

# Dual-Port EtherNet/IP Communication Adapter

Catalog Number 20-COMM-ER



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## 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 available from your local Rockwell Automation sales office or online at <http://www.rockwellautomation.com/literature>) 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 Rockwell Automation, Inc. 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, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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



**WARNING:** Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.

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**Important:** Identifies information that is critical for successful application and understanding of the product.

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**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 a hazard, and recognize the consequences.

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**Shock Hazard** labels may be located on or inside the equipment (e.g., drive or motor) to alert people that dangerous voltage may be present.

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**Burn Hazard** labels may be located on or inside the equipment (e.g., drive or motor) to alert people that surfaces may be at dangerous temperatures.

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# Preface

## About This Manual

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<a href="#">Rockwell Automation Support</a>	<a href="#">7</a>
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This manual provides information about the adapter and using it with PowerFlex 7-Class (Architecture-Class) drives or Bulletin 150 SMC Soft Starters. The adapter can be used with other products that support a DPI™ adapter, such as the DPI External Comms Kit (20-XCOMM-DC-BASE). See the documentation for your product for specific information about how it works with the adapter.

## Conventions Used in This Manual

The following conventions are used throughout this manual:

- Parameter names are shown in the format **Parameter xx - [\*]**. The xx 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 revision number (FRN) is displayed as FRN X.xxx, where ‘X’ is the major revision number and ‘xxx’ is the minor revision number.
- The screen images in this manual resulted from using the following software:
  - RSLinx® Classic software, version 2.51
  - RSLogix 5000 software, version 16

Different versions of the software may have screens that vary in appearance, and differences in procedures.

## Rockwell Automation Support

Rockwell Automation offers support services worldwide, with over 75 sales and 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 the following:

- Sales and order support
- Product technical training

- Warranty support
- Support service agreements

## Technical Product Assistance

For technical assistance, please review the information in [Chapter 7, Troubleshooting](#), first. If you still have problems, then access the Allen-Bradley Technical Support website at [www.ab.com/support/abdrives](http://www.ab.com/support/abdrives) or contact Rockwell Automation.

## Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
Industrial Automation wiring and grounding guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product certifications website, <a href="http://www.ab.com">http://www.ab.com</a>	Provides declarations of conformity, certificates, and other certification details.
Industrial Security Best Practices, publication SECUR-AT001	Provides further information and guidelines on product and system security.
PowerFlex 7-Class DPI (Drive Peripheral Interface) Network Communication Adapter Installation Instructions, publication 20COMM-IN004	Information on the installation of PowerFlex® 20-COMM-x Network Communication Adapters.
EtherNet/IP Media Planning and Installation Manual, ODVA publication 148 <sup>(1)</sup>	Information on the planning, installation, and techniques used to implement an EtherNet/IP network.
EtherNet/IP Network Infrastructure Guidelines, ODVA publication 35 <sup>(1)</sup>	
Ethernet Design Considerations Reference Manual, publication ENET-RM002	
Connected Components Workbench website <a href="http://www.ab.com/support/abdrives/webupdate/software.html">http://www.ab.com/support/abdrives/webupdate/software.html</a> , and online help	Information on the Connected Components Workbench™ software tool—and includes a link for <b>free</b> software download.
PowerFlex 20-HIM-A3/-A5/-C3S/-C5S HIM Quick Reference, publication 20HIM-QR001	Information on the use of the PowerFlex 20-HIM-A3, 20-HIM-A5, 20-HIM-C3S, and 20-HIM-C5S HIMs.
PowerFlex 20-HIM-A6/-C6S HIM (Human Interface Module) User Manual, publication 20HIM-UM001	Information on the installation and use of the PowerFlex 20-HIM-A6 and 20-HIM-C6S HIMs.
PowerFlex 70 User Manual, publication 20A-UM001 PowerFlex 70/700 Reference Manual, publication PFLEX-RM001 PowerFlex 70EC/700VC Reference Manual, publication PFLEX-RM004	Information on installing, programming, and technical data of PowerFlex 70 and PowerFlex 70EC drives.
PowerFlex 700 Series A User Manual, publication 20B-UM001 PowerFlex 700 Series B User Manual, publication 20B-UM002 PowerFlex 70/700 Reference Manual, publication PFLEX-RM001 PowerFlex 70EC/700VC Reference Manual, publication PFLEX-RM004	Information on installing, programming, and technical data of PowerFlex 700/700VC Series A and PowerFlex 700VC Series B drives.
PowerFlex 700H Installation Instructions, publication PFLEX-IN006 PowerFlex 700H Programming Manual, publication 20C-PM001	Information on installing, programming, and technical data of PowerFlex 700H drives.



Resource	Description
PowerFlex 700S w/Phase I Control Installation Manual (Frames 1...6), publication 20D-IN024 PowerFlex 700S w/Phase I Control Installation Manual (Frames 9 and 10), publication PFLEX-IN006 PowerFlex 700S w/Phase I Control User Manual (All Frame Sizes), publication 20D-UM001 PowerFlex 700S w/Phase I Control Reference Manual, publication PFLEX-RM002 PowerFlex 700S w/Phase II Control Installation Manual (Frames 1...6), publication 20D-IN024 PowerFlex 700S w/Phase II Control Installation Manual (Frames 9...14), publication PFLEX-IN006 PowerFlex 700S w/Phase II Control Programming Manual (All Frame Sizes), publication 20D-PM001 PowerFlex 700S w/Phase II Control Reference Manual, publication PFLEX-RM003	Information on installing, programming, and technical data of PowerFlex 700S drives.
PowerFlex 700L User Manual, publication 20L-UM001	Information on installing, programming, and technical data of PowerFlex 700L Liquid-Cooled AC drives.
SMC Flex Smart Motor Controller User Manual, publication 150-UM008	Information on installing, programming, and technical data of SMC Flex State Smart Motor Controller.
SMC-50 Solid-State Smart Motor Controller User Manual, publication 150-UM011	Information on installing, programming, and technical data of SMC-50 Solid-State Smart Motor Controller.
PowerFlex Digital DC Drive User Manual, publication 20P-UM001	Information on installing, programming, and technical data of PowerFlex Digital DC drives.
Getting Results with RSLinx Guide, publication LINX-GR001 and online help <sup>(1)</sup>	Information on using RSLinx Classic software.
RSLogix Emulate 5/500 Getting Results Guide, publication EMULAT-GR002 and online help	Information on how to install and navigate the RSLogix Emulate software for ladder logic programming with Allen-Bradley® PLC-5® and SLC™ 500 processors.
RSLogix 500 Getting Results Guide, publication LG500-GR002 and online help <sup>(1)</sup>	Information on using RSLogix 500 software tool.
RSLogix 5000 PIDE Autotuner Getting Results Guide, publication PIDE-GR001 and online help <sup>(1)</sup>	Information on using RSLogix 5000 software tool.
EtherNet/IP Modules in Logix5000 Control Systems User Manual, publication ENET-UM001	Information on using the ControlLogix® 1756-ENBT or 1756-EN2T EtherNet/IP communication modules with your Logix5000 controller and communicating with various devices on the EtherNet/IP network.
Enhanced and Ethernet PLC-5 Programmable Controllers User Manual, publication 1785-UM012	Information to help design, operate and maintain an Enhanced and Ethernet PLC-5 programmable controller system.
MicroLogix 1100 Programmable Controllers User Manual, publication 1763-UM001 MicroLogix 1400 Programmable Controllers User Manual, publication 1766-UM001	Information to install, wire, and troubleshoot the MicroLogix™ 1100 and MicroLogix 1400 controllers respectively.
Web Updates <a href="http://www.ab.com/support/abdrives/webupdate/">http://www.ab.com/support/abdrives/webupdate/</a>	Flash Update Files, Product Help Files, Control Bar Files, GSD Files, EDS File links, DriveTools SP / Drive AOP Database Files, and other downloads to keep your Allen-Bradley brand drive products up to date

(1) Use this link to the ODVA EtherNet/IP library: <http://odva.org/Home/ODVATECHNOLOGIES/EtherNetIP/EtherNetIPLibrary/tabid/76/Default.aspx>

Documentation can be obtained online at <http://literature.rockwellautomation.com>. To order paper copies of technical documentation, contact your local Rockwell Automation distributor or sales representative.

To find your local Rockwell Automation distributor or sales representative, visit <http://www.rockwellautomation.com/locations>.

For information such as firmware updates or answers to drive-related questions, go to the Drives Service & Support web site at <http://www.ab.com/support/abdrives> and click on the Downloads or Knowledgebase link.

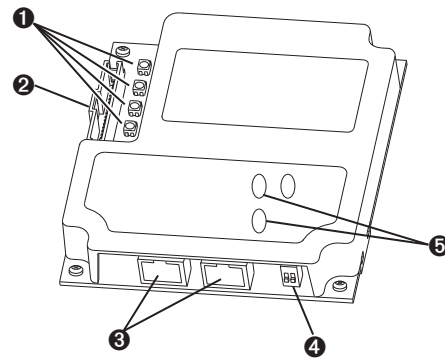
**Notes:**

## Getting Started

The adapter is intended for installation in a PowerFlex 7-Class drive or Bulletin 150 SMC soft starter and is used for network communication.

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<a href="#">Components</a>	<a href="#">11</a>
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## Components



Item	Part	Description
❶	Status Indicators	Four status indicators that indicate the status of the DPI, the adapter, and network connection. See <a href="#">Chapter 7, Troubleshooting</a> .
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	Ethernet Connector	RJ-45 connector for the Ethernet network cable. The connector is CAT-5 compliant to ensure reliable data transfer on 100Base-TX Ethernet connections.
❹	Web Pages Switch (SW4)	Enables or disables the adapter web pages. See <a href="#">Setting the Web Pages Switch on page 19</a> .
❺	Address/mode switches	Set IP address or DHCP/BootP mode.

## Features

The features of the adapter include the following:

- Typical mounting in a PowerFlex 7-Class drive or SMC soft starter.
- Captive screws to secure and ground the adapter to the drive.
- Compatibility with various configuration tools to configure the adapter and connected host drive, including the following tools:
  - PowerFlex HIM (Human Interface Module) on the drive or SMC, if available
  - Connected Components Workbench software, version 1.02 or later
  - DriveExplorer software, version 2.01 or later
  - DriveExecutive software, version 3.01 or later
  - RSLogix5000 version 16 and later with Drives Add-on Profile version 4.05 and later

Additionally, you can use a BOOTP/DHCP server to configure the network address for the adapter.

- Status indicators that report the status of the drive communications, the adapter, and network. They are visible when the drive cover is open or closed.
- Parameter-configured I/O (Logic Command/Reference and up to four pairs of Datalinks) to accommodate application requirements.
- Explicit Messaging support.
- Master-Slave or Peer-to-Peer hierarchy that can be configured to transmit data to and from either a controller or another PowerFlex drive or SMC on the network.
- User-defined fault actions to determine how the adapter and connected PowerFlex drive respond to the following:
  - I/O messaging communication disruptions (Comm Flt Action)
  - Controllers in idle mode (Idle Flt Action)
- Web pages, viewed by using a web browser, that show information about the adapter, its connected host drive, and DPI devices connected to the drive.
- Configurable e-mail messaging to desired addresses when selected drive faults occur and/or are cleared, and/or when the adapter takes a communication or idle fault action.
- Access to any PowerFlex drive or SMC and its connected peripherals on the network to which the adapter is connected.
- Device Level Ring (DLR) or Star Topology support with Quality of Service (QoS) support.

## Compatible Products

At the time of publication, the adapter is compatible with the following products:

- PowerFlex 70/70EC drives
- PowerFlex 700/700VC drives
- PowerFlex 700H drives
- PowerFlex 700S drives
- PowerFlex 7000/7000-2 drives
- PowerFlex 700L drives
- PowerFlex Digital DC drives
- DPI External Comms Kit
- SMC™-50
- SMC™ Flex

Note: The adapter is not compatible with PowerFlex 750 series drives.

## Required Equipment

Some of the equipment that is required for use with the adapter is shipped with the adapter, but some you must supply yourself.

### Equipment Shipped with the Adapter

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

- One 20-COMM-ER EtherNet/IP adapter
- One 2.54 cm (1 in.) long and one 15.24 cm (6 in.) long Internal Interface cable (only one cable is needed to connect the adapter to the drive; for which cable to use, see [Figure 3 - on page 2-21](#))
- One PowerFlex 7-Class DPI (Drive Peripheral Interface) Network Communication Adapter Installation Instructions, publication 20COMM-IN004
- One LED Identification Label for use with Bulletin 150 SMC Flex and Bulletin 700 PowerFlex drives

### User-Supplied Equipment

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

- A small flathead screwdriver
- Ethernet cable (for details, see the EtherNet/IP Media Planning and Installation Manual, ODVA publication 148 available on the ODVA website at <http://odva.org/Home/ODVATECHNOLOGIES/EtherNetIP/EtherNetIPLibrary/tabid/76/Default.aspx>)
- Ethernet switch (for details, see the Ethernet Design Considerations Reference Manual, publication ENET-RM002)
- Configuration tool, such as the following:
  - PowerFlex 20-HIM-xx HIM

- Connected Components Workbench software, version 1.02 or later

Connected Components Workbench is the recommended stand-alone software tool for use with PowerFlex drives. You can obtain a **free copy** by:

- Internet download at <http://www.ab.com/support/abdrives/webupdate/software.html>
- Requesting a DVD at <http://www.ab.com/onecontact/controllers/micro800/>

Your local distributor may also have copies of the DVD available.

Connected Components Workbench software cannot be used to configure SCANport-based drives or Bulletin 160 drives.

- DriveExplorer software, version 2.01 or later

This software tool has been discontinued and is now available as **freeware** at

<http://www.ab.com/support/abdrives/webupdate/software.html>. There are no plans to provide future updates to this tool and the download is being provided 'as-is' for users that lost their DriveExplorer CD, or need to configure legacy products not supported by Connected Components Workbench software.

- DriveExecutive software, version 3.01 or later

A Lite version of DriveExecutive software ships with RSLogix 5000, RSNetWorx MD, FactoryTalk AssetCentre, and IntelliCENTER software. All other versions are purchasable items:

- 9303-4DTE01ENE Drive Executive software
- 9303-4DTS01ENE DriveTools SP Suite (includes DriveExecutive and DriveObserver software)
- 9303-4DTE2S01ENE DriveExecutive software upgrade to DriveTools SP Suite (adds DriveObserver software)

DriveExecutive software updates (patches, and so forth) can be obtained at <http://www.ab.com/support/abdrives/webupdate/software.html>. It is highly recommended that you periodically check for and install the latest update.

- BOOTP server, version 2.1 or higher, for network setup only

- Controller configuration software, such as RSLogix 5/500/5000
- A computer connection to the EtherNet/IP network

## Safety Precautions

Please read the following safety precautions carefully.



**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 or SMC, and then verify power has been discharged before installing or removing an adapter.



**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 an adapter. Failure to comply may result in injury and/or equipment damage.



**ATTENTION:** Risk of equipment damage exists. The adapter contains electrostatic discharge (ESD) 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, see Guarding Against Electrostatic Damage, publication 8000-4.5.2.



**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 drive will respond before resetting an adapter.



**ATTENTION:** Risk of injury or equipment damage exists. **Parameters 21 - [Comm Flt Action], 24 - [Idle Flt Action], and 43 - [Peer Flt Action]** let you determine the action of the adapter and connected drive if communication is disrupted or the controller is idle. By default, these parameters fault the drive. You may configure these parameters so that the drive continues to run, however, precautions should be taken to ensure that the settings of these parameters do not create a risk of injury or equipment damage. When commissioning the drive, verify that your system responds correctly to various situations (for example, a disconnected cable or a controller in idle state).



**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.



**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, Inc. does not assume responsibility or liability (to include intellectual property liability) for actual use of the examples shown in this publication.

## Quick Start

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

Step	Action	See
1	Review the safety precautions for the drive or SMC	Drive or SMC User Manual
2	Review the safety precautions for the adapter	Throughout this manual
3	Verify that the power control device is properly installed.	Drive or SMC User Manual
4	<p>Install the adapter.</p> <ol style="list-style-type: none"> <li>Verify that the power control device is not powered.</li> <li>Connect the adapter to the device with the Internal Interface cable.</li> <li>Use the captive screws to secure and ground the adapter to the device.</li> <li>Connect the adapter to the network with an Ethernet cable.</li> </ol> <p><b>NOTE:</b> When installing the adapter in the DPI External Comms Kit—see the 20-XCOMM-DC-BASE Installation Instructions, publication 20COMM-IN001, supplied with the kit.</p>	PowerFlex 7-Class DPI Network Communication Adapter Installation Instructions, publication 20COMM-IN004, and <a href="#">Chapter 2, Installing the Adapter</a>
5	<p>Apply power to the adapter.</p> <ol style="list-style-type: none"> <li>Verify that the adapter is installed correctly.</li> <li>The adapter receives power from the drive or SMC. Apply power to the device. The status indicators should be green. If they flash red, there is a problem. See <a href="#">Chapter 7, Troubleshooting</a>.</li> <li>Configure and verify key drive or SMC parameters.</li> </ol>	<a href="#">Chapter 2, Installing the Adapter</a>
6	<p>Configure the adapter for your application.</p> <p>Set adapter parameters for the following functions as required by your application:</p> <ul style="list-style-type: none"> <li>IP address, subnet mask, and gateway address</li> <li>Data rate</li> <li>I/O configuration</li> <li>Master-Slave or Peer-to-Peer hierarchy</li> <li>Fault actions</li> </ul>	<a href="#">Chapter 3, Configuring the Adapter</a>
7	<p>Configure the controller to communicate with the adapter.</p> <p>Use a controller configuration tool, such as RSLogix software, to configure the master on the network to recognize the adapter and drive or SMC.</p>	<a href="#">Chapter 4, Configuring the I/O</a>
8	<p>Create a ladder logic program.</p> <p>Use a controller configuration tool, such as RSLogix software, to create a ladder logic program that enables you to do the following:</p> <ul style="list-style-type: none"> <li>Control the connected device, via the adapter, by using I/O.</li> <li>Monitor or configure the device or SMC by using explicit messages.</li> </ul>	<a href="#">Chapter 5, Using the I/O</a> <a href="#">Chapter 6, Using Explicit Messaging</a>



## Installing the Adapter

This chapter provides instructions for installing the adapter in a PowerFlex 7-Class drive.

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### EMC Conformance

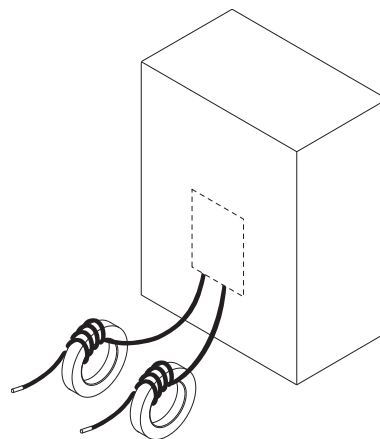
For all PowerFlex 70 and 700 drive installations that require CE conformance per EN61800-3, a ferrite core must be installed on each EtherNet/IP cable connected to the drive.

These ferrites are not required for installation on SMC products.

A ferrite core such as FAIR-RITE part number 2643803802 needs to be installed according to the following diagram.

Note: the cable is wrapped 4 times around each core.

**Figure 1 - Ferrite Core Installation**



## Preparing for an Installation

Before installing the adapter, do the following:

- Make sure the Ethernet switch is the correct type. A ‘managed’ switch that supports IGMP snooping is usually recommended. An ‘unmanaged’ switch can be used instead if RSLogix 5000 software, version 18.00 or later, is used and all devices on the network are configured for ‘unicast’ I/O. For more details, see the following documents:
  - EtherNet/IP Media Planning and Installation Manual, ODVA publication 148
  - EtherNet/IP Network Infrastructure Guidelines, ODVA publication 35
  - Ethernet Design Considerations Reference Manual, publication ENET-RM002
- Understand IGMP Snooping/Ethernet Switches

The 20-COMM-ER adapter is a multicast device. In most situations, an IGMP snooping (managed) switch is required. If more than one or two 20-COMM-ER adapters are connected to the switch, a managed switch is required—otherwise the drive may fault on a DPI Port x network loss. The 20-COMM-ER, RSLogix 5000 software, version 18.00 or later, and a ControlLogix or CompactLogix controller will support unicast. Unicast setup is required when adding the drive to the I/O. When all adapters are set up as unicast devices, then an IGMP snooping (managed) switch is not needed.

Much of EtherNet/IP implicit (I/O) messaging uses IP multicast to distribute I/O control data, which is consistent with the CIP producer/consumer model. Historically, most switches have treated multicast packets the same as broadcast packets. That is, all multicast packets are re-transmitted to all ports.

IGMP snooping constrains the flooding of multicast traffic by dynamically configuring switch ports so that multicast traffic is forwarded only to ports associated with a particular IP multicast group.

Switches that support IGMP snooping (managed switches) ‘learn’ which ports have devices that are part of a particular multicast group and only forward the multicast packets to the ports that are part of the multicast group.

Be careful as to what level of support a switch has of IGMP snooping. Some layer 2 switches that support IGMP snooping require a router (which could be a layer 3 switch) to send out IGMP polls to learn what devices are part of the multicast group. Some layer 2 switches can use IGMP snooping without a router sending polls. If your control system is a standalone network or is required to continue performing if the router is out of service, make sure the switch you are using supports IGMP snooping without a router being present.

- See [Appendix A](#) for the number of CIP connections supported by the 20-COMM-ER adapter.
- Verify that you have all required equipment. See [Required Equipment on page 13](#).

## Setting the Web Pages Switch

To use the adapter web pages, the Web Pages Switch must be set to its 'Enable Web' position. For information to enable or disable web pages for an adapter, see [Setting Web Access Control on page 42](#).

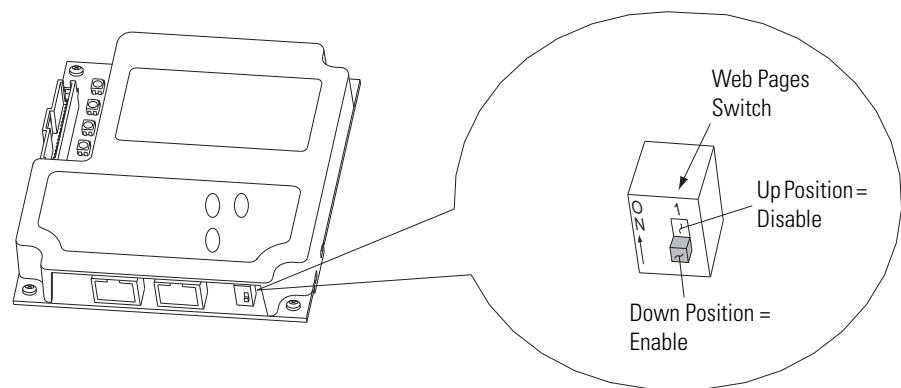


**ATTENTION:** Risk of equipment damage exists. The adapter contains electrostatic discharge (ESD) sensitive parts that can be damaged if you do not follow ESD control procedures. Static control precautions are required when handling the adapter. If you are unfamiliar with static control procedures,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

**Important:** A new switch setting is recognized only when power is applied to the adapter, or the adapter is reset. If you change a switch setting, cycle power or reset the adapter to apply the change.

Set the Web Pages Switch (SW4 in [Figure 2](#)) to enable or disable the adapter web pages. By default, the adapter web pages are disabled. For complete details on adapter web pages, see [Viewing the Adapter Web Pages on page 153](#).

**Figure 2 - Setting Web Pages Switch (only Series B Adapter)**



Setting	Description
Down (OFF) position	Web server enabled
Up (ON) position	Web server disabled (as shipped)

## Connecting the Adapter to the Drive or SMC



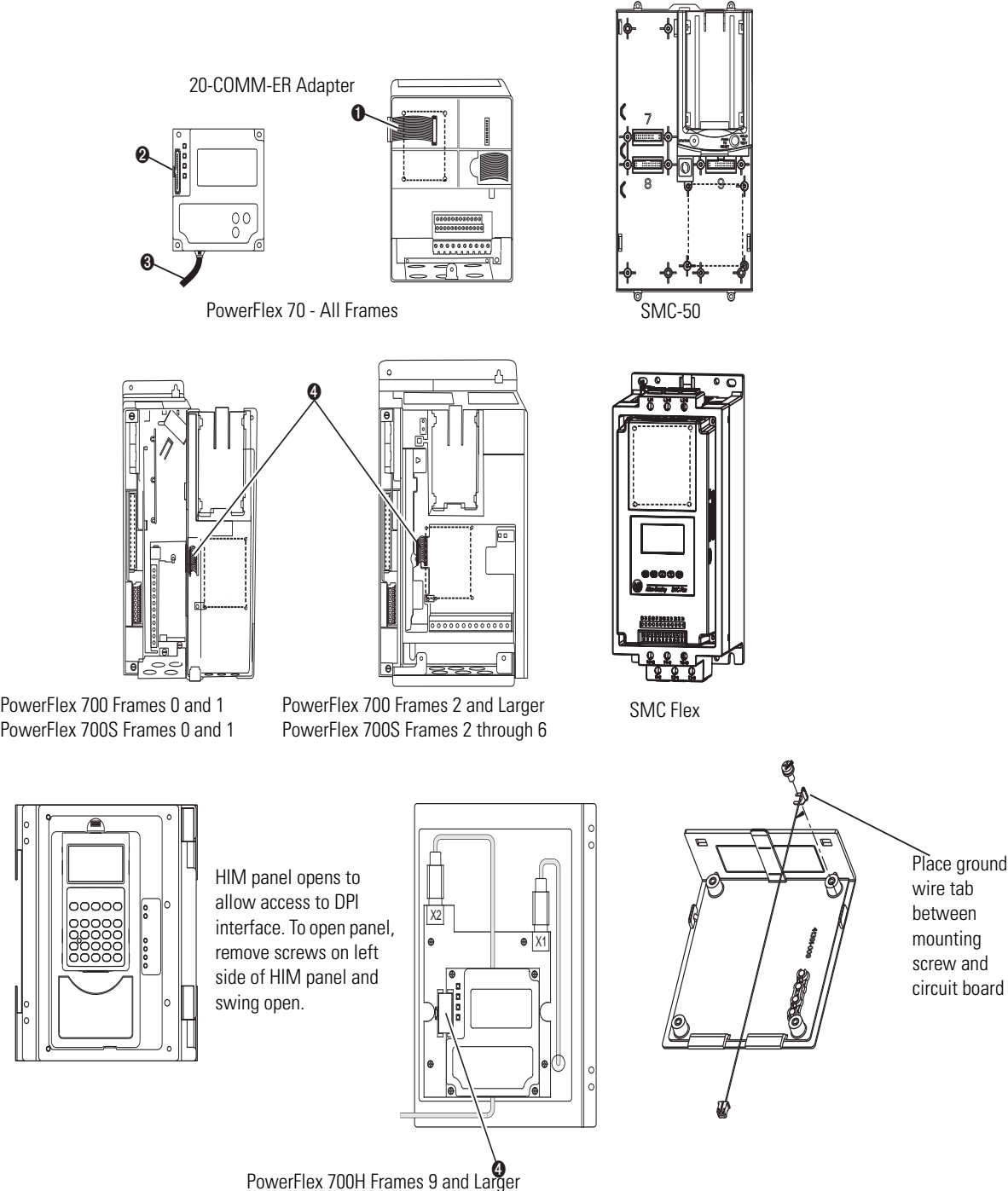
**ATTENTION:** Risk of injury or death exists. The PowerFlex drive or SMC may contain high voltages that can cause injury or death. Remove **ALL** power from the drive or SMC, and then verify power has been discharged before installing or removing the adapter.

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1. Remove **ALL** power from the drive or SMC.
2. Use static control precautions.
3. Remove the drive or SMC cover or open the drive door.
4. Connect the Internal Interface cable to the DPI port on the drive and then to the DPI connector on the adapter (see [Figure 3](#)).
5. Secure and ground the adapter to the drive or SMC (see [Figure 4](#)) by doing the following:
  - On a PowerFlex 70 drive, fold the Internal Interface cable behind the adapter and mount the adapter on the drive using the four captive screws.
  - On an SMC Flex, put the wire lug between the mounting screw and 20-COMM-ER board

**Important:** Tighten all screws to properly ground the adapter. Recommended torque is 0.9 N•m (8.0 lb•in).

**Figure 3 - DPI Ports and Internal Interface Cables**



Item	Description
❶	15.24 cm (6 in.) Internal Interface cable
❷	DPI Connector
❸	Ethernet cable
❹	2.54 cm (1 in.) Internal Interface cable

**Figure 4 - Mounting and Grounding the Adapter**

