User Manual

Original Instructions

AB QUALITY ***Allen-Bradley***

PowerFlex 20-750-ENETR Dual-port EtherNet/IP Option Module

Firmware Version 1.*xxx*

AB *Allen-Bradley* • *Rockwell Software*

Rockwell Automation
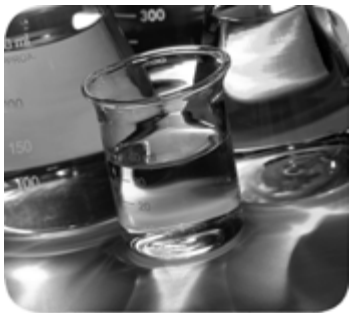
This manual provides information about the 20-750-ENETR Dual-port EtherNet/IP option module for network communication and how to use the module with PowerFlex® 750-Series drives.

To order paper copies of documentation, contact your local Allen-Bradley® distributor or Rockwell Automation® sales representative.

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

Conventions Used in This Manual

These conventions are used throughout this manual:

- Parameter names are shown in the format *Device* **Parameter xx - [*]** or *Host* **Parameter xx - [*]**. The xx represents the parameter number. The * represents the parameter name—for example, *Device* **Parameter 01 - [Operating Mode]**.

  > **TIP** All parameter numbers listed in this manual apply to the PowerFlex 750-Series Drives unless specifically noted. See the PowerFlex Drives with TotalFORCE Control Programming Manual, publication 750-PM100 for PF755T parameters.

- 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 dialog box images in this manual resulted from using this software:
  – Studio 5000® Logix Designer software, version 30.00 and, for Automatic Device Configuration (ADC) information, version 20.00

  Different versions of the software can have dialog boxes 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 located throughout the world.

Local Product Support	Contact your local Rockwell Automation representative for: – 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 http://www.ab.com/support/abdrives or contact Rockwell Automation.

To find your local Rockwell Automation distributor or sales representative, visit https://locator.rockwellautomation.com/SalesOffice/.

Additional Resources

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

Resource	Description
Industrial Automation Wiring and Grounding Guidelines, 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Network Communication Option Module, Installation Instructions, 750COM-IN002	Provides installation instructions for PowerFlex 750-Series Network Communication Modules.
EtherNet/IP Media Planning and Installation Manual, ODVA publication 148 [1]	The planning, installation, and techniques that are used to implement an EtherNet/IP network.
EtherNet/IP Network Infrastructure Guidelines, ODVA publication 35 [1]	
Ethernet Design Considerations Reference Manual, ENET-RM002	
EtherNet/IP Embedded Switch Technology - Linear and Device Level Ring Topologies, ENET-AP005	
PowerFlex 750-Series Drive Installation Instructions, 750-IN001	The installation of programming, and technical data of PowerFlex 750-Series drives.
PowerFlex 750-Series Drive Programming Manual, 750-PM001	
PowerFlex 750-Series Drive Technical Data, 750-TD001	
PowerFlex 750-Series Drives with TotalFORCE Control Built-in EtherNet/IP Adapter, publication 750COM-UM009	This manual provides information about the dual-port, built-in EtherNet/IP interface in PowerFlex 755T, 755TM, 755TR, and 755TL drives and bus supplies, and how to use it for network communication.
PowerFlex 20-HIM-A6/-C6S HIM (Human Interface Module) User Manual, publication 20HIM-UM001	The installation and use of PowerFlex 20-HIM-A6 or 20-HIM-C6S HIMs.
Controller Examples for EtherNet/IP Network Communications with PowerFlex 750-Series Drives, publication 750COM-AT001	The use of PLC-5®, SLC™ 500, and MicroLogix™ 1100/1400 controllers with PowerFlex 750-Series drives that are equipped with a 20-750-ENETR Dual-port EtherNet/IP option module. Or embedded EtherNet/IP adapter (PowerFlex 755 drive only).
Product Certifications website, http://www.rockwellautomation.com/global/certification/overview.page	Provides declarations of conformity, certificates, and other certification details.
Connected Components Workbench website http://www.ab.com/support/abdrives/webupdate/software.html, and online help [2]	The Connected Components Workbench™ software tool. Includes a link for **free** software download.
DriveExplorer website https://compatibility.rockwellautomation.com/Pages/home.aspx, and online help [2]	How to use the DriveExplorer™ software tool.
DriveExecutive website https://compatibility.rockwellautomation.com/Pages/home.aspx, and online help [2]	How to use the DriveExecutive™ software tool.

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

(2) The online help is installed with the software.
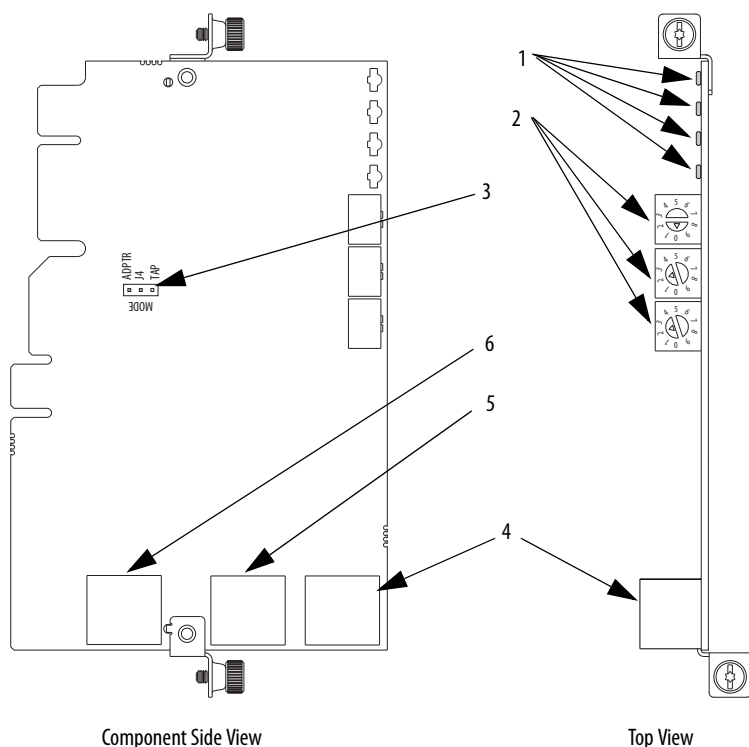
To view or download publications go to
http://www.rockwellautomation.com/global/literature-library/overview.pag

Notes:

Getting Started

The 20-750-ENETR option module is intended for installation into a
PowerFlex® 750-Series or PowerFlex 755T drive and is used for network
communication.

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Components

Component Side View   Top View

Item	Part	Description
1	Status Indicators	Four status indicators that indicate the status of the option module and network communication. See Chapter 7, Troubleshooting.
2	Node Address Switches	Sets the network node address of the option module when **not** using: A BOOTP or DHCP server Option module parameters See Setting the Node Address on page 24.
3	Operating Mode Jumper (J4)	Selects the mode in which the option module operates. See Setting the Operating Mode on page 23.
4	ENET1 Network Port	RJ45 connector for the Ethernet network cable. The connector is CAT-5 compliant to help data transfer on 100Base-TX Ethernet connections. Either port can be used in Adapter mode.
5	ENET2 Network Port	
6	ENET3 (DEVICE) Port (PowerFlex 755 only)	RJ45 connector to connect the short Ethernet cable (provided with the option module) to the Ethernet port on the PowerFlex 755 drive embedded EtherNet/IP adapter. This connection is intended for 'Integrated Motion on the EtherNet/IP network' data transfer.

Features

The features of the option module include the following:

- Adapter or Tap mode of operation that is selected by using the Operating mode jumper (J4). In Adapter mode (default), the option module operates as a network communication adapter supporting-star, linear, or device level ring (DLR) network topologies. In Tap mode, only intended for use with PowerFlex 755 drives, the option module uses ENET3 (DEVICE) port. The connection point is used to transfer 'Integrated Motion on the EtherNet/IP network'[1] data to the PowerFlex 755 drive's embedded EtherNet/IP adapter.

- Industrial Ethernet switch, and ENET1 and ENET2 network ports that provide connections for EtherNet/IP star, linear, or device-level ring (DLR) network topologies.

- ENET3 (DEVICE) port—for use with only PowerFlex 755 drives— that supports the transfer of 'Integrated Motion on the EtherNet/IP network'[1] data for that drive.

- Embedded electronic data sheet (EDS) files for PowerFlex 750-Series drives that eliminate the need to download an EDS file from the Rockwell Automation website. Instead, the EDS file is uploaded from the option module by using Linx-based software. The configuration codes would have to be modified to support the 755T, see PowerFlex 750-Series Drives with TotalFORCE® Control Built-in EtherNet/IP Adapter, publication [750COM-UM009](#) for details.

- Automatic Device Configuration (ADC), is an RSLogix 5000® software feature, version 20 or later, that supports the automatic download of configuration data. Download occurs after the Logix controller establishes an EtherNet/IP network connection to a PowerFlex 750-Series drive and its associated peripherals. The Power Flex 750-Series drive firmware must be revision 4.001 or later. The PowerFlex 755T Series drives firmware must be revision 1.001 and later.

- Captive screws to secure and ground the module to the drive.

- Switches to set a network node address before power is applied to the drive. Alternately you can disable the switches and use a BOOTP server, a Dynamic Host Configuration Protocol (DHCP) server, or option module parameters to configure the IP address.

- Status indicators that report the status of the option module and network communication. They are visible when the drive cover is removed.

- Parameter-configured 32 bit Datalinks in the I/O to meet application requirements. 16 Datalinks to write data from the network to the drive, and 16 Datalinks to read data to the network from the drive.

(1) PowerFlex 755T does not work with 'Integrated Motion'.

- MSG instruction support in the controller.

- Master-slave or peer-to-peer hierarchy that can be configured to transmit data to and from a controller. Or another PowerFlex 750-Series drive on the network by using another 20-750-ENETR option module or the embedded EtherNet/IP adapter in a PowerFlex 755 drive.

  > **TIP** The PowerFlex 755T does not support peer-to-peer on the embedded Ethernet card.If the Ethernet cable is plugged into the ENETR card, it can preform peer-to-peer.

- Supports 'Integrated Motion on the EtherNet/IP network[1] operation (Tap mode only) for only the PowerFlex 755 drive, firmware revision 2.003 or later. For details to configure 'Integrated Motion on the EtherNet/IP network' operation, see Integrated Motion on the EtherNet/IP Network User Manual, publication [MOTION-UM003](#).

  > **TIP** Rockwell Automation recommends that Rockwell Automation® Cat5e shielded Ethernet cable is used in 'Integrated Motion on the EtherNet/IP network' applications.

- User-defined fault actions to determine how the option module and its connected host drive respond to the following:

  - I/O messaging communication disruptions (Comm Flt Action)
  - Controllers in Idle mode (Idle Flt Action)
  - Peer device communication disruptions (Peer Flt Action)
  - The PCCC, register object, and CIP assembly object are specific to the MSG instruction

- Access to parameters by using their name or their number.

- Web pages show information about the option module, its host drive, and DPI™ devices connected to the drive. Depending on its selected operating mode (Adapter or Tap), the option module provides a unique set of web pages with different information.[2]

- Configured email messaging (Adapter mode only) to desired addresses when selected drive faults occur and/or are cleared, and/or when the option module takes a communication or idle fault action.[2]

- Access to any PowerFlex drive and its connected peripherals on the network to which the option module is connected.

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(1) PowerFlex 755T does not work with 'Integrated Motion'.

(2) PowerFlex 755T does not contain web pages or email.

Table 1 - Software Compatibility Matrix

Drive	Firmware	Connected Components Workbench™ Software[3]	DriveTools™ SP[3]	DriveExplorer™ Software
PowerFlex 753	version 1.005[2]			
PowerFlex 755	version 1.009 version 2.003 Frames 8…10	version 1.02	version 5.06	version 6.04
PowerFlex 755T[1]	version 1.001	version 11	Not supported	Not supported

Drive	Firmware	Studio 5000 Logix Designer® Application	RSLogix 5000® Software
PowerFlex 753	version 1.010[2]		
PowerFlex 755	version 1.009 version 2.003 Frames 8…10	version 21	version 16
PowerFlex 755T	version 1.001	version 21[4]	version 20[4]

(1)   PowerFlex 755T does not support DriveExecutive™ or DriveExplorer.

(2)   Only with version 8.001 20-750-ENETR option module.

(3)   Rockwell Automation recommendation the use of the latest available AOP for the drive being used.

(4)   Only with version 5.02 Add-On Profiles.

Option Module Operating Modes

The option module can be operated in Adapter mode (default) or Tap mode. The Operating mode jumper J4 (item 3 in) is used to select the operating mode. If the jumper is missing, the option module operates in the Adapter mode.

Adapter Mode (default)

In the Adapter mode, the option module operates as an EtherNet/IP network communication module. With its EtherNet/IP embedded switch technology and ENET1 and ENET2 network ports, the option module enables the drive to be used in a linear or device-level ring (DLR) network topology. When using a star network topology, either the ENET1 or ENET2 network port can be used. In Adapter mode, the 'Integrated Motion on the EtherNet/IP network' functionality is not supported.

When Operating in Tap Mode

Network
    Protocol
    Data Rates
	EtherNet/IP
	10 Mbps Full-duplex, 10 Mbps Half-duplex, 100 Mbps Full-duplex, or 100 Mbps Half Duple

Connection Limits	30 TCP connections 16 simultaneous MSG instruction connections The following activity uses a CIP connection: • MSG instruction, when 'connected' is checked on on the MSG configuration tab The following activity **does not** use a CIP connection: • MSG instruction, when 'connected' is not checked on on the MSG configuration tab (default)

Drive
    Protocol
    Data Rates
	DPI
	500 Kbps

Electrical

Consumption
    Drive
    Network
	250 mA at 14V DC supplied by the host drive
	None

Mechanical

Dimensions
    Height
    Length
    Width
	68 mm (2.7 inches)
	150 mm (5.9 inches)
	26 mm (1.0 inches)

Weight	62 grams (2.1 ounces)

Environmental

Temperature
    Operating
    Storage
	-10…+50 °C (14…122 °F)
	-40…+85 °C (-40…+185 °F)

Relative Humidity	5…95% noncondensing
Atmosphere	**Important:** The option module **must not** be installed in an area where the ambient atmosphere contains volatile or corrosive gas, vapors, or dust. If the option module is not going to be installed for a time, it must be stored in an area where it is not exposed to a corrosive atmosphere.

Regulatory Compliance

Certification	Specification
UL	UL508C
cUL	CAN / CSA C22.2 No. 14-2010
CE	EN 61800-3
CTick	EN 61800-3

IMPORTANT	This product is of category C2 according to IEC 61800-3. In a domestic environment, this product can cause radio interference in which case supplementary mitigation measures can be required.