OP-440

Operator Panel

Manual Number OP-440-M

WARNING

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To minimize the risk of potential safety problems, you should follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area and usually change with time. It is your responsibility to determine which codes should be followed, and to verify that the equipment, installation, and operation is in compliance with the latest revision of these codes.

At a minimum, you should follow all applicable sections of the National Fire Code, National Electrical Code, and the codes of the National Electrical Manufacturer's Association (NEMA). There may be local regulatory or government offices that can also help determine which codes and standards are necessary for safe installation and operation.

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Manual Revisions

If you contact us in reference to this manual, be sure and include the revision number.

Title: OP-440 Operator Panel User Manual
Manual Number: OP-440-M

Issue	Date	Description of Changes
Original	8/99	Original Issue

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1

Getting Started

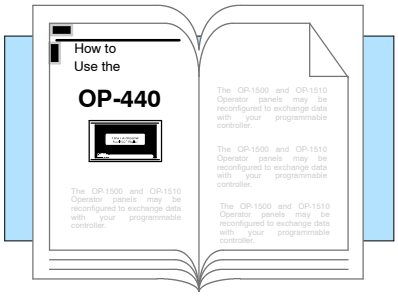
In This Chapter. . . .

- Introduction
- OP-440 Overview
- Frequently Asked Questions

Introduction

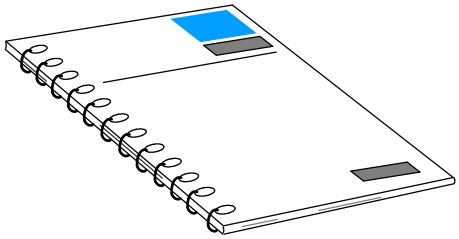
The Purpose of this Manual

Thank you for purchasing an OP-440 OptiMate panel. This User Manual shows you how to install, configure, and program the OP-440. Also included are application examples. Be sure to keep this manual handy for reference when you run into questions. If you understand PLC systems and operator interface units, this manual will provide all the information that you need to get and keep your panel up and running.



Supplemental Manuals

Reference the appropriate PLC/CPU user manuals for the commands and address references required for your system. If you are using a ***Direct***LOGIC PLC product, you will want to keep the ***Direct***SOFT User Manual handy while programming your system. For *other* PLC brands you must reference their user manuals to properly program the ladder logic required to operate the OP-440.



Technical Support

We realize that even though we strive to be the best, we may have arranged our information in such a way that you cannot find what you are looking for. First, check these resources for help in locating the information:

- **Table of Contents** – chapter and section listing of contents, in the front of this manual
- **Quick Guide to Contents** – chapter summary listing on the next page
- **Appendices** – reference material for key topics, near the end of this manual

You can also check our online resources for the latest product support information:

- **Internet** – find us at **http://www.automationdirect.com**

If you still need assistance, please call us at 770-844-4200. Our technical support group will be glad to work with you in answering your questions. They are available Monday through Friday from 9:00 A.M. to 6:00 P.M. Eastern Standard Time. If you have a comment or question about any of our products, services, or manuals, please fill out and return the 'Suggestions' card that was shipped with this manual.

Chapters The main contents of this manual are organized into the following five chapters:

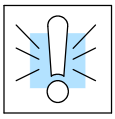
1	**Getting Started**	Introduces the physical and functional characteristics. Discusses the 4 line LED display. Also provides introduction to planning your system.
2	**Installation and Specifications**	Shows how to prepare for system installation, including specifications and mounting instructions. Includes connecting cables part numbers and specifications.
3	**Understanding the Features**	Explains the features and functions of the OP-440. Teaches concept of how data is exchanged between the panel and the PLC.
4	**Configuring the Operator Panel**	Shows how to use the OP-WINEDIT configuration software to configure your panel. Shows how to load the software on your personal computer, call up the screens you will need and how to download the configuration program to your panel.
5	**Programming Examples**	Provides example programs for using the standard functions and features. These examples include ladder logic for implementing messages using ***Direct***LOGIC compatibles and Allen-Bradley SLC 5/03, 5/04 and Micrologix CPUs. Also includes troubleshooting information.

Appendices Additional reference information is in the following appendices:

A	**Worksheets**	Has worksheets that you can use to help setup your OP-panel.

Conventions Used

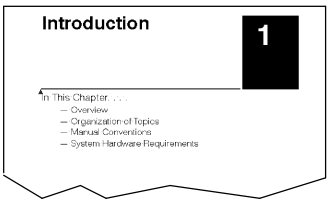
When you see the “notepad” icon in the left-hand margin, the paragraph to its immediate right will be a **special note**.
The word **NOTE:** in boldface will mark the beginning of the text.



When you see the “exclamation mark” icon in the left-hand margin, the paragraph to its immediate right will be a **warning**. This information could prevent injury, loss of property, or even death (in extreme cases).
The word **WARNING:** in boldface will mark the beginning of the text.

Key Topics for Each Chapter

The beginning of each chapter will list the key topics that can be found in that chapter.

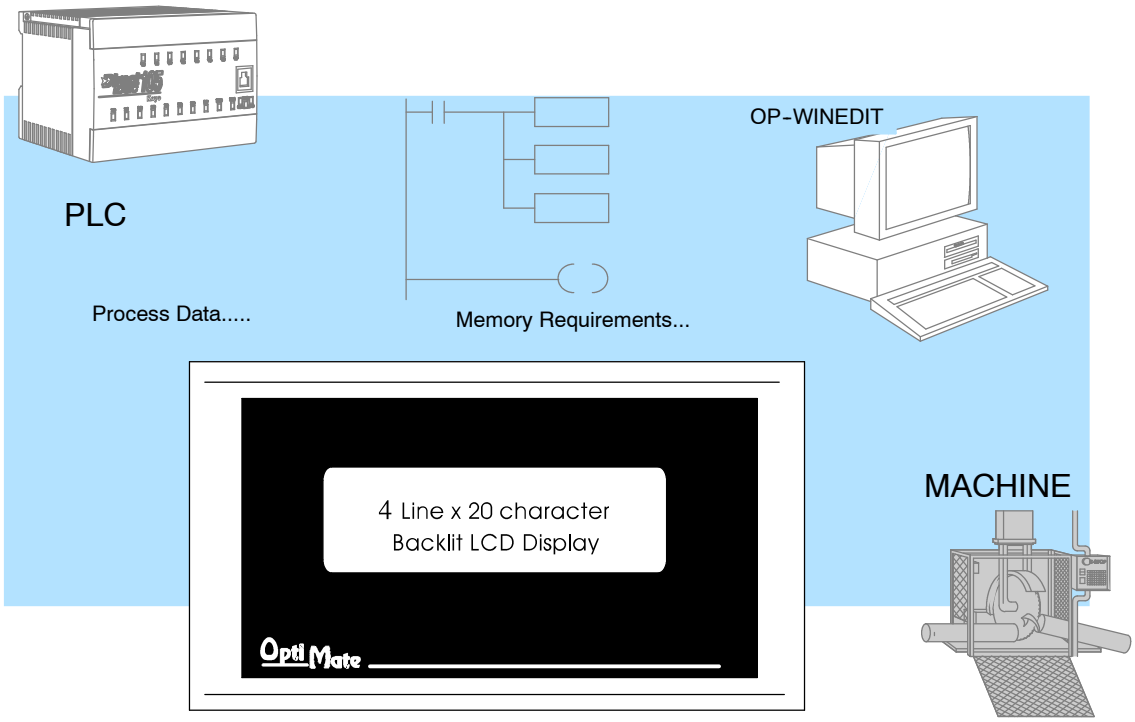


OP-440 Overview

Plan your System

Let's look at the OP-440 operator panel and its individually supported features. As you continue through this manual, try to relate the examples to your Operator Panel application. The application worksheets located in Appendix A will be helpful during the design and configuration of your system.

It is important to read and understand all topics discussed before installing, configuring and programming your application. You should plan your system with all operator interface requirements in mind.

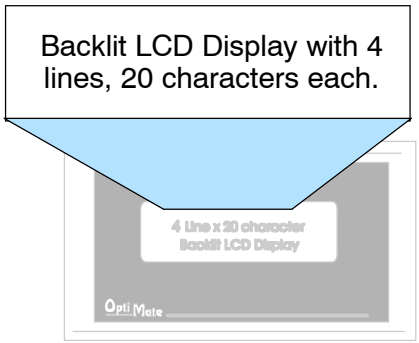


General Panel Information

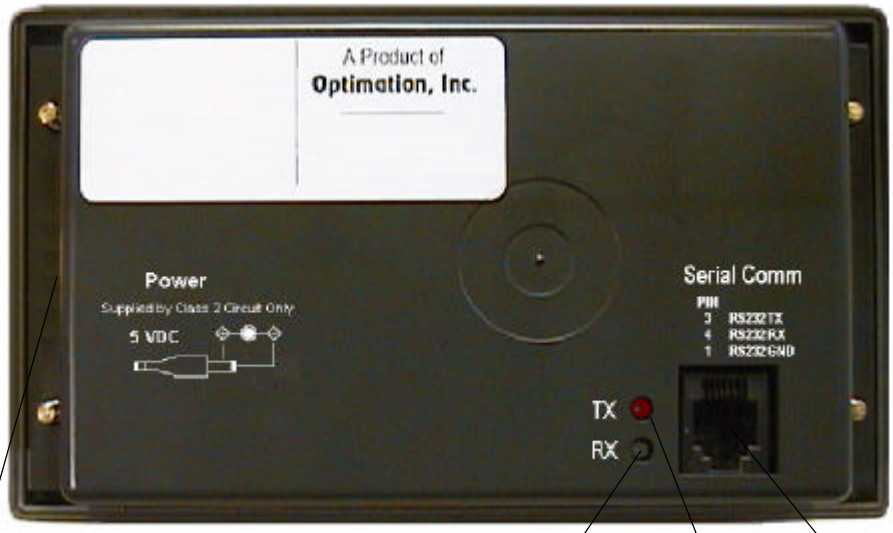
The OP-440 operator panel provides a man-machine interface to your PLC automation system. This panel is *not* designed for applications which demand operator data entry. The panel communicates with your PLC using RS-232 serial communication. Details on configuration software and programming your operator panel are covered in later chapters. *All OP400 series panels can only be used in a stand alone fashion (one panel can be used with each CPU RS232 port). They cannot be used in multi-panel applications.*

LCD Display Window

The OP-440 features an LCD display window to display user-defined messages. Up to 160 messages may be configured and stored in the operator panel using OP-WINEDIT configuration software. The PLC logic program controls which messages are displayed. Details on how to enter and use messages are covered in later chapters.



Back-Panel Layout The back side of the OP-440 contains a serial communications port with transmit (TX) and receive (RX) LEDs and a power receptacle.



Serial Communications Port The serial communications port is a 6-pin RJ12 connector, which supports RS-232 interface wiring. This port is used for communications between the OP-panel and PLC, as well as for programming your panel configurations.

The OP-440 can also draw +5VDC input power through this port through the communications cable when using a DL05, DL105, DL205 or DL405 PLC. In this case, the OP-PS400 power supply is only needed for configuration.

Power Receptacle The center-negative connector is located on the side of the panel, and is used to connect the OP-PS400 power supply.

Frequently Asked Questions

Q. What is required to get started using the OP-440 in my application?

A. You must read this manual and understand the OP-panel requirements and application concepts. You must have programming knowledge for the PLC product you're using, the PLC serial communications capabilities which are available, as well as hook-up and connecting cable data.

Q. How do I configure the OP-440 operator panel?

A. Using the OP-WINEDIT configuration software available from ***Automationdirect.*** This software allows you to configure the OP-panels in a Microsoft Windows™ environment. You may configure your programs offline, upload, and/or download them to your OptiMate panel. The OP-WINEDIT software is provided with installation documentation and Help screens.

NOTE: OP-WINEDIT version 2.3 or later is required when using OP400 series panels.

Q. Can the OP-440 be used with other PLC products?

A. Yes. The OP400 units do support Allen-Bradley SLC 5/03, SLC 5/04, and Micrologix.

Q. Can I connect more than one OP-440 panel to one PLC/CPU?

A. Yes, but only if the CPU has more than one communications port. OP400 series panels can only be used in a stand alone fashion; that is, one panel can be used with one CPU port. OP600 and OP1000 series panels can be used in multiple panel applications (even if the CPU has only a single communications port) with an OP-9001 communications panel.

Q. What are the power supply requirements for the OP-440?

A. The OP400 series panels require 5 VDC input power. A 5 VDC external power supply that plugs into a standard 120 VAC receptacle is available (part no. OP-PS400). This power supply (or equivalent, but it **must have** a center negative power jack) is required for configuring your panel. It is also required for operation **unless** you are using a DL05, DL105, DL205 or DL405 PLC; these products supply 5 VDC through the communications cable. All other PLCs, including DL305 CPUs, require the use of an external 5 VDC power supply.

Q. Will the OP-panels support graphics, animation, or color operator display screens?

A. No, the OP-panels which support display capabilities allow numeric data display, and some panels will also allow text message display.

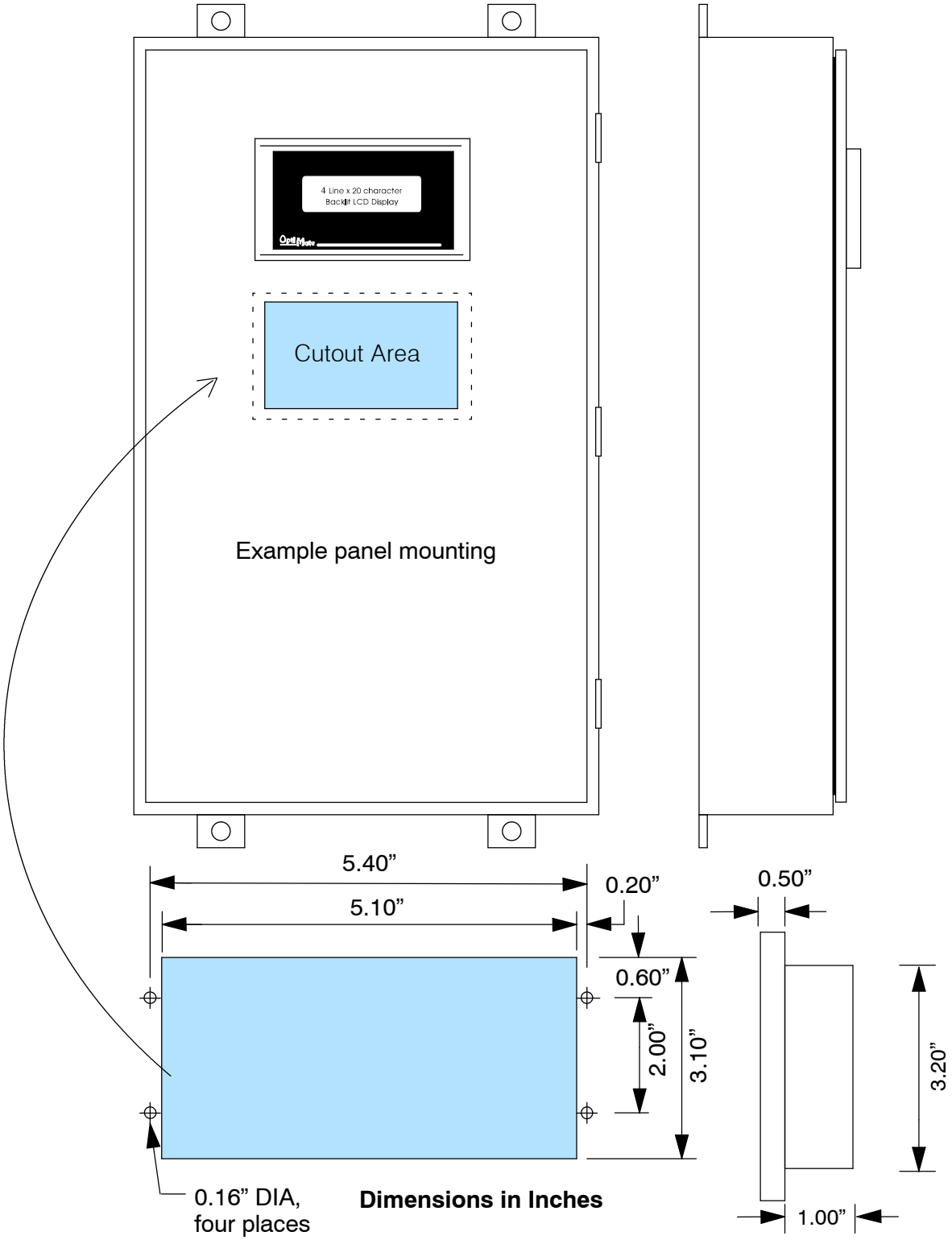
2

Installation and Specifications

In This Chapter. . . .

- Dimensions for Mounting
- Panel Specifications
- Power Supply Connections
- Connecting the Configuration Cable
- Selecting a Communications Cable
- Communications Cable Details

Dimensions for Mounting



Panel Specifications

Physical Specifications

Weight	8 ounces
Panel Fasteners	Four 6x32 threaded studs
LED Display	4 line x 20 character STN with LED backlight; 4.75mm high x 2.95mm wide character size
NEMA Rating	NEMA 4 (when properly installed)

Environmental Specifications

Operating Temperature	32°F to 122°F (0°C to 50°C)
Storage Temperature	-4°F to 158°F (-20°C to 70°C)
Operating Humidity	95% (non-condensing)
Air Composition	No corrosive gases permitted

Operating Specifications

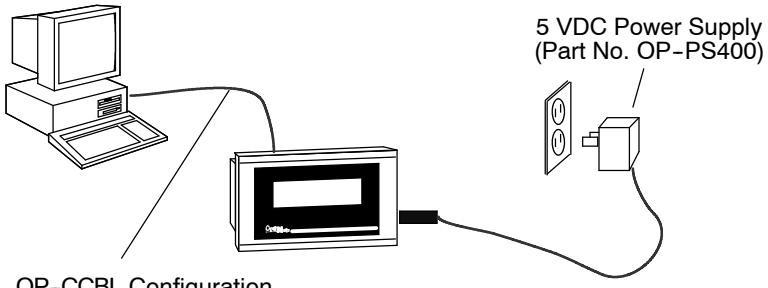
Power Consumption	0.75W @ 5 VDC (Power On surge of 0.44A for 1 ms)
Power Connector	Three terminal DC power plug, center negative
Power Supply	+5 VDC external power supply required for configuration on all panels; required for operation on all PLCs **except** DL05, DL105, DL205, and DL405
Minimum/Maximum Supply Voltage	+5 VDC only
Diagnostics	LED Status
Communication Link	RS-232 4800 to19200 baud 6-pin RJ12 phone jack type connector

Power Supply Connections

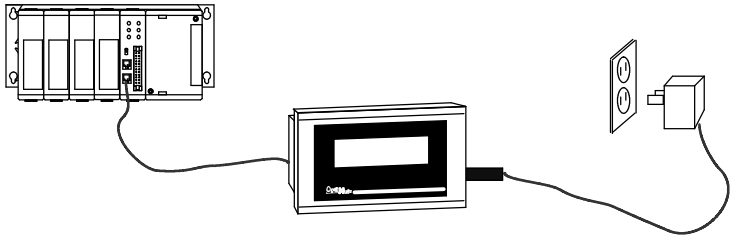
OP400 series panels require +5 VDC input power. An optional 5 VDC external power supply that plugs into a standard 120 VAC receptacle is available (part no. OP-PS400). This power supply (or equivalent) is required for configuring your panel. The power supply is also required for operation **unless** you are using a DL05, DL105, DL205 or DL405 PLC (these products supply 5VDC through the communications cable). All other PLCs, including DL305 and Allen-Bradley 5/03, 5/04 and Micrologix, require the use of an external 5VDC power supply during operation.

NOTE: Only use a 5 VDC power supply that has a **center negative** DC power jack.

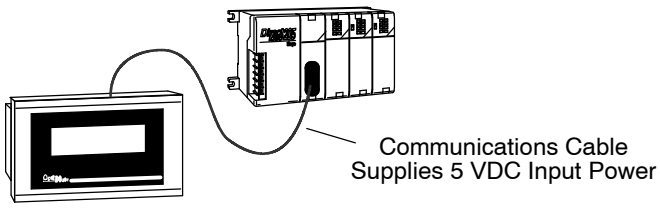
Configuration: 5 VDC Power Supply Required For **All** 400 series panels



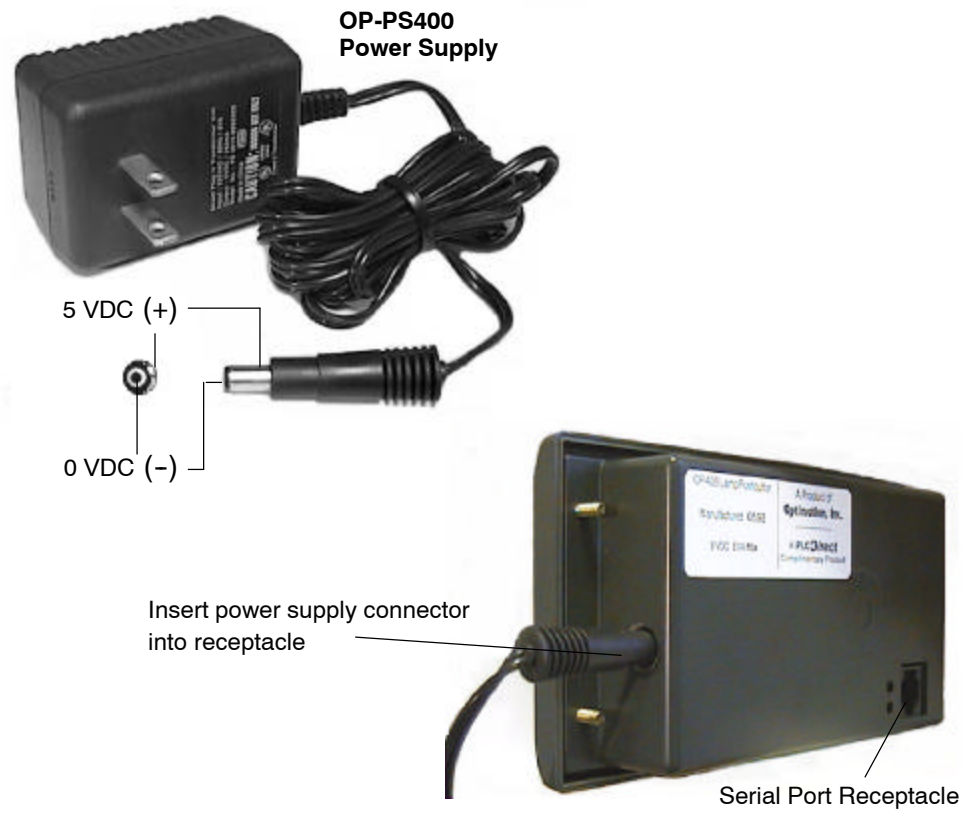
Operation Using a D3-330 w/DCU, D3-340, D3-350, bottom port of DL405, or Allen-Bradley CPU: 5 VDC Power Supply Required



Operation Using a DL05, DL105, DL205, or top port of DL405 CPU:
5 VDC Power Supply Not Required



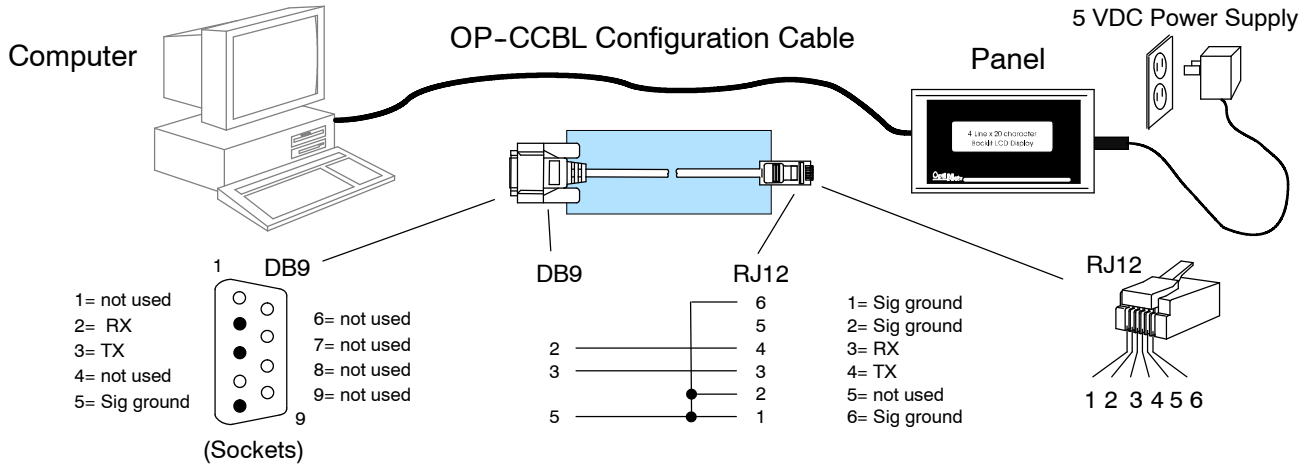
Power Supply Connections



Connecting the Configuration Cable

Configuration Cable

You will need two cables to use your OP-panel: A configuration cable (part number OP-CCBL) and a communications cable. Connect the configuration cable between the serial port on the rear of the OP-panel and the serial port of the personal computer. The panel may then be configured using the OP-WINEDIT configuration software. The figure below shows configuration cable connectors and wiring specifications. The wiring diagram refers to the cable connectors, *not* the communication ports. This cable is disconnected after configuration.



Selecting a Communications Cable

After configuration, connect the communications cable between the OP-panel and the PLC. Use the following table to select the proper communications cable.

Cables for OP400 Series OptiMate Panel-to-PLC Connections			
Family	**CPU (or other device)**	**Port**	**Cable**
DirectLOGIC™ DL05	D0-05xx	Ports 1 and 2	OP-2CBL-2
DirectLOGIC™ DL105	F1-130	Only one	OP-2CBL-2
DirectLOGIC™ DL205	D2-230	Only one	OP-2CBL-2
	D2-240	Top port	OP-2CBL-2
		Bottom port	OP-2CBL-2
	D2-250	Top port	OP-2CBL-2
		Bottom port	* (see note below)
	D2-DCM (module)	Only port	* (see note below)
DirectLOGIC™ DL305	D3-330	Requires DCU	* (see note below)
	D3-330P	Requires DCU	* (see note below)
	D3-340	Top port	OP-3CBL-1
		Bottom port	OP-3CBL-1
	D3-350	Top port	OP-2CBL-2
		Bottom port	* (see note below)
DirectLOGIC™ DL405	D4-430	Top port (15-pin)	OP-4CBL-3
		Bottom port (25-pin)	* (see note below)
	D4-440	Top port	OP-4CBL-3
		Bottom port	* (see note below)
	D4-450	Phone Jack	OP-2CBL-2
		Top port (15-pin)	OP-4CBL-3
		Bottom port (25-pin)	* (see note below)
	D4-DCM (module)	Only port	* (see note below)
	Slice I/O panels	Only one	OP-4CBL-3
TI305™ / SIMATIC® TI305™	325-07, PPX:325-07	Requires DCU	* (see note below)
	330-37, PPX:330-37	Requires DCU	* (see note below)
	325S-07 (or 325 w/ Stage Kt)	Requires DCU	* (see note below)
	330S-37, PPX:330S-37	Requires DCU	* (see note below)
	335-37, PPX:335-37	Phone Jacks	OP-3CBL-1
		If DCU is used	* (see note below)
TI405™ / SIMATIC® TI405™	425-CPU, PPX:425-CPU	Only one	OP-4CBL-3
	PPX:430-CPU	Top port (15-pin)	OP-4CBL-3
		Bottom port (25-pin)	* (see note below)
	435-CPU, PPX:435-CPU	Top port (15-pin)	OP-4CBL-3
		Bottom port (25-pin)	* (see note below)
	Smart Slice™ I/O panels	Only one	OP-4CBL-3
Allen-Bradley™ SLC 500	5/03, 5/04	Bottom port	OP-ACBL-3
Allen-Bradley	MicroLogix	Only one	OP-ACBL-4

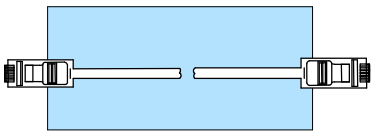
* **Note:** Pre-assembled cables for connecting to these ports are not supplied by **Automationdirect.com**; however, you can use the cable pinout diagrams in the following section to make your own cables.

Communications Cable Details

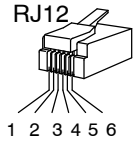
The drawings on this page are for cables which **are** supplied by **Automationdirect.com**. Use this page if you need to make your own cables. We recommend using 22 AWG shielded cable.

OP400 Series Communications Cables

OP-2CBL-2
(DL05, DL105, DL205, D3-350, D4-450)

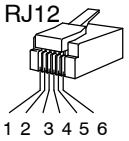


1= Sig ground
2= 5 VDC
3= RX
4= TX
5= not used
6= Sig ground



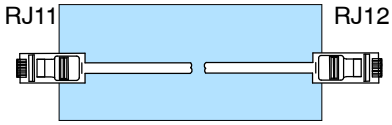
RJ12 (PLC)	RJ12 (Panel)
1	6
2	5
3	4
4	3

Panel Connection

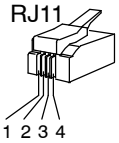


1= Sig ground
2= not used
3= RX
4= TX
5= 5 VDC
6= Sig ground

OP-3CBL-1 (D3-340)

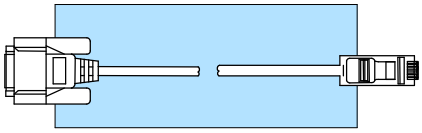


1= RX
2= TX
3= not used
4= Sig ground



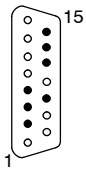
RJ11 (PLC)	RJ12 (Panel)
1	4
2	3
4	1

OP-4CBL-3 (DL405)



DB15

8= not used
7= not used
6= not used
5= not used
4= Sig ground
3= RX
2= TX
1= not used

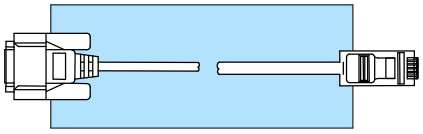


(Pins)

15=Sig ground
14= Sig ground
13=Sig ground
12= not used
11= 5 VDC
10= not used
9= not used

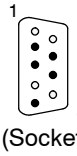
DB15 (PLC)	RJ12 (Panel)
2	3
3	4
11	5
4	1
13	6
14	
15	

OP-ACBL-3
(Allen-Bradley)



DB9

1= not used
2= RX
3= TX
4= not used
5= Sig ground



(Sockets)

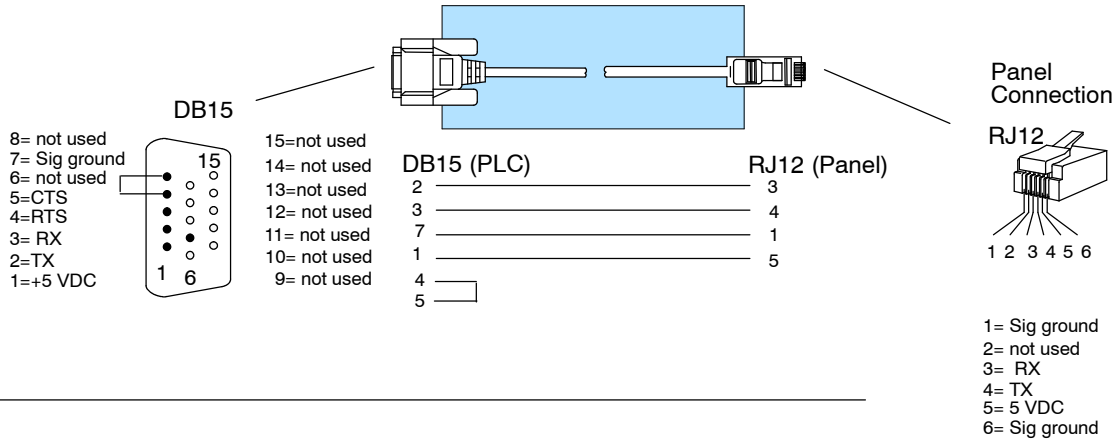
6= not used
7= RTS
8= CTS
9= not used

DB9 (PLC)	RJ12 (Panel)
2	4
3	3
5	1
7	6
8	

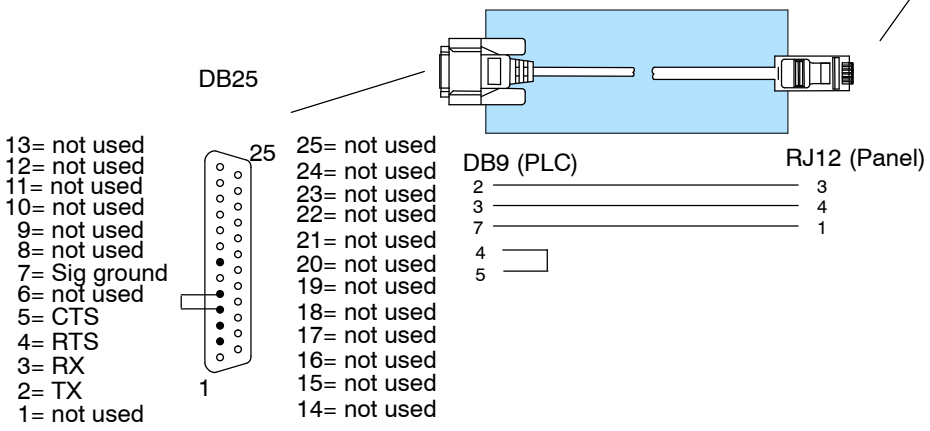
The drawings on this page are for cables which **are not** supplied by **Automationdirect.com**. Use the drawings to make your own cable. We recommend using a 22 AWG or larger shielded cable.

OP400 Series Communications Cables (continued)

Make this cable for use with D2-250 15-pin bottom port.



Make this cable for use with D3-330 w/DCU, D3-350, DL405 bottom ports, and all DCM modules (25-pin ports).



3

Understanding the Features

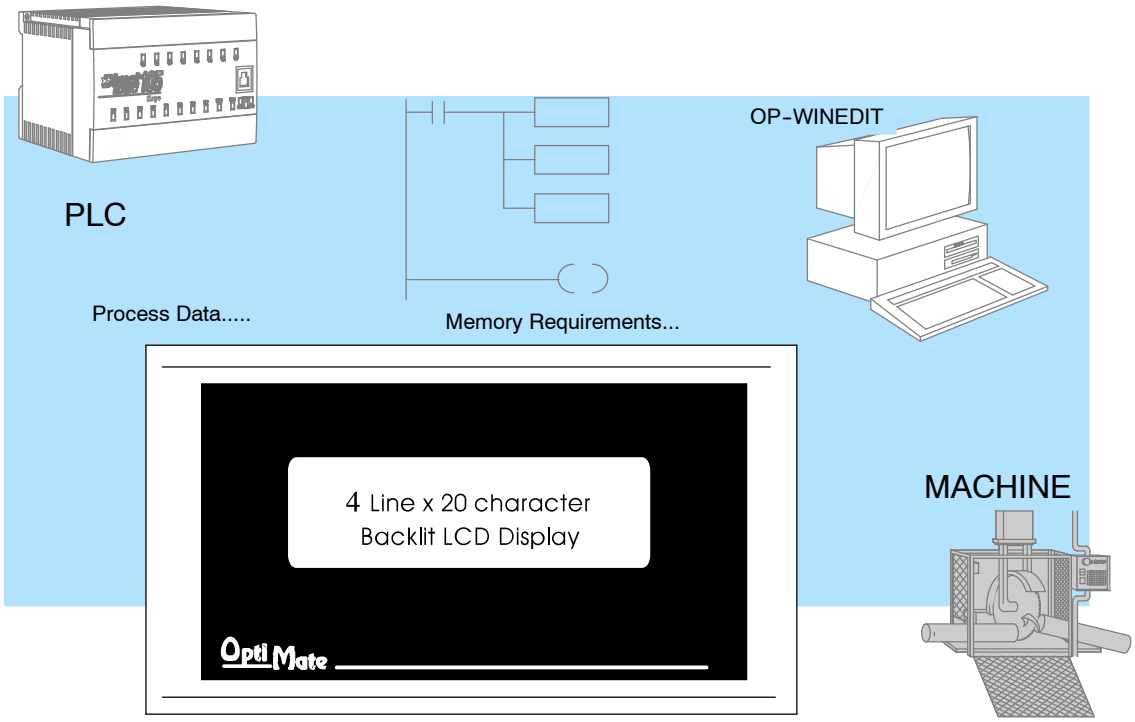
In This Chapter. . . .

- Learning the Features
- PLC Registers
- Messages
- Displaying Messages
- Memory Mapping Process
- *Direct*LOGIC User Memory Overview

Learning the Features

In this section, the subject of how to use the OP-440 features is described. The details for using messages are covered. We recommend that you study this chapter before attempting to configure and use the OP-panel. As you proceed through this chapter, relate the topics discussed with how your operator panel may be implemented. The concepts discussed in this chapter are applicable to all PLCs.

- PLC Registers
- Message Operations
- User Memory Overview



PLC Registers

Register Overview The OP400 panels communicate to the PLC through user defined PLC data registers. The starting or "Base" register is assigned during panel configuration and automatically occupies 12 consecutive 16-bit data registers. In this manual the registers are identified as M+0, M+1, M+2, thru M+11.

OP-440 Panel PLC Register Map

PLC Register	Register Function
M+0	Top line message selection
M+1	Second line message selection
M+2	Third line message selection
M+3	Bottom line message selection
M+4	Top line data
M+5	Top line data 2 (for long BCD and floating point numbers)
M+6	Second line data
M+7	Second line data 2 (for long BCD and floating point numbers)
M+8	Third line data
M+9	Third line data 2 (for long BCD and floating point numbers)
M+10	Bottom line data
M+11	Bottom line data 2 (for long BCD and floating point numbers)

Register Definition The following describes the function of each of the registers shown in the table.

- **Register M+0** – When a number from 1 to 160 is placed in this register, the predefined message associated with that number will be displayed on the **top** line of the LCD display.
- **Register M+1** – When a number from 1 to 160 is placed in this register, the predefined message associated with that number will be displayed on the **second** line of the LCD display.
- **Register M+2** – When a number from 1 to 160 is placed in this register, the predefined message associated with that number will be displayed on the **third** line of the LCD display.
- **Register M+3** – When a number from 1 to 160 is placed in this register, the predefined message associated with that number will be displayed on the **bottom** line of the LCD display.
- **Register M+4** – This contains numeric data associated with the **top** line display (this is described in more detail later).
- **Register M+5** – **Top** line, this is used for long BCD and floating point data only.
- **Register M+6** – This contains numeric data associated with the **second** line display (this is described in more detail later).
- **Register M+7** – **Second** line, this is used for long BCD and floating point data only.
- **Register M+8** – This contains numeric data associated with the **third** line display (this is described in more detail later).
- **Register M+9** – **Third** line, this is used for long BCD and floating point data only.
- **Register M+10** – This contains numeric data associated with the **bottom** line display (this is described in more detail later).
- **Register M+11** – **Bottom** line, this is used for long BCD and floating point data only.

Messages

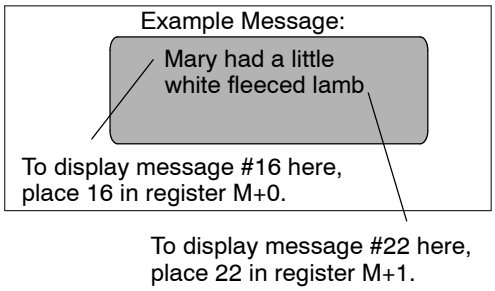
Displaying Messages on the LCD Screen

Through the OP-WINEDIT software, up to 160 predefined messages can be entered and stored in the OP-440. These messages can be 20 characters long and can include a field for the display of numeric data.

Any predefined message can be displayed on any of the four message lines. The messages entered during configuration are numbered 1 thru 160. To display a particular predefined message on the display, simply place that message's number in the message selection register.

For example, let's assume that we have defined message #16 as "Mary had a little" and message #22 as "white fleeced lamb". If we wanted to put these two lines on the top and second lines respectively, we would simply need to put the number 16 in register M+0 and 22 in register M+1.

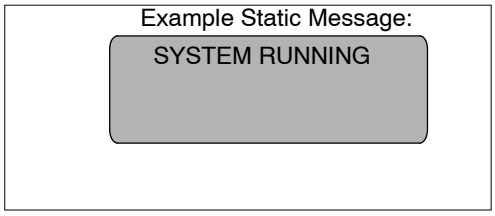
If any number other than 1 thru 160 is placed in a message selection register, the associated line will not change.



There are two types of messages which may be displayed on this panel, **Static** and **Dynamic** messages.

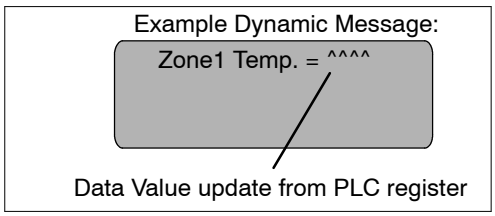
Static Messages

Static messages are text displays which have *no* embedded data. The static messages may be displayed when an event or condition becomes true. You enter the messages during configuration.



Dynamic Messages

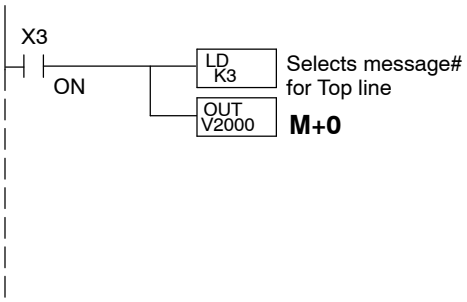
Dynamic messages are text messages which include embedded data. These messages are used to present the operator with important PLC data. This data is information which helps the operator closely monitor and control the machine or process.



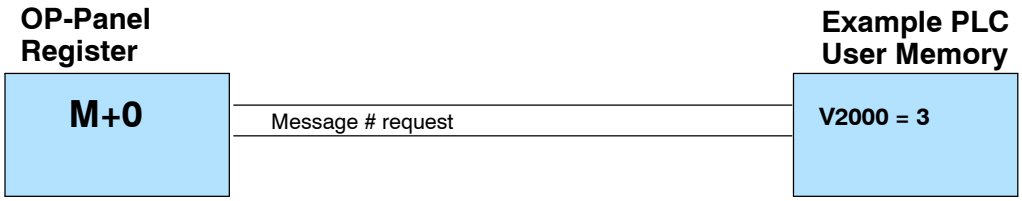
Displaying Messages

The logic required to display the configured message is quite simple. Simply put the message number (1–160) in the memory location that corresponds to the line on which you want the message displayed. The figure below demonstrates an example of a Static message.

Static Message Operation



In this example, if the PLC's input signal X3 is ON, the 16 bit integer (K3) value is placed in Word register V2000 (M+0), selecting message #3 to be displayed on the top line.



Static Display

Description

All supported CPUs use the first OP-panel register for displaying a top line static message.

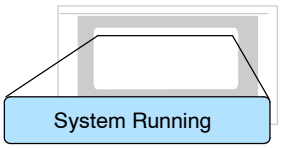
Your ladder logic program must sequence the message being displayed by placing an integer value (1–160) in register M+0. For second line static messages use register M+1 for message selection. Use M+2 for third line static messages and M+3 for bottom line static messages.

The OP-panel operating system automatically updates the latest messages according to values placed in the highlighted registers.

Top Line Static Message

Register	Value	Function
M+0	**3**	Top line message selection
M+1		Second line message selection
M+2		Third line message selection
M+3		Bottom line message selection
M+4		Top line data
M+5		Top line data 2
M+6		Second line data
M+7		Second line data 2
M+8		Third line data
M+9		Third line data 2
M+10		Bottom line data
M+11		Bottom line data 2

Example Message #3



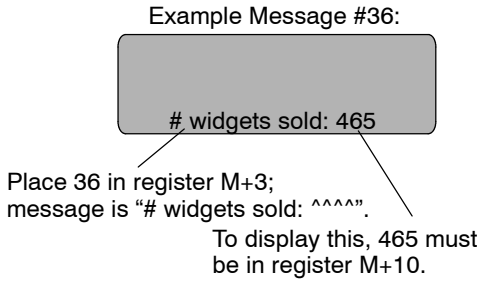
Dynamic Message Operation

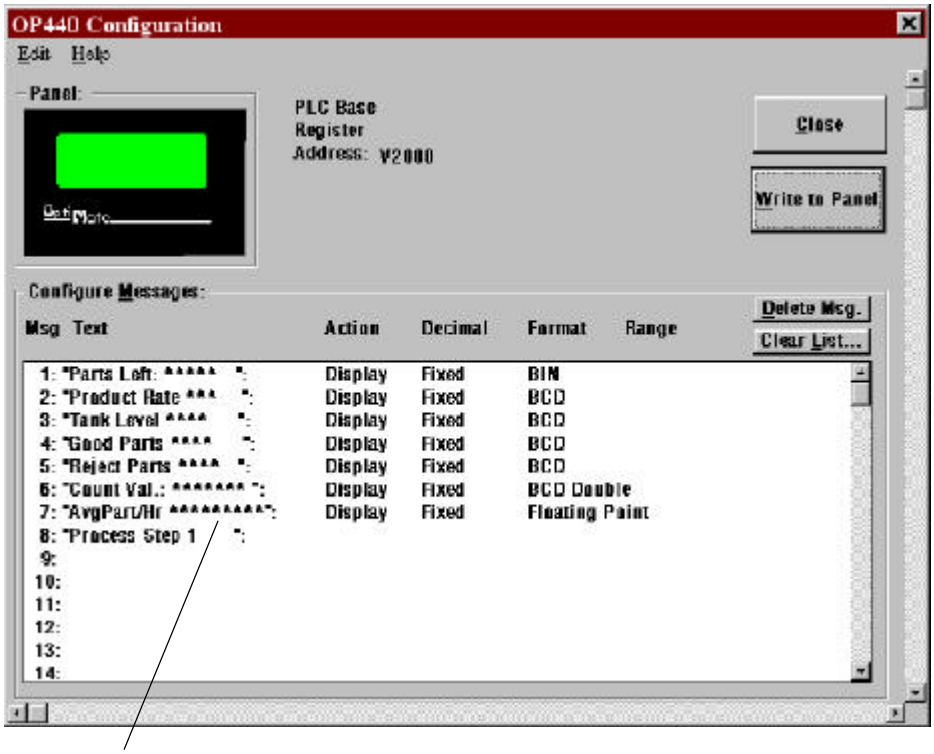
You may program message numbers 1–160 to be used as dynamic messages. One numeric field per line is allowed. Dynamic messages may be displayed on any of the display lines. The maximum number of digits which may be displayed is five if binary data format is used or eight if BCD is used when using a single 16-bit register. The largest number that can be displayed is 99,999,999 when using 32-bit format, and this must be done using BCD. The figure below shows an OP-WINEDIT screen for programming dynamic messages.

Enter the message text and place the caret (^) symbol(s) depending on the number of digits you would like to display. The value range which may be displayed is 0–65,535 integer or 0–99999999 BCD. Choose binary, BCD, or BCD double format and fixed point decimal placement. When choosing the data format for ***Direct***Logic PLCs use BCD format, and with Allen-Bradley PLCs use binary.

For dynamic messages which require fixed decimal point placement within the value, you must use the OP-WINEDIT to perform parameter placement type. For fixed position decimal points you must enter the decimal directly into the message text, such as Zone1 Temp = ^^**.**^^.

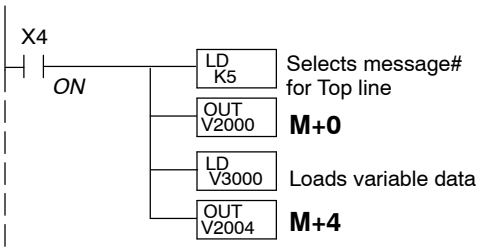
For example, let's say message #36 is "# widgets sold: ^^^". Let's also say that 465 widgets have been sold today. To display the current number of widgets sold on the bottom line of the display, you would place 36 in register M+3 and 465 in register M+10. The bottom line would then display: "# widgets sold: 465".



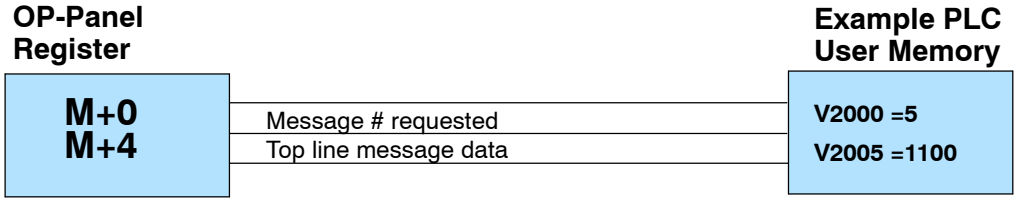


Examples of dynamic messages. Notice the caret (^) symbols, which is where data will be when the message is displayed.

Dynamic Message Top Line

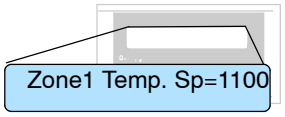


In this example, if the PLC's input signal X4 is ON, the 16 bit integer (K5) value is placed in Word register V2000 (M+0) selecting message #5 to be displayed on the top line. The data value in register V3000 (let's say 1100) is moved into V2004 (M+4), which is embedded in the top line message. The top line data value will update as long as X4 is enabled (ON).



Remember, your ladder logic program must select the message being displayed by placing an integer value between 1 and 160 (message #) in register M+0. The embedded data for the top line message is controlled by loading a 16 bit value into register M+4.

Example Message #5

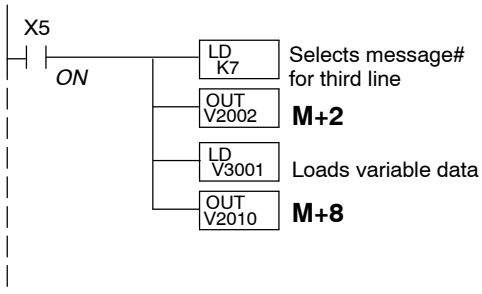


The highlighted registers M+0 and M+4 in this figure result in displaying this top-line dynamic message.

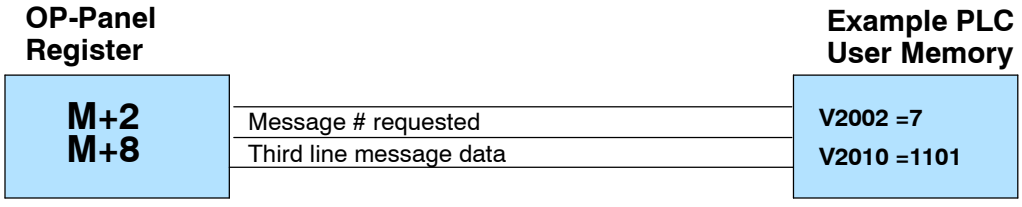
Top Line Dynamic Message

Register	Value	Function
M+0	**5**	Top line message selection
M+1		Second line message selection
M+2		Third line message selection
M+3		Bottom line message selection
M+4	**1100**	Top line data
M+5		Top line data 2
M+6		Second line data
M+7		Second line data 2
M+8		Third line data
M+9		Third line data 2
M+10		Bottom line data
M+11		Bottom line data 2

Dynamic Message Third Line

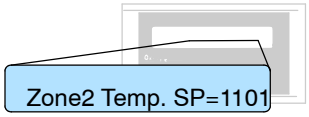


In this example, if the PLC's X5 input signal is ON, the 16 bit integer (K7) value is placed in Word register V2002 (M+2) requesting message #7 to be displayed on the third line. The data value in register V3001 (let's say 1101) is moved into V2010 (M+8), which is embedded in the third line message. The third line data value will update as long as X5 is enabled (ON).



Remember, your ladder logic program must select the third line message being displayed by placing an integer value between 1 and 160 (message #) in register M+2.

Example Message #7



The highlighted registers shown in this figure results in displaying this third-line dynamic message.

Third Line Dynamic Message

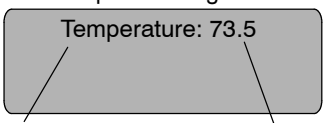
Register	Value	Function
M+0		Top line message selection
M+1		Second line message selection
M+2	**7**	Third line message selection
M+3		Bottom line message selection
M+4		Top line data
M+5		Top line data 2
M+6		Second line data
M+7		Second line data 2
M+8	**1101**	Third line data
M+9		Third line data 2
M+10		Bottom line data
M+11		Bottom line data 2

Displaying Data With a Decimal Point

The OP-440 panel allows you to display fixed point numbers, which are numeric values that have a known decimal point placement and are simply handled as integer values within the PLC program. The only time you see an actual decimal point is on the LCD display. An example of a fixed point number is a program that uses temperature as a control variable, and within the program all temperatures are scaled in tenths of a degree. The values are integer, so a temperature of 73.5 degrees would be 735 in a data register. For the convenience of the operator, you would want the LCD display to include the decimal.

Fixed point numbers are handled by simply placing a decimal point or period in the message field during configuration. For example, let's say you want to display the message "Temperature: 73.5" on the top line, and the message is #47. Enter message #47 as "Temperature:^^^.^" during configuration.

Example Message #47:



Place 47 in register M+0;
message is "Temperature: ^^^.^"

To display this, 735 must be in register M+4.

Displaying BCD and Binary Numbers

Normally, numeric values to be displayed are values contained in one 16-bit register. One 16-bit register will handle values between 0 and 65535 in binary form, or between 0 and 9999 in BCD form. For these type numbers, register M+4 is used for the numeric value for the top line, M+6 for the second line, M+8 for the third line, and M+10 is used for the bottom line.

BCD and Binary Numbers Display

Register	Value	Function
M+0		Top line message selection
M+1		Second line message selection
M+2		Third line message selection
M+3		Bottom line message selection
M+4		Top line data
M+5		Top line data 2
M+6		Second line data
M+7		Second line data 2
M+8		Third line data
M+9		Third line data 2
M+10		Bottom line data
M+11		Bottom line data 2

Displaying BCD Double Numbers

The OP-440 will handle large numeric numbers. If you select the option **BCD Double** when the display message is being defined, your display can handle numbers between 0 and 99,999,999. The panel will use data in the register pair M+4 and M+5 for the top line, M+6 and M+7 for the second line, M+8 and M+9 for the third line, and use M+10 and M+11 for the bottom line. **The data must be in BCD.**

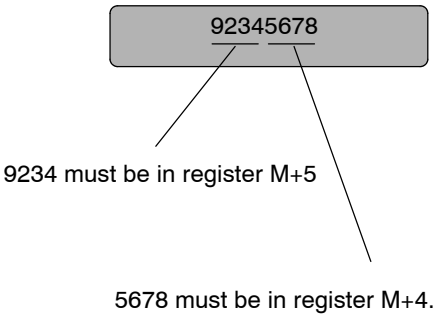
BCD Double Numbers Display

Register	Value	Function
M+0		Top line message selection
M+1		Second line message selection
M+2		Third line message selection
M+3		Bottom line message selection
M+4		Top line data
M+5		Top line data 2
M+6		Second line data
M+7		Second line data 2
M+8		Third line data
M+9		Third line data 2
M+10		Bottom line data
M+11		Bottom line data 2

When placing a BCD double number in the display registers, the first register numerically in the sequence of two registers (M+4, M+6, M+8 or M+10) will contain the four least significant digits of the number. The second register in the sequence (M+5, M+7, M+9 or M+11) contains the data for the four most significant digits of the BCD double number.

For example, to display the number 92345678 on the top line of the display, the top line data registers, M+4 and M+5, must contain 5678 and 9234 respectively.

Example: BCD Double



Displaying Floating Point Numbers

The OP-440 has the capability to display Floating Point (or Real) numbers if you select the option **Float** when the display message is being defined in the OP-WINEDIT software.

Floating point numbers can only be used with the D2-250, D3-350, and D4-450 CPUs since they are the only compatible CPUs that support the IEEE 32-bit floating point number format, which is where the floating point numbers are stored. They always occupy two 16-bit register locations regardless of the size of the number. See the PLC User Manual for more information on the IEEE 32-bit floating point number format.

An IEEE 32-bit floating point number has a range of -3.402823E+38 to +3.402823E+38. The OP-440 will be able to display any number within that range. The panel always uses the format ±X.XXE±XX to display the numbers.

The panel does not have the ability to display all the significant digits of a floating point number, it only displays the first three significant digits. The OP-440 truncates the remaining digits so you always see the true number. The two examples below show the data contained in the PLC registers and the corresponding value displayed on the panel in its format. Notice how the data is truncated.

The configuration of a floating point number message is similar to any other message. First, you select the message number, then you type in the text using nine caret symbols (^) as a place holder for each of the nine floating point number symbols. Next, select the **Float** option for the data format.

Example: Floating Point Numbers

PLC Registers	OP-440 Display
12301.789	+123E+04
123.96783	+123E+02

Let's say you wanted to configure message #58 to display a floating point number. In the OP-WINEDIT software, select OP-440 as the module type, and then select message #58 with the mouse. Type in the following message: "Float Pt ^^^^^^^^^" and select floating point as the message format.

To display a number , simply move it into the desired display line data registers and load the appropriate message number into the corresponding line message selection register. For example, if you display the number 632.15 in message #58, it will be displayed as "Float Pt # +632E+02".

Memory Mapping Process

Each OP-440 is assigned 192 bits of PLC user memory which will be used as the OP-panel database. The ladder logic program must access this assigned OP-panel memory. Let's take a closer look at this user memory and how it relates to the OP-panel features.

OP Base Register Memory Definition

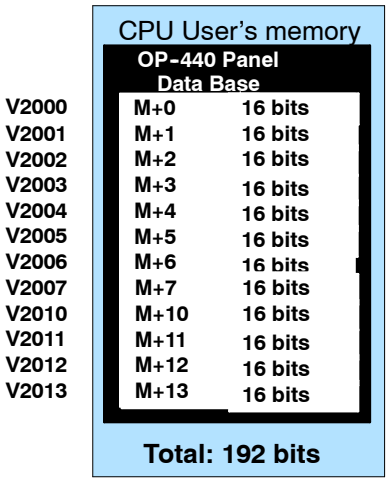
As discussed earlier, regardless of which PLC product you are using the base registers address M+0 through M+11 are formatted the same. In this manual, when the terms M+0 through M+11 are used, this identifies which base register(s) are affected for the topic being covered.

Base Address Manual Reference		Function Description
M+0	=	Top line message selection
M+1	=	Second line message selection
M+2	=	Third line message selection
M+3	=	Bottom line message selection
M+4	=	Top line data
M+5	=	Top line data 2
M+6	=	Second line data
M+7	=	Second line data 2
M+8	=	Third line data
M+9	=	Third line data 2
M+10	=	Bottom line data
M+11	=	Bottom line data 2

Operator Panel Base Memory

PLC user memory is assigned to each panel with the OP-WINEDIT configuration software. For new OP-panels and add-on applications, the programmer must define twelve 16 bit registers for PLC interface. Below is a figure showing memory layout for DL05, DL105, DL205, D3-350, and DL405 PLC's and uses V2000-V2013 for the OP-440 panel. See the next page for other PLC product memory usage examples.

You must reserve 192 bits (twelve 16-bit registers or twenty-four 8-bit registers) which are used to process data between the panel and your PLC. You must configure the **Base** register for the OP-panel. This base register address is stored in the OP-panel program.



OP-Panel User Memory

Let's examine the different address conventions for ***Direct***LOGIC and Allen-Bradley. For example, the ***Direct***LOGIC address references are **octal**, and the Allen-Bradley is **decimal**. The ***Direct***LOGIC DL05/DL105/DL205/D3-350/DL405 OP-panel address uses V-memory registers which are 16-bit registers. The DL305 family uses reference assignments with 8-bit registers. This means that the DL305 will require twenty-four 8 bit registers for data handling. The Allen-Bradley memory is defined with a reference **(Nx)** which represents the memory area and **(:n)** which defines the word within the memory area. Please refer to the appropriate CPU User manual for the PLC product you are using.

DirectLOGIC DL05/DL105/DL205/D3-350/DL405

Example Address		Function
V2000	**M+0**	Top line message selection
V2001	**M+1**	Second line message selection
V2002	**M+2**	Third line message selection
V2003	**M+3**	Bottom line message selection
V2004	**M+4**	Top line data
V2005	**M+5**	Top line data 2
V2006	**M+6**	Second line data
V2007	**M+7**	Second line data 2
V2010	**M+8**	Third line data
V2011	**M+9**	Third line data 2
V2012	**M+10**	Bottom line data
V2013	**M+11**	Bottom line data 2

DirectLOGIC DL305 (DL330 and DL340)

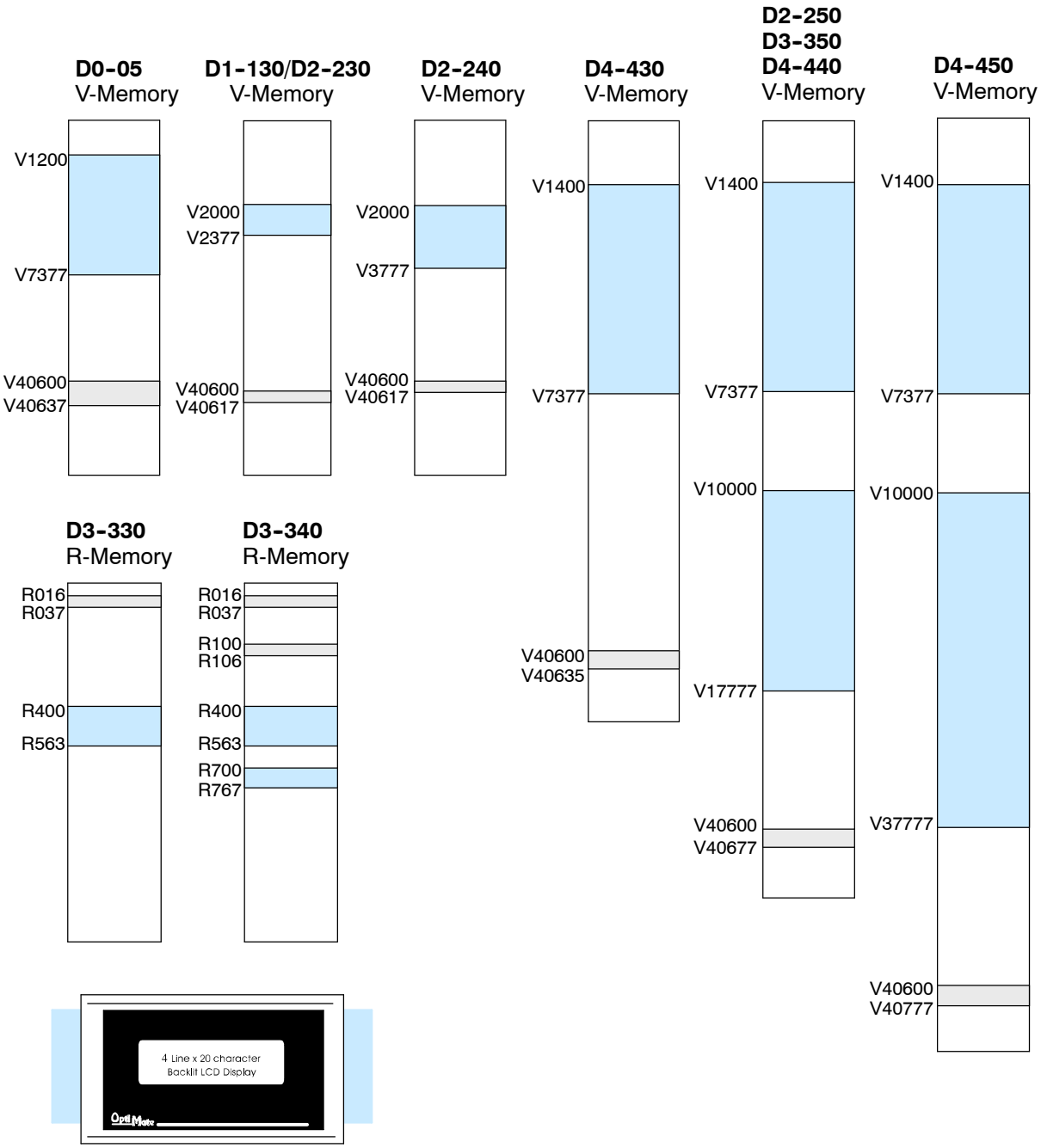
Example Address		Function
R400/R401	**M+0**	Top line message selection
R402/R403	**M+1**	Second line message selection
R404/R405	**M+2**	Third line message selection
R406/R407	**M+3**	Bottom line message selection
R410/R411	**M+4**	Top line data
R412/R413	**M+5**	Top line data 2
R414/R415	**M+6**	Second line data
R416/R417	**M+7**	Second line data 2
R420/R421	**M+8**	Third line data
R422/R423	**M+9**	Third line data 2
R424/R425	**M+10**	Bottom line data
R426/R427	**M+11**	Bottom line data 2

OP Panel User Memory (Cont.)

Allen-Bradley SLC 5/03, 5/04 and Micrologix

Example Address		Function
N7:0	**M+0**	Top line message selection
N7:1	**M+1**	Second line message selection
N7:2	**M+2**	Third line message selection
N7:3	**M+3**	Bottom line message selection
N7:4	**M+4**	Top line data
N7:5	**M+5**	Top line data 2
N7:6	**M+6**	Second line data
N7:7	**M+7**	Second line data 2
N7:8	**M+8**	Third line data
N7:9	**M+9**	Third line data 2
N7:10	**M+10**	Bottom line data
N7:11	**M+11**	Bottom line data 2

*Direct*LOGIC **User Memory Overview**



DirectLOGIC PLCs use octal addressing, as indicated by the shaded areas.

4

Configuring Your Operator Panel

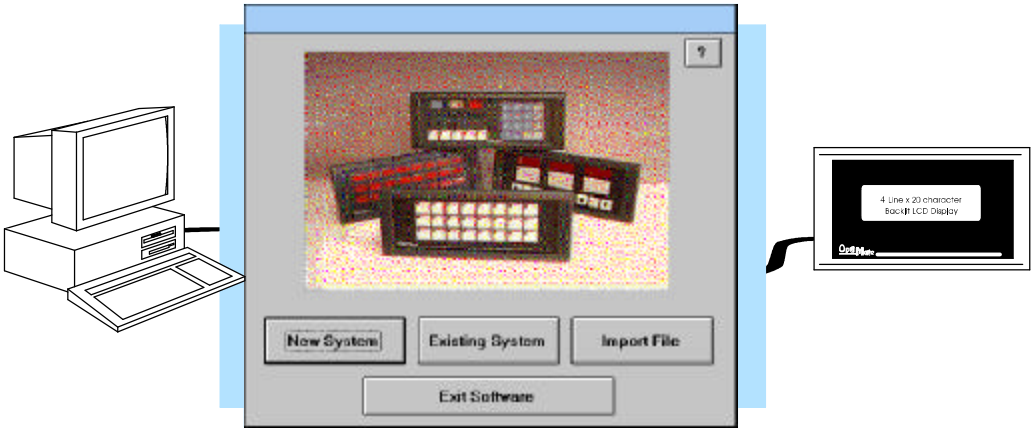
In This Chapter. . . .

— Preparing for Configuration
— How to Configure Your Panel

Preparing for Configuration

OP-WINEDIT Software

The OP-440 is configured with software running on a personal computer. This software is referred to as OP-WINEDIT configuration software.



More about OP-WINEDIT

The OP-WINEDIT configuration software allows you to configure OP-panel applications, as well as download (write to panel) and upload (read from panel) the configurations. Use this software to configure your communication link and enter operator display messages. Order the software from ***Automationdirect.com*** using part number OP-WINEDIT. The OP-440 panel requires version 2.3 or later.

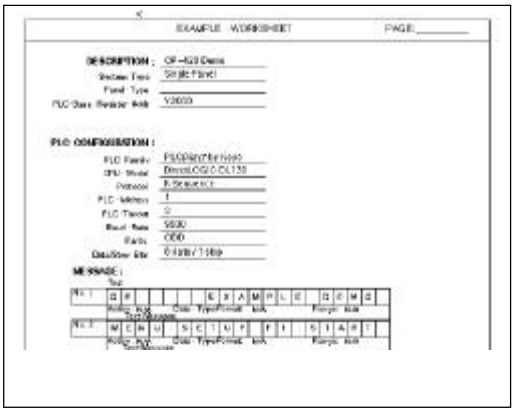
HELP Screens

The OP-WINEDIT software provides **Help** windows which supply instructions for performing all necessary configuration tasks. Should you have problems understanding how to program your panel, refer to these built-in Help windows. To access the Help windows, point and click on the Help menu and choose Using help, or click on the [?] icon located near the top of the main configuration window.

HELP Screen Menu

Application Worksheets

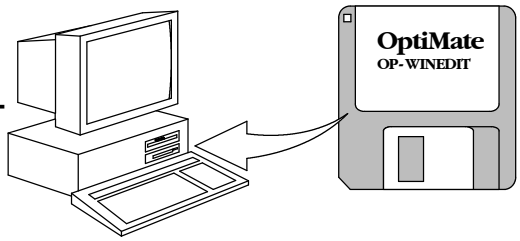
To prepare your application, use the Application Worksheets which are provided in Appendix A of this manual. The example worksheets will help you configure the OP–440 panel. The blank worksheets can be photocopied and used in planning your own applications.



Computer System Requirements

Your personal computer must meet the following minimum requirements:

- ✓ IBM type 386 or above
- ✓ **Windows 3.1 or later, including Windows 95, 98 or NT**
- ✓ 1 meg of hard drive
- ✓ 1 meg of RAM



How to Configure Your Panel

Follow these steps to configure your OP–440 operator panel.

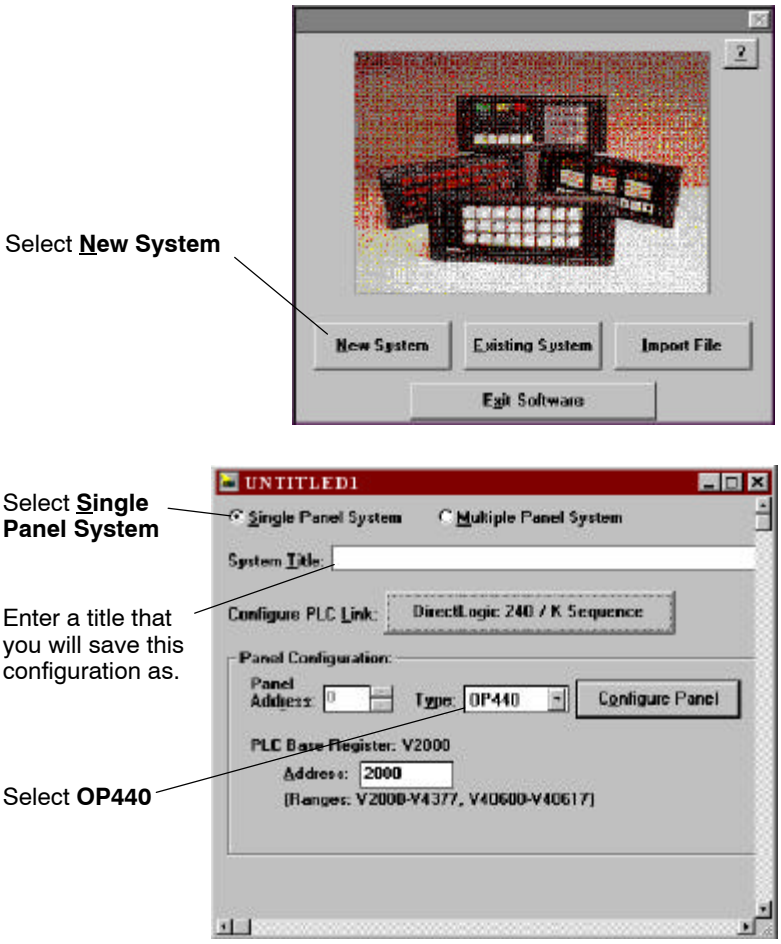
Step 1 **Load OP–WINEDIT** – If you are not already using the configuration software or have an older version, you must install version 2.3 or later (if you are using an older version of OP–WINEDIT you can obtain an upgrade at our web site). The software is provided on one 3-1/2 inch high-density diskette and comes with its own manual. Here are brief installation instructions.

- Place the installation disk into your computer's floppy drive (usually either drive A or drive B).
- Open Microsoft™ Windows (3.1 or above). For Microsoft Windows 95 or NT the **Start**/**Run** program task bar is located at the bottom left portion of your screen. For Microsoft Windows 3.x versions select **File**/**Run** from the Program Manager screen.
- Select **Run**, and a pop-up window appears. Type in the path for the drive in which you have placed the setup disk and designate the file **setup**. Click on **OK** when you are finished.

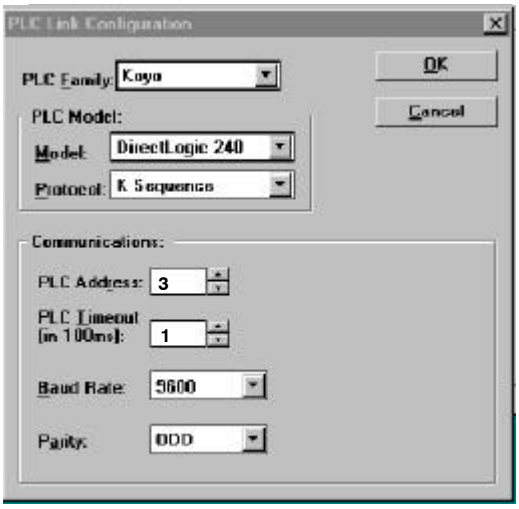
Step 2 **Connect Panel to PC** – Connect the OP–440 to your personal computer using the OP–CCBL configuration cable. Make sure the OP–PS400 5VDC power supply is connected.

Step 3 **Open OP-WINEDIT** – Select New System.

Step 4 **Start Configuring Your Panel** – Start by filling in these parameters:



Step 5 **Select Configure PLC Link** – Here is where you define protocol items such as PLC address, baud rate and parity. Enter the appropriate parameters for your PLC. The following table provides the necessary information for most ***Direct***Logic controllers. For other PLC families, reference that product's user manual to determine the port communications capabilities.



During configuration, make sure that your address and communications parameters match the PLC port settings. The PLC Timeout works like this: When the panel sends a message to the PLC and does not receive a response or does not understand the response, it will wait the time-out period before resending the message.

You also have several ports which can be used to connect your communications cable. Some of these ports have fixed PLC address assignments, and some *do not*. The ports which allow configuring the PLC addresses can be set to a unique address, ranging from 1 through 90. **Refer to your User Manual for specific information on the ports of your PLC**.

NOTE: For Allen-Bradley, you will need to connect to Channel 0 (bottom serial port), using DF1 full duplex. Additionally, the Allen-Bradley software allows you to set the bottom port to a unique PLC address. The software default is PLC Address 1. You must select CRC error detection and make sure the address on the configuration screen matches the address you have assigned. This port must also be configured for either 4800 or 9600 baud. No other baud rates are supported for communicating between the OP-panels and an Allen-Bradley PLC. Since the Allen-Bradley software uses a default baud rate of 1200, you must change the settings.

PLC Model		Port/Baud Rates	Parity	Stop Bit
DL05	**Port 1**	9600	Odd	1
	Port 2	9600/19.2K	Odd/None	
DL105/D2-230/ D2-240	**Top**	9600	Odd	1
	*** Bottom** (DL240 only)	9600/19.2k	Odd/None	
D2-250	**Top**	9600	Odd/None	1
	Bottom	9600/19.2K	Odd/None	
D3-330	*** DCU Only**	4800/9600/19.2k	Odd/None	1
D3-340	*** Bottom &Top**	4800/9600/19.2k	Odd/None	1
D3-350	*** Top**	9600	Odd/None	1
	*** Bottom**	4800/9600/19.2K	Odd	
D4-430/440	**Top**	9600	Odd	1
	*** Bottom**	9600/19.2k	Odd/None	
D4-450	**DB15**	9600	Odd	1
	*** DB25**	9600/19.2k	Odd/None	
	RJ12	9600/19.2k	Odd/None	

* These ports do not supply +5VDC. You must use the OP-PS400 external power supply.

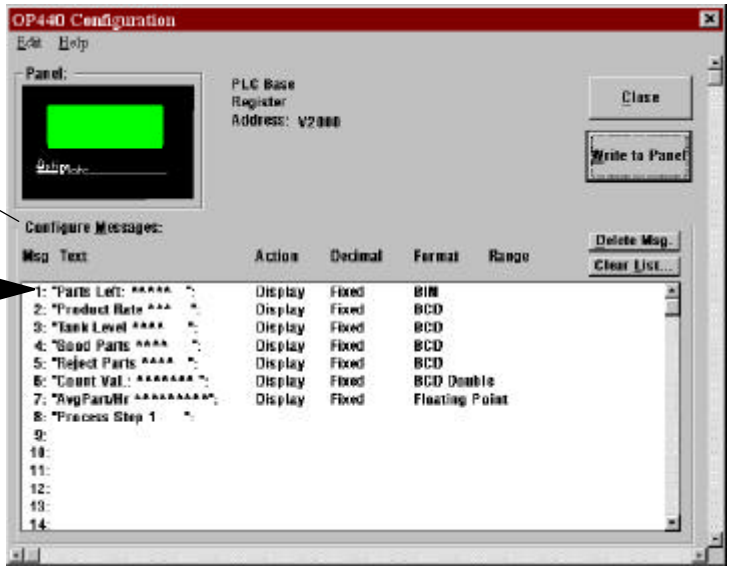
Step 6 **Select the Base Register Address -** This step is very important because it establishes the link in your PLC memory to the panel. Chapter 3, Understanding the Features, describes the mapping process. Once you are familiar with the mapping process and you know which memory block in your PLC to use (refer to the user manual for your PLC), enter your selection.

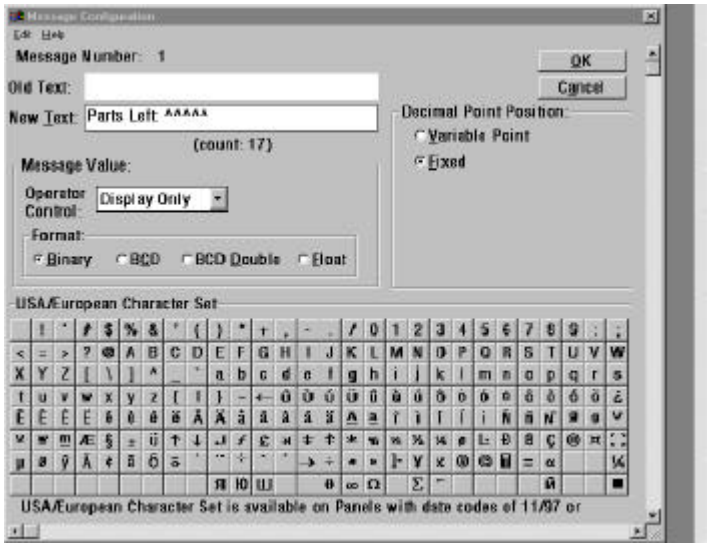
If you choose Allen-Bradley as your PLC Type, you must enter the PLC File Number in addition to a Base Register Address. You must expand the memory map in the Allen-Bradley PLC to include all registers being used by the OP-panel. The panel will only recognize integer file types N7 and user-defined file types N9 through N255. Enter the number only and not the prefix N. The Base Register Address is any number between 0 and 255.

Step 7 **Configure the Panel Features** – These features are discussed in detail in Chapter 3, but they include:

- **Messages** – Enter all messages using the Configure Messages window.

Select **Configure Messages**





For example, to enter message #1, place curser by the "1." area and double-click. This screen appears, allowing you to enter the message. Select OK when message is written.

Step 8 **Download and Save** – Connecting the OP-CCBL configuration cable places the panel in configuration mode. Select Write to Panel to download the configuration to your panel. When the program is finished downloading, wait a few seconds before disconnecting the configuration cable. Disconnecting the cable returns the panel to run mode. When downloading to OP-panels which have already been configured, first clear the message list (Clear List) before loading the new configuration. This removes old messages which may reside within the OP-panel's memory. Remember to save your configuration program before closing OP-WINEDIT.

5

Programming Examples

In This Chapter. . . .

- Examples Using ***Direct***LOGIC PLCs
- Examples Using DL05, DL105, DL205, D3–350 and DL405
- Example Using D3–330/340
- Examples Using Allen-Bradley™ SLC 5/03, 5/04 and Micrologix
- Troubleshooting

Examples Using *Direct*Logic PLCs

Register Usage

The OP-WINEDIT configuration software allows you to configure a panel to use a block of registers at a starting value that you define. For a DL05, DL105, DL205, D3-350 or DL405 CPU the recommended memory to use is the general purpose data words starting at V2000. For the 305 family (except the D3-350) the recommended memory is the registers beginning at R400. Any block of registers within the data word range can be used.

The following table lists the data word registers for ***Direct***LOGIC CPUs.

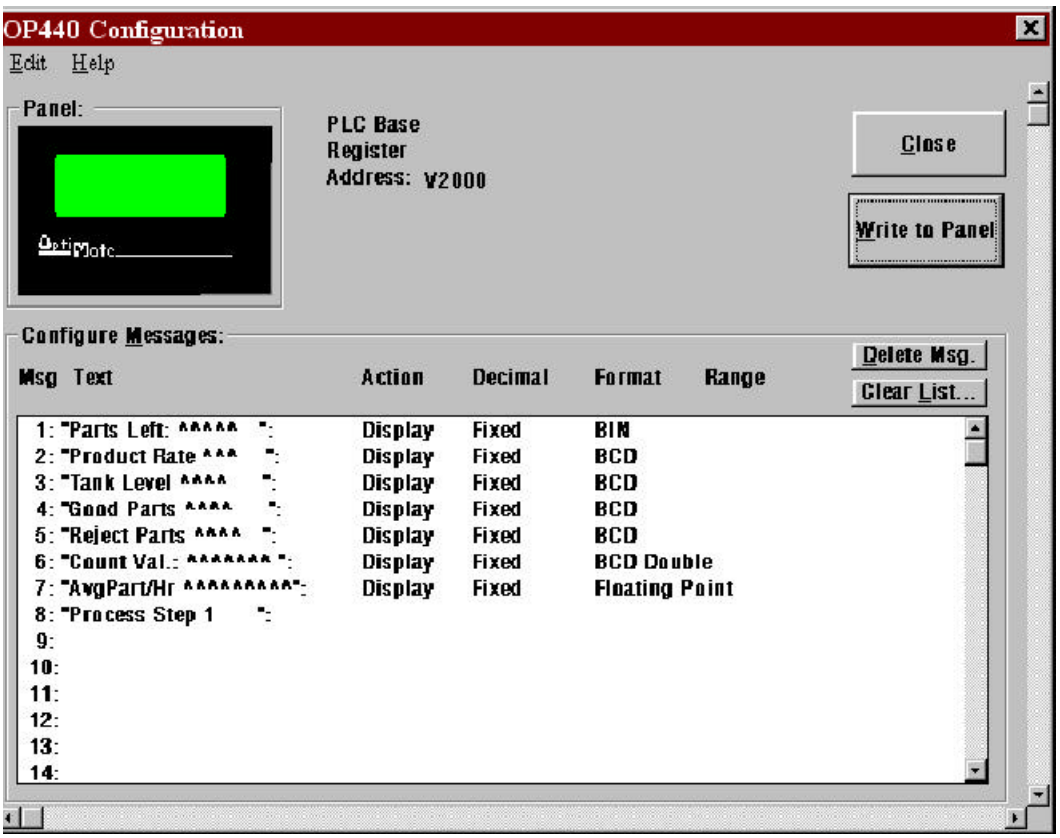
Data Word Registers for *Direct*LOGIC™ PLCs		
Family	**CPU**	**Control Relay Registers**
*Direct*LOGIC™ DL05	D0-05	V1200-V7377
*Direct*LOGIC™ DL105	F1-130	V2000-V2377
*Direct*LOGIC™ DL205	D2-230	V2000-V2377
	D2-240	V2000-V3777
	D2-250	V1400-V7377 and V10000-V17777
*Direct*LOGIC™ DL305	D3-330/D3-330P	R400-R563
	D3-340	R400-R563 and R700-R767
	D3-350	V1400-V7377 and V10000-V17777
*Direct*LOGIC™ DL405	D4-430	V1400-V7377
	D4-440	V1400-V7377 and V10000-V17777
	D4-450	V1400-V7377 and V10000-V37777

Examples Using DL05, DL105, DL205, D3–350 and DL405

Defining the Status Register

The following examples assume that the OP–440 is configured for a base address of V2000. When configuring the panel, use the configuration data and messages shown in the following figure. Also, assume that message #140 consists of all blanks.

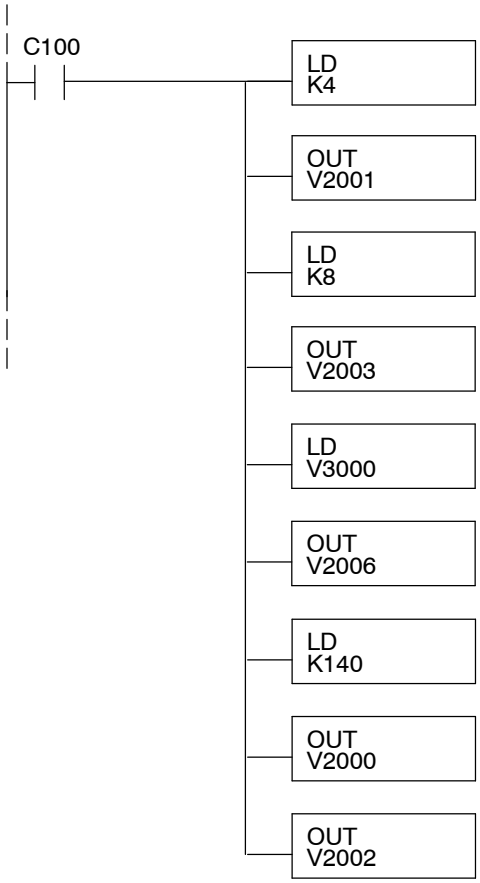
NOTE: The Example Worksheet in Appendix A also has the configuration data and messages needed for these examples. The example uses an F1–130 CPU, but enter the PLC parameters for your PLC. The example shows how you can use the worksheets to help plan your configurations.



Enter the above messages to run the example programs.

Displaying Messages

The following example shows two messages being displayed. The second line is displaying message #4 and the bottom line is displaying message #8. The top and third lines use data display message #140, which has been configured as a blank text message.

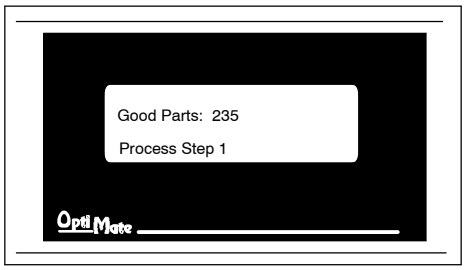


This selects message #4 to be displayed in the second line.

This selects message #8 to be displayed in the bottom line.

This puts data from V3000 into the second line data field.

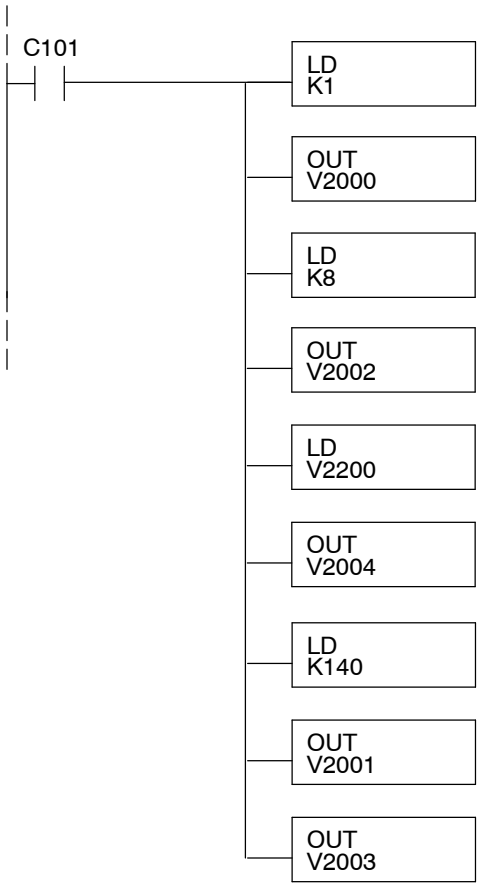
Select message #140 to blank the top and third lines.



V2000	Top line message selection
V2001	Second line message selection
V2002	Third line message selection
V2003	Bottom line message selection
V2004	Top line data
V2005	Top line data 2
V2006	Second line data
V2007	Second line data 2
V2010	Third line data
V2011	Third line data 2
V2012	Bottom line data
V2013	Bottom line data 2

Displaying Binary Numbers

This example is similar to the previous example, except that it uses a binary number in the top line display. The top line uses data display message #1, which has been configured as a binary display message. The data for the data field is coming from memory location V2200. The third line is text message #8. The second and bottom lines use message #140 which has been configured as a blank text message.

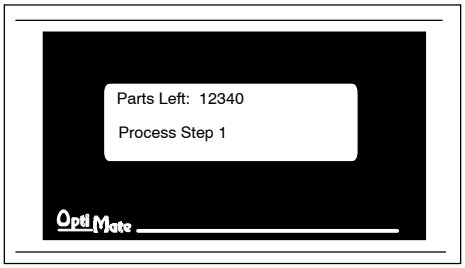


This selects message #1 to be displayed in the top line.

This selects message #8 to be displayed in the third line.

This puts data from V2200 into top line data field.

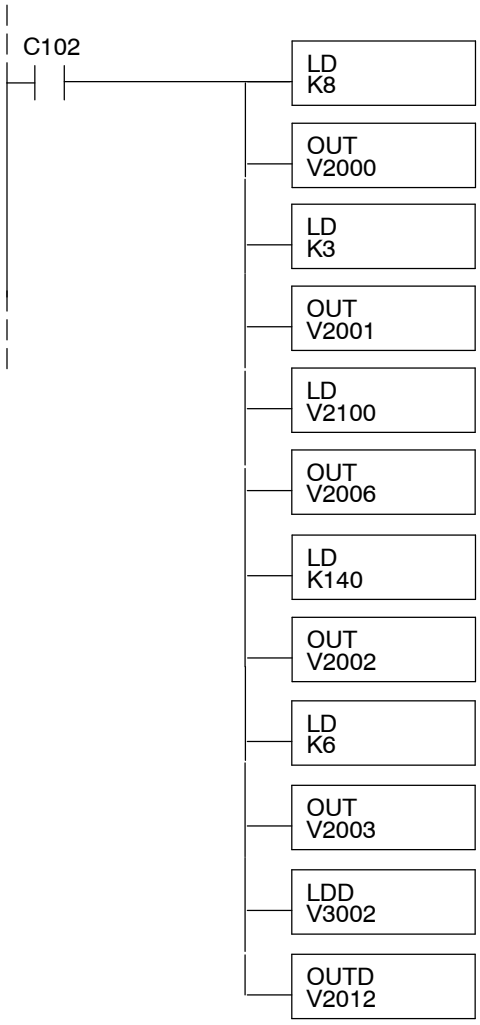
This selects message #140 to be displayed in the second and bottom lines.



V2000	Top line message selection
V2001	Second line message selection
V2002	Third line message selection
V2003	Bottom line message selection
V2004	Top line data
V2005	Top line data 2
V2006	Second line data
V2007	Second line data 2
V2010	Third line data
V2011	Third line data 2
V2012	Bottom line data
V2013	Bottom line data 2

Displaying BCD Double Numbers

This example is similar to the previous example, except that it uses a BCD Double number in the bottom line display. The bottom line uses data display message #6, which has been configured as a BCD Double display message. The data for the data field is from V3002 and V3003. V3002 contains the four least significant digits while V3003 contains the four most significant digits. The second line is text message #3. The data for the second line BCD message comes from register V2100. The third line uses message #140 which has been configured as a blank text message.



This selects message #8 to be displayed in the top line.

This selects message #3 to be displayed in the second line.

This puts data from V2100 into the second line data field.

This selects message #140 to blank the third line.

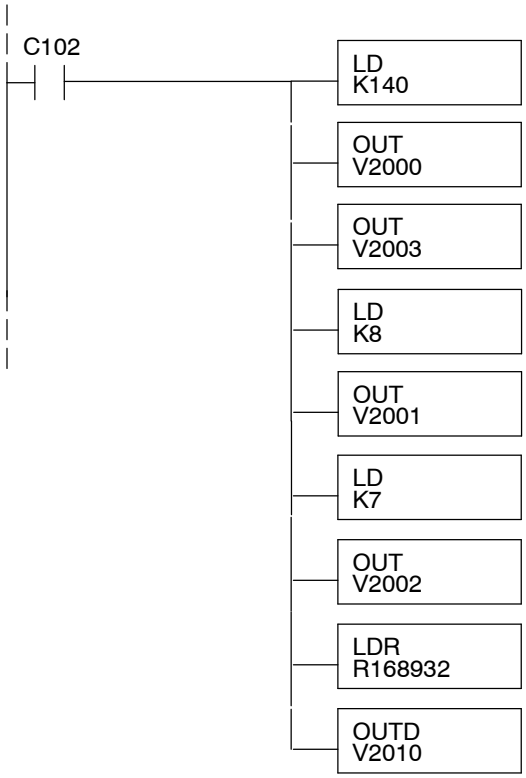
This selects message #6 to be displayed in the bottom line.

This puts the BCD Double number from V3002/V3003 into the bottom line data field.

V2000	Top line message selection
V2001	Second line message selection
V2002	Third line message selection
V2003	Bottom line message selection
V2004	Top line data
V2005	Top line data 2
V2006	Second line data
V2007	Second line data 2
V2010	Third line data
V2011	Third line data 2
V2012	Bottom line data
V2013	Bottom line data 2

Displaying Floating Point Numbers Example 1

This example uses a floating point number in the third line display. The bottom line uses data display message #7, which has been configured as a floating point display message. Since the data is a floating point number, it uses two 16-bit registers. The two registers have to be looked at together, not individually, for the data to be understandable. In this example, the data is a constant number (168932) which is loaded into the bottom line data display registers using an LDR (load real number) instruction. The second line is text message #8.

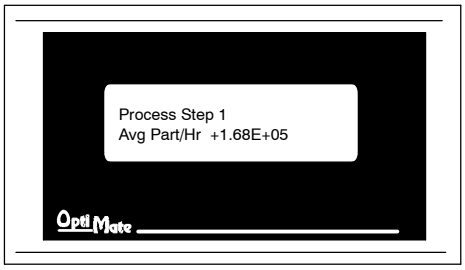


This selects message #140 to blank the top and bottom lines.

This selects message #8 to be displayed in the second line.

This selects message #7 to be displayed in the third line.

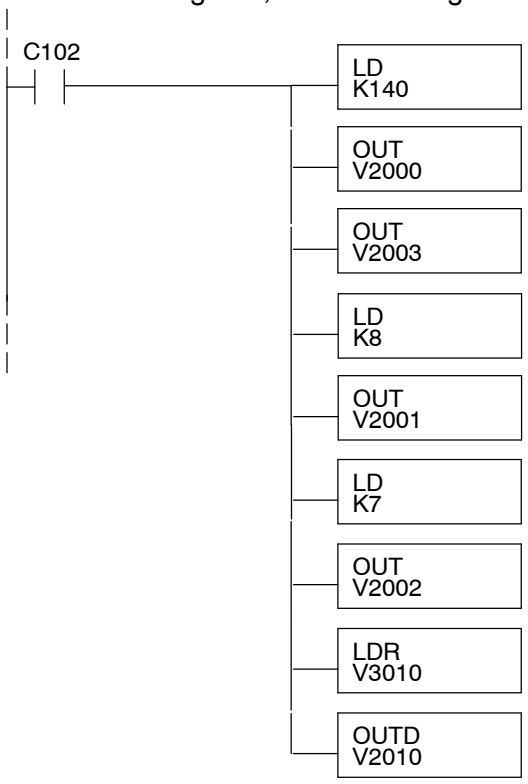
This puts the floating point number into third line data field. Notice that the displayed value is truncated.



V2000	Top line message selection
V2001	Second line message selection
V2002	Third line message selection
V2003	Bottom line message selection
V2004	Top line data
V2005	Top line data 2
V2006	Second line data
V2007	Second line data 2
V2010	Third line data
V2011	Third line data 2
V2012	Bottom line data
V2013	Bottom line data 2

Displaying Floating Point Numbers Example 2

This example is similar to the previous example, except that it gets its value from two PLC registers instead of a constant value. The third line uses data display message #7, which has been configured as a floating point display message. Remember, floating point numbers require two 16-bit registers. In this example, the data is loaded from V3010 and V3011 using an LDR (load real number) instruction to the third line display registers V2010 and V2011. The top and bottom lines use message #140 which has been configured as a blank text message. The second line uses message #8, a text message.

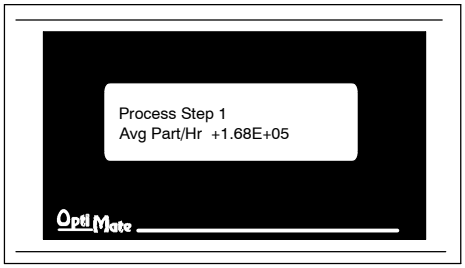


This selects message #140 to blank the top and bottom lines.

This selects message #8 to be displayed in the second line.

This selects message #7 to be displayed in the third line.

This puts the floating point number from V3010 and V3011 into the third line display registers V2010 and V2011.



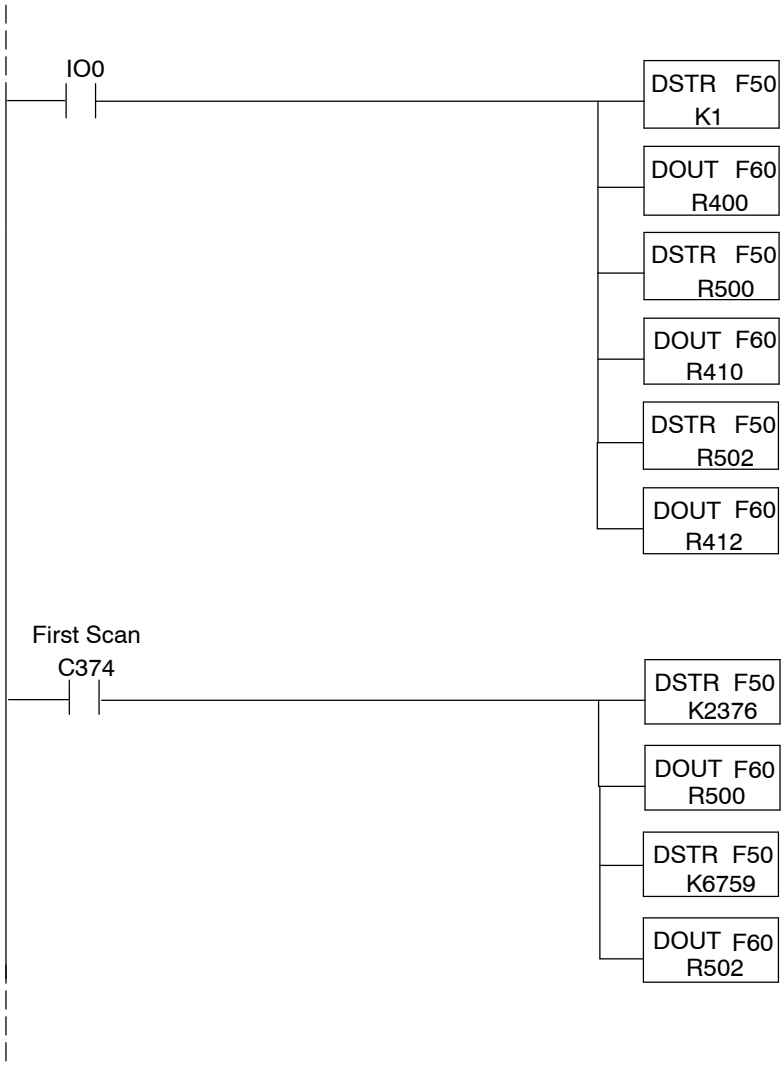
V2000	Top line message selection
V2001	Second line message selection
V2002	Third line message selection
V2003	Bottom line message selection
V2004	Top line data
V2005	Top line data 2
V2006	Second line data
V2007	Second line data 2
V2010	Third line data
V2011	Third line data 2
V2012	Bottom line data
V2013	Bottom line data 2

Example Using D3-330/340

Defining the Status Register

The following example assumes that the OP-440 is configured for a base address of R400/R401. When configuring the panel, enter the messages shown in the previous section for the DL05, DL105, DL205, D3-350 and DL405 examples.

DirectSOFT



Displaying Messages

This rung displays message #1 on the top line and displays the top line data as a BCD Double number.

Top line data.

Top line data BCD Double.

This rung loads an arbitrary value (2376) at memory locations to be displayed as data values.

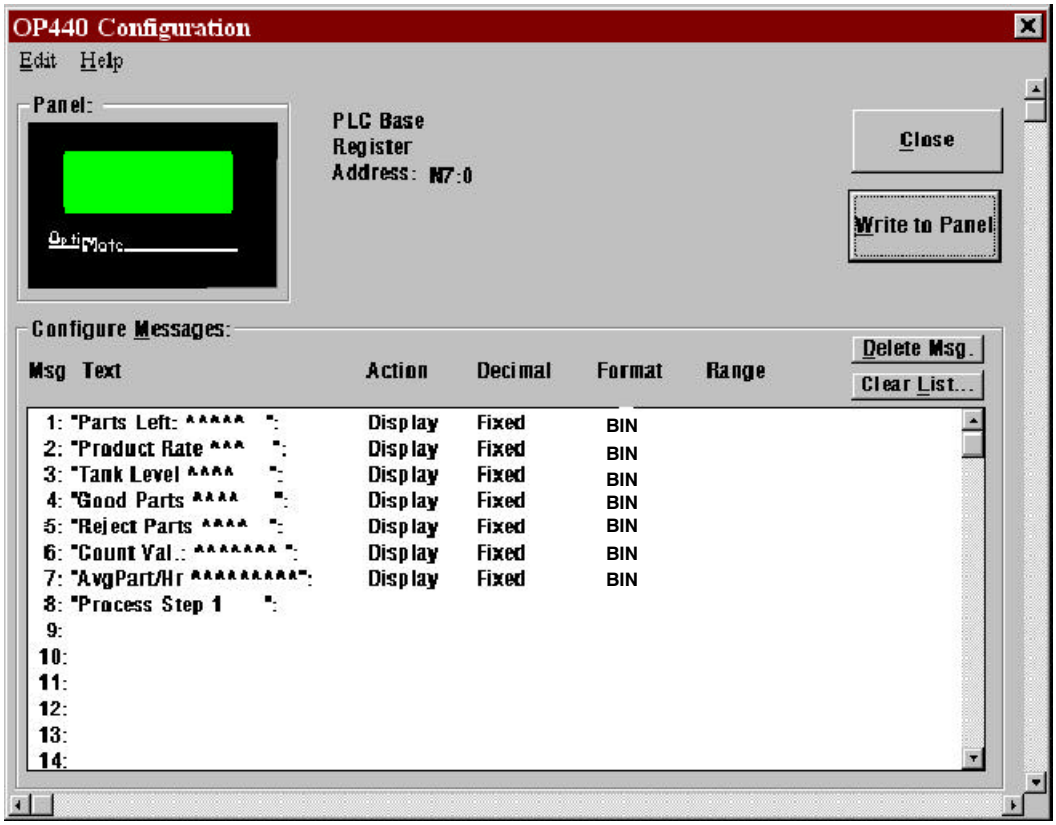
Examples Using Allen-Bradley™ SLC 5/03, 5/04 and Micrologix

Interfacing to A-B Memory

OptiMate panels interface to Allen-Bradley SLC 5/03, SLC 5/04 and Micrologix PLCs via integer file type N. The 5/03 and 5/04 have file type N7 as standard. Other "N" type files can be created. The Micrologix has a fixed file type N7. Please see A-B documentation for information on setting up and using "N" type files.

NOTE: When using an OP-440 with an Allen-Bradley PLC, always be sure that at least 12 words of memory are allocated to allow proper communications.

All of the examples shown assume the OP-440 has been configured as shown below (using OP-WINEDIT) with a file number N7 and base register address 0. Assume that message #140 consists of all blanks.



Displaying Floating Point Numbers

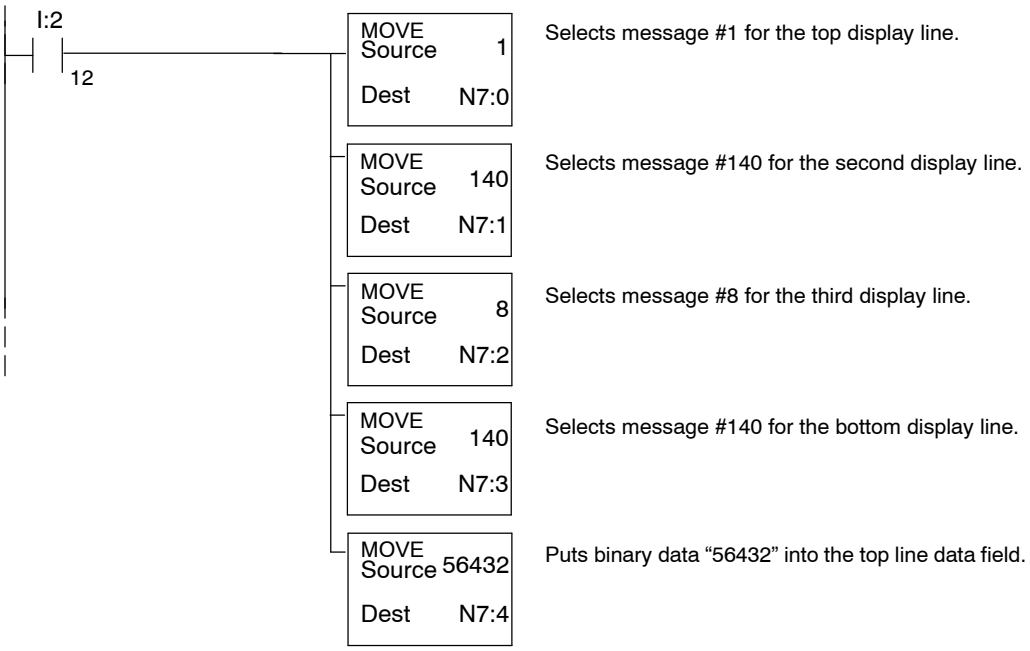
While the OP-440 can display floating point numbers, the A-B SLC PLCs *do not* have a means of handling floating point numbers.

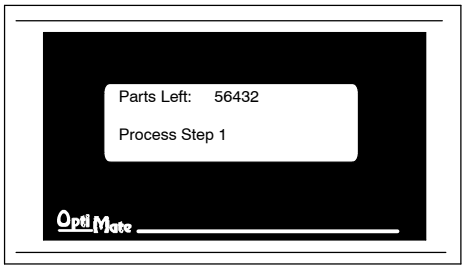
Displaying BCD Numbers

A-B deals with its registers in binary, not BCD. For this reason, during configuration be sure to indicate Binary when setting up for A-B.

Displaying Binary Numbers

This example uses the configuration shown earlier, and shows two messages being displayed. The top line uses data display message #1, which has been configured as a binary display message. The data for the data field is a constant number 56432. The data can also be moved to the data register from another register. The third line is text message #8. Message #140 is selected for the second and bottom lines.





N7:0	Top line message selection
N7:1	Second line message selection
N7:2	Third line message selection
N7:3	Bottom line message selection
N7:4	Top line data
N7:5	Top line data 2 (not used)
N7:6	Second line data
N7:7	Second line data 2 (not used)
N7:8	Third line data
N7:9	Third line data 2 (not used)
N7:10	Bottom line data
N7:11	Bottom line data 2 (not used)

Troubleshooting

Troubleshooting

In this section, we explain how to isolate potential problems which may occur while using the OP-440. Because these panels have only a power supply connection and a communications connection, no DIP switches or controls to set, and cannot be used in multiple panel arrangements, troubleshooting is a very straightforward operation.

Power Supply Problems

If the panel LED display and the RX and TX LEDs on the back of the panel do not illuminate, the panel is most likely not receiving input power. Carefully check your connections to make sure they are tight. If this does not help, see Chapter 2 and review the input power requirements.

Remember, all PLC's require that you use the OP-PS400 5V plug-in power supply (or equivalent) for configuration. Some PLC's also require that you use this power supply for operation. Make sure that the 120 VAC receptacle you plug the power supply into has power. Also, if you are using another 5V power supply, make sure that it has a center negative connector.

If using a PLC that supplies 5V for operation through the communications cable, check to make sure sure that pin 5 on the lead going into the panel has a 5V signal.

Configuration Problems

Make sure that you are using the proper configuration cable (OP-CCBL) and that it is securely connected. Check your configuration program and make sure the proper communications port is selected, such as COM1 or COM2. Review your configuration settings to make sure they are correct. Remember, the OP-WINEDIT Help screens provide a lot of valuable information.

Communication Problems

Observe the RX and TX LEDs on the rear panel. They should be steady flashing or glow (depending on the baud rate). If not, make sure that you are using the proper communications cable and that it is securely connected. Review your configuratiion settings and make sure that the communications information for your PLC, address number, baud rate, protocol type, etc. is correct. Check the user manual for your PLC for the proper settings.

Getting Help

See "Technical Support" in Chapter 1 for additional information.

Appendix A
Worksheets

A

In This Appendix. . . .

— *Example* Application/Message Worksheet

— Blank Application/Message Worksheet

EXAMPLE WORKSHEET PAGE: _____

DESCRIPTION : OP-440 Demo

System Type: Single Panel
Panel Type: OP-440
PLC Base Register Addr: V2000

PLC CONFIGURATION :

PLC Family: ***Direct***Logic
CPU Model: DL130
Protocol: K Sequence
PLC Address: 1
PLC Timout: 3
Baud Rate: 9600
Parity: ODD
Data/Stop Bits:

MESSAGE:

	Text		
No. 1	Parts Left: ^^^^^		
	Action: Display Text Message	Data Format: Binary	Range: N/A
No. 2	Product Rate ^^^.^		
	Action: Display Text Message	Data Format: BCD	Range: N/A
No. 3	Tank Level: ^^^^		
	Action: Display Text Message	Data Format: BCD	Range: N/A
No. 4	Good Parts: ^^^^		
	Action: Display Text Message	Data Format: BCD	Range: N/A
No. 5	Reject Parts: ^^^^		
	Action: Display Text Message	Data Format: BCD	Range: N/A
No. 6	Count Val: ^^^^^^		
	Action: Display Text Message	Data Format: BCD	Range: N/A
No. 7	Avg Part/Hr: ^^^^^^^^		
	Action: Display Text Message	Data Format: BCD Double	Range: N/A
No. 8	Process Step 1		
	Action: Display Text Message	Data Floating Point	Range: N/A
No. 9			
	Action: Text Message	Data Format:	Range:
No. 10			
	Action:	Data Format:	Range:

OP-440 APPLICATION WORKSHEET PAGE: _____

DESCRIPTION : _____

System Type _____

Panel Type _____

PLC Base Register Addr _____

PLC CONFIGURATION :

PLC Family _____

CPU Model _____

Protocol _____

PLC Address _____

PLC Timout _____

Baud Rate _____

Parity _____

Data/Stop Bits _____

MESSAGE:

	Text Message	
No.		
	Action:	Data Format: Range:
No.		
	Action:	Data Format: Range:
No.		
	Action:	Data Format: Range:
No.		
	Action:	Data Format: Range:
No.		
	Action:	Data Format: Range:
No.		
	Action:	Data Format: Range:
No.		
	Action:	Data Format: Range:
No.		
	Action:	Data Format: Range:
No.		
	Action:	Data Format: Range:
No.		
	Action:	Data Format: Range:

OP-440 MESSAGE WORKSHEET PAGE: ________

MESSAGE:

	Text Message		
No.			
	Action:	Data Format:	Range:
No.			
	Action:	Data Format:	Range:
No.			
	Action:	Data Format:	Range:
No.			
	Action:	Data Format:	Range:
No.			
	Action:	Data Format:	Range:
No.			
	Action:	Data Format:	Range:
No.			
	Action:	Data Format:	Range:
No.			
	Action:	Data Format:	Range:
No.			
	Action:	Data Format:	Range:
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	Action:	Data Format:	Range:
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	Action:	Data Format:	Range:
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	Action:	Data Format:	Range:
No.			
	Action:	Data Format:	Range:
No.			
	Action:	Data Format:	Range:
No.			
	Action:	Data Format:	Range:
No.			
	Action:	Data Format:	Range:

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