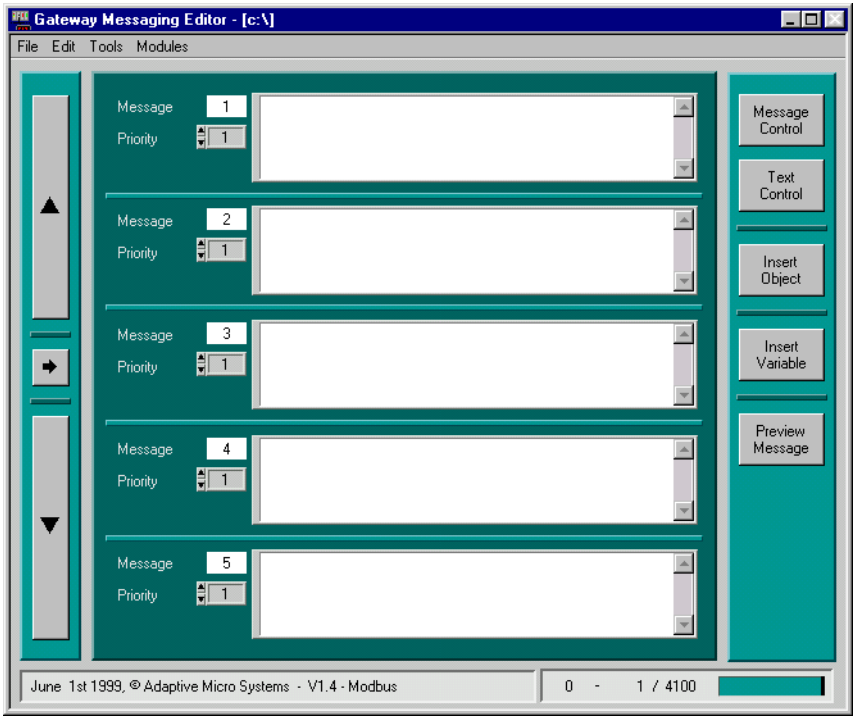
Gateway
Messaging Software
User Manual



ADAPTIVE

Form No. 9703-7004B
9/23/99

NOTE: Due to continuing product innovation, specifications in this document are subject to change without notice.

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NOTES

The following is a list of idiosyncrasies for *Gateway Messaging Software*:

1. Conflicts with Labview V5.0: The *Gateway Messaging Software* will not run when installed on a PC that has **Labview V 5.0** or earlier. If you have **Labview V 5.0** or earlier, contact Adaptive Mico Systems for assistance.
2. Time Formats: The Gateway Messaging Software will not change the time format (24hr. vs. AM/PM) on a sign. The time format can, however, be changed at the sign using the infrared Remote Control. For further information on the Remote Control, see "Example 11 – Using the Remote Control" on page 44."
3. Blank Messages: If a message is accidentally triggered that contains no variables or data, the sign will go blank. Always verify that your messages contain either variables, data, or both before transmitting the message to the sign.
4. Creating Variables: A decimal point cannot be used in variable data. For more information on variables, see "Example 10 — Creating and inserting variables" on page 40".
5. Program names in Widows Start menu: When the Gateway Messaging Software is installed, several shortcuts are created on the Start menu. There is inconsistency between the Start menu name and the software/documentation:

Name in the Windows Start menu	Software/documentation name
Profibus	PD3000 Configuration Software
Modbus Plus	MD3000 Configuration Software
DeviceNet	DN3000 Configuration Software

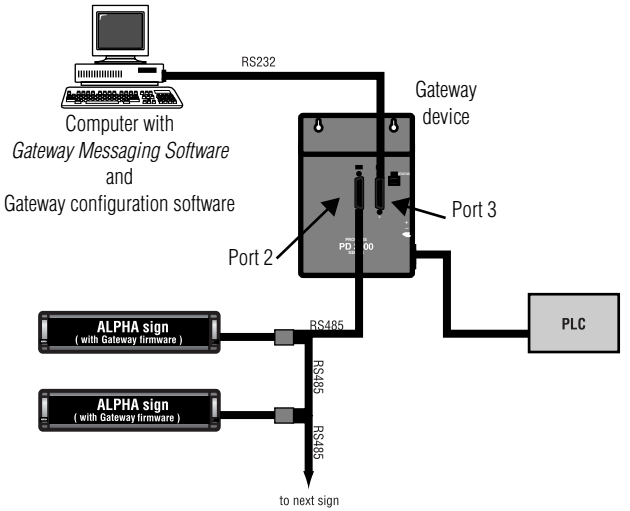
General information

Purpose of the system

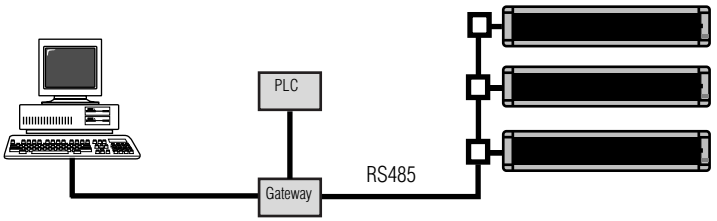
A PLC Gateway system connects PLCs with ALPHA 4000 and 7000 series signs having the Industrial Gateway upgrade. It provides the ability to display user-defined real-time messages. The *Gateway Messaging Software* allows you to create and edit the messages on a computer and download them as a group to the ALPHA signs. Messages can then be displayed on the signs when triggered by PLCs via the Gateway device (PD3000, MD3000, or DN3000.)

System setup

The following are the general steps to setting up hardware, and generating, transmitting, and triggering messages on signs. This manual describes Step 3 and Steps 4a and 4b below in detail.

<table>
<tr><th>Step</th><th>Description</th></tr>
<tr><td>1</td><td>Connect the hardware as shown here (before using the Gateway Messaging Software to create and send messages.)
 
</td></tr>
<tr><td>2</td><td>Program the Gateway device using the installation document for your Gateway device. See the table below.
Table 1: Supporting documentation
<table>
<tr><th>Part Number</th><th>Title</th></tr>
<tr><td>9703-7002</td><td>How to connect ALPHA signs to Profibus DP using the PD 3000</td></tr>
<tr><td>9703-7003</td><td>How to connect ALPHA signs to DeviceNet using the DN3000</td></tr>
<tr><td>9703-7005</td><td>How to connect ALPHA signs to Modbus Plus using the MD 3000</td></tr>
</table></td></tr>
<tr><td>3</td><td>Create, edit, and preview messages on the PC using the Gateway Messaging Software.
(Please refer to “Basic messaging” on page 10 and “Advanced messaging” on page 32 for more information.)</td></tr>
<tr><td>4a</td><td>NOTE: Perform this step (4a) whenever <u>all</u> the signs to receive messages in the sign network are connected to the computer via the Gateway device.

Transmit messages to signs as shown in the configuration in Step 1. If more than one sign is networked, all signs will receive the messages. (Please refer to “Example 1 — Creating a simple message” on page 10 for more information.)</td></tr>
</table>

Step	Description
4b	*NOTE: Perform this step (4b) only if a sign is added to the sign network after the initial setup.* Connect the sign to the industrial sign network. Using a Remote Control, transmit the messages from one of the signs in the sign network to the newly-connected sign. (Refer to "Example 11 – Using the Remote Control" on page 44 for more instructions.) 
5	(Optional) If desired, disconnect the computer from the Gateway/sign network.
6	Program the PLC(s). (Please refer to the documentation for your specific PLC(s) for more detailed information.)
7	*NOTE: The Gateway Device must be connected to the system before performing this step.* Trigger messages using PLC(s) as shown here. (Please refer to the documentation for your specific PLC(s) for more detailed information.) 

Basic software setup

File usage

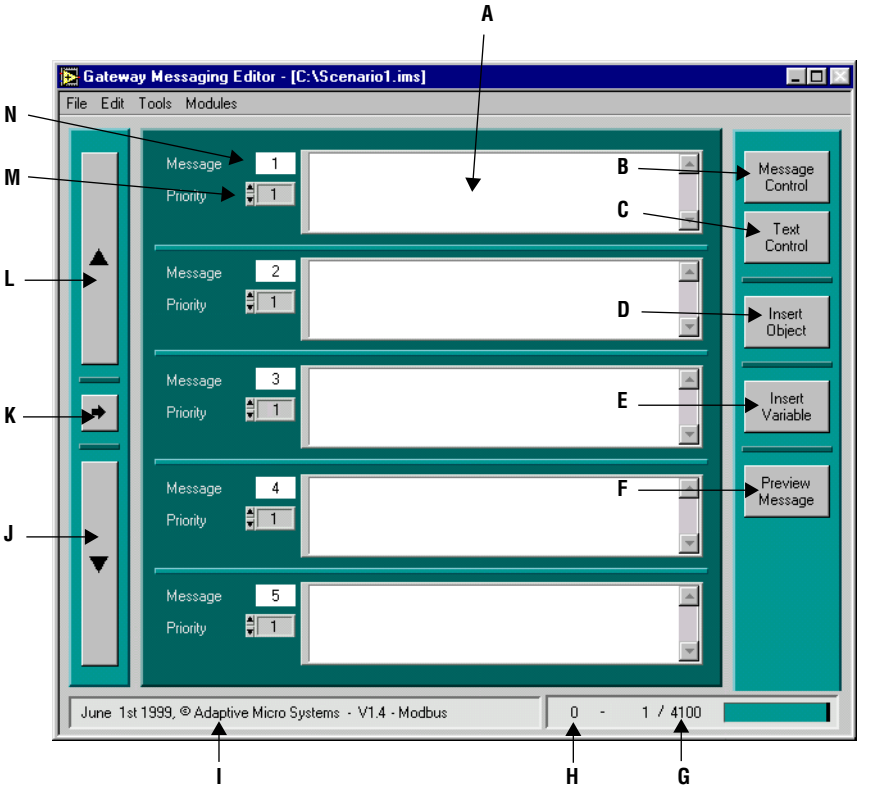
The *Gateway Messaging Software* uses a file to hold a set of messages to be sent to signs. Typically, there is only one file for all messages, but you can create files of different messages based on varying circumstances if you wish. Each file has a user-defined name. When a file is downloaded to ALPHA signs, all messages in that file are downloaded to any attached sign(s.)

By default, each file is stored in the root directory of the computer. If you change the location when you save a file, the *Gateway Messaging Software* will remember that location and select it whenever you want to save again.

Screen layout reference

Whenever you start the *Gateway Messaging Software*, your computer screen will appear as shown here. Refer to the table below for descriptions.

NOTE: Items or features that are grayed out in the software are not available in the software.

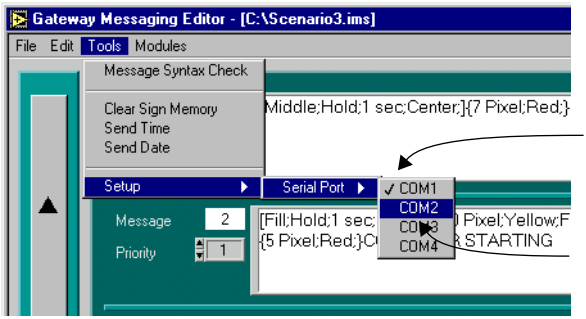


Item	Name	Description
A	Message area	Area for message text, variables, etc., as well as controls for the message and its contents.
B	Message Control button	Opens a window for message options such as: position on the sign, display mode, delay, and justification.
C	Text Control button	Opens a window for text options such as: font, color, width, and flashing.
D	Insert Object button	Opens a window for options to insert date or time.

Item	Name	Description
E	Insert Variable button	Opens a window for options to insert a variable.
F	Preview Message button	Allows you to send the current message to the sign.
G	Message statistics	Indicates the current message number and the maximum number of messages. (See “Setting message size and maximum messages” on page 8.)
H	Column number	Indicates the column number where the cursor is positioned in the current message.
I	Proprietary information	Indicates copyright information, version, and name of the software.
J	Down button	Advances the set of five messages shown in the window to the next set of five messages.
K	Goto button	Allows you to select a specific message number to start the set of five messages shown in the window.
L	Up button	Advances the set of five messages shown in the window to the previous set of five messages.
M	Priority number	Indicates the priority of that message, 1, 2 or 3 (1 = low, 2 = medium, and 3 = high).
N	Message number	Indicates the number of the message.

Setting the serial port

You need to identify which serial port will be used to download messages from your computer to any sign(s).

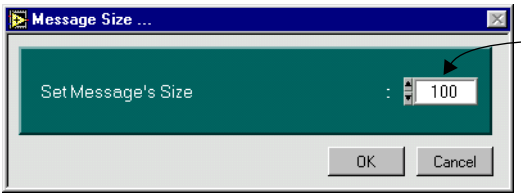
Step	Description
1	In the *Gateway Messaging Editor*, choose *Tools* > *Setup* > *Serial Port*. Select the appropriate serial port for your computer. 

Setting message size and maximum messages

Determining the number of characters available to use

Your ALPHA sign with the Gateway upgrade has 256K memory. You can specify how much of that memory to allocate for each message. The default message size is 100 bytes. You can change that to any size as needed. The range for message size is 50 to 450. The range for maximum number of available user-defined messages is 444 to 4000. (Signs can only accept up to 4000 messages maximum.)

NOTE: If the message size is set too small, messages may not be sent to the sign.

Step	Description
1	Choose *Modules > Setup > Message Size*. Set the value as desired. 
2	Determine the number of bytes taken for sending controls: add up the maximum bytes for each of the following if you use them in a message. Some examples are listed below. Message controls, maximum = 6 bytes Text controls, maximum = 10 bytes Object controls, maximum = 3 bytes Variable controls, maximum = 9 bytes So, if you use all of the above once in a message, the total maximum size used for sending controls is 28 bytes. Likewise, if you only use one set of message controls and one set of text controls, the total maximum size used for sending controls is 16 bytes.
3	Calculate the number of characters available to use in a message Message size set in Step 1 above – the number you calculated in Step 2 above = the number of alphanumeric characters available to use in a message

Determining the number of messages available to use

The formula for the maximum number of messages is:

200,000 / Message size = Maximum number of user-defined messages

Example 1: The default message size is 100, therefore:

200,000 / 100 = 2000

Example 2: If you change the message size to 50 bytes, you can create twice the number of messages as if you had left it at the default of 100 bytes.

200,000 / 50 = 4000

Example 3: If you change the message size to 200 bytes, you can only create half the number of messages as if you had left it at the default of 100 bytes.

200,000 / 200 = 1000

NOTE: You cannot use any message number greater than the maximum number of messages as calculated above, even though you can access them in the *Gateway Messaging Software*. Doing so either will cause erratic and incorrect results on the sign, or those messages will not show on the sign.

NOTE: The table below shows the usage of the set of *Gateway Messaging Software* messages. It indicates that, while the total number of system messages is 4100, you can only use those in the 0 to 4000 range plus the background message (4095.) Message 4095 is reserved for the background message, regardless of the maximum number of messages. (See "Example 8 — Setting the background message" on page 32 for use of the background message.)

Table 2: Usage of messages

Start message	End message	Usage
1	4000	User-defined messages
4001	4094	Not used
4095	4095	Background message
4096	4100	Not used

Basic messaging

Example 1 — Creating a simple message

NOTE: Be sure your hardware is set up as in Step 1 of "System setup" on page 2.

This example shows how to create a simple message and display it on a sign.

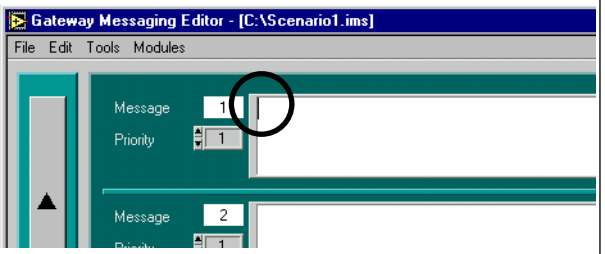
The basic format of any message is:

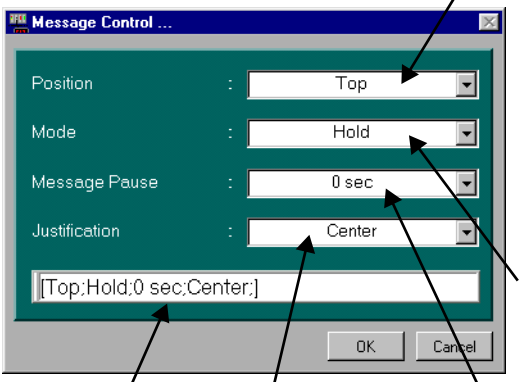
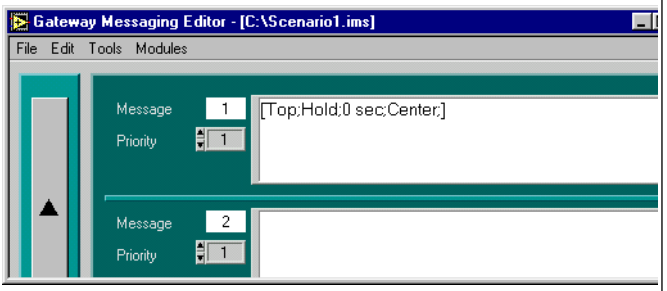
[message controls]{text controls} message body

At least one set of message controls and one set of text controls are required. The basic format may be repeated as many times as necessary.

Specify how to show the message on a sign.

The *message controls* determine certain settings for the entire message. This example introduces the *message control* defaults.

Step	Description
2	Place the cursor at the start of the first message. *Message controls* are placed at the start of any message. 

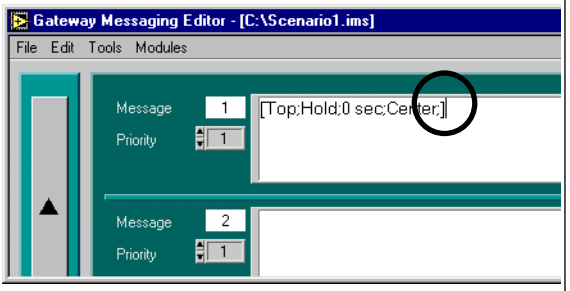
Step	Description
3	Click on the *Message Control* button. The *Message Control…* window will appear. For now, leave the settings as they are. Click **OK**. These are the defaults for the *message controls* the first time you use the *Gateway Messaging Software*. After the first time, the controls are set as you used them the last time in a message.  Message controls that will be inserted and used in the message are automatically shown in this display box. Justification *Center:* Aligns the message in the center of the sign. *Left:* Aligns the message on the left side of the sign. Position *Top:* Places a message on the top line of a sign, or above a prior message for the bottom of the sign. *Bottom:* Places a message on the bottom line of a sign, or below a prior message for the top of the sign. *Middle:* Places a message in the middle of the sign, regardless of the number of lines available. *Fill:* Uses all lines on a sign for the message. Mode *Hold:* Holds the message in one place on the sign. *Rotate Left:* Rotates a message from the right to the left horizontally across a sign. Display Message 0 to 5 seconds: Refreshes and redisplays the message after the number of seconds specified.
4	The message will look like this, with the *message controls* inserted within brackets, []. NOTE If message controls are not set in a message, they default to those of the prior message in the sign. 

Now we will add the Text Controls. Text Controls determine settings for how the message text will appear on the sign (font, color, width, and flashing).

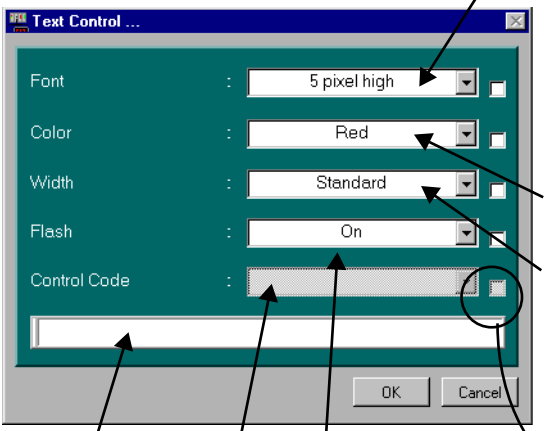
<table>
<tr><th>Step</th><th>Description</th></tr>
<tr><td>5</td><td>Place the cursor at the end of this message, after the message controls.

The text controls are placed after the message controls and anywhere thereafter when you want to change the look of the text.

You must put message controls at the beginning of the message to properly send the message to the sign.

 
</td></tr>
<tr><td>6</td><td>Click on the Text Control button. The Text Control… window will appear.

These are the defaults for the text controls the first time you use the Gateway Messaging Software. After the first time, the controls are set as you used them the last time in a message.

<u>Font</u>
5, 7, 10, or 16 pixel high: Indicates the maximum number of pixels to use for the height of characters. Font is sans-serif.
Fancy 7-or 16 pixel high: Indicates the maximum number of pixels to use for the height of characters. Font is serif.

<u>Color</u>
Choose red, green, or yellow.

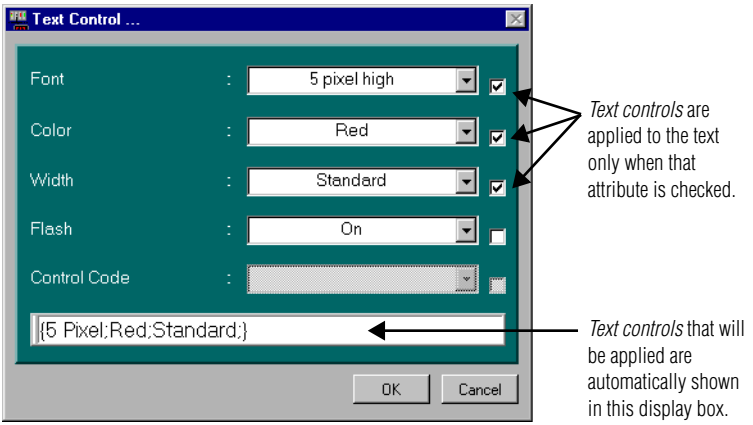
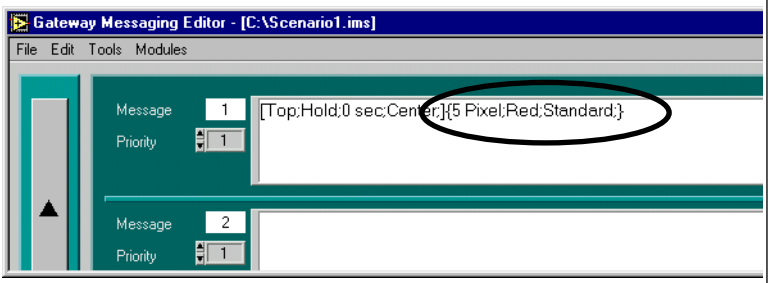
<u>Width</u>
Standard: Uses normal width characters.
Wide: Number of pixels = Standard + 1.
Double Wide: Number of pixels = Standard x 2.

Text controls that will be inserted and used in the message are shown in this display box.

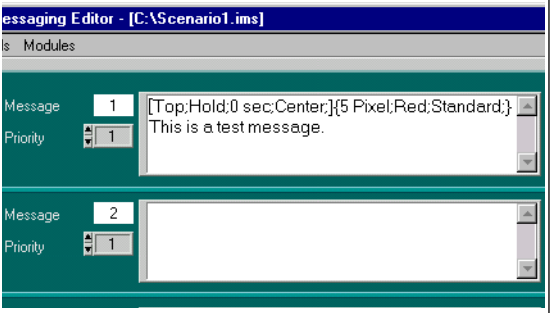
<u>Control Code</u>
Not available.

<u>Flash</u>
On: Turns flashing on for the text following the control, until changed by another Flash control.
Off: Turns flashing off for the text following the control, until changed by another Flash control.

Text controls are applied to the text when that attribute box is checked. See the next step.</td></tr>
</table>

Step	Description
7	For now, leave the choices as they are, but use the check boxes to turn on *Font, Color, and Width.* Click **OK.** 
8	The message will look like this, with the *text controls* inserted within braces, {}. 

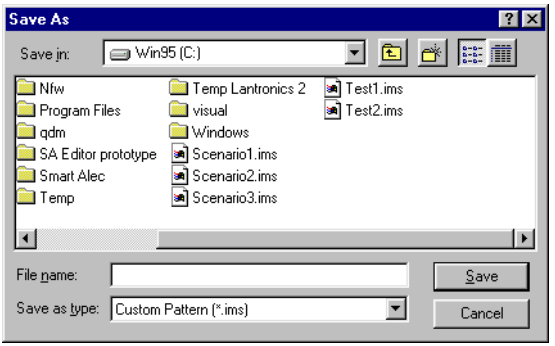
Enter text.

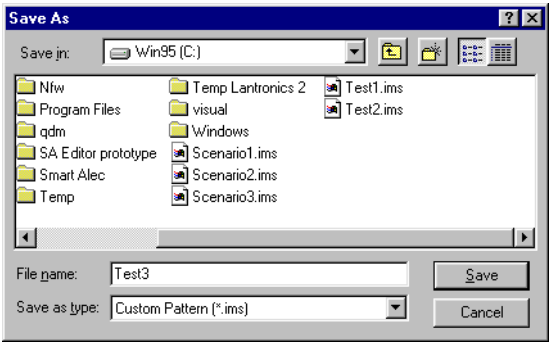
Step	Description
1	Place the cursor in the *Message area* for the first message and type a message. Text in a message will be shown in red when the cursor is in that message. When the cursor is placed in a message, that message is "selected" and the contents of the message are shown in red. **NOTE: Do not use a colon in a message.** See "Appendix B: Frequently-Asked Questions" on page 52. 

Save the message file.

In this section, we will save the message that you just created.

NOTE: You can choose a different sub-directory for your files. The one shown below is for exemplary purposes only.

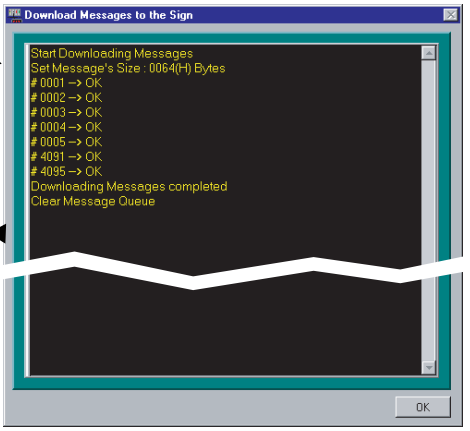
Step	Description
9	Choose *File* > *Save*. For a new file, you'll see the *Save As…* window. 

Step	Description
10	Fill in the name of the file that you want to use. You don't need to provide the extension. "ims" will be used as the default. Choose *Save*. 

Download messages

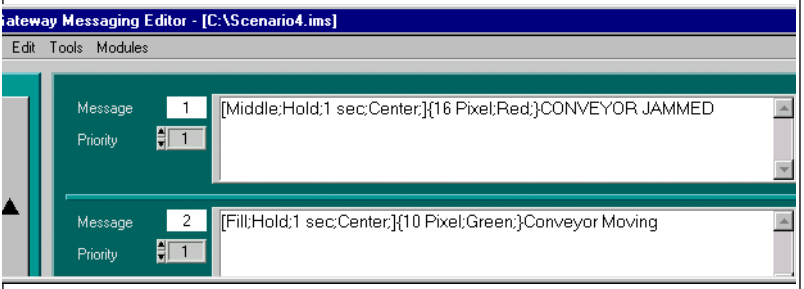
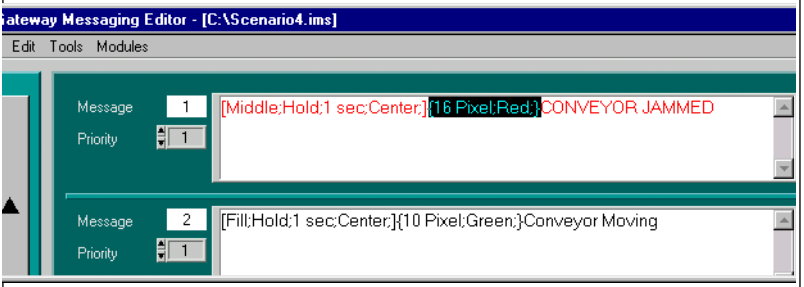
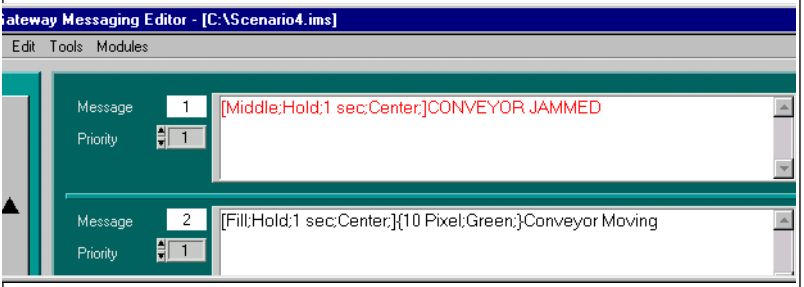
In order for your messages to be displayed on the sign, you must download them to the sign. Once this is complete, the message order will depend upon the priority level that you set each message to. For further information about the message priority level, see "Example 3 — Setting message priorities" on page 19.

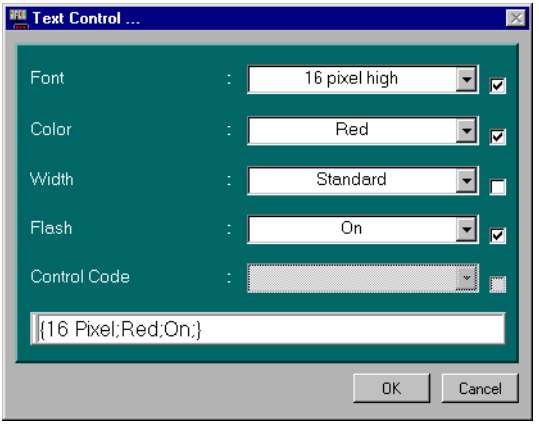
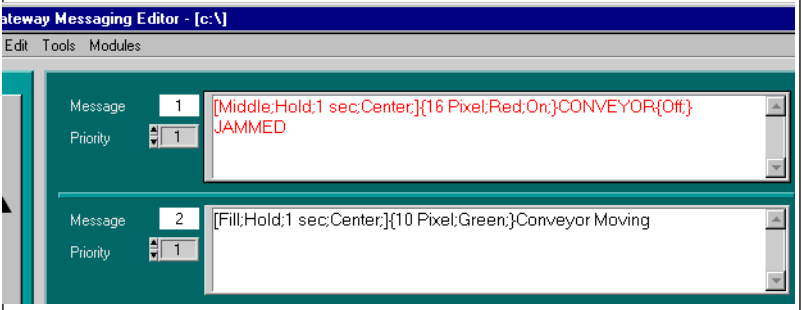
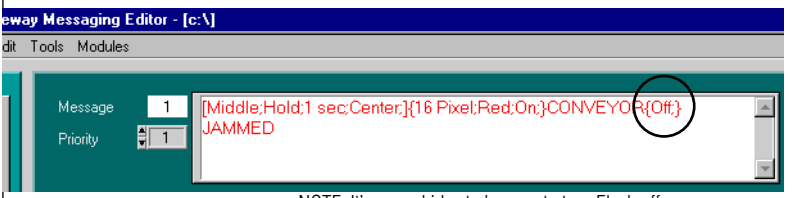
NOTE: Before downloading messages, be sure that all the hardware is properly connected as shown in "System setup" on page 2.

Step	Description
11	Choose *Modules* > *ModBus* > *Download Messages*. All valid messages in the file will be transmitted to the attached sign. When the download is finished, click **OK** to close that window. All the messages downloaded to the sign will be displayed on the sign, and then "*No Background Message*" will appear on your sign. The message queue will now be cleared. The message size is shown in hexadecimal. 0064(H) is the same as 100 bytes in decimal. Each message will be listed as it's transferred. Wait until you get this notification. This indicates that the message queue is cleared. 

Example 2 — Making a message flash

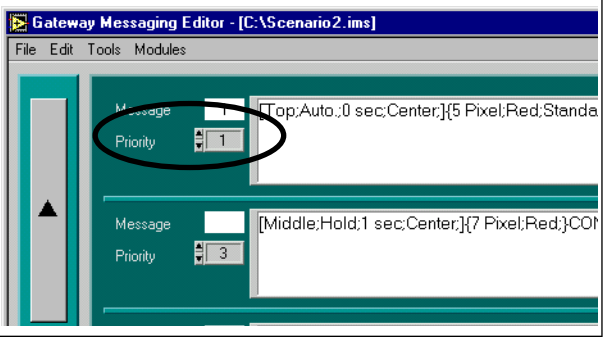
You can make portions, or all, of a message flash on and off.

Step	Description
1	This example will show how to make the first message flash. 
2	First, highlight the *text controls* that are in the message currently. 
3	Delete these text controls (with the **Delete** or **Backspace** key). 

Step	Description
4	Click on the *Text Controls* button. Select and check the same options were in the message before, and also select and check *Flash* > *Enable*. 
5	All the selected options, including *Flash* will be included in the message. 
6	This message shows how to make the first part of a message flash, while the second part does not.  NOTE: It's a good idea to be sure to turn Flash off where you want it to stop. Otherwise, the next message will assume the Flash Mode also.

Example 3 — Setting message priorities

The message priority specifies the importance of a message. Messages of a lower priority will not run if any message of a higher priority is running.

Step	Description
1	Use the up/down arrows for each message to set its *message priority.* 

The next two tables illustrate sample messages with various priorities, and the results of sending those messages to a sign in various combinations. (For a more elaborate example, showing activation and deactivation registers for the PLC, see "Appendix A: Sending priority messages from a PLC" on page 50.)

Table 3: Sample priority messages

Message number	Priority Level
1	Low = 1
2	Low = 1
3	Medium = 2
4	High = 3
5	High = 3

The table below shows the results of sending sample priority messages. (For a more elaborate example, showing activation and deactivation registers for the PLC, see "Appendix A: Sending priority messages from a PLC" on page 50.)

Table 4: Results of sending sample priority messages

Message queue	Message number of message displayed on sign	Highest priority message displayed
1	1	Low
1, 2	1, 2	Low
1, 2, 3	3	Medium
1, 2, 3, 5	5	High
1, 2, 3, 5, 4	5, 4	High
2, 3, 5, 4	5, 4	High
2, 3, 5, 4	5, 4	High
2, 3, 5	5	High
2, 3	3	Medium
2	2	Low
–	–	Background message

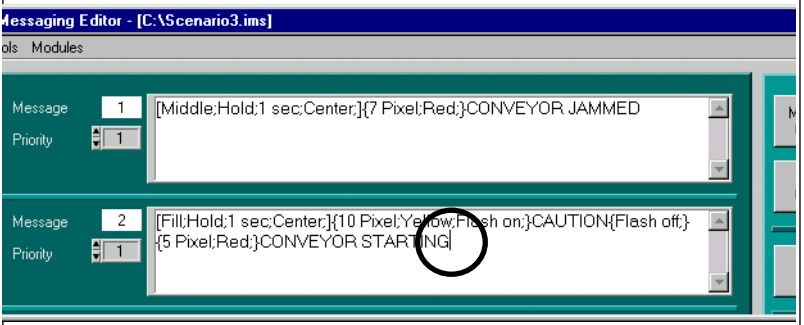
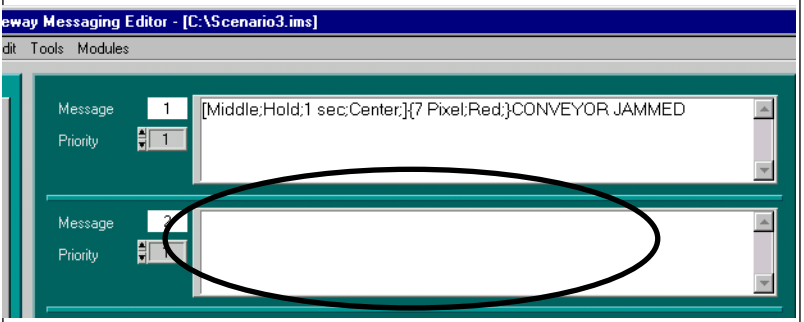
Example 4 — Deleting messages

You can delete the contents of any one message or delete the entire set of messages already downloaded to a sign by:

- **Highlighting the message, and then pressing the backspace key on your computer.**
- **Completing steps 1-4 as shown below.**

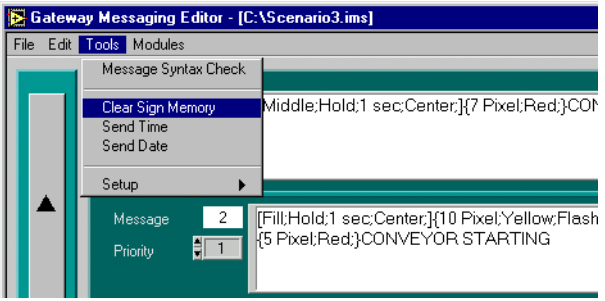
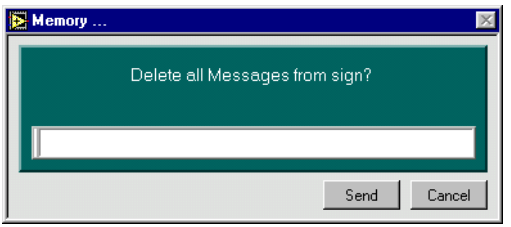
NOTE: There is no "Undo" capability in the *Gateway Messaging Software*. Once a message is deleted from a file or a set of messages is deleted from a sign, you can't get it back without recreating it!

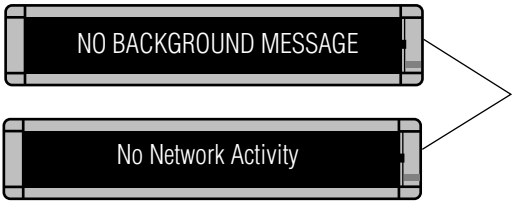
Deleting the contents of a message

	Description
1	Place the cursor anywhere in the *Message area* for the message to be deleted. 
2	From the menu bar, choose Edit > Clear Message. Everything in that message will be deleted. NOTE 1: There is no "Undo" capability in the *Gateway Messaging Software*. Once a message is deleted from a file, you can't get it back without recreating it! NOTE 2: See question 1 in "Appendix B: Frequently-Asked Questions" on page 52 for an understanding of what happens when this file of messages is downloaded to a sign. 

Deleting all messages on a sign

NOTE: Before deleting messages, be sure that all the hardware is properly connected as shown in "System setup" on page 2.

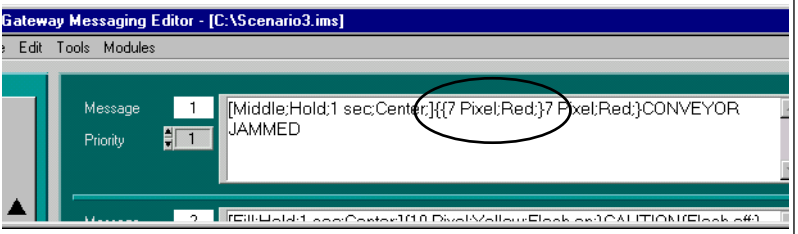
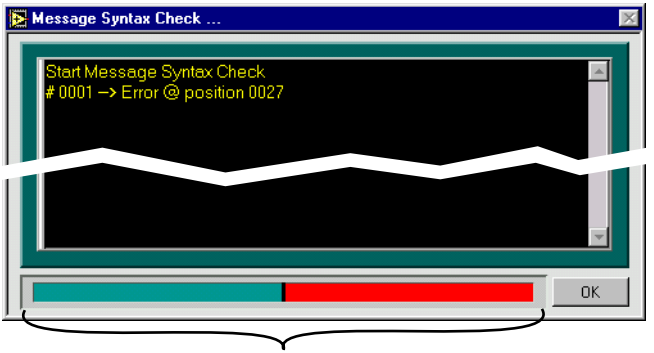
Step	Description
1	Choose *Tools* > *Clear Sign Memory.* 
2	The Memory… prompt will ask for confirmation. Choose *Send* to send the command to delete all messages from the sign. NOTE: There is no "Undo" capability in the *Gateway Messaging Software*. Once a set of messages is deleted from a sign, you can't get it back without recreating it! 
3	You will receive a notification that the command was transmitted. All signs connected to the PC will receive the transmission and will be cleared.  NOTE: This notification does not indicate that the sign actually received the command. It simply means that the command was sent.

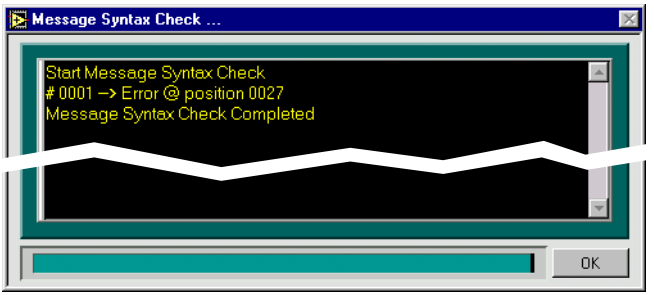
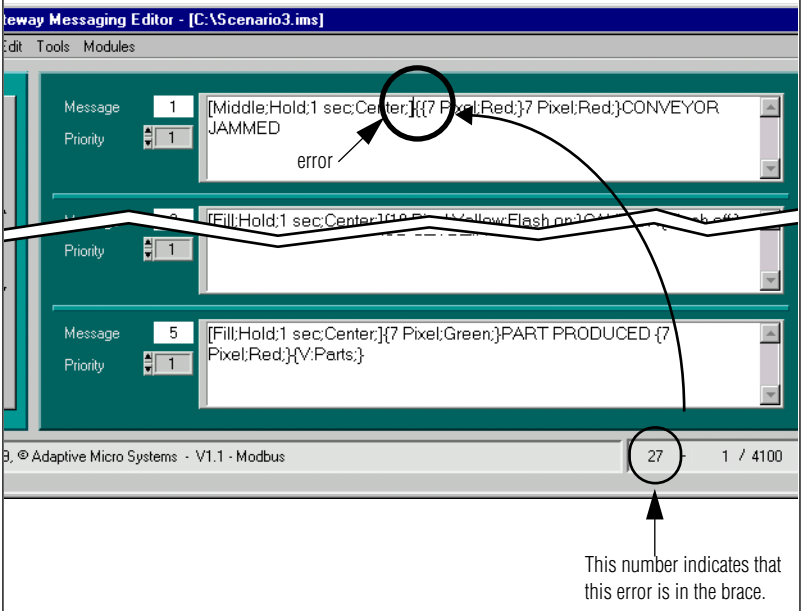
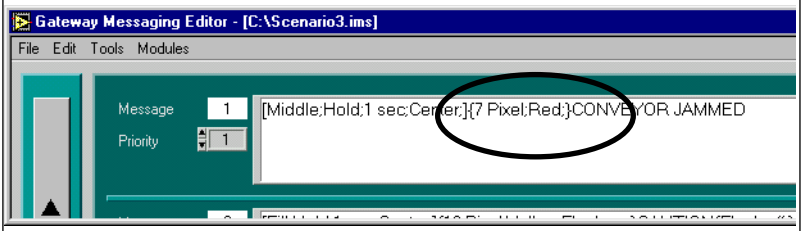
Step	Description
4	Once this is complete, the following messages will appear on your sign:  NOTE: These messages on the sign means that the command was received and processed by the sign.

Example 5 — Checking message syntax

"Syntax" refers to the construction of words, phrases, sentences, or messages according to established rules. The construction must be correct for a message to be displayed correctly. The *Gateway Messaging Editor* can check the syntax of messages for you. Follow the steps to determine and fix any errors.

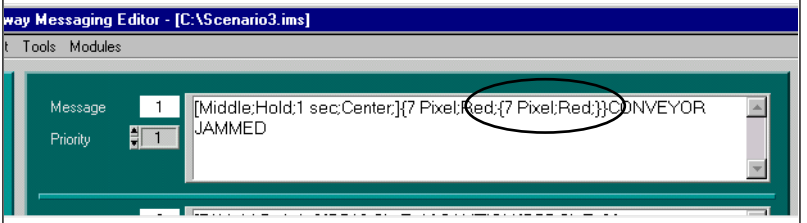
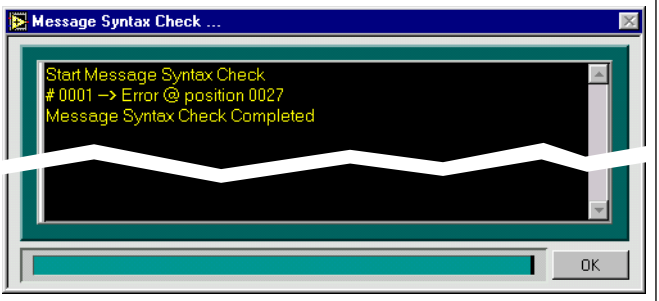
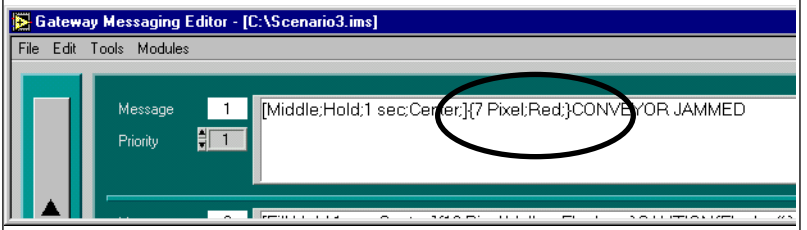
Basic syntax check example

Step	Description
1	As an example, say you accidentally entered text controls twice, as shown here, with one set of controls embedded in another. 
2	Choose *Tools* > *Message Syntax Check*. The syntax check will start automatically. All messages in the file will be checked. There is a status bar at the bottom of the window. 

Step	Description
3	The *Message Syntax Check* processing indicates the message number, the starting position in the message of any syntax error, and when the process is complete. Choose **OK** when the process is done. NOTE: Only messages with errors will be shown. 
4	Place the cursor in the message where indicated by the column number and message statistics. 
5	Determine and correct the error, in this case, by selecting and deleting the extraneous text. 

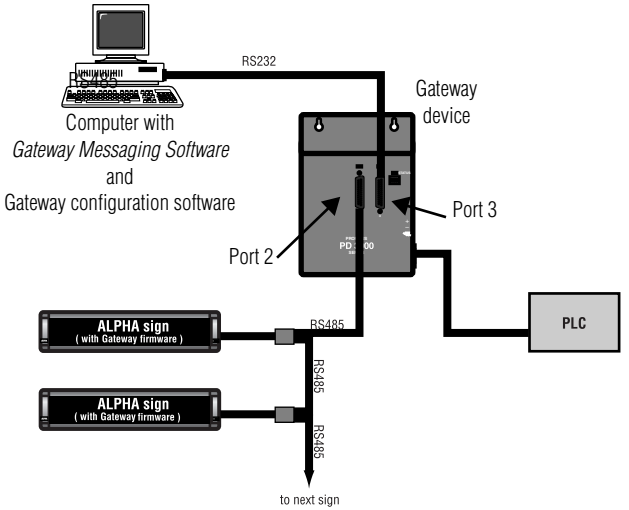
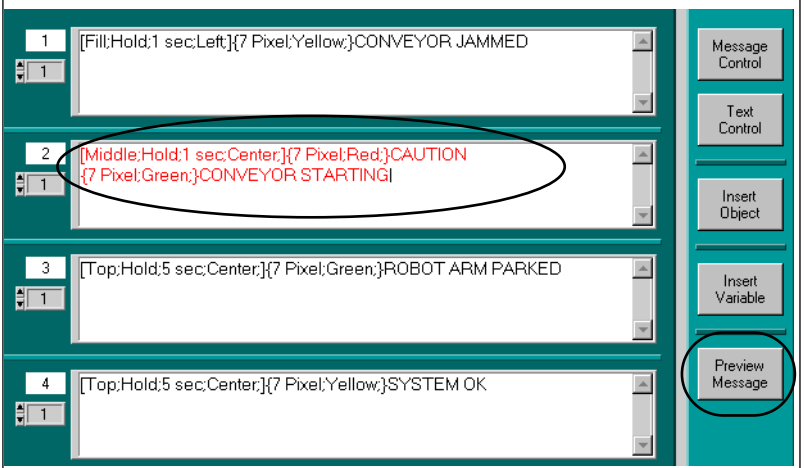
Advanced syntax check example

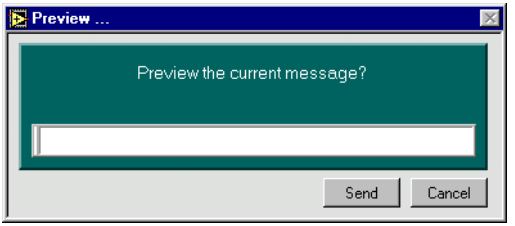
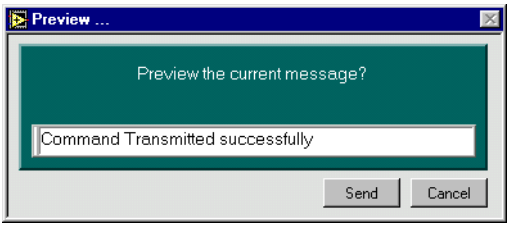
An advanced syntax error is an error that appears somewhere other than in the brackets, or braces. However, during the *Message Syntax Check*, the error will still be shown in the beginning position of where the error is located. Shown below is this error.

Step	Description
1	As another example, say you again accidentally entered text controls twice, but this time with the wrong set of controls embedded at the *end* of the other. 
2	Choose *Tools* > *Message Syntax Check*. The *Message Syntax Check* processing indicates the same starting position for the syntax error as in the example above. 
3	Determine and correct the error, again by selecting and deleting the extraneous text. 

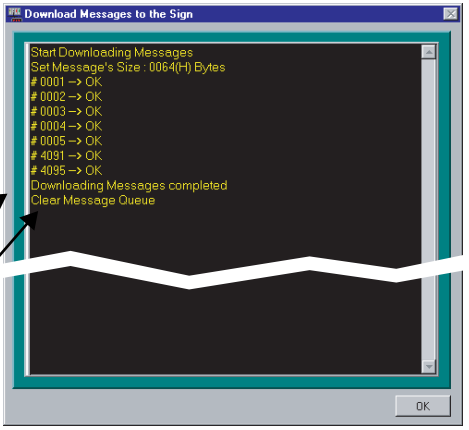
Example 6 — Previewing the message

While you are developing a message, if you want to see how it will actually look, you can use the *Preview* function to display the message on a sign.

Step	Description
1	The sign to be used for previewing must be connected to the PC. 
2	In the *Gateway Messaging Software*, with the cursor in the message to be previewed, choose the *Preview Message* button. 

Step	Description
3	This window will appear to confirm that you really want to send the current message to a sign for preview. Click on the *Send* button. 
4	When the message is sent to the sign, you receive this notice. The message is displayed directly on the sign. Click *Cancel* to close this window. 
5	If the message does not look the way you want it, make your changes and repeat Steps 2 through 4 as needed.

After you have previewed the message(s), and assuming that you want to use these messages, download all messages to the sign and reconnect the sign to the network as explained below:

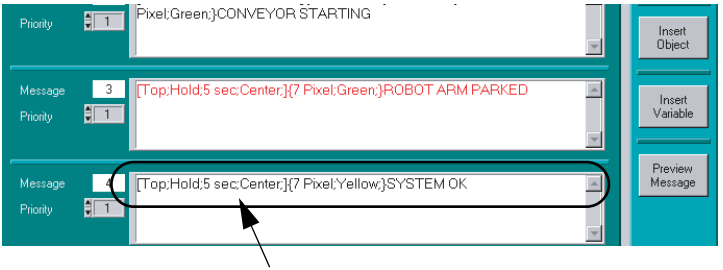
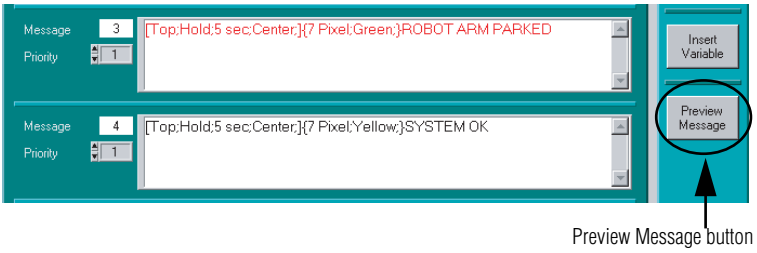
Step	Description
4	Download all messages to the sign: Choose *Modules* > *ModBus* > *Download Messages.* When the download is finished, click **OK** to close that window. The message size is shown in hexadecimal. 0064(H) is the same as 100 bytes in decimal. Each message will be listed as it's transferred. Wait until you get this notification. This indicates that the message queue is cleared. 

Example 7 — Sending messages to a sign on an operating PLC network

If you are sending any messages to the sign, whether previewing or downloading messages, it is strongly recommended that the PLC network be offline. However, if this is not possible, follow these examples.

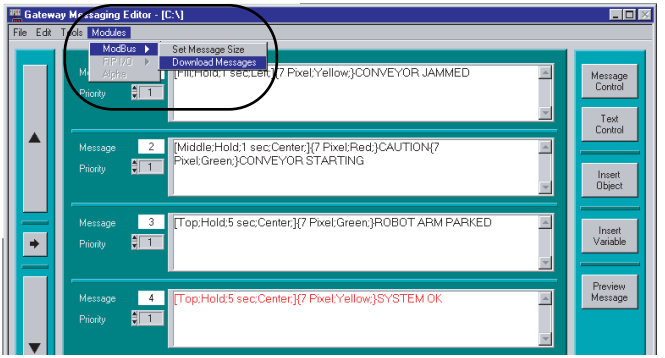
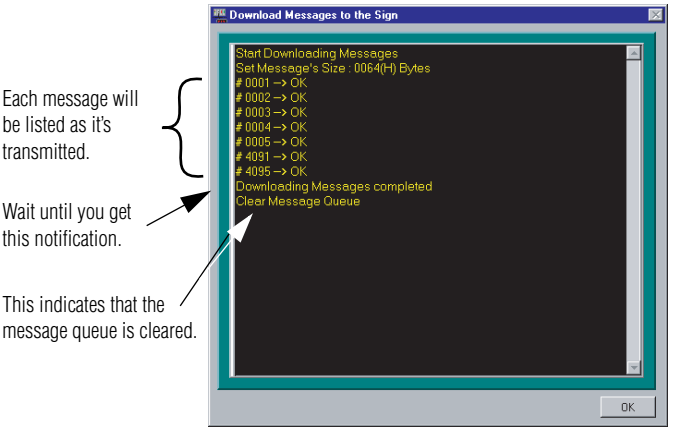
Previewing a message on a sign while the PLC network is running

This example shows how to preview a message on a sign while it is connected to an operating PLC network.

Step	Description
1	Place your cursor in the message to be triggered by the PLC. The message text will turn red to indicate that the message is active. 
2	Click on the *Preview Message* button to preview the message on the sign. The message will appear on the sign. NOTE: “System on” and another message might be running at the same time. 
3	If the sign does not return to normal running operation after previewing the message, complete one of the following two options: 0. Unplug the sign from the network for at least 3 seconds. A. Download all messages to the sign again. For further information, see “Downloading messages to a sign while the PLC network is running” on page 31.

Downloading messages to a sign while the PLC network is running

This example shows how to download messages to a sign while it is connected to an operating PLC network.

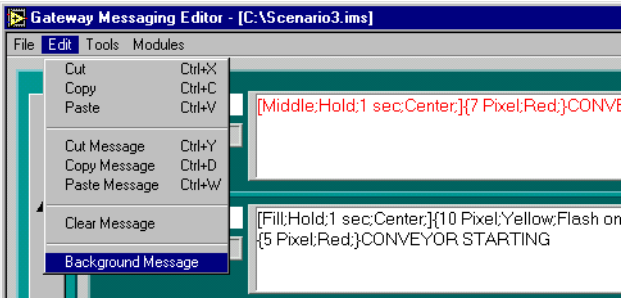
Step	Description
1	After you have completed your messages, select Modules > Modbus > Download. 
2	All messages are downloaded to the sign. 
3	The sign will display the downloaded messages, scrolling through each one sequentially. While this is happening, all PLC operation to the sign is interrupted.
4	After the message queue is cleared, both the sign and the PLC network return to normal running operation. One of these two messages might appear briefly on your sign once all the active messages have been downloaded into the sign. 

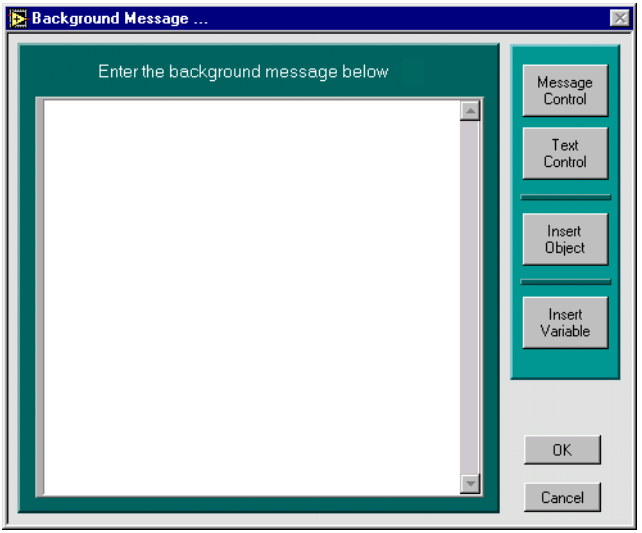
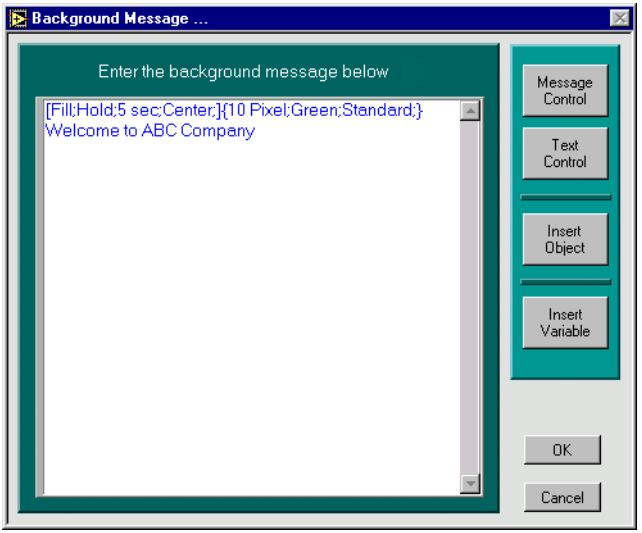
Advanced messaging

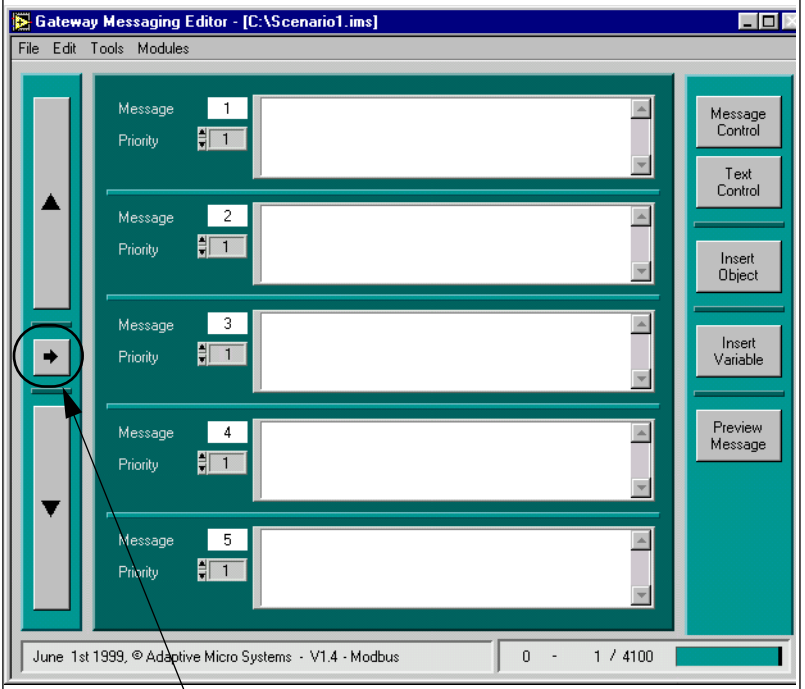
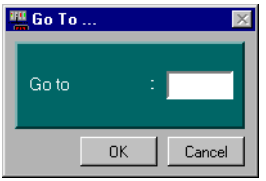
Before attempting the following, make sure you're familiar with the previous examples in the "Basic messaging" section of this manual.

Example 8 — Setting the background message

The background message is designed to be run on a sign when there is network activity but none for that particular sign, and no other messages are already running on that particular sign. In this case, the background message will be displayed on a sign. Using the background message is recommended. If you don't use it, the sign will display "*No Background Message*". You can use the background message to display messages such as a welcome to the company, an inspirational thought, or the date or time.

Step	Description
1	Choose *Edit > Background Message.* 

Step	Description
2	This window for the background message will appear. 
3	Type your message and use the buttons as needed. Click on **OK** to close this screen. 

Step	Description
4	You can also go directly to message 4095, the designated message number for the background message, to make your changes by clicking on the **GoTo Button**.  This screen will appear: 
5	Type in the number of the message that you wish to review, in this case 4095. Click on the **OK** button. You will be taken to that message.
6	Click inside Message #4095 to activate that message.
7	Click on the *Preview Message* button to preview the Background Message on the sign.
8	Click Send to complete the message previewing process.

Example 9 — Using time or date

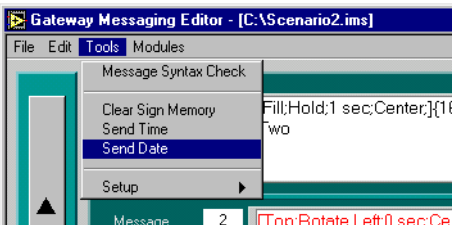
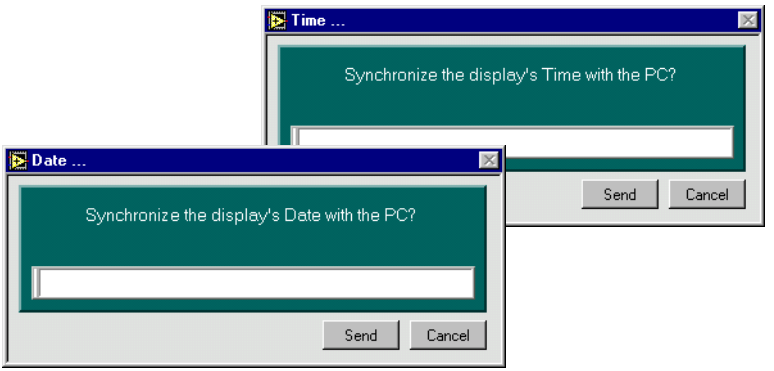
You can synchronize the sign's time and date to those of the computer so that time or date included in a message will be accurate. You can also include time and/or date in a message. The two examples that follow demonstrate these functions.

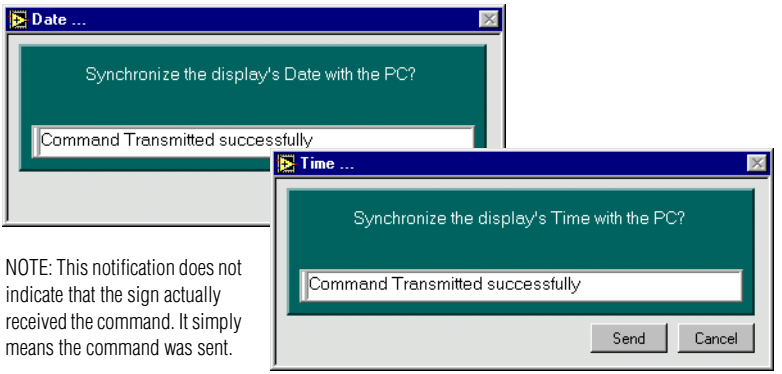
Setting the sign's date and time

This example shows how to send the computer's date and time to an attached sign.

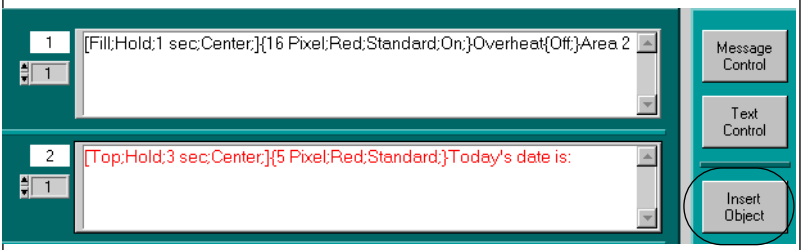
NOTE: You can also set a sign's date and time directly using the hand-held Remote Control. (Please refer to "Using the Remote Control with a sign" on page 45, for more information.) However, if the date and time are set this way, they will not be synchronized with either the computer or with other signs.

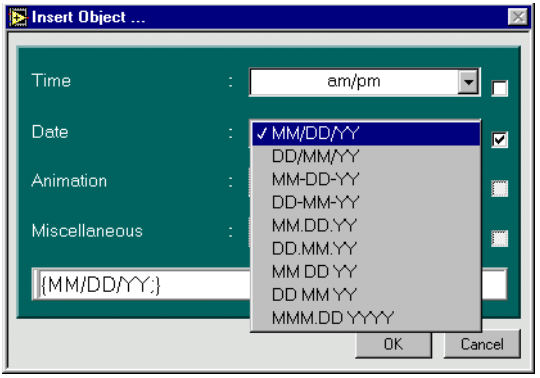
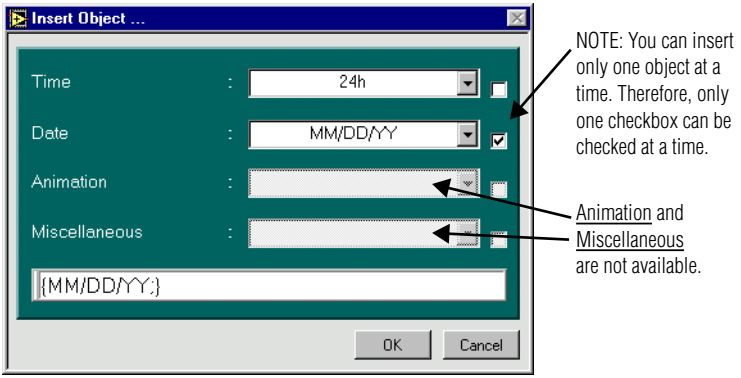
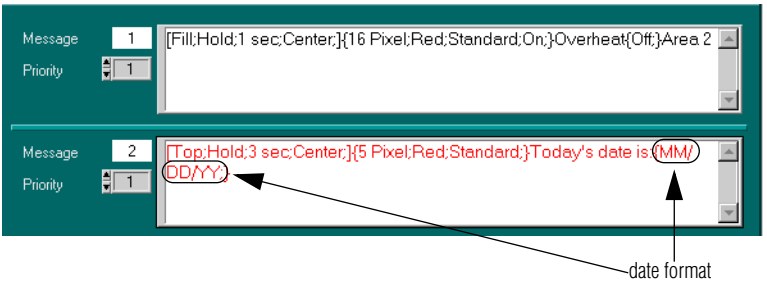
NOTE: You must reset the time to accommodate Daylight Savings Time.

Step	Description
1	Choose *Tools* > *Send Date* or *Tools* > *Send Time*. 
2	You will be receive one of these prompts. Choose the *Send* button. 

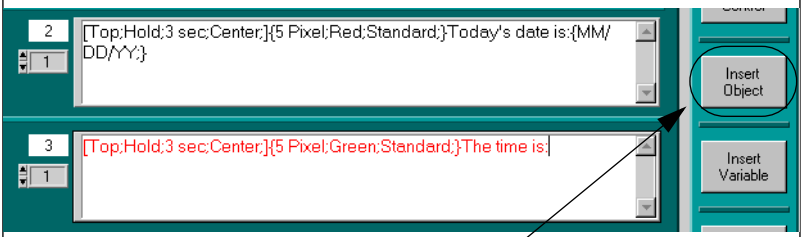
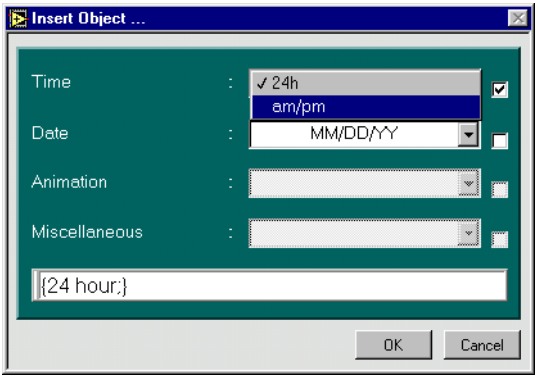
Step	Description
3	You will be notified of the transmission status. After this, any message with time or date will be updated with the correct values.  NOTE: This notification does not indicate that the sign actually received the command. It simply means the command was sent.
4	You can verify that the date and/or time on the sign is correct by checking the sign itself using the hand-held Remote Control. (Please refer to “Using the Remote Control with a sign” on page 45, for more information.)

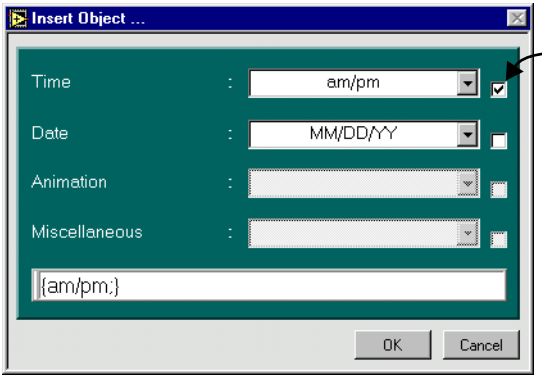
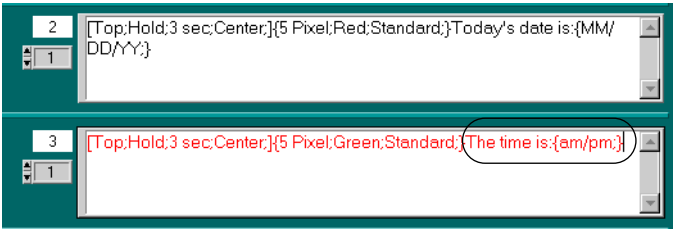
Adding date to a message

Step	Description
1	Type text in a message, such as “Today’s date is: ”. Then click the *Insert Object* button. 

Step	Description
2	Choose a format for the date from the drop down list. 
3	Check the *Date* checkbox. Click **OK**. 
4	The date format is inserted in the message and will be supplied from the sign's date at message run time. 

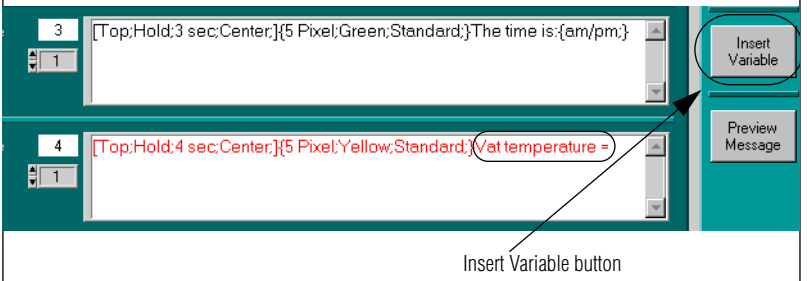
Adding time to a message

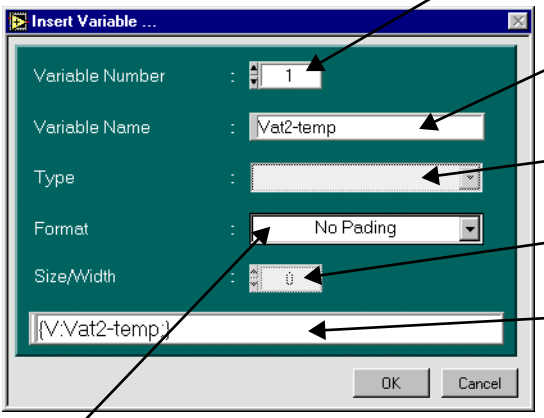
Step	Description
1	Click on the Message Control button and select the following attributes: • **Position: Top** • **Mode: Hold** • **Message Pause: 3 Sec** • **Justification: Center** Click on the Text Control button and select the following attributes: • **Font: 5 Pixel high** • **Color: Green** • **Width: Standard** Type text in a message, such as **The time is**:. Then click the *Insert Object* button. 
2	Choose a format for the time from the drop-down list. Here, we are changing from the current setting of 24-hour format to the new setting of am/pm format. 

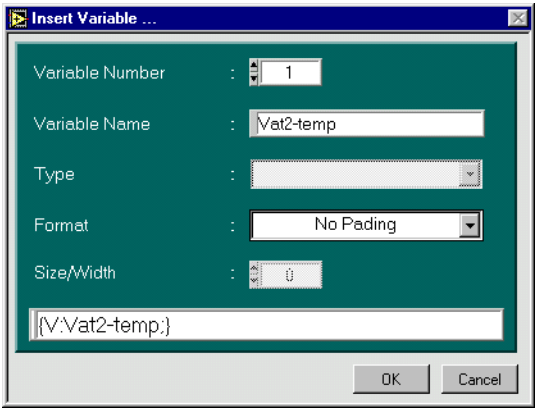
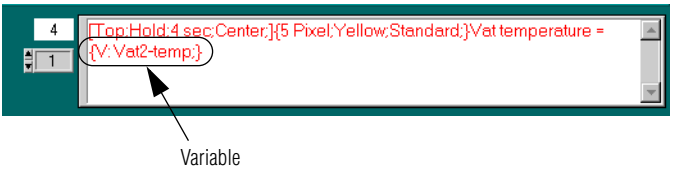
Step	Description
3	Check the *Time* checkbox. Click **OK**.  NOTE: You can insert only one object at a time. Therefore, only one checkbox can be checked at a time.
4	The time format is inserted in the message and will be supplied from the sign's time at message run time. 

Example 10 — Creating and inserting variables

This example shows how to create and insert the values of real-time data in a PLC, such as sensors, RTD's etc.) into messages on signs.

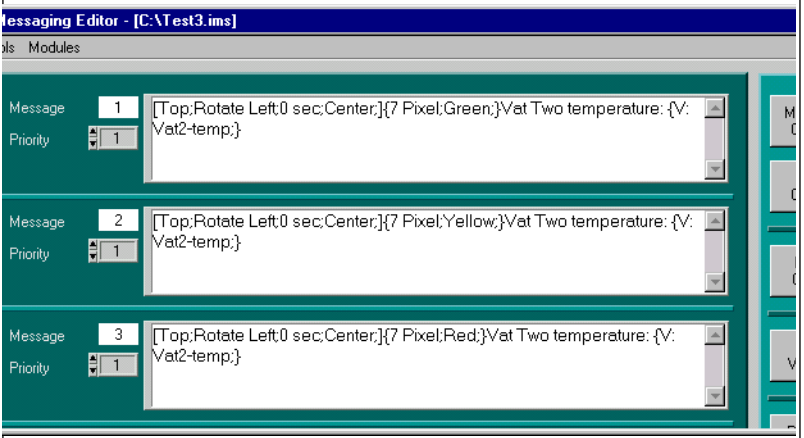
Step	Description
1	Enter the following Message Control attributes: • **Position: Top** • **Mode: Hold** • **Message Pause: 4 sec.** • **Justification: Center** Enter the following Text Control attributes: • **Font: 5 Pixel high** • **Color: Yellow** • **Width: Standard** Type text, such as **Vat temperature**=, in a message. Then click the *Insert Variable* button. 

Step	Description
2	This window will appear.  Variable Number Specify a unique number (1-100) for the variable. Must be the same as the number in the PLC. Variable Name Specify any unique name for the variable. Type Not available. Size/width Not available. Variable controls Show the specifications for the variable as they will appear in the message. Format *No Padding:* Does not insert any leading characters in front of the variable in the message. *Leading 0:* Inserts the appropriate number of zeros in front of the variable in a message to fill the complete size allocated for the variable. *Leading Space:* Inserts the appropriate number of spaces in front of the variable in a message to fill the complete size allocated for the variable. *+/– No Padding:* Does not insert any leading characters in front of the variable in the message. Includes positive and negative denotation. *+/– Leading 0:* Inserts the appropriate number of zeros in front of the variable in a message to fill the complete size allocated for the variable. Includes positive and negative denotation. *+/– Leading Space:* Inserts the appropriate number of spaces in front of the variable in a message to fill the complete size allocated for the variable. Includes positive and negative denotation. NOTE: Default for Variables is *1* and *No Padding*. NOTE: Left justifications is recommended for using variables in a message.

Step	Description
3	Type in the name of the variable. Click **OK**.  NOTE: Do not skip this step. Otherwise, the variable will not reach the sign.
4	The variable will be inserted into the message. 

Step	Description
5	*(Optional)* This window shows how similar messages, with different text controls, can be used and triggered under differing circumstances. Notice that the only difference between the messages is the text color.

When Vat Two temperature is…	Its PLC will be set to trigger…
less than 190° C	Message 1
between 190° C and 200° C	Message 2
greater than 200° C	Message 3



NOTE: After the variable name is created, and you change the name of the variable, you must change all the variables in the program file, otherwise, each message will be a reflection of the variable that you recently changed.

Example 11 – Using the Remote Control

A Remote Control can be used for the following functions on your sign:

- **Turning a sign on/off**
- **Setting the sign's serial address**
- **Setting the Time and Day/Date in a sign**
- **Clearing the Message Activation**
- **Clearing the sign's memory**
- **Special + D option (Transfers one sign's memory to another sign's memory.)**

Remote Control description

A Remote Control is a hand-held keyboard used to operate an ALPHA sign. From its front, a Remote Control emits infrared light which can control many of the functions of an ALPHA sign.

A Remote Control needs four AAA batteries to operate.

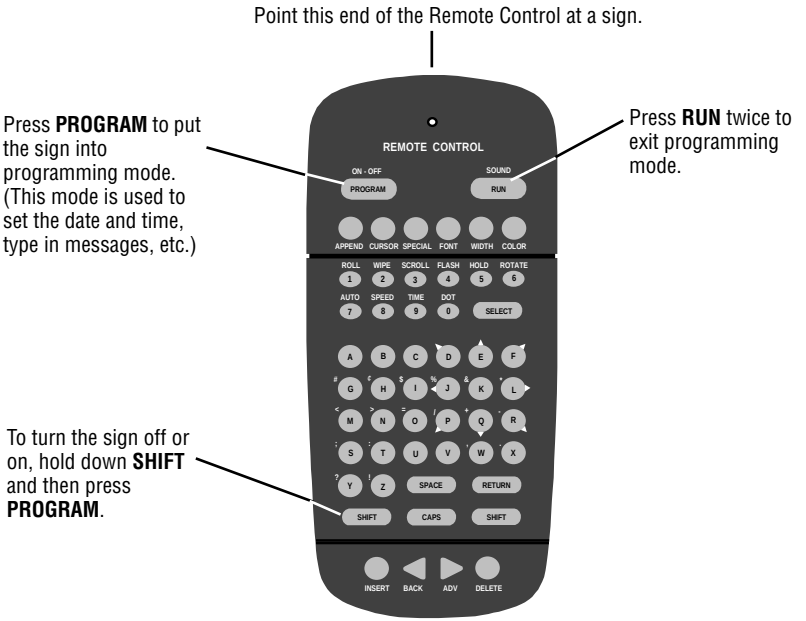
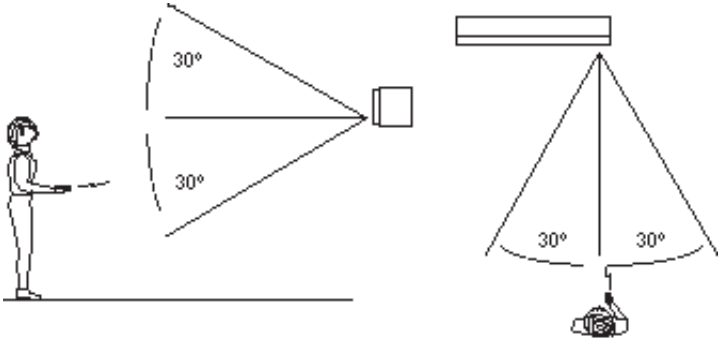


Figure 1: Infrared (IR) Remote Control keyboard

Using the Remote Control with a sign

To program a sign with a Remote Control:

- Stand at least 5 feet and no more than 30 feet from the sign.
- Make sure nothing reflective is in front of the sign. (Light from the sign's display that is reflected back can interfere with the Remote Control.)
- If nearby fluorescent lights interfere with the Remote Control, you may have to relocate either the lights or the sign.



If a sign is this far from the floor…	…then hold a Remote Control this far away:
10 feet	from 10 to 30 feet
15 feet	from 19 to 30 feet
20 feet	from 25 to 30 feet

NOTE: Once the Gateway is connected to a sign, you will no longer be able to use your Remote Control.

Turning a sign on/off

When you plug in the sign's power supply, the sign starts up automatically, and unplugging the power supply turns the sign off.

However, instead of unplugging a sign, there is another way to turn a sign off: Using the **Remote Control**, hold down **SHIFT** and then press **PROGRAM** to turn a sign off and on.

Setting a sign's serial address

The serial address is a number that you can assign to a sign. Typically, this feature is used for a sign that is connected to other signs on a network. Giving a unique serial address to a sign allows you to send messages to that *particular* sign.

See the document **Network Configurations** (part number 9708-8046) for more detailed information on networking signs.

Step	When you do this…	You see this…
1	Press **PROGRAM**. *SET SERIAL ADDRESS* will appear on your sign.	
2	Press **ADV**.	
3	Type a number, like *100*. NOTE: A serial address is actually a number from 1 to 255 in hexadecimal (01 to FFh).	
4	Press **RUN** twice to set the new serial address and return the sign to normal operation.	

Setting the Time and Day/Date in a message

Once set, a sign will remember the time and date unless the sign is unplugged or interrupted by a power loss.

NOTE: If a sign is unplugged or interrupted by a power failure, you will have to manually reprogram each sign.

To set the time and date into a message, complete the following steps using a **Remote Control**.

1. Press **PROGRAM**.
2. Press **BACK** until SET TIME AND DAY or SET TIME appears.
3. Press **ADV**.
4. Press **D** to set the day of the week.
   Press **H** to set the hour.
   Press **M** to set the minute.
5. Press **BACK** until SET DATE appears.
6. Press **ADV**.
7. Press **D** to set the day of the month.
   Press **M** to set the month.
   Press **Y** to set the year.
8. Press **RUN** twice to return the sign to normal operation.

Clearing the Message Activation

Clear Message Activation is a way to clear the messages that you currently have running in the message queue. Your messages that are currently stored will not be lost when you do this provided the messages were previously downloaded to the sign, or you have previously saved them in your computer. (For further information on downloading your messages to the sign see "Example 6 — Previewing the message" on page 27. For further information on saving your messages in your PC, see "Save the message file." on page 14.)

To clear the message activation using your Remote Control, complete the following:

1. Press **PROGRAM** on your **Remote Control**.
2. Press **Back** until *"Clear Message Activation (Y/N)"* appears on your sign.
3. Press **Y.**
4. Queue is cleared when *"Queue Cleared"* appears on the sign.
5. Press **RUN** to return the sign to normal operation.

Clearing the Sign's memory

Clearing the sign's memory is a way to completely erase all messages from your sign. To clear your sign's memory, complete the following:

1. Press **PROGRAM** on your **Remote Control**.
2. Press **Back** until *"Clear Memory"* appears on your sign.
3. Press **ADV** on the **Remote Control**. A warning will appear on the sign's screen.
4. Press **Y** to clear the sign's memory. *"Memory Cleared"* will appear, and then *"No Network Activity"* will be displayed.
5. Press **RUN** to return the sign to normal operation.

Special + D option: Transferring a sign's memory from one sign to another.

You can transfer the messages from the memory of one sign to the memory of any another signs by completing the following steps.

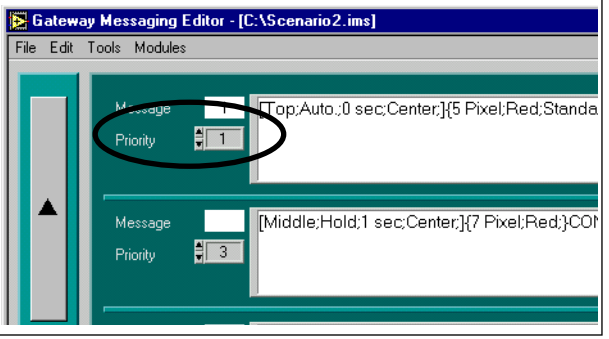
NOTE: To complete the transfer of memory from one sign to other signs, all signs must be connected together and all must be set to either RS232 or RS485 jumper. For further information on connecting signs and the RS232 and RS485 jumper, see the **Network Configurations Manual**, p/n 9708-8046A.

1. Point the **Remote Control** toward the infrared receptor of the sending sign.
2. Press **PROGRAM**.
3. Press **SPECIAL**.
4. Press **D**.
5. The sending sign will transmit all messages to the receiving sign(s).

Appendices

Appendix A: Sending priority messages from a PLC

The message priority specifies the importance of a message. Messages of a lower priority will not run if any message of a higher priority is running.

Step	Description
1	Use the up/down arrows for each message to set its *message priority.* 

The next two tables illustrate sample messages with various priorities, and the results of sending those messages to a sign in various combinations.

Table 5: Sample priority messages

Message number	Priority
1	Low
2	Low
3	Low
4	Medium
5	Medium
6	Medium
7	High
8	High
9	High

This table is used in conjunction with programming your Gateway device.

Table 6: Results of sending sample priority messages

Message number in Activation Register	Message number in Deactivation Register	Message queue	Message number of message displayed on sign	Highest priority message displayed
1	xx	1	1	Low
2	xx	1, 2	1, 2	Low
3	xx	1, 2, 3	1, 2, 3	Low
5	xx	1, 2, 3, 5	5	Medium
4	xx	1, 2, 3, 5, 4	5, 4	Medium
6	xx	1, 2, 3, 5, 4, 6	5, 4, 6	Medium
9	xx	1, 2, 3, 5, 4, 6, 9	9	High
8	xx	1, 2, 3, 5, 4, 6, 9, 8	9, 8	High
8	1	2, 3, 5, 4, 6, 9, 8	9, 8	High
7	1	2, 3, 5, 4, 6, 9, 8, 7	9, 8, 7	High
7	5	2, 3, 4, 6, 9, 8, 7	9, 8, 7	High
xx	7	2, 3, 4, 6, 9, 8	9, 8	High
xx	9	2, 3, 4, 6, 8	8	High
xx	8	2, 3, 4, 6	4, 6	Medium
xx	4	2, 3, 6	6	Medium
xx	6	2, 3	2, 3	Low
xx	2	3	3	Low
xx	3	–	–	Background message

xx = Doesn't matter

Appendix B: Frequently-Asked Questions

Q1. Why were my old messages deleted when I sent new messages?

A. Downloading messages transfers all messages in the Gateway Messaging Editor file to a sign. If any messages had already been downloaded, they are replaced if there is a replacement message. For example:

Message number	Initial set of messages	New set of messages	Resulting set of messages
1	M1A	M1B	M1B
2	M2A	—	M2A
3	—	M3B	M3B
4	M4A	M4B	M4B
5	M5A	—	M5A
6	—	—	—

Q2. What effect will a colon have in a message?

A. It tells the sign that whatever follows the colon or a semi-colon is control codes, similar to *message controls* or *text controls*. Do not use a colon or a semi-colon in a message!

Q3. Why does my sign show only the message "No Network Activity"?

A. There are several possible causes:

1. Network wiring fault
2. PLC fault
3. Gateway device fault
4. ALPHA sign fault
5. ALPHA sign time-out because of no network activity for at least 3 seconds

Q4. What's the difference between Center Justification and Left Justification when I'm using the Rotate mode?

A. None. The Rotate mode starts the message on the right side of the sign and moves it to the left side across the sign.

Q5. What are the defaults for control codes?

A. When the system is first installed and setup, they are:

Control type	Setting	Default
Message Controls	Position	Top
	Mode	Hold
	Display Message	Zero seconds
	Justification	Center
Text Controls	Font	5 pixel high
	Color	Red
	Width	Standard
	Flash	Enable
	Control Code	(none)

After you change settings, they remain as set until you change them again. So, if you change the settings for Message 1, and then go to Message 2, the defaults will be the same settings as you had for Message 1.

Q6. When I downloading messages to the sign, it responds with either "No Background Message" or "No Network Activity". Why aren't the messages displayed?

A. Check to see what protocol is being used. Only Modbus protocol will work with the Gateway firmware upgrade.

A. You may be sending the information to the wrong sign. Check the Modbus protocol being sent to the sign or change the address in the sign with the hand-held Remote Control.

Q7. One of my signs only displays the "No Network Activity" message.

A. There may be a problem with the connection or wiring.

A. The sign may be set to RS232 communications instead of RS485.

A. The Gateway may be programmed to send RS232 instead of RS485.

A. No information is being sent or routed to the sign.

A. Port 2 or Port 3 is configured incorrectly.

Q8. My sign(s) will display the message that I want, but after a few seconds, the message "No Network Activity" appears.

A. The message "No Network Activity" appears when the sign does not see ANY network activity for 3 seconds. To correct the problem, you must have the PLC send some type of data to the display every couple of seconds. This data can be either messages or variable data for the sign. You could even send dummy variable data to one or all the signs, but be sure it's variable that is not being utilized.

Q9. One of my sign(s) only displays "No Background Message"

A. The sign detects some type of network activity, but none of the information is for that particular sign. This may be due to the wrong protocol being sent to the sign, incorrect settings in the Gateway, or the sign in question has never been sent information to trigger a message in that sign. See "Example 8 — Setting the background message" on page 32.

Q10. I have multiple messages being displayed on the sign when triggered by the PLC. How do I clear one or all of the messages?

A. You can clear the message(s) by sending the message number you want cleared to register 102 in the sign.

A. If you want all the messages cleared, disconnect the sign from the network until the "No Network Activity" message is displayed.

A. You can send FFFFh to register 101 in the sign.

Q11. How do I trigger messages in the sign?

A. Send the message number you want to trigger into register 101 in the sign. See the Gateway manual for your specific device.

Q12. How do I turn off the message(s) that I currently have displayed in the sign?

A. Send the message number you want to turn off to register 102 in the sign.

A. Send FFFFh to register 101 in the sign.

Q13. How many messages can be displayed at one time?

A. 64. They are stored in registers 103-167, which is the message queue.

Q14. Can the sign read information from another device that has Modbus protocol?

A. No. The signs act as slaves on the network and cannot initiate communications.

Q15. What are the different types of networks that I can connect up to?

A. DeviceNet
Profibus
Modbus Plus
Modbus ASCII

Q16. What ASCII formats does your sign support?

A. This table shows the two ASCII formats:

	Format 1	**Format 2**
Mode	ASCII	ASCII
Baud Rate	9600	9600
Data Bits	7	7
Parity	Even	Odd
Stop Bits	2	2
RTS Control	None	None

Q17. I am sending variable data to the sign, but it skips or misses data.

A. You may be sending information too quickly to the sign. Space out the time between transmissions to greater than 250 milliseconds (ms).

A. Change the 'Pause time' in the message.

Q18. How many variables does the sign allow?

A. 100. These are in registers 001-100 in the sign.

Q19. What if I want to add or change a message that I have downloaded to the sign?

A. You can add or change a message in the Gateway Messaging software, then download the new information to the sign. See "Example 1 — Creating a simple message" on page 10.

Q20. How do I display variables on the display without them shaking?

A. Use Left-justify for the message versus Center-justify.

Q21. I downloaded my messages, and one message did not show up.

A. Your message may be longer than the message size selected. Check the message. Change the message size if needed.

Q22. I download messages to the sign and some of the message attributes are displayed.

A. Check the message attributes within the message. They may be missing a {} or [].

Q23. How do I put the Gateway into the configuration mode for programming?

A. Turn its DIP switch 3 on.