

Getting Started

In This Chapter. . . .

- Introduction
 - OP-1500/OP-1510 Overview
 - Frequently Asked Questions
-

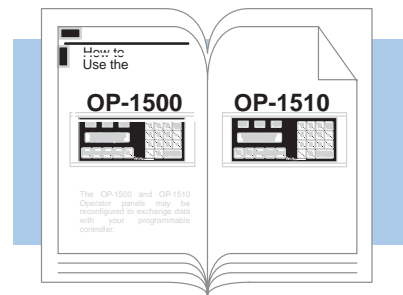
Introduction

The Purpose of this Manual

This User Manual provides user information on panel installation, panel configuration, and programming the OP-1500 and OP-1510. The purpose of this manual is to teach concept and programming techniques which may be applied while implementing the OptiMate® panels. The example programming figures within Chapter 3 “Understanding the Features” use **DirectLOGIC™** program references for training purposes. Example programs for other PLC models and products are located in the Appendix B–D of this manual. Complete example programs are provided for **DirectLOGIC** and Allen-Bradley PLCs.

Contents of the Manual

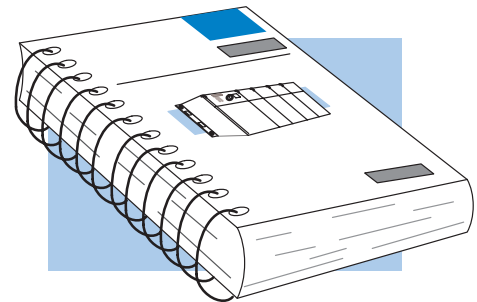
Inside this manual you will learn about planning, implementing, and utilizing the OptiMate OP-1500 and OP-1510 products. This manual's contents discuss aspects of both OP-panels regardless of which PLC product you are connecting. Also included are application examples to improve the learning process and working knowledge with the OptiMate units.



Supplemental Manuals

Reference the appropriate PLC/CPU User Manuals for the commands and address references required for your system. If you are using a **DirectLOGIC** 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-panels.

For Multi-Panel applications utilizing the OP-9001 Communications Master please refer to the OP-9001 User Manual (Part Number OP-9001-M).



Technical Assistance

After completely reading this manual, if you are not successful with implementing the OP-1500 or OP-1510, you may call **PLCDirect** at (800) 633-0405, Monday through Friday from 9:00 A.M. to 6:00 P.M. Eastern Standard Time. Our technical support group will work with you in answering your application questions. If you have a comment or question about our products, services, or manuals which we provide, please fill out and return the suggestions card included with this manual.

Chapters

This table provides an overall description of the topics covered within this manual.



Getting Started

Introduces the physical and functional characteristics. Discusses the pushbuttons, lamps, LCD display and OP-1500 and OP- 1510 characteristics. 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 Basics

Detailed description of feature and functions available with OP-1500 and OP-1510. Teaches concept of how the data is exchanged between the OP and PLC. Also discusses the meaning of the Status and Control register bits used for asynchronous communications control.



Configuring Your Panel

Information on the differences between the DOS and Windows versions of OPEditor. The OP-WINEDIT for windows contains Help windows which will assist with configuring the OP- 1500 and OP- 1510.



Maintenance and Troubleshooting

Aid for diagnostics and maintenance of your OptiMate panel(s). Includes tips on isolating communications faults by use of LED status.

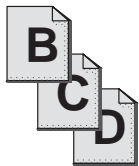
Appendices

Additional examples and reference information:



Application Worksheets

Application Worksheets for planning and creating OP-1500 and OP-1510 programs. These worksheets help define and implement the OP-panel pushbuttons, lamps, and messages.



Complete Application Examples

Appendices B,C, and D provide complete example programs for using OP-panel standard functions and features. These examples will include compatible ladder logic for implementing pushbuttons, lamps, and messages using the *Direct*LOGIC compatibles and Allen-Bradley SLC5/03, SLC5/04 and Micrologic PLCs.



TIP: Information marked by this symbol indicates helpful hints about current topic.



WARNING: These markers warn you about specific concerns which may need to be addressed where there is a safety risk.



NOTE: This marker provides information which is important to check out.



DirectLOGIC PLCs : Denotes information specific to **Direct**LOGIC PLCs.

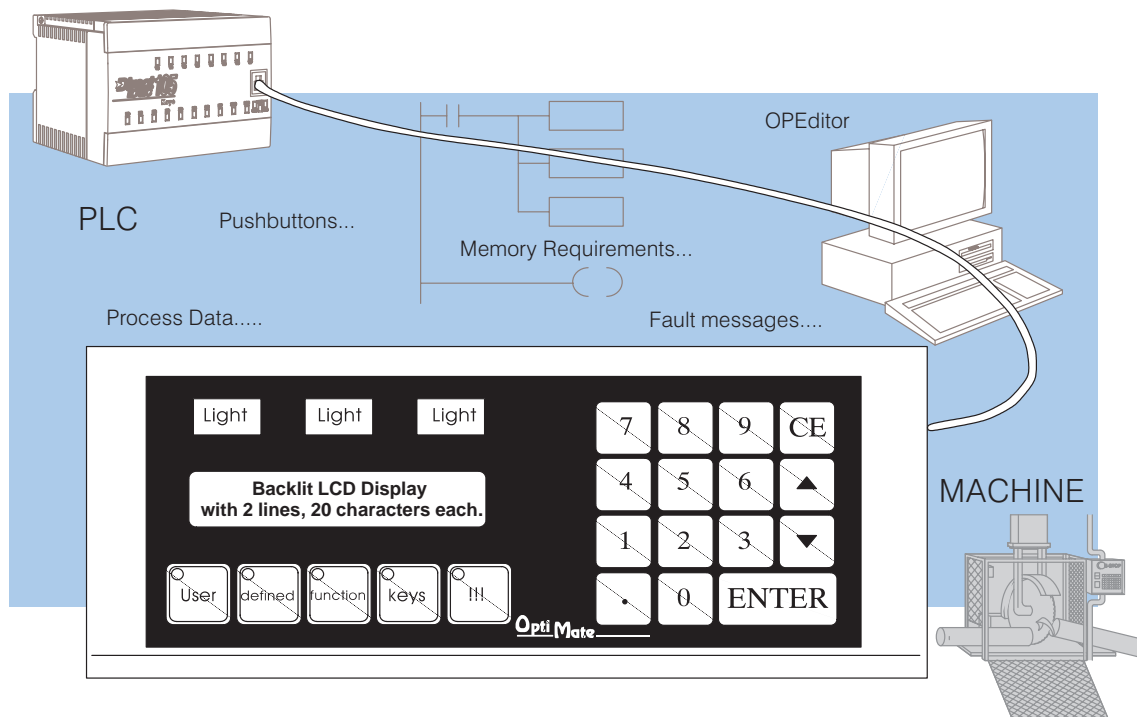


OTHER PLC'S : Denotes information specific to **OTHER** PLCs.

OP-1500/OP-1510 Overview

Plan your System Let's look at the OP-1500 and OP-1510 operator panels and their individually supported features. As you continue through this manual, try to relate the examples to your Operator Panel application. Use the *Application Worksheet* located in Appendix A, which will be helpful during the design and configuration stages of your system.

To help implement the OP-1500 and OP-1510 you should plan your system with all operator interface requirements in mind. All aspects of implementing the OP-panels are covered in the beginning chapters. It is important to read and understand all topics discussed before installing, configuring and programming your application.



General Panel Information

The OP- 1500 and OP- 1510 Operator panels provide a man-machine interface to your PLC automation system. These panels are *not* designed for applications which demand large amounts of operator data entry. The OP- 1500 and OP- 1510 have very similar characteristics, but provide slightly different functionality. The OP-panel features such as lamps, pushbuttons, and messages are all discussed throughout this manual.

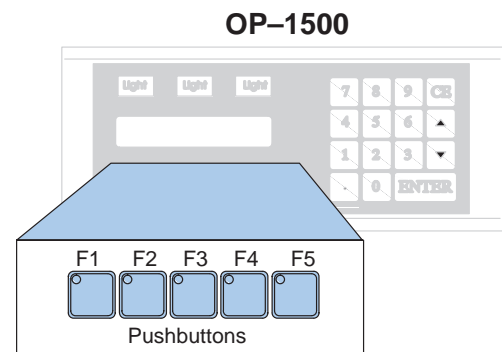
The Operator panels communicate with your PLC using either RS-232 or RS-422 serial communication. Details on configuration software and programming your operator panel are covered in later chapters. Your application requires either a Single or Multi-panel configuration. You may network up to 31 panels to a single PLC. For multi-panel systems, the OP-9001 Communication Master must be used.

For applications demanding large amounts of operator interface data or require information to be graphically displayed, we recommend using PC software such as Wonderware, LABview, Intellution etc. Please refer to our PLC **Direct** product catalog or contact one of our sales representatives for your Operator Interface solutions.

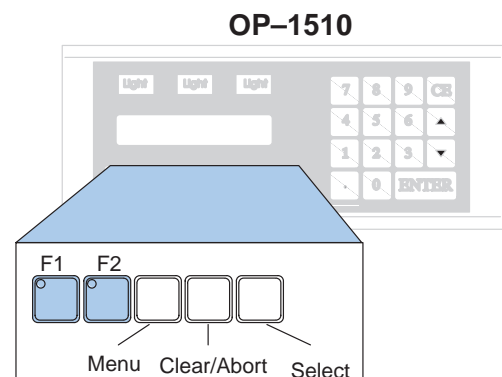
About the Pushbuttons

Many applications require Operator panel pushbuttons for controlling the machine or process. These pushbuttons are used for input signals to the PLC which start and stop a machine or process. The OP-1500 has five user configured pushbuttons and the OP-1510 has two user configured pushbuttons. You may create custom text labels describing the pushbuttons within your application. The following figures show the pushbutton layouts for the OP- 1500 and OP- 1510.

The OP- 1500 contains five sealed membrane pushbuttons located on the lower left portion of the panel. All five pushbuttons may be freely defined for discrete input signals to the PLC. Configure these pushbuttons as momentary or alternating to best fit your operator interface application.

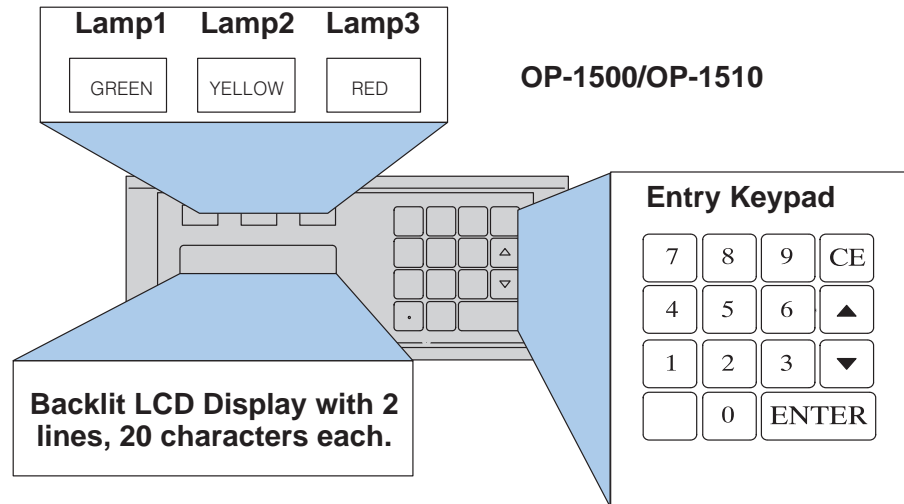


The OP- 1510 contains two user-defined pushbuttons. These two pushbuttons may be configured as momentary or alternating type signals. The other three pushbuttons support the multi-layered Menu functions. The Menu pushbuttons allow you to perform the Menu operations and are clearly labeled Menu, Clear/Abort, and Select.



LCD Display Window

The OP-1500 and OP-1510 both feature a LCD display window. The LCD window supports two message lines which can display up to 20 characters each. The messages must be entered using configuration software which is referred to as OPEditor. Up to 160 messages may be configured and stored in the Operator panel. The message control type may be static text, dynamic, or interactive. The PLC logic program controls which messages are displayed. Details on how to implement and use the different types of messages are covered in later chapters.



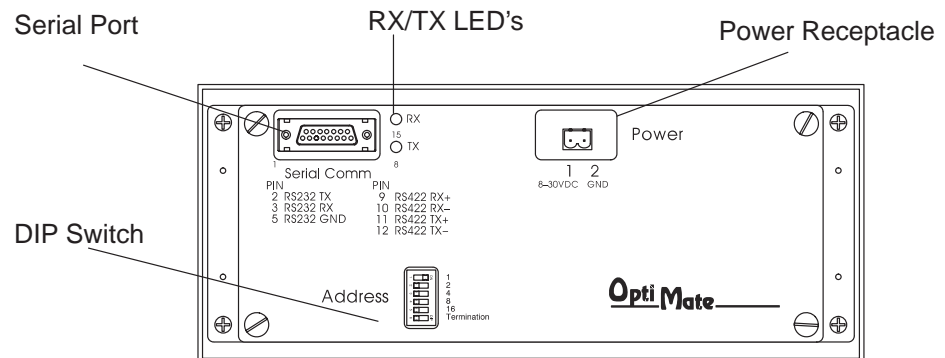
Keypad Entry

You may enter numeric values using the sealed membrane numeric keypad. Interactive messages are used to enter new setpoints using the keypad. During data entry, the keys labeled Enter, CE, ▲ (arrow-up), and ▼ (arrow-down), are also used to assist operator data entry functions. Use of Interactive messages are discussed in later sections of this manual.

Annunciator Lamps

The OP-1500 and OP-1510 each contain three annunciator lamps located above the LCD message window. From left to right these lamps are colored green, yellow, and red and may be labeled to fit your application. The lamps are turned on, off, and flashed through your ladder logic program.

Back-Panel Layout The back side of the OP-1500 and OP-1510 are typical in physical and functional characteristics. The panels both contain a serial port with transmit and receive LEDs, a power receptacle, and an address block with a termination switch.



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 block style connector, also located on the back of the panel, is used to connect an external 24VDC power supply. This block style connector with screw terminals is provided with each panel and allows plug-in connection to the power receptacle.

Address Block

The address switch is for setting the panel address number (0-30) or selecting the panel configuration mode (address No. 31). The address block contains six switches which are discussed in Chapter 2, Installation and Specifications.

Access the Back Panel

The back of the OP-panel must be accessible for maintenance and programming purposes. For door mount installations allow minimum 5-inch depth behind the door for OP-panel clearance. This will include the 2-3 inches required for communications connector and cable. The next chapter discusses mounting specifications and cutout dimensions. Please refer to the Maintenance and Troubleshooting chapter in this manual for tips and techniques on troubleshooting.

Frequently Asked Questions

Q. What's new in this Second Edition Rev. A User's Manual?

A. The Second Edition OP–1500 and OP–1510 manual is divided into chapters for quick reference to information. This manual will help you understand and use features for both operator panels. Application Worksheets and programming examples are provided within the manual Appendices. It also defines the use of new Status bits (Up/Down arrows and Enter key bits).

Q. What is required to get started using the OP-1500 and OP-1510 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. You should ensure the serial port, cables, and protocol parameters are properly chosen for the Optimate panel configuration you are programming.

Q. What's different between the OP-1500 and OP-1510 operator panels?

A. The OP-panels support typical features such as messages, pushbuttons, and lamps with exception the OP–1510 panel allows menu/sub-menu options. This menu/sub-menu feature is well-suited for systems which require extensive operator entry of setpoints and variable type data. The menu features occupy three pushbuttons to be used for handling the menu operations. Once again, you want to consider using the OP–1510 panel for applications which demand data entry of multiple variables or selection of multiple functions.

Q. How do I configure the OP-1500 and OP-1510 operator panels?

A. Using the OP-WINEDIT configuration software available from PLC*Direct*. This OPEditor 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 all your OptiMate panels. The OP-WINEDIT software is provided with installation documentation and Help screens.

Q. Can the OP-1500 and OP-1510 be used with other PLC products?

A. Yes. The Optimate units do support Allen-Bradley SLC 5/03, SLC 5/04, Micrologix, Modicon (MODBUS) and GE (CCM/SNP) PLCs. These applications are configured unique to that network and serial communication specifications supported with each different PLC product.

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

A. No, the OP-panels which support display capabilities allow numeric data variable display, and some panels in addition will allow text message display on the 2-line 20-character LCD display window.

Q. Are the OP-panels compatible with the DL105 and other PLC products?

A. Yes, the OP-panels manufacturer date codes are located on the rear of the units. OP-panels manufactured from **October 1996** or later contain firmware which is compatible with **Direct**LOGIC PLCs, Allen-Bradley SLC 5/03, SLC 5/04, Modicon, and Micrologix PLCs. OP-panels manufactured from **October 1996** or later contain firmware version. For upgrade information contact your PLC**Direct** representative for details.

Q. Are OP-600 series panels compatible with the OP-9001 Master Controller applications?

A. Yes, the OP-9001 units manufacturer date codes are located on the rear of the unit. OP-9001 units which are date coded from **May 1997** or later contain firmware which is compatible with all OptiMate OP-1000 and OP-600 series panels. This firmware version is labeled on the IC chip and should be minimum of V2.4 or greater. For upgrade information contact your PLC**Direct** representative for details.

Q. Will the OP-600 series OP-panels support Allen-Bradley, MicroLogix, GE, or Modicon PLC applications?

A. No, the reduced size and cost of the OptiMate OP-600 series panels will not allow these panels to support all PLC types, as can the OP-1000 series panels.

*Supports all **Direct**LOGIC PLCs.