AMSIG®

AMERICAN SIGNAL COMPANY

Portable Trailer

T-331, 332, 333
&
GP-232, 432, 465

Operations Manual

(Legacy Firmware)

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I. Revision Information

Rev.	Date	Author	Description	Page
A	8-20-04	Price R. Potter	Initial Release	-
B	11-1-04	Price R. Potter	Revise Dim Level Table for 432	41
C	12-16-04	Price R. Potter	Correct speed display command from (Graphics-ShiftB) to (Shift-Radar) in Radar Sequence Programming (f. & g.)	17
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E	2-1-05	Price R. Potter	Revise Dim Level Table for 232 & 432 (back to Rev. A levels)	41
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G	3/31/12	Michael Tong	Revised sections 3.1.1 and 3.1.2 with additional parameter settings nfo.	38-41

1.0 Introduction

Congratulations on your investment in a Portable Variable Message Sign from American Signal Company. We have worked hard to create a portable system that is not only effective but easy to operate. All of the operational features have been designed with the user in mind. This Operations Manual contains information that is applicable to all of the 33x series Trailers (331, 332 & 333) as well as the x32 Advantage series Trailers (232, 432 & 465). In the event certain instructions or information pertains only to a particular model, the text will be labeled to clearly differentiate the specific data for your Portable VMS Trailer. Below is a chart of the models discussed in this Operations Manual and some of the distinguishing characteristics of each one.

VMS Model	Sign Case Size	Matrix	Rows	Columns	Pixel
331	6'-7.5" High x 11'-5.5" Wide	Character	21	40	4 LEDs/Pixel
332	6'-7.5" High x 11'-5.5" Wide	Line	21	50	4 LEDs/Pixel
333	6'-7.5" High x 11'-5.5" Wide	Full	28	50	4 LEDs/Pixel
232	3' High x 6'Wide	Full	28	72	1 LED/Pixel
432	4' High x 8' Wide	Full	28	50	2 LEDs/Pixel
465	4' High x 6' Wide	Full	28	48	4 LEDs/Pixel

Please take a few moments to read over and become familiar with these instructions. The "software" in your portable VMS will prompt you every step of the way as you learn how to control the sign and display messages.

Detailed information on the service and maintenance of the VMS software is contained in the T-33x Series Service & Maintenance Manual or Advantage Series Service & Maintenance Manual.

1.1 Conventions

In this manual, you will see a word (or several words) inside the "<>" symbols. Rather than typing the word(s) shown, you should locate the key named on the keyboard and press that key. Below are a few examples of the use of the "<>" symbols.

<Enter>	Press the enter key
<Left Arrow>	Press the left arrow key
<F1>	Press the F1 function key

At times, you will be instructed to press a letter key in quotation marks. For example, if the instructions say to hit the "X" key or the "P" key, do not type the quotation marks. Type only the letter between them.

Also, there are times when you must press two keys together. Such a requirement will have the keys joined with a dash inside the "<>" symbols. <Alt-F5> means to hold down the Alt key and press the F5 key and then release them both.

To navigate through selections at any menu, you may either select the number of the desired menu selection or you may scroll through the selections using the <UP ARROW> and <DOWN ARROW> keys

At any point during programming, you may escape from the program. Simply press <ESCAPE>. The Terminal will ask you to verify that you wish to abort (escape from programming). Type "Y" for "yes".

➤➤➤ USER'S NOTE ◄◄◄

*Throughout this manual, helpful hints on the operation of the VMS will be found under the heading "*USER'S NOTE*". These hints offer suggestions for use of some of the sign's more valuable features. All* USER'S NOTEs *will be formatted like this one.*

1.2 Hand-held Terminal

The Hand-held Terminal is the input device that allows local control of the VMS and is stored at the bottom of the Pedestal Assembly. The Hand-held Terminal features a keypad and a backlit LCD display for superior visibility. The Hand-held Terminal is intended to be portable and is used by releasing the Velcro straps that hold it in it's cradle. The Terminal cable is long enough to allow movement of the operator around the Trailer unit. The Terminal can also be totally removed from the Pedestal Assembly and stowed in a separate, more secure area. If the Terminal is disconnected, the VMS will continue to operate as previously programmed.

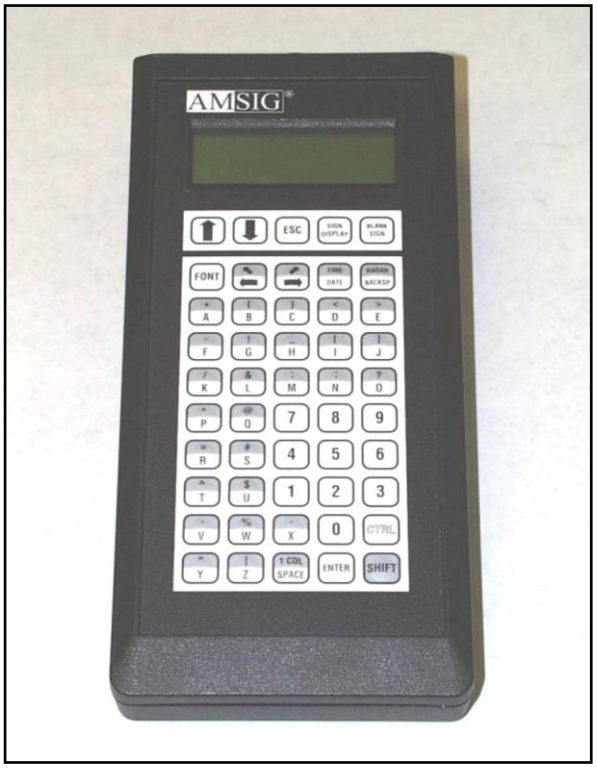


Figure 1-1 Hand-held Terminal (TER-105)

2.0 System Operations

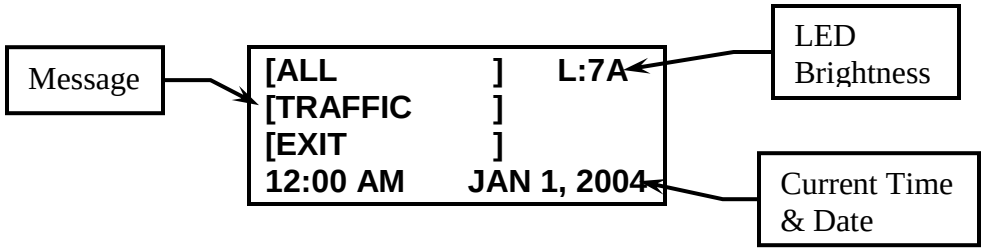
The Operations section will discuss the actual steps required to control the various aspects of your VMS and give detailed information needed to navigate the text-driven menu system displayed on the Terminal.

2.1 Sign Status Display

The control Terminal will display the SIGN STATUS DISPLAY while no user is operating the Terminal. If a user is using the Terminal, and does not press a key for four (4) minutes, the Terminal will log out and return to the SIGN STATUS DISPLAY. If the user presses the "SIGN DISPLAY" key while at a menu, the control Terminal will also log out and return to the SIGN STATUS DISPLAY.

The SIGN STATUS DISPLAY shows

1. Message being displayed on the sign face,
2. LED Brightness (a single digit 0-9 indicating the manually set level, or a single digit 0-9 followed by the letter "A" indicating the sign's current automatic level) and
3. Current time and date.



The sample Sign Status Display above is indicating the following:

1. The sign face contains the text "ALL TRAFFIC EXIT"
2. The LEDs are at brightness level "7" and are operating in automatic (A) mode
3. The signs clock is set at 12:00 AM, January 1, 2004

Press <ESCAPE> and the display will prompt you to enter your password.

Password protection allows you access to the function of the VMS and prevents unauthorized users from changing the settings and parameters with the unit. When shipped from the factory the basic level password is set to REDACTED.

Information regarding the password levels and changing passwords is included in the Appendices.

2.2 MAIN Menu

To access the MAIN Menu, type in your password and press <ENTER>. (NOTE: Info on REDACTED password access in contained in this section. See Section 3.0 for detailed instructions on REDACTED lever access and features.) The MAIN Menu will now appear on the screen with the following choices:

1. TIME & DATE Menu: allows you to verify either or both the time and date, and to change them if necessary.

2. SIGN CONTROL Menu: allows you to control the operation of the sign illumination system.

3. MESSAGE Menu: allows you to create, store, retrieve, sequence and delete messages.

4. SCHEDULE Menu: permits you to program daily, weekly or yearly schedules for operation of the sign.

Figure 2-1 shows the general command structure of the MAIN Menu and sub-menus.

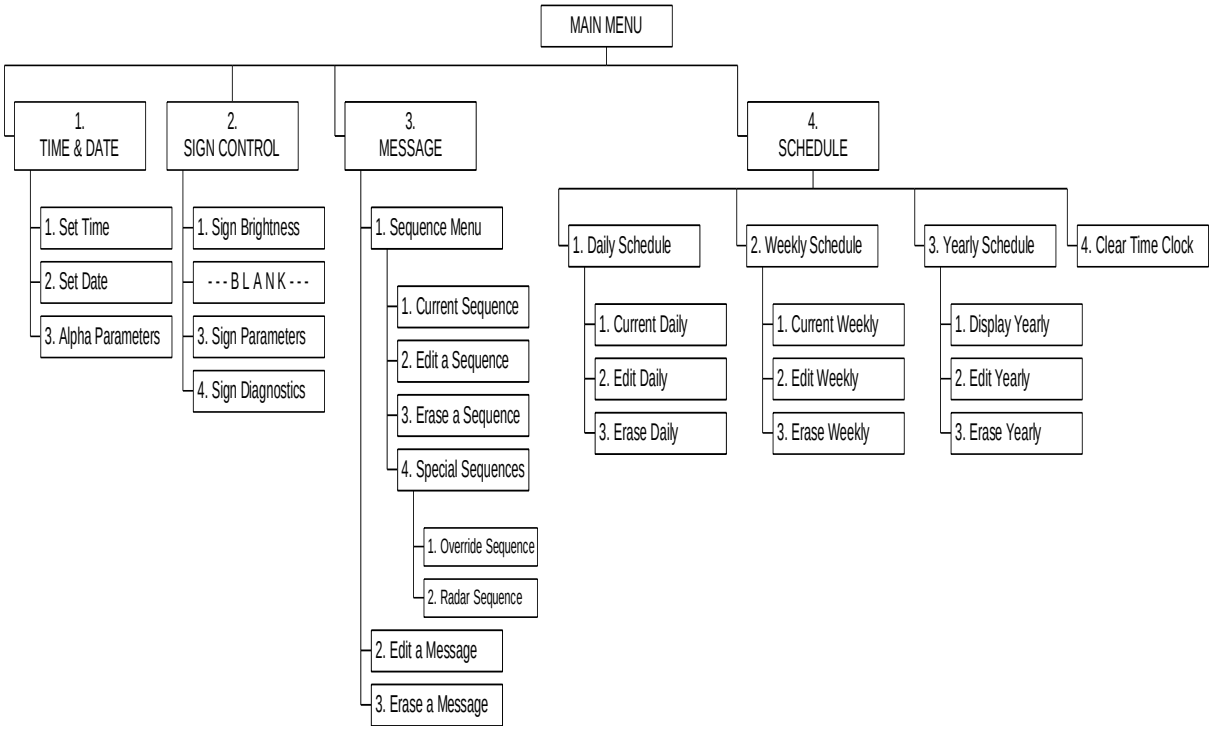


Figure 2-1 MAIN Menu Overview

2.2.1 TIME & DATE Menu

To choose TIME & DATE from the MAIN Menu, type the number "1" and press <ENTER>. Two options are available:

1. **Set Time**
2. **Set Date**

1. SET TIME

a. Type the number "1" and press <ENTER>. The Terminal will display its current time and it will prompt you to change the time.
b. If the time is correct and does not have to be changed, type "N" for "no" and press <ENTER>. The Terminal will return you to the TIME & DATE Menu.
c. If the time is incorrect and should be changed, type "Y" for "yes" and press <ENTER>. The display will allow you to enter the hour, the minute and choose A.M. or P.M. When finished, the display will prompt you to verify the time you have entered. Type "Y" for "yes" and press <ENTER> if it is correct or "N" for "no" and press <ENTER> if you want to change it again.
d. The display will return to the TIME & DATE Menu.
e. To return to the MAIN Menu, press <ESCAPE>.

2. SET DATE

a. Type the number "2" and press <ENTER>. The Terminal will display its current date, and it will prompt you to change the date.
b. If the date is correct and does not have to be changed, type "N" for "no" and press <ENTER>. The Terminal will return you to the TIME & DATE Menu.
c. If the date is incorrect and should be changed, type "Y" for "yes" and press <ENTER>. The display will then allow you to enter the month, day of the month, and the year. When finished, the display will prompt you to verify the date you have entered. Type "Y" for "yes" and press <ENTER> if it is correct or "N" for "no" and press <ENTER> if you want to change it again.
d. The display will then return to the TIME & DATE Menu.
e. To return to the MAIN Menu, press <ESCAPE>.

➤➤➤ **USER'S NOTE** ➤➤➤

The VMS does not require you to enter the day of the week. The sign does this automatically once you enter the date.

The VMS allows you to display the current date and time for motorist information. Instructions for these features are found n the MESSAGE Menu section.

3. ALPHA PARAMETERS

This feature is not present under the REDACTED password and is only accessible using the REDACTED password. For information on additional capabilities contained in this part of the program, refer to Section 3.0 System Information and Parameters.

2.2.2 SIGN CONTROL Menu

To choose the SIGN CONTROL Menu from the MAIN Menu, type the number "2" and press <ENTER>. The following choices are available. (NOTE: Sign Parameters and Sign Diagnostics are only available using the REDACTED password.)

1. **Sign Brightness**
2. **(- - - BLANK - - -)**
3. **Sign Paramters**
4. **Sign Diagnostics**

1. SIGN BRIGHTNESS

a. To select SIGN BRIGHTNESS type the number "1" and press <ENTER>. The Terminal will then display the current sign brightness (on, off or as needed) and prompt you to change the mode.
b. If the SIGN BRIGHTNESS is as desired and does not have to be changed, type the letter "N" for "no" and press <ENTER>. The Terminal will return you to the SIGN CONTROL Menu.
c. If the SIGN BRIGHTNESS should be changed, type "Y" for "yes" and press <ENTER>. The Terminal will prompt you for the new sign brightness.

Enter the brightness level 1- 9 or 0 for automatic.
Brightness (1-9, 0):

1. Entering a zero (0) will select the brightness mode in which the sign will automatically adjust the brightness to match the ambient light conditions.
2. Entering 1 - 9 will select that brightness level until it is changed by the user or in the schedule.
3. The Terminal will prompt you to verify your choice. Type "Y" for "yes" and press <ENTER> if it is correct or "N" for "no" and press <ENTER> if you want to change it again.
4. The display will return to the SIGN CONTROL Menu.
5. To return to the MAIN Menu, press <ESCAPE>.

2. (- - - BLANK - - -)

This menu item is not used and left blank intentionally. It only shows up under the REDACTED password.

3. SIGN PARAMETERS

This feature is not present under the REDACTED password and is only accessible using the REDACTED password. For information on additional capabilities contained in this part of the program, refer to Section 3.0 System Information and Parameters.

4. SIGN DIAGNOTICS

This feature is not present under the REDACTED password and is only accessible using the REDACTED password. For information on additional capabilities contained in this part of the program, refer to Section 3.0 System Information and Parameters.

2.2.3 MESSAGE Menu

To choose the MESSAGE Menu from the MAIN Menu, type the number "3" (Message Menu) and press <ENTER>. The MESSAGE Menu will appear listing the following items:

1. **Sequence Menu**:
2. **Edit a Message**
3. **Erase a Message**

> ➤➤➤ **USER'S NOTE** ➤➤➤
> *At any menu, you may blank the sign. It is a good idea to do this before programming, but it is not required. If the sign is blanked, no messages will ever be displayed even if a Daily Schedule tries to start a display. Do not leave the sign blanked unless it is to be taken out of service. To blank the sign, simply press <BLANK SIGN>. The display will show you whether the sign is currently blanked and ask if you want to change the setting. If you do, then type "Y" for "yes" and press <ENTER>. The display will ask if you want to blank the sign; type "Y" for "yes" and press <ENTER>, if you want to stop displaying messages; or "N" and <ENTER> if you want the sign to display the messages in the current sequence. The display will then ask you to verify your choice. Type "Y" for "yes" and press <ENTER> if it is correct or "N" for "no" and press <ENTER> if you want to change it again.*

1. SEQUENCE MENU

Provides for the creation, change, storage and/or retrieval of user-defined sequences. Sequences are multiple (up to six) messages that are grouped into a single unit. Inside the Sequence Menu are the following options:

1. Current Sequence
2. Edit a Sequence
3. Erase a Sequence
4. Special Sequence - Permits you to choose a message that will appear on the sign display whenever the sign is not in operation OR a message will appear when activated by the radar option.

1. Current Sequence:

a. To select CURRENT SEQUENCE, type the number "1" and press <ENTER>. Since the blank sign setting will determine if the current sequence of messages will be displayed on the sign face, the blank sign setting is edited just as if you pressed the <BLANK SIGN> key. The display will show you whether the sign is currently blanked and ask if you want to change the setting.
b. If you want to change the setting, type "Y" for "yes" and press <ENTER>.

1) This display will ask if you want to blank the sign:
   i) If you want to stop displaying messages, type "Y" for "yes" and press <ENTER>.
   ii) If you want the sign to display the messages in the current sequence, or "N" and <ENTER>.
2) The display will then ask you to verify your choice.

c. The console will then display the current sequence of messages, noted by number and short description. (This description is entered for each sign by whoever enters the message text.)
   1) The display will prompt you to change the current sequence.

> ➤➤➤ **USER'S NOTE** ➤➤➤
> *Pressing <UP ARROW> or <DOWN ARROW> allows you to view all six (6) of the positions in the message sequence.*

   2) If the current sequence is as desired and does not have to be changed, type the letter "N" for "no" and press <ENTER>. The console will return you to the MESSAGE Menu.
   3) If any or all of the positions in the current sequence should be changed, type "Y" for "yes" and press <ENTER>. The console will then allow you to change any or all six (6) possible messages in the sequence with the following prompt:

Pos (0=exit, 1-6)?

> ➤➤➤ **USER'S NOTE** ➤➤➤
> *Pressing <UP ARROW> or <DOWN ARROW> allows you to view all six (6) of the positions in the message sequence.*

> ➤➤➤ **USER'S NOTE** ➤➤➤
> *Messages numbered 0 to 199 are factory programmed; a listing of these messages is included in the appendix(pages 3 and 4) of this manual. Messages numbered 200 to 400 are user-defined. Message "0" is a blank message. Message number 999 is used to indicate no message in this position. For example, if you want to display only three messages in a sequence, select message 999 for positions 4, 5 and 6.*

   4) At the prompt, enter the number of the position to be changed or enter "0" to not change any more positions. If you enter a valid position number, the display will show all of the defined messages by message number and description with the current message for this position at the top of the screen.

> ➤➤➤ **USER'S NOTE** ◄◄◄
> *Pressing <UP ARROW> or <DOWN ARROW> allows you to view all of the existing messages. Pressing <SHIFT> + <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or reverse twenty-five (25) messages.*

5) Enter the message number of the message you want for this position in the sequence. The display will show you the text of the message and the "On" and "Off" times for the message and ask you to verify your selection.
6) After the sequence has been changed to your liking, type the number "0" to end.
7) The display will show the sequence you have entered and ask you to verify that the sequence is correct.
8) Type "Y" for "yes" and press <ENTER> if it is correct or "N" for "no" and press <ENTER> of you want to change it again.
9) If the sign is not blanked, the sign will start displaying the messages in the sequence of messages you have entered.

d. The display will then show you the current message display rate and ask you if you want to change it. If the message display rate is as desired and does not have to be changed, type the letter "N" for "no" and press <ENTER>. The console will return you to the MESSAGE Menu.
e. If the message display rate should be changed, type "Y" for "yes" and press <ENTER>.
   1) The display will prompt you to select a display rate from "0" (slow) through "7" (fast). Select a rate and press <ENTER>.
   2) The display will ask you to verify that the message rate you selected is correct. Type "Y" for "yes" and press <ENTER> if it is correct or "N" for "no" and press <ENTER> if you want to change it again.
   3) The display will then return to the MESSAGE Menu.
f. To return to the MAIN Menu, press <ENTER>.
g. To see the messages as they are displayed on the sign, press <SIGN DISPLAY>, located on the bottom right hand corner of the keyboard face. The console will then show that message text as it is being displayed on the sign face.

> ➤➤➤ **USER'S NOTE** ◄◄◄
> *Pressing the <SIGN DISPLAY> key also logs you out of the system, preventing unauthorized access.*

2. Edit a Sequence:

a. Type the number "2" and press <ENTER>. The Terminal will prompt you for the number of the sequence to be edited.
b. To edit a sequence, type the number of the sequence between "1" and "250" and press <ENTER>.

> ➤➤➤ **USER'S NOTE** ◄◄◄
> *Pressing <UP ARROW> or <DOWN ARROW> allows you to view all of the existing sequences. Pressing <SHIFT> + <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or reverse twenty-five (25) sequences.*

c. If the number selected represents a new sequence, the display will prompt you to verify that you want to enter a new sequence. Type "Y" for "yes" or "N" for "no" and press <ENTER>.
d. If the sequence number entered is for an existing sequence, the Terminal will display the chosen sequence description and prompt you to change it. Type "Y" for "yes" or "N" for "no". and then press <ENTER>.
    1) If "Y" for "yes", type a short description of the message and then press <ENTER>. (Note: Often the sequence itself or an abbreviated version of it may be handy as the sequence description.)
e. The Terminal will display the Sequence description along with the messages (up to six) that make up that sequence and prompt you to change it. Type "Y" for "yes" or "N" for "no". and then press <ENTER>.
f. It will then ask you if you want to use a preprogrammed sequence.
    1) Type "Y" for "yes" and press <ENTER> if you want to copy an already existing sequence into the new one that you are creating. This would be useful if the new sequence was very similar to one that had previously been entered. You would only need to change the messages that needed to be different and leave the others the same.
        i) Chose existing preprogrammed sequence from list and press <ENTER>.
    2) Type "N" for "no" and press <ENTER> if you want to start creating your new sequence from scratch.
g. Terminal will show sequence description and associated messages. It will prompt you which message Position (1-6) you want to change. Press Position number (1-6) or "0" if you want to Exit.
    1) Once Position (1-6) has been entered, the Terminal will display a list of existing messages (0-700, 999) and prompt you to enter one. Select the desired message number and press <ENTER>.
    2) The Terminal will display the chosen message and also show the "On" and "Off" times in the upper right hand corner. It will as for confirmation that this is the desired message for the current position. Type "Y" for "yes" or "N" for "no" and then press <ENTER>.
    3) Repeat steps g. 1) and g. 2) for up to six message positions. Press "0" to Exit when finished.
h. The display will prompt you if the sequence is correct.
    1) Type "Y" for "yes" or and press <ENTER> to return to Sequence Menu.
    2) Type "N" for "no" and press <ENTER> to return to editing steps for sequences.

3. Erase A Sequence:

a. Type the number "3" and press <ENTER>.
b. The console will then prompt you to type the number (1 - 250) of the sequence to be erased. Pressing <UP ARROW> or <DOWN ARROW> allows you to view all of the existing messages.
c. The console will prompt you to verify that you wish to erase the selected sequence. Type "Y" for "yes" or "N" for "no" and press <ENTER>.
d. The display will then return to the SEQUENCE Menu.
e. To return to the MAIN Menu, press <ESCAPE>.

4. Special Sequence:

Contains two options that add specialized features to the VMS:
1. Override Sequence – not currently used
2. Radar Sequence – used with optional Radar

Radar Sequence Operation:
The optional radar speed detection feature allows for the display of the speed of an approaching vehicle within a range of 300 to 600 feet, and traveling in excess of the trigger speed. The trigger speed is operator programmable from the Terminal in increments of one mile per hour.The radar activated message control is operator programmable through the Terminal. The radar messages to be displayed must be inserted in the "6" position (Radar Message Sequence). The operator may use either the factory preprogrammed messages, or those created by the operator. Any keyboard message(s) may include the feature of displaying on the sign face the actual measured speed of the oncoming vehicle.

Radar Sequence Programming:

a. After entering the password (user level or above), enter "3" for the MESSAGE Menu.
b. At the MESSAGE Menu, enter "1" for the SEQUENCE Menu.
c. At the SEQUENCE Menu, enter "4" for the SPECIAL SEQUENCES Menu.
d. At the SPECIAL SEQUENCES Menu, enter "2" for the RADAR SEQUENCE.
e. At the RADAR SEQUENCE Menu, choose the appropriate trigger speed.
   1) When the trigger speed has been chosen, the "6" slot radar message sequence appears, and you may choose any six (6) messages from the up to 199 factory pre-stored messages or the up to 199 operator keyboard messages for display during the radar's detection period.

➤➤➤ USER'S NOTE ◄◄◄
While a maximum of six (6) messages may be used in the Radar Sequence, as a practical note it is recommended that no more than two (2) messages be entered.

2) The Radar display works as follows: A vehicle traveling faster than the trigger speed launches the radar message sequence. When the message with a vehicle speed display appears on the sign as a part of the radar message sequence, the speed of the fastest vehicle in the beam at that point is displayed.
3) It is therefore recommended that the message with the vehicle speed display be inserted in the 1st position of the six position radar message sequence. This will cause the sign display to report and display the speed of a vehicle in the beam traveling faster than the trigger speed as soon as it can. If the vehicle is traveling to fast, it may be out of the radar beam before the sign can display the speed. If this occurs, the sign could display a zero for the speed.

f. To display the speed of the on-coming vehicle on the sign face, you must edit (create) an operator keyboard message with the speed display command (Shift-Radar) contained in it, then insert it as one of up to six (6) in the "Radar Override Sequence". This command uses one or more full lines of the three-line message display space (depending on font choices) of an operator keyboard message.

g. The other two lines of the operator keyboard message are available for operator text (depending on sign space available). Adding this feature requires you to follow the normal procedure for editing (creating) an operator keyboard message.
1) When it comes time to enter the message text, choose and enter the line number on which you want the on-coming vehicle speed displayed, then press Shift-Radar (at the same time).
2) You will see the statement "Radar Speed" appear on the appropriate line. You may put any other text on the other two lines (or even put the "Radar Speed" message on one or both of the other two lines of the message), space permitting.

➤➤➤ USER'S NOTE ◄◄◄

The sign automatically inserts the characters "MPH" after the speed numerals on the appropriate line(s) chosen, space permitting.

➤➤➤ USER'S NOTE ◄◄◄

Remember, increasing the size of the Radar Speed (XXX MPH) reduces the balance of message display available for the other text in that one message. Since the radar detection zone extends to 600 feet, use the 6 x 11 font size for the Graphics-Shift B radar display numerals and MPH and enter it on the third line of an operator message by itself. Use the other, up to five (5) message slots of the six (6) message slot radar sequence, to complete the display.

Example:	Message:	300	**Text**	**Font**	**Line**
			Your	5 x 7	W1

		Speed	5 x 7	W2
		Is	5 x 7	W3
Message:	301	XXX MPH	6 x 11	3
Message:	302	Slow	6 x 11	1
		Down	6 x 11	3

Message Rate: 7 On Time: 4 Off Time: 2

2. EDIT A MESSAGE

a. Type the number "2" and press <ENTER>. The console will then prompt you for the number of the message to be edited.
b. To edit a message, type the number of the message between "201" and "400" and press <ENTER>.

> ➤➤➤ **USER'S NOTE** ➤➤➤
> *Pressing <UP ARROW> or <DOWN ARROW> allows you to view all of the existing messages. Pressing <SHIFT> + <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or reverse twenty-five (25) messages*

c. If the number selected represents a new message, the display will prompt you to verify that you want to enter a new message. Type "Y" for "yes" or "N" for "no" and press <ENTER>.
d. If the message number entered is for an existing message the display will show the message text and the "On" and "Off" times and ask you to verify that this is the message you want to modify. Type "Y" for "yes" or "N" for "no" and press <ENTER>.
e. The console will display the current message description and prompt you to change that description. Type "Y" for "yes" or "N" for "no". and then press <ENTER>.
   1) If "Y" for "yes", type a short description of the message and then press <ENTER>. (Note: Often the message itself or an abbreviated version of it may be handy as the message description.)
   2) The console will display the text of that message, and font (character size) choices for each line.
f. The display will prompt you to change text for any line or to exit. Type 1, 2 or 3 to edit a given line or "0" to exit, then press <ENTER>.
   1) Type the text for each line as you wish it to appear on the sign. Holding the <SHIFT> key while typing text results in lowercase letters.
   2) The <FONT SELECT> key allows you to select which fonts to use for the line of text. The following table shows the available fonts for each Model and the height of the resulting characters:

Character Height

Normal	Blinking	Description	331, 332	333	232	432	465
3 x 7	3 x 7 B	Tiny characters	18”	18”		9”	11”
4 x 7	4 x 7 B	Narrow characters	18”	18”		9”	11”
5 x 7	5 x 7 B	Standard characters	18”	18”		9”	11”
7 x 7	7 x 7 B	Bold characters	18”	18”	6”	9”	11”
5 x 7 W	5 x 7 WB	Std. w/extra spaces between characters	18”	18”	6”	9”	11”
7 x 7 W	7 x 7 WB	Bold w/ extra spaces between characters	18”	18”	6”	9”	11”
6 x 11	6 x 11 B	Large characters		30”	8”	15”	18”
7 x 20	7 x 20 B	Larger characters		55”	17”	28”	33”
9 x 20	9 x 20 B	Largest characters		55”	17”	28”	33”

3) Each press of the <FONT SELECT> key changes the font. If the font selected is a blinking font, its size will be followed by the letter “B”.
4) After you have finished typing the text for the line, press <ENTER> and the display will ask you for the next line of text to change.

➤➤➤ USER’S NOTE ◄◄◄

The display features an indicator which notes remaining space on a given line of text. Space is measured in terms of columns. If a word or phrase will not fit on a given line, try selecting a different font.

➤➤➤ USER’S NOTE ◄◄◄

The Models 333, 232, 432 & 465 have the ability to create useful graphic designs. Two of these are left and right moving “dynamic arrows”. To display a dynamic arrow on a selected line, press <GRAPHIC SHIFT> and the desired arrow. You may not display text and a dynamic arrow on the same line.

➤➤➤ USER’S NOTE ◄◄◄

The VMS can display the current date and time to motorists. To display the date on a selected line, press <SHIFT> + <DATE/TIME>. To display the time on a selected line, press <DATE/TIME>. Depending on the font you

select, the displayed format of the time and/or date will change to fit on a single line.

5) When text editing is complete, type the number "0" to exit and press <ENTER>.

g. The display will show current "on" time (duration of this message in relation to all others). Factory preset "on" time is "6".

1) The display will prompt you to change the number. Type "Y" for "yes" or "N" for "no" and press <ENTER>.
2) If "yes" select a number from "0" (short) to "7" (long) and press <ENTER>.
3) The display will ask you to verify that the "on" time you entered is correct. Type "Y" for "yes" and press <ENTER> if it is correct or "N" for "no" and press <ENTER> if you want to change it again.

➤➤➤ USER'S NOTE ◄◄◄
A detailed chart of "on time" and "off time" options can be found in the appendix.

h. The display will show current "off" time (duration of this message in relation to all others). Factory preset "off" time is "6".
1) The display will prompt you to change the number. Type "Y" for ":yes" or "N" for "no" and press <ENTER>.
2) If "yes", select a number from "0" (short) to "7" (long) and press <ENTER>.
3) The display will ask you to verify that the "off" time you entered is correct. Type "Y" for "yes" and press <ENTER> if it is correct and "N" for "no" and press <ENTER> if you want to change it again.

i. The display will then return to the MESSAGE Menu.
j. To return to the MAIN Menu, press <ESCAPE>.

3. ERASE A MESSAGE

f. Type the number "3" and press <ENTER>.
g. The console will then prompt you to type the number (201 - 400) of the message to be erased. Pressing <UP ARROW> or <DOWN ARROW> allows you to view all of the existing messages.
h. The console will prompt you to verify that you wish to erase the selected message. Type "Y" for "yes" or "N" for "no" and press <ENTER>.
i. The display will then return to the MESSAGE Menu.
j. To return to the MAIN Menu, press <ESCAPE>.

2.2.4 SCHEDULE Menu

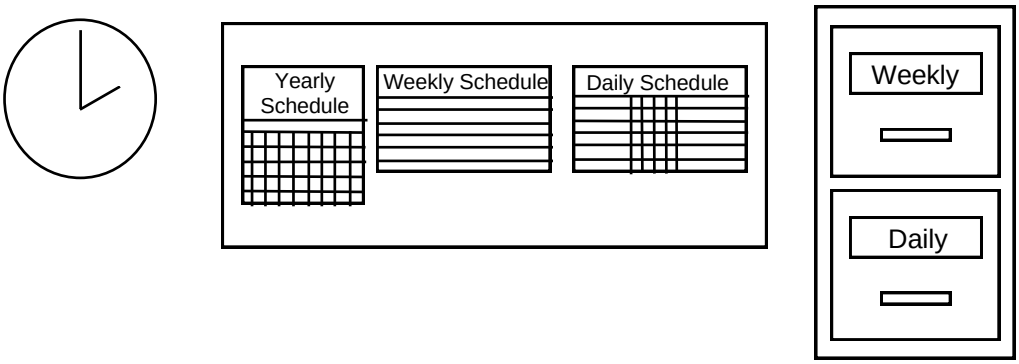
INTRODUCTION

The scheduler in the VMS works on the concept of changes being made at specified times. If you think of the scheduler as an employee that needs to be sent to the sign to make the needed changes from the keyboard, then you won't have any trouble deciding how to program the schedule that matches your required sign operation. There is no duration to an event. In order to have the sign display messages from 10:00 am to 4:00 p.m., one event must be set for 10:00 am to change the Current Message Sequence to the messages to display, another event must be set for 4:00 p.m. to change the Current Message Sequence to the Blank Message (,msg #0) in order to blank the sign.

The schedule in the VMS has three parts:

1. A Daily Schedule that has up to eight (8) times during the day that it can change the sign's operation.
2. A Weekly Schedule that can change which Daily Schedule is to be followed for each day of the week.
3. A Yearly Schedule that can change the Weekly Schedule to be followed, the Daily Schedule to be followed, or change the clock for daylight savings time. The Yearly Schedule can make any of these changes on a particular day in a particular year, or on the same day every year.

The Daily Schedule and the Weekly Schedule allow you to define several Daily Schedules and several Weekly Schedules from which to choose the Current Daily Schedule and the Current Weekly Schedule. The events in the Yearly Schedule are all always active and will take effect when the date matches the activation date set for the Yearly Schedule event. You can think of the scheduling system as a bulletin board where the scheduler posts the list of things to do. There is a Yearly Schedule area that has a calendar with all of the Yearly Schedule events written on it; there is a place to post the Current Weekly Schedule; and there is a place to post the Current Daily Schedule. Beside the bulletin board is a file cabinet with two drawers. One drawer has the Weekly Schedules that have been entered. The other drawer has the Daily Schedules that have been entered.



Each of the Weekly Schedules are a form with an entry blank for a Daily Schedule number and description for each day of the week. An entry blank can be left empty if there is not to be any change for that day of the week by entering "99" as the Daily Schedule for that day. That is different than entering "0" for that day since "0" (the "Blank Daily" schedule) is a Daily Scheduler that does nothing all day.

Each of the Daily Schedules are a form with a line of entry blanks for each of the eight (8) events. Each event has entry blanks for the following:

- the activation time
- whether to call the host computer (if equipped with a cellular phone)
- the new sign brightness
- the new message display rate
- the new message sequence to display

An event may be left blank by leaving its activation time blank or any of the possible changes in an event may be left empty.

Every day, when the clock turns to midnight, the scheduler checks the Yearly Schedule to see if it is supposed to change the Current Weekly Scheduler or the Current Daily Schedule, or change the clock for daylight savings time. If the Scheduler is supposed to change a schedule it goes to the file cabinet and gets the proper schedule and posts it on the bulletin board and puts the old schedule back into the file. If the Scheduler is supposed to change the time for daylight savings time it makes a note of which hour the time change should take effect and whether to set the clock ahead or back and tapes the note to the clock so it can change the clock at just the right time.

If the Scheduler has not put up a new Current Daily Schedule it will check the Current Weekly Schedule to see if it is supposed to change the Current Daily Schedule on this day of the week. If it is, then it goes to the file cabinet and gets the proper schedule and posts it

on the bulletin board and puts the old schedule back into the file. The reason it skips this if it has already changed the Current Daily Schedule is to allow special days to have a different schedule than would be normal for that day of the week.

Every minute the Scheduler checks the Current Daily Schedule to seek if there is an event active for this time. If there is, the scheduler will make the changes in the sign operation listed for the event:

- initiates a call to the host computer (if equipped with a cellular phone)
- set a new sign brightness
- set a new message display rate
- set a new message sequence to display

In summary, the VMS Scheduler performs the following:

Midnight (every day):

- ✓ Checks the Yearly Schedule:
    1. changes the Current Weekly Schedule
    2. changes the Weekly Schedule
    3. changes the Daily Schedule
    4. sets up the Daily Savings Time Change
- ✓ Checks the Current Weekly Schedule:
    5. changes the Daily Schedule if not set by the Yearly Schedule

Every Minute:

- ✓ Checks the Daily Schedule for an event at this time:
    1. calls the host computer (if equipped with a cellular phone)
    2. changes the sign brightness
    3. changes the Message Display Rate
    4. changes the Message Sequence to display

SCHEDULE Menu

To choose the SCHEDULE Menu from the MAIN Menu, type the number "4 and press <ENTER>. The Schedule Menu will appear with the following items:

1. **Daily Schedule**
2. **Weekly Schedule**
3. **Yearly Schedule**
4. **Clear Time Clock**

1. DAILY SCHEDULE

To view or edit the DAILY SCHEDULE, go to the SCHEDULE Menu, type "1" and press <ENTER>. This is where you will be able to create, edit, erase, and activate schedules during the course of a day. A DAILY SCHEDULE may do any of the following up to eight (8) times a day at a particular time:

a) call the host computer
b) change the Sign Brightness
c) change the Message Display Rate
d) change the Messages Displayed

A DAILY SCHEDULE for a typical day on which roadwork is to be done might do the following: At 7:00 a.m.:

- start displaying message for the day
- don't call the host computer
- set the sign brightness to auto
- set the Message Display Rate to "4"
- set the messages displayed to 135, 118, 106 and 152

At 6:00 p.m.:

- shut the sign down for the night
- don't call the host computer
- set the sign brightness to "0" (0ff)
- don't change the Message Rate
- set the messages displayed to "0" (the blank message)

The VMS allows you to create twenty-nine (29) daily schedules. The DAILY SCHEDULE that is actually being followed is one of the DAILY SCHEDULES that has been defined and is selected as the CURRENT DAILY SCHEDULE.

The DAILY SCHEDULE Menu has three choices as follows:

1. Current Daily
2. Edit Daily
3. Erase Daily

1. Current Daily

a. Selecting "CURRENT DAILY" allows you to view all previously created daily schedules and to select which one is active. To select CURRENT DAILY SCHEDULE, type "1" and press <ENTER>.

> ➤➤➤ **USER'S NOTE** ➤➤➤
> *The screen will list all existing schedules by number and short description. You may scroll through the list by pressing the <UP ARROW> or <DOWN ARROW> keys.*

b. At the prompt, type the number of the desired schedule to be made active (1-29) then press <ENTER>.
c. The system will display the contents of the Daily Schedule you have selected and ask you to verity that this is the correct schedule. Type "Y" for "yes" and press <ENTER>.

> ➤➤➤ **USER'S NOTE** ➤➤➤
> *When viewing a DAILY SCHEDULE, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to view parameters for each event. Pressing <SHIFT> + <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or back through an entire event at once.*

d. The display will return you to the DAILY SCHEDULE Menu.
e. Press <ESCAPE> to return to the SCHEDULE Menu.

2. Edit Daily

a. Selecting "EDIT DAILY" allows you to create or modify daily schedules. To EDIT DAILY SCHEDULE, type "2" and press <ENTER>.
b. At the prompt, type the number for the schedule you are about to create or change.

> ➤➤➤ **USER'S NOTE** ➤➤➤
> *The screen will list all existing schedules by number and short description. You may scroll through the list by pressing the <UP ARROW> or <DOWN ARROW> keys.*

c. If this is a new schedule, you will be prompted to verify that you are creating a NEW DAILY SCHEDULE. Type "Y" for "yes" and press <ENTER>.

d. If the DAILY SCHEDULE already exists the screen will display the schedule number, description, event number and time and, for each event, the sign brightness, generator mode, message rate and message settings.
e. The display will ask if you want to change this schedule.
   1) Type "Y" for "yes" and press <ENTER> if you want to change this DAILY SCHEDULE. To return to the DAILY SCHEDULE Menu, type "N" for "no" and press <ENTER>.
   2) The screen will show the selected daily schedule's description and will prompt you to change it. If you wish to do so, type "Y" for "yes" and press <ENTER>. The Screen will then ask for the new description.
   3) Type a short description, then press <ENTER>.
   4) The screen will display the schedule number, description, event number and time and, for each event, the sign brightness, message rate and message settings.

> ➤➤➤ **USER'S NOTE** ➤➤➤
> *When viewing a DAILY SCHEDULE, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to view parameters for each event. Pressing <SHIFT> + <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or back through an entire event at once.*

   5) At the prompt, type the number of the event (1-8) you wish to edit, and press <ENTER>.

f. The activation time for that event will be displayed; or if the event is inactive, a message saying that the event is inactive will be displayed.
   1) At the prompt, type "Y" for "yes" and press <ENTER> if you want this event to be active or "N" for "no" and press <ENTER> if you want to remove this event from this DAILY SCHEDULE.
   2) If you responded "yes" the screen will display the event's activation time, and prompt you to change it. To change, type "Y" for "yes" and press <ENTER>.
   3) At the prompts, type the hour, (A.M. or P.M.) and minute, pressing <ENTER> after each.
   4) The screen will ask you to verify your choice of the event's activation time or inactivity. Type "Y" for "yes" and press <ENTER> if it is correct or "N" for "no" and press <ENTER> if you want to change it again.

> ➤➤➤ **USER'S NOTE** ➤➤➤
> *In order for the schedules to operate properly, make sure that the VMS is programmed with the correct time and date. For more details on time and date, refer to the TIME AND DATE section.*

g. The screen will then display whether the event will call the host computer at activation and prompt you to change it.
   1) To change, type "Y" for "yes" and press <ENTER>. The display will then ask you if you want this event to call the host computer.
   2) If you do not want the event to call the host computer type "N" for "no" and press <ENTER>.
   3) If you want the event to call the host computer at the activation time, type "Y" for "yes" and press <ENTER>.

h. The screen will then display what change, if any the event will make to the sign brightness at activation and prompt you to change it.
   1) To change, type "Y" for "yes" and press <ENTER>. The display will then ask you if you want this event to change the sign brightness.
   2) If you <u>do not</u> want the event to change the sign brightness from what ever it was before the event activated, type "N" for "no and press <ENTER>.
   3) If you <u>do</u> want the event to set the sign brightness at the activation time, type "Y" for "yes" and press <ENTER> The display will then show the following:

Enter the brightness level 1- 9 or 0 for automatic.
Brightness (1-9, 0):

   4) Select a sign brightness to be set at the event activation time and press <ENTER>.

➤➤➤ USER'S NOTE ◄◄◄
For more details on sign brightness, refer to the SIGN CONTROL section.

   5) When you have selected sign brightness, the screen will ask you to verify your choice.
      i) If it is correct, type "Y" for "yes" and press <ENTER>.
      ii) If you want to change it again, type "N" for "no" and press <ENTER>.

i. The screen will then display what change if any the event will make to the Message Display Rate at activation and prompt you to change it.
   1) To change, type "Y" for "yes" and press <ENTER>.
   2) The display will then ask you if you want this event to change the generator mode.
   3) If you <u>do not</u> want the event to change the message display rate from what ever it was before the event activated, type "N" for "no" and press <ENTER>.
   4) If you want the event to set the Message Display Rate at the activation time, type "Y" for "yes" and press <ENTER>. The display will then ask you to enter the Message Display Rate to be set at the event's activation time. Type the Message Rate and press <ENTER>.

> ➤➤➤ **USER'S NOTE** ◄◄◄
> *For more details on Message Rate, refer to the MESSAGE Menu section.*

5) When you have selected the Message Rate, the screen will ask you to verify your choice. Type "Y" for "yes" and press <ENTER> if it is correct or "N" for "no" and press <ENTER> if you want to change it again.

j. The screen will then display the MESSAGE SEQUENCE that will be displayed starting at the activation time, or if the event doesn't change the message will tell you so. The screen will then ask if you want to change the event's effect on the displayed messages. If you want to change it, type "Y" for "yes" and press <ENTER>. The screen will then ask you if you want this event to change the messages that are displayed on the sign. If you want the event to change the messages displayed, type "Y" for "yes" and press <ENTER>. If you want the event to leave the messages displayed on the sign alone, type "N" for "no" and press <ENTER>.
   1) If you responded "yes", the screen will display the MESSAGE SEQUENCE which will be displayed starting at the event's activation time. At the prompt, select each position and its corresponding message, pressing <ENTER> after each. When complete, press "0" to exit.
   2) When you have edited the MESSAGE SEQUENCE, the screen will ask you to verify your choice. Type "Y" for "yes" and press <ENTER>.

> ➤➤➤ **USER'S NOTE** ◄◄◄
> *For more details on message sequencing, refer to the MESSAGE Menu section.*

k. The display will return you to the DAILY SCHEDULE Menu. Press <ESCAPE> to return to SCHEDULE Menu.

3. Erase Daily

a. Selecting "ERASE DAILY" allows you to delete a chosen schedule from the system. To ERASE A DAILY SCHEDULE, type "3" and press <ENTER>. The screen will list all existing schedules by number and a short description and ask you to select one.

> ➤➤➤ **USER'S NOTE** ◄◄◄
> *When viewing the list of schedules, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to view the rest of the list. Pressing <SHIFT> + <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or back through a full screen at a time.*

b. At the prompt, type in the number of the schedule you wish to erase, and then press <ENTER>.
c. The screen will then display the contents of the DAILY SCHEDULE and ask you to verify that this is the DAILY SCHEDULE you wish to erase. Type "Y" for "yes" and press <ENTER>.

> ➤➤➤ **USER'S NOTE** ◄◄◄
> *When viewing a DAILY SCHEDULE, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to view parameters for each event. Pressing <SHIFT> + <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or back through an entire event at once.*

d. The display will return you to the DAILY SCHEDULE MENU. Press <ESCAPE> to return to SCHEDULE MENU.

2. WEEKLY SCHEDULE

A WEEKLY SCHEDULE allows you to select a different DAILY SCHEDULE to be used for each day of the week. You must first create a DAILY SCHEDULE before using it in a WEEKLY SCHEDULE.

You may create up to nineteen (19) weekly schedules. The WEEKLY SCHEDULE that is actually being followed is one of the WEEKLY SCHEDULES that has been defined and is selected as the CURRENT WEEKLY SCHEDULE.

To view or edit the WEEKLY SCHEDULE, go to the SCHEDULE MENU, type "2" and press <ENTER>. The WEEKLY SCHEDULE MENU will appear:

1. Current Weekly
2. Edit Weekly
3. Erase Weekly

1. Current Weekly

a. Selecting "CURRENT WEEKLY" allows you to view all previously created weekly schedules and to select which one of them is active. To select CURRENT WEEKLY SCHEDULE, type "1" and press <ENTER>.
b. The screen will list all existing schedules by number with a short description and ask you to select one.

> ➤➤➤ **USER'S NOTE** ◄◄◄
> *When viewing the list of schedules,, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to view the rest of the list. Pressing <SHIFT>*

+ <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or back through a full screen at a time.

c. At the prompt, type the number of the desired schedule to be made active (1-10), then press <ENTER>. The display will show the contents of the WEEKLY SCHEDULE you have selected and ask you to verify that this is the schedule you wish to be active.
   1) If it is correct, then type "Y" for "yes" and press <ENTER>.
   2) If the WEEKLY SCHEDULE is not the one you want to activate, type "N" for "no" and press <ENTER>.
d. The display will return you to the WEEKLY SCHEDULE Menu.
e. Press <ESCAPE> to return to the SCHEDULE Menu.

2. Edit Weekly

a. Selecting "EDIT WEEKLY" allows you to create or modify weekly schedules. To select EDIT A WEEKLY SCHEDULE, type "2" and press <ENTER>.
b. The screen will display a list of all of the defined weekly schedules with the number and a short description for each one.
c. At the prompt, type a number for the schedule you are about to create or change.

➤➤➤ USER'S NOTE ◄◄◄

When viewing the list of schedules, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to view the rest of the list. Pressing <SHIFT> + <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or back through a full screen at a time.

d. If this is a new schedule, you will be prompted to verify that you intend to create a new WEEKLY SCHEDULE. Type "Y" for "yes" and press <ENTER>.

e. If the WEEKLY SCHEDULE already exists, the current contents of the WEEKLY SCHEDULE will be displayed and you will be asked if you want to change this WEEKLY SCHEDULE.

➤➤➤ USER'S NOTE ◄◄◄

When viewing the WEEKLY SCHEDULE, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to scroll through the entire WEEKLY SCHEDULE.

f. The screen will show the selected weekly schedule's description and will prompt you to change it. If you wish to do so, type "Y" for "yes" and type a short description, then press <ENTER>.

g. The screen will ask you to verify your choice. Type "Y" for "yes" and press <ENTER>.
h. The screen will display a list of the seven (7) days of the week (1 = Sunday, 2 = Monday, 3 = Tuesday, 4 = Wednesday, 5 = Thursday, 6 = Friday, 7 = Saturday) and the corresponding daily schedule assigned to each. You will be asked to verify that you want to change the contents of the weekly schedule.

> ➤➤➤ **USER'S NOTE** ➤➤➤
> *When viewing the WEEKLY SCHEDULE, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you scroll through the entire WEEKLY SCHEDULE.*

1) At the prompt, select the day of the week by number (1-7) and press <ENTER>. A list of the Daily Schedules will then be displayed and you will be asked to enter the number for the Daily Schedule you want to be activated on the day you have selected.
2) Enter the number of the Daily Schedule (1 - 19) or 99 to not change the Daily Schedule on this day of the week) to be assigned to this day, and then press <ENTER>.

> ➤➤➤ **USER'S NOTE** ➤➤➤
> *When viewing the list of schedules, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to view the rest of the list. Pressing <SHIFT> + <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or back through a full screen at a time.*

3) The display will display the contents of the DAILY SCHEDULE you have selected and ask you to verify that this is the correct schedule to use for the day of the week that you are changing. If it is correct, type "Y" for "yes" and press <ENTER>.
4) Repeat these steps for each day in the WEEKLY SCHEDULE to be edited.

i. When finished, type "0" to exit and press <ENTER>.
j. The display will return you to the WEEKLY SCHEDULE Menu. Press <ESCAPE> to return to the SCHEDULE Menu.

3. Erase Weekly

a. To ERASE A WEEKLY SCHEDULE, type "3" and press <ENTER>. The screen will list all existing schedules by number with a short description and ask you to select one.

> ➤➤➤ **USER'S NOTE** ➤➤➤

When viewing the list of schedules, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to view the rest of the list. Pressing <SHIFT> + <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or back through a full screen at a time.

b. At the prompt, type in the number of the schedule you wish to erase, and then press <ENTER>.
c. The screen will then display the contents of the WEEKLY SCHEDULE and ask you to verify that this is the WEEKLY SCHEDULE you wish to erase.
d. Type "Y" for "yes" and press <ENTER>.

➤➤➤ USER'S NOTE ◄◄◄
When viewing the WEEKLY SCHEDULE, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you scroll through the entire WEEKLY SCHEDULE.

e. This display will return you to the WEEKLY SCHEDULE MENU. Press <ESCAPE> to return to SCHEDULE MENU.

3. YEARLY SCHEDULE

The YEARLY SCHEDULE is made up of events that allow you to program the VMS operation until 2099. You may specify operation changes to be made every year on a particular day or just once on a particular month, date and year. A YEARLY SCHEDULE event can do the following:

- Change the Current Weekly Schedule
- Change the Current Daily Schedule
- Set the clock ahead or back one (1) hour

To view or edit the YEARLY SCHEDULE, type "3" and press <ENTER>. The YEARLY SCHEDULE MENU will appear.

1. Display Yearly
2. Edit Yearly
3. Erase Yearly

1. Display Yearly

a. To DISPLAY THE YEARLY SCHEDULE, type "1" and press <ENTER>.
b. If there are no events defined for the YEARLY SCHEDULE, then the screen will display a message saying so.
c. If there are events defined for the YEARLY SCHEDULE, the screen will display all of the events in the YEARLY SCHEDULE. Press <ESCAPE> to exit to the YEARLY

SCHEDULE.

> ➤➤➤ **USER'S NOTE** ➤➤➤
> *When viewing the YEARLY SCHEDULE, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to view parameters for each event. Pressing <SHIFT> + <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or back through an entire event at once.*

d. The display will return you to the YEARLY SCHEDULE MENU. Press <ESCAPE> to return to the SCHEDULE MENU.

2. Edit Yearly

a. To EDIT A YEARLY SCHEDULE, type "2" and press <ENTER>. The screen will display a list of all of the defined YEARLY SCHEDULE Events with the number and a short description for each one.

b. At the prompt, type a number for the event you are about to create or change.

> ➤➤➤ **USER'S NOTE** ➤➤➤
> *When viewing the list YEARLY SCHEDULE, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to view parameters for each event. Pressing <SHIFT> + <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or back through an entire event at once.*

c. If this is a new YEARLY SCHEDULE event, you will be prompted to verify that you intend to create a new YEARLY SCHEDULE event.
   1) Type "Y" for "yes" and press <ENTER>. If the YEARLY SCHEDULE event already exists, the current contents of the YEARLY SCHEDULE EVENT will be displayed and you will be asked if you want to change this YEARLY SCHEDULE event. Type "Y" for "yes" and press <ENTER>.

> ➤➤➤ **USER'S NOTE** ➤➤➤
> *When viewing a YEARLY SCHEDULE, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to scroll through the entire EVENT.*

d. The display will show the activation date of the YEARLY SCHEDULE. If you wish to change this date, type "Y" for "yes" at the prompt and press >ENTER>. If "yes", you will be prompted to select a format to use to express the activation date for this event:

1) MONTH/DAY/YEAR: Selecting MONTH/DAY/YEAR activates the YEARLY SCHEDULE EVENT on a specific calendar day and year (for example: August 6, 1994).
2) MONTH/DAY/EVERY YEAR: Selecting MONTH/DAY/EVERY YEAR activates the YEARLY SCHEDULE EVENT on a specific calendar day every year (for example: every August 6th).
3) MONTH/DAY/DAY OF WEEK: Selecting MONTH/DAY/DAY OF WEEK activates the YEARLY SCHEDULE EVENT on a selected day of the week on or after a calendar date every year (for example: Memorial Day is the first Monday on or after May 25th).
4) MONDAY/DAY OF WEEK#: Selecting MONTH/DAY OF WEEK # activated the YEARLY SCHEDULE EVENT on a particular day of the week of a month (for example: Election Day is the first Tuesday in November).

➤➤➤ USER'S NOTE ◄◄◄

In order for the schedules to operate properly, make sure that the VMS is programmed with the correct time and date. For more details on time and date, refer to the TIME AND DATE section.

e. Select the desired format by typing a number (1-4) and pressing <ENTER>.
f. You will be prompted to type the various components of the date in the selected format, pressing <ENTER> after each. After you have entered the activation date, the screen will display the activation date you have entered and ask you to verify that it is correct. If it is correct, type "Y" for "yes" and press <ENTER>. If it is not correct, type "N" to change it again.
g. The display will inform you what change, if any is made to the CURRENT WEEKLY SCHEDULE by this event, and you will asked if you want to change this. If desired, type "Y" for "yes" and press <ENTER>.
h. The screen will ask you if you want the YEARLY SCHEDULE event to change which WEEKLY SCHEDULE is the CURRENT WEEKLY SCHEDULE.
   1) If you do not want the event to make any change to the CURRENT WEEKLY SCHEDULE, type "N" for "no" and press <ENTER>.
   2) If you do want the YEARLY SCHEDULE event to change which WEEKLY SCHEDULE is the CURRENT WEEKLY SCHEDULE, type "Y" for "yes" and press <ENTER>. The screen will list all existing schedules by number with a short description and ask you to select one.

➤➤➤ USER'S NOTE ◄◄◄

When viewing the list of schedules, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to view the rest of the list. Pressing <SHIFT> + <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or back through a full screen at a time.

3) At the prompt, type the number of the desired WEEKLY SCHEDULE to be made active (1-19) then press <ENTER>. The display will show the contents of the WEEKLY SCHEDULE you have selected and ask you to verify that this is the schedule you wish to be active. If it is correct, then type "Y" for "yes" and press <ENTER>. If the WEEKLY SCHEDULE is not the one you want to activate, type "N" for "no" and press <ENTER>.

i. The display will inform you what change, if any is made to the CURRENT DAILY SCHEDULE by this event, and you will be asked if you want to change this. If desired, type "Y" for "yes" and press <ENTER>.

j. The screen will ask you if you want the YEARLY SCHEDULE event to change which DAILY SCHEDULE is the CURRENT DAILY SCHEDULE.
   1) If you do not want the event to make any changes to the CURRENT DAILY SCHEDULE, type "N" for "no" and press <ENTER>.
   2) If you do want the YEARLY SCHEDULE EVENT to change which DAILY SCHEDULE is the CURRENT DAILY SCHEDULE, type "Y" for "yes" and press <ENTER>.
      i) The screen will list all existing schedules by number with a short description and ask you to select one.

➤➤➤ USER'S NOTE ◄◄◄

When viewing the list of schedules, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to view the rest of the list. Pressing <SHIFT> + <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or back though a full screen at a time.

      ii) At the prompt, type the number of the desired DAILY SCHEDULE to be made active (1-29) then press <ENTER>.
      iii) The display will show the contents of the DAILY SCHEDULE you have selected and ask you to verify that this is the schedule you wish to be active.
      iv) If it is correct, then type "Y" for "yes" and press enter. If the DAILY SCHEDULE is not the one you want to activate, type "N" and press <ENTER>.

➤➤➤ USER'S NOTE ◄◄◄

When viewing a DAILY SCHEDULE, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to view parameters for each event.. Pressing <SHIFT> + <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or back though an entire event at once.

   3) The display will inform you what change, if any is made to the clock by this event, and you will be asked if you want to change this. If desired, type "Y" for "yes" and press <ENTER>.

k. The screen will then ask you if you want this YEARLY SCHEDULE EVENT to change the clock by an hour.
   1) If you do not want the event the YEARLY SCHEDULE EVENT to adjust the clock to either go into or out of Daylight Savings Time, type "N" for "no" and press <ENTER>.
   2) If you do want the YEARLY SCHEDULE EVENT to adjust the clock an hour, type "Y" for "yes" and press <ENTER>. The screen will display the following:
      1. Set Clock Ahead
      2. Set Clock Back
      Enter 1 or 2:
   3) If you want the YEARLY SCHEDULE EVENT to set the clock ahead an hour, type "1" and press <ENTER>.
   4) If you want the YEARLY EVENT to set the clock back an hour, type "2" and press <ENTER>.The screen will then ask you at what hour you want the clock to change (as of 1990, the standard Daylight Savings Time change was made a 2:00 a.m.). Type the hour (1-12) and press enter. The screen will then ask a.m. or p.m. , type "A" or "P" and press <ENTER>.
   5) The display will inform you what change, if any you have asked made to the clock by this event, and you will be asked if it is correct. If it is correct, type "Y" for "yes" and press <ENTER> If it is not correct, type "N" for "no" to change it again.
l. The display will return you to the YEARLY SCHEDULE Menu.
m. Press <ESCAPE> to return to the SCHEDULE Menu.

3. Erase Yearly

a. To ERASE A YEARLY SCHEDULE event, type "3" and press <ENTER>.
b. The screen will list all existing schedules by number with a short description and ask you to select one.

> ➤➤➤ **USER'S NOTE** ➤➤➤
> *When viewing the list of schedules, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to view the rest of the list. Pressing <SHIFT> + <UP ARROW> or <SHIFT> + <DOWN ARROW> will advance or back through a full screen at a time.*

c. At the prompt, type in the number of the schedule you wish to erase, and then press <ENTER>.
d. The screen will then display the contents of the WEEKLY SCHEDULE and ask you to verify that this is the WEEKLY SCHEDULE you wish to erase. Type "Y" for "yes" and press <ENTER>.

> ➤➤➤ **USER'S NOTE** ➤➤➤

When viewing WEEKLY SCHEDULE, pressing the <UP ARROW> or <DOWN ARROW> keys will allow you to scroll through the entire WEEKLY SCHEDULE

e. The display will return you to the YEARLY SCHEDULE Menu. Press <ESCAPE> to return to the SCHEDULE Menu.

4. CLEAR TIME CLOCK

a. To delete all of the user-defined schedules, go to the SCHEDULE Menu, type "4" and press <ENTER>.
b. When the display prompts you "Do you want to delete all user-defined schedules", type "Y" for "yes and press <ENTER>. To return to the SCHEDULE Menu without deleting, type "N" for "no" and press <ENTER>.

➤➤➤ USER'S NOTE ➤➤➤

It is recommended that all user-defined schedules be deleted either after the schedules are no longer needed or before normal, non-scheduled operation of the sign commences. Unwanted (or unknown) schedules can override any normal messages that may be desired.

3.0 System Information and Parameters

3.1 Upper-level Access

The following subsections are accessed by logging into the system with the REDACTED password.

3.1.1 ALPHA PARAMETERS Menu

All American Signal Company's PCMS features a password entry system, limiting access to the sign's controls only to authorized persons. Two main password levels are used:

1. **REDACTEDPASSWORD**: This level of access permits use of all the functions described in the System Operations section of this manual. At the factory, your REDACTED PASSWORD has been set as: REDACTED
2. **REDACTED PASSWORD**: This level of access permits use of all the functions described in the Uppler-level Access section of this manual. In addition, logging in under the REDACTED PASSWORD also allows you to change both your REDACTED PASSWORD and REDACTED PASSWORD. At the factory, your REDACTED PASSWORD has been set as: **REDACTED**

Changing Passwords:

1) To change passwords, select TIME AND DATE from the MAIN MENU by typing the number "1" and pressing <ENTER>.

2) Since you have logged in with the REDACTED PASSWORD, the TIME AND DATE MENU will be different from the one described in the manual. It will look like this:
    1. Set Time
    2. Set Date
    3. Alpha Parameters

3) Type the number "3" and press <ENTER>. The following prompt will appear:

```
The current password
for user access is:
"REDACTED"
Change this (Y/N)?
```

a) If you wish to change the REDACTED PASSWORD, type "Y" for "yes" and press <ENTER>. The following prompt will appear:

```
Enter new
password
for user access:
```

Type the new word. You may use up to nine (9) characters.

b) When you have finished, press <ENTER>.
c) The display will prompt you to verify your choice. Type "Y" for "yes" and press <ENTER>.

4) The following prompt will appear:

The current password for upper level access is: "REDACTED" Change this (Y/N)?

a) If you wish to change the REDACTED PASSWORD, type "Y" for "yes" and press <ENTER>. The following prompt will appear:

Enter new password for upper level access:

b) Type the new word. You may use up to nine (9) characters.
c) When you have finished, press <ENTER>.
d) The display will prompt you to verify your choice. Press "Y" for "yes" and press <ENTER>

5) The display will return to the TIME & DATE Menu. Press <ESCAPE> to return to the MAIN Menu.

➤➤➤ USER'S NOTE ◄◄◄
Be sure to make a record of both passwords. If you should change and then forget your password, call American Signal Company.

3.1.2 SIGN PARAMETERS Menu

To access the higher password level parameters screen from the MAIN MENU:

1. Type the number "2" (SIGN CONTROL) and press <ENTER>. This will bring up the SIGN CONTROL Menu.
2. You will notice that there are two options listed on the menu that are not present when under user access, PARAMETERS and SIGN DIAGNOSTIC.
3. To access the operational parameters, type the number "3" (SIGN PARAMETERS) and press <ENTER>.
4. One by one, each parameter of the PCMS is displayed with its default value.

5. For each parameter, you will be prompted to change that value. Following is the table of the parameters:

Parameters	Description	Default
The current show vehicle counts is	(radar option feature)	N
The current disable seq sel setting is	Allows owner to enable or disable sequence selector feature	N
The current metric units setting is	Allows owner to select metric units	N
The current English/metric cnvrt setting is	Enable or disable the English/metric conversion	N
The current solar start bright setting is	Lux level that activates the solar system (see Note 1 below)	100
The current solar stop bright setting is	Lux level that deactivates the solar system (see Note 1 below)	49
The current therm reg hi degC/V setting is	(factory setting, do NOT change)	255
The current therm reg lo degC/V setting is	(factory setting	255
The current engine warm up time setting is	(factory setting	60
The current gen/solar stop volt setting is	(factory setting	14.6
The current call attempts setting is	(cellular option feature)	5
The current call delay time settings is	(cellular option feature)	120
The current beeper delay time setting is	(factory setting, do NOT change)	20
The current log changes to host setting is	(factory setting, do NOT change)	N
Current Dim (level 9-1) Settings	Refer to DIM LEVEL TABLE section	N/A
The current multidrop address setting is	(factory setting, do NOT change)	255
The current cell enable setting is	(cellular option feature)	N
The current EDACS enable setting is	(factory setting, do NOT change)	N
The current solar sign setting is	(factory setting, do NOT change)	Y
The current wheelen RADAR setting is	(factory setting, do NOT change)	N
The current Decatur RADAR setting is	(factory setting, do NOT change)	N
The current MPH RADAR setting is	(factory setting, do NOT change)	N
The current Kustom RADAR setting is	(radar option feature)	N
The current GPS Enable setting is	(factory setting, do NOT change)	N
The current password wait time setting is	(factory setting, do NOT change)	110
The current normal timing mode setting is	(factory setting, do NOT change)	Y
The current cellular baud/100 setting is	(factory setting, do NOT change)	96
The current Expansion baud/100 is	(factory setting, do NOT change)	96
The current GPS hours offset setting is	(factory setting, do NOT change)	0-255
The current GPS minutes offset setting is	(factory setting, do NOT change)	0-255
The current GPS seconds offset setting is	(factory setting, do NOT change)	0-255

Note 1: Allowing charging when too dark drains batteries "backwards" into solar cells. Also, both Start and Stop Bright should be set at maximum lux level, 65025, to have the relays on power manager disabled for the 331C sign.

6. If you wish to change the value, type "Y" for "yes" and press <ENTER>.
7. At the prompt, type in the new value and press <ENTER>.
8. You will be prompted to verify your choice.
9. Repeat this process for each parameter.
10. After all parameters have been presented, you will be returned to the SIGN CONTROL Menu.

1. DIM LEVEL TABLE

The sign is shipped with the following Dim Table preprogrammed parameters. The table is customized to allow the solar-equipped sign to operate autonomously, when exposed to good sunlight, for a nominal period of thirty (30) days while providing 1000 foot visibility under good conditions.

The table is expressed as follows:

Dim Level = One of nine (9) computer controlled levels of illumination which may be set manually or in automatic mode such that the sign automatically operates at an illumination level based on the ambient light level sensed by the sign photocell.

Dim Ambient Light Level = The Photocell reading

Dim % Level = The % of full brightness at which the sign shall operate.

Dim Level Table

		232		432		465		331,332,333	
Dim Level	Dim Ambient Light Level	Trailer	Yoke / Stationary	Trailer	Yoke / Stationary	Trailer	Yoke / Stationary	Trailer	Stationary
9	3970-5625	**64**	90	**64**	90	**24**	34	**15**	53
8	2810-3969	**62**	80	**62**	80	**21**	31	**14**	47
7	2210-2809	**36**	70	**36**	70	**16**	26	**13**	27
6	1522-2209	**20**	60	**20**	60	**14**	24	**12**	20
5	730-1521	**17**	50	**17**	50	**12**	22	**10**	17
4	226-729	**13**	40	**13**	40	**10**	20	**8**	13
3	26-225	**10**	30	**10**	30	**8**	18	**7**	10
2	2-25	**7**	20	**7**	20	**6**	16	**6**	7
1	0-1	**4**	10	**4**	10	**3**	10	**5**	4

NOTE: These parameters may be changed by an operator under the "REDACTED" password. After entering the "REDACTED" password and choosing the "SIGN CONTROL MENU", choosing the "SIGN PARAMETERS" choice will allow the upper-level password holder to step through and change, if desired, all the upper-level parameters, including those which allow for setting LED percent brightness levels to ambient light levels.

If the sign face is pointed directly into the sun and an increase in brightness is desired, it is recommended that this increase be made in the upper dim level(s) and in increments of not more than 5% per adjustment. This will help you keep the increase in brightness as little as possible to conserve power. Remember, brightening the LED's uses more power and shortens autonomy, while dimming the LED's uses less power and lengthens autonomy

3.1.3 SIGN DIAGNOSTICS Menu

Sign Diagnostics provides information pertaining to the operational status of the sign. The information is accessible through the following four sub-menus and provides an insight into the actual operation of these systems:

1. Sign Status
2. Accessory Diagnostics
3. Battery Status
4. Solar Status

To choose SIGN DIAGNOSTICS from the SIGN CONTROL Menu, type the number "3" and press <ENTER>.

1. SIGN STATUS

a. Type the number "1" and press <ENTER> to access Sign Status. The diagnostics screen will appear as shown below. (NOTE: In this manual, the symbol # represents a number. On your Terminal screen, actual numbers will appear.)

```
I765ROMLA V### ###
O bvwLPSFA   V### ###
RPM #####  L### ###
C# S## R## W### F###
```

b. On the first line, the letter "I" represents inputs. (NOTE: Some of the inputs that are shown here are no longer used.) The next eight characters, when displayed, represent the following:

7 = Engine control input bit 7 operating (* * * NO LONGER USED * * *)
6 = Engine control input bit 6 operating (* * * NO LONGER USED * * *)
5 = Engine control input bit 5 operating (* * * NO LONGER USED * * *)
R = Reset error indicator engaged
O = Oil pressure is low (* * * NO LONGER USED * * *)
M = Mechanic's Override or Test Mode engine switches are engaged (* * * NO LONGER USED * * *)
L = Land line power (AC) is engaged
A = Auto start button has been pressed (* * * NO LONGER USED * * *)

1) The letter "V" represents voltage. The remaining characters on the first line display the current voltage and the filtered average of the LED supply voltage.

c. On the second line, the letter "O" represents outputs. (NOTE: Some of the outputs that are shown here are no longer used.) The next eight characters, when displayed, represent the following:

b = Battery Failure indicator (* * * NO LONGER USED * * *)
v = Voltage low indicator
w = Won't start indicator (* * * NO LONGER USED * * *)
L = Lights are on (* * * NO LONGER USED * * *)
P = Preheat is on (* * * NO LONGER USED * * *)
S = Starter is on (* * * NO LONGER USED * * *)
F = Fuel pump is on (* * * NO LONGER USED * * *)
A = Alternator is on (* * * NO LONGER USED * * *)

1) The letter "V" represents voltage. The remaining characters on the second line display are for factory use only.

d. On the third line, the RPM is displayed. (NOTE: This feature is no longer used.) Also on the third line, the letter "L" represents light. The remaining characters on the third line display the current light reading and the filtered average. This is a number without any unit that is proportional to the brightness sensed.

e. The five (5) items displayed on the fourth line are the following (NOTE: This feature is no longer used.):

C = Cranks - the number of times the engine has been cranked this start (* * * NO LONGER USED * * *)
S = Starter Timer - the amount of starter engagement time remaining (* * * NO LONGER USED * * *)
R = Rest Timer - the amount of rest time between cranks remaining (* * * NO LONGER USED * * *)
W = Warm-up Timer - the amount of warm up time remaining (* * * NO LONGER USED * * *)
F = Fuel - the fuel level reading (only used in cellular phone systems) (* * * NO LONGER USED * * *)

f. Pressing <ESCAPE> will exit the diagnostics screen and return you to the SIGN CONTROL MENU. To return to the MAIN MENU, press <ESCAPE>.

2. ACCESSORY DIAGNOSTICS

a. Type the number "2" and press <ENTER> to access Accessory Diagnostics. There are two choices under the Accessory diagnostics screen:

1. Modem Diagnostics (* * * FACTORY USE ONLY * * *)
2. Radar Diagnostics (* * * FACTORY USE ONLY * * *)

b. Both features are for factory use only and no additional information is included in this manual.

3. BATTERY STATUS

a. Type the number "3" and press <ENTER> to access Battery Status. The status screen will appear as shown below. (NOTE: In this manual, the symbol # represents a number. On your Terminal screen, actual numbers will appear.)

```
Batt  ##.## V        Open
Temp Open
Adjusted   D11.2   N11.8
    S13.2   H14.2   E14.6
```

b. On the first line is listed the Battery voltage (Batt).
c. Other features on this screen is for factory use only and no additional information is included in this manual.

4. SOLAR STATUS

a. Type the number "4" and press <ENTER> to access Solar Status. The diagnostic screen will appear (the capital letters represent abbreviations that actually appear on the screen and the small letters represent actual numerical values for the readings) as follows:

```
PNL aa.aa LED bb.bb
D ccc B d = ee%
A fff.fPgg hhh.h
L iiiii jjj T kkkkk
```

b. The capital letters abbreviations are:
   PNL = (* * * FACTORY USE ONLY * * *)
   LED = battery at the power manager
   D = (* * * FACTORY USE ONLY * * *)
   B = current brightness level in %
   A = amps into or out of the battery pack
   P = status of the two blank solar cell relays
   L = photo cell reading
   T = (* * * FACTORY USE ONLY * * *)

c. The small letters are actual numerical values as follows:
   aa.aa = (* * * FACTORY USE ONLY * * *)
   bb.bb =battery level at the power manager

ccc = (* * * FACTORY USE ONLY * * *)
d = LED brightness level
ee = LED brightness in %
fff.f = for amps into or out of the battery pack with a negative number indicating discharge (not taking into account any charge from the land line
gg = no charging relays are engaged; 1 - only charging relay #1 is engaged; 2 - only charging relay #2 is engaged; 12 - charging relay 1 & 2 are both engaged
hhh.h =(* * * FACTORY USE ONLY * * *)
iiiii = (* * * FACTORY USE ONLY * * *)
jjj = current light reading
kkkkk=(* * * FACTORY USE ONLY * * *)

Note: gg should display "- -" as the relays are disabled for the 331C sign.

3.2 Quick Start Guide to Programming VMS

Changing the Current Sequence through Menus:

1. To start press the **ESC** key on the handheld terminal.
2. At the prompt, type in appropriate password, (new users type: "REDACTED") then press **ENTER.**
3. Select **MESSAGE MENU** from the main menu, press 3, and then press **ENTER**.
4. Select **SEQUENCE MENU**, press 1, and then press **ENTER**.
5. Select **CURRENT SEQUENCE**, press 1, and then press **ENTER**.
6. If sign is not BLANKED, press N (for No), then press **ENTER**.
7. To change current message sequence, press Y (for Yes), then press **ENTER**.
8. Press Y if you want to use a preprogrammed sequence or N if you do not. Press **ENTER.**
9. Choose position 1-6, then press **ENTER**.
10. Choose message number (0 to 199), then press **ENTER**. (See Preprogrammed Message List attached) (Note: To select user defined messages – 201 to 400 See Steps Below)
11. Verify message, if correct, press Y (for Yes), then press **ENTER**.
12. To enter additional messages in sequence, repeat steps 6-8.
13. When all messages are entered, press "0" (zero) for exit, then press **ENTER**.
14. Verify sequence, if correct, press Y (for Yes), then press **ENTER**.
15. Current Rate (0 = Slowest, 7 = Fastest), if OK, press N (for No), and then press **ENTER**.

Creating a User Defined Message (#201 thru #400 ONLY) through Menus:

1. Select **MESSAGE MENU from the main menu**, press 3, and then **ENTER**.
2. Select **EDIT A MESSAGE**, press 2, and then **ENTER**.
3. Type in new message number, then press **ENTER.**
4. Verify number entered, press Y, then press **ENTER**.
5. To give the new message an associated name along with the number, press Y, then press **ENTER**.

6. If you answered N (no) to #5, press enter and go to step 8. If you answered Y (yes) to #5, type in name of message, then press **ENTER**.
7. Verify name entered above, if correct, press Y, then press **ENTER**.
8. To change message, press Y, then press **ENTER**.
9. To choose line, press 1, 2, or 3, then press **ENTER**.
10. Enter text for line, then press **ENTER**.
11. Repeat steps 10 and 11 to complete the message for lines 2 and 3.
12. When message is complete, press 0 (zero) to save and exit, then press **ENTER**.
13. Review message, if correct, press Y, then press **ENTER**.
14. To change message on time, press Y, then press **ENTER**. To leave message alone, press N, then press **ENTER**. Skip Steps 15 and 16.
15. If answered Y to step 14, enter new time, then press **ENTER**.
16. Verify new **ON TIME**. If OK, press Y, then press **ENTER**.
17. Message **OFF TIME** is 2 (default); press N, then press **ENTER**.

3.3 Hot Keys

Hot Keys can be used at the Main Menu. Enter the letter of the Hot Key and skip to that feature.

Hot Keys = **C** – Current Message Sequence
M – Create or Edit User Defined Messages
B – Brightness
R – Rate of Message Sequence
X – Expert Mode for Elimination of Redundant Verifications

3.4 VMS Message List

0	(blank message)
1	ACCIDENT AHEAD
2	ALL TRAFFIC EXIT
3	BE PREPARED TO STOP
4	BLOWING SNOW AHEAD
5	BRIDGE WORK 1000 FT
6	BRIDGE WORK 2000 FT
7	BRIDGE WORK 3000 FT
8	BRIDGE WORK 4000 FT
9	BRIDGE WORK 5000 FT
10	CAUTION
11	CAUTION ACCIDENT AHEAD
12	CAUTION BUMP AHEAD
13	CAUTION DETOUR AHEAD
14	CAUTION ICY BRIDGE
15	CAUTION LOOSE GRAVEL
16	CAUTION MERGE AHEAD
17	CAUTION ROUGH ROAD
18	CAUTION SHOULDER DROP OFF
19	CAUTION SLOW TRAFFIC
20	CAUTION SOFT SHOULDER
21	CAUTION TWO WAY TRAFFIC
22	CAUTION VEHICLES CROSSING
23	CENTER
24	CENTER LANE CLOSED
25	CENTER LN CLOSED AHEAD
26	CREWS WORKING IN ROAD
27	DENSE FOG AHEAD
28	DETOUR AHEAD
29	DETOUR NEXT EXIT
30	DETOUR NEXT 2 EXITS
31	DO NOT PASS
32	DUST STORM
33	DUST STORM AHEAD
34	END SHOULDER USE
35	EXIT HERE
36	EXPECT DELAYS
37	EXPECT DELAYS AHEAD
38	FLAGGER AHEAD
39	FORM ONE LINE LEFT
40	FORM ONE LINE RIGHT
41	FORM 2 LINES LEFT
42	FORM 2 LINES RIGHT
43	FREEWAY CLOSED AHEAD
44	FRESH OIL
45	FRESH OIL ON ROAD
46	GUSTY WINDS
47	GUSTY WINDS AHEAD
48	HEAVY TRAFFIC AHEAD
49	ICY BRIDGE AHEAD
50	ICY ROAD AHEAD
51	KEEP LEFT
52	KEEP LEFT “←”
53	KEEP RIGHT
54	KEEP RIGHT “→”
55	LANE CLOSED
56	LANE CLOSED AHEAD
57	LEFT
58	LEFT LANE CLOSED
59	LEFT LANE EXIT
60	LEFT LANE CLOSED AHEAD
61	LEFT 2 LANES CLOSED
62	LEFT 3 LANES CLOSED
63	LOOSE GRAVEL
64	MAXIMUM SPEED 25 MPH
65	MAXIMUM SPEED 30 MPH
66	MAXIMUM SPEED 35 MPH
67	MAXIMUM SPEED 40 MPH
68	MAXIMUM SPEED 45 MPH
69	MAXIMUM SPEED 50 MPH
70	MERGE
71	MERGE LEFT
72	MERGE LEFT “←”
73	MERGE RIGHT
74	MERGE RIGHT “→”
75	MERGING TRAFFIC AHEAD
76	MINIMUM SPEED 25 MPH
77	MINIMUM SPEED 30 MPH
78	MINIMUM SPEED 35 MPH
79	MINIMUM SPEED 40 MPH
80	NEXT 1 MILE
81	NEXT 2 MILES
82	NEXT 3 MILES
83	NEXT 4 MILES
84	NEXT 5 MILES
85	NEXT 6 MILES
86	NEXT 7 MILES
87	NEXT 8 MILES
88	NEXT 9 MILES
89	NEXT 10 MILES
90	NO SHOULDER
91	ONE LANE BRIDGE
92	ONE LANE BRIDGE AHEAD
93	ONE LANE TRAFFIC

94 ONE LANE TRAFFIC AHEAD
95 PAINT CREW AHEAD
96 PILOT CAR AHEAD
97 PREPARE TO MERGE
98 RAMP CLOSED
99 RAMP CLOSED AHEAD
100 REDUCE SPEED
101 REDUCE SPEED AHEAD
102 REDUCE SPEED 25 MPH
103 REDUCE SPEED 30 MPH
104 REDUCE SPEED 35 MPH
105 REDUCE SPEED 40 MPH
106 REDUCE SPEED 45 MPH
107 REDUCE SPEED 50 MPH
108 RIGHT
109 RIGHT LANE CLOSED
110 RIGHT LANE EXIT
111 RIGHT LN CLOSED AHEAD
112 RIGHT 2 LANES CLOSED
113 RIGHT 3 LANES CLOSED
114 ROAD CLOSED
115 ROAD CLOSED AHEAD
116 ROAD NARROWS AHEAD
117 ROAD REPAIRS AHEAD
118 ROAD WORK AHEAD
119 ROADWAY NARROWS
120 ROAD WORK NEXT 1 MILE
121 ROAD WORK NEXT 2 MILES
122 ROAD WORK NEXT 3 MILES
123 ROAD WORK NEXT 4 MILES
124 ROAD WORK NEXT 5 MILES
125 ROAD WORK NEXT 6 MILES
126 ROAD WORK NEXT 7 MILES
127 ROAD WORK NEXT 8 MILES
128 ROAD WORK NEXT 9 MILES
129 ROAD WORK NEXT 10 MILES
130 ROUGH ROAD AHEAD
131 SHOULDER DROP OFF
132 SHOULDER USE OK
133 SHOULDER WORK AHEAD
134 SIGNAL NOT WORKING
135 SLOW
136 SLOW ROAD FLOODED
137 SPEED LIMIT 25 MPH
138 SPEED LIMIT 30 MPH
139 SPEED LIMIT 35 MPH
140 SPEED LIMIT 40 MPH
141 SPEED LIMIT 45 MPH
142 SPEED LIMIT 50 MPH
143 SPEED LIMIT 55 MPH
144 STAY IN LANE
145 STOP AHEAD
146 STOPPED TRAFFIC
147 SURVEY PARTY AHEAD
148 TRAFFIC CONTROL AHEAD
149 TRAFFIC MUST EXIT
150 TRUCKS CROSSING AHEAD
151 TRUCKS
152 TRUCKS IN/OUT HIGHWAY
153 TWO WAY TRAFFIC
154 TWO WAY TRAFFIC AHEAD
155 USE DETOUR ROUTE
156 USE EXTREME CAUTION
157 VEHICLES CROSSING AHEAD
158 WATCH FOR
159 WORKERS IN ROAD
160 WORKERS IN TUNNEL
161 YIELD AHEAD
162 BUCKLE UP
163 **DRIVE SAFELY**

RADAR SPEED DISPLAY MESSAGES FONTS

182	YOUR SPEED IS	4X7
*183	XXX MPH	6X11
184	SLOW DOWN	6X11
185	SPEED LIMIT	6X11
186	SPEED LIMIT IS 15 MPH	4X7
187	SPEED LIMIT IS 20 MPH	4X7
*188	IS XXX MPH	4X7 & 6X11
*189	IS XXX (LARGE)	7X20
190	MPH	5X7
191	MPH (LARGE)	7X20

These messages display real time radar vehicle speed

195 (test message)
196 (test message)
197 (test message)
198 (test message)
199 (test message)

999 (empty message)

MUTCD Symbols:

401	M4-10L	DETOURL
402	M4-10R	DETOURR
403	W1-1L	SHRPLFT
404	W1-1R	SHRPRGHT
405	W1-2L	LEFTTURN
406	W1-2R	RGHTTURN
407	W1-3L	LSHRPSHF
408	W1-3R	RSHRPSHF
409	W1-4AL	LSHIFT1
410	W1-4AR	RSHIFT1
411	W1-4BL	LSHIFT2
412	W1-4BR	RSHIFT2
413	W1-4CL	LSHIFT3
414	W1-4CR	RSHIFT3
415	W4-1	MRGTRAFFC
416	W4-2L	LLANEEND
417	W4-2R	RLANEEND
418	W4-3	ADD R LN
419	W5-2A	NRRWROAD
420	W6-1	DVDHWTBEG
421	W6-2	DVDHWYEND
422	W6-3	TWOWAYTRF
423	W7-1	STEEPGRD
424	W8-1	BUMP
425	W8-2	DIP
426	W8-3A	PVMNTEND
427	W8-5	SLIPROAD
428	W20-7A	FLAGMAN
429	W22-1	ROADWRK

Arrow Board Messages:

601	ARROWLEFT
602	ARROWL FLASH
603	ARROWRIGHT
604	ARROWR FLASH
605	ARROW DOUBLE
606	ARROW FLASH DBL
607	CAUTION4LIGHT
608	CAUTIONFLASH 4
609	CAUTION BAR
610	CAUT FLASH BAR
611	CHEV LEFT MOVE
612	CHEV LEFT GROW
613	CHEV RIGHT MOVE
614	CHEV RIGHT GROW
615	RADAR MPH LARGE

Moving Graphical Symbols:

639	MOVING SIGN
640	AMSIG SMASH250
641	SEATBELTBUCKLE
642	ALL MUTCD2SEC
646	CHECKERBOARD
647	SIGNS BY AMSIG
648	WAVING FLAG
649	FIREWORKS
650	3 FIREWORKS

Stationary Graphical Symbols:

430	GADOT	MOTCYWRN
431	GADOT	UNEVNPAV
432	DIAMND	WBORDER
433	BLANK	DIAMOND
434	INVRTD	DIAMOND

Reserved by Factory NOT OPERATOR USABLE

435	BLANK IMMAGE
440	FLAG STARS
441	FLAG STRIPES
442	FLAGSTRIPEMASK
445	SIGNS BY
446	AMSIG LOGO
447	SIGN IMAGE
448	SEATBELT RIGHT
449	SEATBELT LEFT
450	FIREWORK A
451	FIREWORK B
452	FIREWORK C
453	FIREWORK D
454	FIREWORK E
455	FIREWORK F
456	FIREWORK G
457	FIREWORK H
458	FIREWORK I
459	FIREWORK J
460	FIREWORK K
461	FIREWORK L
462	FIREWORK M
463	LEFT CHEVRON
464	RIGHT CHEVRON
465	CENTERSTROKE
466	CIRCLE
499	CHECKERBOARD

➤➤➤ USER'S NOTE ◄◄◄

The characters "←" and "→" represent dynamic moving arrows.

3.5 Display Rate Chart

Depending on the speed at which traffic is moving and the number of messages you wish to display, American Signal Company recommends these specific display rates:

NUMBER OF MESSAGES IN SEQUENCE

SPEED OF TRAFFIC (MPH)	1	2	3	4	5	6
25	*	1	1	1	1	1
35	*	1	1	2	2	3
45	*	1	1	3	4	5
55	*	1	2	4	5	6
65	*	2	3	5	6	7

(Numbers in chart are on-screen display rates elections.)

➤➤➤ USER'S NOTE ◄◄◄

If you are displaying only one message, the display rate is not critical. Select "on time" and "off time" to suit your needs.

The chart below illustrates the various "on times" and "off times". Use this chart as needed to select those parameters. Times are listed in seconds and are in **bold**.

ON TIME OR OFF TIME

DISPLAY RATE	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
0	0	0.9	1.8	2.7	3.6	4.0	4.5	9.0
1	0	0.8	1.6	2.4	3.2	3.6	4.0	8.0
2	0	0.7	1.4	2.1	2.8	3.1	3.5	7.0
3	0	0.6	1.2	1.8	2.4	2.7	3.0	6.0
4	0	0.5	1.0	1.5	2.0	2.3	2.5	5.0
5	0	0.4	0.8	1.2	1.6	1.8	2.0	4.0
6	0	0.3	0.6	0.9	1.2	1.4	1.5	3.0
7	0	0.2	0.4	0.6	0.8	0.9	1.0	2.0

3.6 Troubleshooting

PROBLEM	SOLUTIONS
Keyboard terminal displays "SIGN OPERATION"	• Check connector at back of terminal, are all pins properly seated. • Check fuses with multimeter. • Check to see if 10A breaker has triggered (on 33x only). • Exchange keyboard terminal with another one. If problem still exists in other terminal, press "RESET/AUTO-START" on instrument panel. If engine does not start, return both terminal and CPU to factory for repair and return (see limited warranty in manual).
Keyboard will not allow you to change messages	• Check your password (see Section 3.1). • Check message numbers you are using in the current sequence. Message numbers may be one of those created (under the "edit message" menu) or may be one of the factory message numbers before you can choose the number in a position of the current sequence. A message number that is not a factory pre-stored number or one which has been created by the operator cannot be used in a current sequence. • Remember you must press "0" to save the current sequence and exit out after you have chosen the proper message numbers to occupy some or all of the six positions of the current sequence. **NOTE**: When editing (or creating a message, the unit first asks you for a message description or abbreviation, then allows you to input the actual message text over three lines of display.
The SIGN STATUS DISPLAY indicates that the message should be displayed on the sign face but no message is visible	• Check the LED brightness level reported on the SIGN STATUS DISPLAY and verify that it is consistent with the ambient light level. If the LED brightness is too low and not followed by an "A" (for automatic), go to the SIGN STATUS DISPLAY entry in the SIGN CONTROL MENU and change the brightness to a higher setting. Verify that no daily schedules incorrectly set the brightness level. • If the LED bright level reported on the SIGN STATUS DISPLAY is followed by an "A", then change the sign brightness parameters following the procedures detailed on the dim level table. • Check for proper operation of the photo cell by covering it with your hand or a piece of black tape to insure that the photocell reading found on the diagnostic screen goes down towards zero when covered and the reading approaches 255 when the sign is in bright sun.