



OM9001 Communications Master

The OM9001 Communications Master provides an intelligent interface between Programmable Logic Controllers (PLCs) and a set of OptiMate modules. The OM9001 communicates serially to the PLC, transferring register data in both directions. Up to 31 OptiMate modules, provided they are 1000 series or 600 series, can be connected to the

OM9001 for transparent operation with the PLC.

The OM9001 can be configured via the OptiMate Configuration Editor to communicate with any of a large selection of PLC protocols. Baud rate, parity and other protocol specifics are interactively selectable to enable communications. The OMWinEdit configuration software also allows the selection of any combination of 600 or 1000 series OptiMate modules. Once configured, the OM9001 will continuously transfer data between all modules and the PLC. All the user must do to totally control operation is program the PLC to read and write the appropriate data registers. The OM9001 and the OptiMate modules take care of the rest.

The OM9001 contains two serial ports for communications to the OptiMate modules at 19,200 baud. The serial ports are RS422. It can be connected to any number of modules between 1 and 31 within a cable distance of 4000 feet.

Applications

- Machine control
- Process control
- Security systems
- HVAC
- Plant monitoring/control
- PLC applications
- Microprocessor applications

Features

- Communicates with a variety of PLCs
- Transfers data to up to 31 OptiMate modules
- Transparent operation
- High speed data transfer
- 2 RS422 serial ports for module interconnect
- Low cost interface

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Troubleshooting

Specifications

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How the OM9001 Communicates

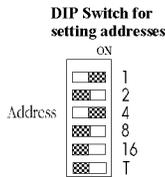
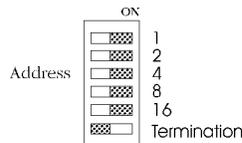
The OM9001 communicates with your OptiMate panels via two RS422 ports at 19200 baud. It communicates with your PLC at the rate you indicate during configuration. Depending on brand and model of PLC, this will be some rate between 4800 and 19200 baud. Later in this manual, we will show you how to select the communication parameters between your OM9001 and PLC. This is done with the same OMWinEdit software that you use to configure the individual OptiMate panels.

The OM9001 knows which OptiMate panel is sending information to it, because each OM panel has a unique address. The 1000 Series address is assigned via its respective DIP switch. The 600 Series address is assigned by the OMWinEdit configuration software. You can have up to 31 panels connected to a single OM9001. Addresses 0 through 30 are available for this purpose. See the diagram below for more about DIP switch settings.

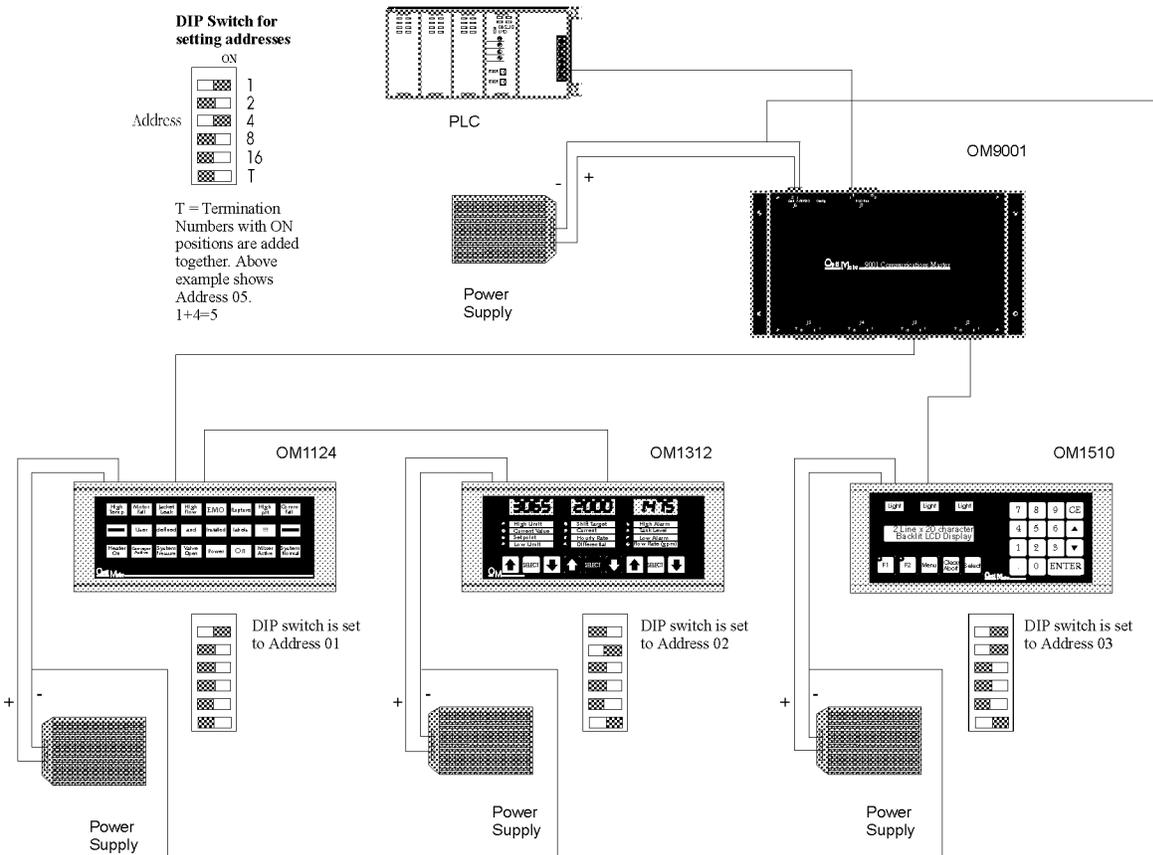
Shown below is a sample configuration using a PLC, a setpoint/display panel (OM1312), a lamp annunciator panel (OM1124), and a menu-driven operator panel (OM1510), each having a unique address.

Assigning Addresses to the Panels Connected to the OM9001

A 6-position DIP switch on the rear of each individual panel allows you to assign a hardware address to your panel. Each panel must have a unique address. You can use any address between 0 and 30 when communicating. **DIP switch 6 is for termination and should only be on if a panel is at the end of the RS422 cable.**



T = Termination
Numbers with ON positions are added together. Above example shows Address 05.
1+4=5



Using the Communications Master

Step 1: Plan Your System of Panels

In the next section, is a template for planning your multi-panel OptiMate system. It's main purpose is to have you plan in advance what base register addresses you want to use for each panel, and to make sure that the consecutive bits consumed by each panel during the mapping process do not overwrite each other. You need to know this information when you plan the configuration.

Step 2: Install the Panels and the OM9001

Preparing for installation, you will want to check the individual specifications. These include dimensions, power requirements, cabling requirements, and NEMA ratings. This manual includes only the specifications for the OM9001. Review the individual OptiMate User Manuals for each respective panel used.

Step 3: Configure the System and the Individual Panels

You need the OptiMate OMWinEdit software in order to configure the system and all the individual panels.

Step 4: Download the Configurations to Each Panel

As you configure the OM9001 for a multi-panel system, you will be configuring each panel as a part of the overall configuration process. After each panel is configured, you will then download the configuration to the individual panel.

Step 5: Download the System to the OM9001 Master

After all the panels have been downloaded with their respective configurations, you then download the overall scheme to the OM9001 itself. This requires that you set a jumper on the OM9001.

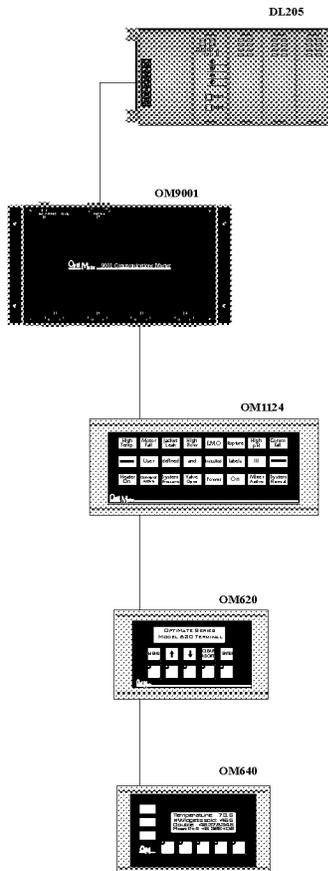
Step 6: Connect the System

After the system configuration is complete, connect the OM9001 to the PLC and to the panels.

Plan your Memory Map

When using more than one OptiMate panel in a system, it is important that you plan ahead to make sure the memory mapping for one panel does not over write the memory mapping for another panel. Let's take a look at a typical system. Notice that each panel shown consumes a fixed amount of memory for its mapping. For example, the OM1124 needs 4 consecutive 16-bit registers; the OM620 needs 9 consecutive 16-bit registers; and the OM640 needs 14 consecutive 16-bit registers.

When you are planning your system, you have to make sure that your panels don't compete for the same memory space. By thinking out memory allocation for the original mapping and re-mapping, you can prevent possible memory overlap in either area. To help you with this process, we recommend using the memory planner on the following page. The following example shows the memory requirements and assignments for three OptiMate panels connected to a DL205 programmable controller. Refer to pages 6-8 to find out how many registers of consecutive memory are required for each panel. Memory does not have to be consecutive between the various panels.



OptiMate Panel Memory Planner

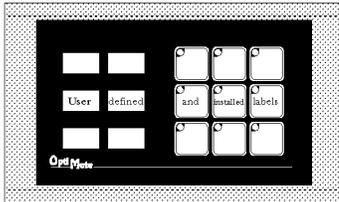
Panel No. (0-30)	Panel Type	Registers Needed	Original Mapping		Remapping	
			Base Address	Final Word Address	Relationship	Function
1	OM1124	4	V40600	V40603		
2	OM620	9	V2000	V2010	V2007:V40604	status
					V2010:V40605	control
3	OM640	14	V2020	V2035	V2034:V40606	status
					V2035:V40607	control

Notice that we have remapped some addresses to take advantage of selected features that require individual bit manipulation. We have kept things simple here to make the example easy to understand. For the OM620 and OM640, for example, we have only remapped the status and control registers.

By thinking out memory allocation for the original mapping and re-mapping, we can prevent possible memory overlap in either area. Refer to your respective OptiMate panel User Manuals to determine what features need to make use of remapping. Since memory mapping is unnecessary with Allen-Bradley PLCs, you may ignore the remapping part of the template if you are an A-B PLC user.

Memory Consumption for Mapping Process

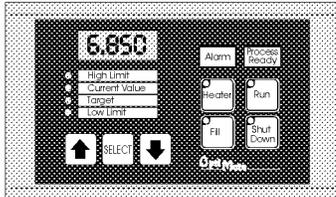
OM609



X	Indicator Light / LED On/Off
X+ 1	Indicator Light / LED Flash Control
X+ 2	Button On / Off Status
X+ 3	Force Data & Commands

consumes 4 consecutive 16-bit registers

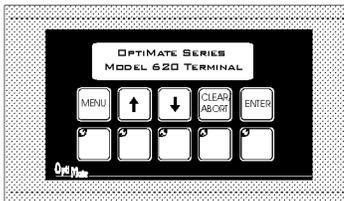
OM613



X	Indicator Light / LED On/Off/Flash
X+1	Button On / Off Status
X+2	Field Point 1 Data Cell
X+3	Field Point 2 Data Cell
X+4	Field Point 3 Data Cell
X+5	Field Point 4 Data Cell
X+6	Field Point Force Data Cell
X+7	Force Commands

consumes 8 consecutive 16-bit registers

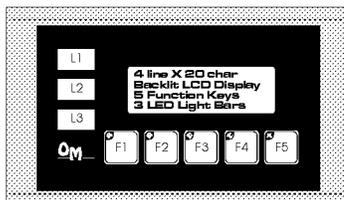
OM620



M+0 (first register of bank)	Top line message selection
M+1	Bottom Line message selection
M+2	Top line data
M+3	Top line data 2 (for long BCD)
M+4	Bottom line data
M+5	Bottom line data 2 (for long BCD)
M+6	Function selection
M+7	Status register
M+8	Control register

consumes 9 consecutive 16-bit registers

OM640

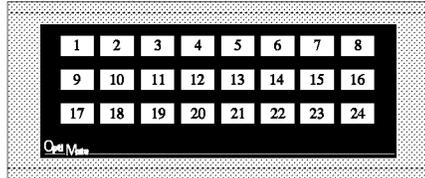


M+0 (first register of bank)	Top line message selection
M+1	Second line message selection
M+2	Third line message selection
M+3	Bottom Line message selection
M+4	Top line data
M+5	Top line data 2 (for long BCD and floating point)
M+6	Second line data
M+7	Second line data 2 (for long BCD and floating point)
M+8	Third line data
M+9	Third line data 2 (for long BCD and floating point)
M+10	Bottom line data
M+11	Bottom line data 2 (for long BCD and floating point)
M+12	Status register
M+13	Control register

consumes 14 consecutive 16-bit registers

Memory Consumption for Mapping Process

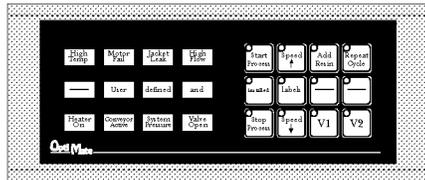
OM1124



consumes 4 consecutive 16-bit registers

m	Lamps 1-16 On/Off control
m+ 1	Lamps 17-24 On/Off control
m+ 2	Lamps 1-16 flash
m+ 3	Lamps 17-24 flash

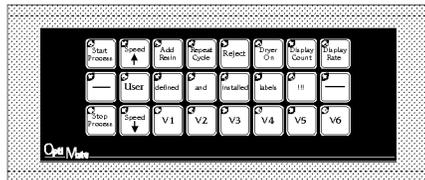
OM1212



consumes 6 consecutive 16-bit registers

X (first register of bank)	Indicator Lamps On/Off control
X+1	Indicator Lamps flash control
X+2	Button LEDs ON/Off control (LED separation mode only)
X+3	Button LEDs flash control
X+4	Button On/Off status
X+5	Force pushbutton data & commands

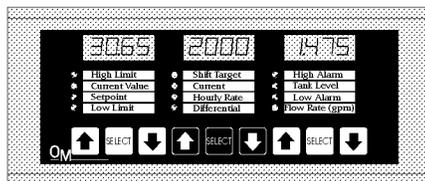
OM1224



consumes 8 consecutive 16-bit registers

X (first register of bank)	Pushbutton 1-16 On/Off Status
X+1	Pushbutton 17-24 On / Off Status
X+2	Lamps 1-16 flash
X+3	Lamps 17-24 flash
X+4	Lamps 1-16 On/Off (if in LED separation mode)
X+5	Lamps 17-24 On/Off (if in LED separation mode)
X+6	Force pushbutton data (1-16)
X+7	Force pushbutton data (17-24) Command bits

OM1312

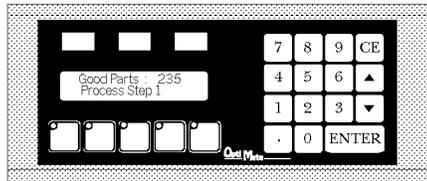


consumes 14 consecutive 16-bit registers

X (first register of bank)	Field Point #1 data (single precision numeric data from 0 - 9999)
X+1	Field Point #2
X+2	Field Point #3
X+3	Field Point #4
X+4	Field Point #5
X+5	Field Point #6
X+6	Field Point #7
X+7	Field Point #8
X+8	Field Point #9
X+9	Field Point #10
X+10	Field Point #11
X+11	Field Point #12
X+12	Bit 16 - Force Flag. If this bit is set, the setpoint(s) selected by bits 1-12 will be forced.
X+13	Field Point force data (single precision values from 0 - 9999)

Memory Consumption for Mapping Process

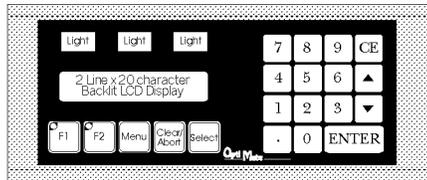
OM1500



consumes 8 consecutive 16-bit registers

X (first register of bank)	Top line message selection
X+1	Bottom line message selection
X+2	Top Line data
X+3	Decimal Point, Top Line data
X+4	Bottom Line data
X+5	Decimal Point, Bottom Line data
X+6	Status Register
X+7	Control Register

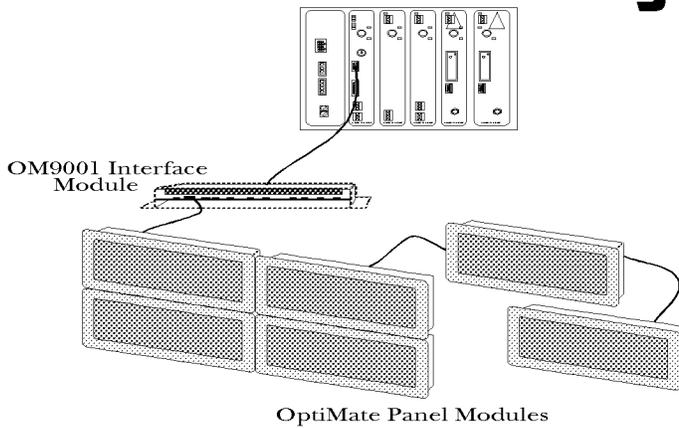
OM1510



consumes 8 consecutive 16-bit registers

X (first register of bank)	Top line message selection
X+1	Bottom line message selection
X+2	Top Line data/Function selection
X+3	Decimal Point, Top Line data
X+4	Bottom Line data
X+5	Decimal Point, Bottom Line data
X+6	Status Register
X+7	Control Register

Installing the Panels



Install the Panels and the OM9001

In this section, you will be given all of the information you need to install the panel. Before actually installing the OM9001 panel, it may be helpful to examine the specifications page to make sure that the requirements of your application are met.

CPUs Supported

Koyo DL05, DL105, DL205, DL305, DL405
 Allen-Bradley SLC 5/03, SLC 5/04, SLC 5/05,
 MicroLogix
 GE 90-30, Micro 90
 Modicon Modbus

Power and Cabling Requirements

By using an OM9001 Communications Master, you can connect multiple OptiMate units up to a single CPU. Up to 31 individual units can be connected in a daisy-chain fashion to the OM9001. Communications are via RS422 between the OM9001 and the operator interfaces. If you use a good quality shielded cable, you can have a total distance of up to 4000 feet between the OM9001 and the last operator interface unit in the chain. We recommend Belden 9729. If you only have a short distance (up to 30 feet) and low electrical noise, you can use ribbon cable and easy-to-install crimp-on ribbon connectors.

The OM9001 panel operates on DC voltages between 8 and 30 VDC rated at 3.75 watts. Connect the panel to a power supply using the terminal block connector supplied.

In all cases, the power supply (supplies) must maintain the specified voltage and current consumption for each individual unit under all conditions, including power-up.

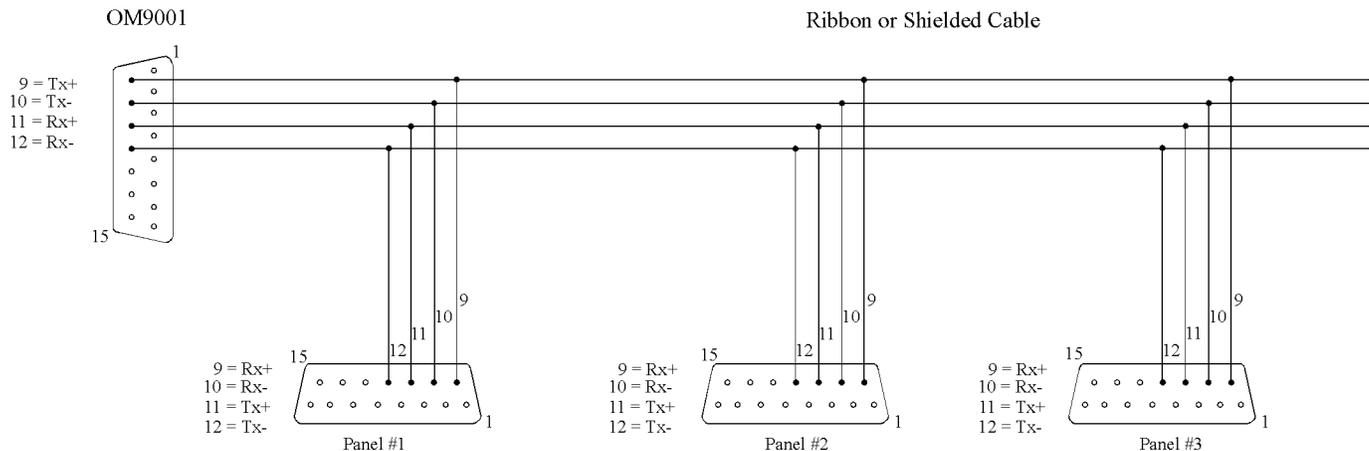
Custom Cables

You must build your own cables for connecting the multiple panels to your OM9001. Since the proper cable choice really depends on your application, we offer the following connectors. For electrically noisy environments, we recommend a good shielded cable, such as Belden 9729 or equivalent. This type of cable will require the solder-type connectors or terminal block connectors. If you're going 30 feet or less, you can use ribbon cable. For ribbon cable, we recommend Belden 9L28015 or 3M 3365/15. See the chart at right for more details concerning the Belden cable.

Belden 9729 Specifications	
Number twisted pairs	2
Nom. Impedance (ohms)	100
Nom. Capacitance (pF/m)	41
Wire Gauge (AWG)	24

- > OM-CMCON-1 - pack of 4 ribbon cable connectors
- > OM-CMCON-2 - pack of 4 solder-type connectors
- > OM-CMCON-3 - pack of 2 terminal block-type connectors
- > CBL-RIBKIT-1 - pack of 4 ribbon cable connectors and 10ft. ribbon cable

Note: Panels can be located as far away as 4000 feet from the OM9001 when using shielded cable (Belden 9729 or equivalent). Flat ribbon connections can be used for a distance of 30 feet maximum. For ribbon cable, we recommend Belden 9L28015 or 3M3365/15. **Notice in the diagram below that the receive and transmit lines are wired straight through for each of the panels connected to the OM9001. For example, pin 9 of the OM9001 is the Tx+ line and pin 9 of the panel is the Rx+ line. This keeps you from having to twist cable wires. The matchup between Tx and Rx is handled internally by the OM9001.**



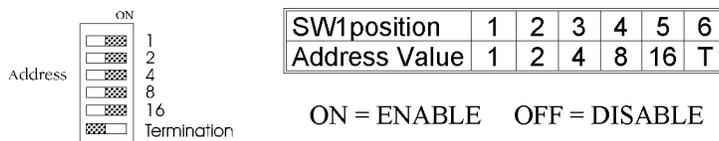
Setting the Panel Address and OM9001 Jumper

Assigning Addresses to the Panels Connected to the OM9001

1000 Series

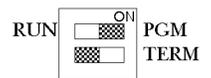
Each panel must have a unique address. A 6-position DIP switch on the rear of each individual panel allows you to assign a hardware address to your panel. You can use any address between 0 and 30 when communicating between a 1000 Series panel and the OM9001 Master Communications panel. Address 31, however, is reserved. See the note that follows:

NOTE: You must use Address #31 (positions 1-5 ON, 6 OFF) when you are using the OMWinEdit software to download or upload the configuration to each panel.



600 Series

The panel address is set via the OMWinEdit configuration software. The 2-position DIP switch on the back of the 600 Series panel is used for Program/Run mode and termination. To communicate with the OM9001, the switch must be set to RUN(OFF). For configuration, the switch labeled RUN/PGM must be set for PGM(ON). The TERM switch should only be on if the panel is at the end of the RS422 cable.



How to Set the Operator Panel Addresses (1000 Series)

To set the address on any of the individual panels so that they can communicate with the OM9001, simply set the appropriate switches on the DIP switch to the desired address. The figure above shows the binary weighting of each switch position. Notice that it is in decimal format. To select address 14, for example, you would slide switches 2, 3, and 4 to the right (ON), and switches 1, 3, and 5 to the left (OFF), (2 + 4 + 8 = 14). **Remember that you must use address 31 only when communicating with a computer for uploading or downloading.** The letter 'T' in position 6 stands for "termination resistor". **Only the final panel in a multi-drop panel configuration should have this position turned ON.**

NOTE: Each time you change the DIP switch setting, you must cycle power to the panel.

Setting the Jumper of the OM9001

There is a jumper terminal on the edge of the OM9001, located between the PLC Port (J7) and the power supply connector (J6). This jumper **must** be in place across both pins in order for the OM9001 to communicate with your computer for downloading or uploading the configuration. **After configuration is complete, you must remove the jumper or the OM9001 will not communicate with the PLC.**

Multi-Panel Applications

Refer to the appropriate manuals for more information concerning the OM9001 and the OptiMate panels.

This section covers 3 basic setups in an OptiMate Multi-Panel System.

1. Systems using a single power supply.
See Figure 1, this page.
2. Systems using multiple power supplies and a single OM9001 comm port.
See Figure 2, next page.
3. Systems using multiple power supplies and both OM9001 comm ports.
See Figure 3, next page.

In multiple power supply systems, the common (0VDC GND) for each power supply must be connected.

We recommend an individually paired and shielded cable such as Belden 9729 or equivalent. For distances of 30 feet or less, a ribbon cable such as Belden 9L28015 or 3M 3365/15 may be used.

The termination switch should be in the ON position ONLY in the panel at the end of the communication cable.

OptiMate panels with a 6-position DIP switch on the back should never have the DIP switches set the same as another panel in the system or the RS422 transceiver chip can burn out on the panels or the OM9001.

In all cases, the power supply (supplies) must maintain the specified voltage and current consumption for each individual unit under all conditions, including power-up.

Multi-Panel System with a single power supply

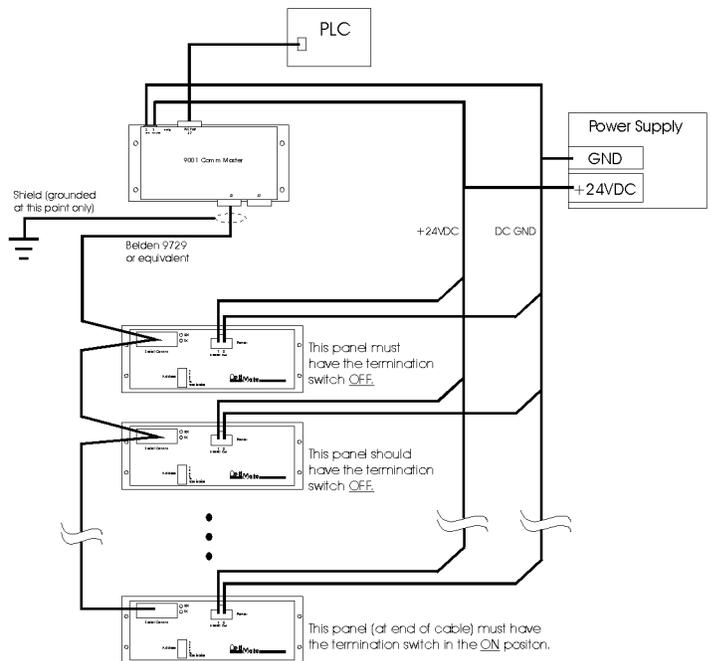


Figure 1

Multi-Panel System with multiple power supplies using both OM9001 comm ports

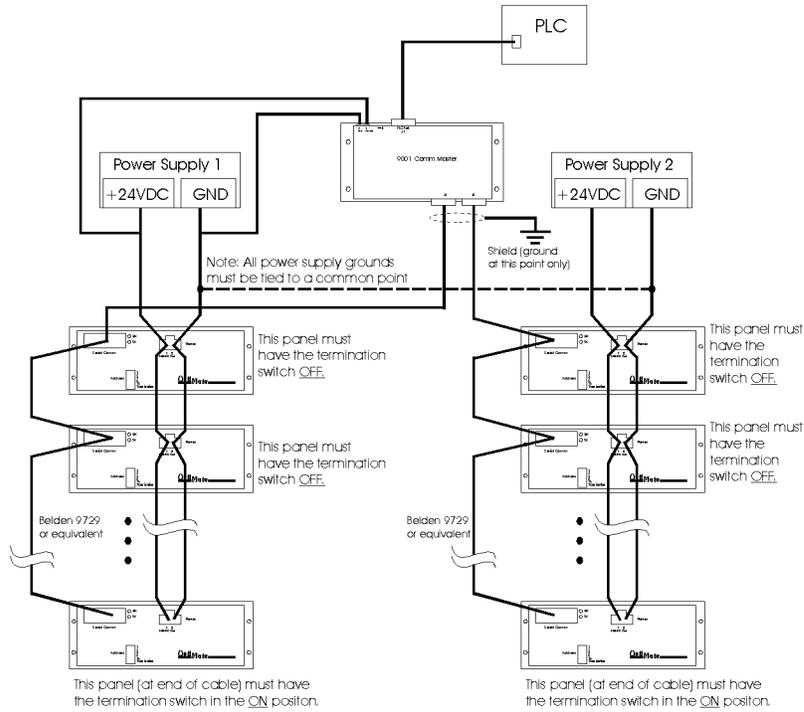


Figure 2

Multi-Panel System with multiple power supplies using a single OM9001 comm port

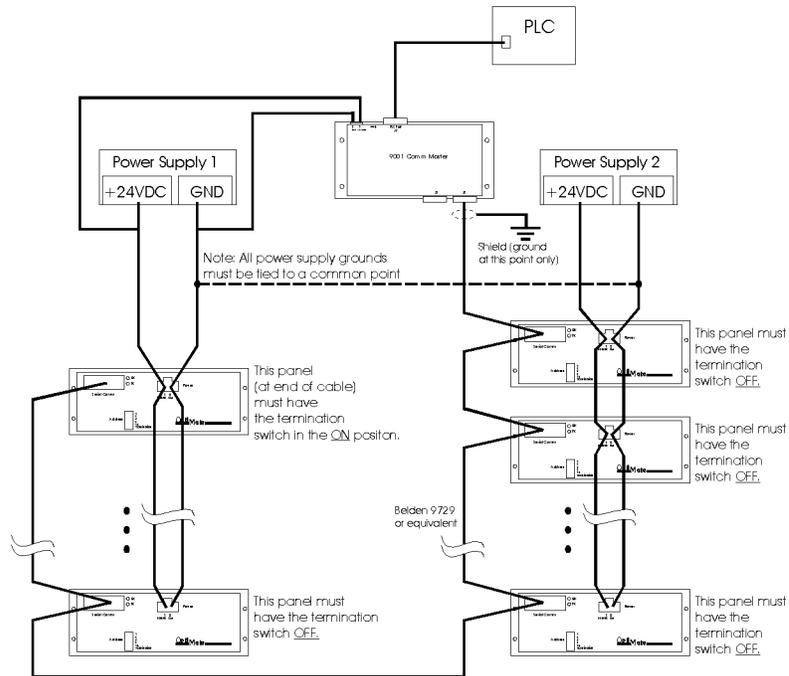


Figure 3

Configuring Multiple Panels Using OMWinEdit

You configure multiple panels by installing the OMWinEdit software onto a personal computer and selecting the appropriate options. The setup options for your system configuration, such as type of PLC being used, communications protocol, and the type of panel being used, are handled through an on-screen dialog.

System Requirements

In order to use the OMWinEdit software, you must have the following components:

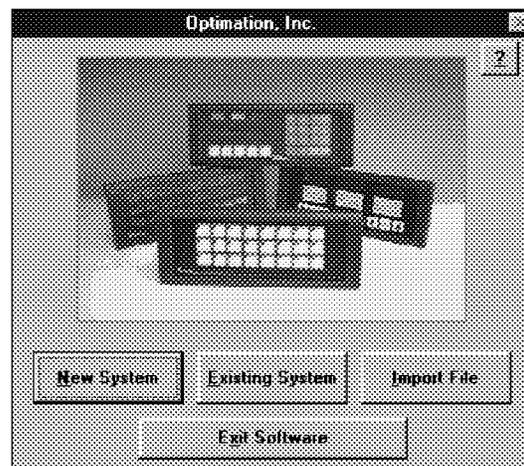
- IBM 386 (or better) compatible computer
- VGA or SVGA video board and color monitor
- Windows 3.1, 95, 98, or NT
- 2 MB free Hard Drive
- 8 MB Ram
- OMWinEdit Installation disk
- Download Cable OM-ACBL-1

Step-by-Step Procedure

NOTE: You do not have to connect the OM9001, or any of the OptiMate panels, to your computer until you are ready to download configuration information. Remember that each panel must have its DIP switch set to 31 and that the OM9001 must have a jumper in place before the configuration can be successfully written. You must remove the jumper on the OM9001 and set the DIP switch on each panel to the appropriate setting before you connect your configured system to the PLC for actual operation.

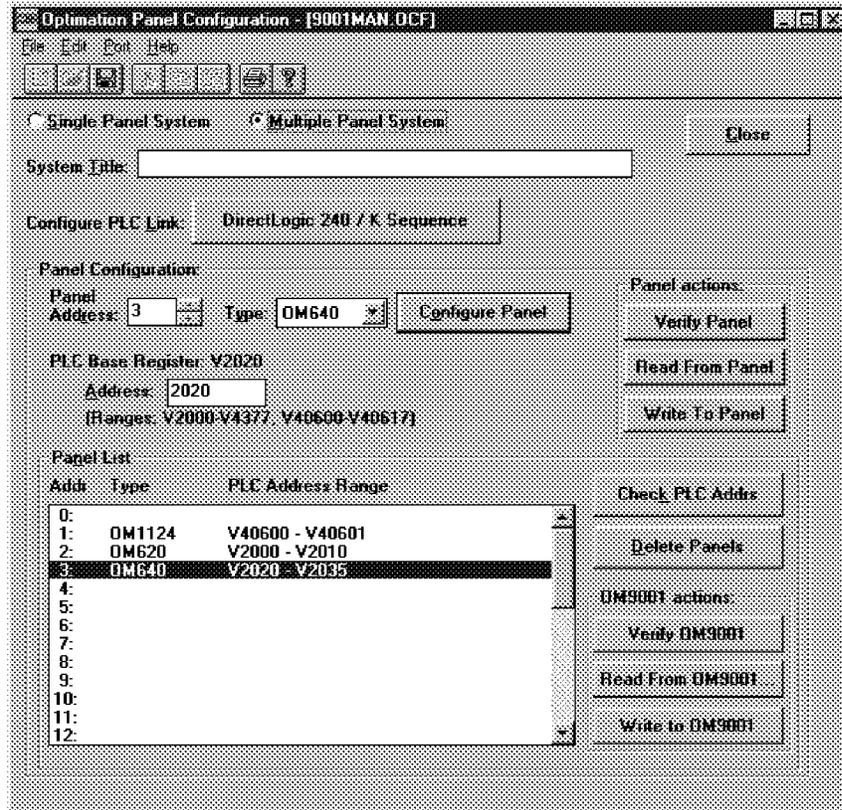
Step 1 Start up

After installing OMWinEdit, click on the Optimization Editor icon and the following screen will appear.



Step 2 Select New System

After selecting "New System," the Optimization Panel Configuration screen will appear. Click on "Port" to specify which of the PC's serial ports (COMM 1, 2, 3, or 4) you will be using when communicating with your OptiMate panel.



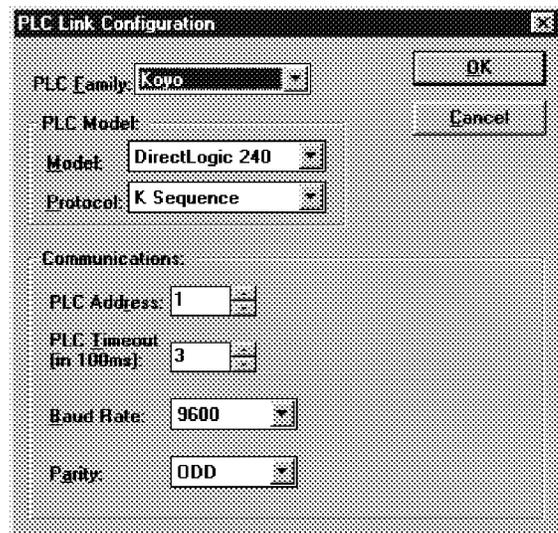
Step 3 Select Multi-Panel System

The Optimization Editor defaults to “Single Panel System,” so you must click “Multiple Panel System.” Even though you will be configuring each individual panel, as well as the OM9001, it is all done through this multi-panel path. **You do not use the single panel system for any reason when you are configuring a multi-panel system.** The Panel List will drop down and show the address information, as you enter it, for each panel.

Step 4 Configure PLC Link

Click on the button beside “Configure PLC Link.” A screen much like the one to the right will appear. Choose the type of PLC being used, as well as the model and communications protocol that is to be used between the PLC and the OM9001.

Each PLC has an address associated with its communications port. Some port addresses are fixed and some are configurable. Check your respective PLC User Manual for the address available for the port connected to your OM9001. When the OM9001 sends a message to the PLC, and either does not receive a response or does not understand the response, it will wait the timeout period before resending the message. The default timeout period is 0.3 seconds, but you can change this if you like. The range is from 0.2 seconds to 25.5 seconds. As a general rule, a lower timeout value is more effective than a larger value.

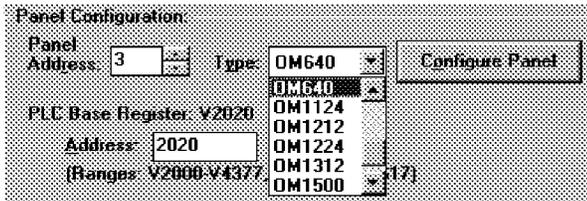


**Step 5
Add the Panel to the System**

So that the OM9001 can distinguish one panel from another, you must assign a unique address (in the range of 0 through 30) to each panel.

NOTE: Remember that you must have the DIP switch on the rear of the OptiMate panel set to address 31 (1-5 ON, 6 OFF) in order for the downloading of your configuration to take place.

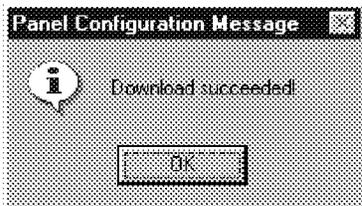
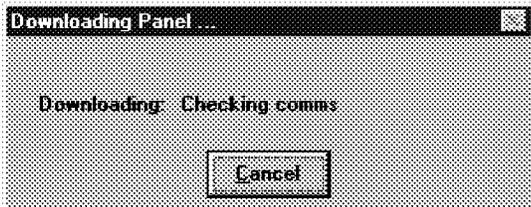
Select the Type of panel from the Panel Type list.



Type your Base Register Address in the Address box, making sure that it falls within the given range.

Click on "Configure Panel." Refer to the applicable User manual for that particular OptiMate panel to continue its configuration.

Place the panel in Program mode (address 31), connect the power cable and the download cable (OM-ACBL-1) directly to the OptiMate panel. Click "Write to Panel."



**Step 6
Repeat Step 5 for each Panel**

Each panel has to be individually configured for all of its features. You must repeat Step 5 for each panel you add to your system. Notice that as you add panels to your configuration they are shown on the Panel List at the bottom of the screen. You will also need to adjust the PLC Register address range for each panel to ensure that the addresses do not overlap.

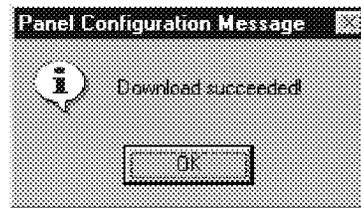
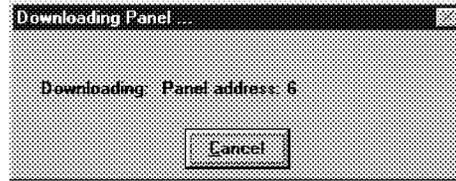
**Step 7
Configure the OM9001**

When you have completely finished configuring every individual panel belonging to your system, you are then ready to download the overall system to your OM9001 Communications Master Panel.

Set the Configuration jumper across both pins, located between J6 and J7.

Plug in the download and power cables.

Click "Write to OM9001." Notice that OMWinEdit will download to all 31 addresses to ensure that the OM9001 is configured completely.



When OM9001 Download is complete, remove the configuration jumper so that the OM9001 can communicate with the PLC. In addition, set the DIP switches on the OptiMate panels to match the unique address you assigned them during configuration. **Do not leave the panels set to address 31 because the OM9001 will not be able to communicate with them.**

**Step 8
Connect the System**

You are now ready to connect the OM9001 to the PLC and the OptiMate panels.

Troubleshooting

The steps shown below help with troubleshooting the OptiMate panel system if successful communication does not occur.

1. Confirm that you have downloaded the panel configurations to each respective panel, and that you have downloaded your system configuration to the OM9001.
2. Remove the jumper from the OM9001 and make sure that all of the DIP switches on your individual panels are set to unique addresses. These addresses, of course, must be the same panel addresses you assigned during configuration.
3. Attach the correct cable from the PLC to the OM9001. Attach the cabling between the OM9001 and the panels.
4. Ensure that your PLC, OM9001, and OptiMate panels are correctly powered.
5. With power applied, visually inspect the LED located beside each connecting port of the OM9001.
 - > The LED located beside J7 (the PLC Port) should blink **green** when the OM9001 is **sending** requests for data to the PLC. The LED should blink **red** when the OM9001 is **receiving** data from the PLC. If the baud rate is such that the request and transfer of data are very fast (changing rapidly between the red and green states), it will appear that the LED glows **amber**.
 - > The LEDs located beside J2 and J3 (multi-panel connecting ports) report the direction of data flow in the same way as explained above. The LED assigned to either J2 or J3 will blink **green** when that port is **sending** data to its panel. It will blink **red** when that port is **receiving** data from its panel. And it will glow **amber** when quickly transferring data to and from its connected panel.

Requesting Data from PLC But No Response

If the LED (by J7) remains green and never makes the transition to red or amber, you are probably experiencing a lack of response by the PLC. When your PLC and the OM9001 are communicating correctly, the LEDs should flicker constantly (or appear to glow amber at high baud rates), with only a few pauses. If it does not, try the following to isolate and solve the problem:

1. If your PLC has indicator LEDs for the communication port, inspect the RX LED. If ON, the PLC is receiving data. If OFF, check the cabling. Check the PLC's TX LED; if ON, check cabling, if OFF, check the PLC and OM9001 configurations.
2. Check your baud rate, parity, and stop bit settings between the PLC and the OM9001. Make sure they are set at a rate that matches your PLC specs and configuration.
3. If the baud rate appears to be OK, check your panel configurations to make sure you have specified the correct memory allocations, and that you have not specified memory that does not exist for your PLC.
4. For Koyo PLCs, make sure the PLC port is set to HEX, and not ASCII, or the LED may indicate that everything is OK when no communication between the OM9001 and the PLC is taking place.
5. If the baud rate and memory allocation seem OK, perhaps your cable is bad. If you built your own cable, check the pinout specifications for that particular cable.

OM9001 Is Communicating with the PLC, but Not with the Panels

In order for the OM9001 to attempt communication with the panels, it first has to establish communication with the PLC. If the LEDs next to J2 and J3 are off, the OM9001 has not established communication with the PLC. These LEDs are used to troubleshoot communication between the OM9001 and the OptiMate panels. The OM9001 should be sending requests (green) to the connected panels and receiving responses (red). When the OM9001 and the panels are communicating correctly, the LED indicators on the OM9001 should flicker constantly (or appear to glow amber), and the LEDs on the panels should flicker at a slower rate than the OM9001. If the OM9001 is not communicating properly, here are some things to check and to correct, if necessary:

1. Check the LEDs on the back of each panel. These LEDs should glow **red** when receiving requests and glow **green** when sending data to the OM9001. If any one of the panels is not communicating, check the DIP switch on the back of the panel, making sure the settings match the settings you indicated in your configuration. Remember also that no two panels can have the same setting.
2. If Step 1 checks out OK, then check the panel and OM9001 configurations.
3. If Step 2 is OK, check your cabling.
4. Make sure that any changes to DIP switch settings have been followed by cycling the power to the panel. You must turn the power OFF, then ON, for the new setting to take place.

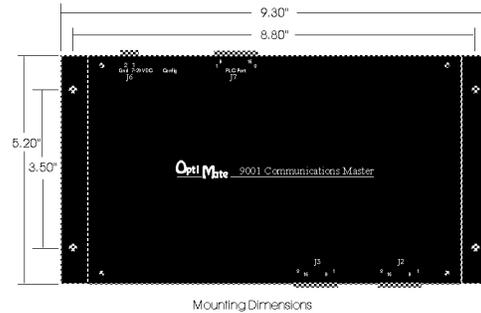
Specifications

Physical

- Back Panel Mount Housing 9.3"L x 5.2"W x 1.75"D
- Panel Fasteners : Four, #6 machine screw holes located as shown in four corners (symmetrical about center line).
- Weight : 20 ounces
- Colors : Black housing with white lettering

Electrical

- Power : 8 - 30VDC @ 2VA
170 mA @12VDC
85 mA @ 24VDC
- Power connector : Pluggable terminal block, 2 position



Communications

- RS232 and RS422 (PLC port-J7)
- RS422 (OptiMate Ports-J2 & J3)
- 4800 to 19200 baud (PLC Port)
- 19200 baud (OptiMate port)
- Two OptiMate RS422 ports
- Compatible with most major PLC protocols
- 15 pin female 'D' shell connectors

J7 only	
Pin	function
2	RS232 TX (PLC port only)
3	RS232 RX (PLC port only)
5	RS232 Sig Gnd (PLC port only)
9	RS422 RX+
10	RS422 RX-
11	RS422 TX+
12	RS422 TX-

Environmental

- Enclosure- Painted Aluminum
- Temperature- 0 to 50 C
- Humidity - 0 - 95% Non-condensing

Part number

OM9001:

PLC interface, two RS422
OptiMate ports

J2 & J3 only	
9	RS422 TX+
10	RS422 TX-
11	RS422 RX+
12	RS422 RX-