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# **PanelMate® Profibus Communication Driver Manual**

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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.

# Table of Contents

<b>Getting Started .....</b>	<b>5</b>
Introduction .....	6
Installing Drivers .....	6
Hardware Installation .....	6
Downloading Drivers to a PanelMate Unit.....	7
Serial Transfer Cables .....	7
Configuring your PanelMate Communications Port.....	9
Adding PanelMate to your Profibus Configuration Software .....	10
PanelMate Connection Examples .....	11
Single Operator Station on a Network with a Single Master .....	11
Single Operator Station on a Network with Multiple Masters .....	12
Multiple Operator Stations on a Network with a Single Master .....	12
Multiple Operator Stations on a Network with a Multiple Masters .....	13
Operator Station Connected to Profibus Plus Serial Connection to Other Serial Device.....	14
Profibus Bus Connector.....	15
<b>Profibus DP Network Communications.....</b>	<b>16</b>
Profibus DP Communications .....	17
PanelMate Messaging Algorithm .....	17
How PanelMate Communicates on the Profibus Network .....	18
Master Output Data Request Frame .....	19
PanelMate Input Data Response Frame.....	20
Profibus DP Master Multiplexing Algorithm .....	22
Building a Master Request Frame .....	22
Reading a PanelMate Response Frame .....	22
Maintenance Access .....	23
<b>Profibus Reference Formats .....</b>	<b>24</b>
General References.....	25
Telegram Numbers .....	25
Memory Types.....	25
Memory References.....	26
Word References.....	26
Byte References.....	26
Bit References .....	27
Reference Examples .....	28
Telegram <u>Reference</u> .....	28
<u>Description</u> .....	28
<u>DataXXX Examples</u> .....	28
<b>Glossary .....</b>	<b>29</b>
<b>Error Codes .....</b>	<b>32</b>
PanelMate Profibus DP Error Messages.....	33

<b>Index.....</b>	<b>34</b>
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# Getting Started

## 1

*This chapter describes the necessary steps for configuring your PanelMate unit, and setting up your Profibus network to recognize and communicate with the PanelMate unit. These steps include:*

- *Installing drivers*
- *Downloading drivers to a PanelMate unit*
- *Installing the Profibus Communications Module or Board*
- *Configuring the PanelMate unit's communications port*
- *Adding PanelMate to your Profibus Configuration Software*

*PanelMate connection examples are also provided to show possible Profibus system configurations.*

## Introduction

The Operator station operates as a slave on a Profibus-DP network. The nature of the Profibus-DP network requires that all devices (slaves) on the network have a fixed data size. The PanelMate allows for various fixed data sizes to be used (32 to 184 bytes) or a Multiplexed Telegram method to allow up to 8160 bytes of data to be transferred.

The Model is used to select the data size for the PanelMate slave. The following table gives the selections:

Model	Input Data Size (bytes)	Output Data Size (bytes)	Profibus Configuration (defined in .GSD file)
Data 32	32	32	The master would see a compact device consisting of a 16 word input and a 16 word output module without consistency.
Data64	64	64	The master would see a compact device consisting of a 32 word input and a 32 word output module without consistency.
Data128	128	128	The master would see a compact device consisting of a 64 word input and a 64 word output module without consistency.
Data184	184	184	The master would see a compact device consisting of a 64 word input, a 16 word input, a 12 word input, a 64 word output, a 16 word output and a 12 word output module without consistency.
Telegram32	32 + 2	32 + 2	The master would see a compact device consisting of a 2 byte input, a 32 byte input, a 2 byte output and a 32 byte output module with consistency.

In the above table the modules indicate a type of data consistency. The text “without consistency” indicates that the data is consistent within a word but not within the module. The text “with consistency” indicates the data is consistent across the module. See Appendix A for definition/description of data module consistency)

## Installing Drivers

PanelMate Configuration Editor software is installed using a CD-ROM. To install the drivers from the CD-ROM, select the **Install Software** option and then **Install Drivers**. From the dialog box, select the driver you wish to install.

## Hardware Installation

Profibus communications requires specialized hardware. Each PanelMate unit must be equipped with a Profibus Communications Module or Communications Board, depending on your PanelMate model.

Refer to the instructions provided with your Profibus Communications Module or Communications Board for detailed installation information.

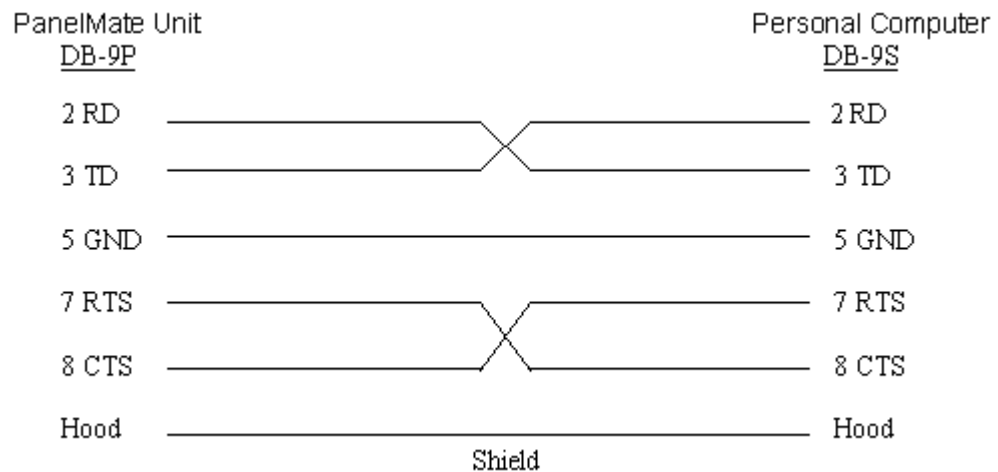


## Downloading Drivers to a PanelMate Unit

- In the VCP Transfer Utility, choose the “Executive” tab and select the proper Executive Firmware to download to the PanelMate unit.
- Click the button labeled “Add to Operation List.”  
**Note:** In order to download to a PanelMate for the first time or to clear the existence of another driver, the PanelMate must first be loaded with Executive Firmware.
- Choose the “Driver” tab.
- Select the appropriate driver to be downloaded to the PanelMate.
- Click the button labeled “Add to Operation List.”
- Place the PanelMate unit in Serial Transfer Mode.
- Connect a serial transfer cable from the correct port on the PC to port 1 on the PanelMate. (See cabling below.)
- Click “Start” at the bottom of the VCP Transfer Utility window.
- **Note:** For a more detailed description of downloading procedures and troubleshooting see *PanelMate Power Series, PowerPro, Pro LT Transfer Utility User’s Guide*.

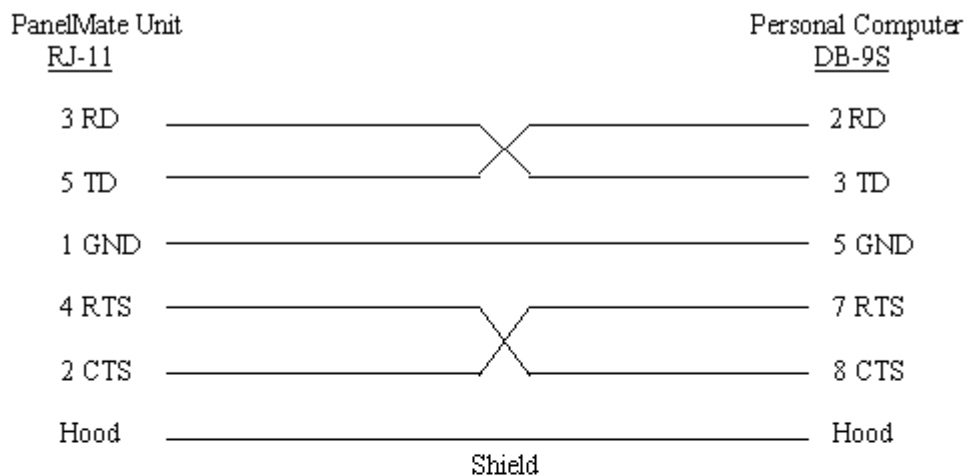
### Serial Transfer Cables

#### Cable P/N 0518

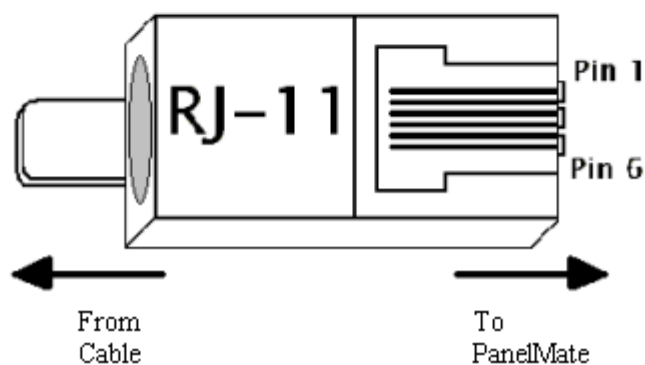


**Cable P/N 0818**

(PanelMate Power Series 1500 and PanelMate 500 only)



RJ-11 pin configuration



## Configuring your PanelMate Communications Port

In the PanelMate Configuration Software, you must set the PanelMate unit's Port Parameters. In the **PLC Name and Port Table** dialog box, the following steps must be completed.

1. Set I/O to **Profibus-DP Slave 2**.
2. Set the **Local ID** to the Profibus Address for the PanelMate. (decimal 1-126)
3. Set the **Name** and **Model** parameters as necessary. (Note: Remote ID not used)
4. Add **Profibus-DP** to the **PLC Name Parameters** List.
5. Set the **Default PLC Name** parameter.

**PLC Name and Port Table**

**Port Parameters**

Port	Device Use	Local ID
1	(No Usage)	
2	(No Usage)	
I/O	Profibus-DP Slave 2	7

Buttons: Port Settings..., Unsolicited Device...

Device Use: Profibus-DP Slave 2 (dropdown)  
Local ID: 7 (text box)

**PLC Name Parameters**

Item Name	Port	Model	Remote	Tag	File Path & Name
1: plc1	I/O	Data32	0		
2: < New entry >					

Buttons: Add, Change, Copy, Paste, Delete, Tag File...

Name: plc1 (text box)  
Port: I/O (dropdown)  
Model: Data32 (dropdown menu showing Data32, Data64, Data128, Data184, Telegram32)  
Remote ID: (text box)  
Default PLC Name: plc1 (dropdown)  
Buttons: OK, elp

For more information, refer to the **PLC Name And Port Table** chapter in the **Configuration Editor User's Guide** for a detailed description of these operations.

**Note:** The port settings do not apply while using the Profibus driver. The Profibus interface card will auto-detect the network baud rate setting. (The PanelMate Profibus Card only supports network baud rates from 9600KB - 12MB.)

## Adding PanelMate to your Profibus Configuration Software

Profibus devices have individual performance characteristics. The Device Configuration File defines the device's general specifications and DP Slave-related specifications.

For your convenience, the following PanelMate GSD file and associated graphics files have been prepared and are located on the PanelMate Profibus Driver Disk or CD-ROM.

- chdp0864.gsd (gsd file)
- ch0864\_n.bmp (bmp file)

Because the GSD file is referenced during the setup of a Profibus network, the GSD files are usually placed in your Profibus configuration software directory. Refer to your Profibus configuration software manual for specific instructions.

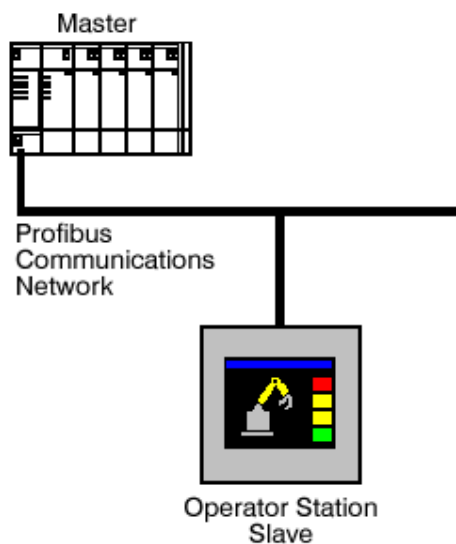
PanelMate Profibus-DP is implemented as a compact Slave Unit with five possible configurations. In your Profibus-DP configuration software, the PanelMate unit can be configured using one of the following selections corresponding to the Model selected in the PLC Name and Port Table:

1. Data32
2. Data64
3. Data128
4. Data184
5. Telegram32

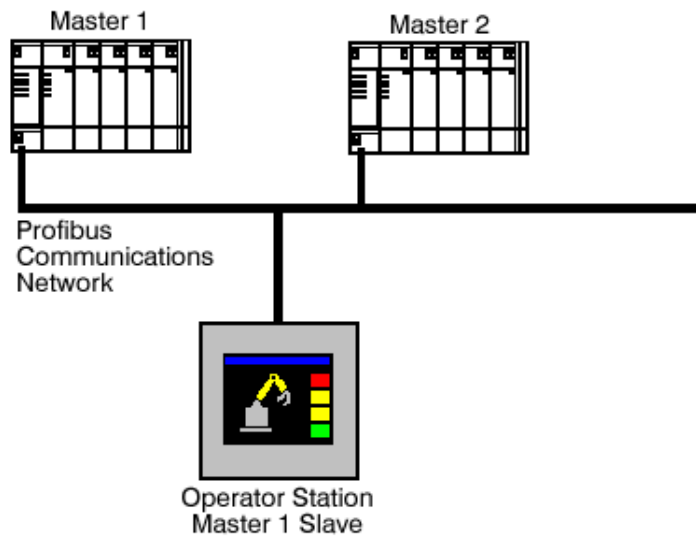
## PanelMate Connection Examples

When connected to a Profibus communications network, the PanelMate unit provides the functionality of a compact Slave. The following connection examples are provided to illustrate typical system configurations.

### Single Operator Station on a Network with a Single Master

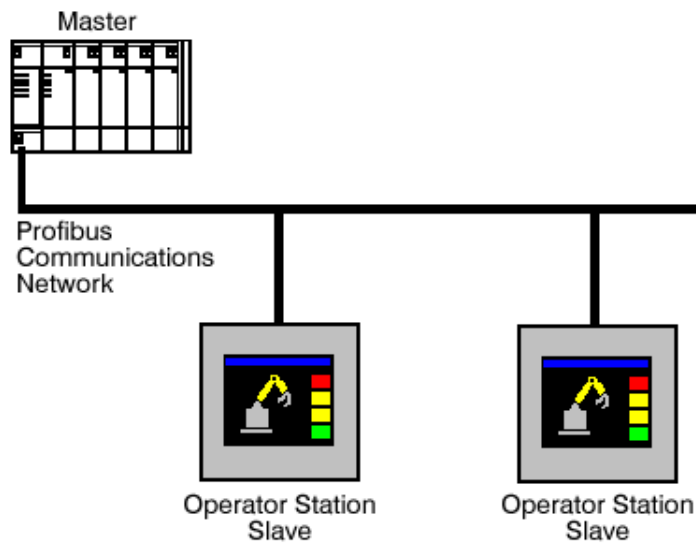


## Single Operator Station on a Network with Multiple Masters

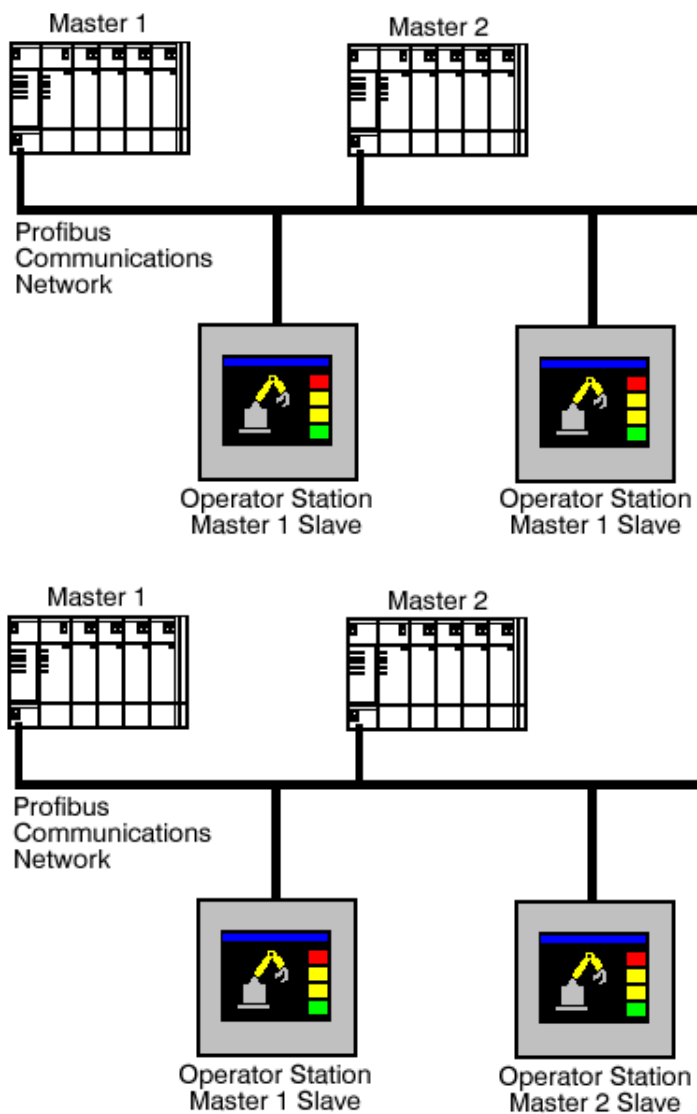


**Note:** As a DP Slave, the PanelMate unit can serve only a single Master

## Multiple Operator Stations on a Network with a Single Master

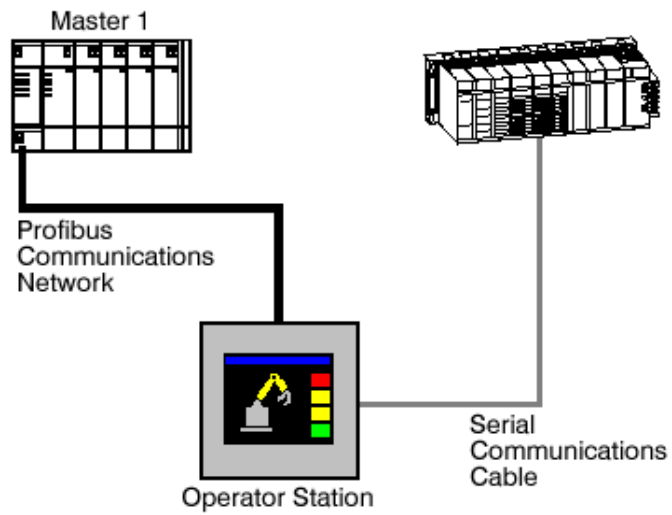


## Multiple Operator Stations on a Network with a Multiple Masters



**Note:** As a DP Slave, each PanelMate unit can serve only a single Master. More than one PanelMate unit may serve the same Master, however no PanelMate unit may serve more than one Master.

## Operator Station Connected to Profibus Plus Serial Connection to Other Serial Device



**Note:** While the PanelMate unit may only serve as a Slave on the Profibus communications network, the PanelMate unit retains full communications capabilities via its serial port.

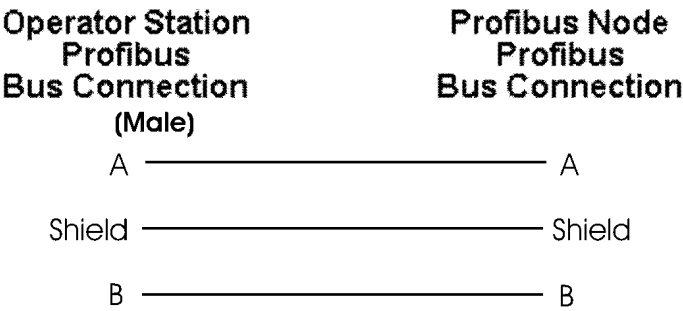


## Profibus Bus Connector

The PanelMate unit’s Profibus Communications Module or Communications Board is equipped with a DB-9 connector for mating to a Profibus bus connector.

As a Profibus network allows daisy-chain connections between devices on the network, proper preparation of the Profibus bus connector is essential to ensure error and trouble free performance. Particular attention should be made to following network requirements for terminating first or last stations. Refer to installation instructions provided with the bus connector for wiring and installation information.

### Cable Diagram



# Profibus DP Network Communications

## 2

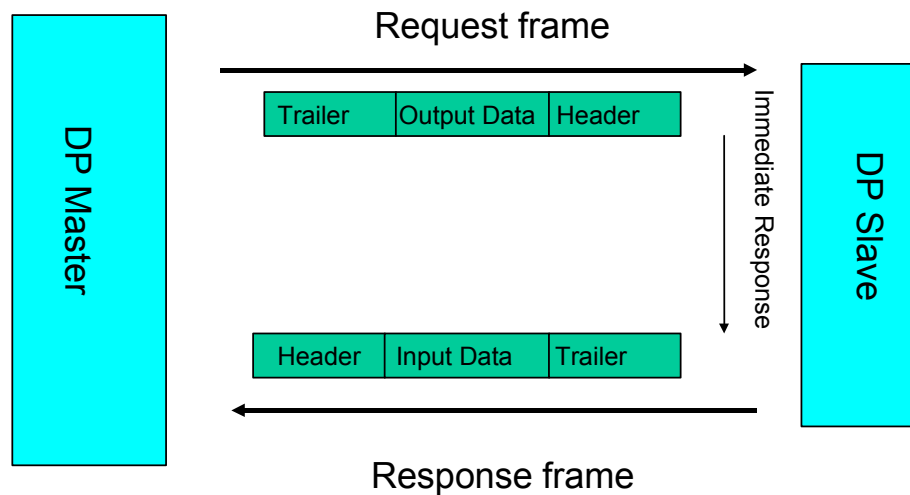
*This chapter describes Profibus DP network communications. The topics discussed include:*

- *Profibus DP communications*
- *How PanelMate communicates on the Profibus Network*
- *PanelMate messaging algorithm*
- *Profibus DP Master multiplexing algorithm*
- *Maintenance Access*

## Profibus DP Communications

A Profibus DP network consists of at least one DP Master and one DP Slave. The Profibus Master cyclically communicates with each Slave on the network within a scheduled interval of the bus cycle time. The bus cycle time is based on the number of Slaves on the network and the amount of data exchanged with each Slave. The bus cycle time of a Profibus DP network will typically be on the order of 10 msec. Profibus permits data exchanges between 1 and 244 bytes per Slave on the network. The size of the data exchange is defined for each Slave during network configuration (on the Master) and remains fixed until a new network configuration is generated.

Depending on model selection in PanelMate configuration PLC Name and Port Table, the PanelMate DP Slave interface is fixed at either 32, 34, 64, 128, 184 bytes of output data and either 32, 34, 64, 128, 184 bytes of input data per frame. If required the PanelMate Profibus interface can address more data through the use of a telegram multiplexing algorithm. The support for the multiplexing algorithm is built into the PanelMate driver, but must be written into the DP Master program to ensure successful data transmission.



## PanelMate Messaging Algorithm

The Profibus data exchange can be broken down into three parts; message header, data and the message trailer. The header and trailer are used to properly coordinate the delivery of an error free message between the Profibus DP Slave and Profibus DP Master. The message data contains the output information (Master request) that will be displayed on the PanelMate or the input information (PanelMate response) that will be written to the Master by the PanelMate. The PanelMate is always a Slave on the Profibus network.

Header	data	Trailer
--------	------	---------

## How PanelMate Communicates on the Profibus Network

Profibus-DP on PanelMate is implemented as a “compact slave”. This means there are fixed configurations that can be employed in the implementation. Four sizes of I/O data (Data32, Data64, Data128 & Data184) are provided for users that require data from 32 to 184 bytes in size. The Telegram multiplexing method (Telegram32) is also provided for users requiring more than 184 bytes of input or output data.

The four fixed “Data” sizes for I/O are easily implemented and the data can be accessed as any normal I/O device on a Profibus-DP network.

The Telegram multiplexing method, while allowing for large amounts of data transfer, is more complex to configure than the four fixed data block methods. The remainder of this chapter explains the details of Telegramming. If not using Telegramming, skip to Chapter 3.

The Telegram multiplexing uses four modules: 2 input bytes, 32 input bytes, 2 output bytes and 32 output bytes. This method of data communication is discussed in the sections that follow.

The two input modules and the two output modules operate together, creating two “telegrams” consisting of 2 control bytes and 32 data bytes each. In the PanelMate implementation, the two control bytes are defined as “telegram number” and “expected telegram number”. In this way, PanelMate and its Master communicate:

- The identity of the data in the 32 byte data field of the telegram
- The data that PanelMate expects in the next telegram it receives from the Master
- The Master communicates to the PanelMate unit the identity of the data in the telegram data field.

The second byte of the control field received from the Master is not used by the PanelMate unit.

By using the control fields of the input and output telegrams, larger amounts of data than the 32 bytes associated with a single telegram may be multiplexed onto the communications bus. As many as 254 different 32-byte blocks of data may be passed each way as 254 different telegrams. This capability is built into the PanelMate communications driver, but it must be programmed into the Profibus DP Master to ensure correct data exchange.

**Note:** When using multiple telegrams, only the telegrams on the Alarm scan, the Trend scan (if used), and the active page scan are actually sent to the Master.

## Master Output Data Request Frame

The Master always initiates the data exchange with the Slaves on the Profibus DP network. On power-up the Master must send the first telegram of data to the PanelMate, to start the communication cycle. This first Master telegram will initiate the first PanelMate telegram but the information in the data portion of the Master telegram will be ignored, since the PanelMate is not expecting a telegram at that time.

1 <sup>st</sup> byte	2 <sup>nd</sup> byte	3 <sup>rd</sup> thru 34 <sup>th</sup> byte
Telegram #	x	32 bytes of output information from DP Master

This telegram is created based on the response from the PanelMate's last sent telegram (except for the first telegram sent by the Master at startup). The first byte of the data is the telegram number for the 32 bytes of information that follow. The second byte of data is a placeholder in the message data. Bytes 3 through 34 contain the data displayed on the PanelMate pages through data references.

### Example of a Profibus PanelMate Template Read Expression

[T002QW:01]      Read telegram #2, word #1

↑      ↑      ↘  
Telegram #   Read   Word reference

See Chapter 3 for more information on reference formats.

## PanelMate Input Data Response Frame

This telegram is created by the PanelMate to notify the Master of the next telegram number of information it needs to read (byte # 2), and to write to the Masters inputs, the words, bytes or the bits referenced in the PanelMate's configuration.

1 <sup>st</sup> byte	2 <sup>nd</sup> byte	3 <sup>rd</sup> thru 34 <sup>th</sup> byte
Telegram #	Req. Telegram #	32 bytes of input information from PanelMate

The 1<sup>st</sup> byte of the data is the telegram number for the 32 bytes of information that follow in bytes 3 thru 34. The second byte of data is the next requested telegram number that PanelMate wants the Master to send in its next request frame.

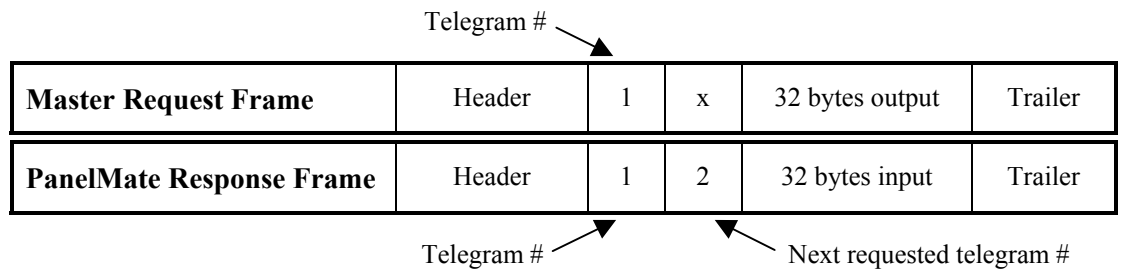
### Example of a Profibus PanelMate Template Write Expression

[T003IW:01]      Write telegram #3, word #1

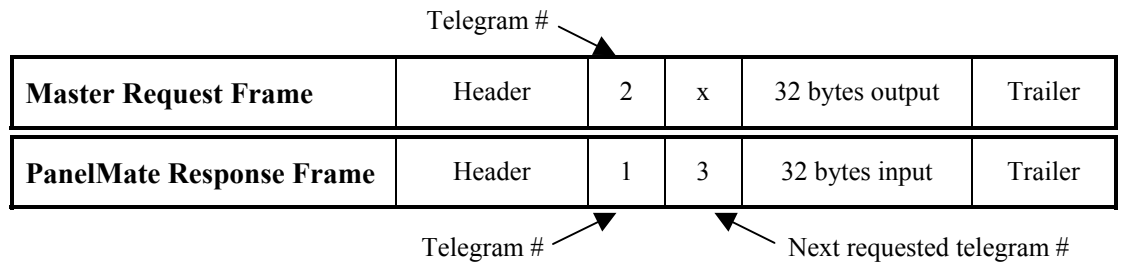
↑      ↙      ↘  
Telegram #   Write   Word reference

See Chapter 3 for more information on reference formats

### Example of the Master to PanelMate Request/Response Frames



The Master sends a request frame of 32 bytes of output data to the PanelMate for telegram number 1. All PanelMate expressions that reference telegram number 1 will use this data to update their fields. The PanelMate immediately replies with a response frame of 32 bytes of input data for telegram number 1 (all logic in the Master requiring telegram number 1 data will use this information; i.e. PanelMate “writes”), and requests telegram number 2 data on the next Master request frame (i.e. PanelMate ‘reads”).



After a complete bus cycle the Master sends a request frame of 32 bytes of output data to the PanelMate unit for telegram number 2. All PanelMate expressions that reference telegram number 2 will use this data to update their fields. The PanelMate immediately replies a response frame of 32 bytes of input data for telegram number 1 (all logic in the Master requiring telegram number 1 data will use this information), and requests telegram number 3 data on the next Master request frame.

## Profibus DP Master Multiplexing Algorithm

The DP Master will assign a block of memory to handle the data exchange between the Master and the PanelMate during the configuration of the network. This memory will have to be multiplexed with logic written inside the Master to guarantee data integrity.

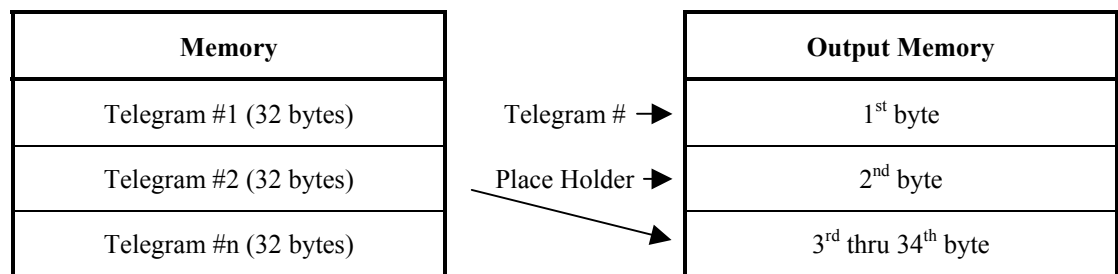
### DP Master I/O Memory Map

1 <sup>st</sup> byte of input memory
2 <sup>nd</sup> byte of input memory
3 <sup>rd</sup> thru 34 <sup>th</sup> byte of input memory

1 <sup>st</sup> byte of output memory
2 <sup>nd</sup> byte of output memory
3 <sup>rd</sup> thru 34 <sup>th</sup> byte of output memory

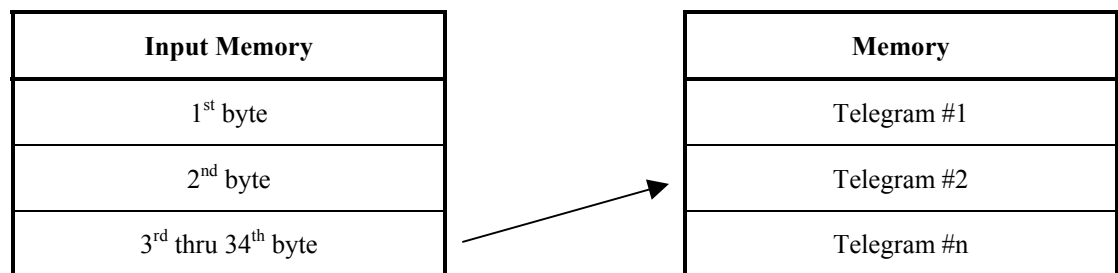
### Building a Master Request Frame

The DP Master will have to multiplex its data into the I/O memory based on the previous requested telegram number sent by the PanelMate in byte number 1 of the last PanelMate response frame. (Byte #1 must contain that telegram number)



### Reading a PanelMate Response Frame

The Master will use the 1st byte to determine which telegram bytes 3 thru 34 represent. The 2<sup>nd</sup> byte will be used to determine which telegram it needs to build for the next Master request frame.





## Maintenance Access

The PanelMate unit's Maintenance Template will access all memory locations supported by the Master. When running online, you may change the Master reference. The Maintenance template is designed to assist you in specifying the Master reference by scrolling through a list of mnemonics which are used to enter the Master word reference. You must enter the correct mnemonics and numeric values and create a legal reference to change a Master reference.

**Note:** When a new reference is entered on an Operator Station, the Maintenance template or Page will remain in a paused state until the Start Monitor control button is pressed. If correct, the template begins updating.

# Profibus Reference Formats

## 3

*This chapter describes Profibus reference formats. The following topics are discussed:*

- *General References*
- *Memory Types*
- *Memory References*
- *Data Blocking*

## General References

Referencing data varies depending upon the type of Data I/O selected. The “Data” types only require specification of the memory type (input or output), data type (bytes/words) and offset. The “Telegram32” type requires the use of Telegram Numbers in the reference.

## Telegram Numbers

Telegram numbers are used to facilitate the multiplexing of the message communicated between the Profibus DP Master and the Operator Station Slave. Telegrams are all of the same size, 34 bytes in length.

Two bytes in each telegram are used by the Telegram Multiplexing Support. Therefore, 32 bytes are available to the communications interface for data exchange.

The number of telegrams that can be exchanged is limited to the number that can be specified by a byte (1-255) and by the user application. The cycle time for a telegram is directly proportional to the number of telegrams and the bit rate of the Profibus DP network - plus the overhead for Operator Station to read each telegram and process its data.

Only the telegrams currently accessed by the active scans are exchanged between the Operator Station and the Master. This can include Page Scan (for the current page), Alarm Scan, and Trend Scan (when used).

*Note: Range checking on the telegram number is limited to 1 through 255. The byte/word index is limited to 0 through 31. The Application Engineer must ensure all specified data references exist in the Profibus DP Master, and the correct programming logic exists in the Profibus DP Master to handle the Telegram multiplexing scheme.*

## Memory Types

The PanelMate, including the PanelMate 1500, supports references to two memory data types for Profibus DP:

- Inputs
- Outputs

*Note: Output data is read only.*

Data is transmitted and received as unsigned 8-bit or bytes. Data is accessible in the form of bits, bytes or words.

## Memory References

The following describes the possible memory reference formats that may be used for the PanelMate Profibus-DP Communications Interface. All numeric characters are specified in decimal. “Data” indicates one of the DataNNN formats (Data32, Data64, etc.) and “Tele” indicates the Telegram32 format in the following text.

### Word References

The following is the format for an Input/Output word reference:

Data - [eW:ddd]

Tele - [TxxxW:ddd]

where:

xxx Telegram number (the Txxx specification is optional for telegram 1, not required for Data types) ; 3-digit maximum, leading zeroes allowed.

e I or Q specifying Input or Output respectively.

W word.

ddd The element word; 3-digit maximum, leading zeroes allowed. Range:

Data32 and Telegram32 – 0 to 15

Data64 – 0 to 31

Data128 – 0 to 63

Data184 – 0 to 91

### Byte References

The following is the format for an Input/Output byte reference:

Data - [e:ddd]

Tele - [Txxx:ddd]

where:

xxx Telegram number (the Txxx specification is optional for telegram 1, not required for Data types) ; 3-digit maximum, leading zeroes allowed.

e I or Q specifying Input or Output respectively.

ddd The element byte; 3-digit maximum, leading zeroes allowed. . Range:

Data32 and Telegram32 – 0 to 31

Data64 – 0 to 63

Data128 – 0 to 127

Data184 – 0 to 183

## Bit References

The following is the format for an Input/Output bit reference:

Data – [em:ddd/tt]

Tele - [Txxxem:ddd/tt]

where:

xxx Telegram number (the Txxx specification is optional for telegram 0) ; 3-digit maximum, leading zeroes allowed.

e I or Q specifying Input or Output respectively.

m Word (blank for Byte).

ddd The element; 3-digit maximum, leading zeroes allowed. . Range:

Data32 and Telegram32 – 0 to 15 for word, 0 to 31 for byte

Data64 – 0 to 31 for word, 0 to 63 for byte

Data128 – 0 to 63 for word, 0 to 127 for byte

Data184 – 0 to 91 for word, 0 to 183 for byte

tt Bit number; 2-digit maximum, range:

For Word references 0-15; leading zero allowed.

For Byte references 0-7; leading zero allowed.

Note: Bit write references are masked into the current input data contained in the operator station.

## Reference Examples

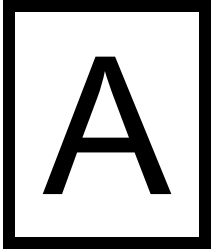
The following are examples of valid references:

<b><u>Telegram Reference</u></b>	<b><u>Description</u></b>
[T002QW:01]	Telegram 2, Output Word 1
[T003IW:01]	Telegram 3, Input Word 1
[T023Q:05]	Telegram 23, Output Byte 5
[T007I:31]	Telegram 7, Input Byte 31
[T002QW:01/15]	Telegram 2, Output Word 1, Bit 15
[T003IW:01/00]	Telegram 3, Input Word 1, Bit 0
[T023Q:05/07]	Telegram 23, Output Byte 5, Bit 7
[T007I:31/02]	Telegram 7, Input Byte 31, Bit 2

### **DataXXX Examples**

[QW:01]	Output Word 1
[IW:01]	Input Word 1
[Q:105]	Output Byte 105
[I:61]	Input Byte 61
[QW:23/15]	Output Word 23, bit 15
[IW:46/ 09]	Input Word 46, bit 9
[Q:16/06]	Output Byte 16, bit 6
[I:38/07]	Input Byte 38, bit 7

# Glossary



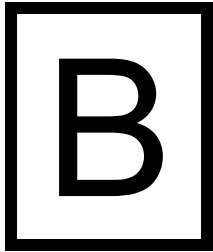
*This reference chapter explains Profibus terminology.*

Term	Description
Comm Module	The communications module provides all communications functionality to connect to Profibus.
Compact Slave	A Profibus DP Slave node having a fixed set of inputs and outputs.
Data Consistency	Profibus-DP slave modules can be configured to have either consistent or inconsistent data. A consistent module contains data from one logic scan in the master. If the data is in the middle of being updated by the scan engine, the old data is sent until the update is complete. An inconsistent module may contain data being changed during a logic scan. The data is consistent within the type of units used (i.e. word module data is consistent within each word). In the PanelMate, the Telegram32 model uses module consistency so that data from different telegrams is not mixed, resulting in incorrect data being used. The Data models (Data32, 64, 128 or 184 models) use inconsistent modules because consistency across the whole module is not required. In addition, many PLCs require special processing to handle consistent modules and many cannot guarantee the data will be consistent over large modules.
Dual Port Memory	A section of memory that can be accessed by two different processors simultaneously. The circuitry and/or control software allowing access by the processors provide an access control method that prevents both processors from accessing the same address simultaneously. Also known as Dual Port Ram, it is often referred to as DPR.
GSD File	Electronic data sheets for Profibus devices. A device description file that describes the functionality of a Profibus device. This includes which baud rates are supported, which configurations are allowed, etc. The Profibus Master requires a configuration tool that can read this information to inform the Master of all of capabilities of the device.
Modular Slave	A Profibus DP Slave node having a modular number of inputs and outputs. The number of inputs and outputs may be tailored utilizing modules of memory to limit the amount of data exchanged between the Master and the Slave to the required amount.
Parser	A software entity used to verify a textual reference.
Port Usage	The type of communications interface assigned to a PanelMate port. It is specified in the Device Usage field of the Port Parameters editor within the PanelMate PLC Name and Port Table editor.



Term	Description
Profibus Configuration Tool	A software package designed to easily generate the parameter data for the Profibus DP Master to be configured. This tool takes the data for the configuration from the GSD files and creates a master parameter record containing all the pertinent data for the system. This data is then transferred to the Profibus DP Master via floppy disk, DPR, or Flash EPROM. Examples of configuration tools include Siemens Com Profibus and Hilscher's Sycon DP.
Profibus DP	PROcess Field BUS Decentralized Pheriphery. (Fieldbus Standard Profibus, DIN 19245)
Profibus DP Master	A Profibus DP node capable of initiating telegram transmissions on the network. This node has the capability of controlling one or more Profibus DP Slave nodes. The Master periodically queries it's Slaves for their output data. The Master is typically some type of Programmable Logic Controller (PLC), PC, or other intelligent control device.
Profibus DP Network	The performance optimized version of Profibus, specifically dedicated to time-critical communication between automation systems and distributed peripherals. It is suitable as a replacement for the costly parallel wiring of 24 V and 4(0) to 20mA measurement signals. Profibus DP is included into the European Fieldbus Standard EN 50170.
Profibus DP Slave	A Profibus DP node unable to initialize telegram transmissions on the network. This node is dependent upon a Profibus DP Master node to which is assigned to be queried periodically for its output data. The PanelMate is referred to throughout this document as the OI Slave or the Profibus DP Slave.
Profibus Interface Center (PIC)	The Profibus Interface Center (PIC) provides a wide range of experience in setup and configuration of Profibus networks. The personnel at the PIC use their equipment to evaluate new Profibus devices during the development and prior to certification testing. In addition, the PIC provides an official DP test laboratory for DP certification testing.
Reference Collection	A group of references scanned on a specific time interval.
Telegram	A data transmission from one node to another within a Profibus network cycle. In the case of PanelMate, the only telegrams accessible to the PanelMate are: <ul style="list-style-type: none"> <li>• Request Telegrams from the Master</li> <li>• Response Telegrams from the PanelMate.</li> </ul>

# Error Codes



*This reference chapter describes the PanelMate Profibus DP error messages.*

## PanelMate Profibus DP Error Messages

When a problem occurs in the Comm Module that does not disable it, an error code is made available to the driver. The driver will ensure that a remote error is returned that contains this error code. The following Comm Modules errors can be detected:

52	Invalid bus address configured
53	Waiting for Warmstart
54	Invalid Module Type Configured
55	Invalid Module Length
61	No Address Switches Available
70	I/O Data too long
71	SPC3 Initialization Error
117	Invalid Message Received
210	Database Access Error
254	Comm Data Exchange Error

**Note:** If an error appears, check the Master setup programming. If the programming is correct, the Profibus DP card may need to be replaced.

# Index

## A

Adding PanelMate to your Profibus Configuration  
Software, 10

## C

Configuring your PanelMate Communications Port, 9

## D

Downloading Drivers to a PanelMate Unit, 7

## E

Error Messages, 33

## G

General References, 25  
Glossary, 29

## H

Hardware Installation, 6  
How PanelMate Communicates on the Profibus Network,  
18, 19, 20

## I

Installing Drivers, 6  
Introduction, 6

## M

Maintenance Access, 23  
Memory References, 26  
    Bit References, 27  
    Byte References, 26  
    Word References, 26  
Memory Types, 25

## P

PanelMate Connection Examples, 11  
PanelMate Messaging Algorithm, 17  
Profibus Bus Connector, 15  
Profibus DP Communications, 17  
Profibus DP Master Multiplexing Algorithm, 22  
    Building a Master Request Frame, 22  
    Reading a PanelMate Response Frame, 22

## R

Reference Examples, 28

## S

Serial Transfer Cables, 7

## T

Telegram Numbers, 25

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