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# **PanelMate® OEM Support Kit User's Guide**

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# Preface

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The goal of Eaton's Cutler-Hammer business unit is to ensure your greatest possible satisfaction with the operation of our products. We are dedicated to providing fast, friendly and accurate assistance. That is why we offer you so many ways to get the support you need. Whether it's by phone, fax or mail, you can access Eaton's Cutler-Hammer support information 24 hours a day, seven days a week. Our wide range of services are listed below.

You should contact your local distributor for product pricing, availability, ordering, expediting and repairs.

**Website Address** [www.cutler-hammer.eaton.com](http://www.cutler-hammer.eaton.com)

Use the Cutler-Hammer website to find product information. You can also find information on local distributors or Cutler-Hammer sales offices.

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**European PanelMate Support  
Center**

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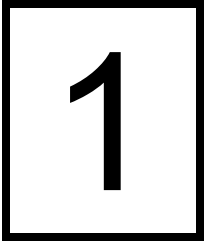
**EMAIL: [CHSupport@bfa.ch](mailto:CHSupport@bfa.ch)**

This center, located in Zurich, Switzerland, provides high-level quality support and product repair services for your PanelMate products. You will receive real-time technical and application support.

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# Introduction



*This chapter overviews the installation and use of the OEM Support Kit. Specifically, this chapter includes:*

- *OEM Support Kit Overview*
- *OEM Support Kit Software Installation*

## OEM Support Kit Overview

The PanelMate Power Series/Power Pro OEM Support Kit contains a collection of tools and utilities to support customers who install and support PanelMate Power Series/Power Pro systems. PanelMate Power Series/Power Pro products may be identified as Cutler-Hammer products, or may be identified as another original equipment manufacturer. The OEM Support Kit contains:

- OEM Conversion Utility – provides four conversion utilities to simplify support of mixed OEM-origin PanelMate Power Series/Power Pro systems.
- Transfer Utility – allows transfer of information to any PanelMate Power Series/Power Pro product, regardless of OEM origin.
- Modbus Plus Enabler Option - allows PanelMate Power Series/Power Pro users to develop configurations designed for operation on Modbus Plus networks.

**Note:** The OEM Support Kit will convert configurations and databases developed with OEM versions of PanelMate Power Series/Power Pro Configuration software. However, the OEM Support Kit is designed to work with Cutler-Hammer PanelMate Power Series/Power Pro Configuration software version 4.0 or later.

The OEM Support Kit is not intended for use with OEM versions of PanelMate Configuration software and will not operate as described in this User's Guide. It is recommended that you install Cutler-Hammer PanelMate Power Series/Power Pro Configuration software prior to using the OEM Support Kit.

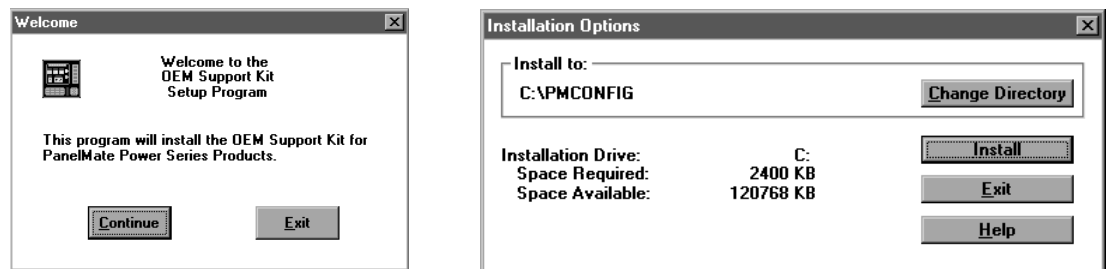
**Note:** Do not use the OEM Conversion Utility on early PanelMate products that use Version 2.11 or earlier software.

## OEM Support Kit Software Installation

The OEM Support Kit contains one diskette labeled 'PanelMate Power Series OEM Support Kit'. The disk contains an installation program named Setup. To install the software, insert the diskette into your personal computer. Under Microsoft Windows® **Start**, choose **File Run**. In the Run dialog box, type:

*drive:\setup*

in the Command Line entry field, where *drive* is the letter of the floppy drive that contains the OEM Support Kit diskette. Press the **OK** button and the Welcome screen will appear after initialization: After pressing the **Continue** button to proceed with the software installation, the Installation Options dialog box will appear:



The OEM Support Kit files need to be installed in your current PMCONFIG directory. The dialog box will show a default path of C:\PMCONFIG. If your PMCONFIG directory is located on a different drive, use the **Change Directory** button to define a new path. Once the path is correctly defined, press the **Install** button to complete the software installation. The OEM Conversion Utility and the Transfer Utility will appear in your PanelMate program submenu. The Modbus Plus Enabler Option is automatically added to your PanelMate Power Series Configuration Software.

# OEM Conversion Utility



*This chapter explains the use of the OEM Conversion Utility software. Specifically, this chapter includes:*

- *OEM Conversion Utility Overview*
- *OEM Conversion Utility Operation*

## Conversion Utility Overview

As a leading manufacturer of operator interface products, Cutler-Hammer provides manufacturing services for many original equipment manufacturers. The OEM Conversion Utility is used to address several issues:

- Allows Cutler-Hammer PanelMate Power Series Configuration Software users to download configurations to PanelMate Power Series OEM units.
- Converts configuration files (.PPS) from any OEM Company ID to a Cutler-Hammer Company ID.
- Converts configurations within a database from any OEM Company ID to a Cutler-Hammer Company ID.
- Removes non-Cutler-Hammer selections from the Configuration Software's tree view.
- Converts the PanelMate Power Series OEM unit's online Company ID to Cutler-Hammer.

## Conversion Utility Operation

The OEM Conversion Utility is launched by clicking **Start, Programs, PanelMate Software, Utilities for OEM Conversions**. The **Convert to Cutler-Hammer** dialog box shown below will appear.

**Note:** Close your PanelMate Power Series Configuration software prior to running the Conversion Utilities.

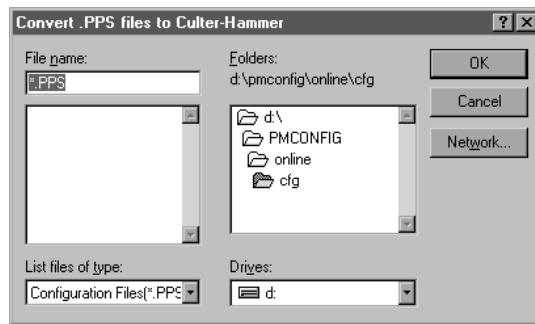


The **Convert to Cutler-Hammer** dialog box contains four conversion options. After a conversion option is completed, this dialog box will re-appear to allow additional conversions. Once you have completed all desired conversions, use the **Exit** button to leave the OEM Conversion Utility program.

**Note:** The **Convert Configurations in Database** and **Convert Treeview in Editor** are inter-connected operations. To avoid potentially confusing results, it is recommended you run both operations.

## Convert Configurations Button

This selection will convert an OEM .PPS configuration file to a Cutler-Hammer Power Series configuration. When selected, the following dialog box will appear:

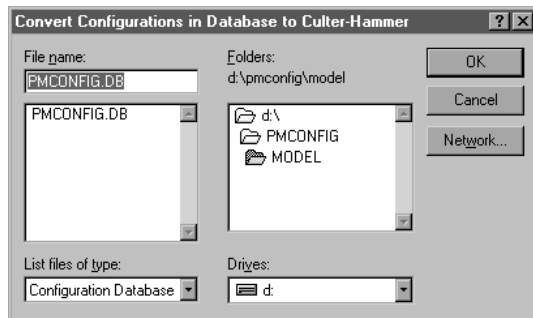


Select the drive where the target configuration is located. The file name will appear in the window. Select the target configuration file and press the **OK** button. A range of files can be selected for conversion by using the **Shift** key and mouse button combination, or multiple, non-consecutive files can be selected by using the **Ctrl** key and mouse button combination. The **Network** button on the dialog box can be used to map to available remote file storage locations.

**Note:** Once an OEM configuration has been converted to a Cutler-Hammer Power Series configuration, the conversion can not be reversed.

## Convert Configurations in Database Button

This selection will convert configurations within a database from any OEM Company ID to a Cutler-Hammer Company ID. When selected, the following dialog box will appear:

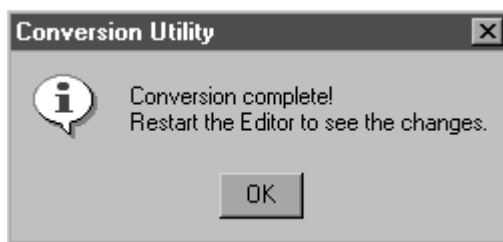


Select the drive where the target database is located. The database will appear in the window. Press the **OK** button to complete the conversion. The **Network** button on the dialog box can be used to map to available remote file storage locations.

**Note:** Once a configuration's Company ID has been converted to a Cutler-Hammer Company ID, the conversion can not be reversed.

## Convert Treeview in Editor Button

This selection will remove OEM model selections from the Configuration Software's treeview. When selected, the OEM Conversion Utility will automatically locate and modify your PanelMate Power Series Configuration Software. When completed, the following message will appear:



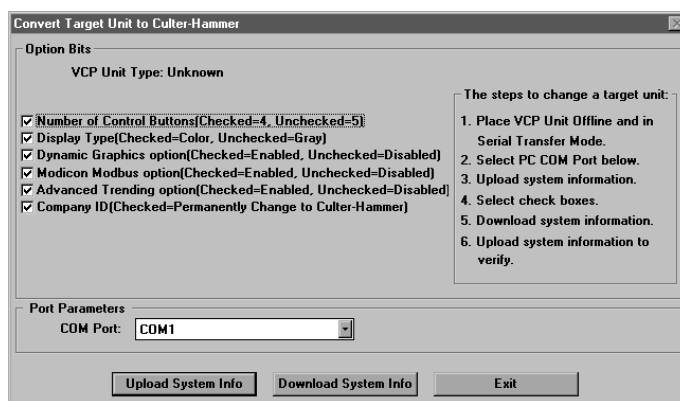
**Note:** Once the treeview has been converted, the conversion can not be reversed.

## Convert Target Unit Button

All PanelMate Power Series products contain an internally maintained company ID. The company ID prevents the downloading of mismatched configurations, executive firmware, product options and communications drivers between OEM and Cutler-Hammer Power Series systems. This selection will convert the internal OEM company ID to a Cutler-Hammer Power Series company ID.

To complete the company ID conversion process, you must have your unit in offline serial transfer mode and ready for data exchange. Refer to your OEM Manual for more information on preparing the unit for uploading/downloading.

When the **Convert Target Unit** button is selected, the following dialog box will appear:



In this dialog box, choose the communications (COM) port, and press the **Upload System Info** button. The unit will upload the system information. Confirm the appropriate check boxes are selected, and select the **Company ID** check box. Press the Download System Info button to initiate the product ID conversion. When completed, press the **Upload System Info** button to verify the conversion.

**Note:** Once the unit's company ID has been converted to a Cutler-Hammer company ID, the conversion can not be reversed.

**Note:** Dynamic Graphics, Modicon Modbus and Advanced Trending options are included with this conversion utility. Select the check boxes to install the options if they are not currently installed on your target unit and they are desired.

# Transfer Utility

## 3

*This chapter explains the use of the Transfer Utility software to download Cutler-Hammer PanelMate Power Series configurations to OEM versions of PanelMate Power Series hardware. Specifically, this chapter includes:*

- *PanelMate Power Series Transfer Utility Overview*
- *PanelMate Power Series Network Transfers*

## Transfer Utility Overview

The PanelMate Power Series Transfer Utility is used to transfer information into the PanelMate unit. The target unit can be either a Cutler-Hammer PanelMate Power Series unit, or a PanelMate Power Series OEM model. The types of information that can be transferred include:

- Executive Firmware
- Network Drivers
- User Configurations
- PLC/Communications Drivers
- PanelMate Power Series Options (Requires an Options Diskette)

**Note:** PanelMate Power Series Transfer Utility versions prior to Version 4.1 do not support downloading of Cutler-Hammer PanelMate Power Series information to OEM units. Version 4.1 or greater is included in this OEM Support Kit.

Refer to your PanelMate Power Series Transfer Utility User's Guide or your OEM manual for detailed instructions on using the Transfer Utility.

### PanelMate Power Series Network Transfers

The Transfer Utility supports transfers to an operator station via a supported PLC communications network. Supported networks include:

- Allen Bradley Data Highway
- Allen-Bradley Data Highway Plus
- Allen Bradley Remote I/O Link
- Modicon Modbus Plus

To use remote network transfers, you must purchase and install:

- The Remote Transfer Option from Cutler-Hammer
- The appropriate communications card/device for your PC.

#### **Allen-Bradley networks**

- *A-B 1784-KT ISA card*
- *A-B 1784 PCMK ISA card*
- *SST (S-S Technologies) 5136-SD ISA card*
- *A-B KE/KF serial port module*

#### **Modicon Modbus Plus network**

- *Modicon SA85 card*
- Allen-Bradley Interchange or RSLinx software if you are using Allen-Bradley devices.

# Modbus Plus Enabler Option

## 4

*This chapter explains the use of the Modbus Plus Enabler Option software. Specifically, this chapter includes:*

- *Modbus Plus Enabler Utility Overview*
- *Configuration Software Requirements*

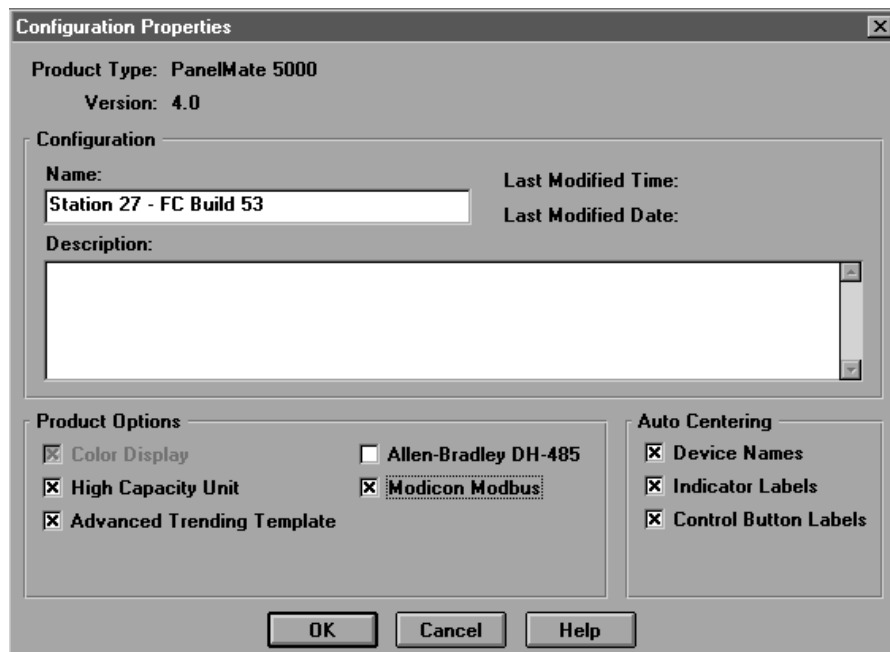
## Modbus Plus Enabler Option Overview

The Modbus Plus Enabler option allows PanelMate Power Series users to develop configurations designed for operation on Modbus Plus networks. When installed, the user will be able to select Modbus Plus communications from the PLC Name and Port Table in the Transfer Utility. For information on Modbus Plus communications refer to Appendix A.

**Note:** The Modbus Plus Enabler Option is not a communications driver. To communicate on a Modbus Plus network, a PanelMate Power Series unit must be equipped with a Modbus Plus interface board. The Enabler Option allows the PanelMate Power Series Transfer Utility software and Configuration software to accept Modbus Plus communication protocols.

## Configuration Software Requirements

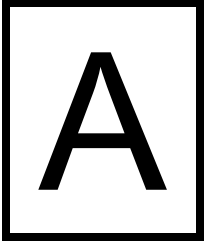
The Modbus Plus Enabler option is activated by selecting the Modicon Modbus option in the Configuration Properties dialog box of the user configuration.



Refer to your PanelMate Power Series Configuration Software User's Guide for more information on the Configuration Properties dialog box.

**Note:** If the Modicon Modbus product option is not selected in the Configuration Properties dialog box, Modbus Plus communications will not appear as a selection in the PLC Name and Port Table of the PanelMate Power Series Configuration Software.

# Modicon PLCs Using Modbus Plus



*This chapter explains how to use your PanelMate Power Series operator stations on the Modbus Plus network. Specifically, this chapter includes:*

- *Introduction*
- *Memory*
- *Possible Configurations*
- *Cabling*
- *Communications parameters*
- *Configuration entries*
- *Switch settings*
- *Modicon word and bit references*
- *Unsolicited Writes to the operator station*
- *Maintenance access*

## Introduction

A PanelMate Power Series unit, with an optional Modbus Plus interface board, can communicate with Modicon controllers that have Modbus Plus compatibility. The PanelMate Power Series unit appears as a node on the Modbus Plus network (similar to an SA85 network adapter). The interface board has responsibility for establishing and maintaining communications across the network. No ladder logic is required to support the interface.

## Memory

The following memory types are supported by the Modbus Plus interface board:

XXXX Coils/discrete outputs

XXXX Discrete inputs (read only)

3XXXX Input Registers (read only)

4XXXX Holding/output registers

900XX Global data (read only; range 1-32)

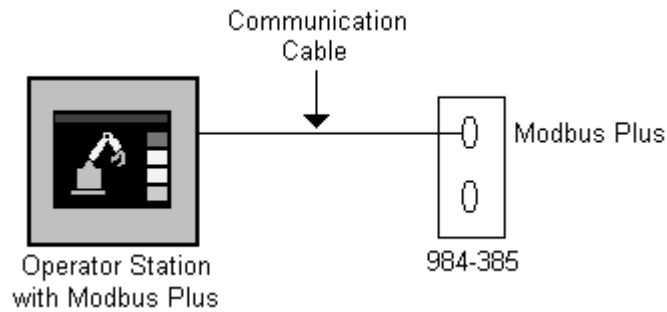
G00XX Global data (Operator station's node range; 1-32)

**Note:** G00XX requires the use of the GLBL prefix.

## Possible Configurations

### Direct

The PanelMate Power Series unit may be connected directly to a Modicon controller having Modbus Plus capability. The PanelMate Power Series unit must have a different network node address than the Modicon controller (see Switch Settings for more information on setting node addresses).

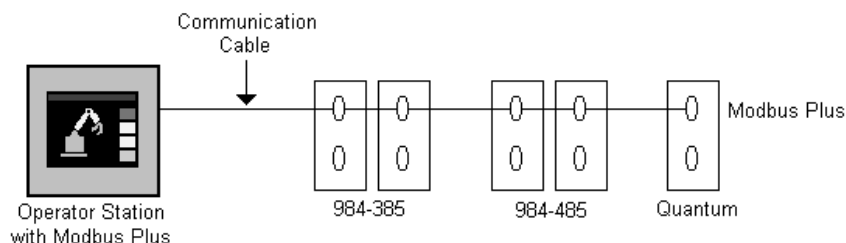


**Figure 1 - Direct Connection**

## Multiple Controllers on a Single Modbus Plus Network

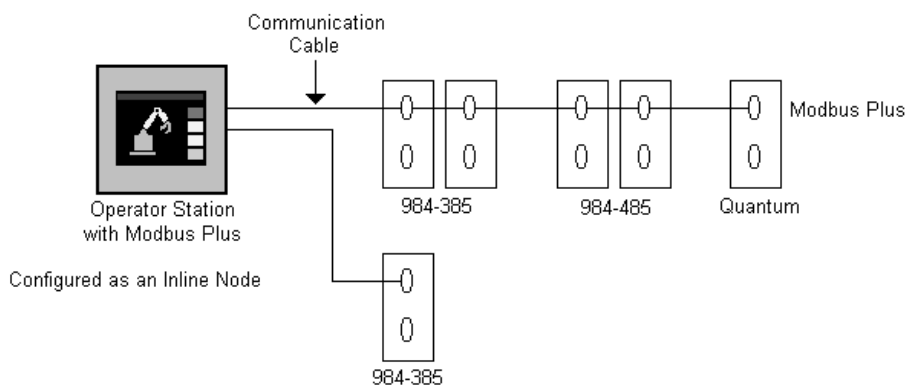
In this configuration, the PanelMate Power Series unit acts like a node on the immediate Modbus Plus network. Each node on the network must have a separate node address as in the following example (see the Switch Settings section for more information on setting node addresses).

### Operator Station/Modbus Plus - Termination Node



Configured as a Termination Node

### Operator Station/Modbus Plus - Inline Node



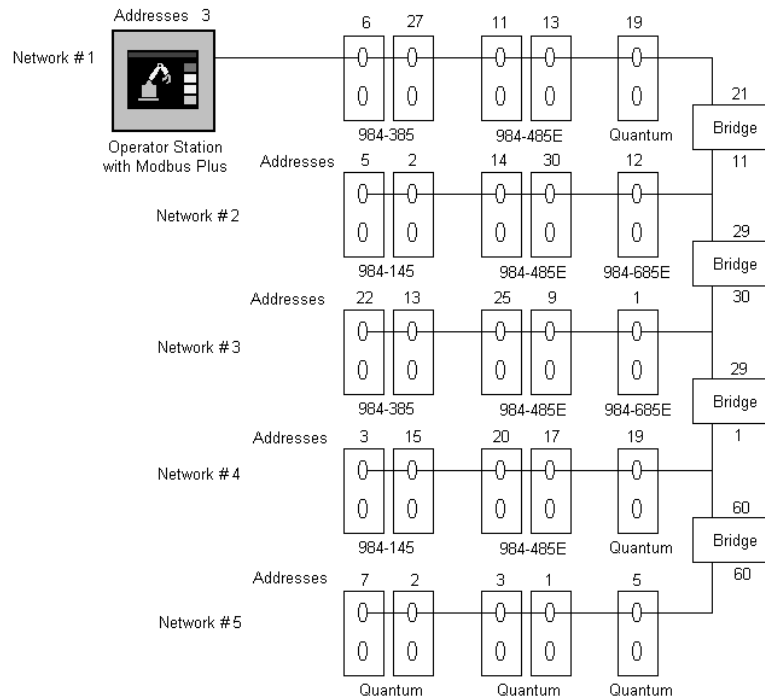
Configured as an Inline Node

## Multiple Controllers on Multiple Modbus Plus Networks

A PanelMate Power Series unit can communicate with up to 32 controllers at once. A PanelMate Power Series unit communicates with a controller through a maximum of four bridges. A PanelMate Power Series unit communicates with another PanelMate Power Series unit through a maximum of three bridges.

**Note:** The address of the system on the 5th byte of the routing address must be a number less than 8.

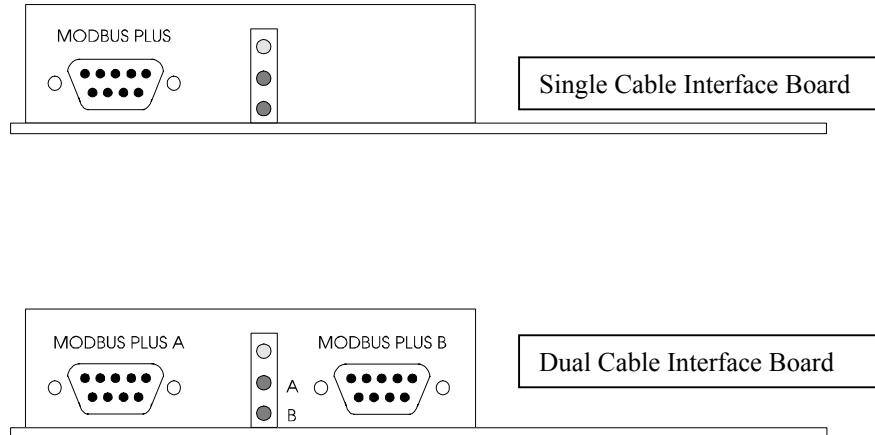
### Sample Operator Station/Modbus Plus Network



## Cabling Diagrams

Communications between the PanelMate Power Series unit and Modbus Plus follows the Modicon standard. See the PanelMate Power Series Modbus Plus Interface Instructions IL (01-50463) for additional information. The PanelMate Power Series unit should be wired like a node on the Modbus Plus Network. The Modicon Part number for the connector required is: AS-MBKT-085 (if the PanelMate Power Series unit is at an inline node) or AS-MBKT-185 (if the PanelMate Power Series unit is at an extreme end of the network).

The figures below shows a single and dual cabled Modbus Plus interface board.



## LEDs

The green LED is used to help determine the current status of the Modbus Plus interface board. The following is a list of possible indications:

**Note:** The two red LEDs, labeled A and B, on the dual cabled Modbus Plus interface board indicate communication errors in either the Modbus Plus A port or the Modbus Plus B port. If an error occurs, the corresponding red error LED will turn on while the communication error exists.

### Network Communication Status

Modbus Plus status is shown by flashing a repetitive pattern on the green indicator. The patterns are:

#### Six flashes per second

The Modbus Plus interface board's normal operating state. The indicator flashes each time the board transmits at its Modbus Plus port. All nodes on the network should be flashing this pattern. If a port indicator is OFF continuously, the board is not transmitting at its port.

#### One flash per second

The PanelMate Power Series unit node is offline after just being powered up, or after hearing a message from another node with the same network address (duplicate addresses are not allowed). In this state, the node monitors the network and builds a table of active nodes and token-holding nodes. It remains in this state for five seconds, then attempts to go to its normal operating state.

#### Two flashes, then OFF for two seconds

The PanelMate Power Series unit node is hearing the token being passed among other nodes, but is never receiving the token. Check the network link for an open or short circuit or defective termination.

**Three flashes, then OFF for 1.7 seconds**

The PanelMate Power Series unit node is not hearing any other nodes. It is periodically claiming the token, but finding no other node to pass it. Check the network link for an open or short circuit or defective termination.

**Four flashes, then OFF for 1.4 seconds**

The PanelMate Power Series unit node has heard a valid message from another node that is using the same address as this node. The node remains offline in this state as long as it continues to hear the duplicate address. If the duplicate address is not heard for five seconds, the node then changes to the pattern of one flash every second.

## Communication Parameters

When using the Modbus Plus interface board, the only communication parameter that needs to be set is the I/O port. In the PLC Name and Port Table, configure the Use field for the I/O port to MODBUS+.

## Configuration Entries

A sample PLC Name and Port Table is shown below.

**PLC Name and Port Table**

**Port Parameters**

Port	Device Use	Local ID
1	(No Usage)	
2	(No Usage)	
10	Modicon Modbus Plus	

Device Use: (No Usage) Local ID: 0

**PLC Name Parameters**

Item	Name	Port	Model	Remote ID
1:	plc1	I/O	984 MB+	6
2:	plc2	I/O	984 MB+	13
3:	plc3	I/O	984 MB+	21, 2
4:	plc4	I/O	984 MB+	21, 12
5:	plc5	I/O	984 MB+	21, 29, 22
6:	plc6	I/O	984 MB+	21, 29, 1
7:	plc7	I/O	984 MB+	21, 29, 29, 15
8:	plc8	I/O	984 MB+	21, 29, 29, 19
9:	plc9	I/O	984 MB+	21, 29, 29, 60
10:	plc10	I/O	984 MB+	21, 29, 29, 60, 2

Name: plc1 Model: 984 MB+ Port: I/O Remote ID: 6 Default PLC Name: plc1

Buttons: Add, Change, Copy, Paste, Delete, OK, Cancel, Help

In the PLC Name Table, under the ID# field, the routing address(es) must be specified. The PanelMate Power Series unit can communicate through a maximum of four bridges. When entering routing information, each bridge address is followed by a command. The last routing address represents the ID# of the controller the PanelMate Power Series unit will be communicating with.

## Sample Addressing for Configuration

- [MOD8,40055] Register 40055 of Controller 19 Network #4
- [MOD4, 30125] Register 30125 of Controller 12 Network #2
- [GLBL, G0030] Operator Station Global Register 30
- [90030.01] Coil 16 of Global Register 30 of Controller 6 Network #1
- [MOD7,00055] Coil 00055 of Controller 15 Network #4
- [10077] Contact 10077 of Controller 6 Network #1

## Switch Settings

The following is a summary of the necessary settings for each of the modules. Be sure to check with Modicon for any possible updates or changes if you encounter any difficulty.

### Operator Station

The PanelMate Power Series unit has one switch setting that is used to set the network node address. The dipswitch is located on the right side of the unit, above the 9-pin Modbus Plus port. The PanelMate Power Series unit node address must not be the same as any other node address on the immediate network

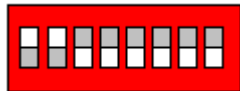
**Note:** The dipswitch on the dual cabled Modbus Plus Interface board is located at the rear of the board.

### 984-385, 984-484, 984-685, 984-785, Compact 984-145, 984-385E, 984-485E, 984-685E, 984-785E, and Quantum

The 984-385, -485, -685, -785, and Compact 984-145 models have a switch setting for configuring the node address.

In the example below, switch 1 and 2 are up making the address 4. It's in binary format starting at 1. Meaning, you must always add 1 to the binary number. (3+1=4)

#### Modbus+ Card dip switch



### Standard Binary Table

Address	Switch Position						Address	Switch Position					
	1	2	3	4	5	6		1	2	3	4	5	6
0	0	0	0	0	0	0	32	0	0	0	0	0	1
1	1	0	0	0	0	0	33	1	0	0	0	0	1
2	0	1	0	0	0	0	34	0	1	0	0	0	1
3	1	1	0	0	0	0	35	1	1	0	0	0	1
4	0	0	1	0	0	0	36	0	0	1	0	0	1
5	1	0	1	0	0	0	37	1	0	1	0	0	1
6	0	1	1	0	0	0	38	0	1	1	0	0	1
7	1	1	1	0	0	0	39	1	1	1	0	0	1
8	0	0	0	1	0	0	40	0	0	0	1	0	1
9	1	0	0	1	0	0	41	1	0	0	1	0	1
10	0	1	0	1	0	0	42	0	1	0	1	0	1
11	1	1	0	1	0	0	43	1	1	0	1	0	1
12	0	0	1	1	0	0	44	0	0	1	1	0	1
13	1	0	1	1	0	0	45	1	0	1	1	0	1
14	0	1	1	1	0	0	46	0	1	1	1	0	1
15	1	1	1	1	0	0	47	1	1	1	1	0	1
16	0	0	0	0	1	0	48	0	0	0	0	1	1
17	1	0	0	0	1	0	49	1	0	0	0	1	1
18	0	1	0	0	1	0	50	0	1	0	0	1	1
19	1	1	0	0	1	0	51	1	1	0	0	1	1
20	0	0	1	0	1	0	52	0	0	1	0	1	1
21	1	0	1	0	1	0	53	1	0	1	0	1	1
22	0	1	1	0	1	0	54	0	1	1	0	1	1
23	1	1	1	0	1	0	55	1	1	1	0	1	1
24	0	0	0	0	1	0	56	0	0	0	1	1	1
25	1	0	0	0	1	0	57	1	0	0	1	1	1
26	0	1	0	1	1	0	58	0	1	0	1	1	1
27	1	1	0	1	1	0	59	1	1	0	1	1	1
28	0	0	1	1	1	0	60	0	0	1	1	1	1
29	1	0	1	1	1	0	61	1	0	1	1	1	1
30	0	1	1	1	1	0	62	0	1	1	1	1	1
31	1	1	1	1	1	0	63	1	1	1	1	1	1

**Table 1** - Controller and Operator Station Dipswitch Settings

**Note:** Modicon uses binary format starting at 1. This means that you must always add a 1 to the binary number in the above table.

## Modbus Plus Word and Bit References

The following section describes the use of Modbus Plus word and bit references in your configuration. The general word referencing method is:

[plcname,word#format]

The “plcname” is the name of the designated PLC as listed in the PLC Name and Port Table. The “word” is the reference number (address) of the word or register to be read or written. The “#format” is a code that specifies the format of the data being read or written. The “plcname” and “#format” are optional.

The general bit referencing method is:

[plcname,bit]

The “plcname” is the designated PLC as listed in the PLC Name and Port Table. The “bit” is the reference number (address) of the bit, coil, or input to be written or read.

### **984-385, 984-485, 984-685, 984-785, Compact 984-145, 984-385E, 984-485E, 984-685E, 984-785E, and Quantum**

The Modicon controllers listed above use decimal word addresses. The PanelMate Power Series unit format default is BIN4. The following list contains the memory types supported by the PanelMate Power Series unit.

0XXXX	Coils/discrete outputs
1XXXX	Discrete inputs (read only)
3XXXX	Input registers (read only)
4XXXX	Holding/output registers
900XX	Global data (Modicon Controllers; read only)
G00XX	Global data (Operator station node)

A PanelMate Power Series unit with a Modbus Plus interface board cannot write to inputs, input registers, or “900XX” global registers; therefore, control button bit references in the Operators Station editors refer to Modicon coils.

Bit references in expressions refer to Modicon coils or inputs.

All references to Controller words refer to Modicon registers.

Leading 0's are not required unless specified.

The Modicon 984-X85 and Quantum controllers allow up to 100 contiguous words per single block read. The maximum number of unused words is 98. If the PanelMate Power Series unit encounters 98 or more unused words, then another block read is generated.

The following is the format for a register reference:

[3rrr] or [4rrr]

rrr Controller reference number of the register.

The following is the format for a discrete input reference:

[1iiii]

iiii Controller reference number for an input reference.

The following is the format for a coil reference:

[0cccc]

cccc Controller reference number for a coil reference.

The following is the format for a register bit reference:

[3rrrr bb], [4rrrr bb], [3rrrr,bb], or [4rrrr.bb]

rrrr Controller reference number of the register.

bb Controller reference number of the bit position.

The bit positions are numbered 1 to 16, least significant to most significant.

**Note:** The register number must be followed by a space or a period. Register bit writes are not allowed.

The following is the format for a global data word read from a Modicon Controller:

[900rr]

rr Controller reference number of the register.

The following is the format for a global data bit read from a Modicon Controller:

[900rr bb] or [900rr.bb]

rr Controller reference number of the register.

bb Controller reference number of the bit position.

The bit positions are numbered from 1 to 16, least significant to most significant.

A PanelMate Power Series unit has 32 global words, numbered 1 to 32. The global data area on the PanelMate Power Series unit can be written to and read from.

The following is the format for a global data word read from a PanelMate Power Series unit:

[GLBL,G00rr]

rr Operator Station reference number of the register.

The following is the format for a global data bit read from a PanelMate Power Series unit:

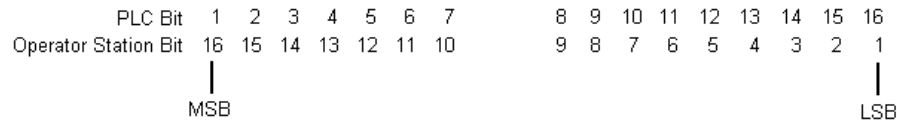
[GLBL,G00rr bb] or [GLBL, G00rr.bb]

rr Operator Station reference number of the register.

bb Operator Station reference number of the bit position. The bit positions are numbered from 1 to 16, least significant to most significant.

**Note:** A PanelMate Power Series unit cannot directly read or write to another PanelMate Power Series unit.

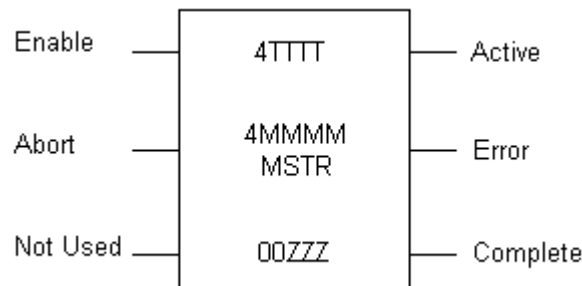
**Note:** A PanelMate Power Series unit's most significant bit (MSB) is bit 16 and the Modicon PLC's most significant bit (MSB) is 1. Refer to the figure below.



## Unsolicited Writes to the Operator Station with Modbus Plus

A PanelMate Power Series unit can receive unsolicited writes from a Modicon controller provided the PanelMate Power Series unit and the specified address is referenced in the PanelMate Power Series unit. The Modicon controller performs unsolicited writes through the use of the MSTR function block.

The Master Function Block consists of 4 main components: the control block, data start, data size, and the enable input.



**The Control Block** - This block must be configured as follows:

4TTTT	Operation Type (1 for write)
4TTTT+1	Error Status (reported by controller)
4TTTT+2	Length
4TTTT+3	Slave Device Data Area
4TTTT+4	Routing 1
4TTTT+5	Routing 2     Complete path to the Operator
4TTTT+6	Routing 3     Station from controller
4TTTT+7	Routing 4
4TTTT+8	Routing 5

**Note:** The routing address after the Operator station address should be set to one. Any unused routing addresses should be set to zero.

**Note:** For a Operator station to read data from another Operator station, the routing address after the Operator station address should be set to 1.

**Data Block Size** - This represents the length of the data block (must match the third word of the control block 4TTTT+2).

00ZZZ      Length of the data block (1-100).

For more information concerning Modicon function blocks, consult Modicon's 984 Programmable Controller Systems Manual.

## Maintenance Access

The Maintenance Template or Page will access all memory locations supported by the PLC driver as defined in this manual. When running online, you may change the PLC reference. You must enter the correct mnemonics and numeric values and create a legal reference to change a PLC reference.

**Note:** When a new reference is entered on a PanelMate Power Series unit, the Maintenance Template will remain in a paused state until the **Start Monitor** control button is pressed. When the **Start Monitor** control button is pressed, the PanelMate Power Series unit will parse the reference. (Parsing means checking the syntax and range of the reference to ensure that is supported by the driver.)

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