          LAMPBANK: AUTO
03>E CH <SCHOOL\GYM>           19-D-CH <>          BRIGHTNESS:AUTO-B
04 E CH <^F*F\^T^A>            20-D-CH <>
05 D CH <ANTIQUÉ\SHOW\TODAY>   21-D-CH <>          AUTO-E/D: ON
06 D CH <FROM\9:00 AM\TO>      22-D-CH <>          1 08:00A2 X 02,04
07 D CH <4:00 PM\AT>           23-D-CH <>          2 08:05P2 D 01,03
08 D CH <COMMUNITY\CENTER>     24-D-CH <>          3 07:00A3 X 04,08
09 D CH <>                      25-D-CH <>          4 04:00P3 D 05,08
10 D CH <>                      26-D-CH <>          5 00:00A1 D 00,00
11 D CH <>                      27-D-CH <>          6 00:00A1 D 00,00
12 D CH <>                      28-D-CH <>          7 00:00A1 D 00,00
13-D-CH <>                      29-D-CH <>          8 00:00A1 D 00,00
14-D-CH <>                      30-D-CH <>
15-D-CH <>                      31-D-CH <>          RATES FL: 05/SEC
16-D-CH <>                      32-D-CH <>          CH: 10/10 SEC
                                           TR: 20 COL/SEC

```

ENTER COMMAND:

COMMANDS: AUTO-E/D BRIGHTNESS GRAPHIC LAMPBANK MESSAGE RATE SEQUENCE TIME

^GN=GRAPHIC CHARACTER (N) [D.STROKE] ^C=TEMP(C) ^F=TEMP(F) ^T=TIME ^ A=AM,PM

Example #1: Automatic Scheduling System

This example shows how the Venus ^R 80 might be used for public service announcements.

Study the AUTO-E/D system to see that:

Monday (Day 2) morning (AM) at 08:00, messages number 01 through 04 will be exclusively enabled to announce the band concert. At 8:05 PM messages 01 through 03 will be disabled and just the time and temperature will remain until the lampbank is turned off at 11:00 PM.

Tuesday (Day 3) morning (AM) at 07:00, messages number 04 through 08 will be exclusively enabled to tell about the antique show. at 4:00 PM messages 05 through 08 will be disabled and just the time and temperature will remain.

Line 5 through 8 of the AUTO-E/D system are not being used.

```

VENUSR 80    MESSAGE SYSTEM  VER.06   64 COL.  +74°F  TIME-DAY 10:34AM-2
DAKTRONICS INC., BROOKINGS, SD                                +23°C    >ON   07:00AM
01 E RU <[EAT]>                17-D-CH <BOY SCOUTS'>          OFF  11:30PM
02 E WR <AT>                    18-D-CH <PANCAKE\SUPPER>      LAMPBANK: AUTO
03 E CH <[JOE'S]>              19-D-CH <TONIGHT\AT\6 PM>    BRIGHTNESS:AUTO-B
04 E CH <>                      20-D-CH <SERVING\TILL\9 PM>
05 D CH <>                      21-D-CH <AT THE>              AUTO-E/D: ON
06 D CH <>                      22-D-CH <COMMUNITY>          1 11:00A2 E 10,12
07 D CH <>                      23-D-CH <CENTER>            2 02:00P2 D 10,12
08 D CH <>                      24-D-CH <>                  3 11:00A3 E 14,15
09 D CH <>                      25-D-CH <>                  4 02:00P3 D 14,15
10 D CH <TODAY'S>              26-D-CH <^T ^A>             5 04:00P4 E 17,23
11 D CH <SPECIAL>              27-D-CH <^F*F>              6 06:00P4 D 19,19
12 D FL <HASH>                 28-D-CH <^C*C>              7 09:00P4 D 17,23
13-D-CH <>                     29-D-CH <>                  8 00:00A1 D 00,00
14-D-CH <TODAY'S\SPECIAL>      30-D-CH <>
15-D-CH <TASTY\BEAN\SOUP>      31-D-CH <>                  RATES FL: 05/SEC
16-D-CH <>                     32-D-CH <>                  CH: 10/10 SEC
                                                                TR: 20 COL/SEC

```

ENTER COMMAND:

COMMANDS: AUTO-E/D BRIGHTNESS GRAPHIC LAMPBANK MESSAGE RATE SEQUENCE TIME

^GN=GRAPHIC CHARACTER (N) [D.STROKE] ^C=TEMP(C) ^F=TEMP(F) ^T=TIME ^ A=AM,PM

Example #2: Automatic Scheduling System

This example shows a typical way that the Venus^R 80 system would be used at JOE'S RESTAURANT.

The current sequence include 29 of the available 32 messages and note that the words "EAT AT JOES" and the time and temperature (in messages 26, 27, and 28) are always displayed (when the lampbank is on, between 7:00AM and 11:30PM each day).

On Monday at 11:00AM, the messages containing "TODAY'S SPECIAL HASH" will be displayed and will continue till 2:00PM.

On Tuesday the messages containing "TODAY'S SPECIAL TASTY BEAN SOUP" will be displayed from 11:00AM to 2:00PM.

On Wednesday afternoon at 4:00PM messages 17 through 23 will be enabled to announce "BOY SCOUT'S PANCAKE SUPPER TONIGHT AT 6 PM SERVING TILL 9 PM AT THE COMMUNITY CENTER". At 6 PM on Wednesday message 19 (which is no longer needed) will be disabled to shorten the total message and make it more easily read by motorists. It now says "BOY SCOUTS PANCAKE SUPPER SERVING TILL 9 PM IN THE COMMUNITY CENTER". At 9 PM the remainder of the message is not needed and is turned off.

The system will then just display "EAT AT JOES" and the time and temperature until 11:30PM that night.

4.2.2 (B) BRIGHTNESS COMMAND

The BRIGHTNESS command controls the brightness of the lampbank. (NOTE: Not all lampbanks have this feature.) To use this command, type a (B) in response to the command prompt:

ENTER COMMAND: (B)

The controller will prompt:

ENTER BRIGHTNESS 1=HIGH 2=LOW 3=AUTO:

- Typing (1) will cause the lampbank to be in the high brightness mode.
- Typing (2) will cause the lampbank to be in the low brightness (dimmed) mode.
- Typing (3) will cause the lampbank to be in the automatic brightness mode. The brightness is then automatically controlled by a photocell. The letter D or B will be printed on the CRT after the word AUTO to indicate if it is currently dim or bright.

Any other response is illegal. The controller will change the brightness as desired and will prompt:

ENTER COMMAND:

at which time a new command may be entered.

4.2.3 (C) CALIBRATE COMMAND

The CALIBRATE command allows the operator to make a minor adjustment in the "offset" factor that is used to read the temperature from the temperature sensor. (This command is applicable only to installations that include the optional temperature sensor.) This minor adjustment may be necessary if the temperature sensor is slightly out of calibration or if the location of the sensor causes it to be consistently slightly warmer or cooler than the actual temperature.

The offset factor that is entered with this command is added by the computer to the fahrenheit temperature; the celsius temperature is always derived from the fahrenheit temperature so the two values will always coincide.

To use the command, type (C) in response to the command prompt:

ENTER COMMAND: (C)

The computer will prompt:

ENTER TEMP OFFSET (+9 TO -9°F) (CURRENTLYX):

where X is either +0 or the offset previously entered with the CALIBRATE command.

The operator now enter (+) or (-) (depending on whether the temperature should be displayed higher or lower) and a number from 0-9.

After this the computer will return to the command prompt:

ENTER COMMAND:

at which time a new command may be entered.

Examples of the CALIBRATE command:

Example #1:

The system is displaying a temperature of 50°F but the actual temperature (as measured on a known correct thermometer) is 56°F.

ENTER COMMAND: (C)

ENTER TEMP OFFSET (+9 TO -(°F): (CURRENTLY +0) (+6)

Operator entered +6.

The system will now display a temperature of 56°F.

Example #2:

The system is displaying a temperature of 89°F but the actual temperature (as measured with a known correct thermometer) is 82°F.

ENTER COMMAND: (C)

ENTER TEMP OFFSET (+9 TO -9°F): (CURRENTLY +4)

There is already a value set in for the offset so the actual temperature measured by the sensor is different than what is displayed. If the current offset is +4, the temperature sensor must be measuring $89^{\circ} - (+4) = 85^{\circ}\text{F}$.

The temperature that is desired is 82°F which is 3°F less than that measured by the temperature sensor.

The operator should then enter -3.

ENTER TEMP OFFSET (+9 TO -9°F): (CURRENTLY +4) (-3)

The temperature will now be displayed as the correct 82°F.

NOTE: At most installations the temperature will be accurate within +/- one degree so use of the CALIBRATE command will not be needed and the offset should be left at +0.

4.2.4 (G) GRAPHIC COMMAND

The GRAPHIC command allows the user to make up their own graphic characters by telling the computer which bulbs to turn on. There is a total of ten graphic characters. Each character can be 7 columns high and up to 24 columns wide. The characters may also be put together in a message to make them longer than 24 columns.

EXAMPLE: To use this command, type "G" in response to the command prompt:

ENTER COMMAND: (G)

The controller will print the border for the graphic characters and available key functions on the video display, and will then prompt:

EDIT GRAPHIC CHARACTER NUMBER (0)

The operator then enters a number 0-9 corresponding to the character that is to be edited. In this case a 0 was entered. The controller then prints the graphic data, if any, on the video display. The operator may now turn bulbs on or off by moving the cursor to the correct location and setting on or off with the period or space respectively. After the character is completed an ESC will return to the command screen or a <CR> will return to the prompt:

EDIT GRAPHIC CHARACTER NUMBER

The operator may now enter a number 0-9 for the desired character or a <CR> will go to the next graphic character.

The following key functions are available:

<u>Key</u>	<u>Function Description</u>
ESC	Returns to command screen.
<CR>	Goes to next graphic frame.

Cursor Movement

H or 5	Puts cursor in upper left corner.
U or 8	Cursor up.
L or 4	Cursor left.
R or 6	Cursor right.
D or 2	Cursor down.
1	Cursor diagonal, down & left.
7	Cursor diagonal, up & left.

9 Cursor diagonal, up & right.
 3 Cursor diagonal, down & right.

Bulb Control

Control-C Clears this characters data.
 Period Sets bulb on at cursor position.
 Space Sets bulb off at cursor position.

Inserting graphic characters into messages:

Type ^Gn into the message where n=the graphic character number.
 The (carat of ↑ (up arrow) may be used depending on what character
 is available on the terminal. Refer to the line at the bottom of
 the video display to determine which is available.

EXAMPLE: GRAPHIC CHARACTER EDITING

GRAPHIC CHARACTER 1

```

  "          *          "
  "          * *       "
  "          * * *     "
  "          *         "
  "* * * * * * * * * * "
  " *                   * "
  "   * * * * * *     "
  
```

COMMANDS:	CURSOR MOVEMENT:	BULB CONTROL:
ESC = EXIT	U OR 8 = UP	PERIOD = ON
RETURN = NEXT CHARACTER	D OR 2 = DOWN	SPACE = OFF
	L OR 4 = LEFT	
	R OR 6 = RIGHT	CONTROL C = ALL OFF
	H OR 5 = UPPER LEFT	

EDIT GRAPHIC CHARACTER NUMBER:

This is an example of how the video screen looks when editing a graphic character. The sailboat shown above uses only 10 columns of the available 24. The number of columns used for each character is counted from the first left column to the last column with bulbs on. Blank columns as the first part of the graphic character will be part of the character.

If characters need to be connected end-to-end with no space between them, the character must not start with blank columns. Also, if the character is to be centered on the display there should be no blank columns to the left of the character. The controller would use the blank columns as part of the character and it would be displayed slightly to the right of center.

4.2.5 (L) LAMPBANK COMMAND

The LAMPBANK command controls the lampbank. To use this command, type (L) in response to the command prompt:

ENTER COMMAND: (L)

The controller will prompt:

ENTER LAMPBANK 1=ON 2=OFF 3=AUTO 4=TEST

To turn the lampbank ON (allows the display of information) type (1).

To turn the lampbank OFF (leaves the lampbank blank) type (2).

To give control to the automatic on/off feature (see the TIME command for more details), type (3).

To turn the lampbank to a test condition, type (4). Type any key to exit lamptest.

The controller will change the lampbank to the desired state and will prompt:

ENTER COMMAND:

at which time a new command may be entered.

4.2.6 (M) MESSAGE COMMAND

The MESSAGE command is used to enter all information for the messages, including the message status, display mode, and message data. To use this command, type (M) in response to the command prompt:

ENTER COMMAND: (M)

The controller will prompt:

ENTER MESSAGE NUMBER:

The operator types the number of the message to be changed. Valid message numbers are 01 through 32. (Note that two-digit numbers are required so messages 1 through 9 must be entered as 01, 02, etc.) A <CR> at this point will go to message number 01.

The controller will move the cursor to the message status of the specified message. If no change in the message status is desired, type <CR>. If a message status of ENABLED is desired type (E), if Disabled is desired, type (D). Illegal characters will result in error messages.

The controller will move the cursor to the display mode. Type <CR> if no change is needed. Type the desired display mode if a change is desired. Illegal characters will result in error messages.

The controller will move the cursor to the 1st character of the message data. Type <CR> if no change is needed in the message data. To change the data, type the desired data. The controller will erase the existing data and display the new data as you type it. Type <CR> when the data is all entered. The controller will respond with:

ENTER MESSAGE NUMBER:

This allows the operator to change another message if desired. Typing <CR> will move the cursor to the next message number after the one you just changed, otherwise any message number may be entered. Pressing the ESC key will return to the command prompt.

NOTE 1: See the section in this manual on MESSAGES for more details on the format of the message data.

NOTE 2: To erase the data in a message completely, type (SPACE) (RUBOUT) <CR> as the first characters of the message data.

4.2.7 (R) RATES COMMAND

The RATES command sets the 3 rates associated with the display modes.

The three (3) rates are as follows:

- | | |
|------------------|---|
| F Flashing rate | The number of times the display frame in the flashing display mode will flash on and off in a second. Usable values are 1 to 20 flashes/second. |
| C Changing rate | The amount of time a display frame is held on the lampbank in 1/10 seconds. Usable values are 02 through 99 corresponding to 0.2 seconds through 9.9 seconds. |
| T Traveling rate | The number of columns a display frame in the traveling mode will travel in a second. Usable values are 1 through 30 col/sec. |

To use this command, type (R) in response to the command prompt:

ENTER COMMAND: (R)

The controller will respond by moving the cursor to the first rate. Type <CR> if no change is desired. Otherwise type the new value. Repeat for each of the rates. After the last rate is entered the controller will display the command prompt:

ENTER COMMAND:

at which time a new command may be entered.

4.2.8 (S) SEQUENCE COMMAND

The SEQUENCE command controls which messages will be displayed and whether E/D is to be checked on these messages. To use this command, type (S) in response to the command prompt:

ENTER COMMAND: (S)

The controller will prompt the following:

ENTER SEQUENCE: (FIRST, LAST MESSAGE)

The operator now enters the range of messages to be use. Type the message number of the first message, then type the message number of the last message.

Example: To sequence through messages 05 through 10, type 05,10.

The controller will change the sequence designators to the newly set sequence and will then prompt:

ENTER COMMAND:

at which time a new command may be entered.

4.2.9 (T) TIME COMMAND

The TIME command sets time of day, current day of week, automatic "Lampbank On" time, and automatic "Lampbank Off" time. The automatic lampbank on and off times specify the time the lampbank is turned ON and OFF each day if the lampbank is in the automatic mode (see the Lampbank command). To use this command, type (T) in response to the command prompt:

ENTER COMMAND: (T)

The controller will move the cursor to the 1st time. Type a <CR> if no change is desired. Otherwise, type the new value followed by a <CR>. Repeat for each of the times. After the last time is entered, the controller will prompt:

ENTER COMMAND:

at which time a new command may be entered.

NOTE 1: Time of day must be entered as a four digit number.

Example: 2:45PM must be entered as 02:45PM.

NOTE 2: The day of the week must be entered as a number for the TIME-DAY section.

1=SUN, 2=MON, 3=TUE, 4=WED, 5=THUR, 6=FRI, 7=SAT

NOTE 3: When the time of day is entered, the seconds are set to zero when the A or P is entered.

4.2.10 (Z) ZTEST COMMAND

The ZTEST command allows testing of RAM, ROM, and TEMP SENSOR. Use of the ZTEST command will erase everything in the controller memory. This command is only to be used if there appears to be a problem with the controller and there is need to determine what is causing the problem. To use this command, type (Z) in response to the command prompt:

ENTER COMMAND: (Z)

The controller will prompt the following:

TEST MODE CLEARS ALL MESSAGES, ENTER TEST MODE (Y/N)?

This is to prevent loss of data if the Z key is pressed accidentally. If you do want to enter the test mode then type (Y) and the controller will prompt:

- 1 RAM
- 2 ROM
- 3 TEMP SENSOR
- 4 EXIT

ENTER TEST NUMBER:

If 1 is selected the controller will print:

RAMTEST PASS=00 ERRORS=00

In about 20 seconds it will print a new line with pass number equal to 01 and it will continue to increment the pass number every 20 seconds. A complete RAM test is done when pass number equals 02. If any errors are detected they will be printed on the video display. RAMTEST will continue to run until ESC is pressed.

If 2 is selected the controller will print:

ROMTEST	ROM1	ROM2	ROM3	ROM4
	XXXX	XXXX	XXXX	XXXX
	YYYY	YYYY	YYYY	YYYY

It will take the controller about 10 seconds to determine the number under each ROM. The X represents what the ROM should be and the Y is the actual value. The X value and Y value should match. Pressing ESC will exit the test.

If 3 is selected the controller will print:

TEMP= +nnn SENSOR ON(or)FF) (where nnn = average temperature)

Sensor ON indicates sensor is sending temperature, OFF indicates no temperature being received. Temperature will equal +52 with no sensor. ESC will exit test.

If 4 is selected the controller will prompt "PRESS SPACE TO CONTINUE", which will cause the controller to return the command screen.

If problems are found, call Daktronics Customer Service.

5. MESSAGES

This section of the manual explains in detail the format of the messages. You may want to refer to the example drawing of the video display on page 3 to see how these details are displayed.

The Venus^R 80 message system has a capacity of 32 messages. Each message consists of three parts: message status, display mode, the message data. The message status is either ENABLED (E) or DISABLED (D). The display mode determines how the information will appear on the lampbank.

The message data contains up to 20 letters, numbers, punctuation, and special characters. It determines what will appear on the lampbank.

DISPLAY FRAMES

A message may contain one or more display frames. A display frame is a group of characters that are displayed on the lampbank together. For example, suppose the lampbank is to display "HAVE", followed by "A", followed by "NICE", and finally "DAY". This would require 4 display frames. The first would be "HAVE", the second "A", the third "NICE", and the fourth "DAY". These four display frames could be in the same message, or could be in two,

three, or four messages. A display frame must fit in a single message as the end of a message always ends a display frame.

Characters and displayable special characters require a certain number of columns when displayed on the lampbank. The number of columns vary. It depends on the character and is different for single and double stroke. (Single and double stroke characters are shown in Appendix B and C respectively.) If any message contains a display frame that will not fit on the lampbank in the selected display mode (because it requires more columns that are available on the lampbank) a WARNING message will be given while the message is being entered. If displayed, only the left most portion that fits on the lampbank will be visible.

If a display frame is too long, it can be shortened by splitting it into two, or more display frames or by using single stroke instead of double stroke. Using shorter words with the same meaning is another possibility.

5.1 DISPLAY MODES

The display mode determines how the display frames in a message will be brought onto the lampbank. When the controller has finished bringing a frame onto the lampbank, the frame will be held for a period of time and then the lampbank may or may not be "blanked" before the next frame is brought on. The length of time that a frame is held before the next frame is displayed is determined by the changing rate. (See the RATES command.) (Note that frames brought on in the "traveling" display mode are not "held" but just continue to travel.) The blanking of a frame is determined by the frame separator at the end of the display frame. (See FRAME SEPARATORS on page 24).

The Displaying Modes are:

CH	Change
FL	Flash
RU	Roll Up
RD	Roll Down
RL	Roll Left
RR	Roll Right
TR	Travel (Right to Left)
VL	Venetian Left
VR	Venetian Right

WU Wipe Up
WD Wipe Down
WL Wipe Left
WR Wipe Right
WI Wipe In
WO Wipe Out

Each of the display modes is explained in detail on the next page. You will note that most of the display modes have a corresponding FRAME SEPARATOR (for controlling blanking).

5.1.1 CHANGE MODE

The new display frame is automatically centered and displayed on the lampbank instantly. It is displayed on the lampbank for the time specified by the changing rate.

5.1.2 FLASH MODE

Flashing mode is identical to changing mode except the lampbank is flashed (turned on and off) at the rate specified by the flashing rate.

5.1.3 ROLL MODE

The new display frame is automatically centered. The new display frame rolls into place by moving in the direction indicated. After the display frame is in place, it is displayed on the lampbank for the time specified by the changing rate.

5.1.4 TRAVEL MODE

The new display frame moves to the left onto the lampbank. The display frame continues traveling (move to the left) at the rate specified by the travel rate until the right most column of the display frame has appeared on the lampbank.

Travel mode is the only display mode that is not limited by the available lampbank columns. Long traveling messages may be made by connecting several traveling messages together with the _PH frame separator.

5.1.5 VENETIAN MODE

The new display frame is automatically centered. The lampbank is divided into eight (8) column blocks. Corresponding columns in each of the eight column blocks are changed to the new display frame simultaneously in the direction specified. This produces the effect of a venetian blind being opened to display the frame. When complete, the display frame is displayed on the lampbank for the time specified by the changing rate.

5.1.6 WIPE MODE

The new display frame is automatically centered. The lampbank is changed to the new display frame column by column or row by row, in the direction specified. When completed, the new display frame is displayed for the time specified by the changing rate.

5.2 MESSAGE DATA

As mentioned earlier, the message data may contain up to 20 characters (letter, numbers, and punctuation) and determines what will appear on the lampbank. Each message may be broken into two or more display frames using "Frame Separators". Each display frame may also contain "Special Characters" which cause special items to be inserted in place of the entered characters as the message is being displayed.

Two important aspects of message data, FRAME SEPARATORS and SPECIAL CHARACTERS are explained here.

5.2.1 FRAME SEPARATORS

Frame separators are certain characters or groups of characters that may be used to divide the message data into two or more display frames. In addition, these characters also tell the computer if and how to blank the lampbank before the next frame is brought onto the lampbank.

It is often helpful to think of the frame separators as the last character(s) of a frame but note that the frame separator characters are never displayed on the lampbank.

Frame separators can be divided into two groups:

- 1) Blanking.
- 2) Non-Blanking.

Any frame that is ended with a blanking frame separator will blank the lampbank before the next frame is brought on.

If a frame is ended with a non-blanking frame separator, the old frame will not be blanked before the new frame is brought onto the lampbank.

If a frame is not ended with a frame separator (the message ends with displayable data of the frame) the lampbank blanks with the same mode in which the frame was brought onto the lampbank, before the next frame is brought on.

The frame separators are:

Frame separators: BLANKING

\ Blank the lampbank in the same mode that the information was displayed (default mode blanking)

_BH Blank the lampbank all at once ("BLANK")

_RU Blank the lampbank by ROLLing the information off

_RD

_RL

_RR

_VL Blank the lampbank by VENETIANing the information off

_VR

_WU Blank the lampbank by WIPEing the information off

_WD

_WL

_WR

_WI

_WO

Frame separators: NON-BLANKING

_OV Don't blank; the new frame overtakes the old frame using the new frame's display mode.

_PH Don't blank; the old frame is pushed off of the lampbank by the new frame using the new frame's display mode. A use of this frame separator is connecting traveling messages together to get a long traveling message.

See the next pages for more details and examples on the use of frame separators.

NOTE: The frame separator control character may be either an underline (_) or a left arrow (+) depending on what is available on the terminal. Look at the command line that prompts what the frame separators are to determine what is available on the terminal. Do not confuse the left arrow (+) with the pointed bracket (<).

Details on the use of FRAME-SEPARATORS:

Note that the first frame separator, the back-slash (\), is only one character and all of the others are three characters long. The back slash (\) should not be confused with the slash (/). All of the three character frame separators begin with an underline (_) or a left-arrow (+). (See note on previous page.)

Legal characters for the three character frame separators are not checked until the message is actually displayed. At that time, if the two characters following the underline () are determined to be illegal, the computer will just interpret them as a back-slash (\) frame separator. At any rate, the two characters following the underline () will not be displayed on the lampbank.

Examples of legal use of frame separators:

<HAVE\A\NICE\DAY>

This message is made up of four different frames that will be displayed sequentially on the lampbank. Each frame will be blanked by the display mode before a new frame comes on.

<HELLO_RUJOE_WO>

The word "HELLO" will blank by rolling up.
The word "JOE" will blank by wiping down.

Examples of illegal use of frame separators:

<HELLO_JOE_WD>

The two letters following the first underline (), "J" and "O", will be interpreted as illegal frame separators.

The word "HELLO" will be blanked as if it was followed by a (\) frame separator but the second frame in this message will contain only the letter "E" because "J" and "O" were considered part of the first frame separator.

<HELLO_RIJOE_WI>

This message will be readable on the lampbank but the word "HELLO" will be blanked as if it was followed by a (\) frame separator because "RI" is not a legal frame separator.

A detailed explanation of each frame separator follows:

" \ "

\ (BACK-SLASH) is the "default mode blanking" frame separator. It causes the lampbank to be blanked with the same mode that was used to bring the frame onto the lampbank. The back-slash is mad by holding the "shift" key and pressing the "L" key.

" _BL"

_BL is a blanking mode frame separator that causes the old display frame on the lampbank to disappear instantly. (BLANK!)

"_R-"

RU, RD, RL, and RR are blanking mode frame separators that cause the old display frame to be "ROLLED" off the lampbank. The third character specifies the direction:

U is up.
D is down.
L is left.
R is right.

"_V-"

VL and VR are blanking mode frame separators that cause the old display frame to be "VENETIANED" off the lampbank. The third character specifies the direction:

L is left.
R is right.

"_W-"

WU, WD, WL, WR, and WO are blanking mode frame separator characters that cause the old display frame to be "WIPED". The third character specifies the direction:

U is up.
D is down.
L is left.
R is right.
I is in (starts at the left and right ends and blanks toward the middle).
O is out (starts at the middle and blanks toward the end).

"_OV"

OV is a non-blanking frame separator that prevents the old frame from leaving the lampbank. The new frame will "OVERTAKE" (or cover up) the old frame using the new frames display mode.

"_PH"

PH is a non-blanking frame separator that prevents the old frame from leaving the lampbank. The new frame will "PUSH" the old frame off as it comes on using its display mode.

5.2.2 SPECIAL CHARACTERS

Special characters are typed into a message like any other characters.

Displayable Special Characters:

All displayable special characters begin with a carat (^) or an up-arrow (↑) (depending on what is available on the terminal) followed by one or two other characters. See the line at the bottom of the video display to determine which characters are available.

The displayable special characters and their meanings are:

- ^C Displays on the lampbank as the Centigrade temp.
- ^F Displays on the lampbank as the Fahrenheit temp.
- ^A Displays on the lampbank as AM or PM.
- ^T Displays on the lampbank the time of day.
- ^Gn Displays on the lampbank graphic character n.

These displayable special characters are explained in greater detail in the following pages.

Non-Displayable Special Characters:

The non-displayable special characters are:

"[" and"]"

These control whether single stroke or double character sets will be used when displaying information on the lampbank.

"[" sets the controller into the double stroke mode. If the controller is in the double stroke mode, all characters (including displayable special characters such as (^T) will appear on the lampbank wider and bolder than normal).

"]" returns the controller to normal (single stroke). Also, the controller automatically returns to single stroke whenever it starts displaying a different message.

A detailed explanation of each DISPLAYABLE SPECIAL CHARACTER follows:

"^C

^C is displayed on the lampbank as the Celsius temperature. The temperature appears on the lampbank according to the following: (X is a number).

- X if temp = 20 99
- +X if temp = 0 19
- X if temp = -1 -99

NOTE 1: (^C) does not cause a degrees sign or the letter C to appear. If either is desired, it must be in the message.

NOTE 2: The asterisk (*) is displayed on the lampbank as the degrees sign.

NOTE 3: The Celsius temperature is converted from the Fahrenheit temperature according to the formula:

$$C = (F - 32) \times 5/9$$

The result is rounded up if the fraction of the result is 5/9 or larger.

NOTE 4: The computer uses the worst case (largest number) of columns to decide whether it will give the operator a WARNING when entering a message. (The worst case for ^C is 16 columns in single stroke and 20 double stroke.)

Example: If the temp is 21° C, then the message: <TEMP ^C*C> would appear on the lampbank as TEMP 21 C.

"^F"

^F is displayed on the lampbank as the Fahrenheit temperature. The temperature appears on the lampbank according to the following:

X if temp is 20 through 199 F
+X if temp is 0 through 19 F
-X if temp is -1 through -99 F

NOTE 1: (^F) does not cause a degrees sign to be displayed. The asterisk (*) will display a degrees sign.

NOTE 2: The worst case column count which is used for determining the WARNING during message entry for (^F) is 16 columns for single stroke and 20 columns for double stroke.

Example: See (^C).

NOTE: Up arrow (↑) or carat (^) may be used depending on what is available on the terminal.

"^A"

^A is displayed on the lampbank as AM or PM. AM and PM appear on the lampbank as follows:

AM if time is 12 midnight through 11:59 (before noon).
PM if time is 12 noon through 11:59 (before midnight).

NOTE: the column count which is used for the warning message during message entry is 11 columns for single stroke and 15 columns for double stroke.

"^T"

^T is displayed on the lampbank as the time of day. The time appears on the lampbank as follows:

X:XX if time is 1:00 --- 9:59
1X:XX if time is 10:00 --- 12:59
See ^A for AM or PM.

NOTE: The worst case column count used to calculate for the WARNING message during message entry is 23 columns for single stroke and 30 columns for double stroke.

"^Gn"

^Gn is displayed on the lampbank as graphic character n. The character will only be displayed to the last column that has a bulb on in it. Graphic characters can be tied together since no spaces are put between them.

NOTE: The column count used to calculate for the warning message during message entry is set by the number of columns in the character.

NOTE: Up arrow (↑) or carat (^) may be used depending on what is available on the terminal.

6. EXAMPLES

6.1 FOR THE BEGINNER

This section is intended for the beginner that is turning on the Venus^R 80 message system for the first time. After using this section to get you started and to see that everything is working, refer to the other sections in this manual for complete details on all functions.

1. Connect the signal connector jack J1 on the controller to the wall junction box using the signal extension cable.
2. Connect the power cord from the controller to a 120 volt outlet.

NOTE: It is important that the signal cable be connected BEFORE the controller is plugged in because the "length of lampbank" information is coded into jumpers in the junction box. The computer in the controller reads this code only once when the controller is first plugged in, and if the signal

cable is not connected to the junction box the computer will probably determine an incorrect lampbank length.

3. Turn on the video terminal and connect plug P3 from the controller to the video terminals EIA jack.
4. Wait about one minute for the "cursor" (a small rectangle of light) to appear on the screen.
5. Press any key (the "space bar" will work fine) and the computer will write the current status of the system onto the screen.
6. Now enter some messages into the memory.

<u>TYPE THIS:</u>	<u>EXPLANATION OF WHAT YOU ARE DOING:</u>
M	Entering the MESSAGE command.
01	Selecting message number 01. NOTE: this must be a zero no "0".
E	Setting this message as ENABLED.
(RETURN)	This jumps over the display mode and leaves it as is (CH=CHANGE). NOTE: the RETURN key is on the right side of the keyboard.
HAVE\A\NICE\DAY	This enters four (4) frames into message number 01. (Don't confuse the back-slash (\) with the slash (/). If you make a mistake, the backspace or delete key can be used to erase.
(RETURN)	This enters message #01 into memory.
(RETURN)	This moves the cursor to message #02.
E	ENABLES message number 02.
RU	This sets message #02 display mode to ROLL UP.
THIS	Enters the word "THIS" as the message.
(RETURN)	This enters message #02 into memory.
<u>TYPE THIS:</u>	<u>EXPLANATION OF WHAT YOU ARE DOING:</u>
(RETURN)	Moves the cursor to message number 03.
E	ENABLES message number 03.
WD	Sets the display mode to WIPE DOWN.

IS\A	This enters two frames: "IS" and "A"
(RETURN)	This enters message #03 into memory.
(RETURN)	Moves cursor to message number 04.
E	ENABLES message number 04.
VL	Sets display mode to VENETIAN LEFT.
[TEST]	Enters the word "TEST" in double stroke (BOLD) letters.
(RETURN)	Enters message #04 into memory.
ESC	This is the "ESCAPE" key. This exits the MESSAGE command.

- All messages are initialized in the sequence so your messages should be displayed on the lampbank.
- Now look at the lampbank to see that your messages are being displayed. Also note the CURRENT MESSAGE POINTER (>) which is jumping between messages numbers 01 through 05 as each one is displayed.
- Try turning the lampbank off.

<u>TYPE THIS:</u>	<u>EXPLANATION OF WHAT YOU ARE DOING:</u>
L	Enter the LAMPBANK command.
2	This will turn the lampbank OFF.

10. Check to see that the lampbank is not blank (OFF).

11. Turn the lampbank on again.

<u>TYPE THIS:</u>	<u>EXPLANATION OF WHAT YOU ARE DOING:</u>
L	Enter the LAMPBANK command.
1	This will turn the lampbank ON.

12. Set in the time of day.

<u>TYPE THIS:</u>	<u>EXPLANATION OF WHAT YOU ARE DOING:</u>
T	Enter the TIME command.

(Enter current time) This will set time of day. NOTE: this number must be entered as a four (4) digit number. For example 2:45 must be entered as 0245.

Your must also enter A or P for AM or PM, and also a number that corresponds to the current day of the week.

1=SUN, 2=MON, 3=TUES, 4=WED, 5=THUR, 6=FRI, 7=SAT.

When the A or P is entered the time is entered into memory and seconds are set to zero.

(RETURN) This will skip over automatic "turn on" time for now.

(RETURN) This will skip over automatic "turn off" time for now and will also end the time command.

13. Now make a message that uses the time.

<u>TYPE THIS:</u>	<u>EXPLANATION OF WHAT YOU ARE DOING:</u>
M	Enter the MESSAGE command.
07	Go to message number 07.
r X o ; ; ge	number 07.
TR	Sets display mode to travel.
THE TIME IS ^T^A	Enters this message into #07. ^T and ^A represents time and AM or PM. NOTE: the up arrow (↑) or the carat (^) may be used depending on what is available on the terminal.
(RETURN)	Enters message 07 into memory.

14. Check to see that your new message is now being displayed.

15. Now try experimenting with the other commands. Refer to the section "How the Computer Decides What to PUT on the Lampbank" if you have problems.

6.2 ADVANCED TOPICS-SPECIAL TRICKS

After you have had a chance to get familiar with all of the standard features of the Venus^R 80 message system you will want to use it to its fullest capability to get a truly dynamic and eye catching display.

One of the important areas is the use of different display modes and blanking modes to ensure that the "show" on the lampbank has

variety and excitement.

Depending on the location of the lampbank and the amount of time people passing by have to read your messages, you will notice that some display modes work better for your application.

Examples:

Long traveling messages usually will not be suitable for a busy intersection where motorists have only a few seconds to read your words. Changing messages with short words may be better for this application.

You will find that the vertical effects are a way to keep the information flowing fast and also add variety.

Special Effects:

After experimenting with the various FRAME-SEPARATORS (especially the PH "push" and OV "overtake" non-blanking frame separators) you will realize that a great number of "Special Effects" can be accomplished by using combinations of the standard display modes and frame separators. Almost every one of the standard DISPLAY MODES can be thought of as having four SUB-MODES.

- A. Lampbank is BLANK: The DISPLAY MODE brings on the NEW FRAME.
- B. OLD FRAME is on the lampbank: The DISPLAY MODE BLANKS the lampbank.
- C. OLD FRAME is on the lampbank (and is set to overtake). The DISPLAY MODE brings on the NEW FRAME and overtakes the OLD FRAME.
- D. OLD FRAME is on the lampbank (and is set to be pushed off). The DISPLAY MODE brings on the NEW FRAME pushing off the OLD FRAME>

Please turn to Appendix D for "More Examples and Tricks" of the interesting word story using various special effects. We suggest that you take time to try these examples. They will probably give you ideas for more "tricks" of your own design.

APPENDIX A: VENUS^R 80 MESSAGE
SYSTEM QUICK REFERENCE
GUIDE

VENUS^R 80 MESSAGE SYSTEM QUICK REFERENCE GUIDE

MESSAGE STATUS

D Disabled
E Enabled

DISPLAY MODES

CH Change

FL Flash

RU Roll Up

RD Roll Down

RL Roll Left

RR Roll Right

TR Travel (Right to Left)

VL Venetian Left

WU Wipe Up

WD Wipe Down

WL Wipe Left

WR Wipe Right

WI Wipe In

WO Wipe Out

FRAME SEPARATORS (BLANKING)

(use < or _ as available)

Blank the lampbank in the same mode that the information was displayed. (Default mode blanking.)

_BL Blank the lampbank all at once. ("BLANK")

_RU Blank the lampbank

by ROLLing the

_RD information off.

_RL

_RR

_VL Blank the lampbank

by VENETIANing the

_VR information off.

_WU

_WD Blank the lampbank

by WIPEing the

_WL information off.

_WR

_WI

_WO

SPECIAL CHARACTERS

(use ^ or † as available)

[] Specifies Double stroke.

^F Fahrenheit Temperature.

^A AM/PM.

^T Time of Day.

^C Celsius Temperature.

^Gn Graphic character n.

FRAME SEPARATORS (NON-BLANKING)

_OV Don't blank; the new frame OVERTAKES the old frame using the new frame's display mode.

_PH Don't blank; the old frame is PUSHed off of the lampbank the new frame's display mode.

OPERATOR COMMANDS:

A Auto E/D	Allows changing automatic scheduling system.
B Brightness	Controls the lampbank brightness.
C Calibrate	Allows minor adjustments in the temperature.
G Graphic	Allows creating graphic characters.
L Lampbank	Controls turning lampbank on & off, & lamptest.
M Messages	Changes a message (status, display mode, & data).
R Rates	Changes the rates used by the display modes.
S Sequence	Controls the sequencing of messages onto the lampbank also controls the E/D checking.
T Times	Changes time of day & automatic on-off times.

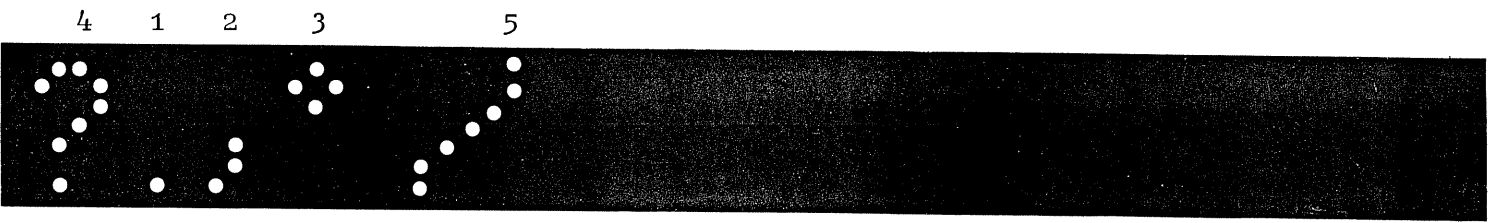
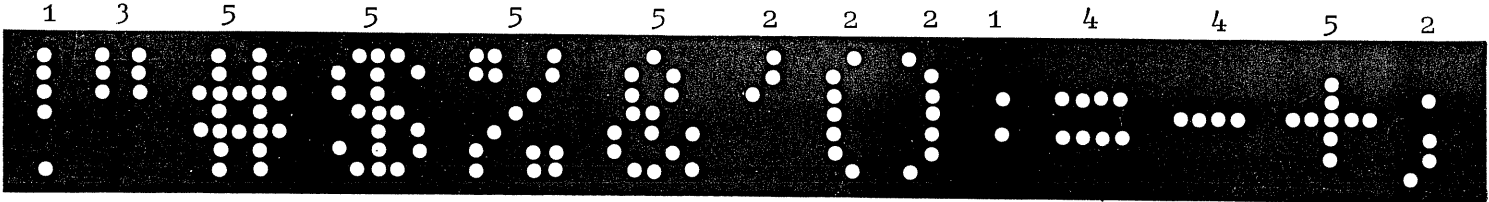
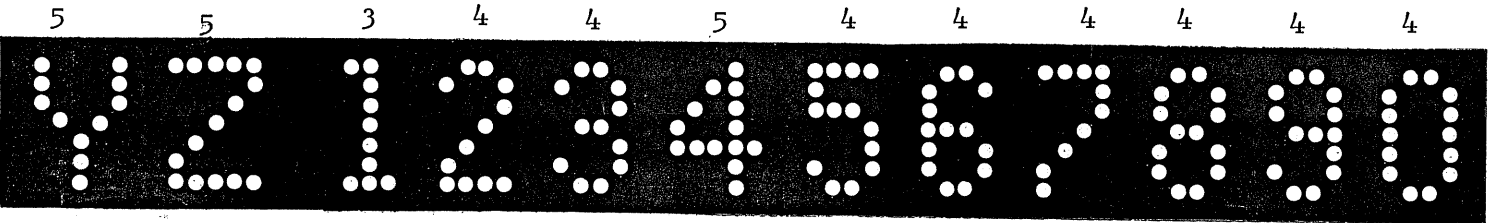
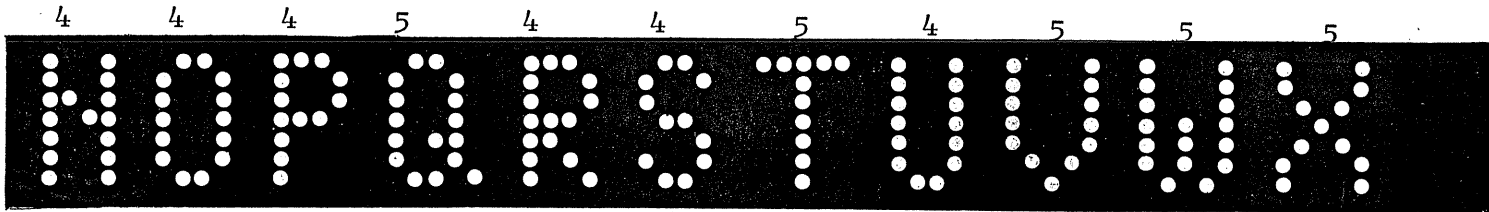
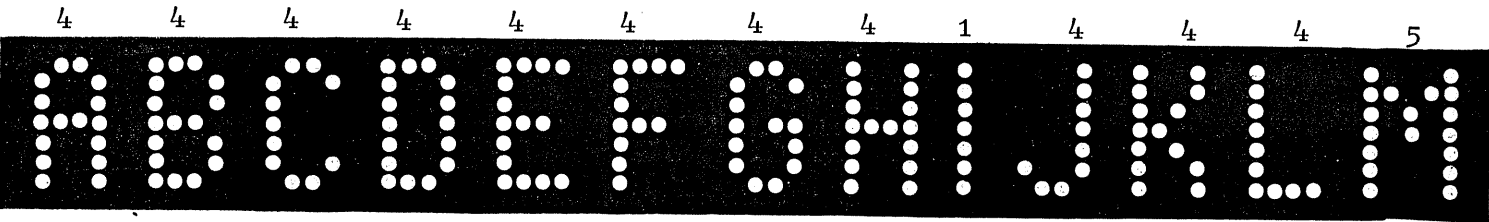
LAMPBANK DISPLAY PRIORITY:

1. Lampbank ON/OFF 2. IN/OUT of SEQUENCE 3. ENABLED/DISABLED

APPENDIX A

**APPENDIX B: SINGLE STROKE
CHARACTERS**

SINGLE STROKE CHARACTERS



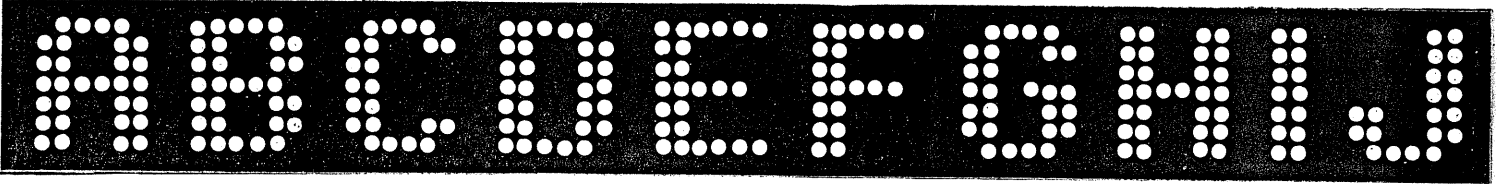
The number above each character denotes the number of columns required for that character.

A "single stroke" blank (Space) uses four (4) columns.

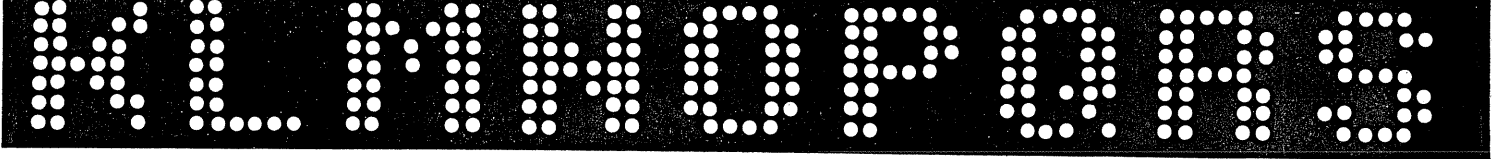
**APPENDIX C: DOUBLE STROKE
CHARACTERS**

DOUBLE STROKE CHARACTERS

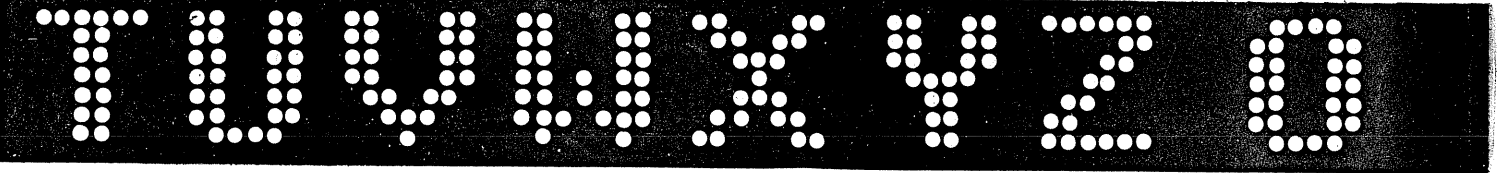
6 6 6 6 6 6 6 6 2 6



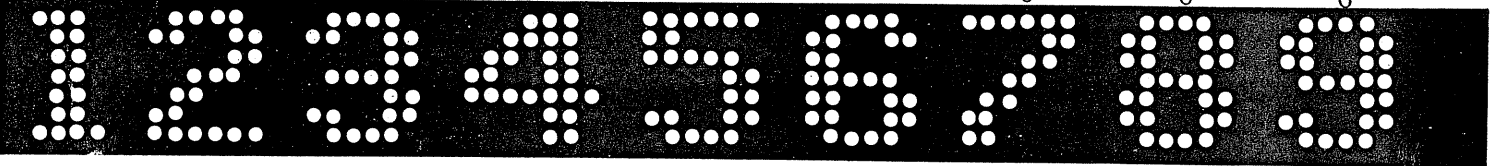
6 6 7 6 6 6 6 6 6 6



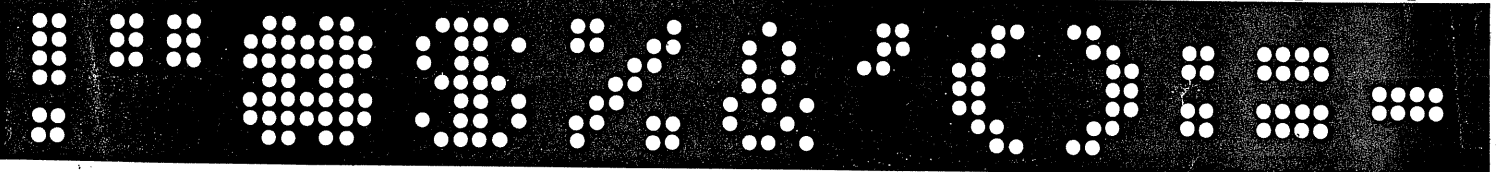
6 6 7 7 7 6 6 6



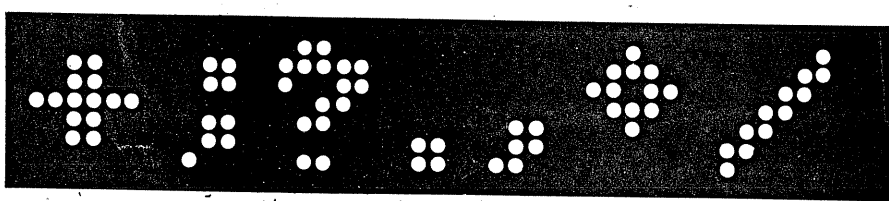
4 6 6 7 6 6 6 6 6 6



2 5 7 6 6 5 3 4 4 2 4 4



6 3 5 6 3 5 6



The number above each character denotes the number of columns required for that character.

A "double stroke" blank (Space uses five (5) columns).

APPENDIX D: ADDITIONAL EXAMPLES
AND TRICKS

ADDITIONAL EXAMPLES AND TRICKS

"The Story of Toast"

1 E RL <BREAD_RD>	(The bread rolls in and down
2 E FL <COOK_WU>	(into the toaster. It cooks.
3 E RU <TOAST_RR>	(The toast comes up out of the
4 E CH <EAT_OV AT_OV>	(toaster and is eaten piece
5 E WD < T_OV >	(by piece. Note- insert spaces
	(as shown.

"Cursor Spelling"

1 E WD <S -OV>	(By using wipe up and wipe down
2 E WU <SP _OV>	(along with overtake-this makes
3 E WD <SPE _OV>	(the word look like it is being
4 E WU <SPEL _OV>	(written with a pencil.
5 E WD <SPELL_OV>	
6 E CH <SPELL_WL>	

"Typing"

1 E CH <T[] _OV>	(This gives the effect of each
2 E CH >TY _OV>	(character being printed by a
3 E CH <TYP _OV>	(typewriter, including rolling
4 E CH <TYPE_OV>	(the paper up at the end of the
5 E CH <TYPE_RU>	(line.

"Card Trick"

1 E RD < CRD. 1_PH>	(This gives the effect of
2 E WR < CRD. 2_PH>	(looking at the top of a deck
3 E WR < CRD. 3_PH>	(of cards as one card is
4 E WR < CRD. 4_PH>	(removed at a time.
5 E WR < CRD. 5_PH>	

"Drowning 'Help'"

1 E RL <H _RD>	(Each letter walks across the
2 E RR < E _RD>	(ice and falls into the water
3 E RL < L _RD>	(in the correct position-after
4 E RR < P _RD>	(three cries it is pulled out
5 E RU <HELP_RD>	(of the lake.
6 E RU <HELP_RD>	
7 E RU <HELP_RD>	

"Soup Commercial"

1 E RL <WATER_RD>	(All of these ingredients slide
2 E RR <SPUDS_RD>	(over and drop into the soup.
3 E RL <MEAT_RD>	(The soup then comes up out of
4 E RR <CARROTS_RD>	(the bowl and is eaten.
5 E RL <SALT_RD>	
6 E FL <COOK>	
7 E RU <SOUP_VL>	
8 E CH <EAT_OV>	
9 E WD < AT_OVT_OV >	

**APPENDIX E. PROGRAMMED MESSAGES ON
VENUS^R 80 MESSAGE
SYSTEM**

PROGRAMMED MESSAGES ON VENUS^R 80 MESSAGE SYSTEM

Typical examples of programmed messages on the Venus^R 80 message system using the 640 character memory capability.

HAPPY	STOP	WE
NEW	POLLUTING	WISH
YEAR!	YOURSELF	YOU
RESOLVE	KICK	THE
TO	THE	BEST
SAVE!	HABIT	FOR
		THE
YOUR	HIGH	NEW
PASSBOOK	SCHOOL	YEAR
WILL	CLASS	
GROW	PLAY	12:35
EACH	FRIDAY	32 F
WEEK	AT	0 C
AS	8:00 PM	
YOU		WE'RE
SAVE	12:32	OPEN
WITH	32 F	TILL
US	0 C	SIX
		TODAY
LET'S	SPRING	
ALL	FIX-UP	STOP
GO	TIME	IN
TO	WE'VE	AND
THE	GOT	SEE
BASKETBALL	THE	US
GAME	CASH	FOR
TONIGHT		A
	FIVE	HOME
12:30	YEAR	LOAN
32 F	CERTIFICATE	
0 C	PAY	HAVE
	11.578%	A
TALK		GOOD
TO	THE	DAY!
US	GOOD	SHOP
WHEN	BANK	AND
YOU	GIVETH-	SAVE
NEED	WHAT	DOWNTOWN
A	UNCLE	
LOAN	SAM	
	TAKETH	
PAY	AWAY	
YOUR		
PROPERTY		
TAXES		
HERE		

TERMINAL CONFIGURATION

Use the following switch settings for standard local control operation. Refer to Appendix G. on Remote Control Operation for switch settings for that mode.

ADDS VIEWPOINT

The ADDS Model: VIEWPOINT A-1 can be identified by it's detachable keyboard and the word ADDS written on the keyboard. It has eight (8) switches on the back of the terminal near the power cord. Switches 3 and 5 should be UP and the rest should be DOWN.

Switch 1	Down	-9600 Baud
Switch 2	Down	-9600 Baud
Switch 3	Up	-9600 Baud
Switch 4	Down	-Auto Scroll: Enabled
Switch 5	Up	-Auto Line Feed: Disabled
Switch 6	Down	-Full Duplex
Switch 7	Down	-Parity: Space
Switch 8	Down	-Parity: Space

HAZELTINE 1420

The HAZELTINE Model 1420 terminal has an attached keyboard and has a small access cover above the keyboard. Under this cover are 16 small switches. The LEFT group of eight (8) switches must be ALL DOWN. The RIGHT group of eight (8) must have Switch 6 UP and all the rest DOWN.

Left Group	Switch 1	Down	-Not Used
	Switch 2	Down	-Not Used
	Switch 3	Down	-9600 Baud
	Switch 4	Down	-9600 Baud
	Switch 5	Down	-9600 Baud
	Switch 6	Down	-Lead In Code: Tilde
	Switch 7	Down	-Parity: Space
	Switch 8	Down	-Parity: Space
Right Group	Switch 1	Down	-Not Used
	Switch 2	Down	-Cursor: No Wrap-around
	Switch 3	Down	-Not Used
	Switch 4	Down	-Font: Upper & Lower
	Switch 5	Down	-Full Duplex
	Switch 6	Up	-Auto Line Feed: Enabled
	Switch 7	Down	-On Line: Off
	Switch 8	Down	-Not Used

APPENDIX F: TERMINAL CONFIGURATION

WYSE 30

The WYSE Model 30 is configured by powering up the terminal, and entering the setup mode by pressing the SHIFT and SETUP keys simultaneously. Two lines of rectangular boxes (fields) will appear, one at the top and one at the bottom of the CRT.

Looking at the bottom set of fields, the active field is the highlighted one. To change the value of the active field press the SPACE BAR. To change the active field use the RIGHT and LEFT ARROW keys. To change levels use the UP and DOWN ARROW keys. Use the following table to set the values for each field.

SETUP	FIELD	VALUE
First Level	Handshake	None
	Screen	Dark
	Cursor	Block
	Blink	On
	Mode	FDX
Second Level	Data Bits	8
	Stop Bits	1
	Parity	None
Third Level	Baud Rate	9600
	Keys	Us
Fourth Level	Blk End	US/CR
	Auto NL	OFF
	CR	CR
	Auto SCRL	OFF
	Lock	CAPS
Fifth Level	Repeat	ON
	CRT Saver	ON
	Protect Attribute	DIM PAGE
Sixth Level	Compatible Mode	ADDSVP
	Enhance	OFF
	Keypad	NUMERIC
	Fkeys	REMOTE
	Test	OFF

Seventh Level Setup. This level will go through a sequence of keys highlighted at the bottom of the CRT. This section will blank all of these keys. Use the following steps:

1. First key will be the ESC key. The field (rectangle) to the right is to be one solid field with no characters or spaces.
2. If the field has a character or space press the HOME key to clear it. When the field (to the right) is clear press the DOWN ARROW key to go to the next key. Repeat these steps until it cycles back to the level one fields.
3. After all keys have been cleared press the SHIFT and SETUP keys simultaneously to EXIT the setup mode.
4. The fields at the top of the CRT will ask 'SAVE CHANGES FOR POWER-ON?' Press the Y key to save the setup.

**APPENDIX G: REMOTE CONTROLLED
OPERATION**

REMOTE CONTROLLED OPERATION

A remote controlled Venus^R 80 system generally operates the same as a standard (local control) system except that the terminal (operator's console) and the controller may be miles apart. The terminal and controller are connected via standard phone lines using communication devices called modems. This section explains use of the standard Daktronics' modem, the Multi-Tech model MT212C.

DEFINITIONS

The term OPERATOR'S STATION refers to the equipment (Operator's Console and modem) at the point of operation.

The term DISPLAY STATION refers to the equipment (Controller and another Modem) located near the display.

The system can be operated over stand "dial-up" or with "dedicated" phone lines. Use of a dial-up line will require a telephone instrument to "make a call" to the display station. When a dedicated line is used, both modems are always connected and dialing is not required.

SWITCH SETTINGS

Modems: Refer to the Installation/Technical Manual for the proper internal switch settings. Make sure the OOS/ANLB (Out Of Service/Analog Loopback) switch on the front of the modem is in the center position.

Video Terminal: Note that the switch settings for remote control are different than for local control.

ADDS VIEWPOINT

Switch 1	Up	-1200 Baud
Switch 2	Down	-1200 Baud
Switch 3	Down	-1200 Baud
Switch 4	Down	-Auto Scroll: Enabled
Switch 5	Up	-Auto Line Feed: Disabled
Switch 6	Down	-Full Duplex
Switch 7	Down	-Parity: Space
Switch 8	Down	-Parity: Space

HAZELTINE 1420

Left	Switch 1	Down	-Not Used
Group	Switch 2	Down	-Not Used
	Switch 3	Down	-1200 Baud
	Switch 4	Down	-1200 Baud
	Switch 5	Up	-1200 Baud
	Switch 6	Down	-Lead In Code: Tilde
	Switch 7	Down	-Parity: Space
	Switch 8	Down	-Parity: Space

Right	Switch 1	Down	-Not Used
Group	Switch 2	Down	-Cursor: No Wrap-around
	Switch 3	Down	-Not Used
	Switch 4	Down	-Font: Upper & Lower
	Switch 5	Down	-Full Duplex
	Switch 6	Up	-Auto Line Feed: Enabled
	Switch 7	Down	-On Line: Off
	Switch 8	Down	-Not Used

WYSE 30

Remote control operation for the WYSE 30 is the same as the Terminal Configuration described in APPENDIX F, with the exception that the baud rate in the Remote Control Operation is set to 1200 baud not 9500 baud.

OPERATION FOR DIAL-UP PHONE LINES:

1. Lift the handset of your telephone and listen for the dial tone. After hearing the dial tone, dial the number for the modem at the lampbank. (At this point your telephone is functioning the same as if there were no modem involved. You can use your telephone to make normal voice calls as well as data calls.)
2. After dialing the number, listen to the other end for the called modem' "answer back tone". This will sound like a high pitched whistle, and is the first step of what is know as "handshaking" between modems.
3. When you hear the answer back tone, press the button on the front of the modem labeled VOICE-DATA. Press the button once, you do not need to hold it in. This will transfer your call from the "voice" mode into the "data" mode. The answer back tone should now change. You may replace the handset in the telephone cradle.
4. As the VOICE-DATA button is pressed, the OH and DSR lights on your modem should come on. About two seconds later the CO and CTS lights should come on (DTR should always be on).
5. You should not be connected and "on-line". Verify this by seeing that CO, CTS, DSR, OH and DTR are on. You may now press a key on the video terminal and it should write the complete screen on the video display. You may now enter information into the Venus^R 80. The XMT and RCV lights should flash when transmitting and receiving.
6. To terminate the call, momentarily depress the VOICE-DATA button or reset the modem by momentarily moving the OOS/ANLB switch to the left. If you should become disconnected accidentally, you will have to redial.

OPERATION FOR DEDICATED PHONE LINE:

Once the modems are installed and powered up they should be "on-line". The CO, CTS, DSR, OH and DTR indicators should be on. You should not be able to press a key on the video terminal and write the complete screen on the video display. You may now enter information into the Venus^R 80. The RCV and SMT lights should flash when receiving and transmitting. Since the line is dedicated to your two modems, there should be no need to disconnect.

APPENDIX G

MODEM TEST:

With the operator's console connected to the modem, a test of the modems receiver and transmitter may be done. The OOS/ANLB switch on the front of the modem should be moved to the right. This will cause data received by the modem to be sent back to the operator's console. Characters now typed at the operator's console will appear on the video display if the modem is working. This test may be done to both modems using the operator's console and connecting cable. Make sure to return the OOS/ANLB to the center position after testing.

BREAK KEY:

If the modems should go off-line or get bad data over the phone line the video display may show erroneous data. Press the BREAK key while holding down the CTRL key (BREAK key only on Hazeltine terminals) and the video display will be rewritten when the next key is pressed.

SERVICE:

In the event that the modems require service, contact Daktronics Customer Service. FCC regulations require that modems be repaired only by qualified technicians.

