

Introduction

In This Chapter. . . .

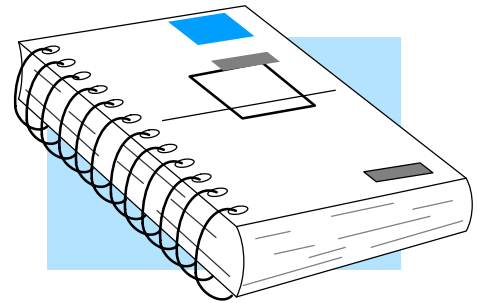
- Manual Overview
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Manual Overview

The Purpose of this Manual

This manual describes how to use the **Ethernet Communication (ECOM) Modules**. You will find information about:

- Setting up the ECOM module
- Network layouts
- PC-to-PLC communications
- PLC-to-PLC communications
- RLL programming examples
- Maintenance and troubleshooting



Other Reference Materials

Other **DirectLOGIC™** manuals may be useful for your application.

User Manuals

- DL205 User Manual part number D2-USER-M
- DL405 User Manual part number D4-USER-M
- **DirectSOFT** User Manual (with part number PC-PGMSW v2.3 or later)
- DSData Server User Manual (with part number PC-DSDATA-M)

Who Should Read this Manual

If you need a high-speed communications link between your **DirectLOGIC** PLC and PCs or other **DirectLOGIC** PLCs and you understand the basics of installing and programming PLCs, this is the right manual for you. This manual gives you the information you need to set up and install a communication link to an ECOM module.

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<http://www.automationdirect.com>

- **Table of Contents** – chapter and section listing of contents, in the front of this manual
- **Quick Guide to Contents** – chapter summary listing on the next page
- **Appendix** – module specifications and Ethernet standards
- **Index** – alphabetical listing of key words at the end of this manual

If you have a comment or question about any of our products, services, or manuals please fill out and return the 'Suggestions' card that came with this manual.

Conventions Used



When you see the “light bulb” icon in the left-hand margin, the paragraph to its immediate right will give you a **special tip**.
The word **TIP:** in boldface will mark the beginning of the text.



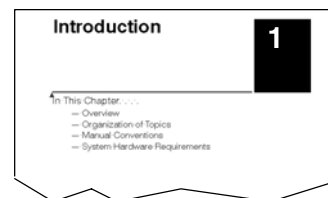
When you see the “notepad” icon in the left-hand margin, the paragraph to its immediate right will be a **special note**.
The word **NOTE:** in boldface will mark the beginning of the text.



When you see the “exclamation mark” icon in the left-hand margin, the paragraph to its immediate right will be a **warning**. This information could prevent injury, loss of property, or even death (in extreme cases).
The word **WARNING:** in boldface will mark the beginning of the text.

Key Topics for Each Chapter

The beginning of each chapter will list the key topics that can be found in that chapter.



ECOM Module Introduction

Four Ethernet Communication (**ECOM**) modules are currently available for use with DL205 and DL405 PLC systems. The four ECOM modules are shown below. These modules provide a low-cost, high-speed Ethernet link for PLC systems. The modules are easy to set up and install on 10BaseT (twisted pair, copper wire) or 10BaseFL (fiber optic) Ethernet networks.

LEDs on the face of each module give vital information about the status of the module and the communication link. The 10BaseT modules use standard RJ45 modular connectors, and the 10BaseFL modules use ST style bayonet connectors.

H2-ECOM



H2-ECOM-F



H4-ECOM



H4-ECOM-F



NOTE: We recommend using a dedicated network for your PLC control applications. For more information see Chapter 2, Setup and Installation.

ECOM Communication Possibilities

You can use the ECOM modules to share data between two or more **DirectLOGIC** PLCs or between **DirectLOGIC** PLCs and personal computers. Communication between PLCs is accomplished by using the Read/Write (RX/WX) instructions which are available in the **DirectSOFT32** Programming Software. Chapter 3 explains the use of RX/WX instructions.

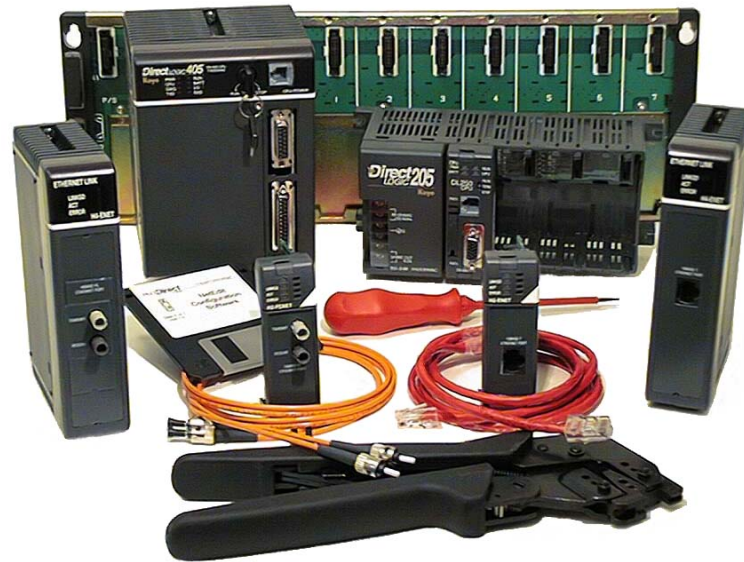
You can also use a personal computer running **DirectSOFT32** Programming Software to program your PLCs over the Ethernet network. It is just like programming through the programming port on the CPU, but with the convenience of doing it from a single location.

Use catalog number PC-PGMSW to program the complete **DirectLOGIC** family of PLCs (only the DL205 series and the DL405 series can be programmed over Ethernet). You can use catalog number PC-PGM-205 for programming just the 205 series. You will need version 2.3 (or newer) of **DirectSOFT** software to recognize the ECOM module. Chapter 2 lists the CPUs which can be used with the ECOM modules.

Your Network PC

PCs running our DSData Server software can establish Ethernet links for exchanging information with **Direct**LOGIC 205/405 PLCs.

You can use a personal computer equipped with a 10BaseT or 10BaseFL network adapter card and NetEdit software to configure the ECOM module over the network. You can also use NetEdit for troubleshooting certain communication problems. The NetEdit utility is included with this manual and is available for download at <http://www.automationdirect.com>.



Frequently Asked Questions

Q. What is Ethernet?

A. Ethernet is a communication specification which defines cable type and signalling methods to be used in a local-area-network (LAN). An Ethernet network transmits *packets* of information between computers at speeds of 10 to 100 million bits per second (Mbps). Currently the most widely used version of the Ethernet standard is 10BaseT. Using the Ethernet standard allows products from many vendors to communicate using common software protocols and hardware.

Q. Will my PC communicate with the ECOM without the use of special software?

A. No, you must use a compatible software package. Popular Windows-based spreadsheet and database software or Human Machine Interface (HMI) software can share data via our DSData software. The DSData Server offers ready-to-use software drivers. Also, *DirectSOFT* V2.3 (or later) programming software will allow *online setup* of the ECOM modules and *programming* of the *DirectLOGIC* PLCs.

Q. Which protocols are supported by the ECOM module?

A. A protocol is a set of rules that allows computers to connect with one another specifying the format, timing, sequencing, and error checking for data packet transmission. The ECOM module supports Novel IPX and UDP/IP (Universal Datagram Protocol/Internet Protocol) in addition to a proprietary high-performance ECOM Ethernet protocol.

Q. Which Ethernet packets are recognized by the ECOM module?

A. The Ethernet Communication Module supports IEEE 802.2, IEEE 802.3, Ethernet 2, and SNAP Ethernet packets. The module will respond to IPX or UDP/IP messages which are initiated using compatible interface software. Using off-the-shelf Windows-based OPC/DDE-compliant software or HMI software and our DSData software, you can link to your PLC and access PLC data.

Q. How do I connect to an Ethernet network?

A. Ethernet devices can be directly connected to a Local Area Network or they can be connected using media adapter products. Media adapters (or transceivers) provide interconnection between different types of Ethernet cabling.

Q. Can I use the ECOM module to allow two PLCs to exchange data with each other?

A. You can use the ECOM to make it possible for two (or more) PLCs to exchange data (contents of memory locations) with each other.

The initiating PLC sends a Read/Write (RX/DX) request that says to the other PLC, "I want to tell you something" or "I want to ask you something." Once the data has been exchanged, the communication channel is closed, and the PLCs resume their program execution.

Q. Can I create multiple networks by putting more than one ECOM in a single PLC base?

A. Yes, but be sure to consult Chapter 2 for important installation information, and be sure not to exceed the PLC power budget (see the module specifications in Appendix A and the PLC User Manual).

Q. What does it mean to “set up” the ECOM module?

A. The ECOM module must have a network identifier in order for other PLCs or PCs to find it on the network. The network identifier can be set using a DIP switch or using software utilities (see Chapter 2).

Q. Are Ethernet specification documents required to install an ECOM system?

A. No. Detailed Ethernet specifications are not necessary for connecting the ECOM module to an Ethernet network. If you want more information about Ethernet networks, many books are available which give guidelines for implementing Ethernet 10BaseT or 10BaseFL networks.

Q. Which LAN technology should I use?

A. ECOM modules are available for connecting to 10BaseT or 10BaseFL (fiber optic) networks. The cable distances and environmental conditions often dictate which media type should be used. The most popular and flexible technology currently is 10BaseT, but 10BaseT is susceptible to electrical noise and is limited to relatively short cable runs. On the other hand, it is very simple and inexpensive, and repeaters can be used to extend its cable length limitations. 10BaseFL allows much longer cable runs with immunity to electrical noise. The fiber optic cable and hubs are currently more expensive than those for 10BaseT.