

Getting Started

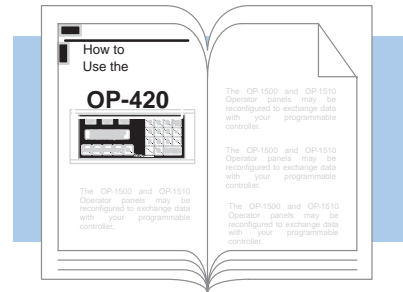
In This Chapter. . . .

- Introduction
 - Conventions Used
 - OP-420 Overview
 - Frequently Asked Questions
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Introduction

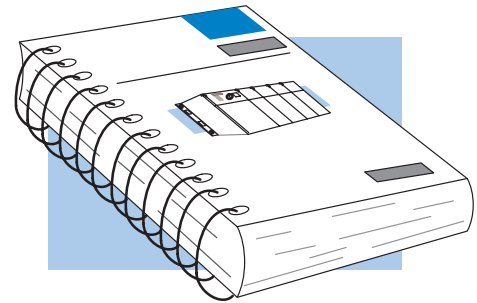
The Purpose of this Manual

Thank you for purchasing an OP-420 OptiMate panel. This User Manual shows you how to install, configure, and program the OP-420. 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 **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-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
- **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** – the address of our Web site is <http://www.plcdirect.com>

If you still need assistance, please call us at 800-633-0405. 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 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-420. 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. Also includes troubleshooting information.

Appendices

Additional reference information is in the following appendices:

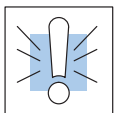
**Worksheets**

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.

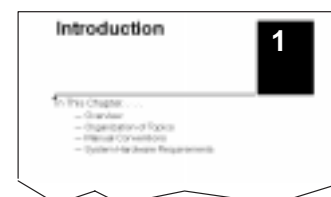


When you see the “exclamation mark” icon in the left-hand margin, the paragraph to its immediate right will be a **warning**. This information could prevent injury, loss of property, or even death (in extreme cases).

The word **WARNING:** in boldface will mark the beginning of the text.

Key Topics for Each Chapter

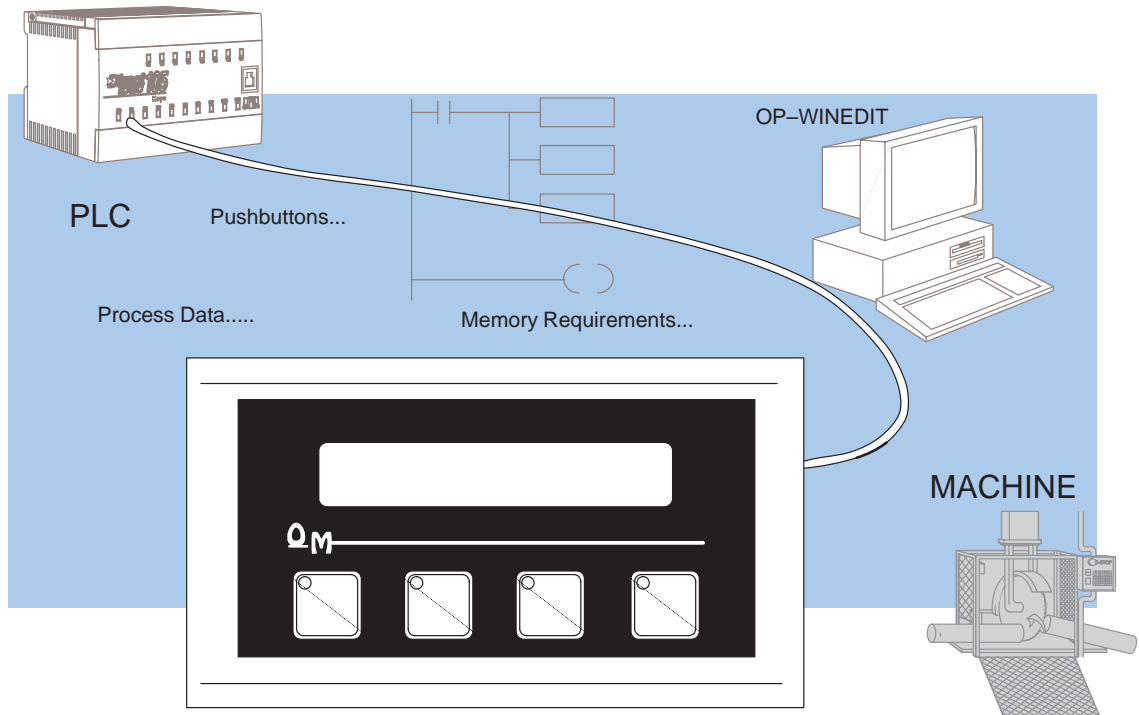
The beginning of each chapter will list the key topics that can be found in that chapter.



OP-420 Overview

Plan your System Let's look at the OP-420 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.



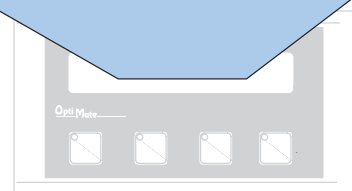
General Panel Information

The OP-420 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 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

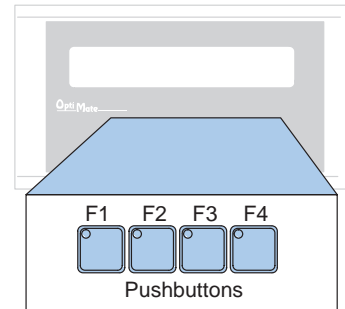
The OP-420 features an LCD display window to display user-defined messages. Up to 160 messages may be configured and stored in the operator panel using OP-WINEDIT configuration software. The PLC logic program controls which messages are displayed. Details on how to enter and use messages are covered in later chapters.

Backlit LCD Display with 2 lines, 20 characters each.



About the 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. The OP-420 has four user-configured pushbuttons. All four 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. You may create custom text labels for the pushbuttons.



Back-Panel Layout The back side of the OP-420 contains a serial communications port with transmit (TX) and receive (RX) LEDs and a power receptacle.



Power Receptacle Location LED Display Intensity Adjustment Control TX LED (Red) RX LED (Green) RJ12 Connection

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-420 can also draw +5VDC input power through this port through the communications cable when using a 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. This power supply is used when configuring the panel. It is also used to power the panel when the panel is connected to any CPU that does not supply +5VDC from the communications port.

Frequently Asked Questions

Q. What is required to get started using the OP-420 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-420 operator panel?

A. Using the OP-WINEDIT configuration software available from PLC*Direct*. 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-420 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-420 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-420?

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 DL105, DL205 or DL405 PLC; these products supply 5 VDC through the communications cable. All other PLCs, including D3-340 and D3-350 (when used with a D3-05-1, D3-08B-1 or D3-10B-1 base) 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.