PanelMate Series 500
Getting Started User's Guide

09/18/96

Preface

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Foreword

Achieving success with the PanelMate 500

Congratulations on your purchase of the PanelMate 500 electronic operator station!

Now that you have received your software and hardware, it's time to determine how to setup your operator station and put it into service.

SUCCESS - AND QUICKLY! We know that's what every user wants and expects. You've started at the right place: by opening this "Getting Started" manual. We know how most people dislike reading volumes of material. So, if you'll just follow the steps outlined in this ONE booklet, you'll be able to get a simple operator interface running with your PLC or network in just a few hours.

We've provided several handy tools to help you "get to know" PanelMate 500. They are further detailed in the pages ahead, but include:

> * an overview of PanelMate 500 which you can run on your PC like a
>   slide show, using a built-in viewer
>
> * a simulation built into every PanelMate 500 online unit
>
> * a more detailed demonstration which can be loaded into the online unit
>
> * a set of simple startup configurations that lets you verify communication
>   with many of the most common small PLCs

About the Other Manuals

In addition to this Getting Started manual, the following documents are furnished with PanelMate 500 configuration software:

* Configuration Editor User's Guide

    This document contains reprints of over 100 help pages built into the configuration editor. It provides answers to questions about software features and functions.

* Transfer User's Guide

    This document provides instruction on how to transfer files between your PC and a PanelMate 500 online unit.

* Online Operation User's Guide

    This document describes how PanelMate 500 works online, and includes a summary of communication errors which may be displayed.

* individual PLC brand communication manual(s)

    A PLC communication manual will be furnished for each of the PLC communication interfaces you purchased. (They can be bought as a group, or individually.) Each manual contains detailed information about cabling to the PLC, addressing, etc.

This document is furnished with each PanelMate 500 online unit:

* Hardware Installation Guide

    This document provides guidelines for physically installing the online unit, including hole cutout information, power and ventilation information, etc.

DON'T READ ANY OTHER MANUALS RIGHT NOW. Please DO read and follow the rest of this Getting Started manual - it will make your path to success much shorter and much more fun! So, if you'll look at the next page about Additional Help, then turn to Chapter 1, let's get started.

Additional Help

If you make use of the demonstration materials and the sample PLC startup communication files, you should be able to get your PanelMate 500 unit up and running successfully with your PLC. And, you'll see that your configuration software has many built-in "help" pages to assist you with the page creation process.

However, PanelMate 500 has a wide variety of features available, including the powerful Virtual Mentor feature in online models 542VM and 542LM. If you need advice on creating your application, or if you need other help, please phone one of the numbers listed below, for assistance.

Department	Number	Description
Customer Support Center	(800) 809-2772	Answers your questions about connection, configuration, and application of Cutler-Hammer products. Available 8:00 AM to 5:30 PM (Eastern Standard Time) Monday through Friday.
Bulletin Board	(614) 899-5209	Electronic bulletin board service allows you to access product information, documents, and demo files. Log on with these settings: (8/1/none/9600-28.8K baud)
Document Faxback	(614) 899-5323	Automated document request service allows product information and technical bulletins to be automatically faxed.
Software Update Service	(614) 882-3282 Extension 7636	Registers your software and provides free or reduced price software updates for Operator Station products.
Repairs and Upgrades	(614) 882-3282	To obtain product repairs, upgrades and spare parts.
Order Entry	(614) 882-3282	Helps you place a new order or check the status of an existing order. All new product sales are through our world-wide distribution channel.
Emergency Support (After 5:30 PM Eastern Standard Time)	(800) 809-2772	24 hour emergency technical support for plant down or safety issues. (**Note:** This service does not currently provide emergency product shipments.)

Table Of Contents

Chapter 1
Overview of the PanelMate 500

In this chapter, you will learn:

- How you can view an overview of PanelMate 500, presented using a Microsoft tool called PowerPoint

- PanelMate 500 theory of operation

- How the PanelMate 500 relates to the PanelMate family

Congratulations on beginning with the Getting Started manual as the place to get familiar with PanelMate 500. Have you glanced at the Foreword section a few pages back? It highlights the other documents you get with PanelMate 500, and provides handy phone numbers you may want.

We recommend that you first take 20 minutes to look at the PowerPoint-based overview described in the next section. It's well worth the time, as a way to get the who, what, where, when and why of PanelMate 500.

How to See a Great Overview of PanelMate 500

Included with your configuration software is a separate group of 3 diskettes as shown below. When transferred to your PC, the file on the Overview diskette permits you to view a colorful and informative "slide presentation" about PanelMate 500, presented with a Microsoft tool called PowerPoint. If you do not have PowerPoint installed on your Windows-based PC, a copy of the PowerPoint slide "viewer" is provided for your convenience. One of the diskettes is labeled "Examples", and contains files which are referenced in the Appendix and in the Virtual Mentor Users Guide.

Here are the contents of the diskette pack:

Diskette Label	File Contents	Description
PowerPoint Viewer	pptview.exe pptview.dll	"slide show" viewer software
Overview	over1.ppt	PowerPoint-based overview of PanelMate 500
Examples	(various files)	communication startup files and sample configurations

How to load the files to your PC and watch the "slide show" overview:

1. Within the Windows Program Manager of your PC, select the File Manager.

2. If you already have Microsoft PowerPoint software installed on your PC, skip to step #3. If you do not have PowerPoint already on your PC, insert the furnished PowerPoint Viewer disk in your PC's floppy disk drive. Use the File Manager to copy both the pptview.dll and pptview.exe files into a directory of your choice in your PC environment.

3. Insert the Overview disk into your PC's floppy disk drive. Use the File Manager to copy the over1.ppt PowerPoint file into the same directory into which you copied the Viewer in previous step #2. If you skipped step #2 because you already have PowerPoint on your PC, then copy the PowerPoint files into an appropriate directory of your choice.

4. If you already have PowerPoint present on your PC, please enter PowerPoint and use the slide show feature to view your just-loaded over1.ppt file. If you do not have PowerPoint on your PC, proceed to step 5, to use the viewer you just loaded.

5. From your File Manager, double click on the PowerPoint Viewer file, pptview.exe. When the screen presents you with a directory listing, double click on the file over1.ppt to start your slide show.

Theory of Operation

Have you viewed the PowerPoint "slide show" overview of PanelMate 500? It's a great way to get familiar with the product, but we wanted to also provide a printed summary of how the product works.

PanelMate 500 is a compact, rugged operator interface device for use with PLCs. The PanelMate 500 Series is a family of multi-line text display units. However, each unit is much more than just a message display - it permits operator pushbutton control and can do sophisticated mathematical operations.

Online Operation

The online operation of the PanelMate 500 features individual pages which are "linked" to each other to provide a prompted or guided operator interface. As a member of the PanelMate Family, PanelMate 500 has the same basic operational characteristics which include the concept of screen objects (templates), and alarming.

There are five different onscreen page types which are created when configuring the system:

Menu	Displays a list of items, one of which can be selected by using the enter key or the numeric keyboard
Data	Displays text messages, numeric data, bar graphs. Permits numeric data entry and use of the Soft Function Keys located below the display to send data to the PLC or to change pages.
Maintenance	Provides access to the Maintenance mode which permits on-line access to any data point in the PLC.
Change Password	Permits the modification of passwords stored within the unit.
Setup	Permits selection of the Contrast Adjust, Offline Mode, or the ability to read the internal System Information (name of the configuration.)

In online operation, the operator responds to prompts on a page which may cause the next page to be displayed. The linked pages form a complete machine control system which can guide the operator through all five components of machine operation:

> Startup
>
> Run
>
> Change
>
> Troubleshooting
>
> Shutdown

There is a sixth type of "page" which can be configured, which is called the **System Page**. This page permits the assignment of functionality to 8 membrane keys and either 4 or 8 (depending on which model) built-in tri-color LEDs, to support pushbutton functions and alarm annunciation. These function assignments are active for the membrane keys and LEDs <u>at all times in online operation, no matter which of the 5 onscreen pages is displayed</u>.

The Virtual Mentor™ Guided Operator Capability is available with online models 542VM and 542LM, to permit the operator station to perform "autopilot-like" functions.
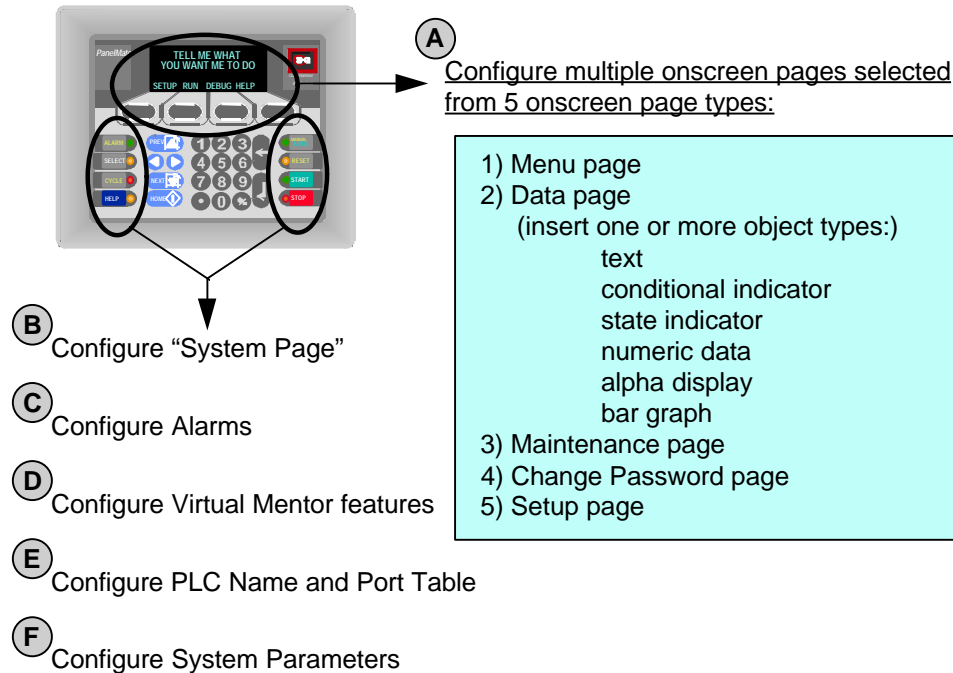
Virtual Mentor

> * adds extensive built-in decisionmaking tools
>
> * can simplify the operator's choices
>
> * can guide operators through sequences
>
> * can vastly simplify diagnostics
>
> * can perform actions without operator or PLC initiation
>
> * further reduces PLC programming

These features can greatly ease tasks and decisionmaking for the operator. Virtual Mentor can be used to create very focused, "context-sensitive" startup or diagnostic sequences which present limited choices to the operator. Virtual Mentor can also perform internal calculations and transmit data back to the PLC without operator intervention.

Configuring the System

The page types are created and linked to each other using Windows-based software on a personal computer. The following steps A, B, C, D, E and F represent stages in the process of configuring a typical PanelMate 500 operator interface application.

A Configure multiple onscreen pages selected from 5 onscreen page types:

> 1) Menu page
> 2) Data page
>   (insert one or more object types:)
>   text
>   conditional indicator
>   state indicator
>   numeric data
>   alpha display
>   bar graph
> 3) Maintenance page
> 4) Change Password page
> 5) Setup page

B Configure "System Page"

C Configure Alarms

D Configure Virtual Mentor features

E Configure PLC Name and Port Table

F Configure System Parameters

As suggested by the diagram above, your operator interface will be constructed from onscreen pages which can be selected from five types. A typical application may have multiple Data pages, several Menu pages, and perhaps only one each of the remaining 3 page types. In addition, you will need to configure the "system page" (the 8 control buttons and 4 or 8 built-in LEDs), plus any alarms needed. If your online unit will be either a model 542LM or 542VM, you can also configure the autopilot-like Virtual Mentor features.

As you create each page in the system, you will use spreadsheet entries in the editors to link it to other pages. This sets up a "navigation" strategy which leads the online unit operator from one page to a next appropriate page.

Additionally, the software provides Windows-based editors for System Parameters, PLC Name and Port Table, System Online Labels and Message Library:

System Parameters

Set up system wide options such as Passwords, Audio Levels, Scan Delays, and Remote Acknowledgment of Alarms

PLC Name & Port Table

Set up PLC communications and configure the PanelMate 500 ports

System Online Labels

Customize labels built into the system. Modify for your terminology or customize to your language requirement.

Message Library

Display text messages that were configured on other pages in the system and which are used on line to give the operator information on machine or process status. These messages can be edited, but existing messages cannot be deleted, nor new messages added from this library listing.

Notes to Previous Users of PanelMate

1. Although PanelMate 500 shares similar screen-based "objects", mathematical
    capabilities and PLC communication software as other PanelMate family members,
    the small display size changes the way an operator interacts with the unit. With other
    PanelMate units, operators actively select from a small library of detailed pages
    (typically 10 or 20), to "navigate" through the pages available. PanelMate 500 allows
    the developer to design a navigation sequence linking together what may be a large
    number of simpler pages (perhaps 100). This pre-defined linkage helps eliminate
    operator confusion and indecision. It is still also possible to create menu listings from
    which operators select numbered entries, to navigate to another page in the system.

    A key difference with PanelMate 500 is that anything the user wishes to present on the
    screen must be configured from one of 5 available onscreen page types:

    >   Menu page
    >   Data page
    >   Maintenance page
    >   Change Password page
    >   Setup page

    Refer back to the Theory of Operation section of this chapter for more explanation of
    each page type.

    There are many ways pages in a PanelMate 500 unit can be linked to each other. The
    operator may choose to navigate to another page in a sequence or the operator's
    response to a question on a page or an alarm may automatically link to another page.

2. The keypad layout is new. There are four Soft Function Keys located below the display area. These keys are similar to the control buttons located to the right of the PanelMate display and have different definitions on different pages. They are used to write data to a PLC or to change pages.

    There are 8 Fixed Function Keys and either 4 or 8 LED's (depending on model of PM 500) located on the outside edges of the unit. These keys operate independently from the display, and can be custom labeled by the user. One key will serve as access to the Alarm Page which contains both alarms and system error messages. The blue keys are the Navigation Keys. They can be used to select the Previous Page, Next Page, or Home Page. The Tab Left and Tab Right keys are used to move within a page.

    The numeric keypad is used to enter numeric data on pages and to select items on Menu Pages.

3. The Menu page can list from one to 99 items. They may be selected with the numeric keypad. One can also use the Tab Left and Tab Right keys to scroll the list and press the Enter Key to select and item.

4. The Data page type is similar to a page in earlier PanelMate products, in that it permits placement on the page of tools called "objects", each of which has a specific purpose. The 6 object types are:

    > Text
    >
    > Conditional Indicator
    >
    > State Indicator
    >
    > Numeric Data
    >
    > Alpha Display
    >
    > Bar Graph

    The six objects are further explained in Chapter 2.

5. The Maintenance Page presents the Maintenance Template functionality (TCAM like functionality). This page enables the operator or maintenance person to display (and optionally change) any value in the PLC register table.

6. The Change Password Page is created to permit the user to change passwords on-line.

7. The Setup Page provides the functionality found on the Setup Page of PanelMate. It permits contrast adjustment, access to system information, and can be used to select offline mode.

8. Note that all pages can be password protected. A check is made before page entry. The seven levels of passwords each have independent time-outs. Clearing a higher level password opens all lower level passwords.

9. Alarming is different than with the rest of PanelMate. There is a separate editor for alarms. One tab is for discrete bit alarms and the other is for value range checking. The developer must enter the alarm messages; they do not configure automatically. A new feature is that each alarm can write a unique bit to the PLC and can also be associated with a diagnostic page. One of the up to 8 function keys must be selected as the alarm key. The associated LED will flash when an alarm or a system error or communications error occurs. Pressing the assigned Alarm Function Key will jump to the alarm page which operates in a fashion similar to the alarm page in other PanelMate models. If you scroll to an alarm which has an associated diagnostic page, pressing the soft function key labeled "HELP" will take you to the appropriate page.

Chapter 2
How PanelMate Series 500 Units Work Online With PLCs

In this chapter, you will learn:

- What role a PanelMate Series 500 unit plays in factory automation

- How PanelMate Series 500 partners with a PLC

- How operators interact with PanelMate Series 500

- How PanelMate Series 500 uses standardized on-screen tools called "objects"

- What functionality the Virtual Mentor feature provides

- PanelMate Series 500 alarm annunciation capability

- What additional features are available

- How operators access multiple screens or "pages"

- Using a simulation built into each PanelMate 500 online unit

What Role a PanelMate Series 500 Unit Plays in Factory Automation

Conventional operator stations consist of individual devices (pushbuttons, lamps, etc.) hard-wired to I/O points on a PLC.

The PanelMate Series 500 is an electronic operator station which replaces conventional operator stations and associated hard-wired devices:

The unit illustrated above features a 4-line text display area, which is available as either vacuum fluorescent or LCD display type. PanelMate 500 is also available in 2-line vacuum fluorescent or LCD display versions.
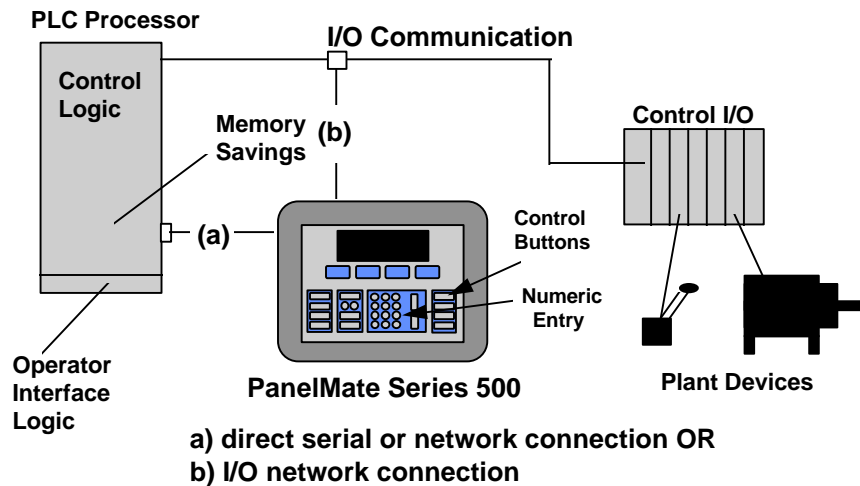
Conventional hard-wired operator stations connect to PLCs symbolically as shown in this diagram:
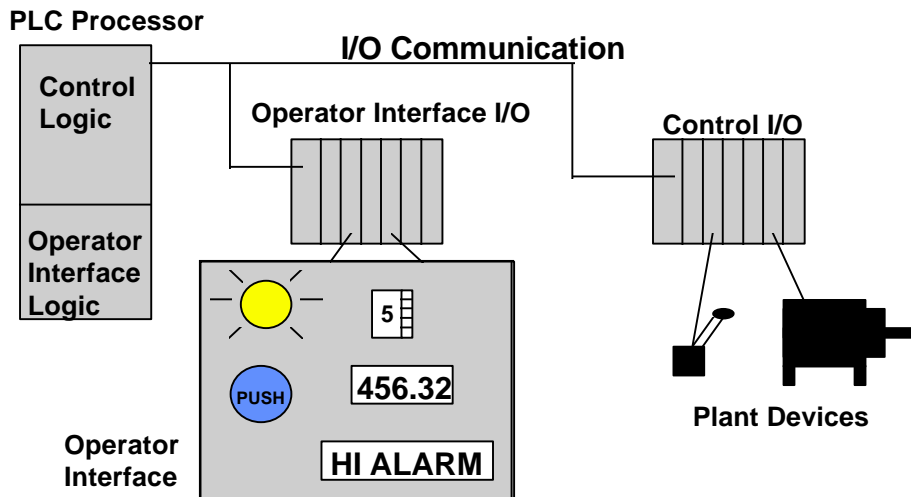
On the operator station shown above:

- pushbuttons and thumbwheels are input devices which require PLC input modules

- lamps, numeric readouts and message displays are output devices which require PLC output modules

- specific PLC ladder logic is required to support the inputs and outputs of the operator station

PanelMate Series 500 connects to PLCs symbolically as shown in this diagram:

a) direct serial or network connection OR
b) I/O network connection

PanelMate Series 500 performs all the same control and monitoring functions as the devices on a hard-wired operator station, plus adds many more capabilities. It also:

- eliminates the need for PLC I/O modules to support the operator interface

- eliminates most PLC ladder logic needed for operator interface support

- often occupies less space than conventional operator stations

- provides great flexibility to customize the appearance and content of displays, and to expand and make changes at a later date

How PanelMate Series 500 Partners with a PLC

PanelMate Series 500 units can

- communicate to nearly 100 varieties of PLC models

- communicate directly to one PLC or to multiple PLCs on a PLC network

- communicate to as many as 10 networked PLCs simultaneously from the same "page" (screen)

PanelMate Series 500 online units physically connect to PLCs or their networks via cabling directly to a PLC port, network connection node or interface module (depending on the PLC brand). Communication is possible to one PLC or PLC network at a time.

This means that PanelMate Series 500 does not directly connect to PLC I/O points except when it is operating on a PLC's remote I/O network. PanelMate Series 500 is usually the "master" device when it communicates to the PLC. This means that:

- PanelMate Series 500 polls the PLC or network to write or to read information

- the PLC does not need extra rungs of ladder logic to *send* information to PanelMate Series 500

PanelMate Series 500 online units feature extensive built-in capabilities to perform mathematical calculations, alarm annunciation, and more. And, they can store data in their own internal memory locations called "scratchpad" addresses. This means that:

- PanelMate Series 500 eliminates the extensive additional PLC ladder logic which might otherwise be needed to support operator interface activities

When PanelMate Series 500 is connected to a remote I/O network such as Allen-Bradley's, it communicates differently than with all other serial or network connections. When PanelMate Series 500 is on the remote I/O network, it appears to the PLC as if it were a PLC I/O rack. This means:

- the PLC is now the master - it determines when to update information to the PanelMate Series 500 or when to receive inputs from the PanelMate Series 500

- the PLC requires ladder logic to specifically send updates to PanelMate Series 500 and to receive inputs (such as operator entries) from PanelMate Series 500. This "block transfer" logic is a standard requirement of such remote I/O networks.

How Operators Interact With PanelMate Series 500

Operators interact with PanelMate Series 500 in two basic modes:

- they monitor events through PanelMate Series 500
- they take action through PanelMate Series 500

Monitoring is supported with the following PanelMate Series 500 capabilities:

- on-screen representation of status, annunciation of alarm information and presentation of instructions
- use of either 4 or 8 (depending on the online model) tri-color LEDs which feature selectable blink rates to annunciate status
- audio annunciation of events through the internal horn
- logging of events through the use of an optionally-connected serial printer

Taking action is supported by permitting operators to press the equivalent of momentary-contact control buttons and to perform numeric entry.

- online units feature 8 control buttons whose functions are configurable - a separate keypad exists for numeric entry
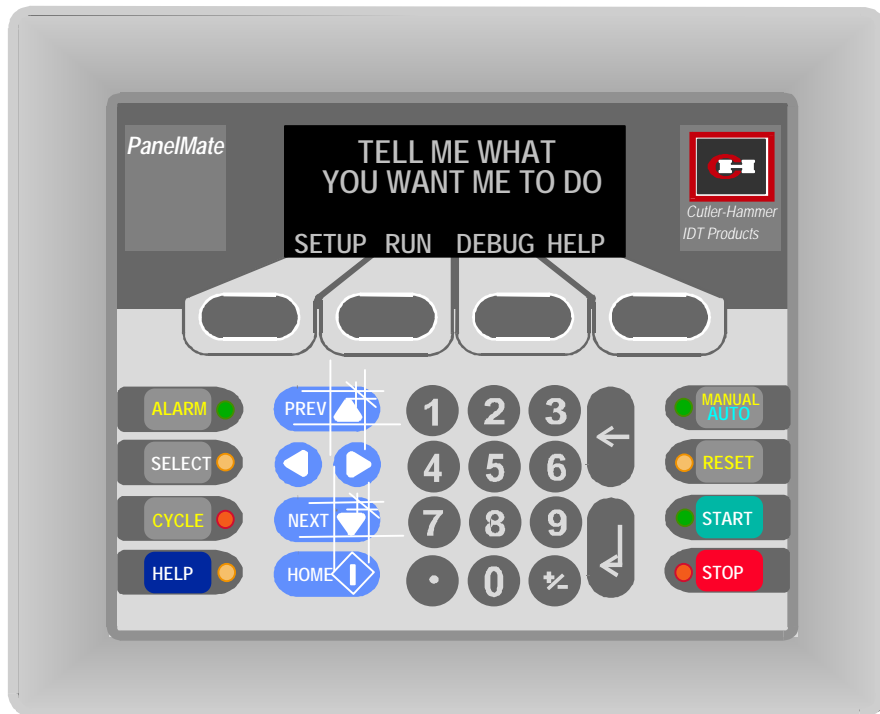
Standardized On-screen Tools Called "Objects"

The most basic job of a PanelMate Series 500 online unit is to replace the functions of traditional hard-wired operator station devices such as pushbuttons, lamps and message displays.

To replace each category of hard-wired device, PanelMate Series 500 supplies a specific visual tool or "object" which can be arranged onscreen within a Data Page. These objects are similar to the templates used in the PanelMate Power Series. Much like templates, the standard objects perform the functions of conventional hardwired contro panel devices. The six object types are:

Text	Used for static labeling
Conditional Indicator	Uses text changes to denote changes in conditions, based on mathematical comparisons
State Indicator	Uses text changes to denote changes in bit status within PLC
Numeric Data	Permits display or entry (or both) of numeric data
Alpha Display	Displays the alphanumeric character equivalent of the ASCII code read from a PLC
Bar Graph	Draws horizontal bar graph only. (Use static text and numeric display to label it.)

During online operation, the operator:

- observes objects on a Data Page

- notes the status of any of the LEDs embedded in the 8 control buttons

- presses any desired soft function keys, control buttons or numeric key selections, to take action

PanelMate Series 500 Alarm Annunciation Capability

PanelMate 500 lets users define alarms for the system within a separate Alarm Properties Editor.

When an alarm situation is detected, PanelMate Series 500 responds by:

- generating a separate message and blinking the "alarm" LED for the dedicated Alarm Function Key

- generating a copy of the alarm message to any printer attached to the PanelMate Series 500 online unit, if desired

- logging the alarm on the separately-displayable alarm page, which can list up to the 100 most recent alarms

- generating an alarm tone (if desired) to the internal alarm horn

When the alarm situation is resolved or cleared, PanelMate Series 500

- lists as "cleared" the alarm reported on the alarm page

- prints a specific "alarm cleared" message to any printer connected to the online unit

Additional Features Available

PanelMate Series 500 has many additional features available to provide convenience and flexibility in partnering with PLCs. These features are accessible from the "System Parameters" section of the configuration software. A few of the often-used capabilities include:

- specifying the page which PanelMate Series 500 should display at powerup

- setting various parameters related to password protection of operator entries

- specifying the volume of the audio feedback for key presses and alarms

- configuring a "heartbeat" communication to the PLC

How Operators Access Multiple Pages

Some PanelMate Series 500 applications may require few pages, while others may require one hundred. In either case, during the page configuration process, the PanelMate 500 configuration software requires the user to create "links" between each page and one or more others. Each link specifies what page will be presented next, as a result of operator action (pressing a key) or some other condition which is detected.

This means that PanelMate 500 is especially well-suited to help guide operators through sequences of operations such as startups or diagnostic actions.

A Simulation Built Into Each Online Unit

Every PanelMate 500 online unit includes an extremely informative simulation which is installed at the factory during the manufacturing process. <u>We strongly recommend that even before you continue with installing software and other startup tasks, you apply power to a PanelMate 500 online unit and review the simulation.</u> (Refer to the Hardware Manual provided with the online unit for instructions on connecting the unit to a source of 24 VDC power.)

The simulation uses the analogy provided by the operation of a coffee vending machine to illustrate:

- the several basic Page types; especially the Menu and Data pages

- how pages are linked together and are accessible through the "previous" and "next" navigation keys

- how operators use the four soft function keys, the numeric keypad and the eight control button keys

- how the built-in LEDs function to indicate alarms or other status

Without any other instruction, you can apply power to the online unit, follow the prompting on the screen, and begin to simulate operator interaction. However, to see how to generate (and reset) a simulated alarm, and get the fullest understanding of the simulation, we strongly recommend that you refer to the Appendix of this Getting Started Users Guide. You will find a description of how to operate the coffee machine simulation.

The Appendix also references an additional example file which can be found on the Examples diskette.

After you have reviewed the standard 12 chapters of this Guide, you will be better positioned to benefit from the examples in the Appendix.

Chapter 3
From Opening the Boxes to Running Online:
A Master Startup Flowchart

In this chapter, you will learn:

- The overall sequence of steps necessary to configure, load and run a PanelMate Series 500 unit

- The chapters in this manual providing specific startup guidance

- A development checklist which can be used as a reminder during the startup process.

The Master Startup Flowchart

Start by Assembling:

    PanelMate Configuration software
    VGA Personal Computer
    Ladder Diagram(s) for partner PLCs

⬇

See Chapter 4   Load the Software To Your Personal Computer

⬇

See Chapter 5   Start a New Configuration (set of pages)

⬇

See Chapter 6   Assign PLC Communications

⬇

See Chapter 7   Create New Pages

⬇

See Chapter 8   Use the Virtual Mentor Capability (if applicable)

⬇

See Chapter 9   Save the Configuration

⬇

See Chapter 10   Compile the Configuration

⬇

See Chapter 11   Transfer the Configuration to an Online Unit

⬇

See Chapter 12   Run the PanelMate 500 Unit Online With the PLC

Development Checklist

1. Draw a flow chart of the application.

2. Determine the interaction between the pages and the function key/ LED pairs.

3. Begin to define page operation. Begin to assign page names and numbers and linkages. Use the Previous and Next navigation keys to maximum advantage. Review security password usage on a per page basis.

4. Remember to include a Startup Page(after power cycle) and a Home Page (for the Home navigation key). They may be the same page.

5. Review the need for a Setup Page(s) (provides contrast adjust, system info[filename] access and selection of Offline Mode. Consider password protection.

6. Review the need for Change Password Page(s).

7. Review the need for the Maintenance Page.

8. Once the flow chart is completed on paper use the editor to configure the pages and the function keys/LEDs. Review the PLC nomenclature that must be used to enter conditions, expressions, and responses. As you configure use the verify buttons to perform intermediate checks.

9. You may wish to complete sub sections of the application and verify online operation before completing the entire configuration. This will permit you to see the operation from the viewpoint of the operator and may change your implementation scheme.

10. Complete PLC Name and Port Table Parameters to enable communication with the PLC.

11. Save your configuration file, Verify it, Compile it, and Transfer it to the PanelMate 500. The first time you transfer to a new PanelMate 500 you must first download the appropriate PLC driver to the unit, then you can transfer the Configuration File.

12. Run the PanelMate 500 and verify operation. Continue to build the application in a piece-meal fashion until complete.

A Master Startup Flowchart

Chapter 4
Installing the Configuration Software

In this chapter, you will learn:

- System requirements

- Using the Setup Program to install the software

System Requirements

The following table shows the software and hardware requirements for installing and running the PanelMate 500 Configuration Software.

Operating System	MS-DOS version 5.0 or later plus any of the following: Microsoft Windows version 3.1 or later Windows for Workgroups version 3.1 or later Windows 95
Microprocessor	386 required (486/66MHz or higher recommended)
Memory	4 MB required 8 MB recommended when running multiple programs
Hard disk space	9 MB Typical
Disk drive	One 3.5-inch high-density drive
Video adapter	VGA or higher resolution; recommended environment is 640X480 with minimum 16 colors
Display device	Color or gray scale monitor or other display device (LCD, gas plasma, etc.)
Pointing device	Microsoft Mouse or compatible pointing device

If you are using a network to install or run the PanelMate 500 Configuration Software you must have a network compatible with your Windows operating environment, such as Microsoft Networks (Windows NT, Windows for Workgroups, or LAN Manager), Novelle NetWare®, Arttisoft® LANtastics, or Banyan® VINES®.

Running the Setup Program to Install the Software

The following procedure describes how to install the PanelMate 500 Configuration Software to your computer's hard disk from floppy disks.

To install PanelMate 500 Configuration Software on your computer:

1. If you are using a virus-detection utility, disable it before running Setup. If you do not disable the utility, Setup may conflict with it and not run.

2. Start Windows and make sure that you close all open applications.

3. Insert the diskette labeled "Configuration Software" in drive A: or drive B:.

4. In the Windows Program Manager, choose Run from the File menu.

5. In the Command Line box, type the letter of the drive that contains the diskette with the Setup program on it, followed by a colon and the word setup. For example, type

        a:setup

6. Choose the OK button, and then follow the instructions on the screen.

At the conclusion of the loading process, you will be prompted with the opportunity to view a "README.TXT" file. We recommend that you <u>DO</u> take a moment to read this file, which contains special notes or news about the software.

Installing the Configuration Software

Chapter 5
Creating a New Configuration

In this chapter, you will learn:

- About the PanelMate 500 Configuration Editor Main Screen

- How to start a new Configuration

Before Getting Into the Software

If you have been following the Getting Started User's Guide in sequence, you have now loaded your configuration software onto your PC and are ready to try creating a sample configuration.

The remainder of this chapter 5, plus chapters 6 through 11 will show you how to start with a "blank screen" and access the software sections necessary to create an application. We recommend that you proceed through all of these chapters, to get a starting familiarity with the concepts of page types, object types, saving and transferring files.

However, as an additional startup aid, the Appendix of this Getting Started User's Guide tells you how to access two completed configurations which are provided with your software.

So, please do continue with chapters 5 through 11, but remember that when you are done, you can view and even modify two existing configurations as an additional part of the startup learning process.

The PanelMate Configuration Editor Main Screen

The Setup program creates a group within your Windows Program Manager named "PM500" , featuring the PanelMate 500 Configuration Software icon. Double click on the icon to launch the program, bringing you to the Main Screen. From this point forward in the Getting Started manual, perform the numbered steps whenever they appear in the screen image representations, such as the number ❶ in the image below:


❶ Place cursor anywhere in logo, click once to clear logo from screen
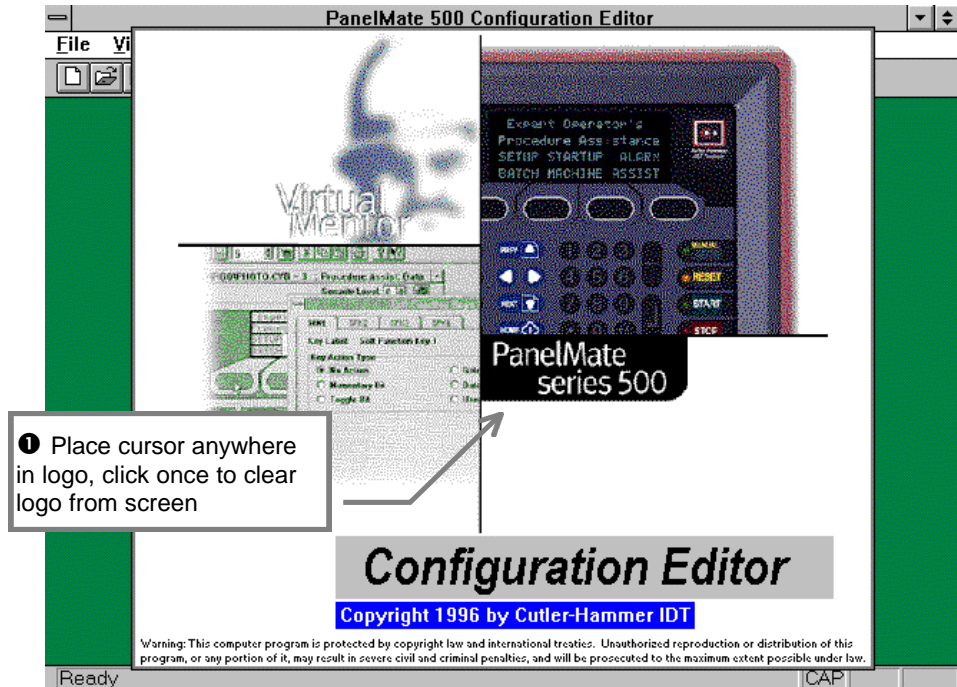
PanelMate 500 Configuration Editor - Main Screen

Tip:

- The standard Windows tool buttons for File Save, Print, Cut, Copy and Paste operate as expected

Starting a New Configuration

Select the "New" button on The Page Editor section of the Main Screen to indicate that you wish to create a new configuration (set of displays for an online unit). This will bring up the New Configuration dialog box used to specify basic information about your new configuration.
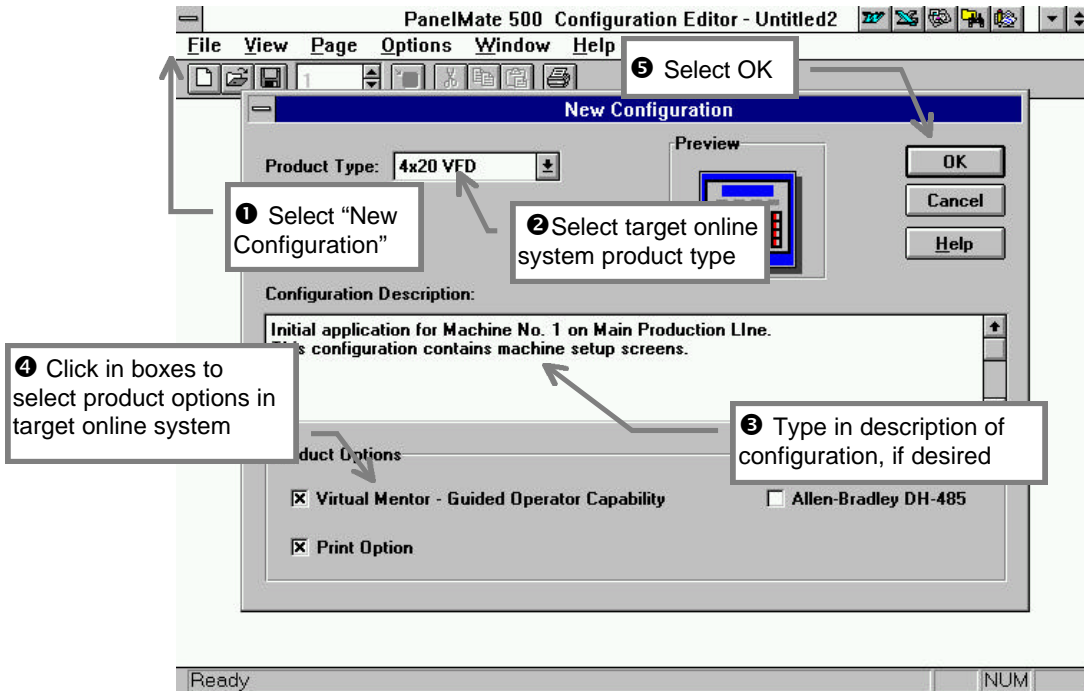
New Configuration Dialog Box

Tips:

- Use <Tab> key or mouse to move to new fields; <Enter> will "complete" the dialog and close the box (except when entering a multi-line Description)

- Description field is for reference only

- Options can later be changed by clicking the "Properties" button on the configuration dialog box (except for Product Type -- if incorrect, "Delete" and start dialog over)

- "Virtual Mentor" option only available with online models 542VM & 542LM

- "Print Option" only available with 4-line versions of the product

Chapter 6
Assigning PLC Communications

In this chapter, you will learn:

- Where to find the necessary communications setup information.

- How to configure the PLC Name and Port Table.

Determining Communication Information

This chapter explains how to setup communications to a PLC. Additional PLCs can be added after successfully establishing communications to a single PLC.

The following communications information needs to be determined from the appropriate PLC Driver Manual in order to complete this section.

Communications Parameters:

- PLC Driver
- PanelMate ID (Local ID, if applicable)

- Electrical Setting
- Baud Rate
- Data Bits
- Stop Bits
- Parity

- PLC Processor Model
- PLC Processor Node ID (Remote ID, if applicable)

Contact the Cutler-Hammer IDT Customer Support Department at 1-800-809-2772 if assistance is needed in collecting this information.
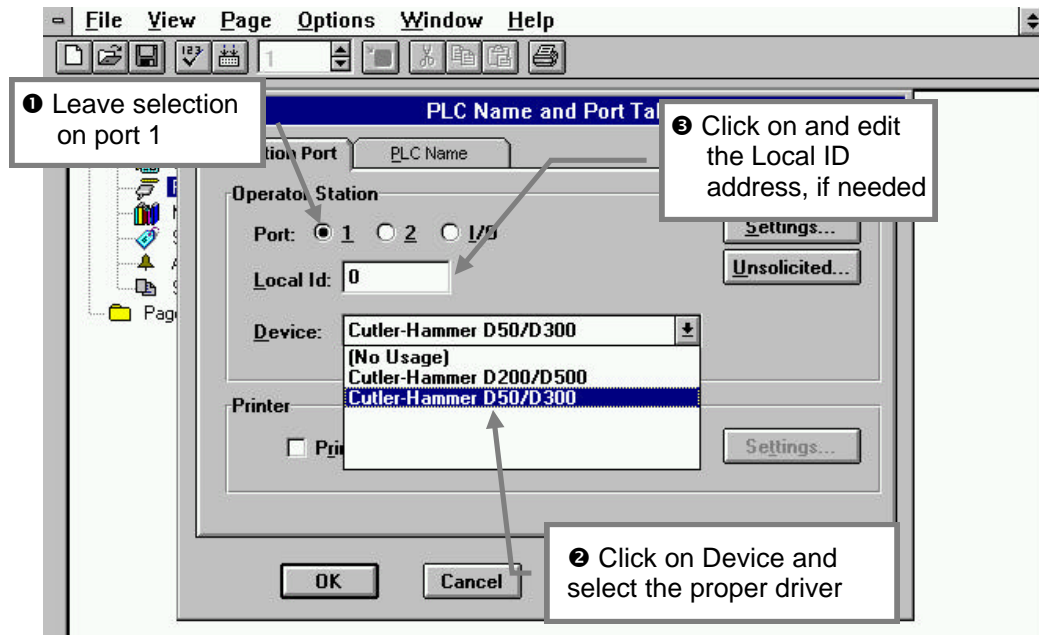
Configuring the PLC Name and Port Table

Start from an open PanelMate Configuration:

❶ Double-click on Properties

❷ Double-click on PLC Name and Port Table
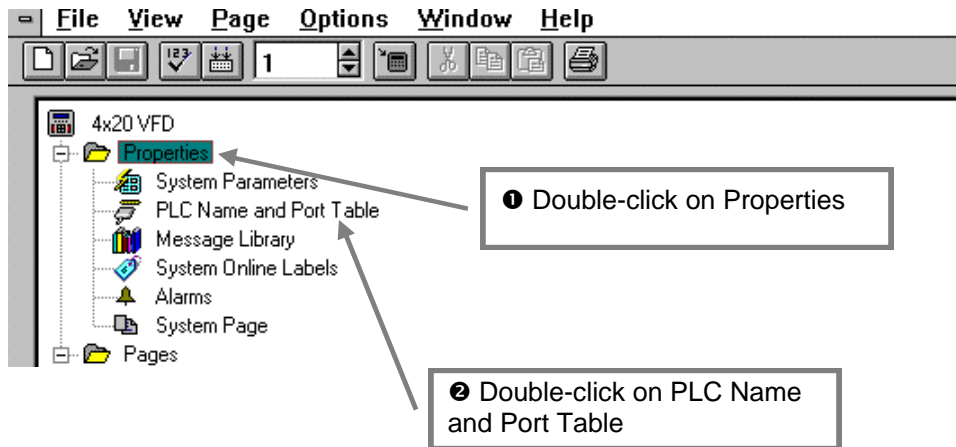
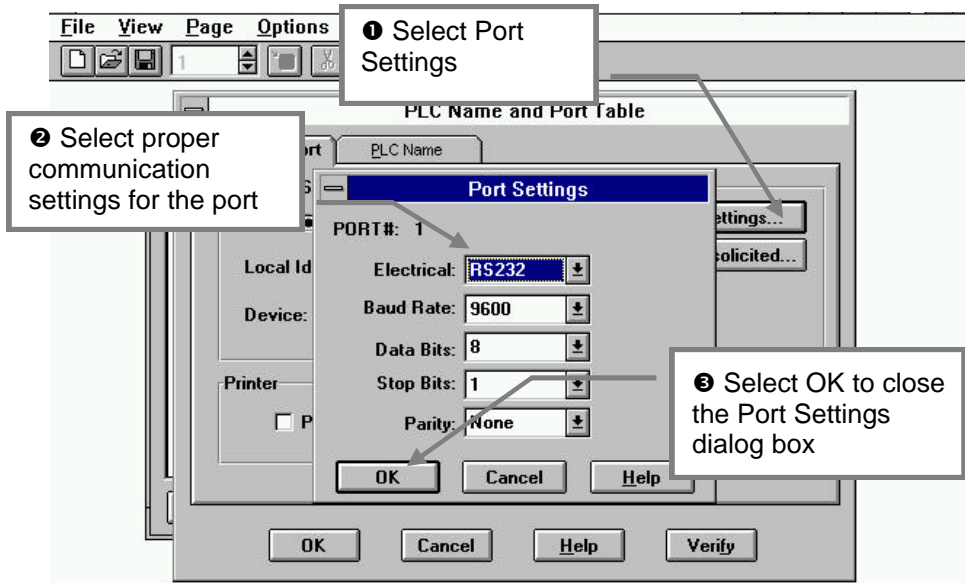## Configure Port Parameters Information:

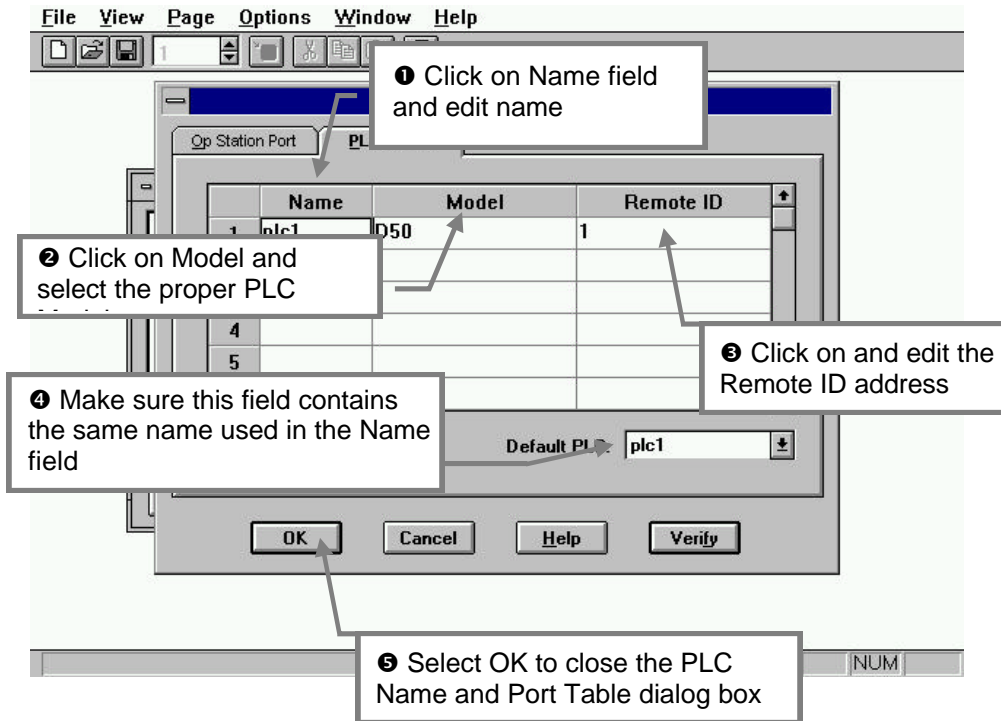Setup the Port Parameters as follows:

Tips:

- Port 2, I/O port, and "Printer Active on Port 2" are only visible on 4-line display versions of the product.

- Click on Help button for further explanation of selections.

Continue configuring the PanelMate communication port as follows:

❶ Select Port Settings

❷ Select proper communication settings for the port

PLC Name and Port Table

Port   PLC Name

Port Settings

PORT#: 1

Local Id

Device:

Electrical: RS232

Baud Rate: 9600

Data Bits: 8

Stop Bits: 1

Parity: None

Printer

❸ Select OK to close the Port Settings dialog box

OK   Cancel   Help

OK   Cancel   Help   Verify

Configure PLC Name Parameter information:

From the PLC Name and Port Table, select the "PLC Name" tab.

❶ Click on Name field and edit name

❷ Click on Model and select the proper PLC Model

❸ Click on and edit the Remote ID address

❹ Make sure this field contains the same name used in the Name field

❺ Select OK to close the PLC Name and Port Table dialog box

Tips:

- If the exact PLC Model is not listed, select a model that has the same or similar address ranges.

- The PLC Node ID settings must match the Remote ID. Do not use leading zeros when entering the Remote ID.

Assigning PLC Communications

Configuring the PLC Processor

The PLC Processor or Communication module must be setupto match the values entered in the PanelMate Configuration Software.

Reference the PLC Driver manual for specific PLC setup instructions. The following parameters are normally configured in the PLC using programming software or dip switches:

- Electrical Setting
- Baud Rate
- Data Bits
- Stop Bits
- Parity
- PLC Processor Node ID (Remote ID)
- Protocol (PanelMate communication type)

These parameters must match the values used in the PanelMate Configuration Software.

Contact the Cutler-Hammer IDT Customer Support Department at 1-800-809-2772 if assistance is needed with determining this information.

Chapter 7
Creating New Pages

In this chapter, you will learn:

- Using the Main and Configuration Window Frames

- A review of the five onscreen page types, plus the System page, Alarms and page linking

- How to Create and Open a new page

- How to Configure a Data Page

- How to Configure a Menu Page

- How to Configure a Change Password Page

- How to Configure a Setup Page

- How to Configure a Maintenance Page

- How to Configure the System Page

- How to Configure Alarms

Using the Main and Configuration Window Frames

Configurations are created and opened from the Main Window Frame. Components of a configuration are accessed from the Configuration Window Frame. Each configuration is contained within its own Configuration Window Frame. Components making up a configuration are automatically listed under the associated configuration name using a "tree view".
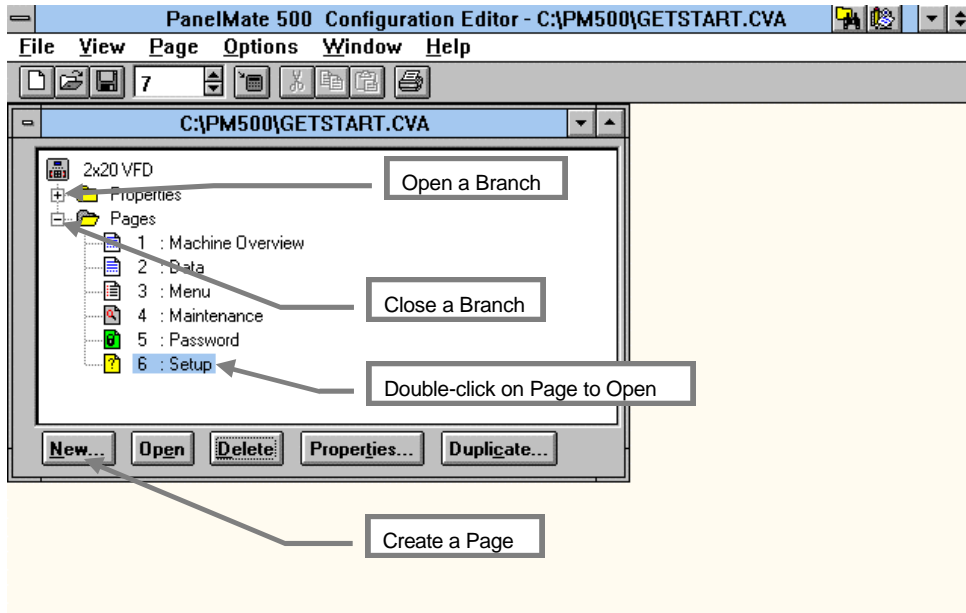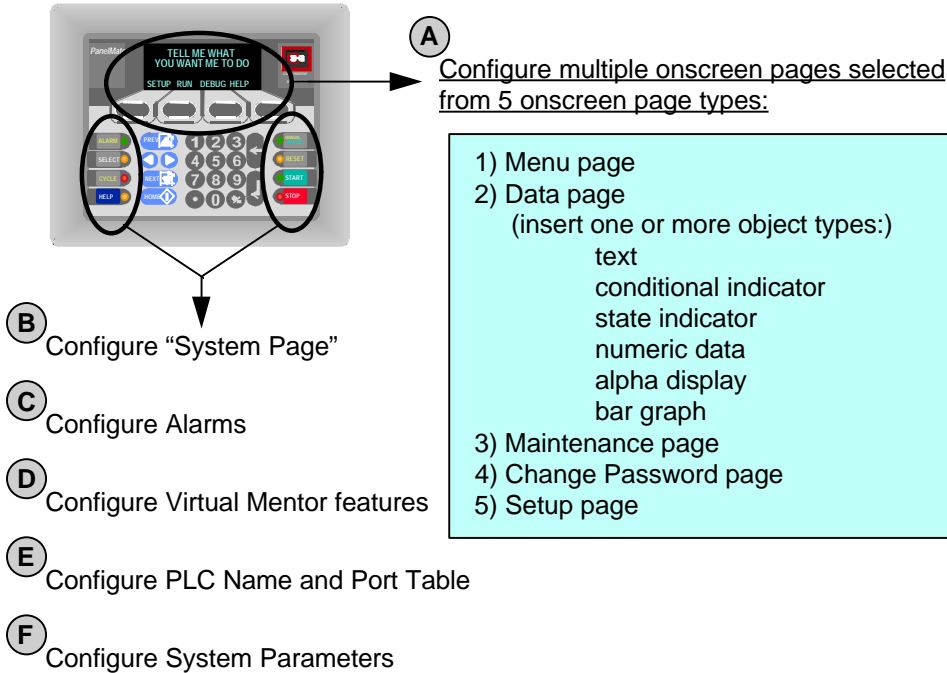

Tips:

- To create a new configuration select "File" then "New Configuration" from the menu bar

- Pages can be copied by highlighting a page then pressing "Duplicate" at the bottom of the Configuration Window Frame or by selecting "Page" then "Duplicate" from the menu bar

- NOTE: for illustration purposes, the example shown above already includes 6 pages (from Machine Overview to Setup) which would not normally be present in a newly started "blank" configuration

A Review of the Page Types

As was presented in Chapter 1, five types of onscreen pages may be configured within the PanelMate 500 configuration software. In addition, users may configure the 8 membrane keys and built-in LEDs as part of the "system page" configuration, and may also configure alarms for the system.

(A) Configure multiple onscreen pages selected from 5 onscreen page types:

> 1) Menu page
> 2) Data page
>   (insert one or more object types:)
>   text
>   conditional indicator
>   state indicator
>   numeric data
>   alpha display
>   bar graph
> 3) Maintenance page
> 4) Change Password page
> 5) Setup page

(B) Configure "System Page"

(C) Configure Alarms

(D) Configure Virtual Mentor features

(E) Configure PLC Name and Port Table

(F) Configure System Parameters

The **Data Page** can display a variety of objects, such as static text, dynamic alpha display data, and numeric information.

The **Menu Page** allows you to configure a numbered list of selections.

The **Maintenance Page** allows you to access any resource (register, timer, etc) used for setup and troubleshooting in the PLC.

The **Change Password Page** is used to allow operators to change passwords.

The **Setup Page** allows you to set the Operator Station's capabilities, such as: adjusting the system's contrast, getting system information, and entering Offline Mode.

About the System Page and Alarms

In addition to the 5 onscreen pages, the PanelMate 500 editor permits configuring certain "system" features which are always active, regardless which of the onscreen pages may be visible. The 8 membrane key control buttons and 8 (or 4) built-in LEDs may be configured using a System Page editor.

Additionally, alarms may be configured independently of any page, using a separate Alarms editor.

A Word About Page Linking

Within the software editor for each of the page types there are tools to permit users to link pages together. Linking simply means that a specific new or "next" screen page will be presented to the operator as a result of some event. That event could be the operator pressing a membrane key, or some piece of data being detected in the PLC or in a PanelMate 500 scratchpad.

Creating New Pages (screens)

Overview Flowchart

❶ Create a new, blank page

⬇

❷ Select page type

⬇

Repeat steps 1 through 4 necessary

❸ Complete page spreadsheets for PLC as *as* references, text, etc. as appropriate for each page type

⬇

❹ Select page security level

⬇

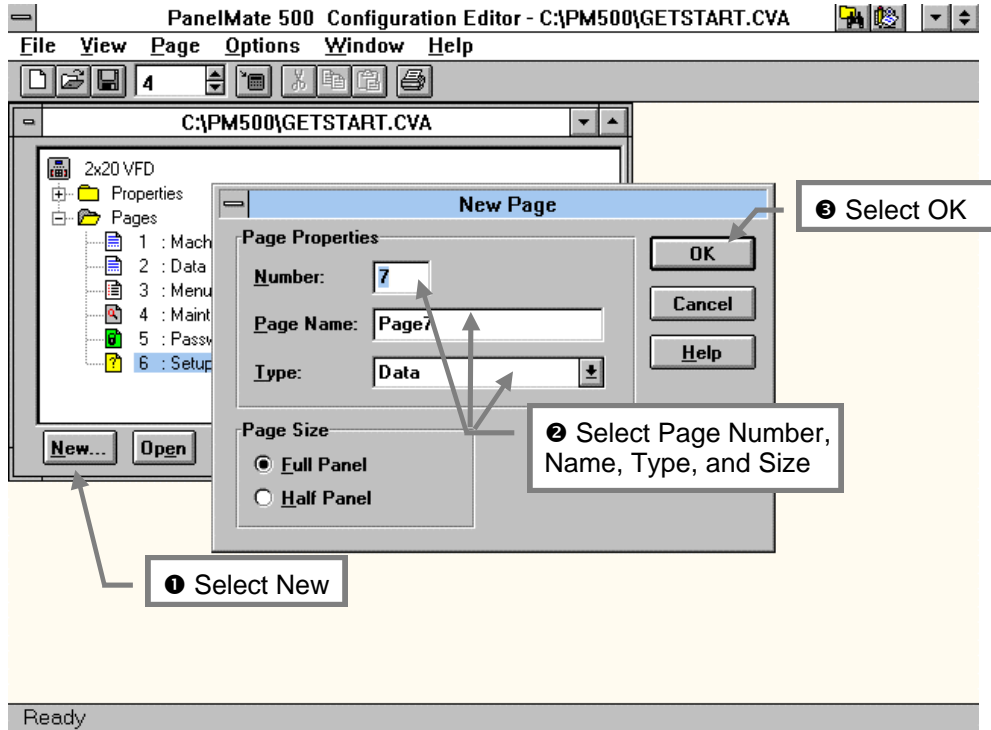❺ Assign soft function keys

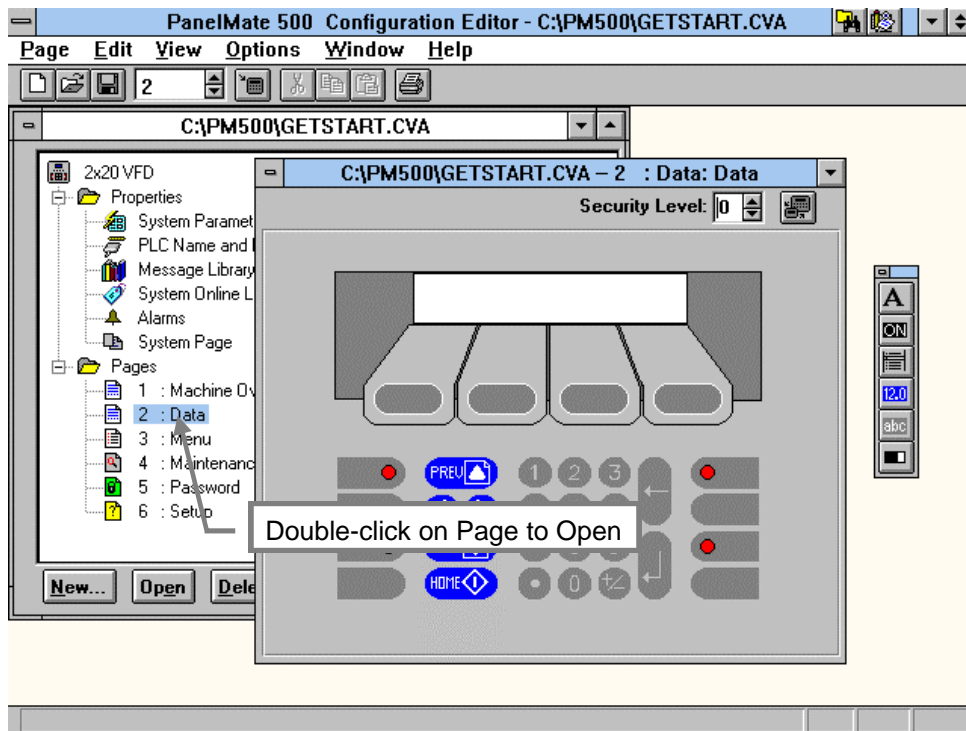# Creating a Page

Add a page to a configuration as follows:

Tips:

- A new page may also be created by selecting "Page" then "New" from the menu bar.

Opening an Existing Page

Open one or more existing configuration pages as follows:


Tips:

- Pages can also be opened by highlighting the page in the Configuration Window Frame and selecting "Open"

- Use the Minimize button to minimize the page to an icon when editing multiple pages at once
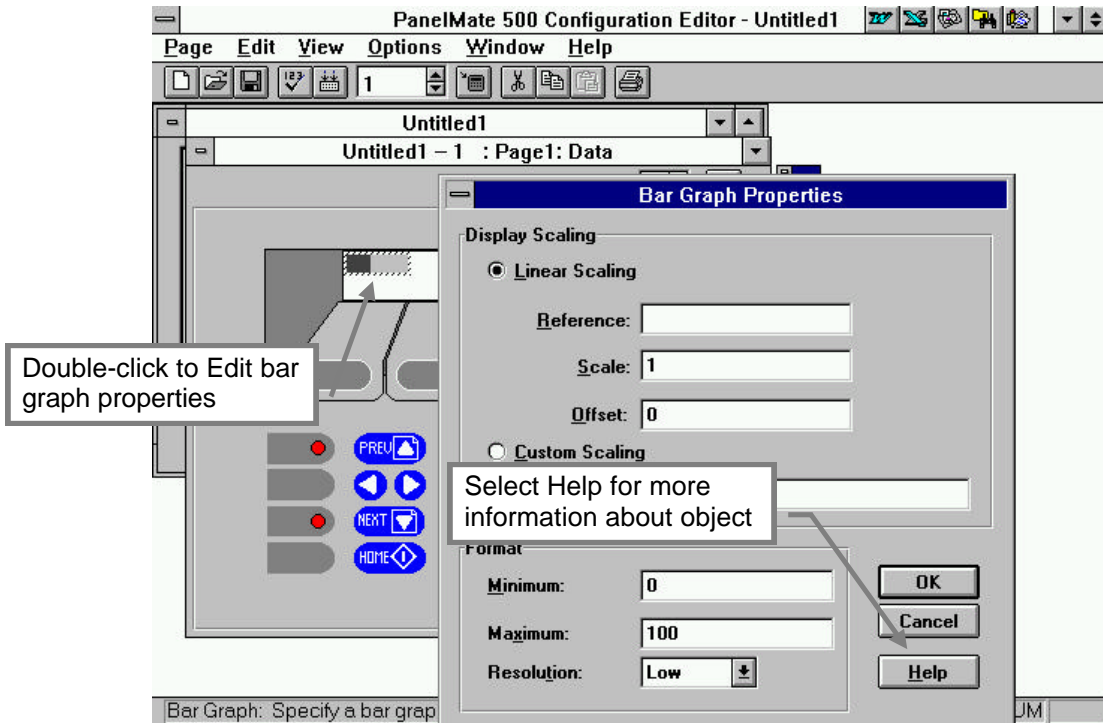
How to Configure a Data Page

The Data Page has a built-in editing feature which permits different types of data to be displayed on the Data Page. The Data Page supports the following types of data: Text, Conditional Indicator, State Indicator, Numeric Data, Alpha Display, and Bar Graph.

To add a Data Page to a configuration, follow the steps for Creating a New Page and select Data for the Type under Page Properties.

To add an object to a Data Page, click once on the desired object from the tool palette. The object will be displayed in the upper left corner of the Data Page screen. To move the object, click on the object and drag to the desired location. To edit the object properties, double-click on the object.
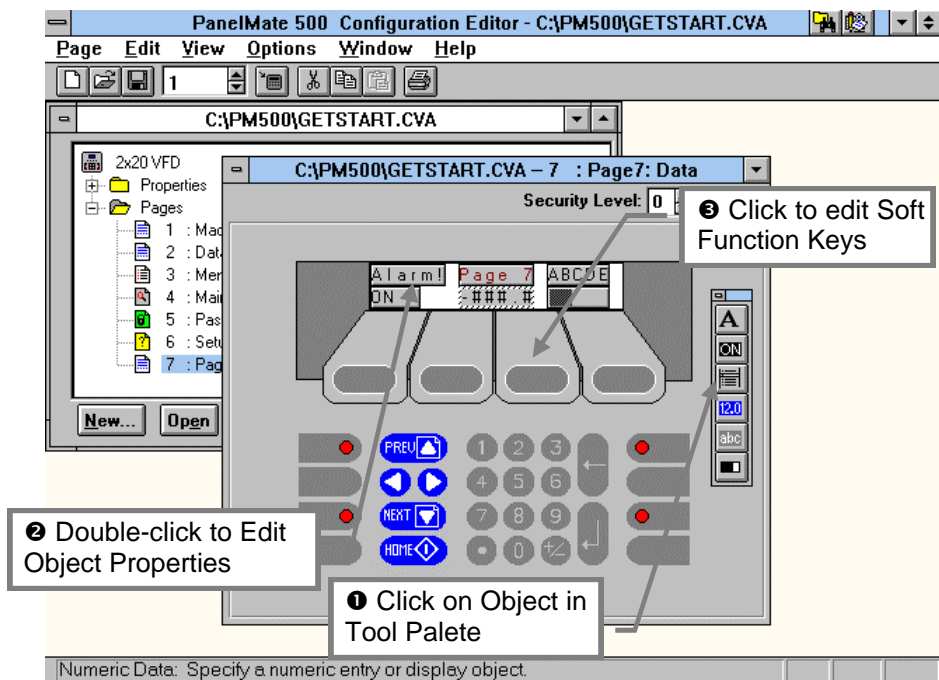
As shown in the following illustration, after selecting a bar graph object from the tool pallette, the bar appears at the top left of the display. When the cursor is double-clicked on the bar, the bar graph properties spreadsheet will appear. In this same fashion, any of the other 5 object types may be added to a data page.

Tips:

- For any of the 6 object types, select Help from the properties spreadsheet for additional information about the use of the object.

The four soft function keys located just below the screen are configurable to be active when a Data Page is displayed. Each soft function key can be configured for any one of five actions: No Action, Momentary (set a bit to 1 then 0), Goto Page, Data Write (write a value to a reference), and User Defined (series of responses).
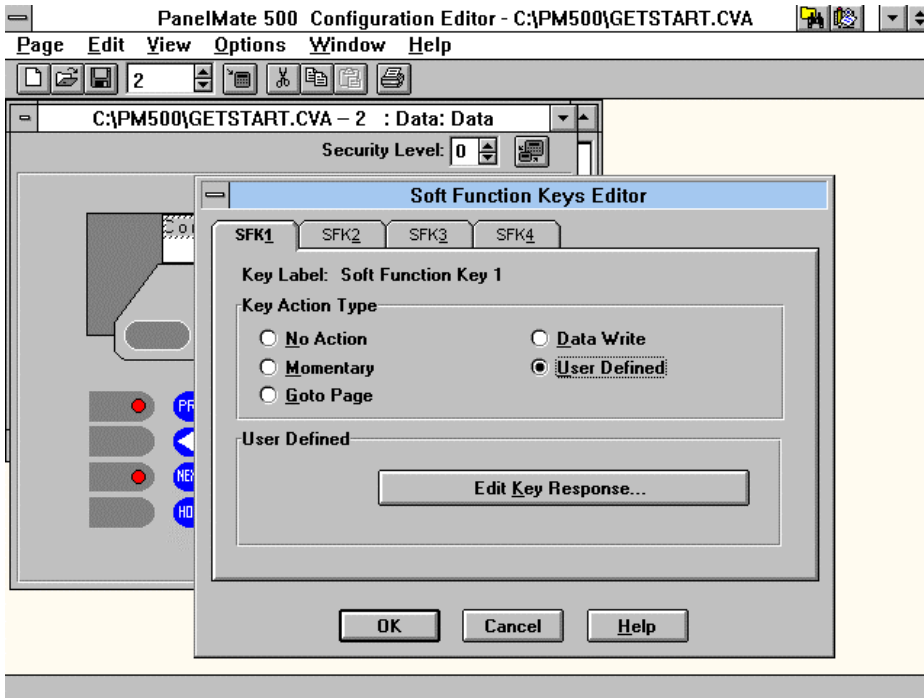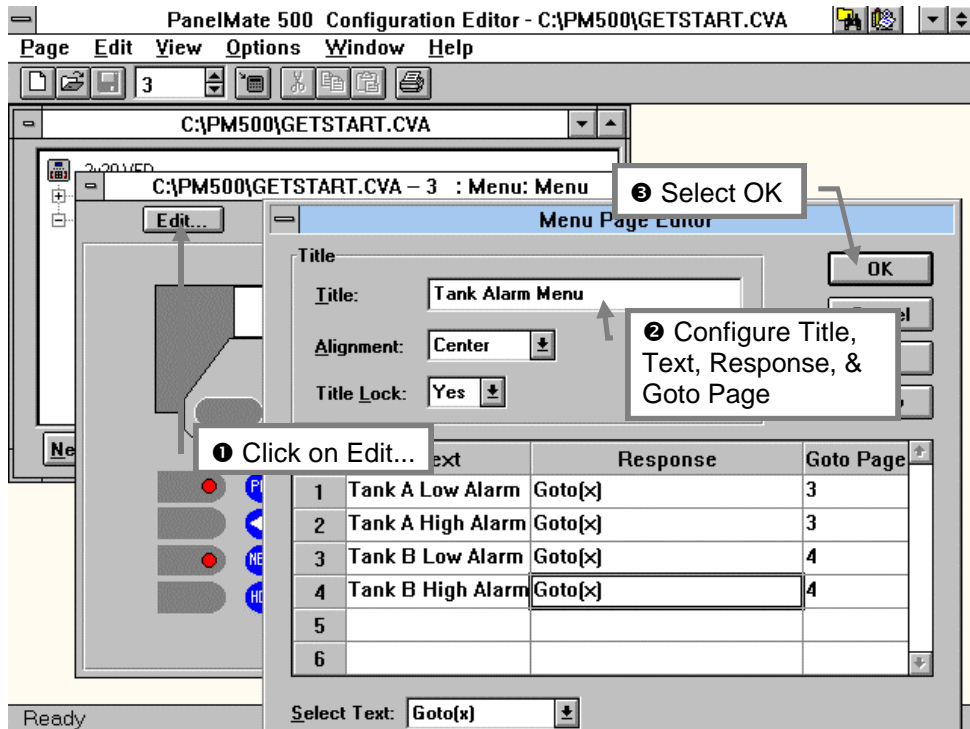

Tips:

- A frequently-used soft-key function is "Go to Page". This permits linking the current data page to another page when a particular soft function key is pressed.

How to Configure a Menu Page

The Menu Page allows you to configure a numbered list of selections (i.e., menu).

To add a Menu Page to a configuration, follow the steps for Creating a New Page and select Menu for the Type under Page Properties.

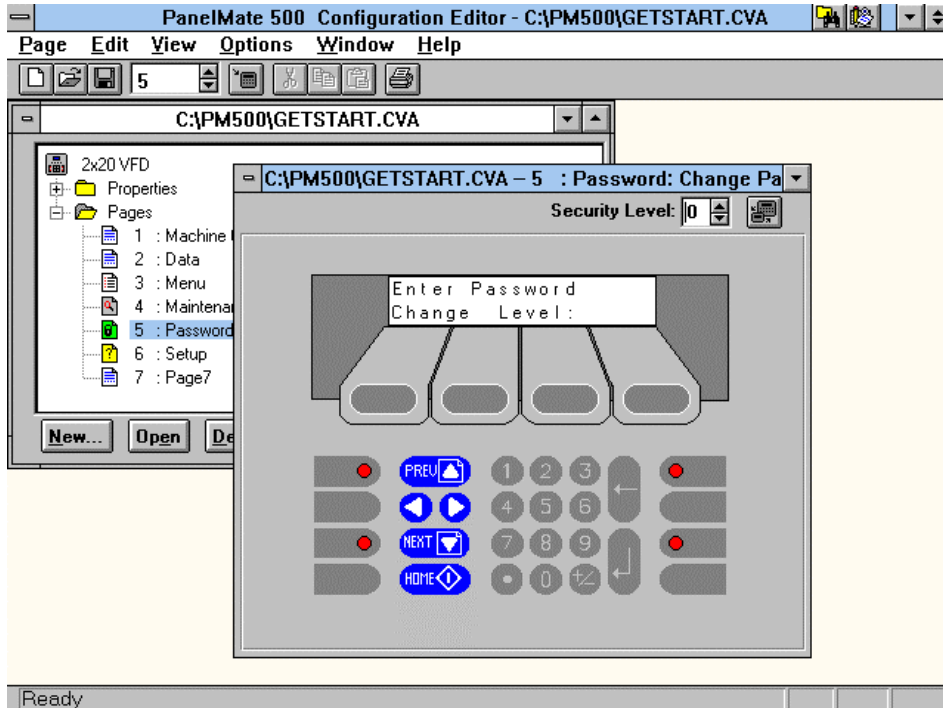To configure the Menu Page, click on Edit... to call up the Menu Page Editor.

Tips:

- For additional information about the Menu Page, select Help within the Menu Page Editor spreadsheet.

How to Configure a Change Password Page

The Change Password Page is used to allow operators to change passwords in Run Mode.

To add a Change Password Page to a configuration, follow the steps for Creating a New Page and select Change Password for the Type under Page Properties.

Creating New Pages

How to Configure a Setup Page

The Setup Page allows you to set the Operator Station's capabilities: adjusting the system's contrast, getting system information, and entering Offline Mode.

To add an Setup Page to a configuration, follow the steps for Creating a New Page and select Setup for the Type under Page Properties.

To configure the Setup Page, click on Edit... to call up the Setup Page Editor.
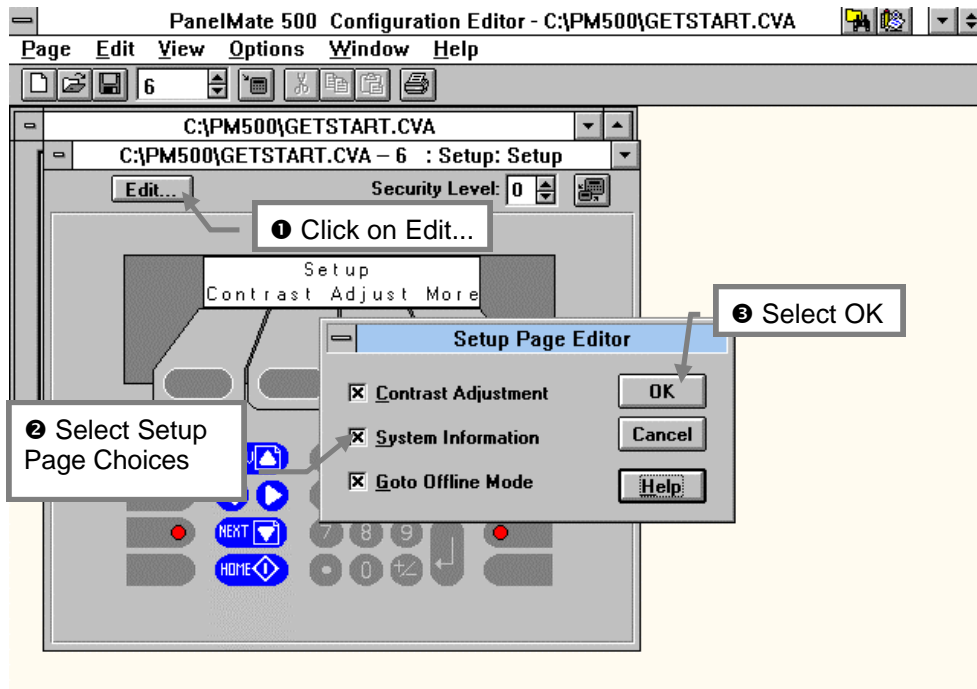
Tips:

- For additional information about the Setup Page, select Help within the Setup Page Editor spreadsheet.

How to Configure a Maintenance Page

The Maintenance Page allows you to access any resource (register, timer, etc.) used for setup and troubleshooting in the PLC.

To add a Maintenance Page to a configuration, follow the steps for Creating a New Page and select Maintenance for the Type under Page Properties.

To configure the Maintenance Page, click on Edit... to call up the Maintenance Page Properties .
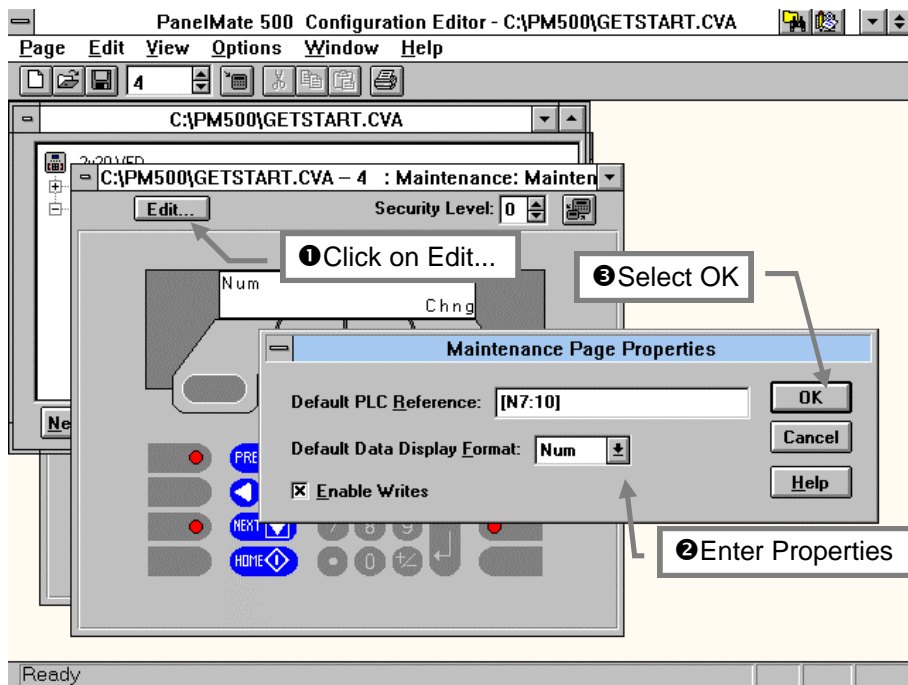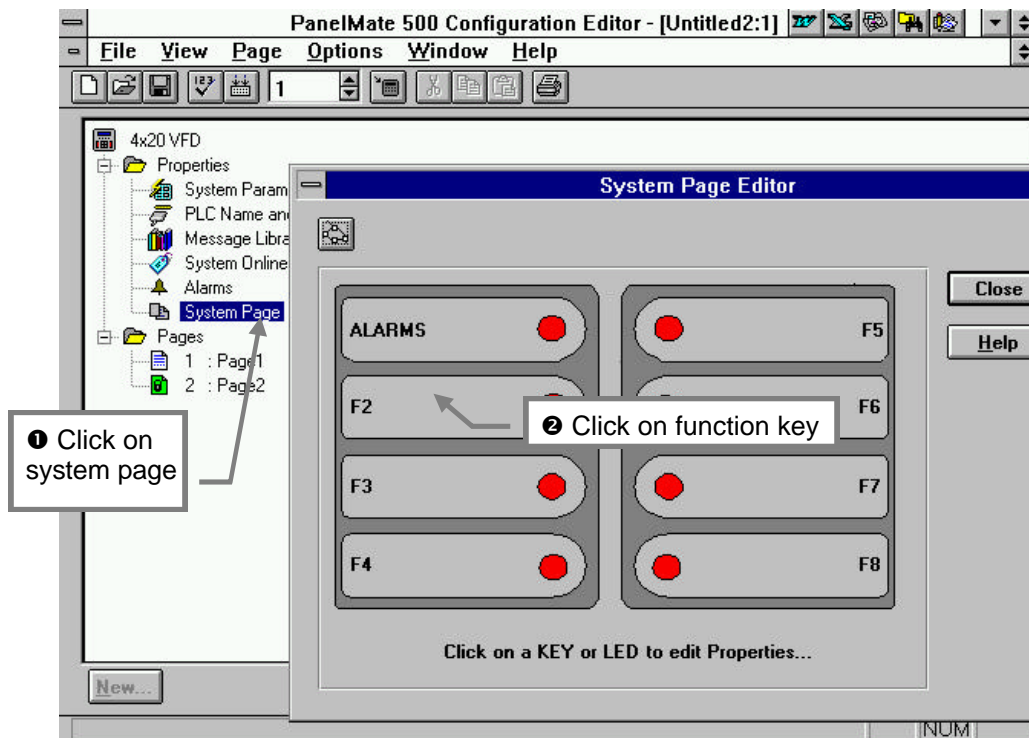

Tips:

- For additional information about the Maintenance Page, select Help within the Maintenance Page Properties spreadsheet.

- Refer to the appropriate PLC manual for specifics on PLC references

How to Configure the System Page

The System Page refers to the set of 8 membrane keys plus built-in LEDs which are at the lower left and right of the front of every PanelMate 500 online unit. The keys and LEDs are assigned functions which are active "system-wide" - regardless which of the 5 onscreen page types is presented to the operator.

To configure the System Page, first double-click on the System Page entry within the Properties listing for your configuration. This will bring up the System Page Editor, which permits access to editing function keys or LEDs. Select a function key and double-click on it.

Tips:

- The System Page editor may also be accessed from any page by single-clicking on the function keys at the bottom of that page.

Double-clicking on the function key will bring up the Function Key Editor. When you have finished editing, click on OK to return to the System Page Editor.
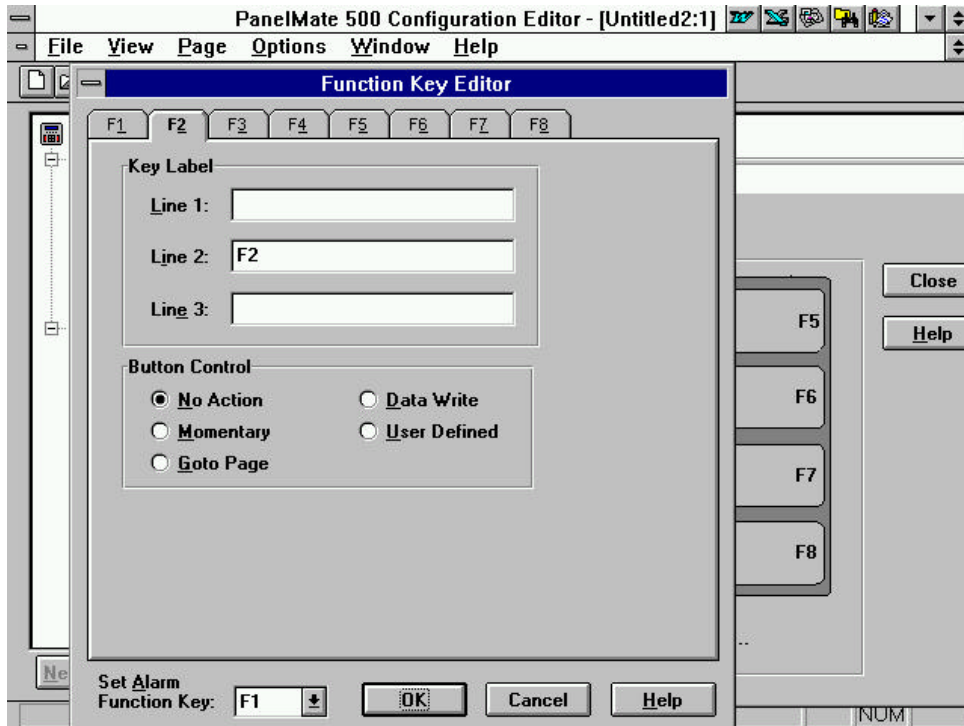
Tips:

- For additional information about the Function Key Editor, select Help within the Function Key Editor spreadsheet.

From the System Page Editor, double-click on any LED to bring up the LED Properties Editor.
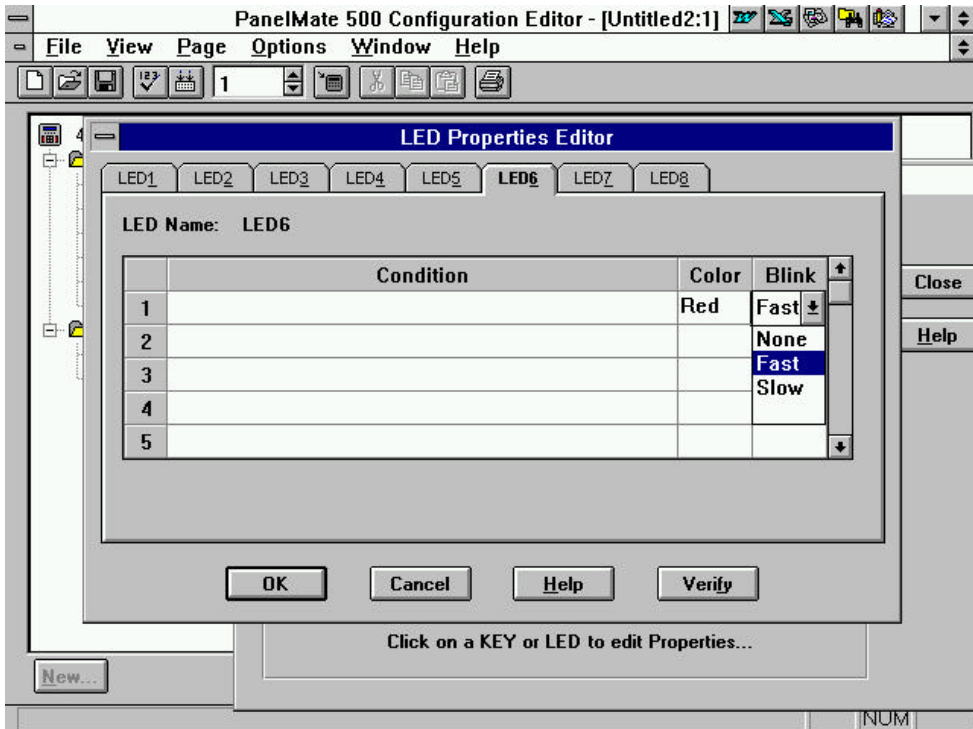
Tips:

- For additional information about the LED Editor, select Help within the LED Editor spreadsheet.

How to Configure Alarms

Alarms are configured for any events on any page in the system using the Alarms editor.

From the Properties listing for your configuration, double-click on Alarms to enter the Alarms editor.
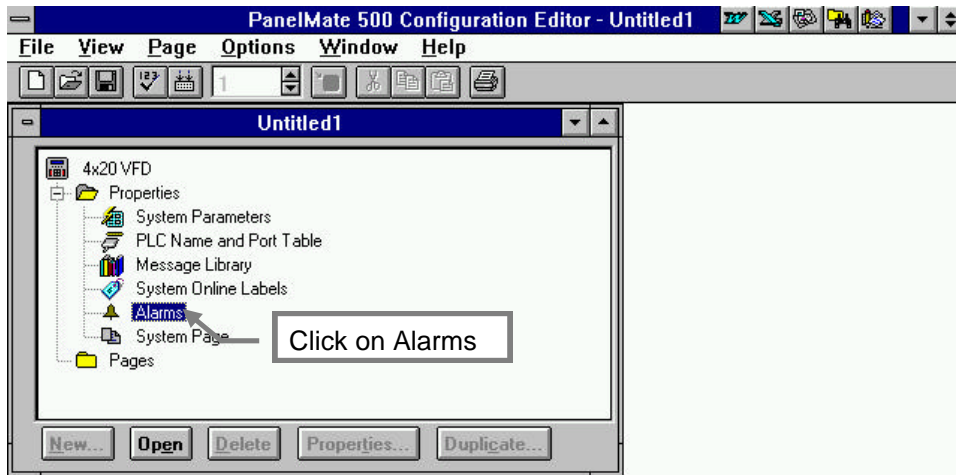
This will display the Alarm Properties Editor, which can be used to specify alarm conditions.
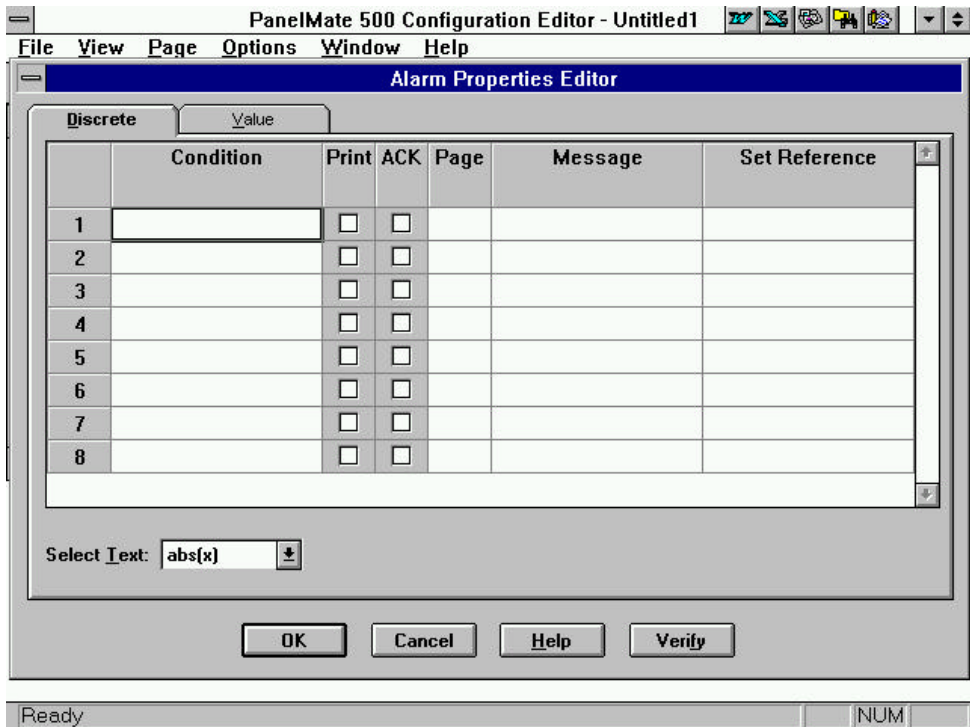
Tips:

- For additional information about the Alarm Properties Editor, select Help within the Alarm Properties Editor spreadsheet.

Chapter 8
Configuring with the Virtual Mentor Guided Operator Capability

In this chapter, you will learn:

- Explanation of the Virtual Mentor Option

- Editing a Response Template

- Response Template Example

Explanation of the Virtual Mentor Capability

The Virtual Mentor™ Guided Operator Capability is available with online models 542VM and 542LM, to permit the operator station to perform "autopilot-like" functions.

Without Virtual Mentor, the operator must monitor the status of the machine and make all decisions relating to its operation.
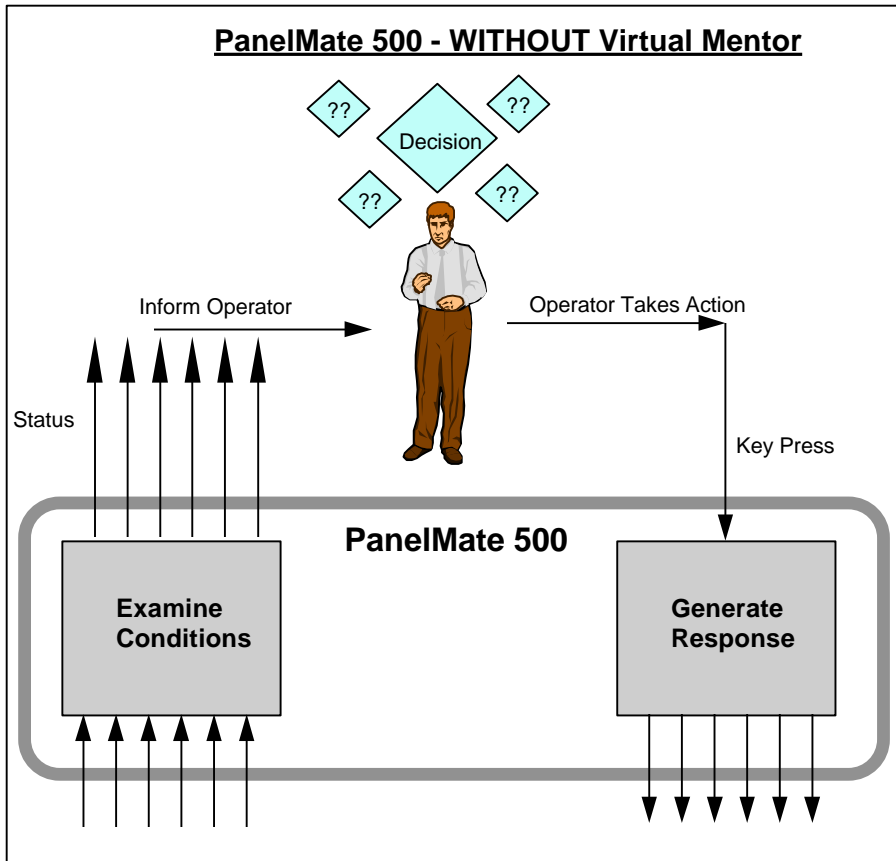
Configuring with the Virtual Mentor Guided Operator Capability

Virtual Mentor:

> * adds extensive built-in decisionmaking tools
> * can simplify the operator's choices
> * can guide operators through sequences
> * can vastly simplify diagnostics
> * can perform actions without operator or PLC initiation
> * further reduces PLC programming

These features can greatly ease tasks and decisionmaking for the operator. Virtual Mentor can be used to create very focused, "context-sensitive" startup or diagnostic sequences which present limited choices to the operator. Virtual Mentor can also perform internal calculations and transmit data back to the PLC without operator intervention.

PanelMate 500 - WITH Virtual Mentor
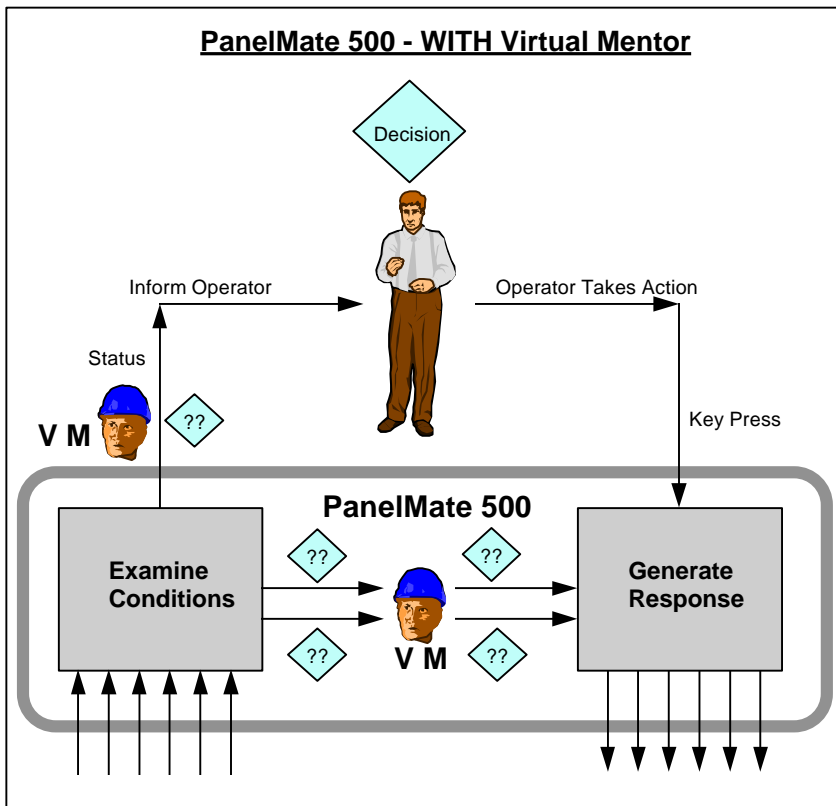
To allow the Virtual Mentor Option feature in your configuration, in the Configuration Properties, select the box under Product Options labeled "Virtual Mentor - Guided Operator Capability". Note for this feature to be available in Run Mode, the Virtual Mentor Option must be available on the PanelMate 500 unit (either model 542LM or 542VM).
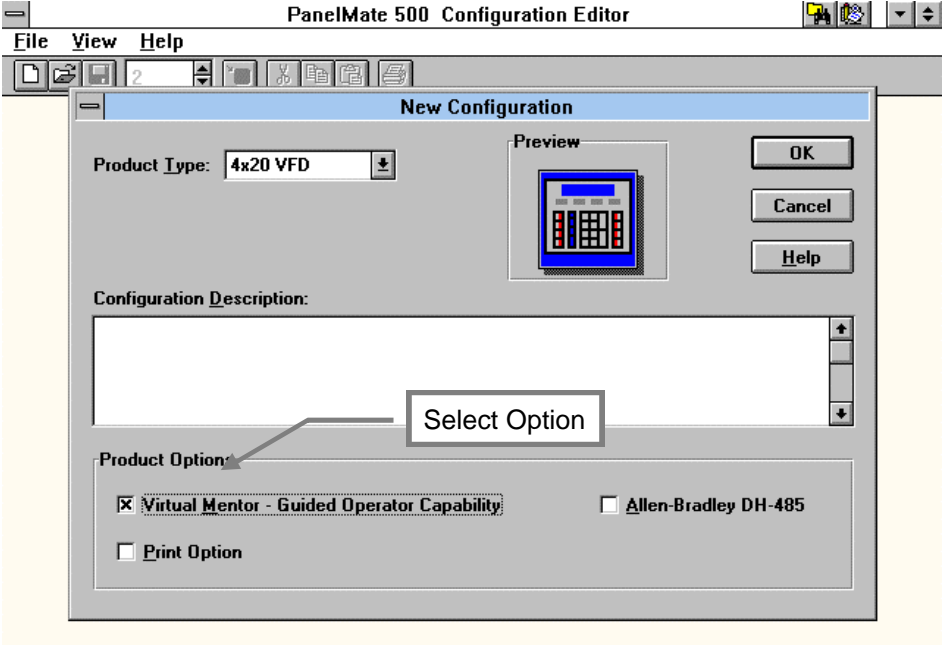
Editing a Response Template

The Virtual Mentor Option permits the creation of "Response Templates" which are comprised of one or more "Condition/Response" pairs. In general, various system responses can be triggered based on defined conditions.

Both the Data and Menu Pages provide access to the Response Template Editor.
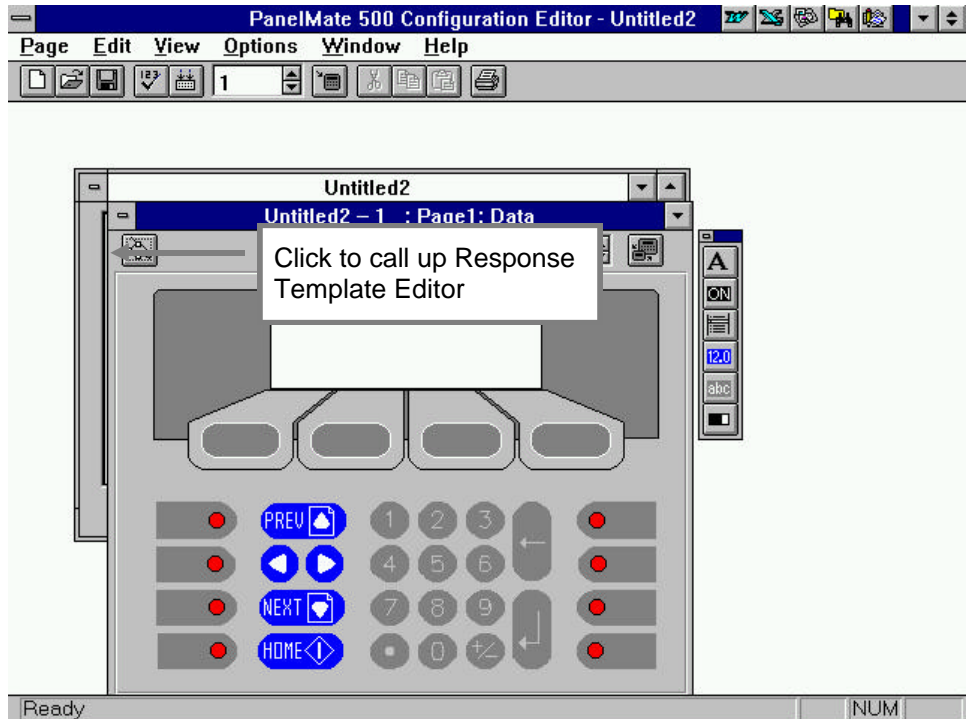
The Response Template Editor contains a set of two tabbed dialog boxes used to determine Entry and Scanned actions. The Operator Station will evaluate each Entry condition once sequentially and execute the designated response(s) prior to displaying the current page. After the page is displayed, the Operator Station will evaluate each Scan condition and execute the designated response(s). After the first pass through the Scan conditions and responses, the Operator Station will only trigger individual conditional expressions based on changed data values.

Page   Edit   View   Options   Window   Help

Response Template Editor

Entry | Scan

	Condition	Response
1	1	[SP,1]=0
2	[SP,OUT_OF_CUPS]=1	Goto(200)
3	[SP,NO_WATER]=1	Goto(202)

Select Text: Break()   Select Page: 18 : Select Beverage

OK   Cancel   Help   Verify
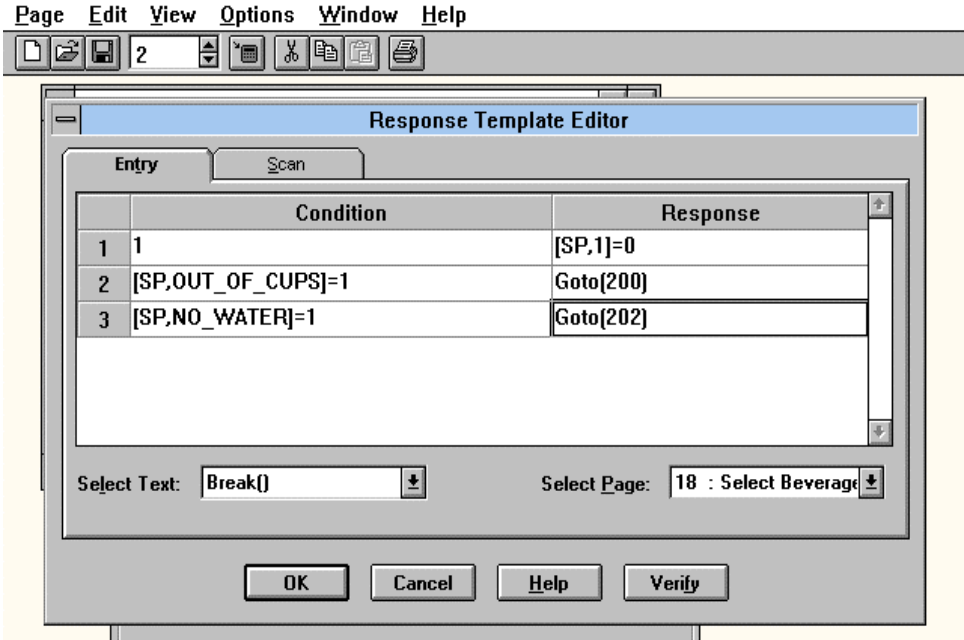
NOTE: For complete information regarding this feature, please review the Virtual Mentor User's Guide which contains a detailed explanation plus configuration examples.

In the Condition field, enter the conditional expressions to be evaluated. You can select a condition in the Select Text field or you can enter a condition by typing in the field. In the Condition field, you can enter PLC references, ScratchPad references or Conditional Operators.

In the Response field, enter the responses to be executed if the condition is evaluated to be true. You can select a condition in the Select Text field, a page number in the Select Page field, or you can enter a condition or response by typing in the field. In the Response field, you can enter PLC references, ScratchPad references or other Response Operators not displayed in the Select Text field or the Select Page field.

ScratchPad registers are supported in the Operator Station for use as interim storage for calculations or for control of reference values. ScratchPad registers are cleared (reset to zero) each time power is removed from the Operator Station.

Note that Soft Function Keys which are active for Data Pages also have access to responses via the User Defined Key Action Type.

For an example of how the Response Template is used, refer to the Response Template Example which follows. Note this example is also included in the Configuration Editor Help.

Response Template Example

The following conditions and responses have been added to the Response Template Editor.

Response Template Editor

	Condition	Response
1	1	[SP,1]=0
2	[SP,OUT_OF_CUPS]=1	Goto[200]
3	[SP,NO_WATER]=1	Goto[202]

Select Text: Break(x)

Select Page: 18 : Select Beverage

OK Cancel Help Verify
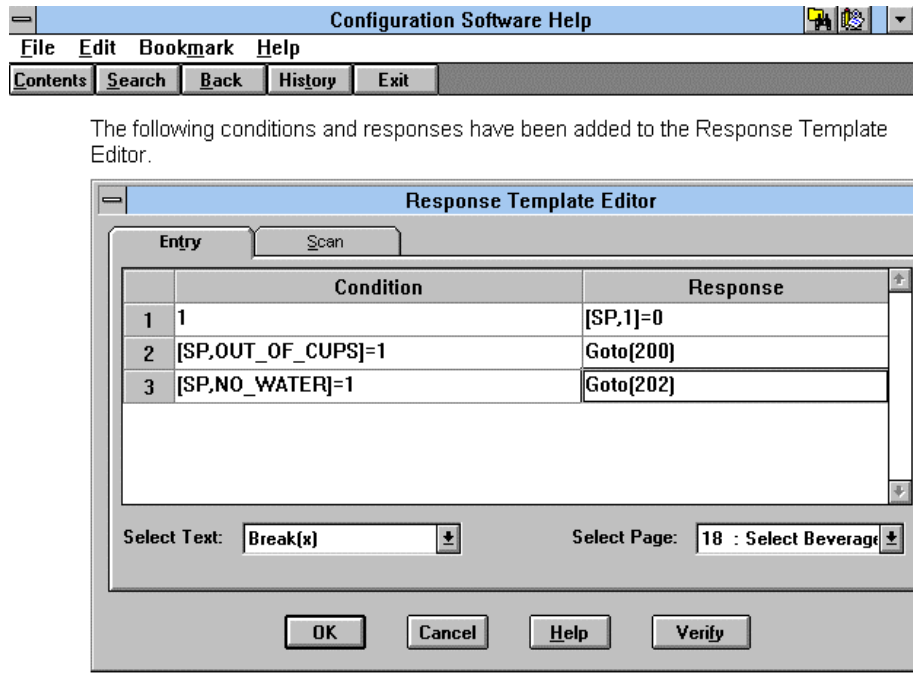
In this example, condition 1 will evaluate to be true every time page 18, Beverage Selection, is displayed. Therefore, ScratchPad register 1 will always be set to 0 (Off). (This resets the Beverage Selection on page entry.) After condition 1 has been evaluated, condition 2 will be evaluated.

If condition 2 is true (i.e., the machine is out of cups), then the response will have the Operator Station go to page 200 (which will display text reading ADD MORE CUPS) and condition 3 will never be evaluated. If condition 2 is false, then condition 3 will be evaluated.

If condition 3 is true (i.e., there is no water in the machine), then the response will have the Operator Station go to page 202 (which will display text reading ADD WATER). If condition 3 is false, then the Operator Station will display the page, update the objects on the page, and begin executing the Response Template Editor Scan table.

Chapter 9
Saving the Configuration

In this chapter, you will learn how to:

- Save a configuration

Saving Changes

If changes were made to the application, the user is prompted to save the changes before the application is closed.

❶ Choose File then Save As...

File   View   Page   Options   Window   Help

❷ Choose a file name

4x20 VFD
Properties
Pages
  1 : Main Menu

Save As

File Name:
*.cvb

col0509.cvb

Directories:
c:\

c:\
aaa_ruth
afterdrk

Select OK to save file

dos
eatonidt

Save File as Type:
4x20 VFD [*.cvb]

Drives:
c:

OK

Cancel

Help

Network...

Select Cancel to discard changes
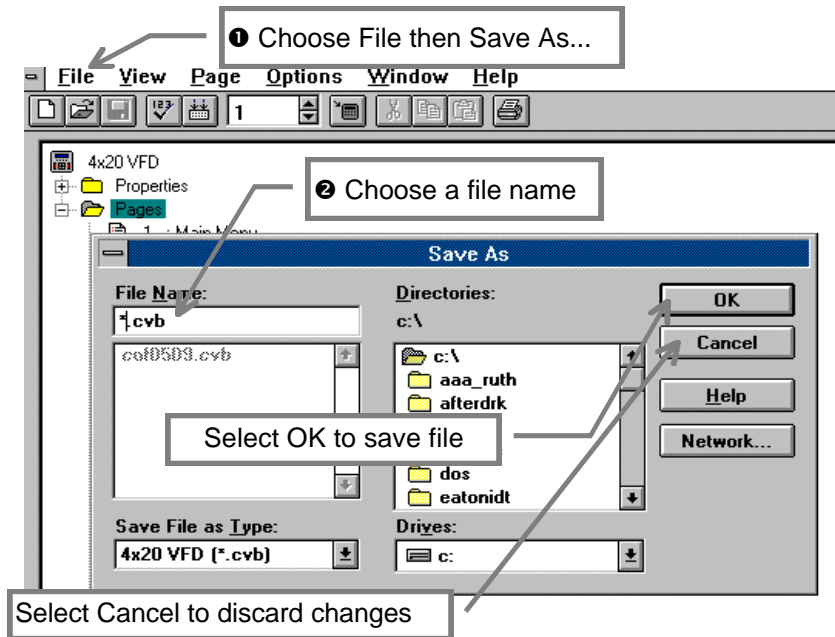
Tips:

- The Configuration Software automatically prompts the user to save each open window with changes if the program is exited

- While working on your application, run verify occassionally to check work

Chapter 10
Compiling the Application

In this chapter, you will learn how to:

- Compile an application for downloading

Compiling an Application for Downloading

Prior to downloading to the online unit, the application must first be compiled into a file as follows:

❶ Choose File then Compile
or click Compile icon

PanelMate 500 Configuration Editor - C:\COF0509.CVB

File   View   Page   Options   Window   Help

C:\COF0509.CVB

4x20 VFD
Properties
Pages
1 Main Menu

Save Compiled File As

File Name:
*.ovb

Directories:
c:\
pm500

❸ Select OK

OK

Cancel

Help

Network...

❷ Choose a filename for the application

Save File as Type:
4x20 VFD (*.ovb)

Drives:
c:
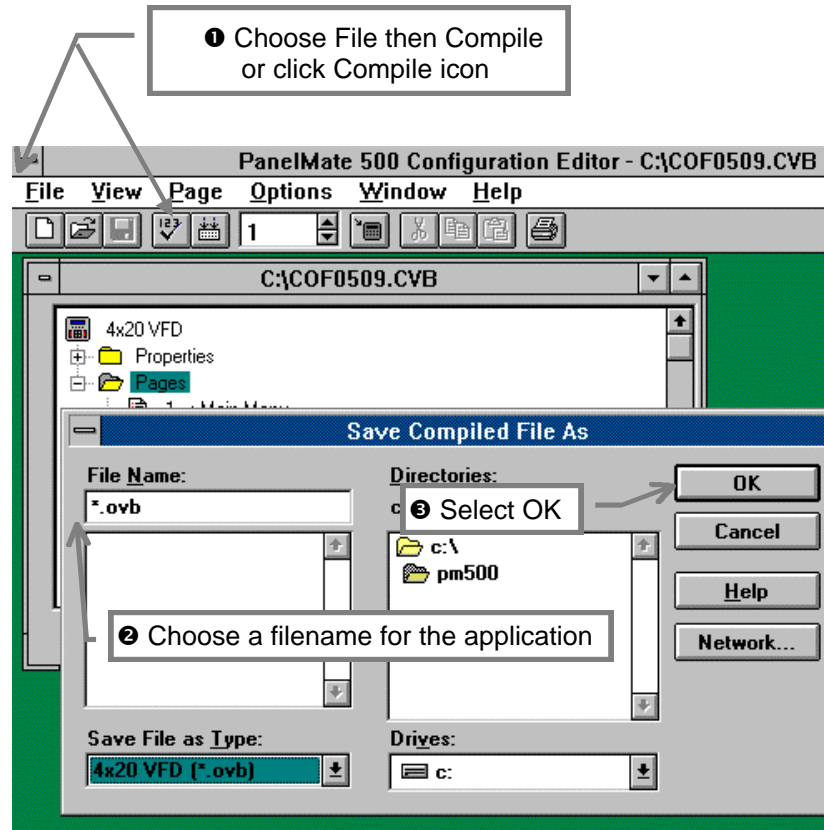
Tips:

- When you compile a file, the verify function is automatically run

- Compiling the file will create a new file which ends with the filename extension .ovb, .ova, .olb or .ola - this file is then available for transfer into an online unit

Chapter 11
Transferring the Configuration to a PanelMate Series 500 Online Unit

In this chapter, you will learn:

- How to setup your Personal Computer and PanelMate Series 500 online unit

- How to perform the file transfer process

PanelMate Transfer Overview

This chapter explains how to transfer a configuration from a PC to a PanelMate Series 500 online unit.

PanelMate requires two separate file types to operate. These files must be the proper version and loaded in the proper sequence for PanelMate to function properly. The two file types are:

- Drivers: A driver is the master program plus the PLC communication protocol.

- Configurations: These are the operator screens that you configure. The version of these files can be the same or "older" than the version of the driver in the PanelMate.

The following is the order in which your setup should occur for proper transfer:

Select PC serial port parameters

Select Systems Information

Select PLC Driver

Select Options

Select Configuration

Prepare PanelMate for Transfer
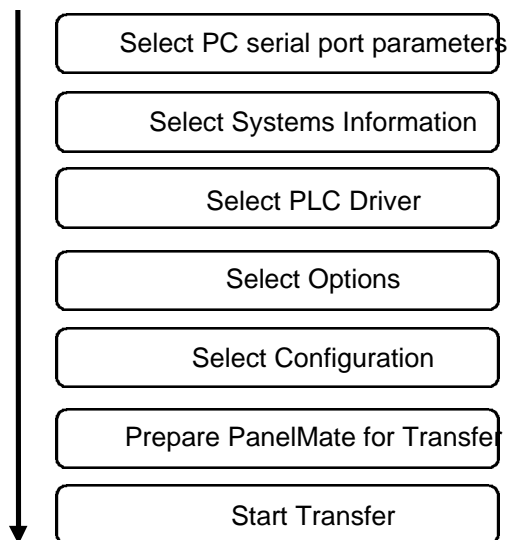
Start Transfer

Starting the PanelMate Transfer Screen

When you have completed a configuration and have saved and compiled it, begin the transfer process by selecting PanelMate Transfer:
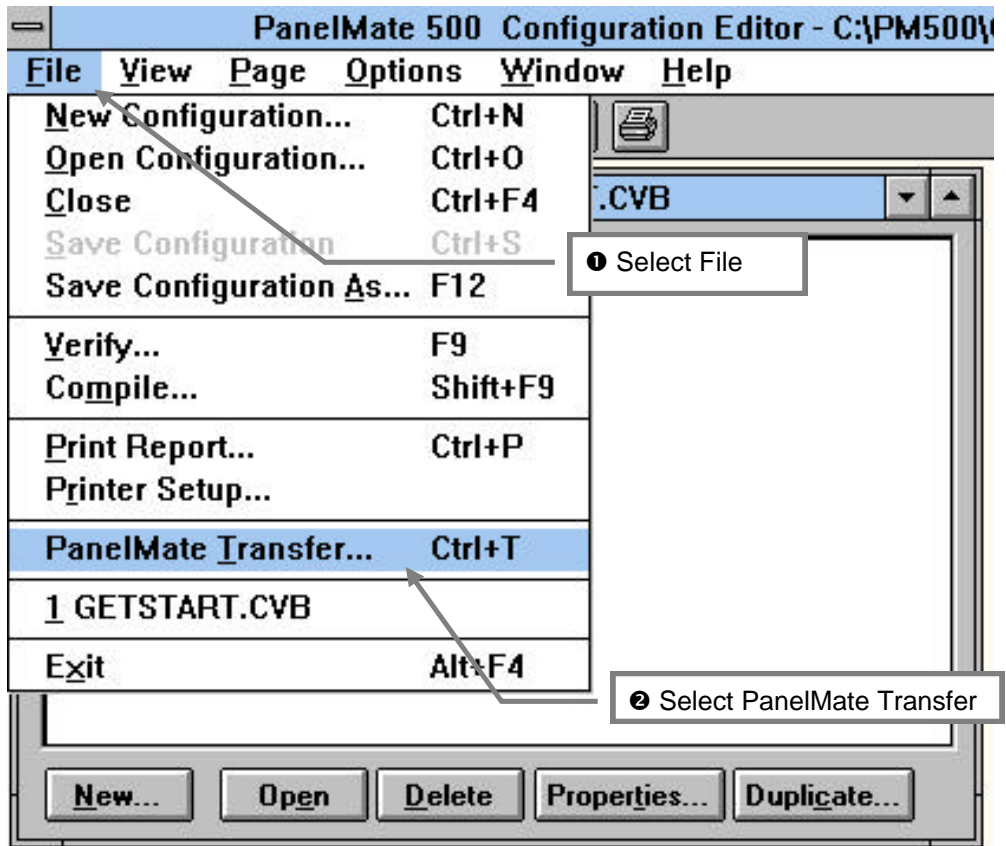
Setting up the Computer Communication Parameters

The computer must be setup properly before the transfer process can begin:
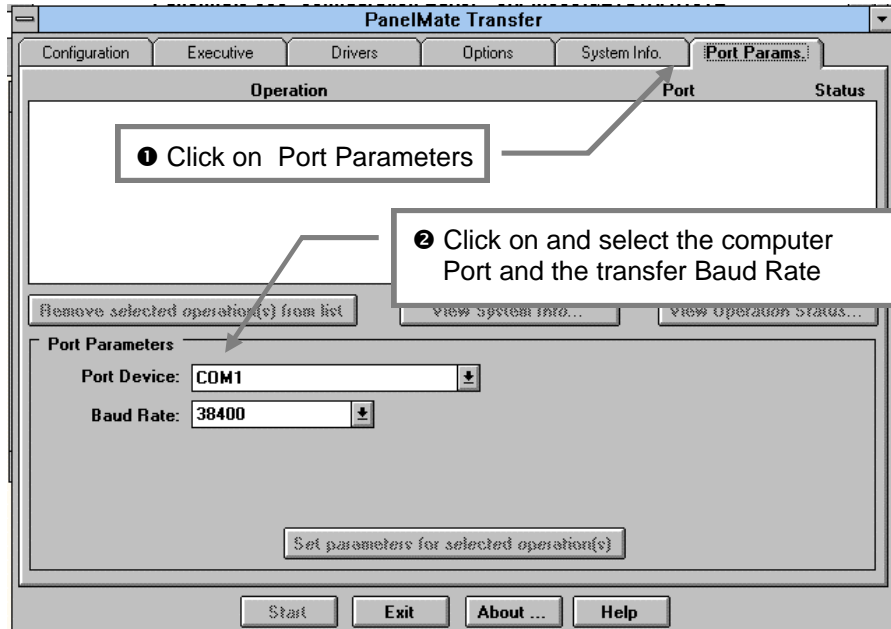
Tips:

- Make sure that that the computer communication port that you select in the PanelMate Software is also set in your computer setup screen as a communication port and not a mouse port

- Check power saving options in your computer setup screen to ensure they have been deactivated. Most laptops shut down serial ports when they enter power saving modes

Determining PanelMate System Information

The System Information option reads and displays the version of PLC driver and configuration that is currently in the PanelMate. The first transfer is normally a reading of the parameters in PanelMate so that proper communications can be verified.
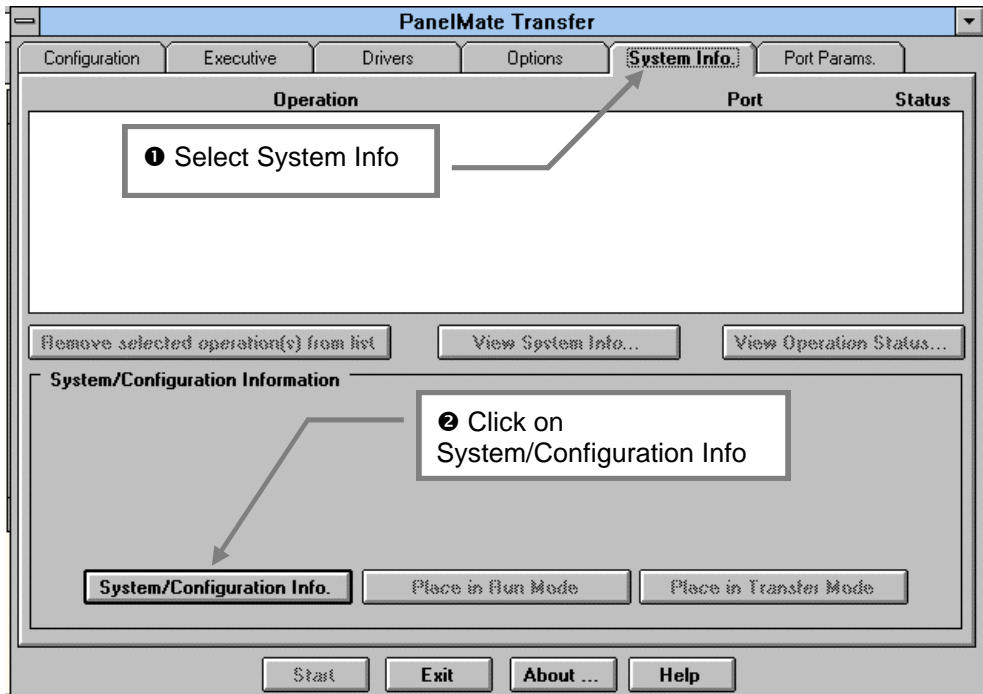
Tips:

- PanelMate units are shipped from the factory loaded with a set of demonstration screens that can be used without having a PLC connected

- Successfully verifying the information in a PanelMate allows you to confirm that your computer serial port and cable are properly setup

- The information displayed on this screen is very helpful if you need to contact Cutler-Hammer IDT Customer Support for assistance

Selecting the PLC Drivers to Transfer

The next step is to transfer the PLC driver that you have used in your configuration.
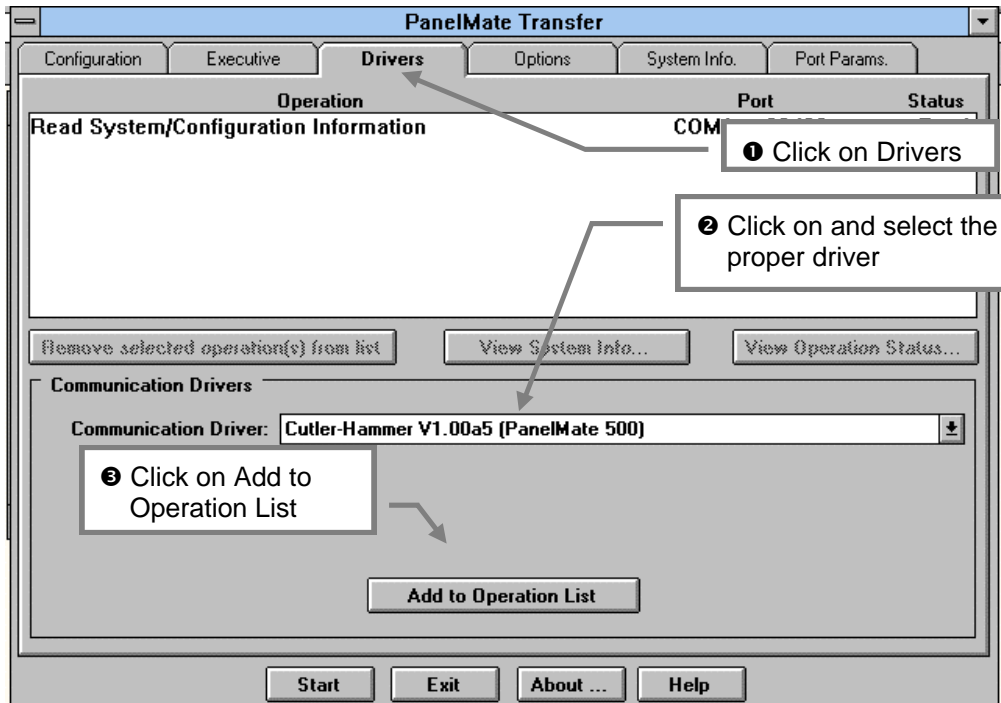
Tip:

- Transferring the driver downloads the master program plus the PLC protocol.

Selecting Options to Transfer

Any special options that you have used in your configuration must next be transferred into the online unit. Options are "One Time Use" disks that enable each PanelMate to accept configurations that are using the following features:

- A-B DH-485 PLC driver
- Print Option
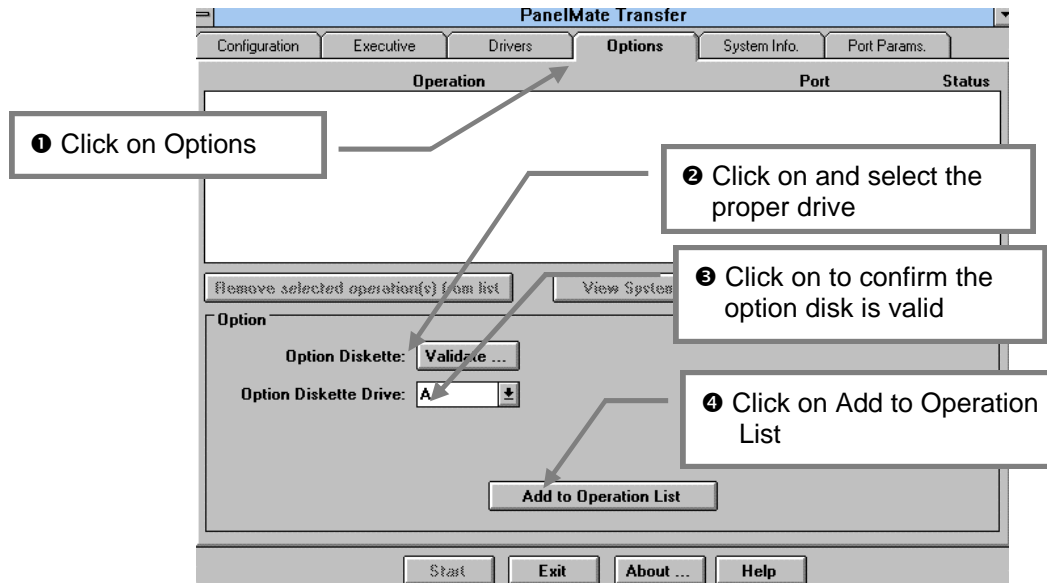
Tips:

- The A-B AcceleratI/On, Modicon Modbus Plus, and Genius I/O cards are not software options. However, they must be installed in the PanelMate before downloading configuration screens using the appropriate drivers

Selecting the Configuration to Transfer

After all other required items have been transferred, the configuration can be transferred to the online unit.
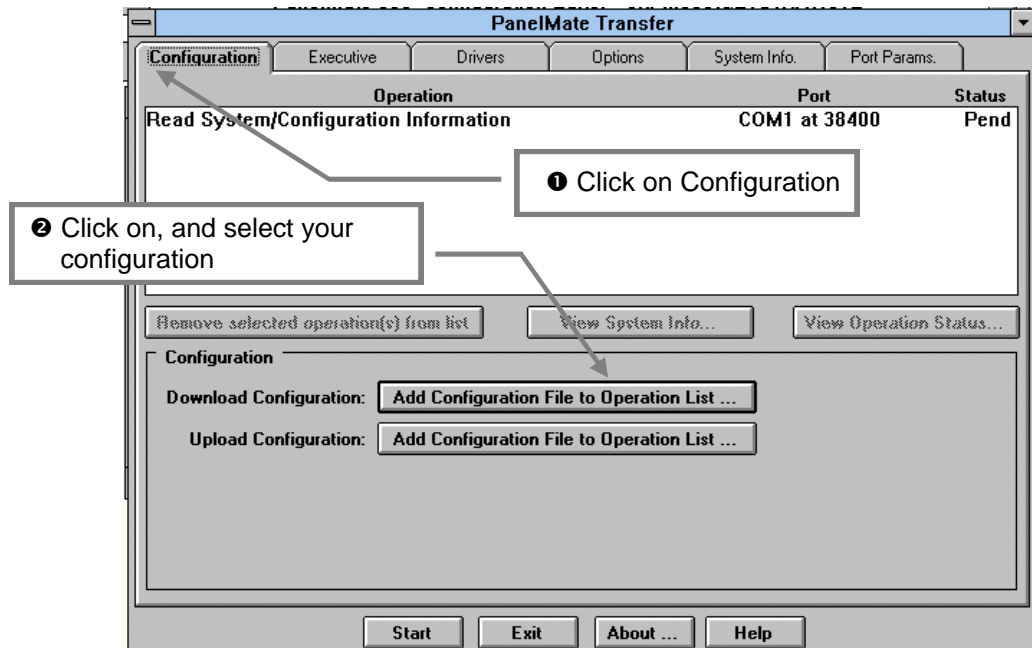
Tips:

- The configuration to be transferred to an online unit must have a filename extension of .ovb, .ova, .olb or .ola. This indicates that it is a compiled configuration ready for **o**nline use. If it has not yet been compiled, a configuration will have a filename extension of .cvb, .cva, .clb or .cla.

Preparing the PanelMate for a Transfer

The PanelMate must be changed from the normal online run mode into an offline transfer mode before downloading new files.

The following steps must be performed to place the PanelMate into transfer mode:

- **Cycle power** to the PanelMate unit
- Press **HELP Button** [Function Key 4 (F4)- see below] while cycling power
- Unit will go into **Offline Mode** and screen will display choices
- Select **"More"** [Soft Function Key 4 (SFK4) - see below]
- Select **Transfer Mode** [Soft Function Key 1 (SF1) - see below]
- Select **"More"**
- Select **Serial Mode** [Soft Function Key 1 (SFK1) - see below]
- Connect the Transfer Cable between the PanelMate (Port1) and the personal computer serial port. We recommend using the Transfer Cable manufactured by Cutler-Hammer IDT however, the cable diagram is available in the Users Guide.
- Warning: When transferring, do not connect any cable to Serial Port 1 RS422/RS485 jack as communication errors will result which may cause download errors.

Soft Function Key 1 (SFK1)

Soft Function Key 4 (SFK4)

Function Key 4 (F4) "Help Key"
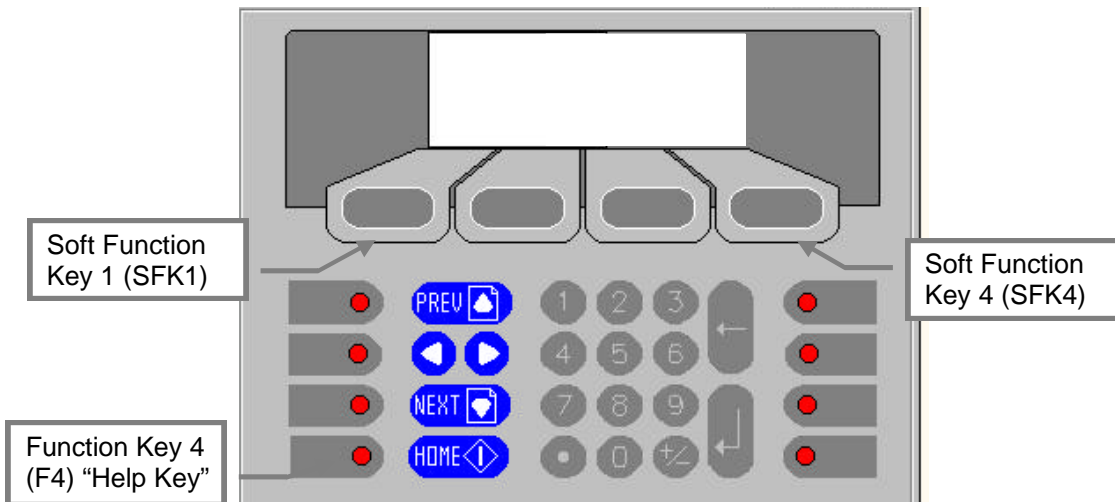
Starting the Transfer Process

Begin the transfer process by clicking on "START." The process will consist of:

- Checking communications and displaying System Parameters of the PanelMate.

- Transfer the PLC Driver

- Transfer the Configuration
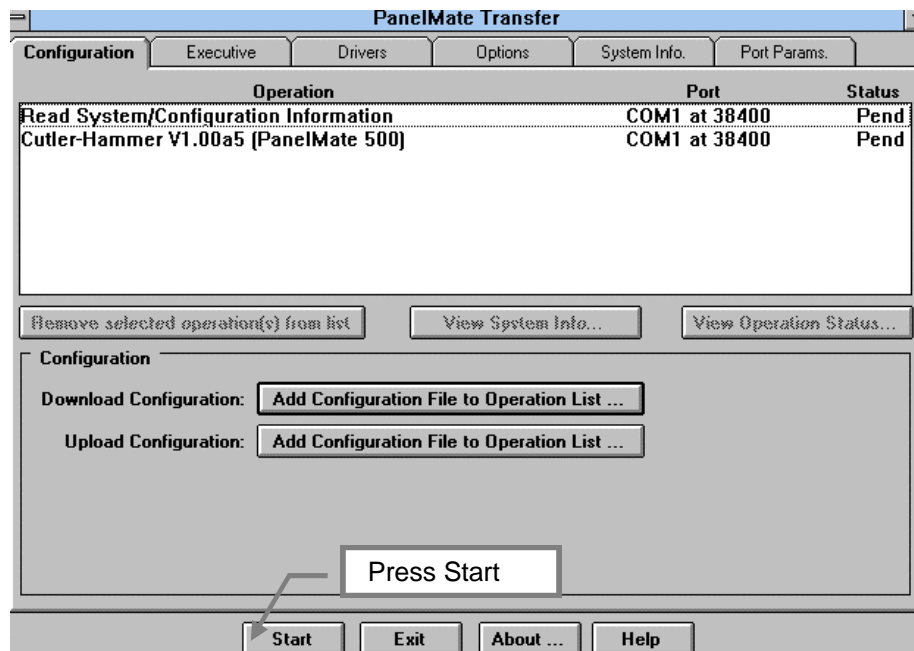
- When complete, press Soft Function Key 4 (SFK4) to Exit and then Soft Function Key 1 (SFK1) to Run.

Chapter 12
Running the PanelMate Series 500 Unit Online With the PLC

In this chapter, you will learn how to:

- Start up a PanelMate Series 500 unit online with a PLC after completing all necessary file transfers

Running the PanelMate Series 500 Unit Online With the PLC

After the download process is complete the PanelMate needs to be placed in the on-line mode:

- Connect your PLC and verify the processor is in the Run Mode.
- Cycle power to the PanelMate unit.
- The PanelMate unit will come up in Online Mode.

The PanelMate performs a hardware diagnostic test and should come on-line.

If the PanelMate does not come on-line properly or displays a communication error message:

- Verify your configuration to ensure there are no mistakes
- Confirm the communication settings in the PanelMate Configuration match the settings of the PLC
- Confirm the PLC cable is correct
- Consult the error code tables in the Users Manual

NOTE: Your software is supplied with simple "Communication Startup" configurations you can use, along with an optional factory-built cable, to verify startup communication for many frequently-used PLCs. Refer to the Appendix of this Getting Started User's Guide for further instructions.

If the PanelMate is locked in the online startup mode due to an invalid configuration it can be placed back in the transfer mode by performing the following:

- **Cycle power** to the PanelMate unit
- Press **HELP Button** [Function Key 4 (F4)] while cycling power
- Unit will go into **Offline Mode** and screen will display choices
- Select **"More"** [Soft Function Key 4 (SFK4)]
- Select **Transfer Mode** [Soft Function Key 1 (SF1)]
- Select **"More"**
- Select **Serial Mode** [Soft Function Key 1 (SFK1)]

Appendix

In this chapter, information is provided to:

- Access and understand a set of communication startup configurations for many commonly-used PLCs - these startup configurations permit you to confirm PLC communications with your PanelMate 500 unit as part of your startup process

- Access and understand two sample configurations provided with your PanelMate 500 configuration software

- Review a list of 12 "Helpful Reminders" which could be useful as you create your configuration, transfer it to the online unit, and run with a PLC

Communication Startup Configurations

The part of the electronic operator station startup process which seems to produce the most common "stumbling blocks" is when a user <u>first</u> attempts to run the operator station online with a PLC. In the case of PanelMate 500, even if the configuration created by the user contains no syntax errors (it passes the "verify" process), and the correct PLC driver is resident in the PanelMate 500 online unit, some of the typical causes of problems include:

- the cable from PanelMate 500 to PLC is wired incorrectly

- the communication parameters which must be set in the PLC and in PanelMate are not correctly matched (e.g. wrong baud rate, wrong PLC ID number, etc.)

- the PLC address references in the PanelMate 500 configuration were assigned to the incorrect locations in the PLC

If basic communication has been successfully established, problem #3 above can still occur due to human errors in configuring reference addresses for the PanelMate pages, or errors in programming the PLC. However, committing either of the first two errors above will make it impossible for basic communication to occur between PanelMate and PLC.

As a result, to increase the likelihood of success at the first communication attempt between PanelMate 500 and the PLC, Cutler-Hammer IDT makes available the following:

- a set of "Communication Startup" files which can provide rapid verification of basic communication for many of the most common small PLC models, without even having a program running in the PLC - these configuration files are furnished on the "Examples" diskette which is supplied with the PanelMate 500 configuration software

- optionally available factory-built cables for most PLC models supported by the PLC driver software

Each startup configuration attempts to read a valid address which has been chosen for the particular PLC model. If the address is successfully read, the words "Communication Link Established" will appear on the screen of the PanelMate 500 online unit.
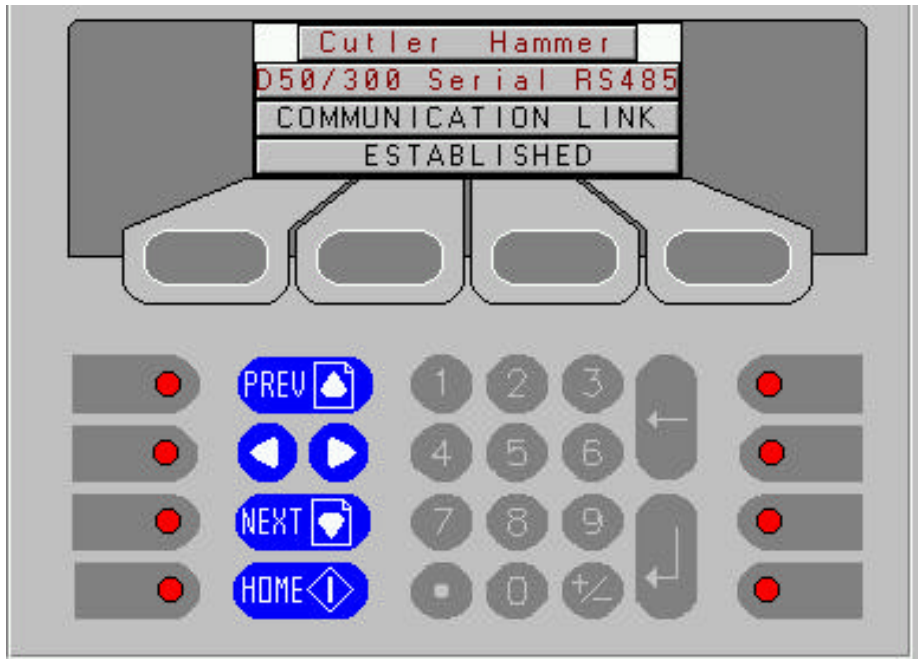
Note that the first two lines of the page confirm the PLC to which communication has been established. The example shown above is for the Cutler-Hammer D50 or D300 PLC.

If communication is unsuccessful, the words "Communication Link Established" will NOT appear. In such a case, press the ALARM control button (the top left button, unless it is reassigned), to go to the alarm page for a communication error message.

Before you proceed with development of a multi-page configuration, we strongly recommend that you use these tools to verify basic communication to your PLC.

PLC Models Covered, and How to Proceed

The following are the PLC models and types of communication for which communication startup files are supplied:

Allen-Bradley PLCs

SLC 500 family via DH 485 communication

SLC 5/03 & 5/04 via A-B RS 232 serial communication (DF1 protocol)

SLC 5/04 via A-B Data Highway Plus *

Micrologix PLC via A-B RS 232 serial communication (DF1 protocol)

PLC 5 family via A-B RS 232 serial communication (DF1 protocol)

PLC 5 family via A-B RS 422 serial communication (DF1 protocol)

PLC 5 family via A-B Data Highway Plus *

> * available only for 4-line display online units (2-line units do not support direct connection to Data Highway Plus)

Cutler-Hammer PLCs

D50 or D300 via RS 485 serial communication

D200 (CPU20) via RS 422 serial communication

General Electric PLCs

model 311 via Series 90 point-to-point serial communication (RS 232 via CMM card)

model 311 via Series 90 point-to-point serial communication (RS 422 via CMM card)

model 311 via Series 90 point-to-point serial communication (RS 422 via programming port)

If you plan to use one of the PLC models and communication approaches noted previously, we recommend that you complete these steps:

1. Examine the charts which follow, to determine the settings you will need to assign (baud rates, PLC ID numbers, etc.) in the PLC model you are using. Whenever possible, the settings are the default settings for the PLC model. Assign any settings necessary.

2. Transfer to the PanelMate 500 unit the appropriate PLC driver (near the top of each chart). Then transfer the communication startup configuration (named in the first line in each chart) for your PaneMate 500 online unit and PLC model. Note that for every configuration name (such as ABDH485), there are actually 4 online file types, corresponding to the 4 categories of online units: 2 and 4 line vacuum fluorescent or LCD display versions. The online file extensions are:

name.ova	(2-line vacuum fluorescent)
name.ovb	(4-line vacuum fluorescent)
name.ola	(2-line LCD)
name.olb	(4-line LCD)

    For example, if you are connecting your 4-line vacuum fluorescent display online unit to an A-B SLC 5/03 PLC via DH 485, you will need to transfer:

    - the <u>Allen-Bradley DH 485</u> PLC driver
    - the <u>ABDH485.OVB</u> communication startup configuration

3. Connect the correct factory-built cable from the PanelMate 500 online unit to the PLC. (see the last line in the chart)

4. Assign both the PLC and PanelMate 500 to be in RUN mode, and verify that the PanelMate display shows "Communication Link Established".

The Communication Startup Reference Charts

Configuration Name	ABDH485
PLC Type	Allen-Bradley SLC 500 family

PLC driver to transfer to PM 500	Allen-Bradley DH 485
Communication type	A-B DH 485
PanelMate Port assigned	1
PanelMate ID assigned	2
Electrical Connection	485-2
Baud Rate	19200
Data Bits	8
Stop Bits	1
Parity	even
PLC ID needed	1
PLC address referenced	S:1/7
PLC port used	DH 485 port or 1747 AIC module
Cutler-Hammer IDT cable #	AB33 or AB34

Configuration Name	ABSLCSER
PLC Type	Allen-Bradley SLC 5/03 or SLC 5/04

PLC driver to transfer to PM 500	Allen-Bradley Serial
Communication type	Allen-Bradley Serial (DF1 protocol)
PanelMate Port assigned	1
PanelMate ID assigned	2
Electrical Connection	RS232
Baud Rate	19200
Data Bits	8
Stop Bits	1
Parity	none
PLC ID needed	1
PLC address referenced	S:1/7
PLC port used	channel 0
Cutler-Hammer IDT cable #	AB36

Configuration Name	ABSLCDHP
PLC Type	Allen-Bradley SLC 5/04

PLC driver to transfer to PM 500	Allen-Bradley DH/DH+
Communication type	Allen-Bradley Data Highway Plus
PanelMate Port assigned	I/O
PanelMate ID assigned	2
Electrical Connection	N/A
Baud Rate	N/A
Data Bits	N/A
Stop Bits	N/A
Parity	N/A
PLC ID needed	1
PLC address referenced	S:1/7
PLC port used	channel 1
Cutler-Hammer IDT cable #	N/A (A-B 1770-CD twinaxial, or equivalent)

Configuration Name	ABMICRO
PLC Type	Allen-Bradley Micrologix

PLC driver to transfer to PM 500	Allen-Bradley Serial
Communication type	Allen-Bradley Serial (DF1 protocol)
PanelMate Port assigned	1
PanelMate ID assigned	2
Electrical Connection	RS 232
Baud Rate	9600
Data Bits	8
Stop Bits	1
Parity	none
PLC ID needed	1
PLC address referenced	S:1/7
PLC port used	programming port
Cutler-Hammer IDT cable #	N/A (A-B 1761-CBL-PM02 cable)

Configuration Name	ABSER232
PLC Type	Allen-Bradley PLC 5 family

PLC driver to transfer to PM 500	Allen-Bradley Serial
Communication type	Allen-Bradley Serial (DF1 protocol)
PanelMate Port assigned	1
PanelMate ID assigned	2
Electrical Connection	RS 232
Baud Rate	19200
Data Bits	8
Stop Bits	1
Parity	none
PLC ID needed	1
PLC address referenced	S:1/7
PLC port used	channel 0
Cutler-Hammer IDT cable #	AB37

Configuration Name	ABSER422
PLC Type	Allen-Bradley PLC 5 family

PLC driver to transfer to PM 500	Allen-Bradley Serial
Communication type	Allen-Bradley Serial (DF1 protocol)
PanelMate Port assigned	1
PanelMate ID assigned	2
Electrical Connection	RS 422
Baud Rate	19200
Data Bits	8
Stop Bits	1
Parity	none
PLC ID needed	1
PLC address referenced	S:1/7
PLC port used	channel 0
Cutler-Hammer IDT cable #	AB38

Configuration Name	ABDHP
PLC Type	Allen-Bradley PLC 5 family

PLC driver to transfer to PM 500	Allen-Bradley DH/DH+
Communication type	Allen-Bradley Data Highway Plus
PanelMate Port assigned	I/O
PanelMate ID assigned	2
Electrical Connection	N/A
Baud Rate	N/A
Data Bits	N/A
Stop Bits	N/A
Parity	N/A
PLC ID needed	1
PLC address referenced	S:1/7
PLC port used	DH+ port
Cutler-Hammer IDT cable #	N/A (A-B 1770-CD twinaxial, or equivalent)

Configuration Name	CHD50
PLC Type	Cutler-Hammer D50, D300

PLC driver to transfer to PM 500	Cutler-Hammer D50/D300
Communication type	serial RS 485
PanelMate Port assigned	1
PanelMate ID assigned	2
Electrical Connection	RS 485-2
Baud Rate	9600
Data Bits	8
Stop Bits	1
Parity	none
PLC ID needed	1
PLC address referenced	F00106
PLC port used	programming port
Cutler-Hammer IDT cable #	CH32

Configuration Name	CHD200
PLC Type	Cutler-Hammer D200

PLC driver to transfer to PM 500	Cutler-Hammer D200/D500
Communication type	serial RS 422
PanelMate Port assigned	1
PanelMate ID assigned	2
Electrical Connection	RS 422
Baud Rate	9600
Data Bits	8
Stop Bits	1
Parity	none
PLC ID needed	1
PLC address referenced	R62F
PLC port used	computer link
Cutler-Hammer IDT cable #	CH31

Configuration Name	GECMM232
PLC Type	General Electric Series 90

PLC driver to transfer to PM 500	GE Series 90 point-to-point
Communication type	GE Series 90 point-to-point
PanelMate Port assigned	1
PanelMate ID assigned	2
Electrical Connection	RS 232
Baud Rate	19200
Data Bits	8
Stop Bits	1
Parity	odd
PLC ID needed	1
PLC address referenced	%S5
PLC port used	CMM port
Cutler-Hammer IDT cable #	GE33

Configuration Name	GECMM422
PLC Type	General Electric Series 90

PLC driver to transfer to PM 500	GE Series 90 point-to-point
Communication type	GE Series 90 point-to-point
PanelMate Port assigned	1
PanelMate ID assigned	2
Electrical Connection	RS 422
Baud Rate	19200
Data Bits	8
Stop Bits	1
Parity	odd
PLC ID needed	1
PLC address referenced	%S5
PLC port used	CMM port
Cutler-Hammer IDT cable #	GE32

Configuration Name	GES90P-P
PLC Type	General Electric Series 90

PLC driver to transfer to PM 500	GE Series 90 point-to-point
Communication type	GE Series 90 point-to-point
PanelMate Port assigned	1
PanelMate ID assigned	2
Electrical Connection	RS 422
Baud Rate	19200
Data Bits	8
Stop Bits	1
Parity	odd
PLC ID needed	1
PLC address referenced	%S5
PLC port used	programming port
Cutler-Hammer IDT cable #	GE31

A PanelMate 500 Product Demonstration

A PanelMate 500 product demonstration is described below using the built-in "coffee machine" example

Introduction

The PanelMate 500 unit is available in 6 online models. Four of these models are: a 4-line vacuum fluorescent display (VFD) unit, a 4-line liquid crystal display (LCD) unit and 2-line versions of each display type. In addition, separate 4-line LCD and 4-line VFD models are available featuring the exclusive "Virtual Mentor" capability. The Virtual Mentor capability provides autopilot-like functions for the most demanding applications.

As an easy-to-understand example of how the model 500 can function as a complete operator station, we have provided a simulation which mimics the way a coffee machine works. This simulation is loaded into every unit as one of the final stages in its manufacture.

Why a coffee machine? A coffee machine requires you to act as an operator by reading from choices presented to you, then performing a sequence of actions in order to obtain the desired result. Occasionally, something unexpected will occur - a cup will fail to be placed in position by the machine for filling, or the machine will be out of sugar or another supply. In such a case, you will begin a kind of "diagnostic" sequence by looking for feedback from the machine (e.g. messages providing status about the cups or other supplies) and expecting to take further action (restock cups or choose another beverage.)

The PanelMate 500 is more than just a message display unit - it's a complete operator station that can lead even inexperienced operators through sequences of operation in much the same way as in our coffee machine example. In addition to merely presenting messages to an operator, PanelMate 500 can display bar and numeric data, plus process numeric entry and control button actions by the operator. And tri-function LEDs are built into the control buttons. As with our other PanelMate products, the model 500 features considerable built-in mathematical capabilities which make it a powerful link between operators and machines.

Demonstration

To illustrate a few of PanelMate 500's capabilities using our "coffee machine" example, just follow these steps with your PanelMate 500:

After initial power-up, the PanelMate 500 will display a Welcome page, including the invitation to press the first soft function key beneath the page for "Run", or the fourth soft function key for "Readme".

Press the key corresponding to Run, to link to the Main Menu.

The "Main Menu" presents 9 choices to the operator, 3 of which are visible in 4-line units and 1 of which is visible in 2-line units. You may use the right ➢ and left ➢ arrow keys on the keypad to scroll down and up through the 9 selections, then press the carriage return ↵ key to choose the item selected. Or, simply press the number of the selection you wish to make, as follows:

Press the number 9 to link to the Coffee Menu page.

The selections from the Coffee Menu are:

1 Run Machine

2 Clean Machine

3 Re-stock Supply

Press the number 1 to link to the Select Beverage page and begin the coffee brewing process

The choices from the Select Beverage page are:

1 Coffee

2 De-caffeinated

3 Tea

Press 1 to select Coffee and link to the Confirm Selection page.

On the Confirm Selection page, press the Continue soft function key just below the display area. This will link to the Brew Strength page.

The Brew Strength page presents the soft function key choices:

Light   Med.   Dark   Mud

Press any of the four choices, to link to the SelectAdditives page.

The Select Additives page asks whether you wish to "Add Creamer?" Your soft key choices are Yes or No.

Press either the Yes or No soft function key to continue additive selection.

Press either the Yes or No soft function key for sugar.

Press either the Yes or No soft function key for sweetener.

Press the Start soft function key to begin brewing.

The first time you complete the previous cycle, you will link to the "Brewing Complete" page. If you then press the Continue soft function key, you can start the cycle over again. When you complete the second coffee brew cycle, the system will link to the Out of Beverage page, and will generate an alarm. The alarm tone will be on, and the red LED embedded in the ALARMS control button will be in rapid blink mode.

Press the ALARMS control button (the top left control button, whose red LED will be blinking) **to link to the Alarm Assistance page.**

Press the Horn soft key to turn off the audio alarm.

Press Help to link to the Out of Beverage page which identifies the unavailable beverage.

Select the Refill soft key to link to the Edit Beverages page.

On the Edit Beverages page, use the right arrow ➢ to choose a beverage field in which you can edit the number of servings remaining before the next alarm.

As you continue to operate the simulation, you can also resupply coffee, decaff coffee, tea, sugar, sweetener, cream or cups as supplies are exhausted.

After entering the Additives or Brewables edit page, you can use the right arrow ➢ key and the numeric keypad to "restock" the item chosen. Enter Brewables to restock coffee.

If you attempt to choose the Supplies edit page, you will be asked to enter a password for protected level #1. Simply press the number 1, followed by the carriage return ↵ key. You may now edit the supply of cups, from 1 to 20. The number of cups you select will also be displayed as a horizontal bar at the bottom of the screen.

Press the blue Home ◆ key to return to the Main Menu page.

To cycle through an examination of all color and blink states of the tri-color LEDs, repeatedly press the topmost control button on the right side of the keypad.

Comments About the Online Simulation

After you have performed the previous demonstration, you may wish to return to the Main Menu and explore other selections in addition to the ones already noted.

The most important concept illustrated by the "coffee machine" is that the PanelMate 500 can alter the way in which it leads operators through a sequence, depending upon conditions at the time. It can react to data from a PLC or network, internally stored data or inputs from the operator, and present choices or sequences to the operator accordingly.

Exploring the Configuration for the Coffee Machine

If you have run the coffee machine simulation AND you have used the Getting Started Users Guide to explore the configuration software, you now may wish to look at the configuration for the coffee machine.

- On your PC, select and start the PanelMate 500 software (refer to chapter 5 of this Guide, if needed).

- One disk furnished with your software is labeled EXAMPLES. Locate it and insert it into the floppy drive of your PC.

- From your PanelMate 500 Configuration Editor, click on File, then Open Configuration.

- Select your floppy drive location (Typically, A or B) then locate and select the file named 4LN_COFF.CVB. This is a file for a 4-line vacuum fluorescent unit. After you have retrieved the file successfully from the floppy disk, select "File" from the software pull-down selections and use "Save Configuration As" to save the file to the PM500 subdirectory on your hard drive, for further use.

The previous process should result in presentation of the directory for the 34 pages which comprise the coffee machine application. You may select individual pages or properties to explore at random, but we strongly recommend that you use the built-in printing capabilities of the software to print several summaries of the coffee machine simulation.

By clicking on File, then selecting Print Report, you can print your choice of Configuration Properties or individual Pages for the coffee machine simulation. If you print everything available, you will generate nearly 50 pages of information. Instead, we recommend you select and print only a limited selection of pages. In order to make these selections, your print selection screen should look like this (note that "System Page", "Page Link Summary" and pages 18, 19, and 8030 are selected):
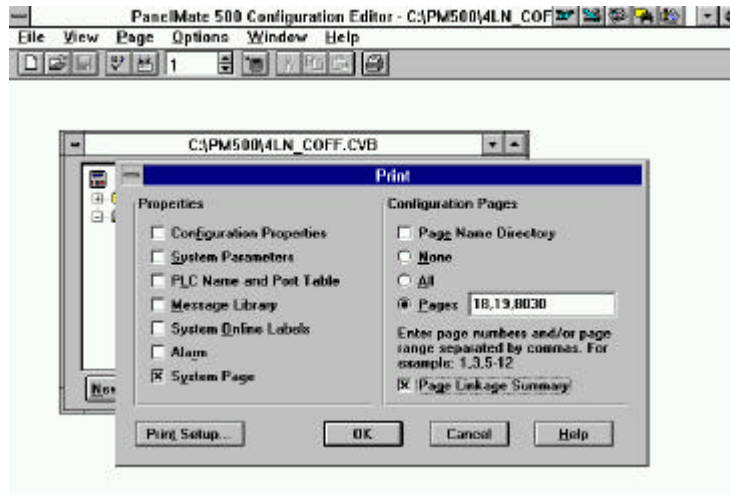
The following are details in the printouts that you should look for:

Selection	**Illustrates**
Page Linkage Summary	* Shows appearance of all 34 onscreen pages in the application.
(prints 5 sheets)	* Shows how every page is linked to any other pages via:
·	- previous or next keys
·	- any of the 4 soft function keys below the screen
·	- any numbered selections on Menu pages
·	- any linkages due to Virtual Mentor Response Templates associated with a page

Page #18   * Shows a Menu Page appearance.

(prints 1 sheet) * Shows that the three selections available to operators (1,
                     2 or 3) set the scratchpad variable "fbeverage" equal to
                     1, 2 or 3 and then assign the screen to Go To page 19.

                  * Shows that a Response Template (Virtual Mentor
                     feature) checks several scratchpad variables (e.g.
                     "cups") and assigns responses accordingly (e.g. goto
                     6020).

                  * Shows that the Previous key returns the screen to page 9
                     and the Next key generates No Action.

Page #19   * Shows a Data Page appearance.

(prints 1 sheet) * Shows the assignments of the 4 soft function keys (keys
                     1 and 4 go to pages 20 and 18, respectively)

                  * Shows static text content and location on display.

                  * Shows the 4 possible text strings which could appear in a
                     State Indicator located after the static text string "You
                     Selected". Also shows the value 0, 1, 2 or 3 in the
                     scratchpad variable "fbeverage" which will generate the
                     text "Error", "Coffee", "Decaff", or "Tea".

                  * Shows that a Response Template (Virtual Mentor
                     feature) checks several scratchpad variables (e.g.
                     "coffee") and assigns responses accordingly (e.g. goto
                     6000).

                  * Shows that the Previous key returns the screen to page
                     18 and the Next key generates No Action.

Page #8030	* Shows a Data Page appearance.
(prints 1 sheet)	* Shows static text content and position on display.
	* Shows position of Numeric Data Object, plus all of its parameters and references.
	* Shows Bar Graph Object, plus all of its parameters and references.
	* Shows that security level 1 password will protect access to this page.
	* Shows that the Previous key returns to page 8000 and the Next key generates no action.
System Page	* Shows that at powerup, by setting six Response Template Conditions to 1, a set of internal scratchpad variables can be assigned initial values (such as [sp, cups] = 3). This is a Virtual Mentor feature.
(prints 2 sheets)	* Shows the assignments of the 8 Function Keys and 8 LEDs. Note how pressing Function Key #5 increments upward the scratchpad variable called "manual", in order to illuminate LED #5 with different colors or blink assignments.

By examining these printouts while using the configuration software to explore pages in the configuration, you can begin to see how pages are constructed and linked together. Remember that because this is a simulation, there are no references on any pages to actual PLC addresses. An actual application would access PLC addresses and make use of PanelMate 500's data objects and mathematical tools to update operators while permitting numeric entry and control operations.

Note that if you replace the coffee machine simulation in your online unit with any other application, you may reload it to that unit, as long as it is a 4-line unit featuring the Virtual Mentor capability (models 542LM and 542VM). Refer to the next section of the Appendix, titled "A Configuration Containing All Page Types and All Object Types" for an example of the loading process. Two files are provided on the Examples diskette, titled 4LN_COFF1.CVB (for 4-line vacuum fluorescent) and 4LN_COF.CLB (for 4-line LCD). Because the coffee machine simulation makes temporary use of the Virtual Mentor capability, it cannot be downloaded to models 522L, 522V, 542L or 542V.

A Configuration Containing All Page Types and All Object Types

Introduction

In addition to the coffee machine simulation already described in this Appendix, there is another simulation available on the EXAMPLES diskette. It is a configuration called ASAMPLE1, and it contains 27 pages designed to provide examples of every one of the 5 onscreen page types, all 6 object types, and the system page. As with the coffee machine simulation, ASAMPLE1 does not use any PLC references, and when loaded to the online unit, does not need to be connected to a PLC in order to run its simulation. Files are provided to load onto any model of PanelMate 500.

This configuration may be examined on your PC, then downloaded to your PanelMate 500 online unit.

Loading the Configuration ASAMPLE1

If you have run the coffee machine simulation AND you have used the Getting Started Users Guide to explore the configuration software, you now may wish to load and examine the ASAMPLE1 configuration. Actually, we have furnished 4 versions of the ASAMPLE1 file, corresponding to the 4 styles of online units. You will need to select the file which corresponds to the type of online unit to which you will be downloading:

File Name	Type of Online Unit
ASAMPLE1.CLA	2-line LCD unit
ASAMPLE1.CLB	4-line LCD unit
ASAMPLE1.CVA	2-line vacuum fluorescent unit
ASAMPLE1.CVB	4-line vacuum fluorescent unit

Before you begin the process, be aware that the ASAMPLE1 file is preconfigured to use the Cutler-Hammer D50/300 PLC driver, even though the simulation runs in the online unit without any connection to a PLC. If you did not load the Cutler-Hammer D50/300 PLC driver to your PC when you installed your PanelMate 500 configuration software, please return to Chapter 4 of this Guide to install it at this time. If you do not have this driver available, please continue and you will be advised of an alternative.

- On your PC, select and start the PanelMate 500 software (refer to chapter 5 of this Guide, if needed).

- One disk furnished with your software is labeled EXAMPLES. Locate it and insert it into the floppy drive of your PC.

- From your PanelMate 500 Configuration Editor, click on File, then Open Configuration.

- Select your floppy drive location (Typically, A or B) then locate and select the file named ASAMPLE1.CVB. This is a file for a 4-line vacuum fluorescent unit, and will be the basis for the examples used in the remainder of the discussion. If your online unit is one of the other 3 types, refer to the listing on the previous page to select the correct version of ASAMPLE1.

The previous process should result in presentation of the directory for the 27 pages which comprise the ASAMPLE1 application. If you do not have the Cutler-Hammer PLC driver available with your software, you will want to select another PLC type, corresponding to a driver which IS installed in your PC. To do so, follow this procedure:

1. Within the directory tree, click on Properties, then PLC Name and Port table.
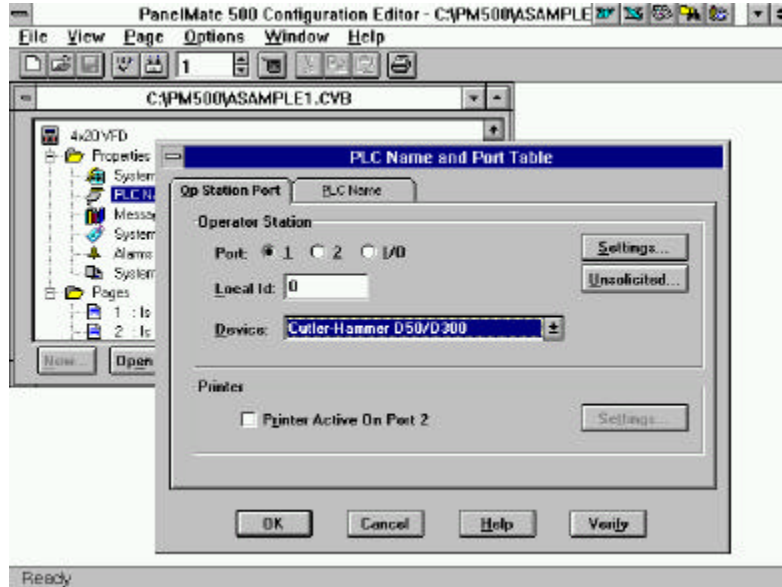
Click on the Device field and select any PLC type available.

2. Click on the PLC Name tab. Double-click on the Model field, click on a model to select it, then click on the adjacent Remote ID field. This process should assign a default set of entries to all 3 field types.
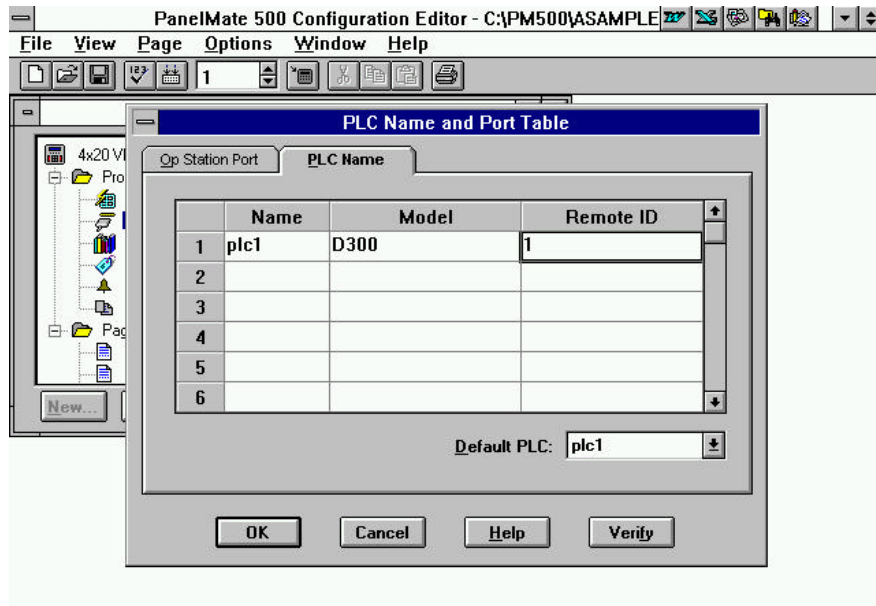
3. Click on OK to complete the new PLC driver selection.

- After you have retrieved the file successfully from the floppy disk, select "File" from the software pull-down selections and use "Save Configuration As" to save the file to the PM500 subdirectory on your hard drive, for further use.

- From the File menu choices, select "Compile" and compile the file ASAMPLE1 onto your hard drive.

To download this application to your PanelMate 500 unit, follow these steps:

- Refer to Chapter 11 of the Getting Started Guide:

    1) Put the PanelMate into the Offline Mode
    2) Connect the transfer cable from your PC to the online unit
    3) Transfer the Cutler-Hammer (or other) PLC driver to the online unit
    4) Transfer the ASAMPLE1 file to the online unit
    5) Put the PanelMate online unit back into the Run Mode

Demonstration

The ASAMPLE1 configuration illustrates all 5 onscreen page types, all 6 data object types, plus the offscreen "system page" (the use of the 8 control buttons, built-in LEDs and numeric entry pad).

After initial power-up, the PanelMate 500 will display a Startup page, including the invitation to press the fourth soft function key for "Reset".

Press the fourth soft function key to Reset the simulation.

Pressing that key causes the text to change from "Reset" to "Ready". The online application is now ready for you to explore. You should plan to access all 5 types of onscreen pages:

> Menu
> Data
> Maintenance
> Change Password
> Setup

In addition, you should view all 6 types of Data Objects illustrated on the Data pages:

> Text
> Conditional Indicator
> State Indicator
> Numeric Data
> Alpha Display
> Bar Graph

And, you should observe how the 8 control buttons, built-in LEDs, navigation keys and numeric entry keys are used.

Once the online unit indicates that it is Ready:

Press the blue "Next" key to advance to page 2, which is the HOME page.

Press the first soft function key, labeled "Next" to advance to page 100, which is a Data Page.

Note the additional page choices available on this page: Data, Menu, Maintenance and More.

Press More to advance to page 101, then press More again to advance to page 102, then press More again to advance to page 100 again.

Note that pages 101 and 102 presented selections to link to Change Password, Setup and Alarms pages.

Press the blue Previous and blue Next keys several times, to see how the screen presentation moves "backward" and "forward" through its linked pages.

The suggested actions which follow will take you through a "tour" of multiple page types. The first segment of the tour explores the object types available on Data Pages (probably the most commonly used page type).

From page 100, press the first soft function key to link to Data Page 3.

Press the blue Next key repeatedly, to examine Data Pages 4 through 8. Several of these pages contain active soft function keys or other choices which can be used to simulate how an object works. Press the blue Previous key to retreat back to page 100 when you are done.

From page 100, press the second soft function key to enter Menu Page 10. Press the blue Next key to advance to page 11, then use the blue > and < keys, followed by the carriage return ↵ key to select any page listed in the menu.

If at any time you wish to start completely over, press the blue Home ◆ key to return to the page assigned to be the Home page.

Now that you have done some exploration, use the blue Home key or other pathway to return to page 100. From page 100, use the soft function keys, Previous and Next keys, plus > or < keys as called for to explore the 3 remaining page types: Change Password, Setup and Alarms. In the alarms page section, you can generate and clear alarms by following the text on the screen. To turn off the alarm tone, press the Alarm control button, followed by the Horn soft function key.

Remember that you can always press the blue Home ◆ key to return to the Home page.

Exploring the ASAMPLE1 Configuration

If you have run the ASAMPLE1 simulation, you now may wish to look more closely at the configuration. Begin by opening the ASAMPLE1 configuration with your PanelMate 500 configuration software, as was described earlier in this Appendix.

By clicking on File, then selecting Print Report, you can print your choice of Configuration Properties or individual Pages for the ASAMPLE1 simulation. If you print everything available, you will generate nearly 50 pages of information. Instead, we recommend you select and print only a limited selection of pages. In order to make these selections, your print selection screen should look like this (note that "Alarm", "Page Link Summary" and pages 1, 4, 8, and 26 are selected):
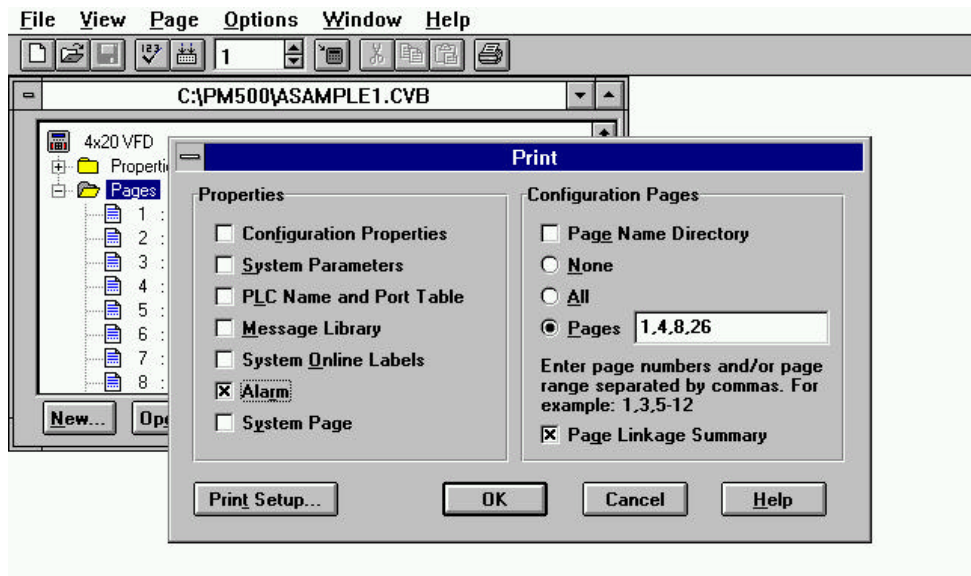
Note that the ASAMPLE1 application was constructed WITHOUT using the Virtual Mentor Response Template feature. The following are details in the printouts that you should look for:

Selection	Illustrates
Page Linkage	* Shows appearance of all onscreen pages in the Summary application.
(prints 5 sheets)	* Shows how every page is linked to any other pages via:
	- previous or next keys
	- any of the 4 soft function keys below the screen
	- any numbered selections on Menu pages
Page #1	* Shows a Data Page appearance.
(prints 1 sheet)	* Shows static text content and position on display.
	* Shows definition of soft function key #4, which is used to reset a series of internal scratchpad variables.
	* Shows position and content of two conditional indicators, including a long text string which "wraps around" on the display.
	* Shows that the Previous key has no page assignment and the Next key advances the screen to page 2.
Page #4	* Shows a Data Page appearance.
(prints 1 sheet)	* Shows static text content and position on display.
	* Shows definition of soft function keys 2 and 4, which are used to increment and decrement an internal scratchpad variable.
	* Shows position and content of a conditional indicator.
	* Shows location and setup of numeric data object.

Page #8	*	Shows a Data Page appearance.
(prints 2 sheets)	*	Shows static text content and position on display.
	*	Shows definition of soft function keys 2, and 4, which are used to increment and decrement an internal scratchpad variable.
	*	Shows position of Numeric Data Object, plus all of its parameters and references.
	*	Shows Bar Graph Object, plus all of its parameters and references.
Page #26	*	Shows a Menu Page appearance.
(prints 1 sheet)	*	Shows that the 15 selections available to operators set or clear scratchpad variables as part of the alarm simulation.
Alarm Page	*	Shows chart of Discrete alarm assignments, including references to the same scratchpad variables referenced on page #26.
(prints 1 sheet)	*	Shows chart of Value alarm assignments, including references to the same scratchpad variables referenced on page #26.

By examining these printouts while using the configuration software to explore pages in the configuration, you can see how pages are constructed and linked together. Remember that because this is a simulation, there are no references on any pages to actual PLC addresses. An actual application would access PLC addresses and make use of PanelMate 500's data objects and mathematical tools to update operators while permitting numeric entry and control operations.

Twelve Helpful Reminders

1. The PanelMate 500 Operator Station design is based on the concept of linking pages to each other. Page changes are possible with screen defined soft function keys, menu selection, logic selection, PLC page change selection, or the use of the navigation keys.

2. The navigation keys link pages using the PREVious and NEXT keys. If you get lost you can always go HOME. To move within a page tab left and right. The tab keys are used in a MENU page to scroll up and down. In a DATA page, they are used to select between multiple numeric entry fields.

3. Only one key on the PanelMate 500 unit may be pressed at a time.

4. The LED and Function Keys act globally -- they are independent of the active page. LEDs are set based on value change. LEDs must be "forced" OFF; put a condition of 1 with a response of black as the last condition.

5. When you create an indicator object with text longer than the assigned display width, the text will automatically scroll. You may wish to buffer the end of the string with blank spaces so that the end of the message does not interfere with the start of the message when it wraps around.

6. The Configuration Software saves files with DOS filename extension .**C**xy where C means Configuration and the x indicate LCD or VFD and the y indicates two or four line. A Configuration File must be compiled to the online format .**O**xy filename before it is transferred to the online unit.

7. Text prompts are entered in individual objects and stored in the message library. If the same word is used multiple times (such as Stop) the message library will only store one copy. Spelling must be identical (Stop and STOP are different). You cannot add new messages directly into the message library. If you need to make a change on a single page then make the change on the page. If you wish to make a global change, (change StOP to Stop) then make the change in the message library.

8. There are internal registers known as ScratchPads that have the syntax [SP,xxx] where xxx is any printable ASCII character (letter or number). You cannot use a space character. Keep names short as they consume memory! ScratchPads are stored internally as signed 32 bit values. (They are integers and therefore cannot contain implicit decimal points.)

9. Many editing windows operate with a grid for information entry. They operate like a spreadsheet -- the right mouse button is used to cut/copy/paste/insert/add/delete rows. To perform an operation on an entire row select it by highlighting the row number at the left side of the grid.

10. When a list of Responses is executed, the first GOTO immediately jumps to the next page and halts execution of the rest of the Response list. (Also, You cannot embed variables inside a GOTO to provide indirection.)

11. When a page is called the following events occur:

    Entry Response Template is executed (if a GOTO is true the page in not drawn.)

    Page Objects are drawn

    Scan Response Template is executed as new values are received, then conditions are evaluated only when a value changes in a reference (either PLC or internal ScratchPad).

12. The Virtual Mentor option permits creation of a System Page which runs in the background. The page can have Entry and Scan tables. (Entry tables can be used to initialize ScratchPad variables). Note that your application should initialize data in either the System Page Entry table **or** the Startup Page Entry table, since they run as separate processes that are not synchronized. Use one table or the other - not both!