

Getting Started

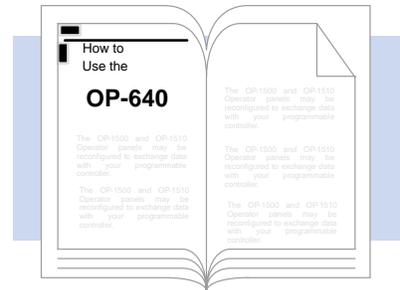
In This Chapter. . . .

- Introduction
 - Conventions Used
 - OP-640 Overview
 - Frequently Asked Questions
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Introduction

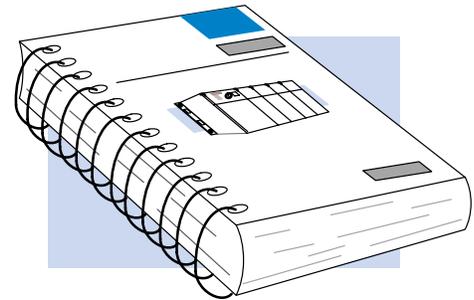
The Purpose of this Manual

Thank you for purchasing an OP-640 OptiMate panel. This User Manual shows you how to install, configure, and program the OP-640. 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 **DirectSOFT** 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-panel.



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
- **Index** – located at the end of this manual
- **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** – the address of our Web site is www.automationdirect.com

If you still need assistance, please call us at 1-770-844-4200. 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:

**Getting Started**

Introduces the physical and functional characteristics. Discusses pushbuttons, lamps and the LCD display. Also provides introduction to planning your system.

**Installation and Specifications**

Shows how to prepare for system installation, including specifications and mounting instructions. Includes connecting cables part numbers and specifications.

**Understanding the Features**

Explains the features and functions of the OP-640. Teaches concept of how data is exchanged between the panel and the PLC. Also discusses the function of the status register.

**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.

**Programming Examples**

Provides example programs for using the standard functions and features. These examples include ladder logic for implementing pushbuttons and messages using **Direct**LOGIC compatibles and Allen-Bradley SLC 5/03, 5/04 and Micrologix CPUs.

**Troubleshooting**

Provides help with troubleshooting your OptiMate panel. Includes tips on isolating communications faults by use of LED status.

Appendices

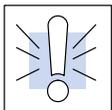
Additional reference information is in the following appendices:

**Worksheets**

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

Conventions Used

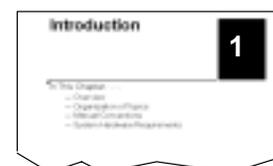
The “note pad” icon in the left-hand margin indicates the paragraph to its immediate right will be a **special note**.



The “exclamation mark” icon in the left-hand margin indicates the paragraph to its immediate right will be a **warning** or **caution**. These are very important because the information may help you prevent serious personal injury or equipment damage.

Key Topics for Each Chapter

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

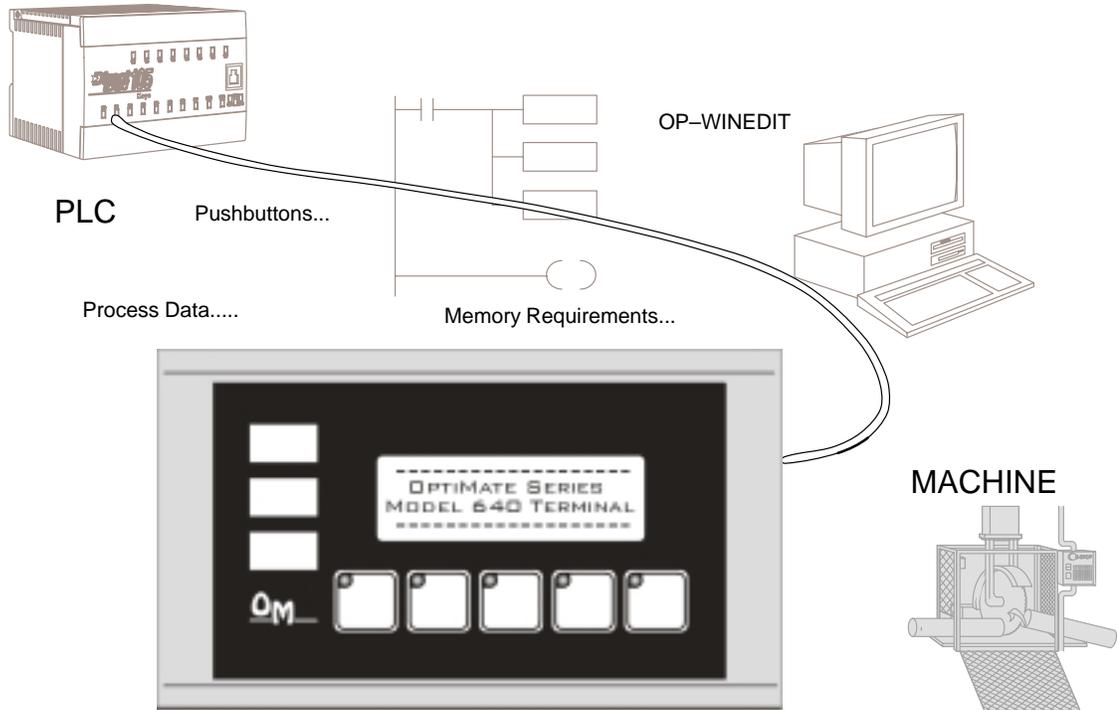


OP-640 Overview

Plan your System

Let's look at the OP-640 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.



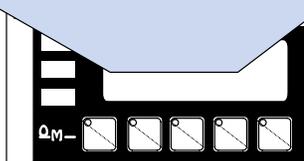
General Panel Information

The OP-640 operator panel provides a man-machine interface to your PLC automation system. This panel is *not* designed for applications which demand large amounts of operator data entry. The panel communicates with your PLC using RS-232 or RS-422 serial communication. Details on configuration software and programming your operator panel are covered in later chapters. The OP-640 operator panel can be used in a stand alone fashion with one panel used with each CPU RS-232 port, or can be used in multi-panel applications using an OP-9001 Communications Master. You may network up to 31 panels using an OP-9001.

LCD Display Window

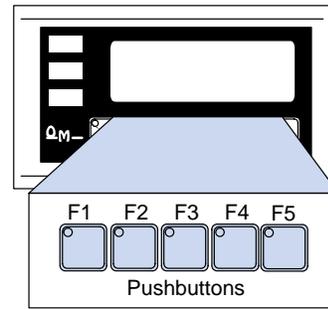
The OP-640 features an LCD display window to display user-defined messages. Up to 160 messages may be configured and stored in the operator panel using OP-WINEDIT configuration software. The PLC logic program controls which messages are displayed. Details on how to enter and use messages are covered in later chapters.

Backlit LCD Display with 4 lines, 20 characters each.



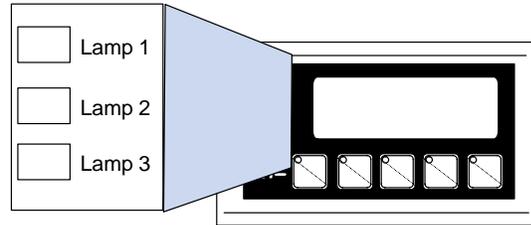
Pushbuttons

Many applications require operator panel pushbuttons for controlling the machine or process. These pushbuttons are used as input signals to the PLC which start and stop a machine or process. Configure these pushbuttons as momentary or alternating to best fit your operator interface application. You may create custom text labels.



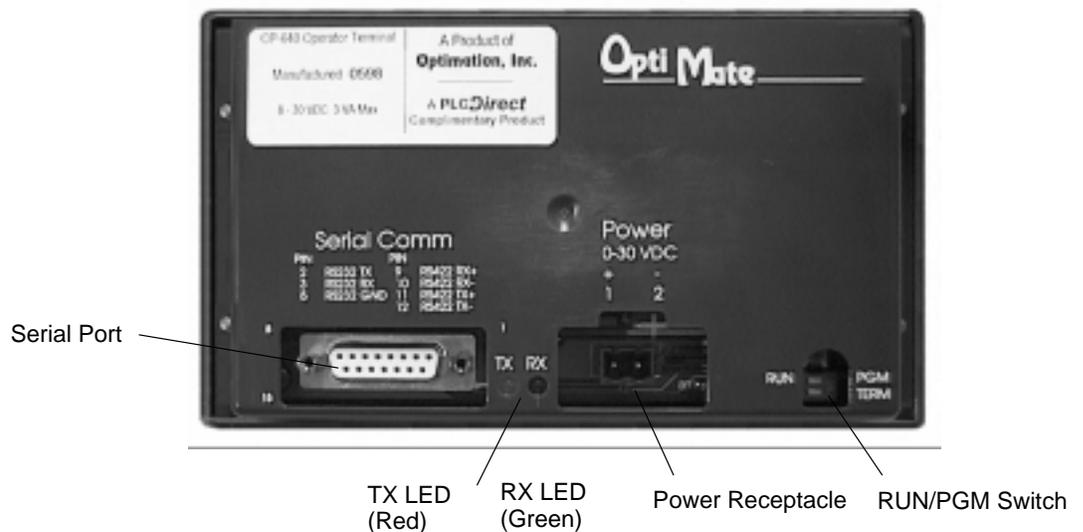
Annunciator Lamps

The three lamps are turned on, off and flashed through your ladder logic program. You may create custom text labels.



Back-Panel Layout

The back panel contains a serial communications port with transmit (TX) and receive (RX) LEDs, a power receptacle, and RUN/PGM and TERM switches.



Serial Communications Port

The serial communications port is a 15-pin, female D-shell connector, which supports using RS-232 or RS-422 interface wiring. This port is used for communications between the OP-panel and PLC, as well as for programming your panel configurations. In the case of a Multi-panel application, this port may be connected to the OptiMate OP-9001 Communications Master.

Power Receptacle

The supplied block style connector with screw terminals is used to connect an external 24VDC power supply.

RUN/PGM and TERM Switches

The RUN/PGM Switch must be set to ON (PGM) before downloading from the PC to the panel. The TERM Switch is only set to ON (right position) when the panel is at the end of a system using RS-422 communications. In all other cases, including downloading, it is set to OFF (left position).

Frequently Asked Questions

Q. What is required to get started using the OP-640 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-640 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.

Q. Can the OP-640 be used with other PLC products?

A. Yes. The OP-640 does support Allen-Bradley SLC 5/03, SLC 5/04, and Micrologix.

Q. What are the power supply requirements for the OP-640?

A. The OP-640 panel requires a 24VDC external power supply. See the Specifications for details.

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.

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

A. Yes, this is referred to as a Multi-Panel application. You may network up to 31 panels to communicate using RS-422 multi-drop communications between the OP-panels and OP-9001 Communications Master unit. Also, if your CPU has secondary ports, you may connect a single panel to each available serial port.

Q. Why does my panel lose communication after being in service for a period of time?

A. Once a panel gains communication with a PLC there are only a few reasons why it does not continue: 1) RFI from nearby motors, welders, starters, etc. causing anything from memory corruption to damaged driver chips; and 2) an inadequate power supply.

Q. When I have my panel connected to a DL205, my LCD and/or lamps work, but my pushbuttons don't...why?

A. The Optimate module cannot WRITE to the PLC's memory when the CPU's RUN/TERM switch is in the Run position, therefore only the LCD and/or lamps visually function. The CPU should be set to the Term position in order for the Optimate panel to write to it.

Q. My module will occasionally fail when I power up my system. Why does this happen?

A. Normally this is caused by an inadequate power supply corrupting the memory. When determining the size of a power supply be sure to include ALL sources of energy consumption and also account for the surge these devices require. For example an OP-613 requires 1.5 Amps (for 2 milliseconds) at start-up, but after start-up needs only 90 mA at 24VDC to function.

Q. My panel lights flash when connected to the bottom port of a D2-240. What's wrong?

A. The lower port on the D2-240 defaults to ASCII mode and needs to be set to HEX mode in order to communicate with an Optimate panel. Access the port settings from DirectSOFT by PLC->Setup->Setup Secondary Com Port.

Q. In a multi-panel system, how should I wire the panels if more than one power supply is being used?

A. It is highly recommended that all the power supply grounds be wired together. Failure to do so may result in failed modules. Also, ensure that power supply and wire size is large enough to handle the current, especially at long distances. It is also highly recommended that all shields be tied to earth ground. For power cable distances greater than 50' or in noisy environments, a two-twisted pair shielded wire such as Belden 9729 (or equivalent) should be used. There is an OP-9001 Supplemental Sheet with diagrams, included with all OP-9001's, depicting the three most typical wiring arrangements.

Q. Why does my module work in a stand-alone situation, but not when connected to my OP-9001?

A. The most obvious reason is that the module was not configured for a multi-panel situation or that the OP-9001 was not configured for the module. Next, the OP-9001 communicates with the module via RS-422 cable, so verify that the pin-outs are correct. Lastly, the RS-422 driver in the module or OP-9001 may have failed due to cabling or power supply problems. Please reference the OP-9001 Supplemental Sheet for wiring directions.

Q. I've loaded a new configuration into my panel and still get some of the old messages. How do I get rid of the old messages?

A. The OP-WINEDIT does not clear the message list in the OP panel when you load a new configuration. If you had more messages in the old configuration than the new configuration, the extra messages do not get overwritten. You can clear the message list from CONFIGURE>CLEAR LIST>THE CONNECTED PANEL. Reload the new configuration and the old messages will be gone.