SoftScreen™

Development System

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1.1 PRODUCT OVERVIEW

Xycom's SoftScreen™ Development System is a powerful PC/AT-based Human/Machine Interface (HMI) design tool. The development system—supporting a range of interface products—provides the user with the capabilities to design interface solutions for control systems.

SoftScreen is divided into two parts: the software program for offline development and a PC/AT runtime engine or an operator interface workstation.

The software uses fill-in-the-blank configuration involving no programming. The graphics builder and pull-down menus further simplify creation of text and graphic screens. The development software runs on any IBM®-compatible PC/AT® with EGA or VGA graphics.

SoftScreen applications consist of a defined configuration, a screen, and optional message file, reports or recipes. Applications have the capability to be run on a PC/AT computer or to be downloaded to one or more SoftScreen Workstation runtime engines also referred to as target devices) over either a single RS-232C line or an RS-485 multi-drop network.

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1.2 DEVELOPMENT SYSTEM FEATURES

- Offline development
- Windows-like mouse interface
- Fill-in-the-blank configurations; no programming
- Recipe and report generation
- Menu-driven graphics builder
- Powerful editing functions
- Single key access to menu items and form entries
- Symbol library creation
- Trends and plots
- Messages
- Context-sensitive Help and access to the system and port configurations
- Sixteen colors for the graphic workstation and PC/AT (base, foreground, and background)
- Sixteen colors for the 2050 (eight base and background)
- Three colors for the monochrome 2000 series
- Thirty-two patterns and six line types for the graphic workstation and PC/AT
- Eight patterns and three line types for the 2000
- Text graphics for the 2000 series

1.3 SYSTEM REQUIREMENTS

Requirements for operation of the SoftScreen Development System are noted below:

- IBM PC/AT-compatible computer (80286 CPU or higher) with
  - 20 Mbyte hard disk (2 to 4 Mbytes available)
  - High-density 5 1/4-inch or 3 1/2-inch floppy drive
  - Mouse or compatible pointing device (Microsoft, Mouse Systems, or compatible, or other with driver)
  - EGA or VGA graphics
  - 640 Kbyte RAM (530 Kbytes free)
- SoftScreen program and utility disks

1.4 MANUAL STRUCTURE

This manual discusses the software development system; you may also consult your SoftScreen workstation manual for additional information specific to the workstation and for downloading instructions.

The chapters in this manual are organized as follows:

Chapter One
Introduction — General information about the SoftScreen Development System.

Chapter Two
Installation — Instructions for installing the SoftScreen Development System and utilities, and for connecting the development system to the SoftScreen engine.

Chapter Three
Getting Started — Basics for using and getting around in SoftScreen.

Chapter Four
Tutorial — Instructional session using the SoftScreen Development System to create a simple application.

Chapter Five
Application Menu — Detailed descriptions of Application Menu options and fill-in-the-blank configuration forms.

Chapter Six
Configuration Menu — Detailed information on filling in the System Configuration Form.

Chapter Seven
Symbol Menu — Detailed descriptions of Symbol Menu options and fill-in-the-blank configuration forms.

Chapter Eight
Utility Programs — Descriptions of the SoftSend, SoftRec, SoftMerg, DXFSoft, EGA2VGA, VGA2EGA, TO8320E, TO8320V, TOPCATE, and TOPCATV utility programs.

Appendix A Questions and Answers	Common questions with helpful tips and usage hints.
Appendix B Menu Structure	A flow-chart reference of the menu structure including page number references to descriptions in Chapter 5.
Appendix C Expression Formats	Sample formats for entering expressions in the various SoftScreen forms.
Appendix D PLC Addressing	Information on SoftScreen PLC addressing and expression formats for specific PLCs.
Appendix E Error Messages	Alphabetical listing of error messages.
Appendix F Symbol Libraries	Reference guide to all symbols contained in each predefined symbol library.
Appendix G Text Graphics (for the 2000 series only)	Listing of available text graphic characters.
Glossary International	Language translations of terms used within SoftScreen.

2.1 INTRODUCTION

This chapter outlines the software installation procedure for the SoftScreen Development System, utilities, and symbol libraries. For direct connect information and information specific to the workstation, consult the SoftScreen workstation manual. Sample expressions specific to the PLCs supported are shown in Appendix D.

NOTE

If you plan to run SoftScreen on a PC Limited system with a BIOS dated 1-13-87, your system may not function properly if mouse interrupts occur. If you have this problem, use the keyboard (instead of the mouse) to make menu selections or to create screens. (See section 3.4 for more information or contact PC Limited for a BIOS upgrade.)

CAUTION

SoftScreen is not recommended for use under Windows.

CAUTION

If you are using Toshiba DOS on a Toshiba laptop, **DO NOT** upgrade to MS-DOS as you will experience significant SoftScreen development problems.

2.2 SYSTEM REQUIREMENTS

Requirements for operation of the SoftScreen Development System are noted below:

- IBM PC/AT-compatible computer (80286 CPU or higher) with
  - 20 Mbyte hard disk (2 to 4 Mbytes available)
  - High-density 5 1/4-inch or 3 1/2-inch floppy drive
  - Mouse or compatible pointing device (Microsoft, Mouse Systems, or compatible, or other with driver)
  - EGA or VGA graphics
  - 640 Kbyte RAM (530 Kbytes free)
- SoftScreen program disks and utility disks

A mouse is recommended for developing application screens on the IBM-compatible offline system.

2.3 INSTALLING DEVELOPMENT SYSTEM SOFTWARE

Software diskettes are shipped in 5 1/4-inch high-density (1.2 Mbytes) and 3 1/2-inch (1.44 Mbytes) formats. Both diskette sizes are shipped with the files compressed. Compressed files cannot be copied directly to the hard drive. Run the install program provided on the disks to decompress the files.

To run the install program, place the diskette into the disk drive, and specify the program as shown below:

C:> **A:install** or **B:install**

The installation program asks a series of questions, including font selection, language selection, and if the utilities and symbol libraries should be installed. If installation is successful, a closing message indicates such. Otherwise, correct the detected condition and return to the install program.

If you are installing several copies of SoftScreen and want to automatically accept the default settings, type

C:> **A:install/batch** or **B:install/batch**

SoftScreen is then installed without any user input.

> **NOTE**
> It is recommended you do not install the SoftScreen Development System using the /batch option until you have installed at least one copy responding to the prompts. This way you can ensure that the default settings are appropriate for your installation.

2.4 STARTING SOFTSCREEN

To start SoftScreen, change the current directory to the SoftScreen directory, and type SOFTSCRN. If you add the SoftScreen directory to your path, SoftScreen can be started from other directories.

2.4.1 **Command Line Options**

To use SoftScreen's special features or if graphics problems occur, reference the command line options (shown below) which can be entered after typing SOFTSCRN. If multiple options are entered, separate each option with a space (e.g., SOFTSCRN /1 /E:4).

Table 2-1. SoftScreen Command Line Options

Text	**Function**
/1	Uses internal Mouse Systems mouse driver on COM1
/2	Uses internal Mouse Systems mouse driver on COM2
/E:1	IBM EGA 640 x 350 monochrome
/E:4	IBM EGA 640 x 350 16 color
/E:5	IBM VGA 640 x 480 2 color
/E:6	IBM EGA 640 x 350 2 color
/E:7	IBM MCGA 640 x 480 16 color
/L	Tseng Labs EVA/480 Adapter 640 x 480 16 color
/M:1	Uses Microsoft mouse driver on serial COM1
/M:2	Uses Microsoft mouse driver on serial COM2
/M:D	Uses Microsoft mouse driver on the bus or serial ports
/U	Video-7 Vega Deluxe 640 x 480 16-color
+<FILENAME>	Saves mouse movements and keystrokes to a file
-<FILENAME>	Plays back all mouse movements and keystrokes in the file
<APPLICATION NAME>	Loads an application automatically
/W<number>	Waits the number of ticks specified between each action during a play back (18 ticks ≈ 1 second). Use this option only with the -<FILENAME> feature.

As explained in Table 2-1, the application name can be entered on the command line, either before or after the options. To do so, type SOFTSCRN <APPLICATION NAME>. If the application does not exist, SoftScreen creates and loads it. If the application does exist, SoftScreen loads it. This method bypasses the Start Menu Bar and begins with the Application Menu discussed in Section 5.3.

Record/Playback Keyboard and Mouse Actions
Two command line options allow recording and playing back all movements and actions performed while using the development system. The option +<FILENAME> saves all mouse and keyboard actions into the file. The option -<FILENAME> plays back all mouse and keyboard actions previously recorded. If the playback is too fast, use the /W<number> option discussed in Table 2.1.

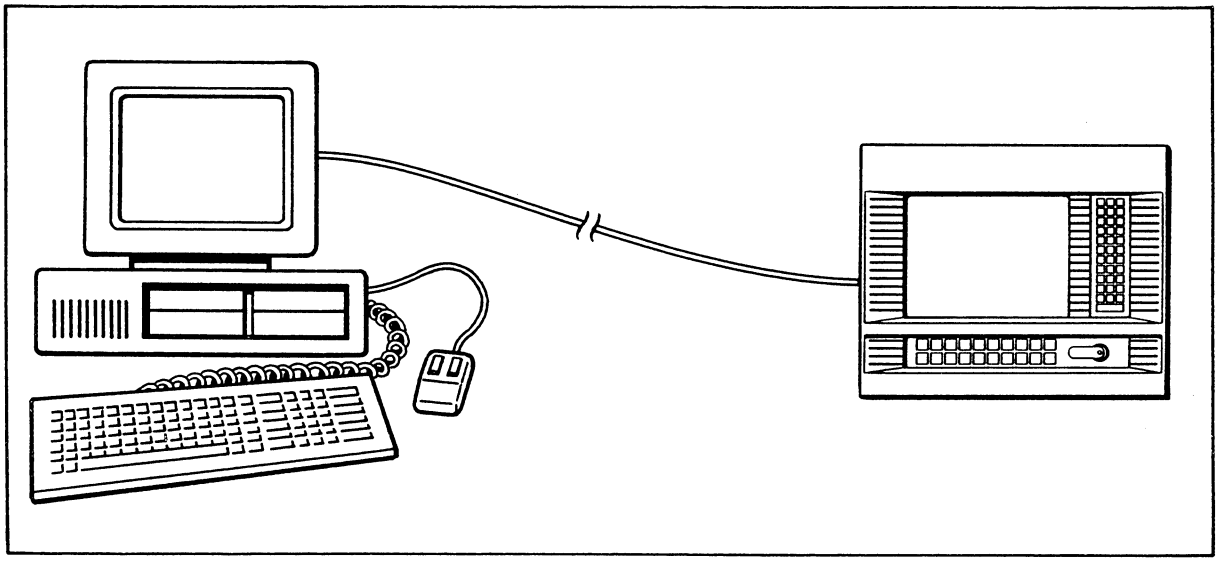
> **NOTE**
> The Print Screen key is not recorded. Also, mouse movements use more disk space than using the keyboard alone. Playback files can get very large if used for prolonged periods of time. Also, when recording, do not use the mouse to scroll through the scroll lists, as the sequence will not play back properly. Use hot keys or cursor keys instead.

2.4.2 Increasing Free Memory

> **IMPORTANT**
> The system needs at least 530 Kbytes of available RAM. If your system lacks enough free memory, a message appears stating that some screens may not be redrawn after selections are entered. This will only happen if your system lacks available memory to save the background areas. This does not mean SoftScreen is not functioning. If you receive this message, do the following to increase your memory:
>
> - Use the internal mouse driver.
> - Remove terminate and stay resident (TSR) files (such as SideKick) from your AUTOEXEC.BAT file.
> - Reduce memory usage in your CONFIG.SYS file.
> - Add EMS or XMS memory to your system.
> - Load DOS into high memory (version 5.0 or higher).
>
> Refer to the MS-DOS manual for more information.

In addition, your Microsoft or Mouse Systems driver may be taking up memory. Because there is a mouse driver in the SoftScreen software, you may not need to load any other embedded mouse drivers. If you have already loaded a mouse driver, delete it from your system's memory. (Refer to the MS-DOS manual if necessary.) If you have deleted your mouse driver, type the appropriate command line to enter the application (SOFTSCRN/1 for COM1 or SOFTSCRN/2 for COM2) for a Mouse Systems mouse driver.

2.5 CONNECTING OFFLINE DEVELOPMENT SYSTEM TO A SOFTSCREEN WORKSTATION



The SoftScreen Development System connects to

- Port 1 of the 8320 workstation
- The secondary port of the 2000-SoftScreen workstation
- COM 1-4 of the PC/AT workstation

The SoftScreen engine ports can be jumper configured for RS-232C or RS-485 communication. Refer to your SoftScreen workstation manual for jumper settings.

A PC/AT can be run without downloading by running the program PCENGINE followed by the application name or by selecting Application-Run while running the development system.

2.5.1 **RS-232C Line**

Using the supplied 9-pin to 25-pin SMART cable and adapter

1. Attach the male 25-pin side of the connector adapter to the 25-pin female end of the cable. (Your cable should now have two female 9-pin connectors.)

2. Connect one end of the cable to the configured port of the SoftScreen Development System PC.

3. Connect the other end of the cable to the target engine of:

    - Port 1 of the 8320 workstation
    - The secondary port of the 2000-SoftScreen workstation
    - COM 1 of the PC/AT workstation

4. Position the switch on the adapter to the middle (connector side up).

Both yellow lights should be on during normal operation. For more information, see the sticker on the cable or the manual enclosed with the cable. Pinouts for a standard null modem cable, which can be used as well, are shown in Figure 2-1 on the following page.

Verify the jumpers are set for RS-232C as described in Chapter 2 of the SoftScreen workstation manual.

NOTE

Verify that the download port of the development system matches the one specified in the SoftScreen software under Application-Load-Configuration-Edit-System-Send Port or Configuration-Send Port.

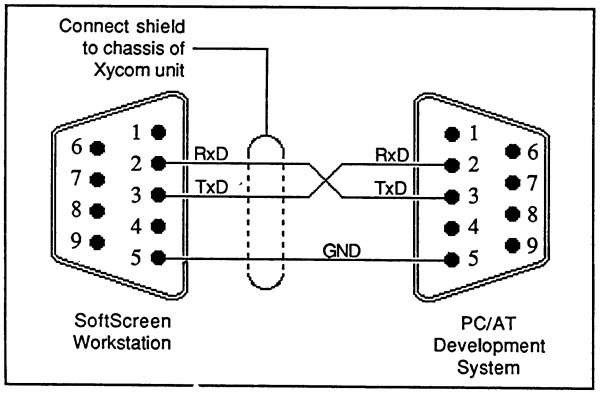


Figure 2-1. Workstation to Development System Interface via RS-232C

2.5.2 **RS-485 Multi-drop Network**

Use a standard RS-485 cable to connect to the target engine of:

- Port 1 of the 8320 workstation
- The secondary port of the 2000-SoftScreen workstation
- Any COM port configured as RS-485 to the PC/AT workstation (third party board may be required)

The pinouts are shown in Figure 2-2 on the following page. Verify that the jumpers on the engine are set for RS-485 as described in Chapter 2 of your SoftScreen engine manual.

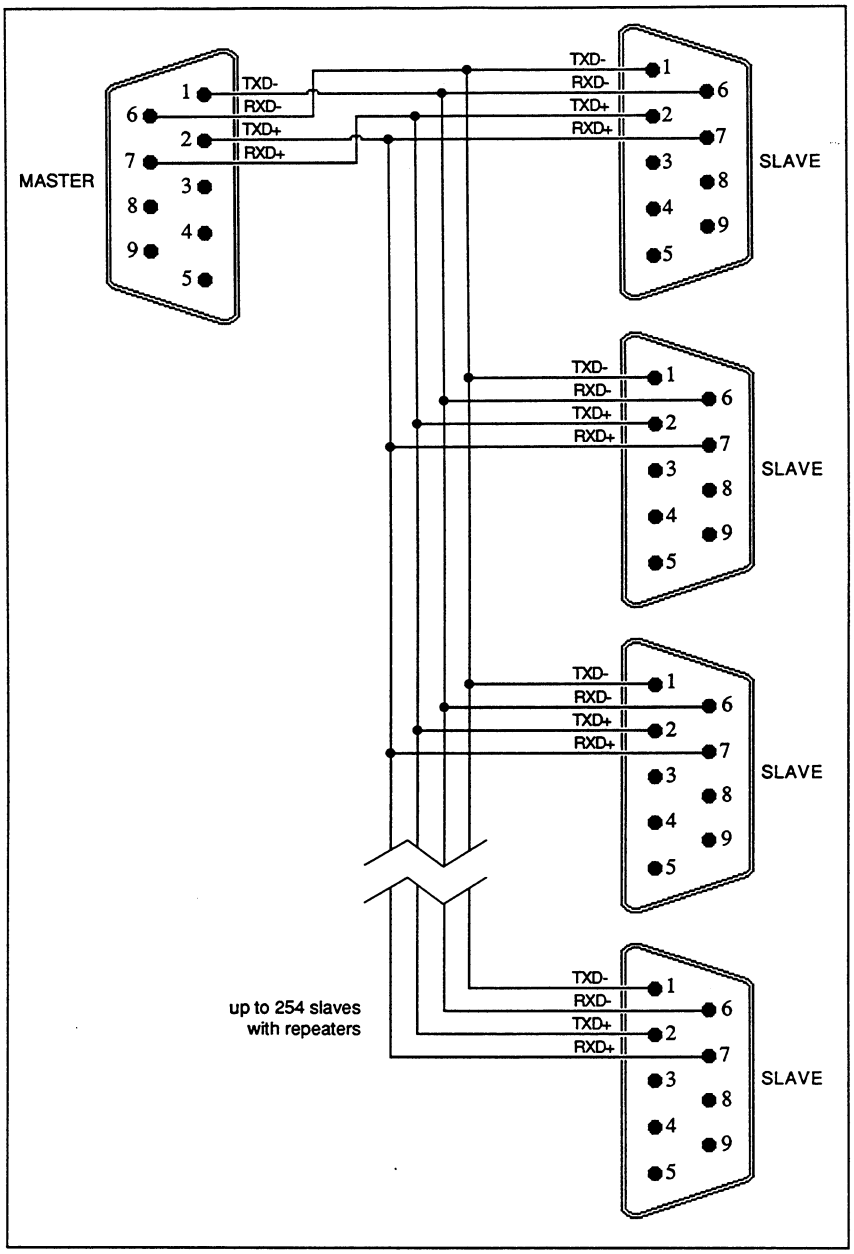


Figure 2-2. Development System Multi-drop Interface via RS-485

Up to 31 (254 with repeaters) SoftScreen workstations can be connected on a multi-drop network from the SoftScreen development system. A sample multi-drop configuration is shown in Figure 2-3 below.

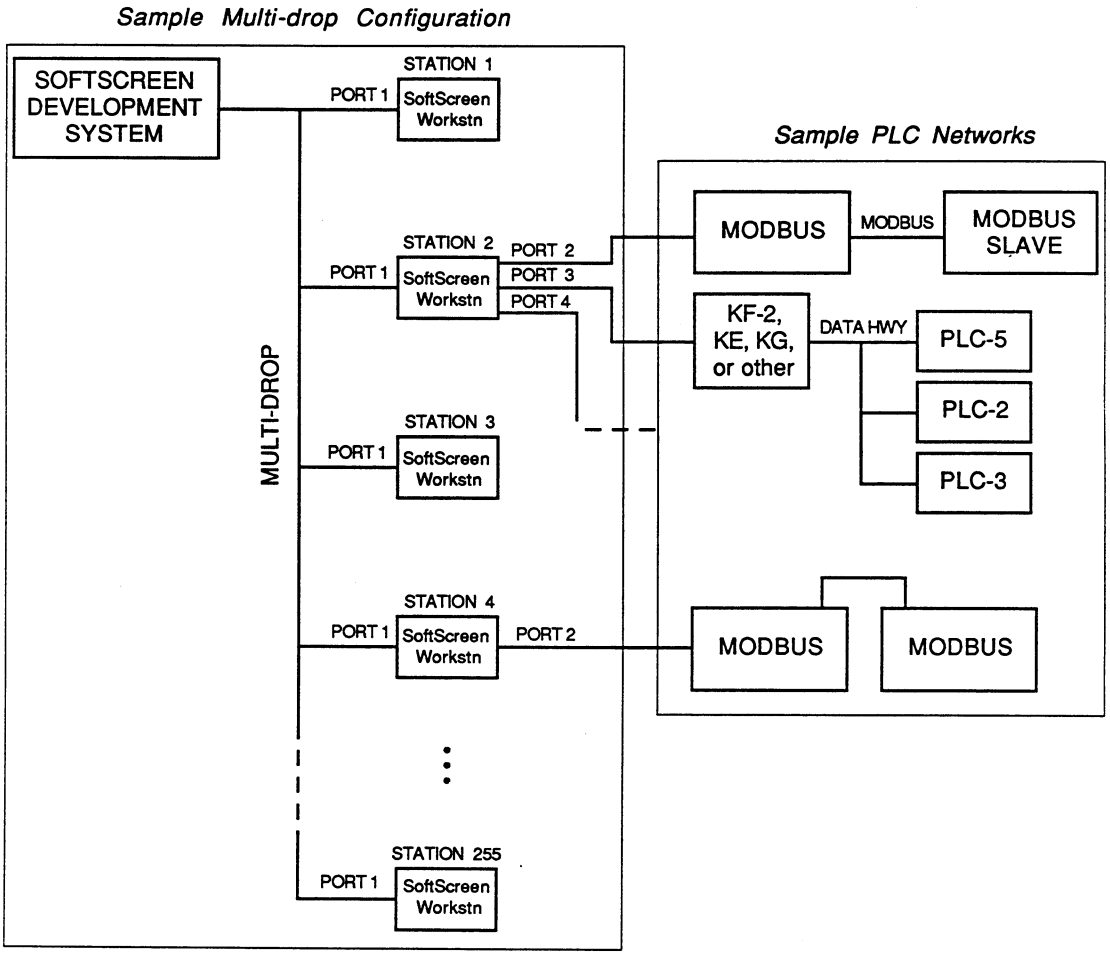


Figure 2-3. Sample Multi-drop Configuration

2.6 INSTALLING THE SOFTSCREEN UTILITIES AND SYMBOL LIBRARIES

The utility programs provide a way to send and receive applications on character-based or DOS machines on the plant floor or near SoftScreen engines or remotely from the development system. They also translate applications into different formats. Refer to Chapter 8 for information on using the utilities.

The symbol libraries store symbols that can be retrieved for placement on a screen or used to create other symbols. The symbol libraries are accessible from the SoftScreen development software. Refer to Chapter 8 for information on using the libraries.

The SoftScreen utility diskette contains the files for SoftMerg, DXFSoft, EGA2VGA, VGA2EGA, TO8320V, TOPCATE, TOPCATV, SoftSend, and SoftRec utilities and the symbol library files. The utility disk is shipped as both 5 1/4-inch high density (1.2 Mbytes) and 3 1/2-inch (1.44 Mbytes). Use the disk appropriate for your PC/AT system.

The files are compressed and should not be copied directly to the hard drive. To install the symbol libraries and utility files into the same directory on your hard drive, place the diskette into the disk drive, and specify the program as shown below:

C:> A:install or **B:install**

The installation program asks a series of questions, including if the utilities or symbol libraries should be installed. If installation is successful, a closing message indicates this. Otherwise, correct the detected condition and return to the install program.

3.1 SOFTSCREEN BASICS

This chapter provides basic information that will make it easier for you to use the SoftScreen Development System.

3.2 MENU BARS AND MENUS

The Start Menu Bar appears when you first enter SoftScreen, as shown below. The SoftScreen version number appears in the right corner of the menu bar.

SoftScreen consists of many interrelated menus. Each menu accesses numerous menus, menu bars, options, and forms. To select a menu or form, use a mouse or arrow keys, or type the first letter of a selection followed by <Enter>.

3.2.1 Moving to the Previous Menu

To return to the previous menu, click on the Xycom logo in the left-most corner of the menu bar, or press <Home> to select the Xycom logo and press <Enter>. (Due to space restrictions, the Xycom logo is not shown in all menu bars in this manual. However, the logo is always in the left-most corner of all menu bars in the development system.) If changes have been made but not saved, you are notified of this before exiting.

3.2.2 Manual Conventions

In this manual, menu selections are sometimes prefaced with the menu or menus that preceded them, separated by dashes. For example, Screen-Edit-Display-Text-Layered refers to selecting Edit from the Screen Menu, Display from the Edit Menu, Text from the Display Menu, and Layered from the Text Menu.

3.2.3 Menu Structure

The SoftScreen menu structure is shown in Appendix B. The menus are shown in flow-chart style with page numbers for each menu selection to help locate specific information.

3.3 USING A MOUSE

A mouse is recommended, but is not necessary. The left mouse button functions like the <Enter> key and is used to make selections. The right button functions like the <Esc> key and cancels actions. In some cases when entering text, the right mouse button acts as the <Enter> key. On a three-button mouse, the middle button is not used.

To use the mouse to select menu items or enter information in a form or scroll list, move the arrow to the menu or prompt line and press the left mouse button once.

When instructions say to select or click a menu or object, they refer to moving the cursor to the desired location and pressing the left mouse button. (Pressing the right mouse button acts like an <Esc> key and aborts the selected function.)

3.4 USING KEYBOARD KEYS

Understanding the function of keyboard keys can make it easier to navigate through forms, scroll lists, and other areas of SoftScreen. Within this manual, keyboard keys are identified by the brackets (< >) surrounding them.

3.4.1 Arrow Keys

Use arrow keys (←↑↓→) to move from one item to another in a form or scroll list. To use the cursor more precisely within a form or scroll list, use the <Shift> and arrow keys together. Hold the left <Shift> key and an arrow key to move faster, in the direction of the arrow key, through forms and scroll lists. Hold the right <Shift> key and an arrow key to move more slowly in the direction of the arrow key.

When in the Screen, Symbol, or Report menus, arrow keys move the cursor by an incremental value. Use the <+> key to increase this value and the <-> key to decrease this value.

3.4.2 Enter

<Enter> functions as a left mouse button toggle. Pressing <Enter> once corresponds to pressing and holding the left mouse button. Pressing <Enter> again corresponds to releasing it. To double click for Scale, Polygons, and Polylines, press <Enter> four times.

3.4.3 Print Screen

<Print Screen> prints the current display image if the listing target specified in the System Configuration is a printer.

3.5 USING FUNCTION KEYS

Function keys can be used to copy and alter information within forms. Information is stored in two buffers: F2 through F6 information is stored in buffer 1; Shift + F2 through F6 information is stored in buffer 2. Table 3-1 defines the function of each key.

Table 3-1. Function Key Descriptions

Key	Description
F1	Displays a Help Form if the mouse cursor is visible. If your text cursor is visible (you are editing text or a field in a form), you cannot access Help.
<Shift> + F1	Displays the size, in Kbytes, of the loaded application and whichever of the following is displayed: configuration, recipe, report, or screen.
F2/<Shift> + F2	Copies information in a selected field to a buffer.
F3/<Shift> + F3	Replaces field information with information in buffer.
F4/<Shift> + F4	Increments the last number in a copied line. Incrementing 65535 results in 0.
F5/<Shift> + F5	Decrements the last number in a copied line. Decrementing 0 results in 65535.
F6/<Shift> + F6	Appends copied information to the end of the selected line.
F7	Provides port 1 configuration information.
F8	Provides port 2 configuration information.
F9	Provides port 3 configuration information.
F10	Provides port 4 configuration information.

Port information accessed using function keys F7 through F10 is read only; it cannot be changed. However, it can be copied using F2. You can also use F2 to copy from a scroll list or a multiple choice field, but F3-F6 cannot be used in these areas.

3.6 NAMING CONVENTIONS

SoftScreen is case sensitive. M-Screen, m-screen, and M-SCREEN all represent different screen names. However, application names are always referenced as uppercase, regardless of how they are entered.

3.7 FORMS AND SCROLL LISTS

A form or a scroll list appears after some menu selections. A form prompts for information or allows you to choose parameters. With a scroll list you can select applications, recipes, reports, or screens, or create new ones. Two sample forms and one sample scroll list are shown in Figure 3-1 below.

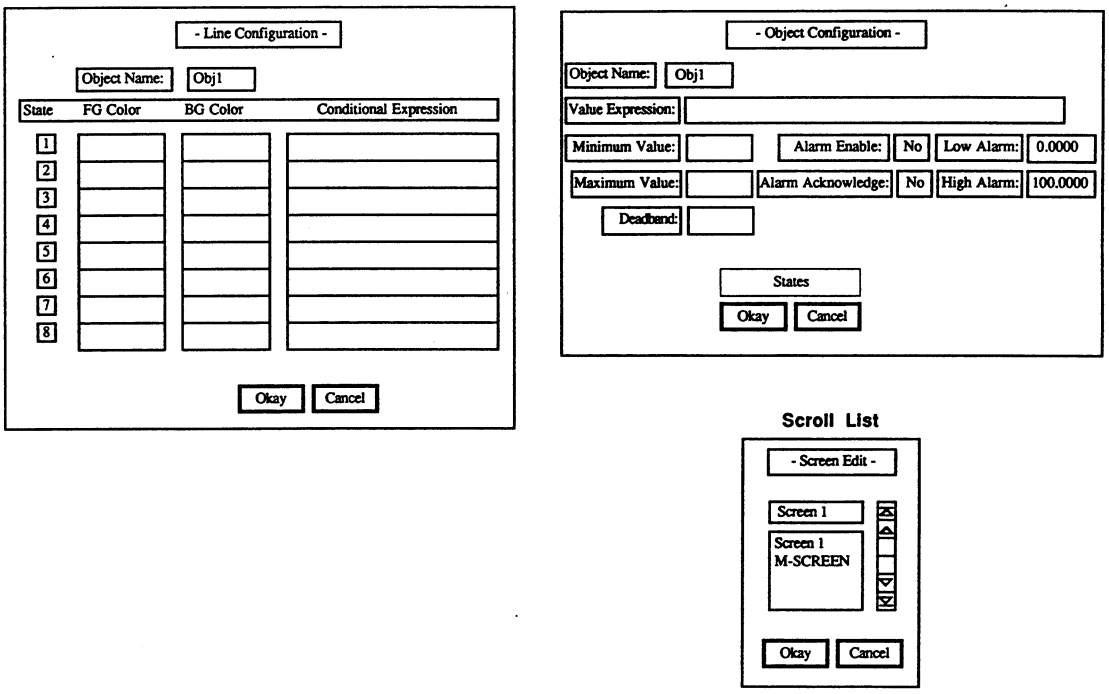


Figure 3-1. Sample Form and Scroll List

3.7.1 Moving within Forms and Scroll Lists

Type any letter in a scroll list to select the next item that has a matching first letter This selection then appears at the top of the list and in the top box. If the scroll list doesn't contain a matching item, the last item in the list is selected. In forms, type the first letter of any item to move to the next item with a matching first letter.

3.7.2 Viewing Multiple Choices in a Form

The fields in some forms have multiple choices. Select the desired field. Then press the space bar, press <Enter>, or place your cursor on the field and click repeatedly to cycle through the available choices. Press <Shift> + space bar, <Shift> + the left mouse button, or <Shift> + <Enter> to cycle in reverse order.

3.7.3 Entering information in a Form

To enter information into a form, select the desired field with the mouse and press <Enter> or the left mouse button, or press the first letter of the field followed by <Enter>. Type the text and press <Enter> or the right mouse button to terminate input. To edit information, use the <Insert>, <Delete>, and <Backspace> keys.

3.7.4 Exiting Forms and Scroll Lists

After entering information or making selections in a form or scroll list, click Okay to exit and save the changes made. To exit a form or scroll list without saving changes, click Cancel or the right mouse button, or press <Esc>.

3.8 DRAWING OBJECTS

To draw objects, use the mouse like a pencil. Click the left mouse button to place the pencil on the paper, hold the mouse button to draw, and release the left mouse button to lift the pencil off the paper.

When drawing objects without a mouse, <Enter> functions as the left mouse button toggle. Pressing <Enter> the first time is equivalent to pressing and holding the left mouse button. Pressing it a second time is equivalent to releasing the mouse button. If two mouse clicks are necessary (as for polygons, polylines, and scaling), press <Enter> four times to simulate the two presses and releases.

3.9 HELP SCREENS

Help screens are accessed by pressing F1 when the mouse cursor is visible. A form appears. If accessing general Help or Help for some menu selections, the form offers four choices: Getting Started, System, Expressions, and Registers. If you access Help from a Value, Address, Expression, or Condition field, your first choice will be Default Ports, instead of Getting Started. Getting Started provides basic information on using the development system, including what happens when each of the function keys is pressed. Default Port displays the default port configuration, if any. System displays the System Configuration and lets you edit some functions. If the configuration is modified, changes are **not** saved to disk. Expressions describe the information allowed in an expression. Registers describe available internal registers. If help is needed when you are in a form, move the cursor to the item and press F1. SoftScreen's help is context sensitive.

3.10 ERROR MESSAGES

If an error occurs during your SoftScreen session, an error message appears on screen. See Appendix E for more detailed explanations of error messages.

3.11 EXITING SOFTSCREEN

Use the Xycom logo at the left of the current menu bar to exit the previous menu or to exit SoftScreen. Press <Home> to move the cursor to the Xycom logo and press <Enter> or click on the left mouse button.

4.1 TUTORIAL OVERVIEW

This chapter is a sample session using the SoftScreen Development System. (Refer to Appendix B for an overview of the menu structure.) This tutorial uses a Modicon PLC to monitor the temperature (Celsius) of a solution in a tank. This operator interface will be created to show the temperature and allow the user to enter setpoints, print reports, load recipes, etc.

The tutorial is divided into seven basic steps:

- Configuring the System
- Selecting Ports
- Creating the Screen
- Generating Reports
- Creating a Recipe
- Sending the Application
- Running the Application

In this tutorial, the SoftScreen Development System connects to

- Port 1 of a graphic workstation (such as the 8320)
- The secondary serial port of a 2000 series workstation
- COM 1 of a PC/AT workstation

The PLC network connects to

- Port 2 of a graphic workstation
- The primary serial port of a 2000 series workstation
- COM 1 of a PC/AT workstation

The Modbus PLC is designated as PLC0 and station 2. PLC addresses to be used are 40030 through 40040. The system used in this tutorial is shown below:

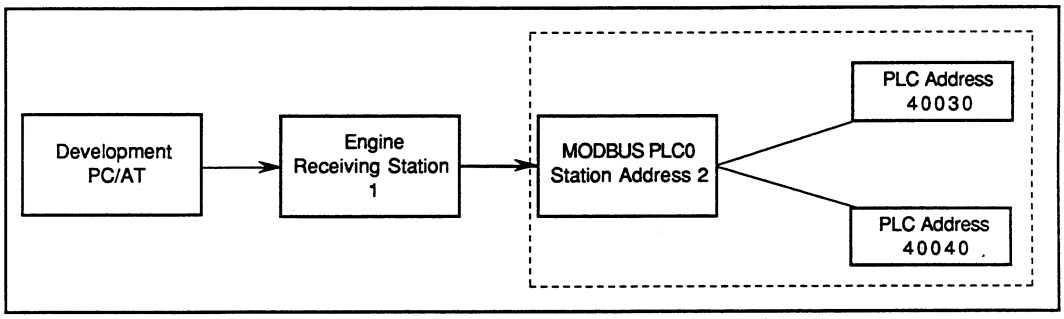


Figure 4-1. Tutorial Setup

4.2 CONFIGURING THE SYSTEM

To begin, load an application into SoftScreen and configure the system by following the instructions below and on the following pages.

The column on the left provides short cuts; the column on the right provides detailed instructions.

When creating screens or reports the current cursor location is displayed at the far right of the menu bar. As the cursor is moved, the x and y coordinates change accordingly.

In this tutorial, x and y coordinates are noted in parentheses ( ). The first set in parentheses refers to the position on a graphic workstation or PC/AT; the second set, which is in square brackets [ ] and italicized, refers to the position on a 2000 engine. When colors are mentioned, the first color is defined for a graphic workstation or PC/AT; the second color, which is in square brackets and italicized, is defined for a 2000 engine.

Keyboard keys are surrounded by greater than and less than symbols (i.e., <Enter> refers to the Enter key on the keyboard).

SHORT CUTS	**DETAILED INSTRUCTIONS**
A, <Enter>, <Enter>, type M-TEMP, <Enter>, Okay	1. Select Application from the Start Menu Bar and Load from the Application Menu. When the Application Scroll List appears, select the top box, type M-TEMP, press <Enter>, and click Okay. M-TEMP appears to the right of the menu bar. M-TEMP is the application which will contain all screens, recipes, and reports created in this tutorial.
C, <Enter>, <Enter>	2. Select Configuration from the menu, and Edit from the Configuration Menu. A new set of menus will appear.
S, <Enter>, enter form information, Okay	3. Select System from the new menus. The System Configuration Form appears. Press the first letter of each field to take the mouse pointer to it. Enter the specific information as shown on the following page. Click Okay when you finish entering information.

Table 4-1. System Configuration Form

Printer	Select the development system printer as **Epson RX80**, **IBM Pro**, HP **LaserJet**, HP 16-color **PaintJet**, HP **DeskJet**, HP **LaserJet+**, or Panasonic **KXP-1124**.
Send Port	Select the port connected to the SoftScreen engine. (Do not select the port used for the mouse.)
Default PLC Name	Enter PLC0 as the name for the main PLC.
Default PLC Format	Select **SB** for signed binary.
Object Configuration	Select **Off** to turn off the Object Configuration Form so it does not appear after each object drawn. (Objects will be configured under Screen-Edit-Tools-Config.)
Symbol Target	Select the target to match your engine.
Listing Target	Select the destination for any listing as one of the following: LPT1, LPT2, LPT3, or File. If File is chosen, the file name will be M-TEMP.LST.
Send Wait Time	Select the default, which is 5 seconds.
Language	This can only be accessed through the Main Title Menu.

T, <Enter>, enter form information

4. Select **T**arget from the Edit Menu. The Target Configuration Form appears. Press the first letter of each field to take the mouse pointer to it. Enter the information as shown in Table 4-2 on the next page.

Table 4-2. Target Configuration Form

Target Engine **(You must specify the target device first or the application may not run as configured.)**	If using an EGA development system, select 8320-EGA or PC/AT-EGA as the target. If using a VGA development system, select 8320-EGA or 8320-VGA for an 8320 engine or PC/AT-EGA or PC/AT-VGA for a PC/AT engine. Select 2000-Mono for a 2000 series engine or 2000-Color for a 2050 engine.
Serial Ports	Select **2** or **4** serial ports to match the target device. 2000 Series targets can only have two ports.
Menu Lock	Select **Off** so the user at the engine can press functioning keypad keys and enter the SoftScreen Engine Configuration Menu.
Keyboard Type	Select the keyboard to match your target device.
Keypress Sound	Select **On** for a beep when the user presses a key.
Repeat Key Presses	Select **Off**.
Printer	Select the target device printer as **Epson RX80** or **IBM Pro**.
Report Log Enable	Select **Off**.
Disk Full Resolution	PC/AT only. Select **Delete None** or **Save Number**. The Alarm Save Number allows from 1 to 65535 alarms to be saved.
File Management Password Level	PC/AT only. Select a password level, **1-7** or **0** for none, to allow access to the engine's File Manager. Select **Only** to restrict the valid password to the level(s) specified or **And Below** to allow all passwords from 1 through the level specified. Multiple levels can be selected by typing each desired level number separated by a comma and using the Only option. Default is 0.
Report Log Path	Leave as M-TEMP.
Startup Screen Name	Enter M-Screen for the first screen to be displayed.
Power-on Diagnostics	Select **On** for the engine to run through diagnostics at power-up.
Security Password Level	Change this to **0**.
Touch Screen	Select **Off**.
Alarm Display Time	Enter **10** for a 10-second display time.
Beep on Alarm	Select **Off**.
Relay on Alarm	Select **Off** to keep the engine relay open.
Print Alarm	Select **Off**.
Alarm Save Number	PC/AT only; configure if Disk Full Resolution is set to Save Number. This defines the number of alarms to save to disk. If the number of alarms is exceeded, the oldest are deleted.

Okay

5. Click Okay. Ports are configured in the next section.

4.3 SELECTING PORTS

The ports used to communicate between the SoftScreen engine and PLCs must be configured prior to running any application. Port 2 will be used, as discussed earlier.

P, <Enter>
Port 2, <Enter>
Press M until Modbus appears, <Enter>, Okay

1. The current display should be the Application-Load-Configuration-Edit screen. Select Ports from the Edit Menu.
2. Select **Port 2** to communicate with the PLC.
3. Select Modbus from the PLC Network Type Form that appears. (To find it quickly, press M until Modbus appears in the top box.) Click Okay.

NOTE

This example uses addresses in the Modbus format. If you will not be using a Modbus PLC and are familiar with your specific PLC, select your PLC and enter its information in place of the Modbus information. The screen, report, and recipe created will be compatible with any PLC selected.

Default settings for each PLC are the standard configuration. Refer to Appendix D for more information about specific PLCs.

Okay	4.	Keep the standard Modbus configuration (or enter your specific PLC information) and click Okay.
Enter 2 as PLC0 address	5.	In the PLC Configuration Form, enter 2 as the address for PLC0 and leave the other fields the same. Click Okay.
T, <Enter>, S, <Enter>	6.	Select Save from the Tools Menu.
<Home>, <Enter>, <Enter>	7.	Click twice on the Xycom logo at the left of the menu bar to return to the Start Menu Bar.

4.4 CREATING THE SCREEN

This session produces a screen that tracks the actual and setpoint temperatures of the liquid in the tank. The finished screen is shown in Figure 4-2 below.

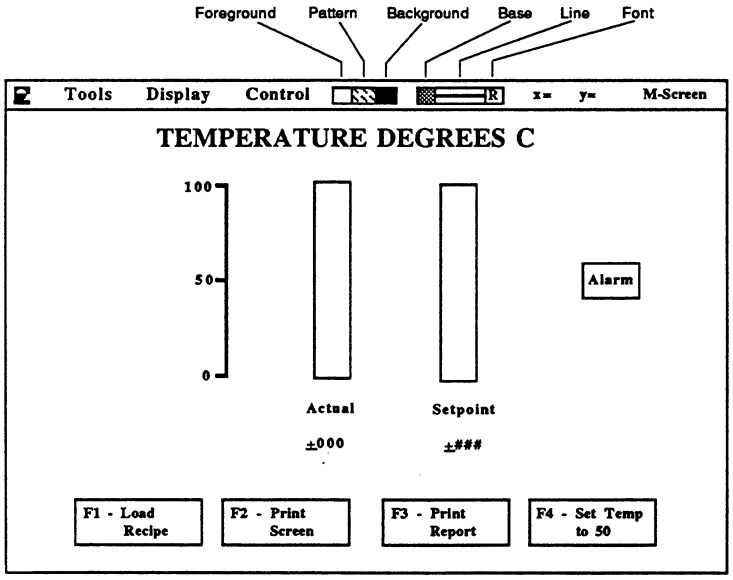


Figure 4-2. Finished Screen

NOTE

Due to differences in SoftScreen engines, the color and coordinate choices are different for the 2000 series, graphic workstations, and PC/AT SoftScreen workstations. Make sure you select the choice appropriate for your workstation. (The x and y coordinates are based on pixels for the graphic workstation and PC/AT SoftScreen engines, and on characters for 2000 engines.) Feel free to experiment with other colors and locations.

A, <Enter>, L, <Enter>	1. Select Application-Load from the Start Menu Bar to load your application.
S, <Enter>, E, <Enter>	2. Select -Screen- from the Application Menu and Edit from the Screen Menu.
Type M-Screen, <Enter>, Okay	3. Position the arrow in the top box, press the mouse button, type M-Screen, hit <Enter>, and click Okay.
T, <Enter>, <Enter>, G, <Enter>, O, <Enter>	4. Select Tools, Screen, Grid, and On. A check mark appears to the right of Grid on the Tools-Screen Menu and a grid pattern appears on the screen.
T, <Enter>, <Enter>, S, S, S, <Enter>	5. Select Screen from the Tools Menu and Snap-To from the Screen Menu. A check mark appears to the right of Snap-To on the Tools Menu, and the mouse cursor orients itself toward the grid lines. (Snap-To is not selectable on the 2000 series as it is always in snap-to mode.)
Blue or *[int white]* foreground colors	6. Select blue or *[int white]* as the foreground color from the menu bar (see Figure 4-2) by using the mouse, or press the space bar to tab to the menu choices for the screen and object attribute boxes. Select the appropriate color, and click Okay.

Black background color	7.	Select black as the background color from the menu bar at the top of the screen (see Figure 4-2).
D, <Enter>, B, <Enter>	8.	Select **B**ar from the **D**isplay Menu to create the Actual temperature gauge.
Click cursor at (280,76) or *[35,5]*, drag to (312,228) or *[39,15]*, release	9.	Position the cursor at (280,76) or *[35,5]* and press and hold the left mouse button. Drag the mouse down and to the right to (312,228) or *[39,15]*, and release the left mouse button.
T, <Enter>, <Enter>, S, <Enter>, Okay	10.	Select **S**creen from the **T**ools Menu, click on **S**ave, then click on Okay.

Copy the bar to use as the setpoint temperature gauge.

T, <Enter>, C, C, <Enter>, click and hold top left of bar	1.	Select **C**opy from the **T**ools Menu and click the top left of the bar. Hold down the left mouse button until the outline of the bar appears.
Click cursor at (376,76) or *[47,5]*, release	2.	Hold down the button, move the copied bar to the right so its top left corner is located at (376,76) or *[47,5]*, and then release the button.
Green or *[blue]* foreground color	3.	Change the color of the second bar. Select green or *[blue]* as the foreground color from the menu bar.
T, <Enter>, C, C, C, C, <Enter>, <Enter>	4.	Select **C**hange from the **T**ools Menu and **F**oreground from the Change Menu. Click the right-most bar and it becomes the selected color.

Create a scale to measure the bar's height.

Select one pixel line width	1.	The line width should be one pixel wide. If it is not, select it from the Line Menu (refer to Figure 4-2 for location of Line Menu).
Cyan or *[blue]* foreground color	2.	Select cyan or *[blue]* as the foreground color.
D, <Enter>, L, <Enter>, click cursor at (184,76) or *[23,6]*, drag to (184, 228) or *[23,15]*, release	3.	Select Line from the Display Menu. Position the cursor at (184,76) or *[23,6]*, click and hold the left mouse button, and drag the mouse toward the bottom of the screen to (184,228) or *[23,15]*. Release the mouse button.
Click cursor at (168,76) or *[21,6]*, drag two grid spaces to the right	4.	Position the cursor at (168,76) or *[21,6]*, click the left mouse button, and drag the cursor to the right to draw a horizontal line two grid spaces wide.
T, <Enter>, C, C, <Enter>, click line, move copied line underneath original, repeat 3 times	5.	Select Copy from the Tools Menu, and click the line created in Step 4. Hold down the mouse button, drag the copy four grid spaces below the original, and release the mouse button. Click on the second line, hold down the mouse button, drag the copy four grid spaces below the second line, and release the mouse button.
T, <Enter>, <Enter>, S, <Enter>, Okay	6.	Select Screen from the Tools Menu, click on Save, then click on Okay.

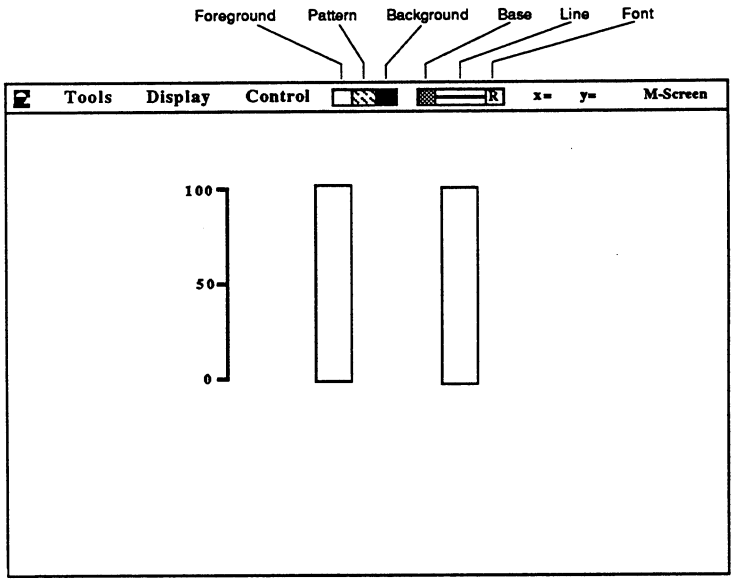


Figure 4-3. Temperature Gauges and Scale

The next step is placing text to mark the scale at 0, 50, and 100.

Font Size S or *R*	1. Select S or *R* from the Font Menu (refer to Figure 4-3 for location) to change the font size.
D, <Enter>, T, <Enter>, <Enter>, click cursor (144,76) or *[17,6]*, type 100, <Enter>, <Enter>	2. Select Text from Display Menu and Single from the Text Menu. Click the cursor at (144,76) or *[17,6]*, type 100, and then press <Enter> twice.

Click at (152, 152) or *[18,11]*, type 50, <Enter>, <Enter>	3. Because the system is still in Display-Text mode, you do not have to select Text again. Click the cursor at (152,152) or *[18,11]*, type 50, and then press <Enter> twice.
Click at (160,228) or *[19,15]*, type 0, <Enter>, <Enter>	4. Click the cursor at (160,228) or *[19,15]*, type 0, and then press <Enter> twice.

To change the location of an object, select Move from the Tools Menu, click on the object, and drag it to the desired position while holding down the left mouse button.

Next, label the two gauges.

D, <Enter>, T, <Enter>, <Enter>	1. Select **T**ext from the **D**isplay Menu and **S**ingle from the Text Menu.
Font size R	2. Select font size as R (regular) from the Font Menu.
Blue or *[white]* foreground color	3. So the text matches the first gauge, select blue or *[white]* as the foreground color.
Click cursor at (272,266) or *[34,17]*, type Actual, <Enter>, <Enter>	4. Position the cursor at (272,266) or *[34,17]*, press the left mouse button, type Actual, and press <Enter> twice.
Green or *[blue]* foreground color	5. So the text matches the second gauge, select green or *[blue]* as the foreground color.
Click cursor at (360,266) or *[45,17]*, type Setpoint, <Enter>, <Enter>	6. Position the cursor at (360,266) or *[45,17]*, press the left mouse button, type Setpoint, and then press <Enter> twice.

Add a field so that the Actual value is displayed when the screen is executed on the engine.

Blue or *[white]* foreground color	1. Change the foreground color to blue or *[white]*.
D, <Enter>, <Enter>, D, <Enter>	2. Select -More- from the Display Menu and Data from the -More- Menu.
Click cursor at (280,285) or *[35,19]*	3. Position the cursor at (280,285) or *[35,19]* and press the mouse button. ±00000.0000 appears on the screen. (The format will be changed in the next section, so do not worry about positioning.)

Add a data entry point to allow the user at the engine to enter a setpoint.

Green or *blue* foreground color	1. Change the foreground color to green or *blue*.
C, <Enter>, D, <Enter>	2. Select Data Entry from the Control Menu.
Click cursor at (376,285) or *[47,19]*	3. Position the cursor at (376,285) or *[47,19]* and press the mouse button. ±#####.#### appears on the screen. (The format will be changed in the next section, so do not worry about positioning.)

Because Object Configuration was turned off in the System Configuration Menu, object configuration forms do not appear automatically after an object is created. At this point, dynamic objects will be configured.

> **NOTE**
>
> If your target SoftScreen workstation is not connected to a PLC or PLC network, but you wish to see the screen running on the target, you can substitute #20 for [40030] and [40040] in the tutorial. #20 is a user-configurable internal register. (See Appendix A for other internal registers.) When you execute your screen or application on the target, the Actual temperature bar will grow based on the value in register #20, instead of the value read from the PLC.

T, <Enter>, C, <Enter>, click on Actual temperature gauge

1. Select Config from the Tools Menu and click on the Actual temperature gauge.

Enter form information, <Enter>, Okay

2. Enter the following information in the Object Configuration Form. Click on each field to make the selection or to enter text. Press <Enter> when you have finished entering text in a field. (States do not need to be set.)

Option	Setting	Meaning
Object Name	Obj0	Default object name
Growth Direction	Up	Bar grows vertically
Value Expression	[40040]	PLC address location connected to station 2
Min Value	0	Bar doesn't fall below 0*
Max Value	100	Bar doesn't grow above 100*
Alarm Enable	Yes	Alarm message appears if min/max values exceeded
Alarm Acknowledge	No	User doesn't have to acknowledge alarm
Low Alarm	20	Low alarm displayed if [40040] < 20
High Alarm	95	High alarm displayed if [40040] > 95
Deadband	2	Value of overlap between alarm conditions and regular levels is 2; alarm message displayed at 95, but not displayed as out of alarm until value reaches 92

* Regardless of the value read or entered as setpoint.

Click Okay when all the information is entered.

Click on Setpoint temperature gauge

3. Config mode is still active. Select the setpoint temperature gauge.

Enter form information, <Enter>, Okay

4. Enter the information into the Object Configuration Form that appears. Press <Enter> when you have finished entering text in a field. (States do not need to be set.)

Option	Setting	Meaning
Object Name	Obj1	Default object name
Growth Direction	Up	Bar grows vertically
Value Expression	[40030]	PLC address location connected to station 2
Min Value	0	Bar does not fall below 0*
Max Value	100	Bar does not grow above 100*
Alarm Enable	No	No alarm necessary for setpoint gauge
Alarm Acknowledge	No	No alarm acknowledge
Low Alarm	0	Same as min value since alarm is not set
High Alarm	100	Same as max value since alarm is not set
Deadband	0	No deadband

** Regardless of the value read or entered as setpoint.*

Click Okay when all the information is entered.

Click on ±00000.0000

5. Select the data display point (±00000.0000).

Enter form information, <Enter>, Okay

6. Fill in the information for the Object Configuration Form that appears. Press <Enter> when you have finished entering text in a field. (States do not need to be set.)

Option	Setting	Meaning
Object Name	Obj18	Default object name
Format	000	No spaces after decimal
Value Expression	[40040]	Matches actual bar info
Min Value	0	" "
Max Value	100	" "
Alarm Enable	No	Alarm set in bar configuration
Alarm Acknowledge	No	" "
Low Alarm	0	" "
High Alarm	100	" "
Deadband	0	" "
Security Level	0, Only	No password needed
Data Scale Expression	None	The data entered will not be scaled

Click on +#####.####

7. Click on the data entry point (±#####.####). The configuration form appears.

Enter form information, <Enter>, Okay

8. Fill in the following information for the Object Configuration Form. Press <Enter> when you have finished entering text in a field. (States do not need to be set.)

Option	**Setting**	**Meaning**
Object Name	Obj19	Default object name
Format	000	No places after decimal
Data Address	[40030]	Matches setpoint bar info
Min Value	0	" "
Max Value	100	" "

Click Okay when all the information is entered.

On the screen, ±### appears at the data entry point. When this screen is running on the engine, the setpoint can be entered.

Next, the entire display is labeled.

Cyan or *blue* foreground color
Font size D
D, <Enter>, T, <Enter>, <Enter>
Click the cursor at (112,38) or *[14,3]*, type TEMPERATURE DEGREES C, <Enter>, <Enter>

1. Change the foreground color to cyan or *blue*.

2. Select D as the font size from the menu bar at the top of the screen.

3. Select Text from the Display Menu and Single from the Text Menu.

4. Click the cursor at (112,38) or *[14,3]*, type TEMPERATURE DEGREES C, and press <Enter> twice.

T, <Enter>, <Enter>, S, <Enter>, Okay	5. Select Save from the Tools-Screen Menu and click Okay to save M-Screen.

This screen is now ready to be sent to the engine. You can end this part of the tutorial, or continue and configure some function keys. If you want to end the session, go to Section 4.7, Sending the Application.

In the next step, keys F1 to F4 are configured and boxes are created on the screen that inform the user what each function key does.

NOTE

The keys configured in this example are set for this screen only. Keys can be configured for an entire application under Application-Load-Configuration-Edit-Keypad-Function or Application-Load-Configuration-Edit-Keypad-Pseudo.

C, <Enter>, <Enter>, <Enter>	1. Select Key from the Control Menu and Function from the Key Menu.
Click on F1	2. Select F1. The Key Configuration Menu appears.
Function on Press: Load a Recipe, R, type M-Recipe, <Enter>, Okay	3. Select **Load A Recipe** as the Function on Press, press the R key, click cursor, type M-Recipe as the recipe name, and press <Enter>. Click Okay.

Configure F2-F4, Okay

4. Configure keys F2 through F4—in the same manner—to the following specifications:

Key	Function	Other Info
F2	Go to Screen	Screen Name = AlarmSum
F3	Print a Report	Report Name = M-Report
F4	Write Data to Address	Address = [40030] Value = 50 (Sets the temperature to 50)

Click Okay after entering the last key information.

Next, create static boxes to let the user know what the function keys do.

Cyan or *[white]* foreground color

1. Select the foreground color as cyan or *[white]*.

D, <Enter>, R, <Enter>, F, <Enter>, click cursor (48, 323) or *[6,21]*, drag to (168, 361) or *[21,23]*, release

2. Select from the Display Menu, Rectangle, and Filled from the Rectangle Menu. Position the cursor at (48,323) or *[6,21]*, drag the mouse to (168,361) or *[21,23]*, and release the button.

T, <Enter>, C, C, <Enter>, click on rectangle, drag 3 grid spaces right, release

3. Select Copy from the Tools Menu and click the rectangle. It should be outlined in another color. Hold down the left mouse button and drag the copied rectangle three grid spaces to the right of the original rectangle, so it is aligned with the first, and release the button.

Click second rectangle, drag 4 grid spaces right, release

4. Copy is still the active mode, so it does not need to be reselected. Click on the second rectangle and drag the copy four grid spaces to the right.

Click third rectangle, drag 3 grid spaces right, release

5. Click the third rectangle and drag the copy three grid spaces to the right of the third rectangle, and release the mouse button.

Now add text in each of the boxes.

Black foreground, Cyan or *[white]* background color
Font size R
D, <Enter>, T, <Enter>, <Enter>, click cursor at (56,342) or *[7,22]*, type F1 - Load, <Enter>, <Enter>
Enter table information

1. Select the foreground color as black and the background color as cyan or *[white]*.
2. Change text size to regular (R) from the Font Menu.
3. Select **T**ext from the **D**isplay Menu and **S**ingle from the Text Menu. Click the cursor at (56,342) or *[7,22]*, type F1 - Load, and press <Enter> twice.
4. Enter the text and locations in Table 4-3 in the same manner as above.

Table 4-3. Tutorial Text and Location Placement

Graphic Workstation and PC/AT	2000 Series	Text
(96,361)	*[12,23]*	Recipe
(200,342) (240,361)	*[25,22]* *[30,23]*	F2 - Go to AlarmSum
(360,342) (400,361)	*[44,22]* *[49,23]*	F3 - Print Report
(496,342) (536,361)	*[62,22]* *[67,23]*	F4 - Set Temp to 50

T, <Enter>, <Enter>, S, <Enter>, save M-Screen	5. Select -Screen- from the Tools Menu and Save from the -Screen- Menu to save M-Screen. The screen is complete.
<Home>, <Enter>	6. Click the Xycom logo to the left of the menus to return to the Start Menu Bar.

You can now execute your screen on the engine, or create a recipe and a report for your application. To download M-Screen, refer to section 4.7.

4.5 GENERATING REPORTS

This section describes how to generate a report that displays the actual and setpoint temperatures based on the screen just created. The report will be printed at the target station printer when F3 is pressed on the engine, as configured on page 4-19. The report format will look similar (depending on date and time formats selected) to Figure 4-4 below. For more information on reports, see section 5.6.

dd mon year			hh:mm:ss AM
	TEMPERATURE REPORT		
	SETPOINT	ACTUAL	
TEMPERATURE	±000		±000

Figure 4-4. M-Report

(Where the data is represented as ±000 on the screen, the actual values recorded will print out at the engine.)

R, R, <Enter>, <Enter>, type M-Report, <Enter>, Okay	1. Select **R**eport from the Application Menu and **E**dit from the Report Menu. The Edit Report Form appears. Click the top box, enter M-Report, press <Enter>, and click Okay. A new set of menus appears and a grid pattern is drawn. This pattern is not printed by the engine. The coordinates displayed are line numbers instead of pixel locations.
D, <Enter>, <Enter>, pick format, <Enter>, click cursor at (7,2)	2. Select **D**ate from the **D**isplay Menu and pick a format. Position the cursor at (7,2) and click the left mouse button. Although the date appears as a format, the actual date will be printed by the engine.

D, <Enter>, T, <Enter>, pick format, <Enter>, click cursor at (61,2)	3. Select Time from the Display Menu and pick a format. Position the cursor at (61,2) and click the left mouse button. Although time appears as a format on the development system, the actual time will be printed by the engine.
D, <Enter>, T, T, <Enter>, <Enter>, click cursor at location, type text	4. Select Text from the Display Menu and Single from the Text Menu. The next four steps are entering text. For each x,y location given below, position the cursor at the given coordinate, click the left mouse button, type the associated text, and press <Enter>. **Location** **Text** (28,5) TEMPERATURE REPORT (24,8) SETPOINT (46,8) ACTUAL (7,12) TEMPERATURE
D, <Enter>, D, <Enter>, click cursor at (25,12)	5. Select Data from the Display Menu. Position the cursor at (25,12) and click the left mouse button. The Report Data Display Form appears.
Enter [40030] as Expression, 000 for Format, Okay	6. Enter [40030] for the Value Expression, 000 for Format, and click Okay.
Click at (47, 12)	7. Select Data from the Display Menu. Position the cursor at (46,12) and click the left mouse button. The Report Data Display Form appears.
Enter [40040] as Expression, 000 for Format, Okay	8. Enter [40040] for the Value Expression, 000 for Format, and click Okay.
D, <Enter>, F, <Enter>, click cursor anywhere on bottom line	9. Select Form Feed from the Display Menu. Position the cursor along the bottom line and click the left mouse button. This ensures a form feed is performed during runtime after each report is printed.

T, <Enter>, <Enter>, S, <Enter>, select M-Report, Okay	10. Select **R**eport from the **T**ools Menu and **S**ave from the Report Menu. Select M-Report and click Okay.
<Home>, <Enter>	11. Click on the Xycom logo to the far left of the menu to return to the Application Menu

4.6 CREATING A RECIPE

This section describes how to create a recipe. Recipes write a value to a specified address to override the current value. The recipe being created in this section (M-Recipe) will be downloaded to the PLC when F1 is pressed on the SoftScreen engine, in accordance with the configuration on page 4-19. It loads a value to set the temperature of the liquid in the tank.

R, <Enter>, <Enter>, click top box, type M-Recipe, <Enter>, Okay	1. Select **R**ecipe from the Application Menu and **E**dit from the Recipe Menu. Click the top box, type M-Recipe, press <Enter>, and click Okay.
Enter form information, <Enter>	2. Fill in the following information in the Recipe Form. **Address** **Value** [40030] 75 This loads the recipe value to the address specified. In this example, 75 will be loaded to address 40030 which controls the setpoint gauge. This is equivalent to an end user selecting the setpoint as 75°C. This recipe overrides the setpoint entered at the engine. Press <Enter> when you have finished entering information.
T, <Enter>, S, <Enter>, select M-Recipe	3. Select **S**ave from the **T**ools Menu and save M-Recipe. The recipe is now complete.

To create larger recipes that use consecutive addresses or values, use function keys F2 through F5 as follows.

Select address field containing 40030, press F2	1. Move the cursor to the line containing [40030] and press F2. This places the string into a buffer.
Move to next address line, press F3, press F4	2. Move to the next address line and press F3. The string in the buffer ([40030]) has been copied onto the line. Press F4. The address increments to [40031].
Move to third address line, press F4	3. Move to the next line and press F4 again. The address increments to [40032].
Click on value field containing 75, press F2	4. Move to the value field containing 75 and press F2. This copies the string into a buffer.
Move to next value field, press F5	5. Move to the next value field and press F5. The value decrements to 74.
Move to third value field, press F5	6. Move to the next value field and press F5 again. The value decrements to 73.
<Home>, <Enter>	7. Press <Home> and click on the Xycom logo to return to the Application Menu.

These function keys can be used on any form in any editable field. For more information on function keys, see Section 3.5. For more information on recipes, see Section 5.6.

4.7 SENDING THE APPLICATION

M-Screen, M-Report, and M-Recipe are part of the M-TEMP application. To download this application (or the configuration, individual screens, recipes, or reports) to your SoftScreen engine, select Start-Application-Send, Start-Application-Tools-Send, Start-Application-Configuration-Send, Start-Application-Screen-Send, Start-Application-Recipe-Send or Start-Application-Report-Send.

> **NOTE**
> The engine's receiving station number must match the number specified on the engine. The station number must be selected through the engine's Setup Menu prior to sending an application. Station #1 is the default.

During runtime, the following dynamic changes occur:

> **NOTE**
> For color engines, the screen appears in the same colors in which it was created. For monochrome engines, black objects appear black, blue objects appear regular intensity, and white objects appear high intensity.

- The green or regular intensity bar displays the setpoint entered by the user.

> **NOTE**
> Press <Home> and enter a new value to modify the setpoint.

- The blue or high intensity bar graphically displays the actual temperature of the tank as read from the PLC address specified.

- The actual temperature displays below the blue or high intensity bar.
- If configured, the function keys when pressed load the recipe, go to the Alarm Summary screen, print a report, or set the temperature to 50.

4.8 RUNNING THE APPLICATION ON A PC/AT ENGINE

To run M-TEMP on a SoftScreen PC/AT engine, select Start-Application-Run or Start-Application-Tools-Run.

> **NOTE**
> Make sure the PC/AT runtime system has been properly installed before running. See the SoftScreen PC/AT manual for installation information.

During runtime, the following dynamic changes occur:

- The green or regular intensity bar displays the setpoint entered by the user.

> **NOTE**
> Press <Home> and enter a new value to modify the setpoint.

- The blue or high intensity bar graphically displays the actual temperature of the tank as read from the PLC address specified.
- The actual temperature displays below the blue or high intensity bar.
- If configured, the function keys when pressed load the recipe, go to the Alarm Summary screen, print a report, or set the temperature to 50.

Definitions

Function Key	Function keys can be configured to allow an operator to control the application. The configuration can be per screen or globally. Function keys are configured under Control_Key_Function. See Section 5.4.1.5.
Pseudo Key	Pseudo keys can control the application triggered by time or an event. The configuration can be per screen or globally. Pseudo keys are configured under Control_Key_Pseudo. No key actually needs to be pressed. See Section 5.4.1.5.
Shortcut Keys	See Table 3-1 in Chapter 3.
PLCs Supporting String	**2000**: Eurotherm; **PC/AT** and **SSW**: Data Highway, Data Highway Plus, Data Highway Extended Serial, GE Series 6 CCM2, GE Genius I/O, GE Series 90, Mitsubishi-A, Modbus, Modbus Plus, TI500 and Xycom terminal.

5.1 CHAPTER OVERVIEW

This chapter outlines and defines the selections for each menu, screen, and form associated with the Application Menu.

NOTE

Each SoftScreen menu bar includes a Xycom logo in the left-most corner. However, due to space constraints, this logo is not depicted on any of the menu bars shown in this manual.

5.2 APPLICATION MENU

The Application Menu is part of the Start Menu Bar which appears when you first enter SoftScreen, as shown below:

Application	Configuration	Symbol	V4.5
Load			
Send			
Print			
Delete			
Alarm✓			
Run			

The SoftScreen version number appears in the right corner of the menu bar. Once an application is loaded, its name appears in the right corner. An application consists of its configuration, a message file, and recipe, report, and screen files (symbols are application independent). The maximum size of an individual recipe, report, or screen is 64 Kbytes for PC/AT, and 16 Kbytes for 2000 targets. The maximum number of screens, recipes, and reports is 255.

A scroll list appears when any of the menu items are selected from the Application Menu. To select an application, click the top box, enter the desired application name, press <Enter>, and click Okay. Do not use the characters ? or * in application names. These characters are used by DOS as single and multiple character matches, respectively. ? and * are allowed for recipes, reports, and screen names but should not be used for report names if printing to the disk is to occur.

The application can then be Loaded, Sent, printed, Deleted, Alarm checked (✓), or Run, as described on the following page.

Load
Loads an application to be edited or creates a new one. If you decide you do not want to load an application, press <Esc>, Cancel, or press the right mouse button. If a new application is loaded, it inherits the previously loaded application's configuration. The target

configuration, port configurations, function key and pseudo key configurations, and security passwords are all duplicated for the new application. The application name appears at the right of the menu bar. This selection brings up the Application Menu Bar.

Send
Sends the selected application to the specified receiving engine on the network. To send the same application to all engines on a network, set the receiving engine as 0. Press <Esc>, Cancel, or the right mouse button to cancel the send.

Print
Prints the selected application to the target specified in the System Configuration. Press <Esc>, Cancel, or the right mouse button to cancel the print. If the destination is a file, screen images are not printed.

Delete
Deletes a selected application from disk and memory. Press <Esc>, Cancel, or the right mouse button to cancel the delete.

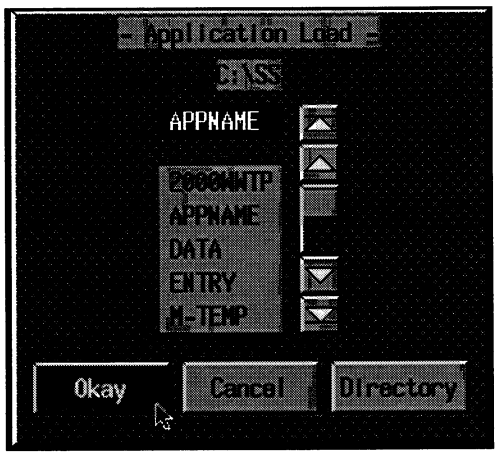
Alarm✓
Checks the number of alarms and the amount of alarm memory used by the selected application. Applications can have a maximum of 100 alarms and use a maximum of 30 Kbytes for these alarms. A message is displayed showing the number of alarms and the amount of alarm memory used. If the limits are exceeded, the message indicates at which screen and which object the overflow occurred. Press <Esc>, Cancel, or the right mouse button to cancel the Alarm Check.

Run
Runs the selected application on the target PC/AT workstation. The PC/AT runtime engine, PCENGINE.EXE, must exist in the search path and there must be enough memory for it to run. See your SoftScreen PC/AT manual for details and other restrictions. Press <Esc>, Cancel, or the right mouse button to exit the Application Run Scroll List.

5.3 Application-Load-TOOLS

Tools	Configuration	Recipe	Report	Screen	Message	AppName
Load						
Send						
Print						
Delete						
Alarm✓						
Run						

Selecting any of the Tools Menu options brings up a scroll list similar to the one shown below.



If the desired application name is shown in the top box, select Okay. If the name appears on the list, but not in the top box, type the first letter of the name or use the mouse to highlight the name, click to select, and then select Okay.

To select a new application, click the top box, enter the desired application name, press <Enter>, and click Okay. Do not use the characters ? or * in application names. These characters are used by DOS as single and multiple character matches, respectively. ? and * are allowed for recipes, reports, and screen names.

If the application is in a different directory, select Directory. A new scroll list appears. Select the new directory or enter the directory name in the top box. To look for an application on a different disk drive, enter the drive name in the top box. Click Okay and the scroll list showing the application names in the chosen directory appears. You may go back and forth between these two scroll lists until the proper directory and application has been selected. If the directory is on a network, the subdirectory markers "." and ".." may not be in the directory list. However, they can be entered in the top box. All files will be saved to the changed directory.

The Tools Menu provides options for loading, sending, printing, deleting, checking, or running an application, as described below:

Load
Loads an application to be edited or allows for the creation of a new one. The application name appears at the right of the menu bar. Press <Esc>, Cancel, or the right mouse button to exit the Application Load Scroll List.

Send
Sends the selected application to the specified receiving engine on the network. To send the same application to all engines on a network, set the receiving engines to 0. Press <Esc>, Cancel, or the right mouse button to cancel the send.

Print
Prints the selected application to the target specified in the System Configuration. If the listing target is a file, screen images are not printed. Press <Esc>, Cancel, or the right mouse button to cancel the print.

Delete
Deletes a selected application from disk and memory. Press <Esc>, Cancel, or the right mouse button to cancel the delete.

Alarm✓
Checks the number of alarms and the amount of alarm memory used by the selected application. Applications can have a maximum of 100 alarms and use a maximum of 30 Kbytes for these alarms. A message is displayed showing the number of alarms and the amount of alarm memory used. If the limits are exceeded, the message indicates at which screen and which object the overflow occurred. Press <Esc>, Cancel, or the right mouse button to cancel the Alarm Check

Run
Runs the selected application on the target PC/AT. The PC/AT runtime engine, PCENGINE.EXE, must exist in the search path and there must be enough memory for it to run. See your SoftScreen PC/AT manual for details and other restrictions. Press <Esc>, Cancel, or the right mouse button to cancel the run.

5.4 Application-Load-CONFIGURATION

Tools	Configuration	Recipe	Report	Screen	Message	APPNAME
	Edit					
	Send					
	Print					

The Configuration Menu allows editing, printing, or sending the configuration associated with an application:

Edit
Allows editing the configuration. This selection brings up another set of menus, which are described in Section 5.4.1.

Send
Sends the current application configuration to the specified receiving engine on the network. To send the configuration to all engines on a network, set the receiving engine to 0. Press <Esc>, Cancel, or the right mouse button to cancel the send.

Print
Prints the current configuration to the listing target specified in the System Configuration. If the listing target is a file, it prints ASCII text. Press <Esc> or the right mouse button to cancel the print.

5.4.1 Application-Load-Configuration-EDIT

Selecting Edit from the Configuration Menu brings up the Edit Menu Bar as shown below. (No menus drop down until they are selected).

Tools	System	Target	Ports	Keypad	Passwords	Date/Time	AppName

To exit this menu bar and return to the Application Menu, press <Home> and <Enter> or click on the Xycom logo.

5.4.1.1 **Application-Load-Configuration-Edit-TOOLS**

Tools	System	Target	Ports	Keypad	Passwords	Date/Time	AppName
Defaults							
Save							
Send							
Print							

Each option on the Tools Menu is described below:

Defaults
Sets the system configuration to the following:

Printer:	EPSN RX80
Send Port:	COM1
Default PLC Name:	PLC0
Default PLC Format:	UB
Object Configuration:	On
Symbol Target:	PC/AT-VGA
Listing Target:	LPT1
Send Wait Time:	5

Save
Saves the current configuration to SOFTSCRN.CFG.

Send
Sends only the current configuration to the specified receiving engine on the network. To send the configuration to all engines on a network, set the receiving engine as 0. Press <Esc>, Cancel, or the right mouse button to cancel the send.

Print
Prints the system, target, port, keypad, and password configurations to the listing specified in the System Configuration. Press <Esc> or the right mouse button to cancel the print.

5.4.1.2 Application-Load-Configuration-Edit-SYSTEM

Tools	System	Target	Ports	Keypad	Passwords	Date/Time	AppName

Selecting System from the Edit Menu Bar brings up the System Configuration Form, which is used to configure the development system environment. Enter the information as follows:

Table 5-1. System Configuration Form

Printer	Select the development system printer as **Epson RX80**, **IBM Pro**, HP **LaserJet**, HP 16-color **PaintJet**, HP Monochrome **DeskJet**, HP **LaserJet+**, or Panasonic **KXP-1124**.
Send Port	Select **COM1** or **COM2** as the port through which to communicate with the engine. This port should be different from the port to which your serial mouse is connected.
Default PLC Name	Enter PLC name (up to five characters). This must match one PLC name in the port menu. This PLC name is used if a name is not specified in an address. Any characters can be used in a PLC name except for : and].
Default PLC Format	Select **SB** (-32768 to 32767.9998) for signed binary, **UB** (0 to 32767.9998) for unsigned binary, **SD** (-999 to 999) for signed decimal, **UD** (0 to 9999) for unsigned decimal, **U3** (000 to 999) for unsigned 3 digit binary coded decimal, **or FP** for IEEE floating point. The default format is used if no other format is specified. However, if a PLC has dedicated floating point registers and an expression uses the default PLC format, FP will be used regardless of the default PLC format selected.
Object Configuration	Select **On** for the Object Configuration Form to appear after each individual object is created. Select **Off** to turn off this feature. If Off is selected, dynamic objects must be configured under Edit-Tools-Config. If **Off** when placing text on screen, the cursor will wrap to the next line.
Symbol Target	Selects the target engine for creating symbols. If using an EGA development system, select **8320-EGA** or **PC/AT-EGA** to create symbols. If using a VGA development system, select 8320-EGA or **8320-VGA** for an 8320 engine or PC/AT-EGA or **PC/AT-VGA** for a PC/AT engine. Select **2000-Mono** for a 2000 series engine or **2000-Color** for a 2050 engine.
Listing Target	Select **LPT1**, **LPT2**, **LPT3**, or **File** as the listing and print* destination. The file name is **<APPNAME>.LST** or **<SYMBNAME>.LST.** Each new list is appended to the previous. **Print output is not saved to a file.*
Send Wait Time	Specify a **range between 1-999 seconds** as the waiting time between each file sent to an engine. The default is five seconds. Decreasing this value to 1 may increase the speed of download. When downloading to 2000 engines, this value may have to be increased if the application is larger than 50 Kbytes.
Language	This option can only be accessed through the Configuration Menu. See Table 6-1.

5.4.1.3 **Application-Load-Configuration-Edit-TARGET**

Tools	System	Target	Ports	Keypad	Passwords	Date/Time	AppName

Selecting Target from the Edit Menu Bar brings up the Target Configuration Form, which is used to configure the engine environment. Enter the information as follows:

Table 5-2. Target Configuration Form

Target Engine	The proper target **MUST** be selected before the application is started. If using an EGA development system, select 8320-EGA or PC/AT-EGA. If using a VGA development system, select 8320-EGA or 8320-VGA for an 8320 engine, or PC/AT-EGA or PC/AT-VGA for a PC/AT engine. Select 2000-Mono for a 2000 series monochrome engine or 2000-Color for a 2050 engine. *Note: If downloading a monochrome screen to the 2050, the colors display as intense white, black, and blue. If downloading a color screen to a monochrome unit, blue and light blue appear as regular intensity, black and dark grey appear black and all, other colors appear as high intensity.*
Serial Ports	Select **2** or **4** to match the target device. 2000 targets can only have two ports. More than two ports may be selected for PC/AT if a network card is used—such as S&S or SA85.
Menu Lock	2000 and SSW. Select **On** to disable engine menu access, or **Off** to allow engine menus to be used via the keypad.
Keyboard Type	Select one of the following Xycom external sealed membrane keyboards: the **8320, 2000 QWERTY** or **2000 ABC** to be used with your target or select **None**.
Keypress Sound	Select **On** for a beep when the user presses a key or a Touch Screen button on the engine, or **Off** for no sound. (This only applies to Touch Screens and Xycom keypads, not external keyboards.) This is available only on engines with an internal beeper or speaker.
Repeat Key Presses	Select **On** to have the function of a touch button or function key repeated if constantly pressed (if on, functions may buffer up). Select **Off** to have the function only performed once per press. Both the press and release will be repeated. Set to **Off** if simulating "push buttons".

Table 5-2. Target Configuration Form (*continued*)

Printer	Select the target device printer as **Epson RX80** or **IBM Pro.**
Report Log Enable	Select the location to which the reports can be sent: **Printer**, **Disk***, **Printer/Disk***, or **Off**. **PC/AT only*
Disk Full Resolution	PC/AT only. Select **Delete None** or **Save Number**. The Alarm Save Number option allows from 1 to 65535 alarms to be saved.
File Management Password Level	PC/AT only. Select a password level, **1-7** or **0** for none, to allow access to the engine's File Manager. Select **Only** to restrict the valid password to the level(s) specified or **And Below** to allow all passwords from 1 through the level specified. Multiple levels can be selected by typing each desired level number separated by a comma and using the Only option. Default is 0.
Report Log Path	PC/AT only. Sets the directory for reports logged to disk. If the directory does not exist at runtime, the engine creates it. Each report is logged to REPNAME.XXX where XXX is a sequential number.
Startup Screen Name	Enter the name of the initial screen (eight characters maximum). *Note: This is necessary before application will run.*
Power-on Diagnostics	2000 and SSW. Select **On** for the target device to run through diagnostics at power-up or **Off** to skip the diagnostic test.
Security Password Level	PC/AT and graphic workstation only. Select a password, **1-7** or **0** for none, to allow access to menus or DOS during runtime. Default is 0.
Touch Screen	Select **On** for a target device with a Touch Screen or **Off** for one without. *Note: In order to use the PF keys for the 2005, and 2050/2060, set the touch screen option to **On**, whether or not you have a touch screen. Setting the option to **On** allows the development system to configure a touch zone without having a touch screen. This overrides the switch located on the back of the 2000 workstation.*
Alarm Display Time	Enter the number of seconds (0-999) an alarm displays on the engine. For information on alarms, see your SoftScreen workstation manual.

Table 5-2. Target Configuration Form (*continued*)

Beep on Alarm	Select **On** and a beep will sound when an alarm occurs on the target engine or **Off** to turn off the sound. This applies only to workstations equipped with an internal beeper or external speaker.
Relay on Alarm	PC/AT equipped with an 9000-RAD board, 9450-SSW or graphic workstation only. **On** closes the relay circuit on the engine when an alarm occurs to allow for a siren, etc. **Off** opens the relay.
Print Alarm	Select **On** to print each alarm as it occurs or **Off** to turn off printing.
Alarm Save Number	PC/AT only. Range 0-65535. Define the number of alarms to save to disk if Disk Full Resolution is set to Save Number. If this number is exceeded, the oldest alarms are deleted.

5.4.1.4 Application-Load-Configuration-Edit-PORTS

Tools	System	Target	Ports	Keypad	Passwords	Date/Time	AppName
			Port 1				
			Port 2				
			Port 3				
			Port 4				

Ports must be configured before sending information to the target engine. The Ports Menu is used to configure the PLC ports. This involves four steps:

1. **Select Ports** and pick a port that appears in dark text. Ports listed in light typeface cannot be selected. After the port is selected, the PLC Network Type Form appears.

2. **Select a PLC network type*** and click Okay. A configuration form appears.

> **NOTE**
> PC/AT and SSW. If the Touch Screen option has been turned on in the Target Configuration Form and you are using a serial Touch Screen, you must select Port 1 or Port 2 from the Ports Menu and specify Touch Screen. (There is no configuration form associated with this selection.)
>
> You do not need to specify a port for a bus version of the Touch Screen.

3. **Enter the communication parameters** appropriate for the selected PLC* and click Okay. Consult your PLC manual for specific requirements.

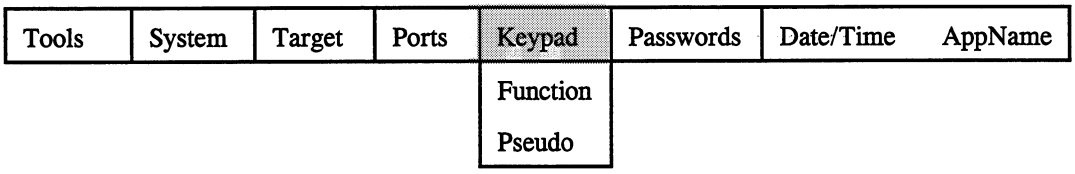
> *** NOTE**
> Specific parameters for each PLC are detailed in Appendix D.

4. **Provide the PLC parameters** in the PLC Configuration Form*, and then click Okay.

> *** NOTE**
> Specific parameters for each PLC are detailed in Appendix D.

> **NOTE**
> For the 2000, Port 1 is the secondary port and Port 2 is the primary port. Use Port 1 to download to graphic workstations and 2000 engines.

5.4.1.5 Application-Load-Configuration-Edit-KEYPAD



The Keypad Menu associates specific functions with keypad keys and pseudo keys for global functionality.

> **NOTE**
> Function and pseudo keys configured using the Keypad Menu are used globally for all screens. However, function and pseudo keys can be configured for individual screens using the Application-Load-Screen-Control-Key Menu. Function and pseudo keys that are not configured for an individual screen, default to Keypad Menu (global) configurations.

Function
Configures function keys for the entire application. Follow the steps listed below:

1. **Select the key to configure** from the Function Key Configuration Form. Configured function keys appear highlighted. Another configuration form appears after a function key is selected.

2. **Select the Function on Press and Function on Release** from the next sample form. The function key can perform one action when pressed and one when released. Options for press and release are shown below:

> **NOTE**
> If Go to Screen, Return to Previous Screen, Go to Idle Mode, Change Security Level, Load Selected Recipe, Execute Selector Button or Exit SoftScreen are selected as the Function on Press, we recommend you do not configure a Function on Release.

None - No function is performed and no information needs to be entered.

Write Data to Address - Enter the appropriate Data Address and Data Value. The data value can contain an expression, internal or indirect register, PLC address, or constant. The data address contains the PLC address or internal register to which you wish to write. When the key is pressed/released on the engine, the value is written to the address.

Go to Screen - Enter the screen name in the Screen Name prompt area. When the key is pressed/released on the engine, the specified screen is executed. Use this function to access the AlarmSum, AlarmVu, and FileMan screens (AlarmVu and FileMan are PC/AT only. Refer to Section 5.7 for more information).

Return to Previous Screen - No information is needed. When the key is pressed/released on the engine, the previous screen is executed. The engine keeps track of the last ten screens executed.

Load a Recipe - Specify the recipe name in the Recipe Name prompt area. When the key is pressed/released on the engine, the recipe information is performed.

Print a Report - Specify the report name in the Report Name prompt area. This report is then printed to the target printer or file when the key is pressed/released on the engine.

Print the Current Screen - No information is needed. The current screen prints to the target printer when the function key is pressed/released on the engine. The 2000 series cannot perform this function.

Go to Idle Mode - PC/AT only. No information is needed. Everything in the engine, including PLC communication, stops and all open files are closed. Only key presses and timeout pseudo keys will function, and only if the specified function is Return to Active Mode. This allows for a safe shutdown procedure for PC/AT Runtime Systems that frequently read and write to opened logging files. This should be used on systems before powering down if SoftScreen is not exited

Return to Active Mode - PC/AT only. No information is needed. If the engine was in idle mode, all stopped activities will begin running again.

Acknowledge Alarm - No information is needed. If the engine is displaying an alarm, it is acknowledged.

Simulate Key Press - Specify the key press values (numbers and letters are allowed) to be inserted into the engine's keyboard buffer when the key is pressed/released. To simulate the <Home>, <Enter>, <Backspace>, <Null>, and <Left Arrow> keys, use <H, <C, <B, <N, and << respectively (lower case is allowed). The 2000 series has a 20-key buffer and the PC/AT and graphic workstation has a 29-key buffer. If more keys are inserted than the buffer has room for, extra keys are lost. Holding down a key with the repeat function on could create such an instance.

Change Security Level - PC/AT only. Enter a Security Level **1-7** or **0** for none.Defining the security levels allows Data Entry, String Entry and Rec Modify objects to be enabled via the password security level entered on the engine. Does not allow screen changes.

Load Selected Recipe - PC/AT only. No information is needed. When the function key is pressed/released on the engine, the recipe to be loaded in the PLC can be chosen from a scroll list.

Execute Selector Button - PC/AT only. Specify the object name of the selector touch button. When the function is performed on the engine, the selector touch button whose object name matches the configured name has its selector index expression evaluated. The engine indexes into the list of configured functions based upon the evaluation result. Both the press and release functions configured at the proper index are performed.

Exit SoftScreen - PC/AT only. No information needed. When the specified event occurs, the engine will exit SoftScreen and return to the operating system.

Pseudo

A pseudo key works like a function key, however, a pseudo key needs a specified event to activate its function. No key actually needs to be pressed. The function only occurs once when the event occurs. To execute again, the event must become false and then true again. To configure a pseudo key, follow the steps below:

1. **Select a key** from the Pseudo Key Configuration Form. Configured keys appear highlighted.

2. **Select a Trigger Event** and fill in the appropriate information as described below:

   None - No trigger event occurs. No other information needs to be provided.

   Time of Day - Enter the time at the Time of Day prompt, using a 24-hour clock (military time). The chosen function will occur at the specified time of day. For example, if 13:00 is entered at the time of day prompt, the chosen function occurs at 1:00 p.m.

   Timeout - Enter the timeout period in seconds. The chosen function occurs at the specified time after the application begins executing. The engine scans pseudo keys once per second.

   Condition Becomes True - Enter a conditional expression. This can consist of a PLC address, expression, etc. See Appendix C for more information. The function occurs when the condition goes from false to true. The engine scans pseudo keys once per second.

Periodic Timeout - Enter the timeout in seconds. The chosen function occurs at the specified time after the application begins executing and continues to occur after each specified amount of time has passed. The engine scans pseudo keys once per second.

3. **Select Function** on page 2 of the Pseudo Key Configuration Form and fill in the appropriate information as shown below:

   None - No function is performed and no information needs to be entered.

   Write Data to Address - Enter the appropriate Data Address and Data Value. The data value can contain an expression, internal or indirect register, PLC address, or constant. The data address can contain the PLC address or internal or indirect register to which you wish to write. The data is written to the address when the specified event occurs.

   Go to Screen - Enter the screen name in the Screen Name prompt area. The screen executes when the specified event occurs. Use this function to access the AlarmSum, AlarmVu, and FileMan screens (AlarmVu and FileMan are PC/AT only. Refer to Section 5.7 for more information).

   Return to Previous Screen - No other information is needed. The previous screen executes when the specified event occurs. The engine keeps track of the last ten screens executed.

   Load a Recipe - Enter the recipe name in the Recipe Name prompt area. The recipe loads when the specified event occurs.

   Print a Report - Enter the report name in the Report Name prompt area. The report prints at the target printer or file when the specified event occurs.

   Print the Current Screen - PC/AT and graphic workstation only. No other information is needed. The screen prints at the target system printer when the event occurs.

   Go to Idle Mode - PC/AT only. No information is needed. Everything in the engine, including PLC communication, stops. Only Return to Active Mode key presses and timeout pseudo keys will function. This allows for a safe shutdown procedure for PC/AT runtime systems that frequently read and write to open log files.

Return to Active Mode - PC/AT only. No information is needed. If the engine was in idle mode, all stopped activities begin again.

Change Security Level - PC/AT only. Enter a Security Level **1-7** or **0** for none. Defining the security levels allows rec modify, string entry, and data entry objects to be enabled via the password security level entered on the engine.

Execute Selector Button - PC/AT only. Specify the object name of the selector touch button. When the function is performed on the engine, the selector touch button whose object name matches the configured name has its selector index expression evaluated. The engine indexes into the list of configured functions based upon the evaluation result. Both the press and release functions configured at the proper index are performed.

Exit SoftScreen - PC/AT only. No information needed. When the specified event occurs, the engine will exit SoftScreen and return to the operating system.

5.4.1.6 Application-Load-Configuration-Edit-PASSWORDS

Tools	System	Target	Ports	Keypad	Passwords	Date/Time	AppName

This menu option is used to set passwords for security levels. These passwords can then be used to protect application screens and screen entry objects, access to menus, and access to DOS and the File Manager on PC/AT engines.

In the Password Configuration Form, specify a password for each of the seven levels. Passwords can have a maximum of eight characters. As not all characters of the alphabet are available on the engine keypad, you may want to use numbers so the passwords can be entered on the engine without the use of an additional ASCII keyboard.

> **NOTE**
> Password screens are automatically generated by the SoftScreen engine. For the 2000 or 2000T you may have to generate your own password screens since there is no keyboard.

For a screen to be executed, the password entered must match one whose level has been set in the Screen-Control-Security Menu on the development system. On the engine, the password prompt appears in the center of a blank screen and returns the user to the previous screen if an incorrect password is entered.

5.4.1.7 **Application-Load-Configuration-Edit-DATE/TIME**

Tools	System	Target	Ports	Keypad	Passwords	Date/Time	AppName

PC/AT and graphic workstation only. This menu sets the date and time format on the development system to send the current date and time to the specified engine. The following options are available:

Set
Sets the date in month/day/year format. Enter the time in hour:minute:second format and select AM or PM. If AM is selected, the time can be in a 24-hour format. Select Okay to change the date and time on the development system. Press <Esc>, Cancel, or the right mouse button to cancel any changes that have been made.

Send
PC/AT only. Sends the current date and time to the specified receiving engine on the network. To send the date and time to all engines on the network, enter 0 for the receiving engine. Press <Esc>, Cancel, or the right mouse button to cancel the send.

5.5 Application-Load-RECIPE

Tools	Configuration	Recipe	Report	Screen	Message	AppName

- Edit
- Send
- Print
- Delete

The Recipe Menu is used to create recipes that can include data information relevant to a PLC's process control. Recipes write values to specified internal registers or PLC addresses.

A scroll list appears when one of the menu items is selected. If the desired recipe name is shown in the top box, select Okay. If the name appears on the list, but not in the top box, click the cursor on your selection, or type the first letter of the name (until the correct selection appears in the top box), and then select Okay. To create a new recipe, click the top box, enter the desired recipe name, press <Enter>, and click Okay.

The recipe can then be edited, sent, printed, or deleted, depending on your menu choice, as described below:

Edit
Provides editing options for a current recipe or the creation of a new one. This selection brings up another set of menus and is described in section 5.5.1. Press <Esc>, Cancel, or the right mouse button to cancel the edit.

Send
Sends the selected recipe to receiving engines on the SoftScreen Network. To send the recipe to all engines on a network, configure the receiving engine as 0. Press <Esc>, Cancel, or the right mouse button to cancel the send.

Print
Prints the selected recipe to the listing target specified in the System Configuration. Press <Esc>, Cancel, or the right mouse button to cancel the print.

Delete
Deletes the selected recipe from disk and memory. Press <Esc>, Cancel, or the right mouse button to cancel without deleting a recipe.

5.5.1 Application-Load-Recipe-EDIT

The Edit option is used to edit an existing recipe or to create a new one. Select the recipe name from the form that appears, or enter a new one. The Recipe Form then prompts for the following information:

Address
Enter the PLC or register address in the format below (text in parentheses is used to declare optional information as described below):

[(PLCNAME:)PLC ADDRESS (BIT #)(,FORMAT)] or # Reg or @Reg (PC/AT only)

where:

name	is a maximum of five characters and references the proper PLC network and port. PLCNAME can be a tag name from the PLC network or interface.
address	is in a format appropriate to the specific PLC (refer to Appendix D for valid PLC addressing)
bit #	is a specific bit number of the address (if required or allowed)
format	is one of the following: UD for unsigned decimal SD for signed decimal UB for unsigned binary SB for signed binary U3 for unsigned 3 digit binary coded decimal FP for IEEE floating point

If PLCNAME and FORMAT are not specified, default information in the System Configuration Form is used.

> **NOTE**
> FP format floating point values beyond SoftScreen's internal value limit (-32768.0000 or 32767.9998) will not be accurate.

Addresses can also be writable internal registers #20 - #500 for the 8320; #20 - #100 for the 2000; and #1 - #6, #20 - #999 and #1050 - #2000 for the PC/AT. For the PC/AT, addresses can also be writable indirect registers @20 - @999 and @1050 - @2000.

Value
The data value can contain an internal register (e.g., #5), an indirect register (e.g., @20), an expression (e.g., #5*15), a PLC address (e.g., [40030]), or a recipe modify register, (e.g., #M<default>).

Recipe modify registers may be used alone or as part of an expression to represent runtime recipe variables. Each #M register in a recipe is given a <default> value that is used by the engine when the recipe is loaded. Defaults may only be decimal constants. Hexadecimal and octal values are not supported. If no <default> is specified, it is set to zero (e.g., #MA = #MA0). However, the value contained in a #M register can be changed while the engine is running using a Recipe Entry object (described in Section 5.7.1.3). Any change made to a #M register permanently replaces its current value.

Up to ten different recipe modify registers may be used in a value expression. The range of valid register labels is #MA - #MJ. If no letter is attached to a #M label, it is set to #MA (e.g., #M<default> = #MA<default>). Since the modify registers contained on a recipe line are unique to that line, the same ten labels may be used multiple times within a recipe. This means that the #MA on recipe line 5 is different from the #MA on recipe line 9.

Examples of value expressions containing recipe modify registers are shown below:

Table 5-3. Value Expressions

Address	Value
[40030]	[40001]*#MA4 + #5/#MB15
@32	#MA400
#50	#MA2*#MB8*(#MC11+AVG ([40010]-[40020]))

Description
This optional comment field (10 characters maximum) is used for documentation purposes only.

At the same time the Recipe Form is displayed on the screen, a new menu bar appears:

Tools	Previous	Next	Page #1	RecName

Tools
Provides selections for editing, saving, sending, and printing recipes. Press <Home> and hit <Enter> or click on the Xycom logo to return to the Application Menu.

Edit Allows editing another recipe or creating a new one. Press <Esc>, Cancel, or the right mouse button to cancel the edit.

Save Saves the recipe as a specified recipe name. To save the recipe under a new name, click the top box, type in the name, press <Enter>, and then Okay. Press <Esc>, Cancel, or the right mouse button to cancel the save.

Send Sends the current recipe to the specified receiving engine. To send the recipe to all engines on a network, select the receiving engine as 0. Press <Esc>, Cancel, or the right mouse button to cancel the send.

Print Prints the current recipe to the listing target specified in the System Configuration. Press <Esc>, Cancel, or the right mouse button to cancel the print.

Previous
Returns to the previous page of the recipe or wraps to page 99.

Next
Moves to the next recipe page or wraps to page 1. There are a maximum of 99 recipe pages available in each recipe.

Page
Shows the current page number. There are a maximum of 99 pages. Pages can be filled in any order with up to 10 items per page. Up to 255 recipes are allowed in an application. To go to a specific page, click on the word Page on the menu bar. The Change Page Number Form appears. Enter the page number and press Okay.

5.6 Application-Load-REPORT

Tools	Configuration	Recipe	Report	Screen	Message	AppName

- Edit
- Send
- Print
- Delete

The Report Menu is used to set the format for reports generated at the target device.

A scroll list appears when one of the menu options is selected. If the desired report name is shown in the top box, select Okay. If the name appears in the list, but not in the top box, click the cursor on your selection or type the first letter of the name (until the correct selection appears in the top box), and then select Okay. To create a new report, click the top box, enter the desired report name, press <Enter>, and click Okay.

The report can then be edited, sent, printed, or deleted, as described below:

Edit
Edits an existing report or creates a new one. Some characters are not recommended for use in names of reports to be saved on disk. Examples include ★ + = | [ ] , ; " ' < > ? / \ . : and space. After entering a report name, a new menu bar appears, as discussed in Section 5.6.1. Press <Esc>, Cancel, or the right mouse button to cancel the edit.

Send
Sends the selected report to the specified receiving engine on the network. To send the report to all engines on a network, select the receiving engine as 0. Press <Esc>, Cancel, or the right mouse button to cancel the send.

Print
Prints the selected report to the listing target specified in the System Configuration. Press <Esc>, Cancel, or the right mouse button to cancel the print.

Delete
Deletes a report from disk and memory. Press <Esc>, Cancel, or the right mouse button to cancel the delete.

5.6.1 Application-Load-Report-EDIT

Tools	Display	Previous	Next	Page #1 x=1 y=2 RepName

The Report-Edit Menu Bar provides the selections Tools, Display, Previous, Next, and Page. Two types of information can be displayed to the left of the Report Name: the x,y cursor coordinates (as shown above) or the current mode (e.g., Erase). The cursor location appears when the cursor is in the screen area; the current mode appears when the cursor is in the menu area. The current mode appears in blue.

In Report-Edit, the cursor moves between character cells. Each page of a report has 80 characters per line and 23 lines per page. Each report can have up to 99 pages. A grid is shown on screen to help line up columns, but is not printed by the engine.

Tools

Tools	Display	Next	Run	Page #1 x=1 y=2 RepName
-Report-				
Config				
Copy				
Move				
Erase				
UnDo				
Cut				
Paste				
Change				

The Tools Menu provides selections for changing report objects and the Edit, Save, Send, Print, and Config options.

> **NOTE**
> When selected, functions under Report-Edit-Tools and Report-Edit-Display remain active until another function is selected. This provides the ability to perform a function on various objects without reselecting it from the menu.

Once a function has been selected, select an object to which to apply it. Objects can be selected by individually clicking each one or by "boxing" a group (also called "rubber banding"). To box a group, position the cursor outside the objects and hold the left mouse button down while dragging the mouse around the objects. A box appears around the selected objects. The selected function is then applied to all objects contained **completely** in the box when the mouse button is released. Objects outside of the box are unaffected. Press the right mouse button while dragging the box to abort the selection.

Selecting -**R**eport- from the **T**ools Menu provides the following choices:

Edit Provides options for editing a new or existing report. Click your cursor on the report name in the Report Edit Scroll List, and click Okay. Press <Esc>, Cancel, or the right mouse button to cancel the edit.

Save Saves the selected report to disk under the specified name. To save the report under a new name, click the top box, type in the name, press <Enter>, and then Okay. Press <Esc>, Cancel, or the right mouse button to cancel the save.

Send Sends the current report to the specified receiving engine. To send the report to all engines on a network, configure the receiving engine as 0. Press <Esc>, Cancel, or the right mouse button to cancel the send.

Print Prints the current report to the listing target specified in the System Configuration. Press <Esc>, Cancel, or the right mouse button to cancel the print.

Config PC/AT only. Provides options for configuring the report's append expression and disk resolution. The append expression, if true, writes the current report to the end of the previously printed report. When a report is printed to a file, the Disk Full Resolution controls whether files are deleted when the disk is full. The file save number range is 1-46000. Press <Esc>, Cancel, or the right mouse button to cancel the configuration.

The remainder of the selections under the Tools Menu are described below:

Config Allows the configuring of display objects created under Reports-Edit-Display.

Copy Copies the selected display object or object group. Move the cursor to the object or object group to copy and hold down the left mouse button. The outline of the object/object group changes color. Drag the duplicate to the desired location and release the mouse button. If the selected object or object group is not moved, no duplicate is created.

Move Moves the selected object or object group. The outline of the object or object group changes color. Drag the object or object group to the desired location and release the mouse button.

Erase Erases the object or object group selected.

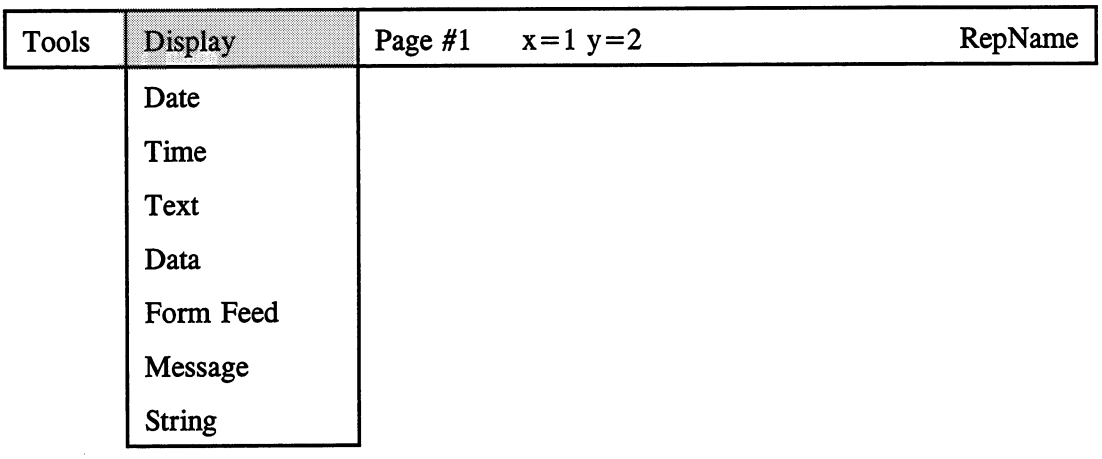
UnDo Restores the display of the report to its previous state. To use, UnDo **must** be initiated immediately after Erase, Move, Paste, or Copy. UnDo does not undo Config, Change Text or Cut If you UnDo an Undo, it returns the item to its previous condition (erased, moved, pasted, or copied). If another selection is made before the UnDo, the last item erased is removed from buffer memory and cannot be retrieved. If a single object has been erased, it retains its chronological order and any overlap quality when it is undone. If a group of objects has been erased and then is undone, the group is placed in front of all other objects, regardless of chronological order. However, objects remain in the order in which they were originally drawn within the group

Cut Copies the selected object or object group into a file in the current working directory for later pasting. This file is saved until another object or object group is cut in the same working directory, even if this does not occur until another SoftScreen session. A cut file in one directory will not overwrite a cut file in another directory so it is possible to have multiple cut files, each in a different directory. The original object remains on the screen.

Paste Copies the most recently cut object/object group onto the screen. The object/object group is placed at its original report location. This provides the ability to cut from one report page and paste onto another without having to change the orientation of any of the objects. If you paste onto the same page from which you cut, the object is placed on top of the original object.

Change Changes previously entered text. Position the cursor on the text to be changed and press the left mouse button. The cursor appears at the end of the text. Use the arrow, <Backspace>, <Insert>, and <Delete> keys to move to the desired location and make the appropriate changes. Press <Enter> to accept the changes.

Display



The Display Menu provides selections for displaying report objects, as described below:

Date Places the date at the selected position in one of four formats. On the development system, the date appears in the format shown on the left, below, not as the actual date. When the report is generated on the runtime system, the actual date is used.

Development	Runtime
mm/dd/yy	e.g., 11/15/93
dd/mm/yy	e.g., 15/11/93
dd mon year	e.g., 15 Nov 1993
dayofweek, fullmonth, dd, year	e.g., Monday, November 15, 1993

Time Places the time at the selected position in one of three formats. On the development system, the time appears in the format shown on the left, below, not as the actual time. When the report is downloaded to the runtime system, the actual time is used.

Development	Runtime
24:mm:ss	e.g., 17:00:00
12:mm:ss	e.g., 05:00:00
hh:mm:ss AM	e.g., 05:00:00 PM

Text Provides options for entering a line of text at the desired location. There are three types of text:

Single - Provides options for entering a single line of text at the desired location. Press <Enter> when finished entering the text.

Layered - PC/AT only. Provides options for printing one of up to six lines of text. After selecting Layered, position the cursor at the desired location and click the left button. The Text Configuration Form appears. Enter up to six lines of text. Only the text line associated with a true conditional expression prints. If more than one condition is true, the line with the highest numbered state—1 through 6—is printed. However, on the development system, the longest line of text is displayed. For example, to track fluid fill in a tank, three text lines could be "tank empty," "tank half full," and "tank full," where only the applicable line should be printed, based on which conditional statement is true. On the development system, the longest line of text—"tank half full"—is displayed. Colors are not selectable.

Control - PC/AT only. Allows control sequences to be sent to the printer when a report is printed. After selecting Control, position the cursor at the desired location and click the left mouse button. The Control Text Configuration Form appears. The Control Code is a sequence of bytes that are sent to the printer when the report is printed. The string can consist of decimal values, hexadecimal values, or ASCII characters separated by commas. To enter hexadecimal values, use 0xddd. ASCII characters should be surrounded by single (') quotes. Control text is limited to 10 objects per line. On the development system, an asterisk (*) displays in intense white on blue to indicate control text.

Data Provides a way to print specified data at a specified location. The Report Data Display Form prompts for the expression and format:

Value Expression Enter a mathematical expression, PLC address, indirect or internal register, or constant. The result of this expression is the value printed. For example, if you entered the expression [PLCADDRESS]/2, the value printed would be the result of reading the PLC address and dividing the data by two.

Format Enter the format in which the expression result is to be printed, with a maximum of five digits before and four digits after the decimal point.

Form Feed Provides a way to form feed the printer for multiple pages. Because each screen page is approximately 23 lines, selecting Form Feed at the end of two screen pages allows more information to be printed per page. Multiple form feeds can be placed on one screen. On the development system, FF is displayed in blue to indicate a form feed.

Message PC/AT only. Defines the length and position of a message. SoftScreen can store 780 different 70-character messages, which are defined under Application-Load-Message-Edit. Fill in the configuration form with the following information:

Table 5-4. Message Configuration Form

Object Name	Enter an object name (eight characters maximum) or accept the default name.
Message Length	Enter the length of the message (from 1 to 70 characters). When the report is generated, the message is printed. On the development system screen a series of M's (one for each unit of length) is displayed.
Value Expression	Enter the expression to be evaluated (for help, press F1 or see Appendix C). The expression is evaluated as an integer (fractions are truncated). If this integer falls on or within the minimum and maximum values, the message associated with that integer is printed. For example, if the expression is evaluated as 5, the message entered under 005 in Application-Load-Message-Edit is printed. If the result of the expression is less than the minimum value or greater than the maximum value, the minimum and maximum values are used, respectively. If a message doesn't exist, nothing is printed at the message location.
Minimum/Maximum Value	Enter the minimum message value. (Messages are defined under Application-Load-Message-Edit.) Enter the maximum value of the message (up to 779).

String PC/AT only. Prints the text at a PLC location or within a series of internal registers. After selecting String, position the cursor at the desired location and click. The String Configuration Form appears. String Address defines the location of the string data. The address can be an internal register or a PLC address. Maximum length is the number of characters the string takes up on the report line. Use Terminator determines whether or not the engine will look for a terminating character which defines the end of the string. The string characters will be printed up to the terminator or the maximum length, whichever comes first. The terminator is defined as a decimal value in the range 0-255. This is the ASCII value of the character that is used to end the string. On the development system a string is represented as a series of S's (one for each unit of length).

Tools	Display	Previous	Next	Page #1	x=1 y=2	RptName

Previous
Returns to the previous page of the report or wraps to page 99.

Next
Moves to the next report page or wraps to page 1. There are a maximum of 99 report pages available.

Page
Lists the current page of the report. There are a maximum of 99 pages. To go to a specific page, click on the word Page in the menu bar. The Change Page Number Form appears. Type the page number you want to go to and press Okay.

5.7 Application-Load-SCREEN

Tools	Configuration	Recipe	Report	Screen	Message	AppName
				Edit		
				Send		
				List		
				Print		
				Delete		
				Alarm✓		

The options under the Screen Menu are used to create an application screen. Most of the objects created on the screen can be tied to a PLC address through fill-in-the-blank object configuration forms, which are automatically brought up if Object Configuration is turned on under Configuration-System.

A scroll list appears when one of the menu items is selected. If the desired screen name is shown in the top box, select Okay. If the name appears on the list, but not in the top box, click the cursor on your selection, or type the first letter of the name (until the correct selection appears in the top box), and then select Okay. To create a new screen, click the top box, enter the desired screen name, press <Enter>, and click Okay.

You can enter any screen name except AlarmSum, AlarmVu, and FileMan. SoftScreen provides these three screens, which are not user configurable. To access any of these screens on an engine, you must configure a function key, pseudo key, touch button, or selector button with the Go to Screen function.

The AlarmSum and AlarmVu (PC/AT) screens allow you to view a listing of alarms during runtime. Both contain the following information: object name, alarm condition (high, low, out of alarm), alarm value, date, time, and status. Alarms can be deleted in the AlarmSum screen; they cannot be deleted in AlarmVu. AlarmVu is not supported on 2000 engines. For more information on alarms, refer to Section 5.7.1.3. FileMan, a File Manager utility for the PC/AT, allows you to manipulate application files. You can copy, compact, expand, delete, and move files using touch buttons or function keys. Screens can be edited, sent, listed, printed, deleted, or alarm checked, as discussed on the following pages.

Edit
Edits an existing screen or enables the creation of a new one. Selecting Edit brings up a new set of menus, which are discussed in section 5.7.1. Press <Esc>, Cancel, or the right mouse button to cancel the edit.

Send
Sends the selected screen to the specified receiving engine on the network. To send the screen to all engines on a network, configure the receiving engine as 0. Press <Esc>, Cancel, or the right mouse button to cancel the send.

List
Prints information associated with a particular screen. Press <Esc>, Cancel, or the right mouse button to cancel the listing.

Short Prints the screen name, number of objects, and file size. For each configured object, the object name, type, expression, and alarm enable status is printed.

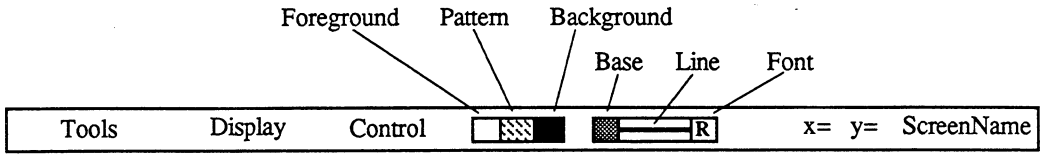
Long Prints all screen environment and configured object information contained within a screen to the development system listing target.

Print
Prints the selected screen image to the listing target specified in the System Configuration (only if it is a printer). Colors print as patterns. It is recommended you temporarily change the foreground and background color of objects to black and white (see Section 5.7.1.4) before printing. Press <Esc>, Cancel, or the right mouse button to cancel the print.

Delete
Deletes a screen from disk and memory. Press <Esc>, Cancel, or the right mouse button to cancel the delete.

Alarm✓
Checks the number of alarms and the amount of alarm memory used by the selected screen. Applications can have a up to 100 alarms and use a total of 30 Kbytes for these alarms. A message is displayed showing the number of alarms and the amount of alarm memory used. If limits are exceeded, the message indicates at which screen and which object the overflow occurred. Press <Esc>, Cancel, or the right mouse button to cancel the alarm check.

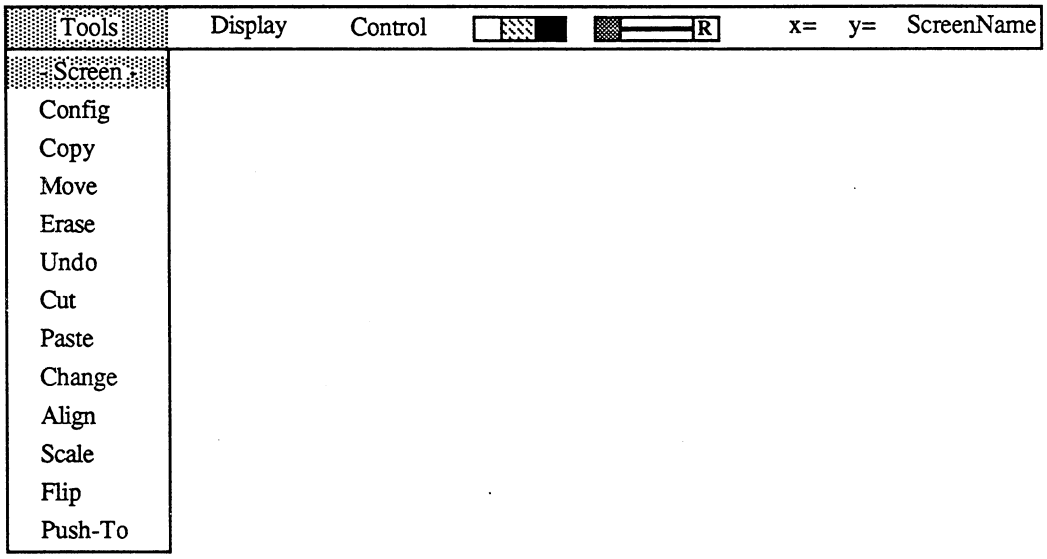
5.7.1 **Application-Load-Screen-EDIT**



The Edit Menu Bar appears after Edit is selected from the Screen Menu. Four types of information can be displayed on the Edit Menu Bar to the left of the Screen Name:

- The x and y cursor coordinates when the cursor is in the screen area
- The current mode (e.g., Erase) when the cursor is in the menu bar
- The current angle when drawing pies
- The touch button zone when drawing touch buttons for a 2000 engine

5.7.1.1 **Application-Load-Screen-Edit-TOOLS**



Some of the performance criteria to be aware of for functions in the Tools Menu are listed below.

- When selected, functions under Edit-Tools and Edit-Display remain active until another function is selected. This provides the ability to perform the same function on various objects without reselecting it from the menu.

- Once you have selected a tools function, select an object to which to apply the function. You can select objects by individually clicking each one or by "boxing" a group. To select a group, position the cursor outside the objects and hold the left mouse button down while dragging the mouse around the objects. A box appears around the selected objects. The function is then applied to all the objects contained **completely** in the box when the mouse button is released. Press the right mouse button while dragging the box to cancel the selection.

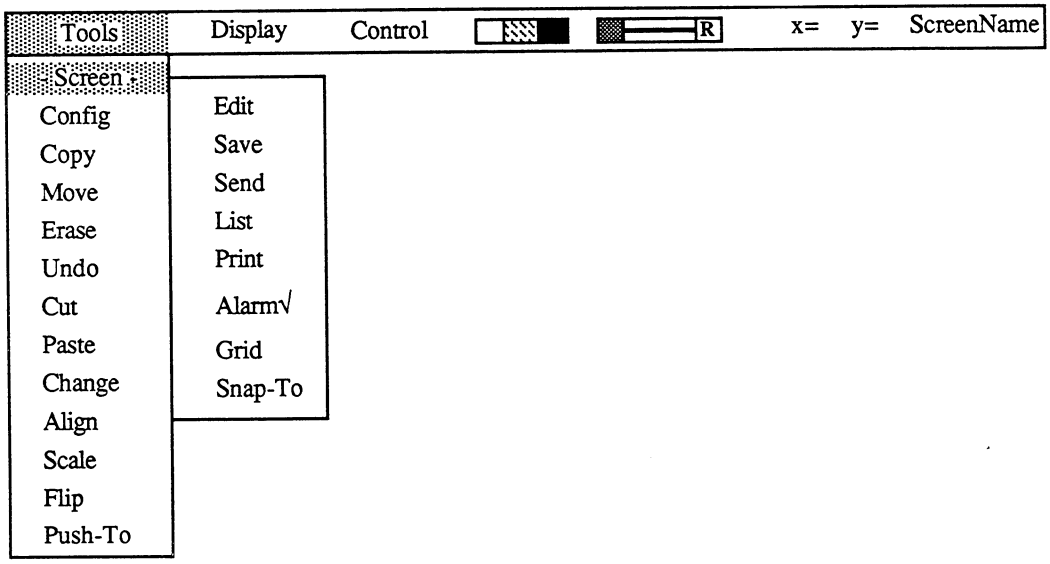
- Default object names are provided as a convenience to the user and are numbered incrementally as Obj0, Obj1, Obj2, etc. However, these names are not a guarantee of uniqueness. For example, assume a screen consists of three objects—Obj0, Obj1, and Obj2—and then Obj1 is deleted. Obj0 and Obj2 remain. When a new object is drawn, it will be called Obj2 because it is the third object on the screen.

  Object names appear on the target engine during alarms. Therefore, it is recommended that you provide more descriptive object names than the defaults to aid the end user.

- Most of the Tools Menu selections are used to modify existing objects. You must first select the function and then click on the object to which the function will be applied. You do not need to click on an object when using UnDo and Paste; these functions update automatically when they are selected.

- Graphic workstation and PC/AT only. If using line sizes greater than one pixel, some objects (bars, rectangles, squares, ovals, circles, pies, and touch buttons) may be drawn one pixel wider or taller than shown in the outline that appears before the mouse is released. This ensures correct drawing and erasure on the engine.

Selecting **-Screen-** from the Tools Menu brings up the following choices:



Edit
Edits an existing screen or enables the creation of a new one. A scroll list requesting the screen name appears. Press <Esc>, Cancel, or the right mouse button to cancel the edit.

Save
Saves the screen as a specified screen name. A scroll list requesting the screen name appears. To save the screen under a new name, click the cursor in the top box, type in the new name, press <Enter>, and then select Okay. Press <Esc>, Cancel, or the right mouse button to cancel the save.

Send
Sends the current screen to the specified receiving engine on the network. To send the screen to all engines on a network, configure the receiving engine as 0. Press <Esc>, Cancel, or the right mouse button to cancel the send.

List
Prints information associated with a particular screen to the listing target specified in the System Configuration. Press <Esc>, Cancel, or the right mouse button to cancel the list.

Short Prints the screen name, number of objects, and file size. For each configured object, the object name, type, any expression, and alarm enable status is printed.

Long Prints all screen environment and configured object information contained within a screen to the development system listing target.

Print
Prints the current screen image to the listing target specified in the System Configuration if it is a printer. Press <Esc>, Cancel, or the right mouse button to cancel the print.

Alarm✓
Checks the number of alarms and the amount of alarm memory used for the current screen or for the application. If changes to the current screen have been made, they should be saved before alarm checking the application. Applications can have up to 100 alarms and use a total of 30 Kbytes for these alarms. A message is displayed showing the number of alarms and the amount of alarm memory used. If limits are exceeded, the message indicates at which screen and which object the overflow occurred. Press <Esc>, Cancel, or the right mouse button to cancel the alarm check.

Grid
Places a grid on the screen to help in positioning objects when **On** is selected. The grid remains on until it is turned off; it does not automatically turn off when a screen is exited. The default distance between the crosslines of the grid is one character height by one character width. When the grid is on, a check mark appears to the right of Grid on the Tools-Screen Menu and when the grid is Off, the check mark is not visible. You can turn the Grid on and off without deactivating a currently selected menu function.

Select **Size** to change the size of the grid. A form appears prompting you to enter the grid size in pixels. The current grid size is displayed for reference. If the size is changed and Snap-To is on, the cursor snaps to the new grid size. For the 2000 series, the cursor is placed in reference to the original character boundaries, regardless of the grid size.

Snap-To
Causes the cursor to move to grid intersections, even if Grid is not selected or displayed on the screen. When selected, a check mark appears to the right of Snap-To on the Tools-Screen Menu. Snap-To remains in effect until it is turned off. It does not automatically turn off when a screen is exited. For the 2000 series, the cursor is always in snap-to mode, so Snap-To is not a selection. You can turn Snap-To on and off without deactivating a currently selected menu function.

The rest of the selections under Tools are described below:

Config
Configures selected objects. If Object Configuration was turned off under Configuration or Application-Load-Configuration-Edit-System, use this selection to configure objects after the screen is drawn. If objects have already been configured, use Config to edit the configuration of selected objects.

Objects can be selected one at a time, several or all at once by using the mouse to select object boundaries. If objects are selected as a group, each Object Configuration Form follows the last (in the order the objects were created) without returning to the screen each time. If objects are configured as a group, press the right mouse button or <Esc> to exit.

Copy
Copies the selected object or object group. Move the cursor to the object or object group to copy and hold down the left mouse button. The outline of the selected object or object group changes color. Drag the duplicate to the desired location and release the mouse button. If the selected object or object group is not moved, no duplicate is created. On a 2000 screen, if a touch button is selected or is in the group of objects selected, movement is based on touch button zone boundaries.

Move
Moves the selected object or object group. When the outline of the object or object group changes color, drag it to the desired location and release the mouse button. If Move is selected to place one object on top of another, the object to be placed on top **must** have been created after the object to be placed behind. This is because the chronological order of object creation determines which objects can be layered on others, with the earliest objects on the bottom layer. To change the ordering of the object list, select Push-To from the Tools Menu. On a 2000 screen, if a touch button is selected or is in the group of objects selected, movement is based on touch button zone boundaries.

Erase
Erases the object or object group selected.

UnDo
Restores the screen display to its previous state. To use, UnDo **must** be initiated immediately after Erase, Move, Scale, Paste, or Copy. UnDo does not undo Config, Change Text, Cut, Flip, or Push-To. If you UnDo an Undo, it returns the item to its previous condition (erased, moved, pasted, or copied). If another selection is made before UnDo is selected, the last item erased is removed from buffer memory and cannot be retrieved. If a single object has been erased, it retains its chronological order and any overlap quality when it is undone. If a group of objects has been erased and then is undone, the group is placed in front of all other objects, regardless of chronological order. However, objects remain in the order in which they were originally drawn within the group

Cut
Copies the selected object or object group into a file in the current working directory for later pasting. (Only visual objects can be cut; function/pseudo keys, alarms, and security levels cannot be cut.) Locations and configurations are also saved. This file is saved until another object or object group is cut in the same working directory, even if this does not occur until another SoftScreen session. A cut file in one directory will not overwrite a cut file in another directory so it is possible to have multiple cut files, each in a different directory. The original object remains on the screen.

Paste
Copies the most recently cut object or object group onto the screen. The object is placed at its original screen location. This allows cutting from one screen and pasting into another without changing the orientation of any of the objects. If you paste onto the same screen you cut from, the object is placed on top of the original object.

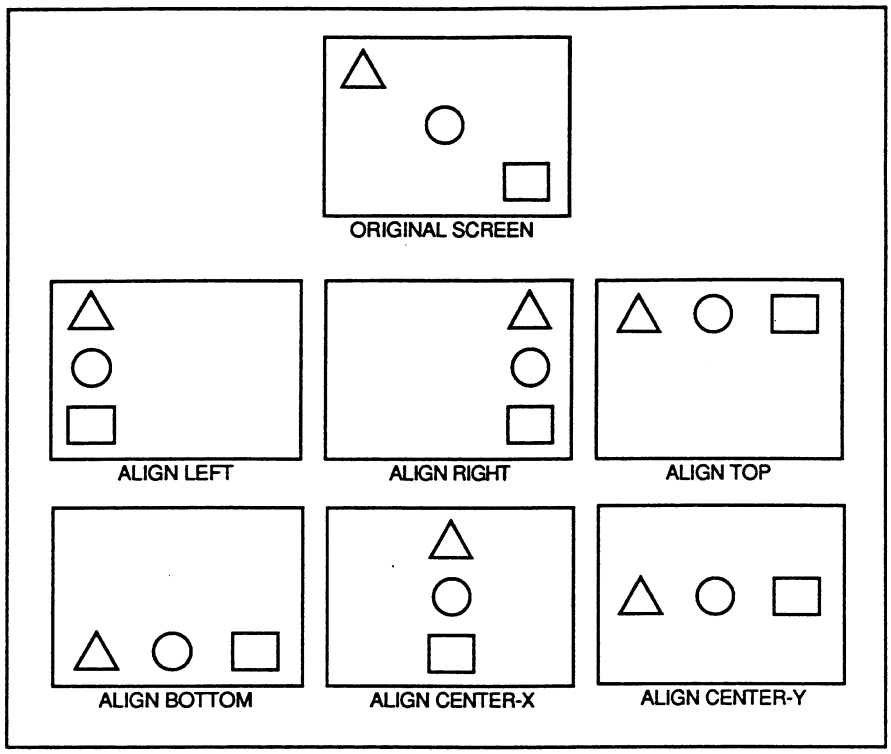
Change
Changes the properties of a single object or a group of objects (foreground color, background color, pattern, line size, line dash, font, text, poly (AT only), or fill/unfill AT only). Filled objects can be changed to unfilled objects and unfilled objects can be changed to filled objects. In addition, the location of a poly object's vertices can be changed (Change Poly can only be performed on a single object).

For example, to change the foreground color of an oval from red to blue, select blue from the Foreground Color Menu, select Foreground from the Change Menu, and click the red

oval. You can also select Foreground from the Change Menu, blue from Foreground color, and then click the red oval. Change Poly and Change Line Dash are not supported for the 2000 series.

Align

Aligns a group of objects to the left, right, top, bottom, center-x, center-y, nearest grid-x, or nearest grid-y of the group. For left, right, top, and bottom alignments, the reference point is the most extreme member of the group. Objects are not moved to the left, right, top, or bottom of the screen. For example, if aligning three objects to the left, the left-most object stays in place and the other two objects are moved in line with the left edge of that object. If the left-most object is in the middle of the screen, the objects will be left aligned in the middle of the screen. For center-x, the object group is aligned around the center x coordinate of the group. For center-y, the object group is aligned around the center y coordinate of the group. For nearest grid alignments, the objects are moved to the nearest grid-x or grid-y position, even if the grid is not turned on. See the diagram below for more information:

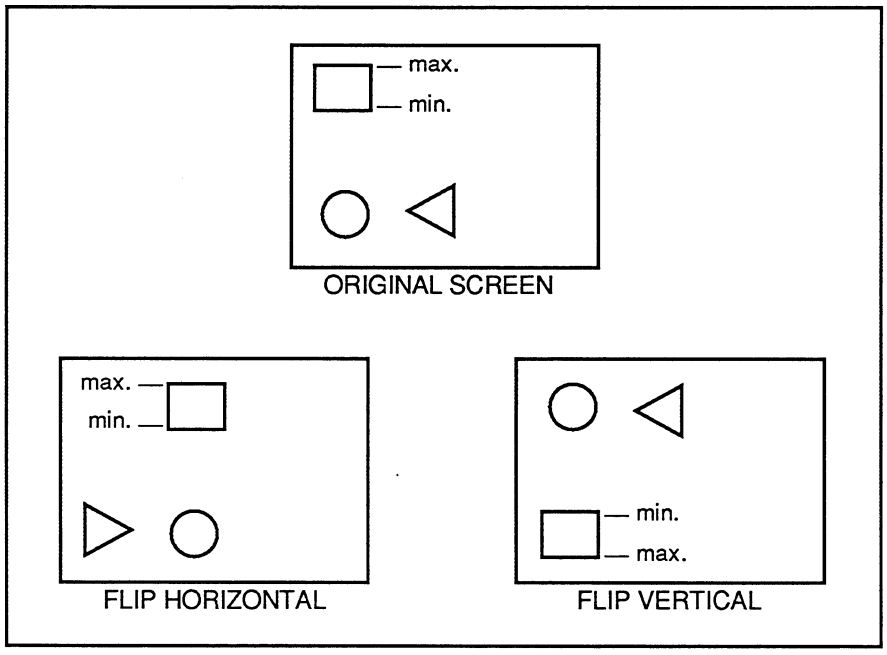


Scale

Scales the selected object or object group. Only graphic elements can be scaled. Date, time, text, data display, data entry, messages, string entry, string display, and recipe entry *cannot* be scaled. To scale an object, select the object or object group. A rectangle appears around the object with four sizing squares. (Vertical and horizontal lines will only have two sizing squares.) Select a sizing square and move it while holding down the left mouse button. Click twice without moving for scaling to occur. Objects are sized to fit in the outline. On the 2000, touch buttons are scaled to touch button zone boundaries. Trends and XY plots can only be scaled down to 130 pixels by 70 pixels. On an EGA/VGA system, touch buttons can only be scaled down to 10 pixels by 10 pixels. If trends, plots, or touch buttons are part of the selected group, scaling will stop once one of these objects reaches its minimum size.

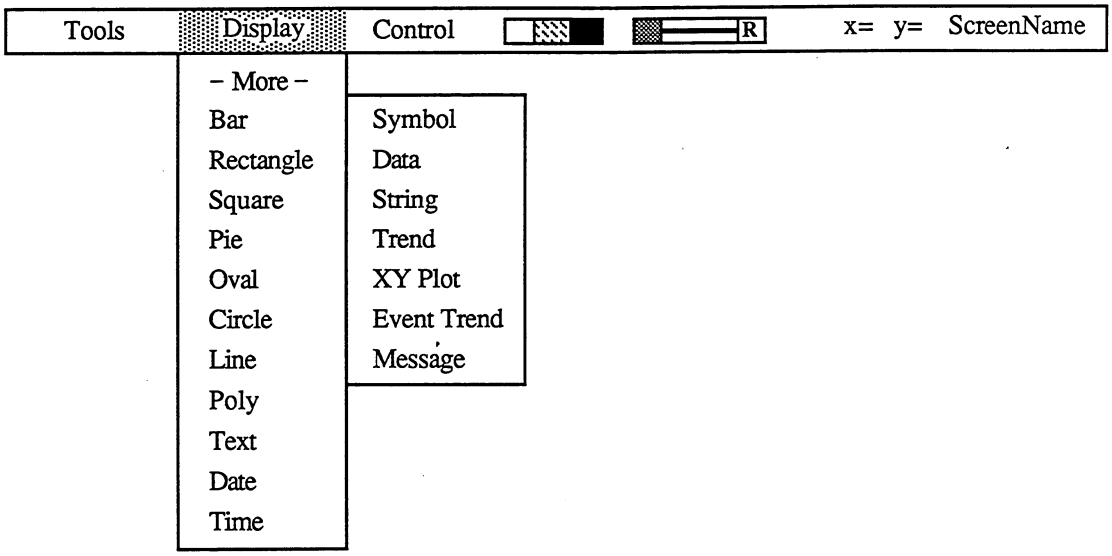
Flip

Flips the orientation of a single object (polygon, polyline, and diagonal line only) or any group of objects along a horizontal or vertical axis. For example, if a triangle pointing up is flipped vertically, it will face down. If a triangle facing left is flipped horizontally, it will face right. When flipped as part of a group, text position changes, but always remains readable. See the diagram below for an example:



Push-To
Pushes an object or object group in front of or behind another object or object group. This is useful because the most recently created objects always overlap objects created earlier. For example, if you decide to enclose an existing text line in a box, when the box is created it is placed on top of the text. For the text to appear, select Push-To Back and click on the box. Push-To may alter the order the cursor scrolls through entry objects when using <Home>, <Pg Dn>, and <PgUp>.

5.7.1.2 Application-Load-Screen-Edit-DISPLAY



The Screen Display Menu is used to create each of the objects listed in the menu. After a selection from Display is complete, an Object Configuration Form appears unless it has been turned off in the System Configuration.

The basic Object Configuration Form for bar, rectangle, square, pie, oval, circle, and data is explained in Table 5-5 on the following page. The basic Object Configuration Form for polygons, polylines, lines, and text is explained in Table 5-6. The configuration forms for selector text, string, trend, xy plot, event trend, and message are shown in Tables 5-7 to 5-15, respectively. Date and time have no associated configurations.
Additional information is described under the specific menu selection.

NOTE

Number of I/O Points You Can View Per Individual Screens

The PC/AT engines can look at up to 400 unique I/O points (PLC addresses); graphic workstation engines can look at up to 300; and 2000 series engines can look at up to 100. The total number of I/O points is a combination of:

Screen Data Points + Trend Points + Alarms = Total I/O points per screen

Table 5-5. Object Configuration Form

Object Name	Enter an optional name (eight characters maximum) or accept the default name (Obj0, Obj1, etc.)
Value Expression	Enter a mathematical expression consisting of an address, equations, etc. This value controls growth of graphical objects and the value of data display objects. Leave this blank for static objects (not required for objects with states only). Press F1 for help or refer to Appendix C for more information.
Minimum/Maximum Value	Enter the minimum value for the object to shrink to and the maximum value for the object to grow to or the minimum and maximum value of a data display object. An object is initially created as a representation of its maximum size.
Deadband	Enter the value of overlap between alarm condition and regular levels. The deadband cannot be larger than the difference between the minimum and maximum values. For example, assume the minimum value is 0, the maximum value is 50, the high alarm is 48, the low alarm is 2, and the deadband is 5. The high alarm will be displayed when the value reaches 48, but will not display as out of alarm until the value reaches 42.
Growth Direction	Define the direction in which a bar will expand: Up, Down, Left, or Right.

Table continued on the following page.

Table 5-5. Object Configuration Form (*continued*)

Alarm Enable	**Select No** to disable the alarm; **Yes** to enable it. Alarms occur when alarm minimum or maximum values are exceeded.
Alarm Acknowledge	Select **No** to disable alarm acknowledge. The alarm message displays for the time set in the Target Configuration. Pressing <Home> overrides the time specified and cancels the alarm message. Select **Yes** to enable alarm acknowledge. The alarm message appears until <Home> is pressed or Alarm Ack. user defined key is pressed.
Low/High Alarm	Enter the minimum value for a low alarm to be displayed and the maximum value for a high alarm to be displayed.
States	Sets object foreground and background colors in relation to a conditional expression.

The following information describes closed objects in more detail.

> **NOTE**
> Unfilled objects are redrawn using the currently selected background color.

Bar

Draws a bar in the current color and pattern. Position the cursor on the screen, hold down the left mouse button, move the cursor to the desired bar shape, and release the button. The outline of the bar appears for reference until you release the button. After the bar is drawn, the Object Configuration Form appears, if enabled. Fill in the form, referring to Table 5-5. The 2000 screen only uses solid foreground color for bars; patterns are not available.

Rectangle
Draws a filled or unfilled rectangle in the current color, pattern, line width, and dash. Position the cursor on the screen, hold down the left mouse button, move the cursor to the desired rectangle shape, and then release the button. The outline of the rectangle appears for reference until you release the button. After the rectangle is drawn, the Object Configuration Form appears, if enabled. Refer to Table 5-5 for information on filling in the form. On the engine, the rectangle will expand proportionately to the values specified in the configuration form.

On 2000-Mono screens, unfilled rectangles have the line centered within the character cell with the screen base color filling the rest of the cell. On 2000-Color screens, the background color fills the rest of the cell.

Square
PC/AT and graphic workstation only. Draws a filled or unfilled square in the current color, pattern, line width, and dash. Position the cursor on the screen, hold down the left mouse button, move the cursor to the desired shape, and release the button. The outline of the square appears for reference until you release the button. After the square is drawn, the Object Configuration Form appears, if enabled. Refer to Table 5-5 for information on filling in the form. On the engine, the square will expand proportionately to the values specified in the Configuration Form.

Pie
PC/AT and graphic workstation only. Draws a filled or unfilled pie in the current color, line width, pattern, and dash (unfilled pies can only be drawn with solid lines). Position the cross on the screen, hold down the left mouse button, and move the cursor to the desired size. The outline of an oval appears for reference until you release the button. When the entire oval is the desired size, release the left button. A line from the center of the oval to the edge appears when you release the button. Move the cursor until the line is positioned at the desired starting location of the pie, and press the left button. The direction you move the mouse is the direction the pie will grow when displayed on the engine. (The angle is shown at the top right of the menu bar.) Move the mouse while holding down the left button in the desired direction, and release the button. An outline of the pie will be shown as you move the mouse. The Object Configuration Form appears, if enabled. Refer to Table 5-5 for information on filling in the form.

Oval
PC/AT and graphic workstation only. Draws a filled or unfilled oval in the current color, pattern, line width, and dash. Position the cross on the screen, hold down the left mouse button, move the mouse to the desired shape, and release the button. The outline of the oval appears for reference until you release the button. After the oval is drawn, the Object Configuration Form appears, if enabled. Refer to Table 5-5 for information on filling in the form. On the engine, the oval will expand proportionately to the maximum value specified in the Configuration Form.

Circle
PC/AT and graphic workstation only. Draws a filled or unfilled circle in the current color, pattern, line width, and dash. Position the cross on the screen, hold down the left mouse button, move the mouse to the desired shape, and release the button. The outline of the circle appears for reference until you release the button. After the circle is drawn, the Object Configuration Form appears, if enabled. Refer to Table 5-5 for information on filling in the form. On the engine, the circle will expand proportionately to the maximum value specified in the Configuration Form.

Polygons, polylines, lines, and text are explained on the next several pages. The configuration form for these items appears below:

Table 5-6. Object/States Configuration Form

Object Name	Enter an object name (eight characters maximum) or accept the default name.
Conditional Expression	Enter the mathematical expression. This can consist of internal registers, PLC addresses, or a symbol expression. (Press F1 for help or see Appendix C for more information.) On the target device, the object appears in the selected colors when the expression is true, or in the color it was originally drawn in when the expression is false. If multiple expressions are true, the information associated with the highest numbered state is used.
Foreground/ **B**ackground Colors	Select black, blue, green, cyan, red, magenta, brown, white*, dark grey, light blue, light green, light cyan, light red, light magenta, yellow, or intense white** for graphic workstation and PC/AT screens. For 2000 Color screens, the selectable foreground colors are the same as the graphic workstation and PC/AT, but the background colors are black, blue, green, cyan, white*, light red, yellow, or intense white*. For 2000 Mono screens, the foreground and background colors are black, blue, or intense white**. On the target device, the object changes to these colors if the conditional expression is true. If multiple expressions are true, the highest numbered state's information is used. **White is displayed as grey. **Intense white is displayed as white.*
Text	List and Layered text only. Enter the line of text, up to 64 characters, that will be used if the conditional expression is true.

Line
Draws a line in the current color and line type. Position the cursor on the screen, hold down the left mouse button, move the cursor to create the line, and release the button. Next, the Line Configuration Form appears, if enabled. Refer to Table 5-6 for filling in the information.

2000 Screens only support horizontal and vertical lines. For 2000-Mono screens, the lines appear centered within the character cell with the screen base color filling the rest of the cell. For 2000-Color screens, the background color fills the rest of the character cell.

Poly
PC/AT and graphic workstation only. Draws a filled or unfilled polygon or a polyline.

Polygon Draws a polygon in the current color, pattern, line width, and dash. Position the cross on the screen, hold down the left mouse button, move the mouse to create the first edge, and release the button. Repeat until the entire shape is drawn. To complete the polygon, click the mouse twice without moving or have the final point equal the starting point. Next, the Object Configuration Form appears, if enabled. It prompts you for the information shown in Table 5-5.

Polyline Draws a polyline in the current color and line type. Position the cursor on the screen, hold down the left mouse button, move the cursor to create the first line, and release the button. Repeat until the polyline is drawn as desired. For the final line, click the mouse twice. Next, the Object Configuration Form (as shown in Table 5-5) appears, if enabled.

Text
Enters text in the current color and text size at the desired location. There are five possible types of text:

Single Displays single text lines. Each line is a separate object. Press <Enter> to end the line and, if automatic object configuration is turned off, to start a new one. Press <Enter>, <Esc>, or the right mouse button while on the new line to complete entering text. If enabled, the Text Configuration Form appears after entering the first line. Refer to Table 5-6 for more information. On the engine, the text appears in the color specified under States if the associated conditional expression is true. Otherwise, it is shown in the color it was created in at the development system.

Layered Displays one of up to six lines of text. After selecting Layered, position the cursor at the desired text location and click the left button. The Text Configuration Form appears. (Refer to Table 5-6 for more information). Enter up to six lines of text. Only the text line associated with a true conditional expression displays on the target device. If more than one condition is true, the line with the highest numbered state (1-6) is displayed. However, on the development system the longest line of text appears in the colors specified under States. For example, to track fluid fill in a tank, three text lines could be "tank empty," "tank half full," and "tank full" where only the applicable line should be displayed based on which conditional statement is true. On the development system, the longest line of text—"tank half full"—is displayed in the selected colors.

List Displays up to six lines of text. After selecting List, position the cursor at the desired location and click. The Text Configuration Form appears (refer to Table 5-6). All lines of text are displayed in a box. The box colors are the current foreground and background colors. For 2000 screens, the surrounding box is a full character cell around the text. For 2000-Mono screens, the box appears centered within the character cell with the box colors the current foreground and base colors. For 2000-Color screens, the background color fills the rest of the cell. On the engine, only elements whose conditional expression is true are displayed in the colors specified. If the conditional expression is false, the text line is shown in the color in which it was originally drawn. On the development system, all lines are displayed in the colors specified under States.

Selector PC/AT only. Defines a list of 1 to 64 text lines each with a user-modifiable index. Up to 49 lines (with the smallest font selected) of these 64 can be displayed at one time. Each of the 64 text lines can have 16 states, each with a unique foreground and background color and associated text (see Figure 5-1). The configured text scrolls in a user-defined window as the value of the index expression changes. When the index expression returns a value, the text line associated with that value is highlighted with the user-defined colors. Text not at the current index expression appears in the colors configured under States in the Text Line Configuration Form.

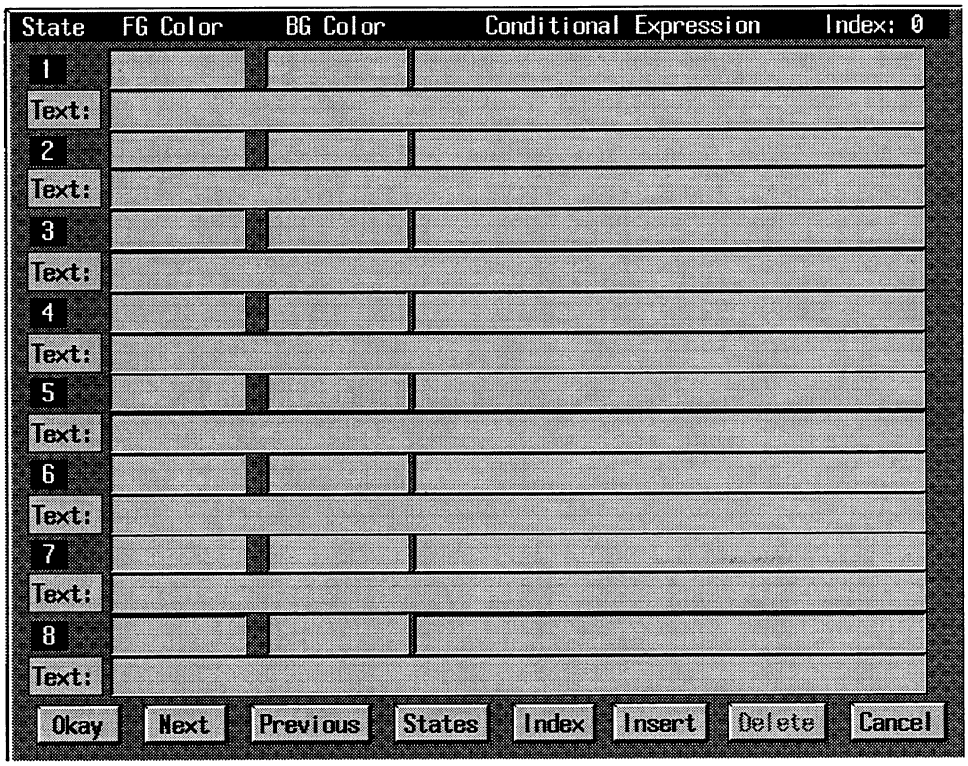
On the development system, the window in which the text appears takes on the current foreground and background colors and is the width of the longest configured text line. The center text line within the window is displayed in the highlight foreground and background colors. All other text lines appear in the state in which they were configured. The development system displays the text lines with index 0 at the top. You may select up to 49 lines to be displayed on a screen but only configured lines will be displayed. If, for example, you configure three lines but select four lines to be displayed, the three configured lines will be displayed. No blank lines will display. See Table 5-7 and Figure 5-1.

Once Selector is chosen, the Selector Text Configuration Form appears. Fill in the information as follows:

Table 5-7. Selector Text Configuration Form

Object Name	Enter a unique object name (eight characters maximum) or accept the default name.
Lines Displayed	Enter the number of lines to be displayed. More lines can be created, but only a maximum of 49 can be displayed.
Highlight **F**oreground/ **B**ackground Color	Define the color in which the selected line is displayed.
Selector Index Expression	Enter a mathematical expression consisting of an address, equation, etc. This value controls which line is drawn in the highlight colors based on the text lines index number. When this value is greater than the index number associated with the last text line configured, the last text line configured is displayed in the highlight colors. For example, if the index number of the last text line configured is 5, and the value returned is 10, the text line at Index 5 will be highlighted.
Text Lines	Allows the creating and editing of text strings for each text line. A new form appears when this button is selected.

When the Text Lines button is pressed, the following form appears:



The following steps describe how to configure text lines:

1. Configure from one to 16 states for each text line (each text line has an associated index number, which appears in the upper right corner of the form).

2. Type in a text string for each state you want to configure.

3. Select the state foreground (FG) and background (BG) colors.

4. Enter a conditional expression. When this expression returns a non-zero value, its associated text displays in the configured foreground and background colors.

5. Press one of the eight buttons along the bottom of the form to continue. Each is described below:

Okay	Accepts information entered and returns you to the Selector Text Configuration Form.
Next	Accesses the next index. However, you must fill in at least one state in the current index to proceed to the next index.
Previous	Returns to the previously configured index.
States	Toggles between two pages: Page one is states 1 through 8; page two is states 9 through 16. The first eight states must be configured to access states 9 through 16
Index	Places the cursor at the top right corner of the form, next to the index number. Type the number of the index to which you want to go, then press <Enter>. The form moves to the page number you entered. However, it will only move to a configurable index.
Insert	Copies the states configured in the current index to the next index. If the next index is already configured, these states are copied to the following index. For example, if you press Insert when you are in Index 1, the configured states are copied to Index 2 and the states that were already configured for Index 2 are copied to Index 3.
Delete	Deletes all entries in an index.
Cancel	Exits the form without saving any changes.

Figure 5-1 on the following page shows how selector text works.

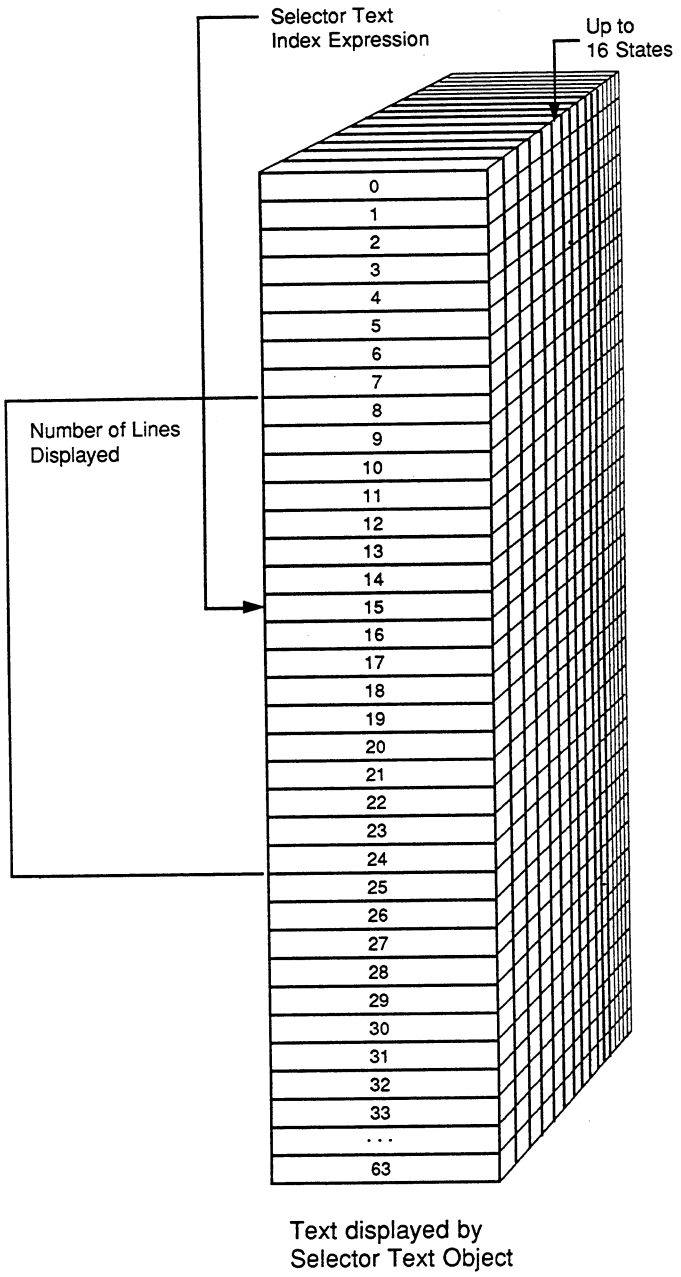


Figure 5-1. SoftScreen Selector Text Objects

Graphics
2000 only. Used to create text graphics on the screen. Text graphics can be used to fill in lines that are missing sections when lines cross each other and to simulate non-supported objects such as circles, diagonal lines, etc. Text graphics cannot be flipped or scaled.

After selecting Graphics, a form with various text graphics appears. Each box represents a text graphic that can be placed onto the screen. The three boxes at the bottom right of the form contain the letters N, P, and C:

N Moves to the next Text Graphics form.

P Moves to the previous Text Graphics form.

C Exits the Text Graphics form; all changes are cancelled

To select a text graphic, place the cursor on the graphic and click the left mouse button. The form disappears and the cursor appears as a crosshair on the screen. Hold down the left mouse button; the outline of the graphic appears to help you position it. Release the mouse button when you are done placing the graphic. The Text Graphic Form reappears after the graphic is placed.

Refer to Appendix G for a complete list of the text graphics available.

Date
Places the date at the selected position in the currently selected color and text size. Dates can appear in four formats:

Development	Runtime
mm/dd/yy	e.g., 11/15/93
dd/mm/yy	e.g., 15/11/93
dd mon year	e.g., 15 Nov 1993
dayofweek, fullmonth, dd, year	e.g., Monday, November 15, 1993

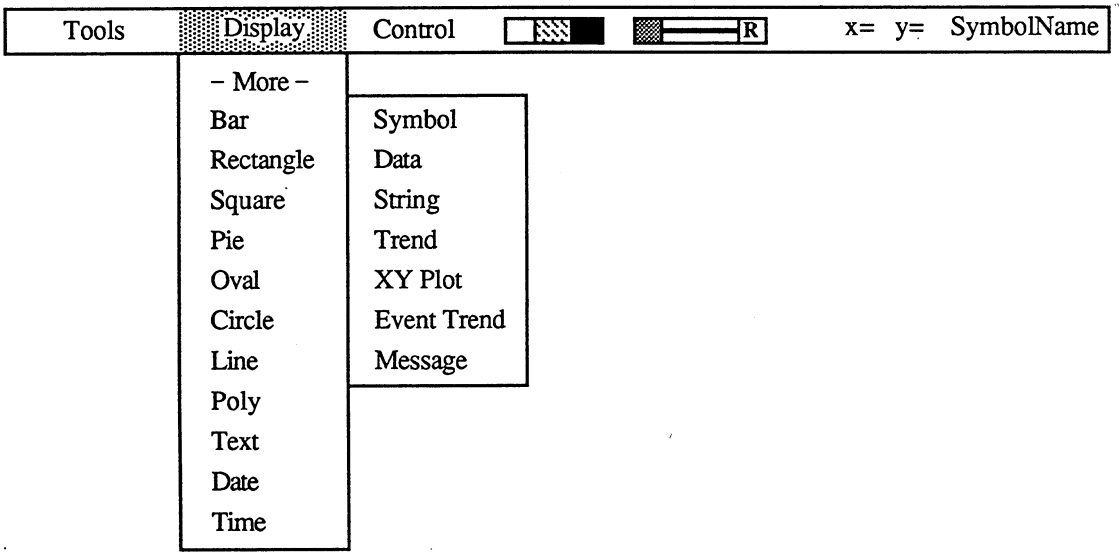
On the development system, the date appears in the format shown on the left, above, not as the actual date. When the screen is executed on the runtime system, the actual date appears.

Time
Places the time at the selected position in the current color and text size. The time can be displayed in three formats:

Development	**Runtime**
24:mm:ss	e.g., 17:00:00
12:mm:ss	e.g., 05:00:00
hh:mm:ss AM	e.g., 05:00:00 PM

On the development system, the time appears in the format shown on the left, above, not as the actual time. When the screen is executed on the runtime system, the actual time appears.

Selecting -More- from the Display Menu provides the following choices:



Symbol Allows selecting, linking, and unlinking symbols. If objects that are going to be linked into a symbol have similar components in their expressions, do not enter the entire expression for each object. Instead, enter $ for the common part of the expression. The $ will be replaced by the expression you tie to the entire symbol. For example, if an object is configured with the expression $/2 and another with the expression $*2, when they are linked together the symbol expression could be [PLCADDRESS]. The first object would divide the value at PLCADDRESS by two, and the second object would multiply the same value by two. To reuse the symbol to work with PLCADDRESS+1, copy the current symbol and configure the new symbol's expression as [PLCADDRESS+1]. Up to four levels of symbols can be nested within one another.

Select - Retrieves a symbol from a symbol library onto the screen. A form appears asking for the name of the symbol library. Select the name and then Okay. Next, select the symbol name and press Okay. When you press the left mouse button, a box outline of the symbol appears on the screen. Hold down the left mouse button to place the symbol, and then release the button. After the symbol is placed, the Symbol Configuration Form appears, if Object Configuration is enabled. The expression you enter will be substituted in place of a $ in the expression of any object in that symbol or in nested symbols. The objects of the symbol are now linked. (To configure or move each object separately, refer to Unlink .)

Link - Defines which objects are to become a symbol. Link is used to group objects and/or symbols into one symbol. To link multiple objects/symbols, you must "box" the group. To select a group, position the cursor outside the objects and hold the left mouse button down while dragging the mouse around the objects. A box appears around the selected objects. All objects contained **completely** in the box when the mouse button is released can then be linked. Next, the Symbol Configuration Form appears, if Object Configuration is enabled. The expression you enter here is substituted for $ in the expressions of the objects of the symbol.

Unlink - Removes one level of connection between previously linked objects. Unlinking allows objects to be individually moved, erased, configured, etc. If a symbol composed of a bar and a symbol is unlinked, the result is two separate objects. To access the individual objects of the

symbol, a second unlink must be performed.

Data Displays a data value (with five places maximum before and four places after the decimal) at the selected screen location. After selecting Data, hold down the left mouse button, position the data box to the desired location, and then release the button. The Object Configuration Form appears, if enabled. Enter the information according to Table 5-5. In addition to the items shown, Format appears. The Format fields allow you to define the number of digits to be displayed to the left and right of the decimal place. The object appears as a series of 0's in the configured format preceded by a ±.

String PC/AT only. Displays the text at a PLC location or within internal registers. While holding the left mouse button, position the rectangle where you would like the object to appear. Fill in the form with the following information:

Table 5-8. String Display Object Configuration Form

Object Name	Enter an optional object name (eight characters maximum) or accept the default name.
String Address	Enter the location of the string data. The address can be an internal register or a PLC address. Reference the engine manual for PLCs that support string data.
Maximum Length	Enter the maximum number of characters the string will take up on the display area.
Use Terminator	Select **Yes** or **No**. Use Terminator allows the string to be displayed until the terminator occurs or until the maximum length is reached, whichever comes first.
Terminator	Indicate the end of a string by entering a decimal value from 0 to 255.
States	Accesses the Object/States Configuration Form. See Table 5-5.

States Sets object foreground and background colors in relation to a conditional expression.

The following steps describe how to configure States:

1. Configure from one to eight states for each String.

2. Select a foreground (FG) and background (BG) color for each state.

3. Enter a conditional expression. When this expression returns a non-zero value, the string displays in the associated foreground and background colors.

The string display object appears as a series of S's the same length as specified by the Maximum Length.

Trend PC/AT and graphic workstation only. Creates a graphic representation of the trend of a process in relation to time. Select Log or No Log, then position the cross on the screen, hold down the left mouse button, drag the cursor to the desired trend size (minimum size is 130 x 70 pixels), and then release the button. The outline of a rectangle appears for reference until you release the button.

Log - PC/AT only. Trend points are logged to disk when log is selected. Fill in the configuration form with the information in Table 5-9:

Table 5-9. Log Trend Configuration Form

Object Name	Enter an optional object name (eight characters maximum) or accept the default name.
Number of Samples	Enter the number of samples (600 maximum). This number is the amount of samples that will be saved in memory per trend pen when screen is Exited then Returned to.
Time Scale	Enter the **hours** and **minutes** the trend represents (maximum is 99 hours, 99 minutes). When the trend is drawn, the start time is displayed in the lower left corner of the trend; the end time is displayed in the lower right corner.
Trend Title	Enter a trend title (25 characters maximum). The title will be centered on the bottom line of the trend.
Date Format	Select **None** or one of three formats. The date appears above time.
Log File Name	Name the destination file that will store trend information. The filename extension will increment when a new trend file is created. Text will wrap from ZZZ to .001.
Log File Format	Trend information is stored in ASCII format.
Log File Path	Enter the destination directory for the log files. If the directory does not exist at runtime, the engine creates it.
Log Enable Condition	This must be configured for the trend to be valid. Enter the condition which allows the trend to run.
Sampling/Log Rate	Sampling is done based upon **Time** or when a **Condition** becomes true. As long as the **Condition** is true, the sampling continues; once the **Condition** is false, sampling discontinues.
Time/Condition	**Time** is based upon every hour:minute:second for continuous sampling. **Condition** takes a data sample as long as file extensions are put .001, .002, etc. when event trigger is true.
Log File Period	Choose **Time** or **Condition** to create a new log file. Time creates a file based on every hour:minute; Condition creates a file when the Start Condition is true and is used until the Stop Condition becomes true.
Disk Full Resolution	Select **Delete None** or **Save Number** to control what happens when the disk is full during logging.
File Save Number	Configure if Save Number is the Disk Full Resolution option. Enter the number of files to save to disk. When this number is exceeded, the oldest files are deleted. You can save up to 46,000 trends files.
Pens	Click to access the Trend Pen Configuration Form described in Table 5-9. All trends must have at least one pen configured to be valid.

The Trend Pen Configuration Form appears when you select Pens. Enter the information according to Table 5-10.

Table 5-10. Trend Pen Configuration Form

Expression	Enter a mathematical expression consisting of a PLC address, equations, etc. This field determines which values are measured. For help, press F1 or see Appendix C.
Color	Select one of the many colors in which to draw the display. The color should be different from the background color and from the other pens.
Minimum Value	Enter the minimum value that will be recorded. If Scale Drawn is selected as Yes, these values display to the right of the trend.
Maximum Value	Enter the maximum value that will be recorded. If Scale Drawn is selected as Yes, these values display to the right of the trend.
Scale Drawn	Select **Yes** to place a scale to the right of the trend or **No** for no scale. The scale lists the minimum and maximum values and has graduated marks in between.
Scale Format	Enter the format to display the minimum and maximum values on the scale. The format must have enough places to accommodate the values, e.g., a maximum value of 100 must have a format of at least 000. If Scale Drawn is selected as Yes, the minimum and maximum values of the pen are displayed in the chosen format in the color chosen for that pen.

No Log - Enter the configuration information according to the following table:

Table 5-11. Historical/Real-time Trend Configuration Form

Type	Select **Real-Time** or **Historical**. If you exit a screen with Real-Time trends, when you return, the data previously displayed is lost and the trend starts again. For Historical trends, saved data is redrawn when you return to the screen. If power is lost on the engine, the last point drawn is connected by a dashed, horizontal line to the first point drawn after power is restored.
Object Name	Enter an **object name** (eight characters maximum) or accept the default name.
Number of Samples	Historical trends only. Enter the **number of samples** (600 maximum). This number is the amount of samples saved in memory per trend pen.
Time Scale	Enter the **hours** and **minutes** the trend represents (maximum is 99 hours and 99 minutes). When the trend is drawn, the start time is displayed in the lower left corner of the trend; the end time will be displayed in the lower right corner.
Trend Title	Enter a **trend title** (25 characters maximum). The title is centered on the bottom line of the trend.
Date Format	Select **None** or one of the three date formats. The date format appears above the time.
Pens	Choosing Pens brings up the Trend Pen Configuration Form, explained in Table 5-9. All trends must have at least one pen configured to be valid.

How often the trend characteristic is sampled depends on the pixel width of the trend box and the time scale as calculated in the formula below:

$$\frac{\text{(maximum x point - minimum x point)}}{\text{\# of seconds in time scale}}$$

where x = pixel width

> **NOTE**
> Each point plotted has an accuracy of ±1 pixel. Resolution depends on the range of the minimum and maximum values selected and the height of the trend. Very small trends with very large scaling may not reach the top pixel for this reason.

XY Plot PC/AT only. Creates a scatter graph using two separate expressions for the x and y axis. Select Log or No Log, then position the cross on the screen, hold down the left mouse button, drag the cursor to the desired plot size (minimum size is 130 x 70 pixels), and then release the button. The outline of a rectangle appears for reference until you release the button.

After the XY Plot is drawn the following configuration form appears.

Table 5-12. XY Plot Configuration Form

Type	Log XY Plots only. Select **Real-Time** or **Historical**. If you exit a screen with Real-Time trends, when you return, the data previously displayed is lost and the trend restarts. For Historical trends, saved data is redrawn when you return to the screen. If power is lost on the engine, the last point drawn is connected by a horizontal line to the first point drawn after power is restored.
Object Name	Enter an optional **object name** (eight characters maximum) or accept the default name.
Point Color	Select a **color** in which to draw the points. The color should be different from the background color.
Number of Samples	Historical and Log XY Plots only. Enter the number of samples (600 maximum). This number is the amount of samples that will be saved in memory.
Sampling Rate	Select **Time**, **Edge**, or **Level**. If Time is selected, data is sampled at the time interval configured. If Edge is selected, data is sampled only when the condition transitions from false to true. If Level is selected, data is sampled as long as the condition evaluates to true.
Clear Plot Expression	Enter the **expression** that will be evaluated. When it transitions from false to true, the plot area will be cleared. For historical and logged plots, the historical buffer will also be cleared.
X/Y Title	Enter the **horizontal/vertical axis labels**.
X/Y Expression	Enter the **expression** to be evaluated. The result will be plotted on the horizontal/vertical axis.
Minimum/**M**aximum Values	Define the **values** for the lowest/highest result of an expression.

Table continued on the following page.

Table 5-12. XY Plot Configuration Form (*continued*)

Scale	Select **No** for no scale or **Yes** if a scale will be drawn using the minimum and maximum values in the configured scale format.
Format	Enter the precision with which the scale values are to be drawn, if Scale is enabled.
Log Information	Log XY Plots only. Click to access the XY Log Plot Configuration Form, explained in Table 5-13.

When Log Information is selected, the XY Log Plot Configuration Form appears. Fill in the information according to the following table:

Table 5-13. XY Log Plot Configuration Form

Log File Name	Enter the destination file for the plot information. The filename extensions will increment when a new plot file is created.
Log File Format	The plot information will be stored in ASCII format.
Log File Path	Enter the destination directory for the log files. If the directory does not exist at runtime, the engine will create it.
Log Enable Condition	Enter the condition which will allow the plot to run. This must be configured for the plot to be valid.
Log File Period	Choose **Time** or **Condition** to create a new log file. Time creates a file every hour:minute; Condition creates a file when the Start Condition is true and it is used until the Stop Condition becomes true.
Disk Full Resolution	Select **Delete None** or **Save Number** to control what happens when the disk is full during logging.
File Save Number	Configure if Save Number is selected as the Disk Full Resolution option. Enter the number of files to save to disk. When this number is exceeded, the oldest files are deleted. The maximum number of files that can be saved is 46,000.

Event Trend PC/AT only. Creates a graphic representation of the trend of a process in relation to an event instead of time. Select Log or No Log, then position the cross on the screen, hold down the left mouse button, drag the cursor to the desired event trend size (minimum size is 130 x 70 pixels), and then release the button. The outline of a rectangle appears for reference until you release the button.

Log - The Log Event Trend Form appears after Log is selected and a trend is drawn. Fill in the configuration form:

Table 5-14. Log Event Trend Configuration Form

Object Name	Enter an object name (eight characters maximum) or accept the default.
Number of Samples	Enter the number of samples (600 maximum). This is the number of samples that are saved in memory per trend pen.
Number of Display Points	Enter the number of data points that can be drawn, per pen, within the trend rectangle.
Display Time	Select **No** to turn off this option or **Yes** to display the start and end times for the trend.
Date Format	Select **None** or one of the three date formats. The date format will appear above the time.
Trend Title	Enter a trend title (25 characters maximum). The title is centered on the bottom line of the trend.
Event Trigger	Select **Edge** or **Level** to determine when trend data is sampled. If Edge is selected, data is sampled when the event expression transitions from false to true. If Level is selected, data is continuously sampled when the event expression evaluates to true.
Event Expression	Enter an expression to determine when trend data is sampled.
Log File Name	Enter the destination file for the trending information. The extension of the file name will increment when a new trend file is created.
Log File Path	Enter the log file destination directory. If the directory does not exist at runtime, the engine creates it.

Table continued on the following page.

Table 5-14. Log Event Trend Configuration Form (*continued*)

Log Enable Condition	Enter the condition which allows the trend to run. This must be configured for the trend to be valid.
Log File Period	Choose **Time** or **Condition** to create a new log file. Time creates a file every hour:minute; Condition creates a file when the Start Condition is true and it is used until the Stop Condition becomes true.
Disk Full Resolution	Select **Delete None** or **Save Number** to control what happens when the disk is full during logging.
File Save Number	Configure if Save Number is selected as the Disk Full Resolution option. Enter the number of files to save to disk. When this number is exceeded, the oldest files are deleted. The maximum number of files that can be saved is 46,000.
Pens	Click to access the Trend Pen Configuration Form explained in Table 5-9. All trends must have at least one pen configured to be valid.

No Log - The Historical/Real-time Event Trend Configuration Form appears after No Log is selected and a trend is drawn. Fill in the configuration form according to the information in Table 5-15.

Table 5-15. Historical/Real-time Event Trend Configuration Form

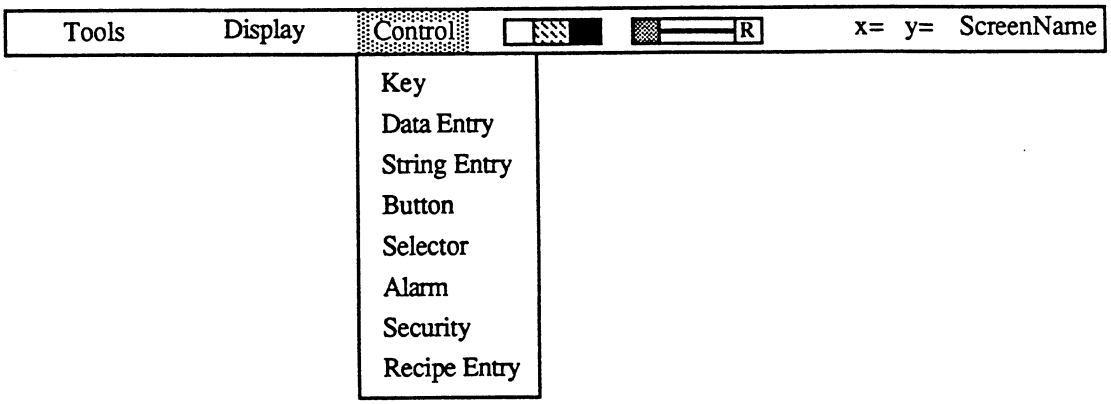
Type	Select **Real-Time** or **Historical**. If you exit the screen with Real-Time trends, when you return, the data previously displayed is lost, and will start again. For Historical trends, saved data is redrawn when you return to that screen. If power is lost on the engine, the last point drawn will be connected by a horizontal line to the first point drawn after power is restored.
Object Name	Enter an object name (eight characters maximum) or accept the default.
Number of Samples	Historical Event Trends only. Enter the number of samples (600 maximum). This number is the amount of samples that is saved in memory per trend pen.
Number of Display Points	Enter the number of data points that can be drawn, per pen, within the trend rectangle.
Display Time	Select **No** to turn off this option or **Yes** to display the start and end times for the trend.
Date Format	Select **None** or one of the three date formats. The date format appears above the time.
Trend Title	Enter a trend title (25 characters maximum). The title is centered on the bottom line of the trend.
Event Trigger	Select **Edge** or **Level** to determine when trend data will be sampled. If Edge is selected, data is sampled when the event condition transitions from false to true. If Level is selected, data is sampled when the event expression evaluates to true.
Event Expression	Enter an expression to determine when trend data will be sampled.
Pens	Click to access the Trend Pen Configuration Form explained in Table 5-9. All trends must have at least one pen configured to be valid.

Message Defines the length and position of a message. SoftScreen can store 780 different messages, which are defined under Application-Load-Message-Edit. Fill in the configuration form with the following information:

Table 5-16. Message Configuration Form

Object Name	Enter an object name (eight characters maximum) or accept the default.
Message Length	Enter the length of the message (from 1 to 70 characters). On the engine, the actual message will be displayed, but on the development system a series of M's (one for each unit of length) will display.
Value Expression	Enter the expression to be evaluated (for help, press F1 or see Appendix C). The expression is evaluated as an integer (fractions are truncated). If this integer falls on or within the minimum and maximum values, the message associated with that integer is displayed. For example, if the expression is evaluated as 5, the message entered under 005 in Application-Load-Message-Edit is displayed. If the result of the expression is less than the minimum value or greater than the maximum value, the minimum and maximum values are used, respectively. If a message doesn't exist, the message currently displayed on the engine will not change.
Minimum Value	Enter the lowest message number. (Messages are defined under Application-Load-Message-Edit.)
Maximum Value	Enter the maximum value of the message number (up to 779). (Messages are defined under Application-Load-Message-Edit.)

5.7.1.3 **Application-Load-Screen-Edit-CONTROL**



The Control Menu controls various aspects of screen configuration.

Key
Defines a function or pseudo key for a particular screen.

Function
Configures a function key through the steps listed below:

1. **Select the key** to configure from the Function Key Configuration Form. Configured keys appear highlighted. A configuration form appears.

2. Select the **Function on Press** and **Function on Release** from this form. The function keys perform one action when pressed and one when released. To return the key's function back to the global definition, both press and release functions must be selected as System Default. The options for press and release are shown on the following page.

NOTE
If Go to Screen, Return to Previous Screen, Go to Idle Mode, Change Security Level, Load Selected Recipe, Execute Selector Button or Exit SoftScreen are selected as the Function on Press, we recommend you do not configure a Function on Release.

None - No function occurs when the key is pressed/released.

Write Data to Address - Enter the appropriate Data Address and Data Value. The data value can contain an expression, internal or indirect register, PLC address, or constant. The data address can contain the address of the location to which you wish to write. The data is written to the address when the specified event occurs.

Go to Screen - Enter the screen name in the Screen Name prompt area. The specified screen executes when the function key is pressed/released on the engine. Use this function to access the AlarmSum, AlarmVu, and FileMan screens (refer to Section 5.7 for more information).

Return to Previous Screen - No other information is needed. The previous screen is executed when the function key is pressed/released on the engine. The engine keeps track of the last ten screens executed.

Load a Recipe - Specify the recipe name in the Recipe Name prompt area. The specified recipe is loaded when the function key is pressed/released on the engine.

Print a Report - Specify the report name in the Report Name prompt area. The report is printed at the target system printer or file when the function key is pressed/released on the engine.

Print the Current Screen - PC/AT and graphic workstation only. No other information is needed. The current screen is printed to the target system printer when the function key is pressed/released on the engine.

Go to Idle Mode - PC/AT only. No other information is needed. Everything in the engine, including PLC communication, stops. Only key presses and timeout pseudo keys will function, and only if the function specified is Return To Active Mode. All log files are closed to allow a safe shutdown procedure.

Return to Active Mode - PC/AT only. No other information is needed. If the engine was in idle mode, all stopped activities begin running again.

Acknowledge Alarm - No other information is needed. If the engine is displaying an alarm, it is acknowledged.

Simulate Key Press - Specify the Key Press Values to be inserted into the engine's keyboard buffer when the key is pressed/released. To simulate the <Home>, <Enter>, <Backspace>, <Null>, and <Left Arrow> keys, use <H, <C, <B, <N, and << respectively, (lower case is allowed). The 2000 has a 20-key buffer and the PC/AT and graphic workstation has a 29-key buffer. If more keys are inserted than there is room for, extra keys are lost.

Change Security Level - PC/AT only. Enter a Security Level, **1-7** or **0** for none. Defining the security levels allows data, string, and recipe entry objects to be enabled via the password security level entered on the engine.

Load Selected Recipe - PC/AT only. No information is needed. When the function key is pressed/released on the engine, the recipe to be loaded in the PLC can be chosen from a scroll list.

Execute Selector Button - PC/AT only. Specify the object name of the selector touch button in the Selector Name prompt area. When the function is performed on the engine the selector touch button whose object name matches the configured name has its selector index expression evaluated. The engine indexes into the list of configured functions based upon the evaluation result. Both the press and release functions configured at the proper index are performed.

System Default - No other information is needed. The function key configuration set up in the Application-Load-Configuration-Edit-Keypad-Function Menu is used.

Exit SoftScreen - PC/AT only. No information needed. When the specified event occurs, the engine will exit SoftScreen and return to the operating system.

Pseudo

Creates a pseudo key in which an event triggers a certain function to occur. To return the pseudo key's function back to the global definition, the trigger event and function must be selected as System Default. To configure a pseudo key, follow the steps below:

1. **Select a key** from the Pseudo Key Selection Form. Configured pseudo keys appear highlighted.

2. **Select a Trigger Event** and enter the appropriate information:

   None - No information is needed. No event occurs. No function is performed.

   Time of Day - Enter the time at the Time of Day prompt, using a 24:00 clock (military time). At that time of day, the specified function occurs.

   Timeout - Enter the timeout period in seconds. The function occurs after the specified timeout period when the screen is executed. SoftScreen scans pseudo keys once per second.

   Condition Becomes True - Enter the conditional statement. The specified function occurs when this expression becomes true. Expressions that can be used in the conditional statement are listed in Appendix C. The engine scans pseudo keys once per second.

   Periodic Timeout - Enter the timeout in seconds. The chosen function occurs at the specified time after the screen begins executing and keeps occurring after every specified amount of time has passed. SoftScreen scans pseudo keys once per second.

System Default - No information is needed. The pseudo key setup in Application-Load-Configuration-Edit-Keypad-Pseudo is used.

3. **Select the Function** from the next form and fill in the appropriate information as shown below:

   None - No function occurs at the trigger event.

   Write Data to Address - Enter the appropriate Data Address and Data Value. The data value can contain an expression, internal or indirect register, PLC address, or constant. The data address can contain the address of the location to which you wish to write. The data is written to the address when the specified trigger event occurs.

   Go to Screen - Enter the screen name in the Screen Name prompt area. The specified screen is executed when the trigger event occurs. Use this function to access the AlarmSum, AlarmVu, and FileMan screens (refer to Section 5.7 for more information).

   Return to Previous Screen - No other information is needed. The previous screen is executed when the trigger event occurs. The engine keeps track of the last ten screens executed.

   Load a Recipe - Specify the recipe name in the Recipe Name prompt area. The recipe is loaded when the specified trigger event occurs.

   Print a Report - Specify the report in the Report Name prompt area. The report is printed to the target system printer or file when the trigger event occurs.

   Print the Current Screen - PC/AT and graphic workstation only. No other information is needed. The screen prints at the target system printer when the trigger event occurs.

   Go to Idle Mode - PC/AT only. No other information is needed. Everything in the engine, including PLC communication, stops. Only key presses and timeout pseudo keys will function, and only if the function specified is Return To Active Mode. All log files are closed to allow a safe shutdown procedure.

Return to Active Mode - PC/AT only. No other information is needed. If the engine was in idle mode, all stopped activities begin running again.

Change Security Level - PC/AT only. Enter a Security Level, **1-7** or **0** for none. Defining the security levels allows data, string, and recipe entry objects to be enabled via the password security level entered on the engine.

Execute Selector Button - PC/AT only. Specify the object name of the selector touch button in the Selector Name prompt area. When the function is performed on the engine the selector touch button whose object name matches the configured name has its selector index expression evaluated. The engine indexes into the list of configured functions based upon the evaluation result. Both the press and release functions configured at the proper index are performed.

System Default - No information is needed. The pseudo key setup under Application-Load-Configuration-Edit-Keypad-Pseudo is used.

Exit SoftScreen - PC/AT only. No information needed. When the specified event occurs, the engine will exit SoftScreen and return to the operating system.

NOTE

If information entered for function or pseudo keys is not the system default, the Key Selection Form highlights the keys. If a key has the same information as the system, when you click Okay it becomes part of the screen key information even if the system configuration changes. To change back to system information, select System Default and click Okay.

Data Entry

Data Entry objects allow the end user to enter the numerical information to be written to an address. Hold down the left mouse button, position the cursor where you want the data to appear, and then release the mouse button. Next, enter the information for the Object Configuration Form that appears, if enabled:

Table 5-17. Data Entry Object Configuration Form

Object Name	Enter an optional name (up to eight characters) or accept the default name.
Format	Define a format up to five places before and four places after the decimal point.
Data Address	Enter the address to which the data is sent.
Minimum/Maximum Value	Enter the minimum and maximum values of the data (the defaults are the most recently entered values).
Security Level	PC/AT only. Select a security level, **1-7** or **0** for none. Select **Only** to restrict the valid password to the level(s) specified or **And Below** to allow all passwords from 1 through the level specified. Multiple levels can be selected by typing each desired level number separated by a comma and using the Only option. Default is 0.
Data Scale Expression	PC/AT only. Use #D in the expression to represent the entered value. The Data Scale Expression allows the entered value to be adjusted before it is written to the data address. For example, if a value of 20 is entered and the Data Scale Expression is #D/2, then the value written to the data address is 20/2=10.

The format will appear as # signs. The user at the engine can press <Home> to enter the particular value in place of the prompts.

> **NOTE**
> Data Entry scaling will allow writing past the minimum/maximum values. See the engine manual for details.

String Entry
PC/AT only. Allows the end user to write character data to an address. Hold the left mouse button, position the rectangle where you would like the object to appear, and release the mouse button. Fill in the form with the following information:

Table 5-18. String Entry Object Configuration Form

Object Name	Enter an optional object name (eight characters maximum) or accept the default name.
String Address	Enter the location of the string data. The address can be an internal register or a PLC address.
Maximum Length	Enter the maximum number of characters the string will take up on the display area.
Use Terminator	Select **Yes** or **No**. The Use Terminator allows the string to be displayed until the terminator occurs or until the maximum length is reached, whichever comes first.
Terminator	Indicate the end of a string, by entering a decimal value from 0 to 255.
Security Level	Select a security level, **1-7** or **0** for none. Select **Only** to restrict the valid password to the level(s) specified or **And Below** to allow all passwords from 1 through the level specified. Multiple levels can be selected by typing each desired level number separated by a comma and using the Only option. Default is 0.

The string entry object displays as a series of s's (one for each unit of length). The user at the engine can press <Home> to enter a particular string in place of the prompts.

Button
Defines touch button zones on the screen. Buttons appear as filled rectangles on a 2000and as sculpted boxes on a graphic workstation. After selecting Button, click the cursor on screen to place the touch button and drag the mouse to size the touch button. The button is displayed in the selected color and pattern. After the button is drawn, the Touch Button Configuration Form appears, if enabled. Fill in the information on the following pages.

> **NOTE**
> Each workstation has PF keys that are located to the right of the screen. Whenever a PF key is pressed, the terminal acts as if a touch zone has been pressed. This occurs whether or not a touch screen is present. When the SoftScreen application is run, pressing the appropriate PF key activates the configured function for a corresponding touch zone. **You do not need to have touch screen for this functionality to work nor do you need to have the touch screen DIP switch enabled if the touch screen is not present.**

Below lists the PF keys and their corresponding zones:

- 2005 PF1 through PF6 correspond to touch zones 10, 20, 30, 40, 50, and 60 *(PF keys do not align exactly with the touch zones)*.
- 2050/2060 PF1 through PF8 correspond to touch zones 10, 20, 30, 40, 50, 60, 70, and 80 *(PF keys line up with the touch zones)*.

Example:
Touch zone 30 might be configured to print a report. If you press PF3, touch zone 30 is activated causing a report to print. If you have a touch screen, pressing zone 30 also causes the report to print. See Figures 5-2, and 5-3, on the following page.

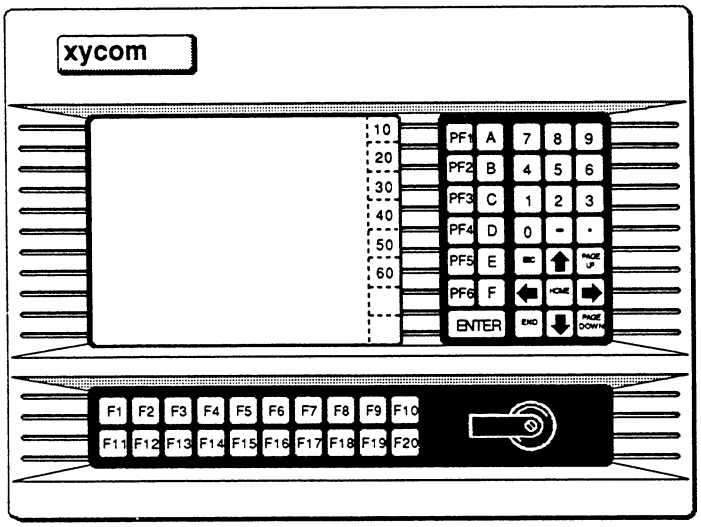


Figure 5-2. 2005 Front Panel

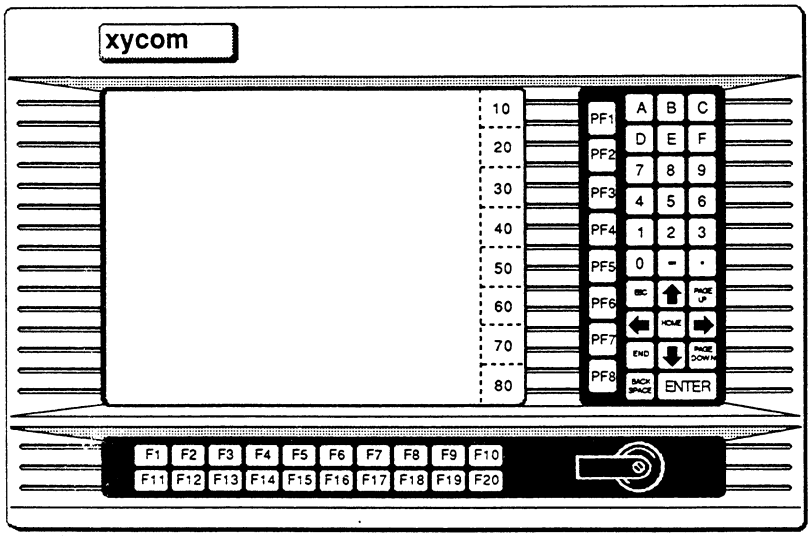


Figure 5-3. 2050/2060 Front Panel

Object Name Enter an optional name (eight character maximum) or accept the default name.

Function This assigns the function that occurs when the button is pressed or released on the engine. The touch button performs one action when pressed and one when released. Select one of the functions below and enter the remaining information as shown:

> **NOTE**
> If Go to Screen, Return to Previous Screen, Go to Idle Mode, Change Security Level, Load Selected Recipe, or Execute Selector Button are selected as the Function on Press, we recommend you do not configure a Function on Release.

None - No additional information needed. Nothing occurs when the touch button is pressed/released on the engine.

Write Data to Address - Enter the appropriate Data Address and Data Value. The data value can contain an expression, internal or indirect register, PLC address, or constant. The data address can contain the PLC address or internal or indirect register to which you wish to write. The data is written to the address when the button is pressed/released on the engine.

Go to Screen - Enter the screen to go to in the Screen Name prompt area. The specified screen is executed when the touch button is pressed/released on the engine. Use this function to access the AlarmSum, AlarmVu, and FileMan screens (refer to Section 5.2.5 for more information).

Return to Previous Screen - No more information is necessary. The previous screen is executed when the touch button is pressed/released on the engine. The engine keeps track of the last ten screens executed.

Load a Recipe - Enter the recipe name in the Recipe Name prompt area. This recipe is loaded when the touch button is pressed/released on the engine.

Print a Report - Enter the report name in the Report Name prompt area. The report is printed at the target system printer or file when the touch button is pressed/released on the engine.

Print the Current Screen - PC/AT and graphic workstation only. No more information is required. The screen is printed at the target system printer when the touch button is pressed/released on the engine.

Go to Idle Mode - PC/AT only. No other information is needed. Everything in the engine, including PLC communication, stops. Only key presses and timeout pseudo keys will function, and only if the function specified is Return To Active Mode. All log files are closed to allow a safe shutdown procedure.

Return to Active Mode - PC/AT only. No other information is needed. If the engine was in idle mode, all stopped activities begin running again.

Acknowledge Alarm - No other information is needed. If the engine is displaying an alarm, it is acknowledged.

Simulate Key Press - Specify the Key Press Values to be inserted into the engine's keyboard buffer when the touch button is pressed/released. Letters and numbers are allowed. To simulate the <Home>, <Enter>, <Backspace>, <Null>, and <Left Arrow> keys, use <H, <C, <B, <N, and << respectively, (lower case is allowed). The 2000 has a 20-key buffer and the graphic workstation and PC/AT each have a 29-key buffer. If more keys are inserted than are allowed, extra keys are lost.

Change Security Level - PC/AT only. Enter a Security Level **1-7** or **0** for none. Defining the security levels allows data entry, recipe entry, and string entry objects to be enabled via the password security level entered on the engine.

Load Selected Recipe - PC/AT only. No information is needed. When the touch button is pressed/released on the engine, the recipe to be loaded in the PLC can be chosen from a scroll list.

Execute Selector Button - PC/AT only. Specify the object name of the selector touch button in the Selector Name prompt area. When the function is performed on the engine the selector touch button whose object name matches the configured name will have its selector index expression evaluated. The engine will index into the list of configured functions based upon the evaluation result, and the selector function will be performed.

Exit SoftScreen - PC/AT only. No information needed. The engine will exit SoftScreen and return to the operating system.

> **NOTE**
> Engines without a Touch Screen will draw the button, but the button will not function when pressed. Engines with a Touch Screen must have it configured and enabled for a button to function.

Selector

PC/AT only. Selector touch buttons, which can be configured to have a function performed on press or release, are based upon the value of their selector index expression. After choosing Selector, hold the left mouse button and drag the cursor until a rectangle appears where you would like the Selector Touch Button to appear. After the button is drawn, the Selector Touch Button form appears, if enabled. This touch button can also be executed during runtime using configured function or pseudo keys. Up to 64 press and release functions can be configured for a selector touch button.

Fill in the form with the following information:

Table 5-19. Selector Touch Button Configuration Form

Object Name	Enter a unique object name (eight characters maximum) or accept the default name.
Selector Index Expression	Enter a mathematical expression consisting of an address, equations, etc. This value controls which indexed function is performed on press/release.
Post Select Address	Define the destination for the Post Select Value. This address is written to after the Selector Index Expression is evaluated, allowing the selector index to be modified after use. The address can be an internal or indirect register or a PLC address.
Post Select Value	Enter the value to be written to the Post Select Address after the Selector Index Expression is evaluated, allowing the Selector Index to be modified after use. The value can contain an expression, internal or indirect register, or PLC address.
Function	Accesses the Selector Touch Button function information, explained on the following pages.
States	Accesses the State Configuration Form, explained in Table 5-5.

Function - This assigns the function that occurs when the button is pressed and released on the engine. The touch button performs one action when pressed and one when released. Select one of the functions on the following pages and enter the information as shown:

NOTE

If Go to Screen, Return to Previous Screen, Go to Idle Mode, Change Security Level or Load Selected Recipe are selected as the Function on Press, we recommend you do not configure a Function on Release.

NOTE

If this Function on Press modifies the value of the Selector Index Expression during runtime, the Function on Release at the new index value will be performed.

If the Function on Press is Go to Screen, Return to Previous Screen, or Load Selected Recipe, the Post Select Value will be written to the Post Select Address.

None - No additional information needed. Nothing occurs when the selector button is pressed/released on the engine.

Write Data to Address - Enter the appropriate Data Address and Data Value. The data value can contain an expression, internal or indirect register, PLC address, or constant. The data address can contain the PLC address or internal or indirect register to which you wish to write. The data is written to the address when the selector button is pressed/released on the engine.

Go to Screen - Enter the screen to go to in the Screen Name prompt area. The specified screen is executed when the selector button is pressed/released on the engine. Use this function to access the AlarmSum, AlarmVu, and FileMan screens (refer to Section 5.7 for more information).

Return to Previous Screen - No more information is necessary. The previous screen is executed when the selector button is pressed/released on the engine. The engine keeps track of the last ten screens executed.

Load a Recipe - Enter the recipe name in the Recipe Name prompt area. This recipe is loaded when the selector button is pressed/released on the engine.

Print a Report - Enter the report name in the Report Name prompt area. The report is printed at the target system printer or file when the selector button is pressed/released on the engine.

Print the Current Screen - No more information is required. The screen is printed at the target system printer when the selector button is pressed/released on the engine.

Go to Idle Mode - No other information is needed. Everything in the engine, including PLC communication, stops. Only key presses and timeout pseudo keys will function, and only if the function specified is Return To Active Mode. All files are closed to allow a safe shutdown procedure.

Return to Active Mode - No other information is needed. If the engine was in idle mode, all stopped activities begin running again.

Acknowledge Alarm - No other information is needed. If the engine is displaying an alarm, it is acknowledged.

Simulate Key Press - Specify the Key Press Values to be inserted into the engine's keyboard buffer when the selector button is pressed/released. To simulate <Home>, <Enter>, <Backspace>, <Null>, and <Left Arrow> keys, use <H, <C, <B, <N, and << respectively, (lower case is allowed). The PC/AT each have a 29-key buffer. If more keys are inserted than there is room for, extra keys are lost.

Change Security Level - Enter a Security Level **1-7** or **0** for none. Defining the security levels allows data entry, recipe entry, and string entry objects to be enabled via the password security level entered on the engine.

Load Selected Recipe - No information is needed. When the selector button is pressed/released on the engine, the recipe to be loaded can be chosen from a scroll list.

Exit SoftScreen - PC/AT only. No information needed. The engine will exit SoftScreen and return to the operating system.

The following information describes the buttons at the bottom of the form that move you around and within the Selector Touch Button Configuration Form:

Okay	Accepts information entered and returns you to the Selector Touch Button Configuration Form.
Next	Moves to the next index. The current index does not have to be configured to move to the next one.
Previous	Returns to the previous index.

Index Allows you to change to another index. When the cursor appears in the selector index box, type the number of the index to which you want to go, then press <Enter>. (Valid index numbers are 0 - 32767.) The form opens the index with the number you entered. Up to 64 indexes can be configured.

Insert Copies the configuration information in the current index to the next index. If the next index is already configured, its information will be copied to the following index. For example, if you press Insert when you are in Selector Index 1, the information configured for this index is copied to Selector Index 2 and the information that was configured for Selector Index 2 is copied to Selector Index 3. If index #32767 is configured, this button may not be selected.

Delete Deletes all information in the current index.

Cancel Exits the form without saving any changes.

> **NOTE**
> An engine without a Touch Screen will draw the selector button, but it will not function when pressed. Engines with a Touch Screen must have it configured and enabled for a button to function.

Alarm
Configures alarms.

Create Creates alarms that display at the bottom center of the target engine when the specified expression meets a specified condition. Different text lines can appear as a process goes in to and out of alarm. Up to four alarms can be defined each time Create is selected (counts as one I/O point for total I/O count).

Table 5-20. Alarm Configuration Form

Object Name	Enter an optional object name (eight characters maximum) or accept the default name.
Deadband	Enter the value of overlap between alarm condition and regular levels. For example, assume alarm condition is GREATER, value is 48, and the deadband is 5. The alarm displays when the value reaches 49, but does not display out of the alarm until the value reaches 43. *Note: Deadband functions are for GREATER and LESS alarm conditions only. Deadband performs no function for EQUAL or NOT EQUAL conditions.*
Acknowledge	Select **Yes** for the alarm to require acknowledgement on the engine before it ceases, or **No** if the alarm does not require acknowledgement. If you select Yes, the user at the SoftScreen engine must press <Home> to acknowledge the alarm.
Expression	Enter a mathematical expression consisting of an address, equations, etc. (For help, press F1 or see Appendix C).
Condition	Select how the expression is to compare to the value: **Greater** than, **Less** than, **Equal** to, or **Not Equal** to. *Note: If doing bit wise compare, it is recommended to use Equal Value of 1.*
Value	Enter a value between -32768 and 32767.9998 to compare to the expression.
Text	Enter the text to display both in and out of alarm conditions. Each line can have a maximum of 17 characters. These lines are displayed at the bottom of the engine screen and are logged into the AlarmSum screen.
Beep	Select **Yes** for a beep to sound on the engine when going into and out of an alarm, or **No** for no beep to sound.
Relay	Graphic workstation or PC/AT using Xycom's RAD card only. Select **Yes** to close the relay circuit on the engine to allow for a siren, etc., or **No** to keep the engine relay open.

Edit Allows configuring previously defined alarm objects. A scroll list containing the names of all objects which have the alarm enabled appears. If the object name appears on the list, but not in the top box, use the mouse to highlight the name and click to select, or type the first letter of the name, and then select Okay. The configuration for that object appears. After exiting the configuration, the scroll list appears again. If the object's alarm is disabled, the name no longer appears in the scroll list. To delete an alarm object, erase the value expression and click Okay. If an alarmed object is in a symbol, the symbol must be unlinked before the object can be reconfigured.

Security
Allows setting which passwords are needed for the user on the engine to view a particular screen. Follow the steps below:

1. **Enter the security level(s)**. Levels can be separated by commas or spaces.

> **NOTE**
> Make sure the levels entered have passwords associated with them under the Configuration-Edit-Passwords Menu. If a selected level does not have a password, the end user can access the screen by pressing <Enter>.

2. Select **Only** to restrict the valid password to the level(s) specified or **And Below** to allow all passwords from 1 through the level specified. Multiple levels can be selected by typing each desired level number separated by a comma and using the Only option. For example, instead of typing 5,4,3,2,1 enter 5 and select And Below for the same results. Non-sequential multiple levels can be entered separated by spaces or commas. For example, enter 3,5 for levels 3 and 5.

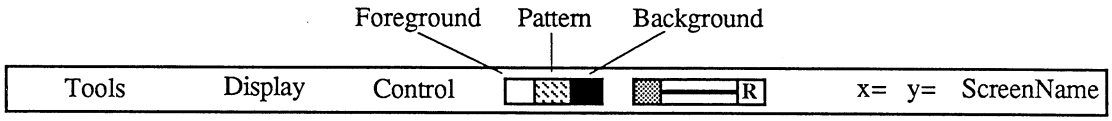
Recipe Entry
PC/AT only. A Recipe Entry object allows a value in a recipe to be modified with a user-specified value when the application is executed on the engine. Selecting Recipe Entry and clicking the cursor on the screen causes the Recipe Entry Configuration form to appear, if enabled. Fill in the configuration form with the following information:

Table 5-21. Recipe Entry Configuration Form

Object Name	Enter an optional object name (eight characters maximum) or accept the default name.
Format	Select the number of digits to be entered before and after the decimal point.
Recipe Name	Enter the recipe containing the modify register which is to be written.
Page Number	Enter the page number where the modify register is located in the recipe.
Line Number	Enter the line number, 1-10, that the modify register is on.
Modify Register #M	Enter which modify register in the recipe line should be modified. The range is A-J.
Minimum Value	Enter the lowest value allowed to be written to the location.
Maximum Value	Enter the highest value allowed to be written to the location.
Security Level	Select a security level, **1-7** or **0** for none. Select **Only** to restrict the valid password to the level(s) specified or **And Below** to allow all passwords from 1 through the level specified. Multiple levels can be selected by typing each desired level number separated by a comma and using the Only option. Default is 0.

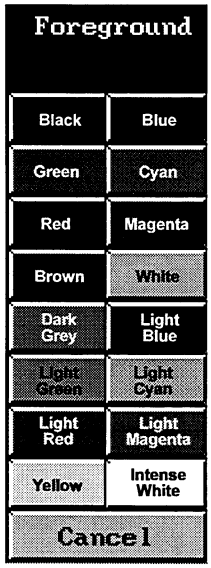
Refer to Appendix C for more information on Recipe Modify Registers.

5.7.1.4 Application-Load-Screen-Edit-FOREGROUND, BACKGROUND, PATTERN

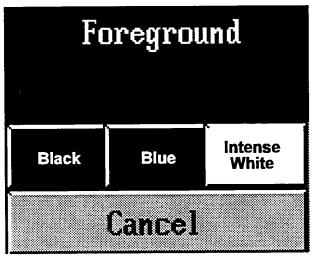


NOTE
Intense white displays as white and white displays as light grey.

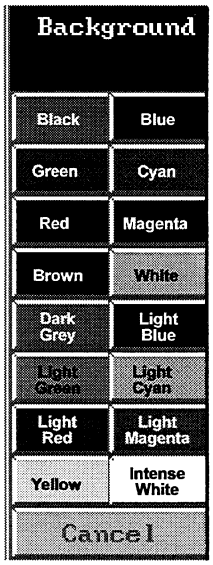
Foreground Color
Foreground color is the color of objects as they appear on the screen and can be selected as black, blue, green, cyan, red, magenta, brown, white, dark grey, light blue, light green, light cyan, light red, light magenta, yellow, or intense white. The current foreground color is displayed in this box.



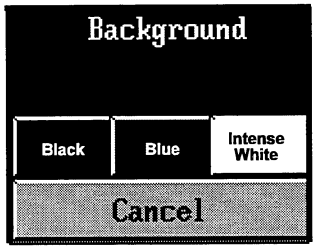
For 2000-Mono screens, the foreground color can be selected as black, blue, or intense white. When the screens are downloaded to the monochrome engine, the colors appear based on the background, foreground, and base colors as shown in Appendix G.



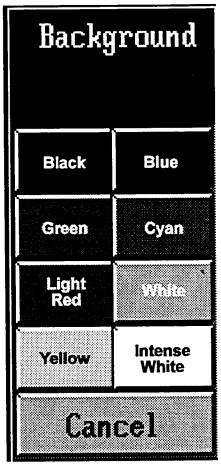
Background Color
Background color is the color behind patterns and text, and can be selected as black, blue, green, cyan, red, magenta, brown, white, dark grey, light blue, light green, light cyan, light red, light magenta, yellow, or intense white. The current background color is displayed in the box.



For 2000-Mono screens, the background color can be selected as black, blue, or intense white. When the screens are downloaded to the monochrome engine, the colors appear based on the foreground, background, and base colors as shown in Appendix G.

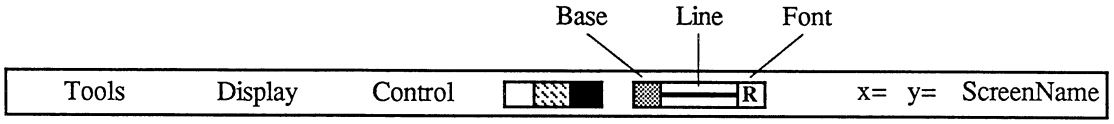


For 2000-Color screens, the background color can be selected as black, blue, green, cyan, white, light red, yellow, or intense white.

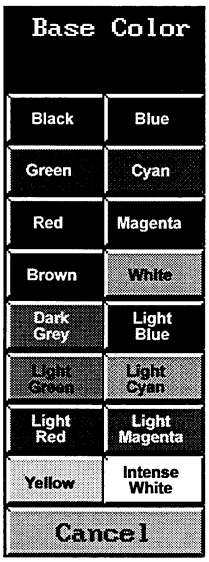


Pattern
The current pattern and colors are displayed in this box. There are 32 patterns available for the graphic workstation and PC/AT, and eight for the 2000 series, including solid, shaded, and crosshatched. These can be used to mix two colors. Filled objects use the pattern.

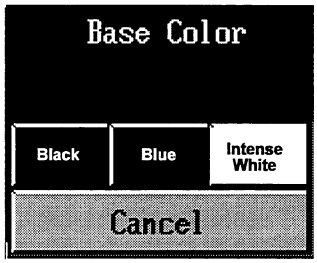
5.7.1.5 Application-Screen-Edit-BASE COLOR, LINE, FONT



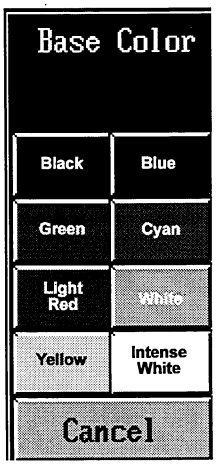
Base Color
Base color is the color of the screen and can be selected as black, blue, green, cyan, red, magenta, brown, white, dark grey, light blue, light green, light cyan, light red, light magenta, yellow, or intense white. The current base color is displayed in the box.



For 2000-Mono screens, the base color can be selected as black, blue, or intense white. When the screens are downloaded to the monochrome engine, the colors appear based on the foreground, background, and base colors selected. (Refer to Appendix G for more information.)



For 2000-Color screens, the base color can be selected as black, blue, green, cyan, white, light red, yellow, or intense white.

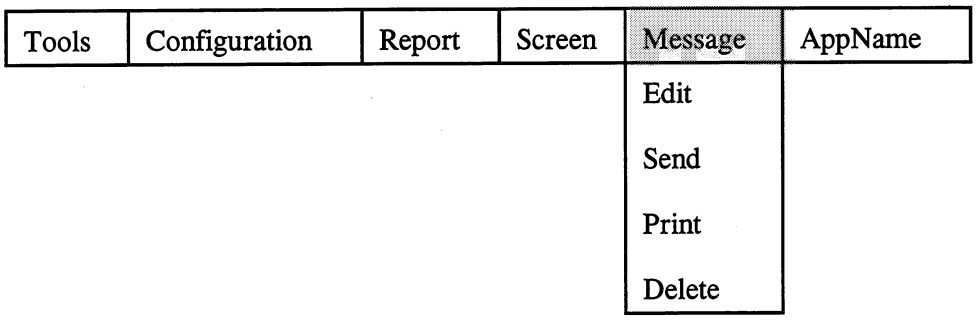


Line
Clicking on this box displays the line selection menu. The bottom three boxes select the line thickness, while the top three boxes select the line dash. Lines can be 1, 3, or 5 pixels wide. Line patterns can be selected as solid, large dash, or small dash. The current line thickness and dash is displayed in the line box.

For the 2000 series, solid thin (1 pixel) and solid thick (5 pixel) lines are supported.

Font
The text font can be small, regular, double, and quad. The initial letter of the currently selected font (S, R, D, or Q) is displayed in this box. For the 2000 series, small font size is *not* supported and not selectable.

5.8 Application-Load-MESSAGE



Messages are used by screen message objects to display a line of text based upon the result of an expression. The return value is used as an index into the message list, and if a message exists, it is displayed on the engine. Each application can have up to 780 different messages. The Message Menu provides the following menu selections:

Edit
Allows editing a current message list. This selection brings up another set of menus, as described in section 5.8.1.

Send
Sends the message list to the specified receiving engine on the network. To send the message list to all engines on a network, configure the receiving engine as 0. Press <Esc>, Cancel, or the right mouse button to cancel the send.

Print
Prints the messages to the target specified in the System Configuration. Press <Esc>, Cancel, or the right mouse button to cancel the print.

Delete
Deletes the messages from disk and memory.

5.8.1 Application-Load-Message-EDIT

Edit allows editing the current list of messages. The Message Form displays message numbers and the text associated with each number. Each message can be 70 characters long. To edit a message, highlight the message with the cursor, press Enter to select the line, enter the desired text, and press <Enter> to finish the line. Normal edit key—backspace, home, end, etc—can be used when editing a line. The function keys—F2-F6 and shift F2-F6—can also be used to manipulate the highlighted text as described at the beginning of this chapter. Refer to Section 3.5 for more information on using function keys.

At the same time the Message Form is displayed on the screen, a new set of menus appears at the top of the screen:

Tools	Previous	Next	Page #1	AppName

Tools
Provides the selections below:

Save Saves the current message list.

Send Sends the message to the specified receiving engine. To send the message to all engines on a network, configure the receiving engine as 0. Press <Esc>, Cancel, or the right mouse button to cancel the send.

Print Prints the messages to the listing target specified in the System Configuration. Press <Esc>, Cancel, or the right mouse button to cancel the print.

Previous
Returns to the previous page of the message list or wraps to page 40.

Next
Moves to the next message page or wraps to page 1. There are a maximum of 40 message pages available.

Page
Shows the current page number. There are 10 messages per page and 780 total messages allowed. To go to a specific page, click on the word Page in the menu bar. The Change Page Number Form appears. Enter the page number you want to go to and press Okay.

6.1 CONFIGURATION MENU

The Configuration Menu is accessed from the Start Menu Bar, which appears when you first enter SoftScreen, as shown below:

Application	Configuration	Symbol	V4.1

When the Configuration Menu is selected, the System Configuration Form appears, the same form as found under Application-Load-Configuration-System-Edit. This form, which is accessible without having to load an application, is used to configure the development system environment. Enter the information as follows:

Table 6-1. System Configuration Form

Printer	Select the development system printer as **Epson RX80**, **IBM Pro**, HP **LaserJet**, HP 16-color **PaintJet**, HP Monochrome **DeskJet**, HP **LaserJet+**, or Panasonic **KXP-1124**.
Send Port	Select **COM1** or **COM2** as the port through which to communicate with the engine. This port should be different from the port to which your serial mouse is connected.
Default PLC Name	Enter a PLC name (up to five characters). This PLC name is used if a name is not specified in an address. Any characters can be used in a PLC name except for : and].
Default PLC Format	Select **SB** (-32768 to 32767.9998) for signed binary, **UB** (0 to 32767.9998) for unsigned binary, **SD** (-999 to 999) for signed decimal, **UD** (0 to 9999) for unsigned decimal, **U3** (000 to 999) for unsigned 3 digit binary coded decimal, **FP** for IEEE floating point. The default format (UB) is used if no other format is specified. However, if a PLC has dedicated floating point registers and an expression uses the default PLC format, FP will be used regardless of the default PLC format selected.

Table 6-1. System Configuration Form (*continued*)

Object Configuration	Select **On** for the Object Configuration Form to appear after each individual object is created. Select **Off** to turn off this form. If Off is selected, dynamic objects must be configured under Edit-Tools-Config.
Symbol Target	If using an EGA development system, select 8320-EGA or PC/AT-EGA to create symbols. If using a VGA development system, select 8320-EGA or 8320-VGA for an 8320 engine or PC/AT-EGA or PC/AT-VGA for a PC/AT engine. Select 2000-Mono for a 2000 series engine or 2000-Color for a 2050 engine. Note: If downloading a monochrome screen to the 2050, the colors display as intense white, black, and blue. If downloading a color screen to a monochrome unit, blue and light blue appear as regular intensity, black and dark grey appear black and all other colors appear as high intensity.
Listing Target	Select **LPT1**, **LPT2**, **LPT3**, or **File** as the listing and print* destination. The file name is **<APPNAME>.LST or <SYMBNAME>.LST.** **Print output is not saved to a file.*
Send Wait Time	Specify a range between 1-999 seconds as the waiting time between each file sent to an engine. Five seconds is used if no other value is specified. When downloading to 2000 engines, this value may have to be increased if the application is larger than 50 Kbytes.
Language	Choose a language format for the development system: English, German, French, or Spanish. All menus, forms, and help messages are displayed in the chosen format.

When Okay is selected, the system configuration is automatically saved.

7.1 SYMBOL MENU OPTIONS

The Symbol Menu is accessed from the Start Menu Bar, which appears when you first enter SoftScreen.

Application	Configuration	Symbol	V4.1
		Edit	
		List	
		Print	
		Delete	

The Symbol Menu is used to create or modify symbols. Symbols can be tied to a PLC variable directly through the fill-in-the-blank configuration form, which appears automatically if Object Configuration is turned on under System Configuration.

Symbols, which are application-independent, are stored in symbol libraries. The development system provides several libraries of predefined symbols that can be copied into applications and screens. Refer to Appendix F for the specific symbols contained in each library.

A scroll list appears when a Symbol Menu option is selected. First, a symbol library name must be supplied. If the library name is shown in the top box, select Okay. If the name appears on the list, but not in the top box, use the mouse to highlight a name and click to select it or type the first letter of the name and select Okay. To create a new library name, click the top box, enter the desired name, press <Enter>, and click Okay. Next, a prompt for the symbol name appears. If the symbol name is shown in the top box, select Okay. If the name appears on the list, but not in the top box, use the mouse to highlight a name and click to select it or type the first letter of the name and select Okay. To create a new symbol name, click the top box, enter the desired name, press <Enter>, and click Okay.

Symbols can then be edited, listed, printed, or deleted as described on the following pages.

Edit
Edits an existing symbol or loads a new one. Edit brings up a new set of menus, which are discussed in Section 7.2. 2000COLR, 2000GRAF, and 2000MONO symbols are for the 2000. 8000EGA, 8000GRAF, and 8000VGA symbols are for the graphic workstation and PC/AT. Press <Esc>, Cancel, or the right mouse button to cancel the edit.

List
Prints information associated with a particular symbol to the listing target specified in the System Configuration. Press <Esc>, Cancel, or the right mouse button to cancel the print.

Short Prints the symbol name, number of objects, and file size to the development system listing target. For each configured object, the object name, type, any expression, and alarm enable status is printed.

Long Prints the symbol environment and all configured object information contained within a symbol to the development system listing target.

Print
Prints the selected symbol image to the listing target specified in the System Configuration if it is a printer. Press <Esc>, Cancel, or the right mouse button to cancel the print.

Delete
Deletes a symbol from the symbol library and from memory. If all symbols within a library are deleted, that symbol library file is also deleted. Press <Esc>, Cancel, or the right mouse button to cancel the delete.

7.2 Symbol-EDIT

The Edit Menu Bar appears after Edit is selected from the Symbol Menu. Four types of information can be displayed on the Edit Menu Bar to the left of the Symbol Name:

- The x and y cursor coordinates when the cursor is in the screen area
- The current mode (e.g., Erase) when the cursor is in the menu area
- The current angle when drawing pies
- The touch button zone when drawing touch buttons for a 2000 engine

The symbol environment is similar to the screen environment except when a symbol in the symbol editor is saved, all the objects in it are automatically linked to form the symbol. Also, anywhere a PLC address or register can be entered, a $ or expression containing a $ can also be used. When the symbol being edited is placed on a screen using the Screen-Edit-Display menu described on page 5-57, the $ expression is defined. Symbols cannot be executed as screens are. They must first be placed in a screen and then configured.

7.3 Symbol-Edit-TOOLS

Some of the things to be aware of for items in the Tools Menu are listed below.

- When selected, functions under Symbol-Edit-Tools, Symbol-Edit-Display, and Symbol-Edit-Control remain active until another function is selected. This provides the ability to perform a function on various objects without reselecting it from the menu.

- Once a function has been selected, select an object to which to apply the function. Objects can be selected by individually clicking each one or by "boxing" a group. To box a group, position the cursor outside the objects and hold the left mouse button down while dragging the mouse around the objects. A box appears around the selected objects. The selected function is then applied to all objects contained **completely** in the box when the mouse button

is released. Objects outside of the box are unaffected. Press the right mouse button while dragging the box to abort the selection.

- Default object names are provided as a convenience to the user and are numbered incrementally as Obj0, Obj1, Obj2, etc. However, these names are not a guarantee of uniqueness. For example, assume a screen consists of three objects—Obj0, Obj1, and Obj2—and then Obj1 is deleted. Obj0 and Obj2 remain. When a new object is drawn, it will be called Obj2 because it is the third object on the screen.

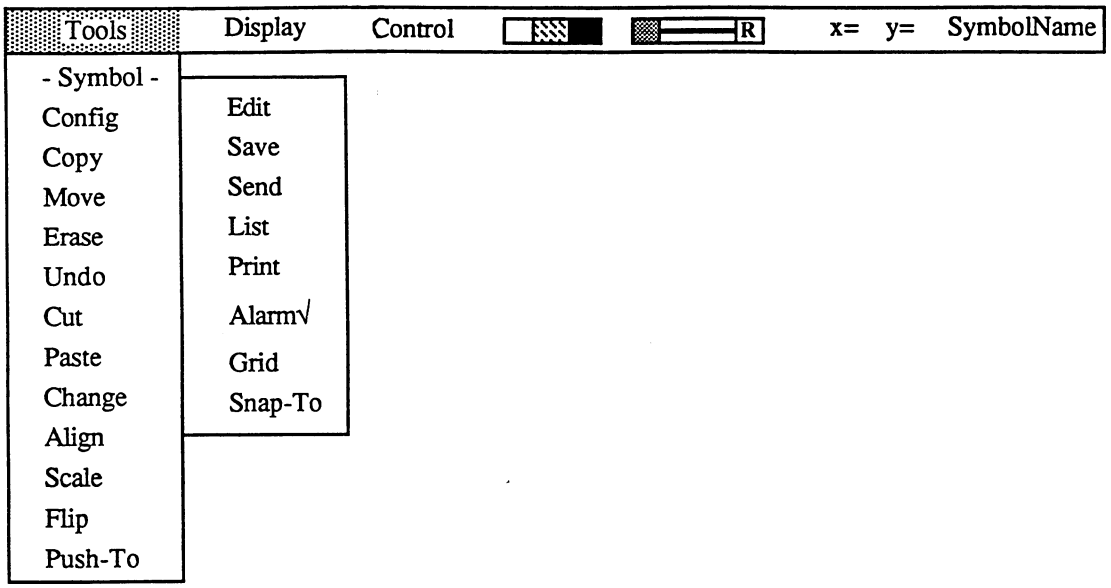
  Object names appear on the target engine during alarms. Therefore, it is recommended that you provide more descriptive object names than the defaults to aid the end user.

- Most of the Tools Menu selections are used to modify existing objects. You must first select the function and then click on the object to which the function will be applied. You do not need to click on an object when using UnDo and Paste; these functions update automatically when they are selected.

- Graphic workstation and PC/AT only. If using line sizes greater than one pixel, some objects (bars, rectangles, squares, ovals, circles, pies, and touch buttons) may be drawn one pixel wider or taller than shown in the outline that appears before the mouse is released. This ensures correct drawing and erasure on the engine.

- Menu choices that appear in a lighter color are not available on the Symbol Menu and they are not discussed in this manual.

Selecting -**Symbol**- from the Tools Menu brings up the following choices:



Edit
Edits an existing symbol or enables the creation of a new one. A scroll list requesting the symbol name appears. Press <Esc>, Cancel, or the right mouse button to cancel the edit.

Save
Saves the symbol as a specified symbol name. To be saved, a symbol must contain an object; a blank symbol cannot be saved. A scroll list requesting the symbol name appears.

Send
Not available.

List
Prints information associated with a particular symbol to the listing target specified in the System Configuration. Press <Esc>, Cancel, or the right mouse button to cancel the print.

Short Prints the symbol name, number of objects, and file size. For each configured object, the object name, type, any expression, and alarm enable status is printed.

Long Prints the symbol environment and all configured object information contained within a symbol to the development system listing target.

Print
Prints the current symbol image to the listing target specified in the System Configuration if it is a printer.

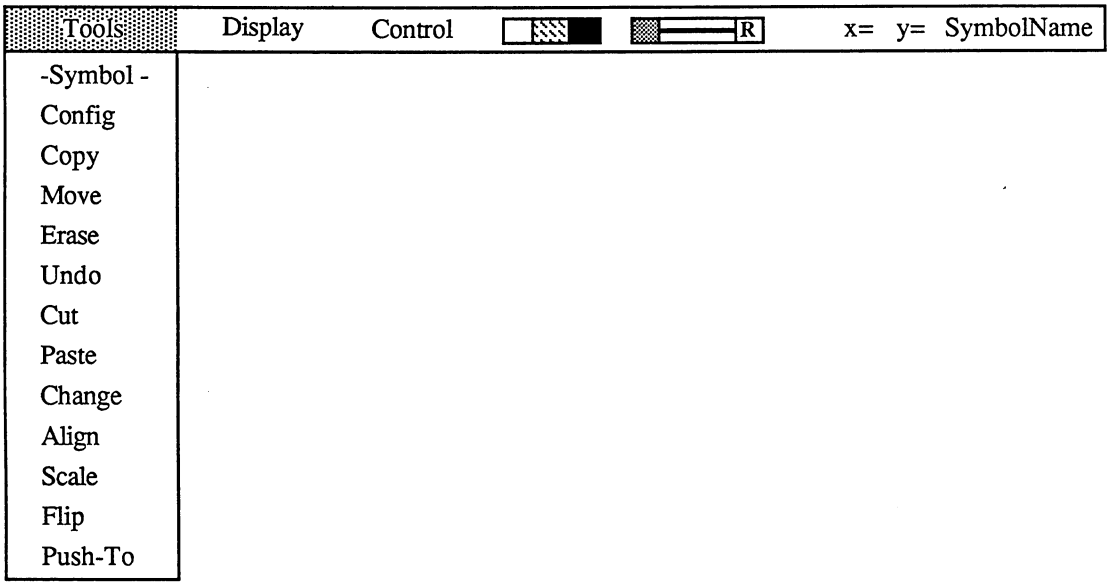
Alarm✓
Not available.

Grid
Places a grid on the screen to help in positioning objects when **On** is selected. The grid remains on until it is turned off; it does not automatically turn off when a symbol is exited. The default distance between the crosslines of the grid is one character height by one character width. When the grid is on, a check mark appears to the right of Grid on the Tools-Symbol Menu and the other selection is Off. You can turn the Grid on or off without deactivating a currently selected menu function.

To change the size of the grid, select **Size** from the Grid Menu. A form appears prompting you to enter the grid size in pixels. The current grid size is displayed for reference. If you change the size and Snap-To is on, the cursor snaps to the new grid size. For the 2000 series, the cursor is placed in reference to the original character boundaries, regardless of the grid size.

Snap-To
PC/AT and graphic workstation only. Causes the cursor to move to grid intersections, even if Grid is not selected or displayed on the screen. When Snap-To is selected, a check mark appears to the right of Snap-To on the Tools-Symbol Menu. Snap-To remains in effect until it is turned off. It does not automatically turn off when a symbol is exited. For the 2000 series, the cursor is always in snap-to mode, so Snap-To is not a selection. You can turn Snap-To on or off without deactivating a currently selected menu function.

The rest of the selections under Tools are described below:



Config
Configures selected objects. This can be used to change previously entered information or to configure objects initially. Objects can be selected one at a time or all at once by using the cursor to select object boundaries. If objects are selected as a group, each Object Configuration Form follows the last (in the order the objects were created) without returning to the screen each time.

If Object Configuration was turned off in the System Configuration, use this selection to configure the objects after a symbol is drawn. If objects have already been configured, use Config to edit the configuration of selected objects.

If objects are configured as a group, press the right mouse button or <Esc> to exit the group configuration.

Copy
Copies the selected object or object group. Move the cursor to the object or object group to copy and hold down the left mouse button. The outline of the object changes color. Drag the duplicate to the desired location and release the mouse button. If the selected object or object group is not moved, no duplicate is created. On a 2000 screen, if a touch button is selected or is in the group of objects selected, movement is based on touch button zone boundaries.

Move
Moves the selected object or object group. When the outline of the object changes color, drag the object to the desired location and release the mouse button. On a 2000 screen, if a touch button is selected or is in the group of objects selected, movement is based on touch zone boundaries.

If Move is selected to place one object on top of another, the object to be placed on top *must* have been created after the object to be placed behind. This is because the chronological order of object creation determines which objects can be layered on others, with the earliest objects on the bottom layer. To change the order of the object list, select Push-To from the Tools Menu.

Erase
Erases the object or object group selected.

UnDo
Restores the display of the symbol to its previous state. To use, UnDo **must** be initiated immediately after Erase, Move, Paste, or Copy. UnDo does not undo Config, Change Text, Cut, Flip, or Push-To. If you UnDo an Undo, it returns the item to its previous condition (erased, moved, pasted, or copied). If another selection is made before the UnDo is selected, the last item erased is removed from buffer memory and cannot be retrieved. If a single object has been erased, it retains its chronological order and any overlap quality when it is undone. If a group of objects has been erased and then is undone, the group is placed in front of all other objects, regardless of chronological order. However, objects remain in the order in which they were originally drawn within the group

Cut
Copies the selected object or object group into a file in the current working directory for later pasting. Locations and configurations are also cut. This file is saved until another object or object group is cut in the same working directory, even if this does not occur until another SoftScreen session. A cut file in one directory will not overwrite a cut file in another directory so it is possible to have multiple cut files, each in a different directory. The original object is not removed from the symbol.

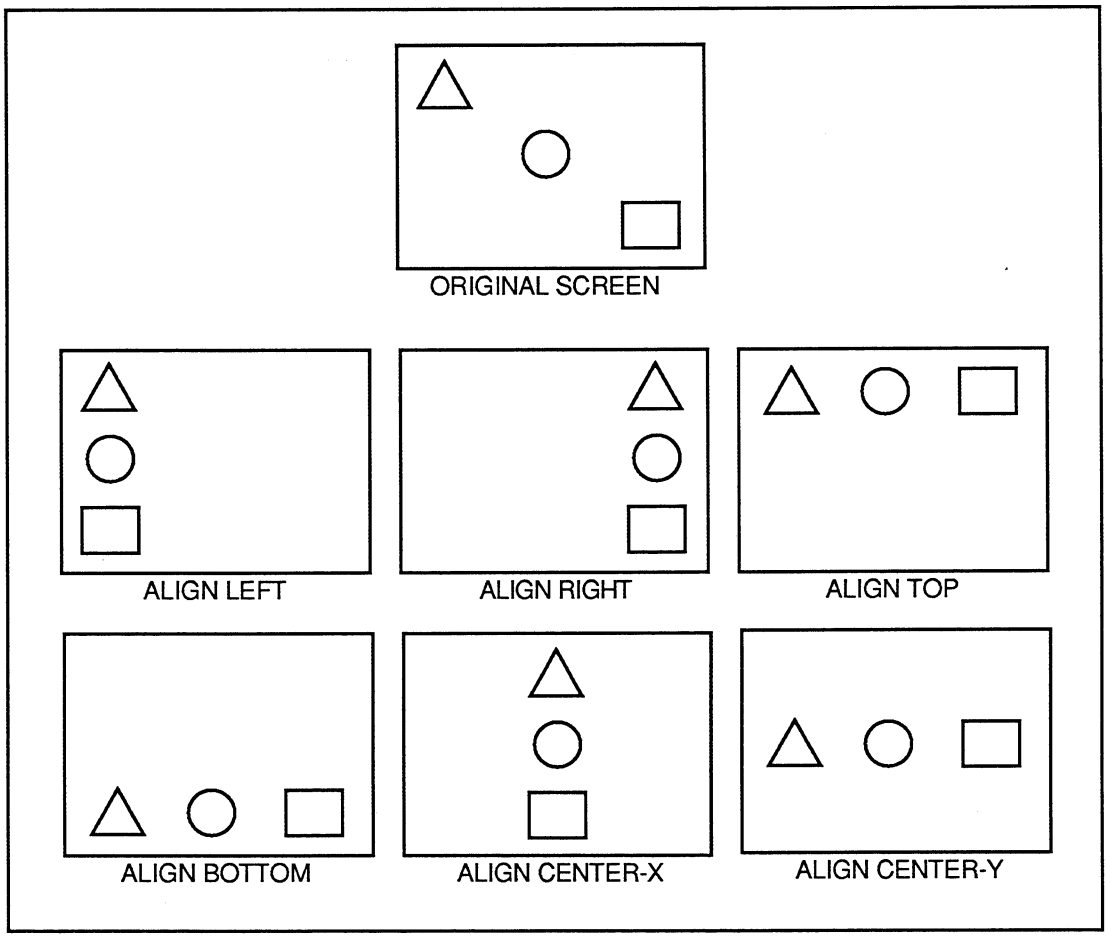
Paste
Copies the most recently cut object/object group onto the screen. The object/object group is placed at its original screen location. This provides the ability to cut from one symbol and paste onto another without having to change the orientation of any of the objects. If you paste onto the same symbol from which you cut, the object is placed on top of the original object.

Change
Changes properties of a single object or a group of objects including foreground color, background color, pattern, line size, and line dash and font and text of text objects. Filled objects can be changed to unfilled objects and unfilled objects can be changed to filled objects. In addition, the location of a poly object's vertices can be changed (Change Poly can only be performed on a single object).

For example, to change the foreground color of an oval from red to blue, select blue from the Foreground Color Menu, select Foreground from the Change Menu, and click the red oval. You can also select Foreground from the Change Menu, blue from Foreground color, and then click the red oval. Change Poly and Change Line Dash are not supported for the 2000 series.

Align
Aligns a group of objects to the left, right, top, bottom, center-x, center-y, nearest grid-x, or nearest grid-y of the group. For left, right, top, and bottom alignments, the reference point is the most extreme member of the group. Objects are **not** moved to the left, right, top, or bottom of the screen. For example, if aligning three objects to the left, the left-most object stays in place and the other two objects are moved in line with the left edge of that object. If the left-most object is in the middle of the screen, the objects are left-aligned in the middle of the screen. For center-x, the object group is aligned around the center x coordinate of the group. For center-y, the object group is aligned around the center y coordinate of the group. For nearest grid alignments, the objects are moved to the nearest

grid-x or grid-y position, even if the grid is not turned on. See the diagram below for more information:



Scale

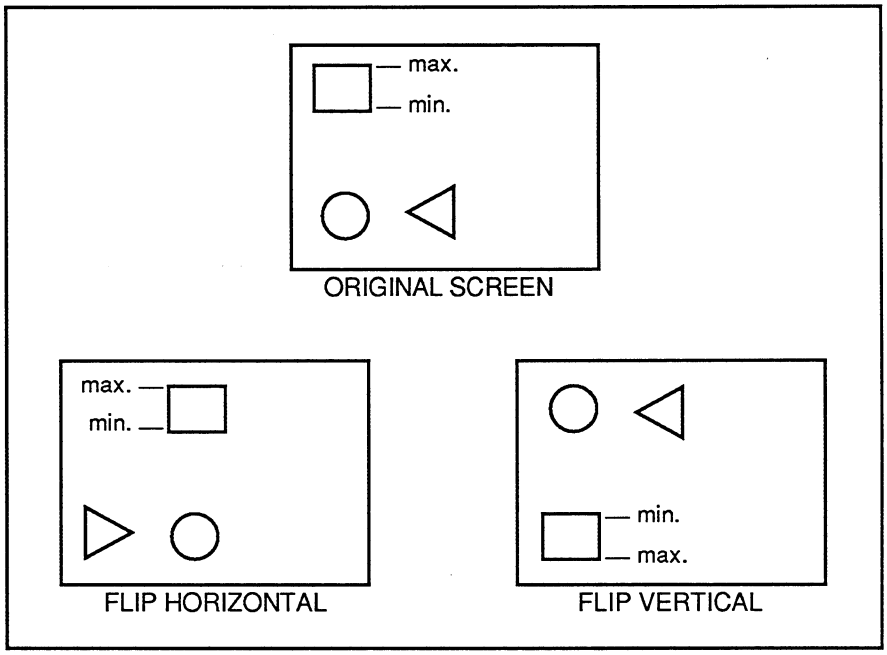
Scales the selected object or object group. Only graphic elements can be scaled. Date, time, text, data display, data entry, messages, string entry, string display, and recipe entry *cannot* be scaled. To scale an object, select the object or object group. A rectangle appears around the object with four sizing squares. (Vertical and horizontal lines will only have two sizing squares.) Select a sizing square and move it while holding down the left mouse button. Click twice without moving for scaling to occur. Objects are sized to fit in the outline. On the 2000, touch buttons are scaled to touch button zone boundaries. Trends and XY plots can only be scaled down to 130 pixels by 70 pixels. On EGA/VGA systems, touch buttons can only be scaled down to 10 pixels by 10 pixels. If there are trends, plots, or touch buttons in the selected group, scaling will stop once one of these objects reaches its minimum size.

NOTE

Date, time, text, data display, data entry, messages, string entry, string display, and recipe entry *cannot* be scaled. However, if any of these items are included in a group scale, their location changes proportionately based on the new size of the scale box.

Flip

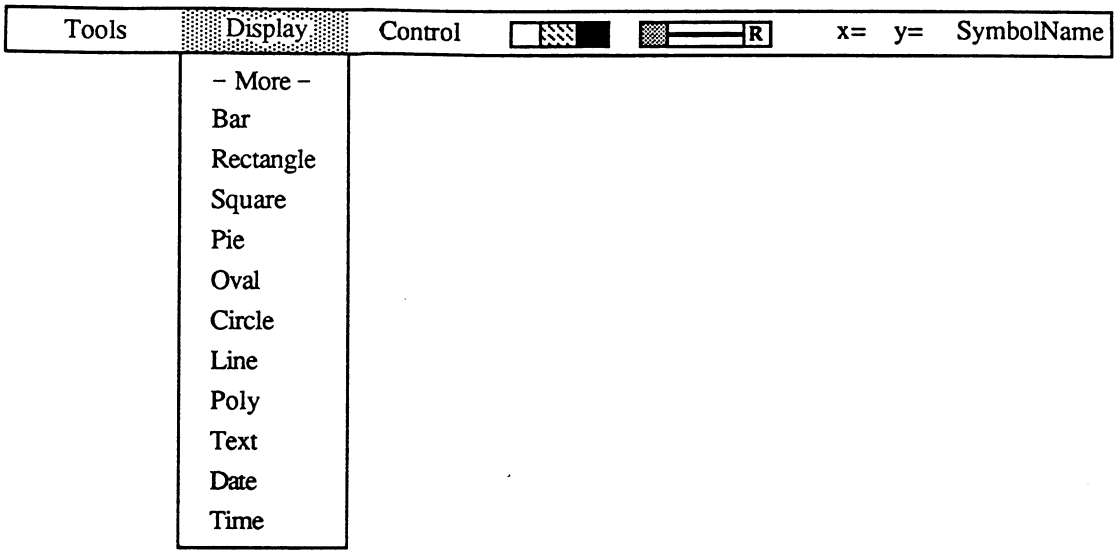
Flips the orientation of a single object (polygon, polyline, and diagonal line only) or any group of objects along a horizontal or vertical axis. For example, if a triangle pointing up is flipped vertically, it will point down. If a triangle facing left is flipped horizontally, it will face right. When flipped as part of a group, text position changes, but always remains readable. See the diagram below for an example:



Push-To

Pushes an object or object group in front of or behind another object or object group. This is useful because the most recently created objects always overlap objects created earlier. For example, if you decide to enclose an existing text line in a box, when you create the box it will be placed on top of the text. For the text to appear, select Push-To Back and click on the box.

7.4 Symbol-Edit-DISPLAY



The Display Menu options allow for the creation of each of the objects listed in the menu. After a selection from Display is complete, an Object Configuration Form appears unless it has been turned off in the System Configuration.

The basic Object Configuration Form for bar, rectangle, square, pie, oval, circle, and data is explained in Table 7-1. The basic Object Configuration Form for polygons, polylines, lines, and text is explained in Table 7-2. The configuration forms for selector text, string, trend, xy plot, event trend, and message are shown in Tables 7-3 to 7-15, respectively. Date and time have no associated configurations.

Additional information is described under the specific menu selection.

NOTE

PC/AT engines can look at up to 400 unique I/O points (PLC addresses); graphic workstation engines can look at up to 300; and 2000 series engines can look at up to 100. All alarm objects, objects with alarms enabled—if they are tied to a PLC address—and local and global pseudo keys count toward these I/O points. Refer to your engine manual for more details.

Table 7-1. Object Configuration Form

Object Name	Enter an optional name (eight characters maximum) or accept the default name (Obj0, Obj1, etc.)
Value Expression	Enter a mathematical expression consisting of an address, equations, etc. This value controls growth of the object. For static objects, this can be left blank. Press F1 to get help or refer to Appendix C for more information.
Minimum/**M**aximum Value	Enter the minimum value for the object to shrink to and the maximum value for the object to grow or the minimum and maximum value of a data display object. An object is initially created as a representation of its maximum size.
Deadband	Enter the value of overlap between alarm condition and regular levels. The deadband cannot be larger than the difference between the minimum and maximum values. For example, assume the minimum value is 0, the maximum value is 50, the high alarm is 48, the low alarm is 2, and the deadband is 5. The high alarm will be displayed when the value reaches 48, but will not display as out of alarm until the value reaches 42.

Table continued on following page.

Table 7-1. Object Configuration Form (*continued*)

Growth Direction	Define the direction in which a bar will expand: Up, Down, Left, or Right.
Alarm Enable	**No** disables the alarm; **Yes** enables it. Alarms occur when alarm minimum or maximum values are exceeded.
Alarm Acknowledge	Select **No** to disable alarm acknowledge. The alarm message displays for the time set in the Target Configuration. Pressing <Home> overrides the time specified and cancels the alarm message. Select **Yes** to enable alarm acknowledge. The alarm message appears until <Home> is pressed.
Low/High Alarm	Enter the minimum value for a low alarm to be displayed and the maximum value for a high alarm to be displayed.
States	Sets object foreground and background colors n relation to a conditional expression.

The following information describes closed objects in more detail.

> **NOTE**
> Unfilled objects are redrawn using the currently selected background color.

Bar

Draws a bar in the current color and pattern. Position the cross on the screen, hold down the left mouse button, move the cursor to the desired bar shape, and release the button. The outline of the bar appears for reference until you release the button. After the bar is drawn, the Object Configuration Form appears, if enabled. Fill in the prompts, referring to Table 7-1. The 2000 screen only uses solid foreground color for bars; patterns are not available.

Rectangle
Draws a filled or unfilled rectangle in the current color, pattern, line width, and dash. Position the cross on the screen, hold down the left mouse button, move the cursor to the desired rectangle shape, and then release the button. The outline of the rectangle appears for reference until you release the button. After the rectangle is drawn, the Object Configuration Form appears, if enabled. Refer to Table 7-1 for information on filling in the form. On the engine, the rectangle expands proportionately to the values specified in the configuration form.

On 2000-Mono screens, unfilled rectangles have the line centered within the character cell with the screen base color filling the rest of the cell. On 2000-Color screens, the background color fills the rest of the cell.

Square
PC/AT and graphic workstation only. Draws a filled or unfilled square in the current color, pattern, line width, and dash. Position the cross on the screen, hold down the left mouse button, move the cursor to the desired shape, and release the button. The outline of the square appears for reference until you release the button. After the square is drawn, the Object Configuration Form appears, if enabled. Refer to Table 7-1 for information on filling in the form. On the engine, the square will expand proportionately to the values specified in the Configuration Form.

Pie
PC/AT and graphic workstation only. Draws a filled or unfilled pie in the current color, line width, pattern, and dash (unfilled pies can only be drawn with solid lines). Position the cross on the screen, hold down the left mouse button, move the cursor to the desired size. The outline of an oval appears for reference until you release the button. When the entire oval is the desired size, release the left button. A line from the center of the oval to the edge appears when you release the button. Move the cursor until the line is positioned at the desired starting location of the pie, and press the left button. The direction you move the mouse is the direction the pie will grow when displayed on the engine. (The angle is shown at the top right of the menu bar.) Move the mouse while holding down the left button in the desired direction, and release the button. An outline of the pie will be shown as you move the mouse. The Object Configuration Form appears if enabled. Refer to Table 7-1 for information on filling in the form.

Oval
PC/AT and graphic workstation only. Draws a filled or unfilled oval in the current color, pattern, line width, and dash. Position the cross on the screen, hold down the left mouse button, move the mouse to the desired shape, and release the button. The outline of the oval appears for reference until you release the button. After the oval is drawn, the Object Configuration Form appears, if enabled. Refer to Table 7-1 for information on filling in the form. On the engine, the oval will expand proportionately to the maximum value specified in the Configuration Form.

Circle
PC/AT and graphic workstation only. Draws a filled or unfilled circle in the current color, pattern, line width, and dash. Position the cross on the screen, hold down the left mouse button, move the mouse to the desired shape, and release the button. The outline of the circle appears for reference until you release the button. After the circle is drawn, the Object Configuration Form appears, if enabled. Refer to Table 7-1 for information on filling in the form. On the engine, the circle will expand proportionately to the maximum value specified in the Configuration Form.

Polygons, polylines, lines, and text are explained on the next several pages. The configuration form for these items appears below:

Table 7-2. Object/States Configuration Form

Object Name	Enter an object name (eight characters maximum) or accept the default name.
Conditional Expression	Enter the mathematical expression. This can consist of internal registers or PLC addresses or a symbol expression. (Press F1 for help or see Appendix C for more information.) On the target device, the object will appear in the selected colors if the expression is true, or in the color it was originally drawn in if the expression is false. If multiple expressions are true, the highest numbered state's information will be used.
Foreground/ **B**ackground Colors	Select black, blue, green, cyan, red, magenta, brown, white*, dark grey, light blue, light green, light cyan, light red, light magenta, yellow, or intense white** for graphic workstation and PC/AT screens. For 2000 Color screens the selectable foreground colors are the same as the graphic workstation and PC/AT, but the background colors are black, blue, green, cyan, white*, light red, yellow, or intense white*. For 2000 Mono screens, the foreground and background colors are black, blue, or intense white**. On the target device, the object changes to these colors if the conditional expression is true. If multiple expressions are true, the highest numbered state's information is used. **White is displayed as grey. **Intense white is displayed as white.*
Text	List and Layered text only. Enter the line of text, up to 64 characters, that will be used if the conditional expression is true.

Line

Draws a line in the current color and line type. Position the cursor on the screen, hold down the left mouse button, move the cursor to create the line, and release the button. Next, the Line Configuration Form appears, if enabled. Refer to Table 7-2 for filling in the information.

2000 Screens only support horizontal and vertical lines. For 2000-Mono screens, the lines appear centered within the character cell with the screen base color filling the rest of the cell. For 2000-Color screens, the background color fills the rest of the character cell.

Poly
PC/AT and graphic workstation only. Draws a filled or unfilled polygon or a polyline.

Polygon Draws a polygon in the current color, pattern, line width, and dash. Position the cross on the screen, hold down the left mouse button, move the cursor to create the first edge, and release the button. Repeat until the entire shape is drawn. To complete the polygon, click the mouse twice without moving or have the final point equal the starting point. Next, the Object Configuration Form appears, if enabled. It prompts you for the information shown in Table 7-2.

Polyline Draws a polyline in the current color and line type. Position the cursor on the screen, hold down the left mouse button, move the cursor to create the first line, and release the button. Repeat until the polyline is drawn as desired. For the final line, click the mouse twice. Next, the Object Configuration Form (as shown in Table 7-2) appears, if enabled.

Text
Enters text in the current color and text size at the desired location. There are five possible types of text:

Single Displays single text lines. Each line is a separate object. Press <Enter> to end the line and, if automatic object configuration is turned off, to start a new one. Press <Enter>, <Esc>, or the right mouse button while on the new line to complete entering text. If enabled, the Text Configuration Form appears after entering the first line. Refer to Table 7-2 for more information. On the engine, the text appears in the color specified under States if the associated conditional expression is true. Otherwise, it is shown in the color it was created in at the development system.

Layered Displays one of up to six lines of text. After selecting Layered, position the mouse to the desired text location and click the left button. The Text Configuration Form appears. (Refer to Table 7-2 for more information). Enter up to six lines of text. Only the text line associated with a true

conditional expression displays on the target device. If more than one condition is true, the line with the highest numbered state (1-6) is displayed. However, on the development system the longest line of text appears in the colors specified under States. For example, to track fluid fill in a tank, three text lines could be "tank empty," "tank half full," and "tank full" where only the applicable line should be displayed based on which conditional statement is true. On the development system, the longest line of text—"tank half full"—is displayed in the selected colors.

List Displays up to six lines of text. After selecting List, position the mouse to the desired location and click. The Text Configuration Form appears (refer to Table 7-2). All lines of text are displayed in a box. The box colors are the current foreground and background colors. For 2000 screens, the surrounding box is a full character cell around the text. For 2000-Mono screens, the box appears centered within the character cell with the box colors the current foreground and base colors. For 2000-Color screens, the background color fills the rest of the cell. On the engine, only elements whose conditional expression is true are displayed in the colors specified. If the conditional expression is false, the text line is shown in the color in which it was originally drawn. On the development system, all lines are displayed in the colors specified under States.

Selector PC/AT only. Defines a list of 1 to 64 text lines each with a user-modifiable index. Up to 49 lines (with the smallest font selected) of these 64 can be displayed at one time. Each of the 64 text lines can have 16 states, each with a unique foreground and background color and associated text. The configured text scrolls in a user-defined window as the value of the index expression changes. When the index expression returns a value, the text line associated with that value is highlighted with the user-defined colors. Text not at the current index expression appears in the colors configured under States in the Text Line Configuration Form.

On the development system, the window in which the text appears takes on the current foreground and background colors and is the width of the longest configured text line. The center text line within the window is displayed in the highlight foreground and background colors. All other text lines appear in the state in which they were configured. The development system displays

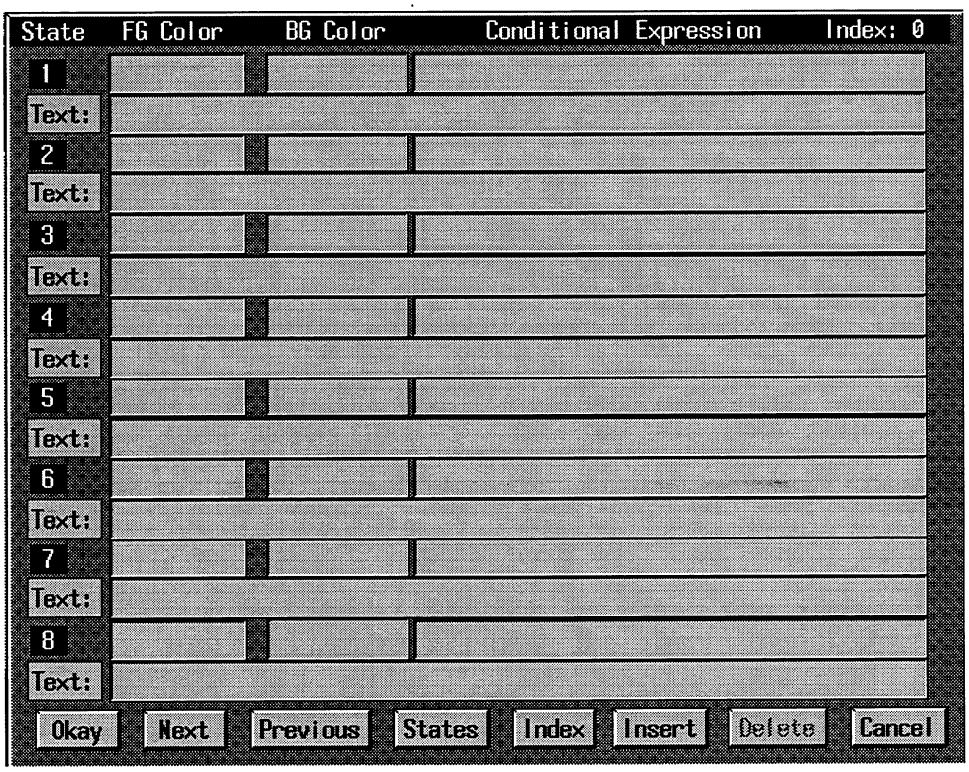
the text lines in numerical order, with index 0 at the top. The configured number of Lines Displayed or the number of lines configured, whichever comes first, is displayed.

Once Selector is chosen, the Selector Text Configuration Form appears. Fill in the information as follows:

Table 7-3. Selector Text Configuration Form

Object Name	Enter a unique object name (eight characters maximum) or the default name.
Lines Displayed	Enter the number of lines to be displayed. More lines can be created, but only a maximum of 49 can be displayed.
Highlight **F**oreground/ **B**ackground Color	Define the color in which the selected line will be displayed.
Selector Index Expression	Enter a mathematical expression consisting of an address, equation, etc. This value controls which line is drawn in the highlight colors based on the text lines index number. When this value is greater than the index number associated with the last text line configured, the last text line configured is displayed in the highlight colors. For example, if the index number of the last text line configured is 5, and the value returned is 10, the text line at Index 5 is highlighted.
Text Lines	Allows the creating and editing of text strings for each text line. A new form appears when this button is selected.

When the Text Lines button is pressed, the following form appears:



The following steps describe how to configure text lines:

1. Configure from one to 16 states for each text line (each text line has an associated index number, which appears in the upper right corner of the form).

2. Type in a text string for each state you want to configure.

3. Select the state foreground (FG) and background (BG) colors.

4. Enter a conditional expression. When this expression returns a non-zero value, its associated text displays in the configured foreground and background colors.

5. Press one of the eight buttons along the bottom of the form to continue. Each is described below:

   Okay Accepts information entered and returns you to the Selector Text Configuration Form.

   Next Accesses the next index. However, you must fill in at least one state in the current index to proceed to the next index.

   Previous Returns to the previously configured index.

   States Toggles between two pages: Page one is states 1 through 8; page two is states 9 through 16. The first eight states must be configured to access states 9 through 16.

   Index Places the cursor at the top right corner of the form, next to the index number. Type the number of the index to which you want to go, then press <Enter>. The form moves to the page number you entered. However, it will only move to a configurable index.

   Insert Copies the states configured in the current index to the next index. If the next index is already configured, these states are copied to the following index. For example, if you press Insert when you are in Index 1, the configured states are copied to Index 2 and the states that were already configured for Index 2 are copied to Index 3.

   Delete Deletes all entries in an index.

   Cancel Exits the form without saving any changes.

Figure 7-1 on the following page shows how selector text works.

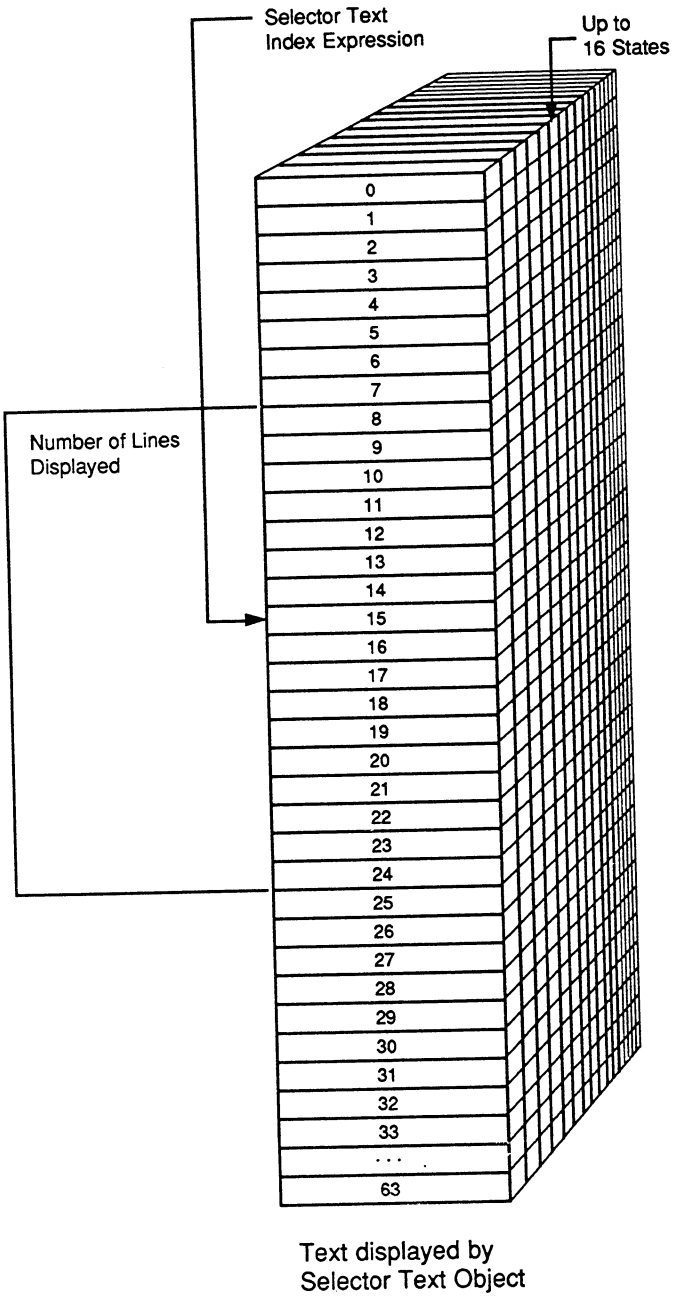


Figure 7-1. SoftScreen Selector Text Objects

Graphics
2000 only. Used to create text graphics on the screen. Text graphics can be used to fill in lines that are missing sections when lines cross each other and to simulate non-supported objects such as circles, diagonal lines, etc. Text graphics cannot be flipped or scaled.

After selecting Graphics, a form with various text graphics appears. Each box represents a text graphic that can be placed onto the screen. The three boxes at the bottom right of the form contain the letters N, P, and C:

N Moves to the next Text Graphics form.

P Moves to the previous Text Graphics form.

C Exits the Text Graphics form without saving changes

To select a text graphic, place the cursor on the graphic and click the left mouse button. The form disappears and the cursor appears as a crosshair on the screen. Hold down the left mouse button; the outline of the graphic appears to help you position it. Release the mouse button when you are done placing the graphic. The Text Graphic Form reappears after the graphic is placed.

Refer to Appendix G for a complete list of the text graphics available.

Date
Places the date at the selected position in the currently selected color and text size. Dates can appear in four formats:

Development	Runtime
mm/dd/yy	e.g., 11/15/93
dd/mm/yy	e.g., 15/11/93
dd mon year	e.g., 15 Nov 1993
dayofweek, fullmonth, dd, year	e.g., Monday, November 15, 1993

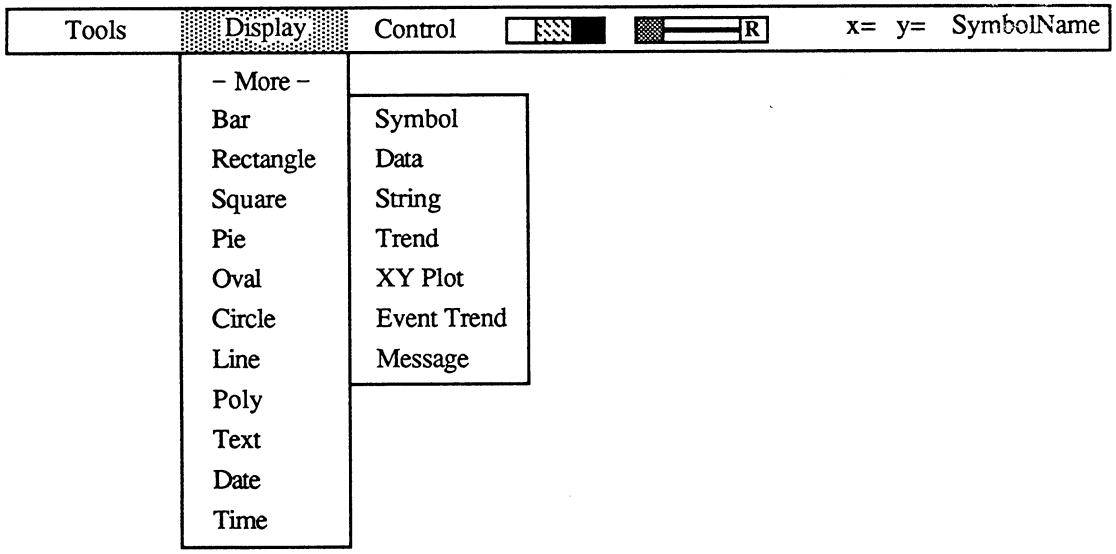
On the development system, the date appears in the format shown on the left, above, not as the actual date. When the screen is executed on the runtime system, the actual date appears.

Time
Places the time at the selected position in the current color and text size. The time can be displayed in three formats:

Development	**Runtime**
24:mm:ss	e.g., 17:00:00
12:mm:ss	e.g., 05:00:00
hh:mm:ss AM	e.g., 05:00:00 PM

On the development system, the time appears in the format shown on the left, above, not as the actual time. However, the actual time appears on the runtime system.

Selecting -More- from the Display Menu provides the following choices:



Symbol Allows selecting, linking, and unlinking symbols. If objects that are going to be linked into a symbol have similar components in their expressions, do not enter the entire expression for each object. Instead, enter $ for the common part of the expression. The $ will be replaced by the expression you tie to the entire symbol. For example, if an object is configured with the expression $/2 and another with the expression $*2, when they are linked

together the symbol expression could be [PLCADDRESS]. The first object would divide the value at PLCADDRESS by two, and the second object would multiply the same value by two. To reuse the symbol to work with PLCADDRESS+1, copy the current symbol and configure the new symbol's expression as [PLCADDRESS+1]. Up to four levels of symbols can be nested within one another.

Select - Retrieves a symbol from a symbol library onto the screen. A form appears asking for the name of the symbol library. Select the name and then Okay. Next, select the symbol name and press Okay. When you press the left mouse button, a box outline of the symbol appears on the screen. Hold down the left mouse button to place the symbol, and then release the button. After the symbol is placed, the Symbol Configuration Form appears, if Object Configuration is enabled. The expression you enter will be substituted in place of a $ in the expression of any object in that symbol or in nested symbols. The objects of the symbol are now linked. (To configure or move each object separately, refer to Unlink .)

Link - Defines which objects are to become a symbol. Link is used to group objects and/or symbols into one symbol. To link multiple objects/symbols, you must "box" the group. To select a group, position the cursor outside the objects and hold the left mouse button down while dragging the cursor around the objects. A box appears around the selected objects. All objects contained **completely** in the box when the mouse button is released can then be linked. Next, the Symbol Configuration Form appears, if Object Configuration is enabled. The expression you enter here is substituted for $ in the expressions of the objects of the symbol.

Unlink - Removes one level of connection between previously linked objects. Unlinking allows objects to be individually moved, erased, configured, etc. If a symbol composed of a bar and a symbol is unlinked, the result is two separate objects. To access the individual objects of the symbol, a second unlink must be performed.

Data Displays a data value (with five places maximum before and four places after the decimal) at the selected screen location. After selecting Data, hold down the left mouse button, position the data box to the desired location, and then release the button. The Object Configuration Menu appears, if

enabled. Enter the information according to Table 7-2. In addition to the items shown, Format appears. The Format fields allow you to define the number of digits to be displayed to the left and right of the decimal place. The object appears as a series of 0's in the configured format preceded by a ±.

String PC/AT only. Displays the text at a PLC location or within internal registers. While holding the left mouse button, position the rectangle where you would like the object to appear. Fill in the form with the following information:

Table 7-4. String Display Object Configuration Form

Object Name	Enter an optional object name (eight characters maximum) or accept the default name.
String Address	Enter the location of the string data. The address can be an internal register or a PLC address. Reference the engine manual for PLCs that support string data.
Maximum Length	Enter the maximum number of characters the string will take up on the display area.
Use Terminator	Select **Yes** or **No**. Use Terminator allows the string to be displayed until the terminator occurs or until the maximum length is reached, whichever comes first.
Terminator	Indicate the end of a string by entering a decimal value from 0 to 255.
States	Accesses the Object/States Configuration Form, explained in Table 7-2.

The string display object appears as a series of S's the same length as specified by the Maximum Length.

The following steps describe how to configure States:

1. Configure from one to eight states for each String.

3. Select a foreground (FG) and background (BG) color for each state.

4. Enter a conditional expression. When this expression returns a non-zero value, the string displays in the associated foreground and background colors.

Trend PC/AT and graphic workstation only. Creates a graphic representation of the trend of a process in relation to time. Select Log or No Log, then position the cross on the screen, hold down the left mouse button, drag the cursor to the desired trend size (minimum size is 130 x 70 pixels), and then release the button. The outline of a rectangle appears for reference until you release the button.

Log - PC/AT only. Trend points are logged to disk when log is selected. Fill in the configuration form with the information in Table 7-5:

Table 7-5. Log Trend Configuration Form

Object Name	Enter an optional object name (eight characters maximum) or accept the default name.
Number of Samples	Enter the number of samples (600 maximum). This number is the amount of samples that will be saved in memory per trend pen.
Time Scale	Enter the **hours** and **minutes** the trend represents (maximum is 99 hours and 99 minutes). When the trend is drawn, the start time is displayed in the lower left corner of the trend; the end time will be displayed in the lower right corner.
Trend Title	Enter a trend title (25 characters maximum). The title will be centered on the bottom line of the trend.
Date Format	Select **None** or one of three formats. The date appears above time.
Log File Name	Name the destination file that will store trend information. The filename extension will increment when a new trend file is created.

Table continued on the following page.

Table 7-5. Log Trend Configuration Form (*continued*)

Log File Format	Trend information is stored in ASCII format.
Log File Path	Enter the destination directory for the log files. If the directory does not exist at runtime, the engine creates it.
Log Enable Condition	This must be configured for the trend to be valid. Enter the condition which allows the trend to run.
Sampling/Log Rate	Sampling can be done based upon **Time**—every hour:minute:second—or when a **Condition** becomes true.
Log File Period	Choose **Time** or **Condition** to create a new log file. Time creates a file based on every hour:minute; Condition creates a file when the Start Condition is true and is used until the Stop Condition becomes true.
Disk Full Resolution	Select **Delete None** or **Save Number** to control what happens when the disk is full during logging.
File Save Number	Configure if Save Number is the Disk Full Resolution option. Enter the number of files to save to disk. When this number is exceeded, the oldest files are deleted. You can save up to 46,000 trends files.
Pens	Click to access the Trend Pen Configuration Form explained in Table 7-6. All trends must have at least one pen configured to be valid.

The Trend Pen Configuration Form appears when you select Pens. Enter the information according to Table 7-6.

Table 7-6. Trend Pen Configuration Form

Expression	Enter a mathematical expression consisting of a PLC address, equations, etc. This field determines which values are measured. For help, press F1 or see Appendix C.
Color	Select one of the many colors in which to draw the display. The color should be different from the background color and from the other pens.
Minimum Value	Enter the minimum value that will be recorded. If Scale Drawn is selected as Yes, these values display to the right of the trend.
Maximum Value	Enter the maximum value that will be recorded. If Scale Drawn is selected as Yes, these values display to the right of the trend.
Scale Drawn	Select **Yes** to place a scale to the right of the trend or **No** for no scale. The scale lists the minimum and maximum values and has graduated marks in between.
Scale Format	Enter the format to display the minimum and maximum values on the scale. The format must have enough places to accommodate the values, e.g., a maximum value of 100 must have a format of at least 000. If Scale Drawn is selected as Yes, the minimum and maximum values of the pen are displayed in the chosen format in the color chosen for that pen.

No Log - Enter the configuration information according to the following table:

Table 7-7. Historical/Real-time Trend Configuration Form

Type	Select **Real-Time** or **Historical**. If you exit a screen with Real-Time trends, when you return, the data previously displayed is lost and the trend starts again. For Historical trends, saved data is redrawn when you return to the screen.
Object Name	Enter an **object name** (eight characters maximum) or accept the default name.
Number of Samples	Historical trends only. Enter the **number of samples** (600 maximum). This number is the amount of samples saved in memory per trend pen.
Time Scale	Enter the **hours** and **minutes** the trend represents (maximum is 99 hours and 99 minutes). When the trend is drawn, the start time is displayed in the lower left corner of the trend; the end time will be displayed in the lower right corner.
Trend Title	Enter a **trend title** (25 characters maximum). The title is centered on the bottom line of the trend.
Date Format	Select **None** or one of the three date formats. The date format appears above the time.
Pens	Choosing Pens brings up the Trend Pen Configuration Form, explained in Table 7-6. All trends must have at least one pen configured to be valid.

How often the trend characteristic is sampled depends on the pixel width of the trend box and the time scale as calculated in the formula below:

$$\frac{\text{(maximum x point - minimum x point)}}{\text{\# of seconds in time scale}}$$

where x = pixel width

> **NOTE**
> Each point plotted has an accuracy of ± 1 pixel. Resolution depends on the range of the minimum and maximum values selected and the height of the trend. Very small trends with very large scaling may not reach the top pixel for this reason.

XY Plot PC/AT only. Creates a scatter graph using two separate expressions for the x and y axis. Select Log or No Log, then position the cross on the screen, hold down the left mouse button, drag the cursor to the desired plot size (minimum size is 130 x 70 pixels), and then release the button. The outline of a rectangle appears for reference until you release the button.

After the plot is drawn the following configuration form appears.

Table 7-8. XY Plot Configuration Form

Type	No Log XY Plots only. Select **Real-Time** or **Historical**. If you exit a screen with Real-Time trends, when you return, the data previously displayed is lost and the trend restarts. For Historical trends, saved data is redrawn when you return to the screen. If power is lost on the engine, the last point drawn is connected by a horizontal line to the first point drawn after power is restored.
Object Name	Enter an optional **object name** (eight characters maximum) or accept the default name.

Table continued on the following page.

Table 7-8. XY Plot Configuration Form (*continued*)

Point Color	Select a **color** in which to draw the points. The color should be different from the background color.
Number of Samples	Historical and Log XY Plots only. Enter the number of samples (600 maximum). This number is the amount of samples that will be saved in memory.
Sampling Rate	Select **Time**, **Edge**, or **Level**. If Time is selected, data is sampled at the time interval configured. If Edge is selected, data is sampled only when the condition transitions from false to true. If Level is selected, data is sampled while the condition evaluates to true.
Clear Plot Expression	Enter the **expression** that will be evaluated. When it transitions from false to true, the plot area will be cleared. For historical and logged plots, the historical buffer will also be cleared.
X/**Y** Title	Enter the **horizontal/vertical axis labels**.
X/**Y** Expression	Enter the **expression** to be evaluated. The result will be plotted on the horizontal/vertical axis.
Minimum/**M**aximum Values	Define the **values** for the lowest/highest result of an expression.
Scale	Select **No** for no scale or **Yes** if a scale will be drawn using the minimum and maximum values in the configured scale format.
Format	Enter the precision with which the scale values are to be drawn, if Scale is enabled.
Log Information	Log XY Plots only. Click to access the XY Log Plot Configuration Form, explained in Table 5-12.

When Log Information is selected, the XY Log Plot Configuration Form appears. Fill in the information according to the following table:

Table 7-9. XY Log Plot Configuration Form

Log File Name	Enter the destination file for the plot information. The filename extensions will increment when a new plot file is created.
Log File Format	The plot information will be stored in ASCII format.
Log File Path	Enter the destination directory for the log files. If the directory does not exist at runtime, the engine will create it.
Log Enable Condition	Enter the condition which will allow the plot to run. This must be configured for the plot to be valid.
Log File Period	Choose **Time** or **Condition** to create a new log file. Time creates a file every hour:minute; Condition creates a file when the Start Condition is true and it is used until the Stop Condition becomes true.
Disk Full Resolution	Select **Delete None** or **Save Number** to control what happens when the disk is full during logging.
File Save Number	Configure if Save Number is selected as the Disk Full Resolution option. Enter the number of files to save to disk. When this number is exceeded, the oldest files are deleted. The maximum number of files that can be saved is 46,000.

Event Trend PC/AT only. Creates a graphic representation of the trend of a process in relation to an event instead of time. Select Log or No Log, then position the cross on the screen, hold down the left mouse button, drag the cursor to the desired event trend size (minimum size is 130 x 70 pixels), and then release the button. The outline of a rectangle appears for reference until you release the button.

Log - The Log Event Trend Form appears after Log is selected and a trend is drawn. Fill in the configuration form with the information in Table 7-10:

Table 7-10. Log Event Trend Configuration Form

Object Name	Enter an object name (eight characters maximum) or accept the default.
Number of Samples	Enter the number of samples (600 maximum). This is the number of samples that are saved in memory per trend pen.
Number of Display Points	Enter the number of data points that can be drawn, per pen, within the trend rectangle.
Display Time	Select **No** to turn off this option or **Yes** to display the start and end times for the trend.
Date Format	Select **None** or one of the three date formats. The date format will appear above the time.
Trend Title	Enter a trend title (25 characters maximum). The title is centered on the bottom line of the trend.
Event Trigger	Select **Edge** or **Level** to determine when trend data is sampled. If Edge is selected, data is sampled when the event expression transitions from false to true. If Level is selected, data is continuously sampled when the event expression evaluates to true.
Event Expression	Enter an expression to determine when trend data is sampled.

Table continued on the following page.

Table 7-10. Log Event Trend Configuration Form (*continued*)

Log File Name	Enter the destination file for the trending information. The extension of the file name will increment when a new trend file is created.
Log File Path	Enter the log file destination directory. If the directory does not exist at runtime, the engine creates it.
Log Enable Condition	Enter the condition which allows the trend to run. This must be configured for the trend to be valid.
Log File Period	Choose **Time** or **Condition** to create a new log file. Time creates a file every hour:minute; Condition creates a file when the Start Condition is true and it is used until the Stop Condition becomes true.
Disk Full Resolution	Select **Delete None** or **Save Number** to control what happens when the disk is full during logging.
File Save Number	Configure if Save Number is selected as the Disk Full Resolution option. Enter the number of files to save to disk. When this number is exceeded, the oldest files are deleted. The maximum number of files that can be saved is 46,000.
Pens	Click to access the Trend Pen Configuration Form explained in Table 7-6. All trends must have at least one pen configured to be valid.

No Log - The Historical/Real-time Event Trend Configuration Form appears after No Log is selected and a trend is drawn. Fill in the configuration form according to the information in Table 7-11 on the following page.

Table 7-11. Historical/Real-time Event Trend Configuration Form

Type	Select **Real-Time** or **Historical**. If you exit the screen with Real-Time trends, when you return, the data previously displayed is lost, and will start again. For Historical trends, saved data is redrawn when you return to that screen.
Object Name	Enter an object name (eight characters maximum) or accept the default.
Number of Samples	Historical Event Trends only. Enter the number of samples (600 maximum). This number is the amount of samples that is saved in memory per trend pen.
Number of Display Points	Enter the number of data points that can be drawn, per pen, within the trend rectangle.
Display Time	Select **No** to turn off this option or **Yes** to display the start and end times for the trend.
Date Format	Select **None** or one of the three date formats. The date format appears above the time.
Trend Title	Enter a trend title (25 characters maximum). The title is centered on the bottom line of the trend.
Event Trigger	Select **Edge** or **Level** to determine when trend data will be sampled. If Edge is selected, data is sampled when the event condition transitions from false to true. If Level is selected, data is sampled when the event expression evaluates to true.
Event Expression	Enter an expression to determine when trend data will be sampled.
Pens	Click to access the Trend Pen Configuration Form explained in Table 7-6. All trends must have at least one pen configured to be valid.

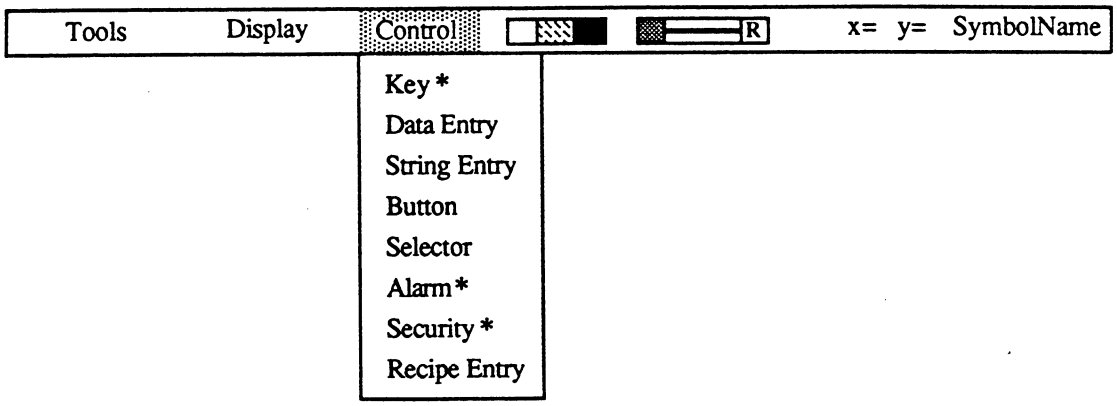
Message Defines the length and position of a message. SoftScreen can store 400 different messages, which are defined under Application-Load-Message-Edit. Fill in the configuration form with the following information:

Table 7-12. Message Configuration Form

Object Name	Enter an object name (eight characters maximum) or accept the default.
Message Length	Enter the length of the message (from 1 to 70 characters). On the engine, the actual message will be displayed, but on the development system a series of M's (one for each unit of length) will display.
Value Expression	Enter the expression to be evaluated (for help, press F1 or see Appendix C). The expression is evaluated as an integer (fractions are truncated). If this integer falls on or within the minimum and maximum values, the message associated with that integer is displayed. For example, if the expression is evaluated as 5, the message entered under 005 in Application-Load-Message-Edit is displayed. If the result of the expression is less than the minimum value or greater than the maximum value, the minimum and maximum values are used, respectively. If a message doesn't exist, the message currently displayed on the engine will not change.
Minimum Value	Enter the lowest message number. (Messages are defined under Application-Load-Message-Edit.) If you do not want a range, but only one particular message, enter its number both as minimum and maximum.
Maximum Value	Enter the maximum number of the message number (up to 779). (Messages are defined under Application-Load-Message-Edit.) If you do not want a range, but only one particular expression, enter its number both as minimum and maximum.

7.5 Symbol-Edit-CONTROL

The Control Menu allows configuring data entry points and push buttons.



Data Entry
Data Entry objects allow the end user to enter the numerical information to be written to an address. Hold down the left mouse button, position the cursor where you want the data to appear, and the release the mouse button. Next, enter the information for the Object Configuration Form that appears, if enabled:

Table 7-13. Data Entry Object Configuration Form

Object Name	Enter an optional name (up to eight characters) or accept the default name.
Format	Define the format up to five places before and four places after the decimal point.
Data Address	Enter the address to which the data is sent.
Minimum/Maximum Value	Enter the minimum and maximum values of the data (the defaults are the most recently entered values).

Table continued on the following page

Table 7-13. Data Entry Object Configuration Form (*continued*)

Security Level	Select a security level, **1-7** or **0** for none. Select **Only** to restrict the valid password to the level(s) specified or **And Below** to allow all passwords from 1 through the level specified. Multiple levels can be selected by typing each desired level number separated by a comma and using the Only option. Default is 0.
Data Scale Expression	PC/AT only. Use #D in the expression to represent the entered value. The Data Scale Expression allows the entered value to be adjusted before it is written to the data address. For example, if a value of 20 is entered and the Data Scale Expression is #D/2, then the value written to the data address is 20/2=10.

The format will appear as # signs. The user at the engine can press <Home> to enter the particular value in place of the prompts.

String Entry

PC/AT only. String entry objects allow the end user to write character data to an address. Hold the left mouse button, position the rectangle where you would like the object to appear, and release the mouse button. Fill in the form with the following information:

Table 7-14. String Entry Object Configuration Form

Object Name	Enter an optional object name (eight characters maximum) or accept the default name.
String Address	Enter the location of the string data. The address can be an internal register or a PLC address.
Maximum Length	Enter the maximum number of characters the string will take up on the display area.
Use Terminator	Select **Yes** or **No**. The Use Terminator allows the string to be displayed until the terminator occurs or until the maximum length is reached, whichever comes first.

Table continued on the following page.

Table 7-14. String Entry Object Configuration Form (*continued*)

Terminator	Indicate the end of a string, by entering a decimal value from 0 to 255.
Security Level	Select a security level, **1-7** or **0** for none. Select **Only** to restrict the valid password to the level(s) specified or **And Below** to allow all passwords from 1 through the level specified. Multiple levels can be selected by typing each desired level number separated by a comma and using the Only option. Default is 0.

The string entry object displays as a series of s's (one for each unit of length). The user at the engine can press <Home> to enter a particular string in place of the prompts.

Button

Defines touch screen zones on the screen. Buttons appear as filled rectangles on a 2000 and as sculpted boxes on PC/AT and graphic engines. After selecting Button, click the cursor on screen to place the touch button and drag the mouse to size the touch button. The button is displayed in the selected color and pattern. After the button is drawn, the Touch Button Configuration Form appears, if enabled. Fill in the following information:

Object Name Enter an optional name (eight character maximum) or accept the default name.

Function This assigns the function that occurs when the button is pressed or released on the engine. The touch button performs one action when pressed and one when released. Select one of the functions below and enter the remaining information as shown:

NOTE

If Go to Screen, Return to Previous Screen, Go to Idle Mode, Change Security Level, Load Selected Recipe, or Execute Selector Button are selected as the Function on Press, we recommend you do not configure a Function on Release. PC/AT only. No information needed. The engine will exit SoftScreen and return to the operating system.

None - No additional information needed. Nothing occurs when the touch button is pressed/released on the engine.

Write Data to Address - Enter the appropriate Data Address and Data Value. The data value can contain an expression, internal or indirect register, PLC address, or constant. The data address can contain the PLC address or internal or indirect register to which you wish to write. The data is written to the address when the button is pressed/released on the engine.

Go to Screen - Enter the screen to go to in the Screen Name prompt area. The specified screen is executed when the touch button is pressed/released on the engine.

Return to Previous Screen - No more information is necessary. The previous screen is executed when the touch button is pressed/released on the engine. The engine keeps track of the last ten screens executed.

Load a Recipe - Enter the recipe name in the Recipe Name prompt area. This recipe is loaded when the touch button is pressed/released on the engine.

Print a Report - Enter the report name in the Report Name prompt area. The report is printed at the target system printer or file when the touch button is pressed/released on the engine.

Print the Current Screen - PC/AT and graphic workstation only. No more information is required. The screen is printed at the target system printer when the touch button is pressed/released on the engine.

Go to Idle Mode - PC/AT only. No other information is needed. Everything in the engine, including PLC communication, stops. Only key presses and timeout pseudo keys will function, and only if the function specified is Return To Active Mode. All log files are closed to allow a safe shutdown procedure.

Return to Active Mode - PC/AT only. No other information is needed. If the engine was in idle mode, all stopped activities begin running again.

Acknowledge Alarm - No other information is needed. If the engine is displaying an alarm, it is acknowledged.

Simulate Key Press - Specify the Key Press Values to be inserted into the engine's keyboard buffer when the touch button is pressed/released. To simulate the <Home>, <Enter>, <Backspace>, <Null>, and <Left Arrow> keys, use <H, <C, <B, <N, and <<, respectively (lower case is allowed). The 2000 has a 20-key buffer and the graphic workstation and PC/AT each have a 29-key buffer. If more keys are inserted than are allowed, extra keys are lost.

Change Security Level - PC/AT only. Enter a Security Level, **1-7** or **0** for none. Defining the security levels allows data, recipe, and string entry objects to be enabled via the password security level entered on the engine.

Load Selected Recipe - PC/AT only. No information is needed. When the touch button is pressed/released on the engine, the recipe to be loaded in the PLC can be chosen from a scroll list.

Execute Selector Button - PC/AT only. Specify the object name of the selector touch button in the Selector Name prompt area. When the function is performed on the engine the selector touch button whose object name matches the configured name will have its selector index expression evaluated. The engine will index into the list of configured functions based upon the evaluation result, and the selector function will be performed.

Exit SoftScreen - PC/AT only. No information needed. The engine will exit SoftScreen and return to the operating system.

> **NOTE**
> Engines without a Touch Screen will draw the button, but the button will not function when pressed. Engines with a Touch Screen must have it configured and enabled for a button to function.

Selector

PC/AT only. This can be configured to have a function performed on press or release, and is based upon the value of their selector index expression. After choosing Selector, hold the left mouse button and drag the cursor until a rectangle appears where you would like the Selector Touch Button to appear. After the button is drawn, the Selector Touch Button form appears, if enabled. This touch button can also be executed during runtime using configured function or pseudo keys. Up to 64 press and release functions can be configured for a single selector touch button.

Fill in the form with the information in Table 7-15.

Table 7-15. Selector Touch Button Configuration Form

Object Name	Enter a unique object name (eight characters maximum).
Selector Index Expression	Enter a mathematical expression consisting of an address, equations, etc. This value controls which indexed function is performed on press/release.
Post Select Address	Define the destination for the Post Select Value. This address is written to after the Selector Index Expression is evaluated, allowing the selector index to be modified after use. The address can be an internal or indirect register or a PLC address.
Post Select Value	Enter the value to be written to the Post Select Address after the Selector Index Expression is evaluated, allowing the Selector Index to be modified after use. The value can contain an expression, internal or indirect register, or PLC address.
Function	Accesses the Selector Touch Button function information, explained on the following pages.
States	Accesses the State Configuration Form, explained in Table 7-6.

Function This assigns the function that occurs when the button is pressed and released on the engine. The touch button performs one action when pressed and one when released. Select one of the functions below and enter the information as shown:

> **NOTE**
>
> If Go to Screen, Return to Previous Screen, Go to Idle Mode, Change Security Level, Load Selected Recipe, or Execute Selector Button are selected as the Function on Press, we recommend you do not configure a Function on Release.

NOTE
If the Function on Press modifies the value of the Selector Index Expression during runtime, the Function on Release at the new index value will be performed.

None - No additional information needed. Nothing occurs when the selector button is pressed/released on the engine.

Write Data to Address - Enter the Data Address and Data Value. The data value can contain an expression, internal or indirect register, PLC address, or constant. The data address can contain the PLC address or internal or indirect register to which you wish to write. Data is written to the address when the selector button is pressed/released on the engine.

Go to Screen - Enter the screen to go to in the Screen Name prompt area. The specified screen is executed when the selector button is pressed/released on the engine.

Return to Previous Screen - No more information is necessary. The previous screen is executed when the selector button is pressed/released on the engine. The engine keeps track of the last ten screens executed.

Load a Recipe - Enter the recipe name in the Recipe Name prompt area. This recipe loads when the selector button is pressed/released on the engine.

Print a Report - Enter the report name in the Report Name prompt area. The report is printed at the target system printer or file when the selector button is pressed/released on the engine.

Print the Current Screen - No more information is required. The screen is printed at the target system printer when the selector button is pressed/released on the engine.

Go to Idle Mode - No other information is needed. Everything in the engine, including PLC communication, stops. Only key presses and timeout

Go to Idle Mode - No other information is needed. Everything in the engine, including PLC communication, stops. Only key presses and timeout pseudo keys will function, and only if the function specified is Return To Active Mode. All files are closed to allow a safe shutdown procedure.

Return to Active Mode - No other information is needed. If the engine was in idle mode, all stopped activities begin running again.

Acknowledge Alarm - No other information is needed. If the engine is displaying an alarm, it is acknowledged.

Simulate Key Press - Specify the Key Press Values to be inserted into the engine's keyboard buffer when the selector button is pressed/released. To simulate <Home>, <Enter>, <Backspace>, <Null>, and <Left Arrow> keys, use <H, <C, <B, <N, and <<, respectively (lower case is allowed). The PC/AT each have a 29-key buffer. If more keys are inserted than there is room for, extra keys are lost.

Change Security Level - Enter a Security Level **,1-7** or **0** for none. Defining the security levels allows data entry, recipe entry, and string entry objects to be enabled via the password security level entered on the engine.

Load Selected Recipe - No information is needed. When the selector button is pressed/released on the engine, the recipe to be loaded can be chosen from a scroll list.

Exit SoftScreen - PC/AT only. No information needed. When the specified event occurs, the engine will exit SoftScreen and return to the operating system.

The following information describes the buttons that move you around the Selector Touch Button Configuration Form:

Okay Accepts information entered and returns you to the Selector Touch Button Configuration Form.

want to go (valid index numbers are 0 - 32767), then press <Enter>. The form opens the index with the number you entered. Up to 64 indexes can be configured.

Insert Copies the configuration information in the current index to the next index. If the next index is already configured, its information will be copied to the following index. For example, if you press Insert when you are in Selector Index 1, the information configured for this index is copied to Selector Index 2 and the information that was configured for Selector Index 2 is copied to Selector Index 3. If index #32767 is configured, this button may not be selected.

Delete Deletes all information in the current index.

Cancel Exits the form without saving any changes.

NOTE

Engines without a Touch Screen draw the selector button, but it does not function. Engines with a Touch Screen must be configured and enabled for the button to function.

Recipe Entry

PC/AT only. A Recipe Entry object allows a value in a recipe to be modified with a user-specified value when the application is executed on the engine. Selecting Recipe Entry and clicking the cursor on the screen causes the Recipe Entry Configuration form to appear, if enabled. Fill in the configuration form with the following information:

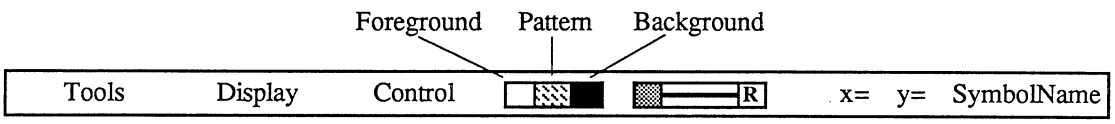
Table 7-16. Recipe Entry Configuration Form

Object Name	Enter an optional object name (eight characters maximum) or accept the default name.
Format	Select the number of digits to be entered before and after the decimal point.
Recipe Name	Enter the recipe containing the modify register which is to be written to.
Page Number	Enter the page number where the modify register is located in the recipe.
Line Number	Enter the line number, 1-10, that the modify register is on.
Modify Register #M	Enter which modify register in the recipe line should be modified. The range is A-J.
Minimum Value	Enter the lowest value allowed to be written to the location.
Maximum Value	Enter the highest value allowed to be written to the location.
Security Level	Select a security level, **1-7** or **0** for none. Select **Only** to restrict the valid password to the level(s) specified or **And Below** to allow all passwords from 1 through the level specified. Multiple levels can be selected by typing each desired level number separated by a comma and using the Only option. Default is 0.

The format displays as r's. The user at the engine can press <Home> to enter the particular value in place of the prompts.

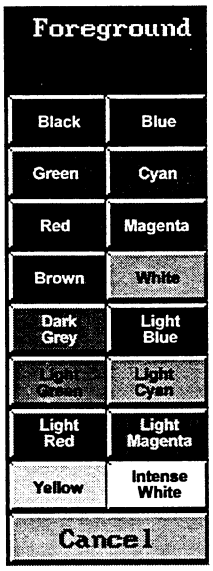
Refer to Appendix C for more information on recipe modify registers.

7.6 Symbol-Edit-FOREGROUND, BACKGROUND, PATTERN

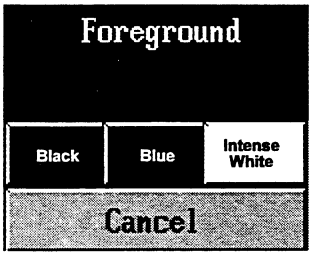


NOTE
Intense white displays as white and white displays as light grey.

Foreground Color
Foreground color is the color of objects as they appear on the screen and can be selected as black, blue, green, cyan, red, magenta, brown, white*, dark grey, light blue, light green, light cyan, light red, light magenta, yellow, or intense white*. The current foreground color is displayed in this box.



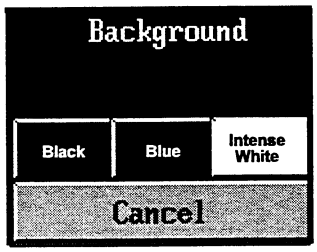
For 2000-Mono screens, the foreground color can be selected as black, blue, or intense white*. When the screens are downloaded to the monochrome engine, the colors appear based on the background, foreground, and base colors as shown in Appendix G.



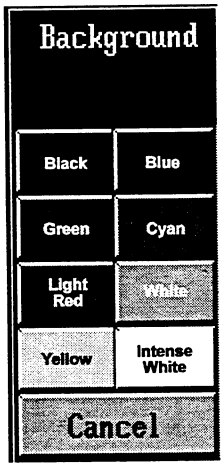
Background Color

Background color is the color behind patterns and text, and can be selected as black, blue, green, cyan, red, magenta, brown, white*, dark grey, light blue, light green, light cyan, light red, light magenta, yellow, or intense white*. The current background color is displayed in the box.

For 2000-Mono screens, the background color can be selected as black, blue, or intense white*. When the screens are downloaded to the monochrome engine, the colors appear based on the foreground, background, and base colors as shown in Appendix G.

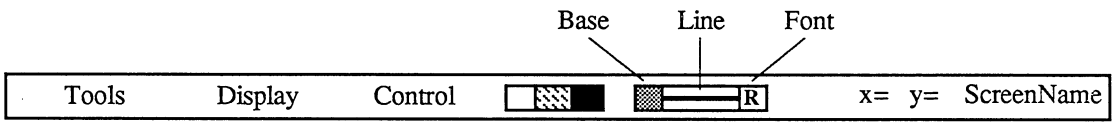


For 2000-Color screens, the background color can be selected as black, blue, green, cyan, white*, light red, yellow, or intense white*.



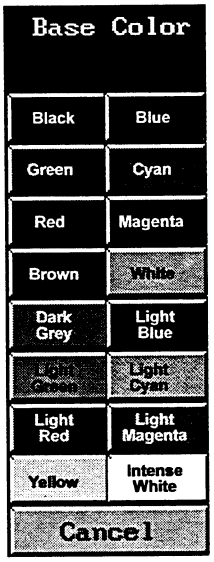
Pattern
The current pattern and colors are displayed in this box. There are 32 patterns available for the graphic workstation and PC/AT, and eight for the 2000 series, including solid, shaded, and crosshatched. Filled objects use the pattern.

7.7 **Symbol-Edit-BASE COLOR, LINE, FONT**

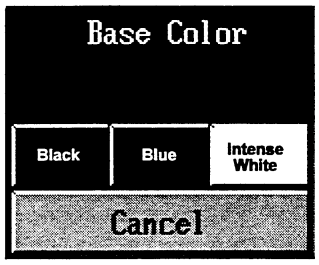


Base Color

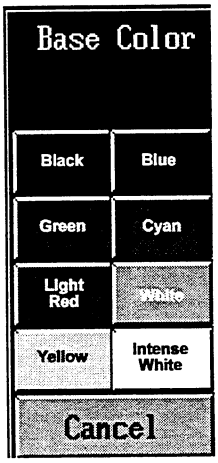
Base color is the color of the screen and can be selected as black, blue, green, cyan, red, magenta, brown, white*, dark grey, light blue, light green, light cyan, light red, light magenta, yellow, or intense white*. The current base color is displayed in the box.



For 2000-Mono screens, the base color can be selected as black, blue, or intense white*. When the screens are downloaded to the monochrome engine, the colors appear based on the foreground, background, and base colors selected. (Refer to Appendix G for more information.)



For 2000-Color screens, the base color can be selected as black, blue, green, cyan, white*, light red, yellow, or intense white*.



Line
Clicking on this box will display the line selection menu. The bottom three boxes select the line thickness, while the top three boxes select the line dash. Lines can be 1, 3, or 5 pixels wide. Line patterns can be selected as solid, large dash, or small dash. The current line thickness and dash is displayed in the line box.

For the 2000 series, solid thin (1 pixel) and solid thick (5 pixel) lines are supported.

Font
The text font can be small, regular, double, and quad. The initial letter of the currently selected font (S, R, D, or Q) is displayed in this box. For the 2000 series, small font size is *not* supported and not selectable.

8.1 INTRODUCTION

The utility disk contains several utility programs. All utilities are text-based and executable from most PCs, clones, or portables. Section 8.2 briefly explains how to get around the utilities. Detailed information for each utility is explained throughout this chapter.

8.2 MOVING AROUND THE UTILITIES

In all of the utilities you will use the arrow keys to move between menu choices. The current choice appears highlighted on the screen. To activate the highlighted choice, press <Enter>. Each choice on the Start Menu Bar (the first menu to appear on the screen) accesses other choices. Form boxes requesting information appear when a menu option is selected.

In the form boxes, you can choose from information already displayed or enter new information. If more than 20 entries are listed on a form, <Page Up> and <Page Down> move between pages. If a field is editable, a flashing cursor appears. Use the standard editing keys—backspace, delete, insert, end, home, right/left arrow keys, etc.—to make changes to information you have entered. Press <Esc> to stop editing, or select Okay to accept the information as it is. Select Cancel to exit that menu choice.

> **NOTE**
> If you use <Up Arrow>, <Down Arrow>, or <Enter> while typing in text, the information entered is used without giving you a chance to complete editing. An error message appears if information is incorrect.

8.3 DXFSOFT

DXFSoft is used to translate the AutoCAD Drawing Interchange file format, DXF, into the SoftScreen screen format. All screens are in PC/AT-VGA mode with 640 x 480 dimensions. All objects have a black background and a white foreground. Any object with a line has a line thickness of one pixel. Be sure to use a small font on text objects.

8.3.1 Entity Types

The following is a list of entity types offered by AutoCAD and the resulting translation by DXFSoft:

Table 8-1. DXFSoft Translations

AutoCAD Entity Types	DXFSoft Translation
Lines	Lines
Arcs	Unfilled pies
Circles	Unfilled circles
Points	One point long lines
Text	Long single text objects
Traces	Filled polygons
Solids	Filled polygons
Shapes	Not supported by this utility
Blocks	Separated into individual objects
Attributes	Not supported by this utility
Dimensions	Not supported by this utility
Polylines	Polylines
3D Lines	Lines; Z elevations are lost
3D Faces	Unfilled polygons; Z elevations are lost

8.3.2 Accessing DXFSoft

DXF screens are scaled using the drawing extents upper right corner, $EXTMAX, and the drawing extents lower left corner $EXTMIN. It is recommended that these values be set to the smallest values that will contain the entire drawing.

To access DXFSoft in DOS, enter the directory into which you have loaded the utility files or include the directory in the DOS PATH. All the DXF files should be in the current directory. Type DXFSOFT and press <Enter>.

The DXFSoft initial screen prompts for the DXF file to be translated. If more than 20 files exist, use <Page Up> and <Page Down> to move between pages. Use the arrow keys to highlight your choice, and then press <Enter> to make a selection.

After selecting Okay, a prompt for the destination application name appears. If the application listed, use the arrow keys to highlight the choice, and press <Enter> to make your selection. If you want to change the name, use the arrow keys to position the cursor after the prompt, enter the desired name, and press <Enter>. Select Okay to continue or Quit to exit the utility.

Next, a prompt for the destination screen appears. You can select an existing screen to overwrite or enter a new screen name. If an existing screen is selected, after the screen is converted a prompt appears to verify the overwrite operation. Select Okay to continue.

Next, a form to verify your selection of DXF file, application name, and screen name appears. You can change your choices, exit the utility, or select Okay to convert the DXF file to the SoftScreen format. After the screen is converted, a prompt appears asking what to do next. You can choose to convert another screen or exit the utility.

8.4 EGA2VGA and VGA2EGA

EGA2VGA is a utility used to convert any 8320 or PC/AT-EGA screen to an 8320 or PC/AT-VGA screen. VGA2EGA is used to convert any 8320 or PC/AT-VGA screen to an 8320 or PC/AT-EGA screen.

8.4.1 Accessing EGA2VGA and VGA2EGA

To access EGA2VGA and VGA2EGA utilities in DOS, enter the directory into which you have loaded the utility files or include the directory in the DOS PATH. Screens which are to be converted should be in the current directory. Type EGA2VGA or VGA2EGA and press <Enter>.

The initial screen prompts for the source application in which the screen to be converted is located. If more than 20 applications exist, use <Page Up> and <Page Down> to move between pages. Use the arrow keys to highlight your choice and press <Enter> to select it.

After selecting Okay, a prompt for the source screen name appears. Use the arrow keys to highlight your choice, and press <Enter> to make your selection. The choice *.* allows you to select all screens to be converted. Select Okay to continue or Quit to exit the utility.

Next, a prompt for the destination application name appears. If the application is listed, use the arrow keys to highlight the choice and press <Enter> to make your selection. If you want to change the name, use the arrow keys to position the cursor after the prompt, type in the desired name, and press <Enter>. Select Okay to continue or Quit to exit the utility.

Next, a form to verify your selection of source application name, source screen name, and destination application name appears. The following is a list of options this utility provides:

- Change your choices
- Exit the utility
- Select Okay to convert the selected screens from EGA to VGA or VGA to EGA

The destination screen name is the same as the source screen name. If the screen already exists in the destination application, after the screen is converted a prompt appears to verify the overwrite operation. If the screen is not EGA or VGA, it is not modified. Instead, it is saved to the destination application.

After the screen is converted, a prompt appears asking the next step. You can convert another screen or exit the utility.

8.5 SOFTMERG

SoftMerg is a utility used to copy any SoftScreen application or an individual configuration, recipe, report, screen, or message to a new or existing application. When copying a screen, alarm, function key, and pseudo key definitions are also copied.

8.5.1 Accessing SoftMerg

To access this utility in DOS, enter the directory in which you have loaded the utility files or include the directory in the DOS PATH. Applications to be merged should be in the current directory. Type SOFTMERG and press <Enter>.

The SoftMerg initial screen appears, with the menu choices as shown below:

Quit	Application	Configuration	Recipe	Report	Screen	Message

Any selection, except for Quit, prompts for the source application name and the destination application name. If the application is listed, use the arrow keys to highlight your choice, and press <Enter> to select it. If more than 20 applications exist, use <Page Up> and <Page Down> to move between pages. If you want to change the name, use the arrow keys to position the cursor after the prompt, enter the desired name, and press <Enter>. Select Okay to continue or Quit to exit the utility.

After selecting Okay, a prompt for the source screen/recipe/report name appears. Use the arrow keys to highlight your choice, and press <Enter> to select it. The choice *.* allows you to select all screens/recipes/reports to be merged. Select Okay to continue or Quit to exit the utility.

Next, a form to verify your selection of source application name, source screen/recipe/report name, and destination application name appears. The following is a list of options this utility provides:

- Change your choices
- Exit the utility
- Select Okay to merge the selected part of the application into the destination application

The destination screen/recipe/report name is the same as the source screen/recipe/report name. If the screen/recipe/report exists in the destination application, a prompt appears to verify the overwrite operation.

After the selected application information is merged, a prompt appears asking what to do next. You can choose to copy more application information or exit the utility.

8.5.2 **Quit**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Quit exits SoftMerg.

8.5.3 **Application**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Application merges a specified application into the destination application. If the destination configuration or message file exists, it is overwritten. If the destination recipe/report/screen exists, a prompt appears to verify the overwrite operation.

8.5.4 **Configuration**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Configuration copies a specified configuration to the destination application. If the destination configuration exists, it is overwritten.

8.5.5 **Recipe**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Recipe merges a specified recipe into a destination application. You are prompted for the recipe name. If the destination recipe exists, a prompt appears to verify the overwrite operation.

8.5.6 **Report**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Report merges a specified report into a destination application. You are prompted for the report name. Enter the station number, select a report name from the screen, and select Okay to send the report to the engine. If the destination report exists, a prompt appears to verify the overwrite operation.

8.5.7 **Screen**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Screen merges a specified screen into a destination application. You are prompted for the screen name. If the destination screen exists, a prompt appears to verify the overwrite operation.

8.5.8 **Message**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Message copies an application's message file to the destination application. If the destination message file exists, it is overwritten.

8.6 SOFTSEND

SoftSend is used to send an entire application, or any piece of an application, to a particular engine or to all engines.

> **NOTE**
> The application files to be sent must be in the current directory as the SoftSend utility. Copy <application>.* to guarantee all application file pieces are transferred.

To access SoftSend in DOS, enter the directory into which you have loaded the utility files or include the directory in the DOS path, type **SOFTSEND**, and press <Enter>. The SoftSend initial screen appears, with the menu bar as shown below:

Quit	Application	Configuration	Recipe	Report	Screen	Message

Each of the selections on the menu bar accesses pull-down menus. The features accessed by each of these choices are detailed below. Selections are described in the order they appear on the screen, from left to right and top to bottom.

8.6.1 Quit

Quit	Application	Configuration	Recipe	Report	Screen	Message

Quit exits SoftSend.

8.6.2 **Application**

Quit	Application	Configuration	Recipe	Report	Screen	Message
	Load					
	Send					

Application brings up two menu choices, Load and Send.

Load
Prompts you for the name of the application to load. Before you can send parts of an application (such as a screen or recipe), it should be loaded. Use the arrow keys to highlight your choice, and press <Enter> to select it.

Send
Prompts you for the name of the application you want to send to the engine. Use the arrow keys to highlight the choice, and press <Enter> to select it.

If you want to send only part of an application and the application has not been loaded, you must select the application name. For example, if you want to send the recipe created in the tutorial in Chapter 4, M-Recipe, you would select M-TEMP, which is the application in which M-Recipe is found.

Once you have selected the application name, you are prompted for the receiving station number. (The engine station number is assigned on the engine's Setup Menu.) Enter the station number and select Okay to send the application. Select Cancel or press <Esc> to exit this menu choice.

8.6.3 **Configuration**

Quit	Application	Configuration	Recipe	Report	Screen	Message
		Edit				
		Send				

Configuration brings up two menu choices, Edit and Send.

Edit
Edits which port you are using to send the data. Use <Enter> to toggle between the choices—COM1 or COM2—and then select Okay.

Send
Sends a specified configuration to the engine. You are prompted for the application name if it has not already been loaded. Select an application name from the list on the screen. Next, select the station number and select Okay to send the configuration.

8.6.4 **Recipe**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Recipe sends a specified recipe to the engine. You are prompted for the application name (if it has not already been loaded) and the recipe name. Enter the station number, select the recipe name, and select Okay to send the recipe to the engine.

8.6.5 **Report**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Report sends a specified report to the engine. You are prompted for the application name (if it has not already been loaded) and the report name. Enter the station number, select a report name from the screen, and select Okay to send the report to the engine.

8.6.6 **Screen**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Screen sends a specified screen to the engine. You are prompted for the application name (if it has not already been loaded) and the screen name. Enter the station number, select a screen name, and select Okay to send the screen to the engine.

8.6.7 **Message**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Message sends an application's message file to the engine. You are prompted for the application name (if it has not already been loaded). Enter the station number and select Okay to send the message file to the engine.

8.7 SOFTREC

SoftRec receives an entire application, or any piece of an application, from a particular engine on the development system. SoftRec can be used to create development system applications using pieces from different engines.

The SoftScreen engine does not store application names. Therefore, to receive an application, or any part of one, from an engine, you must specify an application name. With a name, the information can be saved on disk for later access by the development system.

If you request an entire application, it is stored under the name you specify. If you request pieces of an application, the pieces are added to the application you specify.

> **CAUTION**
> If you receive an entire application, any existing application in the directory with the same name is overwritten. If you do not want to overwrite a current application, rename it in the Application Name: prompt.

To access SoftRec in DOS, enter the directory into which you have loaded the utility files or include the directory in the DOS PATH, type **SoftRec**, and press <Enter>. The SoftRec initial screen appears, with the menu bar as shown below:

Quit	Application	Configuration	Recipe	Report	Screen	Message

Each of the selections on the menu bar accesses pull-down menus. The features accessed by each of these choices are detailed below. Selections are described in the order they appear on the screen, from left to right and top to bottom.

8.7.1 **Quit**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Quit exits SoftRec.

8.7.2 **Application**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Application prompts you for the name of the application you want to receive from an engine. If the application is listed on the form that appears, use the arrow keys to highlight the choice, and press <Enter> to select it. If you want to change the name, use the arrow keys to position the cursor after the Application Name prompt and enter the desired name.

If you want to receive part of an application, you must still enter an application name. For example, if you want to receive the recipe created in the tutorial in Chapter 4, M-Recipe, you would enter M-TEMP, which is the application in which M-Recipe is found. If M-TEMP has been previously entered, it appears as the application name and you only need to select Okay.

Once you have entered the application name, you are prompted for the station number of the engine from which you are requesting data. (The engine station number is assigned on the engine's Setup Menu.) Enter the station number and select Okay to receive the application. Press Cancel or <Esc> to exit from this menu choice.

8.7.3 **Configuration**

Quit	Application	Configuration	Recipe	Report	Screen	Message
		Edit				
		Receive				

Configuration brings up two menu choices, Edit and Receive.

Edit
Edits which port you are using to receive the data. Use <Enter> to toggle between the choices—COM1 and COM 2—and then select Okay.

Receive
Receives a specified configuration from the engine. You are prompted for the application name. Select an application name from the list on the screen or enter a new name. Enter the station number on the next form and select Okay.

8.7.4 **Recipe**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Recipes receives a specified recipe from the engine. You are prompted for the application and recipe names. Select an application name from the list on the screen or enter a new name. Next, enter the station number, select a recipe name, and select Okay.

8.7.5 **Report**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Report receives a specified report from the engine. You are prompted for the application and report names. Select an application name from the list on the screen or enter a new one. Next, enter the station number, select the report name, and select Okay.

8.7.6 **Screen**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Screen receives a specified screen from the engine. You are prompted for the application and screen names. Select an application name from the list on the screen or enter a new one. Next, enter the station number, select the screen name, and select Okay.

8.7.7 **Message**

Quit	Application	Configuration	Recipe	Report	Screen	Message

Message receives an application's message file from the engine. You are prompted for the application name. Select an application name from the list on the screen or enter a new one. Next, enter the station number and select Okay.

8.8 TO8320E and TO8320V

TO8320E is a utility used to convert any SoftScreen screen to an 8320-EGA screen, and TO8320V is a utility used to convert any SoftScreen screen to an 8320-VGA screen.

8.8.1 Accessing TO8320E and TO8320V

To access these utilities in DOS, enter the directory into which you have loaded the utility files or include the directory in the DOS PATH. Screens to be converted should be in the current directory. Type TO8320E or TO8320V and press <Enter>.

The initial screen prompts you for the source application in which the screen to be converted is located. If more than 20 applications exist, use <Page Up> and <Page Down> to move between pages. Use the arrow keys to highlight your choice, and press <Enter> to make your selection.

After selecting Okay, a prompt for the source screen name appears. Use the arrow keys to highlight your choice, and press <Enter> to select it. The choice *.* allows you to select all screens to be converted. Select Okay to continue or Quit to exit the utility.

Next, a prompt for the destination application name appears. If the application you want is listed, use the arrow keys to highlight your choice, and press <Enter> to select it. If you want to change the name, use the arrow keys to position the cursor after the prompt, enter the desired name, and press <Enter>. Select Okay to continue or Quit to exit the utility.

Next, a form to verify your selection of source application name, source screen name, and destination application name appears. The following is a list of options this utility provides:

- Change your choices
- Exit the utility
- Select Okay to convert the selected screens to 8320-EGA or 8320-VGA

The destination screen name is the same as the source screen name. If the screen already exists in the destination application, after the screen is converted a prompt appears to verify the overwrite operation. If the screen is already 8320-EGA or 8320 -VGA, the screen is not modified. Instead, it is saved to the destination application. For 2000 screens, graphic text objects appear as G characters on the new 8320 screen, but do not appear if downloaded to an engine. For PC/AT screens, log trends appear on the new 8320 screen, but do not appear if downloaded to an engine.

After the screen is converted, a prompt appears requesting the next step. You can choose to convert another screen or exit the utility.

8.9 TOPCATE and TOPCATV

TOPCATE is a utility used to convert any SoftScreen screen to a PC/AT-EGA screen. TOPCATV is a utility used to convert any SoftScreen screen to a PC/AT-VGA screen.

8.9.1 Accessing TOPCATE and TOPCATV

To access these utilities in DOS, enter the directory into which you have loaded the utility files or include the directory in the DOS PATH. Screens to be converted should be in the current directory. Type TOPCATE or TOPCATV and press <Enter>.

The initial screen prompts for the source application in which the screen to be converted is located. If more than 20 applications exist, use <Page Up> and <Page Down> to move between pages. Use the arrow keys to highlight your choice, and press <Enter> to make your selection.

After selecting Okay, a prompt for the source screen name appears. Use the arrow keys to highlight your choice, and press <Enter> to select it. The choice *.* allows you to select all screens to be converted. Select Okay to continue or Quit to exit the utility.

Next, a prompt for the destination application name appears. If the application you want is listed, use the arrow keys to highlight your choice, and press <Enter> to select it. If you want to change the name, use the arrow keys to position the cursor after the prompt, enter the desired name, and press <Enter>. Select Okay to continue or Quit to exit the utility.

Next, a form to verify your selection of source application name, source screen name, and destination application name appears. The following is a list of options this utility provides:

- Change your choices
- Exit the utility
- Select Okay to convert the selected screens to PC/AT-EGA or PC/AT-VGA

The destination screen name is the same as the source screen name. If the screen already exists in the destination application, after the screen is converted a prompt appears to verify the overwrite operation. If the screen is already PC/AT-EGA or PC/AT-VGA, the screen is not modified. Instead, it is saved to the destination application. For 2000 screens, graphic text objects appear as G characters on the new PC/AT screen, but do not appear if downloaded to an engine.

After the screen is converted, a prompt appears asking what to do next. You can choose to convert another screen or exit the utility.

A.1 INTRODUCTION

This section details some common SoftScreen questions and answers. We hope they will help you better use our product.

The questions are broken into the following categories:

Table A-1. SoftScreen Question Categories

Section	Title	Description
A.2	File Creation	Questions that might occur when using the SoftScreen Development System to create applications.
A.3	Downloading-General	Questions that might occur when downloading an application (or part of an application) to a SoftScreen engine.
A.4	Downloading-Application	Questions specific to the application's performance as it is downloaded to the engine.
A.5	Miscellaneous	Everything else.

To help you locate information in the following sections, a key word or phrase for the entire question appears in **bold** in the left margin.

A.2 FILE CREATION

2000 Series Menus

Q: Why do my menus shrink when I select a 2000 series workstation as the Target Engine or Symbol Target?

A: The 8320 engine uses pixel x,y coordinates, whereas the 2000 series engines support character-based x,y coordinates. To support more text lines for the 2000 series, the menus were reduced in size.

Black Screen

Q: Why does my screen turn black?

A: When creating a new screen, the current base color is used to fill the screen work area. The initial base and background colors are black. If you change the foreground color to black, new objects will not appear on the screen. If the foreground color is changed to black because a state becomes true, the objects will go black on the engine.

Changing Screens

Q: How do I change screens on the development system?

A: Select Save from the Screen Menu to save the current screen. Next, select Edit from the Screen menu to define another screen. Pick a current screen or enter a new one and click okay. The new screen appears.

Cut/Paste

Q: How do I use Cut and Paste?

A: Cut and Paste should be used for copying from one screen to another, not to cut from and paste onto the same screen. Cut actually *copies* the selected object or object group into a file for later pasting. The object selected to be cut does not disappear from the screen. Rather, when you paste onto another screen, the object appears at its original screen position. If you paste onto the same screen you cut from, the object is placed on top of the original object (no visual change appears on the screen).

Decimal Format

Q: How do I display numbers without decimal places?

A: For data display and data entry objects, a format field allows you to set the amount of numbers before and after the decimal. If you do not want any trailing decimals, click the box to the right of the decimal point until the 000s disappear from the form. Click Okay. No decimal places will appear on the development screen or when the screen is downloaded to the engine.

Defining Symbols

Q: How do I change symbols?

A: To change a symbol, select Symbol-Edit. Enter the symbol library name and click Okay. Next, enter the symbol name and click Okay. The symbol displays on the screen. You can change it any way you like and then select Symbol-Save to save it. When saving, specify the same symbol name to save the changes and overwrite the previous symbol, or another name to save the changed copy as a different symbol.

Forms

Q: How do I enter information in the forms?

A: A **form** allows entering information in fields or choosing from several selections. Some fields in some forms (i.e., some of the PLC forms) are not user configurable. Unconfigurable fields appear grayed. If you place the cursor on a field, it highlights if it is changeable. To scroll through choices, place the cursor on the form so it is highlighted and click, press <Enter> or press the spacebar. To scroll through the choices in reverse order, press <Shift> + click, <Shift> + <Enter> or <Shift> + the spacebar. If you can type information into a field, the text cursor appears when you click on it or press <Enter>. Move the cursor and enter the desired information.

To edit information in a form, use <Insert>, <Delete>, and <Backspace> as with other text editors. In addition, F2 functions as a copy key and F3 as a paste key. To use function keys, click on the line to be copied and press F2. Next, click on the destination field (this field can be in another form) and press F3. Using <Shift> + F2

copies the information into a second buffer and <Shift> + F3 pastes information from the second buffer. Press F1 for help to appear.

Press <Enter> after you have entered the information and click Okay to exit and save the changes made. To exit without making the selection or saving the information, click Cancel, the right mouse button, or press <Esc> to exit the form or scroll list.

Latched Buttons

Q: How can I make latched and interlocked buttons?

A: Power-off latched buttons are not supported by SoftScreen.

Loading Screens

Q: Why do I get a wrong screen format message when I try to load screens?

A: VGA screens are not supported on EGA workstations. Try changing Application-Load-Configuration-Edit-Target-Target Engine to 8320-EGA or PC/AT-EGA. Use utilities to change format.

Object Selection

Q: Why do objects other than those I select sometimes become selected?

A: In rare cases, objects which are only diagonal lines may become selected when another object is clicked. To correct this, select the object as a group. To prevent this, draw all lines, polygons, and polylines before other objects or push all lines, polygons, and polylines to the back of the screen.

Q: Why can't I select an object?

A: Before you can select an object, you must select a function (e.g., Copy) to perform. After the function is selected, click to select an object. Several objects can be selected by clicking the cursor outside all objects of the group, dragging the mouse around the objects, and releasing the button when all desired objects are contained in the outline.

Scaling Text

Q: I'm having trouble scaling text and text in symbols. What should I do?

A: Text cannot be scaled using the Scale menu choice. To change text size, click the Font Menu (to the right of the top menu bar). The Object Fonts Form appears, with small (S), regular (R), double (D), or quad (Q) size text as choices. Click on the desired font size. Next, select Tools-Change-Font and click on the desired text. It will change to the size you selected in the Font Menu. A symbol must be unlinked before the font size can be changed.

Screen Updates

Q: Why do menus appear pulled down on the screen after I update them? Why won't my screen update?

A: If you do not have at least 520 Kbytes of available RAM, the screen may not redraw after each menu selection. This can also happen if your system is running on a network. As long as the menu bar items highlight when the mouse is placed on them, the system is functioning properly. Moving or configuring an object will cause the screen to redraw.

Symbols

Q: How do I save a symbol to a library once it's in a screen?

A: It depends on whether you're in a symbol or screen area.

If you're in Symbol-Edit, delete everything on the screen that you don't want to be part of the symbol. Next, select Symbol-Save and supply a symbol name. It will be saved into the library you are currently in.

If you are in Application-Load-Screen-Edit, select Display-Cut and the select the objects to be part of the symbol. Next, go to Symbol-Edit and create the new symbol. Select Display-Paste to place the objects onto the symbol screen. Next, select Symbol-Save and supply a symbol name. It will be saved into the library you are currently in.

AlarmSum
AlarmVu
FileMan

Q: Why can't I have a screen named AlarmSum, AlarmVu, or FileMan?

A: AlarmSum and AlarmVu are the target engine's alarm summary screens. AlarmSum allows alarms to be deleted; AlarmVu does not. AlarmVu is not supported on 2000 engines. FileMan allows access to the PC/AT File Manager where files can be copied, deleted, etc. These names allow you to configure function keys, pseudo keys, or touch buttons that open the alarm summary and File Manager screens.

A.3 DOWNLOADING-GENERAL

Downloading Error

Q: Why won't my application download to the engine(s)?

A: Make sure the cable from the development system to the engine is connected to the proper ports. Make sure the send port in the System Configuration is set to the proper port. Check the station address. Check the integrity of your cable.

Downloading Other Engines

Q: Can I download a 2000 application to an 8320 or PC/AT engine and vice versa?

A: No. 2000 series applications use text locations for their coordinates whereas 8320 and PC/AT applications use pixel locations. So the 8320 and PC/AT will not execute any 2000 series screens and vice versa. If a 2000 screen name is the same as an existing 8320 or PC/AT screen, the 8320 or PC/AT screen will be overwritten and vice versa.

8320 engines, prior to SoftScreen Version 3.1, will not execute PC/AT screens. Newer 8320s will execute PC/AT screens, but log trends and other PC/AT-only objects will not be drawn. PC/AT engines will execute 8320 screens.

Screens can be converted to run on other engines. See Chapter 8, Utility Programs, for more information.

A.4 DOWNLOADING-APPLICATION

Broadcast Station

Q: Why does a broadcast Send take longer than a Send to a particular station?

A: When sending to an individual engine, it acknowledges each block. When broadcasting to all engines, no acknowledges are sent, so the development system must wait a safe amount of time to guarantee each block and file is received by the engines. When sending an entire application, the Send Wait Time in the system configuration can be reduced if sending to a specific 2000 or 8320 engine.

Changing Screens

Q: How do I change screens on the engine?

A: Configure pseudo keys, function keys, and touch buttons to change to the desired screen. See Chapter 5 for more information.

Data Display

Q: Wrong data being displayed on the screen. What should I try?

A: Check the configuration under Application-Load-Screen-Edit-Config. You may have addressed the wrong PLC port (via PLC Name) or address. The data format (SB, SD, etc.) may be different than what you want as well. Application-Load-Screen-List-Short or Application-Load-Screen-List-Long can display the object's expression to a printer or file for confirmation.

Function Keys

Q: Why won't my function keys work?

A: The function keys on the PC used to run the development system are not changeable. For the engine, function keys must be configured globally or on each screen to function. On the 2000 series without a keypad, a keyboard must be attached for the keys to work. On the 8320, either a keyboard must be plugged in or the keypad can be used. Run diagnostics on the keypad to check for any discrepancies.

Logo Screen

Q: Why does the logo screen appear when I change screens?

A: The screen you specified to go to does not exist, is not the correct startup screen, is misspelled, capitalized or lowercase letters incorrect, or is not compatible with your engine, so the title screen executes instead.

Missing Objects

Q: Objects are missing from my screen when I download. Why?

A: The 8320 and PC/AT allow 200 unique scan points per screen and for alarms. The 2000 series allows 100 scan points. If there are too many alarms or a screen has many different scan points, some objects may not be drawn because the initial value is 0. Use Alarm✓ to check the amount of alarm memory being used in your application or screens.

Objects

Q: Why do my objects get overwritten by other objects?

A: If an object's color or shape doesn't change, it is not redrawn. If an object drawn before this object changes, it will be drawn on top of the one that does not change.

Pseudo Keys

Q: Why don't my pseudo keys run constantly?

A: To update the screen display as often as possible, pseudo keys are only scanned once per second. Also, the read and write table for the PLC may be backed up in the engine, which causes pseudo keys to take longer to execute.

Recipes

Q: How can I get user-changeable recipes?

A: A recipe can have an internal register that is the value to be sent to a PLC address. If a data entry object is configured to write to the internal register, a function key or touch button can load the new recipe. With a PC/AT engine, the Recipe Modify Register can be used in conjunction with the Recipe Entry Screen Object.

Screen Updates

Q: How fast will my screen update?

A: This depends on the number of objects and types of objects on the screen. For example, for the 2000 series, a rough estimate is 120 objects/second (with no alarms). On the PC/AT, internal register #1000-#1003 will give scan rates for each port for the current screen.

Send Error

Q: When I do a Send, how long do I have to wait for an error?

A: If there is a cable problem, it may be as long as five seconds before an error is reported. If broadcasting, only cable problems will be reported.

Startup Screen

Q: Why can't I get my startup screen?

A: The startup screen is set in Application-Load-Configuration-Edit-Target. The screen must have been downloaded to the engine. The name of the startup screen must match exactly, including the case and any spaces before or after the name.

Touch Buttons

Q: Why don't my touch buttons work?

A: Touch buttons don't function on the development system. A Touch Screen must be present on the engine for touch buttons to function. They must also be configured. If a press function is Go to Screen, the release function will not be performed. For PCEngine Systems, a Touch Screen driver must be added for operation. Reference the PC/AT manual for details.

A.5 MISCELLANEOUS

Color on 2000 series

Q: Why can't I get high intensity background color on my monochrome 2000 unit?

A: If the background color is white, it is drawn in reverse video when downloaded to a monochrome 2000 engine. Reverse video is not an attribute that can be made high intensity.

Color Screen to Mono-chrome

Q: When downloading a color screen to a monochrome unit, what colors will be displayed?

A: Blue and light blue appear as regular intensity, black and dark grey appear black, and all other colors appear as high intensity.

Data Optimization

Q: Will SoftScreen optimize data communications to my PLC when reading and writing PLC locations?

A: Only reads are optimized. Up to 16 PLC locations may be read at once, depending on the proximity of the locations and the type of PLC. Write operations are performed per PLC communication.

Mono-chrome to 2050

Q: When downloading from a monochrome to the 2050, what colors will be displayed?

A: The colors will display as intense white, black, and blue.

Mouse Malfunction

Q: Why doesn't my mouse work?

A: Before running the development system, a mouse driver must be loaded or the internal Mouse Systems or MS Mouse driver must be invoked. The mouse may also be disabled if you try to send out the same port as used by the mouse.

Network

Q: Can SoftScreen Development run on a network?

A: Yes, if the network location of the development system is in the user's path and the network loads separate executables into the requesting machine. If the same application is accessed by more than one user, the final version is the one last saved by a user.

Release Upgrades

Q: How do I upgrade from a previous release?

A: Follow the installation instructions on your disk to upgrade the development system. Install new ROMs to upgrade your engine. All your applications will run on the new version. If any changes are made to your application, the development system informs you of the possible changes. Once an application has been updated or saved under the new version, it cannot be used by the old version.

DXFSoft

Q: After using DXFSoft, the arcs on my screen are converted to pies. The arcs which were drawn left to right are now pies growing from right to left. How can I fix this?

A: The DXF file gives no indication of the direction the arc was drawn. To have DXFSoft convert the arc so it is drawn left to right, edit your DXF file and swap the ARC entity's group 51 and 50 values. The 51 value (end angle) will be changed to what was the 50 value (start angle) and the 50 value will be changed to what was the 51 value.

Memory Usage

Q: My application has become larger than my memory. I want to delete some of my objects. How much memory does each object take up?

A: Add the application files together, (i.e., Size = APPL.CON + APPL.MSG + APPL.REP + APPL.REC + APPL.SCR) or press Shift + F1 after the application is loaded to determine the total application size. To determine the size of a screen, recipe, report, or configuration, press <Shift> + F1 while in a screen, recipe, report, or configuration.

The table below describes Xycom SoftScreen memory usage in bytes.

Table A-2. Xycom SoftScreen Memory Usage in Bytes

Application	Memory (in Bytes)	
EXP (Expression)		
Register	3+	Example:*
Address	6+	[40001]+#30*5
Operators	1+	would use 16 bytes
Constant	5+	
Symbol	2+	
Math Function SQT	1+EXP	
AVG,MED,MAX,MIN	1+EXP+EXP	
HMIO Monitor Functions	1	
States	(3+EXP) per State	
Text States	(84+EXP) per State	
Pens	(18+EXP) per pen	
Screen		
Touch Button	150+(States)	
Function Keys	4+ (104 * keys)	
Pseudo Keys	4+ (135 * keys)	
Data Entry	35	
Alarm	19+EXP+(45 * conditions)	
Passworded/Scaled Data Entry	37+EXP	
String Entry	32+EXP	
Selector Touch Button	51+(1+EXP)+(1+EXP)+(104*functions)+(States)	

Table continued on the following page.

Table A-2. Xycom SoftScreen Memory Usage in Bytes (*continued*)

Application	Memory (in Bytes)
Screen	18
All Display Objects	17+
Bar, Rectangle, Square, Oval, Circle, Data Display	9+ (22+EXP)+(States)
Arc	13+ (22+EXP)+(States)
Polygon, Polyline	1+ (4* each point)+(States)
Line	8+ (States)
Text < 11 Characters	19+ (States)
Text > 10 Characters	89+ (States)
Layered Text, List Text	8+ (Text States)
Graphics Text	10+ (States)
Symbol	9+EXP
Date, Time	8
Message	13
Real-time Trend	56+ (Pens)
Historical Trend	65+ (4 * Samples)+(Pens)+(4 * # of Pens)
Log Trend	142+EXP+[1+EXP]+[1+EXP]+[1+EXP]+ (4 * Samples)+(Pens)+ (4 * # of Pens)
String Display	15+EXP+(States)
Selector Text	15+(1+EXP)+((4+EXP+text)*lines)
Real-time XY Plot	127+EXP+EXP+EXP+[1+EXP]
Historical XY Plot	138+EXP+EXP+EXP+[1+EXP]+(8*Samples)
Log XY Plot	210+EXP+EXP+EXP+[1+EXP]+(8*Samples) +EXP+[1+EXP]+[1+EXP]
Real-time Event Trend	90+EXP+(Pens)
Historical Event Trend	90+EXP+(Pens)+(8*Samples)+(4*# of Pens)
Log Event Trend	162+EXP+(Pens)+(8*Samples)+(4*# of Pens)+ EXP+[1+EXP]+[1+EXP]
Report	14
Data Display	13+EXP
Form Feed	3
Date, Time	12
Text < 11 Characters	22
Text > 10 Characters	92
Config	15+EXP
String Display	15+EXP
Control Text	152
Layered Text	20+States
Message	26+EXP
Recipe	14
All Objects	14+EXP

* Expression Example:

4001 is an address	=	6 bytes
+ is an operator	=	1 byte
#30 is an internal register	=	3 bytes
* is an operator	=	1 byte
5 is a constant	=	5 bytes
Total		16 bytes

NOTE

Use the Tutorial in Chapter 4 to practice calculating the size of an application.

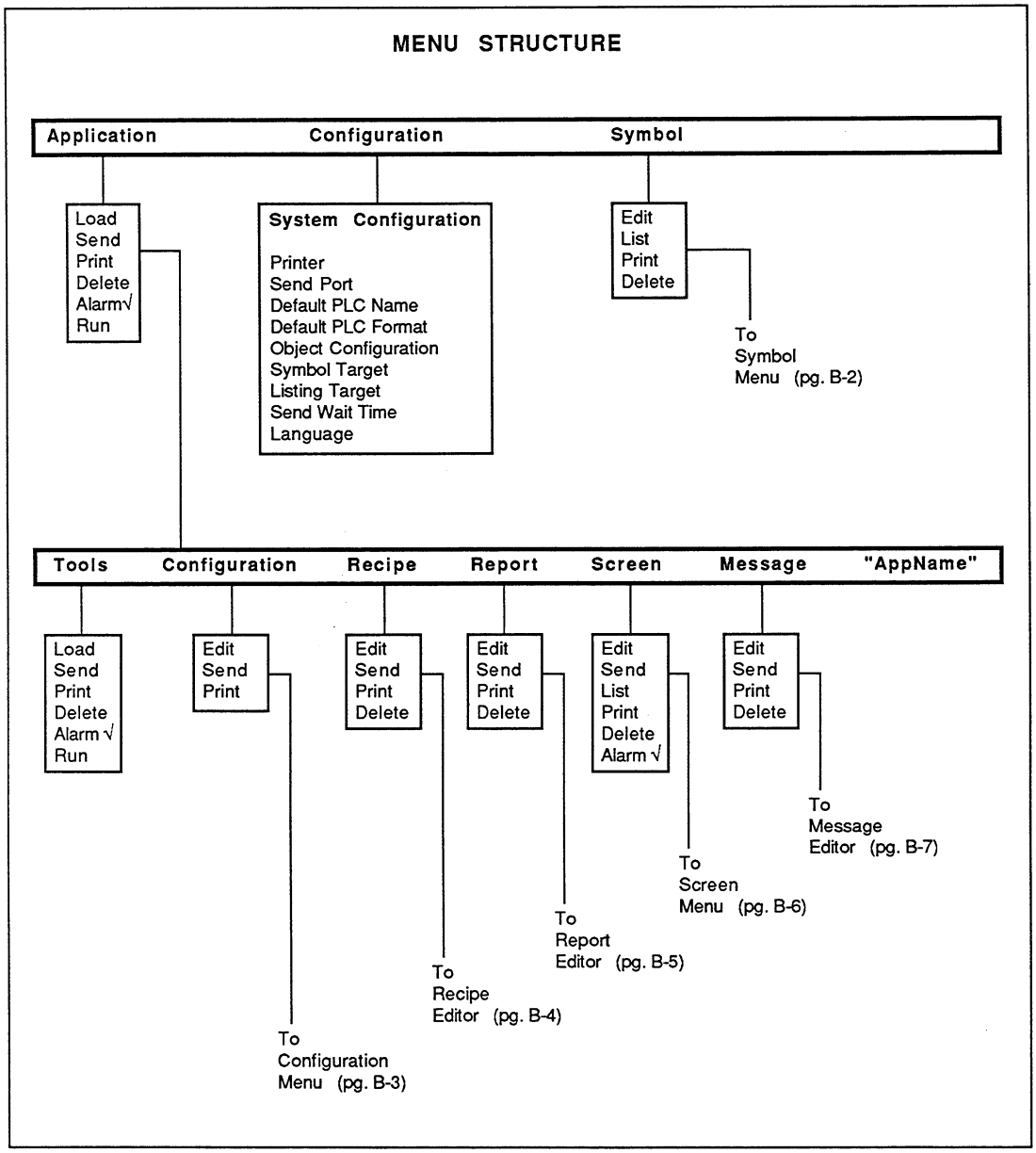


Figure B-1. Menu Structure

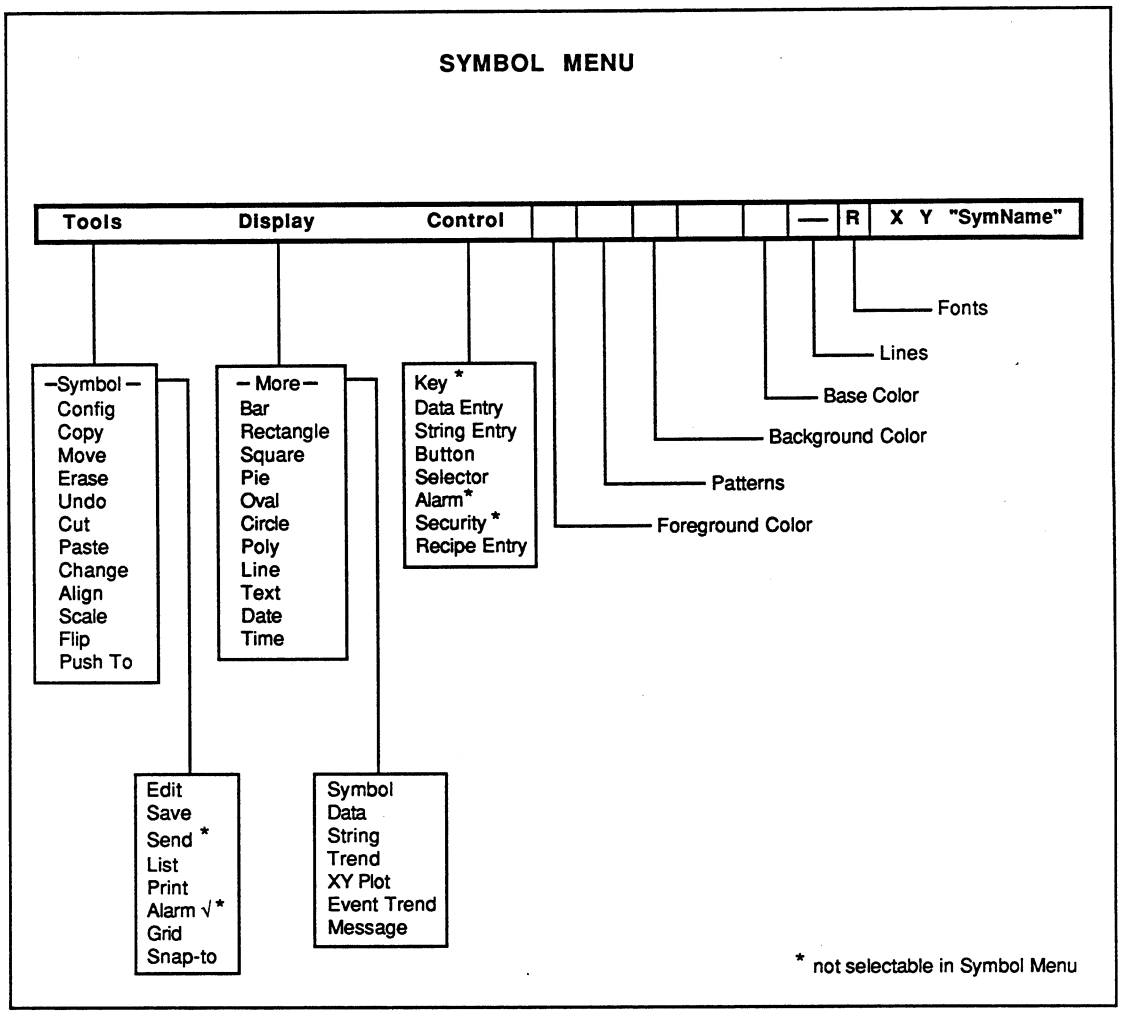


Figure B-2. Symbol Menu

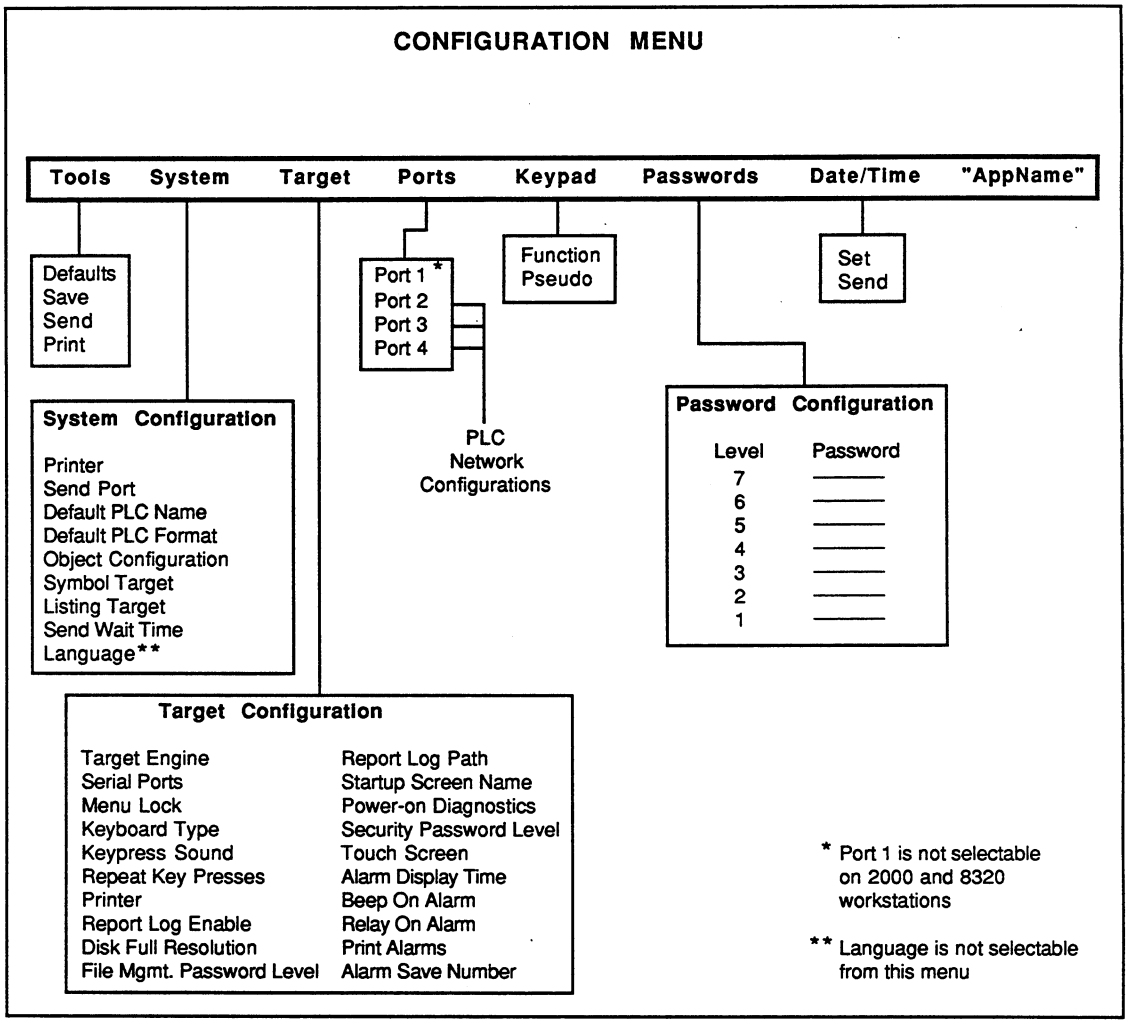


Figure B-3. Configuration Menu

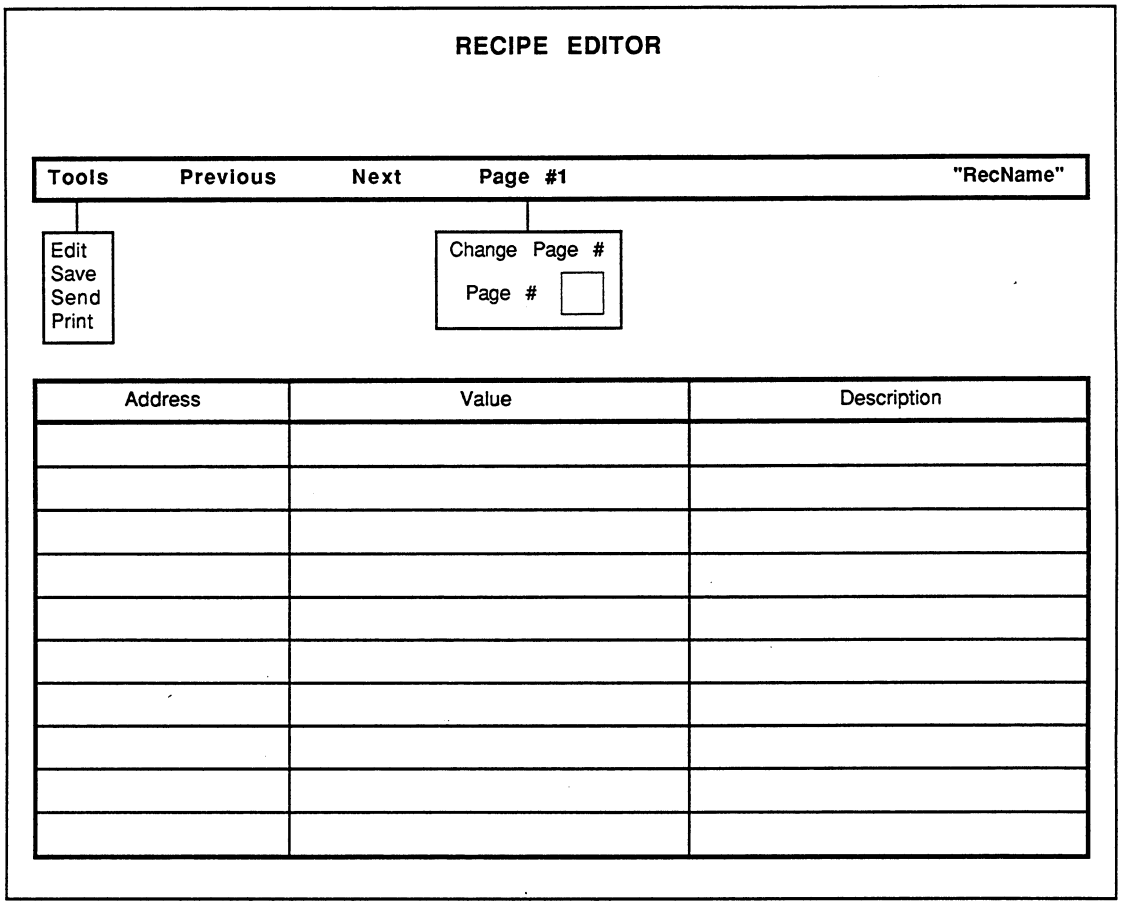


Figure B-4. Recipe Editor

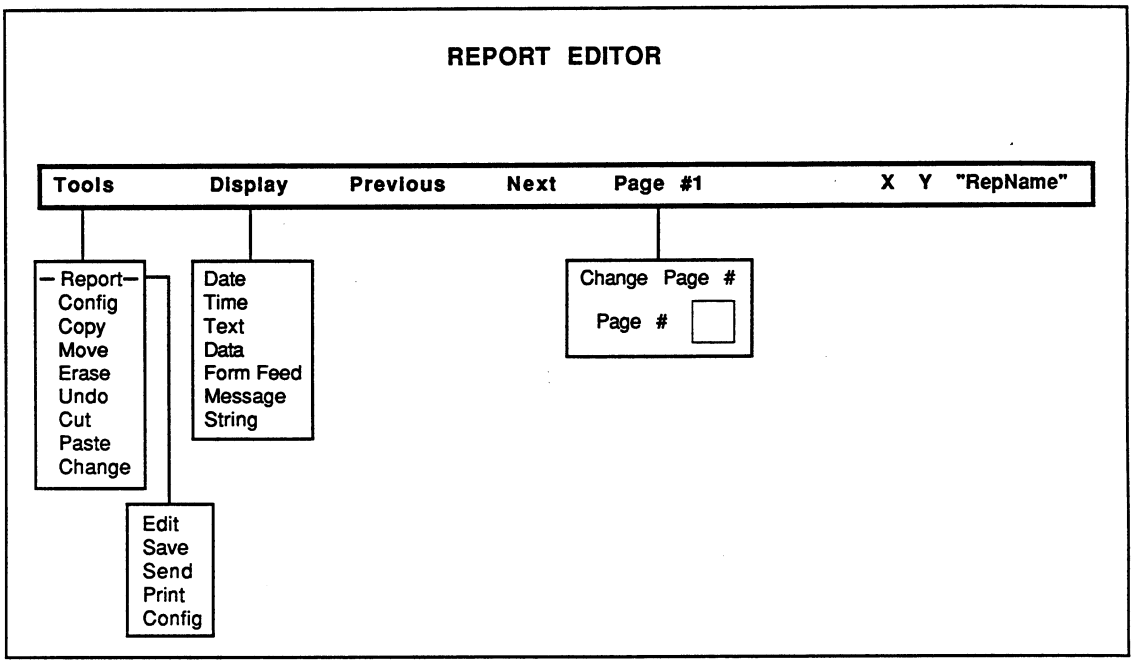


Figure B-5. Report Editor

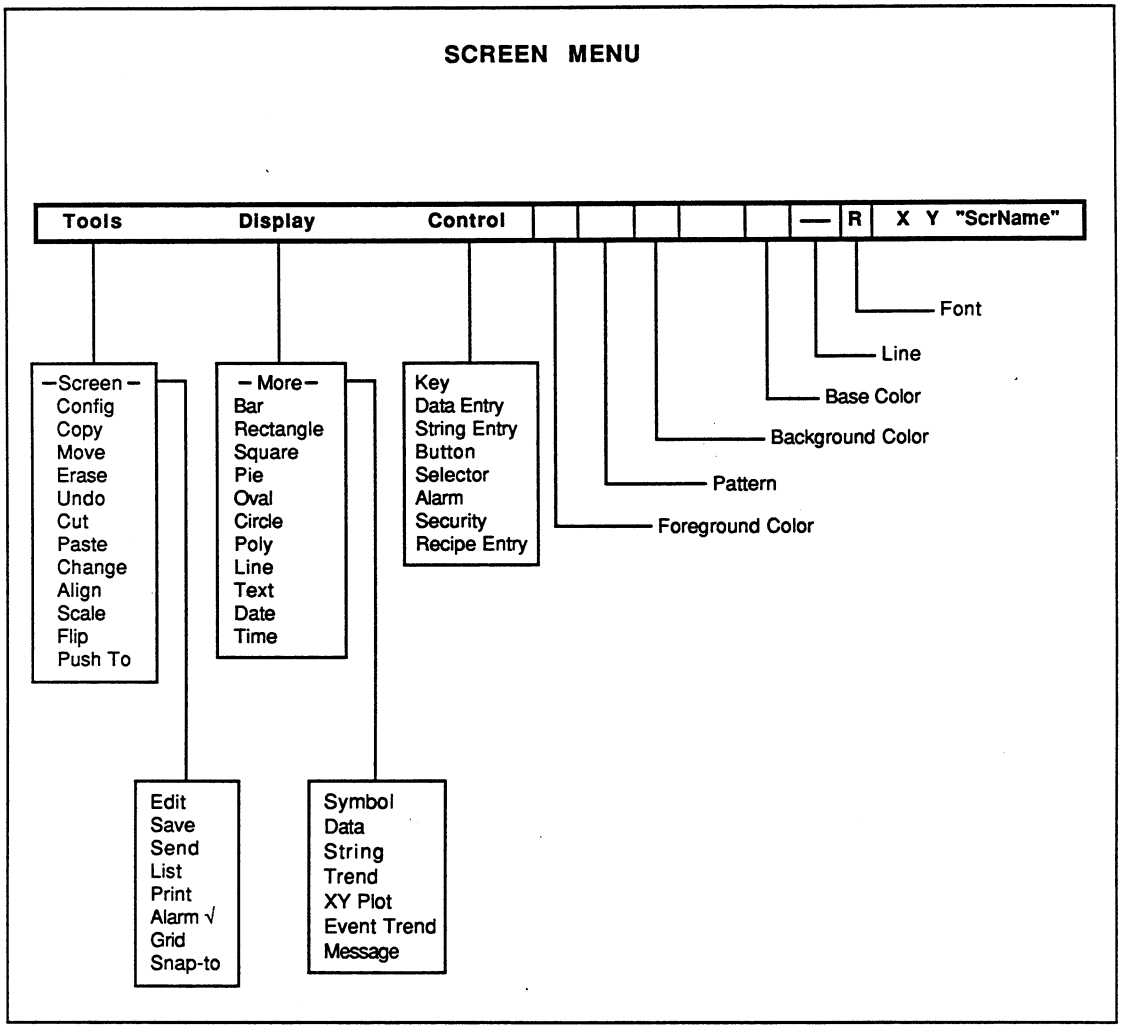


Figure B-6. Screen Menu

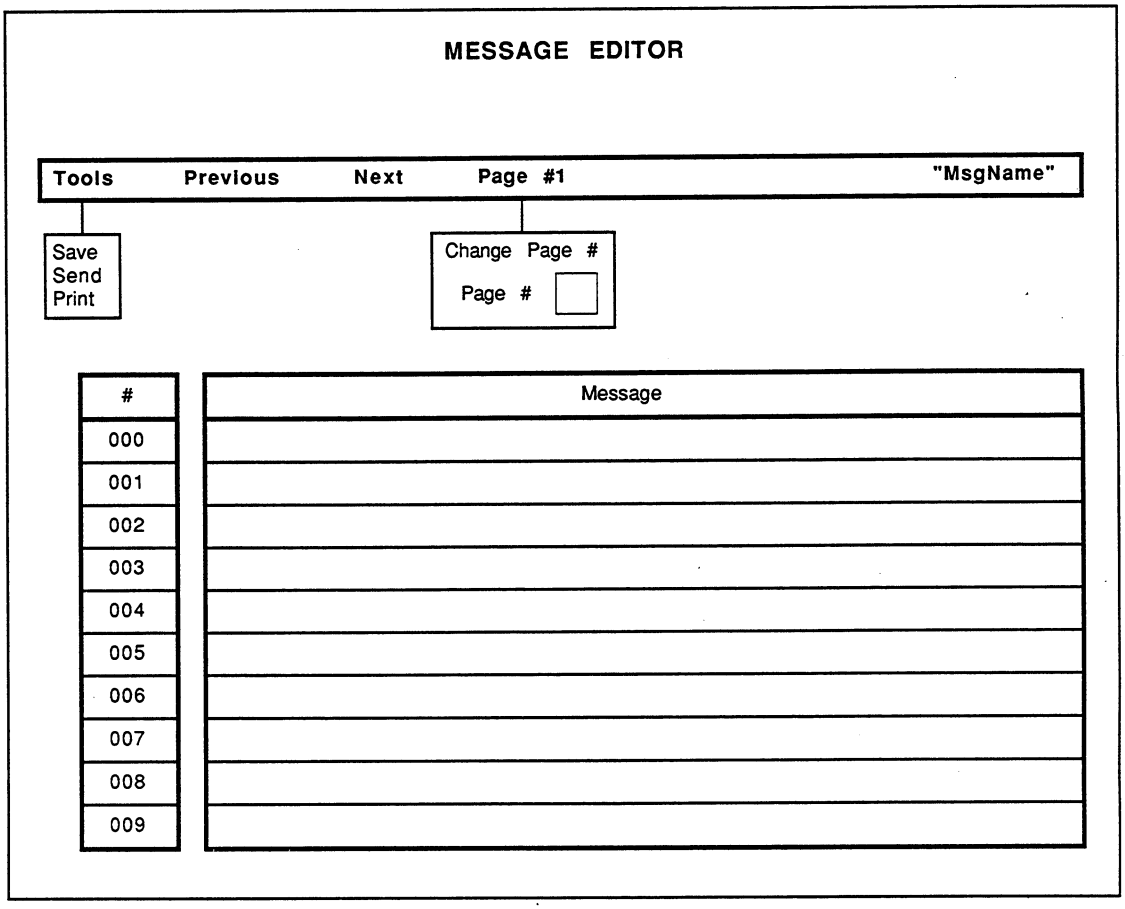


Figure B-7. Message Editor

C.1 INTRODUCTION

An expression consists of one or more operators and operands. The result of evaluating an expression is a signed fixed point value which can be viewed as a true or false state.

Expressions evaluated to true = 1. Expressions evaluated to false = 0. All non-zero expressions are true. The fixed point value is a 32-bit value in which the upper 16 bits are the integer and the lower 16 bits are the fraction.

Internal registers can be used in any value, conditional expression, or data address. Internal registers can have constant values or the value at a specified PLC location assigned to them. All PLC locations must be entered in brackets.

To access Help for expression, press F1 before or after entering an expression (if the text cursor is visible, you cannot access Help).

C.2 PLC VARIABLES

PLC variables are in the form: **[nnnnn:aaaaa bb,ff]**

where:

- **nnnnn** = **PLC name** - optional. This references the proper PLC network and port. The default PLC name from the Configuration Menu is used if this parameter is omitted. PLC names may contain any character except : and].
- **aaaaa** = **PLC address** - specific to the PLC network being used.
- **bb** = **Bit number** - optional.
- **ff** = **Format** (UB, SB, UD, SD, U3, FP) - optional. The default data format will be used if this parameter is omitted.

Table C-1. Format Descriptions

Format	Description
SB	Signed Binary -32768 to 32767.9998
UB	Unsigned Binary 0 to 32767.9998
SD	Signed binary coded Decimal -999 to 999
UD	Unsigned binary coded Decimal 0 to 9999
U3	Unsigned 3 digit binary coded digit 000 to 999
FP	IEEE floating point

C.3 INTERNAL REGISTERS

Internal registers are in the form: **#nnnn**

where:

nnnn = **internal register number** (1-100 for the 2000 series; 1-500 for the 8320; 1-2000 for the PC/AT)

The registers are in an internal 32-bit fixed point format. The upper 16 bits are the integer and the lower 16 bits are the fraction.

NOTE

Internal registers #1 - #7 are Read/Write for graphic workstations and PC/ATs. For the 2000, they are Read only.

Table C-2. SoftScreen Internal Register Assignments

Register	Description	Range
#1	Year	1980-2099
#2	Month	1-12
#3	Day	1-31
#4	Hour	0-23
#5	Minute	0-59
#6	Second	0-59
#7	Day of Week (0= Sunday, 1 = Monday, etc.)	0-6

Table continued on the following page

Table C-2. SoftScreen Internal Register Assignments (*continued*)

Register	**Description (Read Only)**	Range
#8	Port #2 error codes (8320/PC/AT) or primary port error codes (2000 series)	0-32767
#9	Port #3 error codes (8320/PC/AT)	0-32767
#10	Port #4 error codes (8320/PC/AT)	0-32767
#11	Port #1 error codes (8320/PC/AT)	0-32767
#12	Printer port error codes	0-4
#13	Current X pixel position (PC/AT)	0-639
#14	Current Y pixel position (PC/AT)	0-479
#15	Screen saver timer - set in minutes in engine menu, counts down to zero; when zero resets back to value, use a pseudo key to trigger on it when zero.	0-255
#16	Current security level; changed by change security level function	0-7
#17-#19	Reserved; not user configurable	N/A
#20-#100	General purpose for the 2000	N/A
#20-#500	500 general purpose for the 8320	N/A
#20-#999	999 general purpose for the PC/AT	N/A
#1000	Port #1 PC/AT time to complete all PLC reads and writes in the scan tables; displays in tenths of a second	0-32767
#1001	Port #2 PC/AT time to complete all PLC reads and writes in the scan tables; displays in tenths of a second	0-32767
#1002	Port #3 PC/AT time to complete all PLC reads and writes in the scan tables - displays in tenths of a second	0-32767
#1003	Port #4 PC/AT time to complete all PLC reads and writes in the scan tables; displays in tenths of a second	0-32767
#1004-#1029	Reserved for PC/AT; not user configurable	N/A
#1050-#2000	General purpose for the PC/AT	N/A

C.4 RECIPE MODIFY REGISTERS

Recipe Modify Registers can only be used for Recipe Value expressions.

Recipe Modify Registers are in the form of: **#M<default>**

where:

<default> = the constant decimal value which will be used if the engine does not modify it with a Recipe Entry object.

Recipe modify registers may be used alone or as part of an expression to represent runtime recipe variables. Each #M register in a recipe is given a <default> value that is used by the engine when the recipe is loaded. Defaults may only be decimal constants. Hexadecimal and octal values are not supported. If no <default> is specified, it is set to zero (e.g., #MA = #MA0). However, the value contained in a #M register can be changed while the engine is running using a Recipe Entry object (described in Section 5.5.1). Any change made to a #M register permanently replaces its current value.

Up to ten different recipe modify registers may be used in a value expression. The range of valid register labels is #MA - #MJ. If no letter is attached to a #M label, it is set to #MA (e.g., #M<default> = #MA<default>). Since the modify registers contained on a recipe line are unique to that line, the same ten labels may be used multiple times within a recipe. This means that the #MA on recipe line 5 is different from the #MA on recipe line 9. Examples of value expressions containing recipe modify registers are shown below:

Table C-3. Value Expressions Containing Recipe Modify Registers

Address	**Value**
[40030]	[40001]*#MA4 + #5/#MB15
@32	#MA400
#50	#MA2*#MB8*(#MC11+AVG ([40010]-[40020]))

C.5 INDIRECT REGISTERS

PC/AT only. Indirect registers are in the form: **@nnnn**

where:

nnnn = **internal register number**. nnnn is the indirect register number. The nnnn register points at another address.

For example, if register #20 contains a 50 and @20 is used in an expression, the value in register #50 will be used.

Indirect registers should not be used with reserved registers. Refer to Table C-2.

C.6 SYMBOL VARIABLES

Symbol variables are in the form: **$**

where:

$ = **symbol expression**

The $ in all objects of a symbol will be replaced by the expression entered in the Symbol Configuration Form.

C.7 CONSTANTS

The range is -32768 to 32767.9998. 0xdddd defines dddd as a hexidecimal constant. 0oddddd defines dddd as an octal constant

C.8 OPERATORS

Symbols allowed in expressions are shown below. The precedence indicates in which order the operations are performed.

Table C-4. Operator Symbol Definition and Precedence

Symbol	Operator	Result	Precedence
!	Logical negation	Logical negation of single operand that follows	1 Highest
*	Multiplication	Product of two operands	2
/	Division	Quotient of first operand divided by second	2
%	Modulus	Remainder of division of first operand by second	2
+	Addition	Sum of two operands	
-	Subtraction	Difference between first and second operands	3 3
<<	Left shift	Shifts first operand left the number of bits specified by second operand	4
>>	Right shift	Shifts first operand right the number of bits specified by second operand	4
==	Equality comparison	Non-zero if both operands are logically equivalent; zero if they aren't	5
!=	Inequality	Non-zero if both operands are not logically equivalent; zero if they are	5
<	Less than	Non-zero if the first operand is less than the second; zero if not	6
>	Greater than	Non-zero if the first operand is greater than the second; zero if not	6
<=	Less than or equal to	Non-zero if the first operand is less than or equal to the second; zero if not	6
>=	Greater than or equal to	Non-zero if the first operand is greater than or equal to the second; zero if not	6
|	Bitwise inclusive OR	Bitwise inclusive ORing of 2 operands	7
&	Bitwise AND	Bitwise AND of 2 operands	7
^	Bitwise exclusive OR	Bitwise exclusive ORing of 2 operands	7
||	Logical OR	Logical conclusive OR of 2 operands	8
&&	Logical AND	Logical ANDing of 2 operands	8
=	Assign	Operand before takes value of operand after	9 Lowest

C.9 MATH FUNCTIONS

Table C-5. Math Functions

Function	Description
SQT(start)	Square Root
AVG(start-end)	Average
MED(start-end)	Median
MAX(start-end)	Maximum Value
MIN(start-end)	Minimum Value

The following are several rules for math functions:

1. Start and end values must be internal registers (#r), PLC addresses, or symbols. Indirect registers and constants may **not** be used.

2. The starting address must be lower than the ending address. The start and end values must be the same address type.

3. Legal (start-end) combinations are as follows:

   (#r-#r), (PLCaddr-PLCaddr), ($), ($-$), (#r-$), ($-#r), (PLCaddr-$), ($-PLCaddr)

   Make sure that when using a symbol as a start-end value, the symbol expression is the same address type as the other value address.

   Illegal combinations are (#r-PLCaddr) and (PLCaddr-#r)

C.10 RADAR MONITOR FUNCTIONS

The read-only RADAR monitor functions are only valid if the Xycom Runtime Alarm Detection and Recording Module (9000-RAD) board is present in the runtime system. All temperatures are in degrees Celsius. The disk free sampling is handled by the engine. The functions are updated at one minute intervals.

Table C-6. Read-only RADAR Monitor Functions

Function	Description
BAT	Battery life left in days
FAN	Fan filter life left in hours
TMP.H	Highest temperature reached in Celsius
TMP.L	Lowest temperature reached
TMP.C	Last current temperature read
DSK.T	Hard disk time used in days
DSK.M	Time since maintenance of the hard disk in days
DSK.F.<drive letter>	Amount of disk space free in megabytes; drive letter is C-Z

NOTE
Make sure you set the minimum and maximum values properly. Refer to the supporting Xycom hardware manual for details.

C.11 **EXAMPLES**

Table C-7. Expression Examples

Expression	Result	Explanation
2+3*5	17	Mathematical calculation and true.
(2+3)*5	25	Mathematical calculation and true.
#20=2+3*5	17	The value 17 will be placed in register #20 and is true.
#20=[100]	0 if false 1 if true	The value at address 100 will be stored in register #20, and if the value is not 0, it is true.
#20=#20+1	variable	Increments the value in register #20 by 1, and if the value is not 0, it is true.
[PLC1:40030]*100	variable	The value at the address 40030 in the PLC named PLC1 will be read and multiplied by 100. If the result is not 0, it is true.
[PLC1:100 2,SB]* -1	variable	The signed binary value of bit 2 of the PLC PLC1 at address 100 will be multiplied by -1. If the result is not 0, it is true.
(!(#50*[100])*30)	30 or 0	The value of register 50 is multiplied by the value at address 100. **If the result is not 0**, it is assessed as true and assigned the value 1. The value 1 is logically negated to 0 and multiplied by 30 for the end result of 0. **If the result is 0**, it is assessed as false and assigned the value 0. 0 is logically negated to 1 and multiplied by 30 for the end result of 30.

Definitions

Baud	A measure of data-transmission speed.
Parity	Error-checking procedure in which the number of 1's in each successfully transmitted set of bits must be an even number.
Timeout Value	The number of seconds allowed for a retry.
Port Station Number	Station number the engine occupies on the network.

D.1 ALLEN-BRADLEY DATA HIGHWAY

When you select **Data Highway** from Application-Load-Configuration-Edit-Ports, the Data Highway Configuration Form prompts you for the following information (**bold** entries in the right column indicate the SoftScreen default setting). For information on the correct settings for your PLC, refer to your PLC manual.

Table D-1. Allen-Bradley Data Highway Configuration Form

Baud	Select 300, 600, 1200, 2400, 4800, **9600**, or 19.2K
Parity	Select Even or **None**.
Timeout Value	Enter the number of seconds for the timeout 0-9999.
Port Station Number	Enter the port station number as an octal number from 1 to 377.

Click Okay when you are finished.

Next, you are prompted to enter information into the PLC Configuration Form:

Table D-2. PLC Configuration Form

Name	Enter up to nine PLC names with a maximum of five characters each, or keep the defaults.
Type	The type is not user configurable and remains at **PLC 2** even if you are using a PLC 3 or PLC 5.
Address	Enter the address of each PLC as an octal number from 1 to 377.

The address expressions (entered for Expression in various configuration forms) that are specific to the Allen-Bradley Data Highway interface are shown in the table below:

Table D-3. Allen-Bradley Data Highway Addressing

Device	PLC Address	Number Type	Size	R/W
All	10-77, 110-177777	Octal	Word	R/W
All	0-7, 100-107	Octal	Word	R

Valid bit addresses are octal 0 to 7 and 10 to 17.

For example, if the expression **[PLC1:70 3]** is entered in the development system software for a data display object, the engine reads and displays the value in PLC1, word 70, bit 3.

D.2 ALLEN-BRADLEY DATA HIGHWAY EXTENDED

When you select **DH Extended-Serial** from Application-Load-Configuration-Edit-Ports, the Data Highway Configuration Form prompts for the following information (**bold** entries in the right column indicate the SoftScreen default setting). For information on the correct settings for your PLC, refer to the PLC manual.

Table D-4. Allen-Bradley Data Highway Extended Addressing

Baud	Select 300, 600, 1200, 2400, 4800, **9600**, or 19.2K
Parity	Select Even or **None**.
Timeout Value	Enter the number of seconds for the timeout 0-9999.
Port Station Number	Enter the port station number as an octal number from 1 to 377 (this is the address of the Xycom).

Click Okay when you are finished.

Next, you are prompted to enter information into the PLC Configuration Form:

Table D-5. PLC Configuration Form

Name	Enter up to nine PLC names with a maximum of five characters each or keep the defaults.
Type	Type is not user configurable and remains at **PLC 5**.
Address	Enter the address of each PLC as an octal number from 1 to 377 or 0 if not using the PLC.

Address expressions specific to the Allen-Bradley Data Highway Extended Addressing interface are shown in the table below:

Table D-6. Allen-Bradley Data Highway Extended Address Expressions

File Type	f	a	e	b	R/W
O	-	00-377o	-	0-17o	R
I	-	00-377o	-	0-17o	R
S	-	-	0-31d	0-15d	R
B	3, 9-999d	-	0-999d	0-15d	R/W
B*	3, 9-999d	-	-	0-8191d	R/W
T	4, 9-999d	-	0-999d	0-15d	R/W
C	5, 9-999d	-	0-999d	0-15d	R/W
N	7, 9-999d	-	0-999d	0-15d	R/W
F	8-999d	-	0-999d	-	R/W

* [B f/b] form
d decimal
o octal

The legend for the above table is on the following page.

Legend

File Types	
I	Input data image area
O	Output data image area
T	Timer
C	Counter
N	Integer
F	Floating point
B	Binary
S	Status
Other Parameters	
a	I/O address rrg, where rr = rack # and g = group #
b	bit # (optional, except for B f/b form)
e	element
f	file #

NOTE

You may use numbers 9-999 to identify any additional bit, timer, counter, integer, floating point, ASCII, or BCD file types if you need additional file storage.

SoftScreen Direct Connect Expressions

Expressions are needed in many of the SoftScreen Development System forms. Some of the variables of the expressions specific to the Allen-Bradley Data Highway Extended Addressing direct connect are shown below:

addr	is the expression for the address of an I/O rack/group. There are 32 possible racks. Each rack can contain up to eight groups of inputs and up to eight groups of outputs. Each group is 16 bits. For an octal address rrg, rr would be the rack number in octal (00 to 37), and g would be the group number (0 to 7).
bit	is an optional bit number
file	is a file number (9-999); 3 = B, 4 = T, 5 = C, 7 = N, 8 = F
element	(0-999) (0-31) for Status file

These variables can be used as part of your Data Highway Extended Addressing expressions in SoftScreen. For more information on expressions, see Appendix C.

Expressions that perform certain functions when using the Allen-Bradley Data Highway Extended Addressing are listed below and on the following pages:

[O:addr/bit] READ OUTPUT DATA

Where:

addr	specifies the rack/group value to read in the form of rrg, where rr is 0-37 octal and g is 0 to 7
bit	is an optional bit number from 0 to 17 in octal

This expression is used to read a word (16 bits) or bit of output data (outputs from the PLC to the I/O). Example: [O:01/17] output rack 0, group 1, octal bit 17

[I:addr/bit] READ INPUT DATA

Where:

addr specifies the rack/group value to read in the form of rrg, where rr is 0-37 octal and g is 0 to 7

bit is an optional bit number from 0 to 17 in octal

This expression is used to read a word (16 bits) or bit of input data (inputs from the I/O to the PLC). Example: [I:01/17] input rack 0, group 1, octal bit 17

[T file:element.acc/bit] READ/WRITE TIMER ACCUMULATED VALUE
[T file:element.pre/bit] READ/WRITE TIMER PRESET VALUE

Where:

file is the timer file

element is the timer # located in the timer file

.acc specifies the accumulated value of the timer

.pre specifies the preset value of the timer

bit is an optional bit number from 0 to 15, decimal

This expression is used to read or write a word or bit to the **acc**umulated or **pre**set values of a timer. Example: [T4:100.acc/5] timer file 4, element 100 accumulated value, bit 5.

[C file:element.acc/bit] **READ/WRITE COUNTER ACCUMULATED VALUE**
[C file:element.pre/bit] **READ/WRITE COUNTER PRESET VALUE**

Where:

file	is the counter file
element	is the counter # located in the counter file
.acc	specifies the accumulated value of the counter
.pre	specifies the preset value of the counter
bit	is an optional bit from 0 to 15, decimal

This expression is used to read or write a word or bit to the **acc**umulated or **pre**set value of a counter. Example: [C623:3.acc] counter file 623, element 3 the accumulated value

[N file:element/bit] **READ/WRITE TO AN INTEGER FILE**

Where:

file	is the integer file #
element	is the integer # located in the integer file
bit	is an optional bit # from 0 to 15, decimal

This expression is used to read or write to an element or bit in an integer file. Example: [N7:0/0] integer file number 7, element 0, Bit 0

[F file:element] **READ/WRITE TO A FLOATING POINT FILE**

Where:

file	is the floating point file #
element	is the floating point # located in the file

This expression is used to read or write to an element in a floating point file. Example: [F8:0] floating point file #8, element 0

[B file: element/bit] **READ/WRITE TO A BINARY FILE**

Where:

file	is the binary file #
element	is the word # located in the binary file
bit	is an optional bit number from 0-15, decimal

This expression is used to read or write to a word or bit in a binary file.
Example: [B999:20/10] binary file number 999, element 20, bit 10

[B file/bit] **READ/WRITE A BIT IN A BINARY FILE**

Where:

file	is the binary file #
bit	is a bit number from 0 to 8191 in decimal

This expression is used to read or write to a bit in a binary file. This format accesses a binary file as a set of sequential bits instead of word elements, where bit 0 is the first bit in the file.

Example: [B3/300] binary file number 3, bit 300

[S:element/bit] **READ A STATUS WORD OR BIT**

Where:

element is the offset into the status file in the range 0-127

bit is an optional bit number from 0 to 15, decimal

This expression is used to read an element or bit in the PLC status file. Example: [S:12/2] status file, element 12, bit 2

D.3 ALLEN-BRADLEY DATA HIGHWAY PLUS

When you select **Data Highway+** from Application-Load-Configuration-Edit-Ports, the Data Highway Plus Configuration Form prompts for the following information (**bold** entries in the right column indicate the SoftScreen default setting). For information on the correct settings for your PLC, refer to the PLC manual.

Table D-7. Allen-Bradley Data Highway Plus Addressing

Base Address	Fixed to **0xD0000** for the 2000 series. Select 0x8000-0xF8000.
I/O Address	Fixed to **0x0250** for the 2000 series. Select 0x0200-0x2F8.
Baud	Select **57.6k**, 115.2k, or 230.4k.
Timeout Value	Enter the number of seconds for the timeout (1-99). Default is 1.
Port Station Number	Enter the port station number as an octal number from 1 to 377.

Click Okay when you are finished.

Next you are prompted to enter information into the PLC Configuration Form:

Table D-8. PLC Configuration Form

Name	Enter up to nine PLC names with a maximum of five characters each or keep the defaults.
Type	Type is not user configurable and remains at PLC5.
Address	Enter the address of each PLC as an octal number from 1 to 377 or 0 if not using the PLC.

Address expressions specific to the Allen-Bradley Data Highway Plus interface are shown in the table shown on page D-13. The list below shows the addressing forms:

Addressing Forms

[O:a/b]
[I:a/b]
[Tf:e.acc/b]
[Tf:e.pre/b]
[Cf:e.acc/b]
[Cf:e.pre/b]
[Nf:e/b]
[Ff:e]
[Bf:e/b]
[Bf/b]
[S:e/b]

NOTE
When accessing a Floating Point File, the expression **MUST** contain an "FP" (i.e., [Ff:e, FP] if FP is not the default format.

Table D-9. Allen-Bradley Data Highway Plus Address Expressions

File Type	f	a	e	b	R/W
O	-	00-377o	-	0-17o	R
I	-	00-377o	-	0-17o	R
S	-	-	0-127d	0-15d	R
B	3, 9-999d	-	0-999d	0-15d	R/W
B*	3, 9-999d	-	-	0-8191d	R/W
T	4, 9-999d	-	0-999d	0-15d	R/W
C	5, 9-999d	-	0-999d	0-15d	R/W
N	7, 9-999d	-	0-999d	0-15d	R/W
F	8-999d	-	0-999d	-	R/W

* [B f/b] form
d = decimal
o = octal

Legend

File Types	
I	Input data image area
O	Output data image area
T	Timer
C	Counter
N	Integer
F	Floating point
B	Binary
S	Status
Other Parameters	
a	I/O address rrg where rr = rack # and g = group #
b	bit # (optional, except for B f/b form)
e	element
f	file #

SoftScreen Direct Connect Expressions

Expressions are needed in many of the SoftScreen Development System forms. Some of the variables of expressions specific to the Allen-Bradley Data Highway Plus direct connect are shown below:

addr is the expression for the address of an I/O rack/group. There are 32 possible racks. Each rack can contain up to eight groups of inputs and up to eight groups of outputs. Each group is 16 bits. For an octal address rrg, rr would be the rack number in octal (00 to 37) and g would be the group number (0 to 7).

bit is an optional bit number

file is a file number (9-999); 3 = B, 4 = T, 5 = C, 7 = N, 8 = F

element (0-999)
(0-31) for Status file

These variables can be used as part of your Data Highway Plus expressions in SoftScreen.

Expressions that perform certain functions when using the Allen-Bradley Data Highway Plus are listed on the following pages.

[O:addr/bit] READ OUTPUT DATA

Where:

addr specifies the rack/group value to read in the form of rrg, where rr is 0-37 octal and g is 0 to 7

bit is an optional bit number from 0 to 17 in octal

This expression is used to read a word (16 bits) or bit of output data (outputs from the PLC to the I/O). Example: [O:01/17] output rack 0, group 1, octal bit 17

[I:addr/bit] READ INPUT DATA

Where:

addr specifies the rack/group value to read in the form of rrg, where rr is 0-37 octal and g is 0 to 7

bit is an optional bit number from 0 to 17 in octal

This expression is used to read a word (16 bits) or bit of input data (inputs from the I/O to the PLC). Example: [I:01/17] input rack 0, group 1, octal bit 17

[T file:element.acc/bit] READ/WRITE TIMER ACCUMULATED VALUE
[T file:element.pre/bit] READ/WRITE TIMER PRESET VALUE

Where:

file is the timer file

element is the timer # located in the timer file

.acc specifies the accumulated value of the timer

.pre specifies the preset value of the timer

bit is an optional bit number from 0 to 15, decimal

This expression is used to read or write a word or bit to the **acc**umulated or **pre**set values of a timer. Example: [T4:100.acc/5] timer file 4, element 100 accumulated value, bit 5

[C file:element.acc/bit] **READ/WRITE COUNTER ACCUMULATED VALUE**
[C file:element.pre/bit] **READ/WRITE COUNTER PRESET VALUE**

Where:

file	is the counter file
element	is the counter # located in the counter file
.acc	specifies the accumulated value of the counter
.pre	specifies the preset value of the counter
bit	is an optional bit from 0 to 15, decimal

This expression is used to read or write a word or bit to the **acc**umulated or **pre**set value of a counter. Example: [C623:3.acc] counter file 623, element 3 the accumulated value

[N file:element/bit] **READ/WRITE TO AN INTEGER FILE**

Where:

file	is the integer file #
element	is the integer # located in the integer file
bit	is an optional bit # from 0 to 15, decimal

This expression is used to read or write to an element or bit in an integer file. Example: [N7:0/0] integer file number 7, element 0, Bit 0

[F file:element] **READ/WRITE TO A FLOATING POINT FILE**

Where:

file	is the floating point file #
element	is the floating point # located in the file

This expression is used to read or write to an element in a floating point file. Example: [F8:0] floating point file #8, element 0

[B file: element/bit] **READ/WRITE TO A BINARY FILE**

Where:

file	is the binary file #
element	is the word # located in the binary file
bit	is an optional bit number from 0-15, decimal

This expression is used to read or write to a word or bit in a binary file.
Example: [B999:20/10] binary file number 999, element 20, bit 10

[B file/bit] **READ/WRITE A BIT IN A BINARY FILE**

Where:

file	is the binary file #
bit	is a bit number from 0 to 8191 in decimal

This expression is used to read or write to a bit in a binary file. This format accesses a binary file as a set of sequential bits instead of word elements, where bit 0 is the first bit in the file.

Example: [B3/300] binary file number 3, bit 300

[S:element/bit] **READ A STATUS WORD OR BIT**

Where:

element — is the offset into the status file in the range 0-127

bit — is an optional bit number from 0 to 15, decimal

This expression is used to read an element or bit in the PLC status file.
Example: [S:12/2] status file, element 12, bit 2

D.4 ALLEN-BRADLEY REMOTE I/O

When you select **Allen-Bradley Remote I/O** from Application-Load-Configuration-Edit-Ports, the Remote I/O Configuration Form prompts you for the following information (**bold** entries in the right column indicate the SoftScreen default setting). For information on the correct settings for your PLC, refer to the PLC manual.

> **NOTE**
> Port 2 on 8320 targets cannot be configured for Allen-Bradley Remote I/O.

Table D-10. Allen-Bradley Remote I/O Configuration Form

Base Address	PC/AT. Fixed to **0xD0000** for the 2000 series. Select 0x8000-0xF8000.
I/O Address	PC/AT. Fixed to **0x0250** for the 2000 series. Select 0x0200-0x02F8.
Baud	57.6k, **115.2k**, 230.4k
PLC Type	PLC 2 or **PLC 3/5**
Rack Enable	On or **Off**
Restore Rack	On or **Off**
Starting Rack	1-32 for PLC 2, 0-31 for PLC 3/5. Default is 0.
Starting Quarter	1-4. Default is 1.
Number of Quarter Racks	Default is 1. Maximum number for PLC 2 is 128-((Starting Rack -1)*4) - (Starting Quarter -1). Maximum for PLC 3/5 is 128-(Starting Rack *4) - (Starting Quarter -1).
Number of Block Transfer Modules	0-255. Default is 0. The rack must be enabled and only four modules per quarter rack are allowed.
Block Transfer Write Words per Module	1-64. Default is 1. The Number of Block Transfer Modules must be > 0.
Block Transfer Read Words per Module	1-64. Default is 1. The Number of Block Transfer Modules must be > 0.

Click Okay when you are ready to go to the next form.

Next, you are prompted to enter the PLC Name into the PLC configuration Form. Enter a PLC name with a maximum of five characters or keep the default.

The address expressions (entered for Expression in various configuration forms) that are specific to the Allen-Bradley Remote I/O interface are shown in the table below:

Table D-11. Allen-Bradley Remote I/O Addressing

Device	PLC Addressing	Number Type	Size	R/W
Output (O)	Orrg	Octal	Word	R
Input (I) (Rack disabled)	Irrg	Octal	Word	R
Input (I) (Rack enabled)	Irrg	Octal	Word	R/W
Rack Information (RINF)	RINF rr q	Octal	Word	R
*Block Transfer Read (BTR) (Rack disabled)	BTRrrg m off	Octal/Decimal	Word	R
*Block Transfer Read (BTR) (Rack enabled)	BTRrrg m off	Octal/Decimal	Word	R/W
*Block Transfer Write (BTW)	BTRrrg m off	Octal/Decimal	Word	R
*Block Transfer Read Status (BRS)	BRSrrg m	Octal	Word	R
*Block Transfer Write Status (BWS)	BWSrrg m	Octal	Word	R
Communication Status (CS)	CS	-	Byte	R

***NOTE**
Block transfer module number 1 (Allen-Bradley) = 0 (SoftScreen).

Expressions that perform certain functions when using Allen-Bradley Remote I/O are listed below and on the following pages:

[O] or **[O/bit] READ OUTPUT DATA**

Where:

addr specifies the rack/group value to be read in the form rrg, where rr is 0-37 octal and g is 0-7.

bit is an optional bit number from 0 to 17 in octal

This expression is used to read a word (16 biys) of remote I/O output data (outputs from the PLC to remote I/O). Example: [O010 3] Rack 01 Group 0 Bit 3

[addr bit] READ/WRITE INPUT DATA

Where:

addr specifies the rack/group to read/write in the form rrg where rr is 0-37 octal and g is 0-7.

bit is an optional bit number from 0 to 17 in octal that specifies which bit is to be set or cleared for a write and which bit is to be displayed for a read.

This expression is used to read a word (16 bits) of remote I/O input data (inputs from remote I/O to the PLC). Example: [I021 4] Rack 02 Group 01 Bit 4

When used as a data entry command, this expression writes a word (16 bits) or sets/resets a bit of remote I/O input data for the simulated racks. Bit writes are only allowed to inputs.

> **NOTE**
> If this command is used to write to inputs not being simulated by this direct connect, the communication status register for the port configured will equal 2. Refer to Appendix C, Table C-2.

[RINFrack quarter bit] **READ STATUS INFORMATION ABOUT A RACK**

Where:

rack — is the rack number, 0-37 octal.

quarter — is the starting quarter of the specified rack. The number of quarters a rack contains depends on the rack configuration. If a rack consists of four quarter racks, quarter can select any quarter of the rack from 1 to 4. If a rack consists of a quarter rack or a 3/4 rack, quarter can select either of the two starting quarters, 1 or 2. If a rack is a full rack, wuarter should only be 1.

This expression returns status information about a rack in 16 bits as follows:

Bits 8-15:	Unused		
Bits 5-7:	Number of quarters in this rack (1-4)		
Bit 4:	1	=	This is a rack simulated by us
Bits 00-03:	PLC Status		
	0	=	No rack present
	1	=	PLC in run mode, rack OK
	2	=	PLC in test or program mode
	3	=	Rack error; no response from this rack

[BTRaddr module wordoffset] **READ BLOCK TRANSFER READ DATA**

Where:

addr — specifies the rack and group in the form rrg, where rr is 0-37 octal and g is 0-7.

module — specifies the module within the group, either 0 or 1

wordoffset — is a word offset (0-63) into the block transfer module to read.

This expression returns data transferred between the PLC and a block transfer read module. For example, [BTR037 0 20] reads a word of data from the block transfer module at rack 3, group 7 module 0, word offset 20.

[BTRaddr module wordoffset] **WRITE BLOCK TRANSFER READ DATA**

Where:

addr	specifies the rack and group in the form rrg, where rr is 0-37 octal and g is 0-7.
module	specifies the module within the group, either 0 or 1.
wordoffset	is a word offset (1-64) into the block transfer module to write

When simulating block transfer modules, this espressionreturns data transferred between the PLC and a block transfer read module.

Using data entry as an example [BTR121 1 8] writes a word of data from the block transfer module located at rack 12, group 1, module 1, word offset 8.

> **NOTE**
> This expression should not be used to write to BTR modules that are not being simulated.

[BTWaddr module wordoffset bit **READ BLOCK TRANSFER WRITE DATA**

Where:

addr	specifies the rack and group in the form rrg, where rr is 0-37 octal and g is 0-7.
module	specifies the module within the group, either 0 or 1.
wordoffset	is a word offset (0 to 63) into the block transfer module to read.
bit	is optional; 0-15 decimal

This expression returns data transferred between the PLC and a block transfer write module. When simulating block transfer modules, this espression is used to read the data sent to the

simulated BTW module by the PLC. The PLC does a BTW command to the simulated BTW module and this expression makes the data available to SoftScreen.

BRSaddr module **RETURN BLOCK TRANSFER READ STATUS**

Where:

addr — specifies the rack and group in the form rrg, where rr is 0-37 octal and g is 0-7.

module — specifies the module within the group

This expression returns the number of words of data associated with a BTR module. If the value is positive, the data has been updated since the last READ_BTR. If the value is negative, the data has not been updated.

[BWSaddr module] **RETURN BLOCK TRANSFER WRITE STATUS**

Where:

addr — specifies the rack and group in the form rrg, where rr is 0-37 and g is 0-7.

module — specifies the module within the group

This expression returns the number of words of data associated with a BTW module. If the value is positive, the data has been updated since the last READ_BTW. If the value is negative, the data has not been updated.

[CS] GET COMMUNICATION STATUS

This expression returns the current communication status of the Remote I/O link. Two types of status can be returned:

00	Normal communication
225 (FFh)	There have been no valid messages from the PLC for 160 milliseconds

Valid bit addresses for all devices, except CS, are 0-17 octal and are read only, except for inputs.

rr	Rack, 1-40 (octal) for PLC 2 and 0-37 (octal) for PLC 3/5
g	Group, 0-7
q	Starting quarter, 1-4
m	Module, 0 or 1
off	Word offset into the Block Transfer Module, 0-63 decimal

NOTE

SoftScreen control objects (data entry, buttons, etc.) can only be configured for BTR writes if the engine is set up to simulate at least one Block Transfer Module.

D.5 ALLEN-BRADLEY SLC-500

When you select **SLC-500** from Application-Load-Configuration-Edit-Ports, the SLC-500 Configuration Form prompts for the following information (**bold** entries in the right column indicate the SoftScreen default setting). For information on the correct settings for your PLC, refer to your PLC manual.

Table D-12. Allen-Bradley SLC 500 Addressing

Baud Rate	Select 9600 or 19.2k.
Station Address	Enter the Xycom Terminal's PLC Network address as a value between 0-31. Default is 0. (Make sure it is not the same as the SLC's address.)
Port Connect	Chooses whether you are connecting via RS-232 to the 1747-PIC or connecting via RS-485 **directly** to the SLC-500 programming port. Default is direct.

Click Okay when you are finished.

Next, you are prompted to enter information into the PLC Configuration Form:

Table D-13. PLC Configuration Form

Name	Enter up to nine PLC names with a maximum of five characters each, or keep the defaults.
Type	Select either SLC-500 fixed I/O controller or SLC-502 modular controller.
Address	Enter the address of each PLC as a number from 0-31.

Address expressions specific to the Allen-Bradley SLC-500 interface are shown in the table below.

Table D-14. Allen-Bradley SLC-500 Address Expressions

File Type	f	e	s	b	Size	R/W
O	0	0-30	0-255	0-15	Word/Bit	R
I	1	0-30	0-255	0-15	Word/Bit	R/W
S	2	0-15	-	0-15	Word/Bit	R
B	3,10-255	0-255	-	0-15	Word/Bit	R/W
B*	3,10-255	-	-	0-4095	Bit	R/W
T	4,10-255	0-255	-	0-15	Word/Bit	R/W
C	5,10-255	0-255	-	0-15	Word/Bit	R/W
R	6,10-255	0-255	-	0-15	Word/Bit	R/W
N	7,9-255	0-255	-	0-15	Word/Bit	R/W

*[Bf/b] form

Legend

File Types	
O	Output data image area
I	Input data image area
S	Status
B	Binary
T	Timer
C	Counter
R	Control
N	Integer
Other Parameters	
E	Slot #
S	Word #
b	bit # (optional, except for Bf/b form)

SoftScreen Direct Connect Expressions

Expressions are needed in many of the SoftScreen Development System forms. Some of the variables of expressions specific to the Allen-Bradley SLC-500, SLC-502 and SLC-503 are shown below:

F — is a file number (10-255); 3=B, 4=T, 5=C, 6=R, 7 and 9=N

E — for I/O modules, this is the Physical Slot number or Logical Module number. For the SLC-500 fixed controller this is the Physical Slot number (0-2). For the SLC-502 and SLC-503 modular controllers, this is the Logical Module number (1-30). Logical Module numbering is explained in *Fixed Versus Modular I/O Addressing Issues*, on page D-33.

For all other file types, this is the element # (or word offset) with a range of 0-255 (0-15 for status file)

S — is the word # for any I/O module that addresses multiple words of data, up to 255

Bit — is an optional bit number

Expressions that perform certain functions when using the Allen-Bradley SLC-500 are listed below and on the following pages:

[O:E] or **[O:E.S/Bit]** **READ OUTPUT DATA**

Where:

E specifies the Physical Slot number (0 to 2) for the SLC-500, or the Logical Module number (1-30) for the SLC-502 and SLC-503.

S specifies the word number from 0 to 255 for slots having more than 16 outputs

Bit is an optional bit number from 0 to 15 in decimal

This expression is used to read a word (16 bits) or bit of output data (outputs from the PLC to the I/O).

[I:E] or **[I:E.S/Bit]** **READ/WRITE INPUT DATA**

Where:

E specifies the Physical Slot number (0 to 2) for the SLC-500, or the Logical Module number (1-30) for the SLC-502 and SLC-503.

S specifies the word number from 0 to 255 for slots having more than 16 inputs

Bit is an optional bit number from 0 to 15 in decimal

This expression is used to read or write a word (16 bits) or bit of input data (outputs from the I/O to the PLC).

[S:E] or **[S:E/Bit]** **READ THE SLC STATUS FILE**

Where:

E specifies the element from 0 to 15

Bit is an optional bit number from 0 to 15 in decimal

This expression is used to read a word (16 bits) or bit of Status data from the SLC status file.

[B file:E/Bit] READ/WRITE TO A BINARY FILE

Where:

file is the bit file # (3, 10-255)

E specifies the element from 0 to 255

Bit is an optional bit number from 0 to 15 in decimal

This expression is used to read or write to a word or bit in a binary file.

[B file/Bit] **READ/WRITE A BIT IN A BINARY FILE**

Where:

file is the binary bile # (3, 10-255)

Bit is a bit number from 0 to 4095 in decimal

This expression is used to read or write to a bit in a binary file. This format accesses a binary file as a set of sequential bits instead of word elements, where bit 0 is the first bit in the file.

[T file:E.con/Bit] **READ/WRITE TIMER CONTROL VALUES**
[T file:E.pre/Bit] **READ/WRITE TIMER PRESET VALUE**
[T file:E.acc/Bit] **READ/WRITE TIMER ACCUMULATED VALUE**

Where:

file is the timer file # (4, 10-255)

E is the timer # located in the timer file

.con specifies the control word of the timer

.pre specifies the preset value word of the timer

.acc specifies the accumulated value word of the timer

Bit is an optional bit number from 0 to 15 in decimal

This expression is used to read or write to the **con**trol, **acc**umulated or **pre**set values of a timer.

[C file:E.con/Bit] **READ/WRITE COUNTER CONTROL VALUES**
[C file:E.pre/Bit] **READ/WRITE COUNTER PRESET VALUE**
[C file:E.acc/Bit] **READ/WRITE COUNTER ACCUMULATED VALUE**

Where:

file is the counter file # (5, 10-255)

E is the counter # located in the counter file

.con specifies the control word of the counter

.pre specifies the preset value word of the counter

.acc specifies the accumulated value word of the counter

Bit is an optional bit number from 0 to 15 in decimal

This expression is used to read or write to the **con**trol, **acc**umulated, or **pre**set values of a counter.

[R file:E.con/Bit] **READ/WRITE CONTROL CONTROL VALUES**
[R file:E.len/Bit] **READ/WRITE CONTROL LENGTH VALUE**
[R file:E.pos/Bit] **READ/WRITE CONTROL POINTER OR POSITION**

Where:

file is the control file # (6, 10-255)

E is the control element located in the control file

.con specifies the control word of the element

.len specifies the length word of the control element

.pos specifies the position of the control element

Bit is an optional bit number from 0 to 15 in decimal

This expression is used to read or write to the **con**trol, **len**gth, or **pos**ition/pointer values of a control element.

[N file:E/Bit] **READ/WRITE TO AN INTEGER FILE**

Where:

file is the integer file # (7, 9-255)

E is the integer element located in the integer file

Bit is an optional bit number from 0 to 15 in decimal

This expression is used to read or write a word or bit in an integer file.

[NETSTAT station] READ NETWORK STATUS OF A PLC STATION

Where:

station is the network station address to check (0-31)

This expression is used to check the status of a network station. A value of 1 means the station is found and active. A value of 0 means the station is either on the network and inactive or not on the network

[RUN] READ/WRITE THE PLCs OPERATING MODE

This expression returns whether the PLC is in **RUN** mode (1) or **PROGRAM** mode (0). As a write operation, the SLC-500 can be put into RUN mode by writing a 1 or PROGRAM mode by writing 0

Fixed Versus Modular I/O Addressing Issues

The SLC-500 fixed I/O controller is addressed via slot numbers 0, 1 and 2. Therefore, the expressions [I:0], [I:1], and [I:2] correspond directly to the three slots in the SLC-500 PLC.

The SLC-501, SLC-502 and SLC-503 processors are modular controllers. These modular controllers can be configured with a maximum of three racks (30 total slots) with a minimum of four I/O points to a maximum of 256 I/O points. This allows many different I/O configurations. Because of this modularity, the manner in which these modules are addressed from SoftScreen needs to be explained further.

Slot 0 in any modular SLC controller is reserved for the CPU module. Slots 1 to 30 are available for I/O modules. Therefore, if you have an Input module in Slot 1 (adjacent to the CPU module), it will be addressed using the expression [I:1].

The catch comes when you move that Input module to Slot 2 and leave Slot 1 empty or install an output module in it. The way Allen-Bradley stores the data for the I/O in the corresponding I/O files is to take the first module it finds in the rack and put it at the beginning of the Input File. Therefore, with SoftScreen, the expression [I:1] will address an input module in Slot 2 when Slot 1 is left open or contains an output module. Input and output modules are addressed by the order in which they are installed in the backplane, not by their Physical Slot number.

The Logical Module number is based upon the type of module, and the order in which the modules are installed in the controller. The input module installed in the lowest-numbered slot has a Logical Module number of 1. The next input module in a higher-numbered slot has a Logical Module number of 2, regardless of the number of empty slots or output modules installed between them. Logical Module numbers are maintained separately for input and output modules. For example, in a SLC-503 controller with output modules in physical slots 1 and 3 and an input module in slot 2, the output module in slot 3 would have a Logical Module number of 2, and the input module's Logical Module number would be 1.

Xycom recommends that you **DO NOT USE** "I" or "O" SoftScreen expressions if you plan on *leaving open slots for I/O or if in the future you want to insert modules in your backplane after you have developed your SoftScreen application.* Instead, you should move your I/O to a work file with your ladder program and reference the I/O from that file. This way you will never have to contend with SoftScreen addressing changes if the physical configuration of the I/O racks changes.

> **NOTE**
> If you plan on never changing your I/O set up, the "I" and "O" instructions are recommended.

D.6 EUROTHERM EI BISYNCH ASCII DRIVER

This section documents the SoftScreen serial interface to the Eurotherm PC3000 Process Controller. The driver implements a subset of the Eurotherm EI Bisynch ASCII protocol.

The function block Instance.Pin names used in the PC3000 program (for example, Zonel_Temp.Val) are used as variable addresses in the SoftScreen application. Eurotherm's Microcell configuration software is used to generate an ASCII import file which is used by SoftScreen. The import file name consists of the Microcell application name with the extension EUR, and contains the information that allows SoftScreen to map the variable names to actual EI Bisynch addresses. Refer to the *Eurotherm Microcell User Guide* for more information on Xycom export files. Import files provide SoftScreen with the following information for each variable:

- Name
- Instrument address
- Data type
- Data format
- Information needed to organize the pick list in a hierarchical form

D.6.1 COMPATIBILITY ISSUES

The Eurotherm EI Bisynch ASCII driver does not support several standard SoftScreen features:

- XT keyboards
- Application ROMing
- Recipes
- Diagnostics
- SoftSend, SoftRec, and SoftMerge utilities

NOTE

The Eurotherm driver does not support recipes. Make sure that all recipes are deleted and that touch buttons and pseudo keys do not reference recipe functions before downloading an application.

NOTE

Do not delete the .CON file, which contains the logical to physical address mappings associated with an application. If it is deleted, all addresses in your application will become invalid.

NOTE

When an application is configured for the Eurotherm driver, the mapping between Instance.Pin and Bisync address is stored in the .CON file. This information is obtained from the specified .EUR import file. To update this mapping, repeat the Eurotherm port configuration and specify a new or updated .EUR file when requested. DO NOT delete the .CON file.

NOTE
This driver is available only for use on 2000 Series terminals.

D.6.2 SOFTSCREEN DEVELOPMENT CONFIGURATION

Follow the steps below to configure the Eurotherm Driver for SoftScreen.

1. Open the SoftScreen Development System and select the Application.

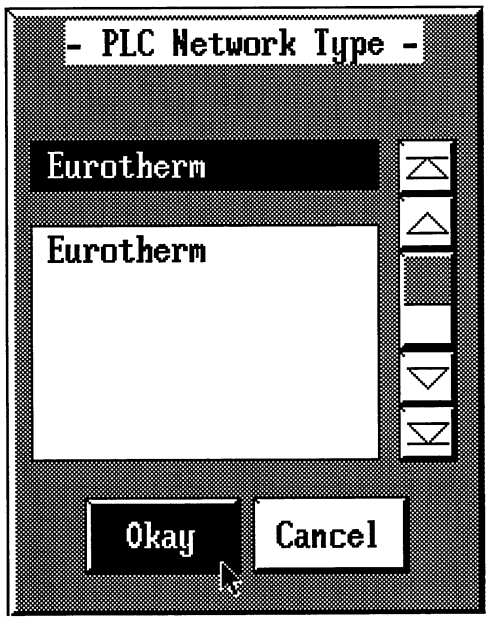


Figure D-1. PLC Network Type Menu

2. Click on the scroll arrows until Eurotherm appears. Click on Eurotherm, then click on Okay. The Eurotherm Configuration Menu appears, as shown below.

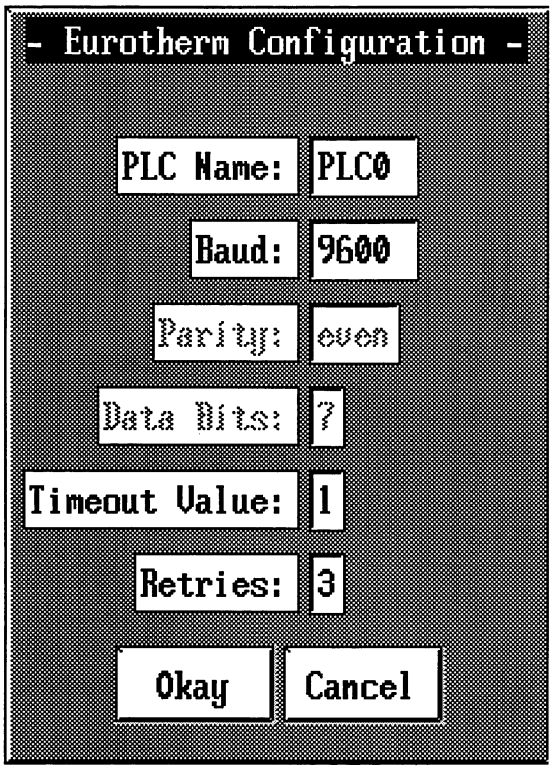


Figure D-2. Eurotherm Configuration Menu

The parity and data bits are fixed values and cannot be modified.

3. Set the driver specifications in the Eurotherm Configuration Menu:

Table D-15. Eurotherm Configuration Menu

Baud	2400, 4800, 9600, or 19.2 K.
Timeout Value	0, **1**, or 2. This is the maximum number of seconds allowed for a response from a Eurotherm PC3000 controller. This includes the time for the entire transmission block to be received. Default is 1.
Retries	0, 1, 2, or **3**. This is the number of times the driver attempts to retransmit a block before aborting. A block is retransmitted if it was not accepted on the previous transmission. Default is 3.

4. Press Okay when the specifications are set. The Load Eurotherm File menu appears below.

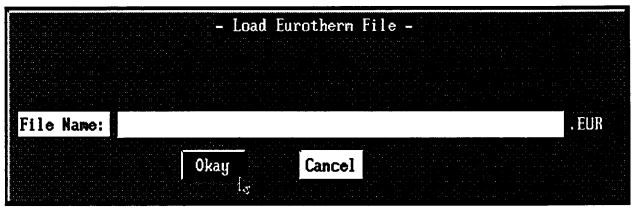


Figure D-3. Load Eurotherm File Form

In the next several steps, you will select the class, type, and instance name of the file you have loaded. This is done so you can verify that the Eurotherm file you loaded contains the Instance.Pin variables you intended.

5. Type the name of the file to be imported, press <Enter>, then click on Okay. The Class Configuration Menu appears, as shown below.

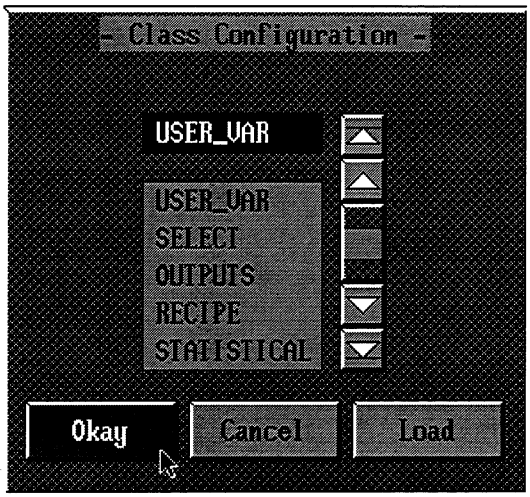


Figure D-4. Class Configuration Menu

6. Use the arrows to scroll through the available classes, select one, then click on Okay. The Type Configuration Menu appears.

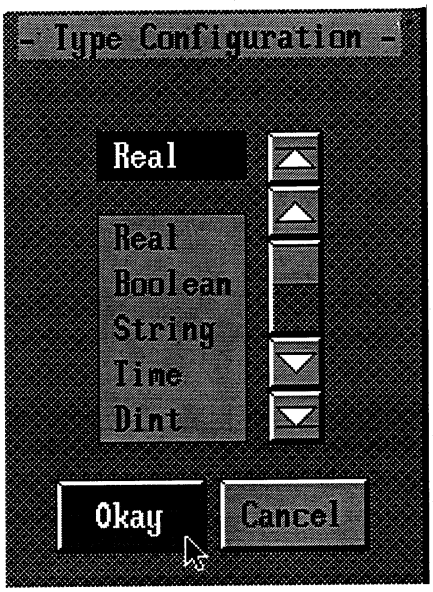


Figure D-5. Type Configuration Menu

7. Select a type, then click on Okay. A pick list of instance names appears in the Instance Configuration Menu, as shown below.

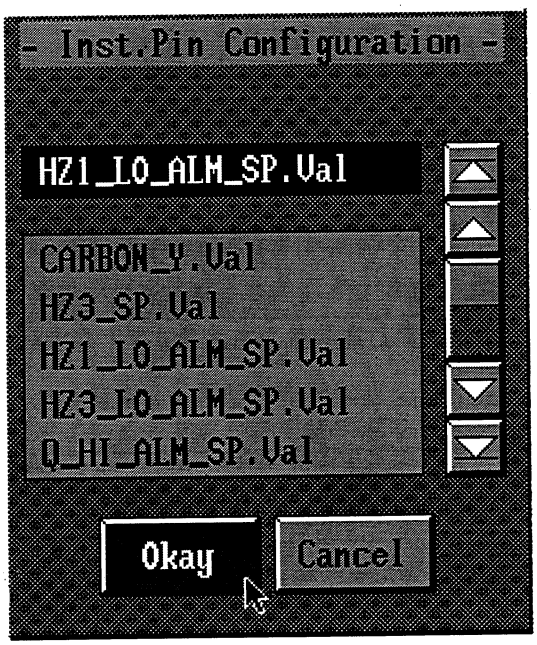


Figure D-6. Instance.Pin Configuration Menu

Instance names are used with all object configuration menus in place of variable addresses. Each variable has an instance name.

> **NOTE**
> A new import file must be loaded to add a variable to, or delete a variable from, a pick list. Once a variable has been added to the database (.CON file) by loading a .EUR file, it cannot be deleted fromthe database. Deleting entries from the .EUR file and reloading will not reduce the size of the SoftScreen database.

8. Choose an instance name, and click on Okay.

9. Select Tools-Save to save the configuration.

10. Click on the Xycom logo at the left of the menu bar icon to return to the Main Menu.

After the variable name is entered from the buffer it can be edited. Using the F3 key to enter names from the buffer will overwrite all data in the field. In an expression that uses variable(s) in combination with other data, the variable Instance.Pin name(s) must be typed in. Use this procedure to enter Instance.Pin names in any expression field. The following steps describe how to use select an Instance.Pin after the application.EUR has been loaded or typed in directly.

1. Select Screen-Edit and choose a screen name or create a new one, then click on Okay.

2. Select a display or control object. (For this example, a control data entry object was chosen.) Click and drag the object on screen, then release the mouse button. The Data Entry Configuration Menu appears.

3. To display the pick list of instance names, place the mouse pointer on the Data Address field and press F1 to access the Help Menu.

4. Choose Default Port. The Eurotherm Configuration Menu appears.

5. Click on Okay and the Class Configuration Menu is displayed. Select a function block class, then press Okay.

6. The Type Configuration Menu displays a list of all available types of function block of the selected class. Select a type, then press <Okay>. The instance name pick list appears.

7. Choose a variable (Instance.Pin name from this list, then press Okay. The variable is placed in a buffer and the Data Entry Configuration Menu reappears.

8. To retrieve the instance name, place the mouse pointer on the Data Address field and press <F3>. The variable (Instance.Pin) name will be placed in the field.

9. Click on Okay to save this configuration.

D.6.3 SUPPORTED DATA FORMATS

SoftScreen allows string and fixed decimal display and entry objects. String format accepts ASCII characters. In configuration menus, users can specify the maximum string length for each object. Strings that exceed this length will be truncated from the right until they fit the display field. No mathematical functions or tests are allowed on data in this format.

Fixed decimal format allows up to five decimal digits before the decimal point and up to four decimal digits after the decimal point with a range of -32768 to 32767.9998 inclusive. If a number received by the driver is too big, it will be displayed as the maximum value allowed. If a number is too small, it will be displayed as the minimum value allowed. For example, floating point numbers less than -32768 are converted to -32768 and numbers greater than 32767.9998 are converted to 32767.9998. For numbers larger than .32767.9998, use the string data display and string data entry objects.

The valid addressing ranges for PLC data types accepted by the Eurotherm driver are listed in the table below:

Table D-16. Eurotherm Addressing

PC3000 Data Type	String Range	Fixed Decimal Range
Boolean	N/A	0 to 1
Hexadecimal	0 to 80 hex characters	NA
Integer (Dint, Int, Intetger, Sint)	-1000000000 to 1000000000	-32768 to 32767
Packed IEEE (Real)	-1000000000.0000 to 1000000000.0000	-32768 to 32767.9998
String	0 to 80 ASCII characters	N/A
Time	00D 00H 00M 00S 000ms to 23D 23H 59M 59S 000ms	N/A
*Date and Time	MMM dd,yyyy hh:mm:ss	NA

*Date and Time are display only; entry is not allowed.

Time variables may be entered and displayed in string format only. The format for the time variable is as follows:

xxD xxH xxM xxS xxxm

where:

x	=	Decimal digit
D	=	Days
H	=	Hours
M	=	Minutes
S	=	Seconds
m	=	Milliseconds

Date and time variables are read only. They are displayed in string format:

MMM dd,yyyy hh:mm:ss

where:

MMM	=	Three character month
dd	=	Day of the month
yyyy	=	Year
hh	=	Hours
mm	=	Minutes
ss	=	Seconds

D.7 GE SERIES 6 CCM2

When you select **GE Series 6 CCM2** from Application-Load-Configuration-Edit-Ports, the GE CCM2 Configuration Form prompts you for the following information (**bold** entries in the right column indicate the SoftScreen default setting). For information on the correct settings for your PLC, refer to your PLC manual.

Table D-17. GE CCM2 Configuration Form

Baud	Select 300, 600, 1200, 2400, 4800, **9600**, or 19.2K
Parity	Select **Odd** or None.
Data Bits	**8** (not user configurable).
Stop Bits	**1** (not user configurable).

Click Okay when you are finished.

Next, you are prompted to enter information into the PLC Configuration Form:

Table D-18. PLC Configuration Form

Name	Enter up to nine PLC names with a maximum of five characters each, or keep the defaults.
Type	The options in this field are **Series 6** and TI305. Select Series 6.
Address	Enter the address of each PLC as a value from 0 to 255.

The address expressions (entered for Expression in various configuration forms) specific to GE Series 6 interface are shown in the table below:

Table D-19. GE Series 6 Addressing

Device	PLC Address	Number Type	Size	R/W
Input	I0001-I65535	Decimal	Bit	R
Output	O0001-O65535	Decimal	Bit	R
ΔRegister	R0001-R65535	Decimal	Word	R/W

Valid bit addresses for register addresses are 0-15.

For example, if the expression **[PLC1:R0005 3]** is entered in the development system software for a data display object, the engine reads and displays the value in PLC1, word R0005, bit 3.

> **ΔNOTE**
> String Entry and String Display are allowed to and from these addresses.

D.8 GE SERIES 90

When you select **GE Series 90** from Application-Load-Configuration-Edit-Ports, the GE Series 90 Configuration Form prompts for the following information (**bold** entries in the right column indicate the SoftScreen default setting). For information on the correct settings for your PLC, refer to the PLC manual.

Table D-20. GE Series 90 Configuration Form

Baud	Select 300, 600, 1200, 2400, 4800, 9600, or **19.2K**.
Parity	Select **Odd**, None, or Even.
Modem Turnaround Time	Enter the turnaround time in milliseconds as a value from 0 to 99. The default is **0.**

Click Okay when you are finished.

Next, you are prompted to enter information into the PLC Configuration Form:

Table D-21. PLC Configuration Form

Name	Enter up to nine PLC names with a maximum of five characters each or keep the defaults.
CPU ID	Enter a CPU ID with a maximum of seven characters to match that of your CPU. If the CPU ID is left blank, the CPU acts as a broadcast and communicates with all CPUs.
Station Password	Enter a station password with a maximum of seven characters. This password should match that of the PLC.

NOTE

You are not able to configure the 8320 Port 4 for GE Series 90. Port 4 is RS232 **only**, and GE Series 90 uses RS422.

Address expressions (entered for Expression in various configuration forms) that are specific to the GE Series 90 PLC interface are shown in the table below:

Table D-22. GE Series 90 Addressing

Device	Range	Dec/Hex	Size	R/W
Input	I0001-I65535	Decimal	Bit	R
Output	Q0001-Q65535	Decimal	Bit	R
Temporary	T0001-T65535	Decimal	Bit	R/W
Internal	M0001-M65535	Decimal	Bit	R/W
SA discrete	SA001-SA65535	Decimal	Bit	R/W
SB discrete	SB001-SB65535	Decimal	Bit	R/W
SC discrete	SC001-SC65535	Decimal	Bit	R/W
S discrete	S0001-S65535	Decimal	Bit	R
Genius global data	G0001-G65535	Decimal	Bit	R/W
Analog input	AI001-AI65535	Decimal	Word	R
Analog output	AQ001-AQ65535	Decimal	Word	R
▵Register	R0001-R65535	Decimal	Word	R/W

Valid bit addresses for analog input, analog output, and register are 0-15.

For example, if the expression **[PLC1:AI100 3]** is entered in the development system software for a data display object, the engine reads and displays the value in PLC1, word AI100, bit 3.

▵NOTE
String Entry and String Display are allowed to and from these addresses.

D.9 GENIUS I/O

When you select **GE Genius I/O** from Application-Load-Configuration-Edit-Ports, the Genius I/O PCIM Configuration Form prompts for the following information (**bold** entries in the right column indicate the SoftScreen default for your PLC), refer to the PLC manual.

Table D-23. Genius I/O PCIM Configuration Form

Memory Base	**0xCC00** or 0xD000.
I/O Base	This must correspond to the I/O base of the dip switches on the PCIM. It can be **0x3E0** or 0x3E4.
Device	Enter from 0-**31**.
Global Data Length	Size in bytes **0**-128.

NOTE
The PCIM Memory Base, I/O Base, and Device number on the daughter board are configured using the GE configuration Software, DPCIMCFG.EXE. This must be done external to SoftScreen.

Click Okay when you are finished.

Next, you are prompted to enter information into the PLC Configuration Form:

Table D-24. PLC Configuration Form

Name	Enter up to nine PLC names with a maximum of five characters each, or keep the defaults.
Type	There are three types that are configurable: 90-70, I/O block, and 90-30.
Address	The address of each device must be unique. Enter the address of each PLC as a number from 0 to 31.

The address expressions (entered for Expression in various configuration forms) that are specific to the Genius I/O interface are shown in the table below:

Table D-25. Genius I/O Addressing

Device	Range	Dec/Hex	Size	R/W
Input	I0001-I65535	Decimal	Bit	R
Output	Q0001-Q65535	Decimal	Bit	R
Temporary	T0001-T65535	Decimal	Bit	R/W
Internal	M0001-M65535	Decimal	Bit	R/W
SA discrete	SA001-SA65535	Decimal	Bit	R/W
SB discrete	SB001-SB65535	Decimal	Bit	R/W
SC discrete	SC001-SC65535	Decimal	Bit	R/W
S discrete	S0001-S65535	Decimal	Bit	R
Seamless global data	G0001-G65535	Decimal	Bit	R/W
Analog input	AI001-AI65535	Decimal	Word	R
Analog output	AQ001-AQ65535	Decimal	Word	R
ΔRegister	R0001-R65535	Decimal	Word	R/W
Global word data	GWD001-GWD064	Decimal	Word	R/W
Global bit data	GBD001-GBD1024	Decimal	Bit	R/W

Valid bit addresses for global word data, analog input, analog output, and register are 0-15 (read only).

For example, if the expression **[PLC1:AI100 3]** is entered in the development system software for a data display object, the engine reads and displays the value in PLC1, word AI100, bit 3.

ΔNOTE
String Entry and String Display are allowed to and from these addresses.

NOTE
Addressing ranges for the 90-30 are: GWD and GBD.

D.10 MITSUBISHI MELSEC-A

When you select **Mitsubishi-A** from Application-Load-Configuration-Edit-Ports, the Mitsubishi-A Configuration Form prompts for the following information (**bold** entries in the right column indicate the SoftScreen default setting). For information on the correct settings for your PLC, refer to the PLC manual.

Table D-26. Mitsubishi-A Configuration Form

Baud	Select 300, 600, 1200, 2400, 4800, 9600, or **19.2K**.
Parity	Select **None,** Even, or Odd.
Data Bits	Select 7 or **8** data bits.
Stop Bits	Select **1** or 2 stop bits.
Format	Select **1**, 2, 3, or 4 to match the dial of your PLC.

Click Okay when you are finished.

Next, you are prompted to enter information into the PLC Configuration Form:

Table D-27. PLC Configuration Form

Name	Enter up to nine PLC names with a maximum of five characters each, or keep the defaults.
Type	The type is not user configurable and remains at **Type A**.
Address	Enter the address of each PLC as a number from 0 to 99.

Address expressions (entered for Expression in various configuration forms) specific to the Mitsubishi-A PLC interface are shown in the table below:

Table D-28. Mitsubishi Addressing

Device	**PLC Address**	**Number Type**	**Size**	**R/W**
Input X	X0000-X07FF	Hex	Bit	R/W
Output Y	Y0000-Y07FF	Hex	Bit	R
Internal relay M	M0000-M2047	Decimal	Bit	R/W
Latch relay L	L0000-L2047	Decimal	Bit	R/W
Link relay B	B0000-B03FF	Hex	Bit	R/W
Annunciator F	F0000-F0255	Decimal	Bit	R/W
Special relay M	M9000-M9255	Decimal	Bit	R
Timer contact TS	TS000-TS255	Decimal	Bit	R/W
Timer coil TC	TC000-TC255	Decimal	Bit	R/W
Counter contact CS	CS000-CS255	Decimal	Bit	R/W
Counter coil CC	CC000-CC255	Decimal	Bit	R/W
Timer value TN	TN000-TN255	Decimal	Word	R/W
Counter value CN	CN000-CN255	Decimal	Word	R/W
Data register D	D0000-D1023	Decimal	Word	R/W
Link register W	W0000-W03FF	Hex	Word	R/W
File register R	R0000-R8191	Decimal	Word	R/W
Special register D	D9000-D9255	Decimal	Word	R
Buffer direct BU	BU100-BU7FF	Hex	Word	R/W
Buffer indirect BI	BI1200-BI1FFF	Hex	Word	R/W
Special function SF	SFXX-AAAA*	Hex	Word	R/W

*Where:

XX	is special function unit number, 0x00-0x27
AAAA	is the address in SFU, 0x0000-0xFFFF
for example:	[SF1E-15CD]

Table D-28. Mitsubishi Addressing (*continued*)

Device	PLC Address	Number Type	Size	R/W
Input word XW	XW000-XW07F	Hex	Word	R/W
Output word YW	YW000-YW07F	Hex	Word	R
Internal relay word MW	MW000-MW127	Decimal	Word	R/W
Latch relay word LW	LW000-LW127	Decimal	Word	R/W
Link relay word BW	BW000-BW03F	Hex	Word	R/W
Annunciator word FW	FW00-FW15	Decimal	Word	R/W
Timer contact word TSW	TSW00-TSW15	Decimal	Word	R/W
Timer coil word TCW	TCW00-TCW15	Decimal	Word	R/W
Counter contact word CSW	CSW00-CSW15	Decimal	Word	R/W
Counter coil word CCW	CCW00-CCW15	Decimal	Word	R/W
Special relay word MW	MW9000-MW9015	Decimal	Word	R

For example, if the expression **[PLC1:TN123 3]** is entered in the development system software for a data display object, the engine reads and displays the value in PLC1, word TN123, bit 3. For TN, CN, D, W, R, and BU, the bit addresses are 0-15. For B1 and SF, the bit addresses are 0-7.

NOTE

Bit addresses cannot be specified for XW, YW, MW, LW, BW, FW, TSW, TCW, CSW, and CCW. To read/write to a bit address, use the addresses on the previous page.

D.11 MODBUS PLUS

When you select **Modbus Plus** from Application-Load-Configuration-Edit-Ports, the Modbus Plus Configuration Form prompts for the following information. For information on the correct settings for your PLC, refer to the PLC manual.

Table D-29. Modbus Plus Configuration Form

Timeout Value	Enter the number of seconds for the communication timeout (0-99). Default is **(1)**.
Network Address	Enter the node address of the SA85 board (**1**-64).
Base Address	Enter the base address of the SA85 board, **0xD0000** - fixed for 2000 series, 0xC0000-0xEF800 on 0x800 byte boundaries.

The PLC configuration requests:

Table D-30. PLC Configuration Form

Name	Enter up to nine PLC names with a maximum of five characters each, or keep the defaults.
Routing Path	Node path for Modicon or Modbus PLC. There can be up to five nodes per path, each node from 1-64. See your Modbus Plus documentation for more information.

Address expressions (entered for Expression in various configuration forms) specific to the Modbus Plus PLC interface are shown in the table below:

Table D-31. Modbus Plus 984 Addressing

Device	**PLC Address**	**Number Type**	**Size**	**R/W**
Coil status	00001-09999	Decimal	Bit	R
Input status	10001-19999	Decimal	Bit	R
Input Register	30001-39999	Decimal	Word	R
Holding register	40001-49999	Decimal	Word	R/W

Table D-32. Modbus 984-785E Addressing

Device	**PLC Address**	**Number Type**	**Size**	**R/W**
Coil status	000001-099999	Decimal	Bit	R
Input status	100001-199999	Decimal	Bit	R
Input register	300001-399999	Decimal	Word	R
Holding register	400001-499999	Decimal	Word	R/W

Valid bit addresses for holding and input registers are 0-15.

Expressions follow the same format whether they are used in data display objects, data entry objects, or recipe values. For example, if the expression **[PLC1:40001, SB]** is entered in the development system software for a data display object, the engine reads and displays the value in signed binary of PLC1, word 40001.

D.12 MODICON MODBUS

When you select **Modbus** from Application-Load-Configuration-Edit-Ports, the Modbus Configuration Form prompts for the following information (**bold** entries in the right column indicate the SoftScreen default setting). For information on the correct settings for your PLC, refer to the PLC manual.

Table D-33. Modbus Configuration Form

Baud	Select 300, 600, 1200, 2400, 4800, **9600**, or 19.2K.
Parity	Select **Even**, Odd, or None.
RTU/ASCII	Select **RTU** or ASCII. RTU is a bit-oriented protocol while ASCII uses ASCII characters. A 16-bit word can be sent as 2 bytes in RTU, and as 5 bytes (1 byte per character) in ASCII.
Stop Bits	Select **1** or 2 stop bits.
Timeout Value	3-30 seconds. Default =3. Number of seconds the engine should wait for a response from the PLC.

Click Okay when you are finished.

Next, you are prompted to enter information into the PLC Configuration Form:

Table D-34. PLC Configuration Form

Name	Enter up to nine PLC names with a maximum of five characters each, or keep the defaults.
Type	Select **984**, 584, 484, 384, or 984-785E, depending on your PLC.
Address	Enter the address of each PLC as a number from 1 to 247 or 0 if not using a PLC.

Address expressions (entered for Expression in various configuration forms) specific to the Modicon Modbus PLC interface are shown in the tables below:

Table D-35. Modbus 384 and 484 Addressing

Device	**PLC Address**	**Number Type**	**Size**	**R/W**
Coil status	0001-0999	Decimal	Bit	R
Input status	1001-1999	Decimal	Bit	R
Input register	3001-3999	Decimal	Word	R
Holding register	4001-4999	Decimal	Word	R/W

Table D-36. Modbus 584 and 984 Addressing

Device	PLC Address	Number Type	Size	R/W
Coil status	00001-09999	Decimal	Bit	R
Input status	10001-19999	Decimal	Bit	R
Input register	30001-39999	Decimal	Word	R
Holding register	40001-49999	Decimal	Word	R/W

Table D-37. Modbus 984-785XR Addressing

Device	PLC Address	Number Type	Size	R/W
Coil status	000001-099999	Decimal	Bit	R
Input status	100001-199999	Decimal	Bit	R
Input register	300001-399999	Decimal	Word	R
Holding register	400001-499999	Decimal	Word	R/W

Valid bit addresses for holding and input registers are 0-15 for Read only objects.

Expressions follow the same format whether they are used in data display objects, data entry objects, or recipe values. For example, if the expression **[PLC1:40001, SB]** is entered in the development system software for a data display object, the engine reads and displays the value in signed binary of PLC1, word 40001.

D.13 MULTI-DROP PORT

When you select **Multi-drop Port** from Application-Load-Configuration-Edit-Ports, the Multi-drop Port Configuration Form prompts for the following information. For information on the correct settings for your PLC, refer to the PLC manual.

Table D-38. Multi-drop Port Configuration Form

Baud	**9600** fixed
Parity	**none** fixed
Data Bits	**8** fixed
Stop Bits	**1** fixed

Next you are prompted to enter the PLC Name into the PLC Configuration Form. Enter a PLC name with a maximum of five characters or keep the default.

NOTE

Only Port 1 can be configured as the multi-drop port. You cannot address the multi-drop port.

D.14 OMRON

When you select **Omron** from Application-Load-Configuration-Edit-Ports, the Omron Configuration Form prompts for the following information (**bold** entries in the right column indicate the SoftScreen default setting). For information on the correct settings for your PLC, refer to the PLC manual.

Table D-39. Omron Configuration Form

Baud	Select 300, 600, 1200, 2400, 4800, **9600**, or 19.2K.
Parity	Select **Even** or Odd.
Data Bits	Select **7** or 8 data bits.*
Stop Bits	Select 1 or **2** stop bits.*
Mode	Select **Single-Link** or Multi-Link to match your PLC.

*** NOTE**
Data and stop bits can only be selected in two combinations:
- 7 data bits and 2 stop bits
- 8 data bits and 1 stop bit

Click Okay when you are finished.

Next, if you select Single-Link, you are prompted to enter the PLC Name into the PLC Configuration Form. Enter a PLC name with a maximum of five characters or keep the default.

If you select Multi-Link, provide the following information:

Table D-40. Multi-Link Configuration Form

Name	Enter up to nine PLC names with a maximum of five characters each, or keep the defaults.
Type	The type is not user configurable and remains at C 200h.
Address	Enter the address of each PLC as a number from 1-31.

Address expressions (entered for Expression in various configuration forms) specific to the Omron PLC interface are shown in the table below:

Table D-41. Omron Addressing

Device	**PLC Address**	**Number Type**	**Size**	**R/W**
Internal relay	IR0000-IR0246	Decimal	Word	R0-246 W30-49 W232-246
Holding relay	HR0000-HR0099	Decimal	Word	R/W
Auxiliary relay	AR0000-AR0022	Decimal	Word	R0-22 W7-22
Data memory	DM0000-DM1999	Decimal	Word	R0-1999 W0-999
Timer/counter	TC0000-TC0511	Decimal	Bit	R/W

Valid bit addresses for all devices except TC are 0-15.

For example, if the expression **[PLC1:DM706 3]** is entered in the development system software for a data display object, the engine reads and displays the value in PLC1, word DM706, bit 3.

D.15 OPTO 22 MISTIC MODEL 200/MISTIC 200 1.5

When you select Opto 22 Mistic 200 from Application-Load-Configuration-Edit-Ports, the Opto 22 Configuration Form, depicted below, appears.

> **NOTE**
> The Opto 22 Mistic 200 driver is for applications created with version 1.3 or earlier of the Cyrano development program. The Mistic 200 1.5 driver is for applications created with version 1.5 or later of the Cyrano development program.

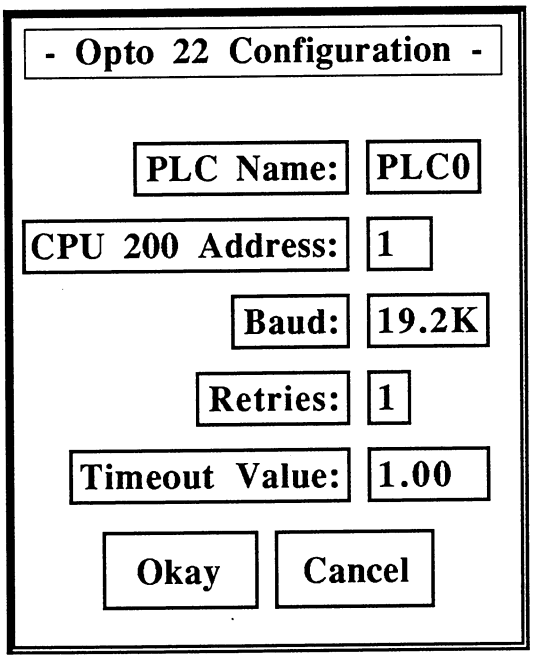


Figure D-7. Opto 22 Configuration Form

Items available when developing an Opto 22 mistic 200 application on the development system are defined in the table below. For information on the correct settings for your PLC, refer to the PLC manual.

Table D-42. Opto 22 Configuration Form

Name	Enter a five character name to reference the mistic 200 CPU. This defaults to PLC0 for Port 2.
Address	The target mistic 200 CPU address. The range is from 1-255. The default is 1.
Baud	The choices are 300, 600, 1200, 2400, 4800, 9600, or 19.2k.
Retry	The number of retries per command. The range is from 1-9. The default is 1.
Timeout	The communication time out in seconds. The range is 1-655.35. The default is 1.

Click Okay when you are finished. You will then be prompted to enter information into the PLC Configuration Form depicted in the figure on the next page.

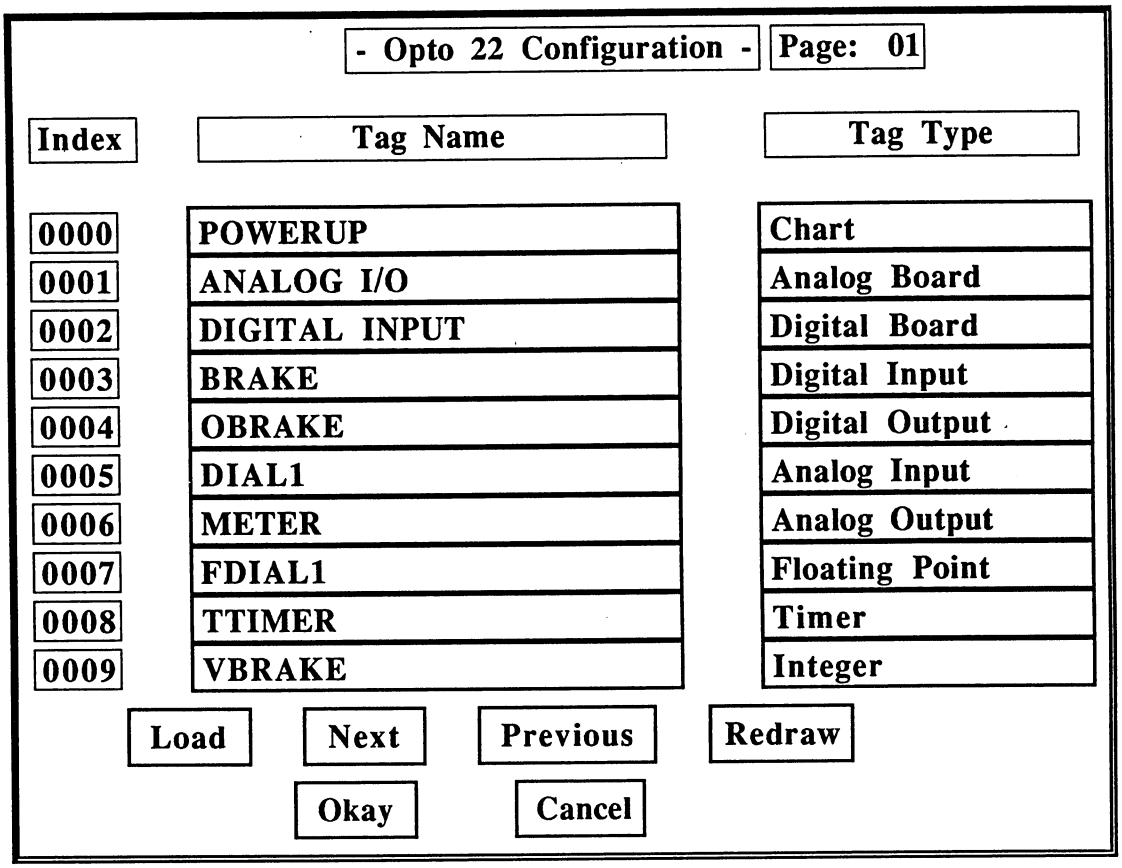


Figure D-8. PLC Configuration Form

Definitions of the items in the PLC Configuration Form are listed on the next page.

Table D-43. PLC Configuration Form

Tag Name	Enter up to 30 characters for each tag name.
Tag Type	Tag Types can be one of the supported PLC data types.
Load	Brings up the Load Cyrano GML File Form.
Next	Moves to the next page, with wrap around abilities.
Previous	Moves to the previous page, with wrap around abilities.
Redraw	Readjusts the form, so if one tag is erased, the other tag's will move up one.

A list of all tag names and each associated data type is displayed. This information can be loaded from a Cyrano 200's .GML file. To do this, select **Load**. This brings up the **Load Cyrano GML File Form**, depicted in the figure on the next page. There is a limit of 2000 tag names per port. If there are more than 2000 tag names in a GML file, all names will be loaded, but the user must delete the extra tag names before exiting the port's configuration. If a tag list exists when another is loaded, the new tag names will be added to the bottom of the list. (Moving items in the list could affect previously configured objects.)

This list could also be created by hand if so desired and edited if needed later. A tag name may be up to 30 characters. Click Okay when you are finished.

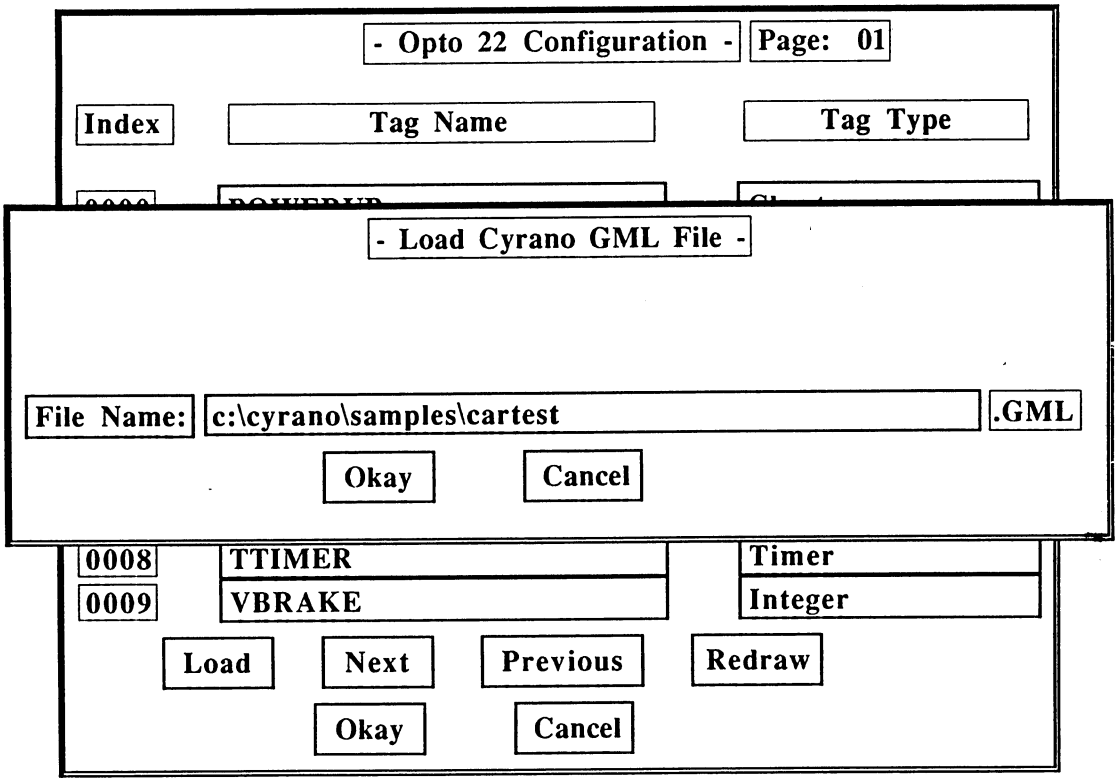


Figure D-9. Load Cyrano GML File

Enter in the path and Cyrano application name of the application containing the tag names. Clicking Okay will load the tag names and return you back to the previous form. Cancel will return you to the previous form without loading the tag names.

D.15.1 **Supported PLC Data Types**

Table D-44. Supported PLC Data Types

Data Type	R/W	Expression Example
Variable Data		
Integer Variable	R/W	[tagname]
Integer Table Variable	R/W	[tagname.index] index = 0-8191
Floating Point Variable	R/W	[tagname]
Floating Point Table Variable	R/W	[tagname.index] index = 0-8191
Timer Variable	R/W	[tagname]
String Variable	R/W	[tagname]
String Table Variable	R/W	[tagname.index] index = 0-8191
Chart Status		
Chart Status	R	[tagname]

Table is continued on the next few pages.

Only task status, integers, and integer tables allow specifying a bit in the expression. The bit range is 0-15. The return value for flags is either 0 or 1. Digital Board States also allow bit entries.

Table D-44. Supported PLC Data Types (*continued*)

Data Type	R/W	Expression Example
Specific PID Loop Data		
PID Enable Flag	R	[tagname]
PID Auto/Manual Flag Internal	R	[tagname.i.f]
PID Auto/Manual Flag External	R	[tagname.x.f]
PID Setpoint Internal	R	[tagname.i.s]
PID Setpoint External	R	[tagname.x.s]
PID Input Internal	R	[tagname.i.n]
PID Input External	R	[tagname.x.n]
PID Output Internal	R	[tagname.i.o]
PID Output External	R	[tagname.x.o]
PID P Term Internal	R	[tagname.i.p]
PID P Term External	R	[tagname.x.p]
PID I Term Internal	R	[tagname.i.i]
PID I Term External	R	[tagname.x.i]
PID D Term Internal	R	[tagname.i.d]
PID D Term External	R	[tagname.x.d]
Analog Board PID Loop Data		
PID Setpoint External	R	[tagname.PID.s] PID = 0-7
PID Input External	R	[tagname.PID.n] PID = 0-7
PID Output External	R	[tagname.PID.o] PID = 0-7

Table D-44. Supported PLC Data Types (*continued*)

Data Type	R/W	Expression Example
Analog Board Data		
Analog Board Enable Flag	R	[tagname]
Analog Point Enable Flag	R	[tagname.point] point = 0-15
Analog Point Internal	R	[tagname.point.i] point = 0-15
Analog Point External	R	[tagname.point.x] point = 0-15
Analog Point Data		
Analog Enable Flag	R	[tagname]
Analog Value Internal	R	[tagname.i]
Analog Value External	R	[tagname.x]
Digital Board Data	**R/W**	**Expression Example**
Digital Board Enable Flag	R	[tagname]
Digital Board State Internal	R	[tagname.i]
Digital Board State External	R	[tagname.x]

Table D-44. Supported PLC Data Types (*continued*)

Digital Board Data	R/W	Expression Example
Digital Point Data		
Digital Enable Flag	R	[tagname]
Digital Value Internal	R	[tagname.i]
Digital Value External	R	[tagname.x]
Digital Latch Internal	R	[tagname.i.l]
Digital Latch External	R	[tagname.x.l]
Digital Counter Internal	R	[tagname.i.c]
Digital Counter External	R	[tagname.x.c]
Digital Frequency Internal	R	[tagname.i.f]
Digital Frequency External	R	[tagname.x.f]
Digital TPO Period Internal	R	[tagname.i.t]
Digital TPO Period External	R	[tagname.x.t]
Digital Period Internal	R	[tagname.i.e]
Digital Period External	R	[tagname.x.e]
Digital Pulse Internal	R	[tagname.i.u]
Digital Pulse External	R	[tagname.x.u]
Digital TPO % Internal	R	[tagname.i.%]
Digital % External	R	[tagname.x.%]

Only task status, integers, and integer tables allow specifying a bit in the expression. The bit range is 0-15. The return value for flags is either 0 or 1. Digital Board States also allow bit entries.

D.16 SATT COMLI

When you select **Satt COMLI** from Application-Load-Configuration-Edit-Ports, the Satt COMLI Configuration Form prompts for the following information (**bold** entries in the right column indicate the SoftScreen default setting). For information on the correct settings for your PLC, refer to the PLC manual.

Table D-45. Satt COMLI Addressing

Baud	Select 300, 600, 1200, 2400, 4800, **9600**, or 19.2K
Parity	Select **Odd**, Even, or None
Data Bits	**8** or 7
Stop Bits	**1** (not user configurable).
Mode	**BINARY** or ASCII

Click Okay when you are finished.

Next, you are prompted to enter information into the PLC Configuration Form:

Table D-46. PLC Configuration Form

Name	Enter up to nine PLC names with a maximum of five characters each or keep the defaults.
Type	The type is not user configurable and remains at **SATT.**
Address	Enter the address of each PLC as a number from 0 to 255.

The address expression format specific to the SATT PLC interface is shown in the table below:

Table D-47. Satt Address Expressions

Device	PLC Address	Number Type	Size	R/W
Register	DN0000-DN3071	Decimal	Word	R/W*
I/O RAM	IOR000-IOR37770	Octal	Byte	R
I/O RAM	IOR000-IOR37777	Octal	Bit	W

*Bits are Read Only

For Register reads, the allowable bit range is 0-15. For IOR Reads, the allowable bit range is 0-7. Example: [PLC0:DN99 15] in a data display reads and displays the value in PLC0, register 99, bit 15.

D.17 SIEMENS

When you select **Siemens** from Application-Load-Configuration-Edit-Ports, the Siemens Configuration Form appears to let you know what communications options are set. These options are for your reference. They are not user configurable:

Table D-48. Siemens Configuration Form

Baud	9600
Parity	Even
Data Bits	8
Stop Bits	1

Click Okay to display the next form.

Next, you are prompted to enter information into the PLC Configuration Form:

Table D-49. PLC Configuration Form

PLC Name	Enter a PLC name with a maximum of five characters or keep the default.
PLC Type	Select **941-944**, CPU 90U, CPU 95U, CPU 928, CPU 921, CPU 922, CPU 100, CPU 102, or CPU 103 to match your PLC device.

Address expressions (entered for Expression in various configuration forms) specific to the Siemens PLC interface are shown in the table below:

Table D-50. Siemens 100 Series CPU Addressing

Device	100 CPU Address	102 CPU Address	103 CPU Address	Size	R/W
Input (I)	I0000-I0127	I0000-I0127	I0000-I0127	Byte	R
Output (Q)	Q0000-Q0127	Q0000-Q0127	Q0000-Q0127	Byte	R
Flag (F)	F0000-F0127	F0000-F0127	F0000-F0127	Byte	R
Timer status (TS)	TS0000-TS015	TS0000-TS028	TS0000-TS0127	Word	R
Timer value (TV)	TV0000-TV015	TV0000-TV028	TV0000-TV0127	Word	R
Counter status (CS)	CS0000-CS015	CS0000-CS031	CS0000-CS031	Word	R
Counter value (CV)	CV0000-CV015	CV0000-CV031	CV0000-CV031	Word	R
Data block	DB2-DB63	DB2-DB63	DB2-DB255	N/A	N/A
*Right byte (DB DR)	DR000-DR255	DR000-DR255	DR000-DR255	Byte	R
*Left byte (DB DL)	DL000-DL255	DL000-DL255	DL000-DL255	Byte	R
*Word (DB DW)	DW000-DW255	DW000-DW255	DW000-DW255	Word	R/W
*§Floating pt.(DB FP)	FP000-FP254	FP000-FP254	FP000-FP254	Double Word	R/W
*Bit in word (DB BI)	BI000-BI255	BI000-BI255	BI000-BI255	Bit	R

Table D-51. Siemens 900 Series CPU Addressing

Device	921/922 CPU Address	928 CPU Address	94X CPU Address	Size	R/W
Input (I)	I0000-I0127	I0000-I0127	I0000-I0127	Byte	R
Output (Q)	Q0000-Q0127	Q0000-Q0127	Q0000-Q0127	Byte	R
Flag (F)	F0000-F0255	F0000-F0255	F0000-F0255	Byte	R
Timer status (TS)	TS0000-TS0127	TS0000-TS0255	TS0000-TS0127	Word	R
Timer value (TV)	TV0000-TV0127	TV0000-TV0255	TV0000-TV0127	Word	R
Counter status (CS)	CS0000-CS0127	CS0000-CS0255	CS0000-CS0127	Word	R
Counter value (CV)	CV0000-CV0127	CV0000-CV0255	CV0000-CV0127	Word	R
Data block	DB2-DB0255	DB3-DB0255	DB2-DB255	N/A	N/A
*Right byte (DB DR)	DR000-DR255	N/A	DR000-DR255	Byte	R
*Left byte (DB DL)	DL000-DL255	N/A	DL000-DL255	Byte	R
*Word (DB DW)	DW000-DW255	DW000-DW255	DW000-DW255	Word	R/W
*§Floating pt.(DB FP)	FP000-FP254	FP000-FP254	FP000-FP254	Double Word	R/W
*Bit in word (DB BI)	BI000-BI255	BI000-BI255	BI000-BI255	Bit	R

Table continued on the following page.

Table D-51. Siemens 900 Series CPU Addressing (*continued*)

Device	90U CPU Address	95U CPU Address	Size	R/W
Input (I)	I0000-I0127	I0000-I0127	Byte	R
Output (Q)	Q0000-Q0127	Q0000-Q0127	Byte	R
Flag (F)	F0000-F0127	F0000-F0256	Byte	R
Timer status (TS)	TS0000-TS0031	TS0000-TS0127	Word	R
Timer value (TV)	TV0000-TV0031	TV000-TV0127	Word	R
Counter status (CS)	CS0000-CS0031	CS0000-CS0031	Word	R
Counter value (CV)	CV0000-CV0031	CV0000-CV0031	Word	R
Data block	DB2-DB063	DB2-DB0255	N/A	N/A
*Right byte (DB DR)	DR000-DR255	DR000-DR255	Byte	R
*Left byte (DB DL)	DL000-DL255	DL000-DL255	Byte	R
*Word (DB DW)	DW000-DW255	DW000-DW255	Word	R/W
*§Floating pt.(DB FP)	FP000-FP254	FP000-FP254	Double Word	R/W
**Bit in word (DB BI)	BI000-BI255	BI000-BI255	Bit	R

* These data items are contained within a data block. To access an item, you must specify the data block number, data item type, and data item word address. For example, to specify the left byte in word 22 of data block 12, use [DB12-DL22]. To specify the floating point value at word address 31 of data block 9, use [DB9-FP31].

** For data block bit in word, (DB BI), a bit address from 0-15 **must** be specified. Valid bit addresses for I, Q, and F are 0-7. Valid bit addresses for TS, CS, TV, and CU, are 0-15. Valid bit addresses for DW are 0-15 and are read only; DR, and DL are 0-7 and are read-only.

§ If you do not specify floating point format in your expressions for floating point registers, SoftScreen automatically assigns floating point format, regardless of the default PLC format setting.

SoftScreen and the Siemens PLC store floating point data types in different formats. SoftScreen uses a fixed-point format in which up to nine significant digits can be displayed, while the Siemens PLC uses IEEE single floating point format in which only seven significant digits can be displayed. For example, SoftScreen can display the eight-digit value 1234.5678, but a digit is lost when the value is sent to and stored in the PLC. When the value is read back, it may be displayed as 1234.5677 or 1234.5679.

As an example, if the expression **[PLC1:TS0126 3]** is entered in the development system software for a data display object, the engine reads and displays the value in PLC1, word TS0126, bit 3.

SoftScreen's internal value limit is from -32768 to 32767.9998. Therefore, floating point values beyond this range will not be represented accurately.

CAUTION

Writing to the same data block from the PLC program and from SoftScreen may cause PLC lockups.

Do not use the Siemens Generate or Compress Data Block commands in ladder programs or on the programming panel while connected to any Xycom products. Due to the way Siemens processes information, memory in the PLC can be corrupted when these commands are executed while connected to a Xycom unit.

If you must use the commands, disconnect Xycom equipment, execute the commands, re-connect our equipment, and **restart our equipment**.

D.18 SIMULATED PLC

The simulated PLC does not have a configuration form. Only the PLC Configuration Form requesting the PLC Name appears. Enter a PLC name with a maximum of five characters or keep the default.

Address expressions specific to the Simulated PLC are shown in the table below:

Table D-52. Simulated PLC Addressing

Device	PLC Address	Number Type	Size	R/W
Random Number	RAND	-	Word	R
Ramp Up	RAMPUP	-	Word	R/W
Ramp Down	RAMPDN	-	Word	R/W
Address	0-49	Decimal	Fixed Point	R/W

Valid bit addresses for all devices except Address are 0-15, and are read-only.

RAND, RAMPUP, and RAMPDN range from 0-32767.

NOTE
Only one port per application may be configured for the Simulated PLC.

D.19 SQUARE D

When you select **Square D** from Application-Load-Configuration-Edit-Ports, the Square D Configuration Form prompts for the following information (**bold** entries in the right column indicate the SoftScreen default setting). For information on the correct settings for your PLC, refer to the PLC manual.

Table D-53. Square D Configuration Form

Baud	Select 300, 600, 1200, 2400, 4800, **9600**, or 19.2K.
Parity	**Even** (not user selectable)
Data Bits	**8** (not user selectable)
Stop Bits	**1** (not user selectable)
Timeout Value	Enter a timeout value in seconds from 1 to 16. The default is **3**.
Mode	Select **Direct** as the mode if connecting directly with a Square D PLC or as Network if connecting to a Square D network.
Network Interface Module Number	If you select Network for the Mode, enter the number of the network interface module as a value from **1** to 199.
Net-to-Net Address	If you select Network for the Mode, enter the net-to-net address as a value from **1** to 199.

Click Okay when you have finished entering information.

If Mode is set to Direct, you are prompted to enter the PLC Name into the PLC

Configuration Form. Enter a PLC name with a maximum of five characters or keep the default.

If Mode is set to Network, you are prompted to enter information into the PLC Configuration Form:

Table D-54. PLC Configuration Form

Name	Enter up to nine PLC names with a maximum of five characters each or keep the defaults.
Type	Select **Single** Connection for single network connection, N-To-N for network
Address	Enter the address of each PLC as a number from 0-199.

Address expressions (entered for Expression in various configuration forms) specific to the Square D PLC interface are shown in the table below:

Table D-55. Square D Addressing

Device	**PLC Address**	**Number Type**	**Size**	**R/W**
All	S0001-S9999	Decimal	Word	R/W

Square D S memory can be written to as words (e.g., [S1]) or as bits (e.g., [S1 3].

Valid bit addresses are 1 to 16.

For example, if the expression **[PLC1:S1234 3]** is entered in the development system software for a data display object, the engine reads and displays the value in PLC1, word S1234, bit 3.

> **NOTE**
> You are not able to configure 8320 Port 4 for Square-D. Port 4 is RS232 **only**, and Square-D uses RS422.

D.20 TI-405/435

When you select **TI-405** from Application-Load-Configuration-Edit-Ports, the TI-405 Configuration Form appears. Only the baud rate option in this form is user configurable. The other options are shown below for reference.

Table D-56. TI-405 Configuration Form

Baud	9600
Parity	Odd
Data Bits	8
Stop Bits	1

Click Okay after selecting a baud rate.

Next, you are prompted to enter the PLC Name into the PLC Configuration Form. Enter a PLC name with a maximum of five characters or keep the default.

Address expressions (entered for Expression in various configuration forms) specific to the TI-405 interface are shown in the table below:

Table D-57. TI-405/435 Addressing

Device	PLC Address	Number Type	Size	R/W
Timer	T0000-T0177	Octal	Word	R/W
Counter	CT000-CT177	Octal	Word	R/W
User register	U0000-U6377	Octal	Word	R/W
Remote I/O memory	GX000-GX777	Octal	Bit	R/W
Input memory	X0000-X0477	Octal	Bit	R/W
Output memory	Y0000-Y0477	Octal	Bit	R
Control relay	C0000-C0737	Octal	Bit	R/W
Stage memory	S0000-S0577	Octal	Bit	R/W
Timer relay	TR000-TR177	Octal	Bit	R/W
Counter relay	CTR00-CTR177	Octal	Bit	R/W
Special relay	SP000-SP137, SP320-SP617	Octal	Bit	R
V memory	V0000-V41230	Octal	Word	R/W
Scratch pad memory	SPD00-SPD8FF	Hex	Byte	R/W

For example, if the expression **[PLC1:CT123 3]** is entered in the development system software for a data display object, the engine reads and displays the value in PLC1, word CT123, bit 3.

> **NOTE**
> Valid bit addresses for T, CT, U, and V are 0-15, and are read only. Valid bit addresses for SPD are 0-7 and are read only.

D.21 **TI-500/505**

When you select **TI-500** from Application-Load-Configuration-Edit-Ports, the TI-500 Configuration Form prompts for the following information (**bold** entries in the right column indicate the SoftScreen default setting). For information on the correct settings for your PLC, refer to the PLC manual.

Table D-58. TI-500 Configuration Form

Baud	Select 300, 600, 1200, 2400, 4800, **9600**, or 19.2K.
Parity	**Odd** (not user selectable)
Data Bits	**7** (not user selectable)
Stop Bits	Select **1** or 2 stop bits.
Timeout Value	3-30 seconds. Default = 3. Sets the length of time the engine should wait for a response from the PLC.
Bit Order (MSB-LSB)	Select **15-0** or 1-16 for bit addressing order.

Click Okay when you have finished entering information.

Next, you are prompted to enter the PLC Name into the PLC Configuration Form. Enter a PLC name with a maximum of five characters or keep the default.

Address expressions (entered for Expression in various configuration forms) specific to the TI-500 interface are shown in the table below:

Table D-59. TI-500/505 Addressing

Device	PLC Address*	Size	R/W
Input	X0001-X65535	Bit	R/W
Output	Y0001-Y65535	Bit	R
Internal coil	C0001-C65535	Bit	R/W
Variable	V0001-V65535	Word	R/W
Constant	K0001-K65535	Word	R/W
Word input	WX001-WX65535	Word	R/W
Word output	WY001-WY65535	Word	R
Drum step current	DSC01-DSC65535	Word	R/W
Drum step preset	DSP01-DSP65535	Word	R/W
Status word	STW01-STW65535	Word	R
Timer/counter preset	TCP01-TCP65535	Word	R/W
Timer/counter current	TCC01-TCC65535	Word	R/W
Analog alarm acknowledge	AACK1-AACK65535	Word	R/W
Analog alarm deadband	AADB1-AADB65535	Floating point	R/W
Most significant word of analog alarm C-flags	ACFH1-ACFH65535	Word	R/W
Least significant word of analog alarm C-flags	ACFL1-ACFL65535	Word	R/W
Analog alarm error	AERR1-AERR65535	Floating point	R/W
Analog alarm high alarm limit	AHA1-AHA65535	Floating point	R/W
Analog alarm high-high alarm limit	AHHA1-AHHA65535	Floating point	R/W
Analog alarm low alarm limit	ALA1-ALA65535	Floating point	R/W
Analog alarm low-low alarm limit	ALLA1-ALLA65535	Floating point	R/W
Analog alarm orange deviation alarm limit	AODA1-AODA65535	Floating point	R/W
Analog alarm process variable	APV1-APV65535	Floating point	R/W
Analog alarm process variable high limit	APVH1-APVH65535	Floating point	R/W
Analog alarm process variable low limit	APVL1-APVL65535	Floating point	R/W
Analog alarm rate of change alarm limit	ARCA1-ARCA65535	Floating point	R/W
Analog alarm set point	ASP1-APS65535	Floating point	R/W
Analog alarm set point high limit	ASPH1-ASPH65535	Floating point	R/W
Analog alarm set point low limit	ASPL1-ASPL65535	Floating point	R/W
Analog alarm sample rate	ATS1-ATS65535	Floating point	R/W
Analog alarm flags	AVF1-AVF65535	Word	R/W
Analog alarm yellow deviation alarm limit	AYDA1-AYDA65535	Floating point	R/W
Constant	K1-K65535	Word	R/W

Table continued on the following page.

Table D-59. TI-500/505 Addressing (*continued*)

Device	PLC Address*	Size	R/W
Loop alarm acknowledge	LACK1-LACK65535	Word	R/W
Loop alarm deadband	LADB1-LADB65535	Floating point	R/W
Most significant word of loop C-flags	LCFH1-LCFH65535	Word	R/W
Least significant word of loop C-flags	LCFL1-LCFL65535	Word	R/W
Loop error	LERR1-LERR65535	Floating point	R/W
Loop high alarm limit	LHA1-LHA65535	Floating point	R/W
Loop high-high alarm limit	LHHA1-LHHA65535	Floating point	R/W
Loop gain	LKC1-LKC65535	Floating point	R/W
Loop derivative gain limiting coefficient	LKD1-LKD65535	Floating point	R/W
Loop low alarm limit	LLA1-LLA65535	Floating point	R/W
Loop low-low alarm limit	LLLA1-LLLA65535	Floating point	R/W
Loop output	LMN1-I MN65535	Floating point	R/W
Loop bias	LMX1-LMX65535	Floating point	R/W
Loop orange deviation alarm limit	LODA1-LODA65535	Floating point	R/W
Loop process variable	LPV1-LPV65535	Floating point	R/W
Loop process variable high limit	LPVH1-LPVH65535	Floating point	R/W
Loop process variable low limit	LPVL1-LPVL65535	Floating point	R/W
Loop rate of change alarm limit	LRCA1-LRCA65535	Floating point	R/W
Loop ramp/soak flags	LRSF1-LRSF65535	Word	R/W
Loop ramp/soak step number	LRSN1-LRSN65535	Word	R/W
Loop set point	LSP1-LSP65535	Floating point	R/W
Loop set point high limit	LSPH1-LSPH65535	Floating point	R/W
Loop set point low limit	LSPL1-LSPL65535	Floating point	R/W
Loop rate	LTD1-LTD65535	Floating point	R/W
Loop reset	LTI1-LTI65535	Floating point	R/W
Loop sample rate	LTS1-LTS65535	Floating point	R/W
Loop V-flags	LVF1-LVF65535	Word	R/W
Loop yellow deviation limit	LYDA1-LYDA65535	Floating point	R/W

Valid bit addresses for all devices except X, Y, and C are 0-15, or 1-16 as configured by the user.

***NOTE**

PLC address numbers are for reference only. Check your PLC documentation for memory size limits.

Expressions follow the same format whether they are used in data display objects, data entry objects, or recipe values. For example, if the expression **[PLC0:WX10 3]** is entered in the development system software for a data display object, the engine reads and displays the value in PLC0, word WX10, bit 3.

NOTE

SoftScreen and the TI Series 500 PLC store floating point data types in different formats. SoftScreen uses a fixed-point format in which up to nine significant digits can be displayed, whereas the TI PLC uses IEEE single floating point format in which only seven significant digits can be displayed. For example, the 8-digit value 1234.5678 can be displayed in SoftScreen, but a digit will be lost when the value is sent to and stored in the PLC. When the value is read back, it may be displayed as 1234.5677 or 1234.5679.

NOTE

If you do not specify floating point format in your expressions for floating point registers, SoftScreen will automatically assign floating point format, regardless of the default PLC format setting.

NOTE

When using V memory as floating point (FP) values, two V memory locations are needed to store the value. Once a V memory location is defined as FP in an application, it must always be defined as floating point in that application. For example, if you specify [V1, FP] the value will be stored in both V1 and V2 locations.

D.22 WESTINGHOUSE

When you select **Westinghouse** from Application-Load-Configuration-Edit-Ports, the Westinghouse Configuration Form prompts for the following information (**bold** entries in the right column indicate the SoftScreen default setting). For information on the correct settings for your PLC, refer to the PLC manual.

Table D-60. Westinghouse Configuration Form

Baud	Select **9600** or 1200.
Parity	Select parity as **Odd** or None.
Stop Bits	**2** (not user selectable)
Data Bits	**8** (not user selectable)
Timeout Value	Enter a timeout value in seconds from 1 to 10. The default is **3**.

Click Okay when you have finished entering information.

Next, you are prompted to enter the PLC Name into the PLC Configuration Form. Enter a PLC name with a maximum of five characters or keep the default.

Address expressions (entered for Expression in various configuration forms) specific to the Westinghouse PLC interface are shown in the table below:

Table D-61. Westinghouse Addressing

Device	**PLC Address**	**Number Type**	**Size**	**R/W**
All	0000-FFFF	Hex	Word	R/W

Valid bit addresses are 0-15.

For example, if the expression **[PLC1:FFFF 3]** is entered in the development system software for a data display object, the engine reads and displays the value in PLC1, word FFFF, bit 3.

D.23 XYCOM TERMINAL

When you select **Xycom Terminal** from Application-Load-Configuration-Edit-Ports, the Xycom Terminal Configuration Form appears. None of the items in this form are user configurable. They are shown below for reference only.

Table D-62. Xycom Terminal Configuration Form

Baud	9600
Parity	none
Data Bits	8
Stop Bits	1

Click Okay to continue.

Next, you are prompted to enter the PLC Name into the PLC Configuration Form. Enter a PLC name with a maximum of five characters or keep the default.

Address expressions (entered for Expression in various configuration forms) specific to the Xycom Terminal interface are in the form, [Station number #reg], where Station Number is the SoftScreen Network Address of the Xycom Terminal, and #reg is the terminal's internal register being accessed.

Ranges for the different terminals are shown in the table below:

Table D-63. Xycom Terminal Addressing Ranges

Device	**Address**	**Number Type**	**Size**	**R/W**
Station Number	0-255	N/A	N/A	N/A
2000 series	#1-#19 #20-#100	Decimal Decimal	Fixed point Fixed point	R R/W
8320	#1-#7, #20-#500 #8-#19	Decimal Decimal	Fixed point Fixed point	R/W R
PC/AT	#1-#7, #20-#999, #1050-#2000 #8-#19, #1000-#1049	Decimal Decimal	Fixed point Fixed point	R/W R

For example, if the expression [3 #20] is entered in the development system software for a data display object, the engine reads and displays the value in STATION 3 register 20.

For more information on SoftScreen internal register assignments, refer to Table C-2.

D.24 INDRAMAT

When you select **Indramat** from Application-Load-Configuration-Edit-Ports, the Indramat Configuration Form prompts for the following information (**bold** entries in the right column indicate the SoftScreen default setting). For information on the correct settings for your DLC, refer to your DLC manual. Error code is set to off and is not user-configurable. It is shown for reference only.

Table D-64. Indramat Configuration Form

Transmit Acknowledge	**Off,**On
Checksum	**Off** (not configurable)
Error Code	**Off**
Baud	Select 300, 600, 1200, 2400, 4800, or **9600**
Parity	**Even**, Odd, None
Data Bits	**7**, 8
Stop Bits	**1**, 2
Timeout Value	**1**-10 seconds

Click Okay to display the next form.

Next you are prompted to enter information into the PLC Configuration Form:

Table D-65. PLC Configuration Form

Name	Enter up to nine PLC names with a maximum of five characters each or keep the defaults.
Type	This type is not user configurable and remains at **DLC.**
Address	Enter the address of each DLC as a number from 1 to 15.

Address expressions (entered for Expression in various configuration forms) specific to the Indramat DLC interface are shown in the table below:

Table D-66. Indramat Addressing

Device	PLC Address	Number Type	R/W
A Parameter	A100-A125	String	R/W
B Parameter	B000-B023	String	R/W
D Parameter	D01-D19	String	R/W
M Function	MH00-MH63 ML00-ML63	String	R/W
Status	S00,S02-S10, S18-S19, S46-S48, S50-S53	String	R
Program Block	BL0000-BL2999	String	R/W

Note: A, B, and D parameters are eight characters long.
B003 and B004 are read only.
Expressions for S06, S07, S46, and program blocks require extra data fields.

Valid ranges for these data fields are listed in the table below.

Address	Data Field
S04	**0000**-2999
S06	**0**-5
S07	**0**-7
S46	**0**-1
BL0000	0-4

Example of a DLC program:

Block #	Numonic			
100	PSA	- 1	-000005.000	010
Parameter:		#0	#1	#2

Example 1
If the expression is **[PLC0: BL0100]** in string display, the engine reads and displays the command stored in block 100 of PLC0.

Example 2
To write a program block parameter **[PLC0: BL0100 1]**, the engine would read program block 100 from PLC0, change parameter #1, then write the program block to the DLC.

Example 3
The expression **[PLC0: S04 0002]** in a string display would display status 04 (counter status), counter block #2.

NOTE
Floating point numbers are displayed with the decimal point implied, as they are on the CTA. To display the decimal point, use "text" to place the decimal

D.24 Siemens SIMATIC TI305

This driver is configured using the GE Series 6 CCM2 Configuration Form. When you select **GE Series 6 CCM2** from Application-Load-Configuration-Edit-Ports, the GE CCM2 Configuration Form prompts you for the following information (**bold** entries in the right column indicate the SoftScreen default setting). For information on the correct settings for your PLC, refer to your PLC manual.

Table D-67. SIMATIC TI305 Configuration Form

Baud	Select 300, 600, 1200, 2400, 4800, **9600**, or 19.2K
Parity	Select **Odd** or None.
Data Bits	**8** (not user configurable).
Stop Bits	**1** (not user configurable).

Click Okay when you are finished.

Next, you are prompted to enter information into the PLC Configuration Form:

Table D-68. PLC Configuration Form

Name	Enter up to nine PLC names with a maximum of five characters each, or keep the defaults.
Type	The options in this field are **Series 6** or TI305. Select TI305.
Address	Enter the address of each PLC as a value from 0 to 255.

The address expressions (entered for Expression in various configuration forms) specific to the SIMATIC TI305 interface are shown in the table below:

Table D-69. SIMATIC TI305 - DCU Addressing

Device	**PLC Address (Octal)**	**SoftScreen Address (Decimal)**	**Number Type**	**Size**	**R/W**
I/O	IO0-IO157	O1-O112	Decimal	Bit	R
Control Relay	IO160-IO373	O113-O252	Decimal	Bit	R
Special Relay	IO375-IO377	O253-O256	Decimal	Bit	R
Shift Register	IO400-IO577	O257-O384	Decimal	Bit	R
T/C Bit	TC600-TC677	O385-O448	Decimal	Bit	R
I/O	IO700-IO767	O449-O504	Decimal	Bit	R
Flags	IO770-IO777	O505-O512	Decimal	Bit	R
T/C Value	AC600-AC677	R1-R64	Decimal	Word	R/W
Data Register*	R400-R576	R65-R128	Decimal	Word	R/W

* Two PLC registers per SoftScreen Address

Valid bit addresses for register addresses are 0-15.

For example, if the expression **[PLC1:O1]** is entered in the development system software for a data display object, the engine reads and displays the value in PLC1, IO bit 0.

Table D-66. SIMATIC TI305 - TI335 RS-232C Port Addressing

Device	PLC Address (Octal)	SoftScreen Address (Decimal)	Number Type	Size	R/W
I/O	IO0-IO157	O1-O112	Decimal	Bit	R
Control Relay	IO160-IO373	O113-O252	Decimal	Bit	R
Special Relay	IO375-IO377	O253-O256	Decimal	Bit	R
Shift Register	IO400-IO577	O257-O384	Decimal	Bit	R
T/C Bit	TC600-TC677	O385-O448	Decimal	Bit	R
I/O	IO700-IO767	O449-O504	Decimal	Bit	R
Flags	IO770-IO777	O505-O512	Decimal	Bit	R
Control Relay	IO1000-IO1067	O513-O568	Decimal	Bit	R
T/C Value	AC600-AC677	R1-R64	Decimal	Word	R/W
Data Register*	R400-R576	R65-R128	Decimal	Word	R/W
Data Register*	R700-R776	R129-R160	Decimal	Word	R/W

* Two PLC registers per SoftScreen Address

Valid bit addresses for register addresses are 0-15.

For example, if the expression **[PLC1:R65 3]** is entered in the development system software for a data display object, the engine reads and displays the value in PLC1, word R400 bit 3.

The following is a listing of error messages you may encounter on the development system. For a listing of runtime engine messages, please refer to your engine manual.

Table E-1. Error Messages

Message	Meaning
Default PLC Name Not Found	The PLC name was not specified in an address and the default PLC name was not specified in the Configuration Menu. To correct the error, specify a correct PLC name in the address, edit the system configuration, and change the default PLC name, or edit the port configuration and use the PLC name to define the appropriate port.
Equation Is Too Long To Translate In The Space Provided	When the expression is evaluated and stored in memory, the addition of parentheses may cause the expression to be larger than the space allowed. If constant expressions are used, reduce them to a single constant. If complex expressions are used, try a simpler way to express the same thing.
Illegal Bit Address	Based upon the particular PLC network and type, an incorrect bit address was entered. Some networks do not allow writing to bit addresses, some allow only bits 0 to 15, and others bits 0 to 7.
Illegal Format	The data is not in one of the following formats: SB, SD, UB, UD, U3, or FP. (See Table 5-1 for more information).
Illegal PLC Address	The address was not valid for the particular PLC or PLC network. Change either the address value or address type

Table continued on next page.

Table E-1. Error Messages (continued)

Message	Meaning
Condition Must Be Specified	An expression must exist in order for the object to work correctly on the engine. Selecting Okay will move the cursor to the necessary field.
Illegal Write Address	The address for the particular network and PLC type cannot be modified.
Not Enough Memory To Create Object	A screen can be 16 Kbytes for the 2000 series and 64 Kbytes for the graphic workstation/PC/AT.
Not An Address	A constant or undefined value was the destination for a recipe address or a write data to address function or pseudo key. Addresses are registers (#0-#500) or PLC addresses ([name:address bit,format]).
Number Out Of Range	Decimal values range from -32768 to 32767; hexadecimal values range from 0 to 0xFFF; register values range from 0 to 500.
Operator To The Left Of "=" Is Not A Register	Only registers are allowed to be assigned values and are denoted with a #. == is used to represent the equal condition.
PLC Name Not Found	The PLC name specified in an address is not defined in the port configuration. Specify a properly defined PLC name or edit the port configuration and define the PLC name before using it.
Unexpected Character	A character was encountered in an unexpected order (e.g., too many operators with no operand).
Unexpected End-Of-Line	An expression ended when more information was expected (e.g., there is an ending operator but no operand).

The SoftScreen Development System comes with predefined symbol libraries to help you create screens for your application. Each library contains several symbols. The symbols in each library are shown on the following pages.

NOTE

This appendix is intended as a guide. You may not have every symbol shown, or you may have additional symbols that are not shown, depending on your application.

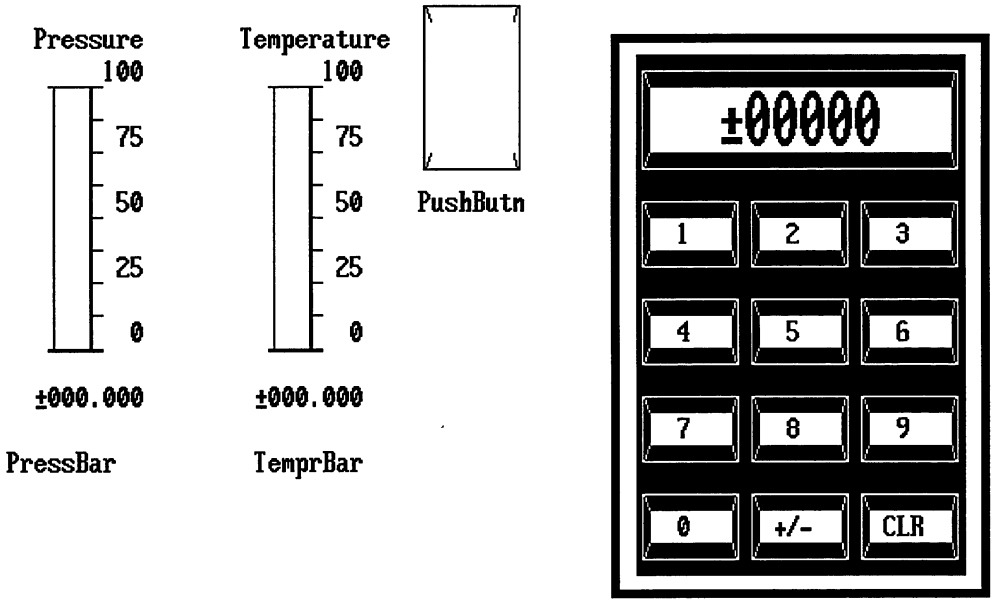
NOTE - 2000 Only

Any symbol that contains a touch button must be placed on an appropriate touch button zone, otherwise the symbol will not appear to be drawn correctly. Starting locations for some symbols are shown below:

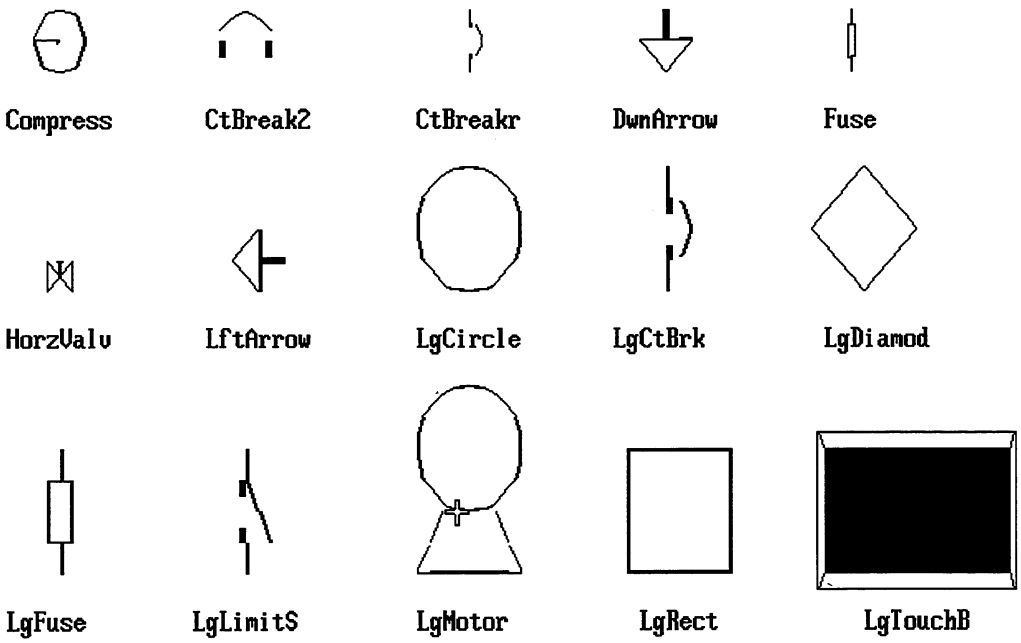
DtaEnry1	(17,10)
TouchPad	(29,18)

Locations in increments of (8,3) are also acceptable. For example, for (17,10), (9,7) and (25,13) also work.

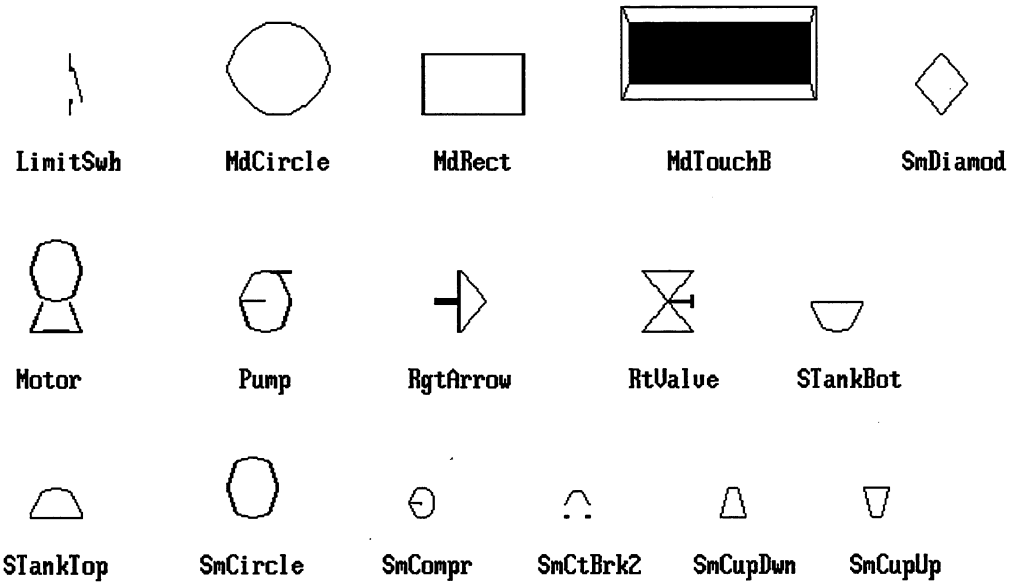
2000 Color Symbols (2000COLR)



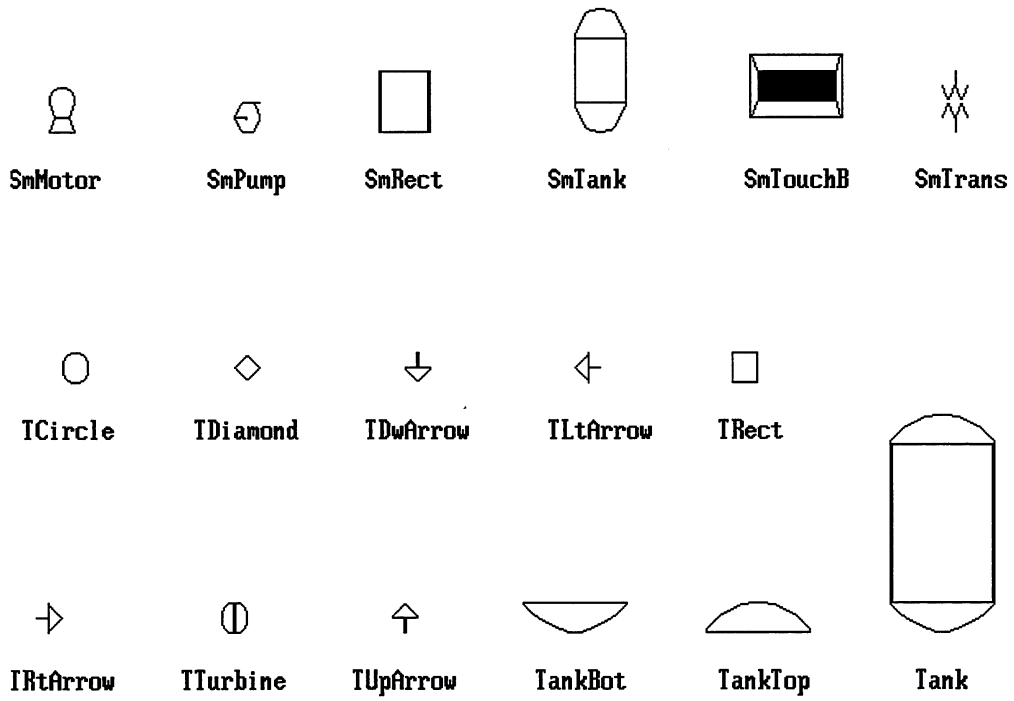
2000 Graphic Symbols (2000GRAF)



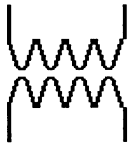
2000 Graphic Symbols (*continued*)



2000 Graphic Symbols (*continued*)



2000 Graphic Symbols (*continued*)



Tranformr

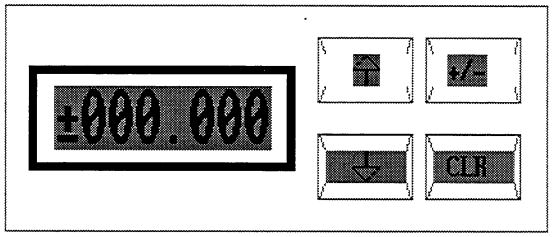
Turbine

UpArrow

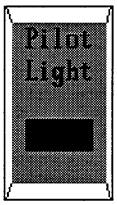
VertValv

UpValve

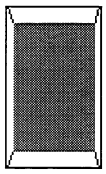
2000 Monochrome Symbols (2000MONO)



DtaEnry1

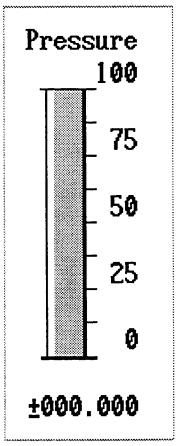


PilotLt1

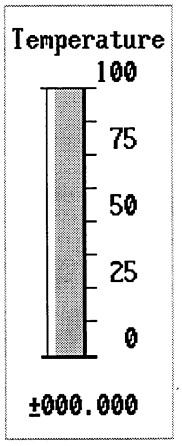


PushBtn

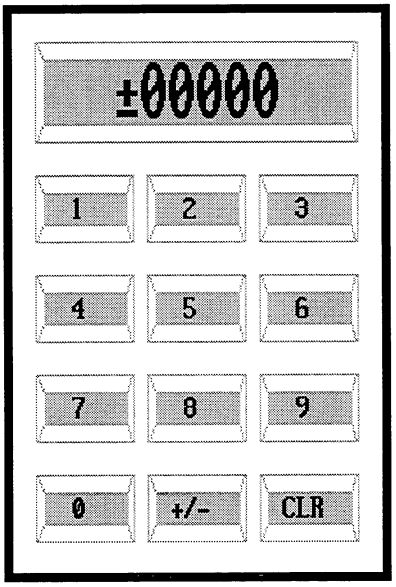
2000 Monochrome Symbols (*continued*)



PressBar

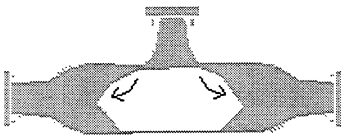


TemprBar

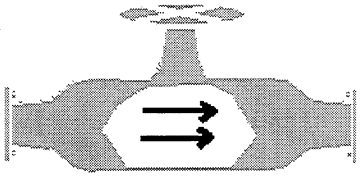


TouchPad

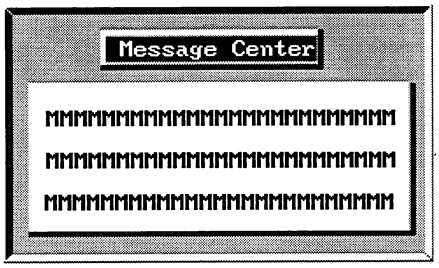
8000 EGA Symbols (8000EGA)



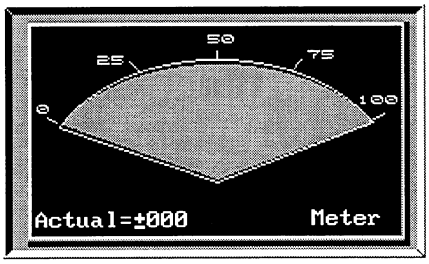
2posValv



HorzValv

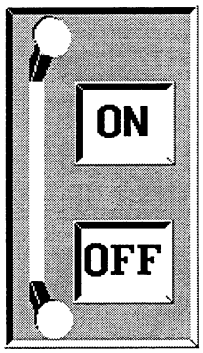


Message1

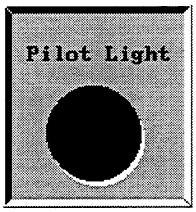


Meter1

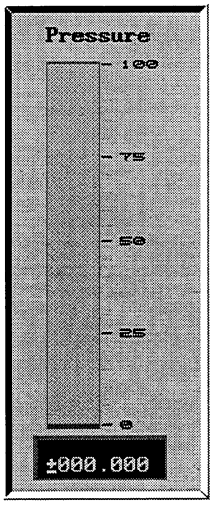
8000 EGA Symbols (*continued*)



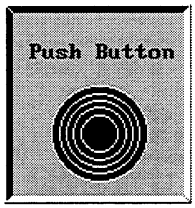
ON/OFF



PilotzLt

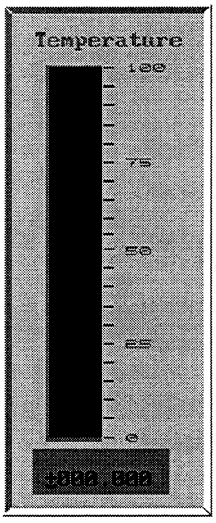


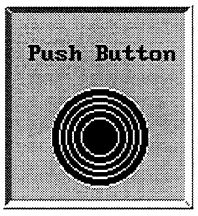
PressBar

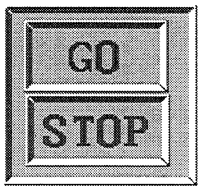


PushBtn

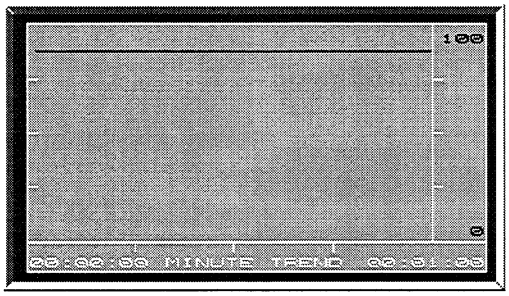
8000 EGA Symbols (*continued*)



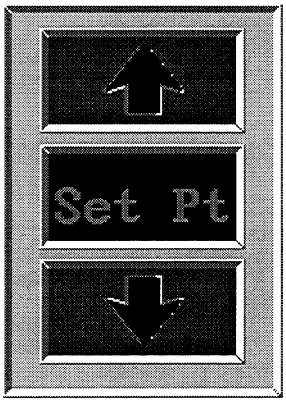




8000 EGA Symbols (*continued*)

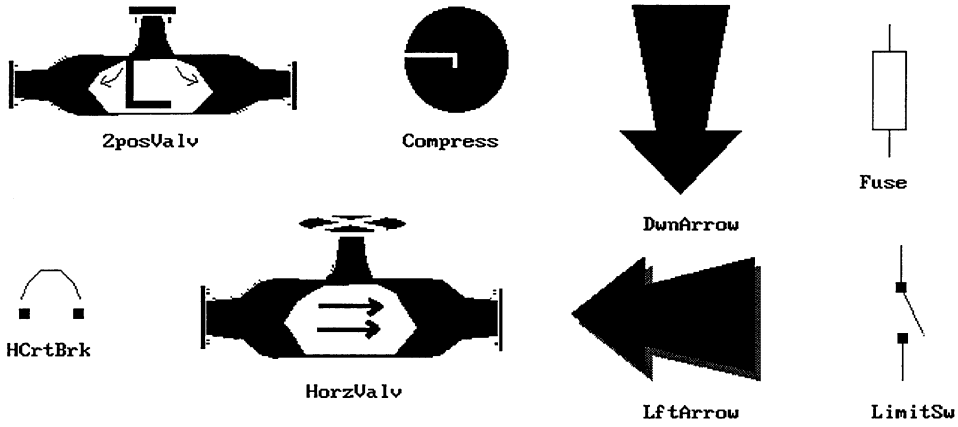


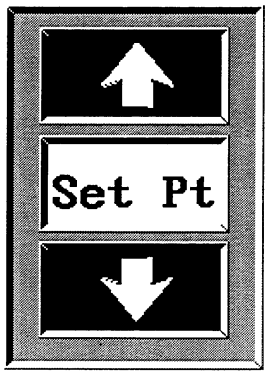
Trend1



UpDwnSt

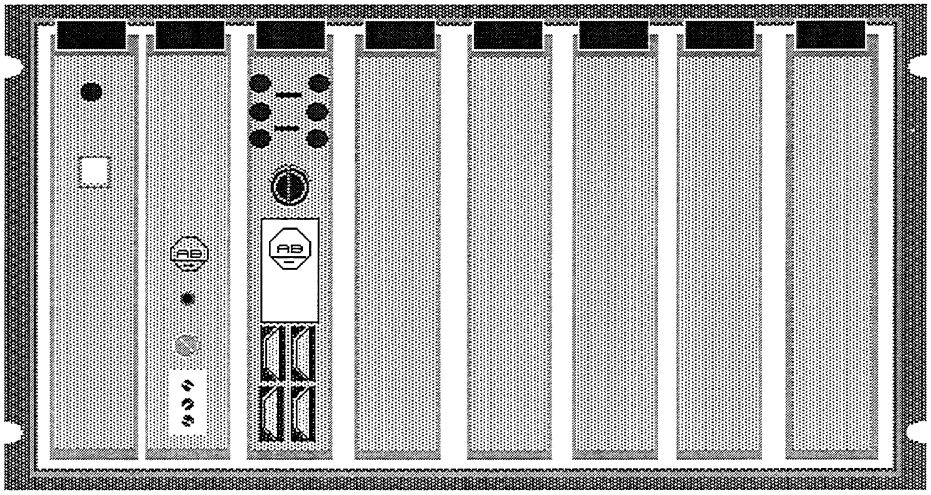
8000 Graphic Symbols (8000GRAF)





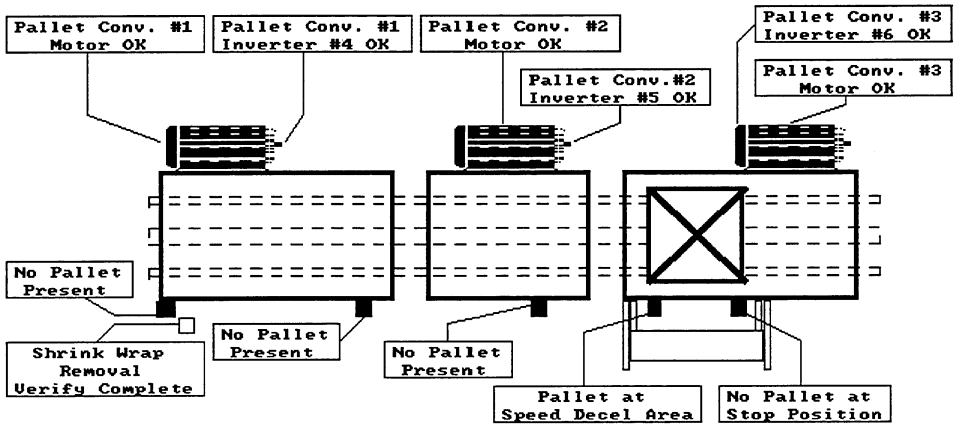
UpDwnSt

8000 Graphic Symbols (*continued*)



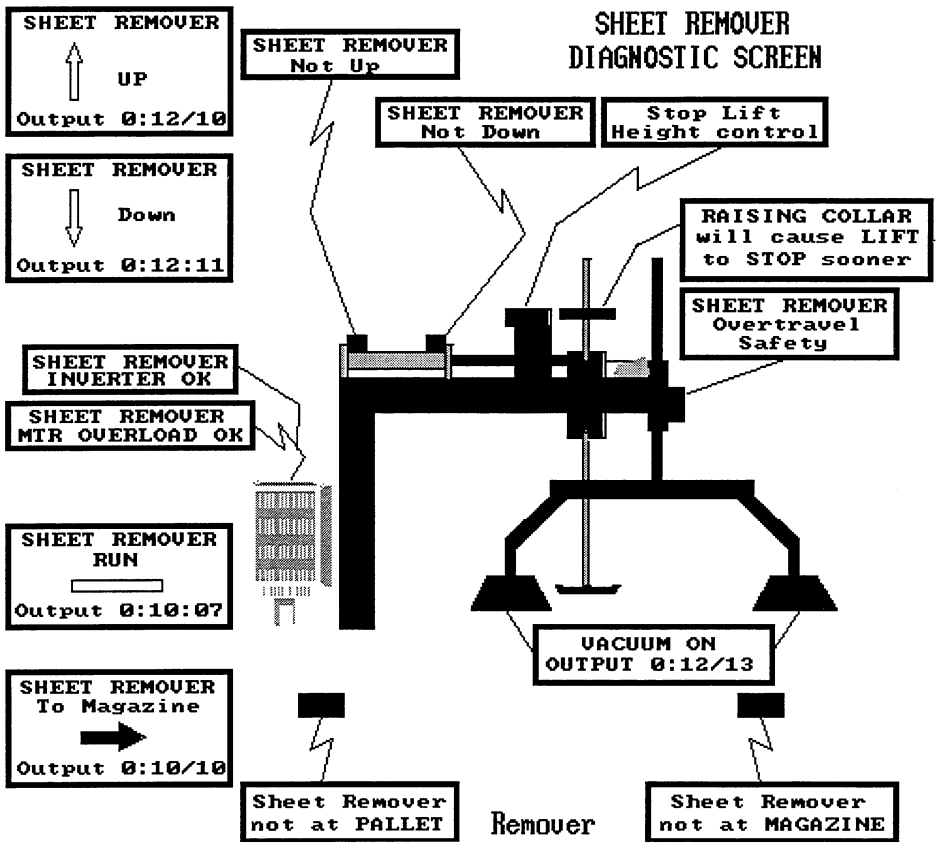
AB-PLC

8000 Graphic Symbols (*continued*)

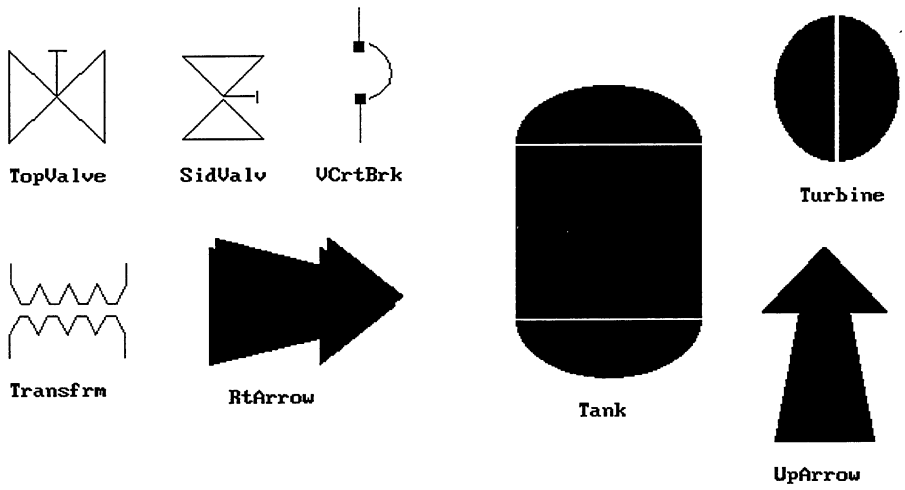


Conveyer

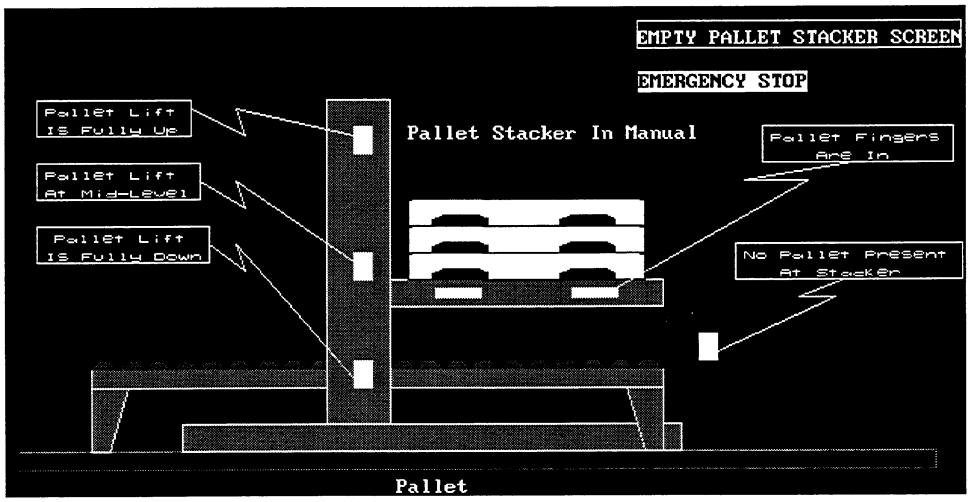
8000 Graphic Symbols (*continued*)



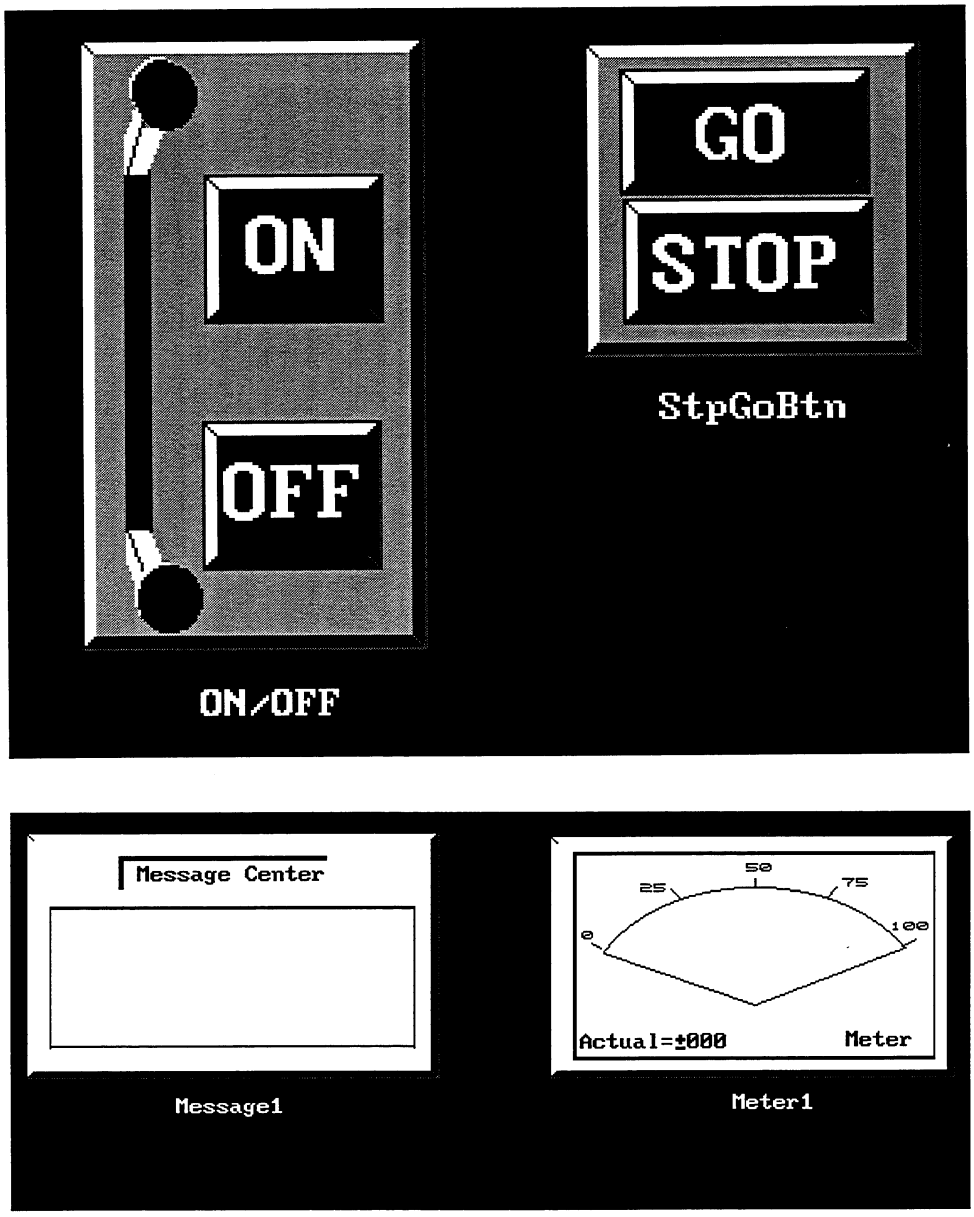
8000 Graphic Symbols (*continued*)



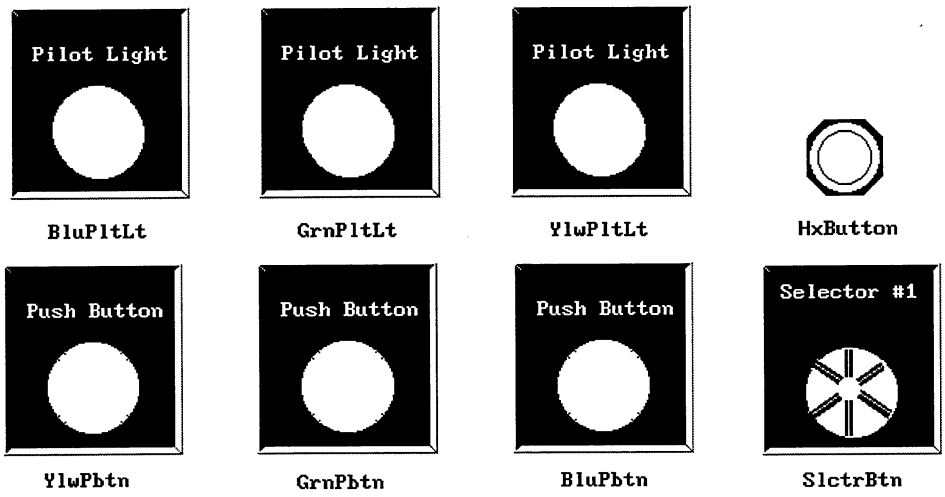
8000 Graphic Symbols (*continued*)



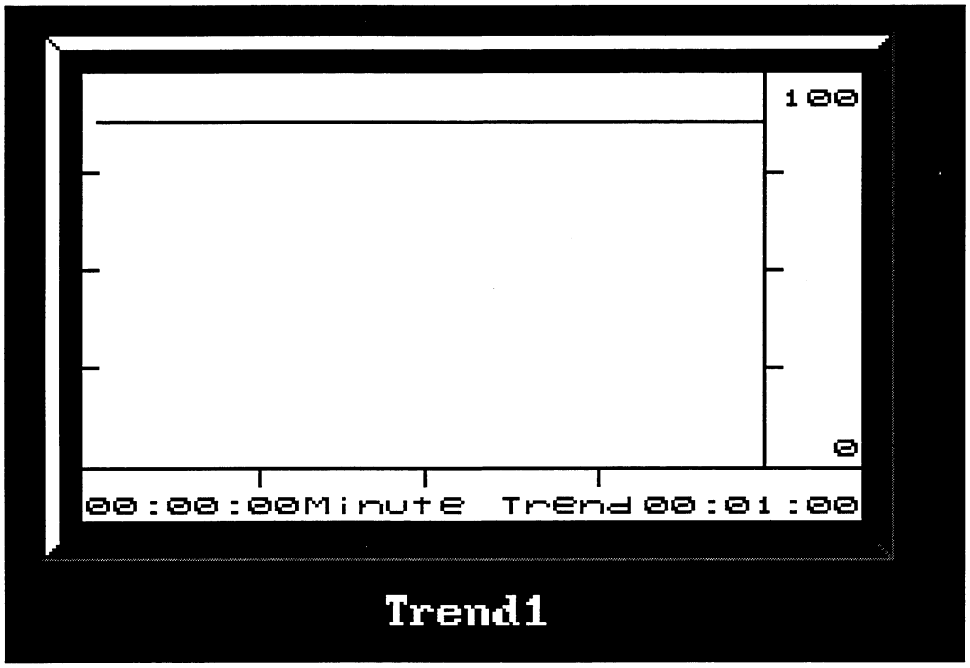
8000 VGA Symbols (8000VGA)



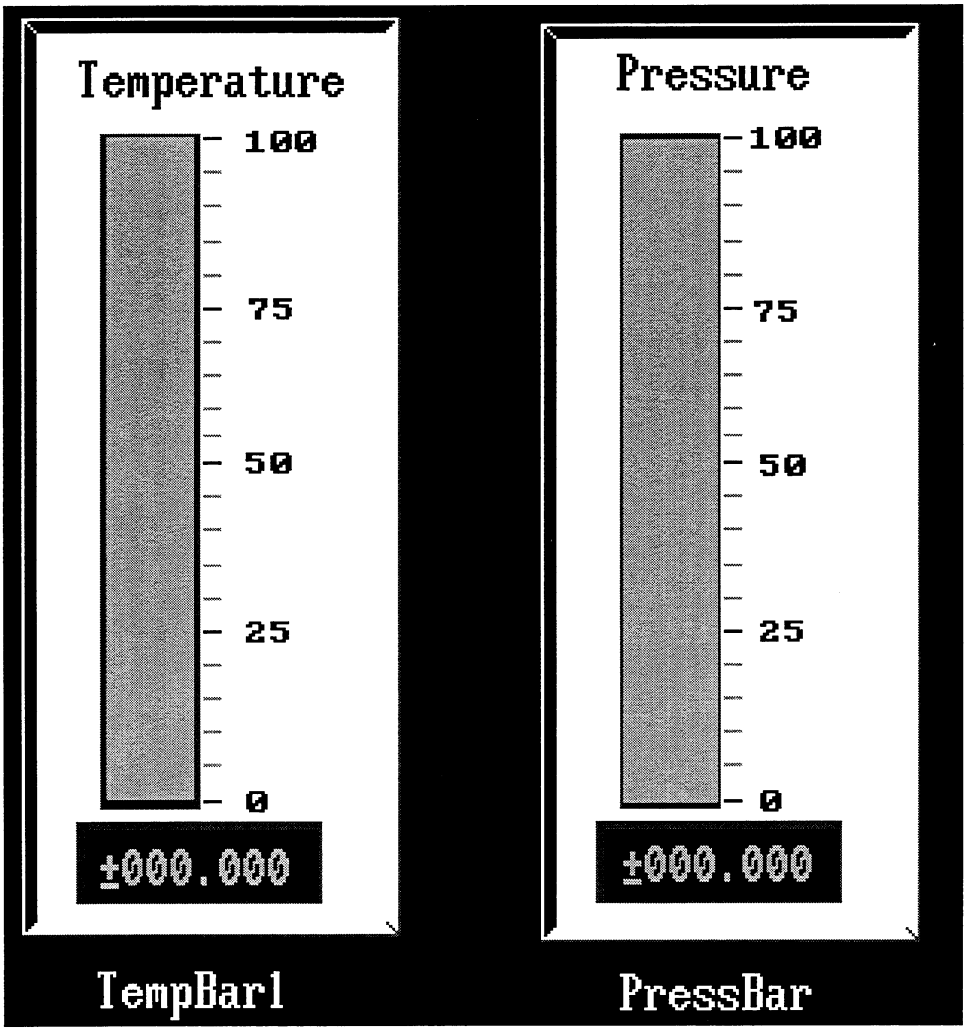
8000 VGA Symbols (8000VGA) (*continued*)



8000 VGA Symbols (8000VGA) (*continued*)



8000 VGA Symbols (8000VGA) (*continued*)



Text graphics are available for the 2000 series to facilitate making screens and symbols. The predefined graphics can be copied onto your screen. Text graphics are accessible under the Display Menu for Screens and Symbols.

Text graphics can be used to fill lines which are missing when lines cross each other and to create elements more quickly than from scratch.

After selecting Graphics, a form with various text graphics appears. Each box represents a text graphic that can be placed onto the screen. The three bottom right most boxes contain the letters N, P, and C for Next, Previous, and Cancel, respectively.

To select a text graphic, place the cursor on the graphic and click the left mouse button once. The form disappears and the cursor appears as a crosshair on the screen. Holding down the left button shows the graphic's outline to help you position it. Release the mouse button when you are done placing the graphic. The Text Graphic form reappears after the graphic is placed. To cancel out of the form, press C at the bottom right of the form or <Esc> or the right mouse button.

NOTE
Text graphics cannot be flipped or scaled.

Each of the Text Graphic forms are shown on the following pages for reference.

For 2000-Mono screens, the foreground color in the development system can be selected as black, blue, or white. When the screens are downloaded to the monochrome workstation, the colors appear based on the background, foreground, and base colors selected, as shown in the table below:

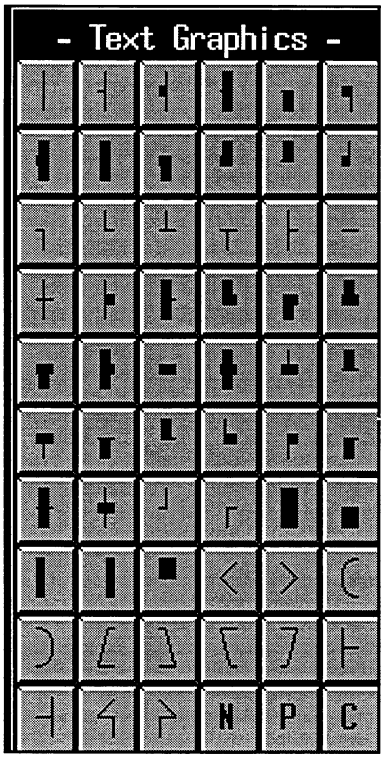
Table G-1. 2000-Mono Screens Background and Foreground Colors

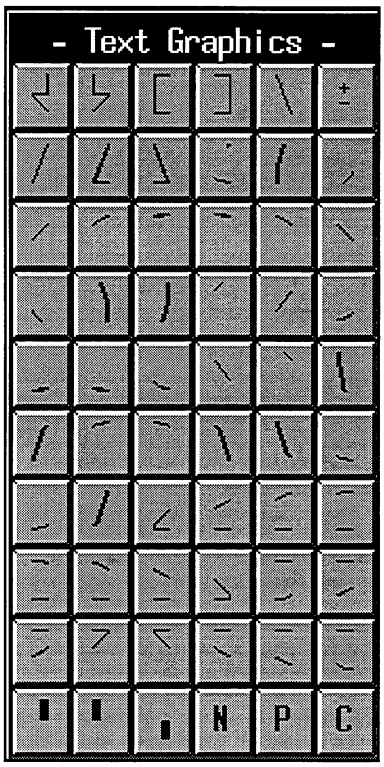
BACKGROUND COLOR	FOREGROUND COLOR		
	Black	**Blue**	**Intensified White**
Black	X	Regular (base=black, I white) Reversed (base=blue)	Highlighted (base=black) Reversed (base=blue) Regular (base=I white)
Blue	Regular (base=white, blue) Reverse (base=black)	X	Reversed (base=black) Highlighted (base=blue) Regular (base=I white)
Int White	Reversed	Reversed	X

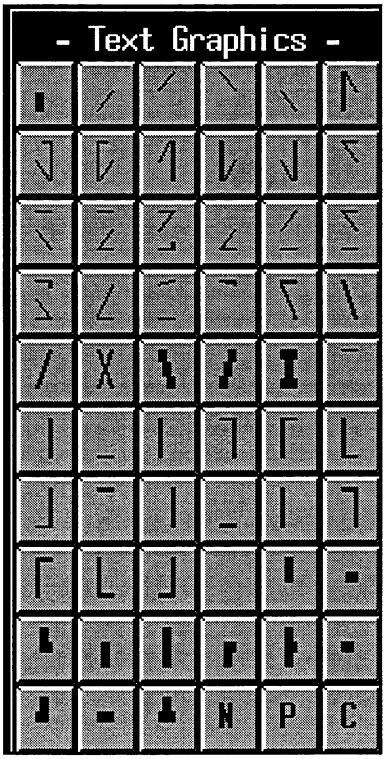
The SHADED AREA is used in the EXAMPLE below.

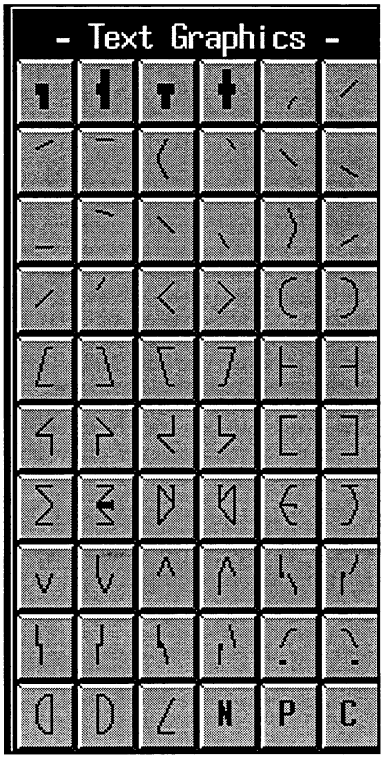
To use this table, locate your foreground color by going down and your background color by going across. The color listed in that box is the color the text will appear. If no base color is listed in parenthesis, the entry is valid for all base colors. Otherwise, the colors specific to a base color are noted.

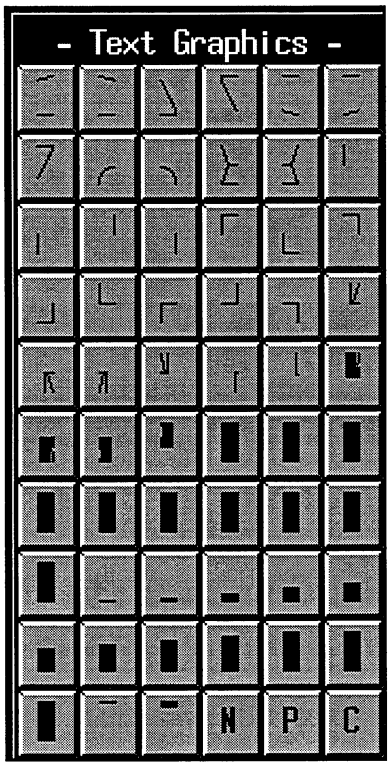
Example If you have a black foreground, blue background, and blue or white base colors, the object appears in regular intensity when downloaded to a monochrome workstation. If you have a black foreground, blue background, and black base, the objects will appear in reverse on the SoftScreen monochrome workstation engine.

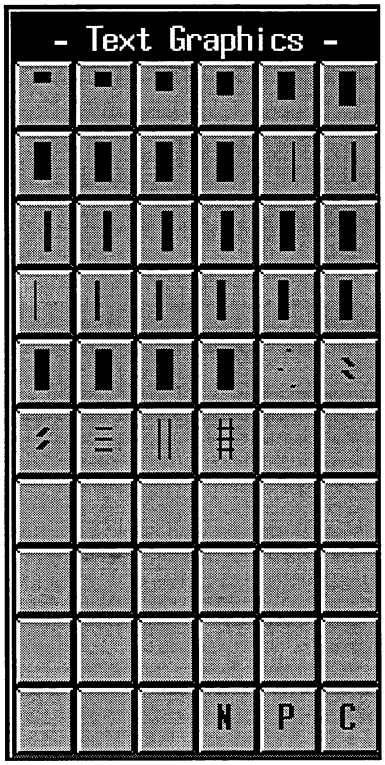

- Text Graphics -
N
P
C


- Text Graphics -
N
P
C


- Text Graphics -
N
P
C

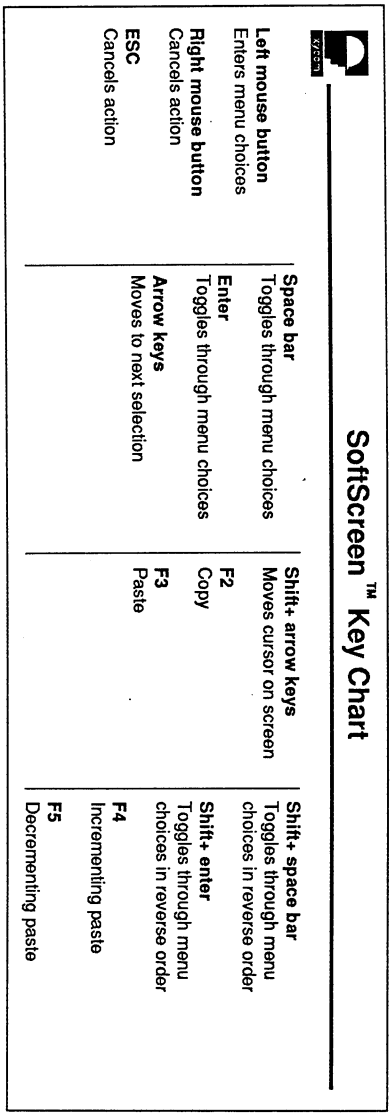

- Text Graphics -
N
P
C


- Text Graphics -
N
P
C


- Text Graphics -
N
P
C

NOTE

Cut out the drawing to the right and place it near your keyboard for quick reference.



This appendix describes the maximum capabilities of SoftScreen on 2000, 8320, and PC/AT engines.

H.1 SCREENS, RECIPES, AND REPORTS

The maximum number of screens, recipes, and reports is 255 of each on all SoftScreen engines.

H.2 PLC POINTS

To optimize PLC communication, all current PLC points (which include current screen points, pseudo key points, alarmed points, and historical and logging trend points) are stored in a single internal table that contains 100 entries for 2000 engines, 200 entries for 8320 engines, and 400 entries for PC/AT engines.

Figure H-1. PC/AT Engine PLC Points

Type of PLC Point	**Total Included in Table**
Alarm PLC Points	All alarm points in the application
Historical/Logging PLC Points	All historical/logging points in the application
Pseudo Key PLC Points	Current and global pseudo keys
Screen PLC Points	Current screen points

H.2.1 Report PLC Points

The largest number of referenced PLC points in a single report is 50 for 2000 engines, and 200 each for 8320 and PC/AT engines.

H.2.2 **Recipe PLC Points**

The largest number of referenced PLC points in a single recipe is 200 for all SoftScreen engines.

H.3 **ALARM OBJECTS**

On the PC/AT engine, there is an internal table that consists of all the objects (in all screens) that are tied to an alarm. This includes objects that are alarm enabled and alarm objects. If the "Alarm Table Exceeded" error occurs, this means there are too many objects tied to an alarm to put into this internal table. The alarm table size is 32767 bytes.

The following formulas and Table H-1 can be used to compute how much space is required in the internal alarm table for any type of object tied to an alarm.

The formula for computing the size of an alarm object is

19 + EXP + ((number of alarms defined in this object (1 - 4)) * 46)

The formula for computing the size of an object that is alarm enabled is

26 + EXP

Where EXP is the total byte size of the mathematical expression.

Table H-2. Alarm Memory Usage

Application Element	Memory (in Bytes)
EXP (Expression)	
Internal register	3
Indirect register	3
External address	6
Operators	1
Constant	5
Symbol	2
Math function	
SQT	1 + EXP
AVG,MED,MAX,MIN	1 + EXP + EXP
9000-RAD Monitor Functions	1

EXP Math Function Examples:

SQT[ADDR1]	=	(1 + 6) for external address
SQT[#30]		(1 + 3) for internal register
AVG[ADDR1 - ADDR2]	=	(1 + 6 + 6) for range functions on external addresses
AVG[#30 - #40]	=	(1 + 3 + 3) for range functions on internal registers

The maximum number of alarms is 100 on all SoftScreen engines.

H.4 HISTORICAL TREND PENS

On PC/AT engines, the following object types have their own internal Trend Table:

- Historical and logging trends
- Historical and logging event trends
- Historical and logging XY plots

If the "Trend Table Exceeded" error occurs, there are too many historical or logging objects in the application. The trend table size is 61,440 bytes.

To determine the size of each historical and logging table, add the object sizes together. For example, all historical and logging trend object sizes should be added together. If the size is greater than 61,440 bytes, the historical and logging trend table has an overflow.

Table H-3. Trend Memory Usage

Application Element	Memory (in Bytes)
Historical Trend	65+ (4 * Samples)+(Pens)+(4 * # of pens)
Logging Trend	142+EXP1+[1+EXP2]+[1+EXP3]+[1+EXP4]+ (4 * Samples)+(Pens)+(4 * # of pens)
Historical XY Plot	138+EXP1+EXP2+EXP3+[1+EXP4]+ (8 * # of samples)
Logging XY Plot	210+EXP1+EXP2+EXP3+[1+EXP4]+ (8 * # of samples)+EXP5+[1+EXP6]+[1+EXP7]
Historical Event Trend	90+EXP1+(Pens)+(8 * # of samples)+(4* # of pens)
Logging Event Trend	162+EXP1+(Pens)+(8 * # of samples)+ (4* # of pens)+EXP2+[1+EXP3]+[1+EXP4]

The formula to determine the memory usage of pens is as follows:

(18+EXP) per pen

Refer to tables H-4 through H-8 on the following pages for descriptions of EXPressions used in Table H-2 on the previous page.

Table H-4. Logging Trend Expressions

Logging Trend Expressions	**Description**
EXP1	Log enable condition
EXP2	Sampling condition
EXP3	Start condition
EXP4	Stop condition

Table H-5. Historical XY Plot Expressions

Historical XY Plot Expressions	**Description**
EXP1	Sample rate condition
EXP2	Clear plot expression
EXP3	X expression
EXP4	Y expression

Table H-6. Logging XY Plot Expressions

Logging XY Plot Expressions	**Description**
EXP1	Sample rate condition
EXP2	Clear plot expression
EXP3	X expression
EXP4	Y expression
EXP5	Log enable condition
EXP6	Start condition
EXP7	Stop condition

Table H-7. Historical Event Trend Expression

Historical Event Trend Expression	**Description**
EXP1	Event expression

Table H-8. Logging Event Trend Expressions

Logging Event Trend Expressions	**Description**
EXP1	Event expression
EXP2	Log enable condition
EXP3	Start condition
EXP4	Stop condition

H.5 APPLICATION STORAGE

> **NOTE**
> On 2000 and 8320 engines, application storage refers to memory. On the PC/AT, application storage refers to available hard disk space.

Memory consists of the size of screens, recipes, reports, messages, and configurations added together on the engine. The maximum amount of user memory available is 96 Kbytes expandable to 224 Kbytes on 2000 engines and 128 Kbytes expandable to 5 Mbytes on 8320 engines. On PC/AT engines, application size is dependent on available hard disk space, not RAM.

If your application has become larger than the available memory on your system, you can delete objects.

To determine how much memory the application uses, add the application files together (i.e., Size = APPL.CON + APPL.MSG + APPL.REP + APPL.REC + APPL.SCR) or press <Shift> + <F1> after the application is loaded to determine the total application size. To determine the size of a screen, recipe, report, or configuration, press <Shift> + <F1> while in the screen, recipe, report, or configuration. If the screen, recipe, report, or configuration has not been saved, it will not be added to the application total.

The table below describes Xycom SoftScreen memory usage in bytes.

Table H-9. Xycom SoftScreen Memory Usage in Bytes

Application	Memory (in Bytes)
EXP (Expression)	
Internal register	3
Indirect register	3
External address	6
Operators	1
Constant	5
Symbol	2
Math function	
SQT	1+EXP
AVG,MED,MAX,MIN	1+EXP+EXP
9000-RAD monitor functions	1
States	(3+EXP) per State
Text States	(84+EXP) per State
Pens	(18+EXP) per pen
Screen	18+
Touch Button	150+(States)
Function Keys	4+ (104 * # of function keys configured)
Pseudo Keys	4+ (135 * # of pseudo keys configured)
Data Entry	35
Alarm	19+EXP+(45 * # of conditions)
Passworded/Scaled Data Entry	37+EXP
String Entry	32+EXP
Selector Touch Button	51+(1+EXP)+(1+EXP)+(104 * # of functions)+(States)

Table continued on the following page.

Table H-9. Xycom SoftScreen Memory Usage in Bytes *(continued)*

Application	Memory (in Bytes)
Screen *(continued)*	
All Display Objects	17+
Bar, Rectangle, Square, Oval, Circle, Data Display	9+ (22+EXP)+(States)
Pie	13+ (22+EXP)+(States)
Polygon, Polyline	1+ (4 * each point)+(States)
Line	8+ (States)
Text < 11 Characters	19+ (States)
Text > 10 Characters	89+ (States)
Layered Text, List Text	8+ (Text States)
Graphics Text	10+ (States)
Symbol	9+EXP
Date, Time	8
Message	13
Real-time Trend	56+ (Pens)
Historical Trend	65+ (4 * # of samples)+(Pens)+(4 * # of pens)
Logging Trend	142+EXP1+[1+EXP2]+[1+EXP3]+[1+EXP4]+ (4 * # of samples)+(Pens)+ (4 * # of pens)
String Display	15+EXP+(States)
Selector Text	15+(1+EXP)+((4+EXP) * (# of text lines)) + (total text for all lines)
Real-time XY Plot	127+EXP1+EXP2+EXP3+[1+EXP4]
Historical XY Plot	138+EXP1+EXP2+EXP3+[1+EXP4]+(8 * # of samples)
Logging XY Plot	210+EXP1+EXP2+EXP3+[1+EXP4]+ (8 * # of Samples)+EXP5+[1+EXP6]+[1+EXP7]
Real-time Event Trend	90+EXP+(Pens)
Historical Event Trend	90+EXP+(Pens)+(8 * # of samples)+(4 * # of pens)
Logging Event Trend	162+EXP+(Pens)+(8 * # of samples)+(4 *# of pens)+ EXP+[1+EXP]+[1+EXP]
Report	14+
Data Display	13+EXP
Form Feed	3
Date, Time	12
Text < 11 Characters	22
Text > 10 Characters	92
Config	15+EXP
String Display	15+EXP
Control Text	152
Layered Text	20+States
Message	26+EXP
Recipe	14+
Each recipe entry	13+Value EXP
Message	2 + (83 * # of messages)
Configuration	
PC/AT engine	3796
2000/8320 engines	N/A

The following is an example of calculating memory usage for an expression:

[4001]+#30*5

Where:

4001 is an external address	=	6 bytes
+ is an operator	=	1 byte
#30 is an internal register	=	3 bytes
* is an operator	=	1 byte
5 is a constant	=	5 bytes
Total		16 bytes

> **NOTE**
> Use the Tutorial in Chapter 4 to practice calculating the size of an application.

When logging alarms, reports, XY plots, or trend data on a PC/AT engine, the available application storage for logging is limited to the amount of free hard disk space.

H.6 SCREEN OBJECTS

The number of screen objects is limited by engine memory—16 Kbytes on the 2000 and 64 Kbytes on EGA/VGA systems—or by the maximum number of objects (1024), whichever occurs first. If you run out of available memory on the engine, you can delete objects. Section H.5 describes how to determine how much memory each object takes up.

H.7 EXPRESSION SIZE

After clicking the OK button when entering an expression, SoftScreen arranges and parenthesizes the expression for efficiency and readability. If the resulting expression exceeds the expression edit field, the following error message appears: "Equation is too long to translate in the space provided." This means you've either entered more than 55 text characters or the resulting expression is greater than 40 bytes. You must reduce the size of the expression until it fits into the expression edit field.

H.8 SCANNING OF PSEUDO KEYS

While running, SoftScreen engines scan and evaluate pseudo keys once per second.

This glossary provides English translations for key SoftScreen words and phrases in French, German, Italian, and Spanish.

French-English

Activ journ rapp	Report Log Enable
Activ. baie	Rack Enable
Activation alarme	Alarm Enable
Adr. données	Data Address
Adr. post-sélection	Post Select Address
Adresse	Address
Adresse chaîne	String Address
Adresse PLC	PLC Address
Adresse poste	Station Address
Adresse réseau	Network Address
Affich	Display
Affich heure	Display Time
Affich. données	Data Display
Affichage chaîne	String Display
Affichage données de rapport	Report Data Display
Aide	Help
Aide Expression	Expression Help
Alarme	Alarm
Alarme bas	Low Alarm
Alarme n°	Alarm #
Alarmes enregist.	Alarm Save Number
Aligner	Align
Alrme haut	High Alarm
Année	Year
Annul	Cancel
Application	Application
Arrière	Back
Attente envoi	Send Wait Time
Aucun	None
Aucune	None
Avant	Front
Avant-plan	Foreground
Avant-plan sélection	Highlight Foreground Color
Baie de départ-Octal	Starting Rack-Octal

Barre	Bar
Barre bas	Bar Down
Barre droite	Bar Right
Barre gauche	Bar Left
Bas	Bottom
Bas	Down
BINAIR	BINARY
Bip en cas d'alarme	Beep On Alarm
Bip touche	Keypress Sound
Bip	Beep
Bits arrêt	Stop Bits
Bits données	Data Bits
Blanc	White
Blanc vif	Int White
Bleu	Blue
Bleu clair	Lt Blue
Bloc	Keypad
Bouton	Button
Bouton	Touch Button
Bouton sélecteur	Selector Button
Brun	Brown
Camembert	Pie
Camembert rempli	Filled Pie
Car. d'arrêt	Terminator
Caractère	Character
Carré	Square
Carré rempli	Filled Square
Centre X	Center-X
Centre Y	Center-Y
Cercle	Circle
Cercle rempli	Filled Circle
Chaîne	String
Changement répertoire	Change Directory
Changer	Change
Changer niveau sécurité	Change Security Level
Changer n° de page	Change Page Number
Charg	Load
Chargement application	Application Load
Chargement écran	Screen Load
Chargement message	Message Load
Chargement rapport	Report Load
Chargement recette	Recipe Load
Chargement symbole	Symbol Load
Charger recette sélect.	Load Selected Recipe
Charger une recette	Load a Recipe

Chemin journ rapp	Report Log Path
Chemin journ.	Log File Path
Chemin	Routing Path
Cible	Target
Cible listage	Listing Target
Cible symbole	Symbol Target
Cible	Target
Code contrôle	Control Code
Coller	Paste
Compteur	Meter
Cond. activ. journal	Log Enable Condition
Cond. passe à état vraie	Condition Becomes True
Condition	Condition
Condition arrêt	Stop Condition
Condition début	Start Condition
Configuration alarme	Alarm Configuration
Configuration bloc-touches	Keypad Configuration
Configuration bouton	Touch Button Configuration
Configuration bouton sélecteur	Selector Touch Button Configuration
Configuration cible	Target Configuration
Configuration entrée données	Data Entry Configuration
Configuration entrée recette	Recipe Entry Configuration
Configuration état	State Configuration
Configuration journal tracé XY	XY Log Plot Configuration
Configuration ligne	Line Configuration
Configuration modifiée	Configuration Modified
Configuration mot de passe	Password Configuration
Configuration multipoint	Multi-drop Configuration
Configuration objet	Object Configuration
Configuration objet automatique	Automatic Object Configuration
Configuration objet message	Message Object Configuration
Configuration objet texte sélecteur	Selector Text Object Configuration
Configuration PLC	PLC Configuration
Configuration plume	Trend Pen Configuration
Configuration pseudo-touche	Pseudo Key Configuration
Configuration rapport	Report Configuration
Configuration sécurité	Security Configuration
Configuration symbole	Symbol Configuration
Configuration système	System Configuration
Configuration tendance	Trend Configuration
Configuration tendance événement	Event Trend Configuration
Configuration tendance journal	Log Trend Configuration
Configuration texte	Text Configuration
Configuration texte contrôle	Control Text Configuration
Configuration texte sélecteur	Selector Text Configuration

Configuration touche	Key Configuration
Configuration touche de fonction	Function Key Configuration
Configuration tracé XY	XY Plot Configuration
Connexion port	Port Connect
Contrôle	Control
Contrôle d'alarme application	Application Alarm Check
Contrôle d'alarme écran	Screen Alarm Check
Copie	Copy
Couches	Layered
Couleur	Color
Couleur avant	Foreground Color
Couleur base	Base Color
Couleur de base écran	Screen Base Color
Couleur de fond	Background Color
Couleur pts	Point Color
Couleur	Pen Color
Couper	Cut
Court	Short
Créer	Create
Cyan	Cyan
Cyan clair	Lt Cyan
Date/heure	Date/Time
Date non valide	Invalid Date
Débit	Baud
Déclencheur	Event Trigger
Défaut	Defaults
Délai	Timeout
Délai périodique	Periodic Timeout
Délier	Unlink
Déplac	Move
Description	Description
Développement	Development
Diagnostics démarrage	Power-on Diagnostics
Direct	Direct
Direction de croissance	Growth Direction
Disque	Disk
Données	Data
Droite	Right
Dte	Right
Durée affichage alarme	Alarm Display Time
Ech. temps	Time Scale
Echel	Scale
Echelle	Scale
Echelle tracée	Scale Drawn
Ecran	Screen

Ecran modifié	Screen Modified
Ecran tactile	Touch Screen
Ecrire données à adresse	Write Data to Address
Editer	Edit
Edition bibli symbole	Symbol Library Edit
Edition écran	Screen Edit
Edition rapport	Report Edit
Edition recette	Recipe Edit
Edition symbole	Symbol Edit
Effac	Erase
Egal	Equal
En al.	In
Enreg	Save
Enreg. nombre	Save Number
Enregistrement bibli symbole	Symbol Library Save
Enregistrement écran	Screen Save
Enregistrement message	Message Save
Enregistrement rapport	Report Save
Enregistrement recette	Recipe Save
Enregistrement symbole	Symbol Save
Entrée analogique	Analog Input
Entrée chaîne	String Entry
Entrée données	Data Entry
Entrée numérique	Digital Input
Entrée recette	Recipe Entry
Envoi	Send
Envoi application	Application Send
Envoi au moteur	Send to Engine
Envoi écran	Screen Send
Envoi message	Message Send
Envoi rapport	Report Send
Envoi recette	Recipe Send
Epaisseur	Line Width
Erreur	Error
Erreur adresse	Address Error
Erreur adresse PLC	PLC Address Error
Erreur alarme	Alarm Error
Erreur application	Application Error
Erreur caractère d'arrêt	Terminator Error
Erreur chargement	Load Error
Erreur communication	Communication Error
Erreur condition	Condition Error
Erreur configuration	Configuration Error
Erreur de niveau sécurité	Security Level Error
Erreur délai	Timeout Error

Erreur disque	Disk Error
Erreur enregistrement	Save Error
Erreur entrée	Entry Error
Erreur envoi	Send Error
Erreur exécution	Run Error
Erreur expression	Expression Error
Erreur fichier configuration	Configuration File Error
Erreur fichier étiquettes	Tag File Error
Erreur fichier provisoire	Temporary File Error
Erreur fonction	Function Error
Erreur grille	Grid Error
Erreur impression	Print Error
Erreur imprimante	Printer Error
Erreur index	Index Error
Erreur ligne	Line Error
Erreur limite	Boundary Error
Erreur longueur	Length Error
Erreur mémoire	Memory Error
Erreur message	Message Error
Erreur mode graphique	Graphics Mode Error
Erreur moment	Time of Day Error
Erreur mot de passe	Password Error
Erreur niveau	Level Error
Erreur nom	Name Error
Erreur nom d'application	Application Name Error
Erreur nom de bibliothèque	Symbol Library Name Error
Erreur nom de rapport	Report Name Error
Erreur nom de recette	Recipe Name Error
Erreur nom de symbole	Symbol Name Error
Erreur nombre alarmes enregistrées	Alarm Save Number Error
Erreur nombre fichiers	File Number Error
Erreur page	Page Error
Erreur plage	Range Error
Erreur plume tendance	Trend Pen Error
Erreur polygone	Polygon Error
Erreur polyligne	Polyline Error
Erreur registre de modification	Modify Register Error
Erreur réglage date/heure	Set Date/Time Error
Erreur répertoire	Directory Error
Erreur réseau port	Port Network Error
Erreur simulation touche	Simulate Key Error
Erreur suppression	Delete Error
Erreur symbole	Symbol Error
Erreur tendance	Trend Error
Erreur texte contrôle	Control Text Error

Erreur texte graphique	Text Graphics Error
Erreur tracé XY	XY Plot Error
Erreur valeur	Value Error
Essais	Retries
et infér.	And Below
Etat	State
Etats	States
Evén. déclench.	Trigger Event
Exéc	Run
Exécuter bouton sélecteur	Execute Selector Button
Exécution application	Application Run
Expr effacement tracé	Clear Plot Expression
Express. index sélecteur	Selector Index Expression
Express. symbole $	Symbol Expression $
Express. valeur	Value Expression
Expression ajout rapport	Report Append Expression
Expression ajout	Append Expression
Expression conditionnelle	Conditional Expression
Expression d'échelle	Data Scale Expression
Expression évén.	Event Expression
Expression X	X Expression
Expression Y	Y Expression
Expression	Expression
Expressions	Expressions
Fich	File
Fich enregistrés	File Save Number
Fonction	Function
Fonction enfoncée	Function on Press
Fonction relâchée	Function on Release
Fonctions	Functions
Fond	Background
Fond sélection	Highlight Background Color
Format date	Date Format
Format journal	Log File Format
Format ligne	Line Format
Format non valide	Illegal Format
Format PLC p. défaut	Default PLC Format
Fréq d'échant	Sampling Rate
Fréq échant/enreg	Sampling/Log Rate
Front	Edge
Gauche	Left
Gche	Left
Graphique	Graphics
Grille	Grid
Grille X	Grid-X

Grille Y	Grid-Y
Gris foncé	Dk Grey
Groupe pseudo-touches	Pseudo Key Group
Groupe touches	Key Group
Haut	Up
Haut	Top
Hauteur	Height
Heure	Time
Heure non valide	Invalid Time
Historique	Historical
Horizontal	Horizontal
Horloge	Timer
Hors	Out
ID UC	CPU id
imp.	odd
Impr	Print
Impr./disque	Printer/Disk
Impression application	Application Print
Impression bibli symbole	Symbol Library Print
Impression écran	Screen Print
Impression message	Message Print
Impression rapport	Report Print
Impression recette	Recipe Print
Impression symbole	Symbol Print
Imprimante	Printer
Imprimante moteur	Engine Printer
Imprimer alarmes	Print Alarms
Imprimer l'écran courant	Print the Current Screen
Imprimer un rapport	Print a Report
Index sélect.	Selector Index
Info journal	Log Information
Information alarme	Alarm Information
Insens.	Deadband
Insér.	Insert
Jaune	Yellow
Jour	Day
Journ	Log
Journal	Log
Langue	Language
Largeur	Width
Lier	Link
Ligne	Line
Ligne n°	Line Number
Ligne supprimée	Line Deleted
Lignes affich.	Lines Displayed

Lignes txt	Text Lines
Limite étiquettes	Tag Limit
Liste bibli symbole	Symbol Library List
Liste écran	Screen List
Liste symbole	Symbol List
Lister	List
Longueur maxi	Maximum Length
Longueur message	Message Length
Longueur message	Message Length
Magenta	Magenta
Magenta cl	Lt Magenta
Message modifié	Message Modified
Mode écran	Screen Mode
Mode symbole	Symbol Mode
Moins	Less
Moment	Time of Day
Mot de passe	Password
Mot de passe poste	Station Password
Moteur cible	Target Engine
Moteur récepteur	Receiving Engine
Motif	Pattern
Mots de passe de sécurité	Security Level Passwords
Mots écriture par module	Block Transfer Write Words per Module
Mots lecture par module	Block Transfer Read Words per Module
Mots passe	Passwords
Multi-lien	Multi-Link
Nbre échantillons	Number of Samples
Nbre points d'affichage	Number of Display Points
Niv.	Level
Niv. sécurité gestion fichiers	File Management Password Level
Niv. sécurité	Security Level
Niveau	Level
Niveau mot de passe sécurité	Security Password Level
Niveaux sécurité admis	Security Levels Allowed
Noir	Black
Nom	Name
Nom application	Application Name
Nom écran démarrage	Startup Screen Name
Nom écran	Screen Name
Nom étiquette	Tag Name
Nom fich.	File Name
Nom journal	Log File Name
Nom message	Message Name
Nom objet	Object Name
Nom PLC par défaut	Default PLC Name

Nom PLC	PLC Name
Nom rapport	Report Name
Nom recette	Recipe Name
Nom symbole	Symbol Name
Nombre d'essais	Enquiry Retries
Nombre d'objets	Number of Objects
Nombre de lignes affichées	Number of Lines Displayed
Nombre de messages	Number of Messages
Nombre de quarts baie	Number of Quarter Racks
Nombre entier	Integer
Nombre modules de transfert par blocs	Number of Block Transfer Modules
Nombre pseudo-touches	Number of Pseudo Keys
Nombre touches	Number of Keys
non	none
Non	Off
Non	No
Non égal	Not Equal
Numéro	Number
N° de poste port	Port Station Number
N° module d'interface réseau	Network Interface Module Number
OK	Okay
Oui	On
Oui	Yes
Outils	Tools
Ovale	Oval
Ovale rempli	Filled Oval
pair	even
Parité	Parity
Passer à l'écran	Go to Screen
Passer au mode inactif	Go to Idle Mode
Période journal	Log File Period
Pge n°	Page #
Pl. grand	Greater
PLC simulé	Simulated PLC
Plume n°	Pen #
Plumes	Pens
Police	Font
Polices objet	Object Fonts
Poly	Poly
Polygone	Polygon
Polygone rempli	Filled Polygon
Polyligne	Polyline
Port d'envoi	Send Port
Port Défaut	Default Port
Port multipoint	Multi-drop Port

Ports série	Serial Ports
Pousser	Push-To
Précéd.	Previous
Pseudo-touche	Pseudo Key
Quart de départ	Starting Quarter
R à R	N-To-N
Rapport	Report
Rapport modifié	Report Modified
Réception alarme	Alarm Acknowledge
Réception	Acknowledge
Recette	Recipe
Recette	Recipe
Recette modifiée	Recipe Modified
Recevoir alarme	Acknowledge Alarm
Rectangle rempli	Filled Rectangle
Regist. modif. #M	Modify Register #M
Registres	Registers
Réglage date/heure	Set Date/Time
Régler	Set
Relais en cas d'alarme	Relay On Alarm
Relais	Relay
Rempli	Filled
Rempli/vide	Filled/UnFilled
Répert.	Directory
Répétition touche	Repeat Key Presses
Réseau	Network
Résol. disque plein	Disk Full Resolution
Restaur	UnDo
Restaurer baie	Restore Rack
Retour à l'écran précéd.	Return to Previous Screen
Retour au mode actif	Return to Active Mode
Retrac	Redraw
Rotation	Flip
Rouge	Red
Rouge clr	Lt Red
Sans journ	No Log
Saut page	Form Feed
Secondes	Seconds
Sécurité	Security
Sélecteur	Selector
Sélection bibli symbole	Symbol Library Select
Sélection symbole	Symbol Select
seulement	Only
Simple	Single
Simuler touche enfoncée	Simulate Key Press

Snap	Snap-To
Sortie analogique	Analog Output
Sortie numérique	Digital Output
Suite	More
Suiv	Next
Suppr	Delete
Suppr. aucun	Delete None
Suppression application	Application Delete
Suppression écran	Screen Delete
Suppression message	Message Delete
Suppression rapport	Report Delete
Suppression recette	Recipe Delete
Suppression symbole	Symbol Delete
Supprimer aucune	Delete None
Symbole	Symbol
Symbole modifié	Symbol Modified
Système	System
Table d'entiers	Integer Table
Table des chaînes	String Table
Table virg. flott.	Floating Point Table
Tableau	Chart
Taille	Size
Taille fichier	File Size
Taille grille	Grid Size
Taille police	Font Size
Temps	Time
Temps d'inversion modem	Modem Turnaround Time
Temps réel	Real-Time
Tend. historique	Historical Trend
Tend. journal	Log Trend
Tend. temps réel	Real-Time Trend
Tendance	Trend
Tendance événement	Event Trend
Terminal Xycom	Xycom Terminal
Texte	Text
Texte à couches	Layered Text
Texte contrôle	Control Text
Texte de liste	List Text
Texte état	State Text
Texte graphique	Graphics Text
Texte graphique	Text Graphics
Texte sélect.	Selector Text
Texte simple	Single Text
Tiret	Line Dash
Titre X	X Title

Titre Y	Y Title
Titre	Trend Title
Touche	Key
Touche fonction	Function Key
Traçage	Drawn
Tracé XY	XY Plot
Trait	Line Size
Txt	Text
Type	Type
Type clavier	Keyboard Type
Type étiquette	Tag Type
Type objet	Object Type
Type PLC	PLC Type
Type réseau PLC	PLC Network Type
Type réseau	Network Type
Utiliser arrêt	Use Terminator
Val. données/touche	Data/Key Press Value
Val. post-sélect.	Post Select Value
Val.	Value
Valeur	Value
Valeur délai	Timeout Value
Valeur maxi	Maximum Value
Valeur maximum message	Maximum Message Value
Valeur min	Minimum Value
Valeur minimum message	Minimum Message Value
Verrou menu	Menu Lock
Vert	Green
Vert clair	Lt Green
Vertical	Vertical
Vide	UnFilled
Virgule flottante	Floating Point
Xmax	Xmax
Xmin	Xmin
Ymax	Ymax
Ymin	Ymin
Zone bas droite	Lower Right Zone
Zone haut gauche	Upper Left Zone

German-English

Abbrch	Cancel
Abfragewiederholungen	Enquiry Retries
Abtast/Aufz-Rate	Sampling/Log Rate
Abtastrate	Sampling Rate
Adresse	Address
Aktuel. Bildsch. drucken	Print the Current Screen
Alarm bestätigen	Acknowledge Alarm
Alarm bestätigen	Alarm Acknowledge
Alarm freigeben	Alarm Enable
Alarm Nr	Alarm #
Alarmanzeigezeit	Alarm Display Time
Alarme drucken	Print Alarms
Alarminformation	Alarm Information
Alarmkonfiguration	Alarm Configuration
An Workstation senden	Send to Engine
Analogausgang	Analog Output
Analogeingang	Analog Input
Ändern	Change
Anfügungs-Ausdruck	Append Expression
Angezgte Zeilen	Lines Displayed
Anwendung	Application
Anwendung ausführen	Application Run
Anwendung drucken	Application Print
Anwendung laden	Application Load
Anwendung löschen	Application Delete
Anwendung senden	Application Send
Anwendungsalarm prüfen	Application Alarm Check
Anwendungsname	Application Name
Anz. Abtastungen	Number of Samples
Anz. sichern	Save Number
Anzahl Alarme	Alarm Save Number
Anzahl angezeigter Zeilen	Number of Lines Displayed
Anzahl Anzeigepunkte	Number of Display Points
Anzahl Blocktransfermodule	Number of Block Transfer Modules
Anzahl Dateien	File Save Number
Anzahl Hinweise	Number of Messages
Anzahl Pseudotasten	Number of Pseudo Keys
Anzahl sichern	Save Number
Anzahl Tasten	Number of Keys
Anzahl Viertelracks	Number of Quarter Racks
Anzeige	Display
Auffr.	Redraw
Aufheben	Erase

Aufz	Log
Aufz-Datei	Log File Name
Aufz-Freigabebeding.	Log Enable Condition
Aufzeich-Format	Log File Format
Aufzeich-Pfad	Log File Path
Aufzeich-Trend	Log Trend
Aufzeich.	Log
Aufzeich.-Daten	Log Information
Aus	Off
Ausdehnungsrichtung	Growth Direction
Ausdruck Hilfe	Expression Help
Ausdruck	Expression
Ausdrücke	Expressions
Ausführen	Run
Ausgabe-Einheit	Listing Target
Ausgabeport	Send Port
Ausgangsrack-Oktal	Starting Rack-Octal
Ausgangsviertel	Starting Quarter
Ausgewählte Vorschr laden	Load Selected Recipe
Auslös-Ereignis	Trigger Event
Ausrichten	Align
Ausser	Out
Auswähl	Select
Automat. Objektkonfiguration	Automatic Object Configuration
Balken	Bar
Balken links	Bar Left
Balken rechts	Bar Right
Balken unten	Bar Down
Bearbeiten	Edit
Bedingt	Layered
Bedingter Ausdruck	Conditional Expression
Bedingter Text	Layered Text
Bedingung	Condition
Bedingung wird wahr	Condition Becomes True
Beschreibung	Description
Bestätigen	Acknowledge
Bildsch	Screen
Bildschirm bearbeiten	Screen Edit
Bildschirm drucken	Screen Print
Bildschirm laden	Screen Load
Bildschirm listen	Screen List
Bildschirm löschen	Screen Delete
Bildschirm modifiziert	Screen Modified
Bildschirm senden	Screen Send
Bildschirm sichern	Screen Save

Bildschirmalarm prüfen	Screen Alarm Check
Bildschirmgrundfarbe	Screen Base Color
Bildschirmmodus	Screen Mode
Bildschirmname	Screen Name
BINÄR	BINARY
Blau	Blue
Blocktransfer-Leseworte pro Modul	Block Transfer Read Words per Module
Blocktransfer-Schreibworte pro Modul	Block Transfer Write Words per Module
Braun	Brown
Breite	Width
Dargestellte Grösse	Scale Drawn
Dateigrösse	File Size
Dateiname	File Name
Daten	Data
Daten in Adr. schreiben	Write Data to Address
Daten-/Tasten-Wert	Data/Key Press Value
Datenadresse	Data Address
Datenanzeige	Data Display
Datenbits	Data Bits
Dateneingabe	Data Entry
Dateneingabekonfiguration	Data Entry Configuration
Datengrösseausdruck	Data Scale Expression
Datum	Date
Datum/Zeit	Date/Time
Datum/Zeit Einst	Set Date/Time
Datumsformat	Date Format
Digitalausgang	Digital Output
Digitaleingang	Digital Input
Digitalkarte	Chart
Direkt	Direct
Druck/Platte	Printer/Disk
Drucken	Print
Drucker	Printer
Dtei	File
Dunkelgrau	Dk Grey
Echtzeit	Real-Time
Echtzeit-Trend	Real-Time Trend
Ein	On
Eine Vorschrift laden	Load a Recipe
Einen Report drucken	Print a Report
Einfach	Single
Einfachtext	Single Text
Einfüg	Insert
Einfügen	Paste
Einschaltdiagnose	Power-on Diagnostics
Einst	Set

Empfänger-Workstation	Receiving Engine
Endez. verwenden	Use Terminator
Endezeichen	Terminator
Entwicklung	Development
Ereig.Trigger	Event Trigger
Ereignisausdruck	Event Expression
Ereignistrend	Event Trend
Ereignistrend-Konfiguration	Event Trend Configuration
Erlaubte Sicherheitsstufen	Security Levels Allowed
Erstell	Create
Farbe	Color
Fehler	Error
Fehler Adresse	Address Error
Fehler Alarm	Alarm Error
Fehler Anwendung	Application Error
Fehler Anwendungsname	Application Name Error
Fehler Anzahl Alarme	Alarm Save Number Error
Fehler Ausdruck	Expression Error
Fehler Ausführung	Run Error
Fehler Bedingung	Condition Error
Fehler Bereich	Range Error
Fehler Dateinummer	File Number Error
Fehler Datum/Zeit-Eingabe	Set Date/Time Error
Fehler Drucken	Print Error
Fehler Drucker	Printer Error
Fehler Eingabe	Entry Error
Fehler Endezeichen	Terminator Error
Fehler Funktion	Function Error
Fehler Gitter	Grid Error
Fehler Grafikmodus	Graphics Mode Error
Fehler Grenze	Boundary Error
Fehler Hinweis	Message Error
Fehler Index	Index Error
Fehler Kenndatei	Tag File Error
Fehler Kommunikation	Communication Error
Fehler Konfiguration	Configuration Error
Fehler Konfigurationsdatei	Configuration File Error
Fehler Laden	Load Error
Fehler Länge	Length Error
Fehler Löschen	Delete Error
Fehler Modifikationsregister	Modify Register Error
Fehler Name	Name Error
Fehler Netzwerkport	Port Network Error
Fehler Passwort	Password Error
Fehler Platte	Disk Error

Fehler Polygon	Polygon Error
Fehler Polylinie	Polyline Error
Fehler Reportname	Report Name Error
Fehler Seite	Page Error
Fehler Senden	Send Error
Fehler Sicherheitsstufe	Security Level Error
Fehler Sichern	Save Error
Fehler Speicher	Memory Error
Fehler SPS-Adresse	PLC Address Error
Fehler Steuerungstext	Control Text Error
Fehler Stufe	Level Error
Fehler Symbol	Symbol Error
Fehler Symbolbibliotheksname	Symbol Library Name Error
Fehler Symbolname	Symbol Name Error
Fehler Tageszeit	Time of Day Error
Fehler Tastensimulation	Simulate Key Error
Fehler Temporäre Datei	Temporary File Error
Fehler Textgrafik	Text Graphics Error
Fehler Timeout	Timeout Error
Fehler Trend	Trend Error
Fehler Trendpen	Trend Pen Error
Fehler Verzeichnis	Directory Error
Fehler Vorschriftenname	Recipe Name Error
Fehler Wert	Value Error
Fehler XY-Plot	XY Plot Error
Fehler Zeile	Line Error
Fnktionen	Functions
Fontgrösse	Font Size
Formularvorschub	Form Feed
Freig. Rep.-Aufz	Report Log Enable
Funkionstaste	Function Key
Funktion	Function
Funktion bei Drücken	Function on Press
Funktion bei Freigabe	Function on Release
Funktiontastenkonfiguration	Function Key Configuration
Ganzzahl	Integer
Ganzzahlentabelle	Integer Table
Gefül. Kreisdiag	Filled Pie
Gefül. Rechteck	Filled Rectangle
Gefüllt	Filled
Gefüllt/Leer	Filled/UnFilled
Gefüllt. Polygon	Filled Polygon
Gefüllt. Quadrat	Filled Square
Gefüllter Kreis	Filled Circle
Gefülltes Oval	Filled Oval
Gelb	Yellow

ger.	even
Gezeich	Drawn
Gitter	Grid
Gitter-X	Grid-X
Gitter-Y	Grid-Y
Gittergrösse	Grid Size
Gleich	Equal
Gleitkomma	Floating Point
Gleitkommatabelle	Floating Point Table
Grafik	Graphics
Grafiktext	Graphics Text
Grö	Scale
Grösse	Size
Grösse	Scale
Grösser	Greater
Grün	Green
Grundfarbe	Base Color
Hellblau	Lt Blue
Hellcyan	Lt Cyan
Hellgrün	Lt Green
Hellmagent	Lt Magenta
Hellrot	Lt Red
Hilfe	Help
Hinten	Back
Hintergr.-Hervorheb.-Farbe	Highlight Background Color
Hintergrund	Background
Hintergrundfarbe	Background Color
Hinweis	Message
Hinweis drucken	Message Print
Hinweis laden	Message Load
Hinweis löschen	Message Delete
Hinweis modifiziert	Message Modified
Hinweis senden	Message Send
Hinweis sichern	Message Save
Hinweishöchstwert	Maximum Message Value
Hinweislänge	Message Length
Hinweisminimalwert	Minimum Message Value
Hinweisname	Message Name
Hinweisobjektkonfiguration	Message Object Configuration
Histor. Trend	Historical Trend
Historisch	Historical
Hoch-Alarm	High Alarm
Höchstlänge	Maximum Length
Höchstwert	Maximum Value
Höhe	Height

In Ruhemodus gehen	Go to Idle Mode
Int Weiss	Int White
Ja	Yes
Jahr	Year
Kein	None
Kein Aufz	No Log
Keine	None
Keine löschen	Delete None
Kenname	Tag Name
Kenngrenze	Tag Limit
Kenntyp	Tag Type
Kleiner	Less
Konfig	Config
Konfiguration	Configuration
Konfiguration modifiziert	Configuration Modified
Kopieren	Copy
Kreis	Circle
Kreisdiagramm	Pie
Kurz	Short
Laden	Load
Lang	Long
Leer	UnFilled
Leitpfad	Routing Path
Linie	Line
Linienbreite	Line Width
Linienformat	Line Format
Liniengrö	Line Size
Linienkonfiguration	Line Configuration
Links	Left
Listen	List
Listentext	List Text
Löschen	Delete
Lösen	Unlink
Magenta	Magenta
Mehr	More
Mehrf verb.	Multi-Link
Mehrpunkt-Konfiguration	Multi-drop Configuration
Mehrpunktport	Multi-drop Port
Menüsperre	Menu Lock
Mind-Alarm	Low Alarm
Minimalwert	Minimum Value
Minuten	Minutes
Mitte-X	Center-X
Mitte-Y	Center-Y
Modemumkehrzeit	Modem Turnaround Time
Modif.-Register #M	Modify Register #M

Modus	Mode
Muster	Pattern
N	No
N-zu-N	N-To-N
Nachauswahl-Adresse	Post Select Address
Nachauswahl-Wert	Post Select Value
Name	Name
Name Startbildschirm	Startup Screen Name
Netzwerk-Schnittstellenmodulnr	Network Interface Module Number
Netzwerkadresse	Network Address
Netzwerktyp	Network Type
Netzwrk	Network
Nummer	Number
Nur	Only
Oben	Up
Oben	Top
Obere linke Zone	Upper Left Zone
Objektanzahl	Number of Objects
Objektfonts	Object Fonts
Objektkonfiguration	Object Configuration
Objektname	Object Name
Objekttyp	Object Type
OK	Okay
Oval	Oval
Parität	Parity
Passwort	Password
Passwort-Konfiguration	Password Configuration
Passwörter	Passwords
Passwortstufe Dateiverwaltung	File Management Password Level
Pegel	Level
Pen Nr	Pen #
Penfarbe	Pen Color
Platte	Disk
Plattenüberlauf-Ents	Disk Full Resolution
Plot-Löschen-Ausdruck	Clear Plot Expression
Polylinie	Polyline
Portanschluss	Port Connect
Portstationsnr	Port Station Number
Pseudotaste	Pseudo Key
Pseudotastengruppe	Pseudo Key Group
Pseudotastenkonfiguration	Pseudo Key Configuration
Punktfarbe	Point Color
Quadrat	Square
Rack aktiv.	Rack Enable
Rack wiederherstel.	Restore Rack

Rand	Edge
Rchts	Right
Rechteck	Rectangle
Rechts	Right
Regelmässige Timeout	Periodic Timeout
Rel.	Relay
Relais bei Alarm	Relay On Alarm
Report-Anfügen-Ausdruck	Report Append Expression
Report bearbeiten	Report Edit
Report drucken	Report Print
Report laden	Report Load
Report löschen	Report Delete
Report modifiziert	Report Modified
Report senden	Report Send
Report sichern	Report Save
Reportaufz-Pfad	Report Log Path
Reportdatenanzeige	Report Data Display
Reportkonfiguration	Report Configuration
Reportname	Report Name
Rot	Red
Rückgängig	UnDo
Schaltf	Button
Schaltfläche	Touch Button
Schaltflächenkonfiguration	Touch Button Configuration
Schieben nach	Push-To
Schneiden	Cut
Schwarz	Black
Seite	Page
Seite	Page #
Seitennummer wechseln	Change Page Number
Seitennummer	Page Number
Sekunden	Seconds
Sel-Schaltfläche	Selector Button
Sel-Schaltfläche ausführ.	Execute Selector Button
Selektor	Selector
Selektor-Schaltfläche-Konfiguration	Selector Touch Button Configuration
Selektorindex	Selector Index
Selektorindexausdruck	Selector Index Expression
Selektortext	Selector Text
Selektortext-Konfiguration	Selector Text Configuration
Selektortextobjekt-Konfiguration	Selector Text Object Configuration
Senden	Send
Senkrecht	Vertical
Sensorbildschirm	Touch Screen
Serielle Ports	Serial Ports
Sicherh.-Stufe	Security Level

Sicherheitskonfiguration	Security Configuration
Sicherheitspasswortstufe	Security Password Level
Sicherheitsstufe ändern	Change Security Level
Sicherheitsstufen-Passwörter	Security Level Passwords
Sicherht	Security
Sichern	Save
Simulierte SPS	Simulated PLC
Skalieren	Scale
Spiegeln	Flip
Sprache	Language
Spring auf	Snap-To
SPS-Adresse	PLC Address
SPS Konfiguration	PLC Configuration
SPS-Name	PLC Name
SPS-Netzwerktyp	PLC Network Type
SPS-Typ	PLC Type
Startbedingung	Start Condition
Stationsadresse	Station Address
Stationspasswort	Station Password
Steuercode	Control Code
Steuerng	Control
Steuerung	Control
Steuerungstext	Control Text
Steuerungstext-Konfiguration	Control Text Configuration
Stopbedingung	Stop Condition
Strich	Line Dash
Stringadresse	String Address
Stringanzeige	String Display
Stringeingabe	String Entry
Stringtabelle	String Table
Stufe	Level
Symbol auswählen	Symbol Select
Symbol bearbeiten	Symbol Edit
Symbol drucken	Symbol Print
Symbol laden	Symbol Load
Symbol listen	Symbol List
Symbol löschen	Symbol Delete
Symbol modifiziert	Symbol Modified
Symbol sichern	Symbol Save
Symbolausdruck $	Symbol Expression $
Symbolbibliothek auswählen	Symbol Library Select
Symbolbibliothek bearbeiten	Symbol Library Edit
Symbolbibliothek drucken	Symbol Library Print
Symbolbibliothek listen	Symbol Library List
Symbolbibliothek sichern	Symbol Library Save

Symbolkonfiguration	Symbol Configuration
Symbolmodus	Symbol Mode
Symbolname	Symbol Name
Symbolziel	Symbol Target
System	System
Systemkonfiguration	System Configuration
Tag	Day
Tageszeit	Time of Day
Tastaturtyp	Keyboard Type
Taste	Key
Tastenbl	Keypad
Tastenblockkonfiguration	Keypad Configuration
Tastendruck simulieren	Simulate Key Press
Tastendruckwiederh	Repeat Key Presses
Tastengruppe	Key Group
Tastenkonfiguration	Key Configuration
Tastenton	Keypress Sound
Textgrafiken	Text Graphics
Textkonfiguration	Text Configuration
Textzeilen	Text Lines
Timeout-Wert	Timeout Value
Ton bei Alarm	Beep On Alarm
Ton	Beep
Trendaufzeichnungskonfig	Log Trend Configuration
Trendbez.	Trend Title
Trendkonfiguration	Trend Configuration
Trendpenkonfiguration	Trend Pen Configuration
Typ	Type
u. niedr.	And Below
Unempf.	Deadband
ung.	odd
Ungleich	Not Equal
Ungültige Zeit	Invalid Time
Ungültiges Datum	Invalid Date
Unten	Bottom
Unten	Down
Untere rechte Zone	Lower Right Zone
Verbotenes Format	Illegal Format
Verkn	Link
Verschieben	Move
Verzeichn	Directory
Vordergr.-Hervorheb.-Farbe	Highlight Foreground Color
Vordergrund	Foreground
Vordergrundfarbe	Foreground Color
Vorgabe Port	Default Port
Vorgabe SPS-Format	Default PLC Format

Vorgabe SPS-Name	Default PLC Name
Vorgaben	Defaults
Vorne	Front
Vorschr	Recipe
Vorschrift	Recipe
Vorschrift bearbeiten	Recipe Edit
Vorschrift drucken	Recipe Print
Vorschrift laden	Recipe Load
Vorschrift löschen	Recipe Delete
Vorschrift modifiziert	Recipe Modified
Vorschrift senden	Recipe Send
Vorschrift sichern	Recipe Save
Vorschrifteneingabe	Recipe Entry
Vorschrifteneingabe-Konfiguration	Recipe Entry Configuration
Vorschriftname	Recipe Name
Waagrecht	Horizontal
Wartezeit bei Senden	Send Wait Time
Wechsel Verzeichnis	Change Directory
Weiss	White
Weiter	Next
Wert	Value
Wertsausdruck	Value Expression
Wiederholungen	Retries
Workstation-Drucker	Engine Printer
Wtr	Next
X-Ausdruck	X Expression
X-Bez.	X Title
Xmax	Xmax
Xmin	Xmin
XY-Aufzeichnungsplot-Konfiguration	XY Log Plot Configuration
XY-Plot-Konfiguration	XY Plot Configuration
Y-Ausdruck	Y Expression
Y-Bez.	Y Title
Zeichen	Character
Zeile gelöscht	Line Deleted
Zeilen-Nr	Line Number
Zeit	Time

Zeit anzeig.	Display Time
Zeitgeber	Timer
Zeitraum Aufz.	Log File Period
Ziel	Target
Ziel-Workstation	Target Engine
Zielkonfiguration	Target Configuration
Zstnde	States
Zt-Bereich	Time Scale
Zu Bildschirm gehen	Go to Screen
Zurück	Previous
Zurück zu Aktivmodus	Return to Active Mode
Zurück zu letztem Bildsch	Return to Previous Screen
Zustand	State
Zustandkonfiguration	State Configuration
Zustandstext	State Text

Italian-English

A strati	Layered
A virgola mobile	Floating Point
Abil. rack	Rack Enable
Abilitaz rapp. log	Report Log Enable
Abilitaz. allarme	Alarm Enable
Aiuto espressione	Expression Help
All. alto	High Alarm
All. basso	Low Alarm
Allarme	Alarm
Allarme n.	Alarm #
Allinea	Align
Altezza	Height
Alto	Top
Ampiezza linea	Line Size
Andare a schermo	Go to Screen
Andare in modalità inatt.	Go to Idle Mode
Anno	Year
Annul.	Cancel
Annulla	UnDo
Applicaz.	Application
Attiv. evento	Event Trigger
Avanti	Front
Azzurro	Lt Blue
Barra	Bar
Barra a destra	Bar Right
Barra a sinistra	Bar Left
Barra in giù	Bar Down
Basso	Bottom
Bianco	White
Bianco int	Int White
BINAR.	BINARY
Bit di dati	Data Bits
Bit di stop	Stop Bits
Blocca su	Snap-To
Blocco menu	Menu Lock
Blu	Blue
Bordo	Edge
Breve	Short
Cambia	Change
Cambia directory	Change Directory
Cambiare liv. sicurezza	Change Security Level
Cambiare numero di pagina	Change Page Number

Canc. nessun.	Delete None
Cancell. nessuno	Delete None
Cancella	Delete
Cancella applicazione	Application Delete
Cancella messaggio	Message Delete
Cancella rapporto	Report Delete
Cancella ricetta	Recipe Delete
Cancella schermo	Screen Delete
Cancella simbolo	Symbol Delete
Carattere	Character
Carica	Load
Carica applicazione	Application Load
Carica messaggio	Message Load
Carica rapporto	Report Load
Carica ricetta	Recipe Load
Carica schermo	Screen Load
Carica simbolo	Symbol Load
Caricare ricetta	Load a Recipe
Caricare ricetta selez.	Load Selected Recipe
Centro-X	Center-X
Centro-Y	Center-Y
Cerchio	Circle
Cerchio pieno	Filled Circle
Ciano	Cyan
Ciano ch.	Lt Cyan
Cod. controllo	Control Code
Collega	Link
Collegamento porta	Port Connect
Colore	Color
Colore base	Base Color
Colore base schermo	Screen Base Color
Colore evidenz primo piano	Highlight Foreground Color
Colore evidenz. sfondo	Highlight Background Color
Colore penna	Pen Color
Colore primo piano	Foreground Color
Colore punti	Point Color
Colore sfondo	Background Color
Cond. abilitaz. log	Log Enable Condition
Condiz.	Condition
Condiz. arresto	Stop Condition
Condiz. inizio	Start Condition
Condizione diventa vera	Condition Becomes True
Conferma allarme	Alarm Acknowledge
Conferma	Acknowledge
Confermare allarme	Acknowledge Alarm
Config. oggetto	Object Configuration

Configuraz.	Configuration
Configurazione allarme	Alarm Configuration
Configurazione automatica oggetto	Automatic Object Configuration
Configurazione grafico XY	XY Plot Configuration
Configurazione immissione dati	Data Entry Configuration
Configurazione immissione ricetta	Recipe Entry Configuration
Configurazione keypad	Keypad Configuration
Configurazione linea	Line Configuration
Configurazione log grafico XY	XY Log Plot Configuration
Configurazione log tendenza	Log Trend Configuration
Configurazione modificata	Configuration Modified
Configurazione multi-drop	Multi-drop Configuration
Configurazione oggetto	Object Configuration
Configurazione oggetto messaggio	Message Object Configuration
Configurazione oggetto testo selettore	Selector Text Object Configuration
Configurazione password	Password Configuration
Configurazione penna tendenza	Trend Pen Configuration
Configurazione PLC	PLC Configuration
Configurazione pseudotasto	Pseudo Key Configuration
Configurazione pulsante	Touch Button Configuration
Configurazione pulsante selettore	Selector Touch Button Configuration
Configurazione rapporto	Report Configuration
Configurazione sicurezza	Security Configuration
Configurazione simbolo	Symbol Configuration
Configurazione sistema	System Configuration
Configurazione stato	State Configuration
Configurazione target	Target Configuration
Configurazione tasto	Key Configuration
Configurazione tasto funzione	Function Key Configuration
Configurazione tendenza	Trend Configuration
Configurazione tendenza evento	Event Trend Configuration
Configurazione testo	Text Configuration
Configurazione testo di controllo	Control Text Configuration
Configurazione testo selettore	Selector Text Configuration
Contatore	Meter
Control	Control
Controlla	Control
Controlla allarme applicazione	Application Alarm Check
Controlla allarme schermo	Screen Alarm Check
Copia	Copy
Crea	Create
Data	Date
Data non valida	Invalid Date
Data/Ora	Date/Time
Descrizione	Description

Destra	Right
Diagnostica all'avviamento	Power-on Diagnostics
Dietro	Back
Dimensione file	File Size
Dimensione font	Font Size
Dimensioni	Size
Dimensioni griglia	Grid Size
Diretto	Direct
Direzione crescita	Growth Direction
Disco	Disk
Disegna	Drawn
disp	odd
Display	Display
Dx	Right
e infer.	And Below
Elimina	Erase
Errore	Error
Errore allarme	Alarm Error
Errore applicazione	Application Error
Errore cancellazione	Delete Error
Errore caricamento	Load Error
Errore comunicazione	Communication Error
Errore condizione	Condition Error
Errore configurazione	Configuration Error
Errore directory	Directory Error
Errore disco	Disk Error
Errore esecuzione	Run Error
Errore espressione	Expression Error
Errore file configurazione	Configuration File Error
Errore file tag	Tag File Error
Errore file temporaneo	Temporary File Error
Errore funzione	Function Error
Errore grafica testo	Text Graphics Error
Errore grafico XY	XY Plot Error
Errore griglia	Grid Error
Errore immissione	Entry Error
Errore impostazione data/ora	Set Date/Time Error
Errore indice	Index Error
Errore indirizzo	Address Error
Errore indirizzo PLC	PLC Address Error
Errore intervallo	Range Error
Errore invio	Send Error
Errore limite	Boundary Error
Errore livello	Level Error
Errore livello di sicurezza	Security Level Error
Errore lunghezza	Length Error

Errore memoria	Memory Error
Errore messaggio	Message Error
Errore modo grafico	Graphics Mode Error
Errore nome	Name Error
Errore nome applicazione	Application Name Error
Errore nome libreria simbolo	Symbol Library Name Error
Errore nome rapporto	Report Name Error
Errore nome ricetta	Recipe Name Error
Errore nome simbolo	Symbol Name Error
Errore numero file	File Number Error
Errore numero salvataggio allarmi	Alarm Save Number Error
Errore ora del giorno	Time of Day Error
Errore pagina	Page Error
Errore password	Password Error
Errore penna tendenza	Trend Pen Error
Errore poligono	Polygon Error
Errore polilinea	Polyline Error
Errore registro modifica	Modify Register Error
Errore rete porta	Port Network Error
Errore riga	Line Error
Errore salvataggio	Save Error
Errore simbolo	Symbol Error
Errore stampa	Print Error
Errore stampante	Printer Error
Errore tasto simulato	Simulate Key Error
Errore tendenza	Trend Error
Errore terminazione	Terminator Error
Errore testo di controllo	Control Text Error
Errore timeout	Timeout Error
Errore valore	Value Error
Esegui	Run
Esegui applicazione	Application Run
Eseguire pulsante selett.	Execute Selector Button
Espres. cancel. plot	Clear Plot Expression
Espres. evento	Event Expression
Espres. simbolo $	Symbol Expression $
Espres. valore	Value Expression
Espres.	Expression
Espress. indice selettore	Selector Index Expression
Espress. X	X Expression
Espress. Y	Y Expression
Espressione aggiunta	Append Expression
Espressione aggiunta rapporto	Report Append Expression
Espressione condizionale	Conditional Expression
Espressione scala dati	Data Scale Expression

Espressioni	Expressions
Evento attivaz.	Trigger Event
Font oggetti	Object Fonts
Form Feed	Form Feed
Formato	Format
Formato data	Date Format
Formato file log	Log File Format
Formato illegale	Illegal Format
Formato linea	Line Format
Formato PLC default	Default PLC Format
Freq campion./log	Sampling/Log Rate
Freq campion.	Sampling Rate
Funzione	Function
Funzione premendo	Function on Press
Funzione rilasciando	Function on Release
Funzioni	Functions
Fuori	Out
Giallo	Yellow
Giorno	Day
Giù	Down
Grafica testo	Text Graphics
Grafico	Chart
Grafico	Graphics
Grafico XY	XY Plot
Grigio sc.	Dk Grey
Griglia	Grid
Griglia-X	Grid-X
Griglia-Y	Grid-Y
Gruppo pseudotasti	Pseudo Key Group
Gruppo tasti	Key Group
Guida	Help
Immis. stringa	String Entry
Immissione dati	Data Entry
Immissione ricetta	Recipe Entry
Imposta	Set
Imposta data/ora	Set Date/Time
Incolla	Paste
Indic	Index
Indice selett.	Selector Index
Indir. dati	Data Address
Indir. post-selez.	Post Select Address
Indir. stringa	String Address
Indiriz	Address
Indirizzo	Address
Indirizzo di rete	Network Address
Indirizzo PLC	PLC Address

Indirizzo stazione	Station Address
Informaz. log	Log Information
Informazione allarme	Alarm Information
Input analogico	Analog Input
Input digitale	Digital Input
Inser.	Insert
Intero	Integer
Invia	Send
Invia applicazione	Application Send
Invia messaggio	Message Send
Invia rapporto	Report Send
Invia ricetta	Recipe Send
Invia schermo	Screen Send
Inviare a motore	Send to Engine
Larghez	Width
Larghezza linea	Line Width
Limite tag	Tag Limit
Linea	Line
Lingua	Language
Lista	List
Lista libreria simbolo	Symbol Library List
Lista schermo	Screen List
Lista simbolo	Symbol List
Liv. sicurezza	Security Level
Livel	Level
Livelli di sicurezza permessi	Security Levels Allowed
Livello	Level
Livello password gestione file	File Management Password Level
Livello password sicurezza	Security Password Level
Lunghezza max	Maximum Length
Lunghezza messag	Message Length
Lunghezza messaggio	Message Length
Lungo	Long
Magenta ch	Lt Magenta
Maggiore	Greater
Marrone	Brown
Massimo	Maximum
Messag.	Message
Messaggio	Message
Messaggio modificato	Message Modified
Minimo	Minimum
Minore	Less
Minuti	Minutes
Modif	Edit
Modifica libreria simbolo	Symbol Library Edit

Modifica rapporto	Report Edit
Modifica ricetta	Recipe Edit
Modifica schermo	Screen Edit
Modifica simbolo	Symbol Edit
Modo schermo	Screen Mode
Modo simbolo	Symbol Mode
Modo	Mode
Motore ricevente	Receiving Engine
Motore target	Target Engine
Multicolleg	Multi-Link
N. moduli di trasferimento a blocchi	Number of Block Transfer Modules
N. punti visualizzati	Number of Display Points
N. salv. allarme	Alarm Save Number
N. salvat. file	File Save Number
Nero	Black
ness	none
Nessuna	None
Nome	Name
Nome applicazione	Application Name
Nome file log	Log File Name
Nome file	File Name
Nome messaggio	Message Name
Nome ogget.	Object Name
Nome PLC di default	Default PLC Name
Nome PLC	PLC Name
Nome rapporto	Report Name
Nome ricetta	Recipe Name
Nome schermo di avvio	Startup Screen Name
Nome schermo	Screen Name
Nome simbolo	Symbol Name
Nome tag	Tag Name
Non ugual	Not Equal
NonPieno	UnFilled
Numero	Number
Numero campioni	Number of Samples
Numero di oggetti	Number of Objects
Numero di pseudotasti	Number of Pseudo Keys
Numero di quarti rack	Number of Quarter Racks
Numero di tasti	Number of Keys
Numero messaggi	Number of Messages
Numero modulo interfaccia rete	Network Interface Module Number
Numero riga	Line Number
Numero righe visualizzate	Number of Lines Displayed
Numero stazione porta	Port Station Number
Nuovi tentativi	Retries
OK	Okay

Ora	Time
Ora del giorno	Time of Day
Ora non valida	Invalid Time
Ore	Time
Orizzontale	Horizontal
Output analogico	Analog Output
Output digitale	Digital Output
Ovale	Oval
Ovale pieno	Filled Oval
Pag n.	Page #
Pag.	Page
Pagina numero	Page Number
pari	even
Parità	Parity
Parole lettura blocchi per modulo	Block Transfer Read Words per Module
Parole scrittura a blocchi per modulo	Block Transfer Write Words per Module
Password livello di sicurezza	Security Level Passwords
Password stazione	Station Password
Penna n.	Pen #
Penne	Pens
Percorso d'instradamento	Routing Path
Percorso log	Log File Path
Percorso rapp. log	Report Log Path
Periodo f. log	Log File Period
Pieno	Filled
Pieno/NonPieno	Filled/UnFilled
pixel	pixels
PLC simulato	Simulated PLC
Poli	Poly
Poligono	Polygon
Poligono pieno	Filled Polygon
Polilinea	Polyline
Porta 1	Port 1
Porta invio	Send Port
Porta multi-drop	Multi-drop Port
Porte	Ports
Porte Default	Default Port
Porte seriali	Serial Ports
Prec.	Previous
Preced.	Previous
Primo piano	Foreground
Pros.	Next
Pseudotasto	Pseudo Key
Pulsante	Touch Button
Pulsante	Button

Pulsante selett.	Selector Button
Quadrato	Square
Quadrato pieno	Filled Square
Quarto iniziale	Starting Quarter
R-a-R	N-To-N
Rack iniz.-ottale	Starting Rack-Octal
Rapp.	Report
Rapporto	Report
Rapporto modificato	Report Modified
Registri	Registers
Registro modif. #M	Modify Register #M
Relé in caso d'allarme	Relay On Alarm
Relé	Relay
Rete	Network
Rettangolo	Rectangle
Rettangolo pieno	Filled Rectangle
Ribalta	Flip
Ricet.	Recipe
Ricetta	Recipe
Ricetta modificata	Recipe Modified
Ridis.	Redraw
Rig. testo	Text Lines
Riga cancellata	Line Deleted
Righe visualiz.	Lines Displayed
Ripetiz. pressioni	Repeat Key Presses
Ripristino rack	Restore Rack
Risoluz. disco pieno	Disk Full Resolution
Rosso	Red
Rosso ch.	Lt Red
Salva	Save
Salva libreria simbolo	Symbol Library Save
Salva messaggio	Message Save
Salva rapporto	Report Save
Salva ricetta	Recipe Save
Salva schermo	Screen Save
Salva simbolo	Symbol Save
Salvare n.	Save Number
Salvare numero	Save Number
Scala	Scale
Scala disegno	Scale Drawn
Scala temp	Time Scale
Scher.	Screen
Schermo	Screen
Schermo a sfioram.	Touch Screen
Schermo a sfioramento	Touch Screen
Schermo modificato	Screen Modified

Scollega	Unlink
Scriv. dati su indirizzo	Write Data to Address
Secondi	Seconds
Segue	More
Selettore	Selector
Seleziona	Select
Seleziona libreria simbolo	Symbol Library Select
Seleziona simbolo	Symbol Select
Sfondo	Background
Sì	Yes
Sicurezza	Security
Simb.	Symbol
Simbolo	Symbol
Simbolo modificato	Symbol Modified
Simulare pressione tasto	Simulate Key Press
Singolo	Single
Sinistra	Left
Sistema	System
Solo	Only
Spingi	Push-To
Sposta	Move
Stamp./Disco	Printer/Disk
Stampa	Print
Stampa allarmi	Print Alarms
Stampa applicazione	Application Print
Stampa libreria simbolo	Symbol Library Print
Stampa messaggio	Message Print
Stampa rapporto	Report Print
Stampa ricetta	Recipe Print
Stampa schermo	Screen Print
Stampa simbolo	Symbol Print
Stampante	Printer
Stampante motore	Engine Printer
Stampare schermo corrente	Print the Current Screen
Stampare un rapporto	Print a Report
Stati	States
Stato	State
Storica	Historical
Stringa	String
Su	Up
Suon	Beep
Suono in caso d'allarme	Beep On Alarm
Suono tastiera	Keypress Sound
Sviluppo	Development
Sx	Left

Tabella interi	Integer Table
Tabella stringhe	String Table
Tabella virg mobile	Floating Point Table
Taglia	Cut
Target	Target
Target listati	Listing Target
Target simboli	Symbol Target
Tasto	Key
Tasto funzione	Function Key
Tempo	Time
Tempo attesa invio	Send Wait Time
Tempo inversione modem	Modem Turnaround Time
Tempo visualizzazione allarme	Alarm Display Time
Tend	Trend
Tend tempo reale	Real-Time Trend
Tend. storica	Historical Trend
Tendenza evento	Event Trend
Tendenza log	Log Trend
Tentativi di richiesta	Enquiry Retries
Terminale Xycom	Xycom Terminal
Terminazione	Terminator
Test	Text
Testo	Text
Testo a strati	Layered Text
Testo controllo	Control Text
Testo di lista	List Text
Testo di stato	State Text
Testo grafico	Graphics Text
Testo selettore	Selector Text
Testo singolo	Single Text
Timeout periodico	Periodic Timeout
Tipo	Type
Tipo oggetto	Object Type
Tipo PLC	PLC Type
Tipo rete PLC	PLC Network Type
Tipo rete	Network Type
Tipo tag	Tag Type
Tipo tastiera	Keyboard Type
Tit. tend.	Trend Title
Tit. X	X Title
Tit. Y	Y Title
Tmpo reale	Real-Time
Tornare a schermo preced.	Return to Previous Screen
Tornare in modalità attiv	Return to Active Mode
Torta	Pie
Torta piena	Filled Pie

Tratto linea	Line Dash
Uguale	Equal
Usare terminaz.	Use Terminator
Val. massimo	Maximum Value
Val. post-selez.	Post Select Value
Valore	Value
Valore dati/tasto	Data/Key Press Value
Valore massimo messaggio	Maximum Message Value
Valore minimo messaggio	Minimum Message Value
Valore minimo	Minimum Value
Valore timeout	Timeout Value
Verde	Green
Verde ch.	Lt Green
Verticale	Vertical
Visual. ore	Display Time
Visualiz stringa	String Display
Visualiz. dati	Data Display
Visualizzazione dati rapporto	Report Data Display
Zna mrta	Deadband
Zona inferiore destra	Lower Right Zone
Zona superiore sinistra	Upper Left Zone

Spanish-English

Abajo	Down
Abajo	Bottom
Activ regist infme	Report Log Enable
Activ. rack	Rack Enable
Activación alarma	Alarm Enable
Acus recibo	Acknowledge
Acusar alarma	Acknowledge Alarm
Acuse de alarma	Alarm Acknowledge
Alarm alta	High Alarm
Alarm baja	Low Alarm
Alarma	Alarm
Alarma No.	Alarm #
Alin	Align
Altura	Height
Amarillo	Yellow
Anchura línea	Line Width
Anchura	Width
Año	Year
Aplicación	Application
Arch	File
Arrib	Up
Arriba	Top
Atrás	Back
Avance página	Form Feed
Ayuda	Help
Ayuda de expresión	Expression Help
Azul	Blue
Barra	Bar
Barra abajo	Bar Down
Barra derecha	Bar Right
Barra izquierda	Bar Left
Baudios	Baud
BINAR.	BINARY
Bits datos	Data Bits
Bits parada	Stop Bits
Blanco	White
Blanco int	Int White
Bloqueo menú	Menu Lock
Borde	Edge
Borrar	Erase
Botón	Button
Botón contacto	Touch Button
Botón selector	Selector Button

Breve	Short
Cadena	String
Cambiar	Change
Cambiar directorio	Change Directory
Cambiar niv. de seguridad	Change Security Level
Cambiar No. página	Change Page Number
Cancel	Cancel
Carácter	Character
Cargar	Load
Cargar aplicación	Application Load
Cargar informe	Report Load
Cargar mensaje	Message Load
Cargar pantalla	Screen Load
Cargar rceta seleccionada	Load Selected Recipe
Cargar receta	Recipe Load
Cargar símbolo	Symbol Load
Cargar una receta	Load a Recipe
Celeste	Lt Blue
Centro-X	Center-X
Centro-Y	Center-Y
Cian	Cyan
Cian claro	Lt Cyan
Círculo	Circle
Círculo llenado	Filled Circle
Clave	Password
Clave estación	Station Password
Claves	Passwords
Claves de nivel de seguridad	Security Level Passwords
Código control	Control Code
Color	Color
Color base	Base Color
Color base pantalla	Screen Base Color
Color de fondo	Background Color
Color lápiz	Pen Color
Color primer plano	Foreground Color
Color puntos	Point Color
Color selección 1er. plano	Highlight Foreground Color
Color selección fondo	Highlight Background Color
Coma flotante	Floating Point
Cond activ. registro	Log Enable Condition
Condic. inicio	Start Condition
Condic. parada	Stop Condition
Condic. pasa a verdadera	Condition Becomes True
Condición	Condition
Conexión puerto	Port Connect

Configuración	Configuration
Configuración alarma	Alarm Configuration
Configuración automática objeto	Automatic Object Configuration
Configuración botón	Touch Button Configuration
Configuración botón selector	Selector Touch Button Configuration
Configuración clave	Password Configuration
Configuración de informe	Report Configuration
Configuración de texto selector	Selector Text Configuration
Configuración destino	Target Configuration
Configuración entrada datos	Data Entry Configuration
Configuración entrada receta	Recipe Entry Configuration
Configuración estado	State Configuration
Configuración informe	Report Configuration
Configuración lápiz tendencia	Trend Pen Configuration
Configuración línea	Line Configuration
Configuración modificada	Configuration Modified
Configuración Multi-drop	Multi-drop Configuration
Configuración objeto	Object Configuration
Configuración objeto mensaje	Message Object Configuration
Configuración objeto texto selector	Selector Text Object Configuration
Configuración PLC	PLC Configuration
Configuración seguridad	Security Configuration
Configuración seudotecla	Pseudo Key Configuration
Configuración símbolo	Symbol Configuration
Configuración sistema	System Configuration
Configuración tecla	Key Configuration
Configuración tecla función	Function Key Configuration
Configuración teclado aux.	Keypad Configuration
Configuración tendencia	Trend Configuration
Configuración tendencia evento	Event Trend Configuration
Configuración tendencia registro	Log Trend Configuration
Configuración texto	Text Configuration
Configuración texto control	Control Text Configuration
Configuración trazo registro XY	XY Log Plot Configuration
Configuración trazo XY	XY Plot Configuration
Contador	Meter
Copiar	Copy
Cort	Cut
Crear	Create
Cuadrado	Square
Cuadrado llenado	Filled Square
Cuarto inicial	Starting Quarter
Datos	Data
Dcha	Right
Defin.	Set
Definir fecha/hora	Set Date/Time

Derecha	Right
Desactivado	Off
Desarrollo	Development
Descripción	Description
Deshac	UnDo
Destino	Target
Destino listados	Listing Target
Destino símbolos	Symbol Target
Día	Day
Diagnóstico de encendido	Power-on Diagnostics
Dibujdo	Drawn
Dir. de cadena	String Address
Dir. post-selección	Post Select Address
Direc.	Address
Direc. datos	Data Address
Dirección	Address
Dirección crecimiento	Growth Direction
Dirección estación	Station Address
Dirección PLC	PLC Address
Dirección red	Network Address
Directo	Direct
Director.	Directory
Disco	Disk
Disparo event	Event Trigger
E infer.	And Below
Editar biblioteca símbolo	Symbol Library Edit
Editar informe	Report Edit
Editar pantalla	Screen Edit
Editar receta	Recipe Edit
Editar símbolo	Symbol Edit
Ejec	Run
Ejecutar aplicación	Application Run
Ejecutar botón selector	Execute Selector Button
Elim. ninguno	Delete None
Elimin	Delete
Eliminar aplicación	Application Delete
Eliminar informe	Report Delete
Eliminar mensaje	Message Delete
Eliminar ninguna	Delete None
Eliminar pantalla	Screen Delete
Eliminar receta	Recipe Delete
Eliminar símbolo	Symbol Delete
Empuj	Push-To
En alrm	In
En capas	Layered

Enlazar	Link
Entero	Integer
Entrada analógica	Analog Input
Entrada cadena	String Entry
Entrada datos	Data Entry
Entrada digital	Digital Input
Entrada receta	Recipe Entry
Enviar	Send
Enviar al motor	Send to Engine
Enviar aplicación	Application Send
Enviar informe	Report Send
Enviar mensaje	Message Send
Enviar pantalla	Screen Send
Enviar receta	Recipe Send
Error al guardar	Save Error
Error alarma	Alarm Error
Error aplicación	Application Error
Error archivo de configuración	Configuration File Error
Error archivo de etiquetas	Tag File Error
Error carga	Load Error
Error clave	Password Error
Error comunicación	Communication Error
Error condición	Condition Error
Error configuración	Configuration Error
Error de archivo temporal	Temporary File Error
Error de directorio	Directory Error
Error de ejecución	Run Error
Error de línea	Line Error
Error de nivel seguridad	Security Level Error
Error de registro de modificación	Modify Register Error
Error de simulación tecla	Simulate Key Error
Error de trazo XY	XY Plot Error
Error definición de fecha/hora	Set Date/Time Error
Error dirección	Address Error
Error dirección PLC	PLC Address Error
Error disco	Disk Error
Error ejecución	Run Error
Error eliminación	Delete Error
Error entrada	Entry Error
Error envío	Send Error
Error expresión	Expression Error
Error función	Function Error
Error gráficos texto	Text Graphics Error
Error grilla	Grid Error
Error hora	Time of Day Error
Error impresión	Print Error

Error impresora	Printer Error
Error índice	Index Error
Error intervalo	Timeout Error
Error lápiz tendencia	Trend Pen Error
Error límite	Boundary Error
Error longitud	Length Error
Error memoria	Memory Error
Error mensaje	Message Error
Error modo gráfico	Graphics Mode Error
Error nivel	Level Error
Error No. alarmas	Alarm Save Number Error
Error No. archivos	File Number Error
Error nombre	Name Error
Error nombre aplicación	Application Name Error
Error nombre biblioteca símbolo	Symbol Library Name Error
Error nombre informe	Report Name Error
Error nombre receta	Recipe Name Error
Error nombre símbolo	Symbol Name Error
Error página	Page Error
Error polígono	Polygon Error
Error polilínea	Polyline Error
Error rango	Range Error
Error red puerto	Port Network Error
Error símbolo	Symbol Error
Error tendencia	Trend Error
Error terminador	Terminator Error
Error texto control	Control Text Error
Error valor	Value Error
Escal tmpo	Time Scale
Escal	Scale
Escala	Scale
Escala dibujada	Scale Drawn
Escribir datos en direc.	Write Data to Address
Espera de envío	Send Wait Time
Estado	State
Estdos	States
Evento dispar.	Trigger Event
Expr. borrado trazo	Clear Plot Expression
Expresión agregado informe	Report Append Expression
Expresión agregado	Append Expression
Expresión condicional	Conditional Expression
Expresión de escala de datos	Data Scale Expression
Expresión evento	Event Expression
Expresión índice selector	Selector Index Expression
Expresión símbolo $	Symbol Expression $

Expresión valor	Value Expression
Expresión X	X Expression
Expresión Y	Y Expression
Expresión	Expression
Expresiones	Expressions
Fecha	Date
Fecha/hora	Date/Time
Fecha no válida	Invalid Date
Fondo	Background
Format	Format
Formato	Format
Formato de fecha	Date Format
Formato ilegal	Illegal Format
Formato línea	Line Format
Formato PLC por def	Default PLC Format
Formato regist.	Log File Format
Frec muestreo/reg	Sampling/Log Rate
Frec muestreo	Sampling Rate
Frente	Front
Fuente	Font
Fuentes del objeto	Object Fonts
Fuera	Out
Función	Function
Función al liberar	Function on Release
Función al presionar	Function on Press
Funciones	Functions
Gráfico	Graphics
Gráficos texto	Text Graphics
Grilla	Grid
Grilla-X	Grid-X
Grilla-Y	Grid-Y
Gris osc.	Dk Grey
Grupo seudoteclas	Pseudo Key Group
Grupo teclas	Key Group
Guard	Save
Guardar biblioteca símbolo	Symbol Library Save
Guardar informe	Report Save
Guardar mensaje	Message Save
Guardar No.	Save Number
Guardar pantalla	Screen Save
Guardar receta	Recipe Save
Guardar símbolo	Symbol Save
Guiones	Line Dash
Herr.	Tools
Histórico	Historical
Hora	Time

Hora del día	Time of Day
Hora no válida	Invalid Time
Horizontal	Horizontal
Idioma	Language
Igual	Equal
imp.	odd
Impr	Print
Impres/disco	Printer/Disk
Impresora	Printer
Impresora motor	Engine Printer
Imprimir alarmas	Print Alarms
Imprimir aplicación	Application Print
Imprimir biblioteca símbolo	Symbol Library Print
Imprimir informe	Report Print
Imprimir mensaje	Message Print
Imprimir pantalla	Screen Print
Imprimir pantalla actual	Print the Current Screen
Imprimir receta	Recipe Print
Imprimir símbolo	Symbol Print
Imprimir un informe	Print a Report
Indic	Index
Indic selector	Selector Index
Inform. regist.	Log Information
Información de alarma	Alarm Information
Informe	Report
Informe modificado	Report Modified
Inser.	Insert
Intervalo de espera	Timeout
Intervalo periódico	Periodic Timeout
Intervalo	Time Out
Ir a modo reposo	Go to Idle Mode
Ir a pantalla	Go to Screen
Izqda	Left
Izquierda	Left
Lápces	Pens
Lápiz No.	Pen #
Largo	Long
Limit	Snap-To
Límite etiquetas	Tag Limit
Línea	Line
Línea eliminada	Line Deleted
Líneas mostrad.	Lines Displayed
Líneas txt	Text Lines
Listar biblioteca símbolo	Symbol Library List
Listar pantallas	Screen List

Listar símbolo	Symbol List
Llenado	Filled
Llenado/Vacío	Filled/UnFilled
Longitud máx.	Maximum Length
Longitud mensaje	Message Length
Magenta cl	Lt Magenta
Marrón	Brown
Más	More
Máximo	Maximum
Mayor	Greater
Menor	Less
Mensaje	Message
Mensaje modificado	Message Modified
Mínimo	Minimum
Minutos	Minutes
Modo pantalla	Screen Mode
Modo símbolo	Symbol Mode
Modo	Mode
Mostrar hora	Display Time
Motor destino	Target Engine
Motor receptor	Receiving Engine
Mover	Move
Multienlace	Multi-Link
Negro	Black
ning	none
Ninguna	None
Ninguno	None
Niv. seguridad	Security Level
Nivel	Level
Nivel clave p/gestión archivos	File Management Password Level
Nivel clave seguridad	Security Password Level
Niveles seguridad permitidos	Security Levels Allowed
No	Off
No igual	Not Equal
No reg	No Log
No.	Number
No. de cuartos de rack	Number of Quarter Racks
No. de líneas mostradas	Number of Lines Displayed
No. de mensajes	Number of Messages
No. de módulo interfaz de red	Network Interface Module Number
No. estación puerto	Port Station Number
No. línea	Line Number
No. módulos de transferencia bloques	Number of Block Transfer Modules
No. muestras	Number of Samples
No. objetos	Number of Objects
No. página	Page Number

No. puntos mostrados	Number of Display Points
No. seudoteclas	Number of Pseudo Keys
No. teclas	Number of Keys
Nomb arch	File Name
Nombre	Name
Nombre aplicación	Application Name
Nombre etiqueta	Tag Name
Nombre informe	Report Name
Nombre mensaje	Message Name
Nombre obj.	Object Name
Nombre pant. inicial	Startup Screen Name
Nombre pantalla	Screen Name
Nombre PLC por defec	Default PLC Name
Nombre PLC	PLC Name
Nombre receta	Recipe Name
Nombre regist	Log File Name
Nombre símbolo	Symbol Name
N° alarmas guard	Alarm Save Number
N° archiv guard	File Save Number
N° pág	Page #
OK	Okay
Orient	Flip
Ovalo	Oval
Ovalo llenado	Filled Oval
Pág.	Page
Palabras escritura bloques por módulo	Block Transfer Write Words per Module
Palabras lectura bloques por módulo	Block Transfer Read Words per Module
Pant.	Screen
Pantalla	Screen
Pantalla contacto	Touch Screen
Pantalla modificada	Screen Modified
par	even
Paridad	Parity
Pegar	Paste
Período regist.	Log File Period
pixeles	pixels
PLC simulado	Simulated PLC
Poli	Poly
Polígono	Polygon
Polígono llenado	Filled Polygon
Polilínea	Polyline
Por defecto	Defaults
Previo	Previous
Primer plano	Foreground
Próx	Next

Puerto 1	Port 1
Puerto de envío	Send Port
Puerto Multi-drop	Multi-drop Port
Puerto por defecto	Default Port
Puertos	Ports
Puertos serie	Serial Ports
R a R	N-To-N
Rack inicial-octal	Starting Rack-Octal
Receta	Recipe
Receta modificada	Recipe Modified
Rectángulo	Rectangle
Rectángulo llen.	Filled Rectangle
Recuperar rack	Restore Rack
Red	Network
Redibu	Redraw
Reg	Log
Regist de modif #M	Modify Register #M
Registro	Log
Registros	Registers
Reintentos solicitud	Enquiry Retries
Reintentos	Retries
Relé en caso de alarma	Relay On Alarm
Relé	Relay
Repetición tecla	Repeat Key Presses
Resol. disco lleno	Disk Full Resolution
Rojo	Red
Rojo claro	Lt Red
Ruta de acceso	Routing Path
Ruta regist infme	Report Log Path
Ruta registro	Log File Path
Salida analógica	Analog Output
Salida digital	Digital Output
Segundos	Seconds
Seguridad	Security
Selec	Select
Seleccionar biblioteca símbolo	Symbol Library Select
Seleccionar símbolo	Symbol Select
Selector	Selector
Separar	Unlink
Seudo	Pseudo
Seudotecla	Pseudo Key
Sí	Yes
Sí	On
Símbolo	Symbol
Símbolo modificado	Symbol Modified
Simple	Single

Simular presión de tecla	Simulate Key Press
Sistema	System
Sólo	Only
Sonido tecla	Keypress Sound
Tabla	Chart
Tabla coma flotante	Floating Point Table
Tabla de cadenas	String Table
Tabla de enteros	Integer Table
Tamaño	Size
Tamaño archivo	File Size
Tamaño fuente	Font Size
Tamaño grilla	Grid Size
Tamaño línea	Line Size
Tecla	Key
Tecla función	Function Key
TeclAux	Keypad
Temporizador	Timer
Tend	Trend
Tend tiempo real	Real-Time Trend
Tend. histórica	Historical Trend
Tendencia evento	Event Trend
Tendencia regist	Log Trend
Terminador	Terminator
Terminal Xycom	Xycom Terminal
Texto	Text
Texto control	Control Text
Texto de estado	State Text
Texto de lista	List Text
Texto en capas	Layered Text
Texto gráfico	Graphics Text
Texto selector	Selector Text
Texto simple	Single Text
Tiemp real	Real-Time
Tiempo	Time
Tiempo de inversión módem	Modem Turnaround Time
Tiempo visualización alarma	Alarm Display Time
Tipo	Type
Tipo de red PLC	PLC Network Type
Tipo de red	Network Type
Tipo etiqueta	Tag Type
Tipo objeto	Object Type
Tipo PLC	PLC Type
Tipo teclado	Keyboard Type
Tít. tend.	Trend Title
Tít. X	X Title

Tít. Y	Y Title
Tono en caso de alarma	Beep On Alarm
Tono	Beep
Torta	Pie
Torta llenada	Filled Pie
Trama	Pattern
Trazo XY	XY Plot
Txto	Text
Usar terminador	Use Terminator
Vacío	UnFilled
Valor	Value
Valor datos/tecla	Data/Key Press Value
Valor intervalo espera	Timeout Value
Valor máximo mensaje	Maximum Message Value
Valor máximo	Maximum Value
Valor mínimo mensaje	Minimum Message Value
Valor mínimo	Minimum Value
Valor post-selec.	Post Select Value
Verde	Green
Verde cl.	Lt Green
Verificar alarma de aplicación	Application Alarm Check
Verificar alarma de pantalla	Screen Alarm Check
Vertical	Vertical
Visual.	Display
Visualiz cadena	String Display
Visualizac datos	Data Display
Visualización datos informe	Report Data Display
Volver a modo activo	Return to Active Mode
Volver a pantalla previa	Return to Previous Screen
Zna mrta	Deadband
Zona inferior der	Lower Right Zone
Zona superior izq	Upper Left Zone

E

F

G

H

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L

M

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V

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