

EXP2424 Expansion Board Installation Guide

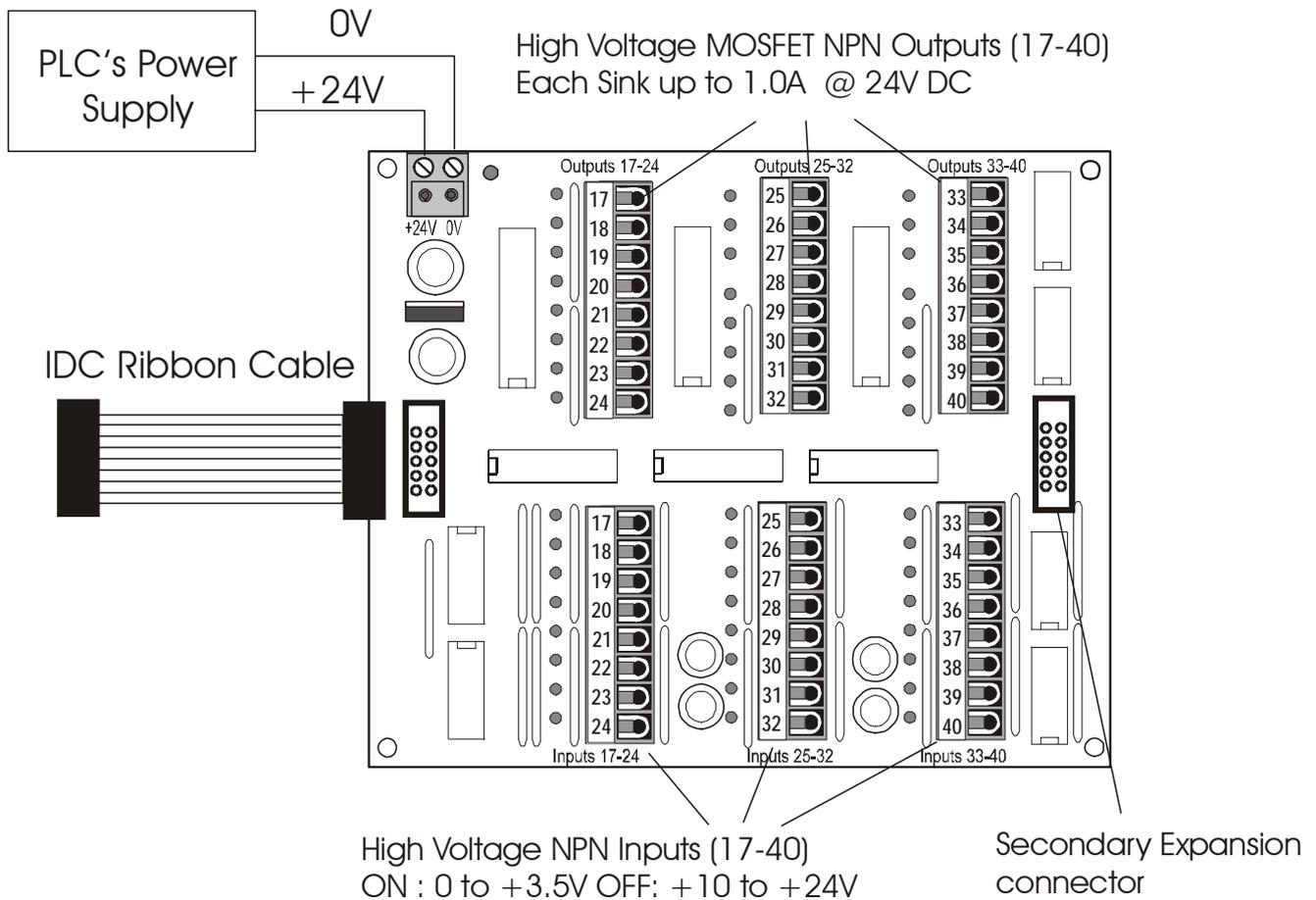


Figure 1 - 24 Inputs, 24 Outputs I/O Expansion board for FMD & F-series PLC

1. Introduction

The EXP2424 is an expansion board specifically designed for the FMD and F-series PLCs. It adds additional 24 digital inputs and 24 digital outputs to the FMD88-10, FMD1616-10, F2424 or F1616-BA. The EXP2424 also has an secondary expansion connector on the right side of the PCB which allows additional expansion board to be cascaded (up to a maximum of 128 digital inputs and 128 digital outputs for these PLCs), or a MD-HMI to be connected. The other expansion board EXP1616R can also be cascaded to the same secondary expansion connector.

The EXP2424 is identical in size to the FMD88-10 PLC. This allows the expansion board to be "stacked" on top or below a FMD88-10 PLC for applications where the controller must be fitted within a very tight space. A FMD88-10 with a EXP2424 stacked together provide 40 digital inputs and 40 digital outputs in a very small footprint.

2. Physical Mounting & Wiring

The EXP2424 requires 4 PCB standoffs (or some screws and nuts) to support the board. It is usually mounted side-by-side to the right of the FMD or F-series PLCs. You must plug the supplied ribbon cable to the PLC's expansion connector located along the right edge of the PLC.

The supplied ribbon cable is meant for side by side mounting of the expansion board. If you wish to stack the EXP2424 on top or below the FMD88-10, you will need to make or purchase a longer expansion ribbon cable (approximately 8 inches long) in order to connect the PLC to the expansion board.

Digital I/O Ports: Detachable screw terminals are provided for quick connection to all digital inputs, outputs and power supply wires. Each block of screw terminals can easily be detached from the controller body, enabling easy replacement of the controller board when necessary. Since the terminal block for digital I/O is inserted vertically to the board surface, you need to remove the terminal block before you can start wiring. Use a small flat-head screw-driver and insert underneath the terminal block, apply even pressure to raise the terminal block until it becomes loosened from the connecting-pin strip, as shown below:

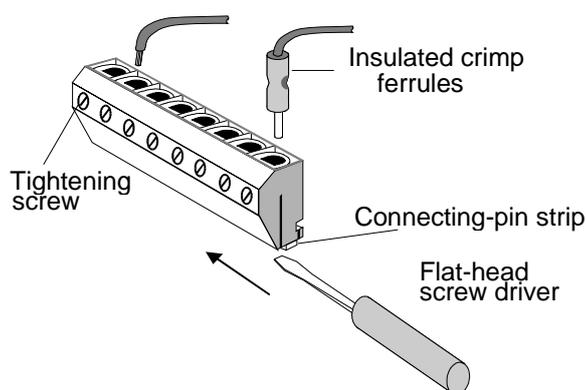


Figure 2 - Removing Screw Terminal block

3. Power Supply

The EXP2424 must be connected to **SAME** 12-24V power supply as the PLC. The power supply is to be connected to the 2-way detachable screw terminal located on the top left side of the board as shown in Figure 1.

Although the expansion board actually draws +24V power from the PLC via the ribbon cable so that it appears to work even if you don't wire the external power to the power supply screw terminal, we strongly recommend wiring up the power supply terminals to reduce chances of high current induced spikes from interfering with the expansion I/O signal.

Please use only industrial grade linear or switching regulated power supply from established manufacturers for best results. Using a poorly made switching power supply can give rise to a lot of problems for the PLC.

Always place the power supply as near to the PLC and the expansion board as possible and use separate wires to connect the power to I/O. Keep the power supply wire as short as possible and avoid running it along side high current cable in the same cable conduit.

4. Digital Input Circuits

Input #	Type	Voltage Level
17- 40	12-24V DC NPN	OFF: Open Circuit or +10V to +24VDC. ON: 0V to +3.5V DC

High Voltage NPN Inputs

When connected to a FMD88-10 or FMD1616-10 PLC, the first 24 expanded inputs should occupy Input #17 to #40 (input #9 to #16 is NOT available on FMD88-10). A second EXP2424 cascaded to the first EXP2424 will occupy input #41 to #64. The input numbers can be marked on their screw terminals using the supplied I/O label sticker.

These are all high voltage NPN type and they are identical to the digital inputs (#1-16) of the FMD88-10, FMD1616-10. All these inputs have green color LED indicators when lit. Every 8 inputs are grouped together into a single strip of detachable screw terminal. Please refer to FMD User's Manual for the wiring diagram for these inputs. (Note: when used with the F2424 PLC, these inputs occupy #25 to 48)

5. Digital Output Circuits

Output #	Type	Voltage Level
17- 40	12-24V DC NPN MOSFET driver	OFF: pulled up to +24VDC via 5.6K resistor ON: 1.2V @ 1.0A per output.

High Voltage MOSFET Outputs

Output #17 to #40 are high voltage, high current DC MOSFET type outputs which are similar to the digital outputs (#9-16) of the FMD1616-10+ PLC. All these outputs have red color LED indicators when lit. Every 8 outputs are grouped together into a single strip of detachable screw terminal.

A second EXP2424 cascaded to the first EXP2424 will occupy output #41 to #64. The output numbers can be marked on their screw terminals using the supplied I/O label sticker.