

# OP-1224

## Pushbutton Panel

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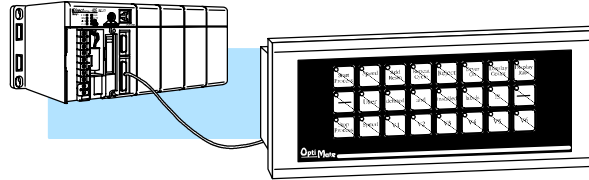
### In This Manual. . . .

- Introduction
  - Preparing the Pushbutton Labels
  - Installing the Panel
  - Configuring the Panel
  - Applying Ladder Logic
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# Getting Started

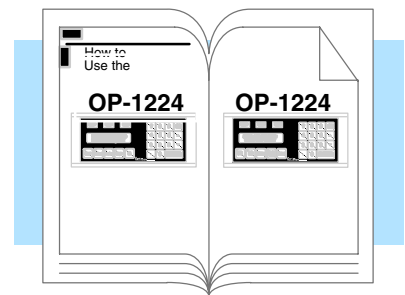
## The Purpose of this Manual

This manual shows you how to install and operate your OP-1224 Pushbutton Panel. It includes wiring diagrams and power requirements, as well as the information you need for selecting the proper connecting cables.



## Contents of the Manual

In this manual you will learn how to use the OPEditor configuration software (purchased separately) to configure your panel. And in the back of this manual, we will show you some simple ladder logic that demonstrates the versatility of the panel, both for **AutomationDirect™** and Allen-Bradley products.



## Additional Manuals

There are several other manuals you will find helpful or necessary:

- **DirectSOFT32™ Programmers Software Users Manual**—Shows you how to use the **DirectSOFT32** Windows software to write your ladder logic for **DirectLOGIC** programmable controllers.
- Respective PLC User Manuals—Shows you the memory conventions, programming instruction sets, data or file types, communications protocol, etc.
- OP-9001-M Communications Master User Manual provides details of how to use the OP-9001 for connecting multiple OP-Panels to a single CPU.

## Technical Assistance

After completely reading this manual, if you are not successful with implementing the OP-1500 or OP-1510, you may call AutomationDirect, 770-889-2858, 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.

**How the OP-1224 Works**

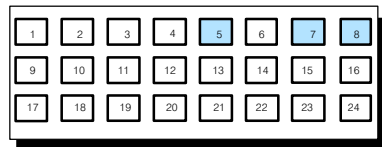
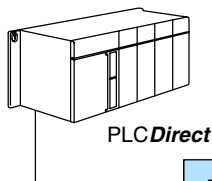
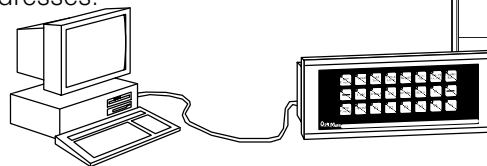
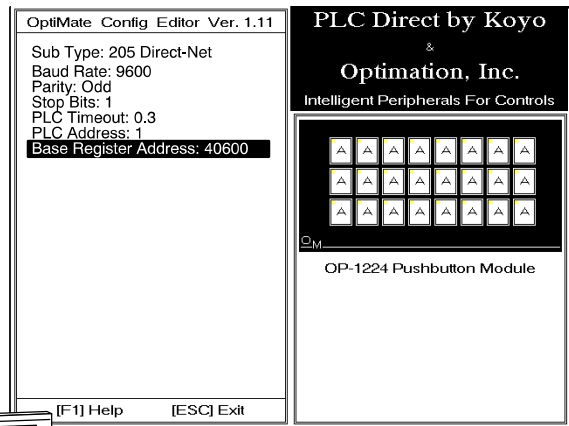
The purpose of the panel is to provide you with 24 tactile pushbuttons that can function as maintained or momentary type switches. An additional benefit of this panel is found in the LEDs that are in the upper left hand corner of each pushbutton. These LEDs can operate as indicators to reflect the status of the individual pushbutton, or they can operate independent of the pushbutton status. The LEDs can turn ON or OFF and even flash for added attention.

To link the pushbuttons and the LEDs to your PLC, the OP-1224 uses a process called “memory mapping”. This process ties the pushbuttons and LEDs to specific reserved areas of memory in the PLC. You can use any available memory as long as it is consecutive.

You enter these base register addresses during initial configuration using the OPEditor software. Each of the functions for the pushbuttons and LEDs are controlled by the status of their assigned bits within the memory words that you have reserved. You interface these words of memory through your ladder logic. The logic below shows how you can use the various features of the OP-1224. We'll cover everything in detail later.

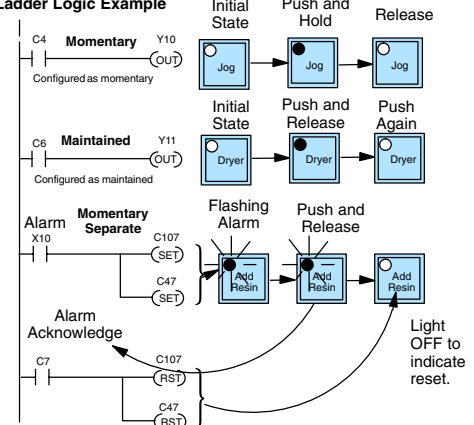
**PLC Direct**

Prior to connecting the OP-1224 to your PLC, you load the OPEditor configuration software onto your personal computer, and begin to define how you want to use the functions that have been designed into the panel. Among other decisions, you are prompted to fill in a base register address. In the example we have shown here, we have used V40600 as the start of the mapped memory addresses.



Mapped Memory Location	Function
m (such as V40600) C0-C17	Pushbuttons 1-16 ON/OFF
m+1 (such as V40601) C20-C37	Pushbuttons 17-24 ON/OFF
m+2 (such as V40602) C40-C57	LEDs 1-16 flash
m+3 (such as V40603) C60-C77	LEDs 17-24 flash
m+4 (such as V40604) C100-C117	LEDs 1-16 ON/OFF
m+5 (such as V40605) C120-C137	LEDs 17-24 ON/OFF
m+6 (such as V40606) C140-C157	Force Function Data (1-16)
m+7 (such as V40607) C160-C177	Force Function Mode/Data (17-24)

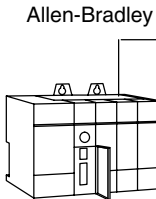
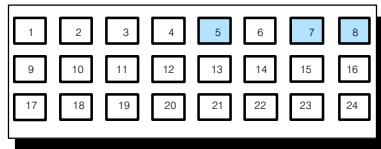
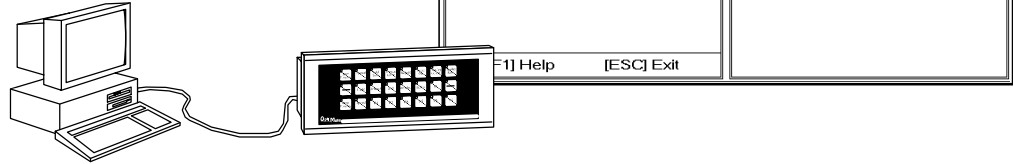
**PLC Direct Ladder Logic Example**



Notice in this example we are using Pushbuttons 5, 7 and 8. These are controlled by internal relays C4, C6, and C7. Your configuration software (OPEditor) allows you to operate your pushbuttons as either momentary switches or “maintained” alternate action switches. We have made C4 a momentary switch and C6 is a maintained switch. C7 is a momentary switch but we are controlling the separate ON/OFF and flashing of Pushbutton 8 with C47 and C107 respectively.

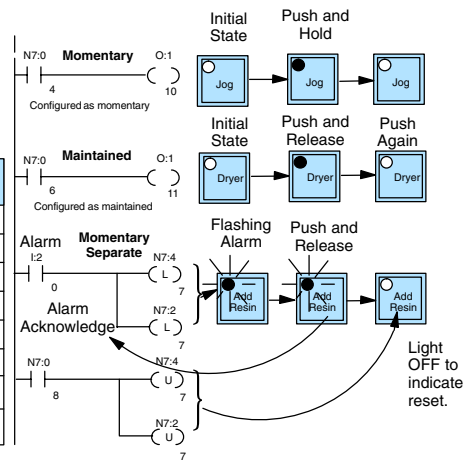
### Allen-Bradley

The same OPEditor configuration software used for the AutomationDirect product is also used for the Allen-Bradley product. As you move through the screens, one of the key items you complete is the base register address for storing data relative to the pushbuttons. In the example below, we have used N7:0/0 as the start of the mapped memory addresses. This means the base address is 0.



Mapped Memory Location	Function
m (such as N7: 0/0– 0/15)	Pushbuttons 1-16 ON/OFF
m+1 (such as N7: 1/0 1/15)	Pushbuttons 17-24 ON/OFF
m+2 (such as N7: 2/0 2/15)	LEDs 1-16 flash
m+3 (such as N7: 3/0 3/15)	LEDs 17-24 flash
m+4 (such as N7: 4/0 4/15)	LEDs 1-16 ON/OFF
m+5 (such as N7: 5/0 5/15)	LEDs 17-24 ON/OFF
m+6 (such as N7: 6/0 6/15)	Force Function Data (1-16)
m+7 (such as N7: 7/0 7/15)	Force Function Mode/Data (17-24)

### Allen-Bradley Ladder Logic Example

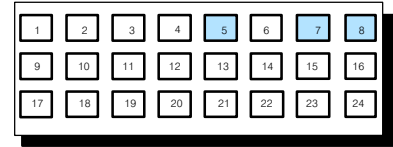


Notice in this example we are using Pushbuttons 5, 7 and 8. These are controlled by bits 4, 6 and 7 in integer file N7:0/0. Your configuration software (OPEditor) allows you to operate your pushbuttons as either momentary switches or “maintained” alternate action switches. We have made Pushbutton 5 a momentary switch and Pushbutton 7 is a maintained switch. Pushbutton 8 is a momentary switch but we are making its LED flash with N7:2/7 and controlling the LED ON/OFF separately from the button status with N7:4/7.

## Using the Pushbutton Panel...5 Easy Steps

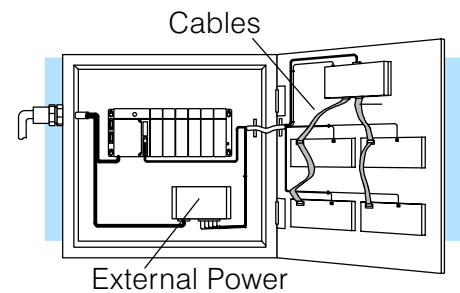
### Step 1: Prepare Your Pushbutton Labels (Pages 5 – 6)

First, you need to prepare the labels for each of the pushbuttons. The labels insert into plastic sleeves behind the main cover. To access the sleeve, you merely snap loose the front bezel.



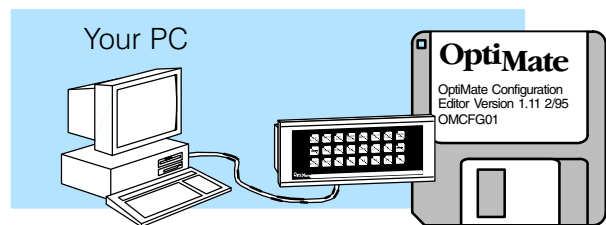
### Step 2: Install the Panel (Pages 7–14)

Preparing for installation, you will want to check the individual specifications. These include dimensions, power requirements, cabling requirements, and NEMA ratings. We include information you will need for mounting; i.e. cutout dimensions, cabling requirements, components needed, etc.



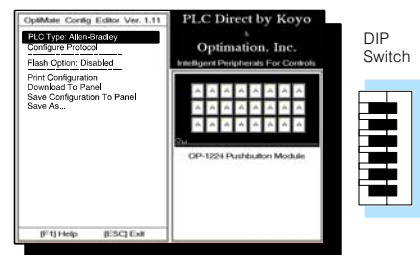
### Step 3: Load the OPEditor Software (Page 15)

You need the OptiMate™ OPEditor software in order to configure your panel. At the time of publication, we have a DOS version with the introduction of a Windows version due in early 1996. This software is the same regardless of whether you are connecting to AutomationDirect or Allen-Bradley product.



### Step 4: Configure the Panel to Work with your CPU (Pages 16–20)

After setting a DIP switch on the rear of the panel and attaching the programming cable, you are ready to configure your panel. The simple and easy-to-follow screens make configuration a painless process.



### Step 5: Write the Ladder Logic (Pages 21–45)

The amount of ladder logic programming knowledge you need is very basic. In most cases, you are already familiar with the elements of logic that are required. We'll give you examples in the final section of this manual, and you will see right away just how easy it is.

