MMI USER'S GUIDE

Form 626-000107 — January, 2000

OPTO 22

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Opto 22 warrants all of its products to be free from defects in material or workmanship for 30 months from the manufacturing date code. This warranty is limited to the original cost of the unit only and does not cover installation, labor, or any other contingent costs. Opto 22 I/O modules and solid-state relays with date codes of 1/96 or later are guaranteed for life. This lifetime warranty excludes reed relay, SNAP serial communication modules, SNAP PID modules, and modules that contain mechanical contacts or switches. Opto 22 does not warrant any product, components, or parts not manufactured by Opto 22; for these items, the warranty from the original manufacturer applies. These products include, but are not limited to, the OptoTerminal-G70, OptoTerminal-G75, and Sony Ericsson GT-48; see the product data sheet for specific warranty information. Refer to Opto 22 form number 1042 for complete warranty information.

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INTRODUCTION

THANK YOU

Welcome and thank you for purchasing the Opto 22 Mistic MMI! The Mistic MMI (Man-Machine Interface) is a Microsoft Windows Version 3.1 (or later) program used to develop operator interfaces for Cyrano 200 strategies running Opto 22 Mistic control equipment. It consists of two major components: the **Mistic MMI Configurator** and the **Mistic MMI Runtime**. The Configurator is the development environment and contains all the functions you need to create animated graphic windows to represent and interact with your control process. The Runtime environment displays the graphic windows you created in the Configurator and allows you to interact with them to monitor your system.

WHERE DO I START?

If you're new to the Mistic MMI, please read Chapter1 to understand the basics about the MMI. Then continue with Getting Started in Chapter 2 to quickly get up and running with the MMI.

If you're familiar with the MMI and just want to get started, turn to Chapter 2, and begin with the Quick Start process. Refer to Chapter 3, Configurator Menu and Chapter 15 Runtime Menu, for overviews of each command.

This book assumes you are familiar with Opto 22's Cyrano, Microsoft Windows, and have a basic knowledge of networking. For more information about Cyrano, refer to the *Cyrano User's Guide*, Form 704. Consult the Microsoft Windows manuals for more information about Windows.

MMI OVERVIEW

Features

With the Mistic MMI, you can communicate to multiple networked Mistic processors and collect and display data from the different strategies running on various controllers. Add the MDS software application to the Mistic MMI system for an efficient data collecting process.

Easily draw and connect graphics to Cyrano tagnames. Because the Configurator shares the same tagname database created in Cyrano, you eliminate the duplication effort of entering names of variables and I/O normally encountered when using other MMIs. Syntax and spelling errors are also eliminated.

You can change the color, size, position, visibility, and other attributes of a graphic based on the value or state of a tag. The value of a tag can also be modified during Runtime based on your interaction with a graphic object. Other MMI capabilities such as real-time trending, historic data logging, and multimedia sound support are also provided.

Control vs. Monitoring

The project you develop using the Mistic MMI, monitors the Cyrano strategy as it is running. The Mistic MMI can be used to change the values of tags in the Cyrano strategy, but it does not contain programming or logic-solving capabilities to actually control a process. These capabilities are part of Cyrano, an actual process control language.

Cyrano

Cyrano is a visual flow-charting language used to create process control strategies that run on Mistic 200 processors. The Cyrano kernel, the interpretive firmware residing in the Mistic processor EPROMs, has many advanced features such as multi-tasking, string handling, communications, and mathematical operations. You can access these features through Cyrano using English-like commands to create a flow chart logic, and develop your process control strategy. Use the Mistic MMI to develop an operator interface to monitor a running Cyrano strategy.

Cyrano saves information about global data items (variables, I/O points, charts, tables, etc.) in a file with a .GML extension. The Mistic MMI reads the .GML files and keeps track of its timestamp. If the Cyrano strategy changes (which affects the timestamp of the .GML file), the MMI warns you so possible problems can be detected.

Configuration vs. Runtime

The Mistic MMI consists of two separate programs, the MMI Configurator and the MMI Runtime. The Configurator is used to develop the operator interface by defining and configuring the draw windows, graphics, and all their attributes that make up a project. It connects these objects to the Cyrano strategy's tagname database. Once this is done and the MMI Runtime is started, the MMI project communicates with the Mistic processor which is running the Cyrano strategy. The MMI Runtime animates the operator interface by updating the graphic attributes (color, size, position, etc.) connected to Cyrano tags according to changes in their values or states.

Project

A project is a collection of draw windows, graphics, and all their attributes developed with the MMI Configurator. It is the database for the operator interface you develop with the Mistic MMI. When the project is saved, several files are created. The main project file has a .MMI extension. Each draw window produces a file with a sequentially numbered file extension (.w01, .w02, etc.) and a file with an .INI extension. The .INI file contains startup information about the project. The *filename*.INI file has information about the project status and when it last exited from the MMI Configurator and the MMI Runtime. These project files, together with the MMI Runtime, present an animated graphics interface for a Mistic control system.

Windows

Like most Windows applications, the Mistic MMI consists of many different windows. The most important are the Main Window and Draw Window.

Main Window

This rectangular area of the display allows you to view your application. You can open, close, move, and resize the main window like any Windows application. The Main Window contains a menu bar allowing you to select various tools. The title bar displays the full project path. If the pathname is too long to fit in the title bar, only the working project subdirectory is shown. To display the full project path, select the File→Project Path command from the menu bar. Refer to the Windows User's Guide for information on using windows.

Draw Window

This window is where all graphics are drawn and edited. Each project consists of one or more draw windows which make up the operator interface. The draw window has *static attributes* of position, size, and color. Draw windows have *visual states* of open, closed or iconified. An open window scans and updates associated objects. A closed window optionally scans any trends it may have, but it does not update any displays. An iconified window scans all objects but does not update any displays.

Objects

Most things visible in the Mistic MMI are considered objects, as well as some things not visible. Objects include draw windows, graphics, triggers, and trends.

There are two types of objects: static and dynamic. Static objects have a static appearance and do not change while the MMI Runtime is running. They have no dynamic (changing) attributes. Dynamic objects have a changing appearance or cause the appearance of other MMI objects to change during execution of the MMI Runtime. Dynamic objects have dynamic attributes defined.

Tags

A tag refers to data items (such as variables, I/O points, or PID loops) from a Cyrano strategy.

To access tags in a MMI project, choose the Configure\Mistic Controller(s) menu option and select the Cyrano strategies for the project. Now all the tags of the selected strategies are available to the MMI.

Tags animate your operator interface through connections to graphic objects and their dynamic attributes. As the values of tags change through *Controller Driven Attributes* (input dynamic attributes, values from the controller) or *Operator Driven Attributes* (output dynamic attributes, values sent to the controller), the appearance of the graphics change. Tags are also used as triggers to initiate system events such as sounds, historic logging, and window configurations.

Connections

A connection occurs when a Cyrano tag is selected as the source or destination of data for an MMI dynamic object. Some examples include:

- Selecting a tag as the source of data to drive the dynamic attribute of a graphic (size, position, rotation, etc.).
- Selecting a tag as the destination of data to drive user interaction with a graphic (slider, send data, etc.).
- Selecting a tag as a trigger source.
- Selecting a tag as the source of data for a trend pen.

CONVENTIONS USED IN THIS MANUAL

Before getting started with the MMI, review the following conventions used in this manual.

General Conventions

- The names of menus, commands, dialog boxes, fields, and buttons are capitalized.
- The names of files are set in capital letters (for example, MWDRIVER.DLL).
- The names of keyboard keys are set in small capital letters (for example, CTRL, ALT, DELETE).

Window Screen Conventions

A dialog box is displayed in response to menu options and enables you to enter specifications. Pressing the TAB key highlights the next control; pressing SHIFT+TAB highlights the previous control. The following illustrations are typical dialog boxes.

The MMI Configurator main window is used to create and setup the graphical representation of your process, while the MMI Runtime window displays the animated results of the graphics you created.

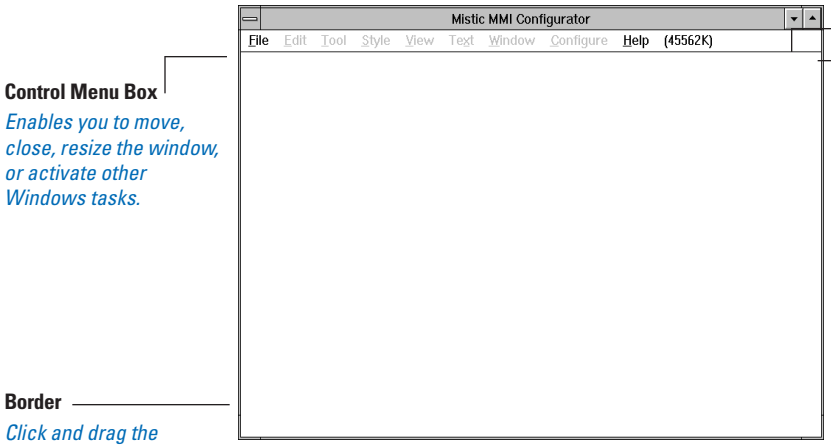

Figure 1-1: MMI Configurator Main Window

Menus

To display a menu, click on its title in the menu bar (or press ALT and the underlined letter in the menu name).

A menu displays a list of options. Choose an option by clicking on it using the arrow keys, followed by ENTER, or by pressing the underlined letter in the option name.

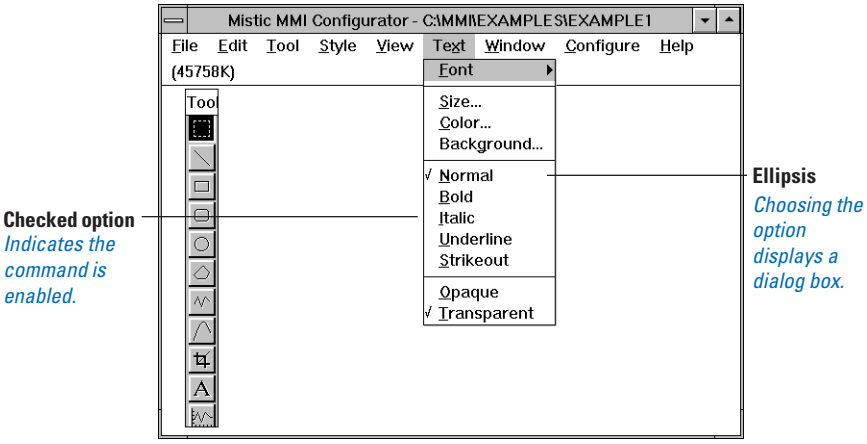

Figure 1-2: Menus

Dialog Boxes

A dialog box is displayed in response to menu options and enables you to enter specifications. Pressing the TAB key hightlights the next control; pressing SHIFT+TAB highlights the previous control. The following illustrations are typical dialog boxes.

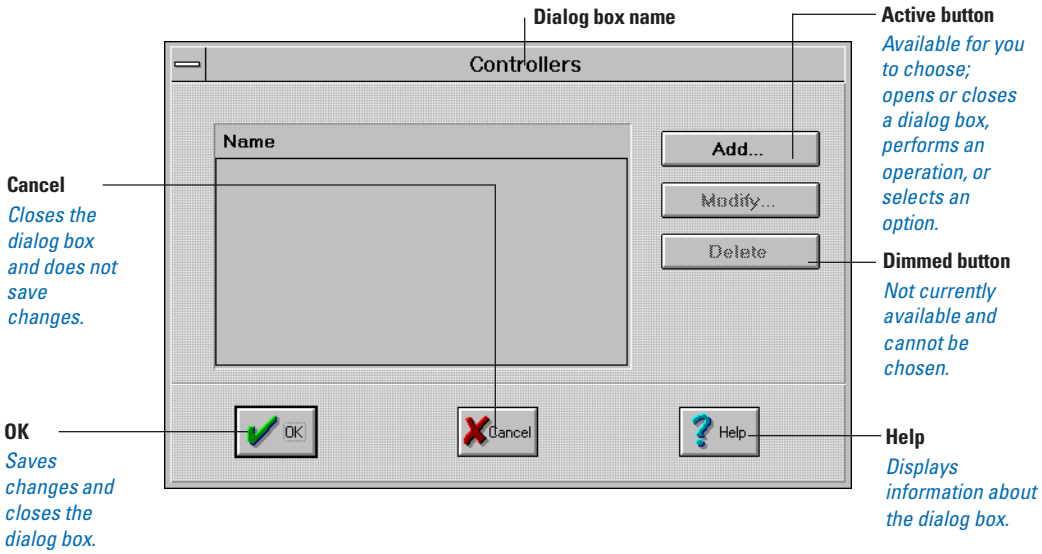

Figure 1-3: Dialog Box Buttons

Some dialog boxes have drop-down lists and require you to enter specifications in field boxes.

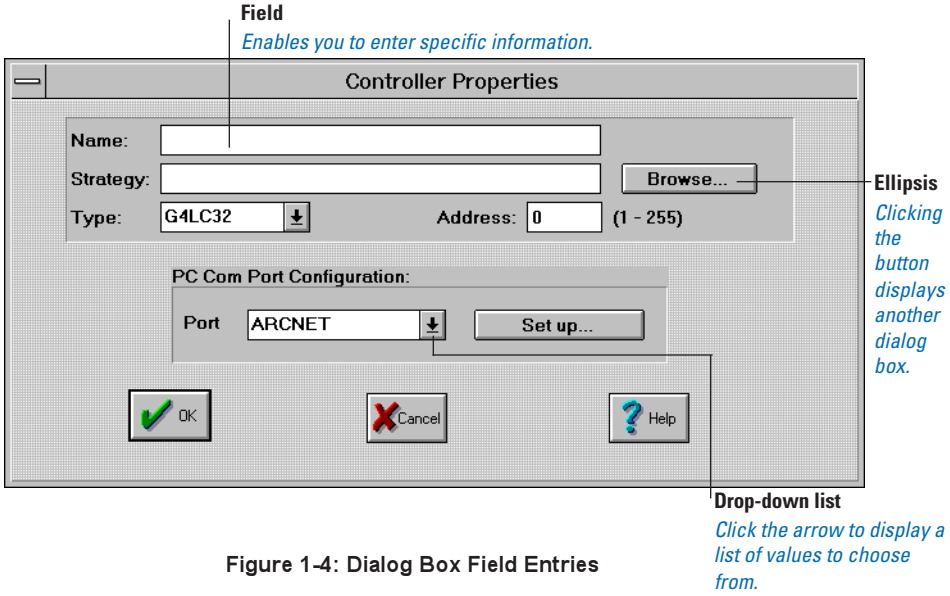

Figure 1-4: Dialog Box Field Entries

GETTING STARTED

OVERVIEW

The Mistic MMI (Man-Machine Interface) is used to develop an operator interface for Cyrano 200 programs running on Opto 22 Mistic controllers. The first step in using this program is to develop a Cyrano Strategy. Once that's done, you're ready to use the MMI.

The Mistic MMI consists of two separate programs, the MMI Configurator and the MMI Runtime. The Configurator is used to develop the operator interface by defining and configuring the draw windows, graphics, dynamic attributes, logs, alarms, sounds, and all other objects that make up your project. It connects the objects to the variables, I/O points, PID loops, etc. defined in your Cyrano strategy. Once this is done, the MMI Runtime communicates with the Mistic processor that's running the Cyrano strategy. The MMI Runtime animates the operator interface by updating the graphic attributes (i.e. color, size, position) connected to the Cyrano tags according to changes made in their values or states.

SYSTEM REQUIREMENTS

The following are the minimum requirements you need to run the Mistic MMI. The MMI Runtime "About" box displays the version requirements for the MMI.

PC Hardware

- IBM-compatible 386 personal computer (486 or better recommended)
- Hard disk with 10 MB of free space
- 16 MB of RAM
- Microsoft Mouse or other compatible pointing device
- VGA or compatible display

Software

- MS-DOS version 5.0 or later
- Microsoft Windows version 3.1 or 3.11

Mistic Products

- Any Mistic controller
- Mistic controller kernel EPROM, version 1.43 or later
- Cyrano software, version 1.3.0 or later

INSTALLATION

At least 10 MB of free space must be available on your hard drive to install the MMI.

Note: The Mistic MMI does not run under Microsoft Windows 95.

1. Run Windows for Workgroups on your PC.
2. Insert the Mistic MMI disk 1, P/N 8875A, into a removable floppy drive (e.g.: b:).
3. Choose the File→Run command from Program Manager.
4. Type b:setup in the Command Line box and click *OK*.
5. Enter the desired location for the MMI when prompted by the MMI setup and press ENTER. The default location is: C:\MMI.
6. After the first disk is installed, remove disk 1, insert disk 2 P/N 8875B, and press ENTER.
7. When installation is complete, the program group "Opto 22" is displayed and contains two icons as shown in Figure 2-1.

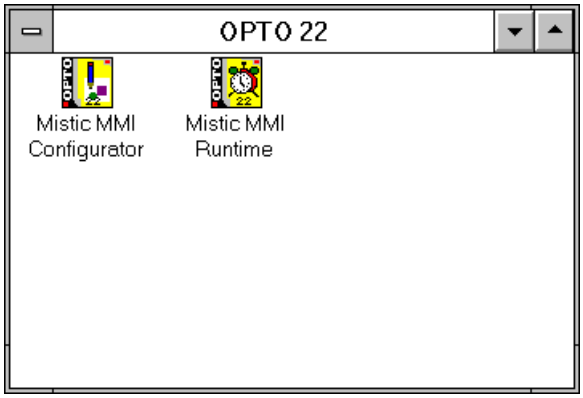

Figure 2-1: Opto 22 Program Group

MMI CONFIGURATOR BASICS

Start the Mistic MMI Configurator by double-clicking on its icon. The first time you start the Configurator, a window displays the caption "Mistic MMI Configurator – (Untitled)". This window is known as the Main window.

The MMI Configurator may contain other windows managed by the Main window. This Main window contains another window captioned (Untitled). This window is called a draw window. Use this window (and others like it) to draw the objects that make up your operator interface. Properties of this window (name, position, dimensions, controls, colors) can be changed by selecting the Window→Properties menu option. Create more draw windows for the project by selecting the Window→New menu option.

The Toolbar is also associated with the Main window. This small window captioned Tools contains buttons with pictures of the basic tools used for building an operator interface. When one tool is selected, it becomes the active tool until a different one is selected, either via the Toolbar or the Tool menu. The Toolbar is not constrained to the interior of the Main window, but "floats" on your desktop at the same level as the Main window.

Selecting a Cyrano Strategy

To begin an MMI project, the MMI Configurator needs to know what Cyrano strategy (or strategies) will be used for the project. This enables the connections to the appropriate Cyrano tags when assigning dynamic attributes to your graphics. Selecting the Configure→Mistic Controller(s) menu option displays a dialog box window captioned Controllers. This dialog box contains an initially empty list of the Mistic controller names used in the current MMI project. After adding one or more Controllers to this list, you are ready to continue.

Steps to Create Objects and Connect Them to Tags

To begin configuring the various objects (graphics, sounds, window configurations, etc.) of your operator interface, start with the graphic objects. Select a tool from the Toolbar (other than the Selector) to draw objects of the chosen type in a draw window. Once an object is drawn, connect it to a Cyrano tag by either double-clicking on it or by selecting the Edit→Dynamic Attributes menu option to display the Dynamic Attributes dialog box. Here the graphic's input dynamic attributes and output dynamic attributes and their connection to Cyrano tags are defined. For example, the input dynamic attributes can set up a connection when the value of a tag increases, the size of the graphic increases. Or change the color of the graphic when an I/O point turns on and off. With output dynamic attributes, you can setup connections that change the value of a tag as you "slide" the graphic on the screen or change the window configuration based on which graphic you select. Many different combinations of attributes may be applied to develop your particular solution.

In addition to graphics, there are other ways of presenting information to the users of your operator interface. These include Historic Data Logs, Sounds, and Window States which can connect to Cyrano tags from the strategies of the current MMI project. Select these menu options from the Configure menu.

QUICK START

During installation, a directory named EXAMPLES is created in the MMI directory. This directory contains examples that include preconfigured Cyrano strategies and MMI projects. The following sections describe how to load the example Cyrano strategy and MMI project.

Verification Process

Before going on, you'll want to verify the Mistic controller and Cyrano strategy are working properly. If the Cyrano strategy is already downloaded to a Mistic controller and is properly operating, you're done with this section.

If your Cyrano strategy is new or you need to check to see if its controller configuration matches your target controller, proceed with the following steps.

1. Start Cyrano and go into the Configurator by selecting System→Configurator from the Cyrano environment.
2. Choose the File→Load command and select Cyrano strategy from the \mmi\examples\example1 directory (this is the default directory location).
3. Select the Configure→Mistic command to review the controller's configuration.

   The Configure Mistic Communications dialog box appears. It displays the controller's address, communication mode, and its PC COM port configuration. Make any necessary changes so it matches the controller's settings.
4. Choose Accept to close the dialog box.
5. Save the file by selecting File→Save.
6. Download the strategy to the controller by choosing System→Debugger.

   Choose "Yes" when asked "Are you sure?".
7. Once the strategy is downloaded and you're in the Debugger, choose the Run→Stop option.
8. Verify the Mistic system is operating.

   Run the Cyrano strategy in Autostep mode to verify the controller is communicating with the PC. A properly running system displays two messages in the lower left corner of the Cyrano Debugger screen indicating the charts and program are running. You can also visually inspect your Mistic system's communication LEDs for communication transactions.

   If you suspect your system is not operating properly, consult the controller manual's or Cyrano manual's appropriate troubleshooting section.
9. Verification is complete. Exit the Debugger by choosing File→Quit.
10. Exit the Cyrano environment by choosing Cyrano→Quit.

To Configure the Mistic MMI

IMPORTANT: Make a backup of your Mistic MMI project before working with it in a new MMI release. A Mistic MMI project saved under a newer release will not work under an older version of the Mistic *MMI.*

1. Start the Mistic MMI Configurator from the Windows Program Manager.

   The Mistic MMI Configurator main window appears.

   If a previously loaded MMI project is opened under a newer Mistic MMI release, a warning first appears indicating the "Project is being marked as Modified". Click *OK*.

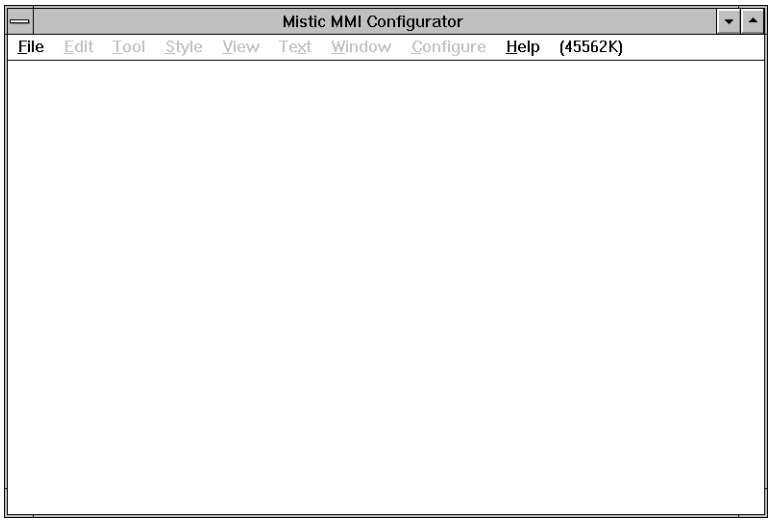

Figure 2-2: Mistic MMI Configurator Main Window

2. Select the File→Open Project command.

   The Open Project dialog box appears.

   If the project was "marked as Modified" (from step 1), you are first asked if you want to save any changes. Saving the project saves it under the newer Mistic MMI release and makes it incompatible with older releases. Click "Yes" if you made a backup copy; click "No" if you do not have a backup copy. Backup all projects before proceeding and start the Mistic MMI configuration process again.

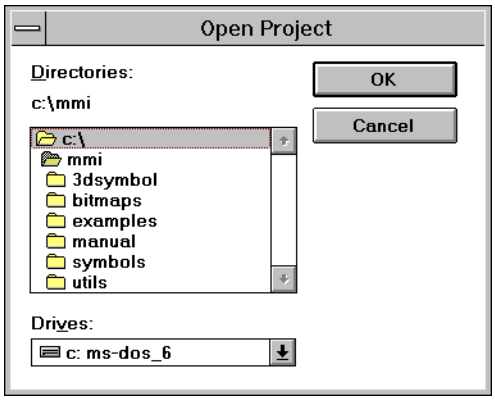

Figure 2-3 Open Project Dialog Box (Mistic MMI)

3. Select a Mistic MMI project and click *OK*.

   Use the directory list box to locate the example project directory in \MMI\EXAMPLES\EXAMPLE1. The Mistic MMI project loads and its graphics appear in the main draw window.

   If you installed the MMI in a directory other than \MMI, the following message appears: "Can't find the GML file". This is because the full path name of the GML file is stored in the MMI project file, and that path includes \MMI. Select *OK* in the message box and the Controller List dialog box appears. Select a controller and click the Modify button. The Controller Properties dialog box is displayed. Click the New Strategy button and select the .GML file from the directory that contains the example. This updates the full path name stored in the project file.

4. Choose the Configure→Mistic Controller(s) command.

The Controllers dialog box appears.

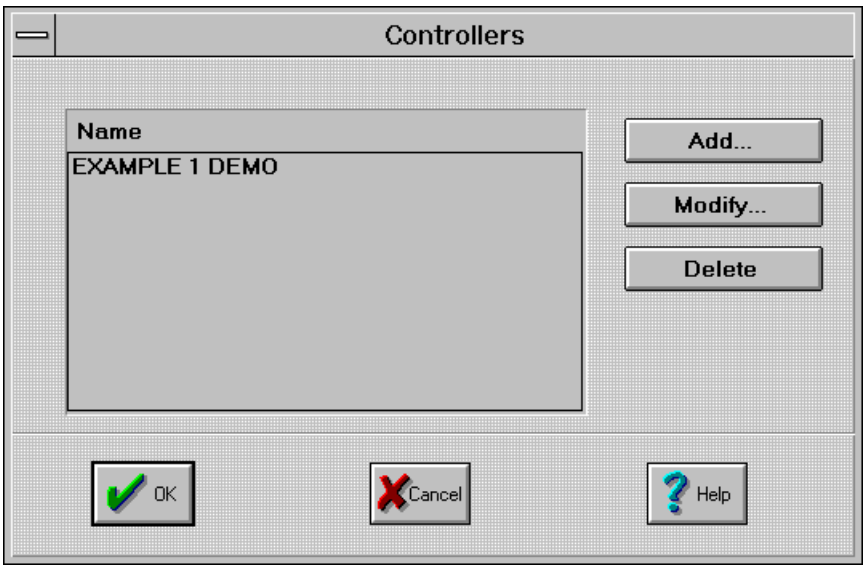

Figure 2-4: Controllers Dialog Box (Mistic MMI)

5. Choose a controller from the Name list box.

   If controller names appear in the Name list box, click on a name and click Modify. Make any changes necessary so the controller properties match the Cyrano strategy.

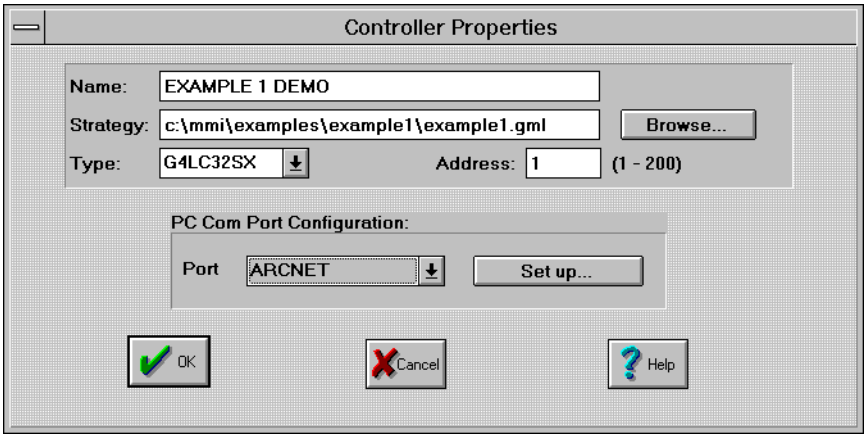

Figure 2-5: Controller Properties Dialog Box (Mistic MMI)

6. Click *OK* from the Controllers dialog box.

7. Exit the Mistic MMI Configurator by choosing the File→Exit MMI Configurator command and save the changes when prompted by the MMI.

To Run the Mistic MMI

1. Start the Mistic MMI Runtime from the Windows Program Manager.
2. Select the File→Open Project command and use the directory list box to locate the example project directory in \MMI\EXAMPLES\EXAMPLE1. The Mistic MMI Runtime project loads, its graphics appear in the main window, and the Event Log Viewer appears. The MMI immediately starts monitoring your process.

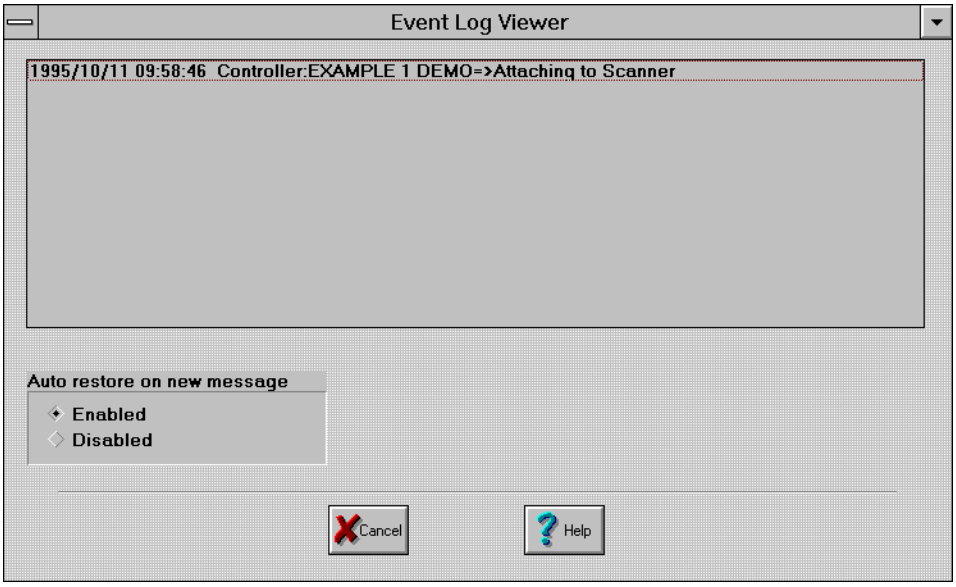

Figure 2-6: Event Log Viewer

Make sure the Event Log Viewer shows a successful connection between your MMI project and Mistic controllers.

CONFIGURATOR MENUS

OVERVIEW

The MMI Configurator is used to develop an operator interface. Define and configure the draw windows and other graphic objects that make up your project and connect them to the variables, I/O points, and other tags defined in your Cyrano strategy.

This chapter gives a brief overview about each of the menu options available in the Configurator.

FILE MENU ITEMS

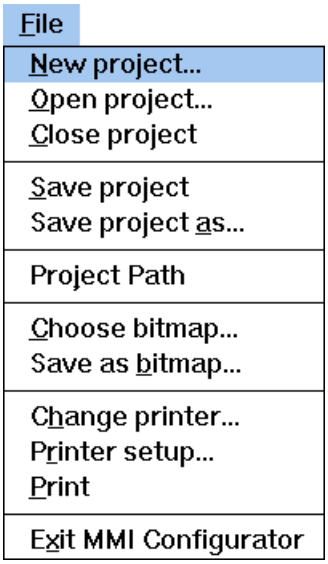

Figure 3-1: File Menu

New project (File Menu)

Use this menu option to create a new project. If a project is loaded which has been modified, a Save Project dialog box prompts you to save any changes. The New Project dialog box is displayed. Select a directory and name for the new project. Once the new project has been successfully created, a main window labeled with the project directory and name, and a draw window labeled "(Untitled)" appears.

Open Project (File Menu)

Use this menu option to open an existing project. The Open Project dialog box is displayed to select the directory of the project you want to open. If a project file is currently loaded and has been modified, the Save Project dialog box appears and prompts you to save any changes before closing the project. Only one project may be open at a time.

Close Project (File Menu)

Use this menu option to close the project. If the project has been modified, the Save Project dialog box prompts you to save the project. If you close a project without saving it, all changes made since the last time it was saved are lost.

Save Project (File Menu)

Use this menu option to save the changes to the current project in the project directory.

To copy a project to a different computer or drive, create a directory with the same name as the directory that the project files are currently in and copy all the files from the project directory to the new directory.

To copy a project to a directory with a different name than the current project directory, use Save Project As or create the new directory (no "." allowed in the project directory name), copy all the files from the project directory to the new directory, and rename all the .Wnn (nn is a 2-digit number), .MMI and .INI files so that their file names match the project directory name.

For example, suppose you have a project named PROJ-A in the directory C:\MMI\PROJECTS\PROJ-A, and want to create a new project based on it named PROJ-B.

1. First create the new directory:

   MKDIR C:\MMI\PROJECTS\PROJ-B

2. Next copy all the files from the original directory to the new directory:

   COPY C:\MMI\PROJECTS\PROJ-A*.* C:\MMI\PROJECTS\PROJ-B

3. Finally, rename the appropriate files:

   REN PROJ-A.INI PROJ-B.INI

   REN PROJ-A.MMI PROJ-B.MMI

   REN PROJ-A.Wnn PROJ-B.Wnn (Note: do not rename .WAV files!)

You are now ready to load the new project.

Save Project As (File Menu)

Use this menu option to save and name the project. This command creates another copy of your project file with another name or saves it to a different location. To save a project with its existing name, location, and format, use the Save Project command.

Project Path (File Menu)

This command displays the full project pathname in a message box. The project pathname is also displayed in the program's Title Bar. If the full project pathname is too long to fit in the Title Bar, then only the project name is shown.

Choose Bitmap (File Menu)

Use this menu option to select a bitmap file. The Choose A Bitmap dialog box prompts you for a bitmap filename and location. The default bitmap file extension is .BMP. The selected bitmap is drawn whenever the bitmap tool is used.

Save As Bitmap (File Menu)

Use this menu option to save the selected graphics as a bitmap. The Save As Bitmap dialog box prompts you for the bitmap filename and location to save the selected graphics. If no graphics are selected, then everything in the draw window is saved to the bitmap filename. The default bitmap file extension is .BMP.

Change Printer (File Menu)

Use this menu option to select the printer you want. The Choose Printer dialog box appears and shows only installed printers. The currently selected printer will be highlighted. After selecting an installed printer, a dialog box titled with the name of the selected printer is displayed showing the current settings and prompts you for any changes. To change the settings on the current printer, use the Printer Setup command.

Printer Setup (File Menu)

Use this menu option to set the attributes of the printer. A dialog box titled with the name of the selected printer is displayed, shows the current settings, and prompts you for any changes. To select another printer, use the Change Printer command.

Print (File Menu)

Use this menu option to print any displayed main and draw windows. The Print dialog box prompts for the number of copies to be printed. To set the attributes of the printer connection, use the Printer Setup command. To select another printer, use the Change Printer command.

Exit MMI Configurator (File Menu)

Use this menu option to exit an MMI Configurator session. The Save Project dialog box prompts you to save the current project if it has been modified.

Shortcuts

Use the mouse to double-click the control-menu button and close the MMI.

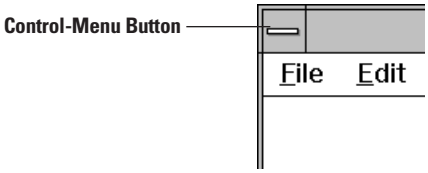

Figure 3-2: Closing the MMI with the Control Menu Button

Keys: ALT+F4

EDIT MENU ITEMS

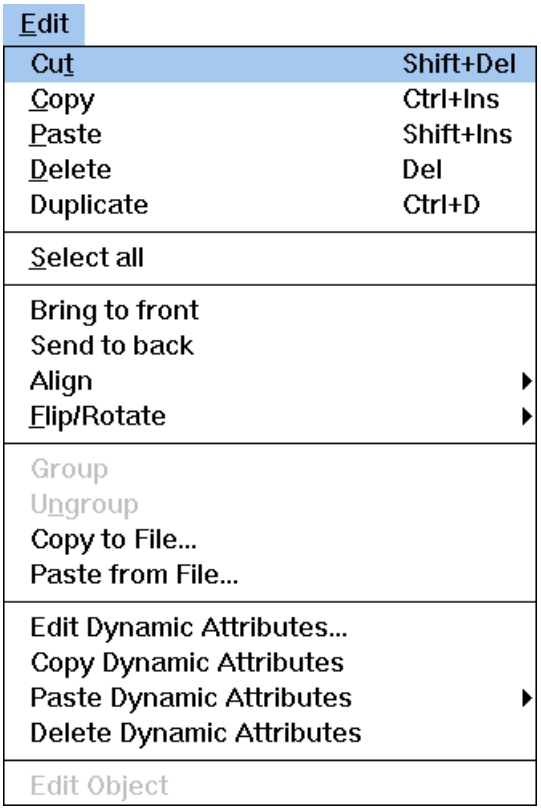

Figure 3-3: Edit Menu

Cut (Edit Menu)

Use this command to remove selected graphics from a draw window and paste them to the clipboard. Cutting to the clipboard replaces the contents previously stored there. This command is unavailable if you have no graphics selected.

Shortcut

Keys: SHIFT+DEL

Copy (Edit Menu)

Use this command to copy selected graphics onto the clipboard. Copying to the clipboard replaces the contents previously stored there. This command is unavailable if no graphics are selected.

Shortcut

Keys: CTRL+INS

Paste (Edit Menu)

Use this command to insert a copy of the clipboard contents. The clipboard contents are inserted in the middle of the draw window and can be moved to the desired location. This command is unavailable if the clipboard is empty.

Shortcut

Keys: SHIFT+INS

Delete (Edit Menu)

Use this command to delete graphics from a draw window. This command is unavailable if you have no graphics selected. Deleted graphics do not replace the contents previously stored to the clipboard.

Shortcut

Keys: DEL

Duplicate (Edit Menu)

Use this command to duplicate selected graphics from a draw window. The duplicate is copied directly below the selected graphics. Duplicating will not replace the contents previously stored to the clipboard.

Shortcut

Keys: CTRL + D

Select All (Edit Menu)

This command selects all completed graphics in a draw window. Graphics that are not selected may be incomplete. Use the Redraw command under the View menu selection to remove the unselected graphics.

Bring To Front (Edit Menu)

Use this command to move one or more graphics in front of another graphics object. This command is unavailable if no graphics are selected.

Send To Back (Edit Menu)

Use this command to move one or more graphics in back of another graphic. This command is unavailable if no graphics are selected.

Align (Edit Menu)

When this command is selected, another window pops up and displays possible alignment selections.

Left

Left justifies the alignment of the selected group of two or more graphics. All selected graphics are aligned with the leftmost graphic in the group.This command is unavailable if you have not selected at least two graphics.

Example:

Before Left-Align **After Left-Align**

Figure 3-3: Left Alignment of Graphics

Center

Horizontally centers the alignment of the selected group of two or more graphics. This command is unavailable if you have not selected at least two graphics.

Example:

Before Center-Align **After Center-Align**

Figure 3-4: Center Alignment of Graphics

Right

Right justifies the alignment of the selected group of two or more graphics. All selected graphics are aligned with the rightmost graphic in the group. This command is unavailable if you have not selected at least two graphics.

Example:

Before Right-Align **After Right-Align**

Figure 3-5: Right Alignment of Graphics

Top

Top justifies the alignment of the selected group of two or more graphics. All selected graphics are aligned with the topmost graphic in the group. This command is unavailable if you have not selected at least two graphics.

Example:

Before Top-Align **After Top-Align**

Figure 3-6: Top Alignment of Graphics

Middle

Vertically centers the alignment of the selected group of two or more graphics. The graphics are centered between the topmost and bottommost graphics. This command is unavailable if you have not selected at least two graphics.

Example:

Before Middle-Align **After Middle-Align**

Figure 3-7: Middle Alignment of Graphics

Bottom

Bottom justifies the alignment of the selected group of two or more graphics. All selected graphics are aligned with the bottommost graphic in the group. This command is unavailable if you have not selected at least two graphics.

Example:

Before Bottom-Align **After Bottom-Align**

Figure 3-8: Bottom Alignment of Graphics

Flip/Rotate (Edit Menu)

The flip and rotate command changes the orientation and position of graphic elements. The actual movement depends on the type of graphic(s) selected.

Flip Horizontal

A horizontal flip replaces the selected graphics with a mirror image about their vertical axis. Text, trends, and bitmaps have their positions changed but are not mirrored.

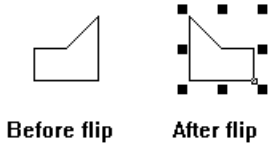

Figure 3-9: Horizontal Flip of a Single Graphic

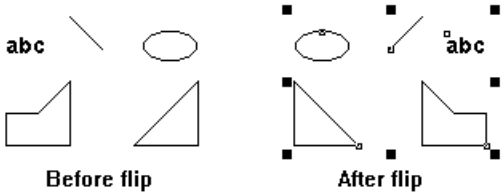

Figure 3-10: Horizontal Flip of Multiple Selected Graphics

Flip Vertical

A vertical flip replaces the selected graphics with a mirror image about their horizontal axis. Text, trends, and bitmaps have their positions changed but are not mirrored.

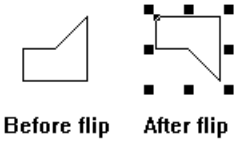

Figure 3-11: Vertical Flip of a Single Graphic

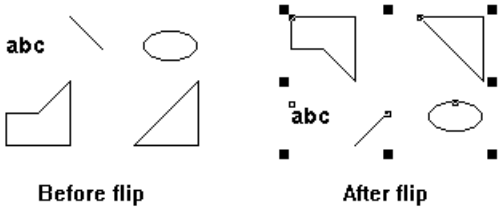

Figure 3-12: Vertical Flip of Multiple Selected Graphics

Rotate Clockwise

Rotates the selected graphic 90 degrees clockwise. If more than one graphic is selected, the center of rotation is the center of the minimum rectangular area that contains the graphics. Text, trends, and bitmaps cannot be rotated and any selection of multiple graphics that includes one of these cannot be rotated.

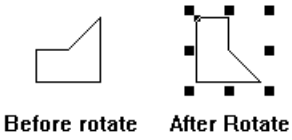

Figure 3-13: Clockwise Rotation of a Single Graphic

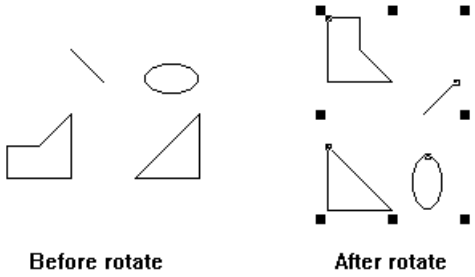

Figure 3-14 Clockwise Rotation of Multiple Selected Graphics

Rotate CounterClockwise

Rotates the selected graphic 90 degrees counterclockwise. If more than one graphic is selected the center of rotation is the center of the minimum rectangular area that contains the graphics. Text, trends, and bitmaps cannot be rotated, and any selection of multiple graphics that includes one of these cannot be rotated.

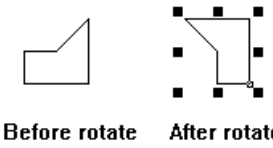

Figure 3-15: CounterClockwise Rotation of a Single Graphic

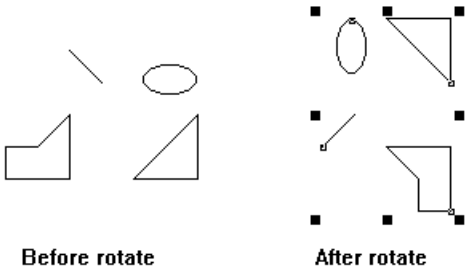

Figure 3-16: CounterClockwise Rotation of Multiple Graphics

Group (Edit Menu)

Use this command to group any combination of two or more graphics as one graphics object. This command is unavailable if one or no graphics are selected.

A group is treated as a graphic object. It can be selected, moved, resized, or have dynamic attributes. At Runtime, only the dynamic attributes assigned to a group are processed, any dynamic attributes assigned to individual members of a group are ignored (this includes trends). If a group is subsequently Ungrouped, the previously configured dynamic attributes of ungrouped graphics are configured and processed at Runtime.

Ungroup (Edit Menu)

Use this command to ungroup previously grouped graphics. This allows each graphic object to be individually selected. This command is only available if a group is selected.

If any of the ungrouped graphics had dynamic attributes prior to grouping, those dynamic attributes will be configured and processed at runtime.

Copy To File (Edit Menu)

Use this command to save the selected graphics to a file. A Copy Symbol to File dialog box prompts for the filename, location, and file format. The default extension for the filename is .SMB. This command is unavailable if you have not selected any graphics.

Paste From File (Edit Menu)

Use this command to retrieve graphics from a file. The Paste From Symbol File dialog box prompts for the filename, location, and file format. The default extension for the filename is .SMB.

Edit Dynamic Attributes (Edit Menu)

Use this command to connect a graphic to a Cyrano data item. The Dynamic Attributes dialog box is displayed for primary graphics showing all applicable dynamic attributes. You are prompted to select input dynamic attributes or output dynamic attributes. As an example, you can setup connections so the value of a Cyrano tag changes the color and fill size of a graphic. With output dynamic attributes, you can change the value of a tag as you "slide" the graphic on the screen. Many different combinations of dynamic attributes are possible.

Different dialog box windows are shown when you want to assign dynamic attributes to an advanced graphic. For example, the Trend Configuration dialog box is displayed when a trend is selected.

This command is unavailable if no graphics are selected or have selected more than one graphics object.

Copy Dynamic Attributes (Edit Menu)

Use this command to copy a selected primary graphic's dynamic attributes to another primary graphic. Use the Paste Dynamic Attributes command to actually assign the copied dynamic attributes to another primary graphic.

This command is unavailable if no graphics are selected or if more than one graphic object is selected, or if no Mistic controller is configured.

Paste Dynamic Attributes (Edit Menu)

Use this command to assign previously copied dynamic attributes to a primary graphic. You can paste dynamic attributes to a group of one or more selected primary graphics. During the pasting process, you may choose whether the attributes of the pasted object should be deleted or if it should have any duplicate attributes replaced or ignored.

This command is unavailable if no graphics are selected or have not copied another graphic object's dynamic attributes. A Mistic controller is configured when you have identified which Cyrano strategy is used for this project.

Delete Dynamic Attributes (Edit Menu)

Use this command to delete dynamic attributes of a selected primary graphic. You can delete the dynamic attribute connections of a group of one or more selected primary graphics.

This command is unavailable if no graphics are selected or have not configured a Mistic controller. A Mistic controller is configured when you have identified which Cyrano strategy is used for this project.

Edit Object (Edit Menu)

Use this command to edit graphic objects which have unique methods of editing. If a graphic is selected which can be edited, this menu item is enabled and the text indicates what type of graphic is selected.

Text objects are currently the only graphic which can be edited. Select the text with the select tool and then choose this menu item. A dialog box appears in which the text may be edited.

TOOL MENU

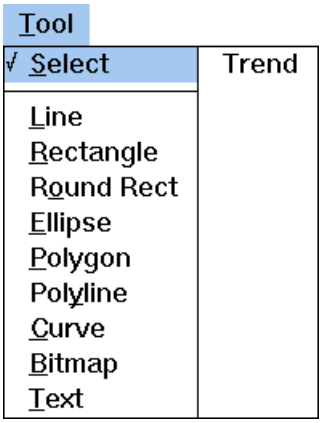

Figure 3-17: Tool Menu

Select (Tool Menu)

The select tool is used to select one or more Primary or Advanced graphics. Most graphic commands, such as resize or rotate, require objects to be selected before the command is performed. The Select command may be chosen from the Tools Menu or the Tool Bar.

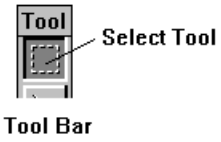

Figure 3-18 : Select Tool

To Select One Object:

1. Choose the Select tool.
2. Place the mouse pointer anywhere over the item to be selected.
3. Click the left mouse button.

Once selected, the object appears with sizing handles and a selection mark.

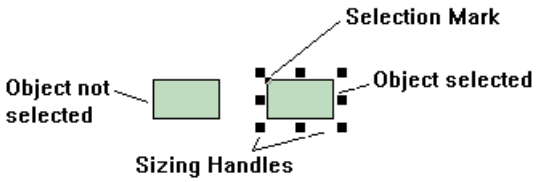

Figure 3-19: Sizing Handles on a Selected Graphic

To Select More Than One Object:

1. Choose the Select tool.
2. Place the mouse pointer just outside the items to be selected.
3. Hold the left mouse button down.
4. Drag the select box over the objects to be selected.

Once selected, sizing handles surround the selected objects and selection marks identify each graphic that is included in the selection.

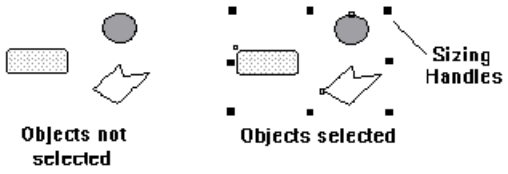

Figure 3-20 : Sizing Handles on a Group of Objects

Line (Tool Menu)

Draws a line in the current line style and color. The Line command may be selected from the Tools Menu or the Tool Bar. A line is a primary graphic.

Figure 3-21 : Line Tool

To Draw a Line:

1. Select a line color and line style. These choices can be made from the Style menu.
2. Select the line tool.
3. Move the mouse pointer into the drawing area.
4. Press and hold the left mouse button to anchor one end of the line. Drag the pointer. If the CTRL key is pressed while dragging the pointer, only a vertical or horizontal line is drawn, depending on which axis the mouse was moved farthest from the anchor point.
5. Release the left mouse button to place the line.

Rectangle (Tool Menu)

Draws a rectangle in the current line style, fill pattern, and color. Select the Rectangle command from the Tools Menu or the Tool Bar. A rectangle is a primary graphic. A square can be easily constructed with the rectangle tool by holding the CTRL key down while constructing the graphic as described below.

Figure 3-22 : Rectangle Tool

To Draw a Rectangle:

1. Select a line style, fill pattern, and color. These choices are made from the Style menu.
2. Select the rectangle tool.
3. Move the mouse pointer into the drawing area.
4. Press and hold the left mouse button to anchor one corner of the rectangle. If the SHIFT key is pressed when the mouse button is pressed and stays pressed while dragging the pointer, the initial mouse point is used to anchor the center of the rectangle rather than the corner.
5. Drag the pointer to size the rectangle. If the CTRL key is pressed while dragging the pointer, a square is drawn. Pressing both the CTRL key and the SHIFT key produces a square with its center anchored at the initial mouse point.
6. Release the left mouse button to place the rectangle.

Round Rectangle (Tool Menu)

Draws a rectangle with rounded corners in the current line style, fill pattern, and color. Select the Rectangle command from the Tools Menu or the Tool Bar. A round rectangle is a primary graphic. A square with rounded corners can be easily constructed with this tool by holding the CTRL key down while constructing the graphic, as described below.

Figure 3-23: Round Rectangle Tool

To Draw a Round Rectangle:

1. Select a line style, fill pattern, and color. These choices can be made from the Style menu.
2. Select the round rectangle tool.
3. Move the mouse pointer into the drawing area.
4. Press and hold the left mouse button to anchor one corner of the rectangle. If the SHIFT key is pressed when the mouse button is pressed and stays pressed while dragging the pointer, the initial mouse point will be used to anchor the center of the rectangle rather than the corner.
5. Drag the pointer to size the rectangle. If the CTRL key is pressed while the pointer is dragged, a square will be drawn. Pressing both the CTRL key and the SHIFT key will produce a square with its center anchored at the initial mouse point.
6. Release the left mouse button to place the rectangle.

Ellipse (Tool Menu)

Draws an ellipse or circle in the current line style, fill pattern, and color. The Ellipse command may be selected from the Tools Menu or the Tool Bar. Ellipses and circles are primary graphics. A circle can be easily constructed with this tool by holding the CTRL key down while constructing the graphic as described below.

Figure 3-24: Ellipse Tool

To Draw an Ellipse or Circle:

1. Select a line style, fill pattern, and color. These choices can be made from the Style menu.
2. Select the ellipse tool.
3. Move the mouse pointer into the drawing area.
4. Press and hold the left mouse button to anchor one corner of the ellipse. If the SHIFT key is pressed when the mouse button is pressed and stays pressed while the dragging the pointer, the initial mouse point is used to anchor the center of the ellipse rather than the corner.
5. Drag the pointer to size the ellipse. If the CTRL key is pressed while the pointer is dragged a circle will be drawn. Pressing both the CTRL key and the SHIFT key produces a circle with its center anchored at the initial mouse point.
6. Release the left mouse button to place the ellipse.

Polygon (Tool Menu)

Draws an N-sided polygon in the current line style, fill pattern, and color. Select the Polygon command from the Tools Menu or the Tool Bar. A polygon is a primary graphic.

Figure 3- 25: Polygon Tool

To Draw a Polygon:

1. Select a line style, fill pattern, and color. These choices can be made from the Style menu.
2. Select the polygon tool.
3. Move the mouse pointer into the drawing area.
4. Press and hold the left mouse button to anchor the first vertex of the polygon.
5. Drag the pointer to the next vertex of the polygon.
6. Release the left mouse button to place the vertex. Repeat for each vertex.
7. When the last vertex has been placed, click on the last vertex to complete the polygon.

   An alternate way to close the polygon is to double-click the left mouse button to close the polygon once the last vertex has been placed. In addition to closing the polygon, it selects it, and presents the Graphic Dynamic Attributes dialog box.

Polyline (Tool Menu)

Draws a multi-segment line in the current line style and color. A polyline appears to be several individual lines, but actually is one graphic object. Polylines are useful when complex line drawings are connected to Dynamic Attributes. Select the Polyline command from the Tools Menu or the Tool Bar. A polyline is a primary graphic.

Figure 3-26: Polyline Tool

To Draw a Polyline:

1. Select a line style and color. These choices can be made from the Style menu.
2. Select the polyline tool.
3. Move the mouse pointer into the drawing area.
4. Press and hold the left mouse button to anchor the beginning of the polyline.
5. Drag the pointer to the end of the first line segment.
6. Release the left mouse button to place the line segment. Repeat for each segment.
7. When the last segment is placed, double-click the left mouse button to complete, select the polyline, and display the Graphic Dynamic Attributes dialog box.

Curve (Tool Menu)

Draws a curve in the current line style and color. The curve is drawn based on points placed in the draw window. After placing a fourth point, a curve is drawn. If you continue placing points, additional curves are connected with every third point that's placed.

Select the Curve command from the Tools Menu or the Tool Bar. A curve is a primary graphic.

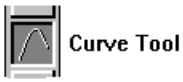

Figure 3-27: Curve Tool

To Draw a Curve:

1. Select a line style and color. These choices can be made from the Style menu.
2. Select the curve tool.
3. Move the mouse pointer into the drawing area.
4. Click the left mouse button to anchor the beginning of the curve.
5. Click the left mouse button at the second, third, and fourth points.

   A curve is drawn after the fourth point is placed.
6. Continue placing points to draw the desired curve.

   A curve is drawn after every third point that is placed.
7. To complete the curve, click on the last point one more time.

Figure 3-28: 4-Point Curve Construction

Bitmap (Tool Menu)

Places a bitmap into the drawing area. Bitmaps are useful for highly detailed drawings or when other drawing programs are used to produce graphic symbols. Select the Bitmap command from the Tools Menu or the Tool Bar. A bitmap is a primary graphic.

Figure 3-29: Bitmap Tool

To Place a Bitmap:

1. Select Choose Bitmap from the File Menu.
2. Choose a bitmap file (*.BMP) from the dialog box.
3. Select the bitmap tool.
4. Move the mouse pointer into the drawing area.
5. Click the left mouse button at the desired bitmap location. The bitmap is centered at this point.

Text (Tool Menu)

Places character text in the drawing area in the current font style, size, and color. Select the Text command from the Tools Menu or the Tool Bar. Text is a primary graphic.

Figure 3-30: Text Tool

To Place Text:

1. Select a text font, size, and color. These choices can be made from the Text menu.
2. Select the text tool.
3. Move the mouse pointer into the drawing area.
4. Click the left mouse button to anchor the starting position of the text.
5. Type the desired text. Use the backspace key to erase mistakes.
6. Move the mouse pointer away from the text and click the left mouse button to end the text entry.

Trend (Tool Menu Items)

Places a strip-chart style data trend in the drawing area. Select the Trend command from the Tools Menu or the Tool Bar. Trends are advanced graphics. Refer to Chapter 8, Trends, for more details about trends.

Figure 3- 31: Trend Tool from the Toolbar

To Place a Trend:

1. Select the trend tool.
2. Move the mouse pointer into the drawing area.
3. Press and hold the left mouse button at the desired location.
4. Drag the mouse to size the trend.
5. Release the mouse to complete placing the trend.

To edit the trend parameters, select the trend with the Select tool and then choose the Edit→Edit Dynamic Attributes command. See the Trend dialog box for more trend configuration information.

STYLE MENU

The Style Menu allows you to control the drawing attributes of the primary graphic tools. Whenever a primary graphic, such as a line or rectangle is drawn, the default style is applied. Combining different style settings allows you to draw an almost infinite variety of graphics. A style is set before an object is drawn or changed. Advanced graphics, such as trends and bitmaps are not affected by style settings. Text drawing attributes which include font style, color, and size are controlled with the Text menu.

Figure 3-32: Style Menu

Line Color (Style Menu)

Set or change a primary graphic's line color. All primary graphics will have this default line color.

To Set the Default Line Color:

1. Select Line Color from the Style Menu.
2. A dialog box of available colors is displayed.
3. Choose the desired color.

To Change the Line Color of an Existing Primary Graphic:

1. Use the select tool to select the graphic(s).
2. Select Line Color from the Style Menu. A dialog box of available colors is displayed.
3. Choose the desired color.

Only the line color of the selected object(s) is affected.

Line Width (Style Menu)

Set or change a primary graphic's line width.

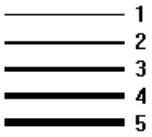

Figure 3-33: Sample Line Widths

To Set the Default Line Width:

1. Select Line Width from the Style Menu.
2. Enter the line width in the dialog's edit box.
3. The line width is given in number of pixels. All primary graphics will have this default line width.

To Change the Line Width of an Existing Primary Graphic:

1. Use the select tool to select the object.
2. Select Line Width from the Style Menu.
3. Enter the line width in the dialog's edit box.

Only the line width of the selected graphic is affected.

Line Style (Style Menu)

Set or change a primary graphic's line style. Different line styles only apply to objects with line width of 1. Line widths greater than 1 are always solid.

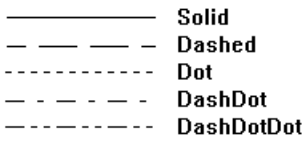

Figure 3-34: Sample Line Styles

To Set the Default Line Style

1. Select Line Style from the Style Menu.
2. Choose the desired line style from the pop-up menu.

All primary graphics will have this default line style.

To Change the Line Style of an Existing Object

1. Use the select tool to choose the object.
2. Select Line Style from the Style Menu.
3. Choose the desired line style from the pop-up menu.

Lines with a line width greater than 1 can only have a solid line style.

Invisible

The invisible line style is used with rectangles, round rectangles, ellipses, and polygons. If these objects are drawn with the invisible line style, the border line around the object is not displayed.

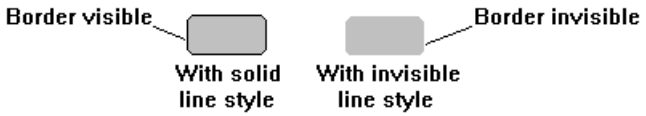

Figure 3-35: Example of Invisible Line Style

Fill Color (Style Menu)

Set or change a primary graphic's fill color. Fill colors only affect rectangles, round rectangles, ellipses, and polygons.

To Set the Default Fill Color:

1. Select Fill Color from the Style Menu.
2. A dialog box of available colors is displayed.
3. Choose the desired color.

All rectangles, round rectangles, ellipses, and polygons will have this default fill color.

To Change the Fill Color of an Existing Rectangle, Round Rectangle, Ellipse, and Polygon:

1. Use the select tool to choose a graphic.
2. Select Fill Color from the Style Menu.
3. A dialog box of available colors is displayed.
4. Choose the desired color.

Fill Pattern (Style Menu)

Set or change a primary graphic's fill Pattern. Fill patterns only affect rectangles, round rectangles, ellipses, and polygons.

To Set the Default Fill Pattern:

1. Select Fill Pattern from the Style Menu.
2. A menu of available patterns is displayed.
3. Choose the desired pattern.

All rectangles, round rectangles, ellipses, and polygons will have this default fill color.

To Change the Fill Pattern:

1. Use the select tool to select a graphic.
2. Select Fill Pattern from the Style Menu.
3. A menu of available patterns is displayed.
4. Choose the desired pattern.

Only the fill pattern of the selected object is affected.

Solid and Invisible

The solid and invisible fill determine if an object's fill is displayed. If the fill is invisible, then only the object's border is displayed.

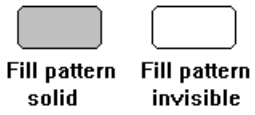

Figure 3-36: Example of Solid and Invisible Fill

Percent

When using a percent fill, you can control the tone of the fill by setting a percentage of fill. Percent fills do not affect vertical, horizontal, diagonal, hatch, pebble, or brick fill patterns.

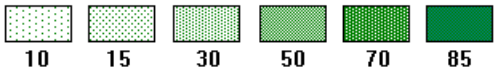

Figure 3-37: Example of Percent Fills

Patterns:

In addition to the solid and percent fills, several patterns may be selected as fill objects.

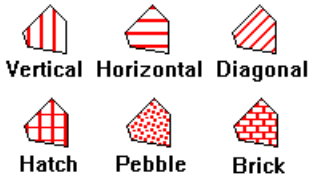

Figure 3-38: Example Fill Patterns

Opaque (Style Menu)

The Opaque style is used to determine how non-solid primary graphics, such as dotted and dashed lines, interact with overlapping graphics and background colors. When the opaque style is set, overlapped graphics and background colors are overwritten.

Transparent (Style Menu)

The Transparent style is used to determine how non-solid primary graphics, such as dotted and dashed lines, interact with overlapping graphics and background colors. This is the opposite of the Opaque style. When the transparent style is set, overlapped graphics and background colors are overwritten only by the solid portion of the line.

VIEW MENU ITEMS

Figure 3-39: View Menu

Hide Menu Bar (View Menu)

Use this command to hide the Menu Bar. The ESC key toggles the menu bar on and off.

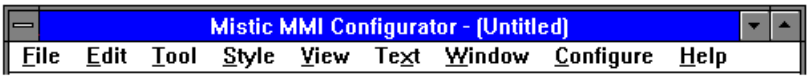

Figure 3-40: Menu Bar

Shortcut

Key: ESC

Hide\Show ToolBar (View Menu)

Use this command to hide or show the ToolBar. The ToolBar has buttons for the primary graphics and advanced graphics. If the ToolBar is hidden, the Show ToolBar command is displayed and you can use this command to show the ToolBar. If the ToolBar is displayed, then the Hide ToolBar command is shown and you can use this command to hide the ToolBar.

Hide\Show Coordinates (View Menu)

Use this command to hide or show the coordinates display of the draw window. The coordinates tell you the position of the cursor within the draw window. If the coordinates display is hidden, the Show Coordinates command is displayed. Use the Show Coordinates command to display the coordinates. If the coordinates display is shown, the Hide Coordinates command is displayed.

Grids (View Menu)

Use this command to make grid changes to the draw window. A Grid dialog box window is displayed and prompts you to toggle the grid on or off, toggle the Snap On or Snap Off, and to enter a grid size. The grid size refers to the spacing of grid points, measured in pixels. For example, a grid size of 10 means a grid point will appear every 10 pixels.

There will be a checkmark by the Grids command if a grid should be displayed and entries are made to affect the grid size. Sometimes grids do not appear because the grid size is too big for the draw window.

Hide\Show Grid (View Menu)

Use this command to hide or show a grid in the draw window. If the grid is hidden, the Show Grid command is displayed. Use this command to show the grid. If the grid is shown, the Hide Grid command is displayed. Use this command to hide the grid. To make changes to the grid, use the View→Grids command.

Turn Snap On\Off (View Menu)

Use this command to toggle the Snap On or Snap Off feature for the active draw window. If Snap On is enabled, the Snap Off command is shown. Use this command to turn off the feature. If Snap Off is enabled, the Snap On command is shown. Use this command to turn on the feature. To make changes to the grid, use the View→Grids command.

Redraw (View Menu)

Use this command to redraw the contents of your draw window. Incomplete primary graphics (such as an incomplete polygon) appearing in the window are removed upon a redraw.

TEXT MENU ITEMS

The Text Menu Items allow you to control text attributes. Text placed in the drawing area with the Text Tool, applies the current font style, size, and color. A text style may be set before the text is drawn or changed after it is placed. Style attributes selected from the Style menu do not affect text.

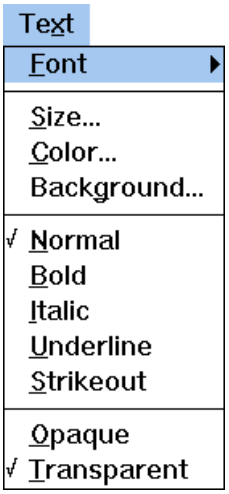

Figure 3-41: Text Menu

Font (Text Menu)

Sets or changes a text font. The style or appearance of each character in a text string is called a font. The MMI currently supports several fonts.

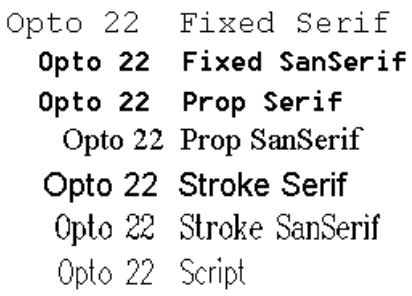

Figure 3-42: Examples of Supported Fonts

To Set the Default Text Font:

1. Select Font from the Text Menu.
2. A menu displays available fonts.
3. Choose the desired font.

All text will have this default font style.

To Change the Font Style of an Existing Text String:

1. Use the select tool to select the string.
2. Select Font from the Text Menu.
3. A menu displays available fonts.
4. Choose the font.

Only the font style of the selected text string is affected.

Size (Text Menu)

Sets or changes text size. In addition to the font style, the size may be set to enhance the text appearance. The size of the text is specified in points. The smaller the point size, the smaller the text. For currently supported fonts, any point size may be used, however point sizes less than eight are difficult to read.

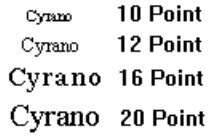

Figure 3-43: Example of Prop Serif Font at Different Point Sizes

To Set the Default Text Size:

1. Select Size from the Text Menu.
2. Enter the point size in the dialog's edit box.

All text will have this default font size.

To Change the Font Size of an Existing Text String:

1. Use the Select tool to select the string.
2. Select Size from the Text Menu.
3. Enter the point size in the dialog's edit box.

Only the font style of the selected text string is affected.

Alternate Method:

1. Use the Select tool to select the string.
2. Grab one of the string's sizing handles.
3. Move the sizing handle to the new size.

Color (Text Menu)

Sets or changes text color. Lines, boxes, and text strings may appear in any color.

To set the default text color:

1. Select Color from the Text Menu.
2. A menu displays available colors.
3. Choose the desired color.

All text will have this default color.

To Change the Color of Existing Text:

1. Use the select tool to select the text string.
2. Select Color from the Text Menu.
3. A menu displays available colors.
4. Choose the desired color.

Only the color of the selected text is affected.

Background (Text Menu)

Sets or changes the text background color. Background colors only apply to Opaque text. Text that is Transparent is not affected by this setting.

To Set the Default Text Background Color:

1. Select Background from the Text Menu.
2. A menu displays available colors.
3. Choose the desired color.

All text will have this default background color.

To Change the Background Color of Existing Text:

1. Use the select tool to select the text string.
2. Select Background from the Text Menu.
3. A menu displays available colors.
4. Choose the desired color.

Only the background color of the selected text is affected.

Text Type Face (Text Menu)

Sets or changes a text type face. In addition to text font style, size, and color, text type faces further enhance the appearance of text. Currently normal, bold, italics, underline, and strikeout type faces are supported.

Figure 3-44: Examples of Text Type Faces

To set the default text type face, select Normal, Bold, Italic, Underline, or Strikeout from the Text menu. Checkmarks on the menu items indicate the characteristics of the default type face. All text subsequently created will have this default type face.

To Change the Type Face of Existing Text:

1. Use the select tool to select the text string.
2. Select one of the type faces from the Text menu.

Only the type face of the selected text is affected.

Opaque (Text Menu)

The opaque setting determines how text appears when overlapping other objects. If the text is set to opaque, objects under the text will be overwritten by the text and text background color. The text background lies just outside the text. Also see Transparent (Text Menu Items).

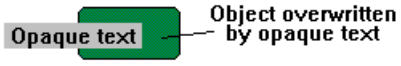

Figure 3-45: Example of Opaque Text:

To set opaque default text, select Opaque from the Text menu.

To Change Existing Text:

1. Use the select tool to select the text string.
2. Select Opaque from the Text menu.

Only the selected text is affected.

Transparent (Text Menu)

The transparent setting determines how text appears when overlapping other objects. If the text is set to transparent, objects under the text will be visible and not affect the text background color. Also see Opaque (Text Menu Items).

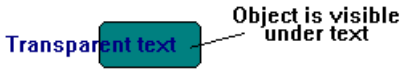

Figure 3-46: Example of Transparent Text

To set transparent default text, select Transparent from the Text menu.

To Change Existing Text:

1. Use the select tool to choose the text string.
2. Select Transparent from the Text menu.

Only the selected text is affected.

WINDOW MENU

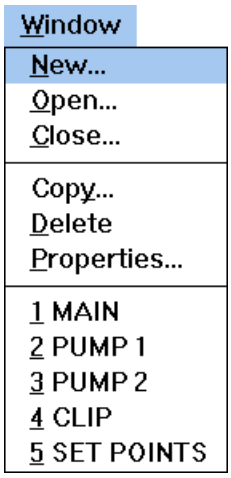

Figure 3-47: Window Menu

The MMI Configurator allows you to configure several draw windows per project. The Window menu items control the number and properties of each draw window in a project. You can create new draw windows, delete draw windows, copy draw windows, and change properties of existing draw windows.

New (Window Menu)

Use this command to create a new draw window and add it to your project. When you create a new project, a new draw window is automatically added.

To add a new draw window to a project, select New from the Window Menu. The Window Properties dialog box is displayed and allows you to configure the name, size, behavior, and window attributes. You must provide a unique name for each draw window.

Open (Window Menu)

Use this menu item to open draw windows that are configured but currently closed. To open a window, select Open from the Window menu. The Open Window dialog box is displayed and lists the names of all draw windows that are closed. Select the name of the windows you wish to open. Draw windows open when a project is saved are opened when the project is started at Runtime. This can be modified by using the Configure→Runtime menu command.

Close (Window Menu)

This menu item is used to close draw windows that are currently open. To close a window, select Close from the Window menu. The Close Window dialog box is displayed and lists the names of all opened windows. Select the names of the draw windows you wish to close. Draw windows that are closed when a project is saved, are closed when the project is started at Runtime. This can be modified by using the Configure→Runtime menu command.

Copy (Window Menu)

This menu item is used to duplicate the current draw window. To copy a window, select Copy from the Window menu. In the dialog box enter a new name and any properties you wish to change. All graphics and their connections in the current draw window are copied to the new draw window. The Copy Window dialog box is displayed allowing you to configure the name, size, and window attributes. You must provide a unique name to the new draw window.

Delete (Window Menu)

This menu item is used to delete the current draw window. To delete a draw window, select Delete from the Window menu. All graphics and their connections in the current draw window are deleted and the draw window is removed from the project. A dialog box is displayed asking you to verify the operation. Use caution since deleted draw windows cannot be recovered.

Properties (Window Menu)

This menu item is used to modify the properties of an existing draw window. To change a draw window's properties, select Properties from the Window menu. Enter the new draw window properties in the dialog box. The Window Properties dialog box allows you to change the name, size, behavior, color, and attributes of a draw window.

Open Window List (Window Menu)

Currently opened or iconified windows are listed in the Window Menu. Up to nine window names are displayed. If more than nine windows are open, a menu item named More Windows is appended.

Select a draw window name to display that draw window in front of all other open draw windows. If more than nine windows are open, selecting More Windows displays a list box with all the names of opened windows. Select from the list box the window you want brought to the front. A window must be open or iconified for it to be listed.

CONFIGURE MENU ITEMS

Figure 3-48: Configure Menu

Mistic Controllers (Configure Menu)

Use this command to select which Cyrano Strategy (or strategies) are used for this project. The MMI Configurator uses the information from the strategy to connect the appropriate Cyrano data item to the dynamic attribute of a dynamic object. The Controller Properties dialog box prompts for the Cyrano strategy. If a Cyrano strategy is not configured for this project, dynamic attributes cannot be assigned to any dynamic objects.

Refresh Times (Configure Menu)

Use this command to change the refresh time for a refresh time group. The Refresh Time Group dialog box prompts you for the new times. Refer to Chapter 5, *Scanning*, for more information about configuring refresh times.

Historic Data Log (Configure Menu)

Use this command to create historic logs. A Historic Log List dialog box is displayed and lists the historic log files that have been created. This command allows you to modify which points are recorded and the data logging frequency to the files.

Event Log (Configure Menu)

Use this command to record a message caused by an event to the disk. You can change parameters such as the number of messages saved, the delimiter used between messages, and the file rollover period.

File names are dependent upon the rollover period specified within the Event Log File Configuration dialog box and follow the format:

yy = year, mm = month, dd = day, and hh = hour.

File name extensions are .MSG. The number of files retained on disk for an event log is also set within the Event Log File Configuration dialog box. When the limit is reached during Runtime, the file with the oldest DOS time stamp is deleted.

Applications (Configure Menu)

Use this command to add or modify application managers for use in the project. The Application Manager List dialog box displays available application managers for the project. The Application Manager Configuration dialog box lets you select the program file, working directory, launch options, the initial display view, and trigger associated with the application manager.

Sounds (Configure Menu)

Use this command to select sounds and assign their trigger for use in the project. The Sounds dialog box lists the available sounds for the project. The Sound Configuration dialog box lets you configure start and stop triggers with the Trigger dialog box. The Sound Configuration dialog box also prompts you for the sound file.

Window State (Configure Menu)

Use this command to add or make changes to existing window managers. The Window Manager List dialog box displays all currently configured window managers and allows access to the Window Manager Configuration dialog box. The Window Manager Configuration dialog box allows you to change triggers with the Window Manager Start Trigger dialog box and to control the draw window visual state with the Pop Window dialog box.

Run Time (Configure Menu)

Use this command to define the initial setup of the draw windows at runtime. For example, you may want to have certain draw windows pop-up and have others iconified when the project starts.

This command can also be used to prevent user exit from MMI Runtime when this project is loaded.

Recipes (Configure Menu)

Use this command to configure download or upload of recipes to a controller by a trigger. This method of recipe management does not require a graphic to be selected during Runtime for the recipe action to occur. To control recipe action by toggling a graphic, refer to the Dynamic Attribute Download Recipe or to the Dynamic Attribute Upload Recipe.

HELP MENU ITEMS

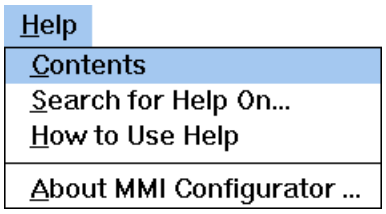

Figure 3-49: Help Menu

Contents (Help Menu)

Starts Help and displays help topics for the MMI Configurator.

Search for Help On (Help Menu)

Opens the Search dialog box for MMI Configurator Help. Use the Search dialog box to look up Help information by using keywords.

How to Use Help (Help Menu)

Describes how to use Help.

About MMI Configurator (Help Menu)

Displays version information about the MMI Configurator.

CHAPTER 4

CONTROLLER CONFIGURATION

OVERVIEW

Controllers need to be configured in the MMI Configurator so that the MMI Runtime can communicate to them. Each controller you configure requires a controller name and address, communication rate, and the name of a Cyrano strategy.

The first part of this chapter discusses communication protocols available between the Mistic controllers. Review this information before configuring your controllers. Following this discusion, is detailed information about the dialog boxes used to configure controllers.

CONTROLLER COMMUNICATION

The Mistic MMI communicates with multiple networked Mistic processors via ARCnet, RS-485, fiber optic, RS-232 connections using logical Windows communication ports, or the Mistic Data Server (MDS). Serial communication is performed using either Binary or modem ASCII modes.

ARCnet

Communication with Mistic processors via ARCnet requires a PC bus adapter card (8 or 16 bit) based on the SMC ARCnet chip. This is the recommended form of communication because it provides the best data throughput and is an economical solution. Using passive or active ARCnet hubs, you can connect up to 254 additional ARCnet nodes such as Mistic processors and other PCs on the network. Refer to Table 4-1 and 4-2 for more detailed ARCnet specifications and MisticNET (ARCnet) cabling information.

Table 4-1: ARCnet Port Specifications

Transfer rate	2.5 megabits/sec.
Termination	93 ohms
Address range	1 to 255, 0 not used
Topology	Star
Cable type	RG62A/U
Connector type	BNC
Normal signal levels	20 VPP output, 7.5 VPP input
Minimum signal levels	16 VPP output, 6.0 VPP input
Access time	Deterministic (token passing)

Table 4-2: ARCnet Cable Specifications

Maximum ARCnet Cable Distances	
Between two farthest NIMs[1]	20,000 ft.
Between active NIM and active NIM	2,000 ft.
Between active NIM and passive NIM[2]	100 ft.
Between passive NIM[2] and controller (or host PC)	100 ft.

1 NIM stands for network interface module (i.e., PC card, M4RTU, or active or passive hub).

2 Passive boards cannot be linked directly to one another without an ARCNET network.

The following ARCnet boards have been tested and are recommended:

ISA BUS Computers:

- Model ARCnet PC-130 Network Controller Board

  Standard Microsystems Corporation

Microchannel BUS:

- Model PDIuC508 ARCnet for IBM PS/2 Models 50, 60, 80

  Pure Data Ltd.

RS–485 and Fiber Optics (AC37/AC42)

The AC37 is a 16 bit ISA bus adapter card that provides high-speed, two-wire or four-wire RS-485 communication at rates of up to 115.2 KB. As many as 255 Mistic processors can be networked in a daisy-chain fashion over a combined distance of 3,000 feet. The AC37 provides optical and transformer isolation for your PC's safety. It is recommended that one AC38 Repeater Brick be used for every 30 processors on the communication link. Communications wire type is a shielded twisted pair.

The AC42 is a 16-bit ISA bus adapter card that provides a fiber optic communications port to Mistic products. RS-485 information at baud rates of up to 115.2 KB is transmitted over the fiber cable. Fiber optic networks can be 3.5 kilometers (about 11,480 feet) and offer a data link that is electrically isolated and completely immune to electrical noise. OPTO 22's fiber optic receivers and transmitters are optimized for 62.5/125 mm cable with "ST" style connectors. Other fiber diameters can be used, but performance specifications fall off rapidly. Up to 255 Mistic processors can be networked on a fiber optic data link. A diagram of typical connections is shown in Figure 4-1.

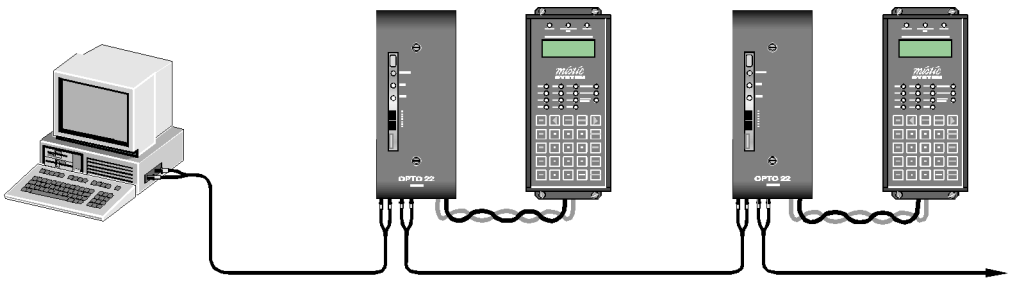

Figure 4-1: Fiber Optic Communications

See the Communications chapter of the "Mistic 200 Systems Installation Guide", Form 595, for information on communications wiring and connectors.

Windows Communication Port / RS–232

RS-232 communications can be implemented using the logical Windows communication ports. The four logical ports are configured using the control panel icon in the Main program group. Four parameters are automatically set by the Mistic driver when the port is used. These parameters include the Baud Rate, Number of Data Bits, Parity, and Number of Stop Bits. The three remaining parameters must be set as follows:

Flow Control	None
Base I/O Port Address	Must match current hardware settings
Interrupt Request Line	Must match current hardware settings

MMI uses Window's serial drivers for RS-232 communication. Some versions of the serial drivers do not work well when using RS-232 in binary mode. Third party serial communication drivers are available and solve some of these problems. The following problems with the Windows serial drivers have been identified:

Version:	Windows 3.1
Result:	Binary mode does not work since the parity bit does not change on-the-fly.
Work-Around:	Use ASCII mode, the Opto 22 P/N AC37 adapter card for RS-485 communication, or third party drivers.
Version:	Windows For Workgroups 3.11
Result:	Binary mode works but very slowly due to 400 msec time delays.
Work-Around:	Use ASCII mode or use AC37. ASCII mode actually runs faster than binary.

Binary Serial Communications Mode

Binary mode optimizes communications by using the parity bit. In binary mode, parity is normally low for all bytes except the address byte where the parity is forced high. The Mistic 200 controller can then quickly accept (or ignore) incoming commands using hardware interrupts. This allows the controller to spend less time servicing communications on networks with several Mistic 200 controllers. Communication parameters are: 8 data bits, 1 stop bit and a parity bit as previously described.

Format of command sent to controller:

Address	1 byte,	01 - FF
Length	1 byte	
Command to controller	My_Data @ .	
CRC-16	2 bytes	

Format of response from controller:

Length	1 byte	
Error Code	1 byte	0=no error
Response from controller	123	
CRC-16	2 bytes	

Modem ASCII Serial Communications Mode

This communication mode allows communications to serial devices that cannot support binary communications, such as telecommunication modems or RF modems.

The G4LC32 controller offers the modem-ASCII option in its configuration and is accessed with the SETUP button. If you have an older G4LC32SX, it requires a separate set of EPROMs for modem ASCII mode. Newer G4LC32SX controllers with Flash EPROMs have an optional jumper to select this feature.

Table 4-3: EPROMs for ASCII Modem Communication

Minimum Version	Description
1.07	Display EPROM (G4LC32)
1.37	mistic kernel EPROM

Comparing Binary with Modem ASCII Serial Communications

Modem ASCII packets are similar to the binary packets above with these exceptions:

- The contents of commands and responses are identical.
- With ASCII mode, each byte is sent as two characters representing the hex value. For example, a byte with a value FF (hex) would be sent as two “printable” ASCII characters like this: “FF”.

Other differences between binary and modem ASCII modes are shown in Table 4-4.

Table 4-4: Binary and Modem ASCII Comparison

	Binary	Modem ASCII
Parity	'Space',except for the first byte (address byte) which is 'Mark' parity	None
Start Byte: Command to Controller	None. The start of the packet is indicated by the address byte 'Mark' parity.	A ">" character
Start Byte: Response to Controller	None.	A "<" character
End byte	None. Packet size is determined by the size byte.	A single carriage return
Data bits	8	8
Stop bits	1	1

Binary Command Example:

Address	Length	Command	CRC
1 byte	1 byte	7 bytes	2 bytes
FF	09	VERSION	Tp

ASCII Command Example:

Start	Address	Length	Command	CRC	End
1 byte	2 bytes	2 bytes	14 bytes	4 bytes	1 byte
">"	"FF"	"09"	"56455253494F4E"	"5470	cr

MDS

MDS (Mistic Data Server) is a DDE software application which allows multiple Mistic MMIs and DDE applications to access data from Mistic controllers. DDE (Dynamic Data Exchange) is a standard interprocess communication protocol for Windows for Workgroups and Windows NT. Linked DDE applications can easily and efficiently be updated with current data from your Mistic controllers. Two software programs make up the MDS package: the MDS Administrator, and MDS.

The MDS Administrator is used to:

- Configure the physical ports MDS uses to communicate with Mistic controllers
- Set scan times for DDE-aware clients
- Set time-outs between MDS and Mistic controllers

MDS is a stand-alone PC application used to:

- Collect data from attached Mistic controllers
- Send only changed data to all registered DDE-aware and Mistic MMI clients
- Display DDE conversation message logging

Use MDS to provide real-time information to multiple PC workstations needing data from the same Mistic controller(s), without slowing down the controller's performance. Typically, a system with several computer terminals, each running Mistic MMI and/or DDE-aware clients (such as Microsoft Excel or Microsoft Word), are networked to a PC running MDS. The PC running MDS has a direct physical connection to Mistic controllers via a MisticNET protocol (ARCnet, RS-485, or any other Mistic controller supported communication option). MDS scans controllers at a preset rate and informs clients of any changes in data.

Without MDS, each client would need to scan Mistic controllers for data updates. This would result in slower throughput rates from the controllers. Each time a controller is scanned, its resources are used to read I/O instead of processing the control strategy.

DIALOG BOXES

The dialog boxes used to configure controllers in the MMI Configurator are discussed in this section. The Controller dialog box lists the currently configured controllers for the MMI. Adding a controller or modifying controller properties displays the Controller Properties dialog box. The PC Com Port Configuration option selected displays the appropriate dialog box to configure the communication port on the MMI computer.

Controllers Dialog Box

To add and configure Mistic controllers, choose the Configure→Mistic Controllers menu option. This displays the Controllers dialog box.

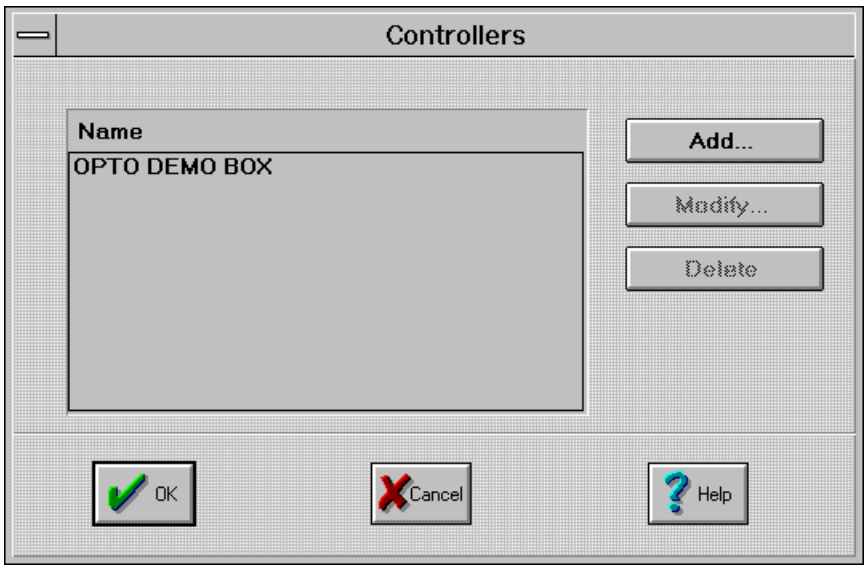

Figure 4-2: Controllers Dialog Box

The Name list box displays a list of controllers available for the MMI project. The controller names are the same names used in your Cyrano strategy. The properties you enter for each controller are saved by clicking *OK*.

To add controllers to the Name list box, click the Add button. The Controller Properties dialog box appears (Figure 4-3). The dialog box is described in the next section.

To modify properties for controllers shown in the Name list box, click the Modify button or double-click on its name. The Controller Properties dialog box appears (Figure 4-3). The dialog box is described in the next section.

Delete — Deletes controllers from the Name list box. A Delete Controller dialog box appears and asks for confirmation about the controller you want to delete. Click *Yes* to delete the name from the list , or *No* to void the delete request.

Controller Properties Dialog Box

Clicking Add or Modify in the Controllers dialog box displays the Controller Properties dialog box (Figure 4-3). After setting all options, click *OK* to save the changes.

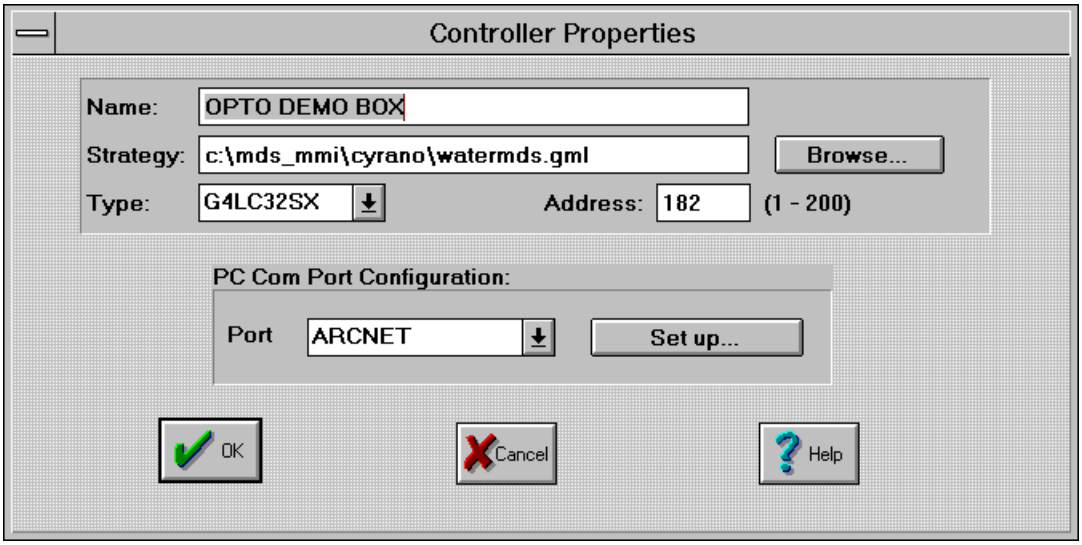

Figure 4- 3: Controller Properties Dialog Box

Name — To add a controller, enter its name exactly as it appears in the Cyrano strategy. Use the Browse button to easily find your Cyrano strategy and enter the controller's name and other properties. If you selected the Modify button from the Controllers dialog box, the controller name automatically appears. Cyrano files end with a .GML extension.

Strategy — To specify the name of the Cyrano strategy running in your controller, enter the full pathname of the file. Use the Browse button to easily enter the filename. Cyrano strategy files end with a .GML extension. If you selected the Modify button from the Controllers dialog box, the controller strategy name automatically appears.

Type — To select the Mistic controller model you are configuring, choose an option from the Type drop-down list. The options are: G4LC32, G4LC32SX, G4LC32ISA, and M4RTU. If you selected the Modify button from the Controllers dialog box, the controller type automatically appears.

Address

To select the controller's address, enter a value in the Address field. If you selected the Modify button from the Controllers dialog box, the address automatically appears.

Table 4-5: *mistic* Controller Address Ranges

Controller	Address Range
G4LC32	1—255
G4LC32SX	1—200
G4LC32ISA	1—255
M4RTU	1—255

Port

Choose an option from the Port drop-down list to select the communication port type used to connect to the Mistic controller. This port is located in the PC that's running MMI. If you selected the Modify button from the Controllers dialog, the port type automatically appears.

Table 4-6: Controller Port Types

Type	Description
ARCnet	Choose this option if you are using an ARCnet port
AC37/AC42	Choose this option if you are using an Opto 22 AC37 RS-485 port, or an AC42, fiber optic port
WIN COM PORT	Choose this option if you are using a RS-232 port
ISA DIRECT	Choose this option if you are using an Opto 22 G4LC32ISA controller
MDS	Choose this option if you are using the Mistic Data Server to access data from the controllers

To configure the selected port, click the Setup button. A dialog box named after the Port option you selected appears. The dialog boxes are described in the following sections.

ARCnet Port Dialog Box

Click Setup in the Controller Properties dialog box to display the ARCnet Port dialog box. Use this dialog box to configure the ARCnet port used to connect the MMI computer to the Mistic controller. Click *OK* to save the options you entered.

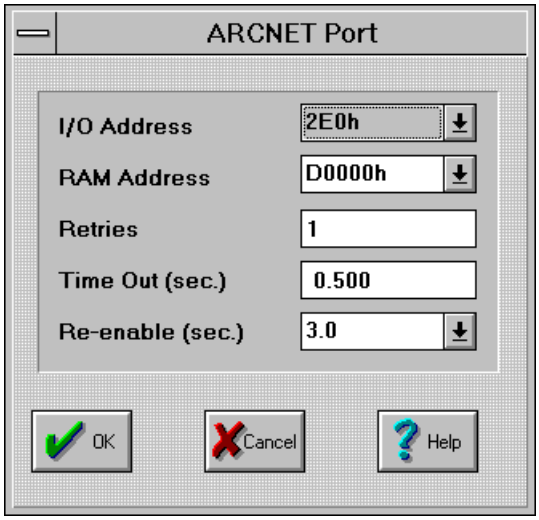

Figure 4-4: ARCnet Port Dialog Box

I/O Address

To specify an I/O address for the ARCnet port, choose an option from the I/O Address drop-down list. The address options are: 260h, 290h, 2E0h, 2F0h, 300h, 350h, 380h, and 3E0h. The address should match the address setting of the ARCnet card.

RAM Address

To specify a RAM address for the ARCnet port, choose an option from the RAM Address drop-down list. The options are: C0000h, C4000h, C8000h, CC000h, D0000h, D4000h, D8000h, DC000h, and E0000h. The RAM address should match the RAM Address setting of the ARCnet card.

Retries

To specify the number of times MMI tries to communicate to a controller after the initial attempt before the controller is considered down, enter a value from 1 to 9. The default value is 1.

Time Out(sec.)

Enter a value from 0.2 to 600 to specify the time (in seconds) MMI waits for a response from the controller between each communication attempt (set by the Retries option). Failure by the controller to respond results in an error message sent to the Event Log window. The default time-out value is 0.5 (seconds).

Re-enable

To specify the time interval to wait before checking for a Mistic controller response after it has failed to respond. This property frees up the computer's CPU for other tasks during this waiting period. The options available are 1, 3, 10, and 30 seconds. The MMI default re-enable time is 3 seconds.

AC37/AC42 Port Dialog Box

Click Setup in the Controller Properties dialog box to display the AC37/AC42 Port dialog box. Use this dialog box to enter settings for your AC37, RS-485 port or your AC42, fiber optic port. Click *OK* to save the options you entered.

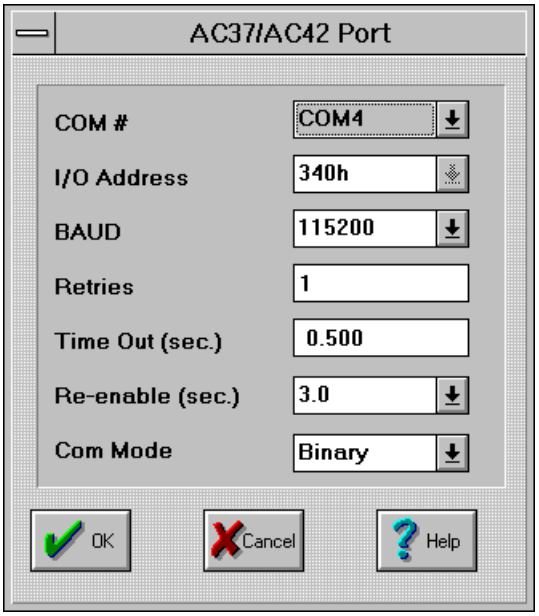

Figure 4-5: AC37/AC42 Port Dialog Box

COM #

To select a communication port, choose a port from the COM # drop-down list. The options available are: COM1, COM2, COM3, COM4, COM5, COM6, and Custom. The Custom port option allows you to enter an address in the I/O Address field. All other COM ports have dedicated I/O addresses and cannot be changed. The default COM # is COM3.

Choose Custom if your port's address is configured differently from standard I/O Address settings. Refer to the I/O Address option description for the standard address settings.

I/O Address

This option displays the dedicated I/O address for the COM port selected in the COM # option. Table 4-7 shows the assigned I/O Address to each COM#. If the Custom port was chosen, assign an address from the drop-down list. The addresses available for the Custom option are 260h, 290h, 2E0h, 2F0h, 300h, and 350h. Make sure the address you choose is assigned to only one communication port. The default I/O address is 348h (the typical Opto 22 address setting for the default COM3 port).

Table 4-7: AC37/AC42 I/O Addresse

COM #	I/O Address
COM1	3F8h
COM2	2F8h
COM3	348h
COM4	340h
COM5	248h
COM6	240h
Custom	*

* See I/O Address discussion for available addresses.

BAUD

To specify a baud rate, choose an option from the BAUD drop-down list. The options are: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 76800, 115200. The default baud rate is 115200 baud.

Retries

To specify the number of times MMI tries to communicate to a controller after the initial attempt before the controller is considered down, enter a value from 1 to 9. The default value is 1.

Time Out(sec.)

Enter a value from 0.2 to 600 to specify the time (in seconds) MMI waits for a response from the controller between each communication attempt (set by the Retries option). Failure by the controller to respond results in an error message sent to the Event Log Viewer window. The default time-out value is 0.5 (seconds).

Re-enable

To specify the time interval to wait before checking for a Mistic controller response after it has failed to respond. This property frees up the computer's CPU for other tasks during this waiting period. The options available are 1, 3, 10, and 30 seconds. The MMI default re-enable time is 3 seconds.

Com Mode

To select the communication mode used by the host computer to the controller, choose the Binary or ASCII option from the Com Mode drop-down list. The Com Mode chooses the type of information packets exchanged by the host computer and controller. The default communication mode is binary.

Use ASCII mode if there is a modem between the MDS computer and Mistic controller. Make sure you configure the Mistic controller for ASCII mode as well. (Consult your controller's user's guide for this setting.) Most modems cannot understand the Opto 22 binary protocol.

ISA Direct Dialog box

Click Setup in the Controller Properties dialog box with the ISA DIRECT port option selected to display the ISA DIRECT Port dialog box. Enter settings for your G4LC32ISA's PC COM port connection. Click *OK* to save the settings you entered.

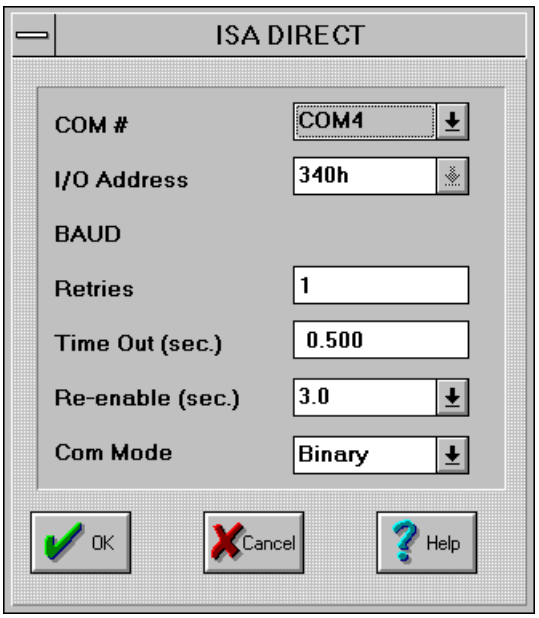

Figure 4-6: ISA Direct Dialog Box

COM #

To select a communication port, choose a port from the COM # drop-down list. The options are: COM1, COM2, COM3, COM4, COM5, and COM6. The default COM # is COM3.

I/O Address

This field displays the communication I/O address for the G4LC32ISA controller. Communication port I/O addresses may be viewed and configured in the Ports program group from the Windows Control Panel. Make sure the I/O address matches the I/O address setting on the G4LC32ISA. Also verify the I/O address is unique from any other address assigned to a card in the computer.

BAUD

This field is not displayed. This parameter does not apply to the G4LC32ISA.

Retries

To specify the number of times MMI tries to communicate to a controller after the initial attempt before the controller is considered down, enter a value from 1 to 9. The default value is 1.

Time Out(sec.)

Enter a value from 0.2 to 600 to specify the time (in seconds) MMI waits for a response from the controller between each communication attempt (set by the Retries option). Failure by the controller to respond results in an error message sent to the Event Log Viewer. The default time-out value is 0.5 (seconds).

Re-enable

To specify the time interval to wait before checking for a Mistic controller response after it has failed to respond. This property frees up the computer's CPU for other tasks during this waiting period. MMI options available are 1, 3, 10, and 30 seconds. The MMI default re-enable time is 3 seconds.

Com Mode

To select the communication mode used by the host computer to the controller, choose the Binary or ASCII option from the Com Mode drop-down list. The Com Mode chooses the type of information packets exchanged by the host computer and controller. The default communication mode is binary.

Binary mode is faster and is typically used. If you are configuring a G4LC32ISA controller, choose the binary communication mode.

WIN COM PORT Dialog Box

Click Setup in the Controller Properties dialog box with the WIN COM port option selected to display the WIN COM Port dialog box. Use this dialog box to enter settings for your RS-232 port. Click *OK* to save the settings you entered.

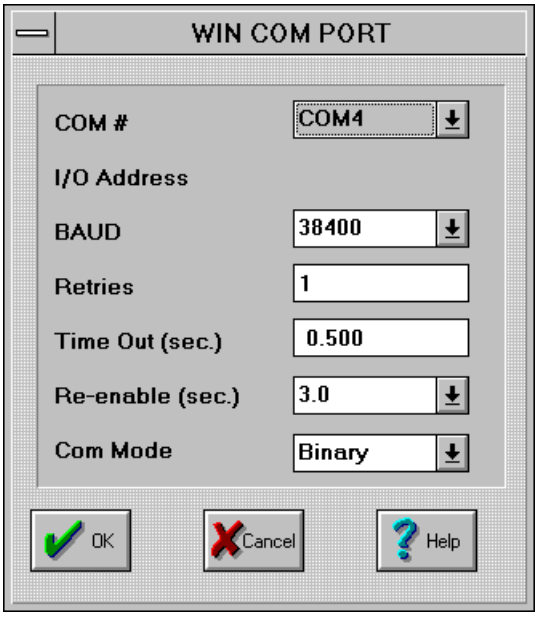

Figure 4-7 : WIN COM PORT Dialog Box

COM #

To select a communication port, choose a port from the COM # drop-down list. The options are: COM1, COM2, COM3, and COM4. The default COM # is COM3.

I/O Address

This field is not displayed. Communication port I/O addresses may be viewed and configured in the Ports program group from the Windows Control Panel. Make sure the address you choose is assigned to only one communication port.

BAUD

To specify a baud rate, choose an option from the BAUD drop-down list. The options are: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 76800, 115200. The default baud rate is 38400 baud.

Retries

To specify the number of times MMI tries to communicate to a controller after the initial attempt before the controller is considered down, enter a value from 1 to 9. The default value is 1.

Time Out(sec.)

Enter a value from 0.2 to 600 to specify the time (in seconds) MMI waits for a response from the controller between each communication attempt (set by the Retries option). Failure by the controller to respond results in an error message sent to the Event Log Viewer. The default time-out value is 0.5 (seconds).

Re-enable

To specify the time interval to wait before checking for a Mistic controller response after it has failed to respond. This property frees up the computer's CPU for other tasks during this waiting period. The options available are 1, 3, 10, and 30 seconds. The MMI default re-enable time is 3 seconds.

Com Mode

To select the communication mode used by the host computer to the controller, choose the Binary or ASCII option from the Com Mode drop-down list. The Com Mode chooses the type of information packets exchanged by the host computer and controller. The default communication mode is binary.

Use ASCII mode if there is a modem between the MMI computer and Mistic controller. Make sure you configure the Mistic controller for ASCII mode as well. (Consult your controller's user's guide for this setting.) Most modems cannot understand the Opto 22 binary protocol.

MDS Port Dialog Box

This dialog box explains the Mistic Data Server (MDS), communications port interface. It is displayed when MDS is the Port option and the Setup button is selected from the Controller Properties dialog box.

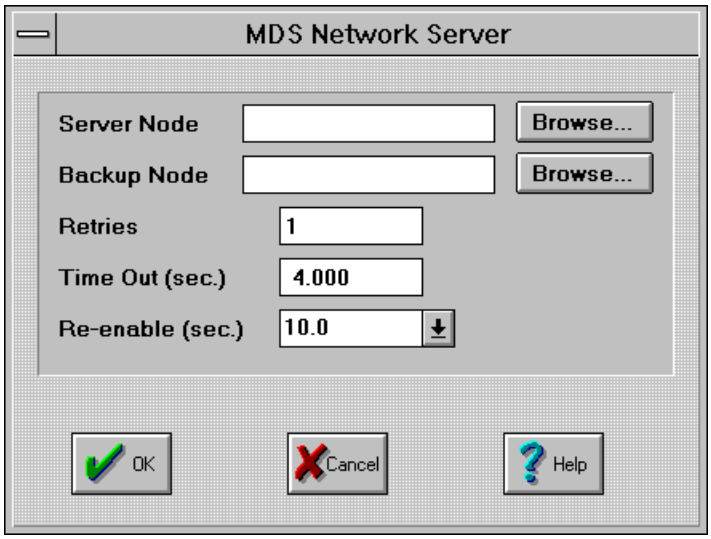

Figure 4-8: MDS Port Dialog Box

The description corresponds to the MDS computer's network configuration. Typically the Mistic MMI computer is connected to another computer running the MDS program. The computer running MDS has a physical connection to the Mistic controller(s). This physical connection and configuration is handled by the MDS Administrator program and is transparent to the Mistic MMI.

Server Node	This is the main MDS server's node name. Use the Browse button to quickly locate and enter the node name. If the PC is not connected to a network (Mistic MMI and MDS are running on the same computer), enter the PC's name.
Backup Node	This optional parameter is used to configure a backup MDS server. Use the Browse button to quickly locate and enter the node name.
Retries	This is the number of times a message is retransmitted by the Runtime before MDS is considered down and an error condition is declared. The default value is one retry.
Time Out (sec.)	This is the period of time that the Runtime waits for a response from MDS before an error condition is declared. The default value is 4 seconds.
Re-enable (sec.)	This is the period of time the MMI Runtime waits after a communication attempt has failed to the MDS before trying to re-establish communication. The MMI Runtime uses the Re-enable time to try to setup and enable a disconnected MDS server. The default value is 10 seconds.

CHAPTER 5

SCANNING

OVERVIEW

The Mistic MMI has an internal scanner that is responsible for acquiring data for tags from one or more controllers. During configuration, tags are connected to graphic objects in the MMI. Understanding how the scanner functions is important to optimizing your system's performance.

This first part of this chapter discusses some important concepts about scanning and the MMI. The latter part of this chapter presents the dialog box used to configure scan times.

WINDOWS

The Mistic MMI supports three different window states: Open, Iconified, and Closed. The state of a window determines how tags for that window will be scanned and whether or not the tags are updated to the display. Any time a window is open, its associated tags are scanned.

Note: An open window is any window that's opened, not just the active (top most) window.

It is suggested that from the Configurator you configure as few windows open as necessary during Runtime. This reduces the chance the scanner will overrun.

Iconified windows scan their data values but do not update the display. By iconifying a window, you reduce the heavy Windows graphics overhead. Since the window does not update the display, that time can be used by other open windows. Keep in mind that since an iconified window still scans its data, the communication overhead is unchanged.

Closed windows do not scan values or update the display. A window should be closed if the information in the window is no longer needed. This greatly reduces the communication and graphic burden on the system.

REFRESH TIME GROUP

Each data value displayed by the MMI belongs to a Refresh Time Group, Group0 by default. The refresh time configures how often a value is scanned. Up to seven groups (Group0—Group6) with different refresh times can be configured in the the Mistic MMI. System performance has a direct relationship to refresh time. Avoid using fast (less than 1/2 second) refresh times on a large number of points to minimize scanner overrun errors.

SCAN GROUP

There are four different types of Scan Groups: Window, Triggers, Trend, and Historic Log. All the tags displayed in a window belong to that window's scan group. A tag can optionally belong to a trend group and a historic log group. The points that make up a window's scan group are scanned based on the state of the window. If the window is closed, then no point scanning in the window occurs.

When a point is connected to a trend or to the historic log, the point belongs to a Trend Scan Group or a Historic Log Scan Group. The Trend and Historic Log Scan Groups can be configured to always be scanned regardless of window state, or scanned only when specific occurrences happen. Trend scan groups have scan disabling options based on its window state. If the window is maximized or minimized, scan disabling is not available. The Historic Log scan group can be configured as a trigger-based scan group using the Start and Stop Trigger options to activate and stop the scan. Keep in mind the number of points configured on trends and in historic logs can dramatically impact system speed.

FRESHNESS

When an I/O point is required by the scanner, the scanner must request the data from the controller. The controller must then get the data from the I/O unit. This can be very time consuming since the controller must communicate with the I/O unit and wait for the I/O unit to respond. Since the controller program is likely to have recently used an I/O point, this information can be used to lessen the communication burden. Every time an I/O point is accessed by the controller, the value and time it was read from the I/O unit is stored in the controller's memory. When a request is made from the MMI to get an I/O value, the time of the last read is checked. If the last read is within the refresh time for that point, the controller's last value is used. No request for the point will be sent to the I/O unit. This greatly reduces I/O communication overhead.

DIALOG BOXES

The dialog box used to configure scan times and freshness values in the MMI Configurator is discussed in this section.

Refresh Times Dialog Box

To configure refresh times for data I/O groups, select the Configure→Refresh Times menu option from the MMI Configurator. The Refresh Time Group dialog box is displayed.

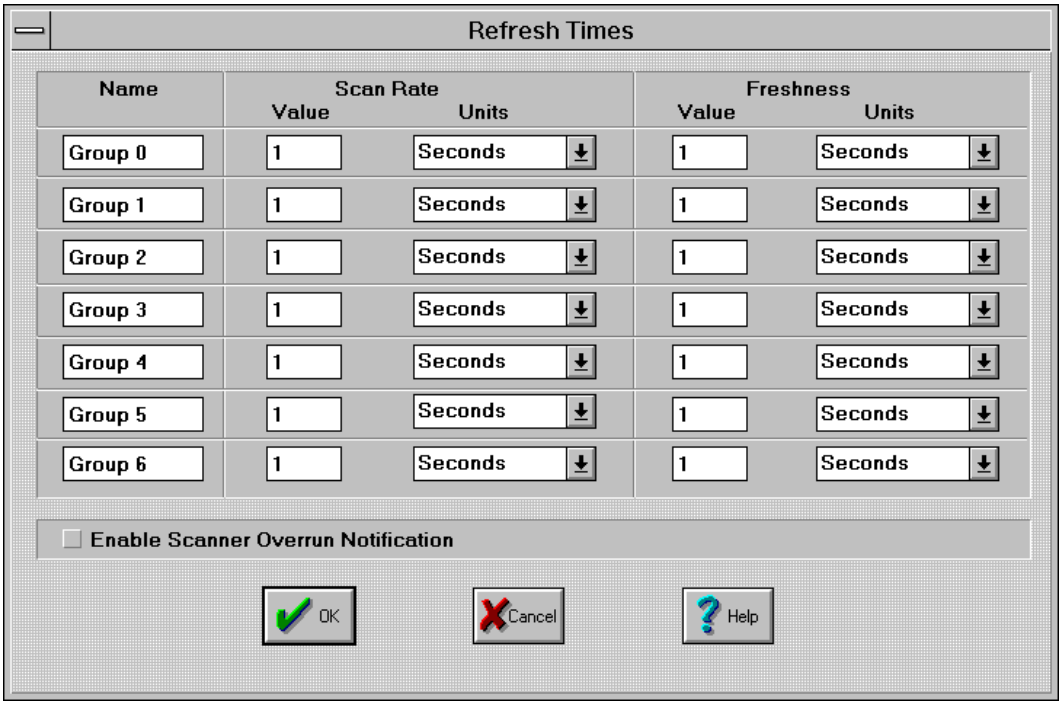

Figure 5-1: Refresh Time Group Dialog Box

Name

Specify a name for the refresh time you want to set up. The name is used in the MMI request for a data item. The name can be up to 15 characters long. Avoid using the "!" and "|" characters in the name. Spaces are also valid characters but when referencing names with spaces, don't omit the spaces or substitute the "_" character for spaces.

Scan Rate

To specify how often the MMI scans the controllers for data, enter a value from 0 to 9999 in the Value field and a unit of time from the Units drop-down list. The unit options are: milliseconds, seconds, minutes, hours, days, and months. The scan rate must be greater than or equal to the value in the Freshness field. The greater the value, the more time between I/O readings and the fewer times the controller is scanned.

Freshness

To specify how current (fresh) the data from the controller must be, enter a value from 0 to 9999 in the Value field and a unit of time from the Units drop-down list. The unit options are: milliseconds, seconds, minutes, hours, days, and months. The freshness value must be less than or equal to the value in the Scan Rate field.

If the data available from the controller is older than the time specified in the freshness field, the controller scans the I/O units for new data. The higher the freshness value, the less the controller's throughput is affected. The lower the freshness value, the more likely the I/O units will need to be scanned.

Enable Scanner Overrun Notification

Check this box to post error messages in the Event Log during runtime. If this box is unchecked, Scanner Overrun error messages will be ignored by MMI Runtime.

DRAW WINDOWS

OVERVIEW

A draw window is any window that allows the addition of graphics. A draw window has static attributes of position, size, and color. It also has a dynamic attribute of a draw window visual state.

DIALOG BOXES

The dialog boxes used to create, open, and close draw windows are discussed in this section. Use the Open or Close windows dialog boxes to manipulate windows in the Configurator. Windows configured as closed or open upon leaving the Configurator are assigned this state at Runtime.

Window Properties Dialog Box

This dialog box is displayed whenever the properties of a draw window must be specified or modified. Selecting the Window→New command displays the Window Properties dialog box.

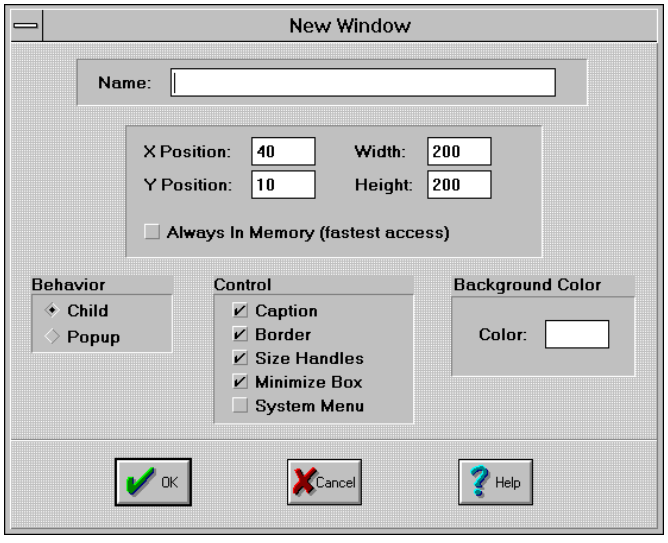

Figure 6-1: New Window Properties Dialog Box

Name

The unique name of a draw window within a project. The name may be up to 20 characters long. Leading and trailing blanks are ignored and are stripped off when the dialog box is closed.

X & Y Position

The X and Y Position fields define the upper left corner of the draw window with respect to the client area of the program. Position X=0 and Y=0 is the upper, left-most corner of the draw window. The default positions are X=40 and Y=10.

Width & Height

These fields define the size of the draw window in pixels. The default width and height is 200.

Always in Memory

This option specifies this window's information should be loaded and always saved in the MMI computer's memory during Runtime. Normally, only opened or iconified windows are saved in memory. Use this option for a window you know will be opened and closed often. This will save you time when this window is opened.

There are tradeoffs when using this option. The more windows you have with this option selected, the more computer memory is used and the more time your initial MMI setup will take. Fewer windows with this option use less computer memory, speeds up the initial MMI setup, but costs you time when a window is opened.

Note, windows with trends are always saved in memory. If you are using the Mistic MMI with the Mistic Data Server (MDS), all windows are always saved in memory.

Behavior

Selects the type of window being created. Child windows appear on top of currently displayed windows. When a Child window is closed, any window(s) hidden by it reappears. Child windows stay within the boundaries of the main draw window when it is active or iconified. The Child window becomes an active window when any portion of its window is clicked.

Popup windows can appear anywhere inside or outside the boundaries of the main window. When a Popup window is iconified, its icon appears in the lower left corner of your screen and is not bound by the boundaries of the main draw window.

Control — This section defines the style of the draw window. Check the appropriate box to apply that style element to the draw window. A draw window can have these optional featuress: a Caption, a Border, Size Handles, a Minimize Box, and a System Menu. Selection of some elements will automatically select another, e.g., selecting Caption forces a Border selection as well.

Color — Specifies the background color of the draw window. Selecting the color button displays the Color dialog box. Choose a color from the palette and click *OK*.

Open Windows Dialog Box

To display the Open Windows dialog box, select the Configure→Open menu option. Use this dialog box to open windows in the Configurator. All currently closed windows are listed and any number of them may be selected for opening by simply clicking on their name and then *OK*. If a closed window has tags which must be scanned, the scanning restarts when the window is opened. Windows configured as closed or open upon leaving the Configurator are assigned this state at Runtime.

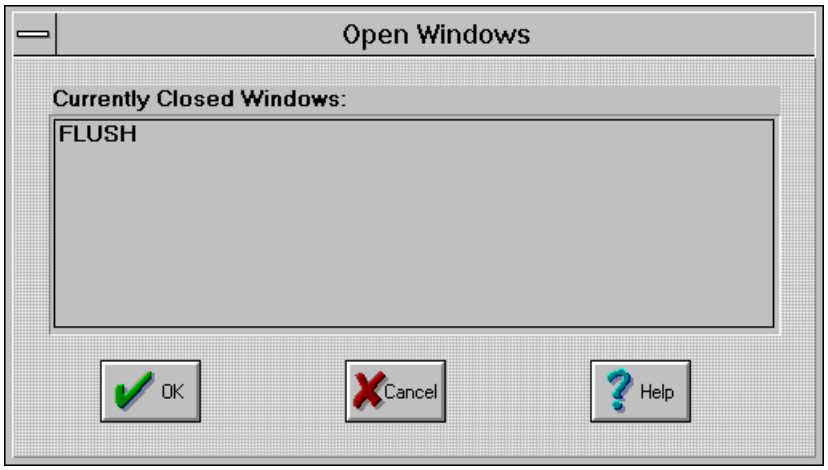

Figure 6-2: Open Windows Dialog Box

Close Windows Dialog Box

To display the Close Windows dialog box, select the Configure→Close menu option. Use this dialog box to close windows in the Configurator. All currently open and iconified windows are listed and any number of them may be selected for closing. If windows are closed in the MMI Runtime, any scanning of tag values associated with the windows ceases until the window is opened again. Windows configured as closed or open upon leaving the Configurator are assigned this state at Runtime.

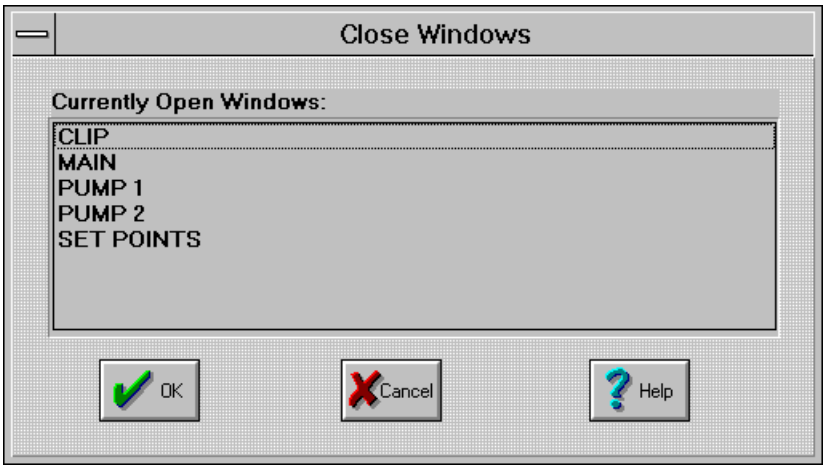

Figure 6-3: Close Windows Dialog Box

GRAPHICS

OVERVIEW

The purpose of the Mistic MMI is to display a graphic representation of a process or system and allow you to interact with that representation. Use the MMI Configurator to create your project's graphics.

The first part of this chapter reviews concepts about graphics, how to create, and how to manipulate them. The latter part presents the dialogs used to define the behavior of graphics with dynamic attributes.

GRAPHIC MANIPULATION

Building Graphics

The Mistic MMI configurator provides several tools to draw graphics. The Tool menu and the Tool Bar provide the basic building blocks to construct all graphics. These tools allow you to choose the type of graphic object you need to build a given image. Each of the tools is classified as a primary graphic or an advanced graphic. Primary graphics include lines, rectangles, circles, and bitmaps. An advanced graphic is a trend.

Selecting Graphics

One of the most important tools is the Select tool. Before any operation can be performed on a graphic or group of graphics, it must be selected. Selecting a graphic tells the graphics editor which items will be affected by the next command.

Figure 7-1: Selecting a Graphic in the MMI

When a graphic or group of graphics is selected, two types of marks are used to identify the graphics in the selection. Eight sizing handles are used to mark the minimum rectangular area that surrounds the selected graphic or graphics. Each graphic that is included in the selection has a selection mark. It serves to identify it as a member of the selection when more than one graphic is selected. The position of the graphics selection mark varies depending on the type of graphic. For example, a rectangle has the mark in the upper left corner and an ellipse has it at the top.

There are two ways to select a graphic using the select tool. The first is to place the pointer over the graphic and click the left mouse button. A set of sizing handles appears outside the selected graphic and a selection mark is added to the graphic. Additional graphics can be added to the selection by placing the pointer over another graphic and holding the SHIFT key down while clicking the left mouse button. This graphic will have a selection mark added to it and the sizing handles will be repositioned if the newly added graphic was outside the rectangular area marked by the sizing handles.

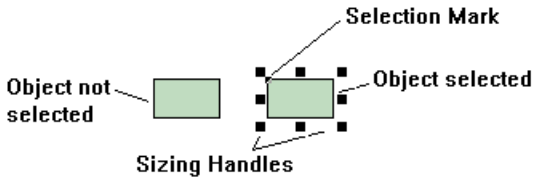

Figure 7-2: Sizing Handles Around One Selected Graphic

The second way to select a graphic is to use the pointer to draw a box around the graphics. To do this, place the pointer just outside the graphic to be selected and hold down the left mouse button. Next, while keeping the mouse button down, stretch the box over the graphic. Release the mouse button when the box completely surrounds the graphic or graphics to be selected. A set of sizing handles appears outside the selected graphics and each selected graphic has a selection mark added to it. This method can select only those objects completely surrounded by the box. More than one graphic may be selected at a time. Additional graphics can be added to the selection by placing the pointer over another graphic and holding the SHIFT key down while clicking the left mouse button.

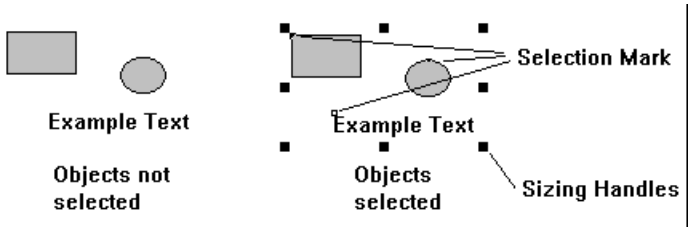

Figure 7-3: Sizing Handles Around a Group of Selected Graphics

Sometimes it is difficult to select a graphic because other objects are overlapping it. When this happens, hold down the CTRL key while left clicking the mouse. This causes the selector to cycle through the objects under the pointer.

De-selecting Graphics

Graphics can be de-selected by placing the pointer over an area of the draw window that is not covered by a graphic and pressing the left mouse button. When the selection contains more than one graphic, individual graphics can be de-selected by placing the pointer over the graphic and pressing the SHIFT key + left mouse button.

Sizing Handles

Sizing handles appear around any graphic or group of graphics that are selected. The sizing handles are a visual cue that one or more graphics is selected. To use most commands on the Edit menu, one or more graphics must be selected. When nothing is selected, these Edit Menu items appear as disabled text. This indicates the command is not available.

Sizing Handles can also be used to change the size of selected objects. To resize a graphic, place the pointer over one of the eight handles and hold down the left mouse button. Stretch the graphic by moving the handle away from the graphic, or shrink the graphic by moving the handle into the graphic. Release the left mouse button to fix the graphic.

Moving Graphics

Moving a graphic is a very common operation. To move a graphic, or group of graphics, select the items to be moved using one of the methods described in the *Selecting Graphics* sections. Place the pointer inside the area defined by the sizing handles and hold down the left mouse button. Move the graphics to their new location and release the mouse button. If you find it difficult to place a graphic exactly where you want it, select the graphic and then use the keyboard arrow keys. Each time an arrow key is pressed, the graphic moves one pixel in that direction.

Setting Attributes

Attributes control the appearance of most graphics. Line Color, Line Width, Line Style, Fill Color, and Fill Pattern are examples of graphic attributes. Attributes for a graphic can be set before it is drawn. Use the Style menu to select different attributes. Changing the settings on the Style Menu when no graphics are selected, sets the default attributes. Any graphics subsequently drawn assume these attributes.

To change an attribute of a graphic or graphics that have already been drawn, select the graphics you want to change and then use the Style Menu commands to specify the new attribute. When graphics are selected and an attribute is changed on the Style Menu, only the selected graphics are affected. The default settings do not change.

Grouping Objects

Sometimes it is easier to handle several graphics as one entity. The Mistic MMI allows any number of graphic objects to be part of a Group. When a set of graphics is grouped, they act as one graphic. They can be moved and sized just like any other graphic. Examples of graphics that are typically grouped are PID face plates, bar graphs, dial faces, and buttons.

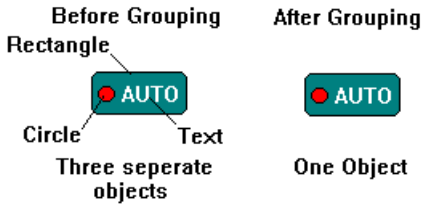

Figure 7-4: Grouping Objects

To Group a set of graphics, select all of the graphics with the select tool. Then select the Group command from the Edit menu. The objects now act as one graphic.

If you need to edit a member of a grouped graphic, the Ungroup command on the Edit Menu breaks the graphic into its individual pieces.

The Mistic MMI also allows grouped objects to be grouped.

Graphic Order

When you place objects in the drawing area, the graphic that is placed last appears in front of any previous objects that it overlaps. The graphic is said to be in "front" of the others. To build complex objects, it may be desirable to change the order in which a graphic appears. The Mistic MMI allows the order of objects to be changed. The Edit menu contains two commands, Bring to Front and Send to Back, which are used to reorder objects.

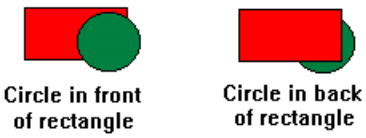

Figure 7-5: Multiple Graphics and Their Order

To change the order of a graphic, select the graphic with the Select tool. Choose either the Bring To Front or Send to Back command from the Edit Menu.

Bitmaps

Bitmaps are pixel-based pictures that can be displayed on computers. There are many different file formats for bitmaps, e.g. TIFF, PCX, GIF, etc. The Mistic MMI supports the native Windows bitmap format which has a file extension of .BMP. Currently the MMI supports 16-color bitmaps. If you have bitmaps that have a format other than .BMP, and you wish to use them with the MMI, there are several commercial and shareware programs that are capable of converting a graphics file from one format to another.

You can save the contents of a draw window as a .BMP file by selecting the Save as Bitmap option on the File menu. This can be useful for documentation purposes or if you have a picture that you wish to use as a bitmap in other draw windows.

Another way of getting bitmaps in and out of the MMI is via the Windows clipboard. If you select one or more graphic objects in a draw window, and then choose Cut or Copy from the Edit menu, the selected objects will be placed on the clipboard so that other Windows programs can Copy or Paste them (as bitmaps) into their workspace. Alternately, if you use a Windows program to cut or copy bitmaps to the Clipboard, you can select the Edit→Paste menu option to paste a bitmap from the clipboard into a draw window.

DYNAMIC ATTRIBUTES

Dynamic objects in the Mistic MMI have what are called Dynamic Attributes. The Dynamic Attributes of a graphic are edited by double-clicking on a selected graphic or by choosing the Edit→Dynamic Attributes menu option while a graphic is selected. There are two different types of Dynamic Attributes–Controller Driven Attributes (CDA) and Operator Driven Attributes (ODA). At least one controller must be configured before dynamic attributes can be attached.

CDA

Controller Driven Attributes are those attributes of a dynamic object that cause a change in the value or state of a Cyrano tag or another MMI dynamic object. Examples of CDAs are Line Color, Fill Color, Text Color, Visibility, Horizontal Size, Vertical Size, Horizontal Position, Vertical Position and Rotate. An MMI dynamic object with a CDA is therefore affected by data coming into the object from an external source (e.g. a tag from a Cyrano strategy running on a Mistic processor).

ODA

Operator Driven Attributes are those attributes of a dynamic object that cause a change in the value or state of a Cyrano tag or another MMI dynamic object. Examples of ODAs are Horizontal Slider, Vertical Slider, Left Button–Send Data and Left Button–Windows. These dynamic attributes cause an object to send data to, or affect the state of a Cyrano tag or another MMI dynamic object. ODA changes take effect immediately because they are not a part of any scan group.

DIALOG BOXES

The dialog boxes used to configure dynamic attributes for graphics are discussed in this section. The Dynamic Attributes dialog box displays all possible dynamic attributes that can be configured. Each dynamic attribute that is edited from this dialog box has a corresponding dialog box to enter configuration changes. Each of these dialog boxes requires a tag to be identified for the dynamic attribute. The Tag Dialog box is used to select this tag.

Dynamic Attributes Dialog Box

The Dynamic Attributes dialog box appears when the Edit→Dynamic Attributes menu option is chosen while a graphic is selected. The dialog box is divided into three sections. The Object information secyion are read-only fields which display position and size of the selected graphic. The Controller Driven Attributes list shows all controller driven attributes, and the Operator Driven Attributes list shows all operator driven attributes that can be applied to the selected graphic. They both allow you to select an attribute and edit its parameters.

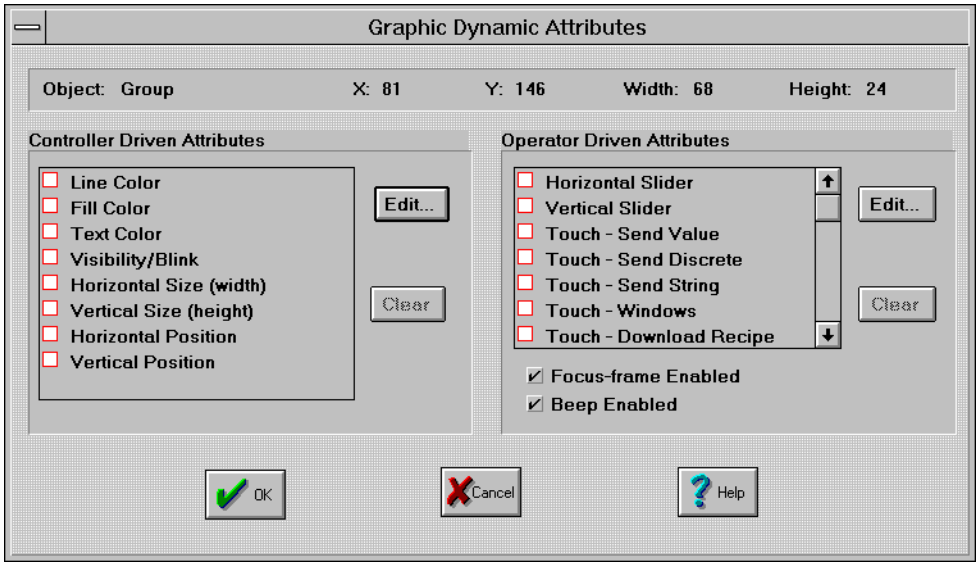

Figure 7-6: Dynamic Attributes Dialog Box

Controller Driven Attributes List (Dynamic Attributes Dialog Box)

This section lists all controller driven attributes that can be applied to the selected graphic. Each entry is preceded by a checkbox which indicates if the dynamic attribute is selected. An empty square indicates a dynamic attribute of that type is not associated with the selected graphic. A checked square indicates a dynamic attribute of that type is associated with the selected graphic. A circle with a slash through it indicates a dynamic attribute of that type cannot be associated with the selected graphic because it conflicts with another dynamic attribute previously selected for that graphic.

Selecting an entry and then pressing the Edit button, or double-clicking on an entry, displays the dialog box to configure the selected dynamic attribute.

Edit Button — Displays the dialog box to configure the dynamic attribute selected in the Controller Driven Attributes List box.

Clear Button — Clears the dynamic attribute selected in the Controller Driven Attributes List box.

Operator Driven Attributes List (Dynamic Attributes Dialog Box)

This section lists all operator driven attributes that can be applied to the selected graphic. Each entry is preceded by a checkbox which indicates if the dynamic attribute is selected. An empty square indicates a dynamic attribute of that type is not associated with the selected graphic. A checked square indicates a dynamic attribute of that type is associated with the selected graphic. A circle with a slash through it indicates a dynamic attribute of that type cannot be associated with the selected graphic because it conflicts with another dynamic attribute previously selected for that graphic.

Selecting an entry and then pressing the Edit button, or double-clicking on an entry, displays the dialog box to configure the selected dynamic attribute.

Edit Button — Displays the dialog box to configure the dynamic attribute selected in the Operator Driven Attributes List.

Clear Button — Clears the dynamic attribute selected in the Operator Driven Attributes List box.

Focus-Frame Enable — The Focus-Frame is a thick rectangle which is drawn around a graphic at Runtime when the mouse is over the graphic and the graphic has Operator Driven Attributes configured. Check this box to enable display of the focus-frame.

Beep Enable — Check this box if you want a beep to occur at Runtime whenever the mouse is clicked on this graphic and it has an Operator Driven Attribute configured. If the beep is enabled, it will only occur for Operator Driven Attributes which do not prompt for user interaction.

Tag Selection Dialog Box

The Tag dialog box is displayed when the Name field's ? button is clicked from one of the dynamic attribute dialog boxes that's being edited. The dialog box lets you select the Cyrano tag you want to work with. The dialog box is divided into 5 sections: Controller, Item Type, Item Name List, Selected Fields, and Refresh Time (only for controller driven attributes and triggers).

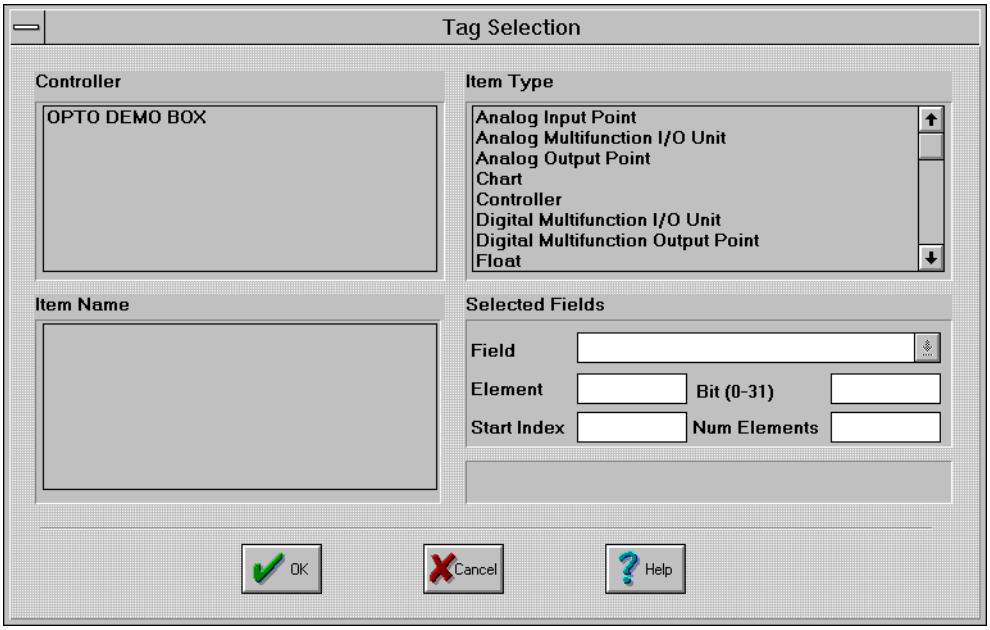

Figure 7-7: Tag Dialog Box

Controller

Select the Mistic controller which contains the tag you wish to use. If only one controller is available, it is automatically selected. Selection of a controller updates the ItemName list box so that it displays a list of the selectable Cyrano data types available in that controller's Cyrano strategy.

Item Type

Select the type of data you wish to use. The list contains only those types defined in the selected controller's Cyrano strategy. Selection of a specific item type updates the Item Name list box . It then displays a list of all the tags of that selection type. The Item Type selection also determines the Selected Field options available.

Item Name

This is an alphabetized list of the available Cyrano tags of the type specified in the ItemType list. You can select the tag of interest from this list.

Selected Fields

The base type of the selected item determines which of these fields, if any, need to have contents specified. If an entry is not needed, then the cursor for the dialog box is prevented from entering that dialog box control.

Field — Specifies what data associated with the tag is of interest. For example, if the tag selected is of Item Type PID, then the available fields are Error, Enable, A/M, Input, Output, Setpoint etc. If the tag Item Type is Digital Multifunction Input Point, the available field is State. If the tag Item Type is FLOAT, the Field list box is disabled.

Bit — If the base type is Integer, a particular bit may be selected from the integer.

Element — If the selected ItemType is one of the Table types and only a single element of the table is desired, then this field can be used to select the index of the single element of interest.

Start Index & Num Elements — To select multiple elements from Item Type Table, use the Start Index to specify the first element and Num Elements to specify how many.

Refresh Time — Allows you to select the refresh time group to be used for scanning. All tags with the same refresh time group are scanned at the same time. A group with a refresh time of 0 seconds is scanned as fast as possible. Use the drop down button to select from the list of refresh time groups. The refresh time parameter is displayed if a controller driven attribute is being edited.

Dynamic Attribute Color Dialog Box

This dialog box is displayed when Line Color, Fill Color, or Text Color is highlighted and the Edit button is selected from the Dynamic Attributes dialog box. It allows you to specify which colors you want associated to the dynamic attributes of the graphic you are editing.

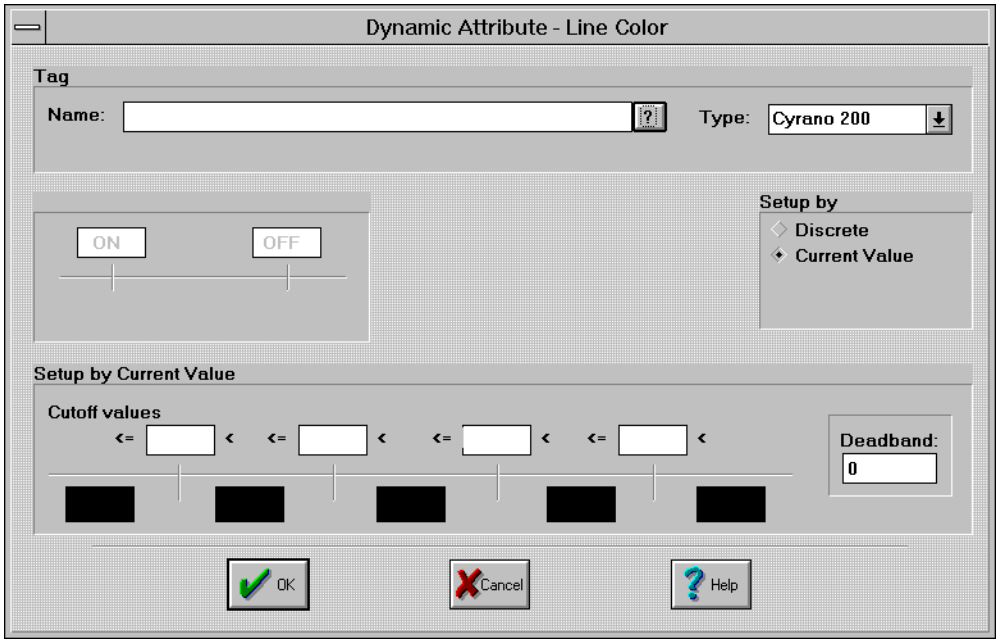

Figure 7-8: Dynamic Attribute Color Dialog Box

Select the Cyrano tag that's used to affect the graphical response of the tag section for this dialog box. As the value of the selected tag's data changes during execution of the Cyrano strategy, the graphic's color changes according to the options entered in this dialog box.

Setup by

Select one of the options to display the appropriate program group.

Selecting Discrete enables the Setup by Discrete control group. This option is normally selected when the tag is a digital input point.

Selecting Current Value enables the Setup by Current Value control group.

Setup by Discrete

When enabled, this control group determines the color used for Tag values of OFF (Tag value of zero) and ON (Tag value not equal to zero). Select the Color button located below the tag value (ON or OFF) to select the desired color.

NOTE: Avoid use of dithered colors.

Setup by Current Value

When enabled, this control group determines the color by comparing tag values against a graphical response scale delineated by cutoff values. The cutoff values are entered in the four edit boxes. These cutoff values separate the graphical response scale into five areas. All areas have a color button to select the desired color.

NOTE: Avoid use of dithered colors.

Deadband

This field is used to specify the deadband value. This value is used in determining whether the graphic should be redrawn as changing data is received from the Mistic processor. In order for the graphic to be redrawn, the reading from the processor must differ from the reading that caused the current graphic state by at least the value specified in the deadband field. Otherwise, the graphic is not redrawn.

Dynamic Attribute Position Dialog Box

This dialog box is displayed when the Horizontal or Vertical Position CDA , or the Horizontal or Vertical Slider ODA is highlighted, and the Edit button is selected from the Dynamic Attributes dialog box. It allows you to specify the position parameters associated with the graphic whose dynamic attributes are being edited. The term "exceeds" used in the dialog box option descriptions is used to indicate a value that may be either greater than or less than the Left/Up or Right/Down value.

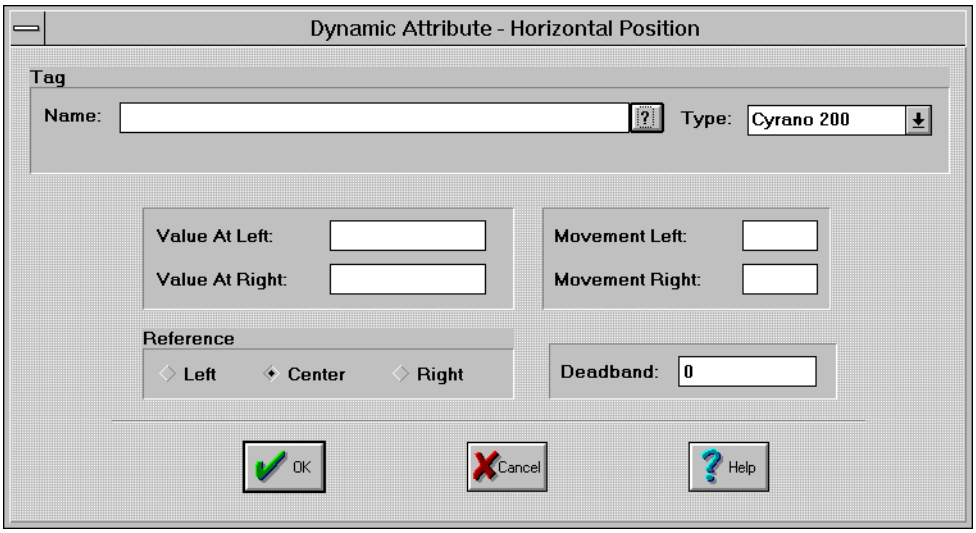

Figure 7-9: Dynamic Attribute Position Dialog Box

Name

Select a Cyrano type tag from the tag section of this dialog box to use as the source of the position data. As the value of the selected tag's data changes during execution of the Cyrano strategy, the graphic's position changes according to the position parameters entered in this dialog box.

Value at Left/Up

Specify the value for the leftmost or topmost position for the tag value from the controller. The Value at Left/Up may be either less than or greater than the Value at Right/Down.The tag position moves in either direction as the data from the tag increases or decreases. If the tag exceeds this value, the graphic is positioned to the leftmost or topmost position as specified by the Movement Left/Up value.

Movement Left/Up

This field defines the maximum number of pixels for movement to the left or in the up direction relative to the default graphic position. The entered value must be a non-negative number. Movement is achieved when the tag returns data that is equal to or exceeds the Value at Left/Up, as explained above.

Value at Right/Bottom

Specify the value for the rightmost or bottommost position for the tag value from the controller. The Value at Right/Bottom may be either less than or greater than the Value at Left/Up.The tag position moves in either direction as the data from the tag increases or decreases. If the tag exceeds this value, the graphic is positioned to the rightmost or bottommost position as specified by the Movement Right/Down value.

Movement Right/Down

This field defines the maximum number of pixels for movement in the right or down direction, relative to the default graphic position. The entered value must be a non-negative number. This movement is achieved when the tag returns data that is equal to or exceeds the Value at Right/Down as explained above.

Reference

Defines the graphic reference point to which graphic movement is applied. This setting is only critical when the graphic's dynamic attributes of size and position are simultaneously modified during runtime. Change in a graphic's size may alter the pixel locations of the graphic's reference points in a different manner. Therefore, it is necessary to specify this reference point within the graphic. Changes in a reference point's pixel location, due to re-sizing, are used in conjunction with pixel movement calculation defined within this dialog to determine a final graphic position.

For example, a graphic's left most point may be used as the reference to which the movement is applied. The scanned tag value may require a graphic position change of 10 pixels to the right and a graphic size change moving the left reference point to the left by 5 pixels. The net change in the graphic's position is then 5 pixels to the right.

Deadband

This field is used to specify the deadband value to be used in determining whether the graphic should be redrawn (for position update) as changing data is received from the Mistic processor. In order for the graphic to be moved to a new position and redrawn, the reading received from the processor must differ from the reading which caused the current position of the graphic by at least the value specified in the deadband field.

Dynamic Attribute Text Input Dialog Box

This dialog box is displayed when a text item is selected in the draw window, the Edit→Edit Dynamic Attributes menu option is selected, the "Text In (from controller)" dynamic attribute is highlighted, and the Edit button is selected from the Dynamic Attributes dialog box. It allows you to specify the data source you want to associate with the text string whose Dynamic Attributes are being edited.

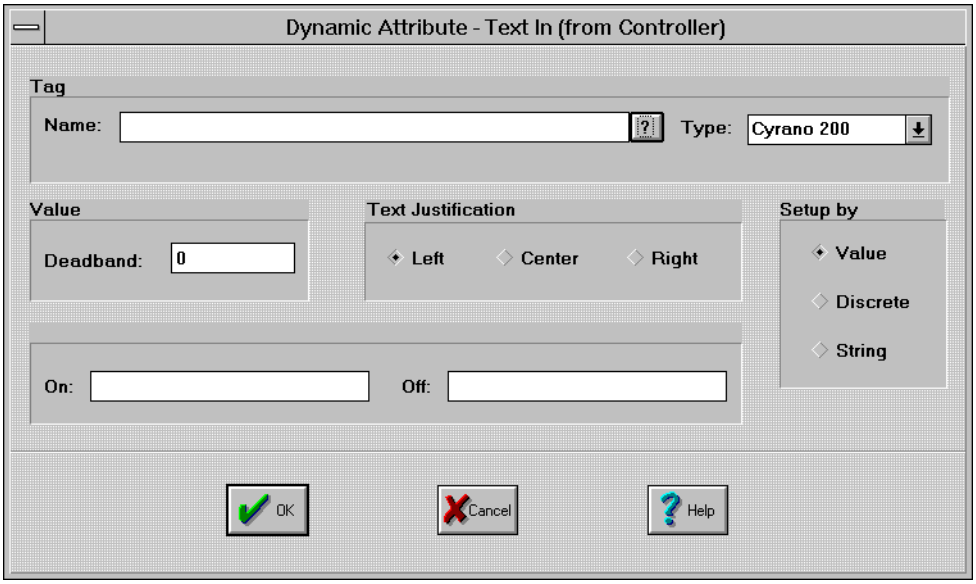

Figure 7-10: Dynamic Attribute Text Input Dialog Box

Name — Select the tag name associated with this text string. Use the Name field's ? button to quickly locate the tag name. As the value of the selected tag's data changes during the execution of the Cyrano strategy, the text is updated to display the value of the data.

Type — This type is always Cyrano 200 source type.

Setup by — Select one of the options to display the appropriate program group. The choices are Value, Discrete, and String.

Text Justification — This radio button group specifies how the displayed text is aligned with respect to the pound signs (###) used as place holders in the text string which has this dynamic attribute. If Left is selected, the left edge of the dynamic text appears where the left most pound sign is. If Right is selected, the dynamic text is positioned such that it ends where the right most pound sign ends. If Center is selected, the center of the dynamic text is positioned at the center of the horizontal space occupied by the pound signs.

Deadband — If you specified Setup by Value, this field is used to specify the Deadband value to be used in determining whether the text value should be updated as changing data is received from the Mistic processor. In order for the text value to be updated, the reading received from the processor must differ from the reading which caused the current text value by at least the value specified in the deadband field. Otherwise, the text value is not updated.

On/Off — If you specified Setup by Discrete, fill in these fields with the strings you want displayed if the Tag's value is ON and OFF, respectively.

Dynamic Attribute Width/Height Dialog Box

This dialog box is displayed when "Horizontal Size (width)" or "Vertical Size (height)" is highlighted and the Edit button is selected from the Dynamic Attributes dialog box. The Dynamic Attributes dialog box is available after a graphic has been selected and the Edit→Edit Dynamic Attributes menu option has been selected. This dialog box allows you to specify which sizing parameters you want to associate with the graphic whose dynamic attributes are being edited.

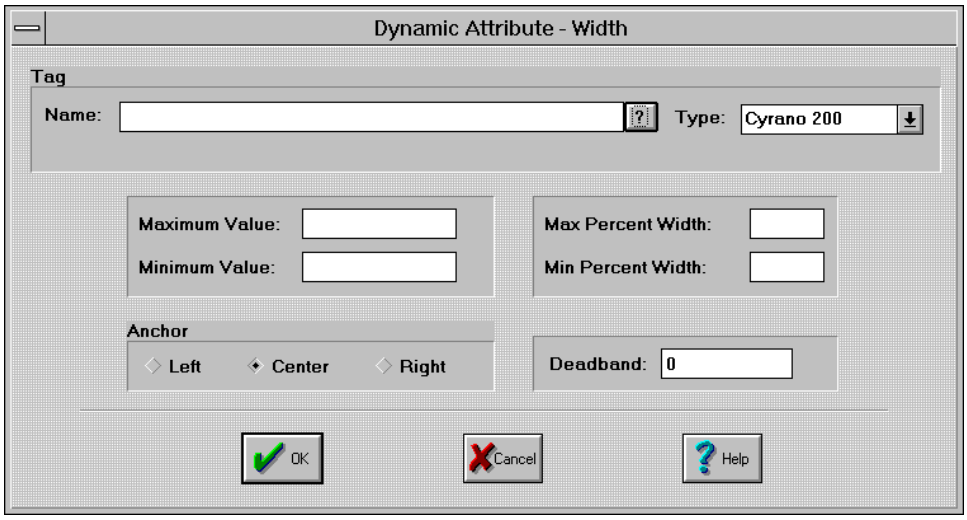

Figure 7-11: Dynamic Attribute Width/Height Dialog Box

Size changes are described in percentage terms of the graphic's full size, which is the size of the graphic produced with the MMI Configurator. Full size is 100 percent, invisible is 0 percent.

(The text in this dialog box may vary according to whether it is being used to specify width or height. In the text that follows, word pairs are used to describe the use of the dialog box, e.g. left/bottom, width/height, etc. Use the word from the pair that is appropriate for the function being configured.)

Tag	Select which Cyrano 200 Tag to use as the source of the sizing data from the Tag section of this dialog box As the value of the selected tag's data changes during execution of the Cyrano strategy, the graphic's size changes in accordance with the parameters that you enter in the dialog box.
Maximum Value	Specify the highest tag value the data from the controller can be. This tag value will produce the Max Percent Width/Height size. If the tag is equal to or exceeds this value, the graphic is sized to the Max Percent size.
Max Percent Width/Height	Specify the maximum percent width/height size that the graphic may achieve. The entered value must be between 0 and 1000. This percentage of full size is achieved when the tag returns data that is equal to or exceeds the Maximum Value.
Minimum Value	Specify the lowest tag value the data from the controller can be. This tag value will produce the Min Percent Width/Height size. If the tag is equal to or less than this value, the graphic is sized to the Min Percent size.
Min Percent Width/Height	This field is used to specify the minimum percent width/height size that the graphic may achieve. The entered value must be between 0 and 1000. This percentage of full size is achieved when the tag returns data that is equal to or less than the Minimum Value, as explained above.
Anchor	The anchor point of the graphic is that which remains fixed while all other points change as the size changes. Left/Bottom fixes the graphic's left/bottom edge, i.e., the graphic's right/top edge moves as it resizes. Right/Top fixes the graphic's right/top edge and the left/bottom moves as it resizes. Center means that both left/bottom and right/top edges move as the graphic resizes while the position of the center remains fixed.
Deadband	This field is used to specify the deadband value to use in determining whether the graphic should be redrawn (for resizing update) as changing data is received from the Mistic processor. In order for the graphic to be resized and redrawn, the reading received from the processor must differ from the reading which caused the current size of the graphic by at least the value specified in the deadband field. Otherwise, the graphic is not resized.

Dynamic Attribute Visible/Blink Dialog Box

This dialog box is displayed when Visibility is highlighted and the Edit button is selected from the Dynamic Attributes dialog box. The Dynamic Attributes dialog box is available after choosing a graphic and selecting the Edit→Edit Dynamic Attributes menu option. The Visible/Blink dialog box allows you to specify the blink rate or visibility associated with the graphic whose dynamic attributes are being edited.

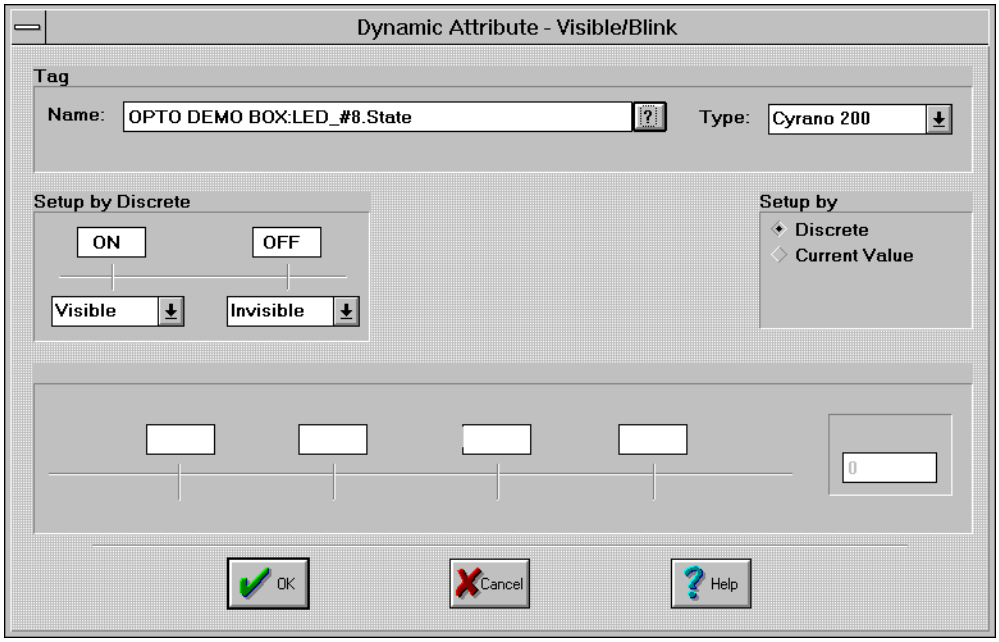

Figure 7-12: Dynamic Attribute Visibility/Blink Dialog Box

Tag

Select which Cyrano 200 Tag to use as the source of the sizing data from the Tag section of this dialog box. As the value of the selected tag's data changes during execution of the Cyrano strategy, the graphic will be visible, invisible or blinking, according to the blink rate or visibility options you entered in the dialog box.

Setup by

This radio button allows the selection of one and only one of the available options. The options are Discrete and Current Value.

Selecting Discrete enables the Setup by Discrete control group. This option is normally selected when the tag is a digital input point.

Selecting Current Value enables the Setup by Current Value control group.

Setup by Discrete

When enabled, this controls group determines the graphical response for Tag values of OFF (tag value of zero) and ON (tag value not equal to zero). Use the drop down list box located below the Tag value (ON or OFF) to select the graphical response. The graphical responses are:

Invisible	Removes the graphic from the display screen.
Visible	Draws the graphic on the display screen.
Slow Blink	Alternates between drawing and removing the graphic at approximately 0.5 hertz rate.
Medium Blink	Alternates between drawing and removing the graphic at approximately a 1 hertz rate.
Fast Blink	Alternates between drawing and removing the graphic at approximately a 2 hertz rate.

Setup by Current Value

When enabled, this controls group determines the graphical response by comparing tag values against a graphical response scale delineated by cutoff values. The cutoff values are entered in the four edit boxes. These cutoff values separate the graphical response scale into five areas. All areas have a drop down list box to select the graphical response. The graphical responses are:

Invisible	Removes the graphic from the display screen.
Visible	Draws the graphic on the display screen.
Slow Blink	Alternates between drawing and removing the graphic at approximately 0.5 hertz rate.
Medium Blink	Alternates between drawing and removing the graphic at approximately a 1 hertz rate.
Fast Blink	Alternates between drawing and removing the graphic at approximately a 2 hertz rate.

Deadband

This field is used to specify the deadband value to be used in determining whether the graphic should be redrawn as changing data is received from the Mistic processor. In order for the graphic to be redrawn, the reading received from the processor must differ from the reading which caused the current graphic state by at least the value specified in the deadband field. Otherwise, the graphic is not redrawn.

Dynamic Attribute Rotate Dialog Box

This dialog box is displayed when Rotate is highlighted and the Edit button is selected from the Dynamic Attributes dialog box. It allows you to specify the rotation parameters associated with the graphic whose dynamic attributes are being edited.

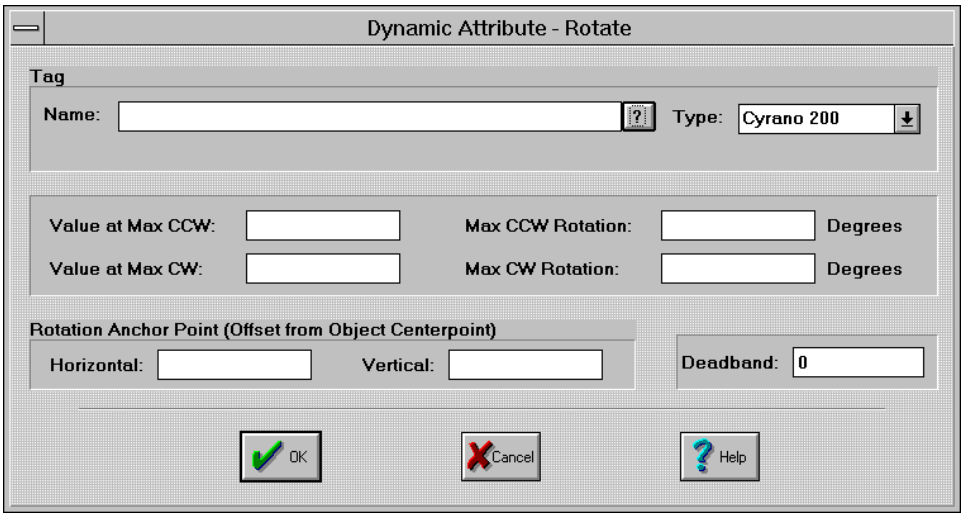

Figure 7-13: Dynamic Attribute Rotate Dialog Box

Tag

Select which Cyrano 200 Tag to use as the source of the rotate data from the Tag section of this dialog box. As the value of the selected tag's data changes during execution of the Cyrano strategy, the graphic rotates in accordance with the rotation parameters entered in the dialog box.

Value at Max CCW

Enter the tag value that represents the value at the maximum counterclockwise rotation. If a tag is read which exceeds this value, the graphic rotates counterclockwise as far as possible, as specified by the Max CCW Rotation. The Value at Max CCW may be either less than or greater than the Value at Max CW. This allows the graphic to rotate in either direction, according to the value of the tag.

Max CCW Rotation

This field is used to specify the maximum counterclockwise rotation angle that the graphic may rotate in degrees from its configured location. The entered value must be a non-negative number. This rotation angle is achieved when the tag returns data that is equal to or exceeds the Value at Max CCW, as explained above.

Value at Max CW

Enter the tag value that represents the value at the maximum clockwise rotation. If a tag is read which exceeds this value, the graphic rotates, clockwise as far as possible, as specified by the Max CW Rotation. The Value at Max CW may be either less than or greater than the Value at Max CCW. This allows the graphic to rotate in either direction, according to the value of the tag.

Max CW Rotation

This field is used to specify the maximum clockwise rotation angle that the graphic may rotate in degrees, from its configured location. The entered value must be a non-negative number. This rotation angle is achieved when the tag returns data that is equal to or exceeds the Value at Max CW, as explained above.

Rotation Anchor Point (Offset from Object Centerpoint)

The rotation anchor point is used to specify the fixed location that the graphic rotates. This location is specified in terms of an offset (in units of pixels) from the centerpoint of the graphic at its configured location. In the field, enter a negative value to specify a position that is to the left of the configured location or a positive value to specify a position that is to the right of the configured location. In the Vertical field, enter a negative value to specify a position that is above the configured location or a positive value to specify a position that is below the configured location. If a value of zero is specified for both fields, then the graphic will rotate about its centerpoint.

Deadband

This field is used to specify the deadband value to use in determining whether the graphic should be redrawn (for rotation update) as changing data is received from the Mistic processor. In order for the graphic to be rotated to a new position and redrawn, the reading received from the processor must differ from the reading which caused the current rotation of the graphic by at least the value specified in the deadband field. Otherwise, the graphic is not rotated from its current position.

Dynamic Attribute Send Value Dialog Box

This dialog box is displayed when the Touch—Send Value is selected from the Dynamic Attributes dialog box and the Edit button is selected. It allows you to specify what output value you want to associate with the graphic whose dynamic attributes are being edited. The Dynamic Attributes dialog box is displayed by selecting the Edit→Edit Dynamic Attributes menu option.

An output value is sent to the Cyrano tag you select from the Tag section of this dialog box. The value is sent when the left mouse button is pressed while the cursor is positioned over the associated graphic.

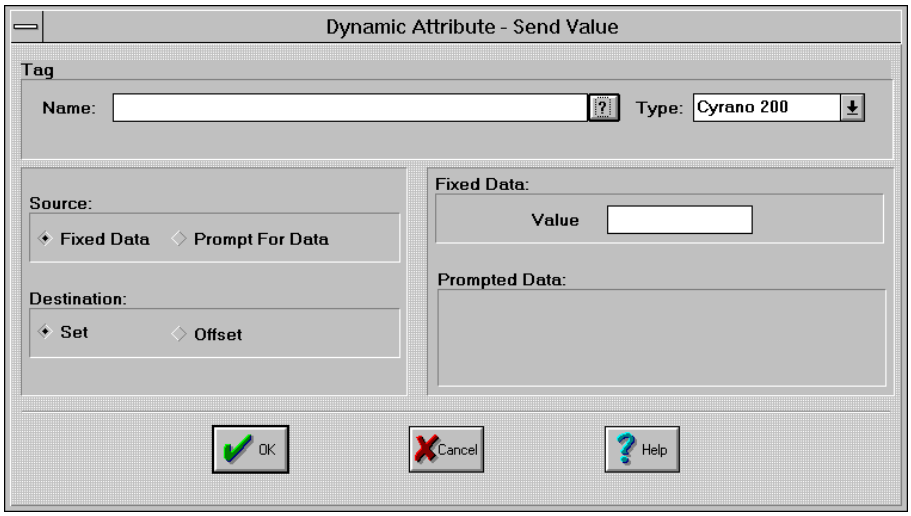

Figure 7-14: Dynamic Attribute Send Value Dialog Box

A numeric keypad is displayed during the MMI Runtime and prompts the user to enter a value if the Send Value is configured with "Prompt For Data" as the source. For computer systems with touch-screens and no attached keyboard, select the "Use On-Screen Keyboard for Touch Screens" from the Configure→Run Time command. This option sizes the keypad to be as large as possible for the video resolution of the Runtime computer monitor.

Name — Choose a Cyrano tag name to receive the value sent. Make sure the tag name type matches the type of data it will receive. Use the ? to quickly locate the Cyrano tagname.

Type — The Cyrano 200 type is the only available choice at this time.

Source — The Fixed Data and Prompt For Data buttons determine the source of the value sent to the Name at Runtime if the graphic is selected.

If the Fixed Data button is selected, the value specified at configuration time is sent to the tag. If the Prompt For Data button is selected, a dialog box will appear to allow you to enter a value to send to the tag.

Value Out — This field contains the value which will be sent to the tag if Fixed Data is selected.

Destination The Set and Offset buttons specify whether the value is to be used to directly set the tag's value or the value is to be added to the tag's current value.

Prompted Data The contents of the User Message field will be displayed in a dialog box that will prompt for a value at Runtime. If the field is left blank, no message is displayed.

The Min Value and Max Value fields must contain the minimum and maximum values allowed for data entered in at Runtime.

Dynamic Attribute Send Discrete Dialog Box

This dialog box is displayed when Touch—Send Discrete is highlighted and the Edit button is selected from the Dynamic Attributes dialog box. It allows you to specify discrete output that is to be associated with the graphic whose dynamic attributes are being edited. The Dynamic Attributes dialog box is displayed when the Edit→Edit Dynamic Attributes menu option is selected and a graphic item is selected.

The discrete output will be sent to the Cyrano tag that you select from the tag section of this dialog box. The value is sent when you press the left mouse button while positioning the cursor over the associated graphic.

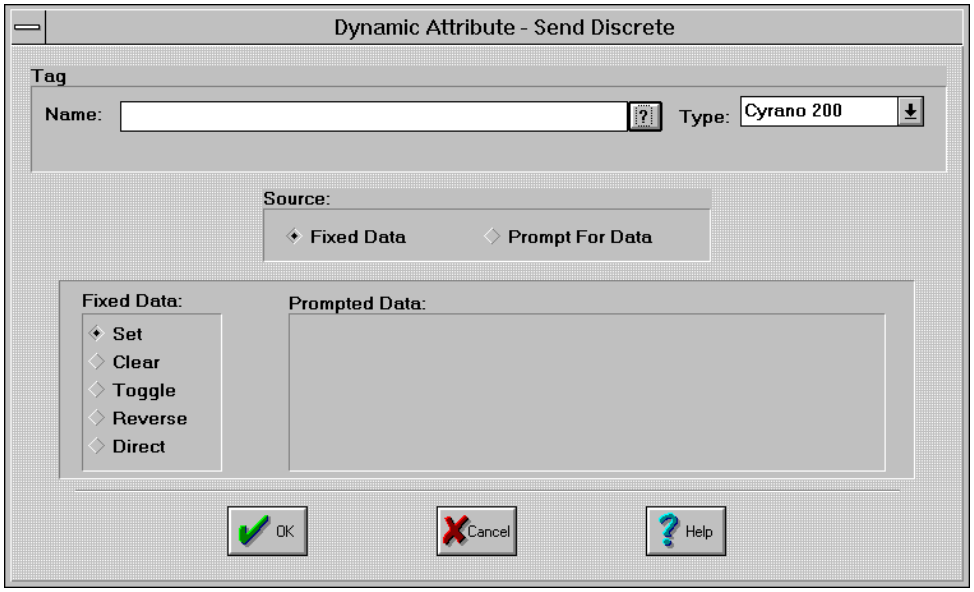

Figure 7-15: Dynamic Attribute Send Discrete Dialog Box

Name

Choose a Cyrano tag name to receive the discrete value sent. Make sure the tag name type matches the type of data it will receive.

Type

The Cyrano 200 type is the only available choice at this time.

Source

The Fixed Data and Prompt For Data buttons determine the source of the discrete state sent to the tag at runtime if the graphic is selected.

If the Fixed Data button is selected, the output state specified at configure time is sent to the tag. If the Prompt for Data button is selected, a dialog box appears which has two buttons; one for setting the state of the tag and one for clearing the state of the tag.

Fixed Data

This group of five buttons is used to specify the output state sent to the tag if the source is fixed data.

Set: The Name tag is set TRUE when the graphic is selected.

Clear The Name tag is set FALSE when the graphic is selected.

Toggle The Name tag changes to TRUE if it is currently FALSE or FALSE if it is currently TRUE.

Direct The named tag is set to TRUE while the left mouse button is held down and reset to FALSE when the button is released.

Reverse The named tag is set to FALSE while the left mouse button is held down and set to TRUE when the button is released.

Prompted Data

The contents of the User Message field is displayed in the dialog box that prompts for a discrete state at Runtime. If the field is left blank, no message is displayed.

The dialog box that appears at Runtime has two buttons. One button causes the named tag to be set TRUE and the other causes the named tag to be set FALSE. The default text on the buttons is SET and CLEAR, respectively. The text that appears on the buttons can be customized by entering strings in the Set Button Text and the Clear Button Text fields. If either field is left empty, its respective button will display its default text.

Dynamic Attribute Send String Dialog Box

This dialog box is displayed when Touch—Send String is selected from the Dynamic Attributes dialog box and the Edit button is selected. It allows you to specify which output string you want to associate with the graphic whose dynamic attributes are being edited. The Dynamic Attributes dialog box is displayed by selecting the Edit→Edit Dynamic Attributes menu option.

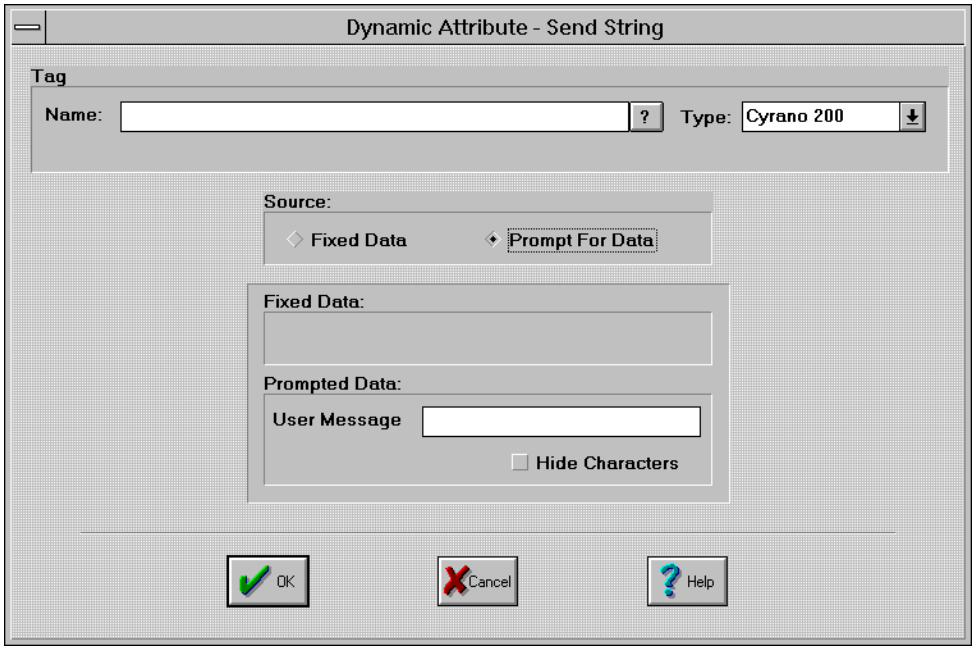

Figure 7-16: Dynamic Attribute Send String Dialog Box

The output string will be sent to the Cyrano tag you select from the tag section of this dialog box. The value is sent when the left mouse button is pressed while the cursor is positioned over the associated graphic.

A full keyboard is displayed during the MMI Runtime and prompts the user to enter a string if the Send String is configured with "Prompt For Data" as the source. For computer systems with touch-screens and no attached keyboard, select the "Use On-Screen Keyboard for Touch Screens" from the Configure→Run Time command. This option sizes the keyboard to be as large as possible for the video resolution of the Runtime computer monitor.

Source

The Fixed Data and Prompt For Data buttons determine the source of the string sent to the tag at runtime if the graphic is selected.

If the Fixed Data button is selected, the string specified at configure time is sent to the tag. If the Prompt For Data button is selected, a dialog box appears which allows you to enter the string to be sent to the tag.

Fixed Data The String Out field specifies the string to be sent to the tag if Fixed Data is selected as the source.

Prompted Data The contents of the User Message field will be displayed in the dialog box that prompts for a string at runtime. If the field is left blank, no message will be displayed. If the Hide Characters check box is checked, the runtime dialog box that prompts for the string will not display the characters as they are typed. Instead, an asterisk will be displayed for each character. This feature is useful for entering passwords.

Pop Window Dialog Box

This dialog box is displayed when Touch—Window is selected from the Dynamic Attributes dialog box and the Edit button is selected. The Dynamic Attributes dialog box is displayed by selecting the Edit→Edit Dynamic Attributes menu option.

This dialog box allows you to specify a visual state (e.g., open, iconic, closed) for a project's draw windows after an event has occurred. This dialog box accomplishes this by listing the project's draw windows and providing a means of describing the visual states after the event. The following description of this dialog box refers to a generic event. The particular event being configured is determined by the menu selection or dialog box selection that caused this dialog box to appear.

To specify the new visual state, first use the Windows list box to select the draw windows that will be affected by the event. They are then removed from the Windows list box and added to the Affected Windows list and the desired action is specified for each. Finally, actions can be specified for all draw windows that have not been added to the Affected Windows list. The sections below detail how to perform these actions.

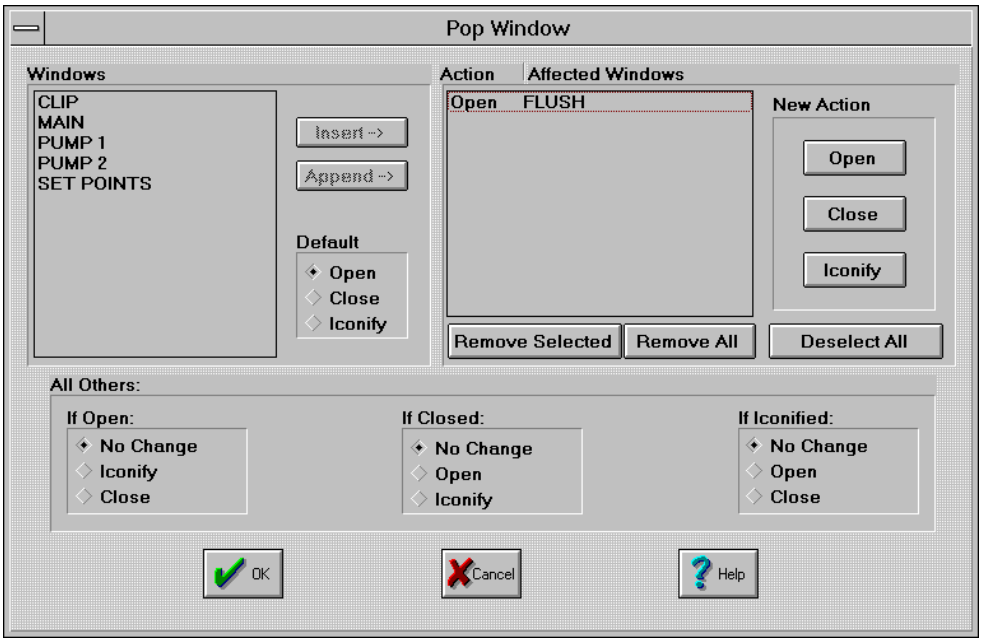

Figure 7-17: Pop Window Dialog Box

Windows List

The Windows list is a multiple selection list box used to select the draw windows to be affected by the event. Selections from this list box can be added to the Affected Windows list box using the Insert or Append buttons. The new visual state of the selected draw windows is initially specified by the Default radio button group. The specification of the new state can be changed after the entry is in the Affected Windows list. See that section for details.

The order of the draw windows in the Affected Windows list is important when any of the draw windows to be opened overlap other draw windows to be opened. If such an overlap exists, those that are nearer the top of the list will obscure those lower in the list. Proper draw window ordering can be obtained using the Insert and Append buttons.

The Append button adds the selected draw windows at the bottom of the Affected Windows list. The Insert button can be used whenever there are entries in the Affected Windows list and there is one, and only one, entry in that list selected. In this case, all selected draw windows in the Windows list are inserted before the entry selected in the Affected Windows list.

Each time entries are added to the Affected Windows list, they are removed from the Windows list and are left in the selected state in the Affected Windows list and any that were previously selected are deselected.

Affected Windows List

The Affected Windows list is a multiple selection list box. Each entry has two parts: the name of the draw window and the action to be performed when the event takes place. Entries are added to the list by the methods described in the Window List section.

Open, Close, and Iconify — These buttons redefine the action for all entries selected.

Remove Selected — This button removes the selected entries from the list and returns them to the Windows list.

Remove All — This button removes all entries from the list and returns them to the Windows list.

Deselect All — This button deselects all entries in the list, i.e., the entries remain in the list but they are set to the deselected state.

Unselected Windows Action

It may be desirable to specify new visual states when the event occurs for all draw windows not included in the Affected Windows list. The section All Others provides radio buttons for this purpose. A group of buttons exists for each of the three possible visual states of a draw window. The radio button selected in each group determines the new visual state for all the draw windows currently in that group's state when the event occurs. For example, if the Close radio button is selected in the If Open grouping, then all open draw windows not listed in the Affected Windows list will be closed when the event occurs.

The No Change radio button means that there should be no change for draw windows referred to by that grouping. This button is the default for each group.

Dynamic Attribute Upload Recipe Dialog Box

This dialog box is displayed when Touch—Upload Recipe is selected from the Dynamic Attributes dialog box and the Edit button is selected. The Dynamic Attributes dialog box is displayed by selecting the Edit→Edit Dynamic Attributes menu option. Use this dialog box to configure a Touch—Upload Recipe dynamic attribute or a trigger-based recipe upload.

The upload recipe function requires two Recipe File names to enable execution at Runtime. The Format File is the file that contains the recipe description. The Destination File is the file that contains the uploaded recipe. If you want to upload the recipe to the Format File, its name must be provided in both sections.

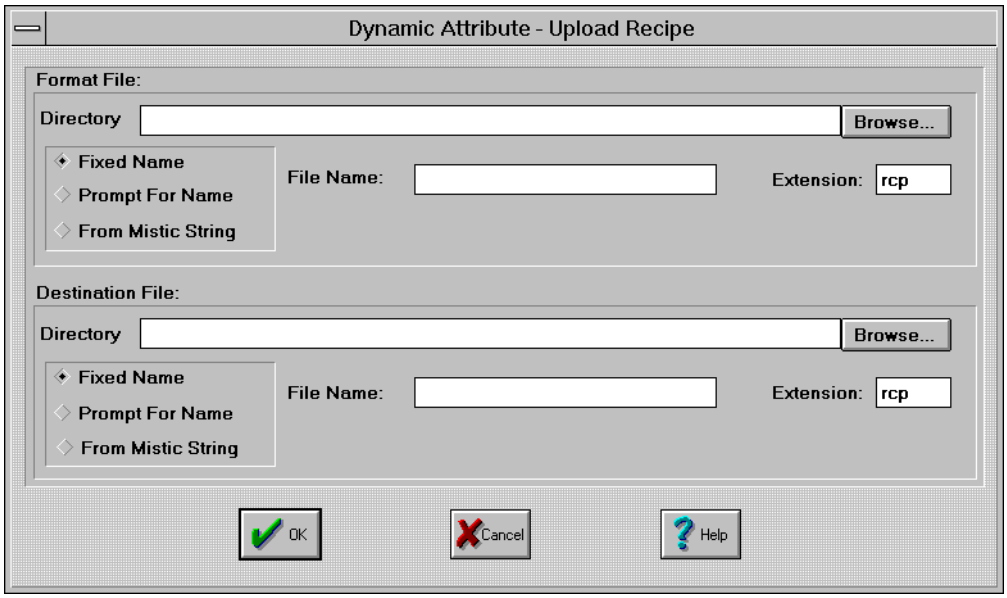

Figure 7-18: Dynamic Attribute Upload Recipe Dialog Box

The following descriptions apply to both the Format File and the Destination File.

Name

Enter a name to refer to this recipe manager. This name is used to refer to this trigger-based recipe in the Recipe Managers list dialog box. The name can be up to 40 characters long.

Directory

Use the Browse button to select the directory where the template file resides. At Runtime, only files from this directory are accessed.

Fixed Name

Check this if the template file is a file name you want to configure at this time. If this option is selected, the File Name edit box appears, prompting you for a file name. Make sure the file exists in the Directory entry, otherwise an error is posted. The file name may not be changed at Runtime.

The Extension parameter also appears and prompts for a one to three character long extension that's appended to the Fixed Name. The extension must not contain a period or a DOS wild card character. The default extension is .RCP.

Prompt For Name

Check this if the template file name is to be prompted at Runtime when the trigger occurs. If this option is selected, the "Extension" parameter also appears. Enter a one to three character long extension which does not contain a period or a DOS wild card. This extension is used as a filter to select which files are displayed when prompting a user for the recipe name at Runtime, however files with different extensions may be selected.

From Mistic String

Check this option if you want to use a string tag name from the controller strategy to specify the template file name. If this option is selected, the "Mistic String" edit box appears, prompting for the name of the Cyrano tag name you want to use. Use the "?" button to enter the tag name from the Tag Selection dialog box.

Extension

Specify the file extension for the recipe files available to this dynamic attribute by entering the extension in the File Extension field. The extension must be one to three characters long and must not contain a period or DOS wild card characters.

If Fixed Name is checked, this extension will append to the File Name entry to create the name for the recipe file. If Prompt For Name is checked, this extension will be used as a filter to select the files for display in a file selection dialog box when the MMI Runtime executes this dynamic attribute. However, you may override this filter if you wish to select a file with a different extension.

Trigger (Trigger-based recipe upload)

Use the Trigger button to select the Cyrano tag name that triggers the recipe upload action. Pressing the "Trigger" button displays the Recipe Trigger Configuration dialog box.

Notification (Trigger-based recipe upload)

Choose this button to select a tag to write a value to when an recipe is successfully uploaded. Pressing this button displays the Recipe Upload Completed Notification dialog box.

Notification Enabled (Trigger-based recipe upload)

This checkbox allows enabling and disabling of the Notification option once it's configured. The Notification Enabled box remains disabled until the notification is configured. A check mark in the box indicates the notification is enabled.

Dynamic Attribute Download Recipe Dialog Box

This dialog box is displayed when Touch—Download Recipe is selected from the Dynamic Attributes dialog box and the Edit button is selected. The Dynamic Attributes dialog box is displayed by selecting the Edit→Edit Dynamic Attributes menu option. Use this dialog box to configure a Touch—Download Recipe dynamic attribute or a trigger-based recipe download. The descriptions that follow for the fields and controls apply to both the Format File and the Destination File.

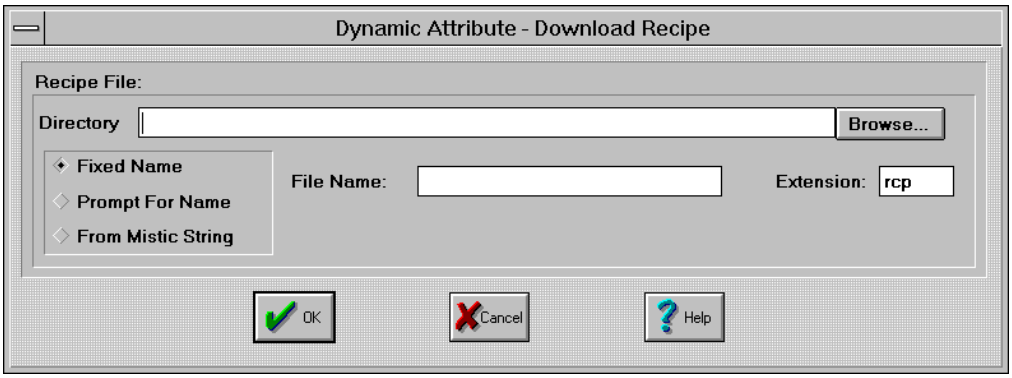

Figure 7-19: Dynamic Attribute Download Recipe Dialog Box

Name: (Trigger-based recipe download)

Enter a name to refer to this recipe manager. This name is used to refer to this trigger-based recipe in the Recipe Managers list dialog box. The name can be up to 40 characters long.

Directory

Use the Browse button to select the directory where the recipe files are. This directory contains the recipe files available for downloading. At Runtime, only files from this directory are accessed.

Fixed Name

Check this if the recipe file is a file name you want to configure at this time. If this option is selected, the File Name edit box appears, prompting you for a file name. Make sure the file exists in the Directory entry, otherwise an error is posted. The file name may not be changed at Runtime.

The Extension parameter also appears and prompts for a one to three character long extension that's appended to the Fixed Name. The extension must not contain a period or a DOS wild card character. The default extension is ".RCP".

Prompt For Name

Check this if the recipe file name is to be prompted at Runtime when the trigger occurs. If this option is selected, the Extension parameter also appears. Enter a one to three character long extension which does not contain a period or a DOS wild card. This extension is used as a filter to select which files are displayed when prompting a user for the recipe name at Runtime, however files with different extensions may be selected.

From Mistic String

Check this option if you want to use a string tag name from the controller strategy to specify the recipe file name. If this option is selected, the "Mistic String" edit box appears, prompting for the name of the Cyrano tag name you want to use. Use the "?" button to enter the tag name from the Tag Selection dialog box.

Extension

Specify the file extension for the recipe files available to this dynamic attribute by entering the extension in the File Extension field. The extension must be one to three characters long and must not contain a period or DOS wild card characters.

If Fixed Name is checked, this extension will be appended to the File Name entry to create the name for the recipe file. If Prompt For Name is checked, this extension will be used as a filter to select the files for display in a file selection dialog box when the MMI Runtime executes this dynamic attribute; however, you may override this filtering if you wish to select a file with a different extension.

Trigger (Trigger-based recipe download)

Use the Trigger button to select the Cyrano tag name that triggers the recipe download action. Pressing the Trigger button displays the Recipe Trigger Configuration dialog box.

Notification (Trigger-based recipe download)

Choose this button to select a tag to write a value to when an recipe is successfully downloaded. Pressing this button displays the Recipe Download Completed Notification dialog box.

Notification Enabled (Trigger-based recipe download)

This checkbox allows enabling and disabling of the Notification option once it's configured. The Notification Enabled box remains disabled until the notification is configured. A check mark in the box indicates the notification is enabled.

Dynamic Attribute Launch Application Dialog Box

This dialog box is displayed when Touch—Launch Applications is highlighted and the Edit button is selected from the Dynamic Attributes dialog box. The Dynamic Attributes dialog box is displayed when the Edit→Edit Dynamic Attributes menu option is selected. It allows you to specify execution of a program file which is to be associated with the graphic whose dynamic attributes are being edited.

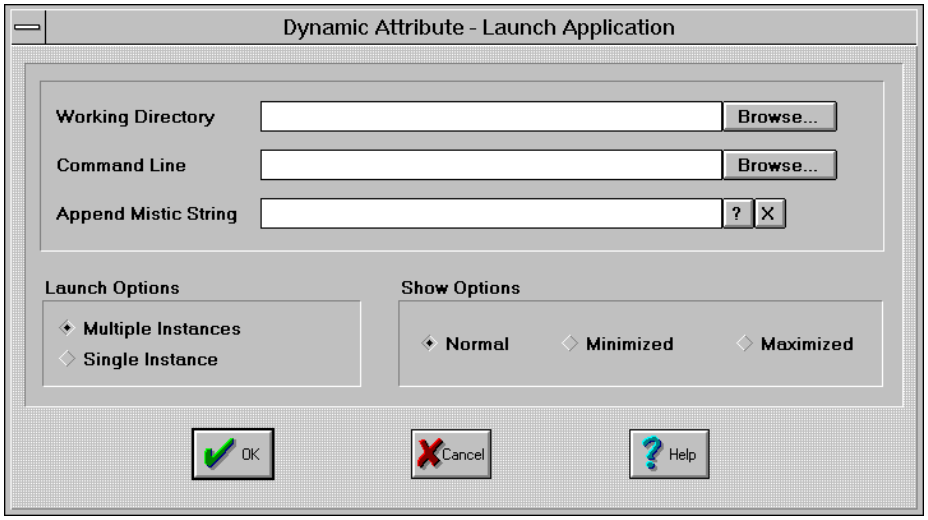

Figure 7-20: Dynamic Attribute Launch Application Dialog Box

Working Directory

These controls allow selection of a working directory used when launching the specified application. The working directory is an optional parameter. If a working directory is not specified, the current MMI Runtime directory is used when launching the application. Selecting the Browse button displays a dialog box titled Working Directory Selection. This dialog box enables selection of a working directory path. Upon exiting this dialog box, the selected path is displayed in the edit box. Contents of this edit box can be edited to add or modify the working directory at any time.

Command Line

Selecting the Browse button displays a dialog box titled Application Manager Executable File Selection. This dialog box enables selection of a program file which is executed when the graphic is selected. Upon exiting the dialog box, the edit box contains the selected program file name, extension, and path. Contents of this edit box can be edited to add or modify any command line parameters.

Append Mistic String/Browse/Clear Button

This optional feature allows a string from a Mistic controller tag to be appended to the Command Line string. The string is appended to the command line string before the application is launched. A possible use for this option is to save command line options for an application in the controller. Only tag names may be entered. Literal strings are not accepted. If the appended string is a parameter, a space must be included in the Command Line string to separate it from the main command line.

Selecting the "?" button displays the Tag Selection dialog box to choose a string variable from the controller strategy. Pressing the "X" button clears the tag name entered.

Launch Options

Applications can be launched so that a new session is created each time, or so that only one session is running at a time for a single graphic.

Multiple Instances

This option launches a new session of an application each time the operator selects the graphic. Some applications only allow one session of an application to run, while others allow multiple sessions.

Single Instance

This option forces the Runtime to check if this graphic has already launched an active session of any application. If no application has been launched, the Runtime launches it, and keeps track of when it's closed.

The single instance option does not limit the number of active sessions of an application that's launched by other graphics and triggers. The single instance option only applies to each graphic or trigger. Therefore, it's possible to have multiple active sessions of an application, even when this option's used.

Show Options

The show options control the initial appearance of the application when it's launched.

Normal

This option displays the application window in a normal view.

Minimize

The application is displayed as an icon when it is launched.

Maximize

The application is displayed as an enlarged window when it is launched.

Dynamic Attribute Runtime Menu Commands Dialog Box

This dialog box is displayed when the Touch—Execute Menu Item is highlighted and the Edit button is selected from the Dynamic Attributes dialog box. The Dynamic Attributes dialog box is displayed when the Edit→Edit Dynamic Attributes menu option is selected. Use this dialog box to configure a Runtime command to execute when the selected graphic is touched.

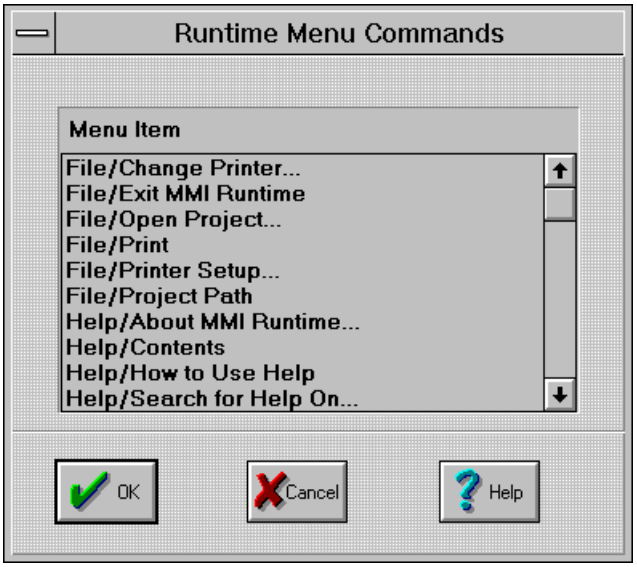

Figure 7-21: Dynamic Attribute Runtime Menu Commands Dialog Box

A Touch—Execute Menu Item dynamic attribute is an Operator Driven Attribute. To configure a Touch—Execute Menu Item dynamic attribute, you need to select the menu item you want executed.

A feature of this dynamic attribute is it overrides the effect of having the "Prevent User Exit" enabled (see Configure→Run Time, Runtime Setup dialog box). A menu item that is normally prevented from being executed when Prevent User Exit is true will be allowed to execute if invoked using this dynamic attribute. This will allow commands such as File→Open Project or exiting from the MMI Runtime. Graphics with dynamic attributes to do this type of override would typically be contained in draw windows that only are shown in special cases, perhaps controlled via a security scheme.

Menu Item — Select the Runtime menu option from this list box and click *OK* to configure the graphic.

TRENDS

OVERVIEW

Trend charts are advanced graphics that display tag values on a graph grid. You can input values to a real-time trend using active I/O tags in a Cyrano strategy. The X-axis represents the time span and the Y-axis is the value range of the data points being plotted. Values appear to move from right to left as they are added to the trend line. Up to four trend lines can be displayed on any one trend chart, but there is no limit to the number of trend charts displayed in a draw window. The maximum time span supported by each trend is 14 days.

Several options are available to customize each trend chart. Some configurable features include the number of major and minor divisions, the graph background, border, pen colors for the trend lines, the x and y axis ranges, and when to stop trend scanning.

To create a trend, select the trend tool from the toolbar or Tool→Trend menu option. Position the cursor where you want the trend to begin, click the left mouse button, drag the mouse to size the trend, and release the left mouse button. Modify the trend by double-clicking on the trend.

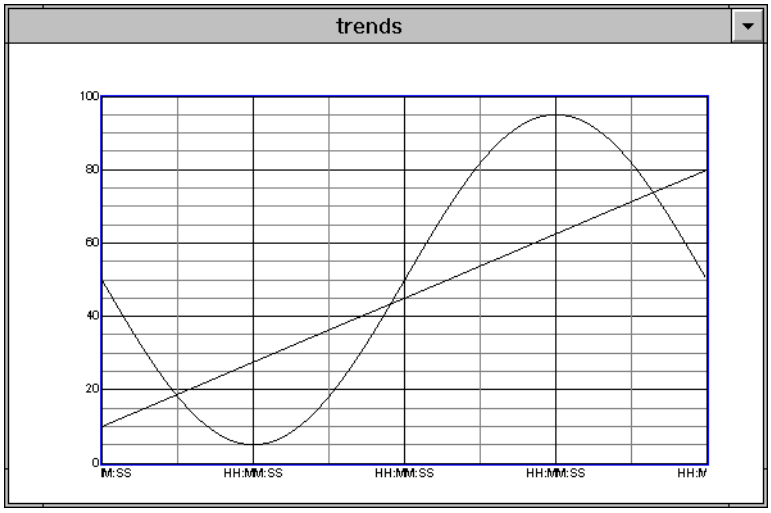

Figure 8-1: Trend Placed in a Window

DIALOG BOXES

The following dialog boxes are used to configure trends.

Trend Dialog Box

The Trend dialog box appears when the trend graphic tool is selected, a trend graph is placed, and the graphic is double-clicked.

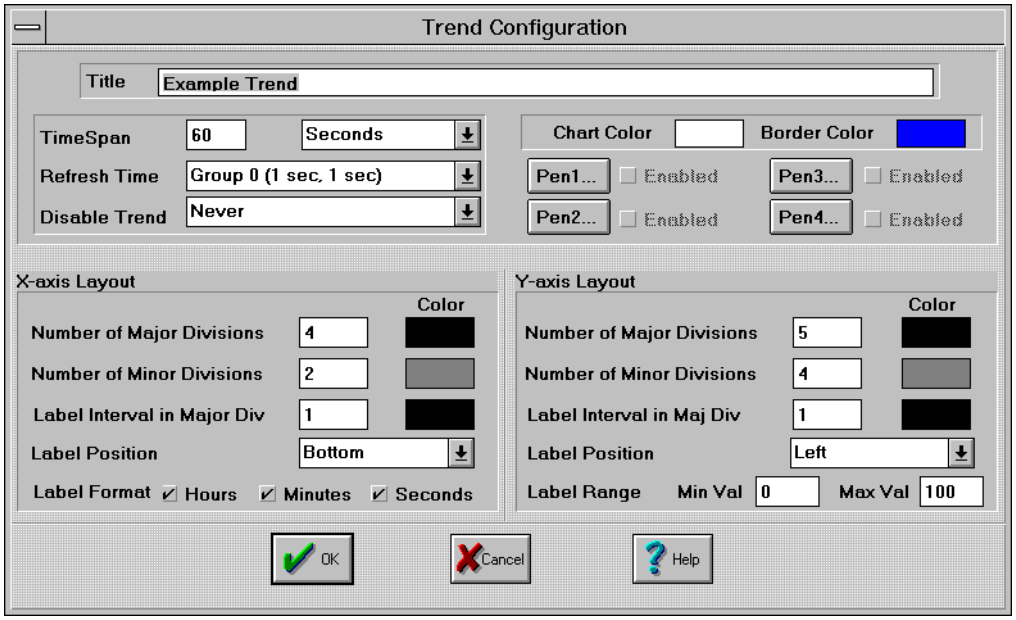

Figure 8-2: Trend Dialog Box

Title — The name used to identify this real time trend.

Time Span — The time span is the period of time represented by the real time trend. The maximum time span supported is 14 days.

Specify the time span by selecting a unit type (e.g., minutes) from the list box and entering a value in the edit box.

Refresh Time — Select the refresh time group you wish to use to scan the trend pens tags. All trend pen's tags will be scanned at the same rate.

Disable Trend — Choose an option from the "Disable Trend" drop-down list to configure disabling for a trend based on its window state. This option is useful to improve efficiency when several trends are used. If every trend is always scanning, the system throughput is slowed considerably.

The trend retains its recorded data at the time the trend was disabled.

Never The trend is never disabled. It always collects data.

When Window Closed The trend stops scanning when its window is closed. It starts scanning again when the window is restored.

When Window Minimized The trend stops scanning when its window is minimized. It starts scanning again when the window is restored.

When Window Closed or Minimized The trend stops scanning when its window is closed or minimized. It starts scanning again when the window is restored.

Chart Color

The chart color is the background color of the real time trend. To select a color, click in the color button to display the Color dialog box**.**

Border Color

Click in the color button to display the Color dialog box and choose a color to outline the chart area of the real time trend.

Pen Configuration

A real time trend can graph up to four lines simultaneously. Each line has a trend pen associated with it.

Each trend pen is configured with the Trend Pen dialog box. Only trend pens that are configured and enabled have a line graphed.

To configure a trend pen, select the appropriate Pen button. The corresponding Trend Pen Configuration dialog box appears. Use it to configure the pen color, line width, and its maximum/minimum values. A trend pen that has been previously configured can be enabled or disabled by selecting its Enabled check box.

X-axis Layout

This section configures the appearance of the chart with regard to the X-axis. You can specify the spacing and color of the vertical lines that identify major and minor axis divisions. You can also use this to specify the format, color, position and spacing of labels.

Number of Major Divisions Enter the Number of Major Divisions in the edit box and specify the color of the vertical lines by selecting the color button. The minimum number of major divisions is one.

Number of Minor Divisions Enter the Number of Minor Divisions in the edit box and specify the color of the vertical lines by selecting the color button. The minimum number of minor divisions is one.

Label Interval in Major Div Enter the spacing in the Label Interval in Major Div. edit box. The value entered specifies how often a label appears with a Major Division vertical line (e.g., 1 means every line, 3 means every third line).Specify the label color by selecting the color button.

Label Position The Label Position is specified using the drop down list box. Choices are Top, Bottom, Top & Bottom, or None.

Label Format The Label Format is specified as any combination of Hours, Minutes, and Seconds.

Y-axis Layout

This section configures the appearance of the chart with regard to the Y-axis. You can specify the spacing and color of the horizontal lines that identify major and minor axis divisions. This can also be used to specify the format, color, position, and spacing of labels.

Major Axis Divisions Enter the Number of Major Divisions in the edit box and specify the color of the horizontal lines by selecting the color button. The minimum number of major divisions is one.

Minor Axis Divisions Enter the Number of Minor Divisions in the edit box, and specify the color of the horizontal lines by selecting the color button. The minimum number of minor divisions is one.

Labels

Enter the spacing in the Label Interval in Major Div. edit box. The value entered specifies how often a label appears with a Major Division horizontal line (e.g., 1 means every line, 3 means every third line). Specify the label color by selecting the color button. The Label Position is specified using the drop down list box. Choices are left, right, left & right, or none.

Label Interval in Major Div

Enter the spacing in the Label Interval in Major Div. edit box. The value entered specifies how often a label appears with a Major Division vertical line (e.g., 1 means every line, 3 means every third line). Specify the label color by selecting the color button.

Label Position

The Label Position is specified using the drop down list box. Choices are Top, Bottom, Top & Bottom, or None.

Label Range

The Label Range refers to the range of pen tag values that appear within the boundaries of the chart. The Min Val represents the minimum value along the chart's y-axis, and the Max Val represents the maximum value represented by the top of the y-axis.

Trend Pen Dialog Box

This dialog box is displayed when a Pen# button is selected from the Trend dialog box. Use this dialog box to configure a trend pen. It associates a tag with the pen and defines the relationship between the tag's value and the position of the pen on the real time trend's chart, i.e., it establishes the scaling between the tag's value and the y-axis of the chart.

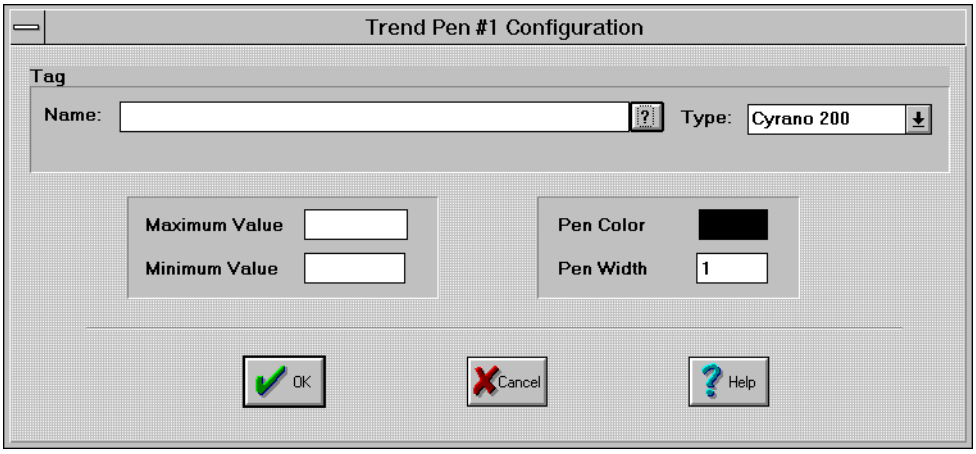

Figure 8-3: Trend Pen Dialog Box

Name — Select a Cyrano tag to use as the source of the position data. As the value of the selected tag's data changes during execution of the Cyrano Strategy, the trend pen's position changes according to the position parameters entered in this dialog box.

Type — Cyrano 200 is currently the only type selection available.

Minimum Value — This is the tag value that positions the trend pen at the bottom of the chart's y-axis. If the value read for the tag at a particular scan time is less than this minimum value, no point is plotted at the x-axis position for that scan time.

Maximum Value — This is the tag value that will position the trend pen at the top of the chart's y-axis. If the value read for the tag at a particular scan time is greater than this maximum value, no point will be plotted at the x-axis position for that scan time.

Pen Color — Selecting the color button displays the Color dialog box for choosing the color for the line that represents this pen's data on the chart.

Pen Width — This edit box specifies the width of the line drawn on the chart for this pen.

CHAPTER 9

RECIPE DOWNLOAD AND UPLOAD

OVERVIEW

Recipes allow you to download and upload data to a Cyrano program. They provide a convenient method for making broad changes to program variables without having an operator manually enter numerous values. This is common in batch type processes where system variables have been predetermined and vary between runs or product types. For example, a cookie baking company uses a Mistic system to control its cookie making process. They make chocolate chip cookies in the morning and need to make peanut butter cookies in the afternoon. The operator can simply upload the recipe to the controller with the ingredient changes. Recipes may also be used to save critical process settings which can be used to create more recipes or restore a system after a failure.

Recipe files are simple ASCII files which contain one or more Cyrano tags and values. Only integer table, float table, and string table tags may be used in a recipe file. A recipe file may also contain chart control instructions. You can run, stop, suspend, and continue one or more Cyrano charts when a recipe file is downloaded. This may be used to start a chart which moves the values in the downloaded tables to other program variables.

Recipes files are downloaded and uploaded by either configuring a Touch—Download Recipe or Touch—Upload Recipe Dynamic Attribute to a graphic object, or by configuring a trigger to initiate the recipe action. If a configured graphic object is selected by the operator or the required trigger action occurs, the configured upload or download function is performed.

This chapter begins by explaining some basic concepts about recipe files. Dialog boxes relating to recipes are then explained and conclude the chapter.

RECIPE FILE FORMAT

Recipe files are ASCII files and can be created using any text editor or word processor that can save files in ASCII format. The Windows Notepad accessory can be used to create ASCII files. Each recipe file contains a list of the Cyrano tags followed by the corresponding data values.

A typical recipe file is shown in Figure 9-1.

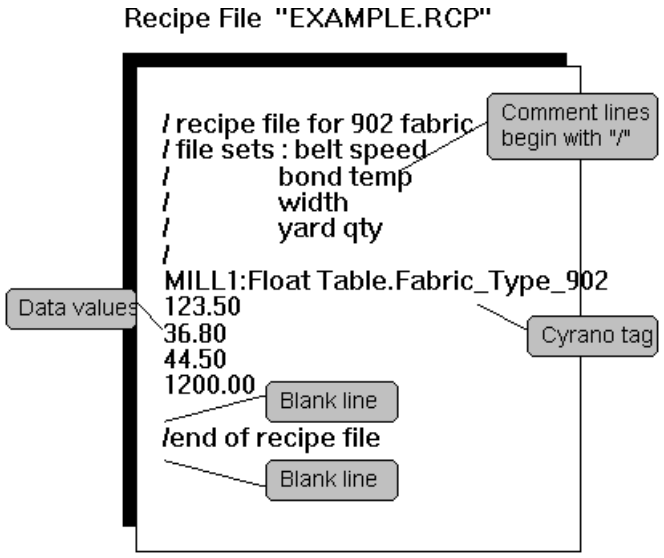

Figure 9-1: Recipe File Format

Figure 9-1 shows how a simple recipe file could be configured. The file contains one or more of the following items:

Comment Line

Any line which begins with the "/" character is considered a comment. Comments are used for documentation only.

Cyrano Tag

This line identifies the Cyrano tag being downloaded (or uploaded). It has the format:

<Controller Name>:<Table Type>.<Table Name>

<Controller Name> is the Mistic controller name

<Table Type> is one of the keywords "Integer Table", "Float Table", or "String Table" which identifies the variable type and is separated from <Controller Name> by a ":"

<Table Name> is the table name of the Cyrano program tag. It must be of the type specified by <Table Type>. It is separated from <Table Type> by a "."

Data Values

Each line following the Cyrano tag contains a data value. When the file is downloaded, the first line following the tag will be sent to index 0 of the table, the second line will be sent to index 1 of the table, and so on. The number of values following the tag must be equal to or less than the actual size of the table. Sending more values than a table can hold will cause errors.

Blank Line

The line after the last data value must be a blank line containing only a carriage return. This line is used to indicate that all the data for that particular table has been specified. Blank lines must not be interspersed within the lines containing the data for the table. The last line of the file must also be a blank line. Figure 9-2 shows where blank lines are expected in the recipe file.

Specifying an Index

When downloading large data tables, it may be convenient to download only part of the table. When a table is downloaded, the table index starts at 0 and is incremented with each data line. The recipe file in Figure 9-2 illustrates how to specify an index.

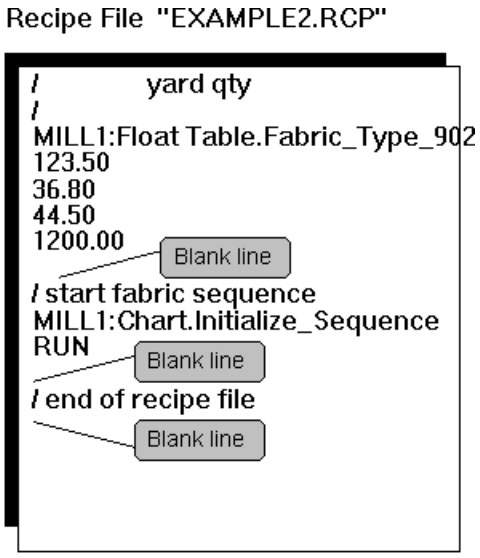

Figure 9-2: Table Indices in a Recipe File

In the above example, the first data value 123.50 would be sent to element 0 of the table. The following line contains the index reference 23:36.80, so the data value 36.80 would be sent to element 23 of the table. The next line, 44.50, will be sent to element 24 of the table. When line 64:1200.00 is sent, it will go to element 64 of the table. The following value, 1255.60, is sent to element 65, and so on.

Chart Control Instructions

The example file in Figure 9-3 contains a chart control instruction. The chart control instruction is used to control the execution state of any Cyrano chart when a recipe file is downloaded.

The instruction has the following format:

<Controller Name>:Chart.<Chart Name>
<Chart State>

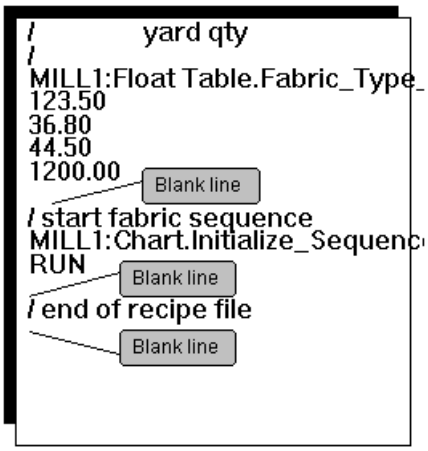

Figure 9-3: Blank lines in a Recipe File

<Controller Name> is the Mistic controller name.

Chart is the keyword which identifies the type of instruction and is separated from <Controller Name> by a ":"

<Chart Name> is the Cyrano chart name. It is separated from **Chart** by a "."

<Chart State> is one of the following keywords: STOP, RUN, SUSPEND, or CONTINUE and must be on the line following the **<Chart Name>**. The last line must be a blank line containing only a carriage return. This line is used to indicate the end of chart control data.

Recipe Uploading

Uploading a recipe is similar to downloading as the files have exactly the same format. However, when an upload is initiated, the MMI needs to know what tags to upload. To do this, a Format File and a Destination File are specified. The format file is a template of the data to retrieve from thecontroller and has the same format as a download file. The destination file is the filename to which the uploaded data will be stored.

DIALOG BOXES

The dialog boxes used to configure recipes are discussed in this section. Depending on whether you want a touch-based or trigger-based recipe action will determine which configuration dialog boxes are displayed.

How to Bring Up a Touch-based (Graphic) Recipe Action

If you want a recipe action to occur by having an operator choose a graphic, you'll want to configure a touch-based recipe action. To begin to configure a touch-based recipe, use the Selector tool to select a graphic, and then choose the Edit→Edit Dynamic Attributes command. The Graphic Dynamic Attributes dialog box is displayed. Select the Touch—Download Recipe or the Touch—Upload Recipe option and then the Edit button. The Dynamic Attribute—Download Recipe dialog is displayed if the Touch—Download Recipe option was selected. The Dynamic Attribute—Upload Recipe dialog box is displayed if the Touch—Upload Recipe option was selected.

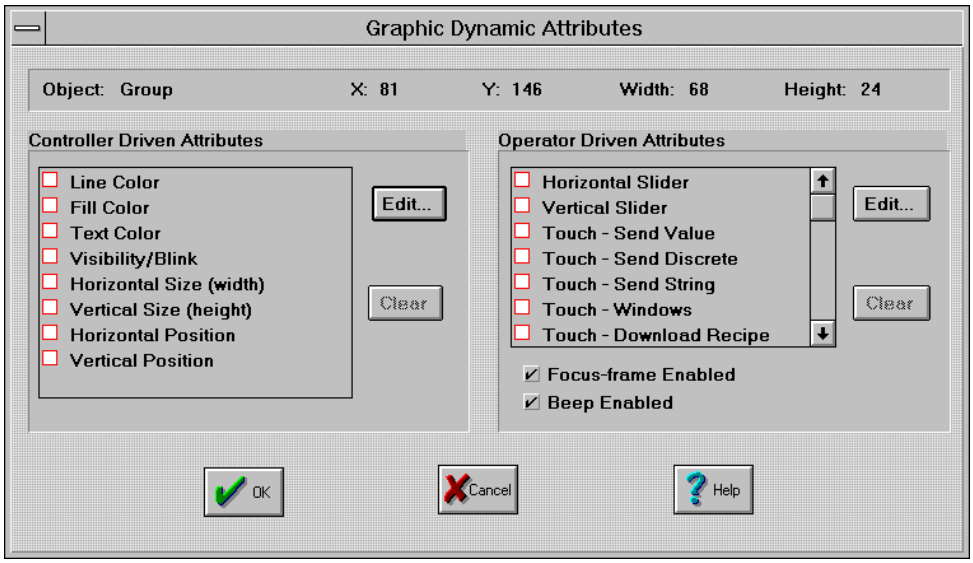

Figure 9-4: Dynamic Attributes Dialog Box Used to Configure a Touch-based Recipe Action

How to Bring Up a Trigger-based Recipe Action

If you want a recipe action to occur after an event takes place, you'll want to configure a trigger-based recipe action. To begin to configure a trigger-based recipe, select the Configure→Recipe menu option. The Recipe Managers dialog box appears. Click the appropriate Add button to configure a download or upload trigger action. The corresponding Download or Upload Recipe Manager appears.

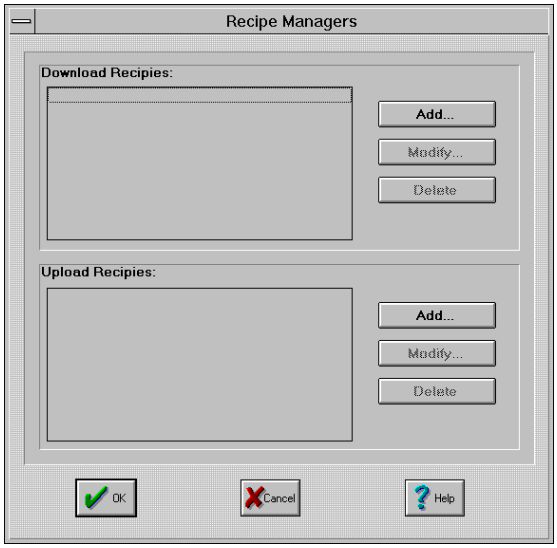

Figure 9-5: Recipe Managers Dialog Box Used to Configure Trigger-based Recipe Action

Download Recipe Dialog Boxes

The dialog boxes used to configure the download recipe actions differ slightly between the touch-based and trigger-based recipes. Figure 9-6 shows the dialog box used to configure touch-based recipes, and Figure 9-7 shows the dialog box used to configure trigger-based recipes. The dialog box parameter descriptions for both are described in this section. Those applying only to trigger-based recipes are indicated as such.

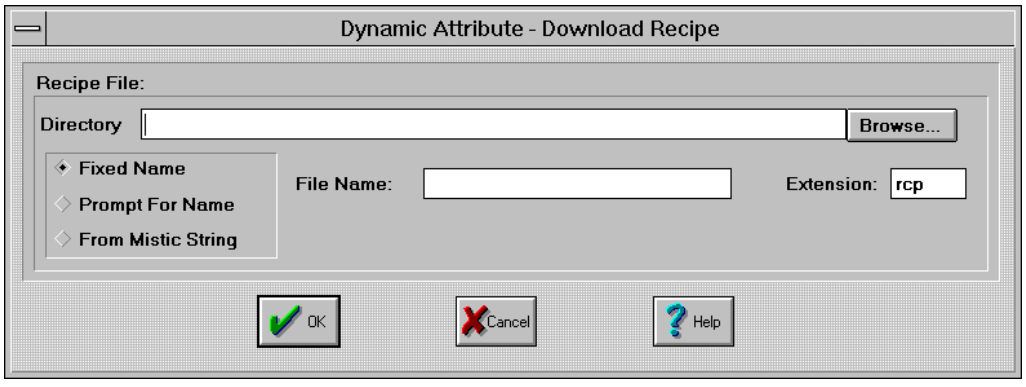

Figure 9-6: Dynamic Attribute Download Recipe Dialog Box

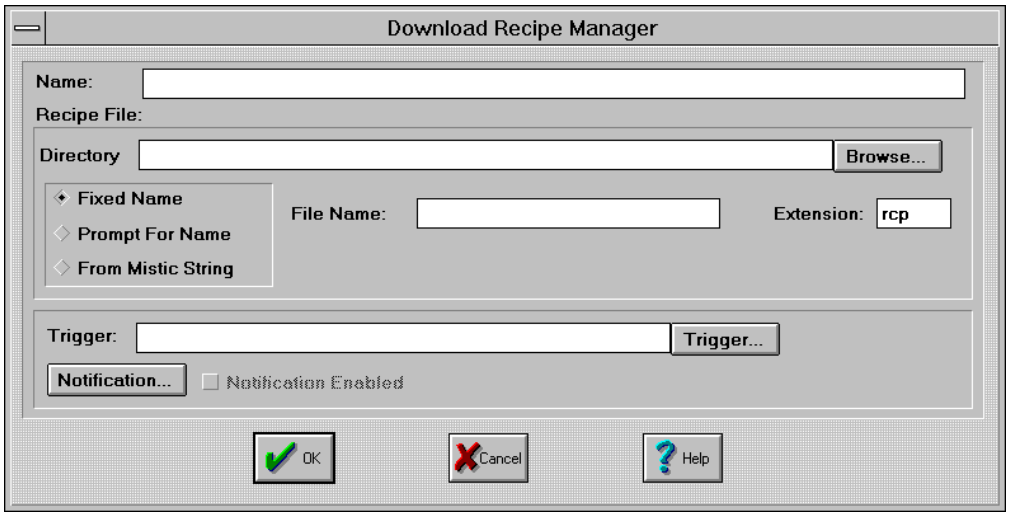

Figure 9-7: Download Recipe Manager Dialog Box

Name (Trigger-based recipe download)

Enter a name for this recipe. This name is used to refer to this trigger-based recipe in the Recipe Managers list dialog box. The name can be up to 40 characters long.

Directory

Use the Browse button to select the directory where the recipe files are. This directory contains the recipe files available for downloading. At Runtime, only files from this directory are accessed.

Fixed Name

Check this if the recipe file is a file name you want to configure at this time. If this option is selected, the File Name edit box appears, prompting you for a file name. Make sure the file exists in the Directory entry, otherwise an error is posted. The file name may not be changed at Runtime.

The Extension parameter also appears and prompts for a one to three character long extension that's appended to the Fixed Name. The extension must not contain a period or a DOS wild card character. The default extension is RCP.

Prompt For Name

Check this if the recipe file name is to be prompted at Runtime when the trigger occurs. If this option is selected, the Extension parameter also appears. Enter a one to three character long extension which does not contain a period or a DOS wild card. This extension is used as a filter to select which files are displayed when prompting a user for the recipe name at Runtime, however files with different extensions may be selected.

From Mistic String

Check this option if you want to use a string tag name from the controller strategy to specify the recipe file name. If this option is selected, the "Mistic String" edit box appears, and prompts for the name of the Cyrano tag name you want to use. Use the "?" button to enter the tag name from the Tag Selection dialog box.

File Name

This parameter is displayed if the Fixed Name option was selected. The file name is the name of the recipe located in the Directory entry.

Mistic String

This parameter is displayed if the From Mistic String option is checked. Enter the name of the Cyrano tag name containing the name of the recipe file. The tag name must be a string type.

Extension

Specify the file extension for the recipe files available to this dynamic attribute by entering the extension in the File Extension field. The extension must be one to three characters long and must not contain a period or DOS wild card characters.

If Fixed Name is checked, this extension will be appended to the File Name entry to create the name for the recipe file. If Prompt For Name is checked, this extension will be used as a filter to select the files for display in a file selection dialog box when the MMI Runtime executes this dynamic attribute. However, you may override this filtering if you wish to select a file with a different extension.

Trigger (Trigger-based recipe download)

Use the Trigger button to select the Cyrano tag name that triggers the recipe download action. Pressing the Trigger button displays the Recipe Trigger Configuration dialog box.

Notification (Trigger-based recipe download)

Choose this button to select a tag to write a value to when an recipe is successfully downloaded. Pressing this button displays the Recipe Download Completed Notification dialog box.

Notification Enabled (Trigger-based recipe download)

This checkbox allows enabling and disabling of the Notification option once it's configured. The Notification Enabled box remains disabled until the notification is configured. A check mark in the box indicates the notification is enabled.

Upload Recipe Dialog Boxes

The dialog boxes used to configure the upload recipe actions differ slightly between the touch-based and trigger-based recipes. Figure 9-8 shows the dialog box used to configure touch-based recipes, and Figure 9-9 shows the dialog box used to configure trigger-based recipes. The dialog box parameter descriptions for both are described in this section. Those applying only to trigger-based recipes are indicated as such.

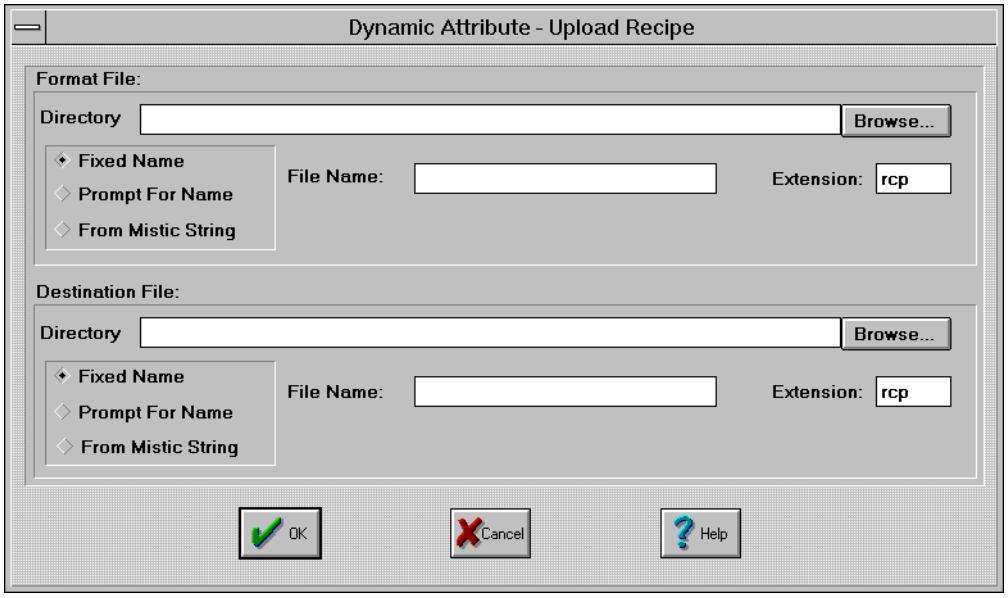

Figure 9-8: Dynamic Attribute Upload Recipe Dialog Box

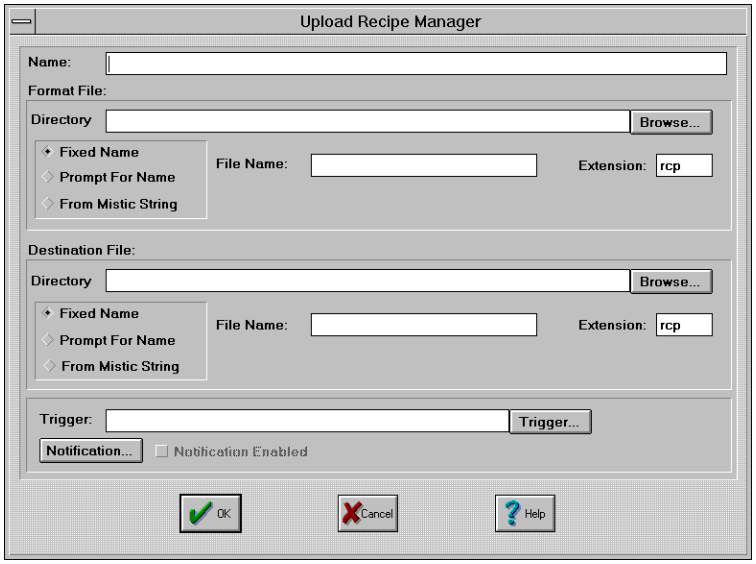

Figure 9-9: Upload Recipe Manager Dialog Box

The following descriptions apply to both the Format File and the Destination File.

Name (Trigger-based recipe upload)
Enter a name for this recipe. This name is used to refer to this trigger-based recipe in the Recipe Managers list dialog box. The name can be up to 40 characters long.

Directory
Use the Browse button to select the directory where the template file resides. At Runtime, only files from this directory are accessed.

Fixed Name
Check this if the template file is a file name you want to configure at this time. If this option is selected, the File Name edit box appears, prompting you for a file name. Make sure the file exists in the Directory entry, otherwise an error is posted. The file name may not be changed at Runtime.

The Extension parameter also appears and prompts for a one to three character long extension that's appended to the Fixed Name. The extension must not contain a period or a DOS wild card character. The default extension is .RCP.

Prompt For Name
Check this if the template file name is to be prompted at Runtime when the trigger occurs. If this option is selected, the Extension parameter also appears. Enter a one to three character long extension which does not contain a period or a DOS wild card. This extension is used as a filter to select which files are displayed when prompting a user for the recipe name at Runtime, however files with different extensions may be selected.

From Mistic String
Check this option if you want to use a string tag name from the controller strategy to specify the template file name. If this option is selected, the "Mistic String" edit box appears, prompting for the name of the Cyrano tag name you want to use. Use the "?" button to enter the tag name from the Tag Selection dialog box.

File Name
This parameter is displayed if the Fixed Name option was selected. The file name is the name of the recipe located in the Directory entry.

Mistic String
This parameter is displayed if the From Mistic String option is checked. Enter the name of the Cyrano tag name containing the name of the recipe file. The tag name must be a string type.

Extension

Specify the file extension for the recipe files available to this dynamic attribute by entering the extension in the File Extension field. The extension must be one to three characters long and must not contain a period or DOS wild card characters.

If Fixed Name is checked, this extension will append to the File Name entry to create the name for the recipe file. If Prompt For Name is checked, this extension will be used as a filter to select the files for display in a file selection dialog box when the MMI Runtime executes this dynamic attribute. However, you may override this filter if you wish to select a file with a different extension.

Trigger (Trigger-based recipe upload)

Use the Trigger button to select the Cyrano tag name that triggers the recipe upload action. Pressing the Trigger button displays the Recipe Trigger Configuration dialog box.

Notification (Trigger-based recipe upload)

Choose this button to select a tag to write a value to when an recipe is successfully uploaded. Pressing this button displays the Recipe Upload Completed Notification dialog box.

Notification Enabled (Trigger-based recipe upload)

This checkbox allows enabling and disabling of the Notification option once it's configured. The Notification Enabled box remains disabled until the notification is configured. A check mark in the box indicates the notification is enabled.

Recipe Managers

The Recipe Manager dialog box appears when the Configure→Recipe command is selected. The dialog box displays the Download Recipes and Upload Recipes list boxes which list the recipes that can be downloaded to the controller or uploaded from the controller. Each list box has a set of Add, Modify, and Delete buttons associated with it.

Pressing the Add or Modify button in the Download Recipes group displays the Download Recipe Manager dialog box. Similarly, the Upload Recipe Manager is displayed when its Add or Modify buttons are pressed.

The Delete button removes the name of a recipe manager from the list.

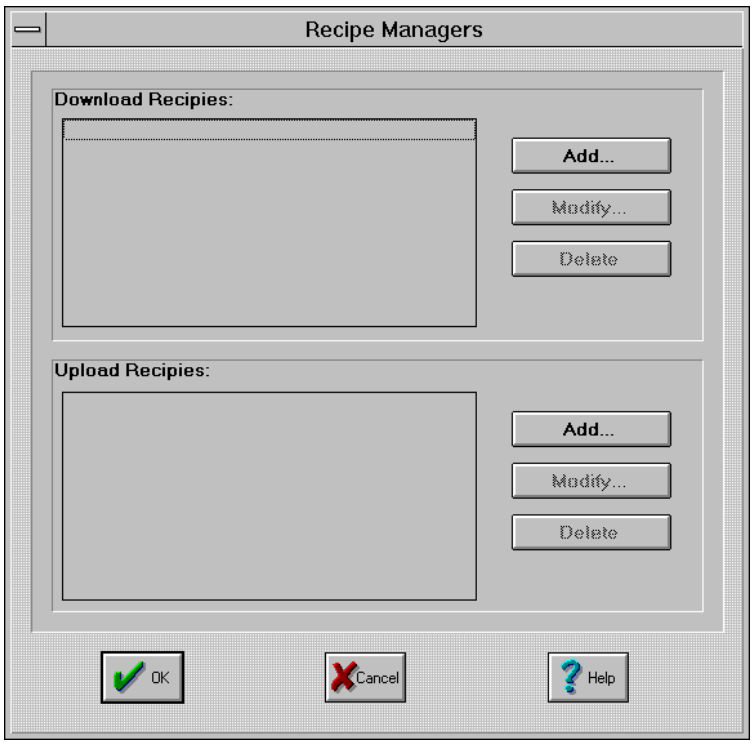

Figure 9-10: Recipe Managers Dialog Box

Recipe Download/Upload Completed Notification

The Recipe Download/Upload Completed Notification dialog box allows definition of a tag and value written to that tag when an appropriate notification condition occurs. You must select a tag from the tag section of this dialog box to use as the destination for the data.

Set/Offset:

Select Set if you want the value used as a replacement for the tag's current value. Select Offset if you want the value added to the tag's current value.

Value Out

This field defines the floating point or integer value written to the specified tag.

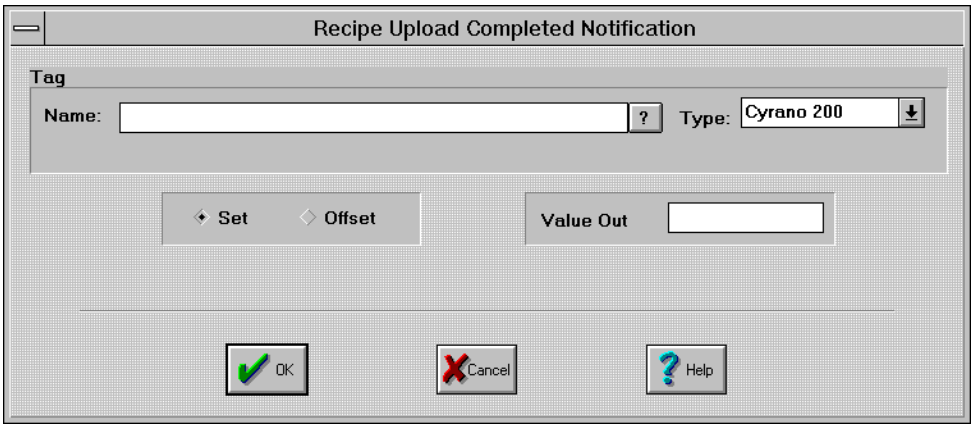

Figure 9-11: Recipe Completed Notification Dialog Box

HISTORICAL LOGGING

OVERVIEW

Historic logging allows you to store data from your process onto disk. Once the data is collected, it can be removed from the system for permanent storage or for use by other applications, such as Excel, to make reports. Data is stored in standard delimited ASCII format. Up to 1 million separate tags may be configured per historic log. (In the case of tables, each element is considered a separate tag.) The data, along with the timestamp, is buffered in the host's memory until it reaches the configured buffer size limit. Upon reaching this limit, the buffer contents are written to this historic log file.

Some basic concepts are presented in the beginning of this chapter, followed by explanations of dialog boxes used to configure Historic Logs.

Tag Types

The following tag base types can be logged: Integer, Integer Table, Float, Float Table, String and Discrete. With tables you may select individual elements, groups of elements, or all elements.

Filenames

Filenames may be constructed in several ways and be created from different sources. Filenames may be created automatically by using the rollover concept, be specified as a fixed name, or be created by using strings stored in the Mistic controller strategy.

The rollover format does not apply to files with fixed names or which are constructed from Mistic string tagnames.

Triggers

By default, historic logging begins when scanning starts and ends when scanning stops. Optionally, the beginning of logging may be delayed until a start trigger condition occurs, and can be stopped when a stop trigger condition occurs or a defined number of samples have been collected. The triggers may be attached to any controller variable.

Rollovers

The rollover period controls how often a new data file is created. The rollover may be set for Hours, Days, Months, or None. If the rollover is set to Hours, then a new data file will be created each hour. Configuring the rollover to None causes all of the collected data to be placed in one file.

File Format

A historic log is a standard ASCII file. The first line of the file is a header which shows the names of each data field. Subsequent lines are data samples with the following format:

DATE<delimiter>**TIME**<delimiter>**TAG1**<delimiter>**TAG2. . .TAG1000**<CrLf>

where:

DATE is the current system data in the format YYYY/MM/DD. (YYYY = year, MM= month, DD= day)

TIME is the current system time in the format HH:MM:SS. (HH= hour, MM= minute, SS= seconds)

TAG1...TAG1000 are valid Cyrano tags in the format Controller_Name:Tag

<delimiter> is any printable ASCII character.

<CrLf> is a carriage return, line feed.

Example:

Date,Time,CNTR1:TEMP208,CNTR1:PRES209,CNTR1:LEVEL218

1993/04/26,17:00:00,120.02,14.96,12.09

1993/04/26,17:00:01,120.06,14.98,12.03

1993/04/26,17:00:02,120.03,14.99,12.02

1993/04/26,17:00:03,120.04,15.01,12.05

Additional header lines may be posted to an existing log file. Every time the MMI is shut down and restarted, a new header line is appended to the log file, followed by data samples.

DIALOG BOXES

The following dialog box explanations present details for configuring Historic Logs.

Historic Log Dialog Box

The Historic Log dialog box is displayed when the Configure→Historic Data Log menu option is selected from the MMI Configurator. All configured historic logs are listed by name. Use this command to add new historic logs to the project , or modify or delete previously configured historic logs. You can add up to 1000 historic logs per project.

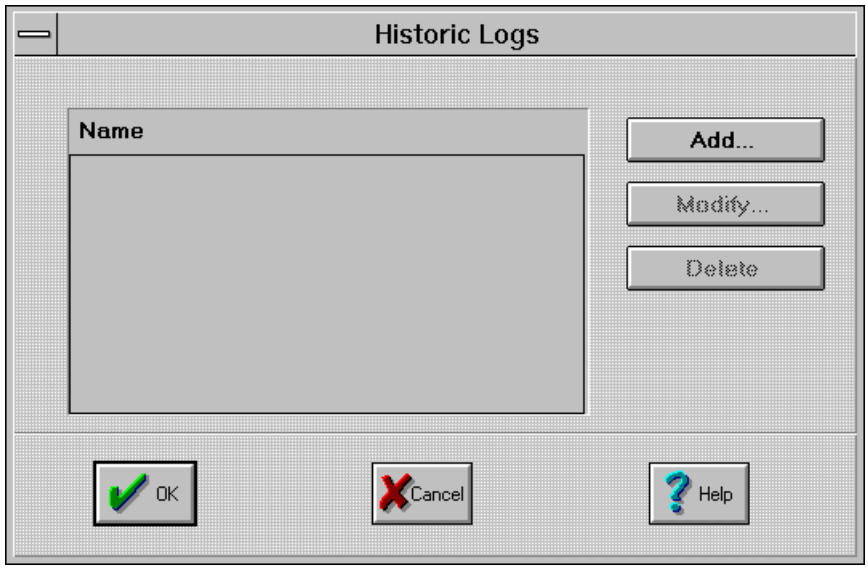

Figure 10-1: Historic Log Dialog Box

Add

Select the Add button to add new historic logs to the project. The new log is displayed on the list when you return from the Historic Log Configuration dialog box.

If there are no historic logs in the project, the Modify and Delete buttons cannot be selected. If a historic log has been configured, the Modify and Delete buttons may be selected.

Modify

Select the Modify button to change the selected historic log with the Historic Log Configuration dialog box. The modified log is displayed on the list when you return to the Historic Log dialog box.

Delete

Select the Delete button to remove the selected historic log from the historic log list. After selecting the Delete button, a message prompting you to delete the selected historic log is displayed . If you respond "yes", the historic log is removed from the historic log list. Selecting "no" or <ESC> aborts the delete process.

Historic Log Configuration Dialog Box

This dialog box is displayed when either the Add or Modify button is selected from the Historic Log dialog box. From this dialog box, you can configure all the properties of a historic log.

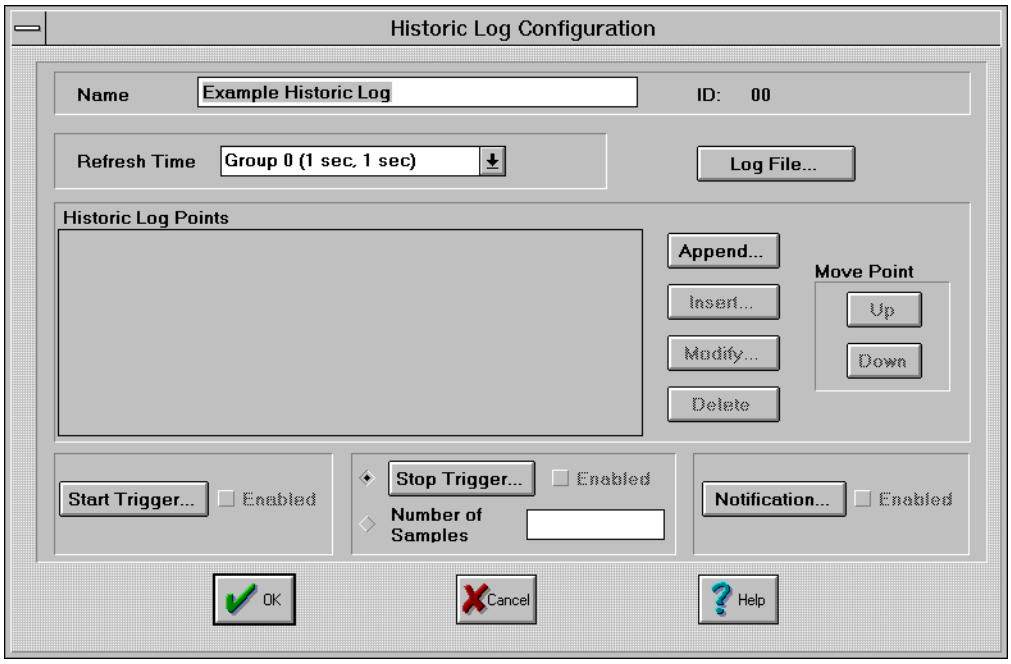

Figure 10-2: Historic Log Configuration Dialog Box

Up to 1 million separate tags may be configured as individual log points within a single historic log. All configured historic log points are put into a single Scan Group and scanned during runtime according to the scan rate of the selected refresh time group. A time stamp is recorded when all tags are scanned within the scan group.

The data, along with the time stamp, is buffered in the host's memory until it reaches the buffer size limit configured in the Historic Log File Configuration dialog box. Upon reaching this limit, the buffer contents are written to this historic log file. All values within a scan group, including the time stamp, are recorded as a single line using the delimiter specified with the Line Format button.

Filenames may be constructed in several ways and be created from different sources. Filenames may be created automatically using the rollover concept, they may be specified as a fixed name, and they can be created using strings stored in the Mistic controller strategy.

Typically, file names are dependent on the rollover period specified within the Historic Log File Configuration dialog box and follow the format:

Months	RM*YYMM*.H*nn*
Days	RD*YYMMDD*.H*nn*
Hours	RH*MMDDHH*.H*nn*
None	HISTLOG.H*nn*

where *YY* = year, *MM* = month, *DD* = day, *HH* = hour, and *nn* represents the two character identifier assigned to the historic log by the configurator.

The rollover format does not apply to files with fixed names or that are constructed from Mistic string tagnames.

The number of files retained on disk for a historic log is also set within the Historic Log File Configuration dialog box. Upon reaching this limit during runtime, the file with the oldest DOS time stamp is deleted.

Name — This edit box enables the user to specify a name for the historic log being configured. The name must be unique from all historic logs within the project or an error message is displayed when OK is selected to exit the dialog box.

ID — This read-only edit box contains a unique two character identifier automatically assigned by the MMI Configurator. This identifier is used as the last two characters of the file name extension for the historic log file (e.g., .H00).

Refresh Time — Enables you to select a previously configured refresh time group to scan the tags of the historic log points. This sample rate applies to every log point configured within this historic log.

Log File — Allows access to the History Log File Configuration dialog box which defines how the historic log file is to be accessed and maintained. File access parameters include the delimiter, number of lines buffered, rollover period, number of files to retain for this log, and whether to keep the file open.

Historic Log Point Configuration

List

Displays all configured historic log points for this historic log by tag name. The order of the points in the list is the order that the points will be logged to the file, with the topmost entry first. New points may be added and existing points may be modified, have their position in the list changed or deleted. To change or rearrange historic log points in the list, select the point prior to choosing the Modify, Up, Down, or Delete buttons. Each historic log point corresponds to an individual tag defined in the Historic Log Point dialog box which is accessed via the Append, Insert, or Modify buttons.

Append

Allows access to the Historic Log Point dialog box to configure a new historic log point to be added to the historic log. The new log point is added at the bottom of the historic log points list upon selecting OK from the Historic Log Point dialog box.

Insert

Allows access to the Historic Log Point dialog box to configure a new historic log point to be added to the historic log. Upon selecting OK from the Historic Log Point dialog box, the new log point is inserted immediately above the point currently selected (highlighted) in the historic log points list.

Modify

Allows access to the Historic Log Point dialog box to modify the historic log point which is selected in the historic log point list.

Delete

Removes the historic log point which is selected in the historic log point list. After selecting the Delete button, a message is displayed prompting the user to delete the selected historic log point. Responding "Yes" causes the historic log point to be removed from the historic log points list. Selecting "No" or ESC aborts the delete process.

Up

Moves the selected log point up the list by repositioning it just above the log point that it is currently below.

Down

Moves the selected log point down the list by repositioning it just below the log point that it is currently above.

Start Trigger

Displays the Historic Log Start Trigger Configuration dialog box allowing definition of a tag and its associated condition which comprises the start trigger for the Historic Log. The start trigger is edge sensitive and therefore only activates from a non-triggered state. If a start trigger is configured and enabled, then a stop trigger must also be configured or an error message will result when exiting the Trigger dialog box via the OK button.

Enabled

Allows start trigger enabling once the start trigger is configured. The Enabled box remains disabled until the start trigger is configured. A check mark in the Enabled box indicates the start trigger is enabled.

Stop Trigger

Displays the Historic Log Stop Trigger Configuration dialog box allowing definition of a tag and its associated condition which comprise the stop trigger for the Historic Log. The stop trigger is edge sensitive and only activates on a transition from a false to true state.

There are two different methods of stopping historic log sampling once it has begun. The user may either select a tag and define a condition for that tag which causes sampling to terminate when the condition evaluates to true (Stop Trigger button), or the user may define a discrete number of samples to take once the start trigger occurs (Number of Samples). Radio buttons in front of the Stop Trigger button and Number of Samples edit box determine the type of stop trigger selected. A method to stop the sampling is required if a start trigger is configured and enabled. If no start trigger is configured and enabled, then a stop trigger is not needed.

Enabled

Allows stop trigger enabling once the stop trigger is configured. The Enabled box remains disabled until the stop trigger is configured. A check mark in the Enabled box indicates the stop trigger is enabled.

Number of Samples

Allows the alternative configuration of a stop trigger via specification of the number of historic log samples to take once a start trigger occurs.

Notification

Displays the Notification dialog box allowing selection of a tag and a value to be written to that tag when the condition that stops the Historic Log sampling is encountered.

Enabled Check Box

Allows notification enabling once the notification is configured. The Enabled box remains disabled until the notification is configured. A check mark in the Enabled box indicates the notification is enabled.

Historic Log File Configuration Dialog Box

The Historic Log File Configuration dialog box allows you to configure how a data file is stored to disk. Files are stored in standard ASCII delimited format. The size, number of files, and line formats are configurable parameters.

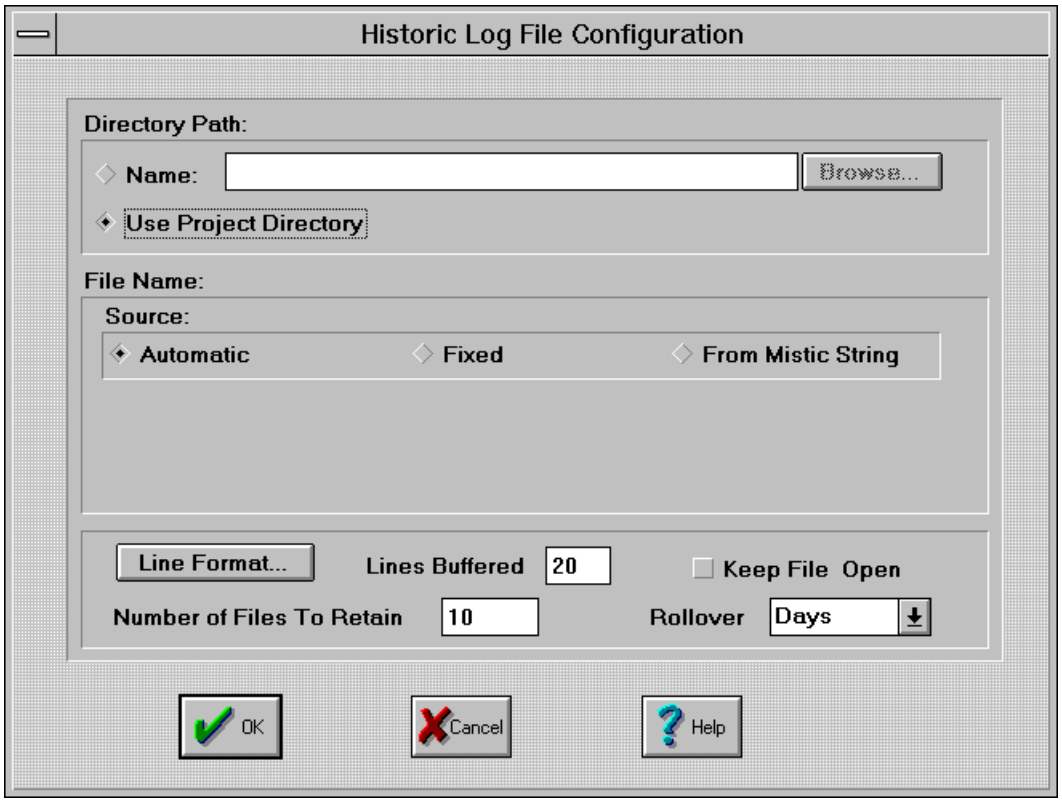

Figure 10-3: File Access Dialog Box

Name — Use this edit box to enter the directory path and filename for a data file. This parameter is initially blank and can be directly edited or changed with the Browse button.

Browse — Use the Browse button to quickly locate a directory path for the data file.

Use Project Directory — Choose this option to specify the file be created in the MMI project directory.

Automatic — Select this option to automatically specify the filename selected in the Directory Path group.

Fixed

Use this option to specify a file name for the data file. The filename can be any valid, 8 character DOS file name and does not require a 3 character extension. Note, if you do not specify an extension, one is not automatically added. A directory path name must be specified either explicitly in this field, or by having selected the "Use Project Directory" option. If the "Name" option was selected, its corresponding edit box must have a file name.

A Start Trigger option must be configured and enabled for this file name source. When the trigger starts a historic log, the new data is appended if the file already exists, and is created if it does not.

Rollover does not apply to this type of file.

From Mistic String

This option lets you specify a string tagname from a Cyrano control strategy and use it to define the file name source. The tagname is specified in the Mistic String edit box with the "?" button. The tag selected must be a string type.

A Start Trigger option must be configured and enabled. When the trigger occurs, the Mistic String tag is concatenated to the Directory Path Name. The Directory Path Name may be an empty string. If this is the case, the tagname must contain the complete path name, including the drive designator (such as c:). This option lets a historic log produce different file names each time a trigger occurs. If a file already exists, the new data is appended to it. If it does not exist, the file is created.

The Default Name if Mistic String Invalid parameter is used to specify a file name in case the Mistic string concatenation does not create a valid file name. The filename can be any valid, 8 character DOS file name. Do not include a 3 character extension. If the default file name is used, the extension is an "H" followed by the historic log's ID number (Example: .H00 if the ID were 00).

In case the tagname entered in Mistic String is empty, then the Project Directory is concatenated with the default file name to create the path and file name.

If the result of the concatenation is a directory or file that can't be accessed or created, the logging file is created using the following rules:

- If the Mistic String is empty, then the Project Directory is concatenated with the Default Name if Mistic String Invalid and the extension is an "H" followed by the historic log ID number.
- If the Mistic String is not empty and the Project Directory was not specified as the directory path, then the "Directory Path Name" is concatenated with the "Default Name if Mistic String Invalid".
- If the "Project Directory" was specified as the path, or the previous step failed, the "Project Directory" is concatenated with the "Default Name if Mistic String Invalid" and the extension is an "H" followed by the historic log ID number. If the project directory is read-only or there is not enough room left on the drive containing the project directory, an error is posted indicating the file could not be created.
- Rollover does not apply to this type of file.

Line Format

The Line Format button displays the Line Format dialog and allows you to customize the line formatting in historic and event logs.

Lines Buffered

Lines buffered configures the number of data lines (samples) which are buffered in system memory before the data is written to disk. Valid entries are any number between 0 and 999. A small Lines Buffered value combined with fast sample rates may result in excessive disk access. A large "Lines Buffered" value may result in loss of data in the event of power loss or system failure.

Keep File Open

When data samples are recorded to disk, the data file is opened, data is written to disk, and the data file is closed. This allows maximum data integrity but slows disk access since each disk access requires an open, write, and close sequence. This option allows the MMI to keep the current data file open for writes, increasing disk performance. Should the system lose power or fail, the current data file may be damaged or lost.

Number of Files to Retain

This edit box contains the number of files that will be stored on the disk before the oldest file is deleted. If Rollover is set to Hours and the Number of Files to Retain is set at 30, only the last 30 hours' data would be stored on disk. Any files older than 30 hours would be deleted.

Rollover

The Rollover edit box allows you to select a rollover period which determines how often a new data file is created. You may select Hours, Days, Month, or None from the drop-down list box. See Rollover Settings for more details.

Rollover Settings

The Rollover drop-down list allows the user to select how often a new data file is created. The user may select Hours, Days, Month, or None from the drop-down list box. For time based rollovers, the DOS time and date functions are used in determining time-of-day and day-of-month. Be sure the system time and date are set prior to starting the MMI.

Selecting hours causes a new data file to be created at the top of every hour. If data logging were triggered at 8:30 am, the first data file would contain data from 8:30 am to 9:00 am. Thereafter, data files will contain data from 9:00 am to 10:00 am, 10:00 am to 11:00 am, etc. The data files will, therefore, contain a maximum of one hours' data depending on when logging is triggered.

Selecting days causes the current data file to close and a new data file to be created every day at midnight. If data logging were trigged at 7:00 pm on the 5th, the first data file would contain data from 7:00 pm to 12:00 pm on the 5th. Thereafter, data files will contain data from midnight the 5th to midnight the 6th, midnight the 6th to midnight the 7th, etc. The data file will therefore contain a maximum of one days' data.

Selecting month will cause a new data file to be created on the first day of every month at midnight. If data logging were started on the January 27th, the first data file would contain data from the 27th of January to the 1st of February. Thereafter, data files will contain data from the 1st of February to the 1st of March, the 1st of March to 1st of April, etc. The data file will therefore contain a maximum of one months' data.

Selecting None causes all logged data to be placed in a single data file name HISTLOG.H*nn*, where nn is the two character identifier assigned to the historic log by the configurator. Logging begins when the Start Trigger is activated Whenever logging is triggered, data will be appended to the existing data file. The size of the file is limited only by available disk space. Care should be taken to not allow a data file to consume all the available disk space.

Line Format Dialog Box

The Line Format dialog box is displayed when the Line Format button is selected from the Line Format button from the Historic Log File Configuration dialog box. This option allows you to customize the line formatting in historic logs.

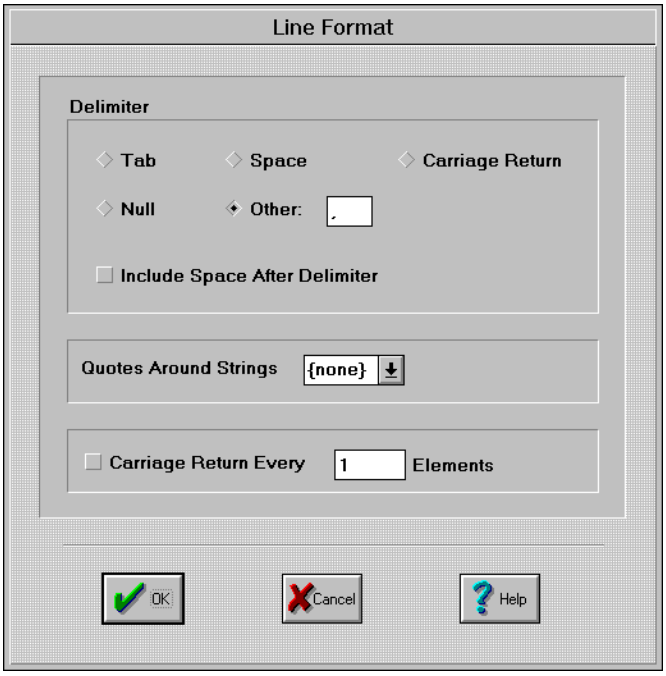

Figure 10-4: Line Format Dialog

Delimiter

Choose a delimiter option to separate the data in the log. Choose "Other" to enter a delimiter option that's not listed.

Check the "Include Space After Delimiter" box to append a space after each delimiter.

Quotes Around Strings

Selecting an option from this drop-down list puts quotes around each string in the log. The types of quotes to select from are: none, ', `, and ".

Carriage Return Every N Elements

Choose this option to insert a carriage return every N data elements on a line, where N is a number entered in the elements text box. This option is primarily intended for historic logs with very long data lines which are read by programs that cannot handle long data lines. The date and time information at the beginning of a data line are not counted as data elements. The N limit is 99999 elements.

Historic Log Point Dialog Box

This dialog box is displayed when the Append, Insert, or Modify buttons are selected from the Historic Log Configuration dialog box. Use this dialog box to select tags whose values are recorded to the historic log file during runtime.

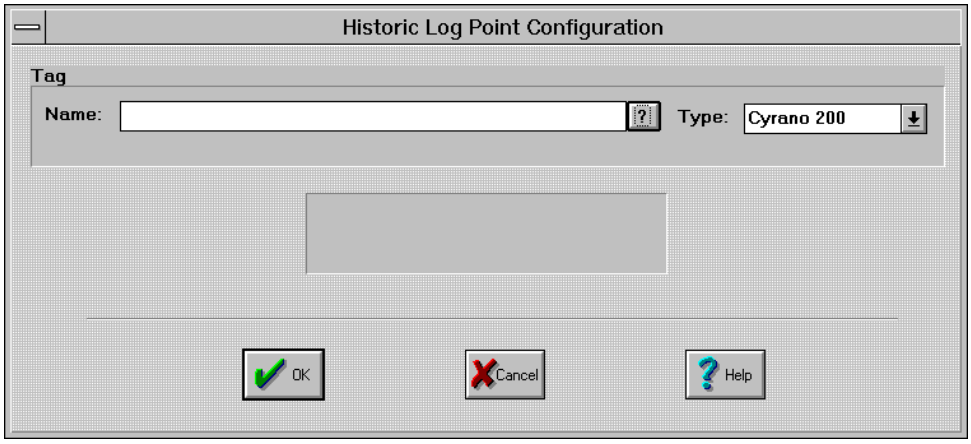

Figure 10-5: Historic Log Point Dialog Box

Select a Cyrano 200 type tag from the tag section of this dialog box to be used as the source of the data. For detailed information about specific tags, the Tag Selection dialog box may be displayed by clicking the mouse on the "?" to the right of the "Tag Name" field.

When creating log tables using table variables, the number of elements can be modified in the Tag Selection dialog box. The maximum number of elements in a log table is 1 million.

Floating Point Resolution Determines the number of digits to the right of the decimal point recorded for floating point numbers.

Tag Selection Dialog Box

The Tag dialog box is displayed when the ? button is clicked from the Historic Log Point dialog box. The dialog box lets you select the Cyrano tag you want to work with. The dialog box is divided into 5 sections: Controller, Item Type, Item Name List, Selected Fields, and Refresh Time (only for controller driven attributes and triggers).

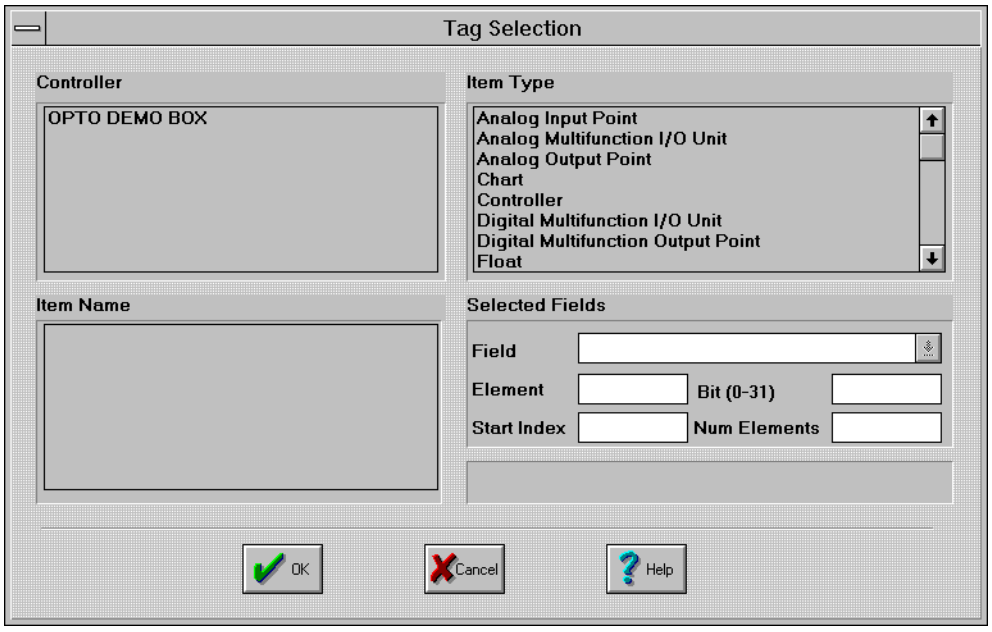

Figure 10-6: Tag Dialog Box

Controller

Select the Mistic controller which contains the tag you wish to use. If only one controller is available, it is automatically selected. Selection of a controller updates the ItemName list box so that it displays a list of the selectable Cyrano data types available in that controller's Cyrano strategy.

Item Type

Select the type of data you wish to use. The list contains only those types defined in the selected controller's Cyrano strategy. Selection of a specific item type updates the Item Name list box . It then displays a list of all the tags of that selection type. The Item Type selection also determines the Selected Field options available.

Item Name

This is an alphabetized list of the available Cyrano tags of the type specified in the ItemType list. You can select the tag of interest from this list.

Selected Fields

The item type of the selected tag determines which of these fields, if any, need to have contents specified. If an entry is not needed, then the option is not available.

Field — Specifies what data associated with the tag is of interest. For example, if the tag selected is of Item Type PID, then the available fields are Error, Enable, A/M, Input, Output, Setpoint etc. If the tag Item Type is Digital Multifunction Input Point, the available field is State. If the tag Item Type is FLOAT, the Field list box is disabled.

Bit — If the base type is Integer, a particular bit may be selected from the integer.

Element — If the selected ItemType is one of the Table types and only a single element of the table is desired, then this field can be used to select the index of the single element of interest.

Start Index & Num Elements — To select multiple elements from Item Type Table, use the Start Index to specify the first element and Num Elements to specify how many.

Refresh Time — Allows you to select the refresh time group to be used for scanning. All tags with the same refresh time group are scanned at the same time. A group with a refresh time of 0 seconds is scanned as fast as possible. Use the drop down button to select from the list of refresh time groups. The refresh time parameter is displayed if a controller driven attribute is being edited.

Historic Log Start/StopTrigger Dialog Box

This dialog box is displayed when the Start Trigger or Stop Trigger button is selected from the Historic Log Configuration dialog box. It allows you to configure either a start or stop trigger for a historic log.

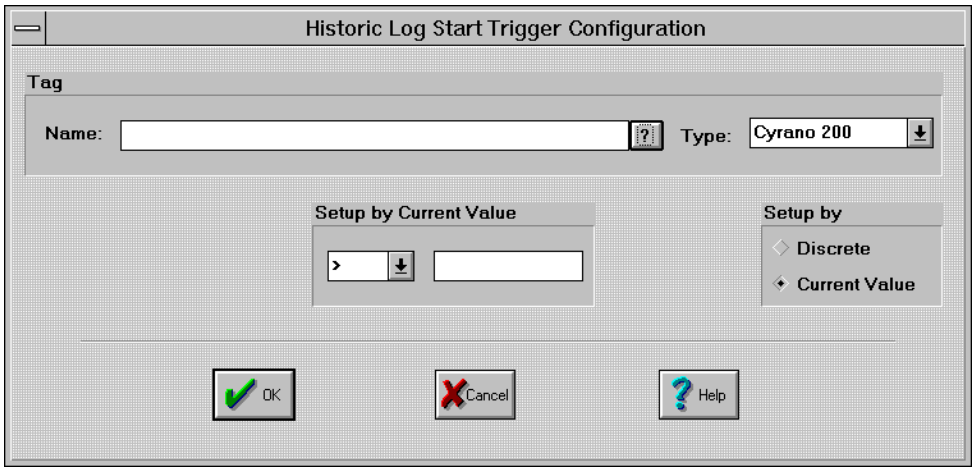

Figure 10-7: Historic Log Start/Stop Trigger Dialog Box

Name

Select a Cyrano type tag from the tag section of this dialog to be used as the source of the data. Prior to tag selection, you need to choose the tag base type as either discrete or value. Discrete types include those tags which can have only two distinct states (on and off), while value tag types are tags that can have several values. Use the "?" button to quickly locate and enter Cyrano tag name from the Tag Selection dialog box.

Setup By

This control group specifies the tag base type. Selecting either the Discrete or Current Value radio buttons subsequently causes the Setup By Discrete or Setup by Value controls to be displayed.

Setup By Discrete

This control group specifies an on or off trigger state for tags which have a discrete basetype.

Setup By Current Value

This control group defines a comparison value and mathematical operation to determine the trigger state for tags with a value basetype. The sampled tag value is compared against this specified trigger value according to the mathematical operation specified.
Mathematical operations include: =,>,<,<=,>=.

Triggers are edge sensitive and only activate on a positive transition from a non-triggered state.

Historic Log Stop Trigger Notification Dialog Box

This dialog box appears when the Notification button is pressed from the Historic Log Configuration dialog box. The Notification dialog box lets you define a tag and value that's written to that tag when a Stop Trigger has occurred. You must select a tag from the tag section of this dialog to use as the destination for the data.

Figure 10-8: Historic Log Stop Trigger Notification Dialog Box

Set/Offset

Select Set if you want the value used as a replacement for the tag's current value. Select Offset if you want the value added to the tag's current value.

Value Out

This field defines the floating point or integer value written to the specified tag.

SOUND

OVERVIEW

The MMI provides a Windows sound interface. The sound interface can use standard .WAV and MIDI files to generate a variety of sounds via a multimedia board. Operator messages and notifications can be prerecorded and triggered by events in the process.

DIALOG BOXES

The following dialog boxes are used to configure sounds into your MMI project.

Sounds Dialog Box

This dialog box is displayed when Configure→Sounds is selected from the MMI Configurator Configure menu. It contains a list of names of all the sound events configured for the current MMI project . Up to 1000 sounds events per project are allowed. Sound files must reside in the MMI project directory.

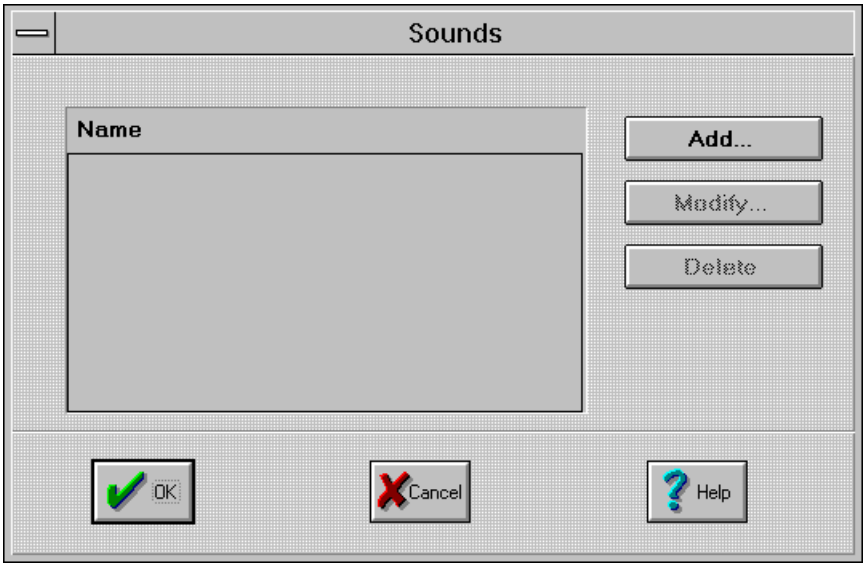

Figure 11-1: Sounds Dialog Box

A sound file is associated with each sound event and contains data regarding the sound to be played. Both .WAV (digitized sound) and .MID files are supported. Several sound files are included with Microsoft Windows and others are available from various sources such as CompuServe, specialty CD-ROMs, and public BBS's. The Windows Media Player utility (MPLAYER.EXE) can be used for sound "browsing" purposes to play .WAV and .MID files over your PC's installed sound hardware.

Use of the MMI sound capability requires that the PC executing the MMI Runtime have an installed and properly configured sound card (which supports the desired sound file types) and associated driver.

Sound List

This is a list of the names of all the sound events that are configured for the current MMI project. New sound events can be added to the list by selecting the Add button. Existing sound events can be modified or deleted from the list by selecting the Modify or Delete buttons.

Add Button

Selecting the Add button causes the Sound Configuration dialog box to be displayed so new sound events can be added to the project.

If there are no sound events in the project, the Modify and Delete buttons cannot be selected. If there are sound events configured, selecting one in the sound list enables the Modify and Delete buttons

Modify Button

Selecting the Modify button causes the Sound Configuration dialog box to be displayed so the parameters associated with the selected sound event can be changed.

Delete Button

Selecting the Delete button displays a dialog box which asks the user to confirm the selected sound is to be removed from the sound list. Selecting OK removes the sound event from the list, while selecting Cancel or ESC exits the delete process without affecting the sound list.

Sound Configuration Dialog Box

This dialog box is displayed when either the Add or Modify button is selected from the Sounds dialog box. Using this dialog box, you can configure the name, sound file, and start/stop triggers that define the sound event. Sound files must reside in the MMI project directory.

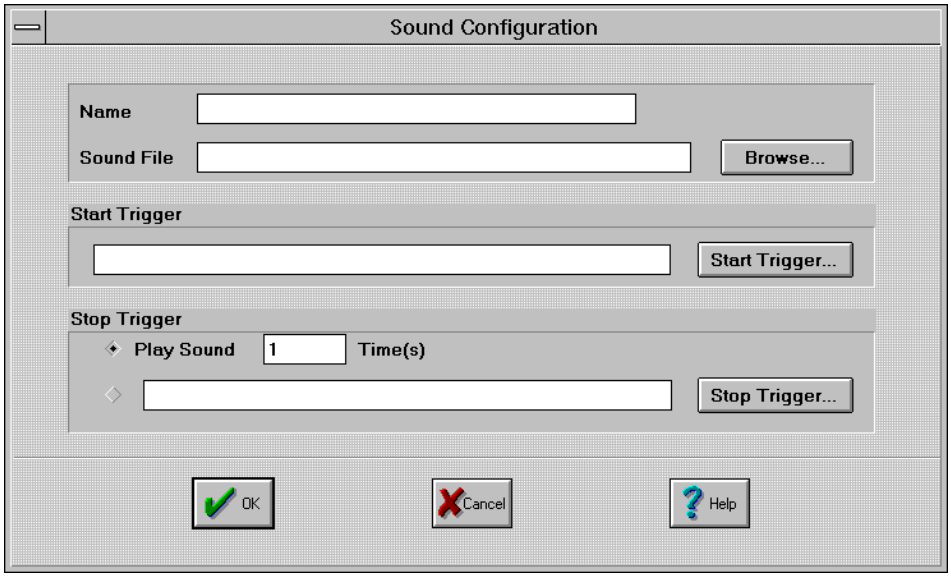

Figure 11-2: Sound Configuration Dialog Box

Name — Enter a name for the sound event being configured. No two sound events in a project may have the same name.

Sound File/Browse Button — Select the Browse button to list sound files found in the project directory. They're displayed in the Select a Sound File dialog box. In this dialog box, the List Files of Type field may be used to select .WAV files or .MID files. Once the desired sound file has been selected, its name is placed in the Sound File field of the Sound Configuration dialog box.

Start Trigger — Selecting the Start Trigger button displays the Sound Start Trigger Configuration dialog box. This dialog box is used to configure the tag and tag conditions that causes the sound file to begin playing. The tag name and associated tag condition that comprise the start trigger are displayed in the edit box.

Stop Trigger

There are two different methods to stop a sound file from playing – by either using 1) a repeat count, or 2) a stop trigger.

1) Select the button next to the "Play Sound ___ Times" text. The sound repeats the number of times specified by the value you enter in the editable field and then stop. This value defaults to one, but you can enter any desired value.

2) Select the button next to the stop trigger edit box. A stop trigger event is configured by selecting the Stop Trigger button and filling in the fields in the Sound Stop Trigger Configuration dialog box. Exiting that dialog box, the tag name and associated condition which comprise the stop trigger are displayed in the edit box.

Sound Start/Stop Trigger Dialog Box

This dialog box is displayed when the Start Trigger or Stop Trigger button is selected from the Sound Configuration dialog box.

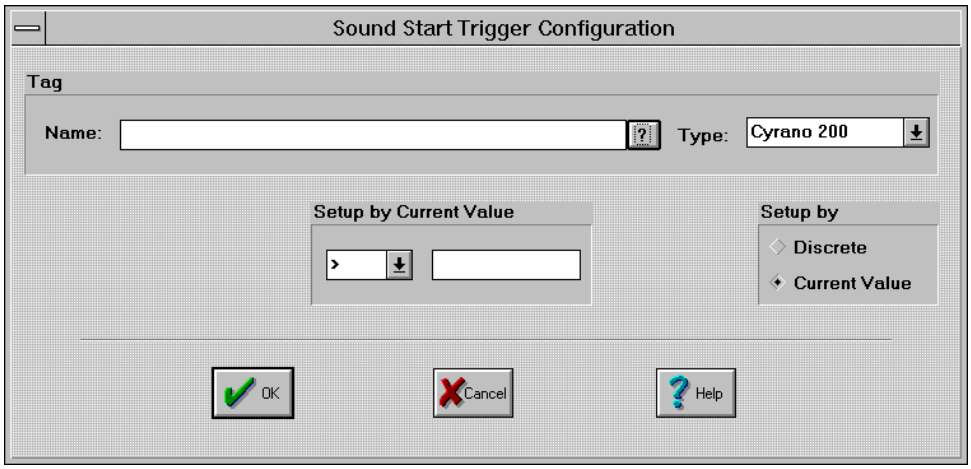

Figure 11-3: Trigger Dialog Box

Name

Select a Cyrano type tag from the tag section of this dialog box to be used as the source of the data. Prior to tag selection, you need to choose the tag base type as either discrete or value. Discrete types include those tags which can have only two distinct states (on and off), while value tag types are tags that can have several values. Use the "?" button to quickly locate and enter Cyrano tag name from the Tag Selection dialog box.

Setup By

This control group specifies the tag base type. Selecting either the Discrete or Current Value radio buttons subsequently causes the Setup By Discrete or Setup by Value controls to be displayed.

Setup By Discrete

This control group specifies an on or off trigger state for tags which have a discrete basetype.

Setup By Current Value

This control group defines a comparison value and mathematical operation to determine the trigger state for tags with a value basetype. The sampled tag value is compared against this specified trigger value according to the mathematical operation specified.
Mathematical operations include: =,>,<,<=,>=

Triggers are edge sensitive and only activate on a positive transition from a non-triggered state.

Tag Selection Dialog Box

The Tag dialog box is displayed when the ? button is clicked from the Sound Start/Stop Trigger Configuration dialog box. The dialog box lets you select the Cyrano tag you want to work with. The dialog box is divided into 5 sections: Controller, Item Type, Item Name List, Selected Fields, and Refresh Time (only for controller driven attributes and triggers).

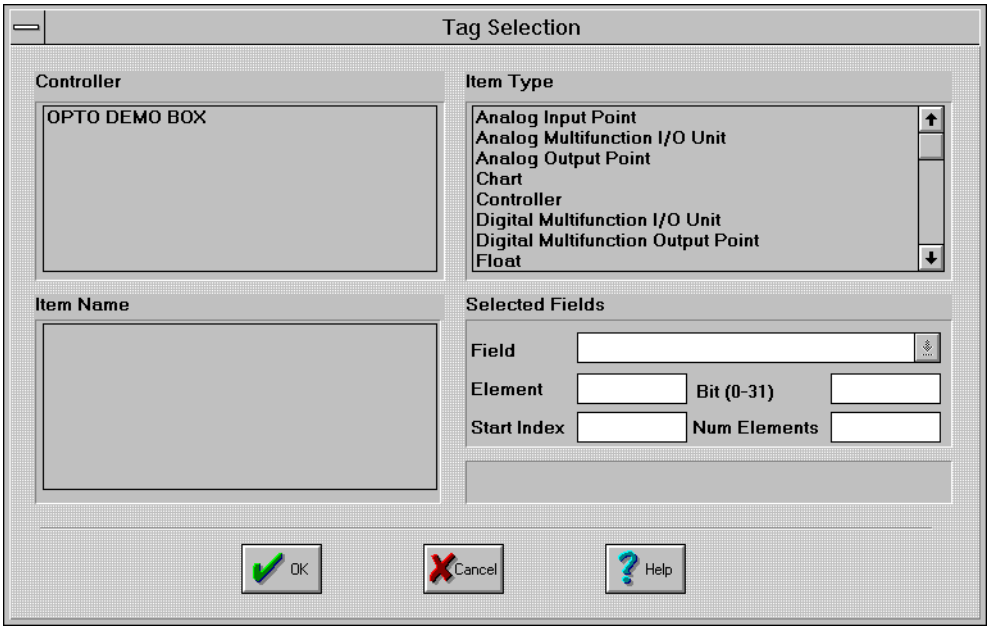

Figure 11-4: Tag Dialog Box

Controller

Select the Mistic controller which contains the tag you wish to use. If only one controller is available, it is automatically selected. Selection of a controller updates the ItemName list box so that it displays a list of the selectable Cyrano data types available in that controller's Cyrano strategy.

Item Type

Select the type of data you wish to use. The list contains only those types defined in the selected controller's Cyrano strategy. Selection of a specific item type updates the Item Name list box . It then displays a list of all the tags of that selection type. The Item Type selection also determines the Selected Field options available.

Item Name

This is an alphabetized list of the available Cyrano tags of the type specified in the ItemType list. You can select the tag of interest from this list.

Selected Fields

The base type of the selected item determines which of these fields, if any, need to have contents specified. If an entry is not needed, then the cursor for the dialog box is prevented from entering that dialog box control.

Field — Specifies what data associated with the tag is of interest. For example, if the tag selected is of Item Type PID, then the available fields are Error, Enable, A/M, Input, Output, Setpoint etc. If the tag Item Type is Digital Multifunction Input Point, the available field is State. If the tag Item Type is FLOAT, the Field list box is disabled.

Bit — If the base type is Integer, a particular bit may be selected from the integer.

Element — If the selected ItemType is one of the Table types and only a single element of the table is desired, then this field can be used to select the index of the single element of interest.

Start Index & Num Elements — To select multiple elements from Item Type Table, use the Start Index to specify the first element and Num Elements to specify how many.

Refresh Time — Allows you to select the refresh time group to be used for scanning. All tags with the same refresh time group are scanned at the same time. A group with a refresh time of 0 seconds is scanned as fast as possible. Use the drop down button to select from the list of refresh time groups. The refresh time parameter is displayed if a controller driven attribute is being edited.

DRAW WINDOW STATE

OVERVIEW

The draw window state configures the appearance of your application by controlling which windows are displayed at what times. Windows may be triggered by events in the controller, such as alarms, and job completion. Changes in a draw window's visual state can act as alarms to force immediate operator attention when a trigger occurs.

The dialog boxes presented in this chapter may be used to configure window managers and a window's visual state. A window manager is a draw window combined with a trigger allowing dynamic control of the draw window visual state.

DIALOG BOXES

Use the following dialog boxes to configure the windows of your project.

Window Managers Dialog Box

This dialog box is displayed when Configure→Window State is selected from the MMI Configurator Configure menu. It contains a list of the names of all the window managers that have been configured for the current MMI project. Up to 1000 window managers per project are allowed.

Figure 12-1: Window Managers Dialog Box

Name

This is a list of the names of all the window managers configured for the current MMI project. New window managers can be added to the list by selecting the Add button. If there are window manager events configured, selecting one in the window manager list enables the Modify and Delete buttons. If there are no window manager events in the project, the Modify and Delete buttons cannot be selected.

Add Button — Select the Add button to display the Window Manager Configuration dialog box and add new window managers to the project.

Modify Button — Selecting the Modify button causes the Window Manager Configuration dialog box to be displayed so the parameters associated with the selected window manager can be changed.

Delete Button — Selecting the Delete button displays a dialog box asking the user to confirm the selected window manager is to be removed from the window manager list. Selecting OK removes the window manager from the list while selecting Cancel or ESC exits the delete process without affecting the window manager list.

Window Manager Configuration Dialog Box

This dialog box is displayed when either the Add or Modify button is selected from the Window Manager List dialog box. The Window Manager Configuration dialog box is used to create or modify a window manager within the project. A window manager is a draw window combined with a trigger allowing dynamic control of the draw window visual state. Changes in a draw window's visual state can act as alarms to force immediate operator attention when a trigger occurs.

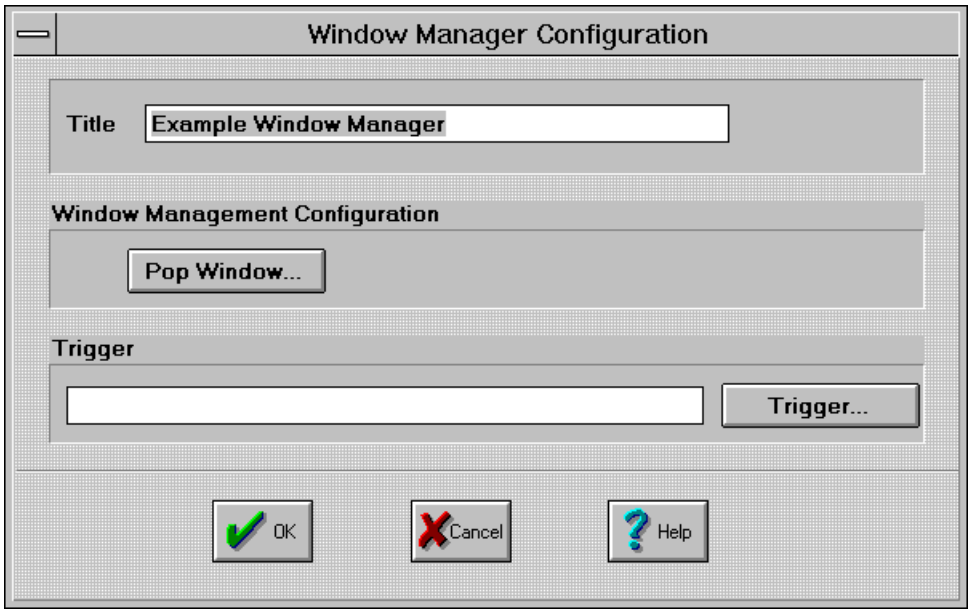

Figure 12-2: Window Manager Configuration Dialog Box

Title — This edit box enables you to specify a name for the window manager being configured. The name must be unique from all window managers within the project or an error message is displayed if OK is selected to exit the dialog box.

Pop Window — Selecting this button displays the Pop Window dialog box. You can enter information about the draw window(s) that are affected by the Trigger.

Trigger — Selecting the Trigger button displays the Trigger dialog box. Define a tag and its associated condition that comprises the trigger for the window manager. The trigger is edge sensitive and only activates from a non-triggered state. The tag and its associated condition are displayed in the edit box.

Pop Window Dialog Box

The Pop Window dialog box is displayed when the Pop Window button is pressed from the Window Manager Configuration dialog box. Use is to configure visual states (open, iconified, closed) for a project's draw windows after an event has occurred. The following description of this dialog box refers to a generic event. The particular event being configured is determined by the menu selection or dialog box selection that caused this dialog box to appear.

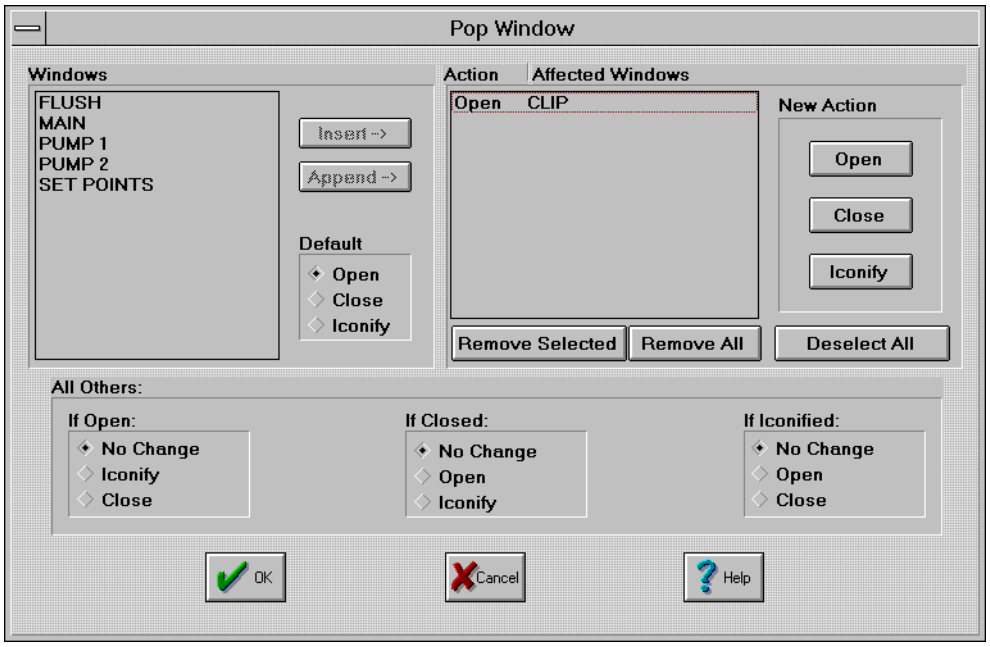

Figure 12-3: Pop Window Dialog Box

To specify a new visual state, first use the Windows list box to select the draw windows that are affected by the event. Click the Insert or Append button to remove them from the Windows list box and add them to the Affected Windows list. The desired action can be specified for each. Finally, actions can be specified for all draw windows that have not been added to the Affected Windows list. The following sections describe how to perform these actions.

Windows

The Windows list is a multiple selection list box used to select the draw windows to be affected by the event. Selections from this list box can be added to the Affected Windows list box using the Insert or Append buttons. The new visual state of the selected draw windows is initially specified by the Default radio button group. The new state can be changed after the entry is in the Affected Windows list. See that section for details. Each time entries are added to the Affected Windows list, they are removed from the Windows list and are left in the selected state in the Affected Windows list and any that were previously selected are deselected.

The order of the draw windows in the Affected Windows list is important when any of the draw windows to be opened overlap other draw windows to be opened. If such an overlap exists, those that are nearer the top of the list will obscure those lower in the list. Proper draw window ordering can be obtained using the Insert and Append buttons.

Append This button adds the selected draw windows at the bottom of the Affected Windows list.

Insert The Insert button places the selected Windows names before the selected window name in the Affected list. Only one entry may be selected in the Affected Windows list for this button to be enabled.

Affected Windows List

The Affected Windows list is a multiple selection list box. Each entry has two parts: the name of the draw window and the action to be performed when the event takes place. Entries are added to the list by the methods described in the Window List section.

There are several buttons that perform operations on entries selected in the list.

Open, Close, and Iconify These buttons define the window state for the entries selected.

Remove Selected This button removes the selected entries from the list and returns them to the Windows list.

Remove All This button removes all entries from the list and returns them to the Windows list.

Deselect All This button deselects all entries in the list. The entries remain in the list but they are set to the deselected state.

All Others

You may want to configure new visual states for all draw windows not included in the Affected Windows list when the event occurs. The If Open, If Closed, If Iconified groups have radio buttons for this purpose. The radio buttons provide a No Change option, and the other two possible window states for a particular group. The radio button selected in each group determines the new visual state for all the draw windows currently in that group's state when the event occurs. For example, if the Close radio button is selected in the If Open grouping, then all open draw windows not listed in the Affected Windows list are closed when the event occurs. The No Change radio button means that there should be no change for draw windows referred to by that grouping. This button is the default for each group.

Window Manager Start Trigger Configuration Dialog Box

This dialog box is displayed when the Trigger button is selected from the Window Manager Configuration dialog box.

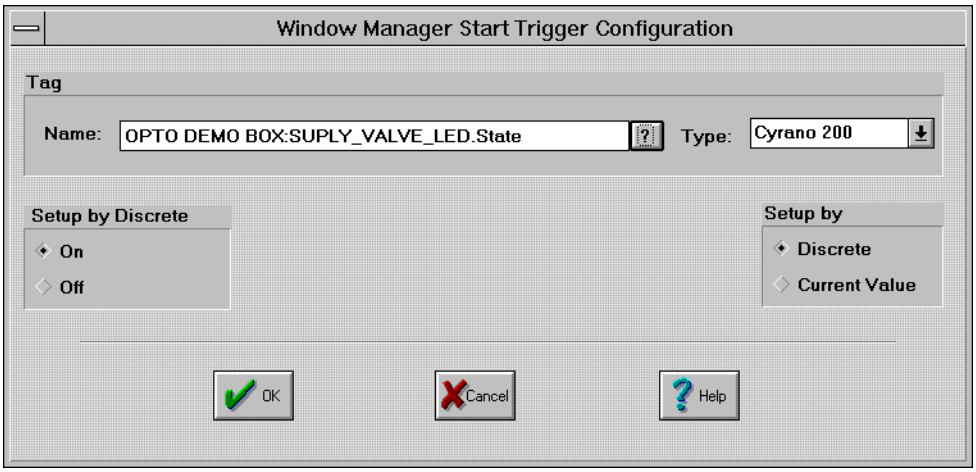

Figure 12-4: Window Manager Start Trigger Configuration

Name

Select a Cyrano type tag from the tag section of this dialog to be used as the source of the data. Prior to tag selection, you need to choose the tag base type as either discrete or value. Discrete types include those tags which can have only two distinct states (on and off), while value tag types are tags that can have several values. Use the "?" button to quickly locate and enter Cyrano tag name from the Tag Selection dialog box.

Setup By

This control group specifies the tag base type. Selecting either the Discrete or Current Value radio buttons subsequently causes the Setup By Discrete or Setup by Value controls to be displayed.

Setup By Discrete

This control group specifies an on or off trigger state for tags which have a discrete basetype.

Setup By Current Value

This control group defines a comparison value and mathematical operation to determine the trigger state for tags with a value basetype. The sampled tag value is compared against this specified trigger value according to the mathematical operation specified.
Mathematical operations include: =,>,<,<=,>=

Triggers are edge sensitive and only activate on a positive transition from a non-triggered state.

Tag Selection Dialog Box

The Tag dialog box is displayed when the ? button is clicked from the Window Manager Start Trigger Configuration dialog box. The dialog box lets you select the Cyrano tag you want to work with. The dialog box is divided into 5 sections: Controller, Item Type, Item Name List, Selected Fields, and Refresh Time (only for controller driven attributes and triggers).

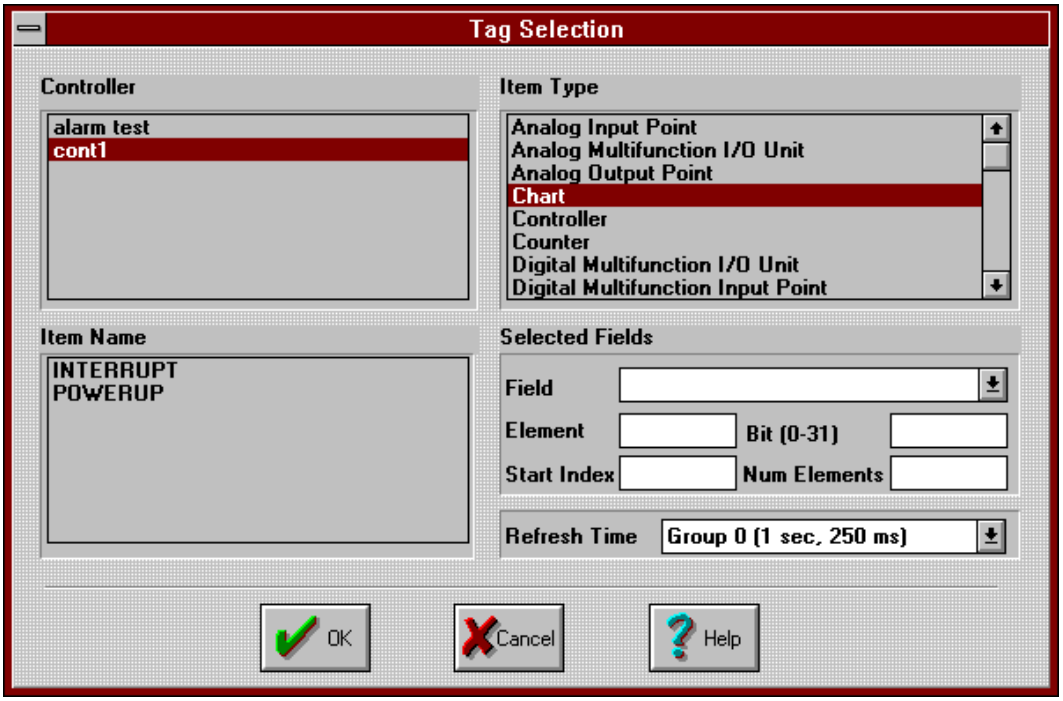

Figure 12-5: Tag Dialog Box

Controller

Select the Mistic controller which contains the tag you wish to use. If only one controller is available, it is automatically selected. Selection of a controller updates the ItemName list box so that it displays a list of the selectable Cyrano data types available in that controller's Cyrano strategy.

Item Type

Select the type of data you wish to use. The list contains only those types defined in the selected controller's Cyrano strategy. Selection of a specific item type updates the Item Name list box . It then displays a list of all the tags of that selection type. The Item Type selection also determines the Selected Field options available.

Item Name

This is an alphabetized list of the available Cyrano tags of the type specified in the ItemType list. You can select the tag of interest from this list.

Selected Fields

The base type of the selected item determines which of these fields, if any, need to have contents specified. If an entry is not needed, then the cursor for the dialog box is prevented from entering that dialog box control.

Field — Specifies what data associated with the tag is of interest. For example, if the tag selected is of Item Type PID, then the available fields are Error, Enable, A/M, Input, Output, Setpoint etc. If the tag Item Type is Digital Multifunction Input Point, the available field is State. If the tag Item Type is FLOAT, the Field list box is disabled.

Bit — If the base type is Integer, a particular bit may be selected from the integer.

Element — If the selected ItemType is one of the Table types and only a single element of the table is desired, then this field can be used to select the index of the single element of interest.

Start Index & Num Elements — To select multiple elements from Item Type Table, use the Start Index to specify the first element and Num Elements to specify how many.

Refresh Time — Allows you to select the refresh time group to be used for scanning. All tags with the same refresh time group are scanned at the same time. A group with a refresh time of 0 seconds is scanned as fast as possible. Use the drop down button to select from the list of refresh time groups. The refresh time parameter is displayed if a controller driven attribute is being edited.

CHAPTER 13

LAUNCHING APPLICATIONS

OVERVIEW

The MMI is capable of starting other applications. This is known as "launching an application". Applications can be launched in two ways. The first uses the Launch Application Output Dynamic Attribute. The second method is to configure an Application Manager. The MMI maintains a list of Application Managers.

A trigger or graphic may be configured to launch an application. Every time the trigger or graphic is toggled, a new session of the application is created, unless the application only allows one session, or you've selected the option to limit it to one session for that particular graphic or trigger. For example, suppose a graphic launches the Windows Calculator program. If the Calculator program is not closed when a user is done with it, they might just click on the graphic again. This could lead to many sessions of the calculator program running all at once. The "single instance" option for the Dynamic Attribute Launch Application eliminates this problem.

The "single instance" option forces the Runtime to check if this trigger or graphic has already launched an application. If this trigger or graphic's already launched an application, that application becomes the active session. If the trigger or graphic does not have a launched application, the Runtime launches it and tracks it until it's closed.

You can also choose the initial appearance of a launched application. Applications may be launched normally, or with its main window maximized or minimized.

DIALOG BOXES

Use the following dialog boxes to configure the launching of applications from the Mistic MMI.

Application Managers Dialog Box

This dialog box is displayed when the Configure→Applications menu option is selected from the MMI Configurator. It contains a list of the names of all the application managers that have been configured for the current MMI project. Up to 1000 application managers are allowed per project.

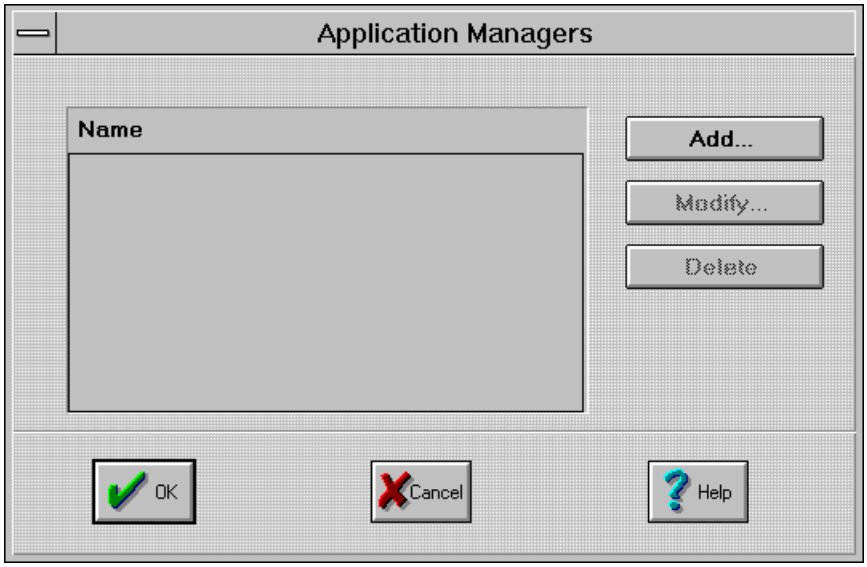

Figure 13-1: Application Managers Dialog Box

Application Managers List

This is a list of the names of all the application managers configured for the current MMI project. New application managers can be added to the list by selecting the Add button. Existing application managers can be modified or deleted from the list by selecting the Modify or Delete buttons.

Add — Selecting the Add button displays the Application Manager Configuration dialog box. New application managers can be added to the project with this dialog box.

Modify Button — Selecting the Modify button displays the Application Manager Configuration dialog box. Parameters associated with the selected application manager can be changed with this dialog box.

Delete Button — Selecting the Delete button displays a dialog asking the user to confirm if the selected application manager should be removed from the application manager list. Choose OK to remove the application manager from the list. Choose Cancel or ESC to exit the delete process without affecting the application manager list.

Application Manager Dialog Box

This dialog box is displayed when either the Add or Modify button is selected from the Application Manager List dialog box. Use it to create or modify an application manager for the project. With this dialog box, you can configure the name, command line parameters, working directory, and start trigger that define the application manager.

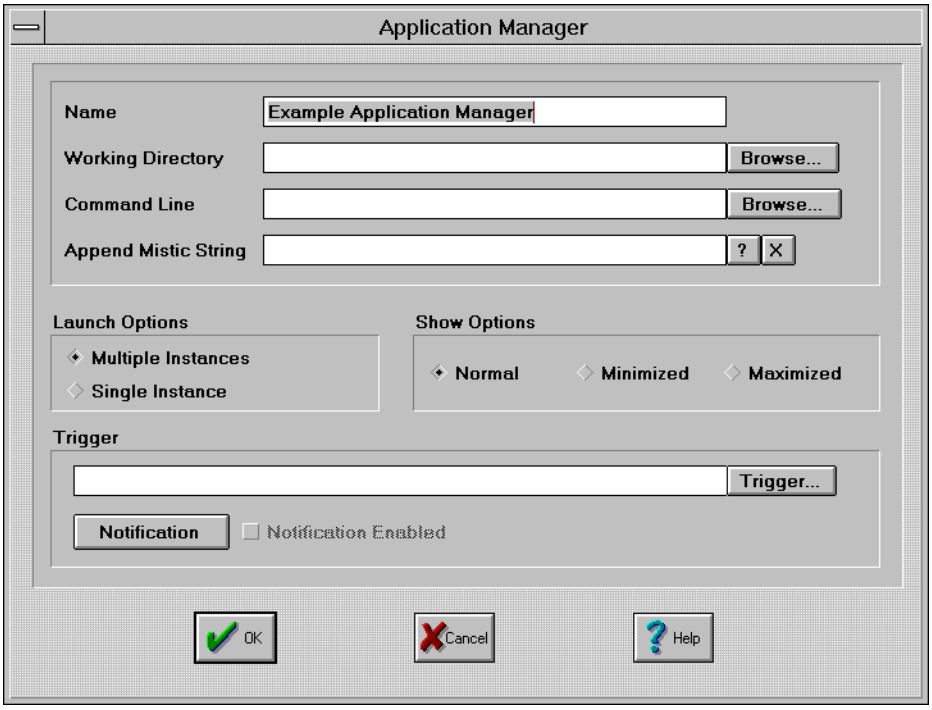

Figure 13-2: Application Manager Dialog Box

Name Enter a name for the application manager being configured. No two application managers may have the same name in a project.

Working Directory/Browse Button

Use this option to select the working directory to use when the specified application is launched. The working directory is an optional parameter. If a working directory is not specified, the current MMI Runtime directory is used. Clicking the Browse button displays a dialog titled Working Directory Selection. When you exit this dialog box, the selected path is displayed in the edit box.

Command Line/Browse Button

Use this option to choose a program file to execute when the trigger condition occurs. Clicking the Browse button displays the Application Manager Executable File Selection dialog box. When you exit this dialog box, the selected path is displayed in the edit box. The Command Line can be modified at any time.

Append Mistic String/Browse/Clear Button

This optional feature allows a string from a Mistic controller tag to be appended to the Command Line string. The string is appended to the command line string before the application is launched. A possible use for this option is to save command line options for an application in the controller. Only tag names may be entered. Literal strings are not accepted. If the appended string is a parameter, a space must be included in the Command Line string to separate it from the main command line.

Selecting the "?" button displays the Tag Selection dialog box to choose a string variable from the controller strategy. Pressing the "X" button clears the tag name entered.

Trigger

Choose the Trigger button to define a tag and its trigger condition. The Application Manager Trigger Selection dialog box is displayed. The trigger is edge sensitive and only activates from a non-triggered state. The tag and its associated condition are displayed in the edit box.

Notification Button

Choose this button to display the Launch Application Trigger Notification dialog box. This option lets you select a tag and write a value to it when an application is successfully launched.

Notification Enabled Check Box

This checkbox allows enabling and disabling of the "Notification" option once it's configured. The "Notification Enabled" box remains disabled until the notification is configured. A check mark in the box indicates the notification is enabled.

Launch Options

Applications can be launched so that a new session is created each time, or so that only one session is running at a time for a single graphic.

Multiple Instances This option launches a new session of an application each time the operator selects the graphic. Some applications only allow one session of an application to run, while others allow multiple sessions.

Single Instance This option forces the Runtime to check if this graphic has already launched an active session of this application. If the application is running, it becomes the active application. If the application is not running, the Runtime launches it, and keeps track of when it is closed.

The single instance option does not limit the number of active sessions of an application that is launched by other graphics and triggers. The single instance option only applies to each graphic or trigger and makes sure each only has one session launched from it. Therefore, it is possible to have multiple active sessions of an application, even when this option is used.

Show Options

The show options control the initial appearance of the application when it is launched.

Normal This option displays the application window in a normal view.

Minimized The application is displayed as an icon when it is launched.

Maximize The application is displayed as an enlarged window when it is launched.

Application Manager Trigger Selection Dialog Box

This dialog box is displayed when the Trigger button is selected from the Application Manager Configuration dialog box. Use it to configure either a start or stop trigger for dynamic objects such as window managers, historic logs, application managers, or sounds.

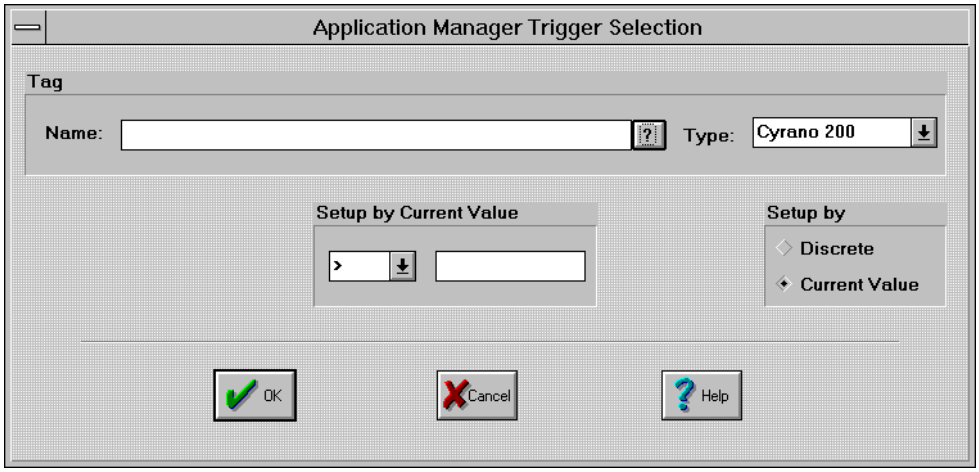

Figure 13-3: Application Manager Trigger Selection Dialog Box

Name

Select a Cyrano type tag from the tag section of this dialog box to be used as the source of the data. Prior to tag selection, you need to choose the tag base type as either discrete or value. Discrete types include those tags which can have only two distinct states (on and off), while value tag types are tags that can have several values. Use the "?" button to quickly locate and enter Cyrano tag name from the Tag Selection dialog box.

Setup By

This control group specifies the tag base type. Selecting either the Discrete or Current Value radio buttons subsequently causes the Setup By Discrete or Setup by Value controls to be displayed.

Setup By Discrete

This control group specifies an on or off trigger state for tags which have a discrete basetype.

Setup By Current Value

This control group defines a comparison value and mathematical operation to determine the trigger state for tags with a value basetype. The sampled tag value is compared against this specified trigger value according to the mathematical operation specified.
Mathematical operations include: =,>,<,<=,>=.

Triggers are edge sensitive and only activate on a positive transition from a non-triggered state.

Tag Selection Dialog Box

The Tag dialog box is displayed when the ? button is clicked from the Application Manager or the Application Manager Trigger Selection dialog box. The dialog box lets you select the Cyrano tag you want to work with. The dialog box is divided into 5 sections: Controller, Item Type, Item Name List, Selected Fields, and Refresh Time (only for controller driven attributes and triggers).

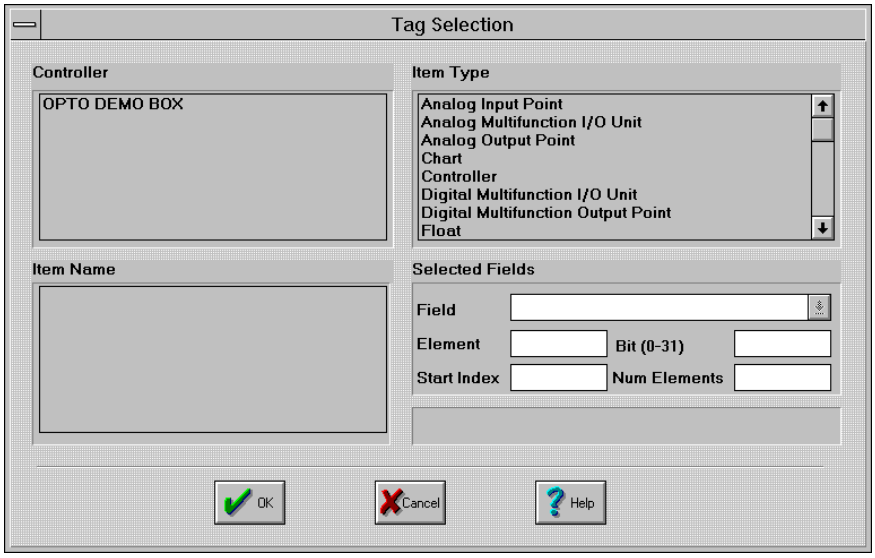

Figure 13-4: Tag Dialog Box

Controller

Select the Mistic controller which contains the tag you wish to use. If only one controller is available, it is automatically selected. Selection of a controller updates the ItemName list box so that it displays a list of the selectable Cyrano data types available in that controller's Cyrano strategy.

Item Type

Select the type of data you wish to use. The list contains only those types defined in the selected controller's Cyrano strategy. Selection of a specific item type updates the Item Name list box . It then displays a list of all the tags of that selection type. The Item Type selection also determines the Selected Field options available.

Item Name

This is an alphabetized list of the available Cyrano tags of the type specified in the ItemType list. You can select the tag of interest from this list.

Selected Fields

The base type of the selected item determines which of these fields, if any, need to have contents specified. If an entry is not needed, then the cursor for the dialog box is prevented from entering that dialog box control.

Field — Specifies what data associated with the tag is of interest. For example, if the tag selected is of Item Type PID, then the available fields are Error, Enable, A/M, Input, Output, Setpoint etc. If the tag Item Type is Digital Multifunction Input Point, the available field is State. If the tag Item Type is FLOAT, the Field list box is disabled.

Bit — If the base type is Integer, a particular bit may be selected from the integer.

Element — If the selected ItemType is one of the Table types and only a single element of the table is desired, then this field can be used to select the index of the single element of interest.

Start Index & Num Elements

To select multiple elements from Item Type Table, use the Start Index to specify the first element and Num Elements to specify how many.the first element and Num Elements is used to specify how many.

Refresh Time — Allows you to select the refresh time group to be used for scanning. All tags with the same refresh time group are scanned at the same time. A group with a refresh time of 0 seconds is scanned as fast as possible. Use the drop down button to select from the list of refresh time groups. The refresh time parameter is displayed if a controller driven attribute is being edited.

Launch Application Trigger Notification Dialog Box

This dialog box appears when the Notification button is pressed from the Application Manager dialog box. The Notification dialog box lets you define a tag and value that's written to that tag when a Stop Trigger has occurred. You must select a tag from the tag section of this dialog box to use as the destination for the data.

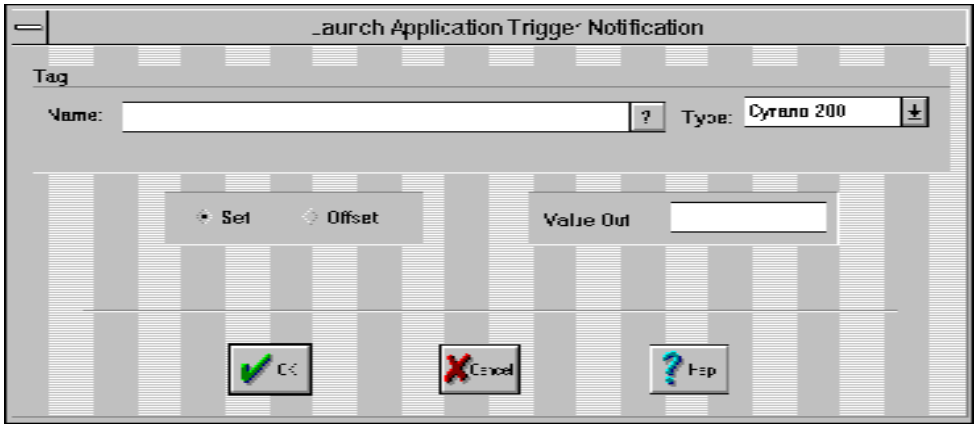

Figure 13-5: Launch Application Trigger Notification Dialog Box

Set/Offset

Select Set if you want the value used as a replacement for the tag's current value. Select Offset if you want the value added to the tag's current value.

Value Out

This field defines the floating point or integer value written to the specified tag.

RUNTIME SETUP

OVERVIEW

This Runtime Setup chapter addresses the configuration of the initial appearance of the MMI Runtime when it begins execution. You can specify which Draw Windows you want open or closed, if you want the menu displayed, and whether you want to prevent the user from exiting the program. Customize the appearance of the main window and choose options to modify the on-screen keyboards for the Send String and Send Value dialog boxes. Also customize the Event Log. The Event Log displays messages about the MMI status and its transactions.

This chapter begins with a discussion on preventing user exit. You will find this useful when you're working with the Runtime Setup dialog box. The chapter then goes into the details of the dialog boxes used to configure the Runtime settings.

PREVENTING USER EXIT

In some situations, it may be desirable to configure the runtime environment so the user is prevented from exiting the MMI Runtime program and switching to other Windows programs.

Preventing Exit

The Configure→Run Time command in the MMI Configurator is used to prevent user exit from the MMI Runtime. Once the MMI Runtime begins executing a project configured this way, the user is prevented from switching to a different project or from exiting the program.

Preventing Switching

It is possible to configure Windows in a way that prevents the user from switching to an application other than the MMI Runtime. This is accomplished by making the MMI Runtime program the shell program for Windows.

The file SYSTEM.INI contains a line which begins "SHELL=". This line identifies the program that Windows will use as its shell when it begins execution. Usually the Program Manager is used as the shell and the line in SYSTEM.INI reads "SHELL=PROGMAN.EXE". If this entry is changed so that Windows thinks the MMI Runtime is the shell, Windows will start MMI Runtime when the user starts Windows from the DOS prompt. For example, if the MMI Runtime program, MMIRT.EXE, is located in the directory C:\MMI then change the entry to "SHELL=C:\MMI\MMIRT.EXE".

Exiting Windows

If the MMI Runtime is running a project which prevents user exit and Windows is running the MMI Runtime as its shell, the only way to exit Windows is by using the CTRL-ALT-DEL key combination. The MMI software includes a Utility Diskette which contains a Windows executable file NOCAD.EXE (for NOControlAltDelete) and a Windows virtual device driver NOCAD.386 which can be used to disable and enable the CTRL-ALT-DEL key functionality. The diskette contains a file NOCAD.TXT which provides the necessary details.

DIALOG BOXES

The following dialog boxes are used to configure the Runtime appearance at startup.

Runtime Setup Dialog Box

Use this dialog box to configure various conditions at the time MMI Runtime begins execution.

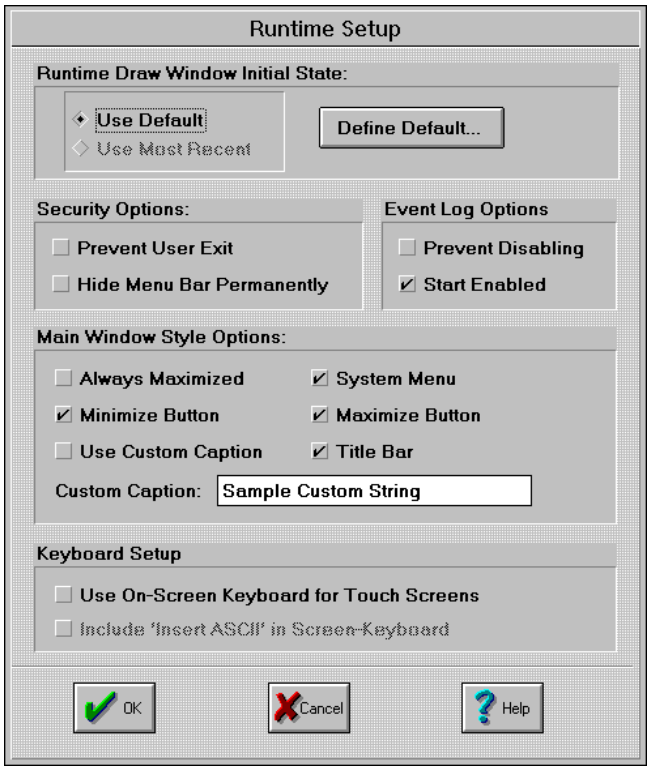

Figure 14-1: Runtime Setup Dialog Box

Runtime Draw Window Initial State

The initial state refers to the position, visual state, and visibility of the project's draw windows at the time they are initially displayed, after the project is loaded. Visibility refers to whether a draw window is obscured by another draw window.

Use Default Check this option to specify the visual state and visibility of the windows.

Use Most Recent The Use Most Recent feature is not implemented in version 3.0.

Define Default If **Use Default** is checked, you must select **Define Default** to display the Pop Window dialog box. Use it to define the desired visual states and visibility.

Security Options

Prevent User Exit Check this to prevent the user from changing the project currently open in the MMI Runtime or from exiting the MMI Runtime.

If you want to prevent a user from switching to another Windows application, refer to the Preventing User Exit in an upcoming section.

Hide Menu Bar Permanently Check this to prevent display of the menu bar in the MMI Runtime. This feature provides a way to prevent the MMI Runtime user from accessing the MMI Runtime menus. The ESC key does not activate the menu bar. Access to selected menu items and graphics such as text and buttons can be configured with Touch—Execute Menu Item output dynamic attribute graphics.

When the menu bar is not visible due to this feature, pressing the F1 function key does not invoke the MMI Runtime online help system. To offer access to the online help system, configure a graphic with a Touch—Execute Menu Item and specify the Help menu item.

Event Log Options

Prevent Disabling — Choose this option to prevent a user from disabling the Event Log during Runtime.

Start Enabled — Choose this option to enable the Event Log at startup.

Main Window Style Options:

Use these options to customize the MMI Runtime application window.

Always Maximized — Check this box to always maximize the Runtime window.

Minimize Button — Check this box to include a minimize button in the Runtime window.

Use Custom Caption — Check this box to use the caption specified in the Custom Caption text box.

Custom Caption — Used to enter a customized caption. This caption is used if the Use Custom Caption check box was selected. Up to 80 characters may be entered.

System Menu — Check this box to include the standard Windows System Menu.

Maximize Button — Check this box to include a maximize button in the MMI Runtime window.

Title Bar — Check this box to include a title bar in the Runtime window.

Keyboard Setup

Use these options to change the typical keyboard setup.

Use On—Screen Keyboard for Touch Screens

Check this option to enable the use of an on-screen keyboard with the Send String and Send Value Dynamic Attributes. Use this option when the MMI Runtime is running on a computer without a physical keyboard and a touchscreen. Selecting this option affects all Send String and Send Value Dynamic Attributes in a project.

Include 'Insert ASCII' in Screen-Keyboard

Select this option to include the 'Insert ASCII' parameter in the On-Screen Send String dialog box. The 'Insert ASCII' feature allows a user to enter any character value between 0-255. This option is only available for the Send String Dynamic Attribute. The Use On—Screen Keyboard for Touch Screens option must be checked in order for this option to be available.

Pop Window Dialog Box

The Pop Window dialog box is displayed when the Define Default button is pressed from the Runtime Setup dialog box. Use is to configure visual states (open, iconified, closed) for a project's draw windows after an event has occurred. The following description of this dialog box refers to a generic event. The particular event being configured is determined by the menu selection or dialog box selection that caused this dialog box to appear.

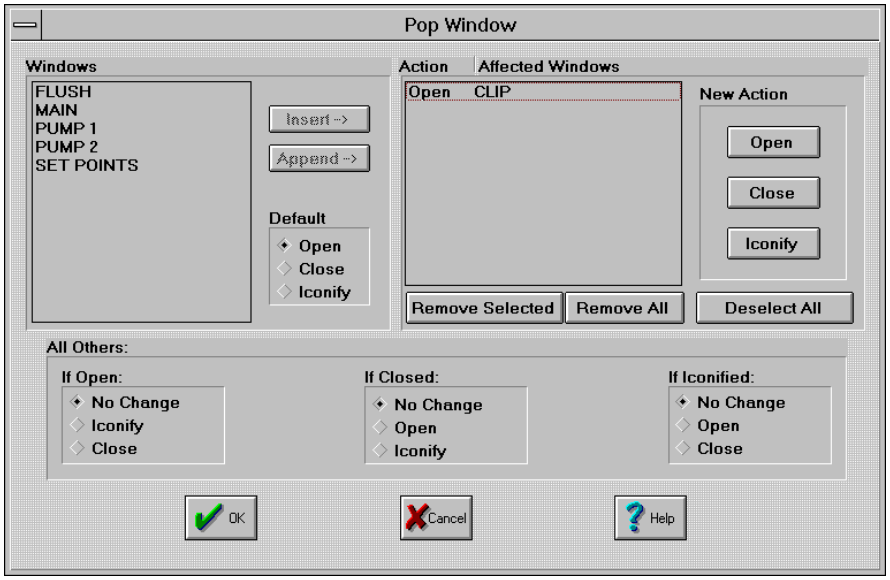

Figure 14-2: Pop Window Dialog Box

To specify a new visual state, first use the Windows list box to select the draw windows that are affected by the event. Click the Insert or Append button to remove them from the Windows list box and add them to the Affected Windows list. The desired action can be specified for each. Finally, actions can be specified for all draw windows that have not been added to the Affected Windows list. The following sections describe how to perform these actions.

Windows

The Windows list is a multiple selection list box used to select the draw windows to be affected by the event. Selections from this list box can be added to the Affected Windows list box using the Insert or Append buttons. The new visual state of the selected draw windows is initially specified by the Default radio button group. The new state can be changed after the entry is in the Affected Windows list. See that section for details. Each time entries are added to the Affected Windows list, they are removed from the Windows list and are left in the selected state in the Affected Windows list and any that were previously selected are deselected.

The order of the draw windows in the Affected Windows list is important when any of the draw windows to be opened overlap other draw windows to be opened. If such an overlap exists, those that are nearer the top of the list will obscure those lower in the list. Proper draw window ordering can be obtained using the Insert and Append buttons.

Append This button adds the selected draw windows at the bottom of the Affected Windows list.

Insert The Insert button places the selected Windows names before the selected window name in the Affected list. Only one entry may be selected in the Affected Windows list for this button to be enabled.

Affected Windows List

The Affected Windows list is a multiple selection list box. Each entry has two parts: the name of the draw window and the action to be performed when the event takes place. Entries are added to the list by the methods described in the Window List section.

There are several buttons that perform operations on entries selected in the list.

Open, Close, and Iconify These buttons define the window state for the entries selected.

Remove Selected This button removes the selected entries from the list and returns them to the Windows list.

Remove All This button removes all entries from the list and returns them to the Windows list.

Deselect All This button deselects all entries in the list. The entries remain in the list but they are set to the deselected state.

All Others

You may want to configure new visual states for all draw windows not included in the Affected Windows list when the event occurs. The If Open, If Closed, If Iconified groups have radio buttons for this purpose. The radio buttons provide a No Change option, and the other two possible window states for a particular group. The radio button selected in each group determines the new visual state for all the draw windows currently in that group's state when the event occurs. For example, if the Close radio button is selected in the If Open grouping, then all open draw windows not listed in the Affected Windows list are closed when the event occurs. The No Change radio button means that there should be no change for draw windows referred to by that grouping. This button is the default for each group.

Event Log Configuration Dialog Box

This dialog box is displayed when Configure→Event Log is selected from the MMI Configurator menu. It allows you to specify the attributes of the event log file and to enable or disable the writing of the file. Only one Event Log can be configured for the project.

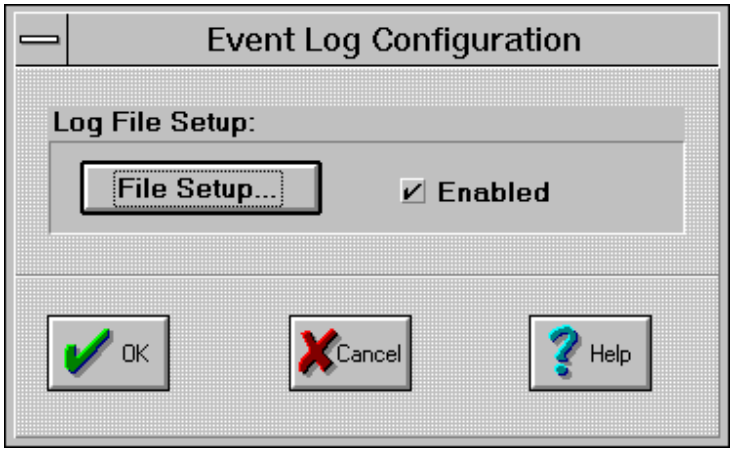

Figure 14-3: Event Log Configuration Dialog Box

File Setup

Selecting the File Setup button displays the Event Log Configuration dialog box. Use this dialog box to specify file parameters such as rollover period, the amount of data to buffer in memory, and the filename and directory location of the Event Log.

As events are received, a time stamp is recorded and the two are buffered in the host's memory until they reach the buffer size limit configured in the Event Log File Configuration dialog box. Once the limit is reached, the buffer contents are written to the event log file.

If the rollover is None, the filename is EVENTLOG.MSG.

File names are dependent on the rollover period specified in the Event Log File Configuration dialog box and follow the format:

where YY = year, mm = month, dd = day, and hh = hour.

If the rollover period is None, then the filename is EVENTLOG.MSG. File name extensions are .MSG. The number of files retained on disk for the message log is also set in the Event Log File Configuration dialog box. Once this limit is reached during Runtime, the file with the oldest DOS time stamp is deleted.

Enabled Check Box

If the Enabled check box is checked, then an event log file will be written to disk.

Event Log File Configuration Dialog Box

The Event Log File Configuration dialog box allows you to configure the format in which data files are stored to disk. Files are stored in standard ASCII delimited format. The size, number of files, and line formats are user configurable. This dialog box is used in conjunction with other dialogs that need to configure file formats.

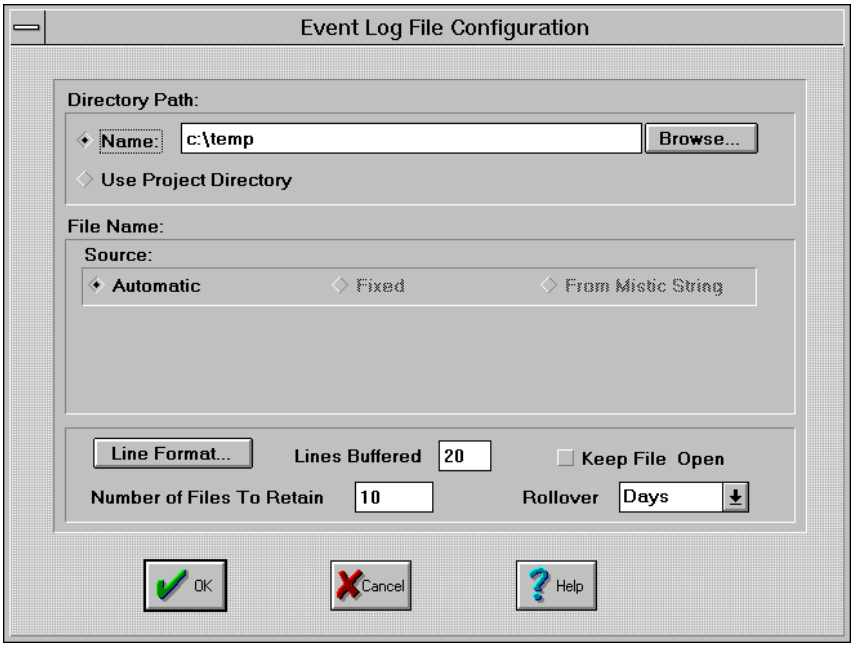

Figure 14-4: Event Log File Configuration Dialog Box

Name — Use this edit box to enter the directory path and filename for a data file. This parameter is initially blank and can be directly edited or changed with the Browse button.

Browse — A path for the data file may be specified by using the Browse button.

Use Project Directory — Choosing this option specifies the file be put into the MMI project directory.

Automatic — Select this option to automatically specify the filename selected in the Directory Path group.

Fixed

Use this option to specify a file name for the data file. The filename can be any valid, 8 character DOS file name and does not require a 3 character extension. A directory path name must be specified either explicitly in this field, or by having selected the Use Project Directory option. If the Name option was selected, its corresponding edit box must have a file name.

A Start Trigger option must be configured and enabled for this file name source. When the trigger starts a historic log, the new data is appended if the file already exists, and is created if it does not.

Rollover does not apply to this type of file.

From Mistic String:

This option lets you specify a string tagname from a Cyrano control strategy and use it to define the file name source. The tagname is specified in the MisticString edit box with the "?" button. The tag selected must be a string type.

A Start Trigger option must be configured and enabled. When the trigger occurs, the MisticString tag is concatenated to the Directory Path Name. The Directory Path Name may be an empty string. If this is the case, the tagname must contain the complete path name, including the drive designator (such as c:). This option lets a historic log produce different file names each time a trigger occurs. If a file already exists, the new data is appended to it. If it does not exist, the file is created.

The Default Name is used to specify a file name in case the Mistic string concatenation does not create a valid file name. The filename can be any valid, 8 character DOS file name. Do not include a 3 character extension. If the default file name is used, the extension is an "H" followed by the historic log's ID number (Example: .H00 if the ID were 00).

In case the tagname entered in MisticString is empty, then the Project Directory is concatenated with the default file name to create the path and file name.

If the result of the concatenation is a directory or file that can't be accessed or created, the logging file is created using the following rules:

- If the MisticString is empty, then the Project Directory is concatenated with the "Default Name if Mistic String Invalid"and the extension is an "H" followed by the historic log ID number.
- If the MisticString is not empty and the Project Directory was not specified as the directory path, then the Directory Path Name is concatenated with the "Default Name if Mistic String Invalid".
- If the Project Directory was specified as the path, or the previous step failed, the Project Directory is concatenated with the "Default Name if Mistic String Invalid" and the extension is an "H" followed by the historic log ID number. If the project directory is read-only or there is not enough room left on the drive containing the project directory, an error is posted indicating the file could not be created.
- Rollover does not apply to this type of file.

Line Format

The Line Format button displays the Line Format dialog box and allows you to customize the line formatting in historic and event logs.

Lines Buffered

Lines buffered configures the number of data lines (samples) which are buffered in system memory before the data is written to disk. Valid entries are any number between 0 and 999. A small "Lines Buffered" value combined with fast sample rates may result in excessive disk access. A large "Lines Buffered" value may result in loss of data in the event of power loss or system failure.

Keep File Open

When data samples are recorded to disk, the data file is opened, data is written to disk, and the data file is closed. This allows maximum data integrity but slows disk access since each disk access requires an open, write, and close sequence. This option allows the MMI to keep the current data file open for writes, increasing disk performance. Should the system loose power or fail, however, the current data file may be damaged or lost.

Number of Files to Retain

This edit box contains the number of files that will be stored on the disk before the oldest file is deleted. If Rollover is set to Hours and the Number of Files to Retain is set at 30, only the last 30 hours' data would be stored on disk. Any files older than 30 hours would be deleted.

Rollover

The Rollover edit box allows you to select a rollover period which determines how often a new data file is created. You may select Hours, Days, Month, or None from the drop-down list box. See Rollover Settings for more details.

Rollover Settings

The Rollover drop-down list allows the user to select how often a new data file is created. The user may select Hours, Days, Month, or None from the drop-down list box. For time based rollovers, the DOS time and date functions are used in determining time-of-day and day-of-month. Be sure the system time and date are set prior to starting the MMI.

Selecting hours will cause a new data file to be created at the top of every hour. If data logging were trigged at 8:30am, the first data file would contain data from 8:30am to 9:00am. Thereafter, data files will contain data from 9:00am to 10:00am, 10:00am to 11:00am, etc. The data files will therefore contain a maximum of one hours' data depending on when logging is triggered.

Selecting days will cause the current data file to close and a new data file to be created every day at midnight. If data logging were trigged at 7:00pm on the 5th, the first data file would contain data from 7:00pm to 12:00pm on the 5th. Thereafter, data files will contain data from midnight the 5th to midnight the 6th, midnight the 6th to midnight the 7th, etc. The data file will therefore contain a maximum of one days' data.

Selecting month will cause a new data file to be created on the first day of every month at midnight. If data logging were started on the January 27th, the first data file would contain data from the 27th of January to the 1st of February. Thereafter, data files will contain data from the 1st of February to the 1st of March, the 1st of March to 1st of April, etc. The data file will therefore contain a maximum of one months' data.

Selecting None causes all logged data to be placed in a single data file. Logging begins when the Start Trigger is activated Whenever logging is triggered, data will be appended to the existing data file. The size of the file is limited only by available disk space. Care should be taken to not allow a data file to consume all the available disk space.

Line Format Dialog Box

The Line Format dialog box is displayed when the Line Format button is selected from the Configure→Event Log and Configure→Historic Log commands. This option allows you to customize the line formatting in event and historic logs.

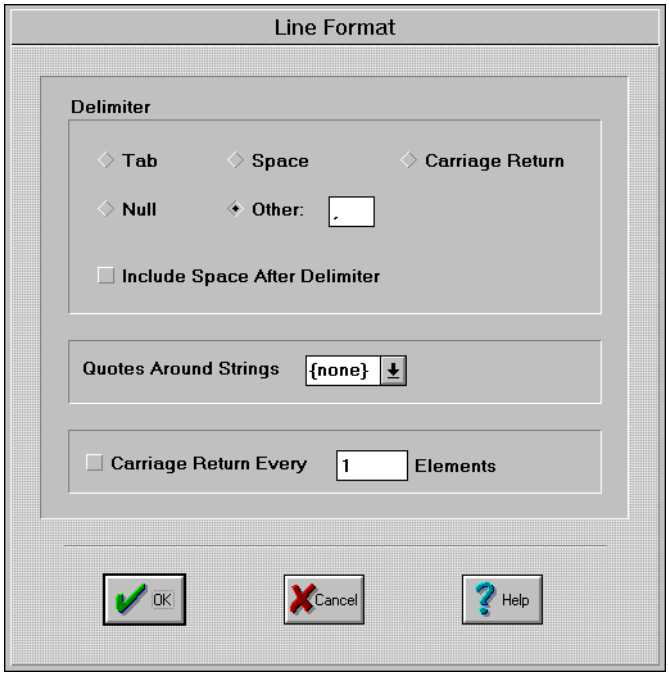

Figure 14-5: Line Format Dialog Box

Delimiter

Choose a delimiter option to separate the data in the log. Choose "Other" to enter a delimiter option that's not listed.

Check the "Include Space After Delimiter" box to append a space after each delimiter.

Quotes Around Strings

Selecting an option from this drop-down list puts quotes around each string in the log. The types of quotes to select from are: none, ', `, and ".

Carriage Return Every N Elements

Choose this option to insert a carriage return every N data elements on a line, where N is a number entered in the elements text box. This option is primarily intended for historic logs with very long data lines which are read by programs that cannot handle long data lines. The date and time information at the beginning of a data line are not counted as data elements. The N limit is 99999 elements.

RUNTIME MENUS

Runtime Menus provide access to the runtime commands. These commands allow you to open and close projects, view the event log, and view the controller configurations.

Figure 15-1: MMI Runtime Menu

FILE MENU

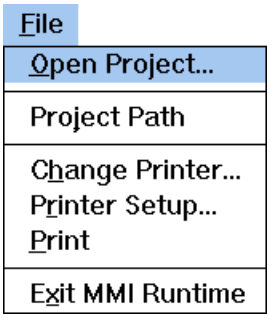

Figure 15-2: File Menu

Open Project (File Menu)

Use this command to load an existing project created by the MMI Configurator. The Open Project dialog box lets you select the directory containing the project you want to open. Scanning and animation begin immediately once the project is loaded.

Project Path (File Menu)

This command displays the full project pathname in a Message Box. The project pathname is also displayed in the Program's Title Bar, however if the full project pathname is too long to fit in the Title Bar, then only the project name is shown.

Change Printer (File Menu)

This command selects from one of the configured Windows print devices. The print device must have previously installed Windows printers.

Printer Setup (File Menu)

Displays a dialog box which allows configuration of default printer settings. This dialog box is specific to each type of printer. See the Windows User Manual for more information on printer settings.

Print (File Menu)

Takes a snapshot of the MMI Runtime screen and sends it to the currently selected printer.

With the Mistic MMI, you can print graphics from the Configurator main window, draw windows, and the Runtime windows, with the File→Print command. The window of interest must be displayed in order to print it. What you see on your screen is what is sent to the printer.

You can select printer devices with the File→Change Printer command. Printing is sent to available printer devices which have been previously installed through the Windows Control Panel. For information on installing printers, refer to the Windows system documentation on the topic.

Exit MMI Runtime (File Menu)

Stops the scanner, closes all Runtime windows, and exits the MMI Runtime.

VIEW MENU

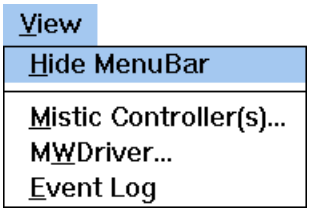

Figure 15-3: View Menu

Hide Menu Bar (View Menu)

This command causes the top menu bar to disappear allowing a larger screen area. To make the menu bar reappear, press ESC.

Mistic Controller(s) (View Menu)

Selecting this command displays the Controller List dialog box. This dialog box lists all of the Mistic controllers that are configured for the project. Selecting a controller and pressing the Inspect button displays the Controller Status dialog box. This dialog box displays each controller's status and allows you to disconnect the MMI from a controller. Refer to Chapter 16, *Runtime Controller Attachment*, Controller Status dialog box, for more information about Runtime controller status.

MWDriver (View Menu)

Choosing this command displays the "MWDRIVER.DLL Information" message box. The MWDRIVER.DLL version and the path from where it was loaded is displayed.

Event Log (View Menu)

The Event Log command displays the Runtime system event log. This log contains system errors and messages received during Runtime. The list box contains the most recent system event messages generated by the MMI. Each message consists of a date and time stamp, and message text. The message text describes events such as communications errors, and I/O errors. Scroll bars may be used to view prior messages. If the text of the message is too wide to completely fit in the list box area, you can double-click the message and it will be displayed in its entirety in a window message box.

Auto restore on new message

This field appears in the Event Log. The enable and disable options may be used to configure how the Event Log Viewer appears during Runtime. If 'Auto restore on new message' is enabled, then the Event Log Viewer dialog box automatically becomes the foreground window when a new event message is received. Selecting Cancel hides the Event Log Viewer dialog box until it reappears as described above.

WINDOW MENU

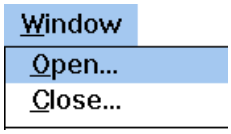

Figure 15-4: Window Menu

Open (Window Menu)

Use this command to open any Runtime window which is currently closed. An Open Window dialog box will display a lists of closed windows.

Close (Window Menu)

Use this command to close any currently open or iconified Runtime window. A Close Window will display a list of currently open windows.

Open Window List (Window Menu)

Currently opened or iconified windows are listed in the Window Menu. Up to nine window names are displayed and if more than nine windows are opened, a menu item named More Windows is appended.

Select a draw window name to cause that draw window to be displayed in front of all other opened draw windows. If more than nine windows are opened, selecting More Windows will display a list box with all the names of all opened windows. Select from the list box the window you want brought to the front. A window must be opened or iconified for it to be listed.

HELP MENU

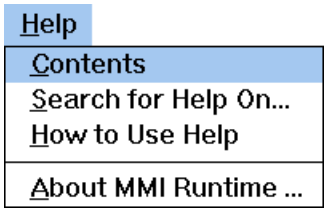

Figure 15-5: Help Menu

Contents (Help Menu)

Starts Help and displays the topics in MMI Runtime Help.

Search for Help On (Help Menu)

Opens the Search dialog box for MMI Runtime Help. Using the Search dialog box, you can look up Help information by using keywords.

How to Use Help (Help Menu)

Describes how to use Help.

About MMI Runtime (Help Menu)

Choosing this command displays information about the MMI Runtime. Information displayed includes the Runtime version and date, and minimum versions required for Cyrano, Mistic controller kernels, and the MWDRIVER.DLL.

RUNTIME CONTROLLER ATTACHMENT

OVERVIEW

During the MMI Runtime, parameters for configured controllers may be inspected.

CONTROLLER LIST DIALOG BOX

This dialog box is displayed when the Configure→Mistic Controllers menu item is selected from the MMI Runtime menu. It contains a list of all the Mistic controller names configured for the current MMI project.

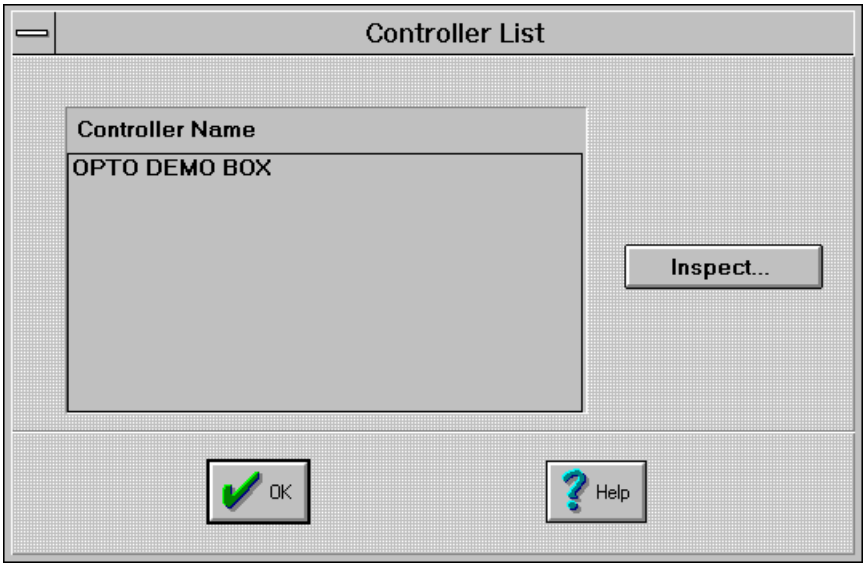

Figure 16-1: Controller Dialog Box

Controller Name — This is a list of all the controllers names that are configured for the current MMI project. Controller parameters can be queried by selecting the Inspect button after first selecting the specific controller in this list box.

Inspect

Selecting the Inspect button displays the Controller Status dialog box so you can obtain information about the selected controller. Information includes EPROM version, available memory, program state, and .GML file information. You may also use the Controller Status dialog box to manually attach or detach a controller. Detaching a controller from the MMI stops the data from being scanned for that controller. The Inspect button can only be used after a controller name has been selected in the Controller Name list.

CONTROLLER STATUS DIALOG BOX

This dialog box is displayed when the Inspect button is selected from the Controller List dialog box. Using this dialog box, you can obtain information about the controller as well as manually attach or detach a controller.

Figure 16-2: Controller Status Dialog Box

Controller

Name

Displays the name of the selected controller from the MMI application's controller list.

Address

Displays the selected controller's address.

Type

Shows the model of the Mistic 200 controller. Possible types are the G4LC32, G4LC32ISA, G4LC32SX, and M4RTU.

PC Port

Type

Displays the computer host port connection to the controller. Possible connection types are ARCnet, AC37/AC42, ISA Direct, and WIN COM. The ARCnet port types have a hex value address in the I/O Adr: and the RAM Address: fields. Alternately, AC37/AC42, ISA Direct, and WIN COM port connections display the I/O Adr and Baud fields.

AC37/AC42 connections show the hex value I/O Address while ISA Direct and WIN COM ports display a COMn (n=values 1 through 4) port connection in the I/O Adr: field.

ISA Direct fields display a N/A in the BAUD field.

Retries

This displays the number of times the computer attempts to establish communications with the controller.

Time Out (sec)

This field displays the amount of time (in seconds) the computer waits before reattempting to establish communications with the currently selected controller.

Re-enable (sec)

This is the period of time that the program waits after a communication attempt has failed before it attempts to re-establish communication to the controller. Every failed communication attempt automatically disables the associated controller. The program uses this Re-enable time to enable the controller for another attempt at communication.

Mode

This field displays the currently selected manner of communication between the controller and host computer for AC37/AC42, ISA DIRECT, and WIN COM PC port types. Valid modes include ASCII or Binary. If the PC port type is ARCnet, the mode is set to N/A. A detailed description of Binary and ASCII modes is found in Chapter 5, Controller Configuration, under Controller Communications.

Controller State

EPROM version

Displays the current EPROM version in the Mistic controller.

Available Memory

Displays the amount of available RAM memory in the Mistic controller in bytes.

Program State Displays the current program state, either RUN or STOP.

GML File Name Displays the eight character file name for the GML file name associated with the Cyrano strategy which is resident in the Mistic controller.

GML File Time Displays the DOS creation time for the GML file associated with the Cyrano strategy which is resident in the Mistic controller.

GML File Date Displays the DOS creation date for the GML file associated with the Cyrano strategy which is resident in the Mistic controller.

Communication

Attach This button allows you to manually attach the Mistic controller to resume scanning. You can query the controller with this button to determine if communication can be established. If communication with the controller is not established and you have not manually detached it, the Status field indicates "Detached on Error". If communication with the controller is not established and the Controller was manually detached by the user, the Status field indicates "Detached by User". Finally, if communication is successful, the Status field indicates "Attached."

Detach This button allows you to manually detach the controller and suspend all scanning associated with that controller. Upon selecting this button, the Status field indicates "Detached by User".

Status This field indicates the current communication status between the host PC and the controller. Upon entry to this dialog box, a query is made to obtain the controller's status. If the controller has been detached by the user, this status indicates "Detached by User". If the controller has not been manually detached, and the query is unsuccessful, the status indicates "Detached on Error". If the controller is not manually detached and the query is successful, the status indicates "Attached". From this point, the status reflects the current controller state desired as the user selects either the Attach or Detach buttons.

Error This field appears when an error is detected. A comprehensive list of Runtime errors is found in Appendix A, Messages and Errors.

ERRORS AND MESSAGES

OVERVIEW

During Configuration and Runtime, the Mistic MMI may alert you to an error condition. Errors are caused by incorrect equipment setup, out of date files, or equipment failure.

Errors can be grouped into three major categories: Configurator Errors, Runtime Errors, and Windows Errors. Configuration errors occur during the construction and attachment of graphics while in the Configurator. Runtime errors occur while running a project. Windows errors are issued by the Windows environment.

Configurator errors occur when building a project. Errors are most common when entering data into a dialog's edit box. If an improper value is entered, the Mistic MMI will inform you of the error. Simply reenter the value.

Along with the errors generated by the Mistic MMI, Windows itself will display errors. The most common Windows errors occur when too many applications are running at the same time. The Windows documentation contains a description of these errors.

Runtime errors occur during Runtime and can be further categorized as Controller, File Access, Historic Log, Launch Application, Port, Recipe, Scanner, Server, or System errors. Most errors can be traced to improper configuration of the Mistic controller or the I/O unit hardware.

CONTROLLER ERRORS (RUNTIME)

The Mistic controller reports the following runtime errors. The source of the error may be the Mistic controller or one or more I/O units.

Buffer Overrun

This error occurs if the data returned from the I/O units is too long (>255 characters) or too short (data length is 0). Check for possible noise interference, proper termination, or other factors which may affect communication lines to the controlller.

Communications Watchdog

The communication link watchdog timer has timed out. The Mistic controller is unable to communicate with one or more I/O units. This might be caused by improper wiring or termination. See "I/O Checksum Error" below.

Controller Bus Error

This error is usually caused by a problem in the Mistic kernel or library. It could also be caused by a failure in the Mistic 200 processor hardware. The failure may be due to a bad memory or port device. When this error occurs, the chart in the controller that caused the error is stopped. If this error occurs, make sure that all cards in the Mistic controller are properly seated.

Controller Compile Error

The MMI was unable to compile a custom Forth word on the Mistic controller during scanning. Custom Forth words are used by the MMI to accelerate scanning by aggregating queries of several tags into one word.

Controller Definition Incomplete

An incomplete user defined command was downloaded to the controller. This can occur if MISTIC.LIB was downloaded with an incorrect FORTH word definition.

Controller Dictionary Full (Switched to Slow Scan)

The controller has insufficient memory to compile a new Forth word generated by the MMI. The MMI creates custom Forth words to accelerate scanning. Each custom word contains queries for several tags found in the same scan group. The increase in scanning efficiency is achieved by making a single query to the controller to obtain values for all the tags compiled into the custom Forth word. This reduces the overhead required if each tag is queried individually. If this error occurs, the MMI must revert to querying each tag individually which is called "Slow Scan."

Controller Empty Stack

The Mistic controller generates this error during a download or while running. A command is requesting more items from the stack than are available. Example: An ENDIF (Forth "THEN") without a corresponding IF.

Controller EPROM Out of Date

The controller EPROM version on the Mistic controller does not meet the minimum version requirements for this version of the MMI. The minimum required EPROM version is identified as the Mistic Version in the About dialog.

Controller Error

The Mistic controller receives a message it does not understand. This may be caused by wiring or noise problems between the host computer and the Mistic controller.

Controller Execute Error

The Mistic controller encounters a program instruction which it cannot execute. During runtime, this error may indicate a corrupt program file.

Controller GML Date Stamp Invalid

The date stamp for the current Cyrano strategy was not currently obtained from the Mistic controller. Check connections with the Mistic controller.

Controller GML Date/Time Incompatible

The date and time stamp recorded on the controller for the current Cyrano strategy does not match the date and time of the GML file which was used to configure the MMI project. MMI Runtime operation will continue. Any tags which may have changed can cause scanning errors. The MMI Configurator should be run to update the internal GML time stamp recorded in the MMI project and verify connections to any tags which may have changed.

Controller GML File Name Incompatible

This error commonly occurs when a new or modified strategy is downloaded to a controller and the Mistic MMI runtime is started. If the MMI was configured with a strategy file that does not match the one in the controller, this error will be reported. Enter the configurator and select New Strategy from the Configure, Mistic Controller Menu.

Controller GML Time Stamp Invalid

The time stamp for the current Cyrano strategy was not correctly obtained from the Mistic controller. Check connections with the Mistic controller.

Controller Out Of Memory (Switched to Slow Scan)

The program and data in the Mistic controller has exceeded the available controller memory. This error usually occurs during program download. During runtime, this error occurs when the MMI is compiling custom Forth words for compressed scanning. These words may be compiled any time a MMI Runtime window is initially opened.

Controller Stack Full

The stack on the Mistic controller cannot grow any further. This error may be caused by an error in a library (Cyrano's MISTIC.LIB file), the include file (Cyrano's MISTIC.INC file), or words downloaded by the MMI.

Controller Strategy Invalid

The Mistic MMI did not find a Cyrano strategy at the controller during the verification process. Make sure a Cyrano strategy was downloaded to the controller before trying to run the MMI.

Data Field Error

The I/O unit did not receive enough characters. This indicates a problem between the Mistic controller and the I/O unit. This can be caused by different baud rate settings on the controller or I/O unit. Check the communications jumpers.

Data Range Error

This error occurs when an invalid command has been constructed within the MMI on the host machine. The erroneous command is not passed on to the Mistic controller.

Invalid Channel

This error occurs when a command attempting to use an unconfigured channel is sent to the controller.

Invalid Command

The Mistic controller received an invalid command from the host.

Invalid Delay

This error occurs with digital I/O units when you try to start a square wave, generate N pulses, or a TPO, with a delay time less than 10ms on more than eight output positions.

Invalid Event

This error occurs when you try to enable an event entry or define a reaction before the event has been defined.

Invalid Limits

An I/O unit receives data which contains an illegal value. The Mistic controller has sent a command to an I/O unit which contains out of range data. Check your controller program to see if calculated values are within module configured ranges.

Invalid Mistic Kernel, may need to be downloaded

The controller's kernel has been corrupted. Download the Mistic kernel using the FLASH200 utility.

Invalid Module Type

This error occurs when a command is sent that requires a different channel configuration than the one presently in use. For example, you issue a command to turn on an output on a channel that is configured as an input.

I/O Buffer Overrun

One of the Mistic I/O units received a command from the controller which was greater than 256 characters.

I/O Checksum Error

This error indicates a problem with the communication link. Checksum error often occurs when the Local Bus or Remote Bus networks are not wired, terminated, or biased properly.

Power Up

After a power failure on an I/O unit, a Power-UP Clear Command is expected before any other command. The Mistic Controller will automatically send this command. However, the MMI will report the occurrence.

Table Index Error

The index for the specified table is out of range. Check the MMI project to make sure you are not accessing an invalid range of table elements.

Undefined Command

This error indicates a Mistic I/O unit received a command from the Mistic controller which it did not understand. This may indicate a new command was added that is not supported by an older I/O unit. An update to the I/O unit's EPROM may be required.

Word Abort While Port Unlocked

This error is generated by the controller after the UNLOCK command was issued.

FILE ACCESS ERRORS (RUNTIME)

The following File Access Errors are generated by the MMI if an error occured while the MMI is working with files or while working with Historic Logs.

Bad Mistic String, using default file name.

The Mistic tagname used as a source for a file name could not be used. The default file name will be used instead. The default file name was set up in the Configurator.

Can't make directory

A directory could not be created. Check if the directory is being created in a read-only directory. Change the protection to allow you to write to it.

Directory now created.

Status message indicating the directory was created.

Drive is full. Writing has been suspended.

A file was being written to a drive but not enough free space was available to complete the transaction. Free up some space on the drive to continue.

Drive is no longer full. Writing has been resumed.

The destination drive has enough space available to complete the file writing transaction.

Initial Writing of file: Filename

Status message indicating Filename is going to be created.

Invalid Directory Bad Directory Name. Using default.

The specified directory could not be used. The default directory will be used instead. The default directory was set up in the Configurator.

HISTORIC LOG ERRORS (RUNTIME)

The following runtime error and File Access runtime errors may result from a historic log error.

Scan Error: [Scanner Error] while accessing: Tagname

A scanner error occurred while trying to access Tagname. Check the Scanner errors list for a complete description.

LAUNCH APPLICATION ERRORS (RUNTIME)

The following errors may occur if an error occurred while working with the Launch Applications feature of the MMI.

File Not Found:

The executable file specified for a launch application setup could not be found. Verify the directory where the file actually resides.

Path Not Found:

The drive/directory path specified for the executable in a launch application setup does not exist. Verify the actual path of the executable file.

Scan error – [Scanner Error] while accessing: Tagname

A scanner error occurred while trying to access Tagname. Check the Scanner Errors section for more details about the error.

WinExec Error #:

A Windows executable error occurred. Check Microsoft help sources for clarification about the error #.

Working Directory Invalid:

The working directory specified for a launch application setup is incorrect. Verify the drive and path are correct.

PORT ERRORS (RUNTIME)

The following errors are generated by the MMI if a port related error occurred.

ARCnet has no other nodes

There are no other ARCnet nodes on the network.

ARCnet Transmitter Not Available

The MWDRIVER.DLL could not receive notification from the ARCnet adapter that it is ready to transmit data. Ensure the ARCnet adapter is installed properly and connected to the network.

Checksum error

The computed CRC checksum does not match that in the received message. Check hardware connections to the Mistic controller.

Controller Currently Busy

Another host machine has the Mistic controller's host port locked. The host port is locked when any host machine is downloading new Forth words for either a MMI or Cyrano application. A MMI session downloads new Forth words during startup or when a window is opened for the first time in that session. During this period, all communication is suspended between other hosts running MMI sessions and the Mistic controller. Upon completion of Forth word download, the port is unlocked and communication resumes with all MMI sessions connected to the Mistic controller. Verification of the communications is provided by the "Attaching to Scanner" message.

Driver Port Invalid

This error occurs when a device, such as an AC37 or AC42, has been configured but does exist at runtime. Check your device configuration.

Driver Protocol Invalid

This is an internal MMI error. Call Opto 22 Technical Support.

Error constructing port – out of memory

The first call to this port failed because the host computer was out of memory.

Invalid Address–

The driver sent a command which included a Mistic controller address outside the limits of 0 and 255.

Invalid baud rate

The baud rate is not correct.

Invalid MwDriver handle

This is an internal MMI error. Call Opto 22 Technical Support.

Not Enough Data –

The MWDRIVER.DLL did not receive the required number of bytes from the controller which were expected. Check connections with the Mistic controller.

Port Init Error

At runtime, the MMI software was unable to initialize the I/O driver. This is probably caused by a memory allocation problem. Exit Windows and restart Runtime.

Port Locked

The communication port configured to talk to one or more Mistic controllers is being used by another application. Check the Windows Program Manager to see what other applications are running. Programs which use the computer serial ports, such as modem programs, may be running and using the port.

Response Time-out

A response was not received from the Mistic controller in the Time-out period specified for the port. Check the Time-out settings for the port. If adequate, check hardware connections with the Mistic controller.

Send Error

This error is usually caused by not having a Clear-to-Send (CTS) signal on the RS-232 port. No message will be sent. Check hardware connections with the Mistic controller.

Undefined Error

An internal Mistic MMI error occurred. The error that occurred is not recognized by the MMI. Contact Opto 22 Technical Support.

RECIPE UPLOAD/DOWNLOAD ERRORS (RUNTIME)

The following errors are displayed if a recipe upload or download error occurred.

An unknown error occurred on the indicated line. (Recipe Upload)

An unknown error occurred during the upload. Call Opto 22 Technical Support.

A scanner error while accessing tag: tagname (tag name not found)

A scanner error was encountered while scanning tagname. Check the Scanner Errors for more details about the error.

Could not find the selected directory for the recipe format file. Please check to ensure the path is correct. (Recipe Upload)

The path configured for the format file of the uploaded recipe was invalid. Make sure the drive/directory path is correct.

Could not find the selected recipe format file. Please check to ensure the filename is correct.

The file name configured for the format file of the uploaded recipe was not found. Make sure you configured the correct tag name.

Could not find the selected directory for the recipe destination file. Please check to ensure the path is correct. (Recipe Upload)

The path configured for the destination file of the uploaded recipe was invalid. Make sure the drive/directory path is correct.

Could not make directory for Destination File: (Recipe Upload)

The path configured in the destination path could not be created. Check the drive specified in the path. Also check the read/write protection of the directory.

Invalid type specified. Valid types are: "Integer Table, Float Table, String Table and Chart"

An invalid type was specified in the recipe. Only tags of types integer table, float table, string table, and chart are allowed in a recipe.

Mistic String for Destination File was empty: (Recipe Upload)

A Cyrano tag name was configured to contain the name of the destination file but its contents were empty. Make sure you configure the correct tag name.

Mistic String for Format File was empty:

A Cyrano tag name was configured to contain the name of the format file but its contents were empty. Make sure you configured the correct tag name.

Scan error – Scanner Error while accessing: Tagname

A scanner error occurred while trying to access Tagname. Check the Scanner Errors section for more details about the error.

The recipe file does not exist! (Recipe Upload)

The recipe upload file does not exist. Verify the spelling of the file.

The specified controller does not exist in this project.

The controller specified in the recipe's Cyrano tag is not recognized by this project. Verify the controller name for the tag name requested. Check the controller's spelling.

The tag info is formatted incorrectly. Should be: Controller:Tag Type.Tag Name"

The syntax for the Cyrano tag is incorrect. Make sure it follows the this pattern: Controller Name:Tag Type.Tag Name, where Controller Name is the name of the Mistic controller; Tag Type is "Integer Table", " Float Table", "String Table", or "Chart"; and Tag Name is the name of a Cyrano tag or chart name of the type specified in Tag Type.

The tag value is formatted incorrectly. Should be: Index (optional) : Value"

Check the syntax of the tag value(s) specified for the indices. Make sure a colon separates the index from the actual value, and also verify the index is within the table's range.

The specified chart state is invalid. Valid states are Run, Stop, Suspend, or Continue.

Make sure the chart state sent in a chart control instruction was "RUN", "STOP", "SUSPEND", or "CONTINUE".

Uploaded/Downloaded to File: Filename

Status message indicating Filename was uploaded/downloaded.

SCANNER ERRORS (RUNTIME)

The following runtime errors are displayed if a scanning error occurred.

Alternate Debugger Port (Switched to Slow Scan)

During the process of compiling Forth words for a compressed scan, the MMI receives a notice from the Mistic controller that it is using the alternate debugger port and therefore cannot compile words on that port. The MMI reverts to a Slow Scan mode in which all tags are scanned individually.

Attaching to Scanner

This message appears when trying to re-establish communications with the Mistic controller.

Controller ID Not Found

The Mistic controller id used for the scan item cannot be found in the list which is maintained internally to the MMI.

Detaching from Scanner on Error

This message appears when the number of retries has been exceeded by the host when trying to re-establish communications with the Mistic controller.

Detaching from Scanner by User

This message appears during runtime when the user has manually disconnected the host from the Mistic controller in the Controller Manager dialog box.

Float value illegal. Value Ignored

An error occurred when converting data from a controller into a float variable used in the MMI. The value is not used to update graphics during this scan period.

Incorrect Packet Size (Switched to Slow Scan)

The response packet from the Mistic controller does not contain the correct amount of data during a compressed scan. This may be due to a failure in the custom Forth word compiled for the MMI to assist in scanning. This custom Forth word is no longer used and the system reverts to scanning all tags separately. This mode is called Slow Scan.

Internal Sequence Error (Switched to Slow Scan)

An internal MMI error occurred when updating graphics with values obtained from a custom Forth word used during scanning. This custom Forth word is no longer used and the system reverts to scanning all tags separately. This mode is called Slow Scan.

Receive Error

The expected number of characters were not received from the Mistic controller.

Scanner Overrun Error

The internal MMI scanner is unable to scan all of the I/O data requests at the rate configured by the user. This can occur if too many points have been configured at too fast a scan rate. Slow down the scan group times. This can also occur if the controller takes too long to provide the data at the configured rate.

Task Start Failed

A task on the Mistic controller has failed to start as directed by the MMI.

Unexpected controller response (out-of-sync)

Sequence ids are placed in each command to the Mistic controller from the host. This id is compared to the one found in the response from the Mistic controller to ensure that messages do not go out of synchronization. If this problem persists, run the MW Sniffer utility to record communications between the Mistic controller and the host and report the problem to Opto 22 Technical Support.

SERVER MESSAGES/ERRORS (RUNTIME)

The following runtime error messages are displayed if a MDS server error occurred.

Alternate server DOWN

The primary or backup server is down. If the primary MDS node was running, the backup node is down; if the backup node was running, the primary MDS node is down.

Alternate server UP

A status message indicating the backup/primary server is connected to MDS. If the primary MDS node was running, the backup node is up; if the backup node was running, the primary MDS node is up.

Both servers DOWN

The primary and backup servers are down. Verify the MDS port configuration in MDS matches the actual physical configuration of the Mistic equipment. Also verify the LAN network is correct.

Both servers UP [switched to primary]

The primary and backup servers are connected to MDS. The primary MDS node is connected to the MMI.

Connecting to server (pinging server)

The MMI is attempting to connect to MDS.

Controller name not found on server or network error

The MMI attempted to verify a controller is registered with MDS but the controller was not found. Make sure it was registered with MDS in the MDS Administrator. Verify the controller name is spelled correctly.

Controller not defined

The MMI attempted to verify a controller is registered with MDS but the controller was not found. Make sure it was registered with MDS in the MDS Administrator. Verify the controller name is spelled correctly.

Could not connect to server. MDS version too old for server

The MMI could not connect to MDS because the version of the MDS program is too old for MMI.

Could not connect to server. MMI version too old for server

The MMI could not connect to MDS because the version of the MMI program is too old for MDS.

Current server DOWN [no alternate]

The primary/backup MDS server is down and an alternate server was not configured. Make sure MDS is running.

Current server UP

Status message indicating the primary/backup MDS server is up and running.

Disconnecting from server

Indicates the MMI is disconnecting from MDS. Possible causes are that a network communication error occurred, or the MMI is simply terminating its connection to MDS.

Error connecting to server (ping FAILED)

The MMI could not communicate and connect to MDS.

Internal Error – server improperly configured

Call OPTO 22 Technical Support. The data collected after this error occurs is unreliable.

Network communication FAILED

The MMI tried to communicate to MDS and MDS could not receive the message. Verify MDS is running and the LAN connections are working properly.

Network error while configuring server (group add FAILED)

The MMI was in the process of configuring MDS with a group when and a failure occurred. Verify MDS is running and the LAN connections are working properly.

Network error while configuring server (item add FAILED)

The MMI was in the process of configuring the server with a tagname when a network error occurred. Verify MDS is running and the LAN connections are working properly.

Network error while configuring server (project disable FAILED)

The MMI was in the process of disabling a project from the server when a network error occurred. Verify MDS is running and the LAN connections are working properly.

Network error while configuring server (project enable FAILED)

The MMI was in the process of enabling a project to the server when a network error occurred. Verify MDS is running and the LAN connections are working properly.

Network error while connecting to server (add FAILED)

The MMI could not connect to MDS because of a network error. Verify MDS is running and the LAN connections are working properly.

Network initialization FAILED

Connection to the network failed. Verify NetBIOS protocol was configured for the network. Also verify Windows for Workgroups 3.11 (or above) is loaded.

Server data overrun

The MMI could not keep up with the data MDS is providing. This could happen if the MMI PC is busy with CPU intensive window operations and tasks. Increase the scan rates for these data items or alleviate the demands on the PC.

Server temporarily locked by another client (project lock FAILED)

The server is locked by a MMI project while the MMI project is built and established to MDS. This keeps another MMI project from building and taxing the MDS resources. The MMI will try again later.

Switched to alternate server

Status message indicates the MMI switched to the backup server if it had been using the main server, or it switched to the main server if it had been using the backup server.

Verification of server configuration FAILED

The MMI is verifying MDS is scanning the correct number of items and the verification failed. Try your project again. If the error repeats itself, call Opto 22 Product Support. Any data returned may be invalid.

SYSTEM ERRORS (RUNTIME)

The following error is displayed if a system error occurred.

System: Floating point error N caught by signal handler

The data returned from the controller was detected to have a floating point error. This could have occurred during data manipulations at the controller. Verify the data has been handled or cast properly according to its type.

PRODUCT SUPPORT

If you have any questions about this product, contact Opto 22 Product Support Monday through Friday, 8 a.m. to 5 p.m. Pacific Time.

Phone:	800-TEK-OPTO (835-6786) 951-695-3080
Fax:	951-695-3017
E-mail:	support@opto22.com
Opto 22 Web site:	www.opto22.com

When calling for technical support, be prepared to provide the following information about your system to the Product Support engineer:

- Software and version being used
- Controller firmware version
- PC configuration
- A complete description of your hardware and operating systems, including:
  — jumper configuration
  — accessories installed (such as expansion daughter cards)
  — type of power supply
  — types of I/O units installed
  — third-party devices installed (e.g., barcode readers)
- Specific error messages seen

GLOSSARY

advanced graphic

The Mistic MMI's advanced graphic object is a trend. It is a predefined collection of graphic symbols. Advanced graphics have their own dialog boxes to control specific attributes.

application manager

An Application Manager is a dynamic object used to launch another application based upon changes in process variables. Each application manager has a command line, working directory, and an associated trigger. The program file specified in the command line is launched everytime the trigger condition occurs.

bitmap

A Bitmap is an electronic image of a picture that can be viewed on a computer display. Bitmaps have types of monochrome or color. Color bitmaps are available with a 16 or 256 color palette. The type and palette size are important as they determine the amount of memory needed to store the image. Bitmap files have a file extension of .BMP. Bitmap files can be created using any Windows paint program. In the MMI, bitmaps are typically used for any complex graphics or logos.

color button

A Color Button appears as a colored rectangle in dialog boxes. Its color indicates the color currently selected to the associated item in the dialog box. To change the color select the color button. This displays the Color Dialog.

***NOTE**: For best results use solid colors only.*

connection

The term *connection* is used to indicate a relationship between an object and a tag that effects a dynamic attribute possessed by the object. The MMI configurator makes the connecting of these pieces of information easy by using the visually oriented Windows interface.

Controller Driven Dynamic Attributes

Controller driven dynamic attributes are connections made to a dynamic object which changes the appearance of the object based on the value or state of a variable. For example, changes in tag values within a controller may cause graphics on the MMI to change size, color, or shape.

Cyrano strategy

A Cyrano Strategy defines the control strategy resident in a Mistic controller. The GML file associated with this strategy is used by the MMI Configurator to obtain information about the controller as well as tag names for the I/O points and variables. Multiple versions of the same Cyrano strategy may reside on more than one controller in a system.

deadband

Deadband is a range of input values for a dynamic attribute that have no impact on the associated dynamic object. The MMI implements a deadband by using the deadband value entered for each dynamic attribute. A deadband value of zero allows all input values to impact the dynamic attribute. If the scanned input value is greater than the deadband value plus the last input value that successfully impacted the dynamic attribute, then the scanned input value is allowed to impact the dynamic attribute. Similarly, if the scanned input value is less than the last input value that successfully impacted the dynamic attribute minus the deadband value, then the scanned input value is allowed to impact the dynamic attribute.

delimiter

A Delimiter is a unique character used to separate items written to the same line within a file.

draw window

A Draw Window is any window that allows addition of graphics. A draw window has static attributes of position, size and color, and a dynamic attribute of a Draw Window Visual State.

draw window visual state

Draw windows have visual states of open, closed, or iconified. An open window scans and updates objects associated with it. A closed window scans only its trends if it was configured to do so, and does no updating. An iconified window scans all its objects but does no updating.

dynamic attribute

Dynamic Attributes are those attributes of a dynamic object which change during runtime. Examples of dynamic attributes include color, size, position, visibility, etc. Dynamic attribute behavior is controlled from sampled tag values as designated during configuration.

dynamic link

A Dynamic Link is the relationship established during configuration between a tag and a dynamic object as a graphic, historic log, or trend.

dynamic objects

Any configurable object that has dynamic attributes associated with it is a dynamic object. Examples of dynamic objects include graphics, historic logs, window managers, and trends. During runtime dynamic objects are updated with values from the scanned controllers, user interaction, or system events.

event

Events are incidents or occurrences of significance to the MMI operator and are not always an indication of abnormal conditions. Event examples include disk full, communication problems, etc.

event log

A project's Event Log is a list of event messages for all events that have occurred while a project is being executed by the MMI Runtime. The list can be viewed using the Event Log Viewer by selecting *View Event Log* from the *View* menu of the Runtime. Optionally, at configuration time, the Event Log can be configured to write the event messages to a file in addition to adding them to its list. Only one event log exists per project.

freshness

Freshness is a method of improving system performance. When an I/O point is accessed by the MMI, a time value associated with the I/O point is tested. If the tested time value is within the specified freshness, the controller will use its Internal Value and save the communications overhead needed to get the value from the I/O brick. This system works because every I/O access the controller makes when executing the Cyrano control Strategy updates the Internal Value and makes its time value current. The freshness value in the MMI is configured as part of a Refresh Time Group.

graphics

Graphics are dynamic objects such as lines, boxes, circles, etc., used to build a visual representation of a system of process. An operator interface is a combination of graphics which visually simulate a real-world process. Graphics are classified as either primary or advanced.

grid

A grid is a visual array of points arranged in the draw window to facilitate the drawing and alignment of graphics. Grids may be turned on or off.

grid point

One of the visual alignment points represented by a single dot. A grid is composed of numerous grid points.

G4LC32

The G4LC32 Mistic controller. Referred to generically as a controller.

G4LC32ISA

The G4LC32ISA Mistic controller. Referred to generically as a controller.

G4LC32SX

The G4LC32SX Mistic controller. Referred to generically as a controller.

historic log

A Historic Log is a dynamic object configured to write a selected set of data out to a file. Data is sampled at predetermined intervals and written out to files in the user selected directory. Each Historic Log can have an associated Start Trigger and Stop Trigger to initiate and terminate sampling.

Operator Driven Dynamic Attributes

Operator driven dynamic attributes are connections made to a dynamic object which changes the value or state of a variable based on an operator action. Operator actions, such as a mouse click, cause variables in a controller to change.

overrun

(scanner overrun error) The internal MMI scanner is unable to scan all of the I/O data requests at the rate configured by the user. This can occur if too many points have been configured at too fast a scan rate. Slow down the scan group times. This can also occur if the controller takes too long to provide the data at the configured rate.

primary graphic

Primary graphics are graphics such as lines, rectangles, circles, polygons, etc. which are used to form complex visual images. The Configurator's Tool Bar contains all supported primary graphics.

project

Projects are collections of one or more draw windows containing dynamic objects which represent a control system or process.

real time trend

A real time trend is a graphical representation of a tag's value as it changes over time. This graphical representation is displayed as a simulation of a strip chart recording. Up to four lines can be displayed simultaneously.

recipe

A recipe is used to download and upload data to a Cyrano program. Recipes allow an operator to make broad changes to program variables for the purpose of tailoring the Cyrano strategy to specific runs or product types. Data is stored in ASCII files which are edited with any text editor word processor which can save the data in ASCII format. These files are uploaded or downloaded by configuring a Touch-Download Recipe or Touch-Upload Recipe Dynamic Attribute for a graphic object.

refresh time group

A Refresh Time Group defines a preconfigured refresh rate and freshness applicable to one or more scanned tags. Up to seven separate refresh times groups can be configured within an MMI project.

rollover period

The period of time a log or file receives data before that data is written to a new log or file. Rollover periods may be months, days, or hours. File naming conventions are adjusted accordingly.

scan group

A Scan Group is a collection of tags that are scanned at particular scan rate. The scan rate defines how often controller variables are scanned to refresh MMI tags. Every MMI tag belongs to a scan group. There are seven scan groups with configurable refresh times ranging from milliseconds to months. Communication loads can be optimized by changing the refresh times of a scan group.

snap on

Snap On is a characteristic causing points of a graphic to be placed only on grid points. Snap On is used to facilitate the drawing and alignment of graphics. Snap On is sometimes referred to as magnetism.

snap off

Snap Off disables the placement of a graphic to the nearest gridpoint when it is moved in the draw window.

static objects

Static Objects are graphics which do not have a dynamic connection. Changes in a controller do not effect a static object. Static objects are used to make a process graphic more familiar to the operator.

tag

A Tag is the symbolic name used to identify a piece of data such as an I/O unit, alarm, variable, or system condition.

tool bar

A Tool Bar is a set of graphic drawing tools arranged in a vertical row used to create process graphics. The Tool Bar may be moved anywhere in the drawing area to facilitate drawing.

trend

A Trend is a rectangular shaped dynamic object which graphs the change in a variable or set of variables over time. Trends show variables in the vertical axis and time in the horizontal axis.

trend pen

A trend pen is a dynamic object used by trends. The value of its tag provides the data for the line graphs in the trends.

trigger

A Trigger is configured with a tag and a condition to which that tag is compared. The condition is comprised of a value and a mathematical relationship. The specified tag is sampled and compared against this specified condition. Triggers are edge sensitive and only activate with a positive transition from a non triggered state. Triggers are often used to start and stop sampling of other tags associated with dynamic attributes of a dynamic object.

window manager

A Window Manager is a dynamic object used to activate, deactivate, or inconify one or more windows based on changes in process variables or operator actions. Each window manager has an associated trigger and list of draw windowss and their visual state transitions.

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