Allen-Bradley

PowerFlex™ Communications

Interbus Adapter

20-COMM-I
FRN 1.xxx

User Manual

Rockwell Automation

Table of Contents

Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. "*Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls*" (Publication SGI-1.1) describes some important differences between solid state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will the Allen-Bradley Company be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, the Allen-Bradley Company cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Allen-Bradley Company with respect to use of information, circuits, equipment, or software described in this manual.

Reproduction of the contents of this manual, in whole or in part, without written permission of the Allen-Bradley Company is prohibited.

Throughout this manual we use notes to make you aware of safety considerations.

ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss.

Attentions help you:

- identify a hazard
- avoid the hazard
- recognize the consequences

Important: Identifies information that is especially important for successful application and understanding of the product.

Shock Hazard labels may be located on or inside the drive to alert people that dangerous voltage may be present.

About This Manual

Related Documentation

For:	Refer to:	Publication
DriveExplorer™	*DriveExplorer Getting Results Manual* Online Help (installed with the software)	9306-GR001B-EN-E
DriveExecutive	www.ab.com/drives/drivetools_2000 Online Help (installed with the software)	
HIM	*HIM Quick Reference*	20OIM-QR001..
PowerFlex™ 70 Drive	*PowerFlex 70 User Manual* *PowerFlex 70 Reference Manual*	20A-UM001… 20A-RM001…
PowerFlex 700 Drive	*PowerFlex 700 User Manual* *PowerFlex 700 Reference Manual*	20B-UM001… 20B-RM001…
Scanner	*SST-IBS-SLC User's Guide*	Version 1.20
SLC	*SLC 500 Modular Hardware Style Installation and Operation Manual*	1747-6.2
SLC	*SLC 500 and MicroLogix 1000 Instruction Set*	1747-6.15
Interbus	*Interbus IBS CMD G4 Quickstart*	27 22 27 6

Documentation for the above and this manual can be obtained online at http://www.ab.com/manuals.

Documentation from SST / Woodhead can be obtained online at http://www.mysst.com/download.

Conventions Used in this Manual

The following conventions are used throughout this manual:

- Parameter names are shown in the following format **Parameter xxx - [*]**. The xxx represents the parameter number. The * represents the parameter name. For example **Parameter 01 - [DPI Port]**.
- Menu commands are shown in bold type face and follow the format **Menu > Command**. For example, if you read "Select **File > Open**," you should click the **File** menu and then click the **Open** command.
- The firmware release is displayed as FRN X.xxx. The "FRN" signifies Firmware Release Number. The "X" is the major release number. The "xxx" is the minor update number. This manual is for Firmware release 1.xxx.
- This manual provides information about the Interbus adapter and using it with PowerFlex drives. The adapter can be used with other products that implement DPI. Refer to the documentation for your product for specific information about how it works with the adapter.

Rockwell Automation Support

Rockwell Automation offers support services worldwide, with over 75 sales/support offices, over 500 authorized distributors, and over 250 authorized systems integrators located through the United States alone. In addition, Rockwell Automation representatives are in every major country in the world.

Local Product Support

Contact your local Rockwell Automation representative for sales and order support, product technical training, warranty support, and support service agreements.

Technical Product Assistance

If you need to contact Rockwell Automation for technical assistance, please review the information in Chapter 7, Troubleshooting first. If you still have problems, then call your local Rockwell Automation representative.

U.S. Allen-Bradley Drives Technical Support:
E-mail: support@drives.ra.rockwell.com
Tel: (1) 262.512.8176
Fax: (1) 262.512.2222
Online: **www**.ab.com/support/abdrives

UK Customer Support Center:
E-mail: esupport2@ra.rockwell.com
Tel: +44 (0) 870 2411802
Fax: +44 (0) 1908 838804

German Customer Service Center:
E-mail: ragermany-csc@ra.rockwell.com
Tel: +49 (0) 2104 960-630
Fax: +49 (0) 2104 960-501

Summary of Changes

This is the first release of the 20-COMM-I manual.

Topic	Page

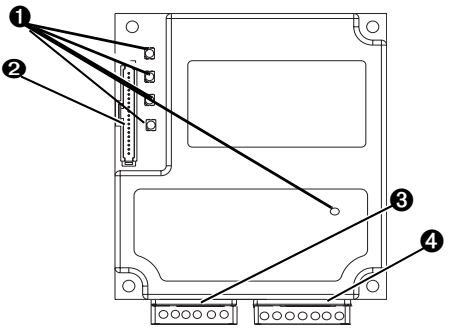
Topic	Page

Getting Started

The 20-COMM-I Interbus adapter is an embedded communication option for any one drive in the PowerFlex family. It can also be used with other Allen-Bradley products implementing DPI™, a functional enhancement to SCANport™.

Components

Figure 1.1 Components of the Adapter



#	Part	Description
❶	Status Indicators	Five LEDs that indicate the status of the connected drive, adapter, and network. Refer to Chapter 7, Troubleshooting.
❷	DPI Connector	A 20-pin, single-row shrouded male header. An Internal Interface cable is connected to this connector and a connector on the drive.
❸	Bus In Interbus Connector	One 6-pin plug-in connector.
❹	Bus Out Interbus Connector	One 7-pin plug-in connector.

Features

The Interbus adapter features the following:

- The adapter is mounted in the PowerFlex drive and receives the required power from the drive. Captive screws are used to secure the adapter to the drive.
- A number of configuration tools can be used to configure the adapter and connected drive. The tools include the PowerFlex HIM on the drive, or drive-configuration software such as DriveExplorer (version 2.01 or higher) or DriveExecutive (version 1.01 or higher).
- Status indicators report the status of the drive, adapter, and network.
- I/O, including Logic Command/Reference and Datalinks, may be configured for your application using a parameter.
- Explicit messages are supported (PCP Read/Write).
- User-defined fault actions determine how the adapter and PowerFlex drive respond to communication disruptions on the network.

Compatible Products

The Interbus adapter is compatible with Allen-Bradley PowerFlex drives and other products that support DPI. DPI is a second generation peripheral communication interface. It is a functional enhancement to SCANport. At the time of publication, compatible products include:

- PowerFlex 70 drives
- PowerFlex 700 drives
- PowerFlex 7000 drives

Required Equipment

Equipment Shipped with the Adapter

When you unpack the adapter, verify that the package includes:

- ❑ One Interbus adapter
- ❑ A 2.54 cm (1 in.) and a 15.24 cm (6 in.) Internal Interface cable (only one cable is needed to connect the adapter to the drive)
- ❑ One grounding wrist strap
- ❑ LED labels
- ❑ This manual

User-Supplied Equipment

To install and configure the Interbus adapter, you must supply:

- ❑ A small flathead screwdriver
- ❑ Interbus cable
- ❑ Configuration tool, such as:
  - – PowerFlex HIM
  - – DriveExplorer (version 2.01 or higher)
    - with 1203-SSS Serial Converter (version 3.001 or higher)
  - – DriveExecutive (version 1.01 or higher)
    - with 1203-SSS Serial Converter (version 3.001 or higher)
- ❑ Configuration tool, such as:
  - – Interbus configuration software (CMD)

Safety Precautions

Please read the following safety precautions carefully.

ATTENTION: Risk of injury or equipment damage exists. Only personnel familiar with drive and power products and the associated machinery should plan or implement the installation, start-up, configuration, and subsequent maintenance of the product using a Interbus adapter. Failure to comply may result in injury and/or equipment damage.

ATTENTION: Risk of injury or death exists. The PowerFlex drive may contain high voltages that can cause injury or death. Remove all power from the PowerFlex drive, and then verify power has been removed before installing or removing a Interbus adapter.

ATTENTION: Risk of equipment damage exists. The Interbus adapter contains ESD (Electrostatic Discharge) sensitive parts that can be damaged if you do not follow ESD control procedures. Static control precautions are required when handling the adapter. If you are unfamiliar with static control procedures, refer to *Guarding Against Electrostatic Damage*, Publication 8000-4.5.2.

ATTENTION: Risk of injury or equipment damage exists. If the Interbus adapter is transmitting control I/O to the drive, the drive may fault when you reset the adapter. Determine how your drive will respond before resetting an adapter.

ATTENTION: Risk of injury or equipment damage exists. **Parameters 6 - [Comm Flt Action]** lets you determine the action of the adapter and connected PowerFlex drive if communications are disrupted. By default, this parameter faults the PowerFlex drive. You can set this parameter so that the PowerFlex drive continues to run. Precautions should be taken to ensure that the setting of this parameter does not create a hazard of injury or equipment damage.

ATTENTION: Risk of injury or equipment damage exists. When a system is configured for the first time, there may be unintended or incorrect machine motion. Disconnect the motor from the machine or process during initial system testing.

Quick Start

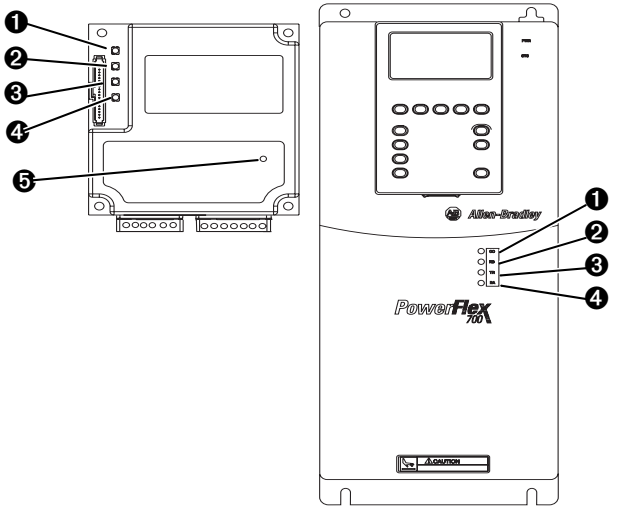
This section is designed to help experienced users start using the Interbus adapter. If you are unsure about how to complete a step, refer to the referenced chapter.

Step		Refer to
1	**Review the safety precautions for the adapter.**	Throughout This Manual
2	**Verify that the PowerFlex drive is properly installed.**	Drive User Manual
3	**Install the adapter.** Verify that the PowerFlex drive is not powered. Then, connect the adapter to the network using an Interbus cable and to the drive using the Internal Interface cable. Use the captive screws to secure and ground the adapter to the drive.	Chapter 2, Installing the Adapter
4	**Apply power to the adapter.** The adapter receives power from the drive. Apply power to the drive. If there is a problem, refer to Chapter 7, Troubleshooting.	Chapter 2, Installing the Adapter
5	**Configure the adapter for your application.** Set the parameters for the following features as required by your application: • I/O configuration. • Fault actions.	Chapter 3, Configuring the Adapter
6	**Apply power to the Interbus master and other devices on the network.** Verify that the master and network are installed and functioning in accordance with Interbus standards, and then apply power to them.	
7	**Configure the scanner to communicate with the adapter.** Use a network tool for Interbus to configure the master on the network.	Chapter 4, Configuring the Interbus Scanner
8	**Create a ladder logic program.** Use a programming tool to create a ladder logic program that enables you to do the following: • Control the adapter and connected drive. • Monitor or configure the drive using Explicit Messages.	Chapter 5, Using I/O Messaging Chapter 6, Using Explicit Messaging (PCP Communications)

Modes of Operation

The adapter uses five status indicators to report its operating status. They can be viewed on the adapter or through the drive cover. (See Figure 1.2.)

Figure 1.2 Status Indicators



#	Status Indicator	Normal Status(1)	Description
❶	CC Cable Check	Green	Cable connections good.
❷	RD Remote Bus Disable	Off	Outgoing remote bus is not switched off.
❸	TR Transmit/Receive	Off	No PCP connections are carried out
		Green	PCP connection are being carried out.
❹	BA Bus Active	Green	Bus is active.
❺	UL Bus Voltage	Green	Bus Voltage is OK.

(1) If all status indicators are off, the adapter is not receiving power. Refer to Chapter 2, Installing the Adapter, for instructions on installing the adapter.

Note: The UL indicator is not viewable when the drive cover is installed or closed.

Note: Interbus compliance requires different LED functions than what is normally displayed on the front of the drive (Port, Mod, Net A, and Net B Led's). LED labels are provided with the adapter for application to the drive cover.

If any other conditions occur, refer to Chapter 7, Troubleshooting .

Installing the Adapter

Chapter 2 provides instructions for installing the adapter on a PowerFlex drive.

Preparing for an Installation

Before installing the Interbus adapter:

- Verify that you have all required equipment. Refer to Chapter 1, Getting Started.

ATTENTION: Risk of equipment damage exists. The Interbus adapter contains ESD (Electrostatic Discharge) sensitive parts that can be damaged if you do not follow ESD control procedures. Static control precautions are required when handling the adapter. If you are unfamiliar with static control procedures, refer to *Guarding Against Electrostatic Damage*, Publication 8000-4.5.2.

Connecting the Adapter to the Network

ATTENTION: Risk of injury or death exists. The PowerFlex drive may contain high voltages that can cause injury or death. Remove power from the drive, and then verify power has been discharged before installing or removing an adapter.

1. Remove power from the drive.
2. Use static control precautions.
3. Route the Interbus cables through the bottom of the PowerFlex drive. (See Figure 2.3.)
4. Connect the Interbus connectors to the cables. (See Figure 2.1.)

Bus In Connector (from previous node on the network).

Terminal	Name	Description
1	/DO1	Receive
2	DO1	Receive
3	/DI1	Transmit
4	DI1	Transmit
5	GND	Ground Connection
6	PE	Protective Earth

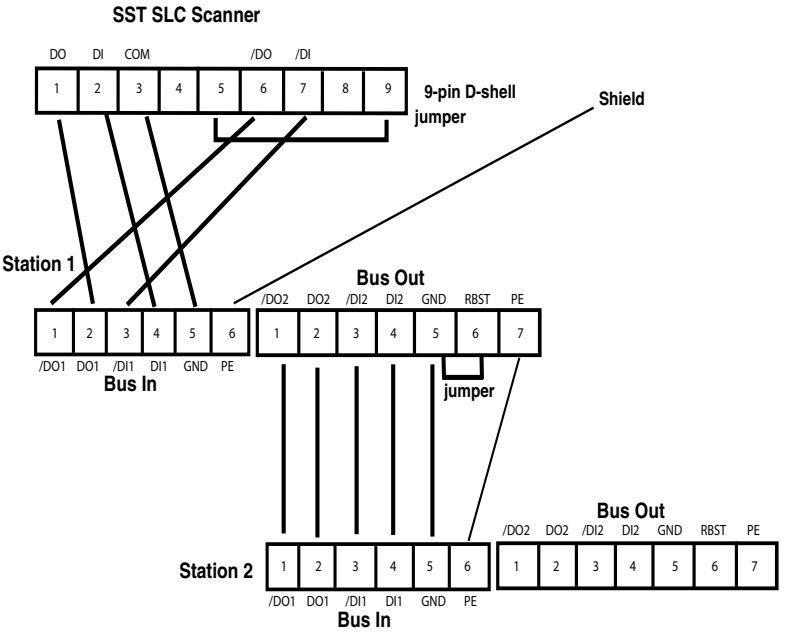
Bus Out Connector (to next node on the network).

Terminal	Name	Description
1	/DO2	Receive
2	DO2	Receive
3	/DI2	Transmit
4	DI2	Transmit
5	GND[1]	Ground Connection
6	RBST[1]	Termination
7	PE	Protective Earth

Important: (1) Connect GND to RBST if the adapter is NOT the last adapter on the bus. If the connection is not made, the adapter will terminate the outgoing bus.

See Figure 2.1 for an explanation of wiring an Interbus network.

Figure 2.1 Example Network Wiring

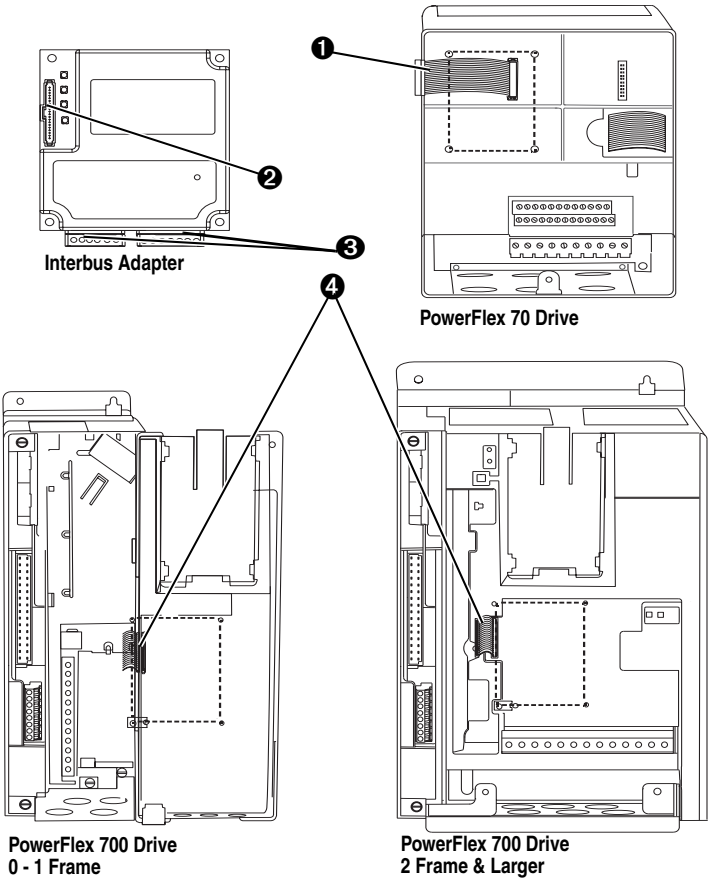


5. Connect the Interbus connector to the adapter.

Connecting the Adapter to the Drive

1. Remove power from the drive.
2. Use static control precautions.
3. Connect the Internal Interface cable to the DPI port on the drive and then to DPI connector on the adapter.

Figure 2.2 DPI Ports and Internal Interface Cables



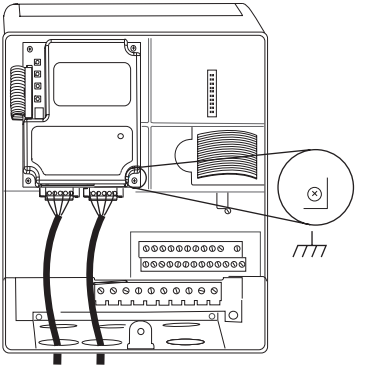
#	Description
❶	15.24 cm (6 in.) Internal Interface cable
❷	DPI Connector

#	Description
❸	Interbus connectors
❹	2.54 cm (1 in.) Internal Interface cable

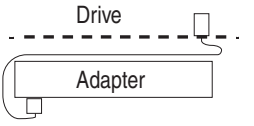
4. Fold the Internal Interface cable behind the adapter and mount the adapter on the drive using the four captive screws to secure and ground it to the drive.

Important: On a PowerFlex 70 drive, tighten the screw in the lower right hole to ground the adapter.
On a PowerFlex 700 drive, tighten the screw in the lower left hole to ground the adapter.

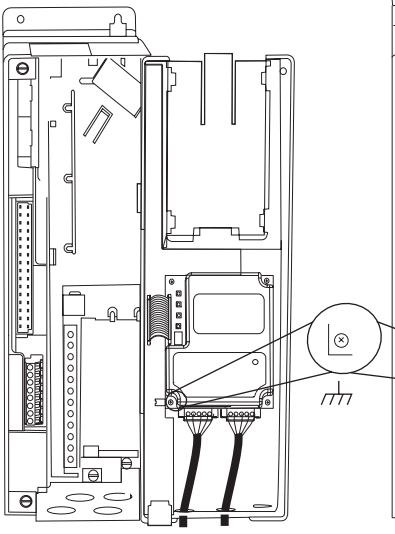
Figure 2.3 Mounting the Adapter



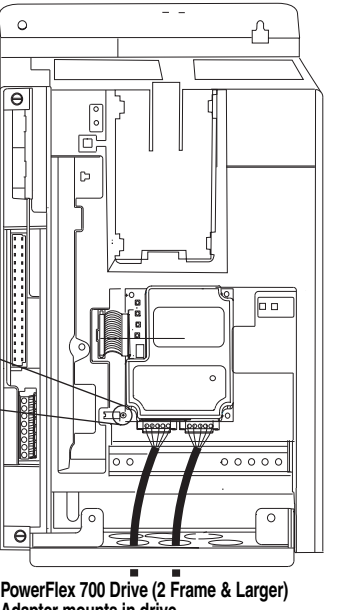
PowerFlex 70 Drive
Adapter mounts in drive.



Internal Interface cable folded behind the adapter and in front of drive.



PowerFlex 700 Drive (0 - 1 Frames)
Adapter mounts on door.



PowerFlex 700 Drive (2 Frame & Larger)
Adapter mounts in drive.

Applying Power

ATTENTION: Risk of equipment damage, injury, or death exists. Unpredictable operation may occur if you fail to verify that parameter settings and switch settings are compatible with your application. Verify that settings are compatible with your application before applying power to the drive.

1. Close the door or reinstall the cover on the drive. Key status indicators can be viewed on the front of the drive after power has been applied.

Note: Interbus compliance requires different LED functions than what is normally displayed on the front of the drive (Port, Mod, Net A, and Net B Leds). LED labels are provided with the adapter for application to the drive cover.

2. Apply power to the PowerFlex drive. The adapter receives its power from the connected drive. When you apply power to the product for the first time, the status indicators should be green or off after initialization. Refer to Chapter 7, Troubleshooting for more information.

3. Apply power to the master device and other devices on the network.

Configuring the Adapter

Chapter 3 provides instructions and information for setting the parameters in the adapter.

For a list of parameters, refer to Adapter Parameters. For definitions of terms in this chapter, refer to the Glossary.

Configuration Tools

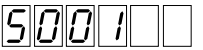
The Interbus adapter stores parameters and other information in its own non-volatile memory. You must, therefore, access the adapter to view and edit its parameters. The following tools can be used to access the adapter parameters:

Tool	Refer To:
DriveExplorer Software (version 2.01 or higher)	*DriveExplorer Getting Results Manual*, Publication 9306-GR001B-EN-E, or the online help
Drive Tools 2000 Software (version 1.01 or higher)	*DriveExecutive Online Help*
PowerFlex HIM	page 3-2

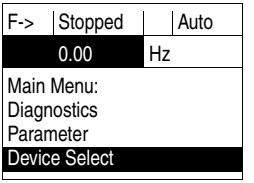
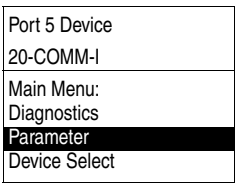
Using the PowerFlex HIM

If your drive has either an LED or LCD HIM (Human Interface Module), access parameters in the adapter as follows:

Using an LED HIM

Step	Key(s)	Example Screens
1. Press the ALT and then Sel (Device) to display the Device Screen.	Device ALT Sel	
2. Press the Up Arrow or Down Arrow to scroll to the **Interbus** adapter. Letters represent files in the drive, and numbers represent ports. The adapter is usually connected to port 5.	OR	
3. Press the Enter key to enter your selection. A parameter database is constructed, and then the first parameter is displayed.		
4. Edit the parameters using the same techniques that you use to edit drive parameters.		

Using an LCD HIM

Step	Key(s)	Example Screens
1. In the main menu, press the Up Arrow or Down Arrow to scroll to **Device Select**.	OR	
2. Press Enter to enter your selection.		
3. Press the Up Arrow or Down Arrow to scroll to the **Interbus** (20-COMM-I) adapter.	OR	
4. Press Enter to select the **Interbus** adapter. A parameter database is constructed, and then the main menu for the adapter is displayed.		
5. Edit the parameters using the same techniques that you use to edit drive parameters.		

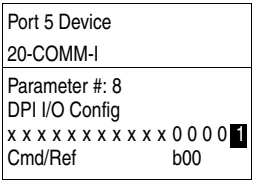
Setting the I/O Configuration

The I/O configuration determines the data that is sent to and from the drive. This is a two part process: enabling/disabling the data transmitted between the adapter and drive, and identifying the data transmitted between the adapter and the scanner.

1. Enable or disable the data transmitted between the adapter and drive.
   A “1” enables the I/O
   A “0” disables the I/O

   Set the bits in **Parameter 8 - [DPI I/O Config]**:

Figure 3.1 I/O Configuration Screen on an LCD HIM



Bit	Description
0	Logic Command/Reference (Default)
1	Datalink A
2	Datalink B
3	Datalink C
4	Datalink D
5 - 16	Not Used

   Bit 0 is the right-most bit. In Figure 3.1, it is highlighted and equals “1.”

2. If Logic Command/Reference is enabled, configure the parameters in the drive to accept the logic and Reference from the adapter. For example, set **Parameter 90 - [Speed Ref A Sel]** in a PowerFlex 70 or 700 drive to “DPI Port 5” so that the drive uses the Reference from the adapter. Also, verify that the mask parameters (for example, **Parameter 276 - [Logic Mask]**) in the drive are configured to receive the desired logic from the adapter.

3. If you enabled one or more Datalinks, configure parameters in the drive to determine the source and destination of data in the Datalink(s). Also, ensure that the Interbus adapter is the only adapter using the enabled Datalink(s).

4. Interbus requires the network I/O mapping to be configured first in the adapter. CMD software will read this configuration online when it is configuring the scanner.

   Process Input Data Description (PIDD) words map input data on the network (data seen as inputs to the scanner and controller program). Example input data includes Logic Status, Feedback and Datalinks (Datalink x1 Out). Up to 9 words of input data can be mapped.

   Process Output Data Description (PODD) words map output data on the network (data sent as outputs from the scanner and controller program). Example output data includes Logic Command, Reference and Datalinks (Datalink x1 In). Up to 9 words of output data can be mapped.

The following indexes are used to select the I/O data:

Table 3.1 PIDD/PODD Indexes

Input

Value (Hex)	Value (Dec)	Selects
2F9A	12186	Logic Status
2F9B	12187	Feedback
2FA4	12196	Datalink A1 Out
2FA5	12197	Datalink A2 Out
2FA6	12198	Datalink B1 Out
2FA7	12199	Datalink B2 Out
2FA8	12200	Datalink C1 Out
2FA9	12201	Datalink C2 Out
2FAA	12202	Datalink D1 Out
2FAB	12203	Datalink D2 Out

Output

Value (Hex)	Value (Dec)	Selects
2F98	12184	Logic Command
2F99	12185	Reference
2F9C	12188	Datalink A1 In
2F9D	12189	Datalink A2 In
2F9E	12190	Datalink B1 In
2F9F	12191	Datalink B2 In
2FA0	12192	Datalink C1 In
2FA1	12193	Datalink C2 In
2FA2	12194	Datalink D1 In
2FA3	12195	Datalink D2 In

To configure the adapter for Logic Command/Status, Reference/ Feedback and the maximum number of Datalinks enabled:

	Parameter #	Name	Value (Hex)	Value (Dec)	Description
Input	20	PIDD W0 Cfg	2F9A	12186	Logic Status (default)
	22	PIDD W1 Cfg	2F9B	12187	Feedback (default)
	24	PIDD W2 Cfg	2FA4	12196	Datalink A1 Out
	26	PIDD W3 Cfg	2FA5	12197	Datalink A2 Out
	28	PIDD W4 Cfg	2FA6	12198	Datalink B1 Out
	30	PIDD W5 Cfg	2FA7	12199	Datalink B2 Out
	32	PIDD W6 Cfg	2FA8	12200	Datalink C1 Out
	34	PIDD W7 Cfg	2FA9	12201	Datalink C2 Out
	36	PIDD W8 Cfg	2FAA	12202	Datalink D1 Out
Output	38	PODD W0 Cfg	2F98	12184	Logic Command (default)
	40	PODD W1 Cfg	2F99	12185	Reference (default)
	42	PODD W2 Cfg	2F9C	12188	Datalink A1 In
	44	PODD W3 Cfg	2F9D	12189	Datalink A2 In
	46	PODD W4 Cfg	2F9E	12190	Datalink B1 In
	48	PODD W5 Cfg	2F9F	12191	Datalink B2 In
	50	PODD W6 Cfg	2FA0	12192	Datalink C1 In
	52	PODD W7 Cfg	2FA1	12193	Datalink C2 In
	54	PODD W8 Cfg	2FA2	12194	Datalink D1 In

Note that Datalink D2 is not used in this example because maximum configuration has been reached. The maximum configuration is shown to illustrate utilizing all 9 words of inputs and 9 words of outputs. Depending on your application needs, any subset of the above example can be implemented.

The corresponding **Parameter 8 - [DPI I/O Config]** setting would be “11111” for all of the above information to transfer between the adapter and the drive.

5. Reset the adapter. Refer to the Resetting the Adapter section in this chapter.

The adapter is ready to receive I/O from the master (i.e., scanner). You must now configure the scanner to recognize and transmit I/O to the adapter. Refer to Chapter 4, Configuring the Interbus Scanner.

Setting a Fault Action

By default, when communications are disrupted (for example, a cable is disconnected) the drive responds by faulting if it is using I/O from the network. You can configure a different response to communication disruptions using **Parameter 6 - [Comm Flt Action]**.

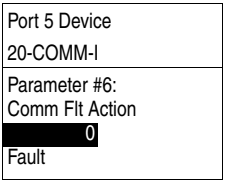
ATTENTION: Risk of injury or equipment damage exists. **Parameters 6 - [Comm Flt Action]** lets you determine the action of the adapter and connected PowerFlex drive if communications are disrupted. By default, this parameter faults the PowerFlex drive. You can set this parameter so that the PowerFlex drive continues to run. Precautions should be taken to ensure that the setting of this parameter does not create a hazard of injury or equipment damage.

To change the fault action

- Set the values of **Parameters** to the desired responses:

Value	Action	Description
0	Fault (default)	The drive is faulted and stopped. (Default)
1	Stop	The drive is stopped, but not faulted.
2	Zero Data	The drive is sent 0 for output data after a communications disruption. This does not command a stop.
3	Hold Last	The drive continues in its present state after a communications disruption.
4	Send Flt Cfg	The drive is sent the data that you set in the fault configuration parameters (Parameters 10 - [Flt Cfg Logic] through 19- [Flt Cfg D2]).

Figure 3.2 Fault Action Screen on an LCD HIM



Changes to the parameter take effect immediately. A reset is not required.

To set the fault configuration parameters

If you set **Parameter 6 - [Comm Flt Action]** to the "Send Flt Cfg," the values in the following parameters are sent to the drive after a communications fault occurs. You must set these parameters to values required by your application.

Number	Name	Description
10	Flt Cfg Logic	A 16-bit value sent to the drive for Logic Command.
11	Flt Cfg Ref	A 32-bit value (0 – 4294967295) sent to the drive as a Reference or Datalink. **Important:** If the drive uses a 16-bit Reference or 16-bit Datalinks, the most significant word of the value must be set to zero (0) or a fault will occur.
12 – 19	Flt Cfg x1 In	

Changes to these parameters take effect immediately. A reset is not required.

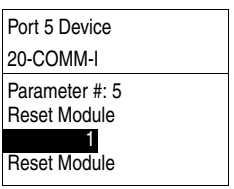
Resetting the Adapter

Changes to switch settings or some adapter parameters require that you reset the adapter before the new settings take effect. You can reset the adapter by cycling power to the drive or by using the following parameter:

ATTENTION: Risk of injury or equipment damage exists. If the adapter is transmitting control I/O to the drive, the drive may fault when you reset the adapter. Determine how your product will respond before resetting a connected adapter.

- Set the **Parameter 05 - [Reset Module]** to **Reset Module**:

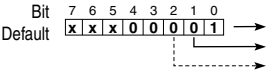
Figure 3.3 Reset Screen on an LCD HIM



Value	Description
0	Ready (Default)
1	Reset Module
2	Set Defaults

When you enter **1 = Reset Module**, the adapter will be immediately reset. When you enter **2 = Set Defaults**, the adapter will set all adapter parameters to their factory-default settings. The value of this parameter will be restored to **0 = Ready** after the adapter is reset.

The following parameters provide information about how the adapter is configured. You can view these parameters at any time.

Parameter No.	Name and Description	Details	
01	**[DPI Port]** Port to which the adapter is connected. This will usually be port 5.	Default: Minimum: Maximum: Type:	0 0 7 Read Only
03	**[Ref/Fdbk Size]** Size of the Reference/Feedback. The drive determines the size of the Reference/Feedback.	Default: Values: Type:	0 = 16-bit 0 = 16-bit 1 = 32-bit Read/Write
04	**[Datalink size]** Size of each Datalink word. The drive determines the size of Datalinks.	Default: Values: Type:	0 = 16-bit 0 = 16-bit 1 = 32-bit Read Only
09	**[DPI I/O Active]** I/O that the adapter is actively transmitting. The value of this parameter will usually be equal to the value of Parameter 13 - DPI I/O Config.  	Default: Bit Values: Type: **Bit Definitions** 0 = Cmd/Ref 1 = Datalink A 2 = Datalink B 3 = Datalink C 4 = Datalink D 5 = Not Used 6 = Not Used 7 = Not Used	xxx0 0001 0 = I/O disabled 1 = I/O enabled Read Only
21	**PIDD W0 Actual** Actual Process Input Description for Word 0 Displays the Actual PIDD Config being transmitted to word 0 in the Interbus Master.	Value: Type:	See Table B.1 Read Only
23	**PIDD W1 Actual** Actual Process Input Description for Word 1 Displays the Actual PIDD Config being transmitted to word 1 in the Interbus Master.	Value: Type:	See Table B.1 Read Only
25	**PIDD W2 Actual** Actual Process Input Description for Word 2 Displays the Actual PIDD Config being transmitted to word 2 in the Interbus Master.	Value: Type:	See Table B.1 Read Only
27	**PIDD W3 Actual** Actual Process Input Description for Word 3 Displays the Actual PIDD Config being transmitted to word 3 in the Interbus Master.	Value: Type:	See Table B.1 Read Only
29	**PIDD W4 Actual** Actual Process Input Description for Word 4 Displays the Actual PIDD Config being transmitted to word 4 in the Interbus Master.	Value: Type:	See Table B.1 Read Only
31	**PIDD W5 Actual** Actual Process Input Description for Word 5 Displays the Actual PIDD Config being transmitted to word 5 in the Interbus Master.	Value: Type:	See Table B.1 Read Only

Parameter No.	Name and Description	Details	
33	**PIDD W6 Actual** Actual Process Input Description for Word 6 Displays the Actual PIDD Config being transmitted to word 6 in the Interbus Master.	Value: Type:	See Table B.1 Read Only
35	**PIDD W7 Actual** Actual Process Input Description for Word 7 Displays the Actual PIDD Config being transmitted to word 7 in the Interbus Master.	Value: Type:	See Table B.1 Read Only
37	**PIDD W8 Actual** Actual Process Input Description for Word 8 Displays the Actual PIDD Config being transmitted to word 8 in the Interbus Master.	Value: Type:	See Table B.1 Read Only
39	**PODD W0 Actual** Actual Process Output Description for Word 0 Displays the actual PODD Configuration being received from word 0 in the Interbus Master.	Value: Type:	See Table B.1 Read Only
41	**PODD W1 Actual** Actual Process Output Description for Word 1 Displays the actual PODD Configuration being received from word 1 in the Interbus Master.	Value: Type:	See Table B.1 Read Only
43	**PODD W2 Actual** Actual Process Output Description for Word 2 Displays the actual PODD Configuration being received from word 2 in the Interbus Master.	Value: Type:	See Table B.1 Read Only
45	**PODD W3 Actual** Actual Process Output Description for Word 3 Displays the actual PODD Configuration being received from word 3 in the Interbus Master.	Value: Type:	See Table B.1 Read Only
47	**PODD W4 Actual** Actual Process Output Description for Word 4 Displays the actual PODD Configuration being received from word 4 n the Interbus Master.	Value: Type:	See Table B.1 Read Only
49	**PODD W5 Actual** Actual Process Output Description for Word 5 Displays the actual PODD Configuration being received from word 5 in the Interbus Master.	Value: Type:	See Table B.1 Read Only
51	**PODD W6 Actual** Actual Process Output Description for Word 6 Displays the actual PODD Configuration being received from word 6 in the Interbus Master.	Value: Type:	See Table B.1 Read Only
53	**PODD W7 Actual** Actual Process Output Description for Word 7 Displays the actual PODD Configuration being received from word 7 in the Interbus Master.	Value: Type:	See Table B.1 Read Only
55	**PODD W8 Actual** Actual Process Output Description for Word 8 Displays the actual PODD Configuration being received from word 8 in the Interbus Master.	Value: Type:	See Table B.1 Read Only
57	**PCP Comm Act** Actual PCP configuration	ENUM: Enabled, Disabled	

Notes:

Configuring the Interbus Scanner

Interbus scanners are available from several manufacturers, including SST. Chapter 4 provides instructions on how to utilize Phoenix Contact CMD software to configure the network on an SST scanner.

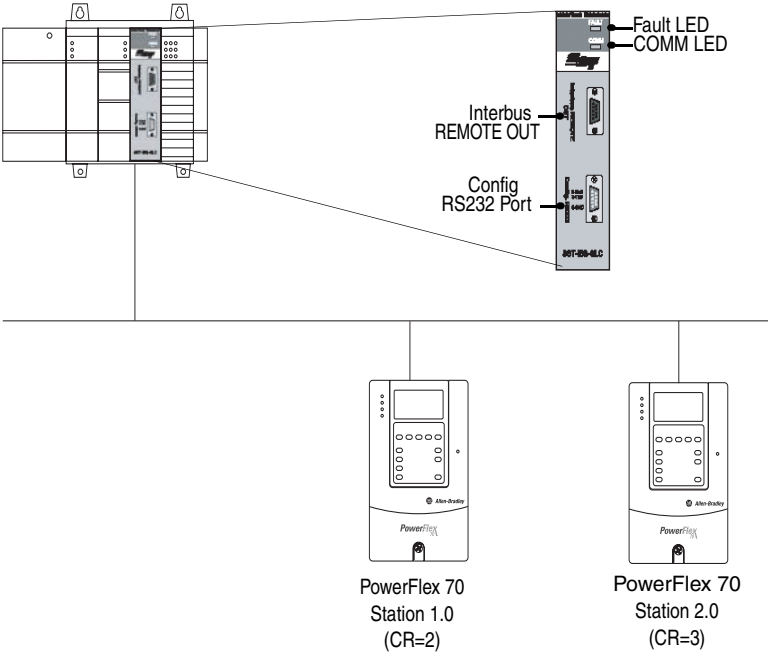
Example Network

All examples in this manual are based on the following:

- SLC controller with a SST Interbus scanner (SST-IBS-SLC) in slot 1.
- PowerFlex 70 at Device 1.0 / CR 2 (CR# is needed for PCP commands).
- Power Flex 70 at Device 2.0 / CR 3 (CR# is needed for PCP commands).
- Logic Command / Status, Reference / Feedback and Datalinks A-D are enabled in the 20-COMM-I and mapped to network I/O.
- Phoenix Contact CMD software is used to configure the network.

This chapter describes the steps to configure a simple network like what is featured in Figure 4.1.

Figure 4.1 Example Interbus Network



Adapter Configuration Settings to use with Ladder Examples

Prior to setting up the SST Interbus scanner with CMD software, the following parameters need to be configured to use the example ladder logic program:

20-COMM-I

Parameter	Name	Value		Description
		Binary/ Decimal	Hexadecimal	
8	DPI I/O Config	xxx1 1111	001F	Enable Cmd/Ref, Datalinks A-D
20	PIDD W0 Cfg	12186	2F9A	Logic Status
22	PIDD W1 Cfg	12187	2F9B	Feedback
24	PIDD W2 Cfg	12196	2FA4	Datalink A1 Out
26	PIDD W3 Cfg	12197	2FA5	Datalink A2 Out
28	PIDD W4 Cfg	12198	2FA6	Datalink B1 Out
30	PIDD W5 Cfg	12199	2FA7	Datalink B2 Out
32	PIDD W6 Cfg	12200	2FA8	Datalink C1 Out
34	PIDD W7 Cfg	12201	2FA9	Datalink C2 Out
36	PIDD W8 Cfg	12202	2FAA	Datalink D1 Out
38	PODD W0 Cfg	12184	2F98	Logic Command
40	PODD W1 Cfg	12185	2F99	Reference
42	PODD W2 Cfg	12188	2F9C	Datalink A1 In
44	PODD W3 Cfg	12189	2F9D	Datalink A2 In
46	PODD W4 Cfg	12190	2F9E	Datalink B1 In
48	PODD W5 Cfg	12191	2F9F	Datalink B2 In
50	PODD W6 Cfg	12192	2FA0	Datalink C1 In
52	PODD W7 Cfg	12193	2FA1	Datalink C2 In
54	PODD W8 Cfg	12194	2FA2	Datalink D1 In

PIDD and PODD parameters are used to identify what will be transmitted on the network and the amount of network I/O the CMD software will allocate on the scanner.

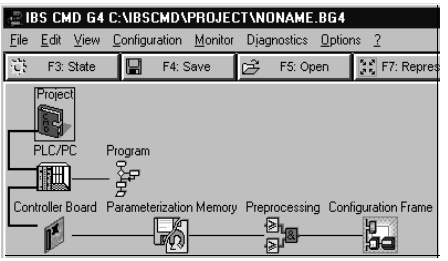
Using CMD Software to Configure the Network

Before starting the configuration, make sure the PC running CMD software is connected to the SST scanner (a null modem cable is supplied with the scanner). The SLC and drives need to be connected to the Interbus network and powered in order for CMD to configure the network. If it does not already exist, CMD software tool automatically creates an Allen-Bradley sub-folder (in the Slaves folder).

CMD needs to be in Extended Mode to configure the network. A password (supplied by Phoenix Contact along with the CMD software), is requested for this functionality each time CMD is started. After CMD has started, you can also click Options/Extended (Function Scope) to enter the password.

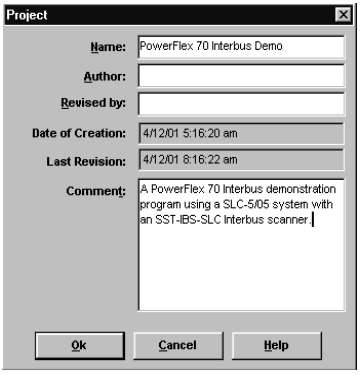
1. Select File / New from the pull-down menu to create a new project. (See Figure 4.2.)

Figure 4.2 Creating a new Interbus project



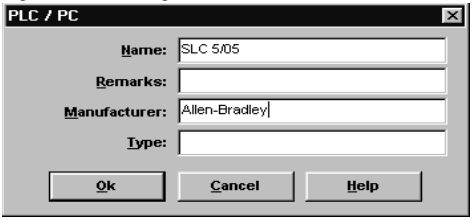
2. Right-click on the Project icon  and select Description. Enter a name for the project and any additional information desired, as shown in Figure 4.3. Click OK when complete.

Figure 4.3 Entering a name for the new Interbus project



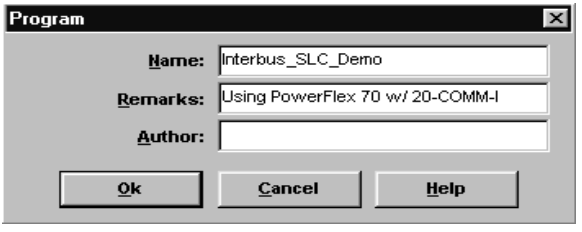
3. Right-click on the PLC/PC  icon and select Description. Enter a name for the controller and any additional information desired, as shown in Figure 4.4. Click OK when complete.

Figure 4.4 Entering a name for the Interbus controller



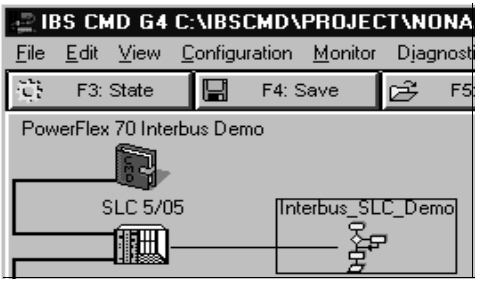
4. Right-click on the Program icon  and select Description. Enter a name for the program (using the actual RSLogix500 file name is recommended), and any additional information desired, as shown in Figure 4.5. Click OK when complete.

Figure 4.5 Entering a name for the Interbus program.



5. When complete, the representation area will look as shown in Figure 4.6.

Figure 4.6 Example Interbus CMD Project



This provides useful information regarding the CMD project being created:

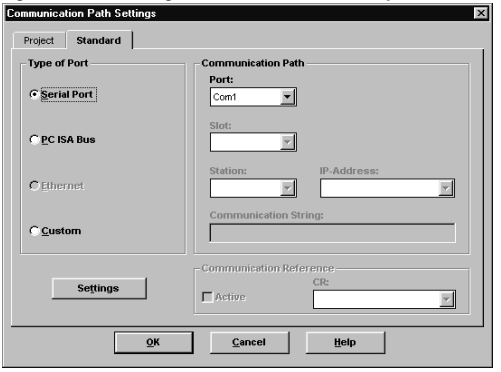
- "PowerFlex 70 Interbus Demo" indicates what this project is for.
- "SLC 5/05" indicates the controller used.
- "Interbus_SLC_Demo" indicates that Interbus_SLC_Demo.RSS is the associated RSLogix500 program used with this system.

6. To configure the PC Com Port that CMD will use to communicate with the SST scanner, click on Options/Settings and then the Driver tab.

7. Click on the Communication Path icon and then the Standard tab.

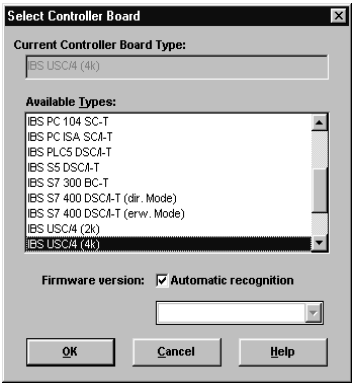
8. Select the type of port of communication path used. Typically, this is "Serial Port" and "Com1" respectively, as shown in Figure 4.7. Click OK until you return to the main screen.

Figure 4.7 Selecting the Port Communication path.



9. Right-click on the Controller Board icon  and select Type. Set the type to “IBS USC/4(4K)” and click OK. This identifies the type of Interbus controller used on the SST scanner. (See Figure 4.8.)

Figure 4.8 Selecting the Interbus Controller type

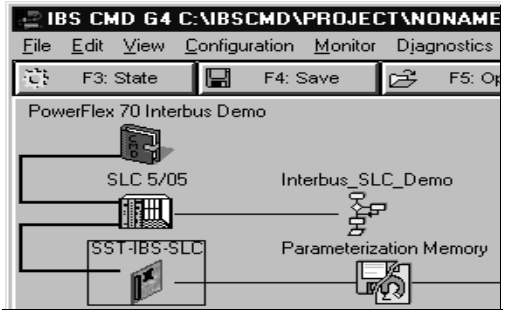


10. Right-click on the Controller Board icon and select Description. Enter “SST-IBS-SLC” in the name field, as shown in Figure 4.9.

Figure 4.9 Entering a Description for the Controller Board

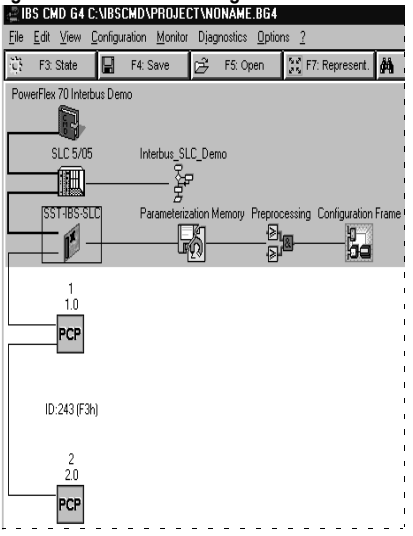
11. When complete, the representation area will look as shown in Figure 4.10.

Figure 4.10 Example Interbus CMD Project



12. From the pull-down menu select Configuration/Configuration Frame/Read In and answer Yes to changing the operating state to Configuration Online. If there are additional prompts, answer OK or Yes to perform the read anyway. CMD will then read the bus configuration. (See Figure 4.11.)

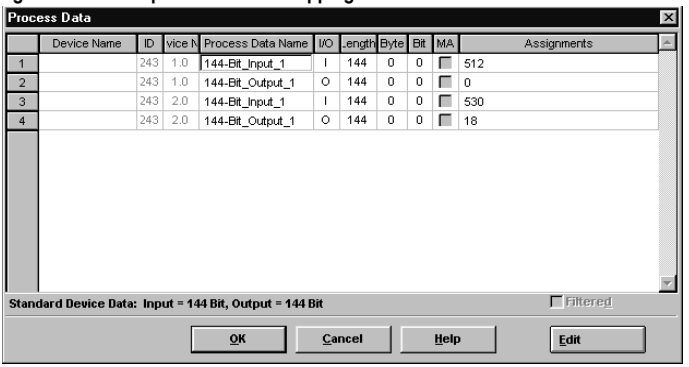
Figure 4.11 CMD Bus Configuration



The gray PCP icons represent each PowerFlex 70 drive. The first PowerFlex 70 has a Device Number of 1.0 and the second has a Device Number of 2.0.

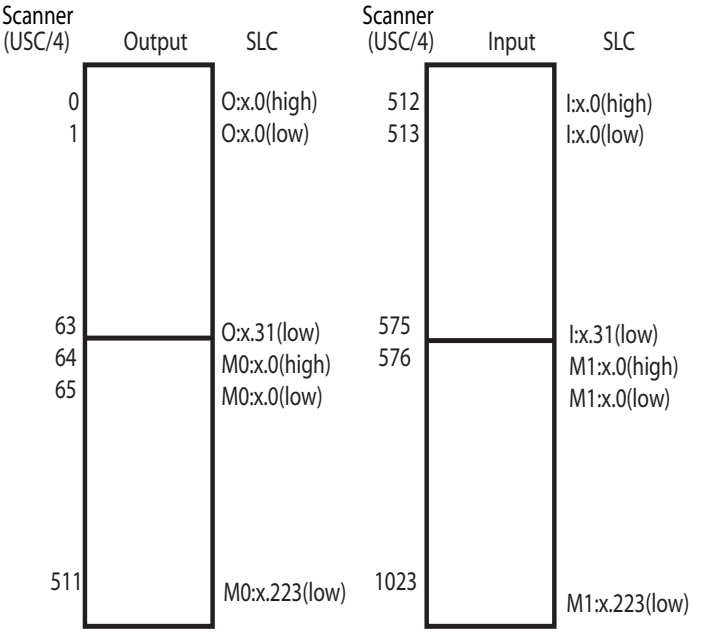
13. Right-click on the SST-IBS-SLC scanner and select Process Data. This shows the Interbus I/O mapping for each device on the network, as shown in Figure 4.12.

Figure 4.12 Example Interbus I/O Mapping



In the example, the length is 144 bits (9 words) because the 20-COMM-I was previously configured for the maximum I/O configuration (See Chapter 3, Setting the I/O Configuration on page 3-3. Depending on your application needs, this length may be less.

The scanner mapping correlates to SLC addressing as follows:



The mapping in the scanner is set up in bytes. Inputs to the scanner start at byte #512 and outputs start at byte #0.

PIDD/PODD parameter settings in the adapter determine the length of I/O data mapped. In the example, each device is configured for 9 words (144 bits) of inputs and 9 words (144 bits) of outputs, the maximum allowed for each device.

Using the PIDD/PODD values previously set in the 20-COMM-I, the I/O layout in the scanner is as follows:

Word	Inputs (Data to Master)	Station		Outputs (Data from Master)	Station	
		1.0	2.0		1.0	2.0
0	Logic Status	512	530	Logic Command	0	18
1	Feedback	514	532	Reference	2	20
2	Datalink A1 Out	516	534	Datalink A1 In	4	22
3	Datalink A2 Out	518	536	Datalink A2 In	6	24
4	Datalink B1 Out	520	538	Datalink B1 In	8	26
5	Datalink B2 Out	522	540	Datalink B2 In	10	28
6	Datalink C1 Out	524	542	Datalink C1 In	12	30
7	Datalink C2 Out	526	544	Datalink C2 In	14	32
8	Datalink D1 Out	528	546	Datalink D1 In	16	34

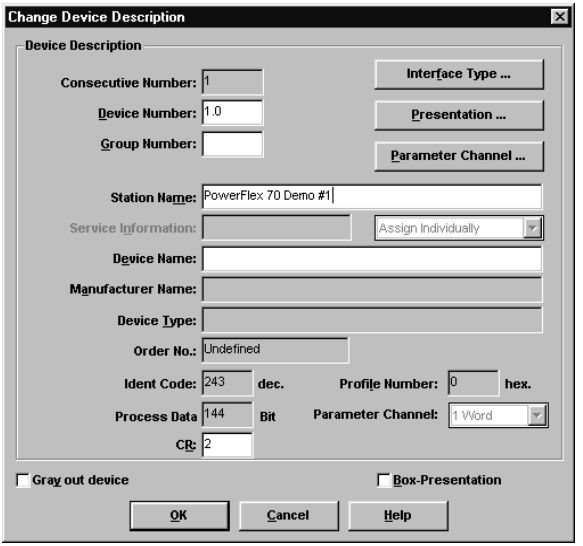
Device 1.0's SLC addressing is as follows:

Word	Inputs (Data to Master)	Assignment		Outputs (Data from Master)	Assignment	
		Scanner	SLC		Scanner	SLC
0	Logic Status	512	I:1.0	Logic Command	0	O:1.0
1	Feedback	514	I:1.1	Reference	2	O:1.1
2	Datalink A1 Out	516	I:1.2	Datalink A1 In	4	O:1.2
3	Datalink A2 Out	518	I:1.3	Datalink A2 In	6	O:1.3
4	Datalink B1 Out	520	I:1.4	Datalink B1 In	8	O:1.4
5	Datalink B2 Out	522	I:1.5	Datalink B2 In	10	O:1.5
6	Datalink C1 Out	524	I:1.6	Datalink C1 In	12	O:1.6
7	Datalink C2 Out	526	I:1.7	Datalink C2 In	14	O:1.7
8	Datalink D1 Out	528	I:1.8	Datalink D1 In	16	O:1.8

Device 2.0's SLC addressing starts immediately after 1.0 addressing (I:1.9 and O:1.9).

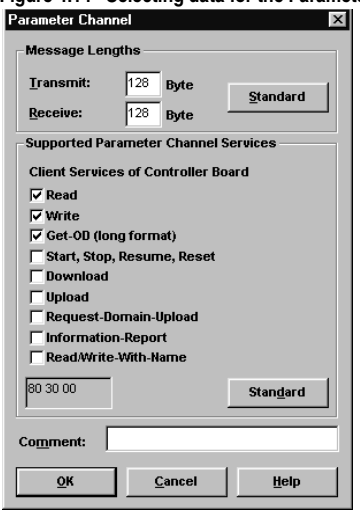
14. Right-click on the 1.0 PCP icon PCP and select Description. Enter a Station Name such as "PowerFlex 70 Demo #1". Note the Communication Reference (CR) is 2. The CR needs to be known when using PCP communication services (explicit messaging). (See Figure 4.13.)

Figure 4.13 Entering a Station Name



15. Click on the Parameter Channel button. Set the Transmit and Receive to 128 bytes and enable Read, Write, and Get-0D (long format) services, as shown in Figure 4.14. Click OK when complete.

Figure 4.14 Selecting data for the Parameter Channel screen

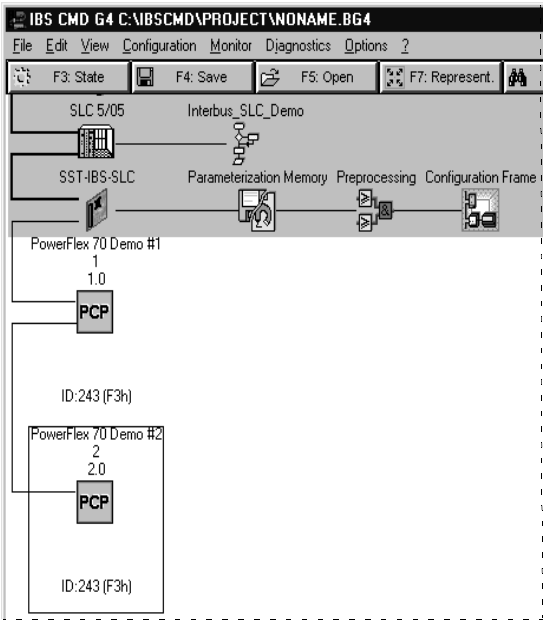


16. Repeat steps #14 and #15 using the 2.0 PCP icon 

. Enter a Station name such as “PowerFlex 70 Demo #2”. Note the Communication Reference (CR) is 3. The CR needs to be known when using PCP communication services (explicit messaging). Click OK when complete.

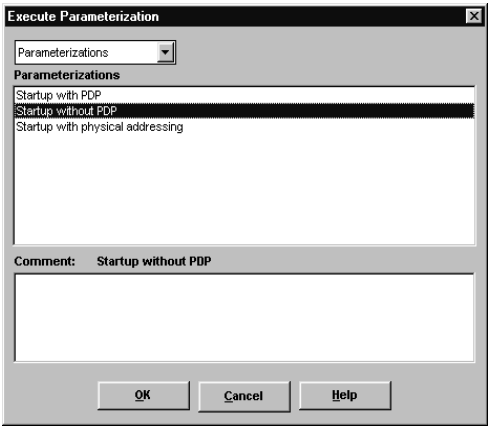
17. When complete, the representation area will look as shown in Figure 4.15.

Figure 4.15 Example PowerFlex 70 Demo #2



18. Right-click on the SST-IBS-SLC icon and select Parameterization/Execute. Select “Startup without PDP” as shown in Figure 4.16 and click OK. This uses the mapping already set up in the scanner and does not allow re-mapping by the software tool.

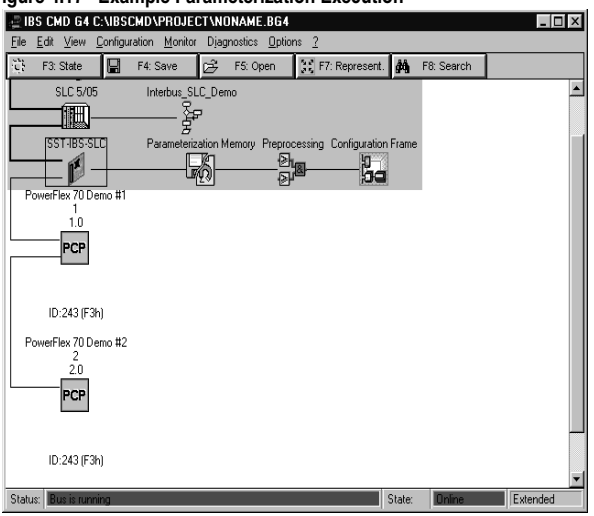
Figure 4.16 Selecting data for Parameterization/Execute screen



If parameterization execution is successful, there will be a prompt to click OK. Click OK.

19. When complete, the representation area will look as shown in Figure 4.17.

Figure 4.17 Example Parameterization Execution



20. Click File/Save from the pull-down menu and save the project.

PowerFlex 70 Settings to use with Ladder Examples

The following parameters should be configured to use the example ladder logic program.

PowerFlex 70

Parameter	Name	Value	Description
90	Speed Ref A Sel	22	DPI Port 5 (20-COMM-I) provides the Reference
300	Data In A1	140	Pr. 140 [Accel Time 1]
301	Data In A2	142	Pr. 142 [Decel Time 1]
302	Data In B1	100	Pr. 100 [Jog Speed]
303	Data In B2	155	Pr. 155 [Stop Mode A]
304	Data In C1	101	Pr. 101 [Preset Speed 1]
305	Data In C2	102	Pr. 102 [Preset Speed 2]
306	Data In D1	103	Pr. 103 [Preset Speed 3]
310	Data Out A1	140	Pr. 140 [Accel Time 1]
311	Data Out A2	142	Pr. 142 [Decel Time]
312	Data Out B1	100	Pr. 100 [Jog Speed]
313	Data Out B2	155	Pr. 155 [Stop Mode A]
314	Data Out C1	101	Pr. 101 [Preset Speed 1]
315	Data Out C2	102	Pr. 102 [Preset Speed 2]
316	Data Out D1	103	Pr. 103 [Preset Speed 3]

RSLogix 500 SST Interbus Scanner Configuration

The SST Interbus scanner is configured by clicking on the I/O Configuration in RSLogix500. The SST-IBS-SLC has an ID Code of 13635. The following settings are used by the example ladder logic program, as shown in Figure 4.18 and Figure 4.19.

Figure 4.18 Scanner I/O Configuration

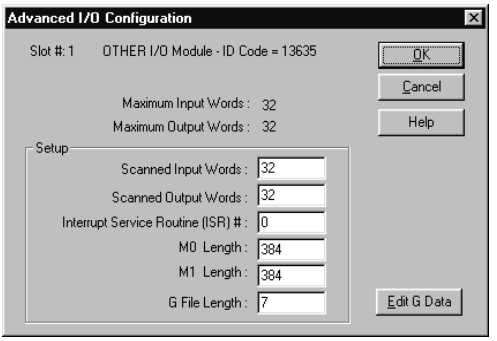
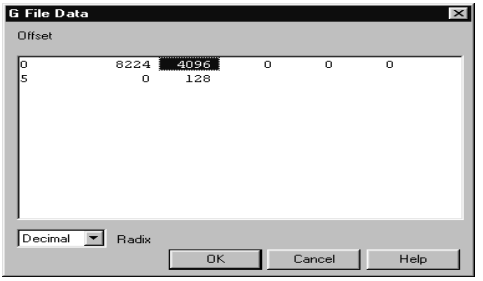


Figure 4.19 Scanner_G_ files



G File Data Information:

Word	Value (Decimal)	Value (Hexadecimal)	Description
0	8224	2020	Fixed to 2020h by the SLC
1	4096	1000	Enables the command interface between the SLC and the USC/4
2	0	0	Use the CMD specified Bus Update Time
3	0	0	Use the CMD specified Bus Warning Time
4	0	0	Use the CMD specified Bus Timeout
5	0	0	The number of words used at the beginning of the M files for Inputs and Outputs
6	128	80	Maximum data size for commands and replies sent between the SLC and the scanner

Refer to the SST-IBS-SLC User's Guide for more information.

Notes:

Notes:

Using I/O Messaging

Chapter 5 provides information and examples that explain how to use I/O Messaging to control a PowerFlex drive.

ATTENTION: Risk of injury or equipment damage exists. The examples in this publication are intended solely for purposes of example. There are many variables and requirements with any application. Rockwell Automation does not assume responsibility or liability (to include intellectual property liability) for actual use of the examples shown in this publication.

About I/O Messaging

On Interbus, I/O messaging is used to transfer the data which controls the PowerFlex drive and sets its Reference. I/O can also be used to transfer data to and from Datalinks in PowerFlex drives.

The Interbus adapter provides options for configuring and using I/O, including the following:

- The size of I/O can be configured by enabling or disabling the Logic Command/Reference and Datalinks.

Chapter 3, Configuring the Adapter and Chapter 4, Configuring the Interbus Scanner discuss how to configure the adapter and scanner on the network for these options. The Glossary defines the different options. This chapter discusses how to use I/O after you have configured the adapter and scanner.

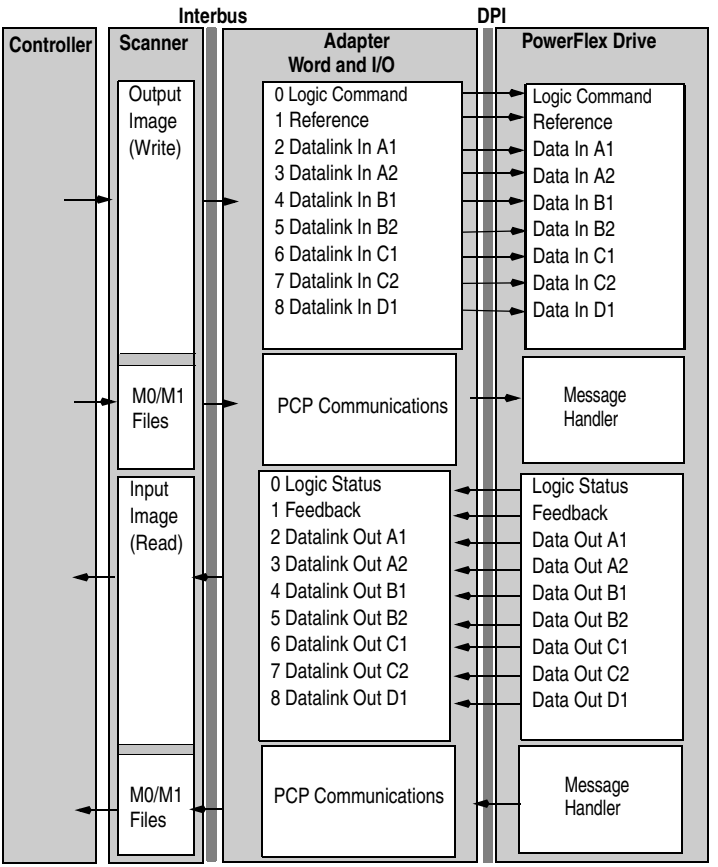
Understanding the I/O Image

The terms *input* and *output* are defined from scanner's point of view. Therefore, Output I/O is data that is output from the scanner and consumed by the Interbus adapter. Input I/O is status data that is produced by the adapter and consumed as input by the scanner. The I/O image table will vary based on the following:

- Size (either 16-bit or 32-bit) of the Reference/Feedback word and Datalink words used by the drive.
- Configuration of **Parameter 8 - [DPI I/O Config]** in the adapter. If all I/O is not enabled, the image table is truncated. The image table always uses consecutive words starting at word 0.

Figure 5.1 illustrates an example of an I/O image with 16-bit words.

Figure 5.1 Example I/O Image with All I/O Enabled

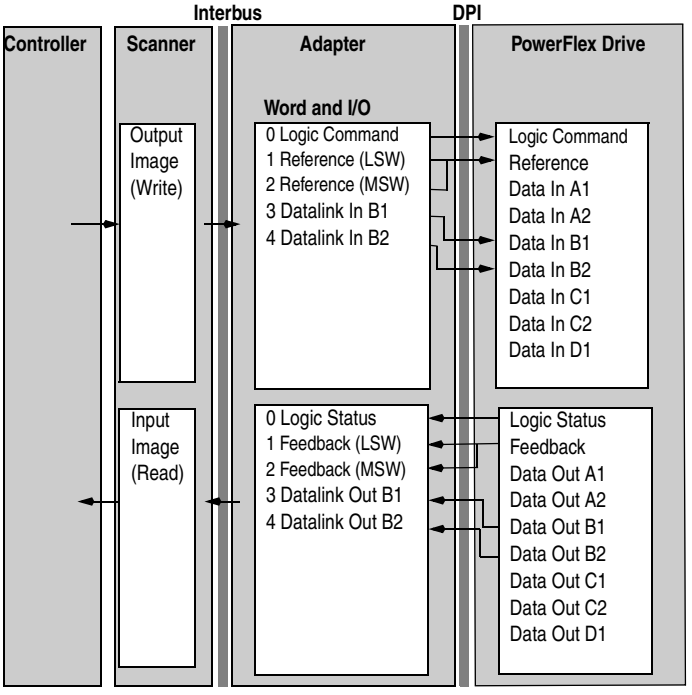


An image that uses 32-bit words for Reference and Datalinks would change the I/O image as follows:

Word	I/O
0	Logic Command/Status
1 - 2	Reference/Feedback
3 - 6	Datalink A1/A2
7 - 10	Datalink B1/B2

Figure 5.2 illustrates an example of an I/O image that does not use all of the I/O data. Only the Logic Command/Reference and Datalink B are enabled. In this example, the Reference is a 32-bit word, and Datalinks are 16-bit words.

Figure 5.2 Example I/O Image with Only Logic/Reference and Datalink B Enabled



LSW = Least Significant Word (Bits 15 - 0)
MSW = Most Significant Word (Bits 31 - 16)

Using Logic Command/Status

When enabled, the Logic Command/Status word is always word 0 in the I/O image. The *Logic Command* is a 16-bit word of control produced by the scanner and consumed by the adapter. The *Logic Status* is a 16-bit word of status produced by the adapter and consumed by the scanner.

This manual contains the bit definitions for compatible products available at the time of publication in Appendix C, Logic Command/Status Words. For other products, refer to their documentation.

Using Reference/Feedback

When enabled, Reference/Feedback always begins at word 1 in the I/O image. The *Reference* (16 bits or 32 bits) is produced by the controller and consumed by the adapter. The *Feedback* (16 bits or 32 bits) is produced by the adapter and consumed by the controller. The size of the Reference/Feedback is determined by the product and displayed in **Parameter 03 - [Ref/Fdbk Size]** in the adapter.

Size	Valid Values	In I/O Image	Example
16-bit	-32768 to 32767	Word 1	Figure 5.1
32-bit	-2147483648 to 2147483647	Word 1 and Word 2	Figure 5.2

Using Datalinks

A Datalink is a mechanism used by PowerFlex drives to transfer data to and from the controller. Datalinks allow a parameter value to be changed without using an Explicit Message. When enabled, each Datalink consumes either two 16-bit or 32-bit words in both the input and output image depending on its size. The size of Datalinks (16-bit words or 32-bit words) is determined by the drive and displayed in **Parameter 04 - [Datalink Size]** in the adapter.

Rules for Using Datalinks

- Each set of Datalink parameters in a PowerFlex drive can be used by only one adapter. If more than one adapter is connected to a single drive, multiple adapters must not try to use the same Datalink.
- Parameter settings in the drive determine the data passed through the Datalink mechanism. Refer to the documentation for your product.
- When you use a Datalink to change a value, the value is not written to the Non-Volatile Storage (NVS). The value is stored in volatile memory and lost when the drive loses power.

32-Bit Parameters using 16-Bit Datalinks

To read (and/or write) a 32-bit parameter using 16-bit Datalinks, typically both Datalinks (x1 and x2) are set to the 32-bit parameter. For example, to read **Parameter 09 - [Elapsed MWh]** in a PowerFlex 70, both Datalink A1 and A2 are set to "9". Datalink A1 will contain the least significant word (LSW) and Datalink A2 the most significant word (MSW). In this example, the parameter 9 value of 5.8MWh is read as a "58" in Datalink A1.

Datalink	Most/Least Significant Word	Parameter	Data (decimal)
A1	LSW	9	58
A2	MSW	9	0

Regardless of the Datalink combination, x1 will always contain the LSW and x2 will always contain the MSW. In the following examples **Parameter 242 - [Power Up Marker]** contains a value of 88.4541 hours.

Datalink	Most/Least Significant Word	Parameter	Data (decimal)
A1	LSW	242	32573
A2	- Not Used -	0	0

Datalink	Most/Least Significant Word	Parameter	Data (decimal)
A1	- Not Used -	0	0
A2	MSW	242	13

Datalink	Most/Least Significant Word	Parameter	Data (decimal)
A2	MSW	242	13
B1	LSW	242	32573

32-bit data is stored in binary as follows:

MSW	2^{31} through 2^{16}
LSW	2^{15} through 2^{0}

Example:

Parameter 242 - [Power Up Marker] = 88.4541 hours

MSW = $13_{decimal} = 1101_{binary} = 2^{19} + 2^{18} + 2^{16} = 851968$

LSW = 32573

851968 + 32573 = 884541

SLC Example Ladder Logic Program

The Interbus example program uses a SLC processor with an SST Interbus scanner (SST-IBS-SLC) in the first slot of the rack and will work with PowerFlex 70 or PowerFlex 700 drives.

Function of the Example Program

The program is written for (2) drives on the network and demonstrates using:

- Logic Command / Reference
- Logic Status / Feedback
- Datalinks
- PCP Read / Write (See Chapter 6.)

Adapter Settings

The 20-COMM-I node addresses are set via CMD software to:

- “1.0” (CR=2) for Station 1
- “2.0” (CR=3) for Station 2

See Chapter 4, Adapter Configuration Settings to use with Ladder Examples.

PowerFlex 70 Settings

See Chapter 4, PowerFlex 70 Settings to use with Ladder Examples.

SST Scanner Settings

See Chapter 4, RSLogix 500 SST Interbus Scanner Configuration.

SLC Data Table

Read Data

The scanner is configured for 18 bytes (9 words) of inputs for each drive, the maximum amount allowed. Two drives require 36 bytes (18 words) max.

Station 1 Address	Station 2 Address	Function
I:1.0	I:1.9	Logic Status
I:1.1	I:1.10	Feedback
I:1.2	I:1.11	Datalink A1
I:1.3	I:1.12	Datalink A2
I:1.4	I:1.13	Datalink B1
I:1.5	I:1.14	Datalink B2
I:1.6	I:1.15	Datalink C1
I:1.7	I:1.16	Datalink C2
I:1.8	I:1.17	Datalink D1

Write Data

The Scanner is configured for 18 bytes (9 words) of outputs for each drive, the maximum amount allowed. Two drives require 36 bytes (18 words).

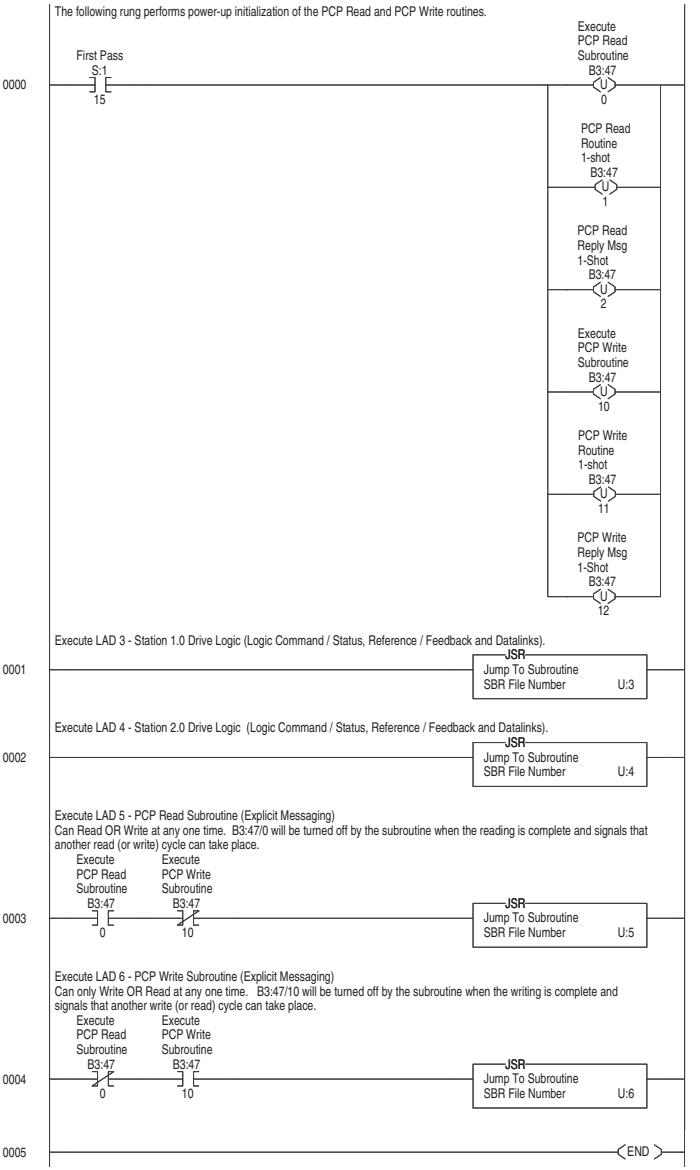
Station 1 Address	Station 2 Address	Function
O:1.0	O:1.9	Logic Command
O:1.1	O:1.10	Reference
O:1.2	O:1.11	Datalink A1
O:1.3	O:1.12	Datalink A2
O:1.4	O:1.13	Datalink B1
O:1.5	O:1.14	Datalink B2
O:1.6	O:1.15	Datalink C1
O:1.7	O:1.16	Datalink C2
O:1.8	O:1.17	Datalink D1

Logic Command/Status Words

These examples use the Logic Command word and Logic Status word for PowerFlex 70 and PowerFlex 700 drives. Refer to Appendix C, Logic Command/Status Words to view these. The definition of the bits in these words may vary if you are using a different DPI product. Refer to the documentation for your product.

SLC Ladder Logic Example - Main Program

Figure 5.3 Example SLC Ladder Logic - Main Program



SLC Ladder Logic Example - Station 1 Program

Figure 5.4 Example SLC Ladder Logic - Station 1 Program

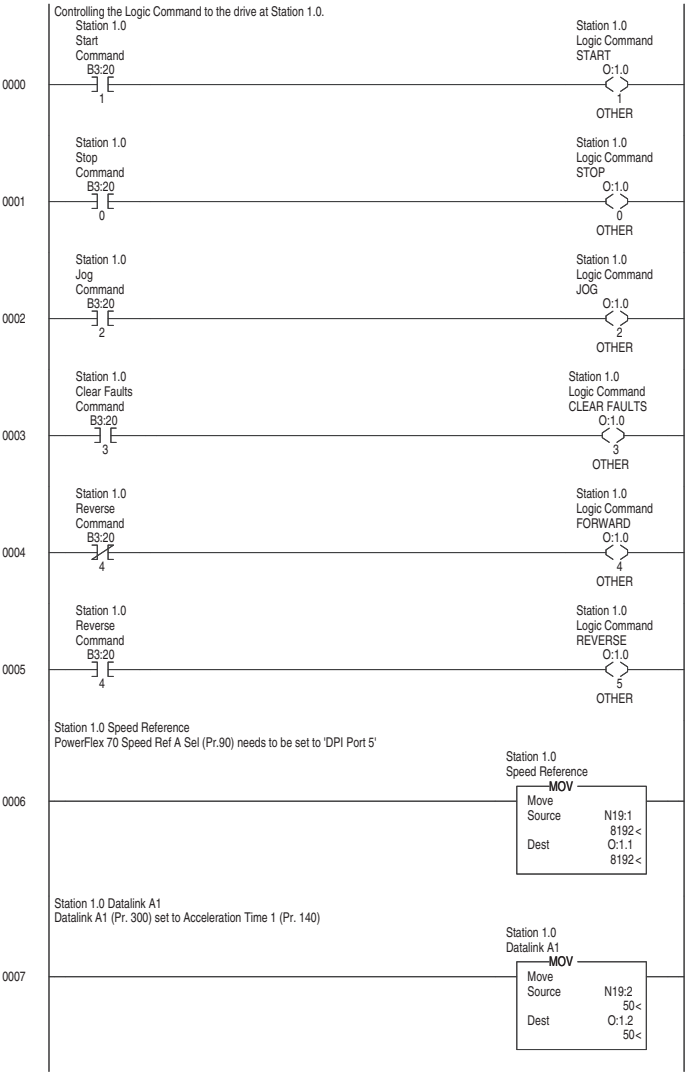
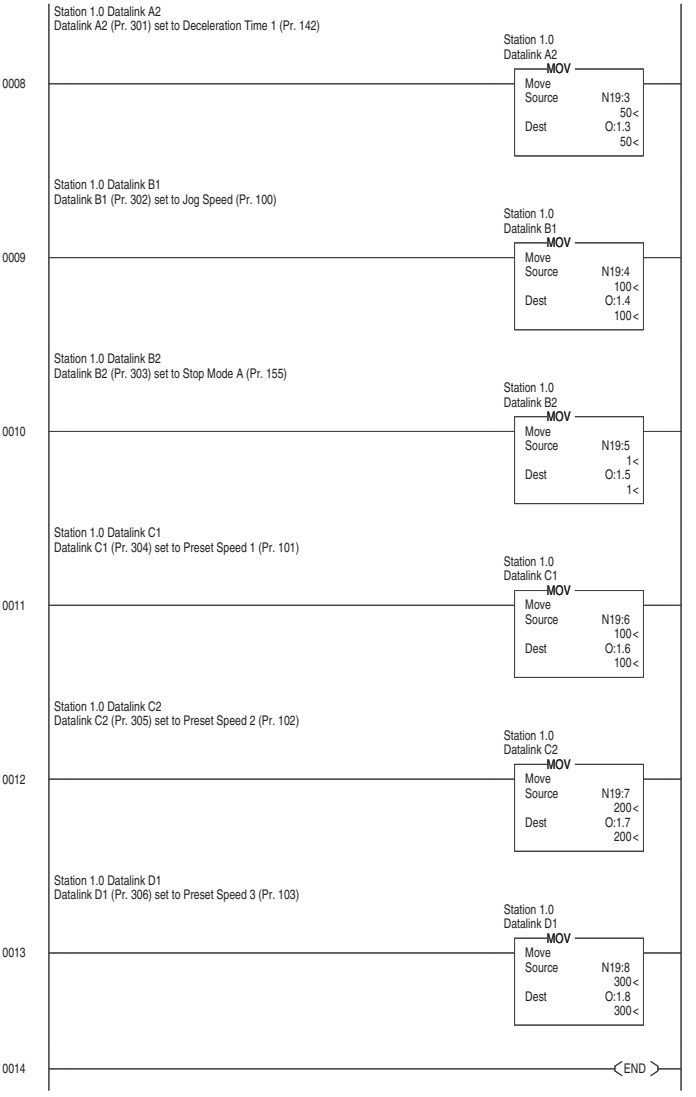


Figure 5.4 Example SLC Ladder Logic - Station 1 Program (Continued)



SLC Ladder Logic Example - Station 2 Program

Figure 5.5 Example SLC Ladder Logic - Station 2 Program

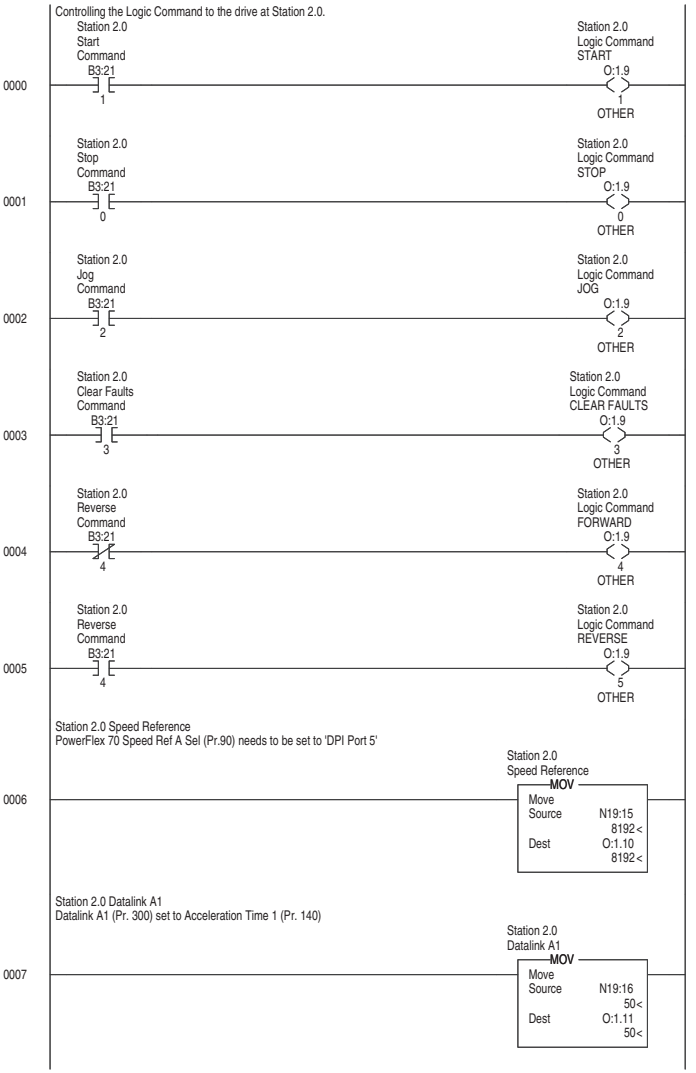
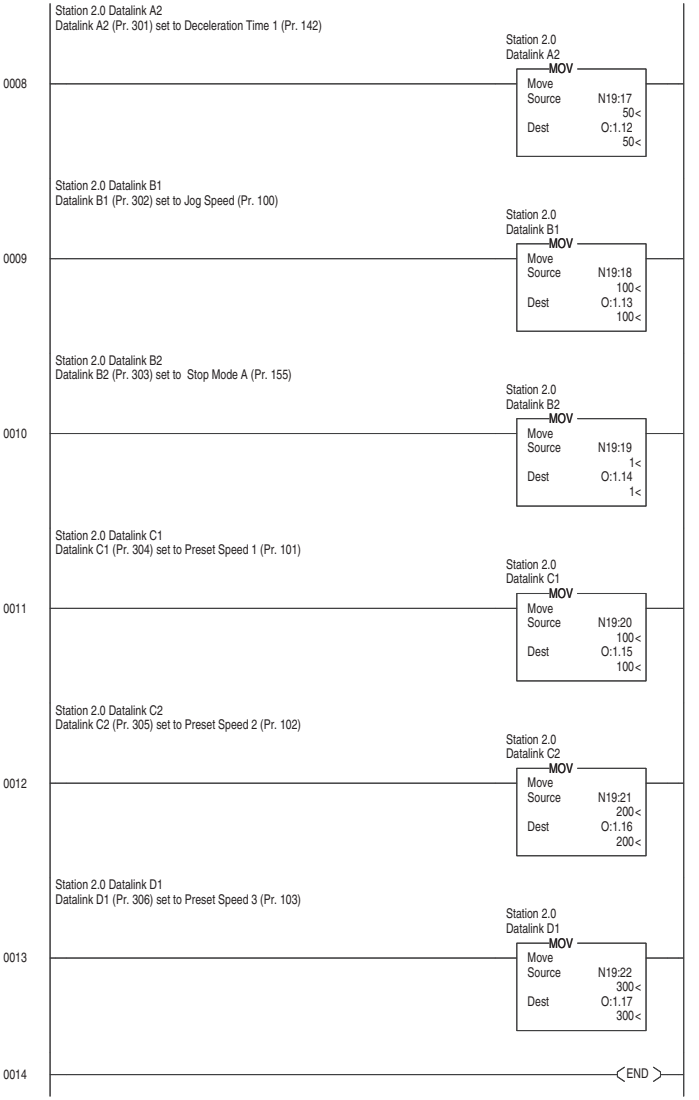


Figure 5.5 Example SLC Ladder Logic - Station 2 Program (Continued)



Using Explicit Messaging (PCP Communications)

Chapter 6 provides information and examples that explain how to use Explicit Messaging to monitor and configure the adapter and connected PowerFlex drive, as well as other peripherals.

ATTENTION: Risk of injury or equipment damage exists. The examples in this publication are intended solely for purposes of example. There are many variables and requirements with any application. Rockwell Automation does not assume responsibility or liability (to include intellectual property liability) for actual use of the examples shown in this publication.

ATTENTION: Risk of equipment damage exists. If Explicit Messages are programmed to write parameter data to Non-Volatile Storage (NVS) frequently, the NVS will quickly exceed its life cycle and cause the drive to malfunction. Do not create a program that frequently uses Explicit Messages to write parameter data to NVS. Datalinks do not write to NVS and should be used for frequently changed parameters.

About Explicit Messaging

Explicit Messaging (PCP Communications) is used to transfer data that does not require continuous updates. With Explicit Messaging, you can configure and monitor a slave device's parameters on the Interbus network.

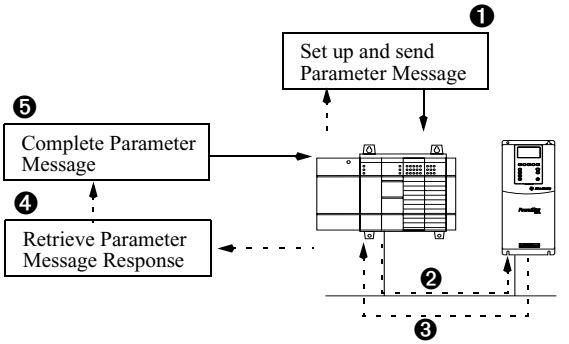
To be able to use Explicit Messaging in the adapter, **Parameter 57 - [PCP Comm Act]** must be set to "Enabled".

Running Explicit Messages

There are five basic events in the Explicit Messaging process defined below. The details of each step will vary depending on the controller. Refer to the documentation for your controller.

Important: There must be a request message and a response message for all Explicit Messages, whether you are reading or writing data.

Figure 6.1 Explicit Message Process



Event

1. Format the required data and set up the ladder logic program to send an Explicit Message request to the scanner module (download).
2. The scanner module transmits the Explicit Message Request to the slave device over the Interbus network.
3. The slave device transmits the Explicit Message Response back to the master.
4. The controller retrieves the Explicit Message Response.
5. The Explicit Message is complete.

PCP Communications

Peripheral Communications Protocol (PCP) messages are used for explicit messaging, which is not part of the normal Interbus I/O data scan. The scanner takes care of all of the details of establishing a connection for PCP communication services. PCP communications can be used to:

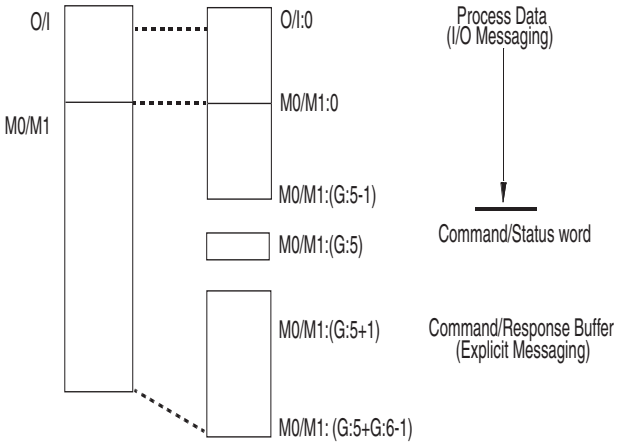
- Read or write DPI Host (PowerFlex 70, etc.) parameters
- Read or write 20-COMM-I parameters
- Read DPI Host (PowerFlex 70, etc.) faults
- Read 20-COMM-I events

Name	PCP - Index Value Range		Access Rights	Description
	Hex	Decimal		
Host Parameters	3001 to (3001 +n)	12289 to (12289 + n)	Host Parameter Dependent	3001 (12289 Dec) = Parameter 1 - etc.
Host Fault Queue	2FF9 to 3000	12281 to 12288	Read Only	Host fault queue containing up to 8 faults
20-COMM-I Parameters	2FB6 to 2FEE	12214 to 12270	Parameter Dependent	2FB6 (12214 Dec) = Parameter 1 - etc.
20-COMM-I Event Queue	2FAE to 2FB5	12206 to 12213	Read Only	Adapter event queue (8 events)

The Command Interface for the SST SLC Interbus scanner must be enabled for PCP Communications to take place:

- Bit 12 of word 1 in the G File must be set
- Word 5 in the G File must be set to the length of process data required in the M Files. This value can range from 0 to 224
- Word 6 in the G File must be set to the maximum length of the command buffer. This value can range from 0 to 128 and must be non-zero to enable the buffer.

Figure 6.2 Memory Map



The ladder example used in this manual uses Input (I:) and Output (O:) files for I/O messaging (Logic Command/Status, Reference/Feedback, and Datalinks) and M Files for PCP messaging (See Chapter 4, RSLogix 500 SST Interbus Scanner Configuration.)

The first word in the Command Interface memory area is the Command (M0) or Status (M1) word. The remaining words form a buffer to pass command data to and from the scanner. The M0 file contains the buffer for the command written by the SLC and the M1 file contains the reply to the SLC written by the scanner.

The lower six bits in the Command word are command bits to the scanner. Commands are initiated by setting bits in this Command word. The scanner acknowledges the command by setting bits in the Status word. The high bit is either the Message Acknowledge bit (command word) or the Message Present bit (Status word).

Table 6.1

Bit	Description
0	PCP Start
1	PCP Stop
2	PCP Read
3	PCP Write
4	PCP Command
5	IBS Command
15	Message acknowledge (Command) / Message present (Status)

The ladder example used in this manual performs PCP Reads and PCP Writes.

PCP Read Message Format

PCP Reads require the following Command and Reply message formats:

Command

Word	Name	Description
0	CR	The Communication Reference (CR #) to read from
1	Index	The index of the variable to read
2	Sub Index	The sub-index of the variable to read (not used)

Reply

Word	Name	Description
0	Command Word Echo	Echo of the Command Word (0004h)
1	Message Length	Number of words following
2	CR	The Communication Reference (CR #) the Reply is from
3	Result	Result Code: 0=Success FFFFh = Timeout FFFEh = Out of buffers to store the reply FFFDh = Invalid CR FFFCh = Could not connect to device with CR FFFBh = Reply of Command bigger than buffer
4	Data Length	The # of bytes of data following (1, 2 or 4 bytes)
5	Data Word 1	Contains 8-bit (1 byte) data reads (stored in the high byte), 16-bit (2 byte) data reads, and the most significant word for 32-bit (4 byte) data reads
6	Data Word 2	Least significant word for 32-bit (4 byte) data reads

The example ladder logic program simplifies addressing the various PCP indexes. Before calling the PCP Read Subroutine (Figure 6.3), three registers are loaded to identify the variable to be read:

Table 6.2 PCP Read Main Program Data

N22:0	The Communication Reference (CR) to read from: Set to “2” to access Station 1.0 (CR=2) Set to “3” to access Station 2.0 (CR=3)
N22:1	The desired Parameter / Event / Fault area to be accessed: Set to “0” to read PowerFlex 70 parameters Set to “1” to read 20-COMM-I parameters Set to “2” to read PowerFlex 70 Fault Queue Set to “3” to read 20-COMM-I Event Queue
N22:2	The actual Parameter number or Event / Fault Queue item number to read. Set to “1” to read Parameter number 1 or Fault / Event Queue item number 1....etc....

The PCP Read Subroutine uses the data in Table 6.2 to create the following Command Message:

Table 6.3 PCP Read Subroutine Command Message

N22:10	The PCP Command word (set to “4” for PCP Read).
N22:11	The Communication Reference (CR) to read from.
N22:12	The PCP Index of the variable to read (“3001h”= Host parameter 1, etc.).
N22:13	Sub Index not used (set to “0”).

Table 6.4 PCP Read Subroutine Reply Message

N22:20	= PCP Status Word.
N22:21	= Echo of the Command word (0004h).
N22:22	= Number of words following.
N22:23	= CR.
N22:24	= Result (“0”=good).
N22:25	= Number of bytes read (1-byte for 8-bit Parameters, 2-bytes for 16-bit Parameters, 4-bytes for 32-bit Parameters).
N22:26	= Data Word #1 (1-byte & 2-byte reads, MSW of 4-byte read).
N22:27	= Data Word #2 (LSW of 4-byte read).

Read Examples

Reading Pr. 140 [Accel Time 1] from a PowerFlex 70 (DPI Host)

Message	SLC Address	Value (Dec)	Value (Hex)	Description
Command	N22:10	4	4	Command word = 4 = PCP Read (bit 2 ON)
	N22:11	2	2	CR# = 2 (Station 1.0)
	N22:12	12428	308C	Index =3000h+8Ch = Parameter 140 [Accel Time] 3001h is the start of PowerFlex 70 parameters (Pr.1) 8C hex = 140 dec = Parameter 140 [Accel Time]
	N22:13	0	0	Sub Index not used
Reply	N22:20	-32,764	8004	Status word: "8000" (bit 15 ON) indicates Reply message present "0004" (bit 2 ON) echo's the command (PCP Read)
	N22:21	4	4	Echo of the Command Word (PCP Read)
	N22:22	4	4	Number of words following = 4
	N22:23	2	2	CR# = 2 (Station 1.0)
	N22:24	0	0	Result = 0 (success)
	N22:25	2	2	Number of bytes read = 2
	N22:26	50	32	Data word 1 = 32 hex = 50 dec = 5.0 seconds
	N22:27	0	0	Data word 2 not used

In the example ladder logic program, the user would load these registers before calling the subroutine to perform the PCP Read:

Message	SLC Address	Value (Dec)	Value (Hex)	Description
Request	N22:0	2	2	CR# =2 (Station 1.0)
	N22:1	0	0	0= PowerFlex 70 (DPI Host)
	N22:3	140	8C	Parameter # = 140 [Accel Time]

Reading Pr. 244 [Fault 1 Time] from a PowerFlex 70 (DPI Host)

Message	SLC Address	Value (Dec)	Value (Hex)	Description
Command	N22:10	4	4	Command word = 4 = PCP Read (bit 2 ON)
	N22:11	2	2	CR# = 2 (Station 1.0)
	N22:12	12532	30F4	Index =3000h+F4h = Parameter 244 [Fault 1 Time] 3001h is the start of PowerFlex 70 parameters (Pr.1) F4 hex = 244 dec = Parameter 244 [Fault 1Time]
	N22:13	0	0	Sub Index not used
Reply	N22:20	-32,764	8004	Status word: "8000" (bit 15 ON) indicates Reply message present "0004" (bit 2 ON) echo's the command (PCP Read)
	N22:21	4	4	Echo of the Command Word (PCP Read)
	N22:22	5	5	Number of words following = 5
	N22:23	2	2	CR# =2(Station 1.0)
	N22:24	0	0	Result = 0 (success)
	N22:25	4	4	Number of bytes read = 4
	N22:26	59	3B	3B235B hex = 3875675 decimal = 387.5675 hours
	N22:27	9051	235B	

In the example ladder logic program, the user would load these registers before calling the subroutine to perform the PCP Read:

Message	SLC Address	Value (Dec)	Value (Hex)	Description
Request	N22:0	2	2	CR# =2 (Station 1.0)
	N22:1	0	0	0= PowerFlex 70 (DPI Host)
	N22:3	244	F4	Parameter # = 244 [Fault 1 Time]

Reading Pr. 21 [PIDD W0 Actual] from a 20-COMM-I

Message	SLC Address	Value (Dec)	Value (Hex)	Description
Command	N22:10	4	4	Command word = 4 = PCP Read (bit 2 ON)
	N22:11	2	2	CR# = 2 (Station 1.0)
	N22:12	12234	2FCA	Index =2FB5h+15h = Parameter 21 [PIDD W0 Actual] 2FB6h is the start of the 20-COMM-I parameters (Pr.1) 15 hex = 21 dec = Parameter 21 [PIDD W0 Actual]
	N22:13	0	0	Sub Index not used
Reply	N22:20	-32,764	8004	Status word: "8000" (bit 15 ON) indicates Reply message present "0004" (bit 2 ON) echo's the command (PCP Read)
	N22:21	4	4	Echo of the Command Word (PCP Read)
	N22:22	4	4	Number of words following = 4
	N22:23	2	2	CR# = 2 (Station 1.0)
	N22:24	0	0	Result = 0 (success)
	N22:25	2	2	Number of bytes read = 2
	N22:26	12186	2F9A	Data word 1 = 2F9A hex = Logic Status
	N22:27	0	0	Data word 2 not used

In the example ladder logic program, the user would load these registers before calling the subroutine to perform the PCP read:

Message	SLC Address	Value (Dec)	Value (Hex)	Description
Request	N22:0	2	2	CR# = 2 (Station 1.0)
	N22:1	1	1	1= 20-COMM-I
	N22:3	21	15	Parameter # = 21 [PIDD W0 Actual]

PCP Write Message Format

PCP Writes require the following Command and Reply message formats:

Command

Word	Name	Description
0	CR	The Communication Reference (CR #) to write to
1	Index	The index of the variable to write
2	Sub Index	The sub-index of the variable to write (not used)
3	Data Length	The # of bytes of data following (1, 2, or 4 bytes)
4	Data Word 1	Contains 8-bit (1 byte) write data (stored in the high byte), 16-bit, (2 byte) write data, and the most significant word for 32-bit (4 byte) write data
5	Data Word 2	Least significant word for 32-bit (4 byte) write data

Reply

Word	Name	Description
0	Command Word Echo	Echo of the Command Word (0008h)
1	Message Length	Number of words following
2	CR	The Communication Reference (CR #) the Reply is from
3	Result	Result Code: 0=Success FFFFh = Timeout FFFEh = Out of buffers to store the reply FFFDh = Invalid CR FFFCh = Could not connect to device with CR FFFBh = Reply of Command bigger than buffer

The example ladder logic program simplifies addressing the various PCP indexes. Before calling the PCP Write Subroutine (Figure 6.4), six registers are loaded to identify the variable to write:

Table 6.5 PCP Write Main Program Data

N23:0	The Communication Reference (CR) to write to: Set to “2” to access Station 1.0 (CR=2) Set to “3” to access Station 2.0 (CR=3)
N23:1	The desired parameter area to be accessed: Set to “0” for DPI Host parameters Set to “1” for 20-COMM-I parameters
N23:2	The actual parameter number to write to (1, 2, ...n).
N23:3	The number of bytes of data to write: Set to either “1” (1 byte), “2” (2 bytes) and “4” (4 bytes)
N23:4	Data Word #1 (1 and 2-byte writes, MSW of 4 byte write).
N23:5	Data Word #2 (LSW of 4-byte write).

The PCP Write Subroutine uses the data in Table 6.5 to create the following Command Message:

Table 6.6 PCP Write Subroutine Command Message

N23:10	The PCP Command word (set to “8” for PCP Write).
N23:11	The Command Reference (CR) to write to.
N23:12	The PCP Index of the variable to write (“306Ah” = Host parameter 106, etc.).
N23:13	Sub Index not used.
N23:14	The number of bytes of data to write (set to “1”, “2” or “4”).
N23:15	Data word 1.
N23:16	Data word 2.

Note that writing to parameters causes a non-volatile storage (NVS) write cycle and therefore must NOT be done frequently (can exceed the maximum number of allowable write cycles and cause the product to malfunction).

Table 6.7 PCP Write Subroutine Reply Message

N23:20	= PCP Status Word.
N23:21	= Echo of the Command word (0008h).
N23:22	= Number of words following.
N23:23	= CR.
N23:24	= Result (“0” = good).

Write Examples:

Writing Pr. 106 [Preset Speed 6] to a PowerFlex 70 (DPI Host)

Message	SLC Address	Value (Dec)	Value (Hex)	Description
Command	N23:10	8	8	Command word = 8 = PCP Write (bit 3 ON)
	N23:11	2	2	CR# = 2 (Station 1.0)
	N23:12	12394	306A	Index = 3000h+6Ah = Parameter 106 [Preset Speed 6] 3001h is the start of PowerFlex 70 parameters (Pr.1) 6A hex = 106 dec = Parameter 106 [Preset Speed 6]
	N23:13	0	0	Sub Index not used
	N23:14	2	2	2 bytes of data following
	N23:15	123	7B	Data word 1 = 123 = 12.3 Hz
	N23:16	0	0	Data word 2 not used
Reply	N23:20	-32,760	8008	Status word: "8000" (bit 15 ON) indicates Reply message present "0008" (bit 3 ON) echo's the command (PCP Write)
	N23:21	8	8	Echo of the Command Word (PCP Write)
	N23:22	2	2	Number of words following = 2
	N23:23	2	2	CR# = 2 (Station 1.0)
	N23:24	0	0	Result = 0 (success)

In the example ladder logic program, the user would load these registers before calling the subroutine to perform the PCP Write:

Message	SLC Address	Value (Dec)	Value (Hex)	Description
Request	N23:0	2	2	CR# =2 (Station 1.0)
	N23:1	0	0	0= PowerFlex 70 (DPI Host)
	N23:2	106	6A	Parameter # = 106
	N23:3	2	2	2 byte data write
	N23:4	123	7B	Data Word 1 = 123 = 12.3 Hz
	N23:5	0	0	Data Word 2 not used

Writing Pr. 6 [Comm Flt Action] to a 20-COMM-I

Message	SLC Address	Value (Dec)	Value (Hex)	Description
Command	N23:10	8	8	Command word = 8 = PCP Write (bit 3 ON)
	N23:11	2	2	CR# = 2 (Station 1.0)
	N23:12	12219	2FBB	Index = 2FB5h+6h = Parameter 6 [Comm Flt Action 2FB6h is the start of the 20-COMM-I parameters (Pr.1) 6 hex = 6 dec = Parameter 6 [Comm Flt Action]
	N23:13	0	0	Sub Index not used
	N23:14	1	1	1 byte of data following
	N23:15	512	200	Data Word 1 (upper byte) = 2 (Zero Data)
	N23:16	0	0	Data word 2 not used
Reply	N23:20	-32,760	8008	Status word: "8000" (bit 15 ON) indicates Reply message present "0008" (bit 3 ON) echo's the command (PCP Write)
	N23:21	8	8	Echo of the Command Word (PCP Write)
	N23:22	2	2	Number of words following = 2
	N23:23	2	2	CR# = 2 (Station 1.0)
	N23:24	0	0	Result = 0 (success)

In the example ladder logic program, the user would load these registers before calling the subroutine to perform the PCP Write:

Message	SLC Address	Value (Dec)	Value (Hex)	Description
Request	N23:0	2	2	CR# = 2 (Station 1.0)
	N23:1	1	1	1= 20-COMM-I
	N23:2	6	6	Parameter # = 6
	N23:3	1	1	1 byte data write
	N23:4	2	2	Data Word 1 = 2 (Zero Data)
	N23:5	0	0	Data Word 2 not used

Writing Pr. 12 [Flt Cfg A1] to a 20-COMM-I

Message	SLC Address	Value (Dec)	Value (Hex)	Description
Command	N23:10	8	8	Command word = 8 = PCP Write (bit 3 ON)
	N23:11	2	2	CR# = 2 (Station 1.0)
	N23:12	12225	2FC1	Index = 2FB5h+Ch = Parameter 12 [Flt Cfg A1 In] 2FB6h is the start of the 20-COMM-I parameters (Pr.1) C hex = 12 dec = Parameter 12 [Flt Cfg A1 In]
	N23:13	0	0	Sub Index not used
	N23:14	4	4	4 bytes of data following
	N23:15	0	0	00000800 hex = 2048 decimal
	N23:16	2048	800	
Reply	N23:20	-32,760	8008	Status word: "8000" (bit 15 ON) indicates Reply message present "0008" (bit 3 ON) echo's the command (PCP Write)
	N23:21	8	8	Echo of the Command Word (PCP Write)
	N23:22	2	2	Number of words following = 2
	N23:23	2	2	CR# = 2 (Station 1.0)
	N23:24	0	0	Result = 0 (success)

In the example ladder logic program, the user would load these registers before calling the subroutine to perform the PCP Write:

Message	SLC Address	Value (Dec)	Value (Hex)	Description
Request	N23:0	2	2	CR# = 2 (Station 1.0)
	N23:1	1	1	1= 20-COMM-I
	N23:2	12	12	Parameter # = 12
	N23:3	4	4	4 byte data write
	N23:4	0	0	Data Word 1 = 0
	N23:5	2048	800	Data Word 2 = 2048

SLC Ladder Example - Peripheral Communications Protocol (PCP)

PCP Read Subroutine (Explicit Messaging)

The PCP Read Subroutine is executed from the Main Program (Chapter 5) by turning on bit B3:47/0. Only one PCP Read or Write can be performed at any one time. B3:47/0 will be turned off by the subroutine when the reading is complete and signals that another read (or write) cycle can take place.

Figure 6.3 LAD5 - PCP Read Subroutine

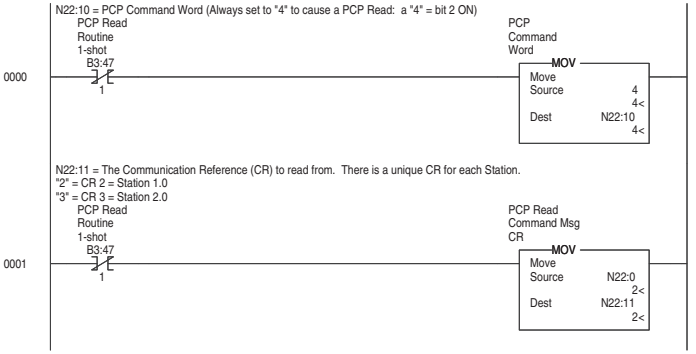


Figure 6.3 LAD5 - PCP Read Subroutine (Continued)

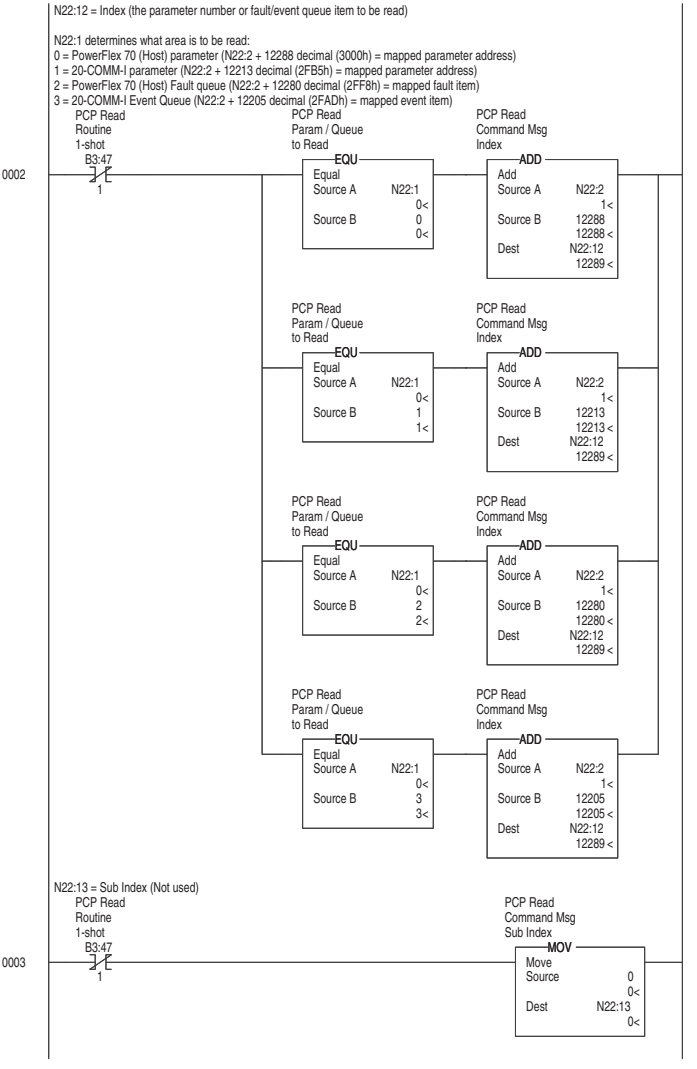


Figure 6.3 LAD5 - PCP Read Subroutine (Continued)

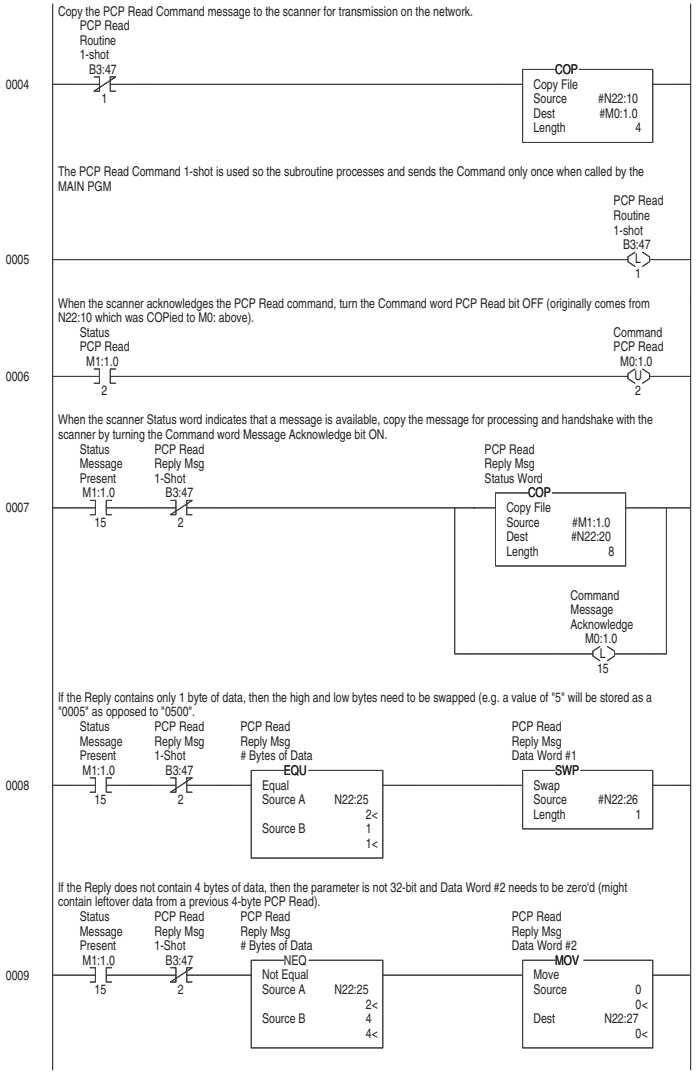
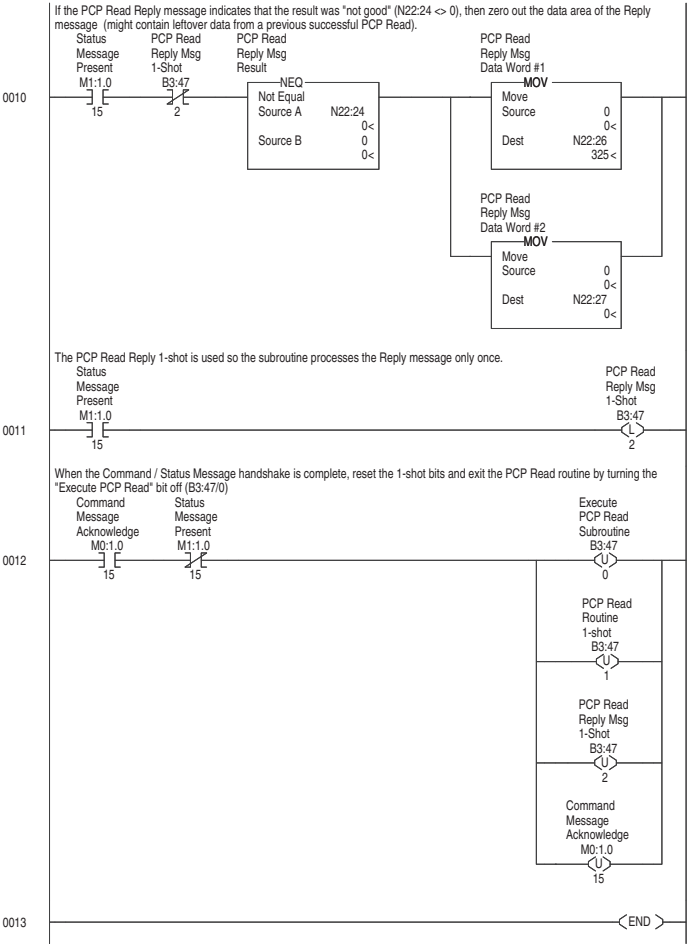


Figure 6.3 LAD5 - PCP Read Subroutine (Continued)



PCP Write Subroutine (Explicit Messaging)

The PCP Write Subroutine is executed from the Main Program (Chapter 5) by turning on bit B3:47/10. Only one PCP Read or Write can be performed at any one time. B3:47/10 will be turned off by the subroutine when the reading is complete and signals that another read (or write) cycle can take place.

Figure 6.4 LAD6 - PCP Write Subroutine

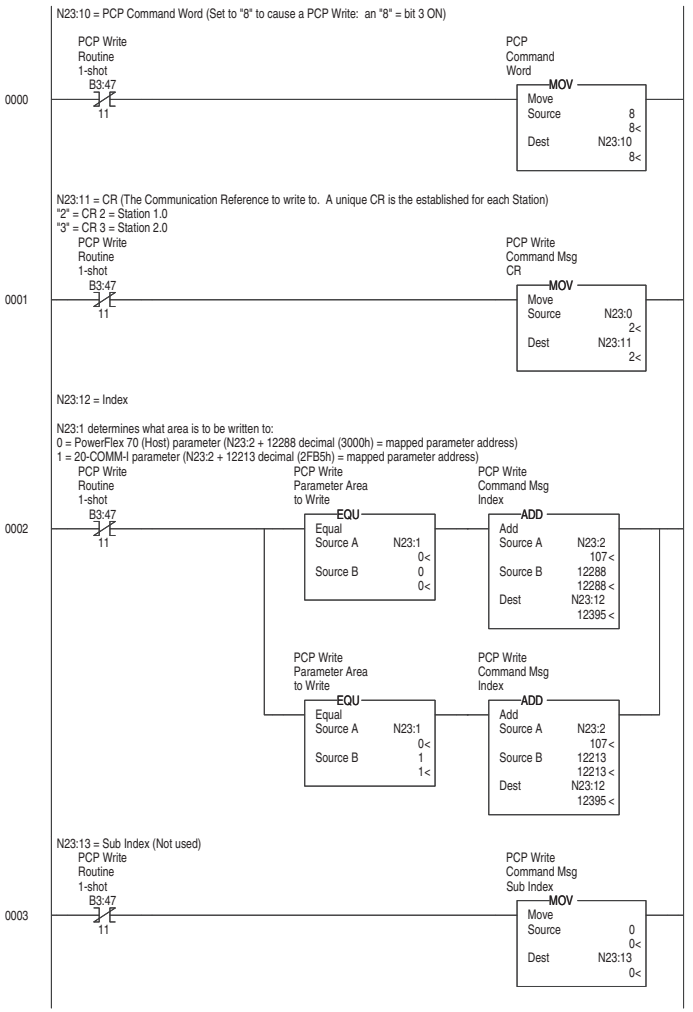


Figure 6.4 LAD6 - PCP Write Subroutine (Continued)

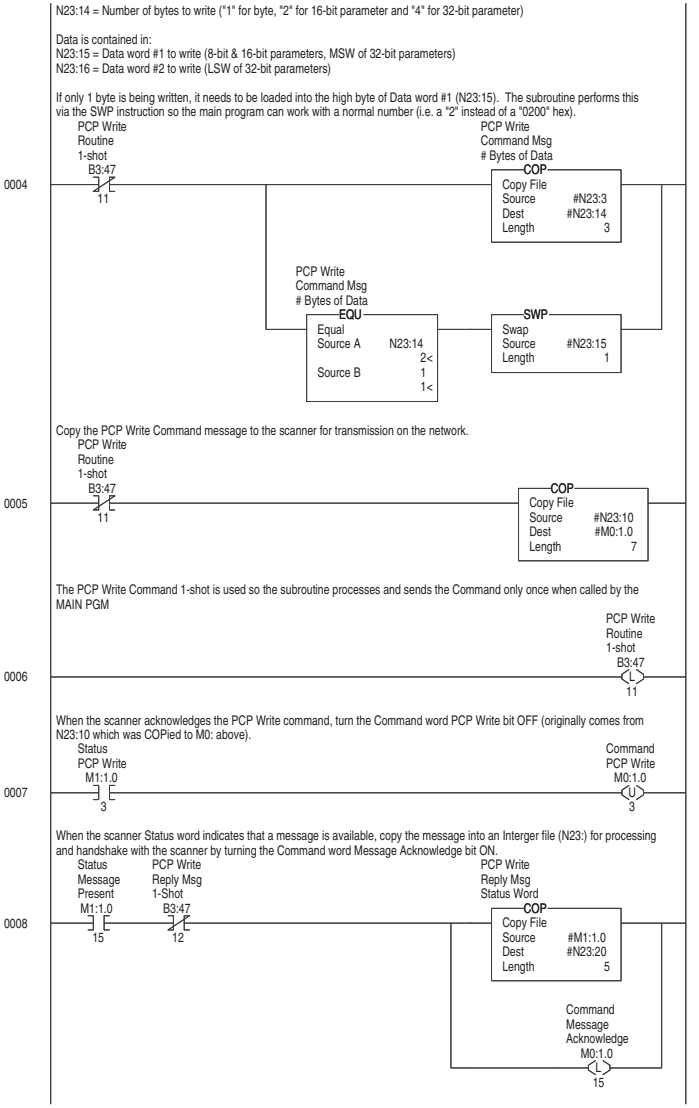
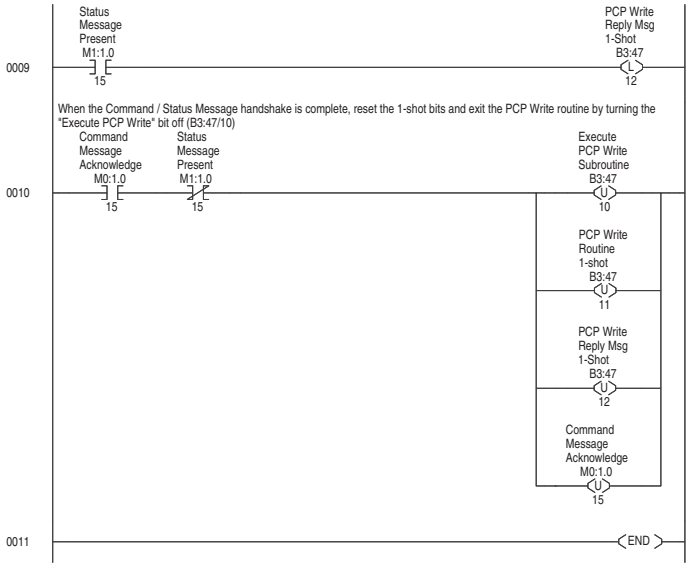


Figure 6.4 LAD6 - PCP Write Subroutine (Continued)



Notes:

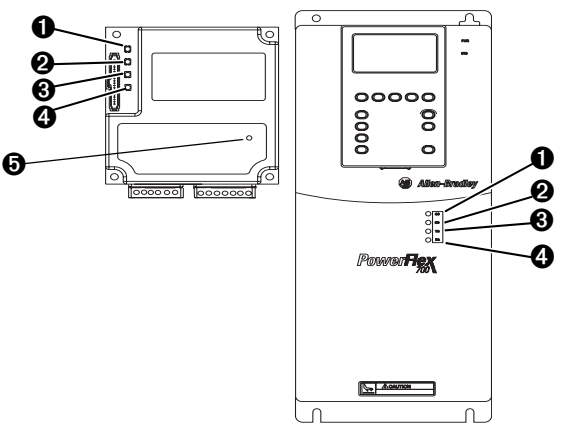
Troubleshooting

Chapter 7 contains troubleshooting information.

Locating the Status Indicators

The Interbus adapter has five status indicators. They can be viewed on the adapter or through the drive cover. See Figure 7.1.

Figure 7.1 Status Indicators



#	Status Indicator	Description	Page
❶	CC	Cable Check	7-2
❷	RD	Remote Bus Disable	7-2
❸	TR	Transmit/Receive	7-2
❹	BA	Bus Active	7-3
❺	UL	Bus Voltage	7-3

Note: The UL indicator is not viewable when the drive cover is installed or closed.

Note: Interbus compliance requires different LED functions than what is normally displayed on the front of the drive (Port, Mod, Net A and Net B Leds). LED labels are provided with the adapter for application to the drive cover.

Cable Check (CC) Status Indicator

Status	Cause	Corrective Action
Off	Master is reset or no cable connection.	• Connect the adapter to the network using an Interbus cable. • Verify master not in reset.
Solid Green	Cable connection good.	• No Action.

Remote Bus Disable (RD) Status Indicator

Status	Cause	Corrective Action
Off	Outgoing remote bus is not switched off.	• No action.
Solid Red	Outgoing remote bus is switched off.	• Read configuration or start data transmission. Master may have to be reset first.

Transmit/Receive (TR) Status Indicator

Status	Cause	Corrective Actions
Off	No PCP connection is carried out.	• Verify that master is sending PCP messages.
Solid Green	A PCP connection is being carried out. Flashes when a new PCP frame has been received.	• No action.

Bus Active (BA) Status Indicator

Status	Cause	Corrective Actions
Off	Bus not active.	• Set master to start data transmission.
Solid Green	Bus active, exchanging data.	• No action.
Flash Green	Bus active, but no data exchange.	• Set master to start data transmission.

Bus Voltage (UL) Status Indicator(1)

Status	Cause	Corrective Actions
Off	Bus voltage is not OK.	• Securely connect the adapter to the drive using the Internal interface cable • Apply power to the drive.
Solid Green	Bus active.	• No action.

(1) Only visible when drive cover is open.

Adapter Diagnostic Items

Adapter Diagnostic Items are viewable with DriveExplorer (version 2.01 or higher), DriveExecutive (version v1.01 or higher) or LCD HIM (2.001 or higher) software. Diagnostic items show current data being transmitted and received by the Host device (e.g. drive), and other diagnostic information regarding the 20-COMM-I.

No.	Event	Description
1	Common Logic Cmd	The current value of the Common Logic Command being transmitted to the Host.
2	Prod Logic Cmd	The current value of the Product-Specific Logic Command being transmitted to the Host.
3	Reference	The current value ofthe Product-Specific Reference being transmitted to the Host.
4	Common Logic Sts	The current value of the Product-Specific Logic Status being received from the Host.
5	Prod Logic Sts	The current value of the Product-Specific Status being received from the Host.
6	Feedback	The current value of the Product-Specific Feedback being received from the Host.
7	Datalink A1 In	The current value of Datalink A1 being transmitted to the Host. (Value of 0 if Datalink is not used).
8	Datalink A2 In	The current value of Datalink A2 being transmitted to the Host. (Value of 0 if Datalink is not used).
9	Datalink B1 In	The current value of Datalink B1 being transmitted to the Host. (Value of 0 if Datalink is not used).
10	Datalink B2 In	The current value of Datalink B2 being transmitted to the Host. (Value of 0 if Datalink is not used).
11	Datalink C1 In	The current value of Datalink C1 being transmitted to the Host. (Value of 0 if Datalink not used).
12	Datalink C2 In	The current value of Datalink C2 being transmitted to the Host. (Value of 0 if Datalink is not used).
13	Datalink D1 In	The current value of Datalink D1 being transmitted to the Host. (Value of 0 if Datalink is not used).
14	Datalink D2 In	The current value of Datalink D2 being transmitted to the Host. (Value of 0 if Datalink is not used).
15	Datalink A1 Out	The current value of Datalink A1 being received from the Host.
16	Datalink A2 Out	The current value of Datalink A2 being received from the Host.
17	Datalink B1 Out	The current value of Datalink B1 being received from the Host.
18	Datalink B2 Out	The current value of Datalink B2 being received from the Host.
19	Datalink C1 Out	The current value of Datalink C1 being received from the Host.
20	Datalink C2 Out	The current value of Datalink C2 being received from the Host.
21	Datalink D1 Out	The current value of Datalink D1 being received from the Host.
22	Datalink D2 Out	The current value of Datalink D2 being received from the Host.
23	Field Flash Cntr	The number of times this device has been flash updated.
24	DPI Rx Err Cntr	The current value of the DPI CAN Receive error counter.
25	DPI Tx Err Cntr	The current value of the DPI CAN Transmit error counter.
26	IbusImage Siz	Amount of process data bytes used on the Interbus network by the adapter.

Viewing and Clearing Events

The adapter maintains an event queue that reports the history of its actions. You can view the event queue using an LCD PowerFlex HIM, DriveExplorer (2.01 or higher) software, or DriveExecutive (1.01 or higher).

Step	Keys	Example Screen
Viewing Events 1. Access parameters in the adapter. Refer to Using the PowerFlex HIM in Chapter 3.		Main Menu: Diagnostics Parameter Device Select
2. Press the Up Arrow or Down Arrow to scroll to **Diagnostics**.		
3. Press Enter to display the Diagnostics menu in the adapter.		Event Q: 1 E3 Ping Time Flt
4. Repeat steps 2 and 3 to enter the **Events** option and then **View Event Queue** option.		
5. Press the Up Arrow or Down Arrow to scroll through the events. The most recent event is Event 1.		
Clearing Events 1. Access parameters in the Adapter. Refer to Using the PowerFlex HIM in Chapter 3.		
2. Press the Up Arrow or Down Arrow to scroll to **Diagnostics**.		
3. Press Enter to display the Diagnostics menu in the adapter.		
4. Repeat steps 2 and 3 to enter the **Events** option and then the **Clr Event** option or **Clear Event Queue** option. A message will pop up to confirm that you want to clear the message or queue.		Dgn: Events View Event Queue Clear Event Clear Event Queue
5. Press Enter to clear all events out of the event queue. All event queue entries will then display “No Event.”		

Events

Many events in the Event queue occur under normal operation. If you encounter unexpected communications problems, the events may help you or Allen-Bradley personnel troubleshoot the problem. The following events may appear in the event queue:

Code	Event	Description
1	No Event	Empty event queue entry.
2	DPI Bus Off Flt	A bus-off condition was detected on DPI. This event may be caused by loose or broken cables or by noise.
3	Ping Time Flt	A ping message was not received on DPI within the specified time.
4	Port ID Flt	The adapter is not connected to a correct port on a DPI product.
5	Port Change Flt	The DPI port changed.
6	Host Sent Reset	The DPI product issued this because it was reset.
7	EEPROM Sum Flt	The EEPROM in the adapter is corrupt.
8	Online @ 125kbps	The adapter and DPI product are communicating at 125kbps.
9	Online @ 500kbps	The adapter and DPI product are communicating at 500kbps.
10	Bad Host Flt	The adapter was connected to an incompatible product.
11	Dup. Port Flt	Another peripheral with the same port number is already in use.
12	Type 0 Login	The adapter has logged in for type 0 control.
13	Type 0 Time Flt	The adapter has not received a type 0 status message within the specified time.
14	DL Login	The adapter has logged into a Datalink.
15	DL Reject Flt	The host rejected an attempt to log in to a Datalink because the Datalink is not supported or is used by another peripheral.
16	DL Time Flt	The adapter has not received a Datalink message within the specified time.
17	Control Disabled	The adapter has sent a “Soft Control Disable” command to the DPI product.
18	Control Enabled	The adapter has sent a “Soft Control Enable” command to the DPI product.
19	Message Timeout	A Client-Server message sent by the peripheral was not completed.
20	DPI Fault Msg	The DPI Host has faulted.
21	DPI Fault Clear	The user cleared a fault in the adapter.
22	Normal Startup	Peripheral completes a normal startup.
23	Net Comm Flt	The adapter detected a fault condition on the Interbus network.
24	Fault Cfg Error	The peripheral detected a 32-bit fault configuration Reference when the Host supports only a 16-bit Reference, or vice-versa.

Code	Event	Description
25	IB Online	The Interbus adapter has gone on-line the Interbus network.
26	IB Offline	The Interbus adapter has gone off-line the Interbus network.
27	Lang CRC Bad	Language file CRC is Bad

Notes:

Specifications

This chapter presents the specifications for the adapter.

Communications

Network	
Protocol	Interbus
Data Rates	500K
Drive	
Protocol	DPI
Data Rates	125K or 500K

Electrical

Consumption	
Drive Network	450mA at 5 V supplied through the drive

Mechanical

Dimensions	
Height	19 mm (0.75 inches)
Length	86 mm (3.39 inches)
Width	78.5 mm (3.09 inches)
Weight	65g (2.3 oz.)

Environmental

Temperature	
Operating	-10 to 50°C (14 to 149°F)
Storage	-40 to +85°C (-40 to 185°F)
Relative Humidity	5 to 95% non-condensing

Regulatory Compliance

UL	508C and CUL
CE	EN50081-2 (1993) and EN61000-6-2 (1999)

Adapter Parameters

Appendix B provides information about the Interbus adapter parameters.

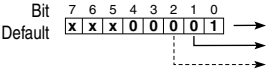
About Parameter Numbers

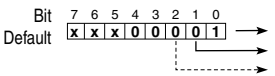
The parameters in the adapter are numbered consecutively. However, depending on which configuration tool you use, they may have different numbers.

Configuration Tool	Numbering Scheme
• DriveExplorer • DriveExecutive • HIM • Explicit Messaging	The adapter parameters begin with parameter 1. For example, Parameter 01 - [DPI Port] is parameter 1 as indicated by this manual.

Parameters List

Parameter No.	Name and Description	Details	
01	**[DPI Port]** Port to which the adapter is connected. This will usually be port 5.	Default: Minimum: Maximum: Type:	0 0 7 Read Only
02	**[DPI Data Rate]** Data rate used by the drive. This data rate is set in the drive, and the adapter detects it.	Default: Values: Type:	0 = 125 K 0 = 125 K 1 = 500 K Read Only
03	**[Ref/Feedback Size]** Size of the Reference/Feedback. The drive determines the size of the Reference/Feedback.	Default: Values: Type:	0 = 16-bit 0 = 16-bit 1 = 32-bit Read Only

Parameter No.	Name and Description	Details
04	**[Datalink Size]** Size of each Datalink word. The drive determines the size of the Datalinks.	Default: 0 = 16-bit Values: 0 = 16-bit 1 = 32-bit Type: Read Only
05	**[Reset Module]** No action if set to "Ready." Resets the adapter if set to "Reset Module." Restores the adapter to its factory default settings if set to "Set Defaults." This parameter is a command. It will be reset to "0 = Ready" after the command has been performed.	Default: 0 = Ready Values 0 = Ready 1 = Reset Module 2 = Set Defaults Type: Read/Write Reset Required: No
06	**[Comm Flt Action]** Action that the adapter and drive take if the adapter detects that Interbus communications have been disrupted. This setting is effective only if I/O that controls the drive is transmitted through the adapter.	Default: 0 = Fault Values: 0 = Fault 1 = Stop 2 = Zero Data 3 = Hold Last 4 = Send Flt Cfg Type: Read/Write Reset Required: No
	ATTENTION: Risk of injury or equipment damage exists. **Parameter 6 - [Comm Flt Action]** lets you determine the action of the adapter and connected drive if communications are disrupted. By default, this parameter faults the drive. You can set this parameter so that the drive continues to run. Precautions should be taken to ensure that the setting of this parameter does not create a hazard or injury or equipment damage.	
07	**[Reserved]**	Default: 0 Values: 0 Type: Reset Required:
08	**[DPI I/O Config]** I/O that is transferred through the adapter.  	Default: xxx0 0001 Bit Values: 0 = I/O disabled 1 = I/O enabled Type: Read/Write Reset Required: Yes **Bit Definitions** 0 = Cmd/Ref 1 = Datalink A 2 = Datalink B 3 = Datalink C 4 = Datalink D 5 = Not Used 6 = Not Used 7 = Not Used
	ATTENTION: Risk of injury or equipment damage exists. If the adapter is transmitting I/O that controls the drive, the drive may fault when you reset the adapter. Determine how your drive will respond before resetting a connected adapter.	

Parameter No.	Name and Description	Details
09	**[DPI I/O Active]** I/O that the adapter is actively transmitting. The value of this parameter will usually be equal to the value of Parameter 8 - DPI I/O Config.  	Default: xxx0 0001 Bit Values: 0 = I/O disabled 1 = I/O enabled Type: Read Only **Bit Definitions** 0 = Cmd/Ref 1 = Datalink A 2 = Datalink B 3 = Datalink C 4 = Datalink D 5 = Not Used 6 = Not Used 7 = Not Used
10	**[Flt Cfg Logic]** Sets the Logic Command data that is sent to the drive if any of the following is true: • Parameter 06 - [Comm Flt Action] is set to Send Flt Cfg and communications are disrupted. The bit definitions will depend on the product to which the adapter is connected.	Default: 0000 0000 0000 0000 Minimum: 0000 0000 0000 0000 Maximum: 1111 1111 1111 1111 Type: Read/Write Reset Required: No
11	**[Flt Cfg Ref]** Sets the Reference data that is sent to the drive if any of the following is true: • Parameter 06 - [Comm Flt Action] is set to Send Flt Cfg and communications are disrupted.	Default: 0 Minimum: 0 Maximum: 4294967295 Type: Read/Write Reset Required: No **Important:** If the drive uses a 16-bit Reference, the most significant word of this value must be set to zero (0) or a fault will occur.
12 13 14 15 16 17 18 19	**[Flt Cfg A1]** **[Flt Cfg A2]** **[Flt Cfg B1]** **[Flt Cfg B2]** **[Flt Cfg C1]** **[Flt Cfg C2]** **[Flt Cfg D1]** **[Flt Cfg D2]** Sets the data that is sent to the Datalink in the drive if any of the following is true: • Parameter 06 - [Comm Flt Action] is set to Send Flt Cfg and the communications are disrupted.	Default: 0 Default: 0 Default: 0 Default: 0 Default: 0 Default: 0 Default: 0 Default: 0 Minimum: 0 Maximum: 4294967295 Type: Read/Write Reset Required: No **Important:** If the drive uses 16-bit Datalinks, the most significant word of this value must be set to zero (0) or a fault will occur.
20	**PIDD W0 Cfg** Configured Process Input Data Description for Word 0. PCP Object to use for Word 0 transmitted to Interbus master.	Default: 0x2F9A (Logic Status) Setting: See Table B.1 Type: Read/Write Reset Required: No (becomes active when Interbus network is restarted)
21	**PIDD W0 Actual** Actual Process Input Data Description for Word 0.	Value: See Table B.1 Type: Read Only

Parameter No.	Name and Description	Details	
22	**PIDD W1 Cfg** Configured Process Input Data Description for Word 1. PCP Object to use for Word 1 transmitted to Interbus master.	Default: Setting: Type: Reset Required:	0x2F9B (Feedback) See Table B.1 Read/Write No (becomes active when Interbus network is restarted)
23	**PIDD W1 Actual** Actual Process Input Data Description for Word 1.	Value: Type:	See Table B.1 Read Only
24	**PIDD W2 Cfg** Configured Process Input Data Description for Word 2. PCP Object to use for Word 2 transmitted to Interbus master.	Default: Setting: Type: Reset Required:	0 See Table B.1 Read/Write No (becomes active when Interbus network is restarted)
25	**PIDD W2 Actual** Actual Process Input Data Description for Word 2.	Value: Type:	See Table B.1 Read Only
26	**PIDD W3 Cfg** Configured Process Input Data Description for Word 3. PCP Object to use for Word 3 transmitted to Interbus master.	Default: Setting: Type: Reset Required:	0 See Table B.1 Read/Write No (becomes active when Interbus network is restarted)
27	**PIDD W3 Actual** Actual Process Input Data Description for Word 3.	Value: Type:	See Table B.1 Read Only
28	**PIDD W4 Cfg** Configured Process Input Data Description for Word 4. PCP Object to use for Word 4 transmitted to Interbus master.	Default: Setting: Type: Reset Required:	0 See Table B.1 Read/Write No (becomes active when Interbus network is restarted)
29	**PIDD W4 Actual** Actual Process Input Data Description for Word 4.	Value: Type:	See Table B.1 Read Only
30	**PIDD W5 Cfg** Configured Process Input Data Description for Word 5. PCP Object to use for Word 5 transmitted to Interbus master.	Default: Setting: Type: Reset Required:	0 See Table B.1 Read/Write No (becomes active when Interbus network is restarted)
31	**PIDD W5 Actual** Actual Process Input Data Description for Word 5.	Value: Type:	See Table B.1 Read Only
32	**PIDD W6 Cfg** Configured Process Input Data Description for Word 6. PCP Object to use for Word 6 transmitted to Interbus master.	Default: Setting: Type: Reset Required:	0 See Table B.1 Read/Write No (becomes active when Interbus network is restarted)
33	**PIDD W6 Actual** Actual Process Input Data Description for Word 6.	Value: Type:	See Table B.1 Read Only
34	**PIDD W7 Cfg** Configured Process Input Data Description for Word 7. PCP Object to use for Word 7 transmitted to Interbus master.	Default: Setting: Type: Reset Required:	0 See Table B.1 Read/Write No (becomes active when Interbus network is restarted)

Parameter No.	Name and Description	Details	
35	**PIDD W7 Actual** Actual Process Input Data Description for Word 7.	Value: Type:	See Table B.1 Read Only
36	**PIDD W8 Cfg** Configured Process Input Data Description for Word 8. PCP Object to use for Word 8 transmitted to Interbus master.	Default: Setting: Type: Reset Required:	0 See Table B.1 Read/Write No (becomes active when Interbus network is restarted)
37	**PIDD W8 Actual** Actual Process Input Data Description for Word 8.	Value: Type:	See Table B.1 Read Only
38	**PODD W0 Cfg** Configured Process Output Data Description for Word 0. PCP Object to use for Word 0 received from Interbus master.	Default: Setting: Type: Reset Required:	0x2F98 (Logic Command) See Table B.1 Read/Write No (becomes active when Interbus network is restarted)
39	**PODD W0 Actual** Actual Process Output Data Description for Word 0.	Value: Type:	See Table B.1 Read Only
40	**PODD W1 Cfg** Configured Process Output Data Description for Word 1. PCP Object to use for Word 1 received from Interbus master.	Default: Setting: Type: Reset Required:	0x2F99 (Reference) See Table B.1 Read/Write No (becomes active when Interbus network is restarted)
41	**PODD W1 Actual** Actual Process Output Data Description for Word 1.	Value: Type:	See Table B.1 Read Only
42	**PODD W2 Cfg** Configured Process Output Data Description for Word 2. PCP Object to use for Word 2 received from Interbus master.	Default: Setting: Type: Reset Required:	0 See Table B.1 Read/Write No (becomes active when Interbus network is restarted)
43	**PODD W2 Actual** Actual Process Output Data Description for Word 2.	Value: Type:	See Table B.1 Read Only
44	**PODD W3 Cfg** Configured Process Output Data Description for Word 3. PCP Object to use for Word 3 received from Interbus master.	Default: Setting: Type: Reset Required:	0 See Table B.1 Read/Write No (becomes active when Interbus network is restarted)
45	**PODD W3 Actual** Actual Process Output Data Description for Word 3.	Value: Type:	See Table B.1 Read Only
46	**PODD W4 Cfg** Configured Process Output Data Description for Word 4. PCP Object to use for Word 4 received from Interbus master.	Default: Setting: Type: Reset Required:	0 See Table B.1 Read/Write No (becomes active when Interbus network is restarted)

Parameter No.	Name and Description	Details	
47	**PODD W4 Actual** Actual Process Output Data Description for Word 4.	Value: Type:	See Table B.1 Read Only
48	**PODD W5 Cfg** Configured Process Output Data Description for Word 5. PCP Object to use for Word 5 received from Interbus master.	Default: Setting: Type: Reset Required:	0 See Table B.1 Read/Write No (becomes active when Interbus network is restarted)
49	**PODD W5 Actual** Actual Process Output Data Description for Word 5.	Value: Type:	See Table B.1 Read Only
50	**PODD W6 Cfg** Configured Process Output Data Description for Word 6. PCP Object to use for Word 6 received from Interbus master.	Default: Setting: Type: Reset Required:	0 See Table B.1 Read/Write No (becomes active when Interbus network is restarted)
51	**PODD W6 Actual** Actual Process Output Data Description for Word 6.	Value: Type:	See Table B.1 Read Only
52	**PODD W7 Cfg** Configured Process Output Data Description for Word 7. PCP Object to use for Word 7 received from Interbus master.	Default: Setting: Type: Reset Required:	0 See Table B.1 Read/Write No (becomes active when Interbus network is restarted)
53	**PODD W7 Actual** Actual Process Output Data Description for Word 7.	Value: Type:	See Read Only
54	**PODD W8 Cfg** Configured Process Output Data Description for Word 8. PCP Object to use for Word 8 received from Interbus master.	Default: Setting: Type: Reset Required:	0 See Table B.1 Read/Write No (becomes active when Interbus network is restarted)
55	**PODD W8 Actual** Actual Process Output Data Description for Word 8.	Value: Type:	See Table B.1 Read Only
56	**PCP Comm Cfg** Enable Interbus PCP communications.	Default: Values: Type:	1 = Enable 0 = Disable 1= Enable Read/Write
57	**PCP Comm Act** Actual PCP Configuration	Default: Values: Type:	1 = Enable 0 = Disable 1= Enable Read Only

Table B.1 PIDD/PODD Indexes

Input

Value (Hex)	Value (Dec)	Selects
2F9A	12186	Logic Status
2F9B	12187	Feedback
2FA4	12196	Datalink A1 Out
2FA5	12197	Datalink A2 Out
2FA6	12198	Datalink B1 Out
2FA7	12199	Datalink B2 Out
2FA8	12200	Datalink C1 Out
2FA9	12201	Datalink C2 Out
2FAA	12202	Datalink D1 Out
2FAB	12203	Datalink D2 Out

Output

Value (Hex)	Value (Dec)	Selects
2F98	12184	Logic Command
2F99	12185	Reference
2F9C	12188	Datalink A1 In
2F9D	12189	Datalink A2 In
2F9E	12190	Datalink B1 In
2F9F	12191	Datalink B2 In
2FA0	12192	Datalink C1 In
2FA1	12193	Datalink C2 In
2FA2	12194	Datalink D1 In
2FA3	12195	Datalink D2 In

Notes:

Logic Command/Status Words

Appendix C provides the definitions of the Logic Command/Logic Status words that are used for some products that can be connected to the Interbus adapter. If you do not see the Logic Command/Logic Status for the product that you are using, refer to your product's documentation.

PowerFlex 70 and PowerFlex 700 Drives

Logic Command Word

Logic Bits																
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	**Command**	**Description**
															x	Stop	0 = Not Stop 1 = Stop
														x		Start*	0 = Not Start 1 = Start
													x			Jog	0 = Not Jog 1 = Jog
												x				Clear Faults	0 = Not Clear Faults 1 = Clear Faults
										x	x					Direction	00 = No Command 01 = Forward Command 10 = Reverse Command 11 = Hold Direction Control
									x							Local Control	0 = No Local Control 1 = Local Control
								x								MOP Increment	0 = Not Increment 1 = Increment
						x	x									Accel Rate	00 = No Command 01 = Accel Rate 1 Command 10 = Accel Rate 2 Command 11 = Hold Accel Rate
				x	x											Decel Rate	00 = No Command 01 = Decel Rate 1 Command 10 = Decel Rate 2 Command 11 = Hold Decel Rate
	x	x	x													Reference Select	000 = No Command 001 = Ref. 1 (Ref A Select) 010 = Ref. 2 (Ref B Select) 011 = Ref. 3 (Preset 3) 100 = Ref. 4 (Preset 4) 101 = Ref. 5 (Preset 5) 110 = Ref. 6 (Preset 6) 111 = Ref. 7 (Preset 7)
x																MOP Decrement	0 = Not Decrement 1 = Decrement

* A 0 = Not Stop condition (logic 0) must first be present before a 1 = Start condition will start the drive.

PowerFlex 70 and PowerFlex 700 Drives

Logic Status Word

Logic Bits																
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	**Status**	**Description**
															x	Ready	0 = Not Ready 1 = Ready
														x		Active	0 = Not Active 1 = Active
													x			Command Direction	0 = Reverse 1 = Forward
												x				Actual Direction	0 = Reverse 1 = Forward
											x					Accel	0 = Not Accelerating 1 = Accelerating
										x						Decel	0 = Not Decelerating 1 = Decelerating
									x							Alarm	0 = No Alarm 1 = Alarm
								x								Fault	0 = No Fault 1 = Fault
							x									At Speed	0 = Not At Reference 1 = At Reference
				x	x	x										Local Control	000 = Port 0 (TB) 001 = Port 1 010 = Port 2 011 = Port 3 100 = Port 4 101 = Port 5 110 = Port 6 111 = No Local
x	x	x	x													Reference	0000 = Ref A Auto 0001 = Ref B Auto 0010 = Preset 2 Auto 0011 = Preset 3 Auto 0100 = Preset 4 Auto 0101 = Preset 5 Auto 0110 = Preset 6 Auto 0111 = Preset 7 Auto 1000 = Term Blk Manual 1001 = DPI 1 Manual 1010 = DPI 2 Manual 1011 = DPI 3 Manual 1100 = DPI 4 Manual 1101 = DPI 5 Manual 1110 = DPI 6 Manual 1111 = Jog Ref

Notes:

A

Adapter

Devices such as drives, controllers, and computers usually require an adapter to provide a communication interface between them and a network such as Interbus. An adapter reads data on the network and transmits it to the connected device. It also reads data in the device and transmits it to the network.

The 20-COMM-I Interbus adapter is an adapter that connects, PowerFlex drives to a Interbus network. Adapters are sometimes also called “embedded communication options,” “modules,” and “peripherals.”

C

CMD Software

IBS CMD G4 is a software package that enables Configuration, Monitoring, and Diagnostics of all connected devices in an Interbus network.

Communication Reference (CR)

The communication reference identifies an Interbus device in the parameter data channel (PCP). To send a PCP service to a device, its CR must be specified. The CRs begin at “2” and must be assigned in ascending order.

ControlFLASH

ControlFLASH is an Allen-Bradley software tool that lets users electronically update firmware on printed circuit boards. The tool takes advantage of the growing use of flash memory (electronic erasable chips) across industrial control products.

Controller

A controller, also called programmable logic controller, is a solid-state control system that has a user-programmable memory for storage of instructions to implement specific functions such as I/O control, logic, timing, counting, report generation, communication, arithmetic, and data file manipulation. A controller consists of a central processor, input/output interface, and memory. See also Scanner.

D

Data Rate

The data rate is the speed at which data is transferred on the Interbus network (fixed at 500k/bps).

Datalinks

A Datalink is a type of pointer used by some PowerFlex drives to transfer data to and from the controller. Datalinks allow specified parameter value(s) to be accessed or changed without using explicit messages. When enabled, each Datalink consumes either four bytes or eight bytes in both the input and output image table of the controller. The drive determines the size of Datalinks.

DPI

DPI is a second generation peripheral communication interface used by various Allen-Bradley drives and power products. It is a functional enhancement to SCANport.

DriveExplorer Software

DriveExplorer software is a tool for monitoring and configuring Allen-Bradley products and adapters. It can be used on computers running Microsoft Windows 95, Windows 98, ME, Windows NT (version 4.0 and 2000), and Windows CE (version 2.11 and higher) operating systems. DriveExplorer (version 2.01 or higher) can be used to configure this adapter and PowerFlex drives. Information about DriveExplorer software and a free lite version can be accessed at http://www.ab.com/drives/driveexplorer.

DriveTools 2000 Software

A software suite designed for Microsoft Windows 98, Windows ME and Windows NT (4.0 or greater) and Windows 2000 operating systems. This software suite will provide a family of tools that you can use to program, monitor, control, troubleshoot, and maintain Allen Bradley products. DriveExecutive (version 1.01 or higher) can be used with PowerFlex drives. Information about DriveTools 2000 can be accessed at http://www.ab.com/drives/drivetools_2000.

E

Explicit Messaging

See Peripheral Communications Protocol (PCP) Messaging.

F

Fault Action

A fault action determines how the adapter and connected product act when a communications fault (for example, a cable is disconnected) occurs.

Fault Configuration

When communications are disrupted (for example, a cable is disconnected), the adapter and PowerFlex drive can respond with a user-defined fault configuration. The user sets the data that is sent to the drive in the fault configuration parameters (**Parameters 10- [Flt Cfg Logic]** through **19- [Flt Cfg D2In]**). When a fault action parameter is set to use the fault configuration and a fault occurs, the data from these parameters is sent as the Command Logic, Reference, and/or Datalink(s).

Flash Update

The process of updating firmware in the adapter. The adapter can be flash updated using the ControlFLASH tool or the X-Modem protocol and a 1203-SSS Smart Self-powered Serial converter (firmware 3.xx or higher).

H

HIM (Human Interface Module)

A device that can be used to configure and control a PowerFlex drive. New HIMs (20-HIM-x) can be used to configure connected peripherals.

Hold Last

When communications are disrupted (for example, a cable is disconnected), the adapter and PowerFlex drive can respond by holding last. Hold last results in the drive receiving the last data received via the Interbus connection before the disruption. If the drive was running and using the Reference from the adapter, it will continue to run at the same Reference.

I

I/O Data

I/O transmit time-critical data such as a Logic Command and Reference. The terms “input” and “output” are defined from the scanner’s point of view. Output is transmitted by the scanner and consumed by the adapter. Input is transmitted by the adapter and consumed by the scanner.

Interbus Network

A Interbus network uses RS485 to connect devices (for example, controllers, drives, and motor starters) and it can support a maximum of 126 devices in a daisy chain connection. Each device is assigned a unique node address and transmits data on the network at the same data rate.

General information about Interbus and the Interbus specification are maintained by the Interbus Club at http://www.ibsclub.com

L

Logic Command/Logic Status

The Logic Command is used to control the PowerFlex drive (e.g., start, stop, direction). It consists of one 16-bit word of input to the adapter from the network. The definitions of the bits in this word depend on the drive.

The Logic Status is used to monitor the PowerFlex drive (for example, operating state, motor direction). It consists of one 16-bit word of output from the adapter to the network. The definitions of the bits in this word depend on the drive.

M

Master

See scanner.

N

NVS (Non-Volatile Storage)

NVS is the permanent memory of a device. Devices such as the adapter and drive store parameters and other information in NVS so that they are not lost when the device loses power. NVS is sometimes called "EEPROM."

P

Peripheral Communications Protocol (PCP) Messages

Acyclic messages that are typically used for configuration purposes such as reading/writing parameters. PCP messages are explicit messages, i.e. they must explicitly identify where the data is to be read from or written to.

Ping

A ping is a message that is sent by a DPI product to its peripheral devices. They use the ping to gather data about the product, including whether it can receive messages and whether they can log in for control.

PowerFlex Drives

The Allen-Bradley PowerFlex family of drives includes PowerFlex 70, PowerFlex 700, and PowerFlex 7000 drives. These drives can be used for applications ranging from 0.37 kW (0.5 HP) to 3,000 kW (4,000 HP). All PowerFlex drives implement DPI, allowing them to use the 20-COMM-I Interbus adapter. This manual focuses on using the adapter with PowerFlex drives. Other products that implement DPI can also use the adapter.

PIDD

Process Input Data Description words are used for mapping input data on the network. Example input data includes Logic Status, Feedback, and Datalinks (Datalink x1 Out).

PODD

Process Output Data Description words are used for mapping output data on the network. Example output data includes Logic Command, Reference, and Datalinks (Datalink x1 In).

R

Reference/Feedback

The Reference is used to send a Reference (for example, speed, frequency, torque) to the product. It consists of one word of input to the adapter from the network. The size of the word (either a 16-bit word or 32-bit word) is determined by the drive.

Feedback is used to monitor the speed of a product. It consists of one word of output from the adapter to the network. The size of the word (either a 16-bit word or 32-bit word) is determined by the drive.

S

Scanner

A scanner is a separate module (of a multi-module controller) or a built-in component (of a single-module controller) that provides communication with adapters connected to a network. See also Controller.

Status Indicators

Status indicators are LEDs that are used to report the status of the adapter, network, and drive. They are on the adapter and can be viewed on the front cover of the drive when the drive is powered.

Z

Zero Data

When communications are disrupted (for example, a cable is disconnected), the adapter and drive can respond with zero data. Zero data results in the drive receiving zero as values for command data. If the drive was running and using the Reference from the adapter, it will stay running but at zero Reference.

Notes:

A

B

C

D

E

F

G

H

I

S

T

U

W

Z

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation, Vorstlaan/Boulevard du Souverain 36, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Publication 20-COMM-UM007A-EN-P - January, 2002 P/N 305367-P01